

4/11/2014



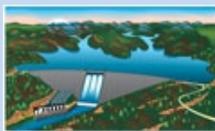
# Some Dam – Hydro News™

## And Stuff

**Quote of Note:** *“Nothing can so alienate a voter from the political system as backing a winning candidate.” - Mark R. Cohen.*

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**“Good wine is a necessity of life.” - Thomas Jefferson**  
**Ron’s wine pick of the week: 2011 Robert Foley Merlot "Napa Valley"**  
**“No nation was ever drunk when wine was cheap.” - Thomas Jefferson**



### **Dams:**

(A compromise solution – good for all! And, they got free money to do it!)

#### **Dam removal to help with fish passage on Umatilla River**

by George Plaven , East Oregonian | March 28, 2014, m.dailyastorian.com

A diversion dam blocking fish passage up the Umatilla River between Echo and Stanfield could be removed by 2016, while still maintaining irrigation rights established 117 years ago. The Umatilla Basin Watershed Council is proposing a multi-phase project that would not only take out the troublesome Dillon Dam -- a year-round barrier for native salmon and steelhead -- but reroute water for irrigation from another existing dam about two miles upstream. Dillon Dam serves three water rights in the area, primarily at Double M Ranch, for a total of 1,821 irrigated acres. The plan is to divert their water instead from the Westland Irrigation Dam, and install an 11,000-foot pipeline out of Westland Canal feeding back into the Dillon Canal. Once that phase is completed, then crews can focus on the actual removal of Dillon Dam and restoration of fish habitat. The

eight-foot-high concrete structure serves no other purpose on the river. All together, the project is expected to cost about \$960,000. Greg Silbernagel, executive director of the watershed council, said the benefits will create a win-win situation for local agriculture and the environment. "It's going to be less maintenance (for producers)," Silbernagel said. "We'll also see increased survival and fish numbers in the Umatilla River."

There are fish and lamprey ladders at Dillon Dam, but they are often inaccessible due to low flows in the summertime or gravel bars deposited by high, sweeping flows earlier in the season. Recent flooding on the river left a solid island of rocks blocking entrance into the ladder, as well as plugging the irrigation headgate. When that happens, it is up to producers with the Dillon Irrigation Company to go in with loaders and clear the mess. The work usually takes 10-12 hours to finish, said Mike Taylor, owner and operator of the Double M Ranch. A third-generation rancher, Taylor depends on irrigation water from the Dillon Dam to grow hay, corn and barley for his cattle operation. The Double M Ranch supports 1,300 cows just outside Echo. Taylor is supportive of the watershed council's proposal as both a cattleman and a fisherman, he said. Westland has the capacity to serve their water rights, he added, so there shouldn't be any issue there. "Most people here understand the fish passage issue, and it will only help to get that dam out of there," Taylor said. The watershed council began in 2011 working on a plan to remove the Dillon Dam, meeting with producers and stakeholders. The group is now waiting on approval from the Oregon Water Resources Department to approve transfer of the Dillon water rights to Westland before moving forward with final design of the pipeline. Funding for the removal is expected to be raised through the Oregon Department of Fish & Wildlife, Confederated Tribes of the Umatilla Indian Reservation and other federal partners. Gary James, fisheries program manager with the Tribes, said the project would further restore salmon runs that were once wiped out in the basin. "It's certainly in our interest if we can consolidate canals and reduce the diversion dams to accommodate irrigation and fish," James said. "When there's a problem at a dam, we'll at least see a delayed (fish) migration. Obviously, when it takes them a lot longer, the wear-and-tear takes its toll." Staff with the state Watershed Enhancement Board announced March 21 they recommended approval for \$50,000 toward engineering the project. The board is expected to make a decision by April 30. Pipeline construction could begin in winter, and finish by summer 2015, Silbernagel said. "Everybody seems on board," he said. "We decided this is what we were going to do, and it's been clear sailing ever since."

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(They have to make a decision because they'll get flooded again!)

### **Meeting looks at dam rebuilding on Little Thompson River**

**Nearby residents are seeking answers when it comes to the rebuilding of five small dams on the Little Thompson River.**

3/30/14, 9news.com

Lyons, CO- For those who live within reach of the Little Thompson River, the September floods are still fresh on their minds nearly seven months later. "There's a lot of big emotions around this because people lost a lot," said Kerri Larson of Pinewood. At a standing room only meeting in Lyons on Saturday, residents near the Little Thompson sought answers about what is being done to repair the five small dams, all of which failed along that river during the flooding. "We have the same problems that anyone else does," said Roy McCutchen, who lives in the Big Elk Meadows subdivision. "We don't have a lot of resources to work with. Funding, money is obviously a problem." Bill McCormick, chief of dam safety, addressed the concerns. He said engineering and feasibility studies are now underway to figure out how the dams will be rebuilt. "The standard when the original dams were built in the 1950s to now has been increased," McCormick said. "We have better engineering, better construction practices, so from that standpoint, the dams will be safer than they were previously." For now, though, where those dams once stood, there is nothing stopping water from flowing down the Little Thompson. "They do not exist," McCormick said. "It's a free flowing stream through the whole valley up there."

McCormick said, at the earliest, construction on the dams could begin by the fall. However, that leaves concerns about the upcoming spring runoff. Some homeowners say that puts them on pause, as they wait to see what will happen with the river, before they begin their own rebuilding process. "Like many people, I can barely afford to do this once," Larson said. "I certainly can't do this twice. So, I can't move forward with my plans to build a bridge, to put some kind of water crossing in, so I can get to my house and move home." FEMA is paying to study what it would take to rebuild the dams. There is no exact estimate of how much the rebuilding would cost or even where the money would come from, but experts say funding would likely need to be in the two to three million dollar range.

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## Wisconsin Department of Natural Resources Spring 2014 Dam Safety Newsletter

[DamSafetyNewsletterSpring2014.pdf](#) (Hold down the ctrl key and click on the link.)

(It's hell being last!)

### Legislation for dam safety (Opinion by Ben Gallagher)

By Letters from our readers on April 02, 2014, al.com

The first and last priority of any infrastructure system is to assure public safety. From barricades on our highways to weight limits on our bridges, safety is paramount for Alabama's families and businesses. Shockingly, Alabama continues to be the only state in the country without a state dam safety program. What this means is that Alabama is the only state in the country that does not know how many dams it actually has, much less their condition and maintenance needs. Of the other 49 states, each has an organized inspection program for assuring public safety. Alabama's position is unacceptable for our state and unacceptable for Alabama's security, public safety, and economy.

