WORLD POWER SYSTEMS REVIEW

1 May 2024

15 April 2024

California exceeds 100% of energy demand with renewables over a record 30 days

In a major clean energy benchmark, wind, solar, and hydro exceeded 100% of demand on California's main grid for 30 of the past 38 days.

Stanford University professor of civil and environmental engineering Mark Z. Jacobson has been tracking California's renewables performance, and he shares his findings on Twitter (X) when the state breaks records. Jacobson notes that supply exceeds demand for "0.25-6 h per day," and that's an important fact. The continuity lies not in renewables running the grid for the entire day but in the fact that it's happening on a consistent daily basis, which has never been achieved before.

On April 2, the California Independent System Operator (ISO) recommended 26 new transmission projects worth $6.1 billion, with a big number being devoted to offshore wind. In response, Jacobson predicted on April 4 that California will entirely be on renewables and battery storage 24/7 by 2035. California passed a law that commits to achieving 100% net zero electricity by 2045.

Electrek
http://electrek.co/

16 April 2024

NGESO proposes retrospective application of upcoming long-term connections reforms

- Today ESO has published initial proposals to further develop the wide-ranging long-term connections reforms we announced in December last year – applying the *First Ready, First Connected* approach to the whole queue.
- Reformed process could be in place by January 2025, subject to timelines for industry consultation and regulatory processes.
- ESO internal analysis of available data indicates that the proposals, as set out today, could potentially halve the size of the queue, enabling earlier connection dates for viable projects.
- We look forward to working with stakeholders as these proposals develop.

Previously, our *First Ready, First Connected* reforms (known within industry as 'TMO4') would only have applied to new connection applications and significant Modification Applications received from January 2025 onwards.

Today's proposals would build on this, with significant action as soon as possible across the whole of the current queue. Due to the fast-growing nature of the queue, this is needed if we are to drive improved connections dates in the timescales needed to deliver on the objectives of the Connections Action Plan (CAP).

These reforms are designed to work in tandem with initiatives from the ESO's five-point plan, as well as work by wider industry such as the ENA's 3-point plan for connections.

Why are you proposing this?

Retrospective application to the whole of the queue will go further and faster – delivering quicker connections for viable projects by raising entry requirements, removing stalled projects, better utilising existing network capacity and better allocating available network capacity.

These proposals are in development and subject to change as they go through the relevant regulatory processes. However, our internal analysis of available data indicates that the proposals as set out today could potentially halve the size of the queue, enabling earlier connection dates for viable projects.

In simple terms, how would these proposals work?

Under the reformed *First Ready, First Connected* 'gated' approach, projects will enter the connections process at 'Gate 1' but will need to reach certain criteria to arrive at 'Gate

2' at which point projects can obtain a queue position and a connection date. Prior to reaching Gate 2, projects would only receive an indicative connection date and connection point.

As set out above, a key difference in today's announcement is that we will seek to apply this *First Ready, First Connected* model retrospectively, across all projects in the connections queue. Within industry, this will be referred to as 'TMO4+'.

Projects in the existing queue will be given a period of time, prior to the implementation of these reforms, to demonstrate whether they have met Gate 2. Where projects meet the criteria, they will have the option to retain their existing connection date, or may request an accelerated connection date based on the reformed queue.

Where projects in the existing queue do not meet the criteria, they will move to an indicative connection date and an indicative connection point. They will also no longer be subject to liabilities and securities, or to Queue Management Milestones. Projects can apply for a Gate 2 offer after they have met the Gate 2 criteria.

Find out more

How fast are new projects joining the queue?

Since October 2022, the transmission connections queue has grown by more than 275GW and has been growing at an average of over 20GW a month for the last 12 months. The distribution connections queue has also continued to grow and, at the current rate of growth, the total queue (across transmission and distribution) is likely to exceed 800GW by the end of 2024. This is over four times the installed capacity we anticipate needing by 2050.

What happens next?

These proposals were first put forward by the ESO to the Connections Delivery Board last month, which saw broad support for the ESO to move on with further development of the proposals.

Implementation will require changes to industry Codes and Licence Conditions. We will shortly submit applications for urgent Code Modification Proposals (CMPs) and will request that these are treated as urgent CMPs. The code modification process will provide the opportunity for formal consultation with stakeholders as the proposals are progressed.

Subject to the regulator's approval of timelines for the code modification process, this reformed process could be in place by January 2025.

We will continue to develop our implementation plans alongside Ofgem, Government and wider industry and will continue to engage with stakeholders closely over the coming months. We will also explore transitional arrangements, which could involve earlier introduction of aspects of the reformed approach.

NGESO

https://www.nationalgrideso.com/

16 April 2024

Extreme heat shuts Philippine power plants and risks blackouts

A heat wave in the Philippines forced power plants to shut down on Tuesday, placing the country at risk of blackouts and prompting the government to call on people to reduce consumption.

Nineteen generators are offline, while three others are running on reduced capacity, on the main Luzon Island, the National Grid Corp. of the Philippines said in a post on its Facebook page. The grid has been placed on red alert for the first time in almost a year, meaning supply is seen as insufficient to meet demand, it said.

Hotter weather both increases electricity demand for fans and air conditioning and makes it harder for plants to prevent overheating. A dozen facilities are also shut in the

Visayas grid, which is on yellow alert, meaning the margin of supply is under a contingency threshold.

The Philippines' weather agency said in January that 2024 may be one of the warmest years on record for the country, threatening to stretch the nation's grid. The heat index, which combines air temperature and humidity, will climb as high as 42C (108F) in Central Luzon on Tuesday and Wednesday, according to the local weather agency. Businesses and households are being encouraged to reduce power usage during peak demand hours, the Department of Energy said.

