

COMMISSION

JOHN F. SULLIVAN – CHAIRMAN
PHILIP C. BASHAW – VICE CHAIRMAN
RUSSELL L. JONES – COMMISSIONER
KIM OWENS – COMMISSIONER
JIM SWEENEY – COMMISSIONER

STAFF

ED GERAK – EXECUTIVE DIRECTOR
HEATHER COLE – EXECUTIVE SECRETARY



ARIZONA POWER AUTHORITY

1810 W. ADAMS STREET
PHOENIX, AZ 85007-2697
(602) 368-4265

WWW.POWERAUTHORITY.ORG

Executive Director Industry Update –September/October 2021

Articles may be edited for content

Several Western Power Providers Announce Plans to Explore Market Options

Company Release - 10/5/2021

Denver--(Business Wire)—Several electric providers that serve millions of customers in the Western United States announced plans today to evaluate regional market solutions together.

Members of the informal Western Markets Exploratory Group (WMEG) are exploring the potential for a staged approach to new market services, including day-ahead energy sales, transmission system expansion, and other power supply and grid solutions consistent with existing state regulations. The group hopes to identify market solutions that can help achieve carbon reduction goals while supporting reliable, affordable service for customers.

The group, which began discussions this summer, includes Xcel Energy-Colorado (PSCo), Arizona Public Service, Black Hills Energy, Idaho Power, NV Energy, Inc., PacifiCorp, Platte River Power Authority, Portland General Electric, Puget Sound Energy, Salt River Project, Seattle City Light, and Tucson Electric Power.

Discussions are in the early stages and are focused on developing long-term solutions to improve market efficiencies in the West. That includes incorporating lessons learned from existing regional markets as well as other efforts across the West.

Many of the companies in the group are currently participating in, or preparing to join the California Independent System Operator's Western Energy Imbalance Market, or have announced plans to evaluate energy imbalance services. WMEG's discussions will not impact participation in or evaluation of those markets in the short-term, as the group is focused on long-term market solutions.

California Water Agencies Resolve Colorado River Dispute

Associated Press 09/21/2021

Greenwire | Two major California water agencies have settled a lawsuit that once threatened to derail a multistate agreement to protect a river that serves millions of people in the U.S. West amid gripping drought.

The Imperial Irrigation District, the largest single recipient of Colorado River water, sued the Metropolitan Water District twice in the past two years. The agencies announced yesterday they have reached a settlement that resolves both lawsuits.

Under the agreement, Imperial can store water in Lake Mead on the Arizona-Nevada border under Metropolitan's account. Imperial will contribute water under a regional drought contingency plan if California is called on to help stave off further water cuts.

Imperial sued Metropolitan, alleging the water agency that serves Los Angeles violated a state environmental law when it sidestepped Imperial in the drought contingency talks. The Los Angeles County Superior Court ruled against Imperial, which appealed to the California Court of Appeals earlier this year.

Another complaint filed in 2020 accused Metropolitan of breaching a contract related to storing Colorado River water in Lake Mead. Metropolitan denied the allegations. A trial was scheduled for April 2022.

Those cases became moot with the agreement signed last week that also outlines regular talks between the agencies to respond to drought, according to court documents. Metropolitan said it will support Imperial's efforts to restore the Salton Sea and to secure more funding for the massive, briny lake southeast of Los Angeles.

The agreement marks the end of legal fights and a return to working together, he said. Already, water users in the West are talking about what will replace an existing set of guidelines for the Colorado River and the overlapping drought contingency plan that expire in 2026.

Imperial has rights to more than one-third of the water allocated to the three states in the river's lower basin and Mexico.

Sam McDonald

Legislative Affairs Director | National Rural Electric Cooperative Association

o: 703-907-5793 m: 570-244-5113

U.S. Storage Market Continued to Grow in Q2 Of 2021

September 16, 2021 Paul Ciampoli

According to Wood Mackenzie and the U.S. Energy Storage Association's (ESA) latest US Energy Storage Monitor report, 345 megawatts (MW) of new energy storage systems were brought online in the second quarter of 2021.

This is an increase of 162% over the same quarter in 2020, making the second quarter of 2021 the second-largest quarter on record by MW for U.S. energy storage additions. An unprecedented volume of storage will come online in the second half of the year, with Wood Mackenzie expecting that storage projects representing over \$5 billion of investment will come online in 2021 alone.

Despite positive market momentum in the U.S., the residential battery storage market dipped slightly, the first drop for the segment in nine quarters (since Q4 2018). Equipment constraints, including an ongoing Tesla Powerwall shortage, is hampering the segment's growth despite the proliferation of new residential storage players, the report noted.