Last week, State House Rep. Mary Sue McClurkin introduced House Bill 610, the first proposed dam safety law in Alabama in years. While this is an encouraging sign, this is no victory. Since the legislative session ends next week, there is no chance this bill will actually come law anytime soon. Why does such a common sense law—making our dams safe and secure—have no chance of passing?

Alabama's dams are a critical part of our everyday life. From our farmers to our energy supply, the use and reliance on Alabama's dams is essential to how our communities thrive and grow. Major dam owners like the US Army Corp of Engineers and Alabama Power recognize the immense costs a dam failure can have on a community, and employ dedicated dam safety professionals. Yet hundreds of other dams in Alabama do not receive routine inspections or maintenance. HB 610 proposes a dam safety program to inventory, inspect, and ensure new dams are properly constructed. This common sense bill includes specific exemptions for small dams to avoid unnecessary impact to farmers and other owners.

Many states did not enact legislation for dam safety until loss of life and significant property damage occurred. Dam failures have occurred in Alabama, and many more near failures have occurred than anyone can account for. We are fortunate to have the opportunity to act before a major disaster occurs. We should learn from the experiences of other states and act swiftly to protect our citizens as well as our economy.

The state of Alabama cannot be an exception when it comes to building a first-class infrastructure system. The fact that we do not even know where all of Alabama's dams are is appalling. Alabama needs a dam safety program now. While passage is unlikely for this legislative session, we must urge our elected officials to make this reasonable measure an immediate priority. *Ben Gallagher works at the Birmingham Branch of the American Society of Civil Engineers.*

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(The public has a right to know!)

### Duke Energy refused to share possible effects of coal ash dam breaches

By Tyler Dukes, 4/2/14, wral.com

Raleigh, N.C. — For more than three years, Duke Energy used a provision in a 2009 state law tightening coal ash pond regulations to refuse to provide environmental regulators and emergency responders with information about potential damage from failed dams. Officials from the Department of Environment and Natural Resources say Duke has failed to provide maps that detail how breaches in 29 of the state's 46 high-hazard coal ash dams would affect surrounding areas. Known as inundation maps, these documents form a crucial part of emergency action plans in the event a dam fails. North Carolina is one of 10 states in the country that does not require dam owners to file these emergency action plans, according to DENR spokeswoman Bridget Munger. But since DENR officials took over regulation of all of the state's dams in 2010, it has required EAPs every time a dam operator applies for any kind of new permit. "That gives us some leverage to work with," Munger said. But documents show the same law granting the agency that regulatory authority created a loophole Duke has used to get around the inundation map requirement. One of bill's authors says that's not how it was supposed to work. "That's a troubling matter, and I guess we could fix that in the coal ash legislation we're going to be filing in the next few weeks," said state Rep. Pricey Harrison, D-Guilford.



#### **Law shifted regulatory authority**

Prior to 2010, Munger said, the safety of the dams keeping coal ash in retention ponds was essentially self-regulated. Duke inspected these facilities every five years, then reported its findings to the state Utilities Commission. Senate Bill 1004 changed that, transferring oversight of coal ash ponds to regulators at DENR. When she signed it into law in July 2009, Gov. Bev Perdue hailed the act as a way to tighten restrictions on the industrial byproduct, which contains arsenic, mercury, lead, boron and other heavy metals. "Because of potential risk posed by the location of North Carolina's coal ash ponds, we must provide greater oversight and more frequent inspections," Perdue said in a release at the time. "This legislation will keep our citizens safer and our dams more secure." For a while, Munger said, the measure mostly worked as intended. "When that was passed and the program was new here, there was a process over the first year of starting to work with these companies," she said. Progress Energy, which owned about 20 of the high-hazard dams, supplied many of the required inundation maps. Duke, she said, was less amenable. But around 2011, Munger said the companies began using one section of the law to claim an exemption. Duke acquired Progress in 2012. "Staff was indeed frustrated because that last part kind of tied the hands of the regulators," she said. Around the same time, WRAL News reported Tuesday, DENR officials began investigating ways to exempt these documents from the state's public records law in response to a Duke request to keep them secret. While the state has some form of EAP on file for 38 of the 46 high-hazard dams, state data show inundation maps are old or missing entirely from two-thirds of the structures. "An EAP without a valid and up-to-date inundation map is pretty much no good," Munger said.

#### **After the spill, a change of heart**

Duke, DENR kept potential impacts of coal ash dam breaches secret. Although it was a busted drain pipe and not a breached dam that caused the coal ash spill in early February that released 40,000 tons of coal ash into the Dan River, Duke is shifting its stance on the release of these impact maps. In a March 20 response to DENR's information request, Vice President John Elnitsky said the company would provide updated emergency action plans and inundation maps before July 31. "It will take several months to update the plans because we intend to incorporate

our learnings from Dan River, and this process is underway," Duke spokesman Thomas Williams said in an emailed statement. Williams said in the email that Duke's practice is to keep emergency plans related to "major critical energy infrastructure" confidential for security reasons. But reached by phone Wednesday afternoon, he offered no explanation for why this information wouldn't be shared with environmental regulators or emergency responders. Harrison said Wednesday that she wasn't aware energy companies were using the measure she helped craft to get around emergency plan requirements. She said the provision was inserted into the original bill to give coal plant operators planning to convert to cleaner energy some leeway with the Clean Smokestacks Act. But as legislators enter the short session in May, she said making a fix to the oversight law is "kind of a no-brainer." "It's been an important tool," Harrison said, "so I think we have to tighten it up."

## Huge Gates Take 600-mile Trek to California Dam Site

04/02/2014, By C.J. Schexnayder, enr.construction.com

The first massive gate for the Folsom Dam Auxiliary Spillway project arrived last month at Folsom, Calif.—about 20 miles east of Sacramento—after a four day, 600-mile journey. Carrying a bulkhead gate so large it took up two lanes of traffic to allow its passage, a 100-ft-long flatbed rolled onto the jobsite in the middle of the night on March 14 with a California Highway Patrol escort. The gate's odyssey from Oregon Iron Works in Vancouver, Wash., where it was fabricated, will be repeated 17 more times to transport the dozen gates to the dam location above Sacramento. That's not counting the trips needed to move additional, smaller gate parts. The \$45-million gates are a key element of the \$900-million spillway project, designed to protect California's capital from inundation. The 3,027-ft-long spillway is designed to channel flows from the Folsom Lake through a stilling basin, which will reduce its speed approaching the American River.



The spillway project is being built by the Folsom Joint Federal Project, a cooperative effort between the U.S. Army Corps of Engineers and the U.S. Dept. of the Interior, Bureau of Reclamation. Work began in 2008 and is slated for completion in 2017.

