

ENERGY MATTERS

Soundbite summaries of the energy news you need to know

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- The Power Read -

- **Fossil fuels:** Major crude pipelines in the US are almost at capacity.
- **Coal:** *Trend-spotting* - it looks like deep sea mining is inevitable.
- **Renewables:** A spotlight on SAF.
- **Policy:** King Charles III of Britain, will receive £45 million (~\$58 million) of public money for the Crown's investment in OSW.
- **Climate:** No one knows how much money the government spends to rebuild coastal beaches ... but it's a lot.
- **Quotes:** Familiar sayings inspired by wind energy.

- Fossil Fuels -

- Oil -

- **Crude oil prices have been in a narrow range (~\$83/barrel) for about a year, but [that could change](#).** Oil production in the US is increasing (global oil demand has been 470K b/d higher than expected) and oil refinery capacity continues to [grow](#); however, US crude oil pipelines are nearing capacity, which could lead to a transport/export ceiling. For instance, major [pipelines](#) between the Permian Basin and the Port of Corpus Christi are more than 90% full (*insert*).



- Gas -

- Right now, **the cost of transporting natural gas to California is almost equal to the cost of the gas itself at the Henry Hub in Louisiana.** This locational disparity will only get worse (more expensive) as global demand increases. Some AES Member SMEs think that in about 5 years natural gas prices in nonproducing regions of North America (like California) will pay about the same price for natural gas as other nonproducing countries like Japan and the EU. Some brokers are [hedging](#) natural gas for up to 15 years to [lock in](#) current prices.

- Coal and mining -

- *Trend-spotting*: **deep-sea mining for critical minerals and metals** is probably inevitable.
- Norway is going forward with seabed mining in the country's territorial waters.
 - International Seabed Authority (ISA) is currently drafting [rules](#) to govern the practice.
 - The ambassador for Kiribati (a tiny nation near Jamaica scattered across 32 tropical atolls) has been accused of trying to [bribe](#) authorities to relax deep-sea mining restrictions. (*Note*: Ambassador Teburoro Tito denies the allegations.)

- Carbon capture and removal -

- **Wood vaulting** (adjective, verb, or noun) *def*: intentionally burying logs so that the gas emissions they would otherwise release are kept underground; [a carbon sequestration technique](#). There are about 50 million acres of excess vegetation on land in the US, and burying them would sequester about 2.2 billion metric tons of CO₂e.

- No- / Low-Carbon and Renewable Energy -

- Spotlight on sustainable aviation fuels (SAF):

One gallon of traditional fossil-based jet fuel burned during flight creates about 20 - 24 pounds of CO₂ (for more about the chemistry of burning hydrocarbons, see "Background" below).



As an [alternative](#) to fossil-based jet fuel, there are four ways to [make SAF](#), with CO₂ equivalent (co₂e) included for each:

Method: **Fats**

[Feedstock](#): Vegetable, cooking and sewage oils
co₂e: 17 - 20 pounds / gallon

Note: Lower emissions not substantial.

Method: **Corn**

[Feedstock](#): ethanol from corn, sugarcane...
co₂e: 17 - 20 pounds / gallon

Note: Lower emissions not substantial.

Method: **Garbage**

[Feedstock](#): Solid waste and biomass
co₂e: 17 kg / gallon

Note: Uses existing waste but requires many complex steps and treatments.

Method: **Air**

[Feedstock](#): CO₂
co₂e: 0.8 kg/ gallon

Note: An expensive way to produce SAF because of high energy input costs.

[Background](#): When jet fuel burns, its carbon and hydrogen atoms combine with oxygen from the atmosphere, which produces water vapor, carbon-dioxide, and other compounds. Each oxygen atom has a mass one third greater than that of a carbon atom; therefore, each CO₂ molecule is, by mass, 27% carbon and 73% oxygen. *Note*: the volume of CO₂ released per flight depends on several factors, including: aircraft efficiency and maintenance, distance traveled, load carried (passengers and cargo), and weather conditions.

