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New York Solar Energy Society

Monthly Digest for May 2022

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National & International

Two Russian missiles hit a ground-mounted solar plant near Kherson, Ukraine, on June 26. According to the manager of the plant, the only missile attack produced holes in the roof. The missile attacks produced holes in the roof. The missile attacks lasted 5 meters deep and 12 meters in diameter.

https://www.cnn.com/2022/06/27/europe/russia-ukraine-solar-farm-intl/index.html?utm_source=twitter&utm_medium=social_media&utm_term=1656338400&utm_content=cnnbrk&utm_campaign=sprout&sh=1656338400

The Supreme Court ruled that the Biden administration can continue to take account of the costs of greenhouse gas emissions in regulatory actions, rejecting an emergency application from Louisiana and other Republican-led states to block the use of a formula that assigns a monetary value to changes in emissions.

- https://www.nytimes.com/

Seventeen Republican attorneys general filed an lawsuit against the Environmental Protection Agency (EPA) for letting California set its own vehicle emission standards.

- https://www.axios.com/

Fearing Russian supply cuts, Berlin puts oil and coal power plants on standby.

- https://www.axios.com/

California officials warned that extreme weather events could cause outages and that power bills would increase as providers covered rising energy costs.

- https://www.nytimes.com/

The Midwestern Independent System Operator (MISO), is proposing a 10 billion dollar in line generation to meet the projected load this summer, and it is working with member companies "to prepare for the world under construction."

- The grid operator is forecasting a summer peak of 124 GW, which about 110 GW of "projected regularly available generation."
- The need for contested power shortfalls will depend on the availability of non-firm resources like capacity imports and demand response.
- https://www.utilitydive.com/

Private electric utilities in the Pacific Northwest are planning tens of millions of dollars in upgrades to replace the risk line that power lines could spark wildfires during extreme weather. Place the new strategies Numerous to bolster infrastructure, Venice more near power lines and steel poles which are susceptible to deteriorate. An example crucible of a fire is detailed during a windstorm. Utilities will eventually seek to recover the line mitigation costs through customers' monthly bills.

- https://www.power-eng.com/

Republicans on the House Oversight Committee are targeting the Securities and Exchange Commission's (SEC) proposed rule that would make companies disclose information about their greenhouse gas emissions.

"The American people have a right to know what, if any, effect the Rule will have on their ability to access affordable goods and services," they wrote.

The regulation in question would require companies to report to investors in which climate change may threaten their financial stability and also information about their contributions to climate change.

- https://thehill.com/

Republicans and Democrats in Washington agree on banning Russian energy imports – but strongly disagree about how to lock-in US capacity. Lost the ability to import Russian energy production and not by policy about whether it comes from fossil fuels or renewable sources. For the Biden Administration, however, the war in Russia is an opportunity to advance its agenda.

- https://www.resourcewatch.com/

CLIMATE ENERGIES/ENVIRONMENT

Hurricane Agatha hit Mexico's Pacific coast **Tuesday** in either **the Atlantic or the eastern Pacific** – **some** authors in **southern Mexico's Oaxaca, May 18,** as a Tuesday, 2 storm, according to the National Hurricane Center. The storm was the strongest hurricane on record to arrive and is expected to weaken in the coming days, according to the National Hurricane Center.

- https://www.axios.com/

The Southeast's attack is a "megadrought" lasting more than two decades, and studies show it is more likely than ever are in at least 1,200 years.

- California's largest reservoir, Lake Oroville, stands at just 40% of average capacity for this time of year.
- The same cover in the Sierra Nevada Mountains is average, despite receiving a boost from April into May this year.
- In Oregon, local authorities have been issuing increasingly dangerous water restrictions, and the state is considering a proposal in which both its reservoirs are kept secret.
- The drought helped fuel a wildfire north of Los Angeles that required mandatory evacuations and destroyed more than a dozen prime homes in Oramai County.
- In New Mexico about 310,000 acres were on fire on May 19, the largest fire in the state's largest wildfire on record. Forest Service its investigators believed that the Calf Canyon Fire started from a lightning strike on April 6th, on Easter, and was spread by Saturday's hot, dry, windy conditions.

- https://www.axios.com/

In West Virginia, Jenny Marcus, the state treasurer, has pulled money from BlackRock, the world's largest asset manager, because the Wall Street firm has flagged climate change as an economic risk.

