

MARKET OVERVIEW

■ Spot natural gas price discounts to the Henry Hub on Transco’s Leidy Line expanded this week as mild weather curbed demand for Marcellus supplies. The Leidy Line index, an indicator of prices for Marcellus output in northeast Pennsylvania, averaged \$1.15/mmBtu lower than the US benchmark price in the three sessions ended yesterday, widening from an average discount of 10¢/mmBtu a week earlier. The Leidy Line was at an average 75¢/mmBtu discount to the Henry Hub in bid week trading for January.

■ Natural gas prices will likely move lower this year as supply continues to outstrip demand, according to analysts with Tudor Pickering Holt. But the analysts said that the downturn in prices should curb production growth next year. Prices should begin to rise as LNG demand picks up and producers start to exhaust their inventory of core drilling locations, creating a “structural shift” in the long-term price curve, the analysts said.

■ US natural gas withdrawals have outpaced average levels this year thanks to a late December cold snap that resulted in the bulk of this winter’s inventory decline. Inventories so far this winter have dropped by 753 Bcf (21.3bn m³), or 35pc larger than the five-year average draw at this point in the season, according to the US Energy Information Administration (EIA). Most of the decline, or about 58pc of the cumulative draw, occurred during the final two weeks of 2022. Withdrawals should begin to close that gap on average levels in the coming weeks because of milder weather.

■ Output from US electric utilities fell sharply last week as milder weather in some areas and the holidays curbed power demand. Electric utilities in the week ended 31 December dispatched 79.5TWh, down by 11pc from a week earlier but 9.8pc higher than the same week last year, according to the Edison Electric Institute. Electricity-weighted heating demand during the final week of the year was well above the same week last year and topped the seasonal norm in the south-Atlantic states, according to the National Weather Service.

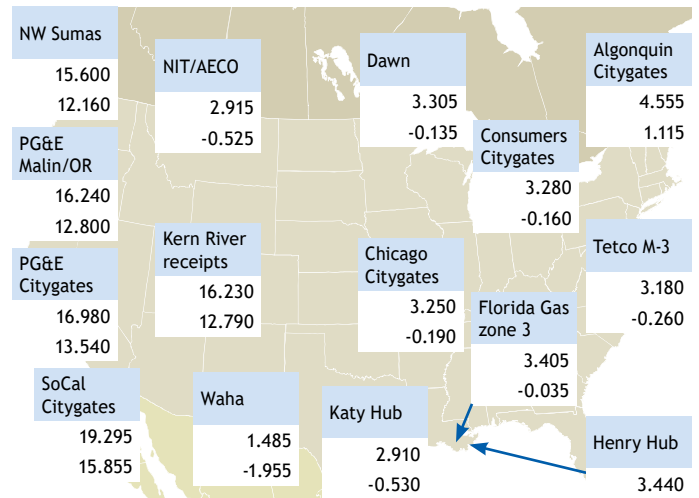
IN THE NEWS

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- Rio Grande LNG survives water permit challenge
- West US Dec gas dailies dwarfed bid week
- US debuts guidance for environmental reviews

Regional price summary

\$/mmBtu



Top number is VWA and bottom is basis to Henry Hub

KEY NATURAL GAS PRICES

Transaction date: 6 Jan 23, flow date(s): 7-9 Jan 23

	VWA	Daily delta	HH cash basis
Appalachia			
Col Gas, Appalachia	2.815	-0.030	-0.625
TETCO M-2 receipts	2.770	-0.035	-0.670
Northeast			
Iroquois zone 2	3.970	-0.115	0.530
Transco zone 6 nonNY North	3.330	0.340	-0.110
Louisiana/Southeast			
SoNat La	3.290	-0.425	-0.150
Transco zone 4	3.435	-0.430	-0.005
East Texas			
NGPL, Texok zone	2.855	-0.005	-0.585
Tolar Hub	2.375	-0.030	-1.065
Midcontinent			
NGPL, Midcontinent	2.920	0.095	-0.520
Panhandle Oklahoma Mainline	2.885	0.020	-0.555
Upper Midwest			
Chicago Citygates	3.250	-0.140	-0.190
Mich Con Citygates	3.275	-0.080	-0.165
Rockies/Northwest			
Opal	16.245	0.880	12.805
Northwest Wyoming	16.065	0.540	12.625
Canada			
Alliance ATP \$/mmBtu	2.640	0.230	-0.800
Empress \$/mmBtu	2.990	-0.115	-0.450
Southwest			
El Paso, Permian Basin	1.350	-0.265	-2.090
El Paso, San Juan Basin	5.895	1.655	2.455

Tables include hyperlinks to those values maintained in the Argus database.

MARKET OVERVIEW

Prices fall on demand outlook

US natural gas futures ended slightly lower today, finishing at a fresh 12-month low, on expectations for mild weather through mid-January, despite lower-than-average inventories.

Nymex gas for February delivery at the Henry Hub fell by 1¢/mmBtu, or 0.3pc, to settle at \$3.71/mmBtu, the lowest since 30 December 2021. The 12-month strip dropped by 0.9pc to \$3.771/mmBtu, while the 2024-calendar strip was down by 0.3pc to \$3.961/mmBtu. Prompt-month prices finished the week down by 17pc from a week earlier on forecasts showing that mild weather would extend well into January, typically the coldest month of the winter heating season.

The weather outlook today showed another drop in expected heating demand during the next two weeks. Above-normal temperatures were expected to blanket most of the US on 11-15 January and the eastern two-thirds of the country on 16-20 January, according to the private forecaster Commodity Weather Group. Most of today's warmer changes to the outlook were for late next week and early the following week.

The unusually warm weather should crimp gas demand for heating and curb withdrawals from gas storage.

US natural gas withdrawals have outpaced average levels this year because of a late December cold snap that resulted in the bulk of this winter's inventory decline. Inventories so far this winter have dropped by 753 Bcf (21.3bn m³), or 35pc larger than the five-year-average draw at this point in the season, according to the US Energy Information Administration (EIA).

Most of that decline, or about 58pc of the cumulative draw, occurred during the final two weeks of 2022. Withdrawals should begin to close the gap with average levels because of milder weather.

Total inventories as of 30 December were 2.891 Tcf – 6.7pc

Nymex natural gas settlements		\$/mmBtu	
Contract	Price	Change	Volume*
Feb 23	3.710	-0.010	102,123
Mar 23	3.392	-0.034	66,081
Apr 23	3.313	-0.045	46,302
May 23	3.352	-0.045	28,297
Jun 23	3.519	-0.040	12,230
Jul 23	3.653	-0.032	11,420
Aug 23	3.683	-0.027	7,639
Sep 23	3.630	-0.027	9,398
Oct 23	3.698	-0.027	16,732
Nov 23	4.060	-0.037	3,678
Dec 23	4.485	-0.037	4,260
Jan 24	4.759	-0.035	6,598
Feb 24	4.582	-0.028	1,520
Mar 24	4.020	-0.036	2,602
Apr 24	3.532	-0.005	3,355
May 24	3.491	-0.005	686
Jun 24	3.584	-0.004	385
Jul 24	3.678	-0.005	279
Aug 24	3.701	-0.007	216

*Volume data estimated by Nymex, subject to verification

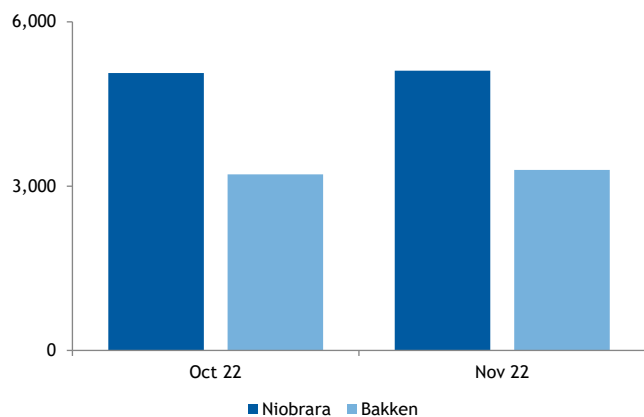
lower than the five-year average and 9.6pc lower than a year earlier. Low inventories can bolster prices by stoking concerns about spikes in demand or supply shortfalls.

Analysts were expecting next week's inventory report to show a draw that was just a fraction of the prior week's decline. The EIA has said that it expects withdrawals from gas storage to exceed average levels this winter thanks to colder weather, the typical seasonal decline in output and the return of the 2 Bcf/d Freeport LNG export terminal in Texas. That terminal shut in June because of an explosion but was expected to resume service this month, Freeport has said.

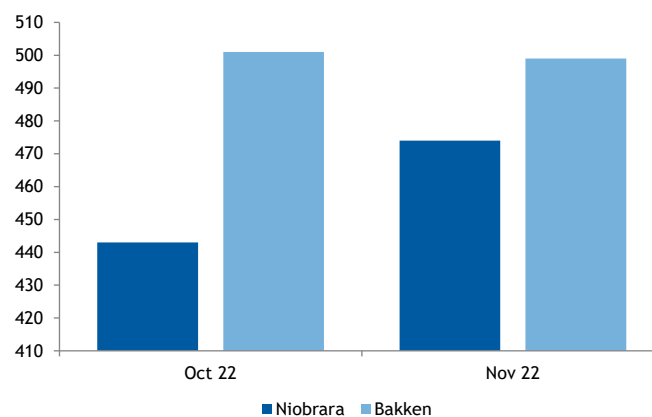
Some analysts, though, say they expect supply to outstrip demand in the coming year as output climbs and LNG exports stagnate.