Bloomberg
https://www.bloomberg.com/

16 April 2024

Europe announces Solar Charter to support PV manufacturing

The European Commission (EC) has announced its European Solar Charter, a package intended to support domestic European solar manufacturing. It joins the group of major global economies – most notably the US and India – looking to spur a domestic solar manufacturing industry to reduce reliance on the Chinese supply chain which dominates the solar landscape.

The Charter was first announced in March, when Commissioner for Energy Kadri Simson said that the PV manufacturing industry faced a "very fragile situation". It followed consistent calls from trade bodies for support for Europe's manufacturers. The long-awaited Charter was signed yesterday (15th April) by the 23 EU member states, the EC and Europe's two main solar trade bodies, the European Solar Manufacturing Council (ESMC) and SolarPower Europe. Under the Charter, member states and the solar industry bodies will "commit" to a number of measures "supporting the competitiveness of the European PV manufacturing industry and promoting the creation of a market for high-quality products meeting high sustainability and resilience criteria."

The EC also signed a number of clauses which it "intends" to execute.

Most notably, the Charter – which can be read in full here – emphasises "ambitious non-price criteria" for public solar auctions as a way to stimulate domestic production. Non-price criteria include "resilience, sustainability, responsible business conduct, 'ability to deliver', innovation and cybersecurity criteria". These were proposed under the Net Zero Industry Act (NZIA) when it was adopted by the European Parliament in November. The Solar Charter requires member states and industry bodies to adopt non-price criteria through "rapid early implementation of the relevant provisions in the NZIA".

These same criteria will also apply to solar PV product offtakers, who will have to incorporate non-price criteria into their strategies. The charter will also see "the promotion of innovative forms of solar energy deployment, such as agri-PV, floating solar, infrastructure-integrated PV, vehicle-integrated PV or building-integrated PV". This will be made possible either by the removal of permitting and regulatory barriers or through public support schemes for these technologies.

Beyond non-price criteria, the Charter says that member states must "Consider using all available EU funding opportunities" to support new solar manufacturing capacity and investments. The EC will "intend" to "further facilitate access to EU funding for solar PV manufacturing projects" under its various financing vehicles, including the Recovery and Resilience Facility. It will also continue to support the European Solar PV Industry Alliance – which it established in 2022 – in its goals to support new domestic manufacturing capacity. In addition, the EC will "cooperate with third countries" outside the EU "to enhance the resilience and diversification of supply chains".

The EU passed a law banning products with forced labour in their supply chains from entering the market earlier this year, which requires the EC to investigate companies in third countries which are exposed to suspected forced labour. Following the signing, CEO of SolarPower Europe, Walburga Hemetsberger said that the Charter "reinforces the reality that solar PV is now a mainstream energy technology. She called the document "an important moment of recognition", but said that the bloc still needs "rapid action and concrete measures at national and EU level to support manufacturers. This means rolling out resilience criteria in public procurement and auctions as soon as possible, unlocking subsidy support, and establishing dedicated EU financing for solar."

She concluded that "the EU Solar Charter is one chapter in Europe's solar story. Delivering accelerated solar deployment growth is key to ensuring a market for European solar manufacturers." The ESMC – which represents many non-Chinese solar manufacturers – was also congratulatory; its secretary general, Johan Lindahl said: "The European Solar Charter marks a crucial moment, drawing much-needed political attention to our domestic solar industry. He continued: "While the Charter alone is not sufficient to rebuild a robust European photovoltaic value chain, we hope it will work as a rallying point for accelerating concrete measures and serve as a signal that the European Union is not yet ready to hand in a walk-over in the competition with China, the US and India." Last month, Lindahl told PV Tech Premium that any possible Solar Charter should support existing EU manufacturers with OPEX.

The ESMC made three policy recommendations for the Charter to be effective:

- Member States' commitment to quantitative off-take targets of resilient EU PV modules – the ESMC recommends that member states commit to specific off-take targets by June 2024.
- Dialogue with off-takers followed by the concrete commitments – the ESMC encourages dialogues for off-takers to "include defined percentages of resilient EU PV modules in their portfolios"
- Bridge funding to secure Final Investment Decisions – the ESMC says that financing is needed to "close the financing gap" and achieve 10GW of investment decisions by 2025.

Pv-tech
http://www.pv-tech.org/

17 April 2024

Australia adds 2.9GW rooftop solar in 2023, total installed capacity surpasses 20GW

Rooftop solar now accounts for 11.2 per cent of Australia's electricity supply, with households and businesses playing a leading role in Australia's renewable energy transition, according to the Clean Energy Council's new Rooftop Solar and Storage Report, published today.

The report, developed with data provided by solar consultancy SunWiz, has also found that rooftop solar photovoltaic (PV) system installations reached 20 GW of total capacity across Australia in 2023. New South Wales broke the record for the highest annual installed capacity of any state, with 970 MW of new rooftop solar systems. Not to be outshone by its rival to the south, Queensland was the first state to surpass a total of one million rooftop solar installations during 2023.Clean Energy Council Policy Director of Distributed Energy Con Hristodoulidis said that rooftop solar is experiencing rapid growth in Australia's clean energy mix, with an estimated one in three households and businesses installing the technology.

"The sheer scale and pace of rooftop solar in Australia is unparalleled anywhere else in the world, due to an abundance of sunshine and the inherent benefits including lower energy bills and feed-in tariffs. Last year saw 2.9 GW of new capacity installed from 314,507

units, marking the second-biggest year for the uptake of rooftop solar, solidifying its position as the second-largest source of renewable generation and the fourth-largest source of all electricity generation in Australia. More than three million Australians understand that their rooftop solar systems are providing them with substantial savings, greater value and peace of mind. The recent announcement by the Federal Government of the $1 billion Solar Sunshot manufacturing support program is a positive sign for future progress, as we leverage world-leading research and innovation to make more solar products right here in Australia."