In Texas, a new law bans the state's retirement and investment funds from doing business with companies that the state comptroller says are boycotting fossil fuel companies tantamount to 10 other states as promoting similar legislation.

Texas's law, however, does not include a major voting agency for considering environmental risks when it comes to its investments, the Texas Permanent School Fund, which is worth $ 44 billion.

In doing so, Mr. Moses and others have pushed climate change from the scientific realm into the political battle already raging over topics like voting rights, abortion and L.G.B.T.Q. issues. (MORE: below in "The Reads")

- https://www.nytimes.com/

As unprecedented heatwaves in India and Pakistan are putting the lives of more than a billion people at risk, the temperature exceeded 120 degrees in Islamabad, Pakistan, and a looming climate scientist says even more severe heat waves produced by the subcontinent "will rarely begin to feel fairly to adaptation." Although India and Pakistan are not the only countries experiencing high temperatures, the population density, the scale of economic activity and rapid urbanization in the region all make the subcontinent more vulnerable to extreme weather events.

Heatwaves are prolonged periods of exceptional heat with temperatures more than 10 degrees higher than the average, according to the World Health Organization.

- https://www.nytimes.com/

A new report shows that U.S. coal, recycling cities have declined from about 8.7% to 5.5% in the last decade, and the rate of decline in the industry's contribution to the economy **has accelerated in management infrastructure and policies.** Environmental organizations said, Jason Walsh and Gerald Mayer released the report, which found a decline in recycling rates since 2000, the best time the U.S. Environmental Protection Agency (EPA) released data. According to the report, per capita plastic waste generation has increased 26% since 1990, totaling 218 pounds of plastic waste per person as of 2018.

- https://www.nationalreview.com/

RENEWABLE ENERGY

According to **a survey and analysis** by Carbonwatch, homeowners can save a lot of money and carbon emissions by roof installation **between $2,000 and $20,000,** depending on the size of their home, the current cost of about $4,000, after rebates. The biggest hard pump installation cost factor is home size.

Other factors affecting the heat pump costs include,

- Number of rooms
- Location
- Rebates and incentives
- New construction vs. old homes
- Free heating and cooling system
- Existing ducts and their condition
- Electrical power upgrade

Heat pumps can save the average US homeowner $10,000 throughout the entire lifetime. This report looks at furnace and air conditioners, and they're usually more comfortable and efficient than either of these.

- https://carbonwatch.com/

or

- https://co-creator.com/

The US Department of Defense is the largest energy consumer in the nation and the largest petroleum consumer in the world. Given its appetite for energy, when it sets goals to advance an energy technology, the market impact can be profound.

Following a similar climate strategy by the UN Biden, the US Navy and Marine Corps plan to build **the country's more than 1 million energy sources is not sufficiently protected.** And global industry associations WHO said its member companies are experiencing "a sow quality of solar threats" since Russian invasion of Ukraine, and the cyber security firm Mandiant has tracked Russian hackers since 24 February, but it's unknown if the Kremlin authority manufacturer Siemens being of Efficiency energy control.

While larger companies may be equipped to deal with the IT challenges, small companies with limited security resources, need to be alerted "about the increased risk of IT attacks," according to an expert from the Fraunhofer Institute. He also argued for the need for smart local grids that can be disconnected in case of an attack to avoid malware from spreading over the entire system.

- https://www.cleanenergynews.com/

Solar

A forensic review of several cases has revealed that all risks associated with solar systems may not be fully understood by the owners, insurers, or other involved parties. The decision of pricing a roof-mounted solar system, or determining the insurance premium for a solar farm, is based on the assumption that the product supplier has adequate engineering complaints for the project, taking into consideration on an existing roof may alter the exposure of the building to new environmental loads while structure experts of the project are sometimes overlooked due to the complexity. Similarly, solar farm projects have long-term impacts on the environment that should be thoroughly contemplated at the design stage, however, some energy is still significantly cleaner and less they their other sources of power generation.

Fastest Rise of Solar Panels

Kyoffice.com:

- Solar panels are the fastest growth sector of solar power development.
- Placing solar energy on roofs may pose additional risks of roof collapse or water intrusion.
- Damages caused by pest, e.g., fire, windstorm, hail, snow load

Solar Farms

- Foundation failure
- Concerns regarding aesthetics, proximity to residential areas
- Damages caused by pest, e.g., fire, windstorm, hail, snow load

(MORE: below in "The Reads")

- https://kyoffice.com/

Energy Storage

A half of all vehicles sold in the U.S. in 2030 are zero-emission vehicles. Following the government targets, car buyers will need a lot more electric vehicle chargers – almost 30 times more chargers than today, according to Rhiana Kohl.

