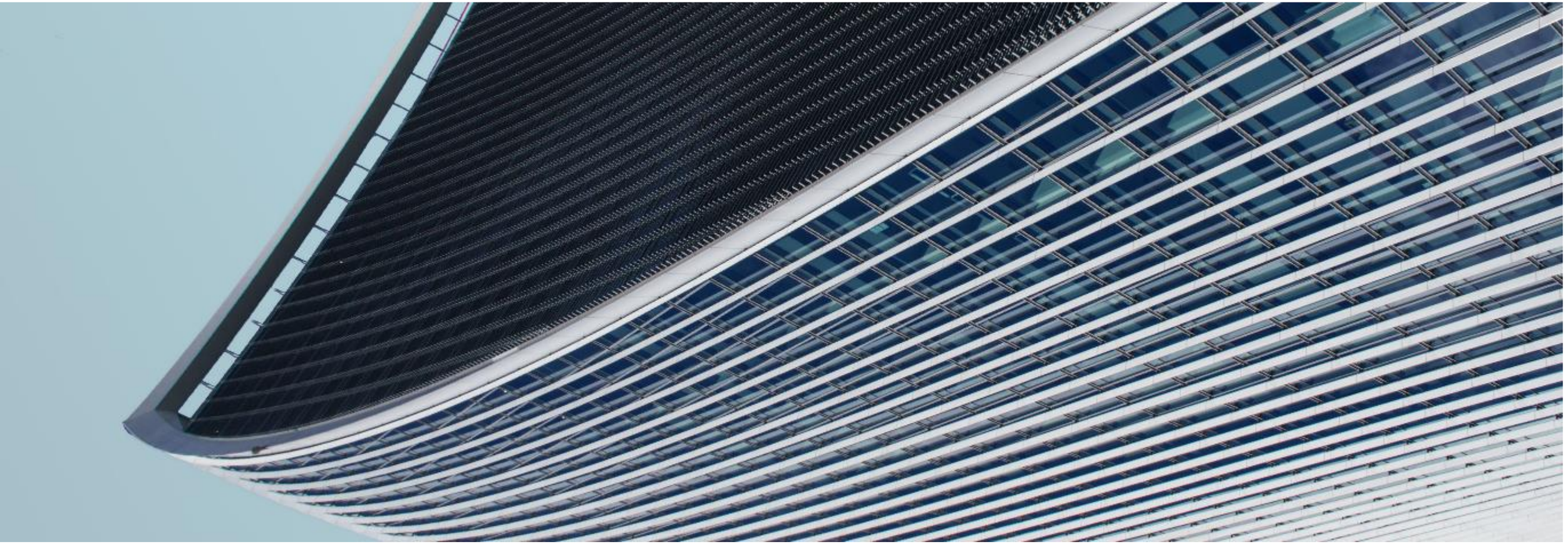
Energy Aspects

POWER

North America Outlook | October 2021

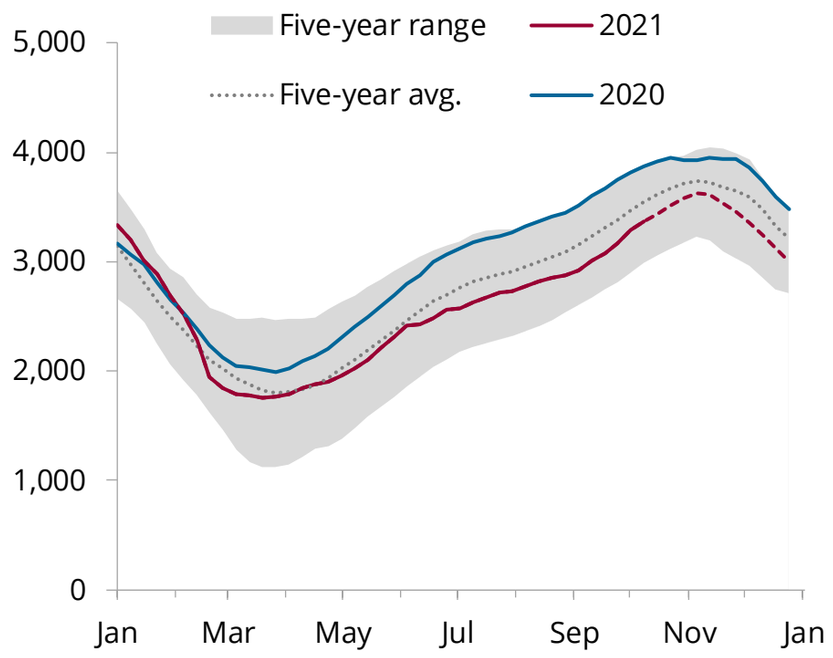
Falling short



Winter weather risks are paramount given how thinly balanced storage is

Lower 48 US storage

bcf



An end-October carryout of 3.6 tcf will leave little cushion against a strong Henry Hub response in a cold winter.

Winter weather scenarios for end-March 2022 storage

bcf

Winter 2021-22 scenario	End-March 2022 (bcf)
Normal weather	1,625
Warmer scenarios	
5% warmer-than-normal	1,980
10% warmer-than normal	2,335
Colder scenarios	
5% colder-than-normal	1,270
10% colder-than normal	915
10% colder baseline change	(710)
Res-com, power, and industrial	(720)
Mexican exports demand	40
US L48 production	(80)
Canadian net imports	50

2022 prices will be highly sensitive to 2021-22 winter weather given the potential for carryouts near 800 bcf or above 2.2 tcf under extreme scenarios.

Source: EIA, Bloomberg, Refinitiv, Energy Aspects

Energy Aspects

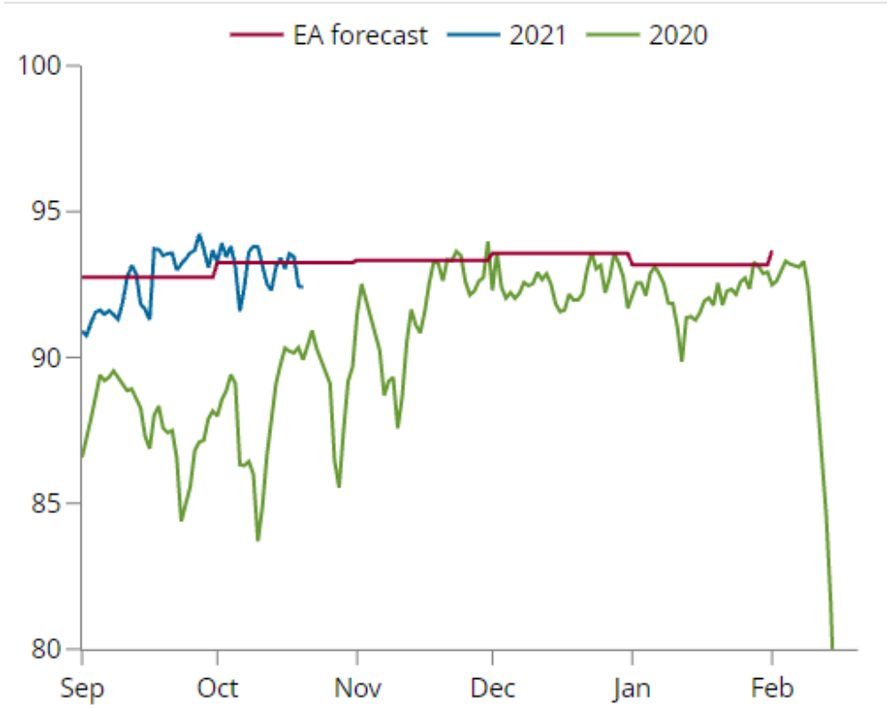
Appalachia planned maintenance to weigh down total US October production

Total US production by basin
bcf/d

Basin	Aug 21	Sep 21	Oct 21	Oct 21 (m/m)	
Marcellus	27.88	27.68	27.92	0.23	↑
Utica	5.77	5.80	5.78	(0.02)	↓
Permian	11.02	10.67	10.60	(0.06)	↓
Haynesville	11.13	11.32	11.41	0.09	↑
South Texas	11.63	11.74	11.67	(0.07)	↓
Anadarko	5.99	6.32	6.53	0.21	↑
DJ basin	4.96	4.93	4.94	0.00	↑
Gulf of Mexico	2.00	1.18	1.98	0.80	↑
Williston	2.06	2.19	2.12	(0.07)	↓
Other	10.28	10.64	9.20	(1.44)	↓
TOTAL	**92.73**	**92.48**	**92.15**	**0.18**	↑

Appalachia maintenance expected to reduce total US October production by 0.2 bcf/d m/m.

Total US production forecast
bcf/d



Haynesville, Permian basin to lead sequential winter production growth of 1.2 bcf/d form current levels.