The non-residential segment, which consists of onsite storage and community-scale storage, saw quarter-on-quarter deployments rise by 31%, driven by the growth of the community storage market in Massachusetts.

The front-of-the-meter (FTM) market deployed 218 MW/729 megawatt hours (MWh) in Q2 2021, with California, Texas and Arizona leading the segment. California continued to lead the front-of-the-meter segment in Q2, with Arevon/Capital Dynamics's 100MW/400MWh Saticoy Energy Storage peaker plant replacement in Ventura County, Calif., contributing most of the MW for the quarter. Solar-plus-storage projects in Texas and Arizona also bolstered Q2 front-of-the meter capacity.

Meanwhile, policy support continued to build in Q2, with several new state incentives introduced for residential and non-residential storage. The industry also still awaits the outcome of budget reconciliation, expected this winter, which could include a solar investment tax credit (ITC) extension and/or standalone storage ITC. A positive outcome would upgrade the energy forecast across all segments, Wood Mackenzie and ESA said.

Moody's Says Hydrogen's Potential as Power Sector Fuel Is Enormous

August 23, 2021 Paul Ciampoli

Hydrogen's potential as a fuel in the power sector and the broader economy is enormous, although electric and gas utilities are unlikely to be the primary demand growth driver of the hydrogen market over the next decade, Moody's Investors Service says in a new report.

Moody's said that while hydrogen has enormous potential in power and heating applications, electric and gas utilities are unlikely to be the primary demand growth driver of the hydrogen market over the next decade, either in the U.S. or globally.

"In addition to high costs, there are significant efficiency losses associated with its production, which can range anywhere from around 30% to over 70% based on the technology used, making its production more expensive than the electricity or natural gas used to produce it. However, hydrogen is likely to play an important role in US efforts to eliminate carbon emissions from the power sector by 2035," the report said.

While the U.S. consumes more than 11 million metric tons of hydrogen per year, its use is practically nonexistent in the power sector, Moody's said.

The report notes that the National Renewable Energy Laboratory (NREL) expects U.S. demand for hydrogen to surge two- to fourfold by 2050, to around 1% to 14% of energy demand. Over the same period, the Department of Energy (DOE) estimates that the hydrogen economy could grow to \$750 billion in annual revenue from an estimated \$17.5 billion today.

Most of this demand growth is likely to come from the transportation sector, followed by industrial uses (refining, chemical, iron and steel and other), with building heat and power and power generation expected to account for around 19% of the demand by 2050, according to a report coordinated by the Fuel Cell and Hydrogen Energy Association, the rating agency went on to note.

Moody's points out that hydrogen can already be blended with natural gas for use as a fuel for power generation, albeit with some limitations. Power equipment manufacturers are developing a new generation of gas turbines that can run on 100% hydrogen and there are several pilot projects and at

least two larger power plants being developed in the U.S. that will initially burn blends of hydrogen and natural gas, before transitioning to 100% hydrogen, Moody's said.

Moody's also said that national and state policies and regulations could help increase hydrogen use. It noted that DOE this year unveiled \$160 million in federal funding for projects to develop technologies for the production, transport, storage and use of hydrogen. "Wider implementation of carbon instruments, such as allowances and taxes, could help make hydrogen more cost-competitive," the report said.

Federal and state incentives are also available for the development of carbon capture, utilization and storage technology, an essential component in the production of "blue" hydrogen, which is produced from natural gas, according to Moody's.

Salt River Project To Expand Gas-Fired Plant to Integrate More Renewables, Boost Reliability

August 25, 2021

Arizona public power utility Salt River Project (SRP) is seeking board approval to expand its Coolidge Generating Station, a quick-start natural gas power plant located in Arizona's Southeast Valley.

The expansion will help SRP integrate more renewable energy resources into the power grid and allow SRP to provide reliable power to its rapidly growing customer base during times of peak electricity demand, including some of the hottest days in Arizona's summer season, it noted in an Aug. 24 news release.

If approved by the SRP Board, the expansion of the Coolidge Generating Station would add 820 megawatts (MW) of capacity produced by 16 natural gas turbines capable of ramping up to full production within 10 minutes.

Because the proposed new gas turbines at Coolidge Generating Station can start quickly and will run in times of peak demand or when there is reduced renewable output, the added natural gas generation would not impact SRP's ability to meet its sustainability goals, the utility noted.

SRP has committed to reducing carbon intensity by more than 65 percent in 2035 and by 90 percent in 2050 from 2005 levels. SRP's sustainability commitments also include **an increased pledge** to add 2,025 MW of utility-scale solar energy by 2025. In addition, SRP plans to add 1,600 megawatt-hours of battery storage by 2023.