- Energy Policy & Geopolitics -

- [US Wind](#), a proposed 2.2 GW Maryland offshore wind farm, received its Final Environmental Impact Statement from the Bureau of Ocean Energy Management (BOEM). Italy's renewable energy developer Renexia, confirmed that it will build 114 turbines totaling 2,200 MW capacity (enough to power 770,000 homes with clean energy). AES Members and [university subscribers](#) also have access to the report, [Winds of Change, OSW on the US West Coast](#).



- The Alliance for Renewable Clean Hydrogen Energy Systems ([ARCHES](#)) is **the first of the 7 hydrogen hubs to receive federal funding** — the \$12.6 billion award + \$1.2 billion from the DOE + \$11.4 billion in public and private matching funds — to build and expand clean hydrogen infrastructure in the West.

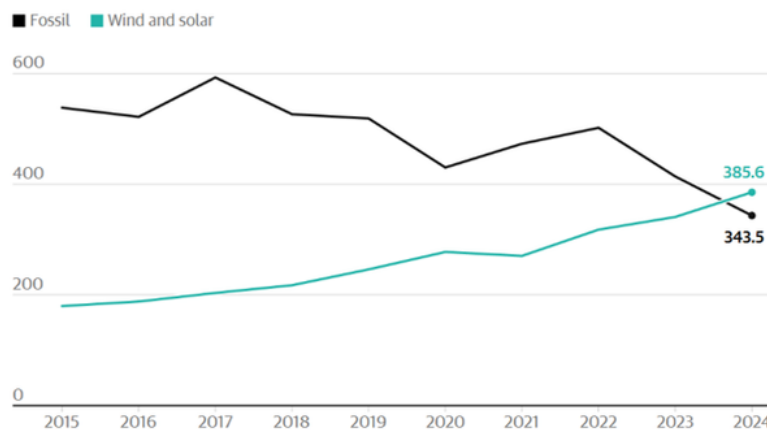
- An example of conflict as a consequence of the energy transition, a lawsuit in the California courts **alleges that Philips 66 stole confidential IP and trade secrets about low carbon renewable fuels developed by Propel Fuels Inc.** (at an estimated value of ~\$200M).

- Global energy -

- **Europe:** The British Crown Estate invested in UK [offshore wind farms](#) that earned £1.5 B in revenues and a record £1.1 B in net profits. The Estate's investment performance means that its lead investor, "LP" King Charles III of Britain, will receive an additional £45 M (~\$58 million) — a 50% increase above his official annual income. (Note: the Crown Estate also owns a large portion of Britain's seabed for up to 12 nautical miles off the coast.)



- Related, wind turbines and solar panels have [overtaken](#) fossil fuels to generate 30% of the European Union's electricity; if hydropower is included, then renewables contribute +50%.



- **Asia:** Last year, India mined and produced the [most coal](#) in human history (and the fifth highest year of total coal imports too). Further, India expects that its coal production and consumption will continue to [increase](#) each year through at least 2030.

- **Africa:** It appears that there are only 3 utilities in Africa that are [privately owned](#):

- Eneo, in Cameroon
- Weza Power, in Burundi
- Eskom Holdings, in Egypt

- Climate, Sustainability, and Resiliency -

- **July 22, 2024, was the hottest global daily temperature on record;** July 21 and 23 were the 3rd and 2nd hottest.



- **No one knows how much money the government spends to rebuild coastal beaches,** but there are a few data points that suggest the total is substantial:

- Since 2010, the Army Corps of Engineers has spent roughly \$3 billion on sand placement and \$1.8 billion post disaster.
- When a beach is deemed to have been destroyed by a coastal storm, as opposed to normal erosion, the Corp pays 100 percent of the total cost.
- The five largest beach projects have been replenished a combined 57 times since 1960, requiring more than 30 million cubic yards of sand (or enough to fill nearly 340,000 transoceanic shipping containers).
- Beach sand replenishment is a policy issue that gets bipartisan support.