Granite Construction Co. is handling the \$125.9-million gate-control-structure portion of the job, which should complete next year. The company evaluated myriad transportation scenarios for the gates, including using barges and air transport, before settling on driving each one down individually from Washington. "It would have been more of a cost advantage if all the bulkheads could be shipped at the same time on the same barge, but the fabrication and installation schedule precluded this," says Tom Peick, the project manager from Granite Construction. Since all the gate components are significantly wider than the roadways they must traverse to reach their



new home, transporting them involves a formidable logistical challenge. The moving operation requires a rolling closure of the southbound lanes of Interstate 5 and, through Sacramento itself, similar closures of thoroughfares. The six flat, panel-shaped bulkhead gates are being shipped completely assembled. The curved Tainter gates will be transported in two parts: the framework arm and the facing. When assembled, the Tainter gates, 45-ft, 3-in. on the face and 28-ft, 9-in. wide, pivot—open or closed—in an arc via the arm. Corps' Sacramento District officials say installation of the first Tainter gate will begin in May. For each 179-ton gate, the process is expected to take four months, they say. First, the gate support structure must be installed, a time-consuming process due to the high precision required. Then, the parts will be lowered 110 ft. to their final position within the confined conduit walls. The 23-ft, 9-in.-long, 39-ft-tall and 3-ft, 6-in.-wide bulkhead gates, each weighing 106.4 tons, will begin being put into place in August and require as much as three weeks to install. To install the bulkhead gates, roller assemblies—eight per side—will be attached to each gate; then, each gate will be hoisted into a vertical posture and positioned over the control structure by crane, says Jacqueline Steiner, engineer with JFP. "[The gate] will slowly be lowered into the bulkhead-gate slot through the head wall until the bottom seal is resting on the sill beam," she says. According to Corps officials, the concrete work for the control structure itself is about 90% complete and should be finished by summer. At that point, work will shift to the electro-mechanical phase, which includes the gate installation, continuing into next year.

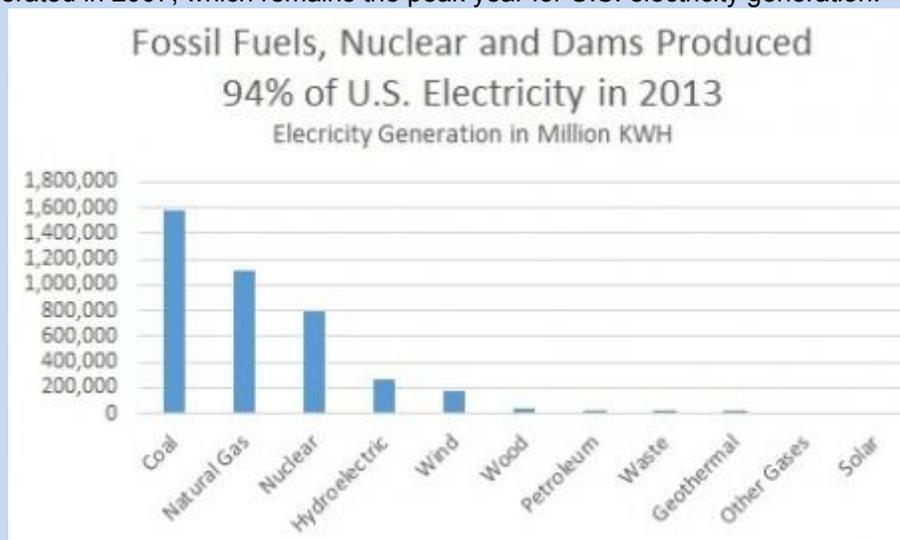


### Hydro:

#### 94% of Electricity in 2013 Came from Reactors, Dams and Fossil Fuels

March 28, 2014 - cnsnews.com

(CNSNews.com) - Ninety-four percent of the electricity generated in the United States in 2013 came from nuclear reactors, dams, and fossil fuels—including petroleum, natural gas, other gases, and coal—according to a new report from the U.S. government's Energy Information Administration. Only 0.2 percent of U.S. electricity during the year came from solar-power sources, and another 4.1 percent came from wind power. In total, the United States generated a net of 4,058,209 million kilowatthours of electricity in 2013. That was up slightly—0.26 percent—from the 4,047,765 million KWH generated in 2012. But it remained less than 4,156,745 million KWH generated in 2007, which remains the peak year for U.S. electricity generation.



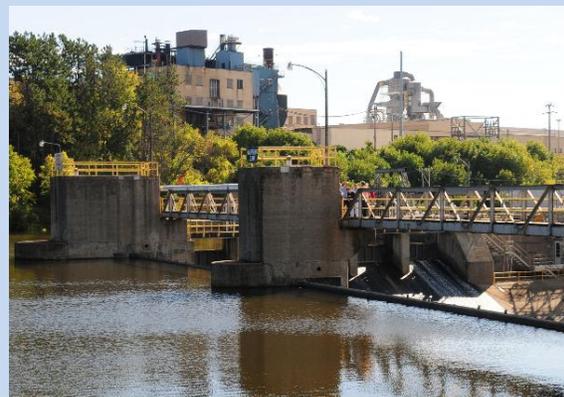
Coal-fired electricity production, which rebounded last year after two years of decline, was the nation's leading source of electricity in 2013. It produced 1,585,998 million KWH—up 4.8 percent from the 1,514,043 million KWH produced in 2012. Coal-produced electricity in 2013 was still down 21.3 percent from its peak in 2007, when coal plants in the United States produced 2,016,456 million KWH. In 2013, natural gas was the second greatest source of U.S. electricity, producing 1,113,665 million KWH. Nuclear power plants were the third largest source, producing 789,017 million KWH. And conventional hydroelectric power was the fourth greatest source, producing 269,136 million KWH hours. Wood-burning electricity sources actually out-produced solar power. With wood generating 39,937 million KWH of electricity in 2013 and solar producing 9,252 million KWH. Wind power was the fifth greatest source of electricity in the U.S.—following hydroelectric—generating 167,665 million KWH. The combined output from all wind and solar power sources in the United States was 176,917 million KWH—or about 4.36 percent of the nation's total supply. The U.S. would have to multiply its present solar and wind power resources 26 times in order to produce the total volume of electricity generated in the country last year.

(Hydro should be a good deal!)

