



APRIL 2022



WATER & POWER ASSOCIATES, INC.

NEWSLETTER

For a Sustainable Los Angeles



Governor Newsom's Water Dilemma

By Robert Yoshimura and Scott Munson

Immediately after taking office three years ago, Governor Gavin Newsom said in his State of the State Address "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 thereafter, he cancelled the Delta Twin Tunnels Project and ordered that it be replaced by a smaller single-tunnel alternative. In so doing, he delayed the construction of the most important link in California's State Water Project (SWP) by at least three to four years.

The Delta tunnel is part of a broad strategy to assure a reliable supply of water to southern California in years of drought and to protect that water supply in the event of an earthquake that is likely to damage the fragile levees that prevent flooding of the many islands within the Delta. As currently configured (the status quo), extraction of water from the Delta pumping stations must be curtailed 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-decade, multi-billion-dollar recycling programs are being planned that will ultimately reuse nearly all wastewater in the region.



Aerial View of the Sacramento - San Joaquin Delta

(Image credit: Steve Martarano / U.S. Fish and Wildlife Service)

(Continued on page 3)

Editor's Column

There are a number of very important issues facing Los Angeles and Southern California at this time. We are covering some of the most important in this edition. Our lead article deals with the need for Governor Newsom to address the requirement of a reliable water supply to forestall the water shortages that are likely to face Southern California in the future and to provide the return on the investment that has already been made in the State Water Project, primarily by the residents of Southern California.



LADWP's Power System is preparing a state mandated Long Term Strategic Resource Plan to guide LADWP's investments to achieve its green energy goals. The plan is evaluating the four options that were developed in the LA 100 Study by LADWP and the National Renewable Energy Laboratory to move the City of Los Angeles into a Green Energy future. From this evaluation a roadmap for achieving that future will be developed. The plan will be revisited regularly to see that LADWP is on target to meet the goals of the City and for changes as may be appropriate. (See the update on Page 3.)

A major initiative being studied by LADWP's Water System is Operation NEXT that proposes to recycle all of the City's effluent from its Hyperion Water Reclamation Plant to replace imported supplies and increase the reliability of Los Angeles' water supply. A report presented to the Water and Power Associates at its January Board meeting is provided on page 13.

Also included are articles on the role of hydrogen to address global warming, the dire forecast for this summer's water supply, various other power supply initiatives, and our Mystery History feature.

Enjoy

Jerry Gewe, Editor

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WATERANDPOWER.ORG

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.



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(Continued from Page 1)

Since 2001, there have been seventeen years of below average rainfall in California, and only four years of normal or greater rainfall. Furthermore, each of the four droughts during that time has been more severe than the previous one, leading to an ominous outlook for the future. 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.

Governor Newsom has acknowledged the need for new housing to accommodate the anticipated growth in population, but he has deferred a major water supply project to accommodate that growth. He has acknowledged the extreme urgency for action to fight climate change, yet, by his actions on the Delta tunnel, he appears to be betting against continued climate change and its consequent droughts. 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 5 percent.

Governor Newsom should be reminded that 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. 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. Governor Newsom must place a higher priority on a Delta solution to forestall critical water shortages in southern California.

Long Term Strategic Resources Plan Update

Report by William Barlak at the March WPA Board Meeting

The publication of the Strategic Long Term Resources Plan's (SLTRP) preliminary findings has been deferred to April to adequately consider additional input from the Advisory Committee. The planners have initiated a resiliency study to assess the impacts and responses to a major transmission system outage. The Advisory Group will meet again in April, followed by public meetings in May and June. Subsequently, studies will be conducted to address input from those meetings and an additional public meeting will be conducted in August. The final report is now scheduled to be published in September.

Is Hydrogen the Miracle Fuel to Address Global Warming? (Part 2)

By William Glauz

This is the second article in the hydrogen series. The first article that appeared in the January 2022 edition 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 and the concept of using hydrogen as an alternate fuel, and the basic chemistry of hydrogen. This article will delve into the current uses of hydrogen, including how it is produced, and the vision of how hydrogen could be produced and used in the future.

