

ENERGY MATTERS

Soundbite summaries of the energy news you need to know

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Note: This is a slightly abbreviated issue of *Energy Matters* because last week the American Energy Society hosted "The Energy Transition and Its Workforce" at Emory & Henry University in Abingdon, Virginia. The Summit was an enormous success — Members will soon have access to the proceedings from that special event.

- The Power Read -

- **Fossil fuels:** Only 2 of 9 biofuel feedstock sources are economical (corn and sugarcane).
- **Renewables:** 5 fusion startups have raised \$300M or more.
- **Climate:** Scope 4 emissions are greenhouse gases never emitted.
- **Electricity:** The US state building the most data centers: Virginia.

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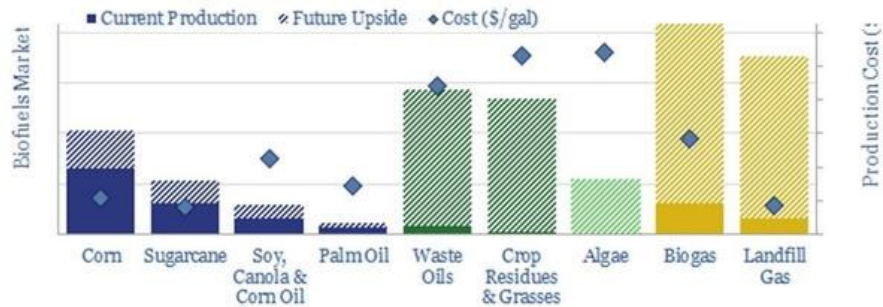
- CAFWD hosts [California Economic Summit](#), October 8-10, in Sacramento.
- AASHE Sustainability Conference and Expo on October 27-29 in [Anaheim](#).
- Don't forget [Energy Transition North America](#), also in Houston, December 4-5.

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- Fossil Fuels -

- Oil -

- Biofuels currently [displace 3.5 Mboed \(barrels of oil equivalent per day\)](#) of oil and gas. But biofuels are not carbon-free, and their weighted average CO2 emissions are only ~50% lower. Right now, only two feedstock sources are economical (corn and sugarcane), and just one (landfill) gas is close while algae is not at all.



- Natural gas -

- Based on all projects currently under construction, **total LNG exports from North America will double between 2024 and 2028**, from 11.4 Bcf/d to 24.4 Bcf/d. [Table below](#), construction of new LNG export terminals, per region:

United States

Port Arthur
Rio Grande
Golden Pass
Corpus Christi Stage III
Plaquemines

Canada

Cedar LNG
Woodfibre LNG
LNG Canada

Mexico

Energia Costa Azul
Fast LNG Altamira FLNG1 and FLNG2

- Coal and mining -

- US exports of thermal coal to Europe are falling but **exports to Asia and Africa are increasing**. Indeed, total US coal exports (thermal and metallurgical) have [increased](#) to 53 million short tons (MMst) from 49 MMst (H1 2024 vs. 2023).



- Carbon capture/removal -

- [Biochar](#), or "biological charcoal," is the result of **heating biomass (such as wood, crop residues, or animal manure) to between 400-800°C in an oxygen-limited environment through a process called pyrolysis**. This method prevents the biomass from combusting, leaving behind a gas (syngas), a liquid (bio-oil), and a solid (biochar). The resulting solid, which contains the carbon from the biomass, can be used to improve soil health.

- No- / Low-Carbon and Renewable Energy -

- **Utility-scale battery storage systems have been growing as a source of electric power capacity in the US** (*insert*). In the first seven months of 2024, operators **added** 5 gigawatts (GW) of capacity to the US electric power grid.



- **Since the Inflation Reduction Act (IRA) was passed two years ago, domestic capacity for producing solar modules has nearly quadrupled** (and is on pace to exceed that record in 2024). In other words, the US installed 32.4 gigawatts of solar in 2023; solar manufacturing capacity in the US is now close to **matching** its pace of solar deployment.

