

EI NEW ENERGY™

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CONTENTS

- 2** CHINA NOCS ACCELERATE PACE
- 3** CALIFORNIA ICE BAN WITHIN REACH
- 4** CHINA TRANSITION TAKES HIT FROM WEATHER
- 5** RUSSIAN GAS SHUTOFF SCENARIOS
- 7** US TAX CREDITS FINALLY UNBIASED
- 8** IN BRIEF: NORHERN LIGHTS CSS MILESTONE
- 9** EI NEW ENERGY DATA

ESG

US States Fight ESG Investing: The Impacts

Texas has started a growing movement of US states pushing back on asset managers that are limiting investments in the oil and gas sector — a practice often termed “energy boycotting” by Republican policymakers. The trend kicked off when the Lone Star State passed a law last year to prevent state funds from contracting with or investing in firms on their list of boycotters, which includes top global asset manager BlackRock. Other producing states have followed in the footsteps of Texas, including its northern neighbor Oklahoma along with West Virginia. Overall, the policies are expected to have only minor impacts but they nonetheless add risk — and they add layers of complexity to the conversation around environmental, social and governance (ESG) concerns.

Texas took a step toward enforcing its policy last week, when State Comptroller Glenn Hegar unveiled a list of about 350 financial companies that engage in energy company boycotts. Aside from BlackRock, the list also includes international financial heavyweights Credit Suisse, BNP Paribas and UBS Group. The list was required under last year’s law. State pension funds — for state employees, teachers, city workers, county staff, emergency services providers and the state’s public school endowment system — now have 30 days to inform the Comptroller of their involvement with investors like BlackRock.

Investing Implications?

The laws are unlikely to slow the overall low-carbon direction of investing by any stretch. Yet there have been some changes in messaging by asset managers who think ESG moves — whether by policymakers or shareholders — should avoid exerting too much pressure too fast. BlackRock this year modified its messaging, for example, around shareholder resolutions it said went too far in dismantling fossil fuel investments.

In the case of the Texas policy, it is still not clear how the state plans to enforce a ban on offending investment firms. It also does not seem difficult to skirt the state’s requirements. Under the law, a state governmental entity is not subject to the requirements if it feels doing so would be “inconsistent with its fiduciary responsibilities with respect to the assets under its management or other duties imposed by law,” according to Hegar’s website. Further, future contracts between financial institutions and state funds must include a statement that the asset manager “does not boycott energy companies.” As long as the statement is provided, the state cannot prohibit the contract.

BlackRock Disagrees

Still, BlackRock said in a statement that it “disagreed” with Hegar’s decision to deem the company a boycotter. “This is not a fact-based judgment,” the company said. “BlackRock does not boycott fossil fuels — investing over \$100 billion in Texas energy companies on behalf of our clients proves that.” As of the end of the first half of 2021, BlackRock was the third largest investor in Exxon Mobil, ConocoPhillips, and Diamondback Energy, all based in Texas. It was also the second-largest shareholder in

>> continued on page 2

RENEWABLE ENERGY PRICE PARITY

	Gas (\$/MMBtu)	CO2 (\$/ton)
Europe		
Market Price	74.63	80.45
Wind Onshore	0.30	0.00
Solar PV	-3.64	0.00
US		
Market Price	9.04	0.00
Wind Onshore	2.62	0.00
Solar PV	0.10	0.00
Japan		
Market Price	65.00	0.00
Wind Onshore	8.52	0.00
Solar PV	5.31	0.00

Market prices Aug 30. Table indicates either gas or CO2 price needed for new renewable energy to match profitability of new gas-fired power, without subsidies. High US carbon prices reflect low gas prices. Japan at parity so no carbon price needed. Source: Energy Intelligence

Houston-based LNG developer Cheniere Energy, according to Reuters Refinitiv data.

The company added that public officials “have a duty to act in the best interests of the people they serve” and that “politicizing state pension funds, restricting access to investments, and impacting the financial returns of retirees is not consistent with that duty.”

Election Year Politics

Texas policy watchers have largely characterized the state law as political grandstanding, aimed at illustrating that Lone Star State Republicans are defending Texas’ oil sector amid the Democratic push to accelerate the clean energy transition. It’s not yet clear the extent those moves will resonate with voters.

“Most Texas voters have no idea this law is in effect,” said Brandon Rottinghaus, a political science professor at the University of Houston. Rather, the law was aimed at a targeted subset of Republican primary voters, against the backdrop of US President Joe Biden’s fresh presidential win and his campaign promises to hold oil companies accountable for climate change. To that end, last week’s blacklisting of financial firms heading into election season helps Texas Republicans make the case that they’re fighting for the oil industry. And financial firms make for fairly easy targets, notes Mark Jones, political science fellow at Rice University’s Baker Institute.