Fifty-seven thousand behind-the-meter batteries were also installed in 2023. When combined with the future uptake of behind-the-meter batteries, households have even more to gain, all the while supporting Australia's timely transition to a renewable energy future.

"It is clear that now is the time to back home batteries, build on their growing popularity among households and write the next chapter of Australia's solar success story," Hristodoulidis said. "This is why the Clean Energy Council has led calls for a national Home Battery Saver Program of up to $6500 per household to provide more Australians with cost-of-living relief and the added flexibility of storing, using and trading lower-cost electricity generated at home, tailored to their needs."

Key statistics from the Rooftop Solar and Storage H2 2023 Report:

- Collectively, rooftop solar is now the second largest source of renewable electricity generation in Australia (behind wind energy generation), and the fourth largest source of electricity generation, providing approximately 11.2 per cent of the country's power supply.
- 2023 saw rooftop photovoltaic ('PV') installations surpassed a total of 20 GW installed capacity in Australia.
- With 970 MW of new rooftop solar systems installed in 2023, New South Wales broke the record for the highest annual installed capacity of any state ever recorded.
- The total number of rooftop solar installations in Queensland surpassed the one million mark, the first state to do so.
- Fifty-seven thousand behind-the-meter batteries were installed in 2023.

Clean Energy Council
http://www.cleanenergycouncil.org.au/

16 April 2024

GWEC: 2023 was a record year for wind power growth – in numbers

The global wind industry installed a record 117GW of new capacity in 2023, making it the best year ever for new wind energy. Despite a turbulent political and macroeconomic environment, the wind industry is entering a new era of accelerated growth driven by increased political ambition, manifested in the historic COP28 adoption of a target to triple renewable energy by 2030. The report highlights increasing momentum on the growth of wind energy worldwide:

- Total installations of 117GW in 2023 represents a 50% y-o-y increase from 2022.
- 2023 was a year of continued global growth – 54 countries representing all continents built new wind power.
- GWEC has revised its 2024-2030 growth forecast (1210GW) upwards by 10%, in response to the establishment of national industrial policies in major economies, gathering momentum in offshore wind and promising growth among emerging markets and developing economies.

Still, the wind industry must roughly triple its annual growth from a level of 117 GW in 2023 to at least 320 GW by 2030 to meet the COP28 and 1.5C degree pathway targets. The Global Wind Report provides a roadmap for how this can be done. GWEC calls on

policymakers, investors and communities to work together across the key areas of investment, supply chains, system infrastructure and public consensus, to set the conditions for wind energy growth to take off through to 2030 and beyond.

The year saw 54 countries representing all continents build new wind power. The top 5 markets for new wind installations are China, US, Brazil, Germany, and India. China set a new record with 75 GW of new installations commissioned, which makes up nearly 65% of the global total. That underpinned a record year for the Asia-Pacific region, which saw year-over-year growth of 106%. Brazil installed 4.8 GW of wind in 2023, putting the country in third place globally. As a result, Latin America also saw record year-over-year growth of 21%. Wind installations in Africa & Middle East increased in 2023 by 182% compared with 2022. Global cumulative wind power capacity passed the first 1 terawatt (TW) milestone in 2023, and now totals 1,021 GW, following year-over-year growth of 13%.

Onshore wind had the best year on record in 2023, surpassing 100 GW in a single year with 106 GW, or a year-over-year growth of 54%. Offshore wind had its second-best year on record with 10.8 GW total installed. The Global Wind Energy Council announced that its revised its 2024-2030 growth forecast (1210 GW) upwards by 10%, in response to the wind industry "entering a new era of accelerated growth driven by increased political ambition."

GWEC
http://gwec.net/

17 April 2024

TEPCO to start loading nuclear fuel at Kashiwazaki-Kariwa unit

TEPCO plans to begin loading fuel into unit 7 of the Kashiwazaki-Kariwa nuclear power plant in the Niigata Prefecture following approval by Japan's Nuclear Regulation Authority, although it is not yet clear when the reactor will be restarted. TEPCO said: "We received approval for the test use of safety equipment to confirm the soundness of the equipment. From now on, we will carry out fuel loading and subsequent pre-use operator inspections to confirm the integrity of the equipment." The fuel loading process began on Monday, ahead of the unit's potential restart.

Kashiwazaki-Kariwa 7 has been offline since August 2011. Additional regulatory inspections will have to be carried out before it can resume operations, and the local governor must give consent for this. As of yet, Niigata Governor Hideyo Hanazumi has not announced whether he will give his consent for the restart, although the central government has sought his approval. According to the Japan Times, in a meeting last month with Yoshifumi Murase, commissioner of the Agency for Natural Resources and Energy, Hanazumi said that the reactor will only be restarted if the government ensures safe evacuations of local residents in the event of an emergency.

Units 6 and 7 of the nuclear power plant, which are 1,356MW advanced boiling water reactors, originally began commercial operation in 1996 and 1997. In 2013, they were the first Japanese boiling water reactors to be put forward for restart when TEPCO applied for Nuclear Regulation Authority (NRA) approval of its safety upgrades. Four years later, TEPCO received permission from the NRA to restart units 6 and 7. However, in 2021, there were malfunctions within the intruder detection equipment at the facility, and TEPCO reported unauthorised use of an ID card. In April 2021, the NRA issued an administrative order to TEPCO stopping it from handling nuclear fuel at the facility until security improvements had been made and assessed by inspections. Last year, the inspections were finished and the NRA confirmed that sufficient improvements had been made.

