



VOL. 1 ISSUE 3 · OCT 2020

NEWSLETTER

For a Sustainable Los Angeles



CAN BATTERIES SOLVE PROBLEMS INTEGRATING RENEWABLES?

BILL GLAUZ

California's electric utility grid has been stressed to its limit during the unprecedented heat storms of August and September 2020. These heat events were record-setting and tested the stability of the grid, both in terms of electrical equipment and resource adequacy. These events also begged the question of



HEAT FIRE STORMS OF AUGUST AND SEPTEMBER 2020 NEAR LOS ANGELES
AP PRESS PHOTO

whether the grid is secure enough to add the levels of renewable energy resources that are being proposed. This is particularly concerning as at the same time significant intermittent renewable energy sources, specifically wind and solar, are being brought on line, there is also a push to decrease or eliminate the use of all fossil fuels to generate electricity. Historically, fossil fuels have been the backbone of traditional utility generation resources.

Natural gas specifically has been the fuel that has allowed the tremendous increases in renewable energy that we have seen over the last decade. Natural gas fired power plants are a resource that can be dispatched when needed, such as when the wind decreases or when the sun goes down.

As policy makers consider the elimination of LADWP's natural gas plants, the primary option being looked at to support the increase in renewable energy resources to supply 100% of LA's electrical energy needs, are batteries. Battery technology and economics have improved significantly over the last decade, primarily driven by the development of all electric battery-driven vehicles.

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Although not a chemical battery, LADWP has relied on its 1270 MW Castaic pumped storage hydroelectric plant to both supply peaking energy, after pumping water from Castaic Lake to Pyramid at night using base load nuclear and coal plants, to now being used to integrate renewables. However, to integrate the amount of renewables being envisioned, additional energy storage will be required. LADWP is looking at developing additional hydro pumped storage, but the availability of feasible sites is very limited, as is availability of batteries. In terms of battery development, LADWP installed a 20 MW/ 10 MWh Lithium Ion battery system at the Beacon Solar Project north of Mohave in 2018. This system helps to integrate the nearly 800 MW of solar and wind connected to the Beacon and nearby Barren Ridge stations. In addition, LADWP approved the 400 MW Eland Solar Project, also near the Barren Ridge station, in 2019. This project also includes a 300 MW/ 1200 MWh battery system, expected to be operational in 2023. The Eland project is one of the lowest cost solar/ storage projects ever approved, with the solar energy component costing less than \$20/MWh, and with storage less than \$40/MWh.

BELOW: THE 250-MW GATEWAY ENERGY STORAGE PROJECT, THE LARGEST BATTERY STORAGE IN THE WORLD UNVEILED IN EAST OTAY MESA, SAN DIEGO, CALIFORNIA UNDATED PHOTO RELEASED BY LS POWER ON AUGUST 19, 2020



Recently other battery projects have also been developed or approved in California, including the Gateway Energy Storage Project in San Diego County and the Moss Landing Energy Storage System in Monterey County. Gateway is a 250 MW battery storage project, expected to be completed in September 2020 while Moss Landing is a 182 MW/ 730 MWh system expected to be completed in early 2021. All of these storage projects are impressive, but are still just the first steps into development of enough storage to adequately integrate the amount of renewable resources expected over the next few decades. California's grid operator estimates that as much as 12,000 MW of batteries would eventually be needed to store enough renewable energy to help maintain the balance between supply and demand. Much will be learned over the coming years about how batteries can support renewable integration, but it makes sense to maintain some level of natural gas generating capacity until batteries can be proven and are economically viable. 

LEFT: LADWP'S 20-MW BEACON BESS IS HANDLING THE HARSH CLIMATE OF THE MOJAVE DESERT WHILE INCREASING UTILIZATION OF SOLAR PV. THEIR EPC PARTNER, DOOSAN GRIDTECH, ALSO PROVIDED THE INSTALLATION'S ENGINEERING DESIGN AND SYSTEMS INTEGRATION. LADWP PHOTO



IN RESPONSE TO AMERICAN HISTORY

A two-part series

Photo: Abraham Hoffman at the LA Cascade
Photo credit: Dave Oliphant

“ *THE* coronavirus pandemic is a hoax created by Democrats to embarrass the Trump Administration.” “The Chinese created the virus in a secret lab with the intention of using it as bacteriological warfare against the United States, but inadvertently let it out across Asia, the Americas, Africa, and Europe.” Add to these spurious claims the hundreds of conspiracy theories (if not thousands and thousands) on the Internet, and eventually gullible people will believe that some unknown power—the Mafia in league with the Freemasons, Zionists, the CIA, the Tri-Lateral Commission, the Illuminati, OPEC, and the Los Angeles Department of Water and Power (if it’s an unknown power, the named entities present a contradiction to the theory) is out to control the world. Do not worry: Jason Bourne or James Bond will save us at the last moment (never mind that they are fictional characters).