Monthly US gas output

mcf/d



Uncompleted wells



EAST

East markets									
	VWA \$/mmBtu	Daily delta \$/mmBtu	Low-High \$/mmBtu	Mid-Range \$/mmBtu	Volume mmBtu/d	Trades	HH cash basis \$/mmBtu	Bid week delta \$/mmBtu	Index / Assessed
Appalachia									
Col Gas, Appalachia	2.815	-0.030	2.770-2.850	2.795-2.835	24,300	9	-0.625	-1.230	Index
Eastern Gas Transmission, North Point	2.700	0.000	2.700-2.700	2.680-2.720	18,300	2	-0.740	-1.160	Index
Eastern Gas Transmission, South Point	2.670	-0.115	2.500-2.740	2.610-2.730	132,300	20	-0.770	-0.965	Index
Leidy Line	2.740	0.095	2.700-2.750	2.728-2.753	20,700	6	-0.700	-1.265	Index
Millennium receipts	2.760	-0.075	2.750-2.780	2.753-2.768	17,000	2	-0.680	-1.150	Index
TGP station 313	2.835	0.115	2.800-2.850	2.823-2.848	32,409	9	-0.605	-1.075	Index
TGP zone 4 Marcellus	2.750	0.040	2.750-2.750	2.730-2.770	4,000	1	-0.690	-1.140	Index
TGP zone 4 200 Line	2.905	0.010	2.890-2.930	2.895-2.915	33,000	4	-0.535	-1.300	Index
TETCO M-2 receipts	2.770	-0.035	2.680-2.900	2.715-2.825	41,600	7	-0.670	-1.295	Index
Northeast									
Algonquin Citygates	4.555	-0.475	4.500-4.700	4.505-4.605	38,500	11	1.115	-19.010	Index
Cove Point supply	3.500	0.155	3.500-3.500	3.480-3.520	99,700	6	0.060	N/A	Index
Iroquois, Waddington	3.670	0.055	3.600-3.750	3.633-3.708	102,774	15	0.230	-9.740	Index
Iroquois zone 2	3.970	-0.115	3.650-4.250	3.820-4.120	59,100	14	0.530	-17.090	Index
Niagara	2.800	0.000	2.615-2.985	2.705-2.895	0	0	-0.640	N/A	Assessed
Portland NGTS delivered	5.415	-0.980	5.250-5.500	5.353-5.478	59,507	8	1.975	N/A	Index
TGP zone 5 200 line delivered	3.800	-0.990	3.800-3.800	3.780-3.820	27,000	7	0.360	N/A	Index
TGP zone 6 200 Line	4.955	-0.500	4.600-5.500	4.730-5.180	95,803	22	1.515	-8.710	Index
TETCO M-3	3.180	0.185	3.090-3.400	3.103-3.258	115,866	17	-0.260	-9.715	Index
Transco zone 5 delivered	3.710	-0.375	3.600-3.730	3.678-3.743	252,700	44	0.270	-11.430	Index
Transco zone 5 North	3.720	-0.360	3.700-3.730	3.713-3.728	50,000	7	0.280	-11.420	Index
Transco zone 5 South	3.705	-0.385	3.600-3.730	3.673-3.738	202,700	37	0.265	-11.435	Index
Transco zone 6 nonNY	3.330	0.340	3.200-3.500	3.255-3.405	161,400	22	-0.110	-8.885	Index
Transco zone 6 nonNY North	3.330	0.340	3.200-3.500	3.255-3.405	161,400	22	-0.110	-8.885	Index
Transco zone 6 NY	3.500	0.310	3.400-3.600	3.450-3.550	10,800	4	0.060	-13.205	Index
Appalachia average: 2.770									Northeast average: 3.810

[Access a file of Argus prices here](#)

■ Spot natural gas prices across the Appalachian production region in the week ended yesterday fell below \$3/mmBtu, the lowest price for those indexes in nearly two months, as mild weather blanketed the eastern US. The Columbia Gas, Appalachia, index, a key indicator for the price of Marcellus supply, in the week ended yesterday fell to \$2.78/mmBtu, down by 38pc from a week earlier. The Eastern Gas Transmission, South Point, index, in the week ended yesterday fell to \$2.57/mmBtu, down by 34pc from a week earlier. The latter index traded under \$3/mmBtu every trading day from 29 December to 5 January. In contrast, it only traded below \$4/mmBtu for two days from 14 November to 27 December.

■ Gas prices could increase next week as eastern US temperatures drop closer to the seasonal norm, though forecasts show warm weather returning the following week. Temperatures in New York City on 10-12 January were forecast to average 37°F (3°C), up by 3°F from the seasonal norm,

according to AccuWeather. Above-average temperatures were expected to cover the mid-Atlantic and New England through 20 January, with the 16-20 January period expected to incur the highest temperatures, according to the private forecaster Commodity Weather Group. The Columbia Gas, Appalachia, price for February was \$3.08/mmBtu, and the price for March was \$2.82/mmBtu, according to Argus forward curves.

■ Tennessee Gas Pipeline (TGP) lifted its operational flow order (OFO) for zones 3-6 yesterday after downgrading the OFO the day before as temperatures fell closer to the seasonal norm. TGP also forecast major restrictions to operational capacity at compressor stations 307 and 313 in northwest and north-central Pennsylvania on 9-15 January as inspections and maintenance occur. Spot prices at TGP Marcellus in zone 4 yesterday rose to \$2.71/mmBtu, up by 26pc from the previous session and down by 8pc from a week earlier.

GULF

Gulf markets									
	VWA \$/mmBtu	Daily delta \$/mmBtu	Low-High \$/mmBtu	Mid-Range \$/mmBtu	Volume mmBtu/d	Trades	HH cash basis \$/mmBtu	Bid week delta \$/mmBtu	Index / Assessed
Louisiana/Southeast									
ANR, Louisiana	3.315	-0.435	3.300-3.350	3.303-3.328	52,500	11	-0.125	-1.510	Index
Columbia Gulf, La	3.165	-0.340	3.100-3.350	3.103-3.228	17,200	4	-0.275	-1.525	Index
Columbia Gulf Mainline	3.015	-0.115	2.975-3.030	3.001-3.029	101,400	15	-0.425	-1.485	Index
Egan	3.335	-0.290	3.160-3.510	3.250-3.420	0	0	-0.105	N/A	Assessed
FGT Citygates basis	3.705	-0.555	3.205-4.205	3.455-3.955	0	0	0.265	N/A	Assessed
Florida Gas zone 3	3.405	-0.555	3.390-3.500	3.378-3.433	42,000	10	-0.035	-2.005	Index
Gulf South expansion	3.080	0.085	2.600-3.200	2.930-3.230	25,000	2	-0.360	-1.430	Index
Henry Hub	3.440	-0.325	3.340-3.505	3.399-3.481	344,000	36	—	-1.310	Index
Pine Prairie	3.285	-0.310	3.180-3.400	3.230-3.340	163,700	30	-0.155	-1.435	Index
SoNat La	3.290	-0.425	3.190-3.500	3.213-3.368	212,600	31	-0.150	-1.545	Index
TETCO E La	3.050	-0.265	3.000-3.100	3.025-3.075	40,500	6	-0.390	-1.315	Index
TETCO W La	3.260	-0.285	3.150-3.380	3.203-3.318	72,000	13	-0.180	-1.300	Index
TGP La 500 Leg	3.135	-0.500	3.090-3.200	3.108-3.163	44,000	15	-0.305	-1.490	Index
TGP La 800 Leg	3.450	-0.180	3.450-3.450	3.430-3.470	5,000	1	0.010	-1.125	Index
TGP zone 1 100 leg	3.020	-0.030	3.020-3.020	3.000-3.040	10,000	1	-0.420	N/A	Index
TGT zone 1	3.010	-0.110	2.985-3.050	2.994-3.026	70,300	14	-0.430	-1.365	Index
Transco zone 3	3.410	-0.440	3.200-3.650	3.298-3.523	307,603	35	-0.030	-1.950	Index
Transco zone 4	3.435	-0.430	3.370-3.700	3.353-3.518	351,800	49	-0.005	-1.950	Index
Trunkline, La	3.335	-0.265	3.160-3.510	3.250-3.420	0	0	-0.105	-1.205	Assessed
Trunkline Z1A	3.070	-0.070	3.050-3.070	3.065-3.075	87,100	10	-0.370	-1.565	Index
East Texas									
Carthage	2.700	-0.035	2.700-2.700	2.680-2.720	10,000	1	-0.740	-1.715	Index
Florida Gas zone 1	2.920	-0.025	2.900-2.950	2.908-2.933	17,500	2	-0.520	N/A	Index
Houston Ship Channel (All)	2.720	-0.100	2.650-2.750	2.695-2.745	70,000	7	-0.720	-1.680	Index
Katy Hub	2.910	0.140	2.700-3.000	2.835-2.985	110,100	16	-0.530	-1.465	Index
Moss Bluff	3.200	-0.235	3.200-3.200	3.180-3.220	25,000	1	-0.240	N/A	Index
NGPL, Texok zone	2.855	-0.005	2.610-2.990	2.760-2.950	293,228	46	-0.585	-2.880	Index
TGP zone 0 North	2.805	0.105	2.625-2.985	2.715-2.895	0	0	-0.635	N/A	Assessed
Tolar Hub	2.375	-0.030	0.980-3.770	1.680-3.070	0	0	-1.065	N/A	Assessed
Transco zone 2	3.300	-0.265	3.280-3.315	3.291-3.309	38,000	8	-0.140	-1.445	Index
South Texas									
TETCO South Texas zone	3.050	0.200	3.040-3.060	3.045-3.055	20,000	3	-0.390	-1.110	Index
TGP zone 0 South	2.800	0.040	2.700-2.890	2.753-2.848	88,500	15	-0.640	-1.100	Index
Transco zone 1	2.935	0.145	2.800-3.040	2.875-2.995	26,100	7	-0.505	-1.610	Index
Tres Palacios	2.905	0.070	2.800-3.100	2.830-2.980	21,000	5	-0.535	N/A	Index
Louisiana/Southeast average: 3.235		East Texas average: 2.865		South Texas average: 2.925		Access a file of Argus prices here			

■ Spot natural gas prices at the Henry Hub, the US benchmark, tumbled this week on mild weather and declines in the futures market, despite a government report showing a large draw from gas storage. The Henry Hub spot index in the three sessions ended yesterday averaged \$3.73/mmBtu, down by 12pc from a week earlier and well below the January bid week index of \$4.75/mmBtu. The Henry Hub spot price fell ahead of the New Year holiday to \$3.50/mmBtu, a seven-week low.

■ Natural gas well completions last month in Texas surged from a year earlier on higher energy prices. Operators in Texas, the largest gas-producing state by volume, completed 143 new natural gas wells in December, according to the Texas Railroad Commission, the state agency that oversees oil and gas drilling. That total was more than double the 71 wells completed a year earlier and 19 wells higher than the total completed in November. The Midland region, home to a portion of the Permian basin, led the state in gas well completions.

