



Natural Gas in Underground Storage

The weekly EIA Natural Gas Storage Report advised that there was a withdrawal of 63Bcf from Underground Storage for the week ending November 30th, 2018.

This is 1Bcf below the median forecast of a 64Bcf withdrawal, the average prediction of sector analysts and traders in the Dow Jones Newswires weekly survey. The withdrawal compares with -3Bcf last year and -58Bcf for the five-year average. Storage is **704Bcf below last year** for the same week and **725Bcf below the 5-year average**. Working gas in storage stands at 2,991Bcf. Total demand is trending down, and annual storage deficit is projected to start shrinking next week.

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Natural Gas Pricing

As of 10:30AM CST, January 2018, (the prompt month) Natural Gas was trading at \$4.45, -\$0.08 from one week ago and the 1-Year Spread average was \$3.28, +\$0.08 from one week ago.

Crude Oil Pricing

As of 9:52AM CST, January, 2018, (the prompt month) Light, Sweet Crude on the NYMEX was at **\$53.66**, **+\$2.42** from one week ago.

Crude Oil & Natural Gas

INDEX	UNITS	PRICE	CHANGE	%CHANGE	CONTRACT	TIME (EST)	2 DAY
CL1:COM WTI Crude Oil (Nymex)	USD/bbl	51.24	-1.65	-3.12%	Jan 2019	10:16 AM	
CO1:COM Brent Crude (ICE)	USD/bbl	60.03	-1.53	-2.49%	Feb 2019	10:16 AM	
CP1:COM Crude Oil (Tokyo)	JPY/Kl	40,600.00	-1,160.00	-2.78%	May 2019	10:22 AM	
NG1:COM Natural Gas (Nymex)	USD/MMBtu	4.29	-0.18	-4.07%	Jan 2019	10:17 AM	

U.S. Petroleum Balance Sheet, Week Ending 11/30/2018

Petroleum Stocks (Million Barrels)	Current Week	
	11/30/18	11/23/18
Crude Oil	1,092.7	1,101.0
Commercial (Excluding SPR) ¹	443.2	450.5
Strategic Petroleum Reserve (SPR) ²	649.6	650.6
Total Motor Gasoline ³	226.3	224.6
Reformulated	0.0	0.0
Conventional	23.2	24.6
Blending Components	203.0	199.9
Fuel Ethanol	23.0	22.9
Kerosene-Type Jet Fuel	38.1	39.7
Distillate Fuel Oil ³	125.6	121.8
15 ppm sulfur and Under ³	110.9	106.5
> 15 ppm to 500 ppm sulfur	4.4	4.3
> 500 ppm sulfur	10.3	10.9
Residual Fuel Oil	28.6	28.7
Propane/Propylene	79.8	81.1
Other Oils ⁴	281.3	284.9
Unfinished Oils	92.2	92.8
Total Stocks (Including SPR) ^{2,3}	1,895.4	1,904.8
Total Stocks (Excluding SPR) ³	1,245.9	1,254.2

Crude Oil Inventory

US crude inventories decreased by 7.3 million barrels to 443.2 million barrels for the week ended November 30th, according to data released yesterday morning by the US Department of Energy. Traders in the Reuters poll projected a decrease of 0.9 million barrels.

U.S. Rotary Rigs

U.S. Rotary Rigs drilling for natural gas were -5 at 189 for the week of November 30th. The number of rigs currently drilling for Natural Gas was +9 from last year. US Rigs drilling for oil were +2 at 887. There are 138 more rigs targeting oil than last year. Canadian rigs were -5 at 199 for the week. Rigs targeting oil remain 82% of all US drilling activity.