On a more serious note, some conspiracies continue to exist long after research has exposed them to be untrue, wildly exaggerated, or on the surface, seem plausible enough even though they have been debunked through scholarship. Case in point: The Owens Valley-Los Angeles water controversy. The latest example of an obsolete conspiracy getting new attention appears in the June 2020 issue of *American History*, a magazine published in print and online by The History Net, a company that publishes a number of several “popular” history magazines. These magazines differ from academic journals in that they have no footnotes or bibliography. An exception to the rule would be *American Heritage* where fact checkers make certain the articles are factually correct.

HISTORIAN, AUTHOR, PROFESSOR
ABRAHAM HOFFMAN

HISTORY *vs* CONSPIRACY

OR

POPULAR *vs* SCHOLARLY RESEARCH

Take, for example, the article “When LA Unions Fought for the Right to Strike, One Weapon was Dynamite,” by Kenny Kemp, an author whose web site bills him as a “Storyteller.” The subtitle of the article says, “The bombing of the Los Angeles Times exposed a business plot to steal water supply and make the rich richer.” Kemp relates how Harrison Gray Otis led a campaign against labor unions that culminated in the bombing of the Los Angeles Times building on October 1, 1910, killing twenty people and injuring many others. Kemp essentially retells a story that is well known in Los Angeles history but, as noted, he’s a storyteller. Herbert Shapiro wrote “The McNamara Case: A Crisis of the Progressive Era,” in the Fall 1977 issue *Southern California Quarterly*. Shapiro, unlike Kemp, is a historian, and he documents his article with end notes demonstrating his research. A more recent example comes from Aaron Tate, author of “The Los Angeles Times Bombing and the McNamaras Trial,” in the June 2020 issue of *Branding Iron*, published by the Los Angeles Corral of Westerners. Tate’s article is documented with end notes and a bibliography of sources consulted.

Although Kemp devotes most of his article to the Times bombing, he also attempts to tie that event to the mayoralty race of 1911 in which Job Harriman, a prominent Socialist attorney, received more votes than did incumbent Mayor George Alexander in the primary election. A run-off was scheduled for December 4—four days after the beginning of the trial of the McNamara brothers.

Article to be continued in next Newsletter issue.

Full article available at: waterandpower.org





Highlights

From the Desk of Jerry Gewe

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All Water Agencies in California are preparing their 2020 Urban Water Management Plans to develop strategies to provide reliable water supplies for their customers through 2045. This is a very good thing, as the economy and lifestyle of Californians is dependent upon having reliable water supplies. We need to know what the options are for maintaining our historic reliable water supplies for Southern California, which have been based upon sound advanced planning and prudent investments in infrastructure.

However, the current efforts going on in Southern California, where each agency is developing independent plans for achieving their own reliability, will likely result in an unnecessary duplication of effort and substantial increases in costs to the water consumers. The Metropolitan Water District of Southern California (MWD) is strongly supporting a fix for the State Water Project, with a current price tag of \$15.9 Billion, and proposes that Southern California provide the largest portion of the funding. The time that will be required to accomplish the fix will undoubtedly cause the actual price tag to go well beyond these numbers. This fix, if implemented, will certainly provide increased reliability of supply to Southern California in terms of protecting against seismic events in northern California and reductions in imports to reduce environmental impacts in the Bay-Delta.

At the same time, the Orange County Water District is proposing to enter into a long term contract for multiple billions of dollars, with a private entity, Poseidon, to have them develop a desalination facility in Huntington Beach, to provide potable water, to reduce their need to purchase water from the (MWD).

In addition to the fixes to the State Water Project, MWD is proposing to spend about a billion dollars to recycle wastewater from the Los Angeles County Sanitation District's Carson Waste Water Treatment Plant to increase their reliability.

At the same time, the Los Angeles Department of Water & Power is developing a multi-billion dollar plan to recycle all of the waste water from the City's Hyperion plant in El Segundo and utilize it to reduce purchases from MWD. Other agencies are certainly developing similar plans. If all of these plans go forward, MWD's sales will go down substantially, however the huge investment that has been made in infrastructure will still need to be paid for by the residents of Southern California along with costs for the new investments being made in the proposed projects. This will cause vastly increased costs for water.

It is vital that that our water leaders, with support from the political leadership, step up to the challenge of merging these planning efforts to ensure that we have reliable supplies of water into the future, without unnecessary overdevelopment. Water is the lifeblood of our economy and way of life in Southern California and reliability is absolutely required. However, this must be accomplished in a way that does not unnecessarily burden Southern Californians. 

Mystery History

JACK FELDMAN



The above 1917 image shows the opening ceremony of the 1st major hydro power plant operated by the Los Angeles Bureau of Power and Light (later LADWP).

Once the Los Angeles Aqueduct was completed in 1913, it became possible to harness the newly delivered water and use it to generate electricity. This was the first major hydro power plant that would provide Los Angeles with much of its power needs for years. Astonishingly, the plant still exists today and delivers clean energy to Angelinos over 100 years after it was originally built.

Name the Power Plant:

- 1. **Cottonwood Power Plant**
- 2. **Division Creek Power Plant**
- 3. **Foothill Power Plant**
- 4. **San Francisquito Power Plant**
- 5. **Franklin Power Plant**
- 6. **Sawtelle Power Plant**

When first opened in 1917, this power plant provided over 70% of LA's power needs. What percentage of LA's power does it provide today?