### Brainerd's plan to buy hydroelectric dam stirs up controversy

By: Pam Louwagie , Star Tribune, March 29, 2014 - startribune.com

City is getting pushback on plan to buy hydroelectric dam from Wausau Paper for \$2.6 million. The city of Brainerd, MN is on the verge of buying a hydroelectric dam that has held back the Mississippi River on the north end of town for more than 100 years. But the plan has opened a floodgate of controversy. City leaders herald the purchase as an unusual opportunity to use more renewable energy and keep electric rates down in the process. By their calculations, the dam will generate more than \$1 million worth of electricity for the city each year — about 10 percent of what it typically buys from Minnesota Power — saving the public utility commission about \$280,000 a year once operating costs are added in. Critics say the city has been too secretive about the details of the dam's condition and they suspect it will cost the city in the long run. The sale is coming nearly a year after Wausau Paper closed its Brainerd plant and looked for buyers for both its facility and its nearby dam, which city officials say was rebuilt in the 1950s.



The city won a bid of \$4.1 million on the dam originally. After consultants inspected it, leaders agreed on a price of \$2.6 million, expecting to spend an estimated \$1.5 million right away to repair the dam's pocked concrete spillway apron and another \$600,000 on equipment upgrades over the next five years. The city will borrow money for both the purchase and repairs, leaders said. "It's not too many cities that have the opportunity to buy a hydroelectric dam like this," Mayor James Wallin said. "Overall I think it's a good investment." But former mayor and City Council Member Bob Olson decried a lack of transparency on the deal, saying the council held no public hearings and officials refused to publicly release the consultant's report on the condition of the dam. He and others who have tried to get the report say they've been told it hasn't been released because of federal regulations saying that engineering, vulnerability and detailed design information about critical energy infrastructure is not public. Olson doesn't buy it. "They don't want to let the public know the millions of dollars they have to spend on repairs and maintenance on this dam," he said. "Buying this dam is a pig in a poke." Council Member Mary Koep cast the sole vote against the \$2.6 million purchase. She said former paper mill employees who worked on the dam met privately with utilities officials to raise concerns about its condition. She said she saw nothing in the consultant's report that couldn't be made public and she questions the long-term expense of

running the dam. Public Utilities Finance Director Todd Wicklund said consultants addressed critics' concerns. The city still needs legislative approval to finish the deal, and in a memo of their talking points, leaders wrote that three engineering companies and others groups issued reports on the dam's condition, with none labeling it poor. The city expects it will pay off debt for the dam in 15 to 20 years at the latest, Wicklund said. Council Member Gary Scheeler said the dam will give the city renewable electricity and an ability to protect the resources in and around Rice Lake, formed by the dam. "This is super because, you know, we're going away from fossil fuels," he said. "We've got bald eagles, we've got otters, we've got all kinds of stuff." City officials acknowledge the dam is being sold to the city at an inexpensive price: "We're not buying a new dam. That would be the primary reason," Wicklund said. Koep said she thinks the price is low because it has expensive potential problems to fix.

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(With a City name like that, you should own a dam.)

### **Potsdam's new hydro generators could finally start making money for the village this weekend**

northcountrynow.com, March 29, 2014 - By Craig Freilich

Potsdam, NY – The Village of Potsdam's new hydroelectric generators are expected to be sending electric power to the grid this weekend. "We have full authorization from National Grid to tie in, and we hope to be generating this weekend," said Village Administrator David Fenton. This could be the happy ending to a long saga of disappointment and delay. The project was nearly sunk when Canadian Turbines of Burlington, Ont., which was under contract to supply the turbines, failed to do so after taking large payments from the village. Trying to force Richard Kuiper, the firm's owner, to make and send the parts took time, but ultimately the village had to turn to another supplier. There is a multi-million dollar judgment against the firm, but "we're collaborating with Canadian lawyers who say there is virtually nothing to get from the guy," Fenton said. "If it ever becomes feasible to collect on the judgment, we will." Since then there was another delay when the second supplier sent turbine blades that were defective and had to be replaced. They were replaced, but then there were several delays as technical details such as balancing the turbines and calibrating controls had to be ironed out, and, more recently, the fact that technicians "have been fighting ice, like everybody else," Fenton said.

Now grid operator National Grid is satisfied the generators and ancillary systems are up to par and the village can throw the switch. And National Grid will be the sole customer for the west dam's power, as it has been for the east dam's generation, at least until the village works out another deal. "We'll just be selling to directly to National Grid, the same as with the east plant, but we're negotiating with a potential long-term contractor," Fenton said, declining to name the prospective electricity buyer. One consolation is that the price the village will be getting for the generators' output is much higher than it was not long ago. "It's very high," said Fenton. "It was 12¢ in January and 8¢ in February" per kilowatt-hour, while it had been at about 3¢ a few years ago. Fenton says that is because while natural gas had been in good supply last year, a lot of the supply has been taken up making heat in this winter's cold weather, causing the price of natural gas, a major fuel for electric generation, more expensive, driving up the cost for everybody.

To fund the project the village took out a \$3.5 million 20-year loan, which is being repaid at about \$250,000 a year. Fenton said the village has 16 years left on that loan. But village officials are confident the project will easily pay for itself and then some.

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### **Press Release, Washington D.C., 31 March 2014**

The American Council On Renewable Energy (ACORE) today announced the release of The Outlook for Renewable Energy in America: 2014, jointly authored by U.S. renewable energy trade associations from the power, thermal, and fuel sectors. The Outlook assesses the renewable

energy marketplace and forecasts the future of each renewable energy technology sector, from the perspectives of each of the associations, and provides a list of policy recommendations by the respective associations that would encourage continued industry growth. "ACORE applauds the unity of the renewable industry community and this united front as reflected in The Outlook for Renewable Energy in America: 2014," said ACORE President and CEO, Michael Brower. "The report demonstrates the many public and private sector opportunities that exist at the national, regional and local levels for continued industry advancement and investment; however, they are not one-size-fit-all solutions for every renewable technology. The articles in the report detail specific market drivers for the biofuel, biomass, geothermal, hydropower, solar, waste, and wind energy sectors." "The financial markets have responded to greater American consumer interest in renewable energy with increasing levels of private sector investment," said Jeffrey Holzschuh, Chairman of Institutional Securities at Morgan Stanley. "Spurred by growing individual as well as business demand, private sector investment in the U.S. clean energy sector surpassed \$100 billion in 2012-2013, stimulating significant economic development while supporting hundreds of thousands of jobs." The trade associations who participated in the Outlook are: Advanced Biofuels Association; American Wind Energy Association; Biomass Power Association; Biomass Thermal Energy Council; Energy Recovery Council; Geothermal Energy Association; Growth Energy; National Hydropower Association; Ocean Renewable Energy Coalition; and the Solar Energy Industries Association.