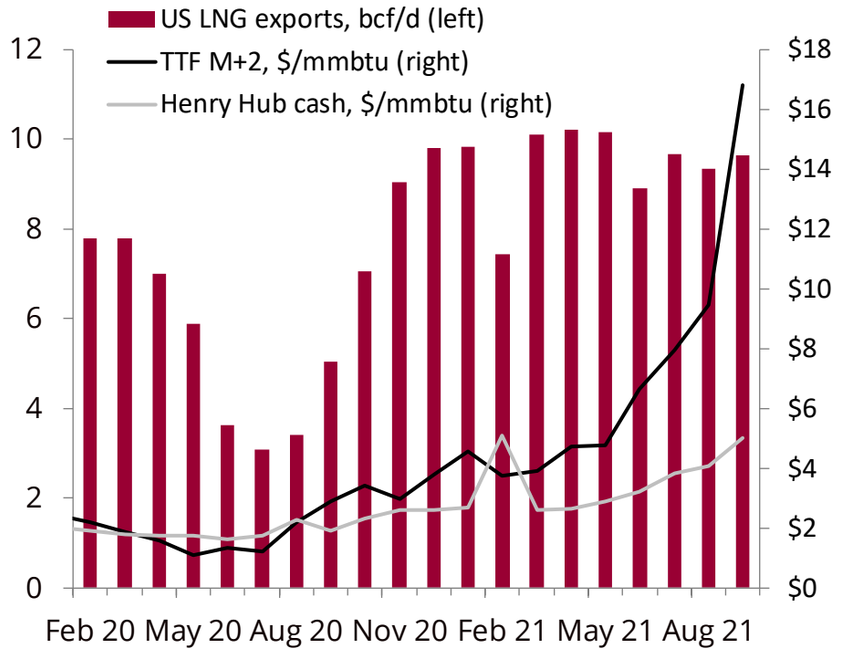
Source: Enverus, Ventyx, Energy Aspects

Energy Aspects

US LNG in the money by a wide margin

TTF and Henry Hub prices vs US LNG exports

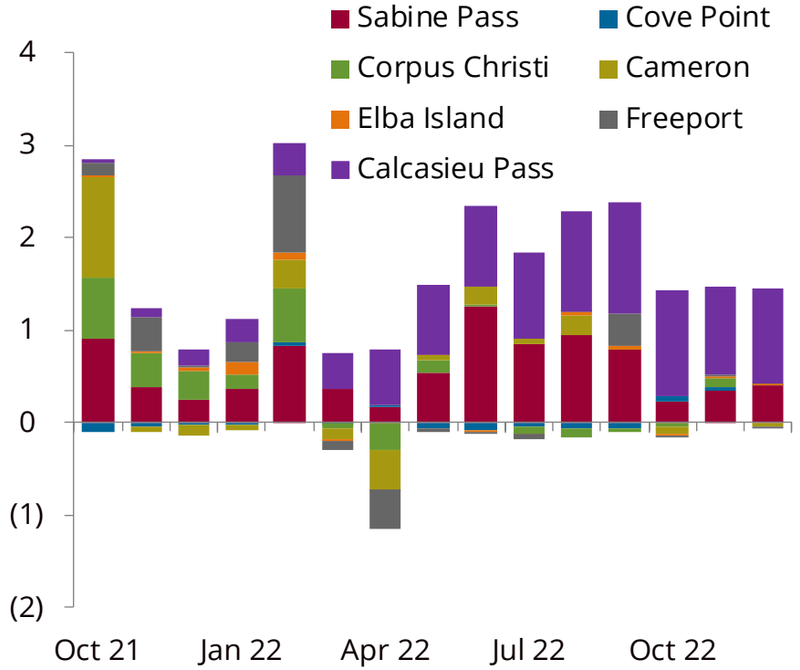
bcf/d; $/mmbtu



Record prices for TTF winter contracts all but assure the lack of financial incentive to stop US LNG exports to Europe.

US LNG feedgas by terminal y/y

bcf/d



Sabine Pass train six will begin commercial operations in January, while Calcasieu Pass's initial trains will likely be later in Q1 22.

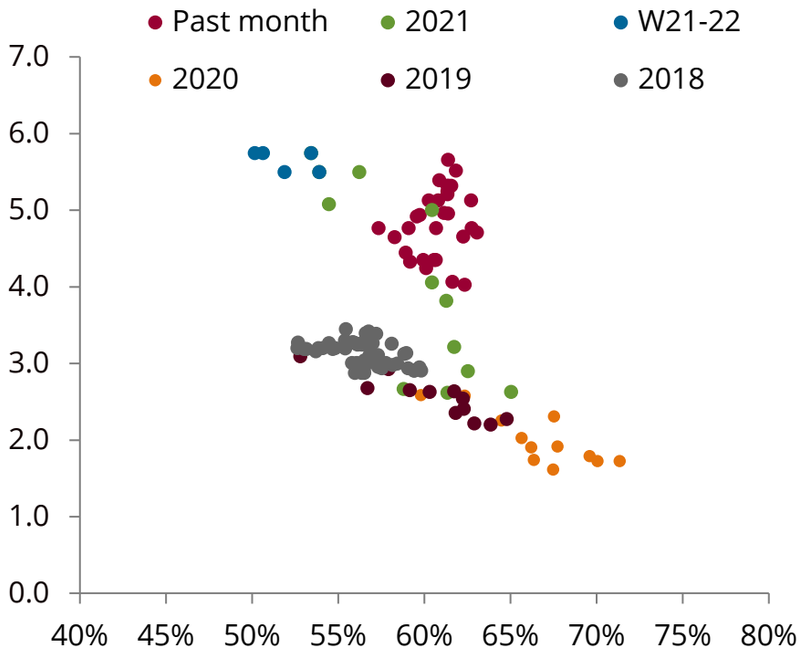
Note: TTF M+2 taken from the 20th day of the month.
Source: AGSI GIE, Bloomberg, Ventyx, Refinitiv, Energy Aspects

Energy Aspects

As coal generation displaces gas this winter, coal stockpiles in danger of depletion

Gas share of thermal generation vs prices

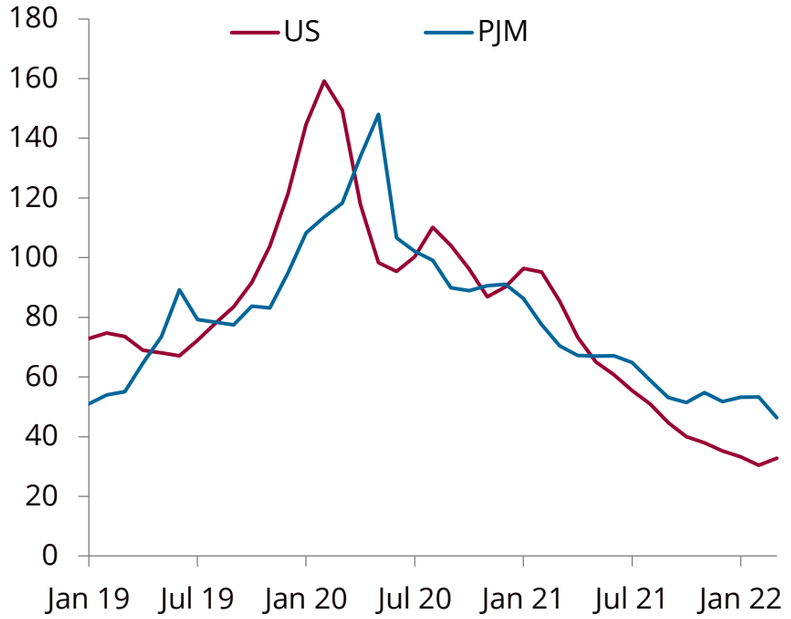
%, $/mmbtu



We forecast gas share of coal and gas generation to be at its lowest point since Q1 18, leading to a large uptick y/y in coal generation, and therefore tightening coal inventories.

Coal inventories

Days of forward supply



Stocks will be near one month of forward supply by the end of 2021, posing risks of widespread inventory depletion in the event of a cold winter, with some plants already running dry.