- **a) 0.5%**
- **b) 1.0%**
- **c) 1.5%**
- **d) 2.0%**
- **e) 2.5%**
- **f) 3.0%**

***Answers on page 16**



NEWSLETTER TEAM

- Jack Feldman**
- Bill Glauz**
- Jerry Gewe**
- David Oliphant**
- Thomas McCarthy**
- Robert Yoshimura**
- Thu Pham - GRAPHICS**

VISIT US AT
WATERANDPOWER.ORG

Do you know...?

During the last year, more than 150,000 visitors viewed 273,000 pages on our website.

Members and guests are invited to our monthly meeting held every second Wednesdays of each month via Zoom. Please contact any Board member or send us a request at comments@waterandpower.org

Interested in becoming a member? Join us online at waterandpower.org or find information in this newsletter to join by mail.

The Los Angeles Water and Power Associates, Inc. is a nonprofit, independent, private organization incorporated in 1971 to inform and educate its members, public officials and the general public on critical water and energy issues affecting the citizens of Los Angeles, Southern California and the State of California. Our secondary mission is to preserve the regional history of water and electricity and show its role in the development and growth of the city of Los Angeles. Also, to disseminate knowledge of the rich and diverse multicultural history of the greater Los Angeles area; to serve as a resource of historical information; and to assist in the preservation of the city's historic records.

UPDATE: LA100 STUDY OF LOS ANGELES LONG TERM ENERGY SUPPLY OPTIONS

BILL ENGELS



DOWNTOWN LA - LADWP PHOTO

“

A key result is having in-basin dispatchable renewable capacity to increase system resiliency and be able to serve customers during unforeseen transmission outages due to fire or earthquake.”

Ashkan Nassiri

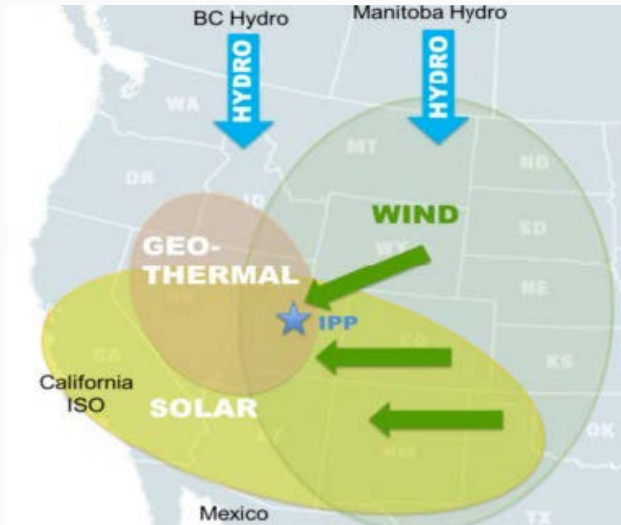
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A July 2020 Water & Power Associates newsletter article described in some detail the origin, scope, participants, and study and meeting format of the LA 100 Study, a potentially utility industry changing analysis mandated by L.A.'s Mayor and City Council. The article summarized LADWP hiring of the National Renewable Energy Laboratory (NREL) to determine what investments LADWP would need to achieve a 100% renewable energy supply for its customers by 2045. Since that July newsletter article, NREL has continued its investigative work, reporting the progress in a series of meetings with the LA 100 Advisory Group, hosted on Zoom. The goals of the study with regard to achieving a 100% clean energy portfolio are to determine the investment required; air quality improvements including reductions in greenhouse gasses (GHG) expected, with prioritization of environmental justice neighborhoods; and impacts of the initiative on the local economy and hiring programs. The outcome will ideally achieve low cost, reliability, and adequate energy supply, but it is unlikely that all three will occur simultaneously. Compromises would thus be needed to achieve a balanced solution acceptable to all. The study is required to integrate sustainability and other concepts from the Mayor's Green New Deal including the electrification of buses and buildings. The focus will be on the L.A. Basin, particularly regarding economic impacts on its businesses and citizens.

NREL has developed a state-of-the-art computer model of the entire electric power process from bulk generation to transmission to residential distribution. They have defined four scenarios that are titled:

- SB 100, which is the world-leading bill signed by former Governor Brown in 2018 that commits California to achieve a 100% renewable energy portfolio by 2045
- LA Leads, which expands on SB 100 by advancing the 100% deadline to 2035, deleting thermal generation unless hydrogen-fueled, prohibiting biofuels and natural gas, and does not rely on Renewable Energy Credits (REC's)
- Transmission Renaissance, which expands on SB 100 by deleting natural gas generation, but allows for new transmission corridors and does not rely on REC's
- High Distributed Energy Future, which is like Transmission Renaissance, but does not allow the use of new transmission facilities or corridors.