- Forests and other land ecosystems are net carbon sinks (they naturally absorb and remove carbon from the atmosphere); **however, extreme heat, drought and wildfires now cause forests and other land ecosystems to emit almost as much CO2 as they remove.** [AES Members](#) have access to the research paper.

- In 1969, nearly 50% of all **K-8 students** [walked or biked](#) to school; today, it's about 10%.

- Research and Markets -

- In the pickup truck market, there's no clear winner between EVs vs ICEs (internal combustion engine):

- Subaru, Toyota, and Mazda are committed to [ICE](#) and hybrids.
- Chevy and Ford are committed to both ICEs *and* EVs.
- Rivian and Tesla will remain entirely EV; [Lucid](#), will no longer make EV trucks.



- Related, the option to claim an immediate \$7,500 tax credit on certain EV car sales was introduced on January 1, 2024. Since then:

- \$1.5B has been granted in tax credits;
- 250,000+ EV buyers claimed the new point-of-sale incentive;
- 93% of new EV buyers and 83% of used EV buyers qualified for some tax credit.

- Chevron will [move](#) its headquarters and 2,000 employees from San Ramon, California, to Houston before the end of 2024.

- Wilson Sonsini published [updates](#) on its sustainability and ESG advisory practice.

- Spotlight on [ResTech](#) -

- 2024 WCS Resiliency Pitch Competition

- Winner: [Blip Energy](#)
- Runner Up: [ThermoShade](#)
- People's Choice Award (tie): [Stars Edge](#) and [Heat Inverse](#).

- Electricity & Power -

- On July 9, US power plant operators generated 6.9 MWh of electricity from natural gas, probably [the most in history](#). (Note: the spike was due to high temperatures across most of the country and a steep drop in wind generation.)



- *Trend-spotting*: Energy storage is the [fastest growing](#) subsector in the power industry.

- A [comparison](#) of new transmission infrastructure built in the last 15 years:

- 2010 - 2014: 1,700 miles was added each year on average
- 2015 - 2019: 925 miles added on average each year
- 2020 - 2023: 350 miles a year, on average

- Related, there are very few interconnections between ISOs in the US. Of all the possible interconnections, it appears that the one that would have the [greatest impact](#) would be **if the Texas ERCOT and the Southwest ISO were connected.**



- Revenues have increased by about 12% for all utilities in high-density data center regions (#1 [Virginia](#), #2 Texas, #3 Illinois).

- The US DoE Loan Programs Office (LPO) announced a conditional commitment for a [loan guarantee](#) of \$861.3 million to Clean Flexible Energy, LLC to finance the **construction of two hybrid storage + solar photovoltaic (PV) farms in Puerto Rico.**

- Universities in the Spotlight -

- The Center for Advanced Power Engineering Research ([CAPER](#)) at **UNCC** is a powerful consortium of universities and industry partners in the Southeast. The Center is hosting a [conference](#) on grid resiliency, October 17 and 18.

- **Georgia Tech** Strategic Energy Institute is the largest and most active energy [ORU](#) in the country.

- The Energy Studies in Buildings [laboratory](#) at the **University of Oregon** offers a wide range of programs, like efficiency, materials, and design.

- **Oregon State University** has a [Department of Energy](#) within its Division of Research and Innovation.

- Quotes -

Familiar sayings inspired by wind energy

During the age of sail (15th thru 18th C), when wind-powered vessels were the only bridge across vast oceans, sailing language became so pervasive that everyone used these common phrases:



- A ship was "**three sheets to the wind**" when the lines to the three main sails broke and the vessel pitched drunkenly out of control.
- To "**pipe down**" was the boatswain's whistle for everyone to be quiet at night, and "**piping hot**" was his whistle to announce that food was ready.
- To "**turn a blind eye**" became a popular expression after Vice Admiral Nelson deliberately placed his telescope against his blind eye to ignore his superior's signal flag to retreat.

- 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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