Caroline Evans, Houston, and Bridget DiCosmo, Washington

STRATEGY

Chinese NOCs Kick Transition Strategies Into Higher Gear

Chinese National Oil Companies, spurred by rising upstream profits and government pressure, are taking more steps to advance their energy transitions. Compared to International Oil Companies (IOCs), their actions may seem like baby steps but nevertheless reinforce a prevailing trend: high energy prices and geopolitical anxiety haven’t slowed down plans by NOCs or the wider oil industry to advance low-carbon projects. On the contrary, record profits in the first half of this year are giving Chinese NOCs the opportunity to both pour money into China’s upstream sector while setting aside funds for new energy projects.

The state-controlled companies are under pressure to lead China’s energy transition by example. This includes pledging to peak carbon emissions and become carbon-neutral before

China’s national targets, set by the government for 2030 and 2060, respectively. China’s state offshore oil specialist China National Offshore Oil Company (CNOOC) became the last Chinese NOC to set itself targets in late June when it announced plans to peak its carbon emissions by 2028 — later than PetroChina’s 2025 target but likely close to Sinopec’s “before 2030” target. The three NOCs target carbon neutrality by around 2050.

CCUS

Carbon capture, utilization and storage (CCUS) is gaining traction in China, long seen as a country with large potential for it. “Chinese NOCs need to capture and store or utilize the CO2 emissions from their different carbon source facilities including upstream assets because most are in their early-to-middle stage of construction or operations. It is not possible to stop producing from them early,” energy consultancy Rystad Energy’s senior CCUS analyst, Sohini Chatterjee, tells Energy Intelligence.

China National Petroleum Corp., the parent company of Sinopec and Hong Kong-listed PetroChina, operate respectively 18% and 14% of China’s CCUS projects, according to Rystad. Sinopec said Monday it has commissioned its one-million ton per year CCUS Project in Eastern China’s Shandong, which involves capturing CO2 from the Qilu petrochemical complex in eastern China and injecting it into the Shengli oilfield to increase oil recovery. PetroChina plans to increase its CCUS capacity from 3.7 million tons by 2025 to 100 million tons by 2050.

CNOOC in June completed China’s first offshore Carbon Capture and Storage (CCS) demonstration project, which has the capacity to sequester 300,000 tons/yr from its Enping 15-1 oil development. The company has also signed a memorandum of understanding with Exxon Mobil and Shell to study a much larger 10 million tons/yr CCS project at the Daya Bay petrochemicals hub in Guangdong province.

Carbon pricing will be an important factor in CCUS activity going forward. “Carbon prices are still low in China but they are likely to see a rise in the coming years with stricter free carbon allowances and dedicated public regulations. They will justify CCUS on a larger scale with permanent storage options,” Chatterjee says.

Hydrogen Rivalry

Sinopec — China’s biggest oil refiner — is keen to take advantage of its network of more than 30,000 retail fuel stations, which give it direct access to Chinese consumers. The company was an early mover in hydrogen and has set aside \$4.6 billion to develop its hydrogen capabilities between 2021 and 2025.

Sinopec wants to have 500,000 tons/yr of green hydrogen

capacity by 2025. The company hopes to soon complete its first 10,000 ton/yr wind and solar-based green hydrogen project in the Inner Mongolia region. The company's network of hydrogen filling stations stood at 83 at the end of June, with another 13 under construction, but that still leaves it some distance from its target of 1,000 stations by 2025.

PetroChina said in June that it intends to capture 30% of China's domestic hydrogen market by 2050, which would open up new fierce competition between China's two largest refiners.

Budget Trade-Offs

Domestically-produced renewables, largely in the hands of private companies, are ultimately seen as enhancing China's energy security. But in the short-term, Chinese NOCs are expected to supply China with steady and reliable oil and gas supplies and improve the country's energy security at a time of growing geopolitical tensions with the West. This means that even as the NOCs refine their transition plans and launch new projects, their new energy budgets risk being cut if oil prices collapse.

CNOOC has pledged to direct 5%-10% of its capital spending to new energy until 2025, equivalent to between 4.5 billion and 10 billion yuan (\$0.70 billion-\$1.55 billion). It will boost its investments in clean energy to 10%-15% of its total capital spending in 2026-30, which would make the company a leader among NOCs in terms of green energy spending as a percentage of total capex.

PetroChina last year spent 2.18 billion yuan on new energy. It said in March that it would more than double investment in new energy this year, placing it at about 2% of its planned capex of 242 billion yuan for this year. Sinopec has pledged to spend 30 billion yuan (\$4.6 billion) on the whole hydrogen chain from 2021-25.

Maryelle Demongeot, Singapore

TRANSPORTATION

California Must Keep Foot on Accelerator to Reach 100% EVs

Can California successfully phase out conventional cars by 2035? The plan approved by regulators last week would involve California's electric vehicle (EV) sales taking a big leap from 16% of overall light-duty vehicle sales in the first half of this year to 100% by the middle of next decade. Reaching 100% would require consistent and speedy uptake, which would hinge on the build-out of charging infrastructure and the continued scale-up of batteries and vehicle manufacturing to bring EV costs down for consumers.