RIGHT: LADWP GRAPHICS
WIND, SOLAR, NATURAL GAS AND
HYDRO POWERS - STOCK PHOTOS




For each scenario, NREL will determine cost ranges, air quality improvement, greenhouse gas emissions, whether environmental justice is served, and economic impact including increases or reductions in jobs. Each scenario will also include an assessment of the required amount of each type of contributing technology to be used under varying load (demand) conditions. Eighteen types of technology have been identified for analysis.

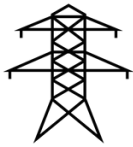
Preliminary findings of the study process to date include:

- A diverse mix of both wind and solar power is crucial, especially in high load situations
- There is a need for continuous firm peaking capacity, for which renewable energy sources like wind and solar are not always reliable, and, therefore, ill-suited for that role
- Both short-term and long-term energy storage capabilities will be needed
- REC's will significantly reduce the need for long-term storage and will likely be required to meet certain mandated deadlines
- New investment pathways will be necessary and there will be resulting implications for cost and reliability. There is the potential for positive and negative impacts on jobs, the local and regional economy, the local and global environment, and LADWP's transmission and distribution grid

The next steps are:

- By the end of September 2020, the full analysis of the final model run except environmental assessment and environmental justice will be completed.
- By the end of December 2020, the full analysis of the final model run will be completed.
- And lastly, by the end of March 2021, NREL will publish its final report and its results will provide input to the next Integrated Resource Plan, which will further define the strategy for achieving 100% clean energy.


An LADWP webpage provides further information about the study. Advisory Group meeting summaries and incremental working papers from the technical team, presentations, and other documents are posted as they become available. Additionally, people can sign-up for email announcements, advanced meeting agendas, and other updates at www.ladwp.com/CleanEnergyFuture. 



A TRYING SUMMER FOR POWER UTILITIES

In the last few months power utilities located throughout the state of California were faced with record breaking temperatures and massive fires that were unprecedented. Many of them were required to suspend electric deliveries due to either demand exceeding their generating capacity or to mitigate against transmission or distribution facilities causing additional fires.

LADWP was able to provide service to its customers without substantial interruption. This was due to a combination of (1) a service territory with only a moderate portion of its facilities located in fire prone zones; (2) effective routine maintenance procedures along its transmission corridors; and (3) the ability to use its natural gas fueled peaking generation facilities which can be started rapidly with very little advanced notice.

LADWP is moving towards its goal of having a carbon free electrical supply through developing additional generation from renewable resources and power storage facilities. However, it is crucial that it maintain a prudent, on-demand, level of peaking generation to provide reliable service to its customers at times like this summer of 2020. 




SUMMER 2020 FIRE NEAR LA.
PHOTO LA TIMES



Low-Carbon Resources Initiative

On July 6, 2020, the California Public Utilities Commission (CPUC) issued a proposal to have the state's investor-owned utilities incorporate climate change vulnerability assessments into their general rate case cycles in an effort to guide infrastructure investments over the long term.

If the proposed decision is approved, utilities will file these climate vulnerability assessments with the CPUC every four years. These assessments will look at the effects of temperature changes, sea level rises, changes in rainfall, wildfire and other climate impacts. The filings will become the basis by which utilities plan infrastructure investments, and prioritize whether to strengthen, move or simply remove generation, transmission and distribution equipment that is vulnerable to climate change energy carriers, such as hydrogen, ammonia, synthetic fuels, and biofuels.

LADWP "is very excited to partner with EPRI and GTI on the Low-Carbon Resources Initiative," said Reiko Kerr, Senior Assistant General Manager, LADWP. "This partnership will further efforts to initiate new highly-technical research projects that will address LADWP's evolving needs and engage in new low-carbon channels for the generation, delivery and end use of electricity in ways that support reliability, sustainability and efficiency." 



STOCK PHOTO

"We see it as an important initiative toward developing clean, low-carbon fuel technologies that will help us achieve a clean energy future for Los Angeles."

Reiko Kerr, LADWP Senior Assistant General Manager

ROBERT YOSHIMURA

What's Ailing California's Electric System?

by CHERYL A. LAFLEUR

Earth Institute

Columbia University

POWER LINE TOWERS SEEN IN LA AREA ON 8/19/20 DURING A TRIPLE-DIGIT HEATWAVE GRIPING THE AREA. PHOTO ROBYN BECK/AFP VIA GETTY IMAGES

California made headlines for all the wrong reasons recently with widespread rolling power outages in the middle of a heat wave and a pandemic. These blackouts were not an accident—they were intentionally scheduled by the grid operator, the California Independent System Operator (CAISO), due to a shortage of resources available to keep the lights on.

The California blackouts led to a frenzy of hot takes and finger-pointing based on instant diagnoses of the problems. The situation is like a Rorschach test on which people superimpose their preconceptions about energy. Opponents of renewable energy, including President Donald Trump, blame the outages on California's use of solar and wind to decarbonize their power supply. Others have jumped to the conclusion that this must be a recurrence of Enron-type market manipulation as in the 2001 energy crisis. Still others have offered silver bullets based on whatever they are selling.

