

Energy Market Watch

May 30, 2023

Market Commentary

Storage & Inventory

Natural Gas

Electricity

Renewables

Trend Analysis

Market Commentary

Week of May 26, 2023

Natural gas retreats as traders await the arrival of summer heat.

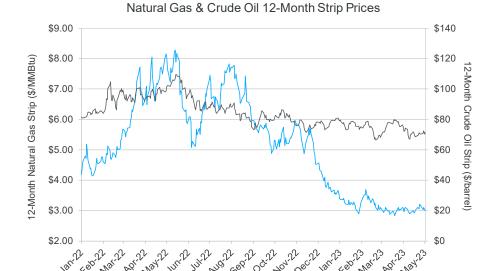
Electric and Natural Gas Market Drivers

Bullish – Market influences driving prices higher:

- ♠ Geopolitics
- ♠ Natural Gas Production
- ♠ Crude Oil

Bearish – Market influences driving prices lower:

- Natural Gas Storage Report
- **E**conomics
- ₩eather Forecast
- U.S. Dollar



—NYMEX-Henry Hub Natural Gas —West Texas Intermediate Crude Oil

Monday 5/22

The Jun-2023 NYMEX natural gas contract fell 18.5 cents lower to \$2.400 per MMBtu as national demand was expected to remain at light levels through the first week of June with comfortable highs in the 60s to 80s for much of the country. The Jun-2023 WTI crude oil contract closed and expired 44 cents higher at \$71.99 per barrel amid lingering tensions between Iraq and Turkey after the ICC ruled Baghdad was due \$1.5 billion in damages for unauthorized exports. Equity markets were mixed during the day on debt ceiling concerns with President Biden and Speaker McCarthy due to meet.

Tuesday 5/23

Natural gas settled 7.9 cents lower at \$2.321 amid a lack of strong cooling demand and as early estimates for the week's storage report topped 100 Bcf. The new prompt Jul-2023 WTI crude oil contract climbed 86 cents higher to \$72.91 after Saudi Arabian Energy Minister Prince Abdulaziz bin Salman suggested OPEC's next meeting could produce a bullish result. Stocks retreated after Treasury Secretary Yellen delivered another warning over the debt ceiling amid ongoing talks.

Wednesday 5/24

Natural gas rebounded 7.7 cents to end the day at \$2.398 ahead of Thursday's storage report even though it was expected to show a large injection. Crude pressed \$1.43 higher to \$74.34 after the EIA reported a large 12.5-million-barrel decline in oil inventories. Equities continued to slide after the minutes of the Federal Reserve's recent meeting showed uncertainty over further rate hikes.

Thursday 5/25

The cost of gas fell 9.1 cents to \$2.307 even after the EIA reported a lighter-than-expected 96 Bcf injection into storage, which was on par with the 5-year average. Oil prices tumbled \$2.51 lower to \$71.83 after Russian Deputy Prime Minister Alexander Novak downplayed the possibility of further OPEC+ production cuts. Equity markets finished near the unchanged mark on intensified debt ceiling talks after Fitch Ratings issued a warning on U.S. credit

Friday 5/26

The Jun-2023 NYMEX natural gas contract closed and expired 12.6 cents lower at \$2.181 as production topped 101 Bcf per day the prior week and as cooler-thannormal temperatures were forecast for the southern U.S. Crude gained 84 cents to settle at \$72.67 on hopes of higher fuel demand in the U.S. as summer travel season approached. Equities bounced higher on reports the White House and House Republicans were nearing a deal on raising the debt ceiling.

Looking Ahead

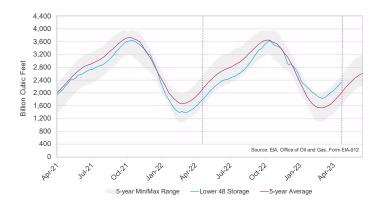
Prices will likely continue to trade mostly sideways until summer heat enters the weather forecast.

Storage and Inventory

	Last Week Comparison				Historical Comparison				
	5/19/2023	5/12/2023		hang cr/de		Same Period Last Year (5/19/2022)	Stocks over/ under Last Year	Same Period 5-Year Ave. (2018-2022)	under
Natural Gas in Storage (Bcf)	2,336	2,240	96.0	•	4.3%	1,807	529.0	1,996	340.0
Crude Oil Inventories (mbpd)	455.2	467.6	-12.5	•	-2.7%	419.8	35.4	n/a	n/a

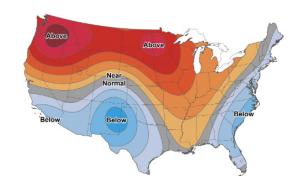
Working Gas in Underground Storage May 19, 2023

Note: The shaded area represents the range between the maximum and minimum values over the past 5 years. The blue line is the historic current level for the date on the x axis and the purple line is the 5-year average.



