



JULY 2022



WATER & POWER ASSOCIATES, INC.

NEWSLETTER

For a Sustainable Los Angeles



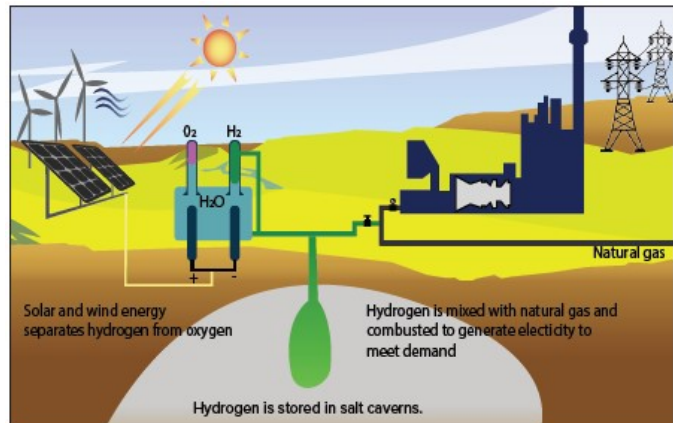
Update on IPP Renewed

By Bill Engels

As last reported in the October 2021 Water & Power Associates Newsletter, the Intermountain Generating Station (aka the Intermountain Power Project (IPP)), the coal-burning generating station located in west central Utah, which has been the electric generating backbone of the LADWP Power System for more than 35 years, is being converted to burn natural gas and renewable energy-derived green hydrogen fuel starting in 2025.

That major effort recently got a giant boost in the form of a \$504.4 million loan to two of the project participants from the U.S. Department of Energy’s Loan Programs Office.

Known as “IPP Renewed”, the conversion effort is planned to include retiring the existing twin 900 Megawatt coal-fueled power generating units; installing new twin 420 Megawatt natural gas-fueled generating units capable of utilizing hydrogen for a total of 840 MW net generation output; modernizing IPP’s Southern Transmission System linking IPP to Southern California; and developing green hydrogen production and long-term storage capabilities. The plant will initially run on a blend of 30% green hydrogen and 70% natural gas starting in 2025 and incrementally expand to 100% green hydrogen by 2045.



(Courtesy: utahfoundation.org)

Facilities adjacent to IPP will produce up to 100 metric tons per day of green hydrogen from regional renewable energy using electrolysis, making it the world’s largest industrial green hydrogen project. The green hydrogen can then be stored in two massive salt caverns, each capable of storing 150 gigawatt hours of energy, resulting in also the world’s single largest hydrogen storage site and providing capabilities for seasonal shifting of excess renewable energy. The long-duration energy storage capability of the salt caverns will help improve resource adequacy and decrease costs by capturing excess renewable power when it is abundant and dispatching it back on the grid when it is needed.

Those adjacent green hydrogen facilities are a joint project of Mitsubishi Power Americas and Magnum Development, known as Advanced Clean Energy Storage 1, LLC, ACES 1 for short.

(Continued on page 3)

Editor's Column

The Water & Power Associates exists to support sound Water and Energy Policies for Los Angeles, Southern California and the State. In keeping with this purpose we are seeking to take a more active role dealing with policy issues.

We have authored a letter to Governor Gavin Newsom, highlighting our concerns over the lack of water supply reliability due to the inability of the State Water Project to deliver the supply that was initially promised. We have also pointed out the impacts of "Climate Change" on the supply, and the steps Southern California has taken to reduce the impact of the shortfall.

We call upon him to act and move the stalled Delta Tunnel Project forward and accelerate the planning, environmental review, and the engineering process. The state's current \$100 billion surplus provides an opportunity to move these processes forward now. If this is not done, we are concerned that it will lead to the largest economic and social calamity in California's history.



Read the letter on page 4 of this newsletter.

We have taken a position supporting the Long Term Strategic Resource Plan, being developed by the Department. In a letter to the DWP Commission, we urge the Department to carefully analyze the long term rate impacts associated with the plan and present that information in a clearly understandable format to the ratepayers. We also request these impacts be reviewed regularly as the implementation goes forward and the results be shared with the ratepayers.

Read the letter on page 8 of this newsletter.

We are also developing a social media presence. Follow the Water and Power Associates on Facebook! The W&PA now has a social media presence to extend our education and policy objectives. Visit our page to see the latest industry issues, tips on conservation, and links to research, commerce, policy and opinions in the water and energy communities. Spread the word by inviting your social media friends. Please bring your own interests and "likes" to the page by posting on-topic comments and discussions. Watch for new connections coming in the future.

<https://www.facebook.com/groups/1182859552457256>

SHARE THE NEWS -

Do you find the information in this newsletter helpful? If so, forward the following link to a friend or colleague who would also benefit from it, so they can get their own copy.

<https://waterandpower.org/newsletters.html>

Jerry Gewe, Editor



OFFICERS

Jerry Gewe
President

Vacant
1st Vice President

Jim McDaniel
2nd Vice President

Robert Yoshimura
Secretary

David Oliphant
Assistant Secretary

Bill Engels
Treasurer/Membership

Phyllis Currie
Assistant Treasurer

Jack Feldman
Webmaster

Jerry Gewe
Newsletter Editor and
Historical Preservation

William Glauz
Assistant Newsletter Editor

BOARD OF DIRECTORS

William Barlak
John Dennis
Rod Fishburn
Dorothy Fuller
Duane Georgeson
George Higgins
Walter Hoyer
Larry Kerrigan
Alice Lipscomb
Scott Munson
Susan Rowghani
Don Sievertson
Julie Spacht
Bill Woodson
Walter Ziesl

Update on IPP Renewed (Continued from Page 1)

In June of 2022, ACES 1 received a \$504.4 million loan guarantee from the DOE's Loan Programs Office, the first guarantee awarded to a clean energy project in nearly a decade, highlighting the Biden Administration and its Energy Department's commitment towards supporting the clean hydrogen sector. This loan helps generate a viable market for green hydrogen and will make it scalable in the western United States and its electrical grid, creating the fundamental infrastructure necessary to deploy this zero-carbon energy source.