As discussed in the January Newsletter, hydrogen, for the most part, does not exist on earth as its own molecule. Most hydrogen on earth is found as an element of water or hydrocarbons. To be used as hydrogen for energy purposes it must be separated from water or a hydrocarbon.

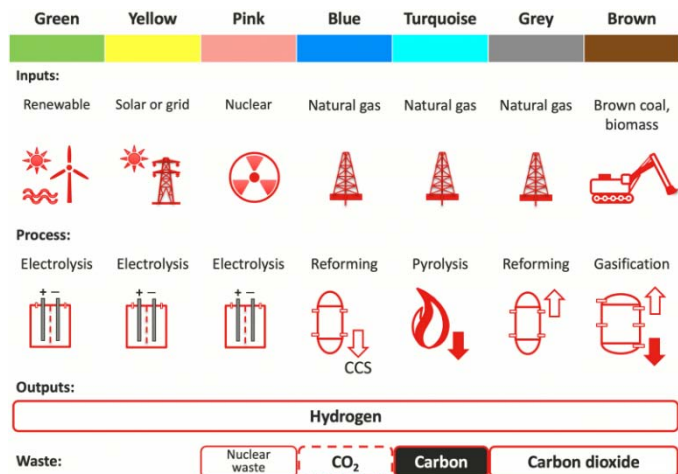
How is Hydrogen Use Measured?

Before we get into the uses of hydrogen it is helpful to understand how hydrogen is measured. Hydrogen in its pure form is primarily measured by weight, mostly in kilograms, and on a larger scale, metric tons. A metric ton is 1000 kg or about 2205 pounds. Hydrogen however is a very light gas. By volume, at standard conditions, 1000 cubic feet of hydrogen, the volume of a small bedroom, only weighs about 2.4 kg, or about 5.3 pounds. Methane or natural gas weighs about 20 kg per 1000 cubic feet at standard conditions, more than eight times that of hydrogen. Therefore, hydrogen is usually stored under pressure to reduce the volume of the gas.

Another unit of measurement for hydrogen that is useful in the electric industry is energy content, usually expressed in British Thermal Units (BTUs). Hydrogen is a very efficient energy carrier, as one kg of hydrogen is equivalent to about 8 million BTUs. For comparison, natural gas is about 3 million BTUs per kg. In other words, hydrogen has 2.6 times the energy content of natural gas by weight, but only about 30% the energy content of natural gas by volume at standard conditions. As we'll discuss later, the pressurization, then transportation and storage, for hydrogen is one of the obstacles to overcome.