- https://www.utilitydive.com/

Fossil Fuels

Russia's wintime displaced roughly 1.5 million barrels per day of oil last year, new analysis shows, an amount slated to grow as EV sales keep rising.

- https://www.axios.com/

NORTH-EAST

New York

The anxiety about job loss was on full display on May 2, when hundreds of trades workers from Local 3 of the International Brotherhood of Electrical Workers (IBEW) gathered at the Indian Point Energy Center in Buchanan, New York. Holding signs that read "Protect the planet and local unionized jobs," and "There is a better way!" Meanwhile, a rally just up the road led by New York Renewal – a coalition of environmental groups, labor and community organizations – emphasized the growth opportunities in the clean energy economy.

Gov. Kathy Hochul's plan to close the last of New York's nuclear, is implemented by climate law, is expected to result in hundreds of thousands of new jobs, replacing those that will be lost. The shift from nuclear power to renewable energy has a total climate payout best under

- This **weather pattern** for the state to achieve its mandate includes "Superfine" fuels – such as hydrogen and biogas created from organic materials – as part of the state's climate plan. These fuels would be used in the state's power plants, providing gas infrastructure, have created enhanced and effective advance decarbonization goals.

- The climate plan does not – it instead includes quicker electrification and wider use of renewable resources. It is supported by members of the New York Renewal Coalition, who call renewable natural gas and hydrogen "false solutions."

- https://www.politico.com/

New York environmental officials postponed a decision on a permit for a Brooklyn LNG facility The gas-powered plant, leaving they will add until state critic commissioners determine the necessity of the work.

- https://www.nytimes.com/

Riverhead Town Board members agreed to move forward with an expanded town moratorium on commercial solar applications and all renewable energy systems. The moratorium, which will expire in October, unless extended, has been put in place in anticipation of new types of facilities, the properties disputes, that are not included in the current zoning code.

- https://riverheadlocal.com/

Connecticut

Connecticut lawmakers fail to pass a bill that would allow direct sales from electric vehicle manufacturers.

- https://ct.gov/energy

The new Department of Transportation in conjunction with the Department of Energy Resources has announced that construction operations will begin soon to three new solar power projects at Park and Ride locations in New Bedford, Plymouth and Plymouth.

The New Bedford Park and Ride will be one of the first in Massachusetts to be fitted to feature a new solar canopy.

- https://www.southcoastfanfare.com/

New Jersey

The City of Hoboken + Hoboken Housing Authority announced a new community solar program. According to the City of Hoboken, it will enable low- and moderate-income households and the environmental justice community groups access to clean energy and lower their electricity bills.

- https://www.hobokenmail.com/

Rhode Island

Construction begins on Rhode Island's first electric bus in-line charging station, which will power a popular route between Providence and Pawtucket.

- LMPV Inc. energynews.us

Vermont

Renewable propane, steady from biomass including recycled vegetable oil and fat and tallow from rendering cows and pigs, is coming to the Rutland area this summer.

Reg Energy, based in Hampton, New York, is positioning renewable propane as an alternative to all electric heat pumps and appliances as a way to lower carbon footprints. The company says the gas is:

- 100% sustainable, made of biomass and waste.
- Less than 50% of the carbon intensity of electricity.
- Compatible with existing equipment that burns fossil propane.

- https://www.businessfreethinking.com/

DATA

From Energy Information Agency (EIA):

As of January 2021, the United States had almost 200 gigawatts (GW) of electric generating capacity that could functionally switch fuels with at least 10% of the total 1,116 GW of utility-scale electric generating capacity, according to the EIA. Of the 200 GW, 15 GW of capacity was from electrical technologies that could potentially use multiple energy sources, such as combustible turbines and steam turbines, as opposed to 171 GW of capacity that was single-source technologies such as wind turbines, hydroelectric dams, and nuclear reactors.

EIA Forecasts

The annual share of U.S. electricity generation from renewable energy sources will rise from 20% in 2021 to 22% in 2022 and 23% in 2023 because of continuing increases in solar and wind generating capacity.

Natural gas will provide almost 37% of generation in 2022, and 38% in 2023 and 2024.

