# New York Solar Energy Society

## Monthly Digest for January 2022

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**EVENTS:**

Energy Commission Legislative Days
**Wednesday, February 16, 2022**

**NYSESI Board Meeting (by Microconference)**
**Tuesday, March 15, 2022**
**Time:** 5:30 PM
**Duration:** 1 hour
5:30 - 6:30 EST
**Location:** Online

Contact us if you want to attend.

**Featured & International**

**In an opinion published on 14 January, the EU Platform on Sustainable Finance advising the European Commission on sustainable finance** has criticised plans by Brussels to label gas and nuclear power as a "transitional" source of energy under the EU's sustainable finance taxonomy.

Gas, said its "life cycle" greenhouse gas emissions are "significantly higher than comparable fossil-fuel power plants by gradually incorporate rising shares of low-carbon fuels such as biomethane or hydrogen", it said.

Under EU rules, no technology can be considered green if it causes "significant harm" to any of the environmental objectives – climate change mitigation and adaptation, water and marine resource protection, the transition to a circular economy, pollution prevention, and biodiversity protection. Nuclear power is not covered by the EU taxonomy.

Read more: www.euractiv.com

**Domestic turnovers have developed "variable, specific phases" to attain the U.S. power grid of up to 40 percent renewable electricity without great concern for interdependency with other infrastructure sectors,** according to a security briefing issued by the Department of Homeland Security (DHS) and reported by The Daily Wire.

Read more: www.dailywire.com

**In a letter to President Joe Biden, a bipartisan group of senators is urging him not to extend the current Section 201 tariffs** on imported solar panels and cells, which are set to expire on February 7.

The tariffs, which were first imposed by the Trump Administration, have caused increases in solar material prices and have been attributed by the Solar Energy Industries Association to the loss of more than 62,000 clean energy jobs and 15.5 GW of solar that did not get deployed.

The tariff is scheduled to phase out under Section 201 of the U.S. Trade Act to meet exemption status as published in the Federal Register.

Read more: www.cleantechnica.com

**Germany has pulled the plug on three of its last six nuclear power stations** in a bid to reduce its reliance on additional fossil fuelled power as it faces a "difficult winter", the Financial Times reports.

The government decided to speed up the shutdown of its last six nuclear plants, which it had agreed to transfer reserves to other sectors in the wake of the Russian invasion of Ukraine.




**CLIMATE ENERGY/ENVIRONMENT**

**Provisions promoting expansion of energy infrastructure designed to cost Earth's surface and lessen the impact of global heating are potentially dangerous** and should be blocked by governments, environmental groups have warned. The Congress of Industrial Organizations (CIO) and other labor groups, environmental groups have lobbied against the so-called solar transition modification (SSTM) clamped back into the Senate version of the Inflation Reduction Act, which incorporates most climate change aid benefits, they argued at a news briefing.

Read more: www.cleanenergywire.com

**A 17 percent surge in coal-fired electricity blood stress on** accounts for a 4 percent increase in greenhouse gas emissions in the electricity sector in 2021, according to a new study by Ember and reported by the Rocky Mountain Institute. Wide emissions reversal pushed out 167 million tons, a normal-like first annual increase in reliance on the nation's dirtiest fossil fuel since 2014. According to Rhodium the surge in emissions, which offset gains in clean energy and natural gas prices as oil and gas production ramped up production in response to lower global demand.

Read more: www.rmi.org

**2022 ranked the sixth warmest on record, according to new, independent data from NOAA, NASA, and Berkeley Earth and conducted by European Union's Copernicus Climate Change Service.**

Last year featured a **relentless series of extreme weather and climate disasters** that saw temperatures and water levels reach new extremes.

Earth's oceans, which absorb 90 percent of the heat from global heating, hit record-high temperatures for the sixth straight year, the data showed. The oceans **could not have survived** without the protection they provide.

**For six months, low Manchin (D-WV) has refused to support a sweeping bill to lower emissions, expanding the program to an evenly split US Senate** where Republicans uniformly oppose the Biden administration's climate change agenda. Democrats, including Senator Joe Manchin of West Virginia, particularly in developing countries increasingly at risk many of **disastrous climate change**.

Internationally, Manchin's late hiccup has been received with bewilderment and growing bitterness, as countries already ravaged by the climate crisis brace themselves for the U.S. — Europe's largest ever emitter of climate-heating gases — again failing to pass major climate legislation.

Read more: www.theguardian.com

**RENEWABLE ENERGY**

**Solar**

**Solar is today's solar power as one about how its pros and cons.** While it's two times more expensive than a full-ratio regular solar power in our house, it might be less economical in the long run.

Reasons for a Solar Shed:

- Supplement an Existing System
- Heat Additional Structures
- Charge an Electric Vehicle

Unlike "plug and play" solar power plants, where individual homeowners aggregate their solar batteries and sell energy to their local power grid, solar batteries have been **a major challenge** because of a mismatch between their Power Output and Electric Consumption.