Water Funds Attract \$35 Billion As Drought Drains Reservoirs. A New Report Asks If They Are Worth It

Last Updated: Aug. 28, 2021

As extreme drought and water shortages plague the U.S. West and beyond, water funds have attracted about \$35 billion of assets under management, according to a new Morningstar report. The trend comes as much of California faces voluntary water rationing this summer as drought parches the land, forces some farmers to destroy crops and drains reservoirs. This month, the U.S. also declared the first-ever water shortage for the Colorado River, a key supplier of water and hydropower to households and farms in seven U.S. states and Mexico.

CAISO forced to curtail 15% of California utility-scale solar in March

Rod Walton 8.25.2021

Last year California's solar power generation produced more electricity than customers needed.

A new report by U.S. Energy Information Administration (EIA) indicated that the California Independent System Operator (CAISO) curtailed about 1.5 million MWh of utility-scale solar power in 2020. That net generation represents about 5 percent of the utility-scale solar produced in the state. CAISO curtailed an average 15 percent of its utility-scale solar output system-wide, the EIA report reads.

California is, by far, the biggest solar power generator in the U.S. To reach its 2025 goal of 50-percent renewable generation, CAISO plans to add another 1.6-GW of utility-scale solar and 400 MW of onshore wind turbine capacity this year, according to reports.

A buildup of future energy storage capacity can help avoid future higher levels of solar curtailment. California is commissioning several major utility-scale battery projects this year and plans to add 2.5 GW for 2021 within CAISO, the report shows.

The system operators' Energy Imbalance Market also offers a real-time market for participants outside of CAISO to buy and sell energy balance demand and supply. Last year, EIM trades helped avoid 16 percent of total possible curtailments, according to the EIA.

Study Finds Hydrogen Peakers Beat Batteries, But Not Gas Peakers

September 3, 2021 Peter Maloney

Hydrogen fuel could be a more economical solution to the intermittency of renewable energy resources than lithium-ion batteries, but it is not an economic match to natural gas-fired peaking plants at current market prices, according to a new report from researchers at the MIT Energy Initiative (MITEI).

While there has been a rapid rise in the deployment of lithium-ion batteries to aid in the integration of intermittent resources such as wind and solar power, batteries are sized to produce power for hours at a time and are best used to address daily imbalances between electric supply and demand.

They found that the LCOE associated with meeting seasonal energy imbalances is \$2,400 per megawatt hour (MWh) using a hydrogen-fired gas turbine and \$3,000/MWh using a lithium-ion battery system. If a gas turbine is fired with "blue" hydrogen, that is, hydrogen produced by reforming natural gas, the average LCOE decreases to \$1,560/MWh. On average, reforming hydrogen rather than electrolytic hydrogen turned out to be the cheapest option for replacing peaking plants, the report found.

Nonetheless, "the power prices required to justify investment in an HFGT to replace a natural gas-fired gas turbine are considerably higher than those seen in the market today," the authors said.

The study also looked at the economics of retrofitting natural gas plants to burn hydrogen, as opposed to building entirely new facilities, and found the price for converting a fossil fuel plant to burn

hydrogen is high and such conversions likely would not take place until more sectors of the economy embrace hydrogen, either as a transportation fuel or for varied manufacturing and industrial purposes.

Tri-State Asks FERC To Approve 'Transparent and Simpler' Contract Termination Approach For Members

Published June 18, 2021 Catherine Morehouse

UPDATE: Sept. 3, 2021: Tri-State said on Thursday that it has filed revisions to its contract termination payment tariff with the Federal Energy Regulatory Commission. The changes are intended to make the methodology for computing member exit fees "more transparent and simpler," the company said.

Tri-State said the modified calculation will be made by comparing projected revenues the withdrawing member agreed to pay, with other revenues the generation and transmission provider expects to receive from offsetting power sales, transmission revenues, and the return of the net present value of the member's patronage capital balance.

The proposed modified methodology, which must be approved by FERC, "is a starting point to allow Tri-State members to work together towards an agreement that is both fair and equitable," Jeff Wadsworth, CEO of Tri-State member Poudre Valley Rural Electric Association, said in a statement.

Dive Brief:

- The Federal Energy Regulatory Commission on Thursday determined that Tri-State Generation and Transmission Association's tariff is unjust and unreasonable, based on the hurdles members face in considering whether to exit the G&T provider.
- Specifically, the commission's preliminary findings revealed that the G&T's tariff makes it difficult for members considering whether to exit Tri-State's service to determine how much terminating the contract will cost. "It is basically impossible for Tri-State's members to make a reasoned assessment as to whether to terminate their membership in Tri-State," said Commissioner Allison Clements during Thursday's open meeting.
- FERC's preliminary findings follow February complaints filed with the commission from seven Tri-State members, saying that the G&T has yet to calculate for its members what the cost of exiting its service would be. The complaint is still pending before federal regulators.