The development and operation of the ACES 1 hub will help spur economic development locally by creating up to 400 local construction jobs throughout the three-year construction cycle, and it will employ a projected 25 full-time operations and maintenance personnel to provide 24/7 operations and maintenance of the facility. This is on top of the 120 local jobs projected to be necessary to continue to run the Intermountain Generating Station and its affiliated transmission facilities. Additionally, property tax revenue collected by host Millard County, Utah, will contribute to services that benefit all nearby Utahns, which typically includes law enforcement and emergency response, infrastructure, and other services.

Green hydrogen plays an important role in the Biden Administration's goal of reaching net-zero emissions by 2050. Green hydrogen produced using renewable energy and electrolysis currently represents only 5% of the hydrogen produced in the U.S., due to its high cost, while the remaining 95% is produced using fossil fuels.

DOE's National Energy Technology Laboratory determined that U.S. clean hydrogen production and use must increase 50-fold by 2050 in order to meet the country's decarbonization goals. The DOE report findings noted while many opportunities exist for hydrogen's growth, government leadership would be critical in achieving decarbonization goals. This would include tax credits and incentives, research, development and demonstration funding, all in the name of reducing the cost of green hydrogen production from the current \$5 per kilogram to \$1 by 2030.

For more information, visit <https://www.ipautah.com/ipp-renewed> and/or www.aces-deltacom



Water and Power Associates, Inc.

June 22, 2022

The Honorable Gavin Newsom
Governor of California
1021 O Street, Suite 9000
Sacramento, CA 95814

Subject: Urgency of Delta Fix in Face of Mega Drought

Dear Governor Newsom:

The dire water supply emergency resulting from the climate-change-induced twenty-two-year mega drought has severely reduced the availability of water from the State Water Project (SWP). Consequently, severe water use restrictions have been or will be implemented state-wide in response to the emergency affecting the largest stormwater collection/distribution system in California.

To add to the problem, in its most recent action, the U.S. Bureau of Reclamation announced that it will reduce outflows from Lake Powell on the Colorado River immediately to preserve that lake's capacity to produce hydroelectric power. Such an action will result in further cuts to water allocations for Arizona and Nevada next year and is likely to affect California when the water level in Lake Mead declines by two more feet. To date, California's priority rights to Colorado River water have forestalled the need for more drastic water use reductions, but that will change soon if conditions on the Colorado River do not improve.

The City of Los Angeles is also anticipating reductions in its primary water supply from the Owens Valley because of severe drought conditions on the eastern side of the Sierra Nevada. Because of the configuration of the water supply network, parts of the northwestern areas of the City can only be supplied from the State Water Project in the absence of sufficient water from the Owens Valley. Thus, the city may be forced to request water reserved for human health and safety considerations from the State which will reduce the emergency storage available for others.

Because the current water supply shortage is driven by climate change, it is unlikely to improve anytime soon. The most immediate and sustainable solution to these drought shortages is to **complete the final link of the State Water Project by constructing the planned Delta Water Tunnel project as soon as possible.** You acknowledged the need for such a project three years ago when you said in your State of the State Address:

Directors

Jerry Gewe
President

Rex Atwell
First Vice President

Jim McDaniel
Second Vice President

Robert Yoshimura
Secretary

David Oliphant
Asst. Secretary

Bill Engels
Treasurer/Membership

Phyllis Currie
Asst. Treasurer

Jerry Gewe
*Newsletter Editor and
Historical Preservation*

Bill Glauz
Assistant Newsletter Editor

Jack Feldman
Webmaster

Board Members

William Barlak

John Dennis

Rod Fishburn

Dorothy Fuller

Duane Georgeson

George Higgins

Walt Hoye

Larry Kerrigan

Alice Lipscomb

Scott Munson

Susan Rowghani

Don Sievertson

Julie Spacht

Bill Woodson

Walter Zeisl

“Our water supply is becoming less reliable because of climate change. And our population is growing because of a strong economy. That means a lot of demand on an unpredictable supply. The status quo is not an option.” Shortly after making that statement, you cancelled Governor Brown’s shovel-ready plan to complete the SWP.

The Delta tunnel is part of a broad strategy to assure a reliable supply of water to southern California including years of drought. As currently configured (the status quo), extraction of water from the Delta pumping stations must be curtailed periodically and in drought years to prevent flow reversals in some waterways which cause the endangered Delta Smelt to be pulled into the pumps or into the habitats of predatory species. Furthermore, a major earthquake would cause inundation of the Delta with seawater, which would subsequently disrupt water supply operations, possibly for many years.

The SWP was conceived in the 1950s and substantially completed in the early 1970s. Since then, it has been in continuous operation providing a major part of the water supply to southern California. However, since 2001, several years of severe drought have limited its operation and forced the region’s water utilities to take extraordinary measures to conserve available supplies at a significant cost to its water users. Conservation programs implemented in southern California have cut urban water use nearly in half, and two multi-billion dollar recycling programs are being planned for completion in 20 to 30 years that will ultimately reuse all wastewater in the region.

Since 2001, there have been seventeen years of below average rainfall in California, and only four years of normal or greater rainfall. Clearly, the consequences of climate change are taking a toll on California’s water supply. The need for a Delta tunnel project is now greater than it has ever been. During the drought years since 2001, the SWP has delivered less than half of the amount of water it was designed to carry. In 2014, the SWP delivered only 5 percent of the contracted amount of water to southern California. Last year it delivered 20 percent, and this year the current allocation is again only 5 percent.

Most of the capital cost of the SWP has been paid for by those who benefit from it, yet those benefits appear to be diminishing with each subsequent drought and its consequent environmental restrictions. Furthermore, the water rate payers of southern California continue to pay for the operating and maintenance costs of a **nearly empty aqueduct** in anticipation that one day their investment in the promised reliable water infrastructure will ultimately pay off. The current situation demands a higher priority on a Delta solution to forestall critical and ongoing water shortages in southern California.