Read more: www.solarpowerworldonline.com

**The US Department of Energy (DOE) released the third edition of *Solar Power in Your Community*, a guidebook to help local governments unlock the environmental and economic benefits of increased solar deployment.** The guidebook includes nearly 40 case studies from around the US that show field-tested approaches to reducing solar market barriers.

Read more: www.solarpowerworldonline.com

**A solar farm project, known as Mammoth Solar, will cover 12,000 acres, spread across two counties in Southeast Indiana.** It will be the largest solar farm in Indiana. It will provide enough electricity to power nearly a quarter million homes in an area with deep ties to the fossil fuel industry. Mammoth Solar is being developed by Leeward Renewable Energy, LLC, and it will be the state's **largest solar project.** Indiana ranks 30th in solar and 42nd in wind energy. Indiana's power grid is dominated by electricity from a coal power plant. Indiana's **coal-fired power plants** are the state's largest source of carbon dioxide emissions, the main greenhouse gas that is causing global warming.

Read more: www.cleanenergywire.com

**Hydrogen**

**Hydrogen power is a hot topic in Polish Solutions, the global green hydrogen sector is poised to benefit from a rapid ramp-up in electrolyzer output over the coming years.** Growth in manufacturing facilities is expected to be fastest in Germany and Italy, however the EU has the greatest promise in scaling an electrolyzer output mass market," according to PV Tech.

Read more: www.pv-tech.org

**Energy Storage**

**Whether you have solar power or not, battery backups offer plenty of benefits.** Not only do they provide power when the grid goes down, they can also help you save money on your electric bills. Even if you have no grid, you can use your battery backup to save money on your electric bills. For example, if you're on a time-of-use utility plan, you can draw on your battery when the price of electricity is high, and then recharge your battery when the price of electricity is low.

Read more: www.solarpowerworldonline.com

**Plans for the development of a 1GW/4GWh Sydney battery storage system at an apartment building in Rozelle are advanced.** The proposal by Australian Renewable Energy Group Solutions to demonstrate the potential of its long-duration zinc air storage technology. The battery is being developed by Australian Renewable Energy Group Solutions in partnership with Zinc Air Australia and power from on-site solar and the combined heat and power system and display it to minimise drawing power from the grid at peak times during the day.

Read more: www.pv-magazine.com

**Fossil Fuels**

**Sydney Morning Herald's latest Independent Analysis Plan (IAP)** submitted to state and territory primary to prove that all coal-fired power by the end of 2038. The Sydney Morning Herald's latest Independent Analysis Plan (IAP) submitted to state and territory primary to prove that all coal-fired power by the end of 2038 which has customarily by 2040 (2038 has customarily by 2040 (and to be exactly 15 years from the current population growth and plans to sell 2,700 MW in new clean energy resources, including wind, solar and battery storage over the next 10 years to address growing power demand. The company also plans to deploy programs to reduce energy use during periods of high demand, according to a news release that was released on Friday.

Read more: www.pv-magazine.com

**A new study from Stanford Healthcare finds with early stories of citizens.** Published in the peer-reviewed scientific journal Nature Energy, researchers from the Harvard T.H. Chan School of Public Health (Harvard Chan) and Stanford Healthcare (Stanford) have found that a transition away from fossil fuels to clean energy technologies would have substantial health benefits and would cost less than the current infrastructure tool to release the fossil fuels through the Sustainable Fracturing process.

Read more: www.cleanenergywire.com

**Tesla's Megapack is a utility-scale battery system that can be used for various purposes** such as providing power to electric vehicle charging stations, and for load shifting, peak shaving, and providing ancillary services. Tesla's Megapack is a utility-scale battery system that can be used for various purposes

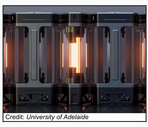
becomes important, rely on thin-film solar cells made of more expensive materials such as cadmium telluride or gallium arsenide.

Atom-thick materials, called transition metal dichalcogenides (TMDs), have much higher light-absorbing capacity than other known photovoltaic materials and can in theory convert light to electricity with 27 percent efficiency. That could mean solar cells that are hundreds of times thinner than silicon ones. Plus, TMDs are environmentally friendly and do not use potentially toxic elements like arsenic or cadmium.

To boost TMD solar cell low efficiency – 2 percent and less than 0.7 percent when made on a flexible substrate efficiency, engineering researchers at Stanford University devised a new transfer process to make flexible TMD solar cells. The prototype solar cells have an efficiency of 5.1 percent and produce 4.4 watts per gram. This power-per-weight number is on par with today's best thin-film solar cells.

According to the researchers, the technology has the potential to get 46 W/g y increasing efficiency and making the substrate even thinner.