6-10 Day Weather Forecast May 29, 2023

The short-term weather forecast is calling for abovenormal temperatures to stretch from the Midwest to the Northwest, with below-normal temperatures along the East Coast and in the South Central and Southwest.



Natural Gas

UNITED STATES	Current	Historical Comparison (US\$/MMBtu)				
NYMEX Contract:	5/26/2023	Last Week 5/19/2023	Last Month 4/26/2023	Last Year 5/26/2022		
Henry Hub Spot	\$1.880	-20.68%	-14.16%	▼ -79.54%		
Prompt Month: June 2023	\$2.181	▼ -15.63%	3.02%	▼ -75.52%		
12 Mth Strip (Jun23-May24)	\$3.001	▼ -5.87%	1.52 %	▼ -62.87%		
Summer Strip (Jun23-Oct23)	\$2.444	▼ -10.40%	- 2.82%	▼ -72.43%		
Winter Strip (Nov23-Mar24)	\$3.507	→ -3.69%	- 0.56%	▼ -58.76%		
Next Summer Strip (Apr24-Oct24)	\$3.303	▼ -1.93%	▼ -1.49%	▼ -34.58%		
Cal '25 (Jan25-Dec25)	\$4.075	-0.61%	→ -3.53%	▼ -4.45%		

CANADA *Pricing in Canadian Dollars	Current	Historical Comparison *(CAD\$/GJ)					
AECO:	5/26/2023	Last Week 5/19/2023	Last Month 4/26/2023	Last Year 5/26/2022			
Spot Price	\$2.307	-0.90%	-9.06%	▼ -63.76%			
Prompt Month: June 2023	\$1.463	▼ -15.02%	→ -0.51%	▼ -76.02%			
12 Mth Strip (Jun23-May24)	\$1.895	▼ -12.53%	-2.32%	▼ -68.11%			

Electricity

UNITED STATES	Current	Historical Comparison (US\$/MWh)					
Wholesale Electricity Prices:	5/26/2023	Last Week 5/19/2023		Last Month 4/26/2023		Last Year 5/26/2022	
ERCOT (Hub Avg.) - ATC							
Monthly Real-Time Avg: May 2023	\$28.83	•	0.71%	•	49.13%	•	-65.04%
Prompt Month: June 2023	\$36.91	•	-1.96%	•	22.44%	•	-66.67%
12 Mth Strip (Jun23-May24)	\$41.50	•	1.21%	•	1.71%	•	-56.55%
NY ISO (Zone J) - ATC							
Monthly Real-Time Avg: May 2023	\$22.59	•	-1.79%	•	-29.17%	•	-70.57%
Prompt Month: June 2023	\$32.24	•	-16.84%	•	5.04%	•	-66.67%
12 Mth Strip (Jun23-May24)	\$58.13	•	-6.88%	•	-10.44%	•	-51.09%
PJM (Western Hub) - ATC							
Monthly Real-Time Avg: May 2023	\$31.41	•	-6.33%	•	9.23%	•	-57.77%
Prompt Month: June 2023	\$31.55	•	-9.90%	•	5.66%	•	-69.19%
12 Mth Strip (Jun23-May24)	\$44.73	•	-6.88%	•	-9.04%	•	-57.96%
ISO-NE (SE MASS) - ATC							
Monthly Real-Time Avg: May 2023	\$23.02	•	-0.69%	•	-18.15%	•	-69.02%
Prompt Month: June 2023	\$35.56	•	-16.07%	•	25.54%	•	-59.87%
12 Mth Strip (Jun23-May24)	\$65.47	•	-8.53%	•	-13.46%	•	-47.99%
MISO (Indiana Hub) - ATC							
Monthly Real-Time Avg: May 2023	\$34.39	•	-4.32%	•	12.41%	•	-55.61%
Prompt Month: June 2023	\$36.74	•	-5.34%	•	11.26%	•	-65.00%
12 Mth Strip (Jun23-May24)	\$45.92	•	-5.81%	•	-7.80%	•	-56.53%
PG&E (NP15 West) - ATC							
Monthly Real-Time Avg: May 2023	\$17.44	•	4.86%	•	-65.09%	•	-74.22%
Prompt Month: June 2023	\$42.80	•	-9.20%	•	-3.45%	•	-49.55%
12 Mth Strip (Jun23-May24)	\$74.22	•	-1.84%	•	-5.34%	•	-24.26%
CANADA *Pricing in Canadian Dollars.	Current	Historical Comparison *(CAD\$/MWh)					
Wholesale Electricity Prices:	5/26/2023	Last Week 5/19/2023		Last Month 4/26/2023		Last Year 5/26/2022	
AESO (Ave.) - ATC							
Rolling 30-Day Average	\$153.95	_	1.37%	•	7.45%	•	24.83%
IESO (Ave.) - ATC							
Rolling 30-Day Average HOEP	\$15.89	•	-9.99%	•	-25.42%	•	-45.14%