Yet 16% of sales already represents an accelerated pace — a doubling from just two years ago. California's EV penetration is also well above the national average. Overall US EV sales represented 7% of total light-duty vehicle sales in July, and hovered in the 5%-6% range throughout the first half of 2022. "EV sales have already jumped from an expensive gadget for the wealthy top 5% to a mass market alternative to ICE vehicles," says Dan Lippe, founder of Petral Consulting in Houston.

He predicts that demand for motor fuels will be 15-20% less in 2035 than in 2021, and expects other states and the federal government to follow suit with similar measures. However, many EV buyers will hold onto their internal combustion engine (ICE) vehicles as well and these ICE vehicles will "remain in use indefinitely" by 25%-40% of the population who are resistant to regulation. The Golden State represents roughly 10% of US consumption, much of that from the auto sector, and it is the second largest oil-using state after Texas, according to the US Energy Information Administration.

The Details

Specifically, California's new rule requires all new vehicles sold in the state by 2035 to be all-electrics, plug-in hybrids or fuel-cell electrics. These vehicles would need to represent a rising share of auto-makers' sales each year on the way to 100% by 2035. The plan was approved by the California Air Resources Board last Thursday and follows an executive order issued by Gov. Gavin Newsom in 2020. California regulators are predicting modest changes in vehicle sales and emissions trends through the end of this decade, followed by a sharp acceleration from 2030 to 2035.

Gasoline car sales would decline by 2.9 million units by 2030 versus the number that would be sold without the new policy, according to the California Air Resources Board (CARB). That would rise to 9.5 million fewer conventional vehicles by 2035. By 2040, emissions from light-duty vehicles would be cut in half versus 2026 levels, while greenhouse gases would be lower by 915 million barrels of oil equivalent, CARB estimates.

Wider Reach?

The demand implications could reach further if other states follow in California's footsteps — which is a prime possibility. In the past, up to a dozen states in the US Northeast and the Pacific Northwest have typically matched California's vehicle policies, and Washington state has already indicated it will follow California's lead on this policy as well.

CALIFORNIA EV PENETRATION SEES SIGNIFICANT JUMP

Year	%LDV Sales	Total Evs Sold
2022(Q1 & Q2)	16.48%	160,421
2021	12.41	250,279
2020	7.78	145,099
2019	6.84	147,347
2018	6.98	157,143
2017	4.29	93,587
2016	3.29	72,683
2015	2.89	64,134
2014	2.98	58,663
2013	2.25	39,805
2012	1.12	17,830
2011	0.52%	6,743

LDVs = light-duty vehicles.
EVs = full electrics, plug-in hybrids, and fuel-cell electrics. Source: California Energy Commission

US ELECTRIC VEHICLE PENETRATION MOUNTS



NOTE: US electric vehicle sales as a percentage of overall light-duty vehicle sales, by month. Source: Wards Auto and US Argonne National Laboratory

California’s move also reinforces a wider global trend to phase out conventional cars. Transport has become a centerpiece of climate action as emissions from the power sector have fallen in many parts of the world. Similar policies are in effect or under way in places like China, Europe, the UK, Canada and Chile. Further, many global automakers have set similar targets to turn their portfolios entirely over to EVs by 2035 or sooner.

Potholes and Roadblocks

Of course, banning conventional cars is controversial and still faces significant technological hurdles. Some of these obstacles are expected to fall away this decade as technology advances and the market scales up. Many observers are watching for a game-changing inflection point at which lower-priced batteries would bring EVs into price parity with conventional cars — or even make them cheaper. This point could be reached by the middle or end of this decade due to falling battery pack costs, although global supply chain issues could delay this by about two years versus previous forecasts, according to analysis from Energy Intelligence Research & Advisory. In terms of convenience, EV driving ranges have already been significantly increased since the first EVs went on sale over a decade ago. Fast-charging technology is also advancing, but at a slower pace.

Banning conventional cars is also naturally controversial — especially with inflation hiking auto prices and inflicting pain at the pump for drivers. Many oil industry players that would stand to lose demand for their products have also been quick to point out the obstacles to large-scale EV uptake. “We only have 11% of the needed charging infrastructure for this plan,” argued Catherine Reheis-Boyd, head of the Western States Petroleum Association in California. Some oil industry groups may also pursue legal action against the California ban.

Lauren Craft, Washington

POWER

China’s Transition Takes Multiple Blows From Extreme Weather

Extreme weather events in big parts of China are exposing weak links in China’s energy transition and climate strategy, which relies heavily on hydropower as the largest source of “non-fossil fuel” for keeping carbon emissions in check. On one hand, the crippling power crisis in China’s Sichuan province that grabbed international headlines might be easing as the heat wave subsided and rainfalls improved hydro availability late last week. But hot weather and droughts have spread to other parts of the Yangtze River basin, wreaking havoc with both power supply and grain production.

The unusual dryness in Sichuan this year highlights the threat from global warming not just to China’s energy security, but also to its emissions reduction efforts. Hydro is set to become increasingly unpredictable and unreliable due to intensifying extreme weather that is fast becoming the new norm, affecting not just China but also the rest of the world. As such, the urgency is mounting for China to accelerate development of other low-carbon alternatives such as wind, solar or nuclear.