MIDCONTINENT

Midcontinent markets									
	VWA \$/mmBtu	Daily delta \$/mmBtu	Low-High \$/mmBtu	Mid-Range \$/mmBtu	Volume mmBtu/d	Trades	HH cash basis \$/mmBtu	Bid week delta \$/mmBtu	Index / Assessed
Midcontinent									
ANR, Oklahoma	3.220	-0.110	3.190-3.290	3.195-3.245	56,400	12	-0.220	-3.775	Index
Enable East	2.830	-0.020	2.700-2.890	2.783-2.878	17,600	4	-0.610	-2.600	Index
NGPL, Amarillo	3.195	-0.025	3.180-3.200	3.190-3.200	3,700	2	-0.245	N/A	Index
NGPL, Midcontinent	2.920	0.095	2.880-2.970	2.898-2.943	86,800	15	-0.520	-2.815	Index
Oneok, Oklahoma	2.820	-0.030	2.800-2.850	2.808-2.833	30,000	6	-0.620	-3.065	Index
Panhandle Oklahoma Mainline	2.885	0.020	2.760-2.980	2.830-2.940	65,025	15	-0.555	-2.855	Index
Southern Star	3.215	0.140	3.170-3.300	3.183-3.248	30,000	3	-0.225	-4.545	Index
Upper Midwest									
Alliance, into interstates	3.260	-0.095	3.240-3.300	3.245-3.275	56,400	13	-0.180	N/A	Index
ANR ML7	3.300	-0.335	3.300-3.300	3.280-3.320	5,000	1	-0.140	-2.300	Index
Chicago Citygates	3.250	-0.140	3.160-3.295	3.216-3.284	178,669	32	-0.190	-2.785	Index
Chicago Nicor	3.250	-0.140	3.160-3.260	3.225-3.275	53,924	10	-0.190	-2.835	Index
Chicago Nipsco	3.250	-0.150	3.240-3.295	3.236-3.264	101,867	17	-0.190	-2.755	Index
Chicago Peoples	3.235	-0.115	3.160-3.265	3.209-3.261	22,878	5	-0.205	-2.765	Index
Consumers Citygates	3.280	-0.085	3.220-3.320	3.255-3.305	313,600	43	-0.160	-1.280	Index
Emerson, Viking GL	3.245	-0.110	3.210-3.260	3.233-3.258	16,100	8	-0.195	-1.765	Index
Lebanon	3.100	-0.150	3.100-3.100	3.080-3.120	27,000	7	-0.340	-2.800	Index
Mich Con Citygates	3.275	-0.080	3.240-3.295	3.261-3.289	176,600	29	-0.165	-1.045	Index
NGPL Iowa Illinois	3.130	-0.150	3.050-3.300	3.068-3.193	74,223	7	-0.310	N/A	Index
Northern Border Ventura Transfer	3.225	-0.145	3.200-3.250	3.213-3.238	60,400	9	-0.215	N/A	Index
NNG Demarc	3.255	-0.140	3.250-3.280	3.248-3.263	6,300	4	-0.185	-4.430	Index
NNG Ventura	3.245	-0.155	3.220-3.280	3.230-3.260	55,700	12	-0.195	-4.730	Index
REX Moultrie-NGPL	3.190	-0.090	3.100-3.220	3.160-3.220	90,700	15	-0.250	-2.600	Index
REX Shelby-ANR	3.180	-0.070	3.180-3.180	3.160-3.200	10,000	2	-0.260	-2.615	Index
REX zone 3	3.195	-0.085	3.100-3.220	3.165-3.225	162,500	29	-0.245	-2.600	Index
Rover, delivered	3.180	-0.090	3.100-3.210	3.153-3.208	26,800	5	-0.260	N/A	Index
Midcontinent average: 3.010				Upper Midwest average: 3.225					Access a file of Argus prices here

■ Dailies at Consumers Citygates for the first week of January were significantly below December levels on milder weather forecast to linger well into January. The Consumers Citygates index for the week ended yesterday averaged \$3.41/mmBtu, 33pc lower than the December monthly average and 18pc lower than the January 2022 monthly average. Spot prices across the US midcontinent this week have faced downward pressure from lower-than-normal heating demand and a rebound in production after the recent arctic blast. The nearby Lebanon, Ohio, hub in the week ended yesterday averaged \$3.21/mmBtu, 42pc lower than the December monthly average and 46pc lower than the January bid week price. The US Energy Information Administration this week reported a larger-than-average storage withdrawal. Warmer weather in coming weeks should limit gas draws and could bring inventories back in line with the five-year-average, keeping prices below \$4/mmBtu in the near future.

■ The Canadian gas rig count this week soared with the addition of 17 rigs, bringing the total to 59, according to Baker Hughes. The count was 13 rigs higher than a year earlier.

■ ANR pipeline terminated a capacity reduction issued ahead of the late-December cold snap for the southwest mainline at the Greensburg-Northern Natural Gas interconnection. The pipeline restricted capacity there on 22 December to firm primary flows. The restriction was originally scheduled to be lifted on 31 December because of incompatible pressures. Warmer-than-normal weather has eased heating demand across the ANR pipeline system.

■ Some midcontinent indexes for early spring were below \$3/mmBtu amid forecasts for higher end-of-winter inventories. The Southern Star price was \$2.77/mmBtu for April, while the Oneok, Oklahoma, price was \$2.66/mmBtu, according to Argus forward curves

ROCKIES AND WEST

Rockies and west markets									
	VWA \$/mmBtu	Daily delta \$/mmBtu	Low-High \$/mmBtu	Mid-Range \$/mmBtu	Volume mmBtu/d	Trades	HH cash basis \$/mmBtu	Bid week delta \$/mmBtu	Index / Assessed
Rockies/Northwest									
Cheyenne	3.305	0.010	3.195-3.310	3.276-3.334	53,900	12	-0.135	-4.955	Index
CIG Rocky Mountains	3.300	-0.040	3.300-3.300	3.280-3.320	30,000	3	-0.140	-5.200	Index
GTN, Kingsgate	3.675	-0.045	3.400-3.750	3.588-3.763	34,700	4	0.235	N/A	Index
Kern River receipts	16.230	0.685	16.000-16.350	16.143-16.318	38,500	6	12.790	-40.410	Index
Northwest Wyoming	16.065	0.540	16.000-16.200	16.015-16.115	15,000	3	12.625	-26.785	Index
Northwest, s. of Green River	5.500	1.190	5.500-5.500	5.480-5.520	2,900	1	2.060	N/A	Index
Northwest Sumas	15.600	2.450	15.000-16.100	15.325-15.875	136,600	22	12.160	-31.475	Index
Opal	16.245	0.880	16.100-16.500	16.145-16.345	45,500	7	12.805	-36.610	Index
PG&E Citygates	16.980	0.320	16.950-17.000	16.968-16.993	85,900	15	13.540	-35.540	Index
PG&E Malin, Oregon	16.240	0.560	16.000-16.600	16.090-16.390	114,500	21	12.800	-27.655	Index
Stanfield	16.055	0.670	15.905-16.500	15.906-16.204	109,100	18	12.615	N/A	Index
White River Hub	5.990	2.065	5.950-6.000	5.978-6.003	21,000	5	2.550	-2.390	Index
Canada									
Alliance ATP C\$/GJ	3.365	0.265	3.280-3.450	3.325-3.405	0	0	—	N/A	Assessed
Alliance ATP \$/mmBtu	2.640	0.230	2.575-2.705	2.610-2.670	0	0	-0.800	N/A	Assessed
Dawn, Ontario C\$/GJ	4.215	-0.180	4.180-4.335	4.175-4.250	109,364	21	—	-1.835	Index
Dawn, Ontario \$/mmBtu	3.305	-0.110	3.280-3.400	3.275-3.335	103,700	21	-0.135	-1.410	Index
Empress C\$/GJ	3.810	-0.185	3.790-3.875	3.789-3.831	27,109	4	—	-1.860	Index
Empress \$/mmBtu	2.990	-0.115	2.975-3.040	2.970-3.005	25,705	4	-0.450	-1.430	Index
NIT/AECO C\$/GJ	3.715	-0.165	3.670-3.750	3.695-3.735	324,400	55	—	-1.595	Index
NIT/AECO \$/mmBtu	2.915	-0.100	2.880-2.940	2.900-2.930	307,600	55	-0.525	-1.225	Index
Westcoast station 2 C\$/GJ	3.565	0.135	3.400-3.740	3.480-3.650	28,514	5	—	-1.590	Index
Westcoast station 2 \$/mmBtu	2.795	0.130	2.665-2.935	2.730-2.865	27,037	5	-0.645	-1.225	Index
Southwest									
El Paso Bondad	6.125	2.115	6.000-6.250	6.063-6.188	10,000	2	2.685	N/A	Index
El Paso, Permian Basin	1.350	-0.265	1.000-1.750	1.163-1.538	304,300	58	-2.090	-2.310	Index
El Paso Plains	3.000	-0.360	3.000-3.000	2.980-3.020	1,400	1	-0.440	-4.000	Index
El Paso, San Juan Basin	5.895	1.655	5.350-6.250	5.670-6.120	18,900	5	2.455	-25.730	Index
El Paso, South Mainline	18.170	0.690	17.500-18.500	17.920-18.420	25,400	6	14.730	N/A	Index
Kern River, delivered	17.420	0.430	17.350-17.500	17.383-17.458	34,000	12	13.980	N/A	Index
Permian Basin	1.410	-0.240	1.000-2.000	1.160-1.660	558,200	102	-2.030	-3.135	Index
PG&E South	16.615	0.395	16.500-16.700	16.565-16.665	53,000	13	13.175	-23.020	Index
SoCal Citygates	19.295	0.560	19.000-19.500	19.170-19.420	125,900	11	15.855	-36.340	Index
SoCal Gas Co	18.050	0.725	16.910-18.400	17.678-18.423	81,932	22	14.610	-24.980	Index
Transwestern Permian Basin	1.460	-0.270	1.400-1.500	1.435-1.485	73,300	10	-1.980	-3.005	Index
Transwestern San Juan Basin	6.000	1.990	6.000-6.000	5.980-6.020	5,000	1	2.560	-34.305	Index
Waha	1.485	-0.210	1.250-2.000	1.298-1.673	180,600	34	-1.955	-3.300	Index
Waha Enterprise	1.475	-0.210	1.250-1.850	1.325-1.625	119,000	20	-1.965	N/A	Index
Waha Oasis	1.500	-0.080	1.140-1.860	1.320-1.680	0	0	-1.940	-3.290	Assessed
Rockies/Northwest average: 11.265			Canada average: 2.930		Southwest average: 7.950				Access a file of Argus prices here

■ Linepack today returned to normal on Kern River Gas Transmission as heating demand eased. The pipeline yesterday warned that linepack was trending low amid wintry weather across the Rockies. Prices for Kern river, delivered, fell by 10pc yesterday to \$16.99/mmBtu. That was 12pc higher than a week earlier and much higher than the Henry Hub daily price of \$3.77/mmBtu. Heating demand for Utah this week was expect-

ed to be 17pc higher than a week earlier but 1pc lower than average, US National Weather Service said.