The state’s current \$100 billion surplus provides an opportunity to fund an **acceleration** of the planning, environmental review, and engineering processes in order to move the stalled Delta Tunnel project forward. **Now is the time for you as governor of the largest state operating a very precarious water supply system to act! Failure to do so will likely lead to the largest economic and social calamity in California history... worse than any previous California drought or the Midwest “dust bowl”**

Sincerely,



Gerald A. Gewe,
President

Is Hydrogen the Miracle Fuel to Address Global Warming? (Part 3)

By William Glauz

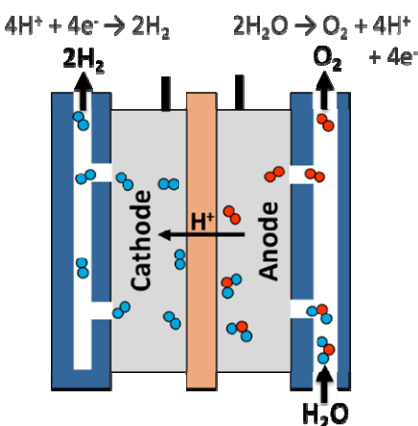
This third article in the hydrogen series will attempt to address the future vision for hydrogen production and use as a resource to reduce carbon emissions. The first two articles in this series from the January and April 2022 editions of the Water and Power Associates Newsletter addressed global warming, policies that are aimed at reducing carbon emissions, primarily in the transportation and electricity generation sectors, the concept of using hydrogen as an alternate fuel and the current uses and methods of production of hydrogen.

The vision for hydrogen as a “miracle fuel” is for it to be used to produce electrical energy for transportation or direct electricity use. Electricity can be produced using hydrogen by either burning it as a fuel in a combustion turbine, or running it through a fuel cell to generate electricity electrochemically. But the method of producing the hydrogen is important if the intent is to be zero carbon emissions.



As mentioned previously, the cleanest method of producing hydrogen, so called “Green Hydrogen”, is using renewable energy as the source of electricity in an electrolysis process. Electrolysis splits hydrogen from oxygen in water by transforming electrical energy into chemical energy. Currently, only about 1% of hydrogen production worldwide uses electrolysis, as it is expensive and not very efficient.

The device that performs the electrolysis is called an electrolyzer. Electrolyzers can range in size from small, appliance-size equipment that is well-suited for small-scale distributed hydrogen production to large-scale, central production facilities that could be tied directly to renewable or other non-greenhouse-gas-emitting forms of electricity production.



An electrolyzer consists of two electrodes, a cathode and an anode. The cathode is a negatively charged electrode, while the anode is positively charged. Both electrodes are separated by a membrane called an electrolyte and surrounded by water. There are different types of electrolyzers, and they function in slightly different ways because of the use of a different type of electrolyte material. Electrolyzers that run backwards are also known as fuel cells that use hydrogen and oxygen to generate electricity through the same electrochemical process. The most common types of electrolyzers and fuel cells are alkaline, proton exchange membrane (PEM) and solid oxide (SO).

Alkaline electrolyzers are currently the most cost effective and have been in operation the longest, but it is expected that PEM and SO technologies will ultimately be better and will see reduced costs in the near future. An alkaline electrolyzer currently costs between \$800 and \$1500/kW installed.

With current technology, the electrolysis process needs about 42kWh of electricity to produce 1kg of hydrogen. That 1kg of hydrogen has an energy content of about 33kWh. Using an alkaline electrolyzer today, with a renewable electricity cost assumption of 6 cents/kWh, hydrogen can be produced for an all-in cost of about \$5/kg. Industry experts feel that with the expansion of the use of electrolyzers for production of hydrogen and the continued cost reductions for renewable electricity to power the electrolyzer, the cost of green hydrogen could be reduced to about \$1/kg in the next few years.



Fukushima Hydrogen Energy Research Field (FH2R), Toshiba

If that 1kg of hydrogen can be used to generate electricity by burning it in a combustion turbine/combined cycle plant, it would produce about 17kWh, making the simple efficiency of the process about 40% (42kWh in for 17kWh out). If that same 1kg of hydrogen was used in a fuel cell it would produce slightly more energy as the fuel cell process, the reverse of electrolysis, is more efficient than a combustion process.

Then there is the question about how much water, and of what quality, is required to produce hydrogen. It takes about 9kg, or 2.4 gallons, of water to produce 1kg of hydrogen. This water also needs to be extremely pure, which may require a level of treatment. Sea water would require a significant amount of expensive treatment to be utilized. If we extrapolate this out to a utility scale use, the amount of water required would be about 1,400 acre feet per year to produce about 10% of LADWP's expected electricity production in 2040. This amount of water is less than 0.3% of LADWP's annual water sales.

At today's cost of producing green hydrogen at \$5/kg, the simple fuel component of electricity production from hydrogen would be about 30 cents/kWh. Reducing hydrogen production costs to \$1/kg would bring fuel costs down to about 6 cents/kWh. Hydrogen costs of \$1/kg would be equivalent to natural gas priced at about \$8/mmBTU, which is still relatively high.

The last article in this hydrogen series will look into the costs and issues associated with delivery and storage of hydrogen, equipment modifications needed to utilize hydrogen with combustion turbines/engines, and also address safety concerns with using hydrogen on a large scale.

Water and Power Associates, Inc.

June 20, 2022

Board of Commissioners,
Los Angeles Department of Water & Power
PO Box 51111
Los Angeles, CA 90051-0100

Ratepayer Impacts of LA100 Proposal

Dear Board Members,

The Water and Power Associates (WPA) appreciates the opportunity to comment on the potential ratepayer impacts of implementing LA100 through the 2022 Strategic Long-Term Resource Plan. WPA is a 501(c)(4) nonprofit corporation, established to support sound water and energy policy in Los Angeles, Southern California, and the State. WPA supports the goals of LA100, showing leadership in reducing carbon emissions while continuing to supply a reliable and affordable source of electricity for the City of Los Angeles. Additionally, we understand how difficult it is to project rate impacts of future electric utility planning, particularly with such significant changes expected in the development and operation of LA's power system over the next decade or two.