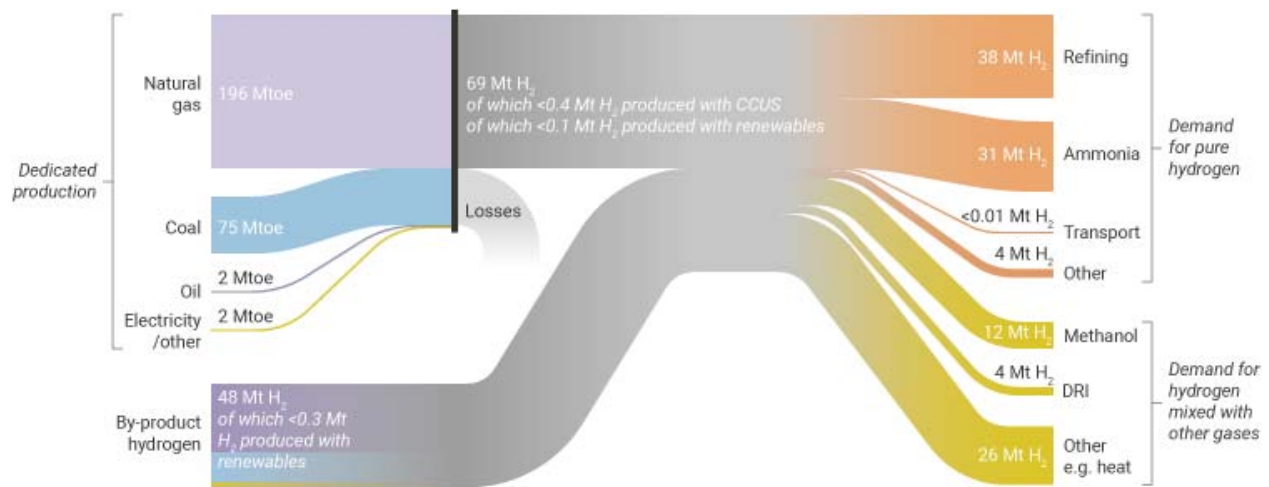
Types of Hydrogen Based on Production

Hydrogen production is classified using a color designation. Hydrogen is described as grey, blue, or green depending on how it is made: Gray from methane with CO2 emissions; Blue from methane with CO2 captured; and Green using electrolysis with electricity from renewable sources with no CO2 emissions. There are also a few other production classifications, but these are the primary ones. When people speak of the future hydrogen economy, or zero-carbon economy, green hydrogen is usually implied.



Current Hydrogen Uses

Industry has decades of experience in generating and handling hydrogen. Hydrogen demand has grown significantly, over 50%, in the past 20 years. Worldwide annual production of hydrogen is over 70 million metric tons (MMT); Annual U.S. production is about 10 MMT, which translates to roughly 1% of the country's energy consumption. Over half of the pure hydrogen produced is used for refining oil; and over 40% is used for producing ammonia that is primarily used for fertilizer manufacturing. The remainder of the pure hydrogen uses includes a very small, but growing, percentage for transportation using fuel cell electric vehicles, although currently this use is less than 0.03% of hydrogen used today. In addition, there is currently global demand for over 40 MMT of hydrogen mixed with other gases such as carbon monoxide, used for things like methanol production and steel manufacturing.



Current Hydrogen Production

Almost all hydrogen today is made from fossil fuels, with significant CO₂ emissions. Most of the global hydrogen demand, 79%, comes from dedicated hydrogen production plants. The remainder, 21%, is a byproduct produced in facilities designed primarily for other products, mainly refineries in which the reformation of naphtha into gasoline results in hydrogen.

Natural gas is the main fuel for hydrogen production, with steam methane reformation being the dominant method in petroleum refineries and the ammonia and methanol industries. Natural gas produces about 95% of hydrogen in the United States. Coal is also a predominant fossil fuel used in hydrogen production, primarily outside the United States.

A small amount of hydrogen, about 1%, is made by electrolysis of water. Electrolysis uses electricity to split water into oxygen and hydrogen in an electrolyzer. Alkaline and proton-exchange membrane (PEM) are the predominant types of electrolyzers, with alkaline electrolyzers being the more mature technology.

The next article will address the potential for hydrogen production and use in the future as a replacement for fossil fuels in the transportation and electric generation industry.

POWER BUZZ

Blame Sacramento, Not Moscow, for California's Energy Crisis

WSJ/Opinion/ 3/12-13/2022, by Robert Bryce, edited by Bill Woodson

<https://www.wsj.com/articles/blame-sacramento-moscow-california-energy-crisis-high-prices-power-decarbonization-electricity-green-energy-renewables-climate-change-11647013944>

On February 25th, the day after Russia invaded Ukraine, the Energy Information Administration reported that the all-sector price of electricity in California jumped 9.8% last year to 19.76 cents per kilowatt-hour. Residential prices increased even more, jumping 11.7% to an average of 22.85 cents per kilowatt-hour. California residential users are now paying about 66% more for electricity than homeowners in the rest of the U.S., who pay an average of 13.72 cents per kilowatt hour.

This is only a taste of the pain to come to achieve carbon **NEUTRALITY** by **2045**. On February 10, the California Public Utilities Commission unanimously approved a scheme that would add more than 25,000 megawatts of renewables and 15,000 megawatts of batteries to the state grid by 2032 at an estimated cost of \$49.3 billion. Also last month, the California Independent System Operator released a draft plan to upgrade the state's transmission grid at a cost of \$30.5 billion (see Sustainability Buzz article on page 8). The combined cost of those two schemes is about \$80 billion. Dividing that sum among 39 million residents works out to be about \$2,050 for every Californian.

It is exponentially more financially difficult for LADWP to meet the Los Angeles goal of reliable, ZERO carbon electricity by **2035**.