The industry-specific authors of The Outlook forecast renewable energy's growth to continue, driven by increasing cost-competitiveness with conventional generation, technology advancements, and acceptance by Americans to embrace clean and renewable technologies. Linda Church Ciocci, Executive Director, National Hydropower Association commented, "Certainty is integral to hydropower's continued growth over the next five years. Doubt surrounding the extension of tax incentives and the possibility of a drawn out licensing process are the main deterrent for developers that Washington must address." "Wind energy is now among the largest sources of new electric power in the U.S.," said Tom Kiernan, CEO of the American Wind Energy Association. "Technology innovation and U.S. manufacturing have reduced its average cost by 43 percent in just four years. The economic benefits are reaching communities and consumers all over America, with an average of \$15 billion a year in private investment and savings on electric bills also now in the billions a year. We're on track to generate 20 percent of the electricity in America from wind by 2030, and already produce over 25 percent in Iowa and South Dakota." "The U.S. is a world leader in geothermal power generation," said Karl Gawell, Executive Director of the Geothermal Energy Association, "but to sustain that role, we need the kind of collaboration shown at ACORE's recent National Renewable Energy Policy Forum to reach state and federal leaders so they will recognize the value of achieving the full potential and diversity of renewable energy." "The world has witnessed a sea change in the drivers of energy production and demand," commented Michael McAdams, President, Advanced Biofuels Association (ABFA). "ABFA believes these issues can be an opportunity and driver for advanced and cellulosic biofuels and we welcome the opportunity to participate with ACORE and the renewable energy community to help support the development and deployment of all renewable technologies." ACORE advocates that an America powered on renewable energy and renewable fuels is a stronger, more secure, cleaner, and more prosperous America. The Outlook for Renewable Energy in America: 2014 shows the potential of America's renewable energy economy to extend beyond one fuel choice or pipeline, to provide the country with an unparalleled opportunity to reinvigorate the U.S. economy while protecting our environment.

### Brookfield grabs Safe Harbor

renews.biz, 31/03/2014

Brookfield Renewable Energy and its institutional partners have wrapped up the



*Copy obtained from the National Perform*

acquisition of a 33% stake in the 417MW Safe Harbor hydroelectric facility in Pennsylvania from a private seller.

The plant (pictured) is on the Susquehanna River and generates an average of 1100GWh annually. It possesses storage capabilities supporting daily peaking and is one of the largest conventional hydro facilities in the PJM market.

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## Free Flow Power seeks approval for hydropower plants on Allegheny, Monongahela and Ohio rivers

April 1, 2014, By Stephanie Ritenbaugh / Pittsburgh Post-Gazette, powersource.post-gazette.com

If Boston-based energy company Free Flow Power has its way, 10 of the Pittsburgh region's locks and dams will share space across the river with hydropower plants. The company is meeting with Pennsylvania regulators on the heels of filing final licensing applications with the Federal Energy Regulatory Commission between late February and early March. The applications are in a 30-day public comment period, according to FERC. Free Flow Power is considering a cluster of 10 sites in the Pittsburgh region: one on the Allegheny River, six on the Monongahela, and three on the Ohio near existing locks and dams operated by the Army Corps of Engineers. Tom Feldman, vice president of project development for Free Flow, said while each facility would generate a relatively small amount of electricity — the largest is proposed for a site in Beaver County at 42 megawatts — the plants combined would create about 148 megawatts for the region at an investment of about \$380 million. "This entire cluster could provide annual electricity needs for about 65,000 homes," Mr. Feldman said. "In aggregate, it will add a nice chunk of power to the energy mix." If approved, the plants — each of which is permitted separately — could be up and running in 2018. "It's an opportunity to provide low-cost renewable energy for several generations," said Mr. Feldman.

A portion of the electricity generated would go to operating the lock and dam itself, according to the Army Corps. The rest would go to the regional power grid, PJM Interconnection. Two major factors in determining locations are "flow," the amount of water traveling over the spillway, and "head," the height differential between the upper pool above the dam and the lower pool, Mr. Feldman said. Another factor is whether there's an opportunity to build more than one facility in the area. "When we saw there was a chance to look at six potential sites on the Monongahela, we jumped at the opportunity," Mr. Feldman said. "We try to time the development so these clusters would come online around the same time." Still, it's early in what can be a very long and costly approval process. "The hydropower development process takes about seven years from concept to commercial operations," Mr. Feldman said. "We're about half way through that at three and a half years." The first three years were spent studying the feasibility, impact on aquatic life and water quality, as well as talking with stakeholders: communities, the Army Corps and state officials.

In a region famous for its rivers, it's no surprise that energy companies would look for ways to pull energy from the water. Today, nine such plants are operating — five on locks and dams and four on reservoirs — in the Army Corps' jurisdiction, including the Kinzua Dam along the Allegheny River near Warren, Jeff Benedict, hydropower project manager for the corps, said. Still, interest has risen and fallen over the years, and many proposals stalled before they could get their feet wet. In the 1980s, for instance, there was a surge of companies that sought and obtained licenses to build hydropower facilities. Then there was a lull, Mr. Benedict said. Jeff Hawk, a spokesman for the corps, said the organization welcomes hydropower. "Our interest is in what impact it will have on operations, navigation, the structural integrity of our facilities and the environment," Mr. Hawk said. In addition to the impact on aquatic life, water quality and existing commercial uses of the river system, there is another concern: demand for water. "For some of these hydro plants, there is a competition for water," said Jim McCarville, executive director of the Port of Pittsburgh Commission, which advocates commercial use of southwestern Pennsylvania's waterways.

"Some divert water to the plant at the expense of navigation in dry seasons. However, Free Flow has assured us that they would not divert water during low periods." Free Flow said it will take the flows normally available to generate its electricity, and will not pool additional water. "We wanted to understand whether we could make this economic with the Army Corps' cooperation, and we feel there's a path forward based on the studies we've done," Mr. Feldman said.

#### **4 million hydroelectric project approved**

Apr 3, 2014, by Charles Roberts, highlandnews.net

The East Valley Water District, CA has approved a plan to add a hydroelectric plant to its water treatment plant on Highland Avenue.

The project will include a 20-inch pipeline from the State Water Project line at City Creek to the treatment plant, a distance of about 1,100 feet.

The hydroelectric plant will take water from the State Water Project and generate enough power to operate the treatment plant, saving about \$200,000 a year.

East Valley Water District expects to finance the project with a low interest loan from the San Bernardino Valley Municipal Water District, which imports water from the State Water Project and distributes it to retail agencies and also serves as watermaster for the area.

"This," said EVWD Board President James Morales, "is a perfect example of leadership, partnership and stewardship in our (EVWD) slogan."

The board also approved a plan to renovate and upgrade the former headquarters site at Base Line and Del Rosa Avenue. It will include a customer service satellite office as well as supplies for use on the west side of Highland, saving the need to transport everything from the new headquarters on Greenspot Road.

The estimated cost for this project is \$1 million to \$1.5 million with work to be performed by Balfour Beatty as an amendment to the new headquarters facility recently completed.