WPA believes it is very important to provide an accurate estimate of the cost implications of the LA100 program to its ratepayers. In the past, LADWP has been very transparent in presenting rate changes and associated bill impacts. For example, in the last major rate adjustment implemented on April 15, 2016, LADWP presented a proposal for water and electric rate increases over a five year period. This process included public workshops where proposed rate increases were presented for typical, low and high-use residential customers as well as small commercial customers (see the LADWP Proposed Rate Increase Chart below). The presentation then showed projected water and electric bill impacts for each of these four customer types at the end of the five years of rate increases. This was a very clear and useful way to present the financial impacts to the customer for future LADWP costs related to operations and changes required to these systems.

However, even though this 2016 process used excellent outreach, there was little public follow-up regarding LADWP's projections compared to the actual customer rates/bills throughout the 5 year period (ending April 14, 2021). This is where we feel LADWP needs to do a better job. For example, monthly residential electric bills over the 2016-2021 timeframe

Directors

Jerry Gewe

President

Rex Atwell

First Vice President

Jim McDaniel

Second Vice President

Robert Yoshimura

Secretary

David Oliphant

Asst. Secretary

Bill Engels

Treasurer/Membership

Phyllis Currie

Asst. Treasurer

Jerry Gewe

Newsletter Editor and

Historical Preservation

Bill Glauz

Assistant Newsletter Editor

Jack Feldman

Webmaster

Board Members

William Barlak

John Dennis

Rod Fishburn

Dorothy Fuller

Duane Georgeson

George Higgins

Walt Hoye

Larry Kerrigan

Alice Lipscomb

Scott Munson

Susan Rowghani

Don Sievertson

Julie Spacht

Bill Woodson

Walter Zeisl

were projected in 2016 to increase 2.1% to 3.9% per year for a typical and high-use residential customer respectively. However the actual monthly residential electric bill increased 5.1% to 6.7% per year for the same customers, assuming they were valley residents. For non-valley residential customers the bill increases were even greater. Similar differences were seen in the projected versus actual water bill increases. (Note: our analysis was done using actual customer billing rates and charges over the five year period.)

Calculating LADWP's billing rates is fairly complicated. For example, the standard residential electric rates have up to eight different components, plus a Power Access Charge. It is useful to publish the component costs to provide electric service including all projections and the approval process for each of the rate components. However, this information does complicate things for the typical ratepayer.

Therefore, based on the above information and for simplicity and transparency, we suggest that for all future rate increases a similar outreach process and chart as used in 2016 be continued but updated every two years with review by the Office of Public Accountability. This is particularly important as LADWP moves forward with any LA100 plan. This will assure full transparency so that all ratepayers will know the projected costs to them, including any future changes. Additionally, the rate chart developed for the LA100 timespan should include activity milestone dates so that ratepayers can see they are getting measurable progress for their increasing rates. Without this measurable component, any LA100 rate increase is simply an "open ended" rate increase with no perceived value to the customer. Finally, the developed rate chart for this time period should include all LADWP costs since most ratepayers want a simple process to explain their total current bill and any future changes to it.

Thank you for your consideration in this matter,

Sincerely,



Gerald A. Gewe, President
Water & Power Associates, Inc.

cc: Martin Adams
Dr. Fred Pickel

LADWP Handout for Proposed 5 Year Rate Increase, December 2015

	Low-Use Residential (250 kWh/Month 8 HCF/Month)	Typical Residential (500 kWh/Month 12 HCF/Month)	High-Use Residential (900 kWh/Month 27 HCF/Month)	Small Commercial (1,000kWh/Month 15 HCF/Month)
Current Monthly Bill	\$74.97	\$130.67	\$276.03	\$235.32
5-Year Avg. Annual Power Rate Change	\$1.05 (2.7%)	\$1.61 (2.1%)	\$6.05 (3.9%)	\$5.19 (3%)
5-Year Avg. Annual Water Rate Change	\$1.07 (2.6%)	\$3.02 (4.8%)	\$11.05 (7.2%)	\$3.01 (3.8%)
Average Monthly Bill Increase At the End of 5 Years	\$2.13 (2.69%)	\$4.63 (3.32%)	\$17.10 (5.54%)	\$8.21 (3.27%)
Average New Monthly Bill At the End of 5 Years	\$85.59	\$153.84	\$361.51	\$276.36

The 22-Year Mega Drought - How Bad Is It?

By Robert Yoshimura

By now everyone has read about or heard about the drought that spurred California's leaders to impose severe restrictions on water use throughout the state. Last summer (in the second year of the current drought), Governor Newsom called for a 15% voluntary reduction in water use. Since then, water use statewide *increased* by 17.6% and in the south coast hydrologic region including Los Angeles, it increased by 25.6% from April 2021 to April 2022. Part of that increase is the result of the driest winter in history leading to a need for more irrigation, and part of it is the result of residual suppressed water use in 2021 following successful conservation efforts during the last drought.