■ Reported volumes traded at SoCal Gas yesterday rose by 29pc from the previous session on cooler weather and lower spot prices. That index, a bellwether for gas prices in southern California, fell yesterday by \$1.62/mmBtu to \$17.33/mmBtu.

INTRADAY PRICES

Pipeline index intraday gas price assessments, flow date: 5 Jan 23									\$/mmBtu
	Intraday 1			Intraday 2			24 hour		
	Low	High	Index	Low	High	Index	Low	High	Index
Chicago Citygates	1.625	3.832	2.714	1.532	3.622	2.564	1.597	3.595	2.551
Col Gas, Appalachia	1.392	4.156	2.872	1.289	3.915	2.700	1.395	3.821	2.613
Cove Point supply	1.763	3.877	2.702	1.666	3.643	2.540	1.771	3.659	2.574
Eastern Gas Transmission, South Point	1.756	4.026	2.765	1.667	3.816	2.618	1.673	3.776	2.585
Indiana NIPSCO	1.963	4.104	3.243	1.861	3.897	3.077	1.841	3.858	3.042
TETCO M-2 Receipts	1.173	3.305	2.806	1.874	3.089	2.629	1.062	3.050	2.580
TETCO M-3	1.424	4.405	3.119	1.344	4.150	2.929	1.383	3.963	2.763
TGP zone 4 Marcellus	1.370	4.250	3.291	1.257	4.004	3.074	1.358	3.908	3.015
TGP zone 5 200 line delivered	1.545	4.049	3.905	1.429	3.801	3.665	1.513	3.539	3.424
Leidy Line	1.655	3.248	3.095	1.543	3.001	2.863	1.600	2.740	2.629
Transco zone 5 North	2.504	3.400	3.076	2.390	3.211	2.913	2.371	3.179	2.886
Transco zone 6 nonNY	1.930	3.892	3.173	1.817	3.643	2.983	1.857	3.272	2.787
Transco zone 6 nonNY North	1.391	5.119	3.414	1.259	4.783	3.188	1.426	4.238	2.869
Transco zone 6 NY	1.206	4.068	3.251	2.438	3.804	3.118	1.230	3.426	2.748

PJM power hub intraday gas price assessments, flow date: 5 Jan 23									\$/mmBtu
	Intraday 1			Intraday 2			24 hour		
	Low	High	Index	Low	High	Index	Low	High	Index
AECO	1.652	3.916	2.902	1.548	3.668	2.718	1.374	3.256	2.413
AEP	2.040	4.263	3.394	1.937	4.047	3.222	1.918	4.007	3.191
APS	2.445	4.337	3.469	2.323	4.120	3.296	2.282	4.047	3.237
ATSI	2.184	4.506	3.199	2.063	4.255	3.020	2.015	4.157	2.951
BGE	2.431	2.752	2.598	2.317	2.623	2.476	2.357	2.668	2.518
COMED	1.749	4.023	2.697	1.656	3.809	2.553	1.644	3.781	2.535
DAY	1.296	3.150	2.419	1.229	2.986	2.294	1.221	2.968	2.280
DEOK	0.891	4.330	1.851	0.845	4.107	1.755	0.840	4.082	1.745
DOM	1.988	4.426	3.285	1.898	4.226	3.137	1.883	4.193	3.112
DPL	2.416	5.293	3.267	2.263	4.958	3.060	1.952	4.277	2.640
DUQ	2.678	2.678	2.678	2.538	2.538	2.538	2.475	2.475	2.475
EKPC	2.226	2.226	2.226	2.117	2.117	2.117	2.106	2.106	2.106
JCPL	1.909	4.165	3.211	1.791	3.906	3.012	1.620	3.533	2.724
METED	1.425	4.483	2.607	1.344	4.228	2.459	1.274	4.008	2.331
PECO	1.587	3.928	3.236	1.486	3.677	3.029	1.296	3.207	2.642
PENELEC	1.926	4.556	3.500	1.812	4.287	3.293	1.744	4.126	3.170
PEPCO	1.939	5.021	2.769	1.848	4.786	2.640	1.855	4.803	2.649
PPL	1.918	4.250	3.358	1.805	4.000	3.161	1.686	3.737	2.952
PSEG	1.191	4.285	2.885	1.116	4.017	2.704	1.010	3.634	2.446

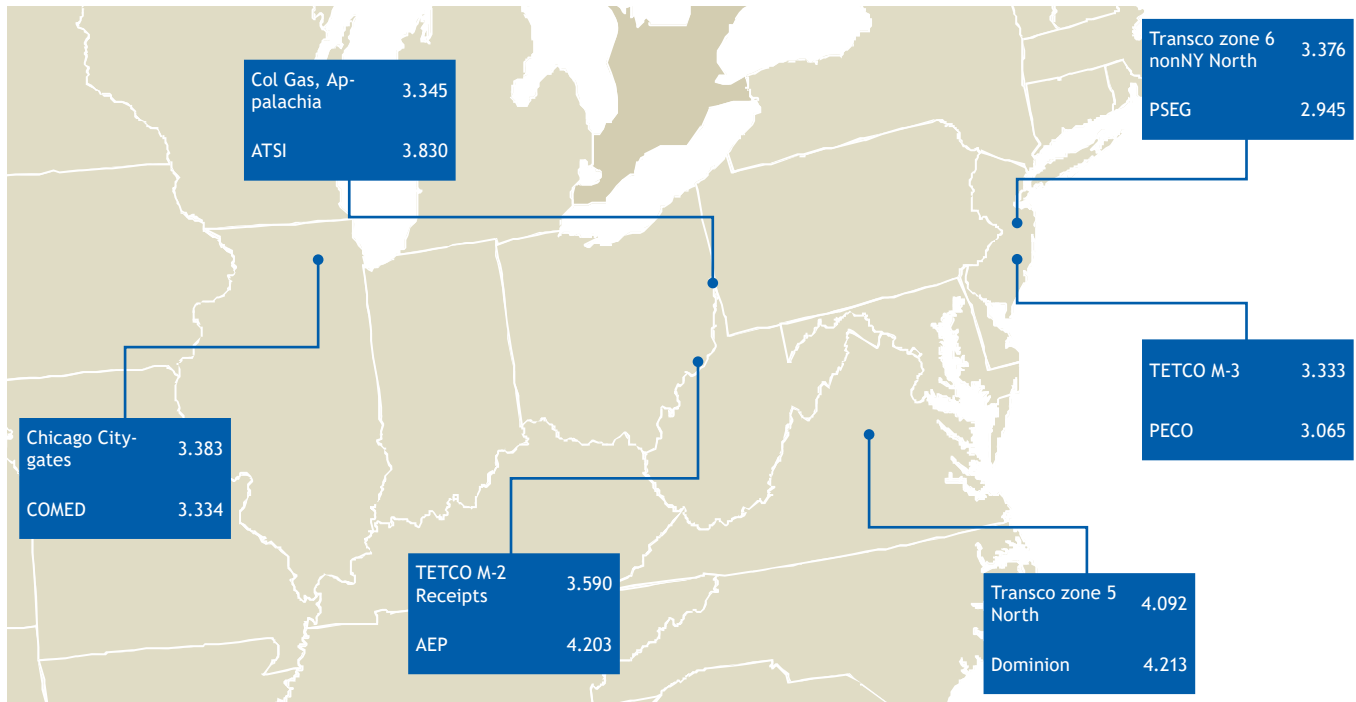
PJM DAY-AHEAD GAS PRICE ASSESSMENTS, FLOW DATE 7 JAN

\$/mmBtu

Pipeline hub	Low	High	Index
Chicago Citygates	2.039	4.769	3.383
Col Gas, Appalachia	1.362	5.156	3.345
Cove Point supply	2.426	5.480	3.783
Eastern Gas Transmission, South Point	2.363	5.022	3.563
Indiana NIPSCO	2.449	5.081	4.002
TETCO M-2 Receipts	1.084	4.365	3.590
TETCO M-3	1.504	5.091	3.333
TGP zone 4 Marcellus	1.664	5.125	4.045
TGP zone 5 200 line delivered	1.846	4.410	4.260
Leidy Line	1.818	3.609	3.433
Transco zone 5 North	3.210	4.582	4.092
Transco zone 6 nonNY	2.810	3.687	3.498
Transco zone 6 nonNY North	1.325	4.784	3.376
Transco zone 6 NY	1.171	4.157	3.296

Power hub	Low	High	Index
AECO	1.622	3.845	2.849
AEP	2.526	5.279	4.203
APS	3.019	5.355	4.283
ATSI	2.615	5.395	3.830
BGE	3.311	3.748	3.538
COMED	2.163	4.974	3.334
DAY	1.606	3.903	2.998
DEOK	1.111	5.397	2.307
DOM	2.550	5.677	4.213
DPL	2.263	4.958	3.060
DUQ	3.227	3.227	3.227
EKPC	2.771	2.771	2.772
JCPL	1.950	4.253	3.279
METED	1.604	5.048	2.936
PECO	1.504	3.721	3.065
PENELEC	2.221	5.255	4.037
PEPCO	2.558	6.624	3.653
PPL	2.083	4.615	3.646
PSEG	1.216	4.375	2.945