High Hydro Dependence

Hydro single-handedly accounted for 15% of China’s total electricity output in the first half of 2022. This is almost equivalent to the combined total from other “non-fossil” sources such as solar, wind and nuclear, according to data from the China Electricity Council. Sichuan, in particular, is the country’s top hydro contributor supplying nearly 30% of China’s hydroelectricity. The southwestern province has an 80% reliance on hydro generation and exports a third of the electricity it produces to other parts of China.

The dry spell and a spike in air-conditioning demand forced Sichuan to impose power cuts on industrial users for 11 days over Aug. 15–26. The province — and those regions dependent on its electricity exports — also had to ratchet up coal burning.

Double Whammy

Droughts or dryness in major hydro provinces like Sichuan, Yunnan and Hubei will pose a double whammy for China’s low-carbon transition: Firstly, the direct impact from having to burn more coal, which would drive up emissions — creating a vicious cycle.

Secondly, power cuts have reduced or halted operations at factories manufacturing electric car batteries, solar cells and other equipment integral to the energy transition. Such

production lines have mushroomed in Sichuan to take advantage of its abundant and low-cost hydropower.

Hydro uncertainties therefore threaten to hinder China's push to accelerate green car adoption and slow its plans for erecting giant solar farms. Consumers' enthusiasm for electric vehicles (EV) could also take a hit from concerns over charging inconveniences due to power cuts in times of extreme weather.

Sichuan Struggles Back

With the heat wave subsiding and rain falling in some parts of the province, Sichuan's hydro output has rebounded by about 10% from the lowest point that was itself some 50% below the usual level, said China's State Grid early this week. As of Aug. 28, normal power supply has resumed to "general industrial and commercial users," according to the State Grid.

However, it said "energy-intensive industries" would have to endure a "gradual recovery" in power supply. The drastic fall in hydro availability would "take some time" to normalize, the State Grid conceded. But as air-conditioning demand eases, Sichuan's power crisis should be "basically resolved in the next three days," it assured citizens.

Companies with production lines in Sichuan that were hit by the power cuts include the world's top EV battery producer CATL, lithium producer Shenzhen Chengxin and US-listed JinkoSolar, which ranks among the world's top 10 solar manufacturers. In addition, EV charging or battery swapping stations operated by Tesla and its local rivals have also been disrupted.

Increasing Wind, Solar, Nuclear

As its hydro sector matures and stagnates, China would need to increase reliance on other "non-fossil energy

sources" like solar, wind and nuclear to deliver on its climate promises. In its latest five-year energy plan for 2021-25, Beijing has set targets of sourcing 20% of total primary energy needs from such non-fossil sources by the end of 2025.

This entails a rapid ramping up of both renewables and nuclear energy, which at the end of 2020, delivered a combined ratio of just under 16% to the Chinese primary energy mix. China's ambitions for non-fossil energy sources also necessitate a further increase to 25% by end-2030.

Kim Feng Wong, Singapore

ANALYSIS

Russian Shutoff Would Hasten Transition, Slow Economy

If Europe were to completely lose access to Russian gas, however unlikely that might be, what would happen? For the energy transition, a shutoff would lead to curbed gas use and an acceleration of substitutes like renewables in multiple sectors — with permanent effects. Big industrial gas users like German chemical giant BASF are already advancing swiftly in this direction. For the economy, a shutoff would cause damage that is significant but not catastrophic.

Seeking Substitutes

Swapping out gas for other energy sources in industrial production is proving easier than many would have expected and could happen with a fairly short turnaround, according to a recent paper published by Econtribute, a joint initiative of the universities of Bonn and Cologne. "It has become clear that the view that gas substitution was not possible at all within six months was wrong," the researchers say.

Case of BASF

One example is Germany's BASF, Europe's largest single gas consumer, which has significantly reduced gas consumption since March. "Where technically feasible, the preparations to substitute natural gas are progressing well and technical optimizations are in place," the chemical giant's boss, Martin Brudermueller, told financial analysts. BASF can rapidly replace 15% of the gas used to generate electricity and steam at its huge Ludwigshafen plant with fuel oil, he said.

Further down the road, BASF intends to "completely abandon oil and gas" for energy production and only use

CHINA ELECTRICITY MIX, JAN-JUN 2022

Fuel Type	Ratio
Combustible Fuels (mostly Coal)	69%
Hydro	15%
Wind, Solar and Other Renewables	11%
Nuclear	5%
Total	100%

Source: China Electricity Council

CHINA'S PRIMARY ENERGY MIX (AS OF 2020)

Fuel Type	Ratio
Coal	57%
Non-Fossil Fuels	16%
Gas	8%
Oil/others	19%

Source: National Bureau of Statistics

renewable electricity. With this in mind, it has recently invested in a 1.5 gigawatt offshore wind farm developed by Sweden's Vattenfall.