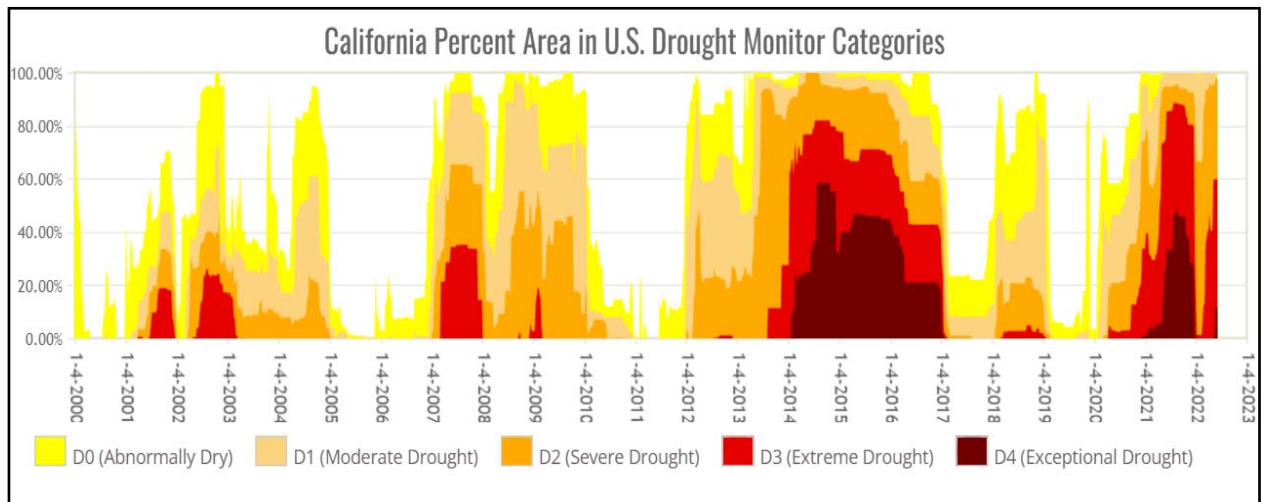


This year in March, Governor Newsom issued an executive order mandating the implementation of conservation measures for a level 2 drought (20% water shortage) and mandated water agencies to limit lawn irrigation to 3 days per week. The Metropolitan Water District (MWD) subsequently declared a water shortage emergency that requires member agencies dependent on State Project Water (SWP) to restrict lawn irrigation to *one day* per week. The City of Los Angeles has imposed a lawn irrigation limit of two days per week and imposed strict conservation measures intended to limit total water purchases from MWD to a specified budget amount.

In late May, the State Water Resources Control Board (SWRCB) voted unanimously to implement an outright ban on watering of non-functional (decorative) turf using potable water in the commercial, industrial, and institutional sectors, as well as regulations requiring local agencies to implement level 2 water use restrictions including a limitation on lawn irrigation of two days per week. The SWRCB has also authorized funding of emergency deliveries of water by truck to certain communities where water supplies have dried up.

The latest SWRCB action will affect ornamental lawns not used for recreation surrounding commercial buildings, business parks, warehouses, and government buildings. Residences, sports fields, parks and golf courses are not affected (yet), but the governor and some water agencies have warned that stricter measures will be implemented if the required level of conservation is not achieved this coming summer.

In the Colorado River basin, most of the watershed is in Extreme or Exceptional drought, the two most severe levels of drought identified by the National Integrated Drought Information Service (NIDIS). Last year, a Level 1 water shortage emergency was declared for the first time in history when the water level in Lake Mead dropped below 1,075 feet. That declaration has led to cuts in water allocations to Arizona, Nevada, and Mexico for the current year. Because of the driest conditions in history in January through March, the water level in Lake Mead has fallen an additional 21 feet since the start of 2022 and is currently at 1,045 feet. That level is the trigger point for a Level 2b shortage and is likely to result in cuts to California's allocation of water in 2023.



Late last year, following the water shortage emergency declaration, the Colorado River's lower basin agencies met and negotiated an agreement known as the 500+ Plan intended to increase Lake Mead storage by 500,000 acre-feet per year. The agreement requires urban conservation measures and fallowing of agricultural land to achieve the needed savings. Details of that agreement can be found in the January 2022 Newsletter in an article titled "Lower Basin States Sign Voluntary Agreement to Cut Water Deliveries from Colorado River". That agreement has not yet been fully implemented and the accelerated decline in reservoir storage continues, exacerbated by the exceptionally dry winter and because the Bureau of Reclamation halted outflows from Lake Powell upstream of Lake Mead to preserve the capacity to generate hydroelectric power at that location.

The twenty-two-year dry period that began in 2000 is the driest such period in 1,200 years according to Andrew Schwartz, Lead Scientist at Central Sierra Snow Laboratory at UC Berkeley. During that time span, four droughts have been recorded as shown in the NIDIS figure above.

Each of the first three droughts have been more severe than the previous one both in terms of duration and dryness. The third drought (2012 to 2019) was considered the longest and worst drought in the history of the state. The fourth (and current) drought has exceeded the severity of the last one by one measure (the percent of the state in extreme drought) and time will tell if other measures are exceeded as well.

During the twenty-two-year dry period, there have been eighteen years of below normal rainfall in California and only four years of normal or greater rainfall. In 2020, Bill Patzert, a former NASA climatologist characterized the previous twenty-one-year period as a single drought during which the average rainfall in Los Angeles has been 2-1/2 inches less than the long-term average. Since then, other scientists have begun calling the period a megadrought driven by climate change. If climate change is the primary driving factor, the outlook for water supplies in the future seems bleak until climate change is controlled.

SUSTAINABILITY BUZZ

Biden Administration Proposes Minimum Standards for National EV Charging Network

Excerpted from APPA, June 10, 2022, by William Glauz

<https://www.publicpower.org/periodical/article/biden-administration-proposes-minimum-standards-tied-national-ev-charging-network>

On June 9, 2022, the Federal Highway Administration announced a notice of proposed rulemaking for minimum standards for projects funded under the National Electric Vehicle Infrastructure (NEVI) formula program.

The minimum standards are intended to ensure a unified network of EV chargers with similar payment systems, pricing information, charging speeds, and more.



The news follows the announcement earlier this year of nearly \$5 billion that will be made available to states over the next five years under the new NEVI formula program, established by the infrastructure law, to build out a national EV charging network.

California Drought Could Severely Limit Hydropower This Summer

Excerpted from Power Magazine, June 2, 2022, by William Glauz

<https://www.powermag.com/california-drought-could-severely-limit-hydropower-this-summer/>



The Energy Information Administration’s (EIA) Short-Term Energy Outlook suggests that current drought conditions in California, forcing a major reduction in hydroelectric generation, could potentially “have a significant impact” on power markets throughout the West from June through September 2022. This impact “could be different than in past years, given the state’s accelerating growth in intermittent generating capacity and reliance on imports,” which accounted for nearly one-third of California’s power supply in 2020. Conditions this summer are especially precarious given that California has experienced more frequent and intense drought conditions over the past decade—and is currently grappling with a third continuous year of drought.

