

ENERGY MATTERS

Soundbite summaries of the energy news you need to know

AN OFFICIAL PUBLICATION OF



AMERICAN ENERGY SOCIETY

October 14, 2024

- The Power Read -

- **Electricity:** Hurricane Milton was exceptional for its wind and extreme flooding.
- **Natural gas:** China is now producing shale natural gas in its Sichuan Basin.
- **Renewables:** In the US, off-grid batteries paired with rooftop solar is growing, but rooftop solar alone is slowing.
- **Policy:** The SCOTUS Fall Term is in session.
- **Climate:** Pollution is declining in China but increasing in all other South Asian countries.

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- The [Clean Hydrogen Market Data Workshop](#) is coming to Chicago, October 22.
- AASHE Sustainability Conference and Expo on October 27-29 in [Anaheim](#).
- NAESCO & ESC host [R3 – Renovate, Retrofit, Reduce – a conference](#) in Anaheim, November 4-6. [Contact us](#) for special access and privileges.
- The [application](#) for the Breakthrough Energy Fellows - Cohort 5 Innovator and Explorer - program is open through December 2, 2024.
- [Energy Transition North America](#) is being held in Houston on December 4-5.

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- Fossil Fuels -

- Oil -

- *Trend-spotting seaborne trade: An overwhelming majority of goods in the world (about 80%) are [transported by ships](#). The volume of cargo has almost tripled in the last three decades, from 4 to nearly 11 billion tons and contributes about [2% of total global emissions](#). For the most part, the global shipping fleet has relied on bunker fuels (a historical term from the days of steam-powered ships, when coal was stored in onboard coal bunkers). Today, the most common bunker fuels are marine gas oil (MGO), marine diesel oil (MDO), and marine fuel oil (MFO), all of which are heavy tar-like fuels that are a byproduct of petroleum distillation and cracking. They contain sulfur, aromatics, metals residue, and nitrogen, which has higher emissions than other fuels. To meet emission targets, shipping companies like Maersk and Wärtsilä are testing new engines that can use traditional fuels, natural gas, methanol, ammonia, or hydrogen, as well as [next-generation](#) marine batteries and micronuclear power.*



- Natural gas -

- China's national oil companies, CNPC and Sinopec, [are now producing shale natural gas in the Sichuan Basin](#). China has the largest shale gas potential in the world, 1.7x larger than US, but most of the reservoirs are [very deep](#). The production rate, ~26 million cubic feet per day, is much lower than a typical US well, which might produce hundreds of millions of cubic feet per day.



- Coal and mining -

- **The industrial metals market is in a long rally.** [Iron ore](#) (a steelmaking staple), copper, zinc, and uranium continue to add to their price gains; meanwhile, China passed a very large economic stimulus package that will increase demand for industrial and critical metals.

- Carbon capture and removal -

- **The DoE is funding [DAC Hubs](#); two have already won awards, with \$1.8B remaining:**

1. [Project Cypress](#)

- Federal Cost Share: Up to \$550 million
- Recipients: Battelle, Climeworks, and Heirloom Carbon Technologies
- Locations: Louisiana, including Calcasieu and Caddo Parishes
- Target: ultimate goal of capturing more than 1 million tons of existing CO2 from the atmosphere each year at fully capacity and storing it permanently and safely in geologic formations.

2. [South Texas DAC Hub](#)

- Federal Cost Share: Up to \$500 million
 - Recipient: 1PointFive, a subsidiary of Occidental
 - Location: South Texas DAC Hub at King Ranch in Kleberg County, TX
 - Target: initial removal capacity of 500,000 metric tons of CO₂ each year and permanently storing it in a saline aquifer deep underground.
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- No- / Low-Carbon and Renewable Energy -

- **The percentage of US homeowners installing an off-grid battery alongside their rooftop solar system (aka "[residential attachment rate](#)") is growing**, from about 10% in 2022 to 12.3% in 2023, and on pace to exceed 25% this year. However, US rooftop solar market installations without batteries are on pace to decline 19% this year.

- **A classic moral dilemma: the clash of ecological preservation and climate change mitigation:**

- The Mojave Desert, in southeast California, is a fragile ecosystem with ~3,300 native plant and animal species and ~700 additional plants.
- Since 2022, a "solar rush" in the Mojave Desert has led to the construction of 234 utility-scale solar installations and 67 planned projects; together these facilities cover ~27,000 acres and generate 354 megawatts of energy.

Ivanpah Solar Power Facility (insert)



Note: The cost of the energy from these solar farms is almost free, but ~\$55,000 to protect an individual tortoise.

- On September 12 and 13, 2024, the American Energy Society hosted a private Summit at Emory & Henry University in Abingdon, Virginia: "The Energy Transition and Its Workforce." (Watch this space for the publication of its Proceedings.) **At that Summit, we heard that the DoE will offer \$3 million in funding to support services like career coaching, apprenticeships, and curriculum development.** [This initiative](#) is now accepting applications from programs that will promote awareness of energy workforce opportunities among "university students, alumni and academic professionals, K-12 students, veterans, and formerly incarcerated individuals."