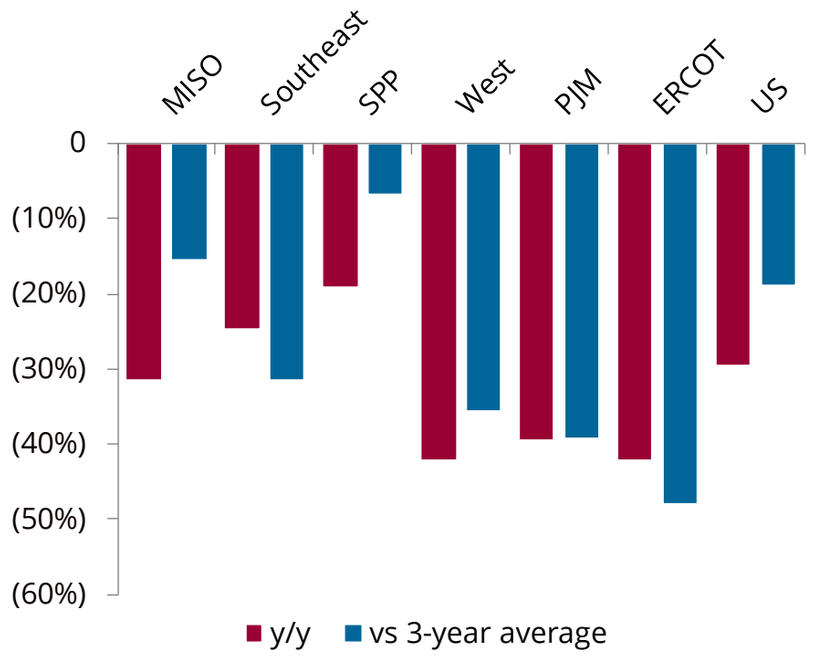
Source: EIA, Bloomberg, Energy Aspects

Energy Aspects

Winter fuel stockpile concerns off to a fast start

Coal inventories by ISO, y/y

%



Source: EIA, Energy Aspects

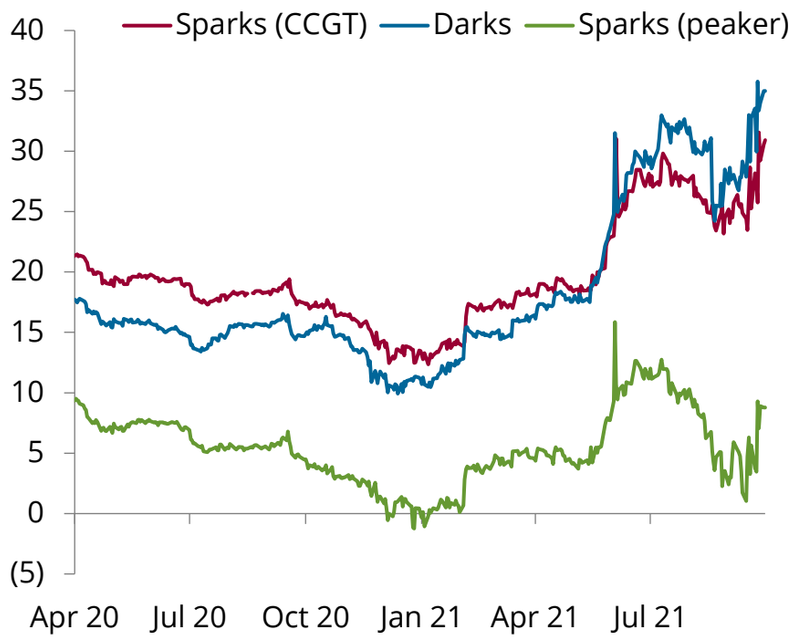
- Short-term PJM prices have been lifted by high generator outages and from coal and gas prices more than doubling y/y. Outages for both planned work and the need to protect coal stockpiles ahead of the winter peak are also raising October heat rates in line with our forecast.
- Concerns about the lack of coal and other fuels during the winter peak (as gas supplies enter the heating season at a three-year low) led PJM to initiate a weekly coal and oil stockpile survey from 11 October. We expect that lengthy stretches of normal or below-normal temperatures would cause generators to run dry, as some are entering the winter with very little coal on the ground.
- With higher weather-normalised load y/y in PJM and much of the US as well as potential shortfalls in generating fuels, peakers may be called upon more often y/y. CTs are also increasingly setting the margin in PJM under new fast-start (FS) rules, which took effect in September. The price uplift from FS was $1.86/MWh across all hours last month, down from the summer peak.
- The next energy market change would have been reserve pricing in May 2022, but that looks set to be delayed, as is the next capacity auction (scheduled to be held in late January 2022 for the 2023–24 delivery year).
- Liquid fuel stocks are of greater concern in the Northeast as LNG availability diminishes. Forward Jan-22–Feb-22 peak power at Mass Hub is nearing levels last seen during the early-2014 Polar Vortex winter.

Energy Aspects

Lower price caps likely in ERCOT, but peak summers, winters move higher

ERCOT Cal-22 spark, dark spreads

$/MWh



- ERCOT generators are also scrambling to ready themselves for Q1 22, the first winter peak since the widespread freeze-offs last February resulted in a week of power outages. Several coal plants in Texas have already run short of coal due to a lack of production response from the Powder River Basin and ongoing railroad congestion. NRG Energy's WA Parish noted its fuel shortfall in outage reports with the ISO over the past month, following similar notices from Vistra Energy's Coleto Creek plant earlier in Q3 21.

- The Public Utilities Commission of Texas (PUCT) will likely lower the price cap to $4,500/MWh from $9,000/MWh by early November, as we had noted last month. The reduced high system-wide offer cap is expected to be implemented by January 2022, along with other changes to how the ISO sets the operating reserve demand curve (ORDC). Increasing the number of times the ORDC is hit would offset the lower price cap, which has been one of the drivers of summer prices rallying in recent weeks.

- Both the ORDC and broader market reforms currently under review come as generation owners must certify the steps they have taken to prepare for cold weather by 1 December. Ongoing investment in coal and gas plants will improve extreme weather performance, but the short timeline since February and lack of an existing capacity revenue stream indicate such investments will reduce but not eliminate generation performance risk this winter. This has helped lift Jan-22–Feb-22 prices above $90/MWh, slightly above our view.

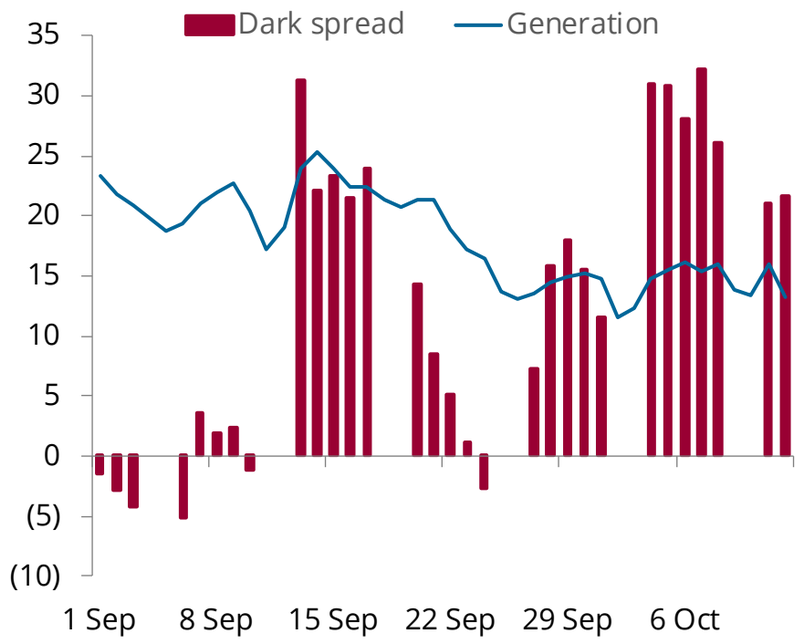
Source: Bloomberg, Energy Aspects

Energy Aspects

PJM coal units idled to save fuel, leading ISO to begin monitoring inventories weekly

PJM dark spread vs coal generation

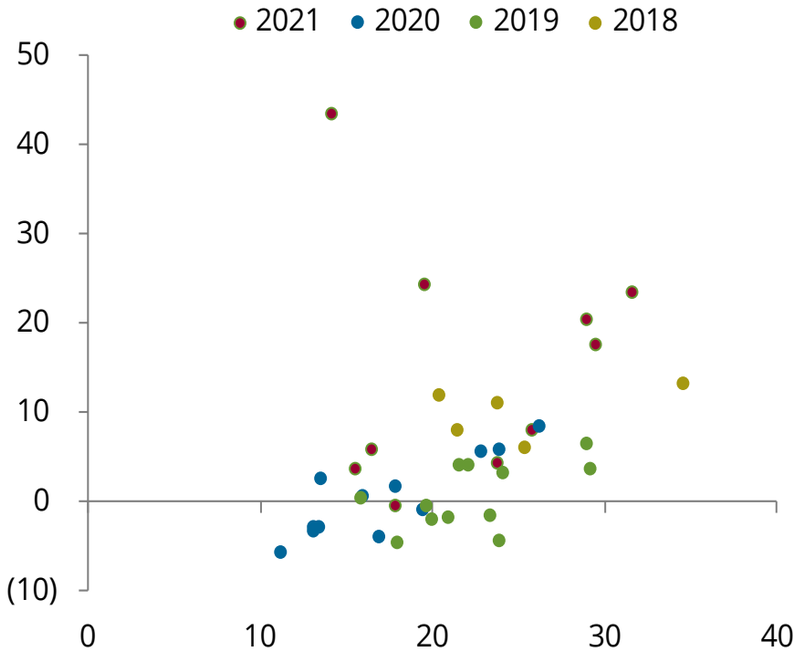
$/MWh; GW



Even with higher-cost coal units in the money this month, total PJM coal generation remains lower y/y and versus forecast as plants conserve fuel ahead of the winter peak.

PJM dark spread vs coal generation

GW (x-axis); $/MWh (y-axis)



With higher dark spreads y/y not driving increased coal generation, the ISO is now surveying plant fuel inventories weekly through winter to ensure sufficient supplies.