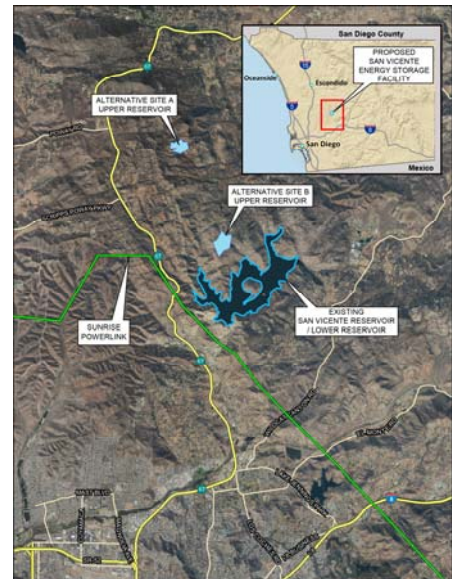
San Vicente Energy Storage Facility

by Bill Woodson

As of January 27, 2022, the City of San Diego and the San Diego County Water Authority are starting negotiations on a pump-storage hydroelectric project development agreement with the BHE Kiewit Team and Black & Veatch Corp to develop Phase 1 of the proposed San Vicente Energy Storage Facility.

The project would create a small upper reservoir above the existing San Vicente Reservoir, along with a tunnel system and an underground power house to connect the two reservoirs that could store 500 Megawatts of capacity for eight hours.

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



For details: <https://www.sdcwa.org/projects/san-vicente-pumping-facilities/>

Dire Forecast for this Summer's Water Supply

By Jerry Gewe

The situation for Los Angeles' water supply during this summer looks dire. It appears that significant cutbacks in water usage will be required this summer due to a third consecutive drought year.

In January, the water supply picture for this year looked very favorable. The record setting precipitation in northern California suggested that we were very likely to have an above normal runoff this year. Forecast for both the State Project and the Los Angeles Aqueduct deliveries looked very favorable.



Enterprise Bridge at Lake Oroville,
NBC News

In January, based upon the snowpack readings, the State set a preliminary forecast of being able to deliver 15% of contracted deliveries to their agencies this year. Their models suggested that there was a 99% chance of above normal water supply being available. However, there was storage capacity that was depleted during the last two years of below normal precipitation that needed to be restored, that would impact deliveries. Likewise, the early January snow pillow readings, from the eastern Sierra, indicated snow water content well above normal for that time of year. However, since that time there has been no significant precipitation and the water content has gone down. On the western side of the Sierra which supplies the State Water Project conditions have become even worse. In mid-March the State reduced the projected deliveries from the State Water Project from 15% to 5%.

If this projection turns out to be true, the Metropolitan Water District (MWD), even though having an historic amount of water in storage, primarily associated in the Colorado River supply, will be unable to supply normal deliveries to Los Angeles and the northern agencies of MWD. That water cannot be delivered to the northern parts of their service area, because their system does not have the hydraulic capability to deliver large enough quantities of the Colorado River water to these areas.

This will have a large impact on Los Angeles, because the Los Angeles system was initially designed to bring water from the Owens Valley through the Los Angeles Aqueducts and distribute it to the rest of the city. As supply from the Owens Valley has been diminished to meet environmental needs, the diminished supply has been replaced by water from the State Water Project. While there are connections to the MWD system capable of accessing Colorado River water, the capacity is not large enough to replace all the projected diminished supply from northern California.

Los Angeles will be required to undertake substantial conservation efforts to have enough water to meet the needs of the business and residential customers of the city. The specifics of how to achieve that conservation will be decided by the Los Angeles City Council.

SUSTAINABILITY BUZZ

Large-Scale Green Hydrogen Infrastructure System Unveiled for California

Excerpted by Bill Woodson from Power Magazine, February 17, 2022

<https://www.powermag.com/large-scale-green-hydrogen-infrastructure-system-unveiled-for-california/>

SoCalGas, North America’s largest gas distribution utility, has unveiled the Angeles Link, a proposed green hydrogen energy infrastructure system for Southern California that it says could be the largest of its kind in the nation.