Dive Insight:

FERC's order on Thursday is the result of years of back and forth between Tri-State and its members. At least seven rural cooperatives are considering leaving the service of Tri-State, citing high costs in part due to a fossil-fuel dominant power mix, albeit one that Tri-State is working to change.

Tri-State last January proposed a strategy to move its members toward a cheaper, cleaner power mix by shuttering some of its coal-fired power plants and replacing the power with renewable energy resources, but members were still concerned about high prices.

Tri-State, which came under FERC jurisdiction in 2019, filed a rate schedule with the commission by which member exit fees could be calculated last April. But it has yet to give any of its members an exit price, despite members requesting such a calculation since November.

FERC's Thursday order acknowledges this history, and further finds the G&T's tariff and bylaws are unjust and unreasonable in that they do not give its members a clear and transparent way to determine the cost of exiting its service. Because such a calculation relies on proprietary information, and Tri-State hasn't provided any of its members with a calculation, those cooperatives have no way to determine what the financial impact of their exit will be, FERC found.

California Battery Plan Exposes Grid Threat

By Miranda Willson *09/09/2021*

California's top energy regulators established an expedited process yesterday for approving new battery storage projects to help the state meet its climate goals and battle energy shortages driven by extreme weather events.

The plan unanimously approved by the California Energy Commission allows the panel to sign off on certain new and expanded battery storage systems within approximately 1 ½ months of receiving an application. It reflects the seriousness of the state's intent to rapidly ramp up its energy storage capacity, said V. John White, executive director of the California-based Center for Energy Efficiency and Renewable Technologies.

With the state facing a shortfall of about 3,500 megawatts of energy in 2021, Gov. Gavin Newsom (D) issued an emergency proclamation on July 31 that suspends some permitting and environmental requirements for energy production facilities and directs state agencies to take steps to increase capacity.

As such, under the energy commission order yesterday, the agency may now authorize battery storage projects "in lieu" of other approvals that would normally be required as well. These include local permits and extensive reviews for projects under the California Environmental Quality Act.

The fast-tracked process applies to utility-scale batteries that would provide at least 20 MW of power to the grid, could discharge that power for at least two hours and would deliver the energy during hours when electricity demand is highest by Oct. 31 of next year, according to the order.

About 500 MW of battery storage is expected to come online in California's power grid by the end of the year, said Anne Gonzales, a senior public information officer at CAISO. There are currently about 1,500 MW of battery storage in the system, according to Gonzales.

However, a similar expedited process for gas generators is angering environmentalists who say the state should instead be building more renewable energy sources.

Under that plan approved last month, the energy commission fast-tracked new emergency and temporary natural gas power generators of 10 MW or more to help meet peak demand this fall. Issued Aug. 17, that order also came in response to Newsom's emergency proclamation, but the expedited approval process only applies to proposed new gas generators that would be built at "previously disturbed" locations.

Transmission Costs 'Killing' Renewables — Report

By David Iaconangelo *09/10/2021*

Federal rules are unfairly hitting renewable developers with the costs of associated grid upgrades, according to a new report backed by clean energy advocates.

Commissioned by the American Council on Renewable Energy (ACORE), the Macro Grid Initiative and the American Clean Power Association (ACP), the report released yesterday was written by consultants at ICF Resources, who examined how 12 transmission upgrades paid for by wind and solar companies affected the wider grids of the Midwest and Great Plains.

They found that 10 of the 12 upgrades, which were undertaken to accommodate large volumes of renewable power, saved electricity consumers money. The most substantial savings ranged from \$59 million to \$335 million for six of the upgrades.

The clean energy trade groups that backed the study — and other advocates of renewables — say the findings show that regional grid rules are often stacked against wind and solar companies, which are saddled with the costs of building out transmission lines that end up being used by everyone else.

Grid operators need to make changes to their planning that could help shift costs off renewable developers and onto a wider range of beneficiaries, argued Wetstone and other advocates.

FERC officials have signaled they're ready to tackle the issue. In July, the agency gave advance notice of a proposed rulemaking for how cost allocation and interconnection and transmission planning could be reformed.

The debate on transmission costs centers on accommodating an influx of renewables, which dominate interconnection queues all over the country. Almost 700 gigawatts of the 750 GW waiting to connect is renewables, according to Lawrence Berkeley National Laboratory.