Source: CME, ICE, Argus Media Group, Energy Aspects

Energy Aspects

With FS implementation and MOPR order, PJM targets new ORDC filing in Q1 22

PJM market reforms

PJM rulemaking	Initiated	Initial filing	Last/next filing	Effective	ISO impact	Notes
Energy price formation	15 Nov 17	2018	2022	N/A	$3.50	New EPSTF driving to fix ORDC.
Fast-start resources	18 Apr 19	31 Aug 19	7 Jun 21	Sep 21	$1.75	Sept. price uplift averaged $1.68/MWh.
Five-minute pricing			31 Jul 20	Nov 21		On track for 1 Nov. start date.
Capacity (RPM)	1 Jun 18	2 Oct 18	9 Sep 21	Jun 22		Modified MOPR approved Sept. 2021.
Market seller offer cap (MSOC)			10 Sep 21			ISO seeking clarity on EE, DR impact.
Reserve price formation	1 Nov 17	29 Mar 19	6 Aug 20	May 22	$0.46-$1.96	ISO aims for FERC order by May 2022.
Carbon pricing	3 Jul 19	N/A	N/A	N/A		
Storage (order 841)	15 Feb 18	1 Dec 18		Dec 19	minimal	

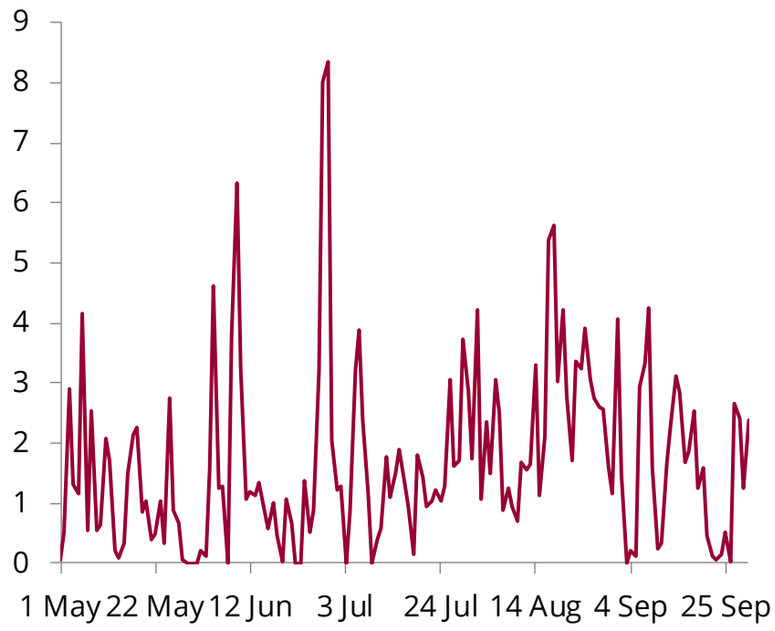
- Market price uplift in line with expectations in September as fast-start pricing implemented. Nearly all the uplift was concentrated during on-peak hours.
- FERC approved—by not taking action—PJM's revamped minimum offer price rule (MOPR) on how resources offer into capacity markets. A more stringent MOPR is being replaced after only one auction during which it was in effect.
- Generators and other suppliers also must now apply an avoidable cost rate (ACR) set by the market monitor (with the option to request a unit-specific ACR) in their capacity offers. Given the increased time to review individual net ACRs, PJM has asked to delay the 2023–24 BRA to late January 2022.
- Under a new Energy Price Formation Senior Task Force, PJM aims to adjust reserve pricing rules before they go into affect in May 2022. In addition to modifying the operating reserve demand curve (ORDC), the group is considering "circuit breakers" to prevent prices from staying too high too long and to avert other grid failures. Two scarcity events took place in September, with five-minute prices peaking above $2,000/MWh, but the new ORDC would cap out near $14,000/MWh under current rules.
- The expected nomination of a third Democrat to FERC would likely provide Chairman Richard Glick more sway in advocating for lower prices.

Note: Italics are sub-components of larger items. Source: PJM, FERC, Energy Aspects

PJM fast-start pricing added $1.58/MWh to real-time prices on average in September

PJM FS uplift on average prices

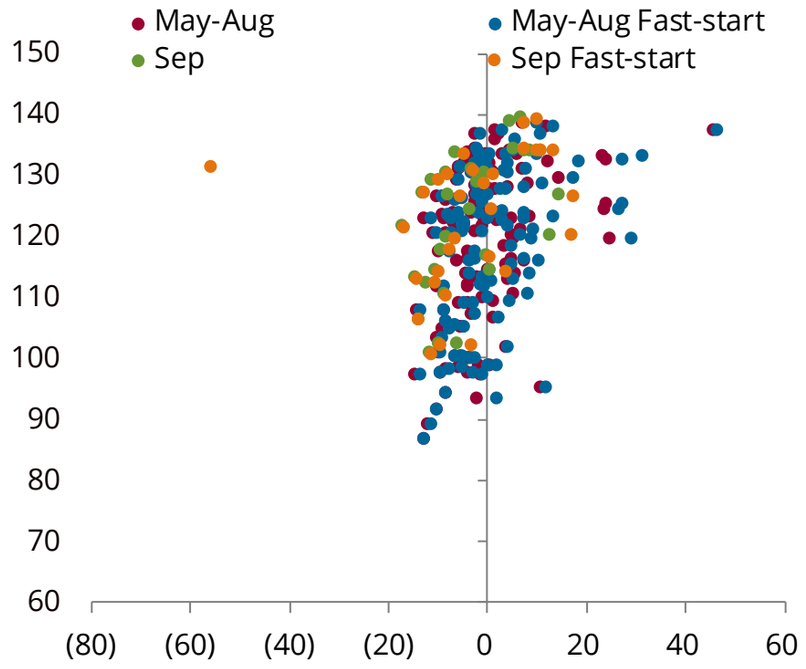
$/MWh



FS uplift on around-the-clock prices in PJM averaged $1.58/MWh in September, below peak-summer months (~$2/MWh over June–August) but above $1.07 seen in May.

PJM gas CT sparks vs load net of outages

$/MWh; GW



Sparks for gas CTs in PJM—typically the marginal unit under fast-start pricing—were uneconomic in September on average, but less so than without the new pricing regime.

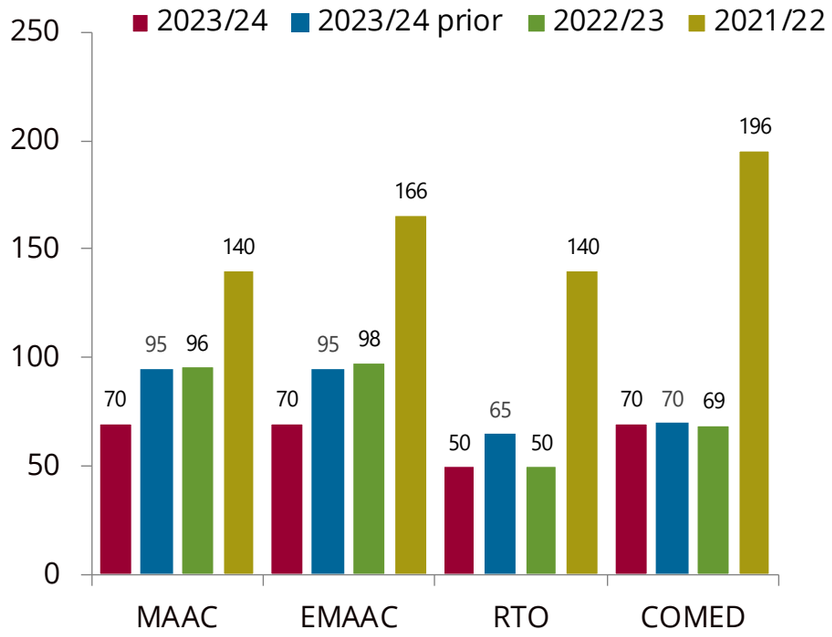
Source: PJM, CME, Energy Aspects

Energy Aspects

PJM 2023–24 capacity forecast lowered on reduced load, MOPR and MSOC updates

PJM capacity forecast

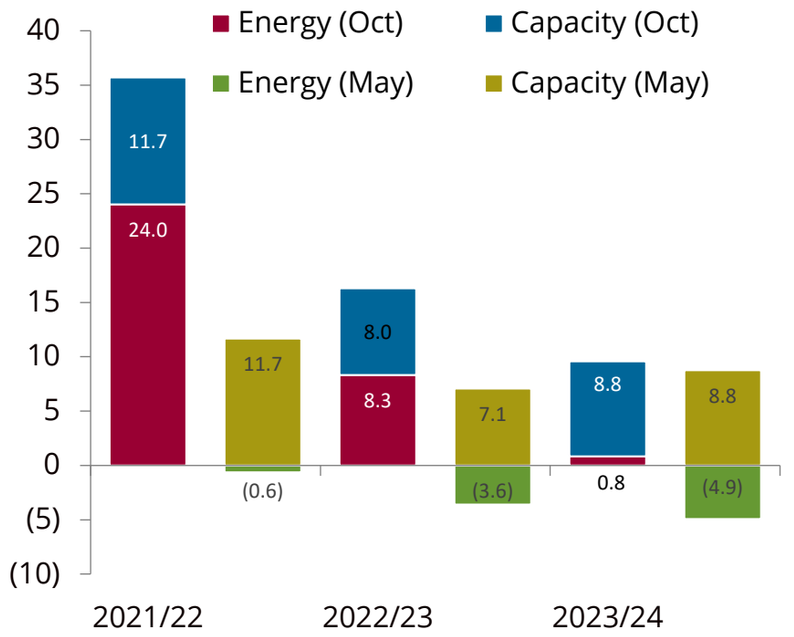
$/MW-d



PJM RTO capacity price forecast flat y/y compared to our prior forecast for a modest y/y gain. MAAC will likely be lower y/y.