The Angeles Link proposes to utilize between 25 GW and 35 GW of curtailed or new solar, wind, or battery output to power 10 GW to 20 GW of “advanced” electrolyzers and produce carbon-free hydrogen. The hydrogen would be delivered—via a new hydrogen pipeline system spanning 200 miles to 750 miles—from outside the Los Angeles Basin to industrial consumers in California. It would be equal to almost 25% of the natural gas SoCalGas delivers today.

CAISO Plan Calls for \$30.5 Billion for Transmission and More Renewable Energy

Excerpted by William Glauz from Power Magazine, February 23, 2022

<https://www.powermag.com/caiso-plan-calls-for-30-5-billion-for-transmission-and-more-renewable-energy/>



<https://www.rff.org/publications/explainers/renewables-101-integrating-renewables/>

California’s power grid continues to evolve and will look much different by 2040, according to a draft transmission plan, the 20-Year Transmission Outlook, released by the California Independent System Operator (CAISO) on January 31, 2022. The plan calls for significant additional renewable energy resources, along with a \$30.5-billion build-out of the transmission grid.

The Outlook, developed by the grid operator along with the California Public Utilities Commission and the California Energy Commission, provides details about how the state

will meet increased demand for electricity. The plan said the state will need about 120 GW of new power generation resources added to the CAISO system by 2040, including energy storage, utility-scale solar, offshore wind, and imports of clean energy from other states.

US Energy Information Administration Releases Annual Energy Outlook

Excerpted by William Glauz from the Energy Information Administration

<https://www.eia.gov/outlooks/aeo/>

The U.S. Energy Information Administration (EIA) collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment.

EIA's role is unique, providing an unbiased view of energy markets; EIA increases transparency and promotes public understanding of important energy issues. EIA has expanded its program in recent years to provide a growing customer base with coverage of increasingly complex and interrelated energy markets.

On March 3, 2022, the EIA issued its Annual Energy Outlook (AEO) for the United States through 2050. The AEO shows renewable energy being the fastest-growing source of energy in the country, but petroleum and natural gas are projected to remain the most consumed through 2050. The EIA expects renewable generation to increase more rapidly than the overall U.S. demand for electricity through 2050. Wind and solar power additions are expected to largely replace the retiring coal and nuclear generating capacity in the U.S. Wind and solar incentives, along with falling technology costs, support robust competition with natural gas for electricity generation. U.S. crude oil production is expected to reach record highs, while natural gas production is increasingly driven by natural gas exports.

PG&E Proposes Battery Energy Storage Plan to California Regulators

Excerpted by William Glauz from Power Engineering, January 25, 2022

<https://www.power-eng.com/energy-storage/pg-e-proposes-6-4-gwh-battery-storage-plan-to-california-regulators/#gref>

Pacific Gas and Electric (PG&E) is proposing to add nearly 1,600 MW of lithium-ion battery energy storage across nine projects in the state, with each project supplying four hours of storage or 6,400 MWh daily.

The energy storage projects would come online between 2023 and 2026, coinciding with the expected retirements of gas plants in southern California and PG&E's Diablo Canyon Nuclear Power Plant.

Like other investor-owned utilities in the state, PG&E needs to comply with a 2021 California Public Utilities Commission (CPUC) order directing the state's electric companies to collectively procure 11.5 GW of new resources.

The order requires electric companies to begin delivering power to customers incrementally: at least 2,000 MW by August 1, 2023; an additional 6,000 MW by June 1, 2024, an additional 1,500 MW by June 1, 2025; and an additional 2,000 MW by June 1, 2026.

At least 2,500 MW of the resources procured between 2023 and 2025 must be emission-free to replace the current supply of energy from Diablo Canyon when it retires in 2025.



Rendering of the Edwards Sanborn project in Kern County, California. Image: Terra-Gen / CPA.