Power Technology
http://www.power-technology.com/

17 April 2024

UAE to maintain thermal power dominance in generation mix

Thermal power will continue to be the dominant power generation source in the United Arab Emirates from 2023 to 2035, accounting for 77.7% of the total power generation mix last year, according to GlobalData. By 2035, thermal power installed capacity is projected to reach 46.1 gigawatts (GW) from 41.2 GW in 2023. The annual generation of thermal power will increase to 155.9 terawatt-hours (TWh) from 135.5 TWh during the same period. Last year, gas was the dominant technology contributing 99.8% of the thermal capacity, with oil and coil contributing 0.1% each.

"With the discovery of new hydrocarbon reserves, the UAE is planning to invest heavily in hydrocarbon infrastructure and seek to develop new production techniques," said Sudeshna Sarmah, Power Analyst at GlobalData. "At present, the country is in the process of choosing new locations to set up new infrastructure and seeking unconventional methods for hydrocarbon production," it added.

Asian-Power
http://asian-power.com/

17 April 2024

DOE releases first-ever Roadmap to accelerate connecting more Clean Energy Projects to the nation's electric grid

The U.S. Department of Energy (DOE) released a new roadmap outlining solutions to speed up the interconnection of clean energy onto the nation's transmission grid and clear the existing backlog of solar, wind, and battery projects seeking to be built. The Transmission Interconnection Roadmap, developed by DOE's Interconnection Innovation e-Xchange (i2X), serves as a guide for transmission providers, interconnection customers, state agencies, federal regulators, transmission owners, load serving entities (LSEs), equipment manufacturers, consumer advocates, equity and energy justice communities, advocacy groups, consultants, and the research community, which includes DOE. The roadmap sets aggressive success targets for interconnection improvement by 2030 and outlines tools that will improve the process for connecting more clean energy projects to a reliable grid, while helping achieve the Biden-Harris Administration's goal of 100% clean electricity by 2035.

"Clearing the backlog of nearly 12,000 solar, wind, and storage projects waiting to connect to the grid is essential to deploying clean electricity to more Americans," said U.S. Secretary of Energy Jennifer M. Granholm. "Through the i2X program, the Biden-Harris Administration is accelerating the interconnection process by ensuring all stakeholders have better access to data and improved standards and procedures as we seek to develop and maintain a more efficient, reliable and clean grid."

According to a report recently released by DOE's Lawrence Berkeley National Laboratory, nearly 2,600 gigawatts of generation and storage capacity are actively seeking grid interconnection, which represents an eight-fold increase since 2014. The high volume of projects and inadequate existing procedures for interconnection has led to uncertainties, delays, inequities, and added costs for developers, consumers, utilities, and their regulators.

The i2X roadmap provides a broad range of stakeholders such as transmission providers, state agencies, federal regulators, equipment manufacturers, and other actors with a set of 35 solutions organized around increasing data access, transparency, and security for interconnection; improving interconnection process and timeline; promoting economic efficiency in interconnection; and maintaining a reliable, resilient, and secure grid. The roadmap includes four target metrics for interconnection reform including shorter

interconnection times, lower interconnection cost variance, increased completion rates, and zero disturbance events attributed to modeling.

Over the past two years of developing the roadmap, DOE collected ideas and potential solutions through a series of stakeholder workshops and virtual meetings, along with a request for information published in October 2023 to solicit public feedback and comments on a draft version of the document. The solutions in the final roadmap include:

- Improving the scope, accessibility, quality, and standardization of data on projects already in interconnection queues
- Creating new and better use of existing fast-track options for interconnection, such as surplus interconnection service, generation replacement service, and energy-only interconnection service
- Adopting and implementing a harmonized and comprehensive set of generation interconnection requirements or standards
- Exploring and evaluating potential options for delinking the interconnection process and network upgrade investments to increase up-front interconnection cost certainty.

DOE has multiple roles in implementing the solutions identified in the roadmap, such as facilitating solution adoption, providing funding and technical assistance, and supporting the research community. DOE's Grid Deployment Office invests in accelerating interconnection of clean energy generation through the $5 billion Grid Innovation Program, which supports deployment of projects that use innovative approaches to enhance grid resilience and reliability. DOE's Solar Energy Technologies Office and Wind Energy Technologies Office recently released a $10 million funding opportunity for analytical tools and approaches to accelerate interconnection and will be leading a series of forthcoming public forums aimed at implementation of interconnection standards to maintain a reliable, resilient, and safe grid.

Through the Title 17 Clean Energy Financing Program, the Loan Programs Office seeks to finance energy infrastructure projects, including transmission infrastructure investments to support transmission interconnection, reconductoring transmission lines, and upgrading voltage. DOE also supports electric vehicle charging deployment through the Joint Office of Energy and Transportation (Joint Office). The Joint Office is convening stakeholders to identify gaps that currently exist between transmission and transportation planning to accelerate the development of transmission within transportation rights-of-way.

DOE
http://www.energy.gov/

18 April 2024

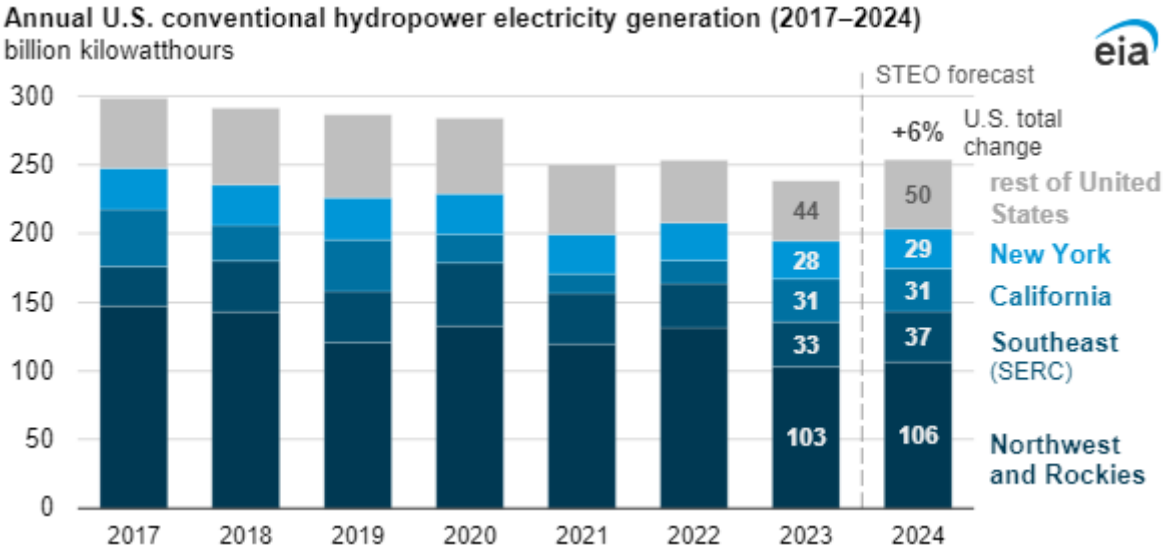
EIA: U.S. hydropower generation expected to increase by 6% in 2024 following last year's lows