PJM energy, capacity values by planning year

$/MWh



Coal plants are more economic on a forward-looking basis than in mid-Q2 21, but increased energy revenues are not enough to offset the loss of capacity payments from Q2 22 onward.

Source: CME, ICE, Argus Media Group, Energy Aspects

Energy Aspects

RGGI closer to reality in Pennsylvania, although legislature may still block 2022 entry

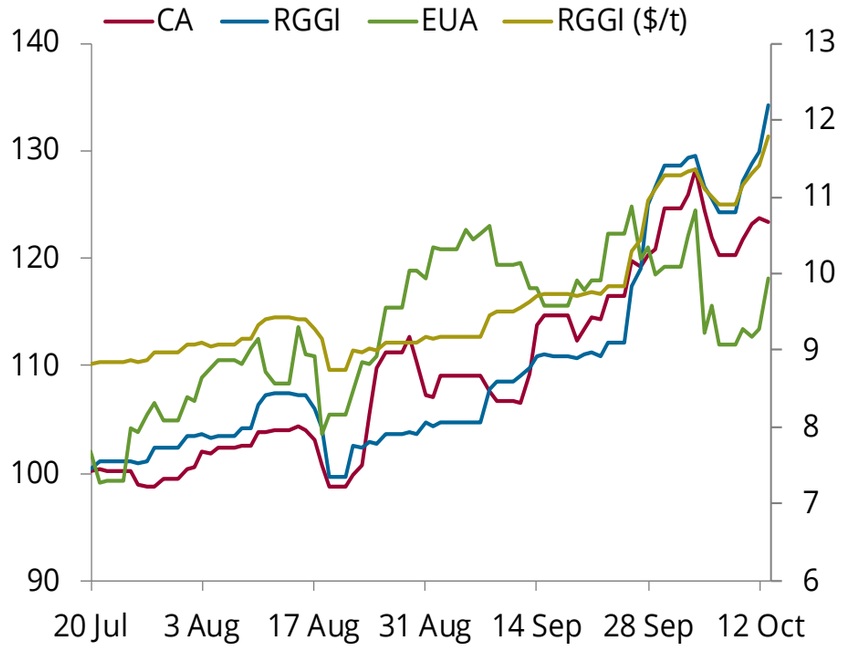
Pennsylvania RGGI estimated timeline

Pennsylvania RGGI rulemaking process		
EQB approves final rule	13 Jul 21	DEP environmental quality board 15-4 vote.
Legislative standing committees	Q3 21	20 days to review; can be extended by 14 days.
IRRC review	**1 Sep 21**	**Approved in 3-2 vote.**
Standing committees review	Q4 21	14 days to pass disapproval resolution, suspend rulemaking.
Senate, House concurrent resolution	Q4 21	Legislature has 30 days (or 10 session days) to adopt.
Governor veto opportunity	Q4 21	No fixed timeline for Wolf to veto, which he likely would.
Senate, House vote	Q4 21	30 days (10 session days) to gain 2/3 majority to override veto.
Attorney General	Q4 21	No fixed timeline for AG to review.
Publication in PA Bulletin	Q4 21/Q1 22	Becomes law, effective immediately.

Pennsylvania's legislature—and potentially courts—are the only remaining hurdles to it joining RGGI. An overall RGGI programme review may tighten caps from 2023.

Carbon credits, indexed to July 2021

%; $/t (RGGI, RHS)



Forecast higher coal/oil generation and overall load gains y/y boost carbon credit demand in RGGI states. Speculative interest has also spread from Europe and California to RGGI.

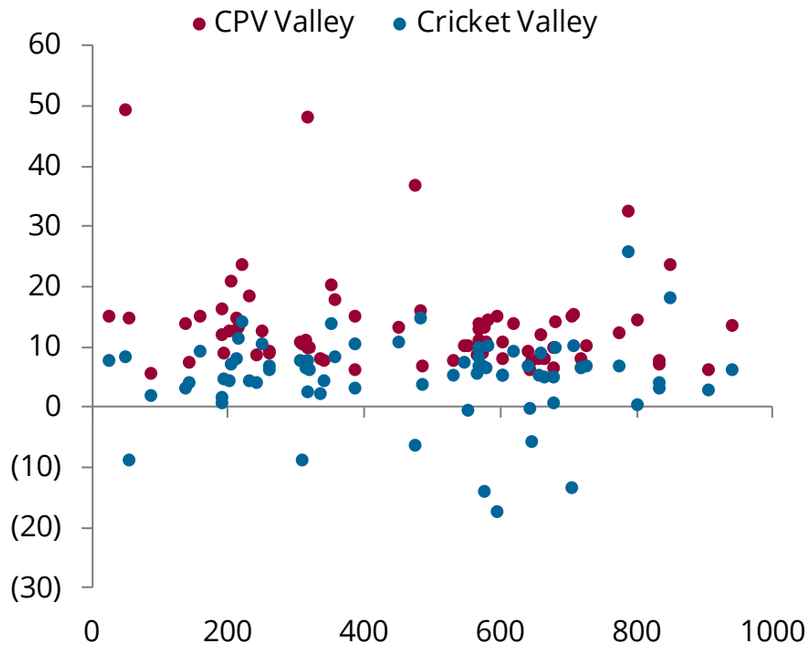
Source: State websites, RGGI, Bloomberg, ICE, Energy Aspects

Energy Aspects

NYISO sparks indicate oil and imports will replace IP3's retirement this winter

NY-G peak sparks vs output

MW; $/MWh

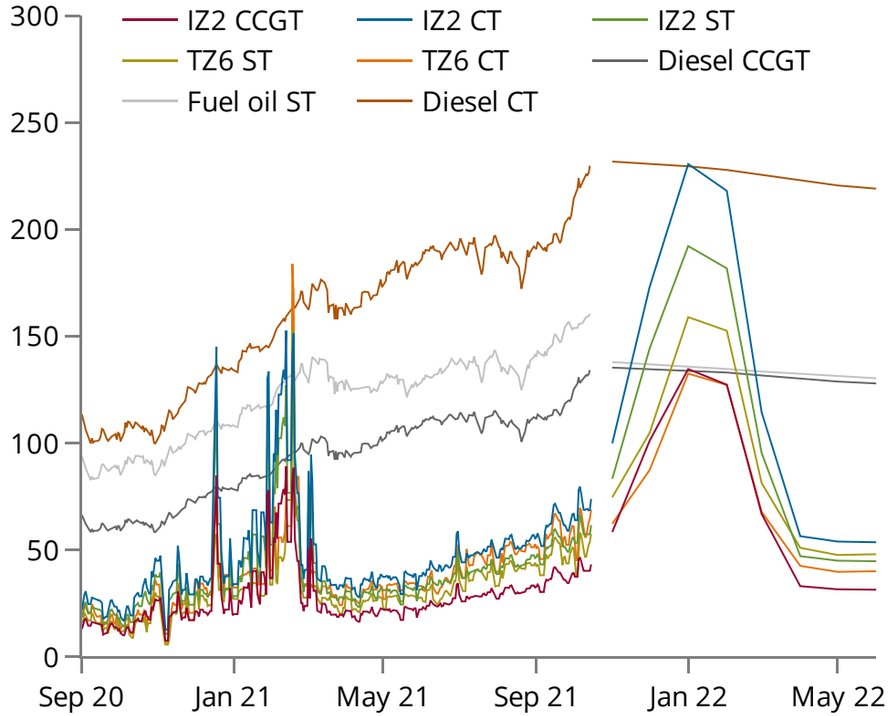


Higher output y/y from Cricket Valley could offset 0.2 GW of the 1.1 GW downstate generation hole left by IP3's retirement, with the remainder from imports and in-city units.

Note: Using M3 as a proxy for Millennium gas (CPV Valley)
Source: EIA, ICE, Energy Aspects

NYISO dispatch costs

$/MWh



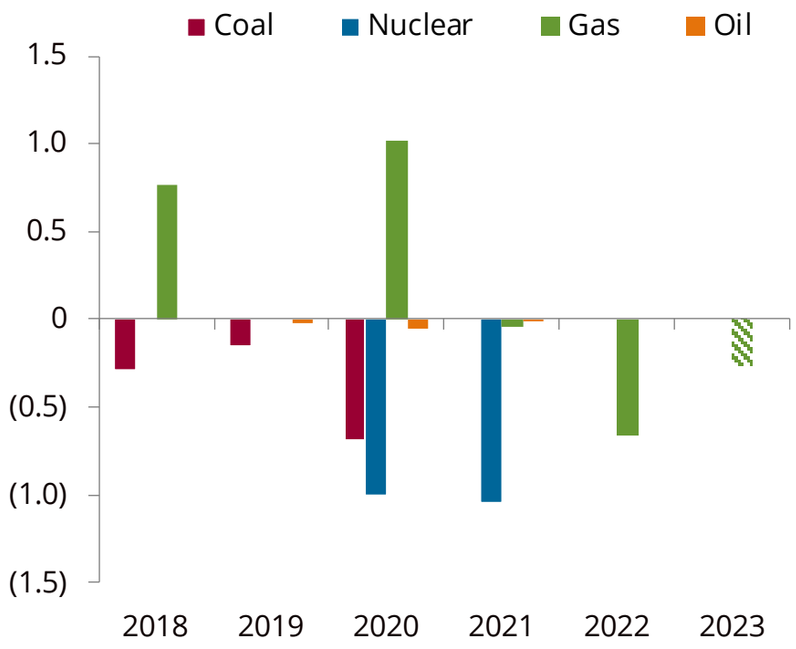
Rising Northeast gas basis makes diesel sparks economic in zone G. Gas CCGTs are economic to flow to ISONE this winter, and the zone J premium needs to widen to pull more into NYC.