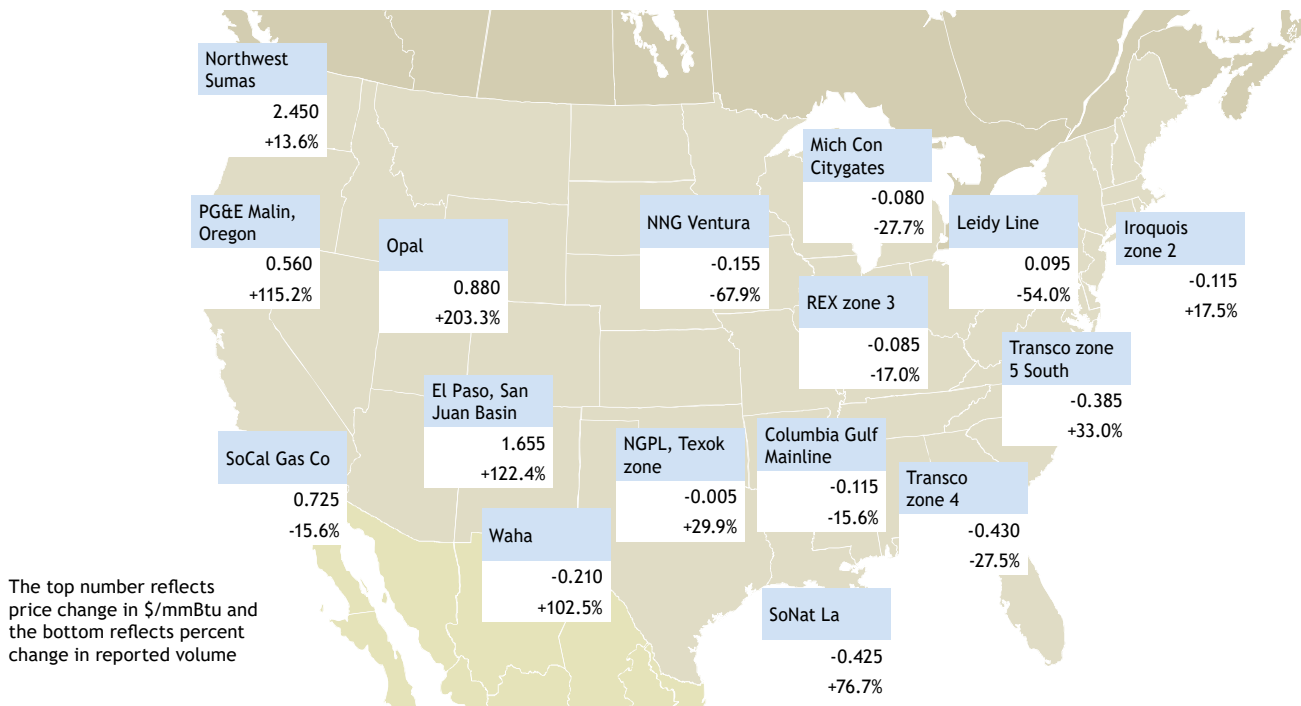
PJM regional price summary



Forward curve differentials to Henry Hub										\$/mmBtu
	February			Mar23-Oct23			Nov23-Mar24			
	Bid	Ask	Midmarket	Bid	Ask	Midmarket	Bid	Ask	Midmarket	
East										
Col Gas Appalachia	-0.6775	-0.5875	-0.6325	-0.8450	-0.7550	-0.8000	-0.6525	-0.5625	-0.6075	
Eastern Gas Transmission Appalachia	-0.8700	-0.7850	-0.8275	-1.0350	-0.9500	-0.9925	-0.8650	-0.7800	-0.8225	
Texas Eastern zone M3	4.6925	4.7625	4.7275	-0.7900	-0.7200	-0.7550	3.1900	3.2600	3.2250	
Transco zone 6 NY	6.2475	6.3825	6.3150	-0.7425	-0.6075	-0.6750	3.9900	4.1250	4.0575	
Gulf/Texas										
Florida Gas, zone 3	0.4050	0.4700	0.4375	0.4900	0.5550	0.5225	0.3625	0.4275	0.3950	
Houston Ship Channel	-0.1975	-0.1575	-0.1775	-0.4600	-0.4200	-0.4400	-0.4550	-0.4150	-0.4350	
Transco zone 3	0.1600	0.2250	0.1925	0.2125	0.2775	0.2450	0.2375	0.3025	0.2700	
Transco zone 4	0.4675	0.5075	0.4875	0.3075	0.3475	0.3275	0.3500	0.3900	0.3700	
Trunkline La	-0.1375	-0.0925	-0.1150	-0.5050	-0.4600	-0.4825	-0.1725	-0.1275	-0.1500	
Midcontinent										
Chicago Citygates	0.9450	0.9950	0.9700	-0.2800	-0.2300	-0.2550	0.2950	0.3450	0.3200	
Dawn Ontario	-0.1850	-0.1400	-0.1625	-0.3050	-0.2600	-0.2825	-0.1750	-0.1300	-0.1525	
Mich Con Citygates	-0.3050	-0.2500	-0.2775	-0.3400	-0.2850	-0.3125	-0.3650	-0.3100	-0.3375	
NGPL Midcontinent	0.5525	0.6075	0.5800	-0.6025	-0.5475	-0.5750	-0.0725	-0.0175	-0.0450	
NGPL Texok zone	-0.3275	-0.2725	-0.3000	-0.4875	-0.4325	-0.4600	-0.3800	-0.3250	-0.3525	
NNG Ventura	2.5875	2.6375	2.6125	-0.4275	-0.3775	-0.4025	1.0850	1.1350	1.1100	
Panhandle Oklahoma Mainline	0.8125	0.8625	0.8375	-0.7475	-0.6975	-0.7225	-0.0200	0.0300	0.0050	
Enable East	0.6450	0.7050	0.6750	-0.6125	-0.5525	-0.5825	0.0300	0.0900	0.0600	
Rockies & West										
NIT/AECO	-0.7625	-0.7225	-0.7425	-1.5650	-1.5250	-1.5450	-1.3725	-1.3325	-1.3525	
El Paso Permian Basin	-0.7550	-0.7000	-0.7275	-2.7475	-2.6925	-2.7200	-1.0075	-0.9525	-0.9800	
NIT/AECO	-0.7625	-0.7225	-0.7425	-1.5650	-1.5250	-1.5450	-1.3725	-1.3325	-1.3525	
NWPL Rocky Mountains	10.0950	10.1700	10.1325	-0.4025	-0.3275	-0.3650	1.5250	1.6000	1.5625	
PG&E Citygates	11.4700	11.5350	11.5025	2.3425	2.4075	2.3750	2.8500	2.9150	2.8825	
SoCal Gas Co	13.9400	13.9500	13.9450	1.4675	1.4775	1.4725	2.6200	2.6300	2.6250	
Northwest Sumas	11.1725	11.2125	11.1925	-0.4300	-0.3900	-0.4100	2.9175	2.9575	2.9375	
Waha	-0.7450	-0.7000	-0.7225	-2.6250	-2.5800	-2.6025	-0.9700	-0.9250	-0.9475	

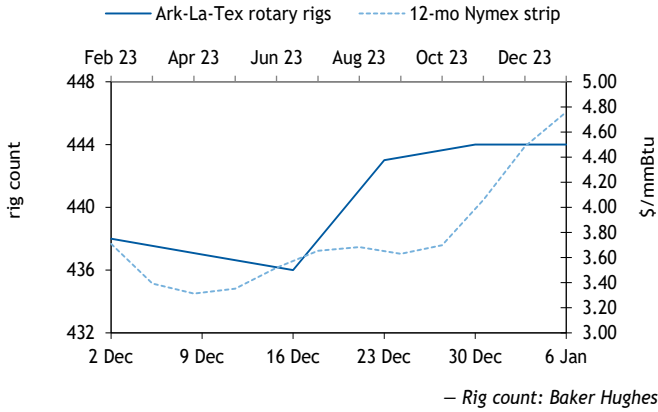
Market data provided by Argus Media group. Contact riskmanagement@argusmedia.com for more information.