Last year, U.S. hydropower electricity generation fell to its lowest since 2001. This year, we expect hydropower to increase 6% and account for 250 billion kilowatthours of electricity generation in the power sector, based on forecasts in our Short-Term Energy Outlook (STEO). We expect hydropower to increase in nearly every part of the country, with notable increases in the Southeast and in the Northwest and Rockies. We expect other regions with significant hydropower generation to either increase slightly, such as in New York, or remain about the same, such as in California.

Northwest and Rockies

More hydropower is generated in the Northwest and Rockies region than any other region of the country: in 2023, 43% of all U.S. hydropower generation occurred in this region. However, last year's hydropower output was the region's lowest since at least 2010. Water

supply, particularly in Washington and Oregon, was affected by a May heatwave that quickly melted the snowpack and reduced water supply for the rest of the year.



On April 4, the National Oceanic and Atmospheric Administration's Northwest River Forecast Center (NWRFC) released its latest water supply forecast for the Pacific Northwest, which is part of the larger Northwest and Rockies region. The NWRFC forecasts normal to more-than-normal water supply in the southern part of the region, around the Snake River Basin, and normal to less-than-normal water supply in the northern part of the region by the Upper Columbia River Basin.

Because water supply and the subsequent hydropower generation can vary widely from year to year, we closely monitor these NWRFC forecasts and use them as inputs to our STEO model. We expect 106 billion kilowatthours of hydropower this year to be produced in the Northwest and Rockies region this year, or 3% more than in 2023. We expect hydropower to account for 29% of the Northwest and Rockies region's electricity generation this year. We expect the increased output from hydropower resources and nonhydro renewables to reduce electricity generation from natural gas and coal.

Southeast

The largest regional increase in hydropower this year comes from the Southeast region, defined as the SERC Reliability Corporation. We expect hydropower generation in the Southeast to increase by 4 billion kilowatthours this year compared with last year. This region includes Alabama, Tennessee, and North Carolina, which combined account for about 10% of total hydropower generating capacity in the United States.

We expect hydropower to account for 5% of electricity generation in the Southeast in 2024. Natural gas and nuclear energy are the two largest sources of electricity generation in the Southeast, and we expect both to increase in 2024. In particular, nuclear electricity generation will increase after the Vogtle Unit 4 generator in Georgia starts providing power to the grid during the second quarter of 2024. We expect these increases in natural gas, nuclear, and hydropower to reduce the use of coal for electricity generation in the Southeast.

California

California's water supply is susceptible to drought. After a very wet year last year, annual hydropower generation increased by more than 80%, from 17 billion kilowatt-hours in 2022 to 31 billion kilowatt-hours in 2023. We expect similar hydropower generation in California this year.

The California-Nevada River Forecast Center expects California to have a near-to-above normal water supply. Water reservoirs in California are also mostly above their historical averages for this time of year. In addition, snowstorms between the end of January

and end of March increased snowpack across the Sierra Nevada mountain range. Nonhydro renewables, mainly solar and wind, are the most significant component of change in California's electricity generation mix. We expect California's nonhydro renewables to increase by 5 billion kilowatt-hours in 2024.

Rest of the United States

We expect hydropower to increase in nearly every region, with notable increases in New York and the Central region (Southwest Power Pool [SPP]). About 6% of U.S. hydropower generating capacity is located in New York, and we expect the state's hydropower output to increase slightly, to 29 billion kilowatt-hours.

The SPP region includes many of the states just east of the Rocky Mountains. In 2023, SPP's hydropower output fell to 11 billion kilowatt-hours, the least in at least a decade. We expect SPP's hydropower will increase to 14 billion kilowatt-hours in 2024.

EIA
http://www.eia.gov/

18 April 2024

Philippine government awards contract for the development of 8 new microgrids

Nearly 4 million Filipino households are either unserved or underserved by the nation's power grid. However, the country has just taken a big step in achieving its goal of fully electrifying those homes. After concluding its first round of a competitive selection process, the Philippine Department of Energy (DOE) recently named the Maharlika Consortium a microgrid systems service provider. The consortium will develop microgrids in eight unserved areas in the Cebu, Quezon and Palawan areas. The hybrid microgrid systems, which are expected to include solar, energy storage and diesel generators, must provide 24/7 electricity to the areas served.

They also must be operational within 18 months of the contract signing with National Power Corporation, the government-owned grid operator in the Philippines. "The rates to be imposed in these areas will be subject to the approval of the Energy Regulatory Commission and will be provided with a subsidy under the Universal Charge for Missionary Electrification for a period of 20 years," according to a statement from the DOE. Missionary electrification refers to off-grid regions where grid connectivity has been deemed unviable.

