



Gerald A. Gewe

## WATER

### Delta tunnels: A steady trickle of progress

by LISA RENNER posted 11.14.2016



Gov. Jerry Brown's massive Delta tunnels project is moving forward through a series of state and federal environmental reviews. But it still faces an array of major hurdles including public opposition, financing and approvals by state water contractors.

The \$15 billion project, known as California Water Fix, is on track to finish the state environmental impact report and federal environmental impact statement by the end of the year, said Cindy Messer, assistant chief deputy with the state Department of Water Resources.

The tunnel project, which has been in the planning stages for 10 years, calls for the construction of two tunnels to carry fresh water from the Sacramento River 150 feet under the Sacramento-San Joaquin Delta.

"Things are definitely coming together," she said. "These immediate processes will further inform the project. As it moves ahead it will be refined. It's got really good traction right now to keep moving forward."

California Water Fix faces one less obstacle, following voters' rejection of Proposition 53, which would have required a statewide vote for any state project financed by more than \$2 billion in revenue bonds. (Continued on page 3)

## POWER



Thomas J. McCarthy

### MIT's 8 Big Ways to Enable the Utility of the Future

### Proactive reform must start now

by Katherine Tweed ~ December 28, 2016



More than two years ago, the Massachusetts Institute of Technology's Energy Initiative started researching the changes afoot in the global electricity sector.

In just a few years, there have been monumental changes in the provision and consumption of energy services -- including the emergence of distributed energy technologies -- that could alter the evolution of power systems in the years to come. MITEI continued its research on a moving target, and recently released its massive *Utility of the Future* report. (Continued on page 2)

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### Water

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## Water and Power Associates, Inc.

is a non profit, independent, private organization incorporated in 1971 to inform and educate its members, public officials and the general public on critical water and energy issues affecting the citizens of Los Angeles, of Southern California and of the State of California.



# MIT's 8 Big Ways to Enable the Utility of the Future

## Proactive reform must start now

*(Continued from page 1)* The report is novel in its comprehensive approach; in its 300+ pages, it digs into the details of a transition to distributed energy resources (DERs) over the next decade and beyond.

“A lot of the challenges really crystallized in this period,” Jesse Jenkins, MIT doctoral student and a researcher on the MITEI study, said of the changes being driven by distributed energy resources and increased use of intermittent renewables. “This is on the radar everywhere.”

The report does not try to predict the future, but rather enable it, said Scott Burger, another MIT doctoral student and researcher on the MITEI study. The results are meant to educate and inform stakeholders, and regulators in particular. Enabling the future means taking a proactive approach to reform for the changes that are already happening across the electric sector.

“The task facing those responsible for the reliable and cost-effective planning, regulation and operation of future power systems is daunting,” the study authors acknowledge. “The sheer length and weight of this study seem to confirm that.”

MITEI offered dozens of recommendations throughout the report. Here are eight of the top insights for regulators and power companies that want to get ahead of the challenges at the distribution level.

**Ditch customer classes.** MITEI recommends ditching the idea of customer classes and instead focusing on the injections of withdrawals of power on the system at any given place and time. **Get granular.** Many of MITEI's 30 top recommendations in Chapter 9 focus on locational pricing, rather than technology-specific or system-wide pricing. “The value of each DER depends on the value of the specific services it provides at a specific time and a specific location,” the study states. Many utilities do not have the visibility into their systems to offer this type of pricing today, which means significant investment will need to come before this is even a possibility.

**AMI everywhere.** The first step to location-based rates, argues MITEI, is the ubiquitous deployment of advanced metering infrastructure. Without it, “it is impossible to meaningfully develop a comprehensive system of prices and charges and accurately meter, compensate and charge a diversity of electricity resources.”

**Simplify volumetric rates.** Before overhauling rates altogether, MITEI also recommends that regulators remove any policy costs, such as efficiency programs, taxes, and residual network costs from volumetric rates. Essentially, anything that's not directly affected by changes in electricity consumption should not be part of the volumetric rate. Those costs should instead be a lump sum divided into monthly installments.

**Focus on reactive power.** The study authors suggest that utilities and regulators pay more attention to reactive power and how that impacts network constraints. To deal with the constraints, DERs may be a cheaper alternative to traditional grid investments. This is one area where many utilities and regulators are already working, by focusing on [non-wires alternatives](#) to deal with pinpointed areas of constraint instead of just building out the grid further.

**Institute profit sharing and multi-year rate plans.** A more nuanced way to incentivize efficiency in the system is to institute profit sharing, according to MITEI. Under profit sharing, utilities are given multi-year revenue trajectories that allow the utility to “share potential profits from efficiency gains and distribute risks between utilities and ratepayers,” according to MITEI. This approach retails utility incentives for cost reduction and improved performance, but does not fully decouple allowed revenues from realized utility costs.