- **The following fusion startups have raised more than \$300M:**

- [Zap Energy](#) (no magnets)
- [TAE](#) (formerly known as Tri Alpha Energy)
- [Helion](#) (Microsoft is their first customer)
- [General Fusion](#) (raised \$441 million)
- [Commonwealth Fusion Systems](#) (raised \$1.8 billion USD)
-

Note: All fusion startups have raised a combined \$7.1 billion

- SMRs are small modular nuclear reactors that are about one-tenth to one-quarter the size of a traditional nuclear power plant and have a power capacity of up to 300 MW per unit, which is equivalent to around one-third of the generating capacity of conventional nuclear reactors. **The two leading SMR companies are Terrapower and NuScale.** Other SMR companies include: Rolls-Royce, MoltexFLEX, GE Hitachi, China National Nuclear Corporation, Candu Energy, and X-energy.

- Energy Policy & Geopolitics -

- **Beltway buzz: Congress is back in session this week** with votes on China-related legislation, including measures targeting Chinese-made electric-car batteries, making it harder for foreign nationals to buy US farmland, prohibiting the Homeland Security Department from funding any university that receives money from the Chinese government, and establishing a China division within the DOJ. Meanwhile, House Republican leaders released a continuing resolution that would fund the government through late March but got immediate pushback from a small band of House Freedom Caucus Republicans.

- AES editor's recommend: ***The Same Mistakes*, by Phil Verleger** (AES Energy Writer of the Year 2023), [The International Economy](#), Spring 2024. (*Excerpt:* "The push to mitigate climate change will die out, just as globalization programs did when voters turned to populist candidates who they saw as protecting their best interests.")

- Climate, Sustainability, and Resiliency -

- This is how many [Earths are needed](#) to support different countries' lifestyles:



- **Methane emissions are increasing faster than any other greenhouse gas, including CO2.** [AES Members](#) have access to the peer reviewed paper (PDF reprint).

- **Scope 4:** greenhouse gases never emitted due to a product's cleaner production or attributes. Or, more precisely, **"the difference in total lifecycle GHG emissions between a company's product and some alternative product that provides an equivalent function."** "Product," in this case, includes both goods and services. (Qualifying examples of Scope 4 include: an electric vehicle replacing a petroleum-powered one; steel produced in a factory powered by hydrogen instead of fossil fuels; a flight powered in part with sustainable aviation fuel; or maybe even a Zoom meeting that obviates the need to travel.)

- Research and Markets -

- **The US DoE Loan Program Office finalized its first loan guarantee to support tribal energy sovereignty.** The \$72.8 million loan guarantee will finance the development of a solar-plus-storage microgrid on the lands of the [Viejas Band](#) of the Kumeyaay Indians near Alpine, California.



- **Netflix is seeking an ESG Controller** to work in Los Gatos. The salary will be between \$300K - \$800K. (AES did not receive any compensation for this job post.)

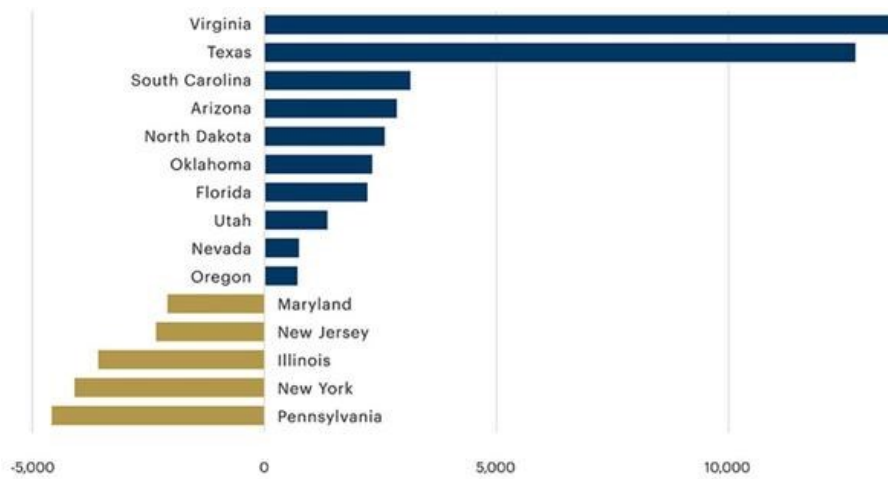
- **Wilson Sonsini published updates** on its sustainability and ESG advisory practice.