It is important to diagnose the problem correctly so that we don't administer the wrong medicine. While a full examination should be done, some causes can preliminarily be ruled out. There is no evidence so far that market manipulation was afoot. There is also no evidence that California's solar and wind generation did not perform as designed. Wholesale markets in other regions of the country are delivering increasing amounts of renewable energy and keeping the lights on.

I think California has three "preexisting conditions" that need to be addressed to avoid this happening again.

1. Lack of clear accountability for having the resources to keep the lights on.

In California, CAISO has the job of dispatching power plants but has little authority to ensure they get built. Lining up enough resources is largely under the supervision of state regulators. This should be remedied through the actions of the California legislatures and the Federal Energy Regulatory Commission, which regulates CAISO.

2. Lack of resources to balance solar and wind power.


California leads the nation in solar generation, and also uses a lot of wind generation. These carbon-free resources

help reduce the climate impacts of burning fossil fuels. But unlike conventional power plants, they cannot be turned on or off as needed. By design, their availability depends on the sun and wind at any given moment. They can work well in conjunction with resources that can be turned on as needed, especially in the evening when the sun goes down "balancing" resources can be gas-fired plants, pumped water or battery storage, hydroelectric power, or the collective actions of homes and businesses to move their consumption to different times of the day. California does not have enough of these resources. See problem #1—someone needs to be in charge.

3. Closing disfavored resources before opening the new ones.

It is hard to site and build new energy resources, including carbon-free resources, anywhere in the country. Even in regions where there is strong political support for clean energy to fight climate change, it often does not translate to people allowing wind turbines or a high-voltage transmission lines to be built anywhere near them. California has been decisive about what resources it does not want any more, including many of its gas-fired power plants and its last nuclear power plant. It has been much slower to construct resources to take their place. **In the past three years, California has closed 5,000 megawatts (MW) of gas generation in anticipation of building 3,000 MW of battery storage that is still on the drawing board. In a heat wave, when every resource is needed, this gap in resources came home to roost.**

The real cure

When something goes wrong, it is easy to make snap judgments, demonize technologies you don't like, or suspect foul play. Such false diagnoses about what ails California's power system only encourage snake oil solutions. Putting in the hard work on big structural issues like the ones I identified is the real cure. California surely does not want to—and should not—back off its climate goals. But it should take a hard look at who is responsible for getting the resources in place to keep the lights on, and then make the tough decisions to do so. Its citizens deserve nothing less. 

RAPHAEL VILLEGAS

PROGRAM MANAGER *OPERATION NEXT*
LOS ANGELES DEPARTMENT OF WATER AND POWER

RECYCLING PROJECT OF 100% OF THE EFFLUENT FROM LOS ANGELES' HYPERION WASTEWATER RECLAMATION PLANT



HYPERION TREATMENT PLANT LEFT: LADWP PHOTO; RIGHT: LA TIMES PHOTO

SUMMARY BY ROBERT YOSHIMURA

A number of planning studies have concluded recently regarding the potential development of various water sources for Los Angeles including a stormwater capture plan, conservation studies, groundwater remediation studies, a recycled water master plan, and the Mayor's Green New Deal Sustainable City pLAN. Conclusions from those studies will be incorporated into the 2020 Urban Water Management Plan and will define the nature of water supply sources for Los Angeles in the future. Currently, Los Angeles' sources for its 502,000 AF of water per year are divided among Metropolitan Water District (MWD 49%), LA Aqueduct (38%), Groundwater (11%), and recycled water (2%). Only 13% of current supply is local. By 2035, reliance on MWD and the LA Aqueduct will be significantly reduced such that 71% of supply sources will be local, including recycled water, stormwater, and groundwater. The addition of new sources will increase total available supply to 662,000 AF per year.

The goal of Operation NEXT is to recycle 100% of Hyperion effluent by 2035 and thus provide approximately 35% of Los Angeles' total water supply. Treatment will be upgraded by substituting membrane bioreactors for the existing clarifiers (basins where solid organic matter is removed) and adding reverse osmosis and advanced oxidation. Because the membrane bioreactors require less than half the area of the clarifiers, their replacement will enable all the new process elements to fit within the footprint of the existing plant.

Upon completion of the project, the two primary means of distributing the water to users will be injection into local groundwater basins followed by extraction and additional treatment, and direct potable reuse (DPR). Many possibilities are being explored regarding how to do this and include:

- Injection into the existing coastal seawater intrusion barriers in the West Basin, and injection into new wells in the Central Basin with extraction and use locally within those basins
- Expansion of distribution into the adjacent Hollywood and Santa Monica basins
- Construction of a pipeline to the north San Fernando Valley to existing groundwater recharge basins and for raw water augmentation at both the MWD Jensen Filtration Plant and the LA Aqueduct Filtration Plant

- Construction of a pipeline to connect to MWD's planned backbone pipeline that will transport recycled water to the San Gabriel basin for injection and for raw water augmentation at MWD's Weymouth Filtration Plant in La Verne

As the largest water project since the LA Aqueduct, Operation NEXT will have far-reaching impacts upon the LA Water System. It will utilize an unconventional water source and fundamentally change system operations. It will provide one-third of the City's water supply and require coordination and planning with numerous other agencies with whom the City is partnered. Complex groundwater governance issues will have to be resolved. Ultimately, the focus will shift from groundwater recharge to direct potable reuse after criteria for such uses are established late in 2023. Partnering agencies include MWD, Los Angeles Bureau of Sanitation, and the Water Replenishment District. The implementation strategy for Operation NEXT calls for the building of teams around resource needs. Consequently, teams will be established for planning and treatment technology, infrastructure, institutional agreements, environmental and regulatory approval, and public outreach.