**Performance-based regulation.** But even sophisticated profit sharing may not be enough, the study warns. Utilities should be incentivized to look beyond capital or operational expenditures with new performance-based models, such as the U.K.'s total expenditure or [TOTEX](#)-based approach.

**Build a DSO.** The study also calls for distribution system operators that serve as market platforms for distributed energy services and can coordinate with markets at the wholesale level. The DSO could be the distribution utility that does not also participate in the market, as New York is trying to do, or it could be an entirely new entity. Along with other functions, the DSO should also be the hub for customer and grid data to ensure access is fair and that privacy concerns are addressed.

It is possible to build a model that supports the utility of the future with incremental steps, but those steps must start right away, according to MITEI experts. “We caution regulators that we do need to begin today, really yesterday, for proactive reform ahead of what's happening on the technology side,” said Jenkins. “We hope this [report] is well timed to provide a toolkit.” ❖

# W•A•T•E•R

## Delta tunnels: A steady trickle of progress

by LISA RENNER posted 11.14.2016



*Continued from (page 1)*

It's unclear how a Donald Trump presidency will impact the twin tunnels. Trump hasn't spoken much about water in California, which is in its sixth year of drought.

But he told a Fresno audience in May that there actually was no drought in California and that the state flushed out fresh water into the sea that should have gone to farmers.

"Believe me, we're going to start opening the water so that you can have your farmers survive," Trump was quoted as saying.

"If we're going to save the Delta and the San Francisco Bay, flows through the estuary are going to have to be protected and that water cannot be exported." — Barbara Barrigan-Parilla.

The tunnel project, which has been in the planning stages for 10 years, calls for the construction of two tunnels to carry fresh water from the Sacramento River 150 feet under the Sacramento-San Joaquin Delta. The tunnels would be 40-feet in diameter and would run 30 miles from Sacramento to intake stations north of Tracy. Construction is tentatively planned to start in 2019 and take 14 years.

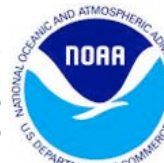
Supporters contend the tunnels are necessary because the current water system is out of date and dependent on 50-year-old levees that could fail from earthquakes, floods or rising sea levels. They say the current system doesn't capture enough fresh water and the pumps trap endangered fish, pulling them to predators. Opponents say the project is too costly and will destroy the delta by depleting it of fresh water.

"If we're going to save the Delta and the San Francisco Bay, flows through the estuary are going to have to be protected and that water cannot be exported," said Barbara Barrigan-Parilla, executive director of advocacy group Restore the Delta.

Farmer Rudy Mussi, who grows tomatoes, alfalfa, walnuts, almonds and more west of Stockton, sees the plan has an unfair water grab. "They want to steal our water from northern California and give it to someone with junior rights," he said.

He believes a better and much cheaper solution is to strengthen the state's existing levees. "They can spend \$2 billion and reinforce all the levees in the delta," he said.

Then, likely in the summer, part two of the state board water hearings will begin and will focus on how the tunnels will affect fish and wildlife.



The project is going through hearings before the State Water Resources Control Board through the end of January on how the project will impact existing water rights.

The National Oceanic Atmospheric Administration's National Marine Fisheries Service and the US Fish and Wildlife Service are expected to release a biological opinion on the impact to Delta smelt and salmon sometime in March or April.

The tunnel project has also applied for what's known as a "2081 permit" from the California Department of Fish and Wildlife to show that it complies with the Endangered Species Act. The department will make a decision after reviewing the biological opinion.

Then, likely in the summer, part two of the state board water hearings will begin and will focus on how the tunnels will affect fish and wildlife.

"I think people are getting tunnel weary and they think let's decide already." — Chris Austin.

Then, the project has to go before the state water contractors who will pay for the tunnels for a final decision. These include the Metropolitan Water District of Southern California, Westlands Water District and the Santa Clara Valley Water District. They have to figure out how to allocate costs and how to pay for everything.

Also still to be completed are designs for the tunnels.

Barrigan-Parilla, the executive director of Restore the Delta, believes the state has vastly underestimated the cost of the project and that it could run as high as \$100 billion. She said tunnel projects always have huge cost overruns.

Steve Arakawa, Metropolitan Water District's manager of Bay-Delta initiatives, said all the water agencies have an interest to make sure costs stay manageable. He said the \$15 billion cost estimate that was done built in a 36 percent contingency to address uncertainties that may come up.