Renewables

Industry Highlights

• The California Independent System Operator (CAISO) Board of Governors approved the organization's 2022-2023 transmission plan, which is aimed at ensuring the state has the required infrastructure to meet its reliability and clean-energy goals. The plan identified 45 projects for system expansions and upgrades and will cost around \$7.3 billion over the next decade. The majority of high-voltage transmission projects are located in the state and will support more than 40 GW of new resource development identified by the Public Utilities Commission. Improvements have been needed in order to meet the hundreds of interconnection requests the ISO received annually from potential resource developers.

Renewable GE National Wind REC Index May 26, 2023

*Regional Greenhouse Gas Initiative (RGGI)



Renewable GE National Solar REC Index May 26, 2023



Note: Renewable Energy Credits (RECs) are a market-based instrument that represents the property rights to the environmental, social, and other non-power attributes of renewable electricity generation. One REC is equal to one MWh of renewable energy generated and delivered to the grid. The various shades in the above charts refer to the vintage year the REC was produced.

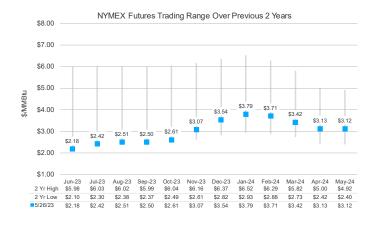
Environmental Price Summary

UNITED STATES	Current	Historical Comparison (US\$/Credit)					
Renewable Energy Credits	5/26/2023	Last Week 5/19/2023		Last Month 4/26/2023		Last Year 5/26/2022	
Connecticut Class I REC Index 2023	\$39.38	•	2.07%	•	1.13%	•	6.79%
Maine Class I REC Index 2023	\$34.25	•	0.00%	•	0.00%	•	14.41%
Maryland Tier I REC Index 2023	\$32.38	•	2.57%	•	7.11%	•	26.65%
Massachusetts Class I REC Index 2023	\$38.88	•	0.49%	•	-0.15%	•	5.44%
New Jersey Class I REC Index 2023	\$34.23	•	1.48%	•	7.54%	•	33.02%
Pennsylvania Tier I REC Index 2023	\$34.08	•	2.34%	•	10.65%	•	34.04%
Texas Solar REC Index 2023	\$3.150	•	13.31%	•	10.53%	•	-37.00%
Texas Wind REC Index 2023	\$2.700	•	0.00%	•	-1.82%	•	-36.28%
UNITED STATES	Current		Histori	cal Compariso	n (US\$/tonne o	or ton)	
Carbon and RGGI Allowances	5/26/2023	Last Week	5/19/2023	Last Month	n 4/26/2023	Last Year	5/26/2022
California Carbon Dec 2023 Vintage	\$31.89	•	1.24%	•	-0.16%	•	-0.50%
RGGI CO2 Allowances Dec 2023 Vintage	\$13.73	•	2.39%	•	4.49%	•	-1.44%

Trend Analysis

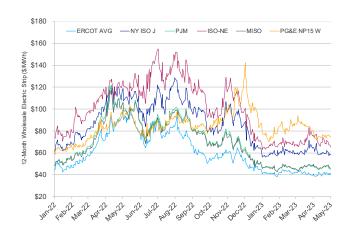
NYMEX Futures Trading Range

This graph represents the futures trading range of each NYMEX natural gas contract over the past two years. The high and the low for each month have been provided below, along with the current forward prices as of the market close on May 26, 2023.



Electric ATC 12 Month Rolling Strips

This graph shows the historic trading range of the electric around-the-clock (ATC) 12-month rolling strip by Independent System Operator (ISO) region as of the market close on May 26, 2023.



12-Month Rolling Strip

This chart presents the correlation between NYMEX natural gas and electricity's 12-month rolling forward pricing over the past two years.

12-Month Rolling Strip	ERCOT HZ	NY ISO J	РЈМ	ISO-NE	MISO	PG&E NP15
NYMEX Correlation	95.5%	92.7%	94.3%	89.7%	93.7%	48.9%

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