In a July joint statement accompanying the rulemaking's advanced notice, Glick and fellow Commissioner Allison Clements expressed concern that regional grid planning was currently discouraging new transmission from emerging, distributing costs improperly and failing to protect consumers.

Tesla Applies To Be A Retail Electric Provider In Texas

September 11, 2021 Peter Maloney

Tesla could begin operating as a retail electricity provider (REP) in Texas as soon as Nov. 15 under a recently filed application with the Public Utility Commission of Texas (PUCT).

The filing specifies that Tesla Energy Ventures is seeking REP certification to operate in the Electric Reliability Council of Texas (ERCOT) area and not all of Texas. The filing also noted the applicant intends to use shareholder equity and letters of credit to meet the access to capital requirements for retail electric providers.

In the application, Tesla said its customer acquisition strategy would “target its existing customers that own Tesla products and market the retail offer to customers through the mobile application and Tesla website.

Scheduling of energy delivery will be managed by ENGIE Energy Marketing NA, while energy forecasting would be managed by Tesla Energy Ventures, which said it plans to “leverage forecasting tools, capabilities, and knowledge already in place to support its utility-scale battery storage system in ERCOT as well as its retail offerings and virtual power plant programs operating today in places ranging from Australia, California, Vermont, Germany, and the United Kingdom.”

Tax Hike Seen Luring Banks Back to Munis After Trump-Era Exodus

By Michelle Kaske September 16, 2021

The Democrats' push to raise the corporate income tax will likely drive banks and insurers to step up their purchases of municipal bonds, a haven for tax-averse investors.

House Democrats are looking to increase the top corporate rate to 26.5% from 21% to help finance President Joe Biden's \$3.5 trillion economic plan.

That could spark demand for state and local government debt from financial firms seeking to ease their tax burden. Banks, property and casualty insurers and life insurance providers are active investors in the \$4 trillion municipal-bond market, collectively holding a combined \$1 trillion of the securities as of March 31, according to Federal Reserve data.

There's A 1-In-3 Chance Lake Powell Won't Be Able To Generate Hydropower In 2023 Due To Drought Conditions, New Study Says

By Drew Kann, CNN Updated September 23, 2021

(CNN)The falling water levels at Lake Powell, the second-largest man-made reservoir in the US, could make the dam's hydroelectric power generation impossible as soon as next year, according

The new modeling shows a 3% chance that Lake Powell, which is located on the Colorado River from northern Arizona to southern Utah, could drop below the minimum level needed to allow the lake's Glen Canyon Dam to generate hydroelectricity next year.

In 2023, the chance of a shutdown grows to 34%, according to the projection.

When running at full capacity, the dam produces power that is distributed to some 5.8 million homes and businesses spanning from Nebraska to Nevada.

In late July, Lake Powell had fallen to roughly 3,554 feet in elevation — just 33% of capacity — according to the US Bureau of Reclamation, below the previous all-time low set in 2005.

The projections for water levels in Lake Mead, which provides water to 25 million people in the West, are also bleak as climate change, drought and poor runoff continue to sap the river's supply.

In 2025, the updated projections now show a 66% chance that Lake Mead could drop below the critical threshold of 1,025 feet above sea level. If water levels stay below that threshold, it would trigger deep water cuts, potentially affecting millions of people in California, Arizona, Nevada and Mexico.

There is also a greater than 1-in-5 chance that water levels in Lake Mead will fall below 1,000 feet above sea level in 2025. That is barely 100 feet above what is considered "dead pool," the level at which water can no longer flow through Hoover Dam.

As drought conditions cause water levels to drop, billions of kilowatt hours of hydroelectricity that power homes from Nebraska to Arizona are also at risk.

RFP Seeks Partner To Develop Large-Scale Pumped Storage Project In California

September 26, 2021

Paul Ciampoli

The San Diego County Water Authority this month issued a request for proposals seeking a full-service private partner capable of developing a large-scale pumped energy storage project planned jointly by the Water Authority and the City of San Diego.

In July 2021, the San Vicente Energy Storage Facility **received \$18 million** in the state budget signed by California Gov. Gavin Newsom, enough to advance the project through initial design, environmental reviews, and the federal licensing process.

The project could store 4,000 megawatt-hours per day of energy (500 megawatts of capacity for eight hours).

The potential project would create a small upper reservoir above the San Vicente Reservoir, along with a tunnel system and an underground powerhouse to connect the two reservoirs. The powerhouse would contain four reversible pump turbines.

During off-peak periods, turbines would pump water to the upper reservoir where it would act as a battery of stored potential energy. During high energy use, the system would discharge energy as water from the upper reservoir flows downhill through the turbines. The exchange between the two reservoirs would not consume water and is closed-loop.