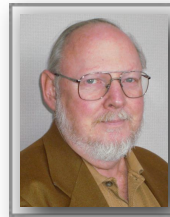
Chris Austin, who reports on state water issues in her blog Maven's Notebook, expects these issues to be addressed next year.

"The pressure is going to be on to make a decision point," she said. "I think people are getting tunnel weary and they think let's decide already."



Westlands Water District





Edward A. Schlotman

As I write this article I can look out and see a nice sunny day, a little chilly but all in all not too bad for the end of November. We've had some rain, which has been very helpful, and hopefully, we'll get some more. We need it desperately, to understate the matter. We have been short in rainfall for good amount of time. "Yes", you say, "we have but, we will get some more rain. The reservoirs will fill up. The ground basin will be recharged and all will be well." And I would respond that you are quite the optimist.



According to the 2010 census there were about 3,800,000 people living in the city of Los Angeles. Not a bad number. Today there are an estimated 180,000 to 200,000 more people living in the city of Los Angeles, and, by the time of the rapidly approaching 2020 census Los Angeles will be home to well over 4 million people. "So what?" you say. "This is a big city, lots of room. We can always stick more out in the San Fernando Valley." (Yes that's a joke.) Well it doesn't matter *where* we see our new residents. Wherever they are they will need water.

How much water does the average person use in a day? Only a gallon? Right! If you include showers, personal hygiene, laundry, pets, landscaping, and who knows what else that's not even close. So the question remains where does this water come from and that, of course, brings us back to the lack of rain and snowfall California has experienced in recent times. The little rain and snowfall in the fall and winter of 2016 will not make up for the lack of rain in years past. The simple fact is Los Angeles needs more water and will continue to need more water for years to come because, among other reasons, the population will continue to grow.

I have recently seen stories in the paper about multi-family construction going on in all sorts of places in the City i.e. get more and more people in relatively limited spaces. That may do away with lawns and trees and bushes (how charming) but people will still need the water, and doing away with the greenery to cram in more people is no benefit to anyone.

I don't have an answer or suggestion for the more and more people who seem to want to live in Los Angeles, but there is a solution for the lack of water. In point of fact there is an enormous water supply available which would in fact solve the problem. It is called the Pacific Ocean. Yes it's saline. But that can be remedied. There are desalinization processes available which will remove the salt and give us freshwater for ourselves, our pets, our greenery and our lifestyle. Will it be cheap? I suspect not! What I asked was how do you want to live, as a Third World country or as a Californian?

As always I appreciate your thoughts. ❖

## ANNUAL MEETING of GENERAL MEMBERSHIP

Saturday, February 11, 2017  
10:00 a.m. to Noon  
L.A. Department of  
Water and Power  
John Ferraro Building  
111 North Hope Street  
Los Angeles, CA 90012  
Room A5B

Bring photo I.D. for  
admission to parking lot.



2016~ 2017

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About 68.0% of water consumption in the Los Angeles Department Of Water And Power is residential.  
Los Angeles City population estimates, April 1, 2010 ~ 3,792,662.  
Los Angeles City population estimates, July 1, 2015 ~ 3,971,883.  
Los Angeles City population estimates, July 1, 2016 ~ Not yet available.

According to the State Water Resources Control Board,  
average daily gallons used by each residential customer for October 2015 ~ 75.11  
average daily gallons used by each residential customer for October 2016 ~ 73.76



**FLOODPATH: The Deadliest Man-Made Disaster of 20<sup>th</sup>-Century America and the Making of Modern Los Angeles**, by Jon Wilkman. New York: Bloomsbury Press, 2016. 327 pp. Illustrations, Drawings, Charts, Maps, Notes, Selected Bibliography, Index. Hardcover, \$28.



In 1963 the Arthur H. Clark Company published *Man-Made Disaster*, a history of the failure of the St. Francis Dam north of Los Angeles, a tragedy that claimed the lives of some 450 people. The book's author, Charles Outland, was a Santa Paula rancher and part-time historian who lived in Ventura County. The disaster, which occurred on March 12, 1928, had been largely neglected by historians until the publication of Outland's book. The book soon went out of print, but in 1977 Outland produced a slightly revised version, also published by the Clark company.

Almost two decades later the Historical Society of Southern California published a special issue of its periodical, *Southern California Quarterly*, on the St. Francis Dam disaster, also printing it as a paperback book under the title *The St. Francis Dam Disaster Revisited*. At the same time the Society published a paperback edition of Outland's book. Much to the surprise of Society members, both books quickly sold out. Although California historians had given only minimal attention to the disaster, even noting it as "largely forgotten," evidently the tragedy still attracted a great deal of interest among people who wanted to know more about this sad event.