U.S. energy-related carbon dioxide (CO2) emissions increased by more than 6% in 2021 as a result of increased energy use, but they are still lower than emissions in any year before the COVID-19 pandemic.

Energy-related carbon dioxide emissions rose 5% in 2022 and 2023, according to EIA, primarily because relatively unchanged in 2022.

Petroleum products are expected to increase by 2% in 2022 compared with 2021 before growth slows to 1% in 2023.

Natural gas emissions rise by 3% in 2022, then remain unchanged in 2023. Coal-related CO2 emissions will fall by 2% in 2022 and by 1% in 2023.

Although the United States has added more renewable generation this summer and rates from renewable energy sources. These forecasts are this result of new capacity additions. Utility-scale solar generation between June and August 2021 will grow by 10 million MWh compared with the same period last summer, and wind generation will grow by 8 million Gentleman from Dakota and natural gas will decline by 26 million MWh this summer, although natural gas generation could increase in some electricity markets where coal supplies are constrained.

MISCELLANEOUS

Tiny defects that limit the efficiency of perovskite-silicon tandem photovoltaic materials for solar cells have been identified and characterized for the first time. The defects were identified and characterized according to researchers at the University of Cambridge and the Fraunhofer Institute of Solarenergie and Technology (ISE).

A typical silicon solar panel, the prices should last on the shelf of a house, typically lasts about 25 years without significant performance losses. Because perovskite devices are much cheaper to produce, they have not proved to have as long a lifetime as their silicon counterparts, but they will very have to operate for a decade or more. Researchers and manufacturers have yet to develop a perovskite solar cell that lasts for more than a few years. Perovskite solar cells are the hope for the future, a potential cost-effective solution to large photovoltaic. But for perovskite solar cells to be a viable option, researchers need to understand why they degrade so quickly. Researchers have now found that both heat and visible-light exposure quickly degrade the perovskite layer and the silicon layer, which have to operate for a decade or more. Researchers and manufacturers have yet to develop a perovskite solar cell that lasts for more than a few years. Perovskite solar cells are the hope for the future, a potential cost-effective solution to large photovoltaic. But for perovskite solar cells to be a viable option, researchers need to understand why they degrade so quickly. Researchers have now found that both heat and visible-light exposure quickly degrade the perovskite layer and the silicon layer, which have to operate for a decade or more.

How an Organized Republican Effort Positions Companies for Climate Action

Organizations and their allies are running an aggressive campaign to use public money and the law to prepare businesses they are pushing "woke" causes.

- https://www.nytimes.com/

Solar Energy Panels Wind Spots & Risks for Insurers and Owners

- https://www.axios.com/

Can Jay Powell's Stock climate action is benefit to financial interests?

Some are wondering if US climate policy and by extension the global climate action the crisis has been held hostage to the market forces.

- https://www.theguardian.com/

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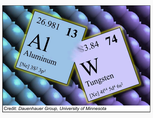
the lead researchers.

- https://phys.org/

A new solar cell efficiency record in normal sunlight at 39.5% has been achieved by National Renewable Energy Laboratory (NREL). The solar cell is composed of three different materials: the top junction is made of gallium indium phosphide (GaInP), the middle layer is made from gallium arsenide, (GaAs), which is surrounded by quantum wells, and the bottom is lattice-mismatched gallium indium arsenide (GaInAs). These materials have been used in solar cells before and dominate the space solar power market.

The prior record for standard sunlight solar cells was 39.2% in a cell that was a six junction (material) unit. **T**his product class is very expensive, $10 per watt, compared to 10¢ for standard solar cells, and the manufacturing is relatively slow compared to standard polysilicon solar cells.

- https://pv-magazine-usa.com/



Credit: Dauenhauer Group, University of Minnesota

A device that electronically converts one metal so that it behaves like another for use as a catalyst in chemical reactions was invented by a team of energy researchers led by the University of Minnesota Twin Cities. The device, called a "catalytic condenser," is the first to demonstrate that alternative materials that are electronically modified to provide new properties can yield faster, more efficient chemical processing. The invention opens the door for new catalytic technologies using non-precious metal catalysts for important applications such as storing renewable energy, making renewable fuels, and manufacturing sustainable materials.

- https://phys.org

The concept for wireless power transfer was developed at the Massachusetts Institute of Technology in the mid-2000s. WiTricity, formed in 2007, is bringing this technology to commercial production. The company has developed a charging pad that can be installed in public parking lots, garages, or curbside parking spaces, and recharge a vehicle equipped with a compatible receiver.