Salt River Project Unveils Plans For 400-MW Solar Plant

September 28, 2021 *Peter Maloney*

Arizona public power utility Salt River Project (SRP) has announced its largest standalone solar power project to date, a 400-megawatt (MW) facility scheduled to enter operation in 2024.

The CO Bar Solar project is sited on private land in Coconino County, Ariz. Clenara, a subsidiary of Enlight Renewable Energy, is contracted to build and operate the new solar plant. Construction is expected to begin in 2023 and to generate about 550 jobs, many of them local.

The project is the latest in a string of recent announcements aimed at supporting the public power utility's long-term decarbonization goals.

In May, SRP **said it would more than double** its 2025 utility-scale solar commitment, raising the goal to 2,025 MW of utility-scale solar power that would be online by the end of fiscal year 2025.

In August, SRP **announced three new solar energy plants** capable of generating a total of 500 MW. The three projects include two 200-MW solar plants and a 100-MW solar facility. The first project is due online in fall 2022 and the other two will begin construction in 2022. Facebook has agreed to take 450 MW of the output of the projects.

With its commitment to add 2,025 MW of utility-scale solar resources by 2025 and its recent announcement of new solar projects, SRP anticipates that nearly 50 percent of the retail energy it delivers to customers will come from carbon-free resources by 2025, contributing to the utility's goals to reduce carbon intensity by 65 percent in 2035 and by 90 percent in 2050 from 2005 levels.

SRP is also exploring the use of energy storage to help integrate intermittent solar resources into its grid with the recent announcement of a 25 MW **battery storage facility at its Bolster substation** as well as deals for solar-and-storage facilities scheduled to come online in June 2023.

Could LA Water Recycling Be A Miracle for Parched West?

By Jeremy P. Jacobs 09/27/2021

With severe drought strangling the West, the country's largest water provider has embarked on a multibillion-dollar project that could help them cope with increasingly frequent shortages exacerbated by climate change.

The Metropolitan Water District of Southern California wants to recycle Los Angeles' wastewater, creating a new supply stream that would significantly reduce the city's reliance on imported water from Northern California and the Colorado River.

It would mark a new paradigm in Western water infrastructure. Instead of the dam-building and constructing massive pipelines and aqueducts to connect far-flung rivers to cities, Metropolitan's proposal focuses on producing "new" water locally. And it seeks to utilize what has historically been wasted; Los Angeles' wastewater is currently treated and discharged into the Pacific Ocean.

Fully built, the Regional Recycled Water Program would produce up to 150 million gallons a day — enough water to supply 500,000 homes.

It isn't cheap. Metropolitan estimates that it would cost at least \$3.4 billion to build.

But other states, seeing the potential benefits of the project in reducing California's reliance on the Colorado River, are chipping in.

Nevada has inked a deal to help fund the exploratory phases. In return, if the project is built, it would get to take some of the water allocated to California that it doesn't need out of Lake Mead, the lower basin's main reservoir.

Arizona is in the process of finalizing a nearly identical deal.

Solutions are needed as the water situation up and down the Colorado River continues to deteriorate due to climate change and a two-decade-long megadrought that some scientists are now saying may be a new, drier normal.

Huffman is a co-sponsor of legislation, H.R. 4099, that would create a new \$750 million federal grant program for large-scale wastewater recycling programs like Metropolitan's.

The ambition and scale of the Los Angeles project is partly the result of Metropolitan's size. No other utility has the resources and capacity to take on such a massive project.

The utility is partnering the Los Angeles County Sanitation Districts, which treats the city's wastewater. Their plant in Carson, Calif., one of the largest in the country, produces the country's biggest discharge of treated wastewater into the Pacific Ocean.

Metropolitan would turn that facility into an advanced treatment facility that it would own and operate, said Mickey Chaudhuri, Metropolitan's assistant chief of operations. It would use a three-step filtration process, including reverse osmosis and ultraviolet light to clean the water, then shuttle it using an extensive conveyance system through Southern California's urban areas.

Currently, Metropolitan is planning for "indirect potable reuse," meaning the water from the Carson facility would be funneled underground into aquifers or into reservoirs before it is later taken out, treated again and added to the drinking water supply.

In total, Metropolitan estimates that all of the California projects would cost \$15 billion.

Metropolitan's would be among the largest ever built. The current plan would generate 168,000 acre-feet per year. The water would cost about \$1,800 per acre-foot, Chaudhuri said, and the extra cost would be spread over the rates of all of the retail water agencies Metropolitan sells water to. That's more than current imported water costs Metropolitan — about \$1,000 per acre-foot — but cheaper than desalination, which is about \$2,300 per acre-foot.