Energy Aspects

NYISO thermal stack to shrink from next year, lifting our capacity price forecast

NYISO net capacity changes

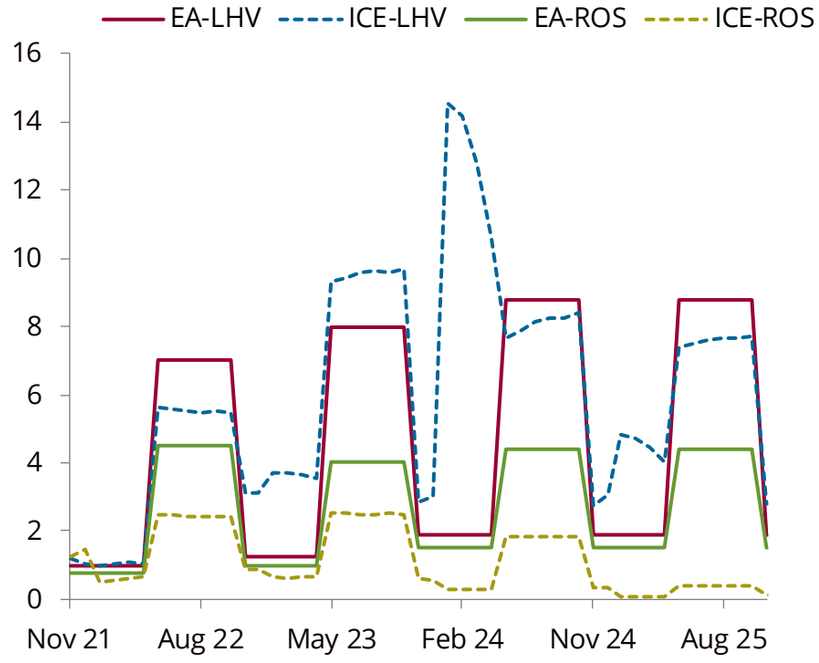
MW



Net thermal capacity will decline further at the end of next year as NYC peakers begin to retire. Repower projects at Danskammer, Astoria and Gowanus are unlikely to be built.

NYISO capacity price forecast

$/MWh



Downstate peaker retirements and seasonal mothballing from 2023 drives our contango price view in Lower Hudson Valley and NYC, though by less than forwards.

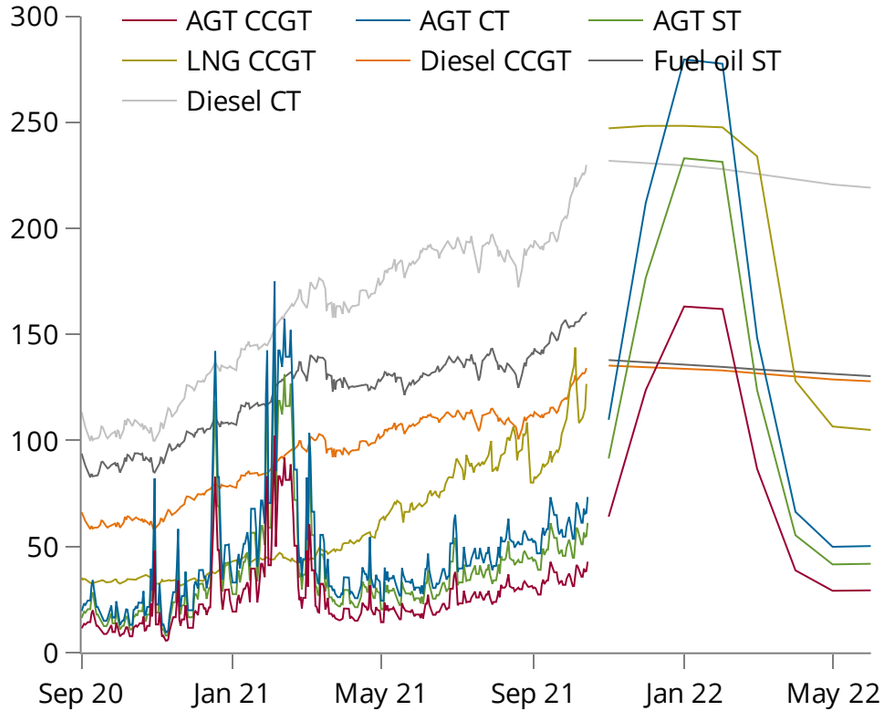
Source: NYISO, Company websites, EIA, ICE, Energy Aspects

Energy Aspects

Oil now more economic than local or imported gas in New England this winter

ISONE competing dispatch costs

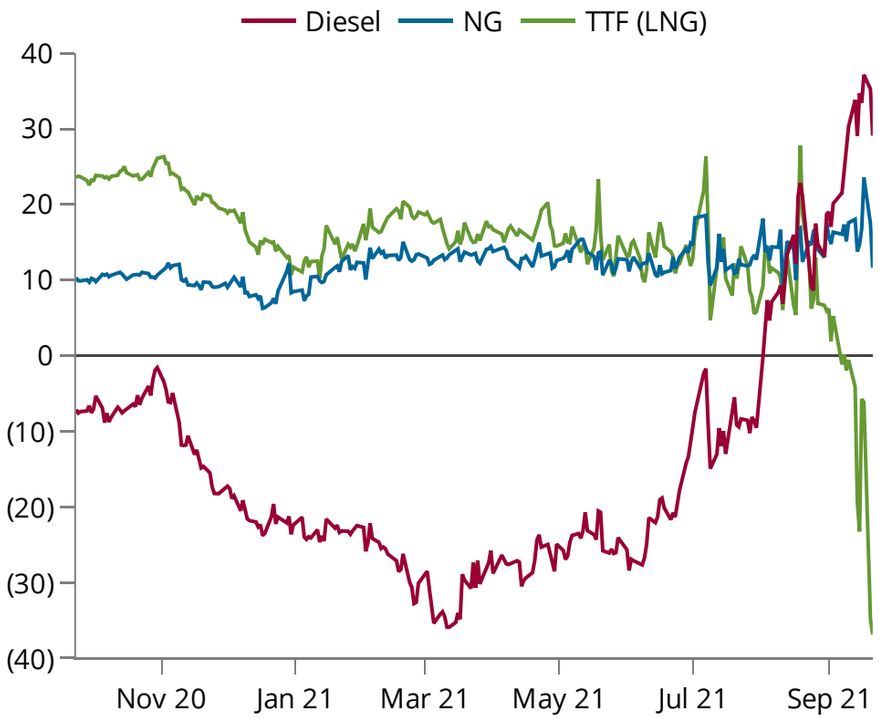
$/MWh



Diesel and fuel oil units are in the money over Jan-22–Feb-22 at current forwards. Such plants maxed out at 2.4 GW during the last major ISONE cold spell in January 2018.

ISONE winter spark spreads

$/MWh



Widening diesel and fuel oil sparks—driven by AGT gas chasing meteoric TTF prices—indicates generators should be stocking up on liquids ahead of winter, given current low inventories.

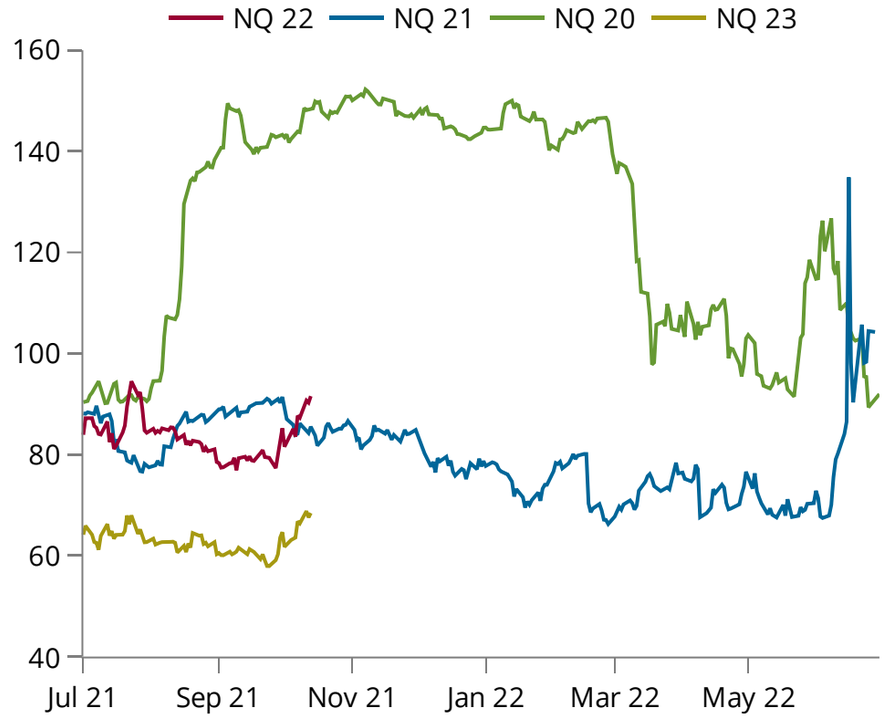
Source: ICE, Bloomberg, Mass DEP, EIA, EPA, Energy Aspects

