

L.A. Looks to Break Price Records With Massive Solar-Battery Project

The cheapest U.S. solar power purchase agreements (PPAs) have been coming out of places like West Texas, but developer 8minute Solar has put the spotlight back on California.

JEFF ST. JOHN JULY 01, 2019

The Los Angeles Department of Water and Power is preparing to approve a utility-scale solar-battery project that could shatter U.S. records to date, in terms of both storage capacity and low price.

8minute Solar Energy's Eland Phase 1 and 2 projects would each consist of 200 megawatts of solar capacity, along with at least 100 megawatts — and more likely 150 megawatts — of battery capacity, according to Eric Montag, LADWP director of strategic initiatives.

The total project would add up to 400 megawatts of solar and 300 megawatts of energy storage, and could be submitted for approval as early as LADWP's next commission meeting on July 23.

Speaking at a [June 18 \[LADWP\] commission meeting](#), Montag described the Eland Phase 1 and 2 projects as groundbreaking not only for LADWP but for the U.S. utility sector at large.

“This is the lowest solar photovoltaic price in the United States, and the largest and lowest-cost combined solar and high-capacity battery energy storage in the U.S., and we believe in the world today,” he told LADWP commissioners.

The projects would sell their 200 megawatts of solar capacity under a 25-year power-purchase agreement with LADWP at a price of \$19.97 per megawatt-hour.

That's lower than the [sub-\\$25 per megawatt-hour](#) price that Texas municipal utility New Braunfels Utilities got for its 225-megawatt solar PPA with Engie-affiliated Long Draw Solar back in December, among the lowest PPA prices confirmed in the U.S. and the lowest confirmed in Texas. *(continued on page 2)*

U.S. SENATORS PROPOSE BIPARTISAN CARBON CAPTURE BILL FOR GAS-FIRED POWER PLANTS

Four U.S. senators are backing a bipartisan bill aimed at spurring advancements in carbon capture and sequestration technology for natural gas-fired power plants. The legislation would task the U.S. Energy Department with creating a program to develop carbon capture and sequestration, or CCS, technology for natural gas-fired generating facilities with the goal of accelerating its commercial application through private sector demonstration projects.

SNL May 24

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L.A. Looks to Break Price Records With Massive Solar-Battery Project

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According to Colin Smith, senior solar analyst with Wood Mackenzie Power & Renewables, the most recent record-setting solar PPA prices in the U.S. have been coming out of places like West Texas and Nevada.

“A sub-\$20 solar-storage PPA in California is exceedingly low,” Smith said.

It’s also well below the \$35 to \$38 per megawatt-hour — at that time another low-price record for solar — that developer 8minute offered in its first big solar PPA with LADWP back in 2016.

“We used to talk about how solar PPA prices were competitive with other generation sources,” Smith said. “Now we are seeing solar-plus-storage together as providing greater capacity and still competitive with new-build natural gas and other sources of electricity.”

Meanwhile, the price for the project’s battery capacity, according to Montag’s presentation, is an additional \$13 per megawatt-hour for the 100-megawatt plan, or \$33 per megawatt-hour when combined with the solar. There is an additional \$6.65-per-megawatt adder for the 150-megawatt option for just under \$40 per megawatt-hour combined.

These are close to price points being set by recent projects announced in Nevada and Arizona by utilities seeking to meet gigawatt-scale energy storage targets, Smith noted.

8minute’s project with LADWP will include about 65 megawatts of additional solar photo voltaic energy (PV) beyond its nameplate capacity to serve the battery storage to be added to the project, Montag said.

That’s because the Kern County transmission corridor where the projects are to be built, already the home of about 1 gigawatt of solar PV, has a maximum capacity for how much power it can carry to Los Angeles.

But the 100 to 150 megawatts of batteries to come with the project will “take that extra 65 megawatts beyond that transmission capacity and store it,” Montag said. (See p.6 “How big batteries are transforming the solar landscape”.)