Jon Wilkman's *Floodpath* indicates the continuing interest in a tragedy whose causes and consequences are still debated. It is also the first in a new effort by historians to give their versions of the disaster's history. Coming out at almost the same time as *Floodpath* is *Heavy Ground* by Norris Hundley jr. and Donald C. Jackson; geologist J. David Rogers is also writing a book about the event.

Wilkman holds impressive credentials in writing *Floodpath*, his research into the tragedy spanning some two decades. Early on he interviewed survivors of the disaster, and he utilized Los Angeles and Ventura County newspapers, the official reports by government groups investigating the tragedy, and contemporary and secondary books and articles. This level of research enabled Wilkman to provide readers with a broad context that goes beyond the dam's failure to include the growth of Los Angeles, the city's need for a reliable water supply to serve that growth, and the efforts of William Mulholland to solve that need, which he did through the construction of a 233-mile aqueduct that tapped the Owens River in the Eastern

Sierra, and the construction of storage reservoirs, including the St. Francis Dam in the 1920s.

William Mulholland is the central figure in this narrative, a self-taught engineer who went from very humble beginnings as an Irish immigrant and ditch digger to become the chief engineer of the Los Angeles Bureau of Water Works and Supply (later combined with the Bureau of Power and Light to become the municipally operated Los Angeles Department of Water and Power). Wilkman covers the by now familiar ground of how the City of Los Angeles legally if unethically obtained the rights to the Owens River's water, ensuring water for a population that by 1930 exceeded a million. If Mulholland is central to the story, so is his hubris in the construction of the St. Francis Dam. Wilkman faults Mulholland for mistakes he made in design and construction of the dam, but he tends to agree with Rogers that *at the time the dam was built there were problems with the geology on the site that engineers, given the knowledge of the time, could not foresee*.

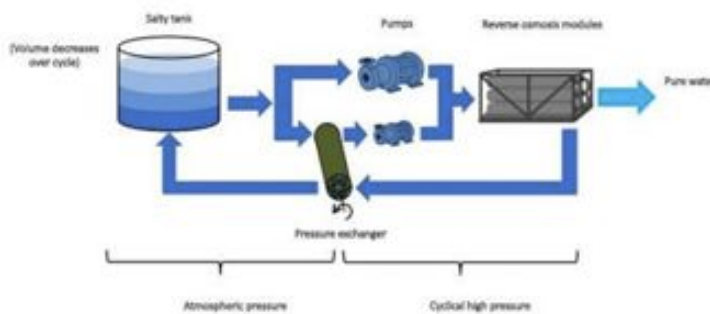
Wilkman's narrative will engage the reader as he relates the human side of the tragedy, allowing survivors, some of whom he was able to interview, to tell their stories. Some publicists (not from Bloomsbury in this case) like to use words such as "definitive" or "tells the untold story." Wilkman and other scholars know that neither this book nor others will ever be definitive. The story has already been told by Outland and others about the Owens Valley-Los Angeles Aqueduct controversy or the dam's collapse; some of the writers on the topic have not bothered to do the research necessary beyond writing a polemic. Fortunately, serious scholars are setting a high standard of scholarship in their work, making it possible for readers to make informed judgments on this important event in the history of southern California.



Abraham Hoffman, Ph.D.  
teaches history at  
Los Angeles Valley College.

## Desalination progress: Water everywhere and not a drop to drink

Posted By *Editorial* on November 21, 2016



“Water, water everywhere and not a drop to drink” has become a common cry for more than just wayward sailors, with water scarcity affecting nearly 2 billion people—many of whom live near the oceans. Desalination through Reverse Osmosis (RO) has long offered one solution to help meet global water needs in the face of population growth, development, and climate change. However, removing salt from water is energy-intensive.

A team of MIT researchers has responded by creating new designs for reverse osmosis desalination that significantly exceeds the energy efficiency of state-of-the-art techniques. Instead of the standard steady flow operation, their two proposed configurations vary the salinity of a set volume of water over time, essentially providing desalination in “batches.” This batch approach could substantially reduce the energy use of future desalination systems.

The team is co-led by two MIT mechanical engineers, PhD candidate Emily Tow and postdoc David Warsinger, and also includes MIT PhD student Kishor Nayar, Stanford University graduate student Laith Maswadeh '15, and John H. Lienhard, the Abdul Latif Jameel Professor of Water at MIT. The study was published in the journal *Water Research* and presented at the 9th International Desalination Workshop held in Abu Dhabi this week, where Warsinger won the Best Oral Presentation Award for his talk on the team’s work.

“In traditional RO systems,” explains Warsinger, “the entire system is maintained at a steady, high pressure to be able to reach the desired level of water recovery.” Specifically, saline water (the feed solution) is pumped through a membrane that passes water but blocks salts and other impurities. As water permeates through the membrane the feed solution becomes more concentrated. Due to osmosis, additional pressure is required to force water out of a more concentrated solution.