The award is the first in support of the country's Microgrid Systems Act of 2022, more formally known as Republic Act No. 11646 or the Act of Promoting the Use of Microgrid Systems to Accelerate the Total Electrification of Unserved and Underserved Areas Nationwide. Bids were due in mid-November 2023 and the Maharlika Consortium, which is comprised of Maharlika Clean Power Holdings, CleanGrid Partners and WEnergy Global, was the only bidder. A second round of bidding is expected to be held within the next twelve months.

Considering the physical landscape of the Philippines, which is an archipelago made up of 7,461 islands, it's perhaps not surprising that remote communities lack access to the grid and reliable electricity. According to the Philippine DOE, more than 1.2 million households in the country, or 9% of the country's population, have no access to electricity, distribution lines, individual home systems or a connection to a microgrid. Another 2.7 million do not have reliable access to electricity on a 24/7 basis. "Microgrids are a critical infrastructure for the electrification of our rural communities," said Sen. Win Gatchalian, the principal author of the Microgrid Systems Act. He is encouraging the DOE to "further expedite the development of microgrids to help propel the electrification of unserved and underserved areas."

Microgrid Knowledge
http://www.microgridknowledge.com/

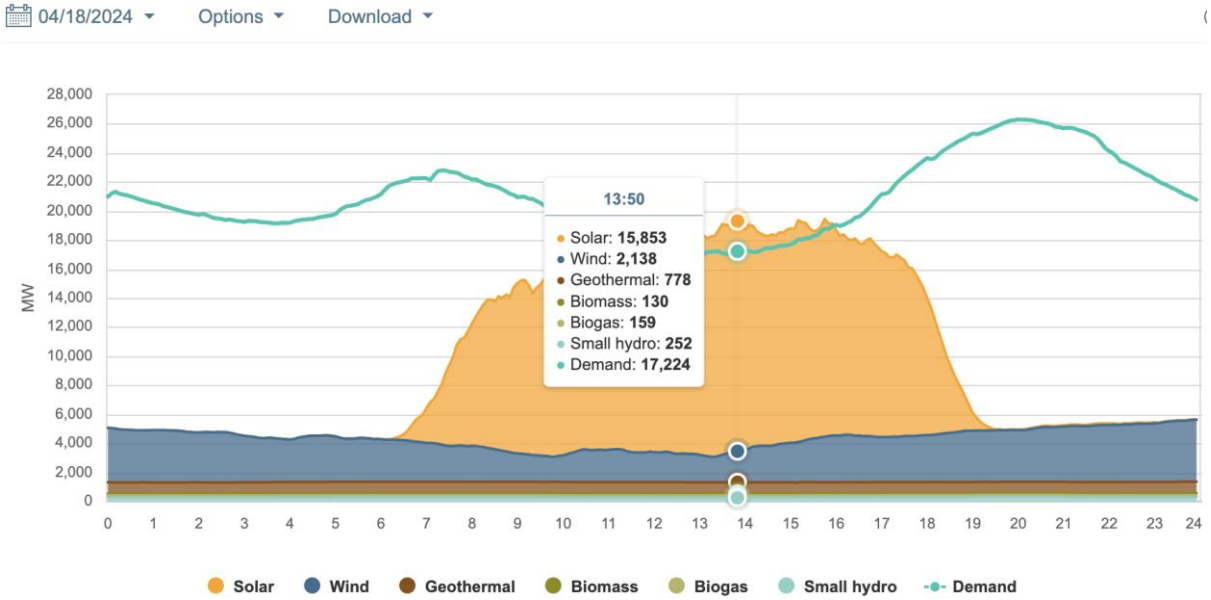
19 April 2024

California's Grid Keeps Setting New Clean Energy Records

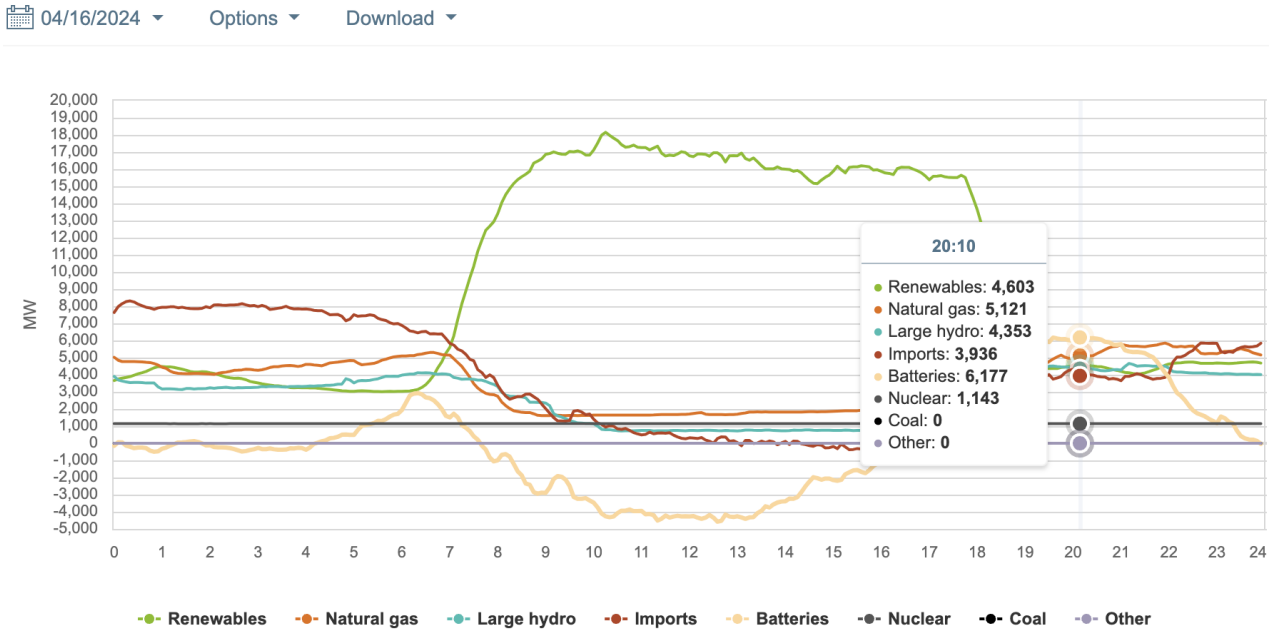
California is being powered by more clean energy than ever before, breaking records and accelerating our progress towards a 100% clean electric grid.