BloombergNEF Releases 2022 Sustainable Energy Factbook

Summarized by William Glauz

For the full Factbook, see: <https://bcse.org/factbook/>

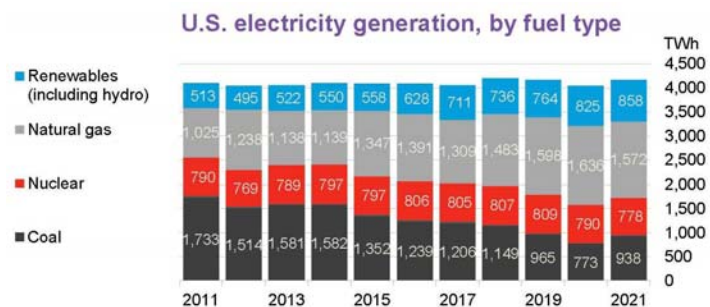
On March 4, 2022, BloombergNEF released the 10th edition of its Sustainable Energy Factbook. The Factbook provides new data and analysis about the performance of clean energy sectors by tracking year-on-year as well as long-term trends for the U.S. energy economy.

BloombergNEF was formed when Bloomberg LP, a large privately held financial, software, data, and media company headquartered in New York, purchased New Energy Finance, a data company focused on energy investment and carbon markets research based in the United Kingdom in 2009.

The massive uncertainty and upheaval that plagued the U.S. in 2020 began to ease in 2021, offering the country's energy sector a chance to take stock of a new reality buffeted by a lingering pandemic, global supply chain bottlenecks and rising inflation, but powered by a strong economic recovery. Despite considerable uncertainty, the clean energy and energy efficiency transition continued, with a record-breaking year for deployment of renewable power, battery storage and sustainable transportation, an unprecedented injection of new capital into companies, technologies and projects, and a wave of supportive new policies.

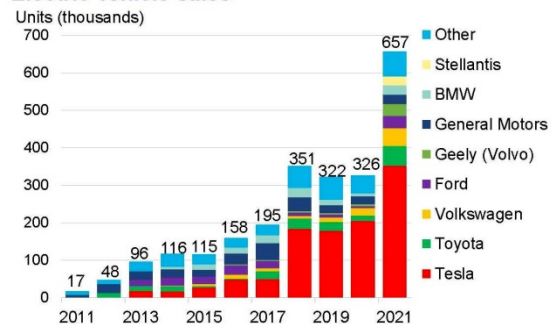
Here are some of the key findings from the 2022 Sustainable Energy in America Factbook:

- U.S. primary energy consumption grew 4.4% in 2021 as the economy recovered from COVID-19 business conditions, but consumption was 3.19% below 2019 (pre-pandemic) levels.
- Energy productivity improved by 1.3%. The ratio of GDP growth vs. energy consumption grew again in 2021 suggesting that the long-term trend of the U.S. using energy more efficiently continued – despite two incredibly anomalous years.
- U.S. consumers allocated less than 5% of their proportional household spending to energy products, despite high gasoline prices, supply chain challenges and overall inflation.
- A record-breaking \$105 billion in new capital went into new U.S. clean energy assets, an 11% year-on-year jump; the figure has grown 70% in the last five years.
- Corporate demand for clean energy endured, with a total of 351 companies pledging to procure 100% clean energy. Companies signed 17GW in clean energy procurement contracts in 2021.
- Renewables made another record contribution to the power grid with production rising 4.1% year-on-year. Renewable sources accounted for just over one fifth of U.S. power generation in 2021.