Metropolitan has already opened a \$17 million demonstration facility for the technology.

NHA Report Identifies Challenges to Realizing Pumped Storage's Potential

October 5, 2021 Peter Maloney

A new report from the National Hydropower Association (NHA) provides recommendations for policymakers and other stakeholders aimed at raising the profile of pumped storage hydropower (PSH) and making the technology better able to support the growing level of intermittent renewable resources coming on to the grid.

The **2021 Pumped Storage Report** notes that pumped storage provides 94 percent of the bulk energy storage in the United States, but the last PSH project – a 40 megawatt (MW) plant in California – was commissioned in 2012.

A total of 1.8 gigawatts (GW) of PSH projects have received permitting authorizations, and over 50 GW of PSH have been issued preliminary permits or in the process of receiving permits, but no new projects have yet to begin construction.

The report also noted that pumped storage hydropower is nearly two to three times less expensive than lithium-ion batteries on a per kilowatt hour (kWh) basis and PSH's annual operations and maintenance costs at \$20 per kilowatt hour year are three times lower than batteries.

The NHA report recommends that:

- Congress should create a stand-alone Investment Tax Credit (ITC) for all storage technologies, to ensure that PSH can compete with other storage resources on a level economic playing field.
- States need to send a market signal that long duration storage will be needed to meet aggressive climate goals, and state legislatures should adopt robust long duration storage targets with long lead times to ensure that the demand is met and that all technologies have a chance to compete.
- In regional markets, the Federal Energy Regulatory Commission (FERC) should ensure there are sufficient compensation mechanisms for frequency response, inertia, flexible ramping, condensing, voltage control and black start and other services provided by PSH. In addition,

some remuneration should be provided to those technologies like PSH that can provide broader system benefits that are hard to quantify and measure.

- Utilities should work with the Department of Energy, PSH developers and the national laboratories to ensure that the full benefits of PSH, including the full range of services provided by advanced turbine technologies, are accurately modeled in integrated resource plans.
- FERC and other stakeholders should work to reform the licensing process, including allowing projects with minimal environmental impacts to be expedited.

With the potential for 50 GW of pumped storage, “now is the time to develop new long-duration energy storage resources to enable a reliable, clean energy grid, the NHA report said.

Transmission capacity rights exchange: CAP and SRP agree to multi-year transmission capacity swap
by Nick Walter October 4, 2021

A trade doesn't always involve pro athletes, automobiles, or even side orders of food.

Occasionally, it's comprised of massive amounts of electrical transmission capacity from one switchyard to another.

After more than a year of discussions, Central Arizona Project (CAP) and Salt River Project (SRP) – two primary water providers for Arizonans — have agreed to a non-financial, 3-year agreement from 2021-23 to meet both CAP and SRP's transmission capacity needs and help afford water users reliable and stable rates.

The agreement: digging into details

The CAP system requires the most energy to pump water from the Colorado River through the Mark Wilmer Pumping Plant during months that are typically lower in energy prices compared to the summer months of July and August, which are high demand for residential users. This ability to “shape” our pumping load means that additional transmission capacity during these months are paramount.

Here are some details of this “transmission swap”:

- **CAP to SRP.** During July and August, CAP has excess transmission capacity at its Palo Verde switchyard when its power purchasing needs are lowest due to its summer west plant maintenance outages. So under this agreement, during these months when SRP's energy demand is peaking, SRP has accepted the CAP transmission capacity rights of 100 megawatts (MW) on the path from the Palo Verde 500 kV switchyard to the Morgan kV switchyard during on-peak hours.
- **SRP to CAP.** CAP's transmission capacity needs are greater when power prices are significantly lower during off-peak hours, and “shoulder months” when temperatures outside are between a comfortable 45- to 65-degrees Fahrenheit. The agreement gives CAP the use of 125 MW of SRP transmission capacity on the path from the Palo Verde switchyard to the Westwing 500 kV switchyard (March-May and October-November) and 75 MW of SRP transmission capacity on the same path during February and December.

Keeping the lights on as we transition to a clean energy future – lessons from California

Washington Public Utility Districts Association October 7, 2021

Recently, the state of California took the extraordinary step of walking back its clean energy laws and federal environmental regulations as the state's electricity needs threatened to exceed available energy. Without this quick action, Californians faced brownouts. Overreliance on wind and solar failed in California, increasing carbon emissions as the state now has to temporarily operate carbon-emitting gas and diesel generators to support the grid.