Want to Know if California Can Make Zero Emissions By 2045? Here's What to Watch

California plans to reach 60 percent renewables by 2030 and a zero emissions economy by 2045 as its investor-owned electric companies face wildfires and bankruptcy, new and unproven energy providers proliferate, and customers demand a decentralized energy system. What could go wrong?

The key to success is eliminating natural gas as an electric energy resource, stakeholders told Utility Dive.

Utility Dive, May 21

Citing Reliability, CAISO Says State May Need to Run Gas Plants Longer

Citing a fast-approaching shortfall of thousands of megawatts of power capacity, California’s energy grid operator last week urged the California Public Utilities Commission (CPUC) to immediately consider extending retirement dates for natural gas-fired plants slated to shut down under the state’s once-through-cooling mandate. In comments filed July 22 in an ongoing CPUC docket on energy procurement, the California Independent System Operator said its analyses points to a potential “resource adequacy” gap of up to 2,000 MW beginning in summer of 2021 and growing quickly to 2,500 MW in 2022 if all once-through cooling plants retire as planned.

IHS Energy Daily <http://www.mmsend42.com/link.cfm?r=r8xLVgdym5HLG05DetYqSw~&pe=IY11mn7e6u-WXnKrisxib8hTqpAelnwnHHCyhAZDGok6Cj0CsJwHI9t_3yQ9zs_TnsISzUAlleA2EOGA-gsAjq~&t=NUWvoEKASsa_11MjDBYsZQ~>, July 30

Perry Stirs Up Debate — Again — With Climate Comments

Energy Secretary Rick Perry came under fire this week after asserting on Twitter that emissions from the U.S. energy sector have dropped more than those of any other country belonging to the Paris climate accord. According to DOE, Perry’s assertion is based on data from both the Energy Information Administration and the International Energy Agency showing an overall drop in emissions since 2005.

Environment & Energy Publishing, July 10

Speakers & Guests at Luncheon Meetings



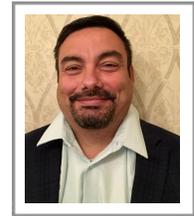
John Bednarski
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federal agencies.

**Members-At-Large
Not Pictured**

Eldon Cotton,
Rod Fishburn,
Walter Zeisel.

Thank You!

The Reason Why LA Reservoir is Covered in Black Plastic Balls

Chardynne Joy H. Concio May 15, 2019 06:59 AM EDT

The Los Angeles reservoir holds some 12.5 billion liters of water or roughly [3.3 billion gallons](#), the same deposit where most LA residents get their personal drinking water. But why would officials put 96 million black plastic balls in the Los Angeles reservoir? Well, they were originally thought to minimize evaporation. However, minus what has often been reported [as the main purpose](#) of these balls, it's not actually for preventing evaporation. [In a new episode](#) from Veritasium, Derek Muller investigates the story behind this wild idea.

Despite their efficiency on water conservation, the plastic balls or "shade balls" as they are most commonly referred to, were initially used to combat a potentially harmful carcinogenic that forms in the reservoir. The problem began with bromide, a natural property found in salt water. Bromide, on its own, is not necessarily a health risk to humans, but if some of this salty water sneaks into the reservoir and experiences ozone treatment with the rest of LA's drinking water, it can form the compound bromate. And, as we know, bromate is a carcinogen.

The LA Department of Water and Power assumed they were keeping tabs on these bromate levels, but for some reason, the carcinogenic levels kept spiking when water entered the reservoir. Come to find out, when bromide and chlorine intermingle with sunlight, the

reaction produces even more bromate than when simply interacting with ozone treatment.

Initially dubbed "bird balls", the solution was both strange and strangely perfect. These balls were generally used around airports to prevent birds from landing in nearby water, and essentially becoming a casualty of airplane engines. Scientists noticed, however, that the black balls also turned out to be highly effective at keeping out sunlight.

"They knocked out the problem immediately," chief of LADWP Marty Adams [told](#) Muller in the video.

