

ENERGY MATTERS

Soundbite summaries of the energy news you need to know

AN OFFICIAL PUBLICATION OF



AMERICAN ENERGY SOCIETY

May 6, 2024

- News from the Society -

- Next week, we'll publish a special issue of *Energy Today* with big news about the American Energy Society.

- The Power Read -

- **Oil and Gas:** OPEC+ has cut production, except Iraq and Kazakhstan.
- **Coal and Mining:** The hottest topic in energy right now is copper.
- **Renewables:** US electricity generation from wind decreased for the first time since the mid-1990s.
- **Special - Policy:** The DoE announced the first tranche of \$4B in 48C tax credits, and is gearing up to distribute another \$6B.
- **Global policy:** The Group of Seven nations has reached a "qualified" agreement to end the use of coal by 2035.
- **Climate:** The O&G industry emits 3 times more methane than estimated.
- **Electricity:** *Spotlight* - commercial buildings and the built environment.

- Fossil Fuels -

- Oil -

- In January, the OPEC+ coalition agreed to [cut production](#) to avoid a global oil surplus that would drive prices down. However, **Iraq and Kazakhstan ignored and surpassed their production quotas** by several thousand barrels per day. Kazakhstan resubmitted its new production schedule that includes compensatory cuts, but Iraq hasn't officially responded. Meanwhile (related or coincidence?), China-Kazakhstan trade reached an [all-time high](#) in Q1 of this year.

- Gas -

- **Spotlight - Ammonia 2.0** ([AES Members](#) have access to Spotlight Ammonia 1.0, a PDF):

- A nitrogen atom forms three bonds with hydrogen to create NH₃ or ammonia, which means it doesn't emit carbon when burned.
- The production of ammonia is [carbon intensive](#), accounting for about [2%](#) of the world's total carbon emissions.
- More than 70% of ammonia produced today ends up as liquified gas in nitrogen fertilizer that farmers inject into soil.
- Other major uses for ammonia include as a refrigerant and cleaning solution.
- The chemical has a long history as an experimental transportation fuel, and was a base for a NASA and Air Force jet, the X-15, that set an unbroken speed record in the 1960s.
- There are [new efforts](#) to use ammonia as a combustion fuel and as a medium for transporting hydrogen.

- Coal and mining -

- *AES trend-spotting: the hottest topic across all energy sectors and verticals right now is copper.* (Among other signals, driven by efforts to "electrify everything," it appears that copper is headed north of [\\$12,000/ton](#).)

- Carbon capture and removal -

- Marine carbon dioxide removal is a form of geoengineering, the most polarizing concept in climate science right now. **To consider [marine CO₂ removal](#) responsibly, the DoE Advanced Research Projects Agency-Energy (ARPA-E) has a program that supports measuring and monitoring carbon in the ocean.** Called Sensing Exports of Anthropogenic Carbon Through Ocean Observation ([SEA-CO₂](#)), the program announced its first tranche of funding: \$36 million to be distributed among national labs, academic institutions, and private companies.

- No- / Low-Carbon and Renewable Energy -



- Construction of offshore wind in the US must comply with the century-old Jones Act, which requires all merchant shipping along a US coast to involve a domestic vessel carrying a US flag. Since there was no [OSW industry](#), there were no domestic merchant vessels to support the industry ... until now. **The first compliant ship, commissioned by utility Dominion Energy, has set sail.** *Note: [AES Members](#) have free access to [Winds of Change](#); [The State of Offshore Wind Along the US West Coast](#).*



- **Georgia Power is [now operating](#) its 1,114-megawatt (MW) Unit 4 nuclear power reactor at Plant Vogtle** after connecting to the power grid in March 2024. The commercial start of Unit 4 completes the 11-year expansion project at Plant Vogtle. *Note: no new nuclear reactors are under construction now in the US.*

- **US electricity generation from wind turbines decreased for the first time since the mid-1990s** in 2023 despite the addition of 6.2 gigawatts (GW) of new wind capacity last year. *Note:* the 2023 decline indicates that wind as a generation source is maturing after decades of rapid growth.

- Energy Policy & Geopolitics -

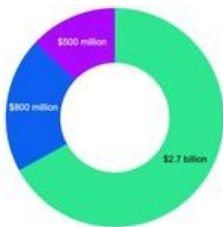
- Beltway buzz -

- *Special report:* The SEC **approved** the requirement for public companies to disclose material **Scope 1 and 2 information**. While the SEC ([S7-10-22](#)) climate disclosure mandate is objectively a big deal, the final version is scaled back (aka "material" or information that an investor would want to know when making an investment decision, and also Scope 3 is not required) compared to the initial proposal [two years ago](#).

Continuing, the SEC's isn't the only active climate reporting rule. There is also the Global rule ([ISSB IFRS S1 & S2](#)), the EU rule ([CSRD/ESRS](#)) and California ([SB253+261](#)), which is being litigated. **There are about 2,800 US companies and about 600 non-US companies that will have to comply with all 4 climate rules;** today, less than half disclose their Scope 1 and 2 emissions.