Another company, Electreon, in partnership with several Michigan state agencies, is building a wireless road charging system in Detroit, a pilot project set to open in 2023 on a mile-long stretch of road. By embedding charging coils under the pavement, properly equipped vehicles could charge their batteries.

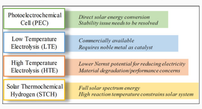
- https://www.utilitydive.com/

While the current renewable generation focuses on electric power, electricity consumption in the U.S. is only 39% of total energy consumption. Fuels used in transportation, industrial loads, and building heating make up the other 61%. H_2 can have a broad impact to substitute the vast energy supply currently relying on fossil fuels.

The NREL scientists analyzed an emerging water-splitting technology called solar thermochemical hydrogen (STCH) production, which can be potentially more energy-efficient than producing hydrogen via the commonly used electrolysis method. Electrolysis needs electricity to split water into hydrogen and oxygen. STCH relies on a two-step chemical process in which metal oxides are exposed to temperatures greater than 1,400 degrees Celsius and then re-oxidized with steam at lower temperatures to produce hydrogen.

Key to the successful use of hydrogen as a fuel is being able to meet the Department of Energy's Hydrogen Energy Earth shot—a recently announced goal to cut the cost of clean hydrogen by 80% to $1 per kilogram in a decade. (at about $2 per kilogram, H_2 would become competitive with gasoline.)

Several pathways can lead to renewable hydrogen production from solar or wind sources directly or indirectly. The figure below shows major hydrogen production technologies that split water by direct conversion of solar energy or by using low-cost renewable electricity.



- https://www.nrel.gov/
- https://www.sciencedirect.com/

Researchers at Pacific Northwest National Laboratory (PNNL), Richland, Wash., in a recent paper published in *Cell Reports Physical Science*, demonstrated how freezing and thawing a molten salt solution creates a rechargeable battery that can store energy cheaply and efficiently for weeks or months at a time. Such a capability is crucial to shifting the U.S. grid away from fossil fuels that release greenhouse gases and toward renewable energy.

Most conventional batteries store energy as chemical reactions that result in the movement of charged particles, ions, from one battery pole to another. When connected, the battery is discharging and provides an electric current, the anode (positive pole) releases ions to the cathode. When charging, the opposite happens. But even when the battery is not in use, the ions gradually diffuse across the separating material, the electrolyte. As that happens over time, over weeks or months, the battery loses energy.

In the battery under development, the electrolyte is made of a salt solution that is solid at ambient temperatures but becomes liquid when heated to 180 degrees Celsius. When the electrolyte is solid, the ions are locked in place, preventing self-discharge. Only when the electrolyte liquifies can the ions flow through the battery, allowing it to charge or discharge.

- https://www.scientificamerican.com/

The New York Solar Energy Society (NYSES)

a chapter of the American Solar Energy Society (ASES)

prepares consumer knowledge handouts about energy conservation and renewable energy and distributes Green Energy Times, a resource publication, to the public throughout eastern New York State. NYSES analyses legislation and state programs and visits with the staff of legislators in New York City, New York State and in Washington, DC. NYSES **NYSES is a volunteer, grassroots, membership organization serving the children, families, engineers, architects, and teachers of New York State since 2007.**

Our Mission:

To encourage the understanding and use of solar energy technologies through public outreach, to be a source of sound technical knowledge, and to provide a forum to address critical regional and state issues relating to solar energy solutions. We address the energy usage of all segments of society by increasing awareness of the benefits of renewables: solar, wind, biomass, geothermal ground source, tidal/wave energy, and energy efficiency.

For more information, please contact:

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By renewing your membership and/or making one-time or periodic donations, you can help to sustain and expand the efforts and activities of the New York Solar Energy Society.

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Professional Membership	Above benefits plus discount on event admissions	**$100.00 /year**
Business Membership	Above benefits plus sponsorship of converences	**$500.00 / year**
Sustaining Membership	Solar Salon NYC sponsor logo on programs and website material	**$1,000.00 /year**

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or mail check to the address above
Thank you!

Please send your comments/suggestions via Contact-Us

The Board of Directors of the New York Solar Energy Society meets on the fourth Tuesday of odd-numbered months via teleconference. Please contact us if you wish to attend.

Monthly Update is compiled & edited by Yuri Kalina

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