GUEST OF THE MONTH
SEPTEMBER 2020


JOSEPH S. AVILA

**SENIOR DIRECTOR ENERGY POLICY, STRATEGY AND ENVIRONMENTAL
SOUTHERN CALIFORNIA GAS COMPANY
FUTURE ENERGY SUPPLIES FOR LOS ANGELES**

SUMMARY BY ROBERT YOSHIMURA

For most of its 135-year history, Southern California Gas Company (SoCal Gas Company)) enjoyed a positive relationship with customers, regulators, elected officials, and the media because of its solid reputation among those stakeholders. SoCal Gas owed that good reputation to well-managed utility operations that avoided complaints and problems that result in negative news. Unfortunately, that reputation suffered an abrupt change in 2015 when a leak was discovered at the Aliso Canyon gas storage facility in Porter Ranch. The gas leak affected the lives of hundreds of nearby residents and was characterized as the worst gas leak in U.S. history in terms of its environmental impact. The incident drew statewide and nationwide attention from government officials as well as the media. As a result of the SoCal Gas Company's response to the gas leak, the Aliso Canyon storage facility is now likely the safest and most heavily monitored gas storage facility in the nation if not the world. The unfortunate incident at Aliso Canyon has added to the anti-gas sentiment among state and local officials and environmentalists who were already opposed to the use of any form of fossil fuel as part of their war on global climate change and pollution. Now an aversion to natural gas and gas storage facilities has also emerged. Consequently, the desire to reduce gas reliance has seemingly become more urgent in the minds of California's political leaders. That mindset combined with the Aliso Canyon incident has inhibited SoCal Gas Company's ability to engage in balanced, thoughtful energy policy discussions with the state's elected leaders and key stakeholders.

California's governor and his administration as well as most state legislators are advocating a rapid transition to an all-electric energy plan consisting of renewable sources only, and elimination of gas as a fuel for direct use by residences, businesses, and industries. In fact, recent events have emboldened climate change proponents despite demonstrated evidence the past several weeks that the reliability of the state's electric power grid has already been severely compromised. The alarming number of power outages that occurred during the heat waves of mid-August and early September suggest that the transition to all renewables should proceed more cautiously. It is notable that the ability of the Los Angeles Department of Water and Power to generate and distribute electric power from its diverse mix of dispatchable resources minimized the number of outages within the Los Angeles area during those heat waves and helped to avert shortages elsewhere in the state just as it had during the 2001 energy crisis.

The recent blackouts also highlighted a fundamental difference between renewable energy which is only available during a limited time frame and gas-fueled energy which is available on-demand. Solar power is at its optimum between the hours of 10:00 AM and 3:00 PM and gas-fueled energy is needed to meet customer demand for the remaining 18 or so hours of the day. Furthermore, customer energy demand is greatest between 3:00 PM and 9:00 PM in the evening when solar generation is virtually non-existent. Thus, a solar-based energy system requires some form of short and long duration storage to bridge the gap between energy demand and supply. Batteries can provide only a few hours of storage, but are very expensive, have a relatively short lifespan (5 to 7 years) and pose an unknown and growing environmental health hazard. Other long duration storage methods have yet to be commercially proven and pump-storage projects such as LADWP's Castaic Lake, while effective, have geographic limitations. Because renewable power is affected by weather and increasingly unpredictable atmospheric conditions, it cannot be turned on as needed to meet customer demand. Gas' intrinsically complimentary relationship with intermittent resources like solar and wind is one of many reasons to favor gas-fired electrical power over batteries. Recent polling suggests that at least 80% of homemakers and commercial chefs prefer gas for cooking and most homeowners favor gas for water heaters and space heating primarily because of its lower cost. The potential for significant increases in the cost of electricity and reduced system reliability, particularly during more frequent and intense heat storms, should be a major concern for most citizens. Gas-fired electric energy is an affordable "on-demand" source of power that continues to be necessary, especially as the state transitions to increasing quantities of intermittent solar and wind energy. But considering recent events, this race to transition to 100% renewable power must be done more cautiously and perhaps over a longer time horizon to reduce the expected cost impacts on our most vulnerable communities. Wanting the world to be a certain way and then rationalizing actions to make it true will not lessen the real-world effects on people who cannot afford subsidized solar panels, electric vehicles, and all-electric kitchen appliances. California's power rates are poised to increase substantially so those who are already carrying a disproportionate share of the environmental burden including seniors and families living at the margin, will be the ones most severely affected financially and socio-economically. 