Today, around 60% of BASF's gas consumption is used as an energy source and the remaining 40% as a raw material to make products such as acetylene, synthetic gas and ammonia. Due to high natural gas prices, the company has already reduced its ammonia production in Germany and substituted it with imports, including from its own facilities in the US and Asia. Ammonia is easy to source externally, Brudermueller said, and "is therefore an important element of our risk mitigation considerations in the event of a major curtailment of natural gas volumes."

Case of Mercedes

Carmaker Mercedes-Benz similarly wants to "maximize the potential for reducing or substituting the use of natural gas in vehicle production." It said for example that the paint shop at its historic Sindelfingen plant, which specializes in upper and luxury vehicles, could operate "without gas supply in an emergency mode." Beyond the auto sector, Mercedes sees a gas demand reduction potential of "around 50%" in Germany "without impact if regional pooling is possible." Such pooling would involve sharing available gas resources among EU countries. Longer-term, it wants to fully switch its energy consumption "from gas to electricity and other renewable energy sources."

Permanent Shift

More generally, the current crisis may accelerate the energy transition and trigger permanent changes in Europe's industry, many economists believe. Evidence from previous crises such as the Covid-19 pandemic suggests that "some firms adjust their technology, even in the very short run, when confronted with a disruption in their value chain," says the Paris Polytechnique Institute's Raphael Lafrogne-Joussier. Goethe University Frankfurt's Volker Wieland concurs. "A major long-term reorganization of industrial production is necessary, some companies will drop out and gas-dependent sectors will decline."

LNG: A Shock Absorber

A key factor easing the risks for Europe is access to global LNG trade, which could "shrink the adverse economic impact of a sudden interruption in Russian gas imports almost five-fold," according to a recent IMF paper. "The global LNG market acts as a shock absorber and helps to share the economic pain from the Russian gas shut-off." This would lead to "substantial negative spillover effects" from rising prices to countries outside of the EU, mostly in Asia. "In fact, the effects on economic activity for Asia buyers of LNG such as Japan, South Korea and Pakistan are

GDP LOSSES FROM RUSSIAN GAS SHUT-OFF

Country	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	Global	EU only	No	No
Hungary	-1.1%	-3.4%	-4.2%	-6.5%
Slovakia	-0.8%	-2.6%	-4.1%	-5.7%
Italy	-0.6%	-2.1%	-3.7%	-5.7%
Lithuania	-0.6%	-2.0%	-1.0%	-1.4%
Netherlands	-0.8%	-1.9%	-1.4%	-2.0%
Bulgaria	-0.6%	-1.9%	-0.6%	-0.9%
Poland	-0.6%	-1.8%	-1.4%	-2.0%
Czech Republic	-0.6%	-1.8%	-4.1%	-5.4%
Latvia	-0.5%	-1.5%	-0.9%	-1.2%
Greece	-0.4%	-1.4%	-0.6%	-0.8%
Germany	-0.4%	-1.3%	-2.0%	-2.8%
Spain	-0.3%	-1.2%	-0.8%	-1.2%
Austria	-0.3%	-1.0%	-1.9%	-2.6%
France	-0.2%	-0.8%	-0.8%	-1.1%
Estonia	-0.2%	-0.7%	-0.4%	-0.6%
Finland	-0.1%	-0.4%	-1.0%	-1.4%
Romania	-0.5%	0.1%	-1.2%	-1.7%
Total EU	-0.4%	-1.4%	-1.8%	-2.7%

Four scenarios for 12-month ahead GDP losses, in % terms versus a base case scenario, resulting from a Russian supply shut-off. The scenarios involve various levels of gas market integration -- versus a disconnected market in which supply and demand can be imbalanced. Scenario 1 means global integration; Scenario 2 involves Europe as a single market but it's misaligned with the rest of the world; Scenario 3 means the market for each country or group of countries has imperfect correlation with other countries/groups of countries; Scenario 4 has the same conditions as 3 plus household protection policies, which can create market imbalances by separating households from the rest of the economy. Source: IMF

broadly similar in magnitude to those for the EU as a whole," the IMF found. The gas crisis could indeed cause several Asian countries to "not go down the route of gas" for future energy needs, nonprofit RMI's Kingsmill Bond tells Energy Intelligence.

Economic Blow?

Economists say a complete shutoff of Russian gas would cause a significant GDP slowdown and possibly a recession, but they do not foresee anything earth-shattering. "There is no threat of mass poverty or popular uprisings," the Econtribute paper notes. This is because there is scope for significant energy savings and fuel substitution, including between piped Russian gas and LNG which would spread impacts internationally via higher gas prices.

The EU would lose between 0.4%-2.7% in economic output over the 12 months following the interruption of Russian supply, according to IMF calculations. This would translate to GDP growth falling to between minus 1.2% and 1.1%, down from the EC's latest projection of 1.5% for 2023. Likewise, credit rating agency S&P found in a report published this week that a complete interruption in Russian gas supply would cause the Eurozone's GDP to fall to 0.5% next year, down from 1.9% in the base scenario. By comparison, the EU's GDP dropped by 5.9% in 2020 at the peak of the Covid-19 crisis.