Hydroelectric generation in California is expected to be reduced from 15% of total generation to 8%. To offset the lost hydro generation, the EIA projects California will be forced to buy more power from neighboring markets and increase its in-state natural gas generation this summer. The drought scenario also suggests that the increased natural gas generation will contribute to higher wholesale energy prices and a surge in carbon dioxide emissions.

POWER BUZZ

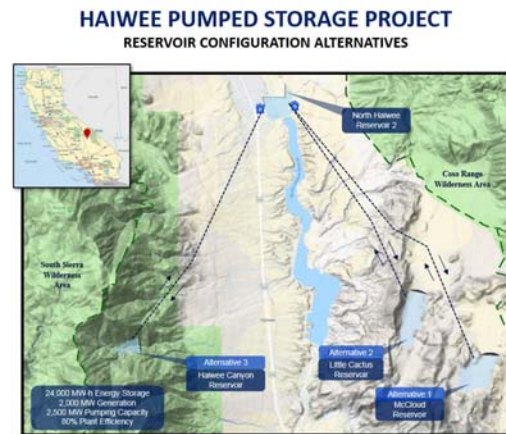
Proposed Haiwee Pumped Storage Project

Excerpts by Bill Woodson, from Premium Energy Holdings, LLC

<https://premiumenergyholdings.com/index.php/applications/haiwee-pumped-storage>

The proposed Haiwee Pumped Storage Project would be located 10 miles south of Olancho, California. The project envisions a facility with a capacity ranging from 1,600MW to 2,000MW. The project proposes the lower pool to be a new North Haiwee Reservoir 2, upstream of the existing North Haiwee Reservoir.

The proposed power plant would operate closed-loop. The project's operation would not alter the existing streams and it would not alter the operation of the existing Haiwee Reservoirs. The filling of the reservoirs would use water conveyed through the existing LA Aqueduct.



On March 19, 2020 FERC issued the preliminary permit for the project to Premium Energy Holdings, LLC (PEH). The permit preserves the right of first priority to apply for a license for the project under the Federal Power Act. This allows PEH to conduct investigations and secure necessary data to determine the feasibility of the project and to prepare a license application.

Panel OK's Surveys for Offshore Wind Energy Development

Excerpted by Bill Woodson from The San Luis Obispo Tribune, 6/10/2022

<https://www.sanluisobispo.com/news/local/environment/article262305472.html>

The California Coastal Commission is allowing the proposed Morro Bay wind energy development a path forward. They found that the survey activities are consistent with the California Coastal Act.

Site activities may include the placement of buoys with data collection equipment and 873 boat trips in the wind energy area over 3 years.



Offshore wind turbines. Photo courtesy NOAA

The vote signified a major step forward for the offshore wind energy development because the Coastal Commission is one of the only state agencies that has a say in activities that take place in federal waters—which begin three miles from shore and stretch out 200 miles.

The Commission's main concern was the potential effects the site assessment and eventual construction of wind turbines could have on wildlife in the area.

Florida Power & Light (FPL) 1260 MW Combined Cycle Gas Turbine Plant

Excerpted by Bill Woodson from Power Magazine, 6/9/2022

www.powermag.com/ge-debuts-first-7ha-03-gas-turbines-at-1-3-gw-plant-in-florida

FPL officially declared the Dania Beach Clean Energy Center operational on June 1. The two G.E. air-cooled turbines each have a single-cycle net output of 430 MW. The combined cycle plant is rated 1260 MW.

G.E. claims the plant is 62.22% efficient—a record.

G.E. also claims the turbines can burn 50% of hydrogen by volume in natural gas blends “right out of the box”.



But perhaps the most important element of the plant is its ability to respond to demand fluctuations. Each turbine can achieve a remarkable 75 MW/minute ramp, the two combined, 140 MW/minute. By leaving the turbines running at approximately 20% gas turbine output, the turbines would not have to go through a start-and-stop cycle, thus be able to immediately ramp up and then down at the 140 MW/minute rate.

WATER BUZZ

Huntington Beach Desalination Proposal Rejected

By Jerry Gewe

On May 12, after hours of heated debate, the Coastal Commission denied a permit for the proposed \$1.4 billion Huntington Beach Desalination Plant proposed by Poseidon Water for construction in Huntington Beach.

The proposed plant which had strong political support from Governor Newsom and other politicians was unanimously rejected by the Commission, based on a staff report which reported potential negative environmental impacts including killing millions of tiny marine organisms that make up the base of the food chain, the high energy cost of running the plant, its location in an earthquake fault zone, and the impacts of climate change including sea level rise.

Proponents argued that in light of the current cycle of drought conditions, California needs the additional supply that could be achieved through ocean desalination. They also argued that while the cost of the water might be high, the impact could be lessened by freeing up current supplies to be used by other areas of California and even possibly other states through exchanges of water supplies from the Colorado River and getting those areas to cover part of the expense.

In the end the Commission decided that the negative environmental impacts outweighed the benefits and turned down the project permit. This probably brings an end to the project which has been debated for much of the last two decades.

Mystery History Question

Presented by Jack Feldman



Then and Now

Jets of water converge in the center of a fountain situated in the center of the gardens in this well-known Los Angeles Park. The fountain (and park) was dedicated on November 6th, 1913.

Symbolically, it represents the terminus of the new LA Aqueduct, opened a day earlier on November 5th, 1913.

Can you name this well-known Los Angeles Park?

Answer on Page 19

GUEST SPEAKERS

Summaries by Robert Yoshimura

GUEST OF THE MONTH
MAY 2022

JAY LIM

LADWP Manager of Resources Planning

Update on 2022 Strategic Long-Term Resource Plan

The 2022 SLTRP that began development in September of 2021 is intended to provide a roadmap for LADWP to achieve a 100% carbon free energy portfolio by 2035. The target date was established by City Council motion and is the driving force behind the schedule. The ambitious nature of both the scope and schedule of this project will require assessments of Human Resources, Implementation and Constructability, Procurement Risk, Operation and Maintenance, and Supply Chain Risk to assure that necessary resources are available as

needed. Such assessments are new and have never been a part of previous SLTRPs or Integrated Resource Plans. The 2022 SLTRP draws upon the data developed by the National Renewable Energy Lab's (NREL) LA 100 Study.