POSEIDON'S HUNTINGTON BEACH DESALINATION PLANT CONTINUES TO MEET RESISTANCE FROM REGULATORS AND ENVIRONMENTAL GROUPS

INFORMATION FOR THIS ARTICLE WAS SUPPLEMENTED FROM POSEIDON WATER'S WEBSITE, ARTICLES PUBLISHED BY LA TIMES STAFF WRITERS BETTINA BOXALL (8/6/20), MATT SZABO (7/28/20) AND BRANDON PHO OF VOICE OF OC (8/7/20)

ROBERT YOSHIMURA



POSEIDON'S HUNTINGTON BEACH DESALINATION PLANT
PHOTO VOICE OF OC

Poseidon Water, a private corporation, has been developing a 50 million-gallons-per-day (MGD) seawater desalination plant in Huntington Beach, CA for more than 20 years. Originally proposed in 1998, the plant would provide a drought-proof water supply for the growing needs of Orange County. Since then, Poseidon has worked closely with regulators, environmentalists, and the Orange County Water District to make this happen. The project will be located on the site of an existing fossil-fueled power generation plant that is scheduled to be decommissioned in 2020. It will provide enough fresh water to meet the needs of 400,000 residents and will supplement or replace existing imported water supplies whose reliability has been questioned. According to Poseidon, the project will support 3,000 construction jobs and provide employment for 280 people during its 50 years of operation.

The project has been surrounded in controversy since its inception because of its environmental damage to coastal ecosystems including the adjacent environmentally sensitive Bolsa Chica Wetlands, home to a diverse population of unique plant and wildlife. The high cost of the project is also expected to significantly affect the water rates of local purveyors. The cost of water from the plant is estimated to be \$2,250/acre-foot, or more than twice the cost of imported water purchased from the Metropolitan Water District of Southern California. When completed, the project will take in 106 MGD of seawater through its fine-mesh intake screens and discharge 56 MGD of concentrated brine containing twice the salinity of coastal seawater.

Environmentalists are concerned that the project will kill large amounts of plankton, a critical element of the marine food chain.

In late July and early August 2020, the Santa Ana Regional Water Quality Control Board (SARWQCB) held public hearings leading up to a vote to approve the project. The staff of SARWQCB has researched the project and is recommending its approval. However, some Board members remain skeptical because: they are unconvinced that the mitigations will compensate for the environmental damage; they have concerns about the impact of higher water rates on working-class families; and Poseidon and OCWD have not proven that a need for the additional water exists.

A number of environmental organizations including Orange County Coastkeeper, Amigos de Bolsa Chica, the Bolsa Chica Land Trust, and the California Coastal Commission testified during the hearings. Additionally, a Latino community organization known as Azul, objected to the cost impacts of the project and suggested focusing on conservation and rainwater capture instead. A scientist representing the Coastal Commission suggested additional mitigations elsewhere. Representatives of OCWD also testified in support of the project but could not guarantee that the agency would commit to buying all of the water from the project until a firm price is established. Poseidon testified that a firm price could not be established until all permits and their accompanying conditions are issued. Required permits not yet obtained are the operating permit from the SARWQCB and approval by the California Coastal Commission. Because of the many remaining concerns, the SARWQCB deferred action on the permit and requested that Poseidon go back to the drawing board and develop additional mitigations to address the issues articulated at this hearing.





BILL GLAUZ

ELECTRIC VEHICLES AND LOS ANGELES



Bureau of Power and Light Electric Truck 1920s

PHOTO LADWP HISTORICAL ARCHIVE

Los Angeles, known as the car capital of the world, has a long history with the electric vehicle. In the early 1920s the Bureau of Power and Light used electric trucks to assist with streetlight maintenance. As the automobile became the primary transportation mode and as population boomed in the 20th century, Los Angeles also became infamous for its unhealthy and poor air quality. The air quality in the Los Angeles basin has improved significantly over the past few decades, but is still some of the worst in the nation, again primarily due to the gasoline powered automobile. Air quality improvement is one of the key drivers in the redevelopment of the electric vehicle. In the early 1970s, LADWP formed an Electric Car Committee that worked with local universities to study the possibilities for development of an electric car and also purchased a Mars II Electrauto to demonstrate the viability of EVs throughout the city. At the 1990 LA Auto Show, General Motors unveiled the GM Impact, a concept all electric car developed by local technology company AeroVironment. Impressed by the viability of the Impact, and motivated by

GM's intent to produce the Impact, the California Air Resources Board (CARB) made a ruling that each of the U.S.'s seven largest carmakers—the largest of which was GM—would be required to make 2% of its fleet emission-free by 1998, 5% by 2001, and 10% by 2003, in accordance with consumer demand, in order to continue to sell cars in California. The board stated the mandate was intended to combat California's poor air quality, which at the time was worse than the other 49 states combined. Other members of what was then the American Automobile Manufacturers Association, along with Toyota, Nissan and Honda, each also developed a prototype zero-emissions vehicle in response to the new mandate.