“The commercially-available semi-batch design, called closed-circuit reverse osmosis, or CCRO, recycles the concentrate into the feed stream, so that the feed solution becomes concentrated over time, and pressure in the system can be increased incrementally as needed,” Warsinger adds.

A fully batch design, as proposed by the team, has the potential to push the efficiency even higher by using a closed feed tank to reduce the amount of mixing between the recycled concentrate and feed. “Mixing causes entropy generation, which is the enemy of efficiency. Our model shows how reduced mixing in batch RO improves energy efficiency over CCRO by up to 20 percent,” says Tow. “Compared to conventional RO systems, the batch configuration provides up to 64 percent energy savings.”

The trick is in the timing. The proposed configuration can ramp up the pressure over time to precisely follow the osmotic pressure of a concentrating batch of salt water. To conserve energy, the first new configuration uses part of the RO module as a storage tank, while the other configuration uses a pressure exchanger to enable saltwater storage atmospheric pressure.

“The batch system starts with a fixed amount of solution in a circulation tank and passes it multiple times through the RO membranes to collect clean water,” Warsinger says. “With each pass, the concentration of the remaining solution increases and the pressure of the system increases to match its osmotic pressure. This gradual increase eliminates the excess energy needed to maintain the entirety of a continuous system at a high pressure.” (Continued on page 7)



## OP-ED: ROCKY MOUNTAIN IS COMMITTED TO SOLAR AND TO CUSTOMER FAIRNESS

By Paul Murphy ~ First Published Nov 11 2016 05:42PM • Last Updated Nov 11 2016 07:48 pm

The benefits of solar power are many, including the environmental attributes pointed to in a Tribune op-ed ("Rooftop solar's worth? Don't Forget value of saving Earth," Nov. 6).

Solar has grown exponentially in Utah over the past few years, and rooftop solar has played a part in that growth. But HEAL Utah suggests that the way to realize Utah's vast solar potential and its benefits is to continue to require customers to subsidize private rooftop solar panels.

The vast majority of solar energy in Utah now comes from large-scale solar farms. More than 20 facilities are operating now in Southern Utah, which together produce eight times the amount of solar energy as all rooftop systems combined. This is energy from the sun. It feeds the grid that serves all customers, and it is cost effective.

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HEAL Utah points to the discussion that will take place in coming months about the proper value to place on rooftop solar and how much rooftop solar customers should receive for excess power they put back on the grid through net metering.

Rocky Mountain Power is currently crediting rooftop solar customers 8.5 to 14.5 cents for each kilowatt hour they produce. At the same time the energy company is purchasing solar power from large scale solar farms for about 4 cents per kilowatt hour.

This week Rocky Mountain Power asked the Public Service Commission to change the rates for future

rooftop solar customers. The commission ordered a study which found a typical Utah rooftop solar customer is being subsidized \$400 each year by customers who rent or cannot afford or do not want solar panels. This subsidy is costing other customers \$6.5 million each year and if the system isn't changed it will cost non-solar customers \$667 million over the next 20 years.

Rocky Mountain Power recognizes the investment that rooftop solar owners have made with their systems and is not asking for rates to change for current customers. However, the energy company is asking the Utah Public Service Commission to end the substantial subsidies for future customers.

A future average net metering customer will still save about \$40 (or 35 percent) on his or her bill and still receive about twice as much for excess power as it would cost to get the same energy from solar farms. The solar market will continue to grow because the price of solar panels has plummeted and rooftop solar customers are still getting hefty federal and state tax credits.

Rocky Mountain Power is committed to renewable energy and is the second largest rate-regulated owner of wind power in the U.S. — No. 1 if you include our parent company. We are already in the transition to using more renewable energy and have pledged to do even more. If cleaner energy is the goal, then it makes a lot more sense to invest in more solar and wind at the lowest prices possible.

Paul Murphy is Rocky Mountain Power  
external communications director ❖

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### Desalination progress:

*(Continued from page 6)* With practicality in mind, the team's designs avoid the use of a pressurized circulation tank. One design takes advantage of a rotary pressure exchanger to pressurize the salt water flowing into the reverse osmosis membrane by depressurizing the concentrated brine leaving the module. An alternative design pumps permeate into a flexible bladder within the pressure vessel that contains the membranes, eliminating the need for a pressure exchanger and enabling small-scale operation.