Heading into Earth Week, the state's electric grid racked up a series of accomplishments never before seen in California history. By bringing on more sources of clean electricity and diversifying the state's energy portfolio, clean energy has been exceeding the demands of nearly 40 million people and the world's 5th-largest economy.

EXCEEDING DEMAND WITH 100% CLEAN ELECTRICITY: During 31 of the past 43 days, clean energy exceeded grid demand consumed at a point during the day; that's compared to only seven days all of last year. And, it was only two years ago in May that California first even momentarily met demand with 100% clean energy.



MOST SOLAR ENERGY EVER GENERATED AND SERVED: Solar projects served a new high of 17,170 MW, an increase of over a thousand MW from last year's peak – enough to power millions of homes. And, the amount of demand served by solar hit a new record, powering 86.4% of electricity demand.



MORE BATTERY STORAGE POWERING THE GRID THAN EVER BEFORE: For the first time ever, battery storage discharge exceeded 6 GW and batteries were the largest source of supply to power the grid at a point during the day. California has built out 6,600 MW of battery storage capacity, a 1020% increase since 2020.

Office of Governor
http://www.gov.ca.gov

19 April 2024

Japan starts 5th ocean discharge of Fukushima nuclear-tainted wastewater

Japan on Friday started the fifth round of release of nuclear-contaminated wastewater from the crippled Fukushima Daiichi Nuclear Power Plant into the Pacific Ocean. Despite opposition among local fishermen, residents as well as backlash from the international community, TEPCO, the plant's operator, started discharging the radioactive wastewater in the morning, the first round in fiscal 2024. Similar to the previous four rounds, about 7,800 tons of the wastewater, which still contains tritium, a radioactive substance, will be discharged until May 7.

TEPCO analyzed the water stored in the tank scheduled for release, and found that the concentrations of all radioactive substances other than tritium were below the national release standards, while the concentration of tritium that cannot be removed will be diluted with seawater, Japanese newspaper Asahi Shimbun reported. TEPCO will measure the concentration of radioactive substances such as tritium in the surrounding waters every day during the period to investigate the effects of the release, it added.

The fishery industry and local residents have long opposed the discharge plan. About 150 fishermen and residents from Fukushima and Miyagi prefectures filed a lawsuit against the Japanese government and TEPCO at the Fukushima District Court on Sept. 8, 2023, demanding them stop releasing nuclear-contaminated water into the ocean. On March 4, the lawsuit held its first public hearing at the Fukushima District Court, and the number of people signed on as plaintiffs has grown from about 150 to over 360. Hideki Taki, chairman of the Retired Workers Union of the National Trade Union Council, said in a recent email interview with Xinhua that the Japanese government and TEPCO have written agreements with local fishermen in Fukushima, pledging they would not dispose of the radioactive wastewater without gaining the understanding of relevant stakeholders. However, since last August, they have disregarded the agreements and arbitrarily proceeded with the ocean discharge of nuclear-contaminated water, which is unforgivable.

The so-called "treated water" by the government and TEPCO still contains radioactive materials after being treated by advanced liquid processing system (ALPS), a multi-nuclide removal system, which TEPCO also admits. After radioactive substances are discharged into the sea, they will inevitably enter human bodies through the food chain, but the government and TEPCO have not provided any evidence-based safety instructions on the food chain, Hideki Taki said.

Meanwhile, the decommissioning of the Fukushima plant has made little progress, and it is completely unpredictable when the nuclear waste and contaminated materials can be removed, Hideki Taki noted, adding that the government and TEPCO should immediately stop the ocean discharge. The Fukushima nuclear-contaminated water release began in August 2023, and a total of about 31,200 tons of the water was released in four rounds in fiscal 2023, which ended in March. In fiscal 2024, TEPCO plans to discharge a total of 54,600 tons of contaminated water in seven rounds, which contains approximately 14 trillion becquerels of tritium.

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Biden-Harris Administration Announces Final Transmission Permitting Rule and Latest Investments to Accelerate the Build Out of a Resilient, Reliable, Modernized Electric Grid

In a continued commitment to bolster the U.S. power grid, today the Biden-Harris Administration announced a final transmission permitting reform rule and a new commitment for up to $331 million aimed at adding more than 2,000 megawatts (MW) of additional grid capacity throughout the Western United States – the equivalent to powering 2.5 million homes and creating more than 300 new, high quality and union construction jobs. By improving Federal transmission permitting processes and investing in transmission build out and grid upgrades, the Biden-Harris Administration is deploying a multifaceted approach to ensuring that Americans have clean, reliable, and affordable power when and where they need it. These efforts advance the Biden-Harris Administration's historic climate agenda, strengthen energy security and grid resilience, and reduce energy costs by bringing low-cost clean electricity to more families and businesses.

The Department of Energy (DOE) is issuing a final rule to establish the Coordinated Interagency Transmission Authorizations and Permits (CITAP) Program, which aims to significantly improve Federal environmental reviews and permitting processes for qualifying transmission projects. Under the CITAP Program, DOE will coordinate a Federal integrated interagency process to consolidate Federal environmental reviews and authorizations within a standard two-year schedule while ensuring meaningful engagement with Tribes, local communities, and other stakeholders. This final rule, initiated and completed in under a year, implements a May 2023 interagency Memorandum of Understanding (MOU) to expedite the siting, permitting, and construction of electric transmission infrastructure in the United States. This rule is the latest action the Biden-Harris Administration has taken to accelerate permitting and environmental reviews.