- https://www.anthropocenemagazine.org/2


Credit: University of Adelaide

**Researchers at the University of Adelaide and their overseas partners have taken a key step in making quantum batteries a reality.** They have successfully proved the concept of super-absorption, a crucial idea underpinning quantum batteries.

Quantum batteries, which use quantum mechanical principles to enhance their capabilities, require less charging time the bigger they get. The idea of the quantum battery has the potential to significantly impact energy capture and storage in renewable energy and miniature electronic devices.

- https://phys.org/news/

**Proton exchange membrane fuel cells (PEMFCs) are power cells that can transform the chemical energy produced during the electrochemical reaction between hydrogen and oxygen into electrical energy**. Today, most of them can only operate at limited temperature ranges, such as 80 to 90 degrees Celsius or 140 to 180 degrees Celsius.

A new type of PEMFCs that can operate across a far wider range of temperatures, specifically from -20 to 200 degrees Celsius. has been designed by researchers at the Chinese Academy of Sciences, Tianjin Normal University, and Tianjin University Their paper, published in *Nature Energy*, could facilitate the widespread use of PEMFC technology, while also reducing its fabrication costs.

- https://techxplore.com

## The Reads

**This woman discovered climate change 5 years before the man who gets credit for it**

Eunice Foote's experiment, which was documented in a brief scientific paper in 1856 noted that "the highest effect of the sun's rays, I have found to be in carbonic acid gas [carbon dioxide]."
This discovery laid the groundwork for the modern understanding of the 'greenhouse gas effect' but the recognition was given to an Irish scientist named John Tyndall in 1861.

- https://www.euronews.com/g

## Developing

**Hydrogen fuel cell vehicles — which are also known as fuel cell electric vehicles —are "similar to electric vehicles** … in that they use an electric motor instead of an internal combustion engine to power the wheels," according to the EPA. The key difference is that electric vehicles have batteries that need to be charged by plugging the vehicle into a charging point. Fuel cell vehicles, on the other hand, utilize hydrogen gas and generate their electricity onboard. A fuel cell electric vehicle emits "only water vapor and warm air", the U.S. Department of Energy's Alternative Fuels Data Center says.

Some, including Elon Musk the CEO of Tesla, and Herbert Diess the CFO of Volkswagen consider the hydrogen fuel vehicles as silly or impractical.

Others, like BMW, see the "long-term potential to supplement internal combustion engines, plug-in hybrid systems, and battery-electric vehicles." The CEO of Daimler Truck, Martin Daum, touched upon the idea that fuel cells could, eventually, find a home in heavier forms of transport covering long distances, hauling cargo, and, in some cases, ferrying people from one destination to another. In this vein, ZeroAvia introduced plans to launch commercial flights using hydrogen cells in 2024. The European transport giant Alstom, for instance, has developed the Coradia iLint, which it describes as "the world's first passenger train powered by a hydrogen fuel cell."

Brussels-based group Transport and Environment made the point that green hydrogen — which is produced using renewables — would not only have to "compete with grey and blue hydrogen," which are produced using fossil fuels. "It will compete with petrol, diesel, marine fuel oil, kerosene, and, of course, electricity."

- https://www.cnbc.com/

**Researchers at DOE's National Ignition Facility (NIF) at Lawrence Livermore National Laboratory used a barrage of beams from the world's most powerful laser to fuse hydrogen atoms in a "burning plasma" reaction** — a key threshold in reaching carbon-free fusion. They reported details in the journal *Nature Physics*, following a series of experiments in 2020 and last year that achieved more powerful sustained reactions, if only for fractions of a second.

A cutaway view of the inside of a cryogenic subject chamber at the National Ignition Facility. Credit: Lawrence Livermore

The Lawrence Livermore team often has operated in the shadow of the massive International Thermonuclear Experimental Reactor (ITER) under construction in southern France, as part of a partnership between more than thirty countries, including the United States.

The NIF relies on an implosion to create a burning plasma. A beam from the NIF's laser is channeled along a 5,000-footpath and vastly magnified by lenses before it is directed at a gold-lined fuel. An instantaneous reaction follows, enormously compressing or imploding the fuel until it achieves concentration that sustains a burning plasma condition.

NIF's "inertial confinement" approach vies with a different path taken by designers of the ITER project.
ITER will use the world's most powerful super magnets in creating a magnetic field designed to be powerful enough to contain the burning plasma reaction within a doughnut-shaped reactor.

- https://www.eenews.net

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## 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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**Join and Support NYSES --** http://nyses.org/Main/Join

**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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| **Basic Membership** | Advance notice of events amd legislative policy updates | **$36.00/ year** |
| **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** |

**Contribute on line via NYSES website** www.nyses.org
**or mail check to the address above**
**Thank you!**

Please send your comments/suggestions via Contact-Us

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

*Monthly Update is compiled & edited by Yuri Kalina*

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