Adams also explains that their carbon black color sustains each sphere and they can work for up to ten years, with no chance of toxic waste mixing into the water below. Even better, once these balls are placed on the reservoir, the treatment facility can use less chlorine for algae growth, which tends to thrive in sunlight. And while evaporation was not the original reason these balls were used, they do in fact keep the water below much cooler. "So for all of these reasons, shade balls reduce evaporation by 80 to 90 percent," Derek [explains](#). "That's pretty significant for a dry climate like Los Angeles."

Between the savings in chlorination and evaporation alone, Adams says these balls will pay for at least half their original price, approximately three-for-a-dollar, by the time they are through with their job. ✍

New York Joins List of U.S. Cities Looking to Own Power Grid

Mark Chediak Bloomberg July 22, 2019

- The idea of a locally-run power grid is gaining momentum with New York joining the list of cities pondering a takeover of their privately run utilities in a bid for independence.

After Consolidated Edison Inc. left tens of thousands in the dark from two blackouts in eight days, New York Mayor Bill de Blasio suggested that the most-populous U.S. city might have to take it over. Meanwhile, San Francisco is considering bidding for the poles and wires owed within its borders by PG&E Corp., which filed for bankruptcy protection in January due to an estimated \$30 billion in claims from fires caused by its equipment.

Other places pondering a locally run grid include San Francisco's neighbor to the south, San Jose, and a local water agency in California. The city of Boulder, Colorado, has been in talks for years with incumbent utility Xcel Energy Inc. on an effort to buy the city's electric distribution systems, which remains unresolved.

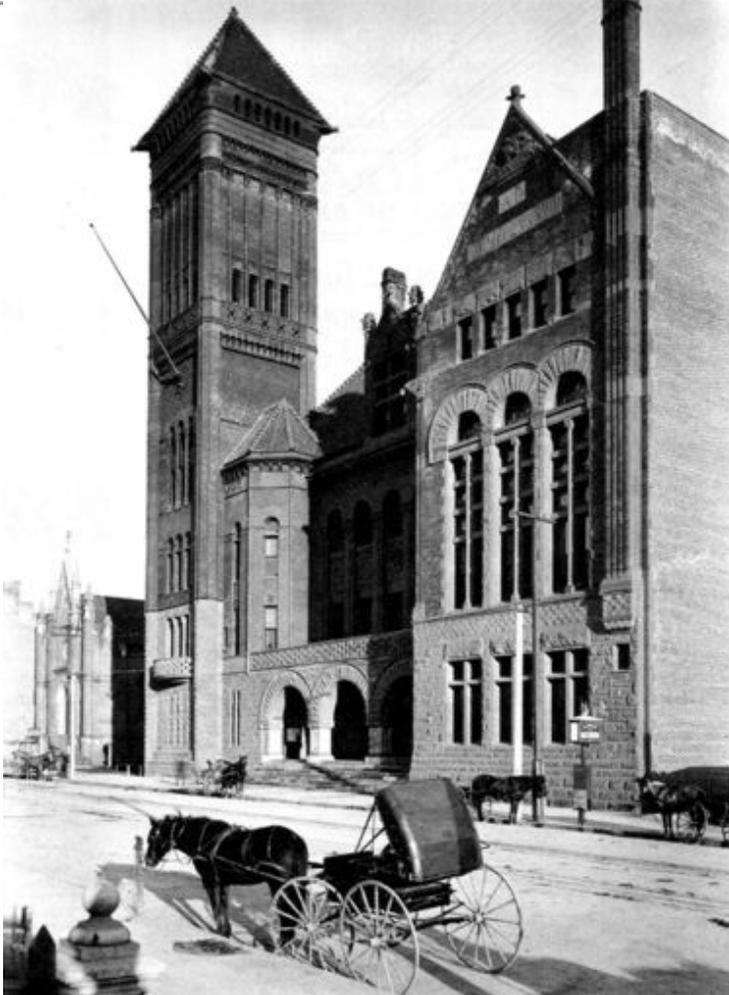
To contact the reporter on this story: Mark Chediak in San Francisco at mchediak@bloomberg.net



MYSTERY HISTORY

by Jack Feldman

This grand Romanesque edifice building was made of marble and red sandstone. Built in 1888, the building stood for 40 years on the 200 block of South Broadway in Downtown Los Angeles. The skyscraper tower could be seen for miles.