- Energy Policy & Geopolitics -

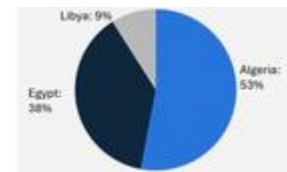
- **The SCOTUS Fall Term.** The justices will hear a total of nine arguments in October. *Editor's note:* [SCOTUSBlog](#) is a great resource.

- They left in place two EPA regulations impacting the energy sector, including rules on mercury and methane.
- In a separate case, justices asked the US Solicitor General to offer guidance on a request by red states to reject climate change torts brought by state/city governments against fossil fuel companies, signaling its growing interest in such cases.
- The Court will consider a case about temporary nuclear waste storage, looking at whether or not the NRC has broad authority to license private facilities unaffiliated with nuclear power plant reactors.
- Separately, SCOTUS declined to consider whether judges should serve as tiebreakers for deadlocked federal energy regulators.
- A separate emergency application seeking to block Biden regulations concerning carbon emissions from coal- and gas-fired power plants remains pending.
- [AES Members](#) have access to all archived *Energy Today* issues about "the most important energy and environment SCOTUS cases."

- The US presidential election is a few weeks away. Congress is essentially inactive, spending most of its time campaigning "in-district." It's worth noting that **both VP Harris and former President Trump agree that the US should create a [better policy](#) on critical mineral production and that stockpiles should be a priority.**

- Global Energy Geopolitics -

- **MENA:** [Natural gas](#) is used to generate about 95% of electricity in the Middle East and North Africa; meanwhile, only 3 nations supply almost all of the natural gas used in the region (in order: Algeria, Egypt, Libya).



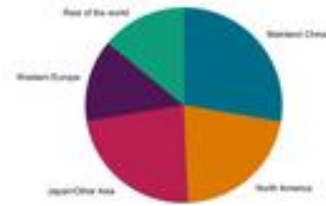
- **Asia:** Japan has been [buying](#) Canadian LNG and then re-selling the fuel into other markets at a markup. In 2022, the country resold almost 32 million tons of LNG to other countries. Separately (?), Japan is urging Canada to increase production; Canadian policymakers are trying to decide if they should restrict trade through diplomatic channels.

- **Europe:** Poland and Germany account for about two-thirds of [total coal consumed](#) in the EU; meanwhile, England has closed its last coal-fired power plant.

- Climate, Sustainability, and Resiliency -

- Spotlight: industrial chemicals -

- There are [28 primary industrial chemicals](#) (electronic chemicals, specialty polymers, industrial and institutional cleaners, water-soluble polymers and construction chemicals). **Many of these chemicals are made by and sometimes for petroleum refining processes.**



- The US is the leading consumer of biocide specialty chemicals (cleaners for industry, corrosion inhibitors, cosmetic/personal care, food additives, lubricating oil additives, oil field chemicals, printing inks, synthetic lubricants, etc. *See insert*).
- Mainland China is the largest consumer of all types of specialty chemicals.
- Western Europe leads in radiation-curable coatings consumption.
- The top-4 specialty-chemical providers in the US are: 1) Momentive; 2) Invista; 3) Entegris; 4) Albemarle Corporation
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- **In the US, emissions from eight industrial sectors—chemicals, refining, iron and steel, food and beverage, cement, pulp and paper, aluminum, and glass—account for about 14% of total emissions.** Most of those emissions come from [producing heat for industrial processes](#). *Note:* the DoE Loan Programs Office (LPO) is focusing much of its investments on lower carbon technologies at medium-temperature industrial chemical production processes.

- **Industrial processes account for around one-fifth of global CO2 emissions** (as opposed to 14% of total emissions in the US, above).

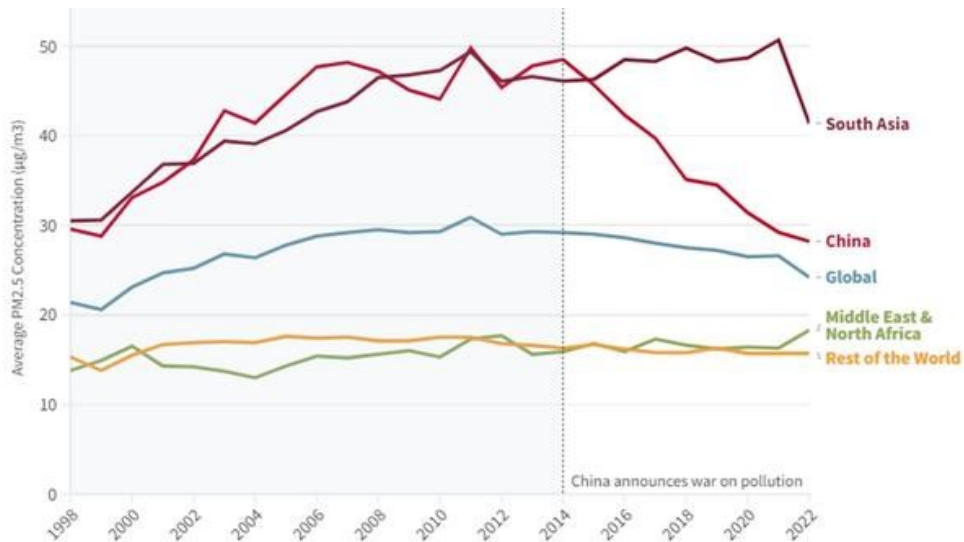
- High-temperature environments (>1000c) that encompass some of the most polluting industries, such as steel and cement production.
- Medium-temperature environments (200-800c) that encompass many chemical production processes.
- Low-temperature environments (>200c), the easiest to decarbonize space, that includes most food and beverage processes.