DAILY MARKET CHANGES

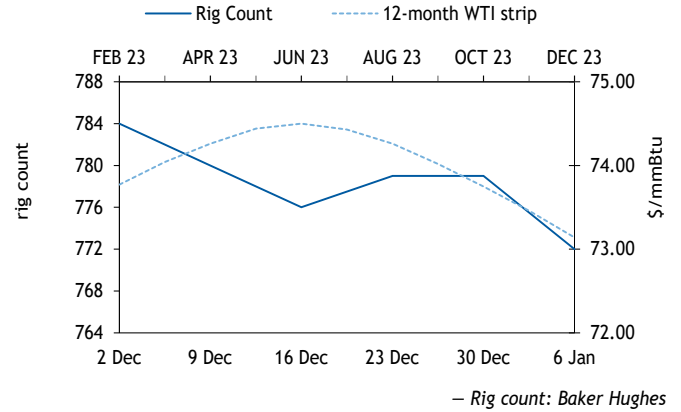


PRODUCTION FUNDAMENTALS

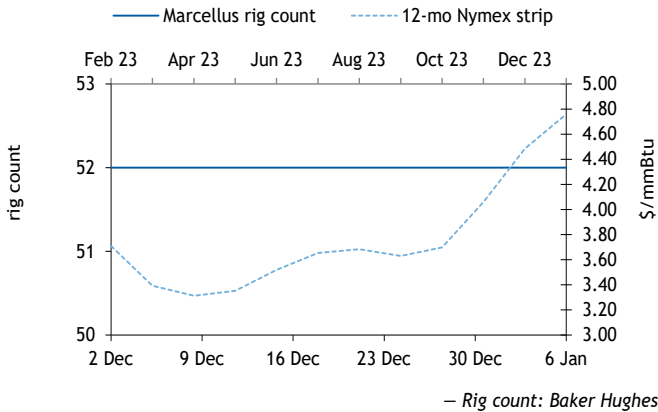
Gulf rig count vs forward curve



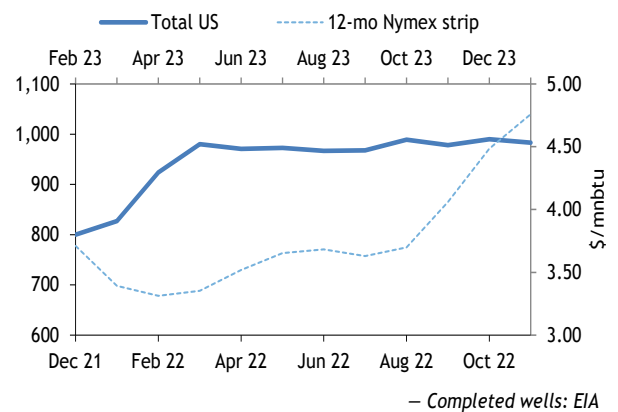
US rig count gas vs oil



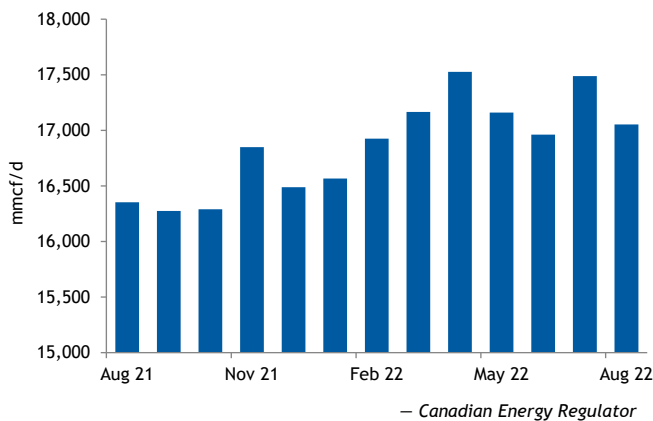
Marcellus rig count vs forward curve



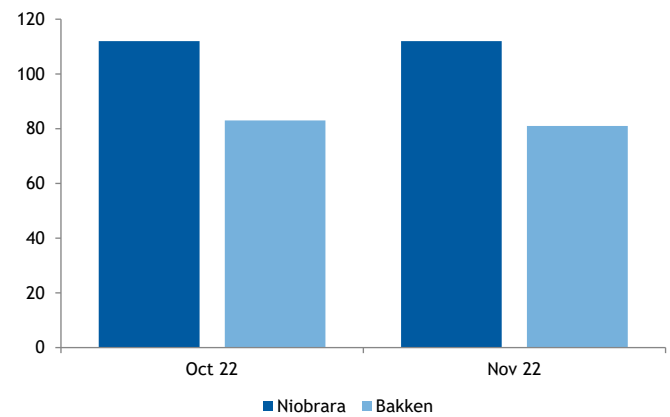
Well completions vs forward curve



Canadian gas production



Bcf Completed wells



MEXICO NATURAL GAS

Pemex to hike output by 65pc in gas fields

Mexico's state-owned Pemex plans to increase by 65pc natural gas output in its top three producing gas fields in 2023 as it gets gas flaring in check and drills more wells in complex, high-pressure, high-temperature onshore acreage.

Pemex produced 1.34 Bcf/d (38mn m³/d) of natural gas in its onshore Quesqui, Ixachi and Tupilco fields in December and expects to close out 2023 with 2.21 Bcf/d, Pemex said in an investor presentation published at the end of December.

Pemex has rapidly ramped up output in those fields, with the non-associated gas fields Ixachi and Quesqui – launched in 2018 and 2019, respectively.

The associated gas field Tupilco was launched in June 2021 and produced 52.7mn cf/d of gas in November, outside of the top 10 gas fields but it ranked seventh in crude production, the latest data from oil regulator CNH showed.

Field development has been complex, with wells drilled from 8,000m-9,000m, well pressures of between 900kg/cm² and 1,224kg/cm² and temperatures of up to 172° C.

Pemex planned to drill 12 wells across the fields in the fourth quarter of last year and will continue its drilling campaign this year.

Output from Quesqui and Ixachi have allowed the oil company to stabilize production over the past year, with total output of 4.77 Bcf/d in November, up by 1.9pc from 4.68 Bcf/d in the same month in 2021 and 4.72 Bcf/d higher from October.

Total natural gas production is forecast to hit 4.59 Bcf/d, while crude production is expected to reach 2mn b/d by year-end.

"We will have to drill a well pretty much every day to reach this year's targets," Pemex director of exploration and production Angel Cid said on 29 December.

Ixachi has the largest reserves at 1.97bn barrels of oil equivalent (boe), followed by Quesqui at 914mn boe.

Pemex also plans to drastically cut gas flaring this year as the Papan measuring and compression station – with a processing capacity of 300mn cf/d – starts operations this month.

Ixachi and Quesqui fields started production without the required gas infrastructure, resulting in excessive gas flaring, that led the CNH to fine Pemex an undisclosed amount.

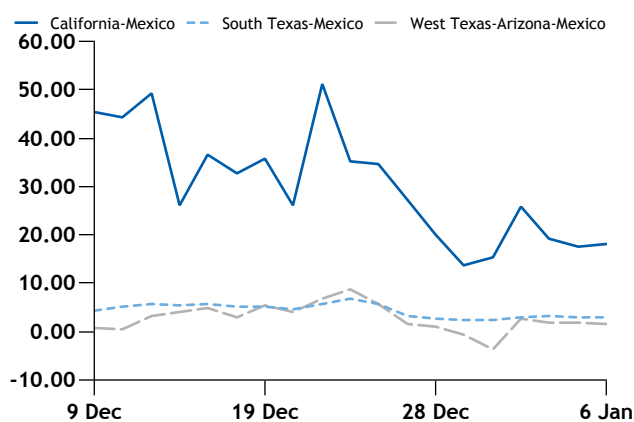
But by 2024 Pemex hopes to flare just 2pc of natural gas production as it invests \$2bn in the maintenance and construction of gas pipeline, pumping and processing infrastructure. The largest investment – \$1.34bn – is allocated for the Ixachi field and includes the Papan measuring and compression station as well a new separation battery and pipelines.

Mexico infrastructure projects

Project	Type	Capacity mn cfd	Developer	Proposed In-service date
Cuxtal-Mayakan Phase II	Pipeline	100	Engie	Dec-23
Tuxpan-Tula	Pipeline	886	TC Energy	Delayed
Tula - Villa de Reyes	Pipeline	886	TC Energy	Partial service
Villa de Reyes-Guadalajara	Pipeline	886	Fermaca	Out of service
Samalayuca-Sasabe	Pipeline	472	Grupo Carso (Carlos Slim)	Feb-21
Guaymas-El Oro	Pipeline	510	ENova	Out of service

Mexico border prices

\$/mmBtu



Existing compression infrastructure and separation batteries will be expanded to meet increased output from the Quesqui and Tupilco fields.

The new investments will allow Pemex to meet emissions reductions targets that will be laid out in a business wide sustainability program to be published in the second half of this year.

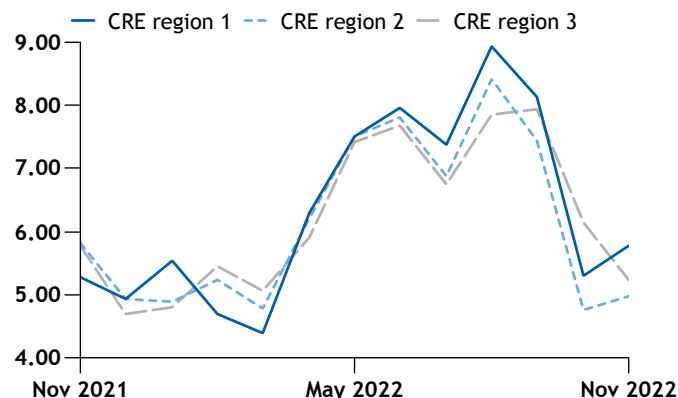
Pemex has one of the worst ESG ratings among global oil and gas companies but the new commitment follows on the heels of a shift in government rhetoric towards more ambitious climate goals.

Mexico agreed to a tougher new target of reducing greenhouse gas emissions by 35pc by 2030 from a 2000 baseline during November's Cop 27 climate summit.

MEXICO NATURAL GAS

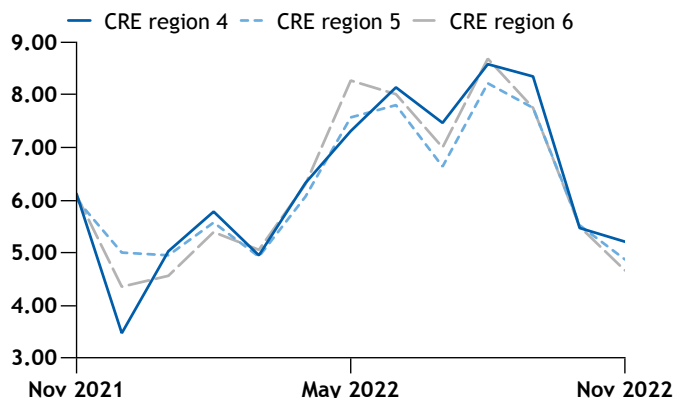
Mexican CRE prices regions 1-3

\$/mmBtu



Mexican CRE prices regions 4-6

\$/mmBtu



WEEK IN REVIEW

Pemex slashes oil, gas reserves ambitions

Mexico's state-owned Pemex slashed its hydrocarbon reserves targets in its latest five-year business plan, the latest downsizing of the operator's ambitions during President Andres Manuel Lopez Obrador's administration.

Pemex hopes to incorporate up to 950mn barrels of oil equivalent (boe) with discoveries each year through 2027, down from the 1.3bn boe pledged from 2019-2024, according to the company's 2023-2027 business plan published in December.

Full story [here](#).

Mexico to continue debt support for Pemex

Mexico's state-owned Pemex will partially resume payment of its debt obligations this year but the finance ministry will provide support if necessary, President Andres Manuel Lopez Obrador said today.

"If Pemex needs help, we will provide it," Lopez Obrador said at his daily press conference.

Full story [here](#).

Mexico's energy outlook turns green

Mexico's energy sector is entering 2023 on a firmer footing towards decarbonization following a shift in government energy policy.

This time last year, Mexico faced electricity reforms that could have curtailed renewable development, widespread suspicion of clean energy within state power company CFE, soaring

levels of gas flaring from state-owned Pemex's onshore fields, and a tepid government response to climate change action.

Full story [here](#).

Pemex gas output up by 1.9pc in Nov

Mexico's state-owned Pemex produced 4.77 Bcf/d (135mn m³/d) of natural gas in November, up by 1.9pc from 4.68 Bcf/d in the same month in 2021.

Production in November was the highest of the year and up from 4.72 Bcf/d in the previous month, according to the latest Pemex statistics.

Pemex – together with its partners in farm-outs and contracts signed after the 2014 energy reform – produced a total of 4.85 Bcf/d in November, up by 2.1pc from 4.75 Bcf/d in November 2021 and up by 1pc against 4.80 Bcf/d produced in October.

Full story [here](#).

Mexico's LPG price caps increase

Mexico's ceiling prices for retail LPG slightly increased for the second consecutive week, despite stronger gains in US benchmark propane.

The average of 2,490 city-specific retail price caps set for 1-7 January rose by 0.09pc to Ps10.38/l (\$1.96/USG). The lowest individual cap nationwide dropped to Ps9.16/l from Ps9.18/l a week earlier, applicable in the border states of Tamaulipas and Chihuahua near US export centers.

Full story [here](#).