"The energy required for seawater desalination has been reduced by a factor of four in the last three decades through advances in energy recovery devices and membrane designs, approaching the thermodynamic minimum for conventional continuous reverse osmosis processes," says Richard L. Stover, a water industry

veteran with 25 years of commercial and technical experience and a director of the International Desalination Association. "However, recent research and field trials have shown that batch and semi-batch processes have the potential to provide additional energy savings of up to 25 percent. In addition, these new processes can use advanced high-permeability membranes, such as graphene, better than continuous processes can, providing additional energy savings. For these reasons and more, batch and semi-batch processes are the future of RO."

The authors have applied for patents on their batch systems and see potential applications for industry in the near future. As well as saving energy in large facilities, the more efficient and low-maintenance design could be very useful for smaller scale systems in off-grid areas, and could be run from portable generators or solar power. ❖

Newsletter



Test & Increase your knowledge of Los Angeles History



View showing Power Plant No. 1 located in San Francisquito Canyon with transmission tower in lower-right and water penstocks seen in the distance.

The completion of Power Plant No. 1 was the Los Angeles Bureau of Power and Light's (later DWP) first step in becoming an independent electricity provider.

What year was the power plant completed?

- A) 1913
- B) 1917
- C) 1921
- D) 1925
- E) 1929

Answers at [http://waterandpower.org/museum/Mystery\\_History.html](http://waterandpower.org/museum/Mystery_History.html)

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Abraham Hoffman, Ph.D.  
Book Report



Jack Feldman  
Mystery History



Article Submitted By:  
Gerald A. Gewe



Delta tunnels: A steady trickle of progress

Articles Submitted By:  
Thomas J. McCarthy



- ▶ MIT's 8 Big Ways to Enable the Utility of the Future
  - ▶ Desalination progress: Water everywhere and not a drop to drink
- ▶ Rocky Mountain is committed to solar and to customer fairness
- ▶ Las Vegas now runs completely on renewable energy
- ▶ Regulators scrap net metering in major setback for solar energy in Arizona
  - ▶ Clean Water Rule WOTUS 11/17/16



# Regulators scrap net metering in major setback for solar energy in Arizona

P.O.W.E.R

David Wichner Arizona Daily Star

Updated Dec 22, 2016 Mamta Popat / Arizona Daily Star

Arizona regulators on Tuesday voted to scrap so-called net metering for customers with rooftop solar systems in favor of a lower “export rate,” despite the objections of solar advocates.

After nearly two years of proceedings including a two-day meeting ended late Tuesday, the Arizona Corporation Commission voted 4-1 to end so-called net metering, a process by which solar customers Tucson Electric Power Co. and other state-regulated utilities are credited for excess power production at full retail rates.

“I think we’ve accomplished something pretty historic today,” Commission Chairman Doug Little said. “It’s not perfect but it’s a step in the right direction.”

Commissioner Bob Burns voted against the proposal. Arizona utilities including TEP and Arizona Public Service Co. had sought to eliminate net-metering, under which customers with rooftop solar are reimbursed their excess power generation, contending that solar customers aren’t paying their fair share of fixed grid costs.

Solar companies and advocacy groups counter that solar is worth far more than the utilities say in terms of reduced costs and pollution, and that any cuts to net-metering rates would devastate the industry.

Two other states, Nevada and Hawaii, have ended net metering, and at least 25 other states are considering that and other solar rate-design issues.

Under a policy decision expected to guide pending and future rate cases, the Corporation Commission voted to end net metering and replace it with reimbursement through an “export rate” much lower than retail rates.

The export rates will be determined in each utility rate case and will initially be based on a “resource comparison proxy” based on a weighted, five-year average cost of power from utility-scale solar farms.

The new export rates will vary by utility and be stepped down annually, in increments limited to 10 percent each year.

TEP had proposed basing the solar export rate on its most recent costs for utility-scale renewable energy projects — about 6 cents per kilowatt-hour instead of the retail rate of about 11.5 cents per KWh.

Solar-industry experts say dropping the export rate significantly will essentially make solar uneconomical for many customers and devastate the industry, citing a huge drop-off in demand in Nevada after that state cut net metering.

Over the longer term, the utilities are required to develop solar valuation methodologies based on a five-year forecast of “avoided cost” of conventional generation, including such things as fuel costs, to be updated with each rate case.

APS has advocated using its own proprietary cost studies to set an “avoided cost” rate for solar credits, at about 3 cents per KWh.

Solar advocates wanted the value of solar to be considered over a longer time period, 20 years or more, to fully capture environmental and other long-term benefits.

Going forward, the utilities with commission approval could use either the resource proxy or the avoided-cost models to set an export rate, which would be updated in subsequent general rate cases.

The new solar compensation scheme will apply to customers whose solar systems are connected to the grid prior to the decisions on each utilities rate case.