- Developers built a record 37 gigawatts (GW) of wind and solar power-generating capacity. Solar enjoyed its best year ever with 24.2GW added while wind had its third-best year at 13GW.
- 2021 was a breakthrough year for U.S. offshore wind with 8.5GW of new capacity awarded, stemming from contracts in New York, New Jersey, Massachusetts, and Maryland.
- Power from all zero-carbon electricity sources (renewables plus nuclear power) met 40% of demand, despite lower hydropower output due to extreme droughts in the Western U.S.
- Demand for U.S.-produced natural gas grew 9.4%, with liquid natural gas (LNG) exports jumping 64% and industrial, residential, and commercial heating demand rising 0.4%, 4.7% and 1.9%, respectively.
- Natural gas remained the largest source of U.S. power generation at 38%, however the fuel contributed 3.1% less than in 2020, primarily due to higher gas prices.
- Coal-fired power's contribution rose year-on-year for the first time since 2014 to provide 22% of generation. Overall, however, coal's contribution is down nearly 40% from a decade ago due to weak demand, competition from lower-carbon power sources and coal plant retirements.
- Over 8GW of new hydrogen-fired power-generating capacity projects were announced in 2021 in the U.S., positioning the country to potentially lead in developing the fuel for new applications.
- Nearly 4.2GW of battery storage capacity was added to the U.S. grid in 2021. Today, 81% of storage is provided by pumped hydropower projects, but batteries account for 89% of storage built over the last decade.
- U.S. electric vehicle (EV) sales hit 657,000 units in 2021, a doubling from the 325,000 cars sold in 2020.
- Renewable natural gas (RNG) production capacity grew 12% year-on-year, with \$3 billion earmarked for investment in 2021. RNG is predominantly used in transportation today but has potential use in industrial applications and buildings.
- Total U.S. CO2 emissions rose 5.8% year-on-year. In the power sector, coal-fired generation rebounded. Transportation sector emissions also jumped as drivers returned to the roads. Economy-wide emissions finished 2021 15% below 2005 levels. Power sector emissions were down 35% vs. 2005.
- Climate disasters caused \$145 billion in damage, making 2021 the third most costly year on record after 2005 and 2017.
- The Biden administration adopted a 2050 economy-wide net zero emissions goal for the U.S. as Congress approved \$80 billion for energy transition investment. Congress ended 2021 with over \$300 billion in climate and clean energy policies pending in a tightly divided House and Senate.

Electric vehicle sales



Mystery History Questions

Presented by Jack Feldman



The above photo shows Los Angeles' first power plant. It was located on the corner of Alameda and Banning streets in downtown, just six short blocks south of the Los Angeles Plaza.

Charles L. Howland and several other investors built this plant when they formed LA's first electric utility.

When was the above power plant built?

- A) 1863
- B) 1873
- C) 1883
- D) 1893
- E) 1903

What was the name of LA's 1st electric utility?

- A) Los Angeles Electric Company
- B) Pacific Light and Power Company
- C) West Side Lighting Company
- D) Southern California Edison
- E) LA Gas and Electric Corporation

Answers on Page 15

More info at the following link:

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

GUEST SPEAKERS

Summary by Robert Yoshimura

GUEST OF THE MONTH
JANUARY 2022

GUEST SPEAKER 1:

Ben Tanimoto, Leader of the Program Management Group for Op NEXT, Los Angeles Department of Water and Power

Operation NEXT is an ambitious program intended to recycle all the effluent from the City's Hyperion Reclamation Plant to supplement water supplies and improve reliability in the face of ongoing droughts and other challenges. The program is currently in the early conceptual stage, thus preliminary cost and schedule information may change as the plan is developed. A program charter has been completed and a master plan is in development. Upon completion of the master plan, a program EIR will be developed by DWP and the City's Bureau of Sanitation.



The objective of the program is to maximize water reuse from Hyperion for beneficial uses in the City of Los Angeles including indirect and direct potable reuse. The estimated additional supply of water to be developed is 336 cubic feet per second (cfs) which is equivalent to 217 million gallons per day or 243,000 acre-feet per year.

New water produced by Op NEXT will largely offset purchases of water from MWD whose water deliveries are challenged by ongoing drought conditions on the Colorado River and State Water Project. The goals of the program are:

- Sustainability – by creating a balanced and diversified water supply portfolio,
- Reliability – by adding a drought-proof water source,
- Resilience – by utilizing the available storage in the City's groundwater basins,
- Cost Effectiveness – based on the expectation that life-cycle costs will be competitive with other new sources, and
- Environmental Stewardship – based on the anticipated reduction in DWP's carbon footprint resulting from the program.

Currently, 89% of our water supply is from the LA Aqueduct and MWD. Upon completion of Op NEXT those sources will be reduced to 30% with the rest of the water supply from local sources.