The core scenarios in this SLTRP vary from those of the LA 100 Study primarily because of the more urgent schedule mandated by the City Council. The four scenarios can be summarized as follows:

1. SB 100 (Reference Case) – assumes Renewable Power Sales (RPS) of 60% by 2030 (as required by SB 100), 80% by 2035, and 100% by 2045. The distributed energy resource (DER) deployment in this case is the reference standard.
2. Case #1 – assumes an RPS of 80% by 2030, 100% by 2035, and 100% in 2045. The DER deployment is high.
3. Case #2 – assumes an RPS of 90% by 2030, 100% by 2035, and 100% in 2045. The DER deployment is high.
4. Case #3 – assumes an RPS of 90% by 2030, 100% by 2035, and 100% in 2045. In this case, DER deployment is the highest possible.

Each scenario will be tested for sensitivities to the prices of fuel, greenhouse gas allowances, and renewable energy and storage. The recommended case will be further tested for “what if” sensitivities to various implementation risks such as no combustion alternatives, demand response, transmission upgrades, and load from electrification.

The 2022 SLTRP will incorporate refinements over the LA 100 study as follows:

- Will include costs of the Power System Reliability Program (PSRP) which will upgrade aging infrastructure instead of considering only the costs of load increases and integration of local solar projects.
- The load forecast in the LA 100 study has been replaced by a newer forecast in the SLTRP, which shows slower growth in demand. The newer forecast results in a 20% reduction in demand due to energy saving strategies. A rate increase will be necessary to compensate for the reduced sales.

Interesting tradeoffs between scenarios have been identified in the preliminary findings. All three of the early scenarios (Cases 1, 2, and 3) will result in zero carbon emissions by 2035.

Case 1 will be best if technological improvements are less than expected, while Cases 2 and 3 are best if technological improvements are better than expected. Comparison of Cases 2 and 3 will show the cost and value of a more aggressive distributed energy resources buildout. The NREL Annual Technology Baseline costs forecast shows a decline in wind and solar + storage costs over the next decade.

Cases 2 and 3 produce consistently less carbon emissions in the interim (prior to 2035) than Case 1. SB 100 carbon emissions remain fairly constant throughout the study period because in-basin gas generation is used whenever renewable energy is insufficient to meet demand, and because IPP does not convert to 100% hydrogen until 2045.

The need for energy curtailments (because of over-capacity) is expected to be well managed and kept below 5% in all scenarios until 2035. Subsequently, SB 100 and Case 1 remain significantly below 5% through 2045, but Cases 2 and 3 grow rapidly, especially Case 3 because of its aggressive DER utilization.

The total present value cost of the four scenarios is estimated to be as follows: SB 100 = \$57 billion, Case 1 = \$66 billion, Cases 2 and 3 = \$70 billion. Case 3 will have greater rate impacts than Case 1 or 2 because of its increased behind-the-meter solar which will reduce revenues from sales of energy. The total cost of the 3 carbon-free cases is less than estimated in the LA 100 Study because newer, lower demand forecasts were used in the SLTRP. All 3 carbon-free cases result in significant cost penalties per ton of carbon removed compared to the SB 100 scenario.

The big takeaways from the study so far can be summarized as follows:

1. All three carbon free cases have similar capacity buildouts in the early years.
2. The planning and procurement cycle will give DWP the opportunity to reassess the least cost and most reliable path to zero carbon as new technologies become viable.
3. Serving load with zero carbon emissions requires dispatchable and firm generation.

Next steps in the planning process will include the following refinements on core case scenarios:

- Natural gas capacity phase out schedule,
- Cost optimizations, particularly if wind can replace costly geothermal,
- Loss of load probability analysis, and
- Resiliency analysis for 2030, 2035, and 2045.

Sensitivity analyses will proceed in two phases with a determination of how to apply price sensitivities and “what if” analyses in Phase I (June), and price sensitivity and “what if” analyses on the recommended case in Phase II (August).

Three virtual public outreach meetings are planned in August followed by approval by the Board of Commissioners in September. The final 2022 SLTRP will be issued at the end of September 2022.

GUEST OF THE MONTH
JUNE 2022

ANSELMO COLLINS
LADWP Assistant General Manager - Water

UPDATE ON WATER ISSUES

The Drought – The drought led the State’s Department of Water Resources (DWR) to reduce Metropolitan Water District’s (MWD) allocation for the current year to less than 100,000 acre-feet (AF). MWD subsequently declared a water supply emergency for the 6 (out of 26) member agencies that are dependent on the State Water Project (SWP). Those agencies (including LADWP) will be required to adhere to strict conservation measures that include restricting lawn irrigation to one day per week, or to restrict their MWD water use to a



specified budget. For LADWP, that budget is 21,000 AF per month for the remainder of the year. LADWP has chosen the budget and a reduction in irrigation days from three days per week to two.

The reason these measures are limited to those 6 agencies is because MWD does not have the ability to transport its abundant allotment of Colorado River water to the western regions of its service area. Also, MWD has 2.5 million AF of total regional storage and one million AF in Lake Mead, but most of it is below the elevation that would trigger cuts in deliveries to California. Lake Mead's water level is currently two feet above that trigger point.

LADWP is doing several things to mitigate the effects of the drought on its customers. To the extent possible, supply to the western parts of the city has been shifted to Colorado River water, including operating the Stone-Hollywood Trunkline in reverse. The westside of the city is now being supplied from Eagle Rock reservoir. Additionally, they are in negotiations to increase imports from the Owens Valley by 4,000 to 5,000 AF through reductions in irrigation.

LADWP is also pumping more local groundwater. Current year local groundwater production is expected to total 52,000 AF. Next year, with the completion of portions of the groundwater remediation projects, another 10,000 AF will become available. When the remediation projects are fully implemented, a total of 90,000 AF of groundwater will be available. The current actions described above will get the Department through this season within the budget stipulated by MWD but additional measures by both LADWP and MWD will be required long term.