What was the name of the building?

- LA County Courthouse Building
- LA Water Department Building
- LA City Hall Building
- LA Gas and Electric Building
- Federal Building and Post Office

Mayor Garcetti nominates Marty Adams to succeed David Wright as General Manager of LADWP

Office of Los Angeles Mayor Eric Garcetti - lamayor.org

LOS ANGELES — Mayor Eric Garcetti today nominated Marty Adams as the next General Manager of the Los Angeles Department of Water and Power. Adams, currently LADWP’s Chief Operating Officer, is a widely-respected 35-year veteran of the utility. ✍



July 23 The LADWP Board of Commissioners voted to name the agency’s chief operating officer, Marty Adams, as interim general manager. Garcetti had already nominated Adams in mid-June to succeed Wright as general manager in a planned transition, pending City Council confirmation. ✍



We invite your comments, inquiries, and suggestions. Go to comments@waterandpower.org

● Click [HERE](#) for answer
Or go to Answer at https://waterandpower.org/museum/Mystery_History.html

POWER

Report: PG&E considers \$11B fund to settle wildfire claimsAUTHOR [Robert Walton @TeamWetDog](#)

PUBLISHED June 6, 2019

Dive Brief:

- Pacific Gas & Electric is considering an \$11 billion fund to settle wildfire liabilities, [Bloomberg reported Thursday](#), citing people familiar with the talks.
- The utility has reportedly discussed the idea with lawmakers, along with the law firm Jones Day and investment bank PJT Partners, which advise a group of PG&E equity holders.
- PG&E filed for [Chapter 11 bankruptcy protection](#) in January, in part due to liabilities associated with the last two wildfire seasons. In May, the California Department of Forestry and Fire Protection (Cal Fire) concluded the deadly Camp Fire in 2018 was caused, at least in part, [by the utility's transmission lines](#).

Dive Insight:

PG&E is working to address liability claims from the 2017 and 2018 wildfires, though the proposed fund would not include damages resulting from the Tubbs Fire. Cal Fire [cleared PG&E of responsibility for that blaze earlier this year](#).

The proposed fund would include \$8 billion for current claims and another \$3 billion for possible future claims. It would be paid for using about \$400 million annually in PG&E earnings, according to Bloomberg.

PG&E earlier this year [recorded a \\$10.5 billion charge](#) related to the Camp Fire, which killed 85 people and burned more than 150,000 acres in Butte County in 2018. California regulators recently approved wildfire mitigation plans for the state's electric utilities, including proactive power shutoffs designed as a last-resort tactic in high winds.

As utilities prepare for the next wildfire season,

PG&E's bankruptcy could lead to major changes at the company and for all the state's utilities. Regulators have considered splitting the company into separate gas and electric divisions, and San Francisco is [considering buying portions of its grid](#), in part because the city says distribution service is increasingly expensive.

And the state is considering changes to its strict liability rules for utilities, to help ensure their financial health. A draft report from California's Commission on Catastrophic Wildfire Cost and Recovery [recommends changing the state's inverse condemnation rules](#), or for the legislature to establish a fund for wildfire victims.

The issues impact all California utilities: In April, Southern California Edison [asked federal regulators for a higher return on equity](#) due to "dramatic, material changes" to its regulatory and financial conditions, related to wildfire risks. ✍

Editors' note: Dive provides news and analysis for retail executives. It covers topics like retail tech, marketing, e-commerce, logistics, in-store operations, corporate, etc.

How big batteries are transforming the solar landscape

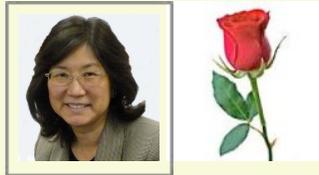
The batteries will serve multiple purposes, he said. First, they will serve as a shock absorber of sorts for the solar farm, keeping each phase's output to the transmission system as close to a steady 200 megawatts as needed.

Second, and more importantly, they will absorb excess solar generated during the day, and discharge it through the late afternoon and evening to bolster the dropoff in solar generation, combined with the steep rise in customer demand for electricity as people come home from work.