Philippe Roos, Strasbourg

POLICY

US Clean Tax Credits Finally Going Technology-Neutral

US lawmakers have, for many years, discussed technology-neutral clean energy incentives, which would encourage all types of low-carbon technologies rather than a prescribed list. Fraught politics kept this from coming to fruition. Now, under the Inflation Reduction Act recently signed into law, such a policy is now slated to go into effect starting in 2024. Technologies that would now qualify for tax credits, which did not qualify before, include advanced nuclear, gas with carbon capture, and energy storage.

Investments in renewable-enabling grid improvements, like standalone energy storage and high-capacity transmission lines, would qualify now for the full value investment tax credit, according to a Congressional Research Service report earlier this month. Previously, neither were eligible for the credits. It is especially helpful for transmission lines given that broader transmission tax incentives were stripped from the bill.

The technology-neutral clean electricity tax credit is less ambitious than the carbon pricing or clean electricity performance standard proposals circulated on Capitol Hill in recent years, but would still usher in significant impacts. Modeling suggests the IRA law could bring down US emissions by around 1 billion tons by 2030, versus 2005 levels, compared to scenarios without the law. The biggest emissions cuts are poised to come from the US power and transportation sectors.

Wind and Solar Impacts

But what are the implications for wind and solar power, which have historically benefited from tax credits? The new law includes extensions for the investment and production tax credits long prized by wind and solar interests, but after 2024 those incentives would be replaced with an emissions-based, technology-neutral tax credit for facilities with zero- or net-negative CO₂ emissions. Facilities may adopt

either a 30% investment credit, or a production tax credit for the sale of domestically produced electricity with an emissions rate not greater than zero, of 0.3¢ per kilowatt hour. The production credit would offer bonus values for prevailing wage requirements, which means projects must meet federal standards for paying their employees.

Earlier versions of the bill included the tax incentives alongside a clean electricity payment program that would have aimed to hit 80% clean electricity by 2030 by paying utilities to incrementally increase their share of renewable power. Absent that policy, the tax incentives alone are still expected to accelerate renewable growth, though on a slower trajectory. By 2040, roughly 70-80% of power generation is expected to be from renewables. Energy storage, geothermal, nuclear and gas with carbon capture would share the remaining slice, Energy Intelligence understands.

More Benefits

Under the new tax incentive program, public and nonprofit entities, including those owned and managed by states and municipal governments, could receive direct payments even where their tax burden is too low to take advantage of the credits. “This will allow these entities to take advantage of tax treatment previously only available to investor-owned utilities and enables cities that own their own public utilities — such as Cleveland, Columbia and Tallahassee — to transfer tax credits for cash,” a Center for American Progress analysis notes. That change from current law will allow cities in competitive markets to utilize power purchase agreements to buy 100% clean energy, taking advantage of lower costs and greater availability of renewable resources.

Perhaps the biggest beneficiaries are state and local governments: the tax incentives are widely expected to drive down clean electricity technology costs, affording states the opportunity to set more ambitious clean energy standards and emissions targets of their own. State policies can often move the needle further than the federal government, at least within their borders.

Bridget DiCosmo, Washington

IN BRIEF

Northern Lights CCS Milestone

Equinor, TotalEnergies and Shell have signed the first cross-border carbon capture and storage agreement for their landmark Northern Lights CCS Project, envisioned as a regional carbon transport and storage infrastructure network. Dutch fertilizer giant Yara will ship 800,000 tons/yr of CO₂ generated at its Sluiskil plant in the Netherlands to Northern Lights, which will sequester it offshore Norway. The CO₂ from the Yara plant will use about half of the capacity of the first phase of Northern Lights, which is slated to start operating in early 2025. The Yara deal is the first storage contract for Northern Lights, which the partners say could one day sequester as much as 5 million tons/yr of CO₂.

Honda, LG Battery Deal

Automaker Honda and South Korean battery giant LG announced Monday that they will produce batteries in the US for Honda EVs as part of a \$4.4 billion joint venture. Ultimately, the plant aims to have an annual production capacity of approximately 40 GWh. The two companies aim to begin construction in early 2023 and start of mass production of advanced lithium-ion battery cells by the end of 2025. The decision to site their operations in the US is timely, given that the Inflation Reduction Act places a number of new country-of-origin restrictions on EVs and EV components for the purpose of tax credit eligibility. Honda and LG said their choice of location was “based on the shared belief that expanding local electric vehicle production and ensuring the timely supply of batteries would put them in the best position to target the rapidly-growing North American EV market.” Toyota also announced Wednesday it is making an additional investment of \$2.5 billion in its newest North American battery production facility, based in the state of North Carolina.

Germany-Norway CCS Link

Germany’s Wintershall Dea said on this week that Norway will be “at the heart” of

its long-term transition plans after signing an agreement with Equinor to pursue a large-scale carbon capture and storage (CCS) project linking Germany and Norway. “Europe and the rest of the world needs ... every molecule it can get” to replace Russian energy supplies,” CEO Mario Mehren told the Offshore Northern Seas (ONS) conference in Stavanger, Norway.