DOE is also announcing up to $331 million through President Biden's Bipartisan Infrastructure Law to support a new transmission line from Idaho to Nevada that will be built with union labor—the latest investment from the $30 billion that the Administration is deploying from the President's Investing in America agenda to strengthen electric grid infrastructure.

"The Biden-Harris Administration is doing everything everywhere to get more power to more people, in more places, said U.S. Secretary of Energy Jennifer M. Granholm. "We are acting with the urgency the American people deserve to realize a historic rework of the permitting process that slashes times for new transmission lines, puts more Americans to work and meets the energy needs of today and the future."

"In order to reach our clean energy and climate goals, we've got to build out transmission as fast as possible to get clean power from where it's produced to where it's needed," said John Podesta, Senior Advisor to the President for International Climate Policy. "As today's announcements demonstrate, the Biden-Harris administration is committed to using every tool at our disposal to accelerate progress on transmission permitting and financing and build a clean energy future."

"As the Federal government's largest land manager, the Department of the Interior is working to review, approve and connect clean energy projects on hundreds of miles across the American West," said U.S. Secretary of the Interior Deb Haaland. "As we continue to surpass our clean energy goals, we are committed to working with our interagency partners to improve permitting efficiency for transmission projects, and ensuring that states, Tribes, local leaders and communities have a seat at the table as we consider proposals."

Expanding electric transmission capacity in the United States is essential to meet growing demand for electricity, ensure reliable and resilient electric service, and deliver new

low-cost clean energy to customers when and where they need it. But over the past decade, transmission lines in the United States have been built at half the rate of the previous three decades, often due to permitting and financing challenges. The Biden-Harris Administration is tackling those challenges head-on, with today's new CITAP Program and transmission investment announcement as the latest steps in broad efforts to take on climate change, lower energy costs, and strengthen energy security and grid reliability.

Federal Permitting Reform

Today DOE released a final rule that will significantly improve Federal environmental reviews and permitting processes for qualifying onshore electric transmission facilities, while ensuring meaningful engagement with Tribes, states, local communities, and other stakeholders. Consistent with the Fiscal Responsibility Act of 2023, the rule establishes the Coordinated Interagency Transmission Authorizations and Permits (CITAP) Program to better coordinate Federal permitting processes and establish a two-year deadline for completion of Federal authorizations and permits for electric transmission.

The CITAP program helps transmission developers navigating the Federal review process, providing:

- Improved Permitting Review with Two-Year Timelines: DOE will serve as the lead coordinator for environmental review and permitting activities between all participating Federal agencies and project developers, ultimately making the Federal permitting process for transmission projects more efficient. DOE will lead an interagency pre-application process to ensure that developer submissions for Federal authorizations are ready for review on binding two-year timelines, without compromising critical National Environmental Policy Act (NEPA) requirements. This will significantly improve the efficiency of the permitting process for project developers by collecting information necessary for required Federal authorizations to site a transmission facility before starting the permitting process.
- Sustained Integrity in Environmental Review Process: DOE will work with the relevant agencies to prepare a single NEPA environmental review document to support each relevant Federal agency's permit decision making, reducing duplication of work. Further, state siting authorities may participate in the CITAP Program alongside Federal agencies and take advantage of the efficiencies and resources DOE is offering through the program, including the single environmental review document, as a basis for their own decision-making.
- Transparent Transmission Permitting: CITAP Program will require a comprehensive public participation plan that helps project developers identify community impacts from proposed lines at the outset of the project and encourages early engagement by potential applicants with communities and Tribes. The CITAP Program will allow potential applicants and agencies to coordinate via an online portal, which will allow project developers to directly upload relevant information and necessary documentation and will offer a one-stop-shop for their Federal permitting communications. The online portal will also allow participating Federal agencies to view and provide input during the initial document collection process and during Federal environmental reviews.

Increasing Investor Confidence

Today, DOE also announced the selection of one additional conditional project from the first round of capacity contract applications through the Transmission Facilitation Program (TFP).

Thanks to an investment of $331 million from President Biden's Investing in America agenda, the Southwest Intertie Project (SWIP-North) will bolster resource adequacy in the West by bringing wind energy from Idaho to Southern Nevada and to customers in

California, and providing a pathway for solar resources to meet evolving reliability needs in the Pacific Northwest. With construction anticipated to start in 2025, the proposed, 285-mile line will bring more than 2,000 MW of needed transmission capacity to the region and create over 300 new, high quality and union construction jobs. The SWIP-N line will also help increase grid resilience by providing an alternate route to deliver power supplies during wildfires or other system disruptions. This project will also upgrade a key substation in Nevada, unlocking an additional 1,000 MW of capacity along the existing One Nevada Line, a major transmission corridor in Southern Nevada.

The National Transmission Needs Study, released in October 2023, estimates that by 2035 there will be a need for 3.3 gigawatts of new transfer capacity between the Mountain and Northwest regions to unlock the power sector emissions savings enabled by the Investing in America agenda. The SWIP-N project contributes 58% of this interregional transmission need.

Funded by the President's Bipartisan Infrastructure Law, the Transmission Facilitation Program is a $2.5 billion revolving fund to help overcome the financial hurdles associated with building new, large-scale transmission lines and upgrading existing transmission lines. Under the program, DOE is authorized to borrow up to $2.5 billion to purchase a percentage of the total proposed capacity of the eligible transmission line. By offering capacity contracts, DOE increases the confidence of investors, encourages additional customers to purchase transmission line capacity, and reduces the overall risk for project developers.

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