As Montag explained, "As the sun goes down, for the other 1,000 megawatts of solar we have without batteries, the gas-fired generation and hydro have to compensate for that."

Like California's grid as a whole, LADWP relies on natural-gas-fired peaker plants to get it through times of peak demand. And like the state as a whole, it's expecting to have less peaker capacity in future years to deal with the problem. ✍

In Memory



With regrets we announce the passing of Melinda Rho.

Melinda was an active member of the Associates more than a decade. After her retirement from the Los Angeles Department of Water and Power, she became a member of the Associate Board of Directors as Assistant Newsletter Editor.

Melinda is greatly missed.

BOOK REVIEW

Our Thanks to member Abraham Hoffman for more than 15 years of Book Reports for this newsletter.



Hoffman teaches History at Los Angeles Valley College

**You Are Invited To Contribute
As A Book Reviewer**

Have you read an interesting book about electric power or water?

Anyone who wishes to review books about power and/or water for our Newsletter, please send your article or your contact number to any Board member or go to comments@waterandpower.org

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UPDATE FROM METROPOLITAN WATER DISTRICT

The following article is a summary of a presentation by John Bednarski, Chief Engineer of the Metropolitan Water District of Southern California at the Water and Power Associates Board meeting in June 2019.

Bednarski's presentation focused on MWD's Regional Recycled Water Program. He also provided brief updates on MWD's current operating conditions, the status of the Delta Conveyance Program, and MWD's Drought Contingency Program.

By Bob Yoshimura

Current Operating Conditions

2019 has been an exceptionally good year for water in California. In the northern Sierra, snowpack on April 1st was measured at 163% of normal for the date. Since then, cool weather and additional precipitation have helped to attenuate melting such that the snowpack is 203% of normal on June 1. Likewise, on the Colorado River Watershed, snowpack peaked at 133% of normal on April 1st, and is 484% of normal on June 1. This year's allocation of water from the State Water Project (SWP) is 70% of the contracted amount, which is significantly greater than the average allocation for the previous five years.

MWD thus anticipates a 2019 total supply of nearly 2.4 million acre-feet (AF) consisting of 947,000 AF from the Colorado River, and 1,340,000 AF from SWP including 65,000 AF of "Article 21" water (low-cost surplus water available during exceptionally wet years). The total supply for the year significantly exceeds the anticipated demand of 1,520,000 AF, which is lower than normal because of cool, wet weather this Spring. The abundance of water is expected to result in a record year-end storage balance of nearly 4 million AF.

Delta Conveyance Program (aka Water Fix)

At the beginning of the year, the two-tunnel Delta Conveyance Program was ready to launch after many years of negotiations, planning, and review. However, in April, new governor Gavin Newsome issued an executive order that directed additional review of the program and the development of a water resiliency portfolio that considers California's water needs through the end of the century, adapts to climate change effects, and modernizes conveyance with a new single-tunnel project.

In an announcement on May 2, the California Department of Water Resources (DWR) essentially suspended the Water Fix program by withdrawing all approvals, decertifying the EIR, and rescinding all project-related permits.

The governor's executive order will thus delay the program approximately three years to allow for the development of a new EIR and additional planning and engineering as well as additional outreach to the public.

Drought Contingency Plan (DCP)

The Bureau of Reclamation and affected agencies developed the DCP to protect the Colorado River and bolster water supplies during droughts. Formal agreements (4) were executed at a signing ceremony at Hoover Dam on May 20, 2019. Of interest to Southern California residents is the Lower Basin DCP which is designed to keep Lake Mead above critical storage elevations through two specific provisions. The first incentivizes the creation of Intentionally Created Surplus (ICS) to be stored in Lake Mead. The second allows MWD to store up to 400,000 AF of surplus water (3 feet of elevation) in Lake Mead. Thus, by maximizing the use of SWP water in the coming summer, MWD will be able to minimize its deliveries of Colorado River water and store the surplus in Lake Mead, which is currently just above its critical shortage elevation.