Customers whose rooftop solar panels are installed before the rate decisions will be “grandfathered” to continue to receive the benefits of existing net metering, but the decision limits those benefits to 20 years from the data of interconnection.

Solar advocates contended that anything other than full grandfathering of net-metering rates would be unfair and lead to litigation, noting that Nevada appears to be backing off its retroactive elimination of net metering in the face of public outcry and lawsuits.

But new solar customers will not be allowed to “bank” unused excess energy credits, which under net metering are carried over and credited monthly until the end of the billing year.

Instead, any excess energy production will be credited “instantaneously” during each day, with no carryover credits. Rooftop solar customers under the new rules will have their eventual energy export rate locked in for 10 years.

That upset some solar-industry advocates who said prospective customers should get a locked-in export rate for at least 20 years, reflecting the useful 20 to 30-year life of solar panels. “You’re going to have people who are going to sign up for solar with no idea what happens after 10 years,” said Court Rich, representing the solar-industry group The Alliance for Solar Choice.

TEP had proposed basing the solar export rate on its most recent costs for utility-scale renewable energy projects — about 6 cents per kilowatt-hour instead of the retail rate of about 11.5 cents per KWh. Solar-industry experts say dropping the export rate significantly will essentially make solar uneconomical for many customers and devastate the industry, citing a huge drop-off in demand in Nevada after that state cut net metering.

Anne Hoskins, a former Maryland utility regulator now representing rooftop solar provider Sunrun, said the shorter lock-in rate is unfair and will jeopardize financing for solar adoption particularly for financed systems. “The state is getting the benefit of private residents putting capital out there (to install solar), they need that 20-year certainty,” she said.

Utility representatives countered that the 10-year export rate lock-in is roughly equal to the payback period for the typical home rooftop solar system.

Commissioner Burns had advocated for a 20-year lock-in period, citing that as a typical length of solar power-purchase agreements.

Commissioner Bob Stump, who has been sharply critical of the solar industry, said the net metering rules had to be updated for consumers and the long-term future of the solar industry.

“To maintain the status quo would have made the industry less sustainable and less self-reliant,” said Stump, adding that he was proud to make his last vote as he is stepping down from the commission at the end of the year.

Chairman Little said much work remains to be done.

Export rates will be set in pending rate cases filed by TEP, Arizona Public Service Co. and other utilities.

Regulators also likely will have to consider requests by the utilities to impose new fixed charges or special “demand rates” based on peak usage.

“I think this will become more of an evolutionary process,” Little said. “We’ll be revisiting some of these issues but it’s a good step” ❖



U.S. EPA Administrator Gina McCarthy and EPA Region 7 Administrator Karl Brooks speak with reporters attending a farm tour about the specifics of the Clean Water Act proposal. Photo courtesy of U.S. EPA.

The Obama administration's controversial Clean Water Act jurisdiction rule was already on life support before the election.

Dozens of lawsuits and a nationwide stay halted U.S. EPA and the Army Corps of Engineers' plans to implement the new standards on the ground.

At the same time, congressional opponents and industry groups continued to paint the rule as invasive, hastily written and illegal.

With Donald Trump's promise to pull the plug on the measure, it's only a matter of time before it dies, say observers. "I think this rule is ultimately doomed," Vermont Law School professor Pat Parenteau said in an email.

During his campaign, President-elect Trump vowed to repeal the regulation, which redefines which water bodies are automatically covered under the Clean Water Act.

EPA and the Army Corps crafted it to clarify the extent of protection for small wetlands and streams that lead to rivers, lakes and bays, after two Supreme Court decisions in 2001 and 2006 muddled the limits of federal jurisdiction.

As it stands, the Army Corps makes case-by-case determinations of what is federally protected and what isn't, a practice that environmentalists say leaves waterways vulnerable to pollution.

Industry critics panned the so-called Clean Water Rule when the administration proposed it and then finalized it last year, saying its definitions and limits amounted to broad federal overreach over private land and states' rights.

**The measure — also known as the Waters of the U.S. rule, or WOTUS — is under scrutiny by the 6th U.S. Circuit Court of Appeals, with oral arguments expected as soon as next spring.**

## **CLEAN WATER RULE WOTUS 'ULTIMATELY DOOMED.' WHAT HAPPENS NEXT?**

Tiffany Stecker, E&E News reporter

Greenwire: Wednesday, November 16, 2016

### **Scenarios**

Trump could request a voluntary remand before the court makes a decision, Parenteau said. In that case, the court would have to agree to return the rule to the agency and give a legal justification.

That justification could come from the Supreme Court's recent decision in *Army Corps of Engineers v. Hawkes Co. Inc.*, where justices said landowners could sue the government over federal wetlands determinations.