#### **Promote and provide to encourage youngsters into hydropower**

3 April 2014, waterpowermagazine.com

**So what should we be doing to encourage the young generation to consider hydropower engineering as a career choice? Promote and provide suggests IWP&DC editor, Carrieann Stocks**



The promotion of public awareness of science and engineering should be seen as an important activity if we're ever going to increase the numbers of students pursuing higher education courses in these subjects, particularly if we want encourage them to view hydropower as a rewarding career path.

The demand is there for a growing workforce to help meet the needs of new hydro development but also to help handle the existing assets and refurbishment projects before the larger group of workers running the show so far move out of the active workforce. With the average age of workers in the energy industry at an unsurprising 50, and a high percentage sitting above that figure, we really need to start attracting those younger recruits who no doubt will bring fresh ideas and a new exuberance to the sector. We're also facing stiff competition from other renewable sectors so we really need to bring hydropower out into the open. This has been a key message conveyed at numerous events I've attended over the years. One thing that has stuck in my mind is that solutions have often been discussed - but then not taken any further. Of course, there are incentives and programs out there, but very little has been publicised.

I believe there are two key words to consider when it comes to encouraging the younger generation to look at hydropower in a favourable light when considering their career paths –

### **Promote hydropower**

So you've worked on a great hydropower project with immeasurable benefits? Well why not let the world know! Critics of the industry are often very vocal about why hydropower projects shouldn't be developed - why not counter this and explain why they should. Let people know the opportunities the project brings to the local community. Why not promote the benefits of working in the industry at universities and school career fairs? While I was at school I never once had someone tell me about the benefits and challenges of working in hydropower engineering. There are many ways hydropower could be introduced to the younger generation - including arranging to attend careers fairs, organising events, offering scholarships and graduate programs. The possibilities are endless.

**"Work with the trade associations to improve the public's perception of the industry - show them that projects can be sustainable and environmentally sound"**

Work with the trade associations to improve the public's perception of the industry - show them that projects can be sustainable and environmentally sound. **The National Hydropower Association in the US for example do some excellent work in promoting hydropower.** They conduct research, carry out surveys into the public's attitude towards hydropower, organise events and work with a number of other organisations to promote and develop hydropower. **The International Hydropower Association is another association working tirelessly to advance hydropower.** The association works to build and share knowledge on the role of hydropower in renewable energy systems, responsible freshwater management and climate change solutions. Its Hydropower Sustainability Assessment Protocol is helping to develop sustainable hydropower and can only help improve the industry's image.

### **Provide opportunities**

While it's all well and good promoting the benefits of the hydropower industry, it's important to provide opportunities for young people to see what the industry has to offer. Some ideas include mentoring programs, graduate programs, school trips and competitions.

**"Pupils' enthusiasm for science and mathematics can be improved through extra curricula activities that demonstrate the challenge and excitement of science and engineering projects and careers"**

The steadily weakening demand for engineering courses follows on from significant falls in the numbers of school pupils choosing to study mathematics and physics. It is believed that students lose interest while at school because they are not enthused by the teaching methods and content of the science and mathematics courses. Furthermore, they cannot see the relevance of the issues they study to the world around them and future careers. I remember reading somewhere that it is recognised that pupils' enthusiasm for these subjects can be improved through extra curricula activities that demonstrate the challenge and excitement of science and engineering projects and careers. You could start by providing some of these activities at schools and colleges in your project or operations area. Some great examples of programs that are working well include STEMNET (the Science, Technology, Engineering and Mathematics Network) which creates opportunities to inspire young people in Science, Technology, Engineering and Mathematics. The organisation does this by working with thousands of schools, colleges and STEM employers, to enable young people of all backgrounds and abilities to meet inspiring role models, understand real world applications of STEM subjects and experience hands-on STEM activities that motivate, inspire and bring learning and career opportunities to life. Across the UK, STEM Ambassadors volunteer their time and support to promote STEM subjects to young learners in a vast range of original, creative, practical and engaging ways.

Why not see how you could get involved with similar projects, and help inspire the next generation of young engineers?



## Water:

(Some good ideas but, it still never rains or snows where or when you want it to! Of course, the rivers are low. It hasn't rained much lately!)

### **Bigger Dams Won't Make California Greener**

8Mar 30, 2014, By The Editors, bloombergview.com

California's northern rivers are so low that young Chinook salmon have to be trucked on their journey to the Pacific Ocean. Yet to listen to some farmers and their political allies, you would think the fish, shielded by environmental law, are doing fine, while the state's \$45 billion agricultural economy is being sucked dry by the epic drought. Their solution: build huge tunnels, expand big dams (federally subsidized, of course) and pipe more water from the relatively wet north to the dry south. But Mother Nature is sending a different message: California can't count on having bounties of water to meet all the claims on it. Although some new storage plans make sense -- especially small-scale, local projects and repairs to existing infrastructure -- no new mammoth public works are going to draw more water from the sky. That 20th-century strategy perpetuates wasteful agricultural practices and antiquated water-rights laws. California's water future would be better secured through measures that make the most efficient use of every drop. Despite the recent rainstorms, the Sierra Nevada snowpack, on which much of the state will depend for water in the dry months to come, is at a quarter of its normal level. The state hopes to rely more on groundwater, but that resource has been dangerously depleted and polluted by previous droughts and overuse. Farmers, who use 80 percent of California's water and produce almost half of all U.S.-grown fruit, nuts and vegetables, are following 500,000 of the 8 million acres cultivated.

Just 38 percent of the state's fields are watered using efficient drip- or precision-sprinkler irrigation systems, according to a 2010 survey. Farmers who have yet to switch from flooding or spraying entire fields need the nudge of loans or rebates. Incentives are also needed to get farmers to adopt technology to improve irrigation timing. Newer systems can measure the moisture in soil, take the weather into account and even withhold water when a crop is in a drought-tolerant stage of growth. These methods can reduce energy bills and improve crop yields and quality. If taxpayers subsidize these improvements, farmers in turn will need to refrain from using the water they save merely to expand their operations. The state should end the "use it or lose it" system for water rights that has prevailed for too long. In some cases, it makes sense for municipalities to fund irrigation improvements in exchange for the water that farmers save.

The Pacific Institute estimates that efficiency measures could reduce agricultural water use in California by 15 percent and urban use by 30 percent. The organization calculated that a package of measures producing a savings of 1 million acre-feet of water a year would require an upfront investment of \$1.87 billion. By contrast, the proposed Temperance Flat dam and reservoir -- which would be federally financed -- would produce just 158,000 acre-feet of water yearly, at a cost of \$3.4 billion. A plan supported by Governor Jerry Brown to build two tunnels beneath the Sacramento-San Joaquin Delta would cost \$25 billion.