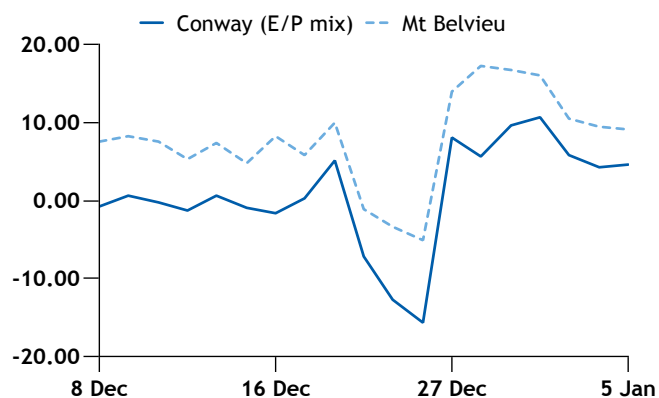
EXPORTS AND NGLS

US-Mexico border prices		\$/mmBtu
Trans date: 6 Jan 23, flow date(s): 7-9 Jan 23		Price
South Texas-Mexico		2.980
West Texas-Arizona-Mexico		1.565
California-Mexico		18.230
Mexico Prices		\$/mmBtu
	Assessment	Low-High
Baja	9.940	1.605-18.270
El Encino	1.775	1.595-1.960
Los Ramones	3.410	3.360-3.460
LNG Everett, Massachusetts		\$/mmBtu
		Price
Boston Harbor delivered		20.011
Boston Harbor delivered round trip voyage costs		19.927
Boston Harbor delivered round trip month-to-date average		19.682

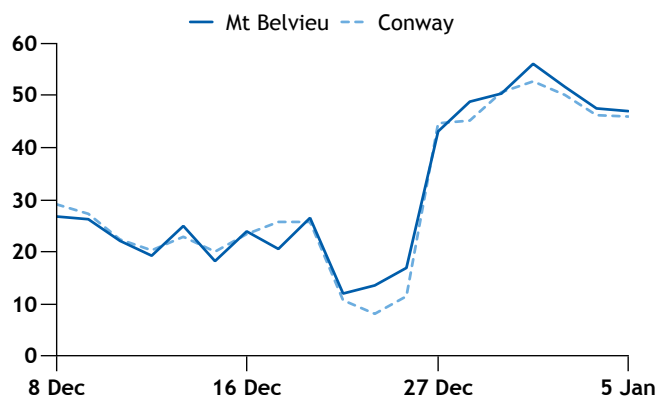
US Gulf coast netback arbitrage		\$/mmBtu
		Arbitrage
Milford Haven, Wales (half-month 1)		-2.670
Tokyo (half-month 1)		-7.820
Pecem, Brazil (prompt)		-1.140
LNG markets: Argus daily spreads		\$/mmBtu
		Spread
Transco zone 6 New York-NBP		-15.652
Henry Hub-NBP		-15.712
Henry Hub-TTF		-16.887
Henry Hub-Zeebrugge		-15.910
Henry Hub-PEG		-15.690

NGL fractionation spreads		
	¢/USG	\$/mmBtu
Gulf, Mont Belvieu		
Ethane Enterprise	10.005	1.784
Propane Enterprise	48.595	2.248
Normal butane Enterprise	73.033	0.683
Isobutane Enterprise	81.901	1.094
Natural gasoline Enterprise	120.093	1.830
Total barrel value		7.639
Total barrel frac spread		4.919
Midcontinent, Conway		
Ethane-propane mix	3.487	1.440
Propane	46.014	2.225
Normal butane	72.208	0.692
Iso-butane	104.908	1.345
Natural gasoline	120.376	1.860
Total barrel value		7.562
Total barrel frac spread		4.642

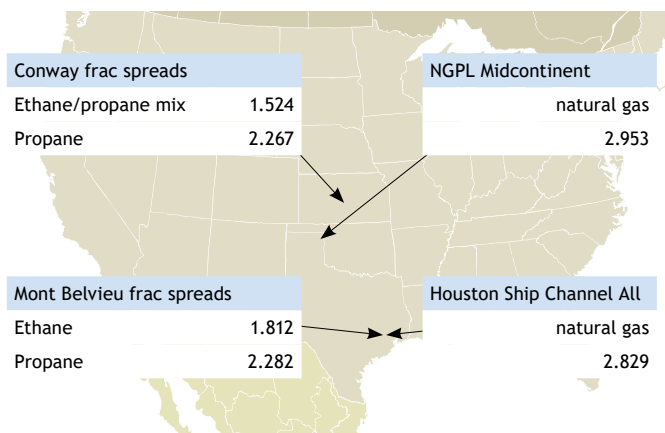
Ethane fractionation spreads ¢/USG



Propane fractionation spreads ¢/USG



MTD average \$/mmBtu



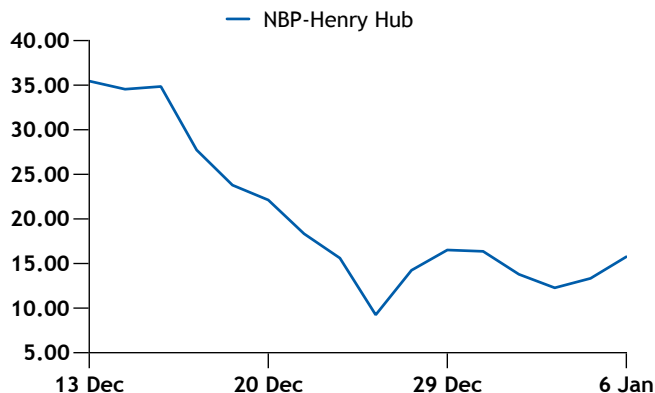
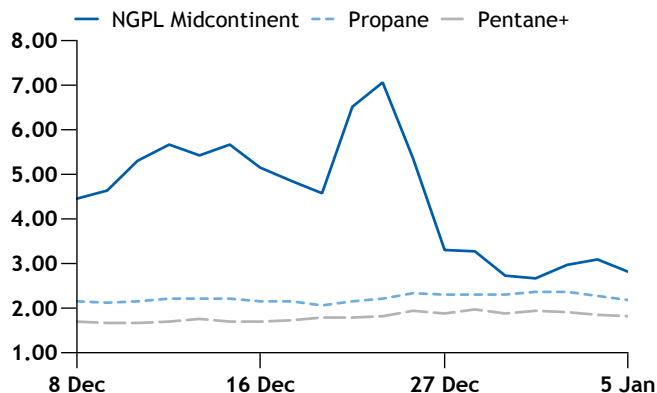
EXPORTS AND NGLS

NGL Prices, Conway Kansas

\$/mmBtu

Henry Hub vs NBP spread

\$/mmBtu



NEWS

Rio Grande LNG survives water permit challenge

US firm NextDecade's proposed 27mn t/yr Rio Grande LNG export facility and a related natural gas pipeline prevailed today against a lawsuit that challenged water permits for the project.

The US Army Corps of Engineers had chosen the "least environmentally damaging" option when it approved the project's water permits, a three-judge panel on 5th US Circuit Court of Appeals ruled. The federal appeals court also found regulators did not act arbitrarily when evaluating the effects of building the natural gas export project.

The proposed LNG project would be located at a site near Brownsville, Texas. The project would receive gas from the proposed 4.5 Bcf/d (127mn m³/d) Rio Bravo pipeline, which would stretch 130 miles (209km) to the Agua Dulce hub, near Corpus Christi, Texas.

The Sierra Club and other environmentalists had filed their lawsuit to challenge federal water permits for the LNG project and the pipeline. They said the two projects should have been revised to better protect wetlands, but the 5th Circuit found regulators were justified in issuing the permits.

NextDecade plans to make a final investment decision on three liquefaction trains at Rio Grande LNG project by this quarter. The gas export facility is proposed to eventually have a total of five trains, each with 5.4mn t/yr of liquefaction capacity.

By Chris Knight

West US Dec gas dailies dwarfed bid week

Spot natural gas prices across the western US in December far exceeded the December bid week price, or the price settled on ahead of December for continuous delivery of gas throughout the month.

While bid week buyers generally pay a premium to the spot market in exchange for protection from price volatility, a number of factors – including a severe cold snap, prolonged drought, and unscheduled pipeline maintenance – exacerbated the region's underlying vulnerability to demand shocks, causing price spikes that may have taken some market participants by surprise.

In the northwestern US, market participants purchasing gas in December on the spot market on the Northwest pipeline in Sumas, Washington, paid, on average \$28.16/mmBtu, nearly double what bid week buyers paid: \$14.91/mmBtu. That means a buyer who chose to purchase a standard 10,000 mmBtu contract for day-ahead delivery every day throughout the month of December would have paid \$4.1mn more than a bid week buyer for the same volume.

At PG&E Citygates in California, spot market buyers on average paid more than twice what their bid week counterparts paid: \$9.4mn for 10,000 mmBtu, a \$5mn premium. It was the highest monthly average spot price – \$30.22/mmBtu – at the index since Argus began reporting it in September 2008, with the highest daily price also setting an all-time Argus record: \$58.07/mmBtu on 21 December.

NEWS

Further down the coast, things were no different. Daily buyers at SoCal Citygates paid \$9.6mn/10,000 mmBtu, a \$4.9mn premium to bid week; at SoCal Gas, they paid \$9.1mn/10,000 mmBtu, double their bid week counterparts.

While a long-term drought, pipeline maintenance, and severe cold snap that enveloped the midcontinent and southern US were the primary causes of the unexpected spot price surge, several underlying factors make the western US especially vulnerable to the volatility, said Connor McLean, senior analyst at BTU Analytics.

Among these factors is California's retirement of coal- and nuclear-powered power plants, intended to accelerate the state's transition to renewables but which have also had the effect of making its grid more dependent on gas. According to McLean, in December 2021, natural gas accounted for 35pc of load during peak hours, compared with 45pc in December 2022. That 30pc load increase for gas, combined with inventories at US Pacific storage sites in the week ended 16 December being 25pc below year-earlier levels and 30pc below the five-year average, according to the Energy Information Administration, make the region poised for high prices when demand spikes.

Beyond the phasing out of coal and nuclear, the long-term drought also reduced the region's hydropower capacity, making gas even more valuable.

So when the severe cold snap blanketed the midcontinent and southern US, diverting Permian and other sources of gas toward those regions, net interchange – the amount of power California could draw on from other states – dropped from 30pc in December 2021 to 15pc in December 2022, according to McLean.

The final blow to supply was California's already limited pipeline capacity being further cut down when pipeline maintenance in West Texas reduced capacity coming out of the Permian, both on the Permian Highway Pipeline and on El Paso Natural Gas Company's Waha station. Likewise with a Gas Transmission Northwest (GTN) compressor station going off line in mid-December, impairing for days delivery of Canadian gas into the northwestern US.