- Spotlight on [ResTech](#)

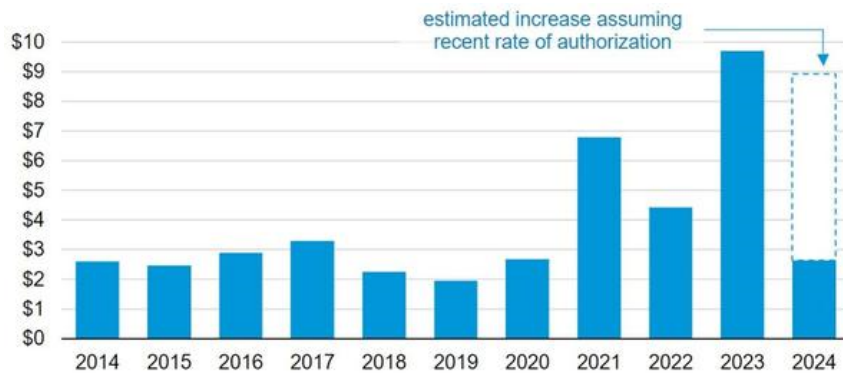
- **WaterTech:** Most farms use a variety of irrigation methods to water crops; however, all methods of irrigation require significant amounts of electricity. [New research \(PDF\)](#) studied the effect that electricity prices have on water consumption. The research determined that in the short run **electricity prices do not affect irrigation strategies** (-0.76 elasticity). However, farmers do seek solutions that will lower water use if the cost of electricity remains high for 2+ rainy seasons.

- Electricity & Power -

- Anecdotal evidence suggests "[jaw dropping](#)" demand for electricity in Texas and especially Virginia as AI data centers come online. Building up the power supply will test producers and midstream companies and threaten energy security.



- Electricity prices have [gone up](#) since the beginning of the COVID pandemic in 2020. (Insert below: annual net rate and projected increases in regulated markets, in billion USD.)



- Related, average annual household spending on energy in California – which includes electricity, natural gas and gasoline – is about \$6,500, or about **\$450 above the average inflation rate**.

- **Grid operators watch the weather very closely, especially as they try to integrate renewables under unpredictable conditions.** For instance, this August the CAISO experienced substantially higher [day-ahead](#) (PDF) heat rates in the southern half of the state (the HE17 reached an average of 56.8); in contrast, the northern hub day-ahead rates dipped below average (30.3 for HE17), or about 26.5 points lower than the southern hub. However, heavier wind generation throughout the state contributed to a lower draw on net load than previous years.

- Quotes -

Why are SMRs taking so long to deploy?

"Nobody exactly wants to be first. But somebody has to be."

- Eric Carr, president of nuclear operations for Dominion Energy

"Anybody other than Russia."

- Ki Seob Sim, Nuclear Fuel Engineering Specialist at the IAEA, on concerns about Russia being the only supplier of uranium HALEU nuclear fuel in the world

"They (SMRs) just aren't ready."

- David Schlissel, IEEFA analyst, specializing in SMRs, explaining that the sector is still struggling with cost overruns and manufacturing delays

- Bulletin Board -

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- **Orrick** published [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.

- **Title Leader** launched a Title Commitments [platform](#) to support title searches by parcel.

- Gratitude -

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