Farmers complain they are being victimized while few city and suburb dwellers face mandatory restrictions on water use and can still enjoy their lawns and golf courses. This is a fair criticism. Crazy, water customers in 42 California communities, including Sacramento, the state capital, still pay a flat rate. According to an analysis by the San Jose Mercury News, those places use 39 percent more water per person than the state average. Communities should charge so-called block rates for water, so that the more water a household uses, beyond a reasonable amount, the more it costs. Localities can expand their supply by recycling more wastewater. Treated wastewater can be used for irrigating fields and landscapes, for industry and for recharging groundwater. The state already recycles about 670,000 acre-feet of treated wastewater yearly, though that's far less than the 3.5 million acre-feet that are discharged into the Pacific. The California Legislature should add enforcement mechanisms to a 2009 law requiring the installation of high-efficiency toilets, faucets and showerheads in commercial and residential

properties by 2019. Water districts should cooperate with energy utilities to offer rebates for clothes washers that use 15 gallons of water per load instead of the 60 gallons that old machines require. The rest of the state should follow the lead of the Metropolitan Water District, which services southern California, in paying customers to replace their lawns with plants such as salvia and agave that are adapted to the arid climate. About half the water the district sells to residences is used on landscaping. **These changes may sound minor, but in a state with more than 38 million people they add up. And they promote the goal of shared sacrifice.** For all the talk of how the drought is inflaming the political divisions between cities and farms, the truth is that Californians are in this one together.



### **Environment:**

(Now it's the seagulls! Wonder who gets to do the target shooting?)

#### **Army Corps to begin killing birds at dams**

Associated Press, March 28, 2014, [dailyinterlake.com](http://dailyinterlake.com)

Clarkston, Wash. (AP) — **The Army Corps of Engineers this spring will begin killing birds at some Snake and Columbia river dams to help protect juvenile salmon and steelhead.** The agency unveiled a plan Thursday that will allow as many as 1,200 California gulls, 650 ring-billed gulls and 150 double-crested cormorants to be killed. The birds gather at the dams and feast on the migrating salmon and steelhead that bunch up there. The Lewiston Tribune said the action will occur at McNary Dam on the Columbia River and Ice Harbor, Lower Monumental, Little Goose and Lower Granite dams on the Snake River. The corps said birds are typically the single largest cause of juvenile salmon and steelhead mortality. A 2009 study estimated that between 4 percent and 21 percent of smolts passing through the dams were eaten by birds. The corps has long used non-lethal methods to scare away birds.

#### **The plan has critics.**

Kieran Suckling, executive director of the Center for Biological Diversity, said **there are better ways to protect the fish, such as removing the dams.** "The birds are fundamentally not being killed to save the salmon," he said. "They are being killed to keep the dams in place that are endangering the salmon." Bruce Henrickson of the Army Corps in Walla Walla said the agency has been encouraged by the National Marine Fisheries Service to consider killing problem birds. He said hazing with water cannons, fire crackers and wires strung above the river that disrupt flight paths will continue to be used. The corps contracts with the federal Wildlife Services Agency to implement the non-lethal hazing practices. The same agency will use shotguns to kill what Henrickson called problem birds or small groups of birds. "They observe specific individual or small group behaviors, and if those birds don't retreat from non-lethal hazing, then lethal take is considered as an option," he said. None of the bird species targeted for removal at the dams is listed under the Endangered Species Act but they are protected by the Migratory Bird Treaty Act. An environmental assessment found that 2,500 California gulls, 3,400 ring-billed gulls and 705 cormorants could be killed in Washington without affecting their distribution, abundance or population trends.

(There they are among all the locks and dams! Go Steelers!)

#### **American bald eagle makes comeback along Pittsburgh's three rivers**

By Cristina Corbin, March 31, 2014, [FoxNews.com](http://FoxNews.com)

Some 250 years since the American bald eagle nested along all three of Pittsburgh's rivers, the iconic bird is making a comeback -- and a live webcam is capturing the eaglets hatching in real-

time. Six adult eagles have been spotted in nests the birds built along three of the city's major rivers in Allegheny County -- one nest on the Monongahela River, another within view of the Allegheny River and a third in an undisclosed location along the Ohio River.

"The American bald eagle is in our psyche -- we've heard about it since childhood."  
- Jim Bonner, Audubon Society of Western Pennsylvania

The return of the majestic bird to the area has not only excited bird watchers and biologists, but has brought an "enormous sense of pride" to the entire community in Allegheny County, according to the Audubon Society of Western Pennsylvania.

"People who are not even birders are thrilled," Jim Bonner, the society's executive director, told FoxNews.com.

"It's awe-inspiring to see this magnificent creature return. The American bald eagle is in our psyche



-- we've heard about it since childhood. Everyone can identify." At 2:30 p.m. on Friday, an eaglet hatched as the mother eagle, who had recently fought off a raccoon, watched over her eggs -- and the entire birth was captured live by a web camera created by the Murrysville-based PixController Inc., which is working with the Pennsylvania Game Commission. A second eaglet hatched over the weekend, and the third and final egg is expected to open any time Monday, Bonner said.

Click here to view the eagles: <http://www.pixcontroller.com/eagles/index.htm>

The bald eagle, America's national bird, is the only eagle unique to North America. The bird, most commonly found in Alaska, was declared endangered in the 1970s, when it was discovered that pesticides including DDT were killing off the species. An accumulation of the chemical in the eagle's body weakened egg cells, causing the bird to lay eggs that would break or crack prematurely. While the bald eagle was eventually removed from the Endangered Species list, protections are still in place in many parts of the country to ensure the eagle's population does not again plummet. Allegheny County recently removed the bird from its "threatened species" list, according to Bonner. The sighting of six adult eagles and the birth of their young has given hope the majestic bird will return in abundance to the Allegheny region after more than some 250 years.

"The eagles are the comeback story and a great demonstration of a lot of things going right," Bonner said. In the 1700's, mature tall trees -- a natural nesting habitat for the birds -- were stripped from hillsides surrounding Pittsburgh's three major rivers to meet lumber and fuel demands. A century later, industrialization led to heavy pollution of the rivers, which in turn killed off fish populations the eagles thrived on. In the mid-20th century, eagles, as well as other bird species, began dying off due to the widespread use of DDT, a colorless and tasteless insecticide that was eventually banned from use. Bonner said that by the 1980's, only a few nesting bald eagles could be found in the entire state of Pennsylvania. A breeding study conducted statewide between 2004 and 2010 found no bald eagles nesting in Allegheny County. Half of the world's population of bald eagles -- approximately 70,000 -- reside in Alaska. The birds can be found "anywhere you have open water," Bonner said, noting that it is common to see them in places like coastal Florida.