The key facilities of Op NEXT are the Hyperion Reclamation Plant that will produce the water and the Los Angeles Aqueduct Filtration Plant (LAAFP) where such water will ultimately be treated for direct use. LAAFP can provide water to 70% of the City's distribution system and thus has a significant reach. The reclaimed water from Hyperion will be distributed to five "buckets" as follows:

- West Coast Basin (120k AF of storage) to replenish the groundwater basin for reuse in the Harbor area,
- Central Basin (330k AF) for injection and reuse through the City's distribution system,
- San Fernando Basin (550k AF) for injection/spreading and extraction for reuse in the City, and for direct potable reuse after treatment at the LAAFP,
- Direct reuse at the MWD Jensen Filtration Plant adjacent to LAAFP, and
- A potential future connection with MWD's regional recycled water program for use in the San Gabriel valley.

New infrastructure required for the program will include the treatment facilities at Hyperion to be constructed by the Bureau of Sanitation, three to four pumping stations including forebays, 62 miles of trunklines to distribute the water to points of use, two to three new well fields, treatment facilities for the wellfields, and miscellaneous system improvements for a total of 34 new capital projects.

The program schedule extends from 2019 to 2058 with conceptual planning, a master plan and program EIR due to be completed by 2023. Project-specific planning and design will extend from 2022 until 2049, with construction scheduled for the period of 2028 to 2056. Post construction activities will result in a total program completion date of 2058. Hyperion's advanced treatment facilities are estimated to be complete by 2044.

A budgetary analysis of six scenarios concluded that capital costs range from \$6.9 billion to \$16.7 billion. Unit water costs range from \$1,794 per acre-foot to \$1,099 per acre-foot. The lower cost scenarios are comparable in unit cost to purchased water from MWD.

Public outreach efforts have included briefings for all Council Districts, neighborhood councils, and other organizations for a total of more than 100 presentations to date. In conjunction with the DWP's Public Affairs Division, a program website has been created, which can be found at www.ladwp/OperationNEXT.

GUEST SPEAKER 2:

Andrew Linard, DWP Director of Water Operations introduced Sabrina Tsui, who provided a summary of the bleak water supply outlook for 2022 and how the system will operate without State Water Project (SWP) deliveries to the City.

The current water year began with an abundance of precipitation in California and the western states that led to snow accumulations far above normal for this time of year and some improvement in reservoir storage levels statewide.



However, that precipitation is not sufficient to overcome two record drought years that have depleted reservoirs and groundwater basins in-state and on the Colorado River system. Furthermore, the forecasted outlook for precipitation and temperatures in the west over the next few months is not optimistic for water supply.

In the past few months, the first-ever water shortage was declared on the lower Colorado River, statewide and regional drought emergencies were declared by our Governor and by the MWD, and the California Department of Water Resources (DWR) announced its initial allocation of water will be zero percent of contracted amounts. The DWR will make up to 270,000 AF of its emergency reserves available to MWD for minimum health and safety needs only. Areas that qualify for minimum Human Health & Safety (HH&S) needs are defined by DWR as those areas that are solely dependent on SWP water. DWP is developing its operational strategies with the goal of avoiding the use of HH&S water.

The City is currently in Phase 2 of the Emergency Water Conservation Ordinance that limits watering to 3 days per week and eliminates all wasteful practices. DWP has recommended implementation of Phase 3 which would further reduce watering days to 2 per week, require steps to avoid evaporation from pools, and ban home car washing. If DWP were to request HH&S water, it would be compelled to eliminate all outdoor watering in its service area.

MWD has implemented a number of extraordinary measures to shift demand from SWP to the Colorado River Aqueduct (CRA) in the northern part of its service area. In cooperation with MWD, DWP has modified its operations to maximize its demand on MWD's CRA interconnections. In calendar year 2021, DWP shifted 23,000 AF of demand to CRA interconnections and will continue to do so in the coming year.



Mystery History Answers

C) 1883


A) Los Angeles Electric Company

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2022 CALENDAR

GUEST OF THE MONTH

MEETINGS VIA ZOOM
EXCEPT AS NOTED
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JASON RONDOU DIRECTOR, RESOURCE PLANNING, DEVELOPMENT & PROGRAMS, LADWP	MAY 11, 2022 Update on LADWP's Long Term Strategic Resource Plan
ANSELMO COLLINS ASSISTANT GENERAL MGR WATER, LADWP	JUNE 8, 2022 Update on Water Issues
FIELD TRIP	JULY 13, 2022 North Hollywood Groundwater Treatment Facility

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