Regional Recycled Water Program

The Regional Recycled Water Program is part of a broader initiative to increase the reliability of Southern California's water supply by reusing the 400 million gallons per day (mgd) of wastewater (448,000 AF/year) that is produced by the region's two largest wastewater plants. The program is needed because of the uncertain availability of water from SWP, the Colorado River, and local groundwater basins. Supply from SWP has ranged from 70% of contracted amount to 5% during the previous five years. On the Colorado River, Lake Mead is currently at an elevation so low that it is approaching its shortage level. Local groundwater basins have been overused and have steadily declined since the '30s. (Continued on page 9)

UPDATE FROM MWD

summary by Associates' secretary, Robert Yoshimura, of a presentation by John Bednarski, Chief Engineer of the Metropolitan Water District of Southern California at the Water and Power Associates Board meeting in June 2019.

(Continued from page 8)

The program is expected to increase local supplies (including conservation and recycling) from 41% of total water use in 1990 to 65% by 2040. Recycled wastewater will provide a reliable source of water regardless of conditions on the SWP and Colorado River and can be stored locally in the available capacity of groundwater basins.

MWD is collaborating with the Sanitation Districts of Los Angeles County (LACSD) to develop up to 150 mgd (168,000 AF/year) of treated wastewater from the Joint Water Pollution Control Plant in Carson, California. Initially, the water will be delivered to local agencies for groundwater replenishment and industrial uses. Ultimately, when expected enabling regulations are passed, the recycled water will be delivered to MWD's existing Weymouth and Diemer water treatment plants for direct potable reuse. In November of 2015, the MWD Board authorized a formal agreement with LACSD for program development, the construction of a demonstration plant, and feasibility and phasing studies.

The feasibility and conceptual planning studies have been completed and the demonstration plant is under construction and expected to commission in August 2019. The environmental planning process is scheduled to begin later this year. The conceptual plan recommends a phased implementation with an initial capacity of 100 mgd with provisions for future expansion to 150 mgd.

In Phase 1, the backbone system will consist of a 100 mgd Advanced Water Treatment Plant (AWTP) at JWPCP, and a pipeline (150 mgd capacity) from the JWPCP to the Santa Fe Spreading Grounds in the north San Gabriel Valley. Along the way, facilities will be included to deliver water to Harbor area industrial users, and injection wells in Long Beach and the Montebello Forebay.

In Phase 2, the AWTP will be expanded to 150 mgd and additional pipelines will be constructed to deliver water to the Weymouth and Diemer water treatment plants and to the Orange County Spreading Grounds and the West Coast Basin injection wells.

The AWTP will be constructed on a former refinery site adjacent to the JWPCP and will use membrane bioreactors to remove ammonia followed by reverse osmosis and final disinfection using ultraviolet light and oxidation. The effluent thus produced will be virtually free of all microorganisms, chemicals, and salts. The \$17million demonstration plant is under construction on a small portion of the AWTP site and will be open to tours upon completion.

The estimated capital cost of the program is \$2.6 billion for Phase 1 and \$3.4 billion for the full program. Unit costs of water produced by the program are expected to be \$1,813 per AF for Phase 1 and \$1,826 for the full program, not including upgrades to the Weymouth or Diemer water treatment plants.

Two workshops are planned for the MWD in July/August (approach to implementation) and September/October (agreements and financial considerations). Board action on the environmental planning process will be required in late winter 2019 or spring 2020. The workshops will provide information needed for the Board actions including methods of cost recovery (how to spread the costs to users). Two white papers are planned to provide information on program implementation and delivery (White paper #1) and agreements and financial considerations (White paper #2). Additional information regarding the program can be found on MWD's website at www.mwdh2o.com/RRWP. ✍

What Comes Next After Batteries Replace Gas Peakers?

Peaker replacement by battery storage has begun in California. Substituting bulk gas power is another matter entirely.

[JULIAN SPECTOR](#) JULY 01, 2019

Battery storage is gaining a foothold in the California peaker plant market previously served by fast-acting natural gas generators.