- There is [no longer](#) a clear path to limiting global warming to 1.5 degrees Celsius.

- Tampa Bay is the [most vulnerable](#) community in the US in terms of the total number of people (3.5 million) who live nearest to sea level.

- Research and Markets -

- In the last ten years, **global pollution levels have been defined by two competing regional trends in Asia**. Since declaring a “war on pollution” in 2014, [China has reduced its pollution by 39%](#); meanwhile, also in the last ten years, the South Asian countries of India, Bangladesh, Nepal, and Pakistan have each had pollution levels increase by about 10%, but in the last year have started reducing emissions.



- Astron Aerospace in Kansas has developed a **hydrogen-burning engine** that releases mainly water and has a **60% efficiency rate** (ICEs run at ~30% efficiency).

- **Toyota is investing \$500 million to support commercial production of Joby's electric air taxi**, with the aim of developing an [air mobility industry](#).

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

- **Spotlight on ResTech** -

- [Secured Carbon](#), a member of the [CSVS](#) incubator and an innovator in originating IRA clean energy tax credits, and ZERO13, the COP28 award-winning international carbon exchange, [announced a strategic partnership](#) to develop clean energy tax credit futures. As Tac Leung, CEO of Secured Carbon, explains, “This alliance will create a more scalable marketplace for clean energy tax credits by unlocking their pre-sale using standardized futures contracts. It’s the right next step for green finance.”

- Meanwhile, [GridWrap](#), also part of the CSVS incubator, won the ETS pitch competition.

- And another member of the CSVS incubator, [Flox Robotics](#) will be piloting its Digital Sheepdog Technology at Gerald R. Ford International Airport in Michigan.

- Electricity & Power -

- Hurricane Milton made landfall as a Category 4 storm (160+ mph winds) and then dropped to Category 2 (110+ mph winds) as it cut across the middle Florida. **The storm caused extensive damage and disruption, including but not limited to energy infrastructure.** Unlike other regions in the US, Florida's O&G industry relies on transportation (trucks, barges, railway) rather than pipelines, so all trade essentially stopped. About 4 million customers were cut off from power in the Tampa/Sarasota region alone.



- Related, Milton was a wind and flooding event because [previous storms](#) (Helene, Debby, etc.) had saturated the region and left little time to clear out debris that was blocking runoff.

- Companies like Microsoft, Amazon, and Google are increasing emissions as a result of demand for AI; **in response to construction of more data centers, [utilities](#) are building more gas-fired plants.**

- **AI and data center load growth would require triple the current nuclear capacity**, from 100GW to 300GW. AES Members have access to the updated version of the DoE Pathways to Commercial Liftoff Advanced Nuclear [report](#) (PDF).

- *Startup spotlight:* [Halcyon](#) is building an AI-assisted search and information platform that helps electricity providers navigating the energy transition find valuable new sources, understand shifting market dynamics, and answer complex questions quickly.

- Universities in the Spotlight -

Mark your calendars: October 22, 2024

- MIT is hosting its [Sustainability Conference](#) on October 22 at the Boston Marriott Cambridge - students can attend for free.

- Sign up for **Colorado School of Mines** Spring 2025 Career Days, which takes place on January 28-29, 2025, on October 22 using [DiggerNet](#).



- The [Electric Vehicle Expo](#) will be hosted at **Stanford University** on October 22 at 5:30pm - 6:30pm in the Volkswagen Automotive Innovation Lab.

- The **Yale University** Physics Department is hosting the [High Energy Particle Theory Seminar](#) on October 22 at 4:00pm (speaker TBD).

- October 22 is "[Equity Day](#)" during the **US DoE Justice Week**.

- Quotes -

- Energy extreme -

"It's scary — everybody is working out their contingency plans for either administration."
- Mark Lashier, CEO of Phillips 66, on concerns in the oil and gas industry that a Trump presidency will cut the two-year old Biden climate law

"It's striking — the degree of commitment that industry has made to low-carbon businesses like carbon capture, biofuels and hydrogen."
- Daniel Yergin, vice chairman of S&P Global and AES Energy Writer of the Year 2021

"It doesn't budge."
- Steven Polzin, Arizona State University School of Sustainable Engineering and the Built Environment, on inelastic car ownership in the US (despite the explosion of alternatives to vehicle ownership — car-sharing platforms, ride-hailing apps such as Uber and Lyft, autonomous taxis and a menagerie of "micro-mobility" options from electric scooters to e-bikes — nothing has made a dent.)

- 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.

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- Gratitude -

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