This is not just a California issue; we have already had near misses in Washington. During the heatwave this past summer, the region's largest federal energy supplier, the Bonneville Power Administration, urged electricity consumers in Eastern Washington to conserve energy to avoid brownouts. While the lower Snake River dams saved the day, running at full capacity to provide hydropower, the incident was a shot across the bow – a California-esque warning that if we aren't smart with our transition to a clean energy future, we will be left in the dark, literally.

Washington's recently updated State Energy Strategy outlines ambitious goals to use the state's clean energy to electrify other sectors of our economy to reduce carbon emissions, namely transportation and buildings. This will significantly increase electricity demand. The strategy states, "The modeling suggests that electricity demand in Washington could grow by 13-20% over 2020 levels by 2030. Electricity demand then accelerates and by 2050 is up to 92% above the 2020 level." At the same time demand is projected to increase, Washington utilities are mandated under the state's clean energy laws to eliminate carbon-emitting energy resources such as coal and natural gas. In addition, there are calls to remove dams that generate carbon-free electricity and are critical to integrating intermittent energy resources such as wind and solar that only produce electricity when the wind is blowing and the sun is shining.

As we make this transition to our clean energy future, we must prioritize the reliability of the electric grid and the affordability of this essential service. Energy policies, regulations, and rules that seek to overturn the laws of physics will fail us. Such policies have already failed California. We must ensure our electricity resources and grid are not just clean but also reliable and affordable. Remove one leg of the three-legged stool and our clean energy future collapses.

Striving for cleaner sources of energy is a laudable goal. Renewable energy is one way to get there, including hydropower, which is not only clean and renewable, but is available 24 hours a day, unlike solar and wind generation. Nuclear energy is also a non-emitting generating resource and is also available 24 hours a day.

We must consider cleaner, more efficient natural gas generation as well. We should do everything we can, with attention to reliability and affordability, to bring resources online that can power our economy, generate less carbon and not be a financial burden to our citizens and communities.

We can achieve our goals; a clean energy future with high reliability and low costs. We will fail, however, if we don't fully understand the ramifications of our policy decisions today. We must prioritize reliability and affordability along with decarbonization. We must learn from California to avoid becoming California.

*George Caan, Executive Director
Washington Public Utility Districts Association*

*Kent Lopez, Executive Director
Washington Rural Electric Cooperative Association*

Diesel-Fueled Generators Grow 22 Percent in California Since 2020

Rod Walton 10.7.2021

The state of California, which is trying to eliminate carbon emissions in its power sector but had to allow new gas-fired generation to make up for weather impacts on the grid this summer, is also seeing a proliferation of backup diesel-fueled generators, according to a new report.

Research by consulting group M.Cubed indicates that the generator population in the Golden State climbed by double-digit percentage points in the past year. Two air quality districts, the South Coast and Bay Area, collectively are home to more than 23,000 backup generators.

Combined those on-site gen-sets account for 12.2 GW of electricity capacity, close to 15 percent of California's entire grid, according to the M.Cubed analysis. Of that total gen-set population, more than 20,000 are diesel-fueled.

The backup generator count rose 34 percent in the Bay Area Air Quality Management District alone in the past three years, according to M.Cubed.

Many businesses and mission critical services such as hospitals and military bases are bolstering their backup plans with microgrids which include solar and storage combinations. A large part of those microgrids also include a gen-set, fired by natural gas or diesel, to deploy when circumstances require it.

State and local leaders know all this and are, of course, concerned deeply about the emissions impact. At the same time, the state's energy commission allowed four gas-fired engine gen-sets to be brought in to provide resiliency to the grid in the midst of wildfires and lowered hydropower production due to drought conditions.

“We have long been concerned about the proliferation of diesel backup generators here in the Bay Area, as highlighted in this report,” said Jack Broadbent, executive officer of the Bay Area Air Quality Management District. “Emissions from these backup generators can harm local residents, regional air quality and the global climate. This is particularly true in communities already overburdened by air pollution and the Air District is actively pursuing regulations to curb this pollution.”

However, backup generators provide Californians with energy security as they deal with a myriad of weather and grid events. The state is seeking a goal of 100-percent clean energy power by 2045, but must deal with the challenges facing its journey to net-zero carbon emissions.

Four gas-fired flexible gen-sets approved to help California through a brutal summer are still online and available to support the state's grid, according to the latest Department of Water Resources statement.

Two units each have been temporarily installed at two sites in Northern California: Greenleaf Unit 1, operated by Calpine in Yuba City, and the Roseville Energy Park, operated by Roseville Electric. Each unit can produce up to 30 MW of power, totaling 60 MW of power at each site. The units run on natural gas but can run on a blend of up to 75 percent hydrogen.