Replacing gas peakers notches an early victory for the energy storage industry, but it is not sufficient to decarbonize the grid. Short-duration batteries have a physical limitation: They cannot deliver power indefinitely, and longer-duration options are rare at commercial scale.

That raises the question of what comes next as California, joined by a growing cohort of states, moves toward a legislative mandate of zero-carbon grid power by midcentury.

Nick Chaset grapples with that question as the CEO of East Bay Community Energy, a local organization empowered to source clean electricity for Alameda County, across the bay from San Francisco. His organization recently signed a contract to [replace a decades-old jet-fuel-burning peaker](#) in downtown Oakland with a 20-megawatt, 4-hour-duration lithium-ion battery plant. ✍

FERC Approves CAISO Plan to Fix the Inverter-Based Wind, Solar Reliability Issues

In what appears to be a first for a regional energy grid operator, federal regulators last week approved rule changes proposed by the California Independent System Operator (CAISO) that require wind and solar farms to ensure that their inverters can "ride through" brief electric line faults and continue delivering energy to the grid. CAISO said the new tariff requirements are needed given the huge increase in solar and wind resources on its energy grid in recent years, raising the potential for significant reliability issues if a large number of renewables go off line during fault conditions. ✍

NV Energy Announces 'Hulkingly Big' Solar-Plus-Storage Procurement

Berkshire Hathaway's Nevada utility announced three new projects, including what would be the largest solar plant in the U.S.

[EMMA FOEHRINGER MERCHANT](#) JUNE 25, 2019

NV Energy one-upped its huge 2018 solar and storage [procurement](#) on Tuesday, announcing three new solar projects totaling 1,200 megawatts paired with 590 megawatts of battery storage.

Colin Smith, a senior solar analyst at Wood Mackenzie Power & Renewables, called the procurement "hulkingly big." When built, one of the projects — at 690 megawatts — will be the largest solar plant in the U.S., according to tracking from WoodMac

The three solar-plus-storage projects, developed by 8minute Solar Energy, EDF Renewables and Quinbrook Infrastructure Partners and Arevia Power, should be complete by 2023. Two will be built on the Moapa Band of Paiutes Indian River Reservation, in partnership with the tribe.

Aside from their massive size, the contracts also come as a vote of confidence in utility-scale solar-plus-storage, according to analysts. Developer 8minute said its project could run 65 percent of the time during peak summer hours, as opposed to the 29.9 percent availability of the average solar plant in Nevada. ✍

Texas Fight Could Ripple Across U.S. Energy Grid

The future of the U.S. energy grid may ride in part on an obscure tussle over transmission in the Lone Star State. Front and center is a new law in Texas — enacted as S.B. 1938 — that gives incumbent energy companies first dibs on building new transmission lines. Critics say the measure effectively cuts out new entrants, clashes with the state's history of competition, and could raise the costs of transmission projects that factor into customers' electricity bills. ✍

[Environment & Energy Publishing](#), July 10

COME JOIN US

Members and guests are invited to attend our monthly Luncheon Board Meetings held the second Wednesday of each month, 11:00 a.m to 1:30 p.m. in Los Angeles.

**TO JOIN US
as a Member or as a Guest,
Contact any Board Member
Or Go To**

comments@waterandpower.org

Schedule of Guest Speakers

July 10, 2019	Reiko Kerr - Reiko Kerr, Senior Assistant General Manager, LADWP, "Update on Power Issues"
August 14, 2019	Arash Saidi, - LADWP Solar Program Development Manager "Status of Solar Power Initiatives in LA"
Sept. 11, 2019	Evelyn Wendel "A Campaign to Revive Public Water Fountains"
October 9	Marcie Edwards - Retired GM LADWP "Life after LADWP"
November 13, 2019	(Tentative) Andrew Linard - Director LADWP WETS Division "Capital Program & SIMPLAR Procurement System"
December 11, 2019	(TBD) Power System Planning Manager - Reliability w/o Coastal Generating Stations (Tentative)
January 8, 2020	Tour of MWD Water Recycling Demonstration Plant (Tentative)
February 8, 2020	Annual Meeting - John Ferraro Office Building