In 1994, GM began PrEView, a program whereby 50 hand-built Impact electric cars would be lent to drivers for periods of one to two weeks, under the agreement that their experiences would be logged. Volunteers had to own a garage where a high-current charging unit could be installed by an electrical contractor. I remember trying for a volunteer spot, but no luck for me. I believe there were some DWP employees that were successful at becoming a volunteer. Driver response to the cars was favorable, as were reviews by the automotive press. According to Motor Trend, "The Impact is precisely one of those occasions where GM proves beyond any doubt that it knows how to build fantastic automobiles. This is the world's only electric vehicle that drives like a real car." Automobile called the car's ride and handling "amazing," praising its "smooth delivery of power." That year, a modified Impact set a land speed record for production electric vehicles of 183 mph. However, GM viewed the program as a failure as they didn't believe the EV was ready for mass production. GM did however continue with EV development and in 1996 they announced, again at the LA Auto Show, the introduction of the EV1, an all-electric battery powered compact sports car based on the Impact. DWP promoted the EV1 in LA. I can remember taking DWP's EV1 for a spin around downtown.

The increased use of EVs in LA will improve local air quality, reduce greenhouse gas emissions, and increase primarily off-peak electric energy sales.



It was quite the ride with some real zip. DWP was also testing in its fleet some other EVs at the time, primarily battery conversions. It was almost a running joke as to whether the car would make it back to the office, especially making it up the last hill from Beaudry on 1st Street. DWP also at this time was installing public charging stations around the city preparing for the coming expected wave of EVs. However, the EV1 was a lease program from GM, and production of the car was canceled in 1999. Ultimately the entire EV1 program was canceled in 2003 and all 1,100 EV1s were repossessed by GM and crushed. Ultimately CARB rolled back its EV rules, primarily due to auto manufacturer lawsuits, and the electric vehicle took a break in development. If you get a chance, check out a couple of documentaries, available on YouTube, “Who Killed the Electric Car” and “Revenge of the Electric Car.”

Tesla Model 3


ALL PHOTOS WIKIPEDIA

If the U.S. transitioned all the light-duty vehicles to hybrids or plug-in electric vehicles, we could reduce our dependence on foreign oil by 30-60 percent, while lowering the carbon pollution from the transportation sector by as much as 20 percent.

U.S. Department of Energy



At about the same time the EV1 program was canceled, a new start-up company in the Silicon Valley was founded by a group of five engineers. This company was called Tesla, as a tribute to the developer of alternating current, Nikola Tesla. Tesla began production of its first commercial vehicle, the Roadster, in 2008. Tesla now offers Models S, X, Y and 3. One of the five original founders is now Tesla’s current CEO and visionary Elon Musk. As many of you may know, Tesla is now worth more than GM, Ford, Fiat Chrysler, BMW, Honda and Volkswagen combined. During the early 2000s, other auto manufacturers have brought their own electric vehicles to market including the Nissan Leaf in 2010, the BMW i3 in 2013, the Fiat 500e in 2013, the Kia Soul EV in 2014, the Honda Clarity Electric in 2016, the Chevrolet Bolt in 2017, the Hyundai Kona Electric and Niro EV in 2018, and Mini Cooper SE 2020, along with other smaller company products.


There are currently about 60,000 EVs in the DWP service territory, that is expected to double in the next 18 months. EVs are still relatively expensive to purchase, and even with fuel savings, are expensive to operate. However there are still local, state and federal programs that reduce the cost to purchase and operate an EV. LADWP also continues to support the use of EVs through EV charger subsidies, used EV rebates, and time of use rates that encourage off peak charging. The increased use of EVs in LA will improve local air quality, reduce greenhouse gas emissions, and increase primarily off peak electric energy sales. 



\$15.9 BILLION PRICE TAG ANNOUNCED FOR CALIFORNIA'S DOWNSIZED DELTA TUNNEL PROJECT

SACRAMENTO BEE AUGUST 22, 2020

Shortly after taking office last year, California's governor Gavin Newsom scrapped the Twin-Tunnel Delta project and replaced it with a smaller single-tunnel option in hopes of reducing its cost and the controversy surrounding such a large undertaking. However, a recent preliminary cost estimate for the new project prepared by the Department of Water Resources (DWR) sets the price at \$15.9 billion, only slightly less than the \$16.7 billion cost of the original twin-tunnel project. DWR explains that inflation and a different set of assumptions and mitigations result in a higher-than-expected price, and that if measured under the same assumptions, the original project would cost \$22 billion, thus resulting in a significant savings in cost.

Former Governor Jerry Brown was unable to gain full acceptance of the original project because of a reluctance on the part of downstream water agencies to buy-in due to its high cost, and resistance from environmental groups despite a promise of reduced harm to fish. As currently operated, pumping from the Delta causes reversals in the flow of some rivers and forces the fish into predators or the pump station intake structure. To save the fish, pumping is often reduced, thus limiting the supply to downstream water users. The new project, called the Delta Conveyance Project would bypass most of the Delta and improve both the reliability of water supply and protection of the ecosystem of the Delta. Although some environmental groups have agreed to consider the new project, continued fierce opposition is expected. 



Mystery History

Answers to
mystery questions

- 4) San Francisquito Power Plant
- a) 0.5%

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