Under its partnership with Norway’s Equinor, the companies intend to create infrastructure for the transportation of German industrial CO₂ emissions for injection and storage in offshore reservoirs in Norway. Once sufficient CO₂ volumes are available, the partnership plans to connect the CO₂ collection hub and storage site in Norway via a 900 kilometer open access pipeline to Germany that will be commissioned in 2032.

QE Eyes Blue Ammonia

QatarEnergy plans to build the world’s largest blue ammonia plant, the company’s CEO and state minister for energy Saad al-Kaabi said Wednesday. The move reinforces a trend of growing investments in low-carbon ammonia and hydrogen in the wider Middle East. The agreements for the construction of Ammonia-7 Project were signed by QatarEnergy’s affiliates, QatarEnergy Renewable Solutions and Qatar Fertiliser Company. The project was awarded to Germany’s Thyssenkrup and Mideastern construction company Consolidated Contractors Company, which will both be the contractors of the project. The \$1.156 billion plant is expected to come online in the first quarter of 2026 and will produce 1.2 million tons per year of blue ammonia, al-Kaabi said. It will capture and sequester 1.5 million tons of carbon dioxide per year through an ammonia manufacturing process.

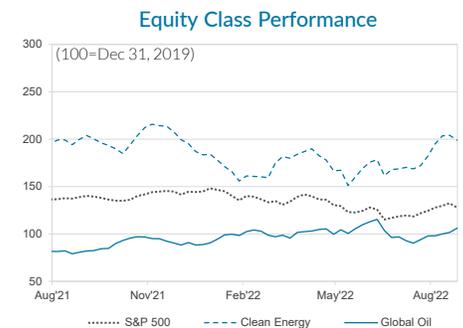
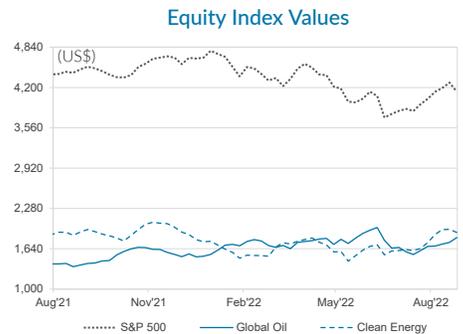
Qatar has recently doubled down on efforts to maintain its strategy to diversify energy resources, while QatarEnergy commits to delivering on its Sustainability Strategy. Part of the strategy is to reduce greenhouse gas emission through the

deployment of carbon capture and storage (CCS) technology to capture over 11 million tons per year of CO₂ by 2035.

Exxon Gets US CCS Approval

Exxon Mobil has gotten the green light from the US Department of the Interior for permanent underground carbon storage on federal land for the expansion of its LaBarge CCS facility in Wyoming. The project, which Exxon says will add up to 1.2 million tons/yr of CCS capacity to the 6 million-7 million tons/yr currently captured at the site, is the first of its kind to win approval under a nascent Interior policy for managing some aspects of CCS on federal lands. Interior called the approval a “significant milestone” in the Biden administration’s climate efforts, and it precedes the department’s plans to unveil regulations governing US Gulf of Mexico leases for carbon capture later this year. The \$400 million expansion marks the first CCS project to be sanctioned under Exxon’s Low-Carbon Solutions Division.

CLEAN ENERGY EQUITY MARKETS



Source: S&P Global

EI NEW ENERGY DATA

ENERGY FUTURES: REFERENCE PRICES

	Aug 26	Aug 19	Chg.
Carbon (€/ton)			
ECX EUA	89.69	94.14	-4.46
CME GEO (\$/offset)	4.18	4.08	+0.11
Crude oil (\$/bbl)			
Nymex WTI	92.89	89.06	+3.82
ICE Brent	99.65	94.88	+4.77
Natural gas (\$/MMBtu)			
Nymex Henry Hub	9.37	9.17	+0.21
ICE UK NBP	65.75	52.56	+13.19
Coal (\$/ton)			
McCloskey CSX	199.00	195.00	+4.00
ICE Rotterdam	374.02	361.59	+12.43

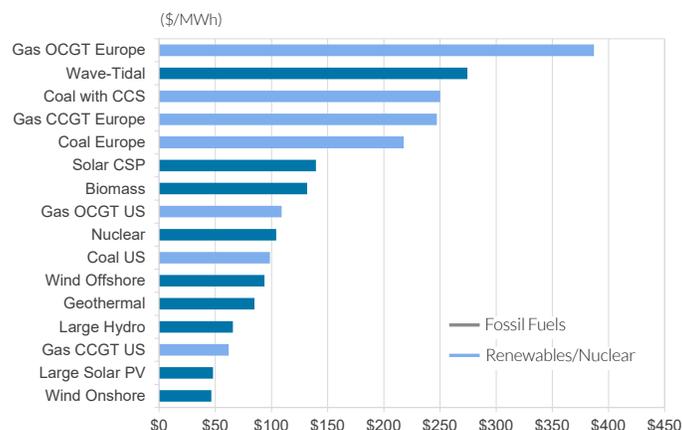
All prices are weekly averages and front-month. EUA = EU Allowances; GEO = Global Emissions Offset. Replaces ECX CER starting 3/30/21. ICE UK gas converted from p/therm. *Short tons. Source: Exchanges