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### **Other Stuff:**

(First, they kill birds, now they're aiming at airplanes!)

#### **The Tallest Wind Turbine Ever Will Float Above Alaska**

gizmodo.com, 3/25/14

A thousand feet off the ground, the wind blows brisk and uninterrupted. But how do you build such a tall, thin beam to support a turbine's blades? You don't—you float the generator in a giant helium balloon. The world's first floating commercial wind turbine will soon be hovering over Fairbanks, Alaska. Gizmodo first wrote about the Buoyant Wind Turbine (BAT) two years ago—back when it was still called the Airborne Wind Turbine—but it's just now getting its first long-term



test. BAT can be deployed in under 24 hours, so it's targeted toward remote communities or disaster areas as an alternative to diesel generators. Additional equipment for cellular service or weather monitoring could also be added, turning the turbines into floating infrastructure pop-ups.

(Seems they want to blame someone. It looks like they need to get some geotech engineers out there to do this right!)

### What Started the Mudslide? Satellite Image May Offer New Clues

3/28/14, by Erik Ortiz, nbcnews.com



A satellite image could be a clue in determining whether river erosion was a factor in the fatal hillside collapse in Washington state, a landslide expert said. The undated image on the Google Earth website was apparently taken some time after the 2006 landslide in Oso forced engineers to construct a retaining wall along the Stillaguamish River, reported NBC affiliate KING5. The wall was created to reinforce the riverbank. The image shows a bend in the north fork of the Stillaguamish and what appear to be broken-off logs cluttering the river at the northeast end of the

wall. The wall was swept away Saturday in a mile-long mudslide that flattened homes on the other side of the river, killing at least 17 people. It's too early to say whether the wall's failure played a part in the slide, but it could be studied in the event the river had eaten away at the hillside's stability, said Dave Montgomery, a geologist at the University of Washington.

"You can clearly see the river cutting into the toe of the slope," Montgomery told KING5. But the Stillaguamish Tribe of Indians, which oversaw the building of the \$1 million wall, doesn't believe the wall's condition contributed to the collapse. The tribe's environmental manager, Pat Stevenson, told KING5 that the wall was also built to hold back sediment that was hurting the river's fish run — and not meant to support the entire slope. **The tree-filled hillside has been known as a landslide area for more than 60 years, and the river has eroded the base of it since at least the 1950s, geologists said.** While there was state-approved logging at the top of the hillside in 2005, the area immediately around the head of the slide was restricted from harvesting, according to state officials. **A Seattle Times report, however, found that logging was still done in the restricted area. Logging can contribute to slides because it removes trees that would otherwise absorb the water on the land.**

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#### **Graphic of mudslide (Worth a look!)**

[http://www.washingtonpost.com/national/health-science/what-made-the-mountain-move/2014/03/30/398ac6ac-b7c2-11e3-b84e-897d3d12b816\\_graphic.html](http://www.washingtonpost.com/national/health-science/what-made-the-mountain-move/2014/03/30/398ac6ac-b7c2-11e3-b84e-897d3d12b816_graphic.html)

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**(There's much you can say about this! I told you so is not a good statement now!)**

#### **Science saw the Washington mudslide coming. Next time, let's Google it first**

Daniel J Miller, Guardian News - [bing.com](http://bing.com), April 2, 2014

**Fifteen years ago,** I wrote a study about the hilly terrain along the mighty Stillaguamish River, near the tiny town of Oso, Washington. To the lay person, it was indecipherable: systematic hazard mapping, zones of historic activity, charts of peak annual daily mean discharge. But it also included three words — "large catastrophic failure" — that warned of the potential for a devastating landslide, should conditions change. **My work wasn't ignored. But only engineers could read it, or at least only engineers wanted to.** The pertinent information wasn't readily available to those involved in making decisions, like people choosing to live in Steelhead Haven, a small, rural neighborhood tucked in the floodplain across the river from the site. Even when informed, people didn't fully understand — or chose not to objectively evaluate what they knew. The next year, a local engineer named Tracy Drury developed design options for the Army Corps of Engineers that were subsequently implemented. Huge efforts were made to stabilize that slope on the Stilly, an engineering fix to reduce flow of mud into the river. This may have given a sense of security that proved unjustified. Maybe we should have started a proto-StillyMap app, or a watch-the-mudslide campaign. After all, Drury had warned that "catastrophic failure potential places human lives and property at risk". He suggested that the affected properties near Oso be purchased — that people be removed from danger. **In 2006, after a river-blocking landslide at the very same site we had both studied, construction of houses at Steelhead Haven persisted. I attended a public meeting after that slide to discuss continuing risks. I recall few details, but I received a call recently from a resident of the area who remembered someone standing up.**

**You're trying to take our land!, was the refrain.** Perhaps so, given Drury's suggestion to buy out the homes that were in danger of catastrophe. But we are scientists and engineers. Our role is to provide information, not buy real estate. This year, of course, conditions did change. A record-breaking rain, a devastating landslide, tiny Steelhead Haven buried. Ten days later, 24 people are known dead and 22 are still missing. I can't imagine the grief of those now seeking lost loved ones. **Nature can be cruel, but it's not entirely capricious. The clues were there. Can we nurture a culture that gets people listening to scientists — or at least sharing our work? Can we stop breeding a culture willing to risk disaster in the first place?** Perhaps we can. I've been getting calls all week, since the Seattle Times dug up my study, from people asking where to get information on landslide risks to their homes. But there are too few places I can send them. It's not that there

is no information out there – Oregon and Washington have web pages full of information and maps – but it's of no use to these poor homeowners; they don't know what to do with it. There will come a day when we can pull up maps on our iPhones that show known landslide hazards as prominently as directions to the nearest barber shop. Let's make that day come sooner. We've become consumers of information; users of "big data". Let's become consumers of science. Tech giants and marketers have figured out how to get us to buy vast quantities of things we don't need; can't we use their techniques to get us to learn about things we do need? It will take money, time and effort to collect the information, to build the analytical models, to develop a user interface that people will use and understand. I've been providing data and analysis tools to land managers for years, but informed managers are nothing without an informed citizenry, and especially informed policymakers. Now it's time for commerce and non-profits to collide with an Angry Birds for disaster preparedness. I believe that out of tragedy, out of anger and sadness, we gain determination. We're never going to build a world that is disaster-proof or rid of uncertainty, but if we look carefully at what the world shows us, get the word out on what we see, and everyone listens and acts on what they hear, we can come a little bit closer to a future where true disaster is a thing of the past.



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