- **ARPA-e has issued an RFI (Request for Information) about the need for [Responsible Mining of Critical Minerals \(FIRM-CM\)](#)**. Responses to this RFI should be submitted in PDF format to the email address ARPA-E-RFI@hq.doe.gov by 5/14/2024.

- **The IRS released a notice of proposed rulemaking about the Clean Hydrogen Production Tax Credit (PTC) under Section 45V**, which would provide a 10-year PTC or Investment Tax Credit (ITC) for taxpayers who produce [qualifying hydrogen](#).



- *Special announcement:* DOE announced the **first \$4 billion tranche of 48C awards. Category 1**, which includes energy products and recycling of eligible components, made up 67% of the projects receiving allocations. The remaining share of allocations went to industrial emissions reduction (**Category 2**) and critical materials processing (**Category 3**). Winners include: NOVONIX Limited, a battery manufacturer (\$104 million); Ballard Power Systems, a fuel cell factory in Texas (\$54 million); and, MP Materials, a rare earth magnet factory (\$58.5 million). *Insert:* 48C award allocations of the first \$4B tranche, by three categories.

- ***Related special announcement:* The DoE and IRS announced that they plan to open the second, and potentially final, round of Section 48C(e) Qualifying Advanced Energy Project (or, "48C") applications for the final \$6 billion in IRA allocations.** The 48C program functions like a competitive grant, where entities may submit applications to receive tax credit allocations for the following purposes:

- Clean Energy Manufacturing: Expand or establish an industrial or manufacturing facility for the production or recycling of clean energy equipment and vehicles.
- Industrial and Manufacturing Facility Decarbonization: Re-equip an industrial or manufacturing facility with equipment that reduces GHG emissions by at least 20%.
- Processing, Refining, and Recycling Critical Minerals: Re-equip, expand, or establish an industrial facility for the processing, refining, or recycling of critical minerals.

- Global Energy -

- **The Group of Seven nations have agreed to end the use of “unabated” coal by 2035.** However, by referring to “unabated” coal, the agreement leaves room for countries to burn coal past 2035 if their carbon pollution is captured before entering the atmosphere. The agreement also includes a caveat that countries could choose “a timeline consistent with keeping a limit of 1.5°C temperature rise within reach, in line with countries’ net-zero pathways.” That caveat allows countries to keep using coal past 2035, as long as their overall national emissions won’t contribute to global warming of more than 1.5 degrees Celsius. *Note:* coal makes up less than 6% of the electricity mix in the UK, Italy, and Canada, and almost nothing in France. But it still comprises 32% of Japan’s electricity mix, 27% of Germany’s and 16% of the US.

- Climate, Sustainability, and Resiliency -

- "**discretization**" *noun*, def: The mathematical process to create a model for complex events like the changing climate. For instance, **ocean climate models typically split their governing equations** into a 3D baroclinic component that models slow internal gravity waves and ocean currents and a 2D barotropic component that models fast surface gravity waves.

- **The US oil and gas industry emits 3 times more methane than current industry or government estimates.**

- Related, the most advanced methane detection satellite was developed by [MethaneSAT](#), the Environmental Defense Fund (EDF), and the government of New Zealand. It will be able to identify and measure methane emissions over wide areas, generating data that will be made available to the public free of charge.

- Research and Markets -

- **Researchers developed a mass synthesis process for sodium-containing sulfides.** Mass synthesis of electrolytes with high conductivity and formability is key to the practical use of all-solid-state sodium batteries, thought to be safer than lithium-ion batteries and less expensive because sodium is far more plentiful than lithium. [AES Members](#) have access to the peer-reviewed research.

- "advantaged assets" *noun*, def: any investment, project, account, or asset that offers notable returns or other benefits to the investor. For instance, **ExxonMobil and Chevron are increasing their investments in the advantaged assets of the Permian and the Guyana basins.** (Note: since 2019, Exxon has doubled its production amount in the Permian.)

- **NextEra Energy, a so-called "yieldco" (a type of company that purchases assets and distributes cash to shareholders) is struggling to pay bills coming due** under an obscure type of financing that has weighed on the company since interest rates began climbing and its stock price started tumbling. (*Thank you* Greg Allen of [Aviva Energy](#), AES member and energy SME.)

- **Elon Musk let go of about 500 "superstars" from the Tesla supercharger team.** The reasons aren't entirely clear, though there is a lot of speculation.