LADWP's total daily gallons per capita (gpcd) water usage is now 112 gallons. Its goal is to reduce that amount to 105 gpcd to meet the MWD budget. The penalty for exceeding the budget is \$2,000 per AF and underusage cannot be carried over to the following month. Thus, maximizing the available deliveries from MWD will require careful planning of operations.

DWR is currently working on plans to construct Sites Reservoir, an off-line storage facility in northern California. When that is completed, it will provide some seasonal storage that will help alleviate drought-related water shortages. However, for earthquake-related emergency storage, Sites is located on the wrong side of the San Andreas Fault.

Mono Basin Ranch Leases – A recent review of ranch leases revealed that language in the Mono Basin leases was identical to those for Inyo County ranch leases. Inyo County leases are governed by an agreement between Inyo and Los Angeles stemming from earlier litigation. Thus the language in the Mono leases required revision to eliminate incorrect water allocations that apply only to Inyo. When the Mono ranchers were informed of the proposed changes, Inyo County, the Sierra Club, and California Department of Fish and Wildlife (but not the ranchers) filed a lawsuit alleging that LADWP was acting to increase exports to Los Angeles and doing so without environmental documentation. A local judge agreed with plaintiffs and ruled in their favor. LADWP plans to appeal the decision based on factual information regarding exports from Mono that prove the plaintiffs' allegations false.

Mono Basin Water Rights – A threat to Los Angeles' water rights in Mono Basin is emerging because of the declining level of Mono Lake. Under current agreements, LADWP exports from Mono Basin depend on the water level in the lake. This year, the City is limited to 4,500 AF in total exports from the Mono Basin because the lake level is 0.08 inches below the point that triggers the 4,500 AF limit. It is important to understand that in a drought year such as this one,

most of the water imported through the Aqueduct comes from Mono Basin because of the many commitments for environmental mitigations in the Owens Valley.

LADWP is now involved in negotiations with the Mono Lake Committee, Mono County, California Fish & Wildlife, Great Basin Air Pollution Control District, and the State Water Resources Control Board regarding those water rights. LADWP is seeking commitments to firm up its water rights, and the interested parties noted above are seeking more water for a variety of environmental mitigations including flushing flows in Rush Creek, dust control around the lake, and refilling the lake. The Mono County Supervisors, in particular, are seeking a long-term agreement to fulfill their water interests.

Operation NEXT – Operation NEXT is a \$16 billion water reuse project that will ultimately reclaim all of the effluent from the Hyperion Water Reclamation Plant for groundwater recharge in the Central, West Coast, and San Fernando Basins and for direct potable reuse through the Los Angeles Aqueduct Filtration Plant. Because of the enormous cost, LADWP is seeking State and Federal funding to defray some of the cost. It is also seeking partnerships with other agencies such as MWD to pay for some or most of the cost of interconnections, and with West Basin Municipal Water District to collaborate on the expansion of their Edward C. Little Water Reclamation Facility. The EC Little project seems particularly beneficial to Los Angeles because they will manage the project to completion within five years and share the effluent with us.

Mayor Garcetti's goal is to complete this project by 2035. However, that goal is not practical from a construction or a cash flow perspective, and a more realistic expectation is full delivery of project water by 2045. Completion by 2035 would require annual capital budgets of \$2 billion for five or six years. By comparison, the highest historical single-year capital expenditure has been \$700 million. Thus, significant rate increases would be required for such an accelerated schedule compared to spreading those costs out over ten more years.



Mystery History Answer

Exposition Park

More info at the following link:

https://waterandpower.org/museum/Early_Power_Generation.html

SAVE THE DATE

2022 CALENDAR

GUEST OF THE MONTH

MEETINGS 10:00AM
VIA ZOOM, EXCEPT AS NOTED
For the Zoom Link, RSVP @
webmaster@waterandpower.org



FIELD TRIP	JULY 13, 2022 San Fernando Valley Groundwater Remediation Facilities
STEPHEN KWOK MGR ENTERPRISE CYBERSECURITY SYSTEMS LADWP	AUGUST 10, 2022 Cybersecurity Issues Luncheon at Taix French Restaurant Limit of 20 persons, Reserv Reqd RSVP to jgewe@hotmail.com
JASON RONDOU DIR POWER RESOURCE PLANNING LADWP (INVITED)	SEPTEMBER 14, 2022 Long Term Strategic Resource Plan Update
DELON KWAN AST DIR OF WATER RESOURCES LADWP (INVITED)	OCTOBER 12, 2022 Water Supply Reliability for the Future
WINIFRED YANCY DIRECTOR ELECTRIC VEHICLE STRATEGY & IMPLMENTATION LADWP (INVITED)	NOVEMBER 9, 2022 LADWP's Future Plans & Programs for Electric Vehicles Luncheon at Taix French Restaurant Limit of 20 persons, Reserv Reqd RSVP to jgewe@hotmail.com

BECOMING A MEMBER

Join

- + HELP PRESERVE LOS ANGELES REGIONAL HISTORY OF WATER AND ELECTRICITY
- + DISSEMINATE KNOWLEDGE OF THE RICH MULTI-CULTURAL HISTORY OF LOS ANGELES
- + BECOME INFORMED AND GAIN INSIGHT AND EXPERTISE ON WATER AND ELECTRIC ISSUES

ANNUAL MEMBERSHIP \$30

ONLINE AT WATERANDPOWER.ORG
BY MAIL, FILL OUT THIS CARD AND WRITE A CHECK TO:
WATER & POWER ASSOCIATES, INC
SEND BOTH TO:
10736 JEFFERSON BLVD, UNIT 165
CULVER CITY, CA 90230

NAME _____

ADDRESS _____

PHONE _____

EMAIL _____

COMPANY, TITLE/POSITION, RETIRED _____

Check if you would like to receive a digital copy of the newsletter only, to save mailing costs.

+ Water & Power Associates, Inc, is an IRC 501 (c) (4) organization. Donations are not tax deductible.