Justice Anthony Kennedy wrote in his opinion that "the reach and systemic consequences of the Clean Water Act remain a cause for concern," which many saw as a direct jab to the Clean Water Rule (*Greenwire*, May 31).

The 6th Circuit could also issue a decision on the rule next year, either vacating it or sending it back for a rewrite.

In that case, the new administration could do nothing or could choose to promulgate a new rule or guidance to replace the Obama regulation.

A Republican Congress could gut the Clean Water Rule via legislation or by defunding EPA's activities in spending bills.

Senate Republicans still will lack a 60-vote majority to overcome a filibuster but will not have to contend with a veto as they did under President Obama.

The White House blocked a congressional resolution to dismantle the rule in January. Proponents then failed to get the 60 votes necessary to override the veto (*Greenwire*, Jan. 21).

A new rulemaking under the Republican president could help people and businesses affected by the rule obtain more clarity, said Brooks Smith, an environmental attorney with Troutman Sanders LLP who represents industry opponents.

"I think the Clean Water Rule is dead, but it will need to be replaced with something that provides the kind of certainty and clarity and predictability that was supposed to come with the rule and really didn't," Smith said. (*Continued on page 11*)

## CLEAN WATER RULE

(Continued from page 10)

### Revoke and replace?

Smith said a rule would be preferable to less-rigorous guidance. "I think there's general consensus that this is such an important demarcation of federal power that it needs to be formal, it needs to be a rule," he said.

If WOTUS dies, Smith said there could be intermediate guidance or a policy for regulators on the ground while EPA and the Army Corps work on a new rule.

The 6th Circuit's opinion will be important in setting guideposts for how the new administration will address the next steps, said Jon Devine, senior attorney with the Natural Resources Defense Council's water program. If the judges weigh in on the importance of protecting waterways, that could place impositions on a new rule.

"If the court were to say that a certain level of protection is required, then that would be a constraint on how much the [Trump] administration can change it," he said.

Revoking the rule may have been an effective talking point in the campaign, but it won't be quick or easy, said Andrew Stewart, an attorney with Vinson and Elkins LLP and a former director in EPA's Office of Civil Enforcement. Rescinding a regulation or crafting a new one will have to be based on a foolproof record.

"To modify the rule in a way that is defensible and could survive judicial scrutiny, that takes an administrative record," said Stewart. It would require scientific and technical information that invalidates the Obama administration's findings or a different interpretation of the law that is upheld.

Environmental groups are aware that revoking the Clean Water Rule will be easier said than done, and they have said they will use the notice and comment period for a new one to challenge attempts to weaken clean water protection.

"We'll make sure we fight a rollback," Devine said.

The future of the rule also hinges on who will lead EPA under Trump, particularly the Office of Water. Sam Clovis, a top adviser to the president-elect's campaign, has said Trump was looking for someone with an agricultural background to direct the agency (*Greenwire*, Sept. 30).

Farming and ranching groups, particularly the American Farm Bureau Federation, have lambasted WOTUS and said its definition of "tributary" would broadly include many land features.

Even though Trump won't likely pick a water chief in the first months of his administration, some early names for the post include Bruce Rastetter, an agriculture entrepreneur from Iowa, and Georgia Agriculture Commissioner Gary Black.

"Bringing in a farmer (a smart one) makes lots of sense," said an agricultural trade group source. "Tougher to attack a farmer than an oil [and] gas or coal lawyer." ❖

P.O.W.E.R

## Las Vegas now runs completely on renewable energy

Doyle Rice, USA TODAY 2:32 p.m. EST December 21, 2016



Las Vegas is the first big U.S. city to use 100% renewable energy.  
(Photo: City of Las Vegas)

From street lights to city parks, community centers and fire stations, all Las Vegas city-run spots are now powered entirely by renewable energy, making it the largest in the U.S. to use such sources. "We are now one of the few cities of the world that can say all the power we use comes from a green source," the city announced.

The goal was reached with last week's opening of Boulder Solar 1, a large solar plant run by NV Energy that's located near Las Vegas.

"This is truly a proud day for Las Vegas," Mayor Carolyn G. Goodman said last week.

Renewable energy is generated from natural processes that are continuously replenished, according to Penn State University. "This includes sunlight, geothermal heat, wind, tides, water, and various forms of biomass. This energy cannot be exhausted and is constantly renewed," the school said.

While all Vegas government facilities are now only powered by renewable energy, many residential and commercial buildings are not, the *Huffington Post* reported.

Overall, the city's energy savings because of its shift is estimated at roughly \$5 million annually, the city said. The city invested more than \$40 million in renewable energy over the past few years.

San Francisco and San Jose are some of the other big cities with plans to use 100% renewable