Energy Aspects

ERCOT summer view unchanged despite ORDC, sparks rally

ERCOT-N peak summer prices

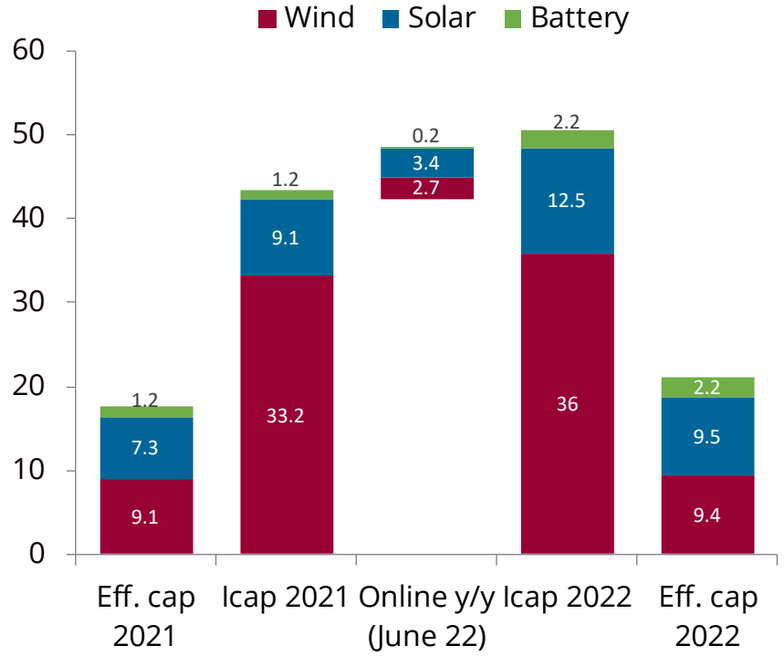
$/MWh



Seasonal rally and potential for more scarcity hours under a revised ORDC supports summer-22 prices. August sparks gain slightly m/m and y/y as power follows gas higher.

ERCOT renewable capacity

GW



Battery storage capacity will nearly double y/y by next summer, with solar growing by another third despite modest construction delays pushing some projects out.

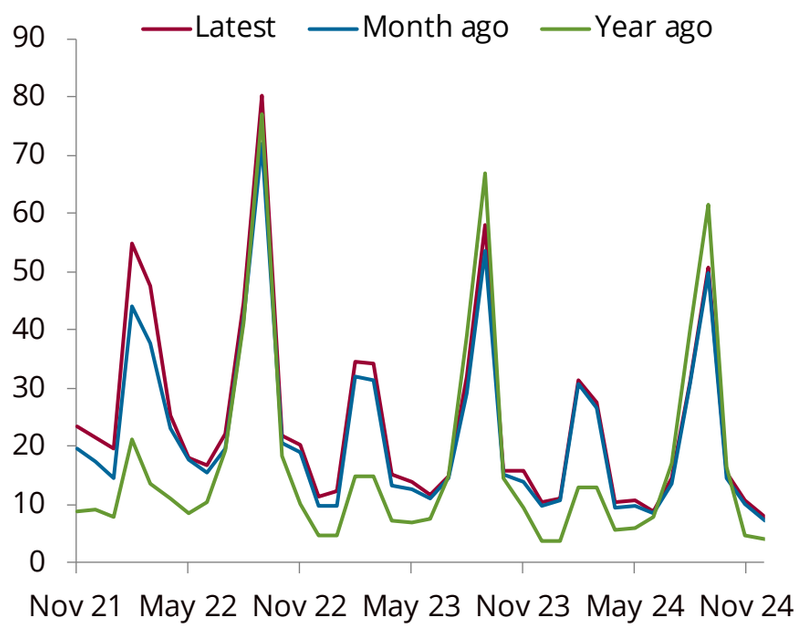
Source: ICE, Bloomberg, ERCOT, Energy Aspects

Energy Aspects

Dispatchable capacity rushes into the ERCOT queue ahead of market reform

ERCOT-N forward CT sparks

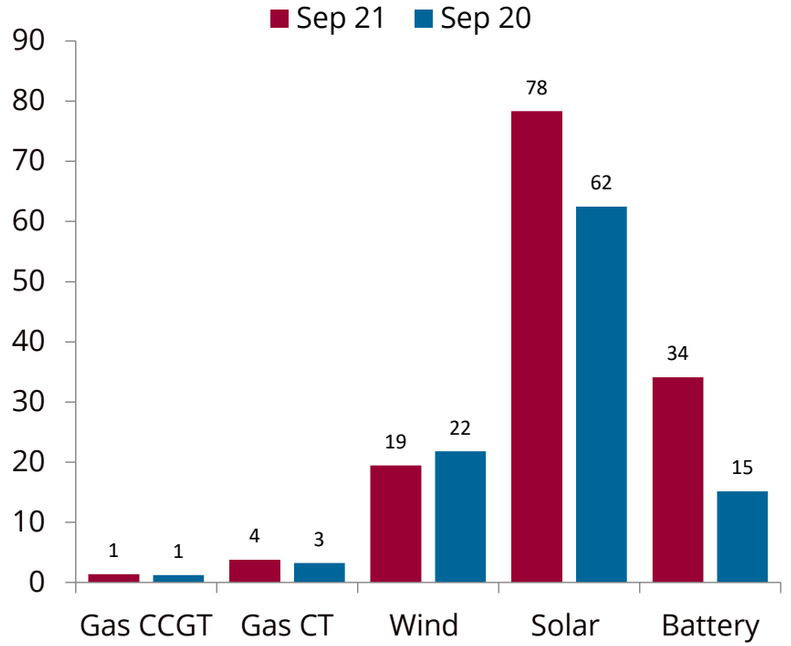
$/MWh



With higher gas prices y/y, peak summer sparks for higher heat-rate units have dropped, but the spike in forward winters this year has raised forward CT sparks by 33% y/y.

ERCOT interconnection requests by fuel, type

GW



Potential market reforms that would incentivise more "dispatchable" capacity have led to an increase in new CT interconnection requests and a spike in battery filings.

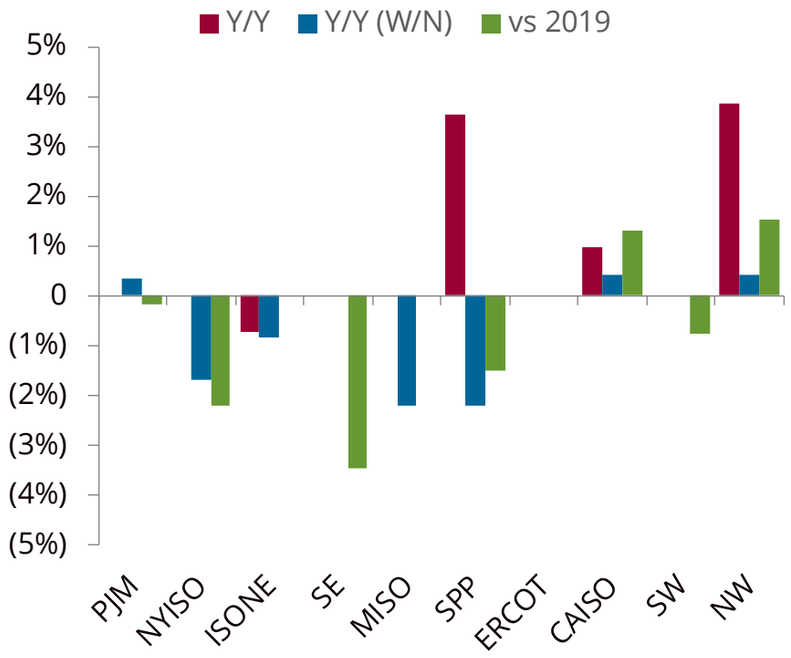
Source: ERCOT, Bloomberg, Energy Aspects

Energy Aspects

Another warm start to autumn coupled with high outages underpins Q4 21 prices

Average load y/y, trailing three-month average

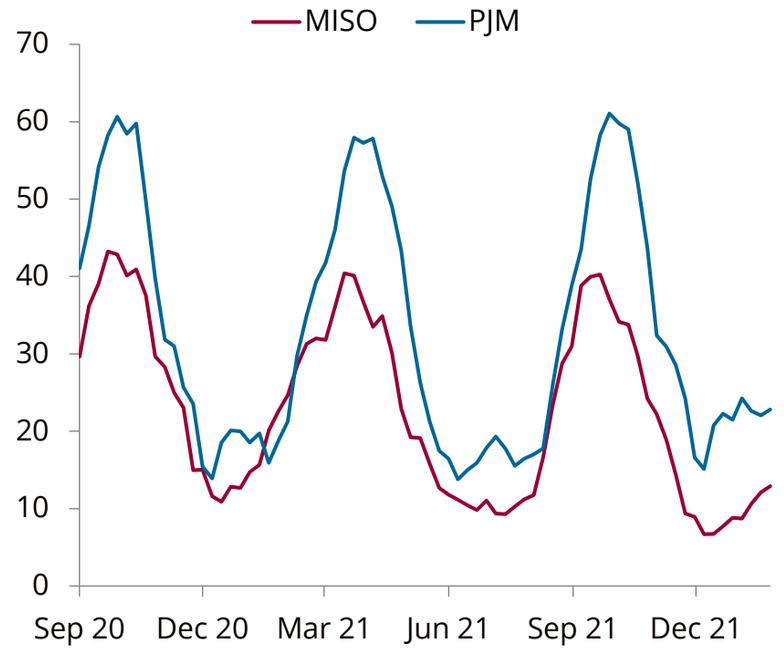
%



Weather-normalised loads have bounced back from pandemic reductions in PJM and the West, and they continue to climb in ERCOT. Northeast loads—especially NYC—remain the weakest.