GLOBAL ELECTRICITY PRICES

	Aug 26	Aug 19	Chg.
Europe (\$/MWh)			
Germany (EEX)	597.13	507.41	+89.72
France (Powernext)	635.03	503.74	+131.29
Scandinavia (Nordpool)	332.59	240.63	+91.96
UK (APX)	587.99	447.83	+140.16
Italy (GME)	657.61	523.81	+133.80
Spain (Omel)	169.96	150.35	+19.61
North America			
New England	110.10	88.05	+22.05
Texas (Ercot)	91.97	82.01	+9.95
US Mid-Atlantic (PJM West)	127.55	100.15	+27.40
US Southwest (Palo Verde)	100.55	121.55	-21.00
Canada (Ontario)	67.40	62.42	+4.98
Other			
Australia (NSW)	102.23	102.84	-0.61
Brazil (SE-CW)	11.01	13.47	-2.46
India (IEX)	69.80	58.11	+11.70
Japan (JPX)	174.37	162.17	+12.20
Singapore (USEP)	137.84	170.00	-32.16

Weekly average of wholesale prices. Source: Exchanges

NEWBUILD POWER GENERATION COSTS



Source: Energy Intelligence

DATA: The complete set of EI New Energy data is available to web subscribers, including historical and forecasted levelized cost of energy (LCOE) calculations, EV sales, our Green Utilities rankings, fuel switching thresholds, electricity production by sector, ethanol and biodiesel fundamentals, carbon and energy prices, along with methodologies and reader's guides. The New Energy Data Service can be accessed [here](#).

LATEST INDICATORS: SALES AND FLEET PENETRATION OF EVS

China		US	
NEV sales Jun '22	596,000	EV sales June '22	74,211
% LDV sales NEVs Jun '22	23.8%	% LDV sales NEVs June '22	6.59%
NEV sales Jan-Jun '22	2,600,000	EV sales May '22	73,608
% LDV sales NEVs Jan-Jun '22	22%	% LDV sales NEVs May '22	6.66%
Total NEV fleet as of Jun '22	10,010,000	Annual EV sales 2021	605,958
% fleet NEVs	2.5%	% LDV sales NEVs 2021	4.14%

Europe (EU, UK, and EFTA)

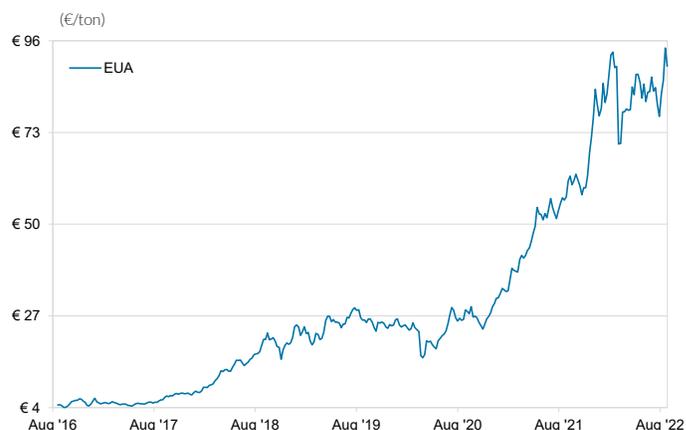
Sales Penetration		NEVs = all New Energy Vehicles. EVs = plug-in hybrids and all-electrics. LDVs = light-duty vehicles. EFTA includes Norway, Switzerland, Iceland, Liechtenstein. Sources: China Association of Automobile Manufacturers, China Passenger Car Association, US Alliance for Automotive Innovation, US Argonne National Laboratory/Wards Auto, European Automobile Manufacturers Association	
EV registrations Q2 '22	560,266		
% LDV sales EVs Q2 '22	19.69%		
EV registrations Q1 '22	562,276		
% LDV sales EVs Q1 '22	20.47%		
EV registrations Q2 '21	574,626		
% LDV sales EVs Q2 '21	14.44%		

GLOBAL CARBON PRICES

	Aug 30	Aug 23	Chg.
Europe (€/ton)			
EUA Dec '22	80.81	89.29	-8.48
US (\$/ton)			
CCA (Calif.) Dec '22	27.37	3.50	+23.87
RGGI (Northeast) Dec '22*	13.55	13.71	-0.16
New Zealand (NZ\$/ton)			
NZU (spot)	86.80	85.60	+1.20
Asia (\$/ton)	Aug 29	Aug 22	Chg.
China-Guangdong	8.47	8.47	-0.00
South Korea	20.29	20.62	-0.33

Benchmark months. *Short tons; all others metric tons. Source: ICE, OMF

EU CARBON FUTURES PRICES



ECX front-month futures. Source: ICE