- Startup Spotlight -

- [Voltpost](#) provides curbside EV charging stations that hook up to streetlights and lamp posts that are already connected to the power grid.
 - Two fusion startups, [Longview Fusion Energy](#) and [Type One Energy](#), announced construction agreements for a pilot phase and both aim to fully operate by the 2030s.
 - Total investment in SMRs (small modular nuclear reactors) increased 60% in the last 3 years.
 - [Circular Venture Lab](#) in Evansville, Indiana, won the 2024 US DoE Community Energy Innovation Prize for its support of startups in the circular economy.
-

- Electricity & Power -

- Spotlight on commercial buildings and the built environment -

65°F

- The temperature that electric utilities in the US assume that commercial buildings will not require heating or cooling to be comfortable; also, **the temperature used to determine the "score" of the weather conditions will dictate a heating or cooling degree day.**
 - *Example 1:* The high temperature for the day is 90°F and the low temperature is 66°F, then the temperature mean for that day is: $(90^{\circ}\text{F} + 66^{\circ}\text{F}) / 2 = 78^{\circ}\text{F}$
Because the result (78°F) is above 65°F, the score for example 1 is: **13 Cooling Degree Day** (78°F - 65°F).
 - *Example 2:* The high temperature is 33°F and the low temperature is 25°F; therefore, the temperature mean for that day is: $(33^{\circ}\text{F} + 25^{\circ}\text{F}) / 2 = 29^{\circ}\text{F}$
The result is below 65°F, so the score for example 2 is: **36 Heating Degree Day.**
- **Electricity consumption trends for commercial buildings** (*source:* de Chalendar and Lepech, Stanford University):
 - About 15.1% of all building infrastructure exists solely for extreme temperature events (hot or cold) that happen only once every few years.
 - "building heterogeneity" *adjective*, def: when an unusually small number of rooms or space in a building use most of the power supplied to the entire building.
 - There are 3 primary reasons why a building uses excessive power:
 - Bad location/exposure
 - Minimum air flow
 - High occupancy rate (people or machines)
 - Cooling is the fastest growing use of energy in buildings

- "sick building syndrome ([SBS](#))," *noun*, def: a circumstance in which people develop symptoms of illness or infection caused by the building in which they work or reside. The main symptoms include: headaches; eye, nose, or throat irritation; fatigue; dizziness; nausea. Note: symptoms caused by SBS are not the result of poor cleaning or other people, but rather are due to construction materials and/or poor aerodynamics.

- Universities in the Spotlight -

- The Diagnostic Instrumentation Lab at **Mississippi State University** changed its name to the Institute for Clean Energy Technology ([ICET](#)). Current research is focused on, among other topics, the built environment.

- **Embry-Riddle Aeronautical University** (in Daytona Beach) has the Clean Energy Systems Laboratory ([CESL](#)), which is focused on the energy-water nexus (aka WaterTech), and the Adaptable Clean Energy Lab ([ACE](#)), which is focused on the built environment.

- The **Florida Institute of Technology** ([Florida's STEM university](#)) offers, among other notable programs, the Zero Energy Building (ZEB) for the built environment and the Renewable Energy and Energy Efficient Technologies (REET) program that conducts research on sectors like AgTech.

- [Energy Terminal](#) at **Duke University** published a Resource Hub for the energy transition.

- Quotes -

The wit and wisdom of the energy sector's great curmudgeon, [Michael Liebreich](#)

"History will have a good laugh at us."

And ...

"The hydrogen love-in doesn't actually serve any purpose."

And ...

"It's all bollocks."

— On general hydrogen hype

"They're cost claims are nothing but hot air."

— On Terraform Industries' announcement that they solved the challenge of producing green ammonia with electrolysis

"Green hydrogen costs ... are a country mile from [claims] by Hydrogen Europe, McKinsey & Company...."

— Comparing actual cost (at €8/kg or more) versus industry claims

- Bulletin Board -

Reach 135,000+ readers with your message.

Members of AES can post an announcement for free! [Contact us](#) for more information.

- **Orrick** has published its [2024 Offshore Wind Report](#). The report is an update on the current OSW market and trends in 20+ key jurisdictions with some forward looking analysis. AES Members have access to [Winds of Change](#).

- **Clearpath** has [primer resources](#) on Ag-Tech, CCUS, Water-Tech, Industrial Fuel.... Also, **ClearPath launched its Conservative Climate Leadership Program**. Individuals interested in an energy policy internship in DC are encouraged to [apply](#).

- **Honeywell's Sustainable Building Technologies (SBT)** is hiring for a global [Senior Director Solutions Architect](#).

- **Ubiquitous Energy**, a leader in transparent solar technology, is [developing](#) energy generating windows and door products.

- **Sunrun**, a residential solar and battery storage installer in the US, has partnered with Ford to launch a new [home electric vehicle \(EV\) charger](#) compatible with any EV model.

- Gratitude -

AES would like to recognize our sponsors — our catalysts for change.
For more information about the many benefits of sponsorship [contact AES](#).

Much thanks to our sponsors and partners:

**WILSON
SONSINI**

Honeywell

 Women's
Energy
Network™

 **CONSULATE GENERAL
OF DENMARK**
Silicon Valley


orrick

 **NORDIC
INNOVATION
HOUSE** SILICON VALLEY

CLEARPATH

 **FIRE2FISSION**

Schneider
Electric



Contact information

[The American Energy Society](#)

[AES LinkedIn Group](#)

[AES introductory video](#)

[Contact the editors](#) about the Society or this issue of *Energy Matters*.