Outages (PJM and MISO)

MW



Autumn outages are mostly higher than those seen in spring 2021 as coal units take long or unplanned shutdowns to preserve coal inventories or because of a lack of fuel.

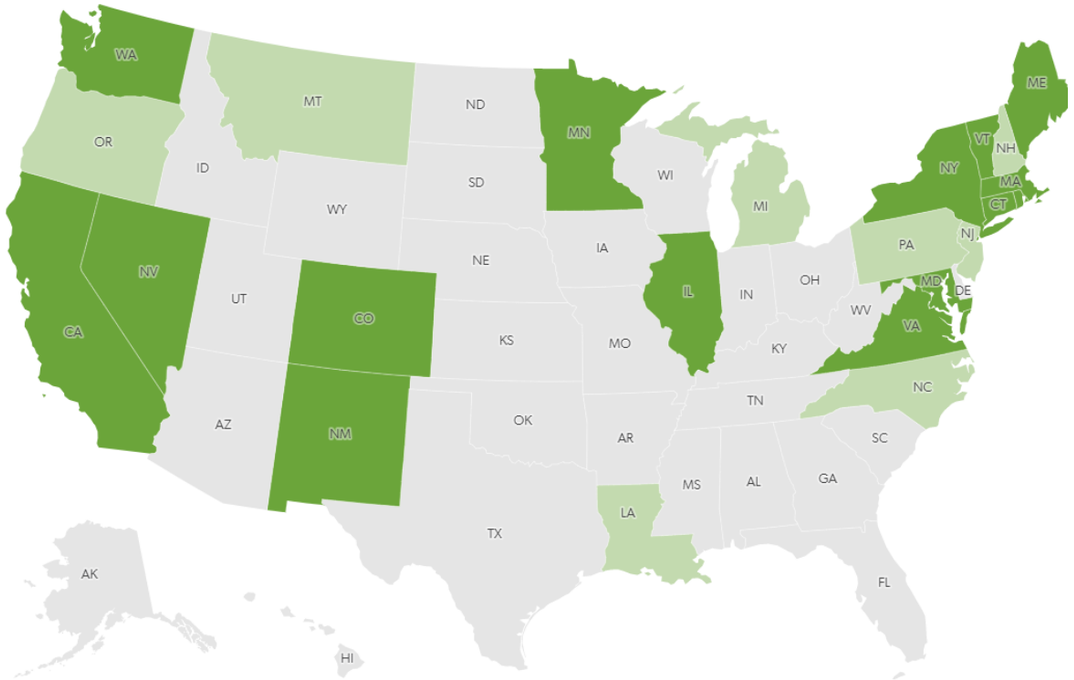
Source: ISOs, EIA, Energy Aspects

Energy Aspects

National clean performance standard still on the table

US state clean energy policy

GW



- Debate continues over a federal budget reconciliation bill that would include incentives to boost renewable generation by extending tax credits, although a proposed Clean Electricity Performance Program (CEPP) has been scuttled by opposition from moderate Democrats.
- The size of the budget reconciliation bill's climate provisions and the overall package have been whittled down by more than half from the original $3.5 trillion proposal. While we still expect the Democrats to adopt the overall infrastructure, social and climate spending programmes, they are shrinking clean energy funds and other spending to appease moderate senators.
- Under the CEPP, load-serving entities (utilities) would have had targets to increase clean energy supply by as early as 2023. We believe the timeline's implementation, even if it had been adopted, would have slipped to 2024. Regardless, expectations for persistent subsidies, rising state renewable portfolio standards and corporate greening are driving continued increases in new renewable interconnection requests nationally.
- State clean energy targets have also increased in the past quarter, with Illinois beginning to reduce gas and coal plant emissions from 2030 and Washington state set to trim generators and other large emitters from 2023.

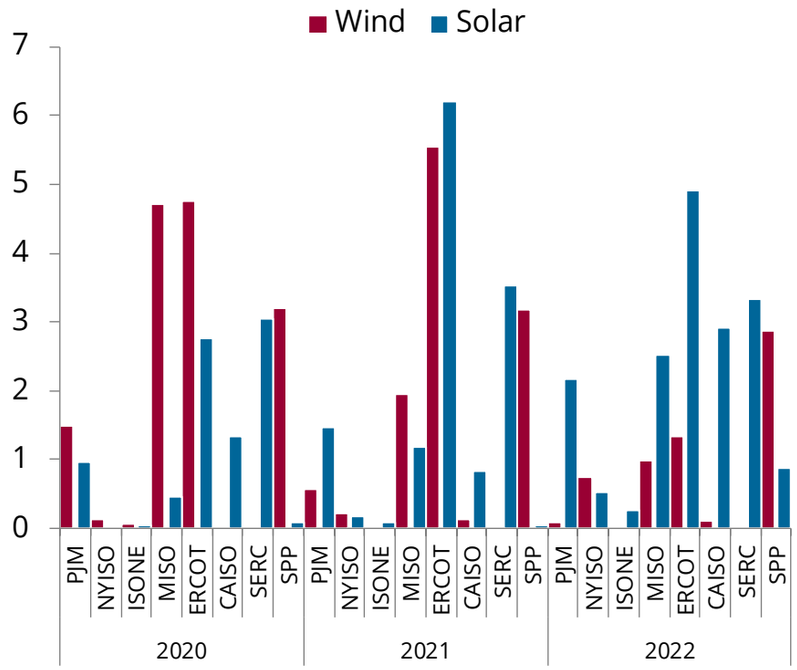
Note: Dark green states have legislative clean energy mandates; lighter green are states with executive orders
Source: Energy Aspects

Energy Aspects

Wind, solar growth to stretch into 2022–23, even before new federal targets

Installed renewable capacity, y/y

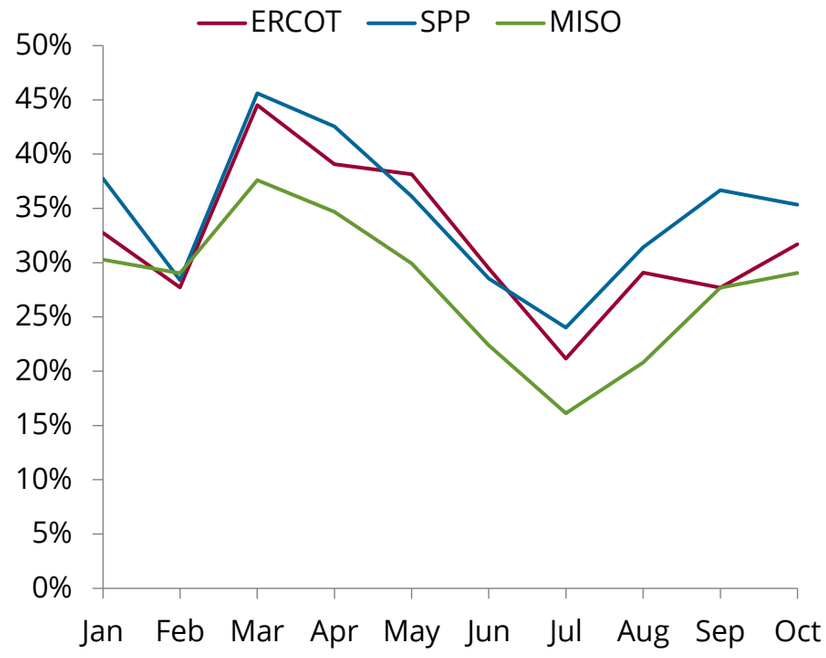
GW



Ongoing supply chain disruptions and labour shortages have pushed some new projects later into 2022 and 2023. While financing risks persist, interconnect queues surge.

Wind capacity factors

%



Wind capacity growth has increased total available generation, but it also raised price volatility due to large swings in utilisation this summer.

Source: Company websites, EIA, EPA, Energy Aspects

Energy Aspects

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