Bid week prices at the four indexes have increased dramatically in January, all roughly tripling from the December bid week price. The January bid week prices at PG&E Citygates and SoCal Citygates were both over \$50/mmBtu.

Prices for the indexes in the months and years ahead are much lower. The price for PG&E Citygates for February was \$15.02/mmBtu, and the price for March was \$7.38/mmBtu. The PG&E Citygates price for December 2023 was \$7.72/mmBtu,

and the price for December 2024 was \$6.39/mmBtu, according to Argus forward curves.

By Julian Hast

US debuts guidance for environmental reviews

Pipelines, federal oil and gas leases, electric transmission lines and other major projects will be subject to more exhaustive climate scrutiny during permitting, the White House said in guidance released today.

The interim guidance offers federal agencies far more explicit instructions on how to analyze greenhouse gas emissions and climate effects when reviewing projects under the National Environmental Policy Act (NEPA). The guidance will take effect on 9 January. The White House intends to make revisions after it receives public comment.

The guidance is part of President Joe Biden's administration push to make climate considerations an explicit part of how the government reaches decisions, following up on past actions prodding agencies to use renewable energy and buy low-carbon materials. The more specific climate guidance will help "avoid legal setbacks" and allow regulators to make more informed decisions, the White House said.

"These updated guidelines will provide greater certainty and predictability for green infrastructure projects" Council on Environmental Quality chair Brenda Mallory said.

The guidance seeks to offer a "common approach" to analyze climate change as part of NEPA reviews, following a period of uneven reviews and former president Donald Trump's administration trying to eliminate climate considerations altogether. Federal regulators have said the lack of explicit guidance in the past have made it hard to decide the level of detail for climate reviews.

The guidance offers best practices for climate reviews, including recommendations to quantify indirect emissions from projects and using a metric named the "social cost of carbon" to provide a dollar estimate of climate effects. The guidance also says federal agencies should the NEPA process to mitigate gas emissions "to the greatest extent possible."

But the White House wants to avoid requiring exhaustive studies of projects likely to reduce greenhouse gas emissions. The guidance emphasizes a "rule of reason" that says the depth of climate reviews should be proportional to a project's effects, and it says some renewable projects can have a less detailed climate analysis.

Renewable energy groups applauded the guidance. The American Clean Power Association said the guidance recogniz-

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es that agencies should not spend time and resources reviewing "relatively minor and short-term greenhouse gas emissions" of building clean energy projects that will reduce emissions over the long term.

Oil and gas industry groups have opposed past attempts for agencies to consider indirect greenhouse gas emissions and seek emission mitigation during the NEPA process. The US Federal Energy Regulatory Commission last year faced intense backlash from the industry over a similar proposal related to natural gas pipeline permitting.

By Chris Knight

Iwatani buys US industrial gas firm Aspen Air

Japanese industrial gas supplier Iwatani has acquired US counterpart Aspen Air, expanding its presence in Montana and its surrounding states.

Iwatani said on 6 January that it has acquired Aspen Air for an undisclosed sum through Iwatani Corporation of America, a wholly owned subsidiary of Iwatani.

Iwatani will be able to start handling gas separated from atmospheric air to produce its primary components – typically nitrogen, oxygen and argon – expanding its service area in the US.

The acquisition of Aspen Air is an opportunity to further expand its business in the US and strengthen its profitability, Iwatani said.

By Reina Maeda

UGI venture to develop South Dakota projects

US natural gas and power utility UGI and two partners plan to develop additional projects in South Dakota that would derive renewable natural gas (RNG) from dairy manure waste.

MBL Bioenergy, a joint venture between UGI and dairy digester project developers Sevana Bioenergy and California Bioenergy, will spend \$150mn to develop a second and third cluster of RNG projects in the state, after announcing its first set last year. UGI will provide 100pc of the funding.

MBL plans to develop a cluster of RNG projects at three farms near Estelline, South Dakota, that will produce about 300mn cf/yr (8mn m³/yr). Another group will be built at two farms near Summit, South Dakota, and produce about 225mn cf/yr.

The partners in May 2022 announced plans to produce 300mn cf/yr with dairy waste collected from three farms north of Sioux Falls, South Dakota, with UGI providing \$70mn for those projects.

All of the announced RNG projects are expected to be completed in 2024. Once completed, dairy waste from the farms will be broken down into oxygen-free biodegradable material and moved to a gas upgrading facility before being delivered into the local natural gas distribution system, UGI said.

RNG, also known as biomethane, is a more refined version of biogas that is captured at sites such as landfills, wastewater treatment facilities, food processing plants and dairy farms. It can be used interchangeably with conventional natural gas.

UGI recently said it is focusing on investing in renewable energy and rebalancing its portfolio, and the partnership was noted as an important step in expanding California Bioenergy's carbon negative gas business.

By Taylor Zavala

Republicans inch toward picking House speaker

The US House of Representatives is getting closer to electing a new speaker, with representative Kevin McCarthy (R-California) picking up 15 votes from Republicans who had been opposing him.

McCarthy in the 13th and latest round of balloting received 214 votes, three short of what he needed that round to be elected speaker. Republican leaders were able to flip votes after negotiations with far-right holdouts who wanted more constraints on the speaker and additional influence over the legislative process.

"We're at a turning point," representative Scott Perry (R-Pennsylvania) said after switching his vote to McCarthy. "The framework for an agreement is in place."

The House voted to adjourn until 10pm ET, providing more time for negotiations to continue and for two Republicans who support McCarthy to return to Washington, DC, to cast ballots.

It remains unclear what concessions McCarthy has granted as part of the negotiations. Some of the conservative holdouts wanted the House to approve rules under which just one Republican member could call for a floor vote to remove the speaker, along with measures to limit government spending and appointments to influential House committees.

Even if McCarthy ends up clinching the speakership vote, the protracted fight could leave him in a far weaker position to manage the 222-212 majority that Republicans now hold in the House, following the death of one Democrat in November. Far-right conservatives have shown their ability to stick together and get concessions. The House speaker could also have a harder time negotiating if there is a constant threat of being subject to a removal vote.

NEWS

Democrats have remained united in supporting Hakeem Jeffries (D-New York) as their pick for House speaker, forcing Republicans to rely only on their members to hit the majority vote needed to win. The last time the House failed to elect a speaker on the first ballot was in 1923.

The difficulty for Republicans in electing their own speaker offers a potential preview of upcoming legislative challenges. The US Congress needs to pass a funding bill by 30 September to avoid a government shutdown. Lawmakers also will have to raise the federal debt limit to avoid an economically catastrophic default by the US government.

Far-right conservatives want to use those must-pass bills to pass Republican policy goals, laying the groundwork for a possible showdown with Democrats who control the US Senate. Biden has said he will not cut spending on Social Security and Medicare in exchange for increasing the debt.

"I'm never going to give in," Biden said in October. "It's outrageous."

By Chris Knight

ExxonMobil profit hit by lower gas, oil prices

ExxonMobil said lower oil and natural gas prices weighed

on fourth-quarter profit compared with the previous three months.

The preview of quarterly results showed that profit was depressed by as much as \$1.7bn from weaker oil prices, and by as much as \$2.4bn from lower natural gas prices. That was partially offset by gains from derivatives of as much as \$1.5bn.

Record oil company profits in the past year have provoked the ire of the White House, which has repeatedly called on the industry to ramp up US crude production to ease inflationary pressures, rather than focus on rewarding shareholders via buybacks and dividends.

ExxonMobil is set to release full fourth-quarter results on 31 January.

By Stephen Cunningham

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DEFINITIONS

Indexes and assessments

Argus daily and bid week (monthly) indexes are based on the policy of the US Federal Energy Regulatory Commission (FERC) that calls for the use of a volume-weighted average based on verified trades. The FERC policy also allows for assessments in the absence of trade, and Argus conducts intelligent assessments when that occurs in daily and bid week markets. On the regional pages each day (East, Gulf, Midcontinent, Rockies and West), the far right hand column of the data table indicates if a daily price is an index or an assessment. Additionally, in the case of an assessment, the price as indicated in the VWA \$/mmBtu column will show "0" in the columns Volume mmBtu/d and Trades.

In the Natural Gas Bid Week Indexes table, published on the first business day of every month, an assessed price is indicated by "0" in the columns Volume mmBtu/d and Trades.

Degree day graphs

Actual and forecast heating degree days (HDDs) and cooling degree days (CDDs) are sourced from Accuweather. HDDs are the number of degrees by which the average outside temperature falls short of, or is forecast to fall short of 65° F on the given day. CDDs are the number of degrees by which the average outside temperature exceeds, or is forecast to exceed 65° F on the given day.

Pipeline capacity

Percentages are based on the most recent pipeline cycle available at 4pm EST. They represent the proportion of available capacity confirmed by pipelines at that time.

Fractionation spreads

For details on how Argus calculates fractionation spreads, see Argus Natural Gas Americas methodology at www.argusmedia.com/methodology.

Natural Gas Prices daily summary tables (pp. 1-2)

This table is comprised of five columns. To the right of the hub name on the far left, is listed:

- VWA is the volume-weighted average, or index
- Daily delta is the change from the prior trading day
- HH cash basis is the difference in price from the Argus Henry Hub daily index. Where there is no daily index, the value in the column is designated as a dash, or -.
- Bid week delta is the difference between the daily index and the bid week index for the current month. Where there is no bid week index, the value in the column is N/A. Where there is no daily index, the value in the column is designated as a dash, or -.

Intraday natural gas price assessments

Intraday natural gas price assessments are published for 19 zones of the PJM Interconnection and 14 liquid natural gas pricing hubs. Using PJM dispatch prices, the cost of transporting gas and other standard industry metrics, the resulting assessments are fuel price levels that enable gas-fired generators to be dispatched on a real-time basis. The intraday prices are published for three discrete periods. These are a daily, 24-hour period, the period for hours 15:00 to 24:00 (intraday 1 or ID 1) and a period for hours 19:00 to 24:00 (intraday 2 or ID 2).

To be able to address if all gas-enabled generators in PJM could clear the market, three levels of gas price assessments are applied to each time period. Characteristics of natural-gas fired power plants were used to create price assessments in each PJM zone and pipeline hub for:

- The cost of gas based on the weighted average generator heat rate.
- The lowest generator cost of gas.
- The highest generator cost of gas.



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