	North American Rig Count			Change		Percent Change	
	11/30/2018	11/23/2018	12/01/2017	Weekly	Annual	Weekly	Annual
Total U.S.	1,076	1,079	929	(3)	147	-0.3%	15.8%
Offshore	23	25	20	(2)	3	-8.0%	15.0%
Land	1,053	1,054	909	(1)	144	-0.1%	15.8%
Inland Waters	2	2	1	0	1	0.0%	100.0%
Oil	887	885	749	2	138	0.2%	18.4%
Percent	82.4%	82.0%	80.6%	0.4%	1.8%		
Gas	189	194	180	(5)	9	-2.6%	5.0%
Percent	17.6%	18.0%	19.4%	-0.4%	-1.8%		
Directional	68	73	71	-5	-3	-6.8%	-4.2%
Horizontal	934	929	792	5	142	0.5%	17.9%
Vertical	74	77	66	-3	8	-3.9%	12.1%
Gulf of Mexico	23	25	20	-2	3	-8.0%	15.0%
Gulf Oil	18	18	16	0	2	0.0%	12.5%
Percent	78.3%	72.0%	80.0%	6.3%	-1.7%		
Gulf Gas	5	7	4	-2	1	-28.6%	25.0%
Percent	21.7%	28.0%	20.0%	-6.3%	1.7%		
Canada	199	204	222	(5)	(23)	-2.5%	-10.4%
Oil	119	124	111	(5)	8	-4.0%	7.2%
Percent	59.8%	60.8%	50.0%	-1.0%	9.8%		
Gas	80	80	111	0	(31)	0.0%	-27.9%
Percent	40.2%	39.2%	50.0%	1.0%	-9.8%		
North America	1,275	1,283	1,151	(8)	124	-0.6%	10.8%
Prices							
Oil \$/bbl.	\$51.23	\$53.91	\$57.82	(\$2.67)	(\$6.59)	-5.0%	-11.4%
Oil \$/mmbtu	\$8.83	\$9.29	\$9.97	(\$0.46)	(\$1.14)	-5.0%	-11.4%
Gas \$/mmbtu	\$4.46	\$4.50	\$2.91	(\$0.04)	\$1.55	-0.8%	53.2%



Geopolitical

A Trade Detente Would Fuel The U.S. Energy Sector And China's Environment: Donald Trump's trade war with China is causing uncertainties in both the financial markets and the overall economy. To that end, the U.S. oil and natural gas sectors could get seriously hurt unless both sides can save face or one side folds.

Economists agree on almost nothing — except that free and fair trade produces better business and healthier economies. And that axiom especially holds true when it comes



Weather

The AccuWeather 1-5 day Outlook forecasts below-normal temps for the most of the US with the exception of most of the Western third and Florida, which will be at normal temps. The 6-10 Day Outlook forecasts New England and much of the center of the country at normal temps with the balance of the North and parts of the Southwest at above-normal temps. The Southeast is projected to be at below-normal temps.

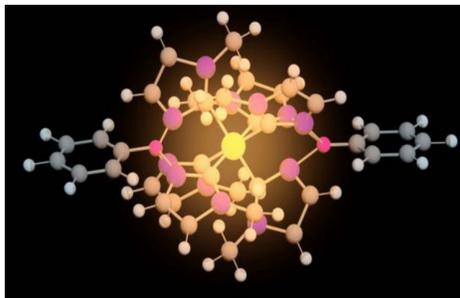
11-15 Day Outlook forecasts most

to the relationship between the United States and China, considering that the Asian nation is the second biggest economy in the world and that it is a voracious consumer of oil and natural gas. In fact, the two economies are inextricably linked to the import-export markets.

In other words, as China increases its fortunes, there is a corresponding wealth effect here. And the corollary to that is that the richer economies are better able to address...

of the country at above-normal temps with the exception of the deep South and Western third of the US, which will be at normal temps. The 30-day Outlook projects normal temps for almost all of the US except the far North Central area and below-normal temps for most of New England.

The 90-Day Outlook projects the most of the country at normal temps with the exception of the Northwest, which is expected to be at above-normal temps.



Sustainability and Renewables

New Brilliant Iron Molecule May Be the Key to Cheap Solar Energy: The novel molecule can function both as a photocatalyst to produce fuel and in solar cells to produce electricity, replacing the expensive and rare metals in use today.

Scientists are looking at some of the most unlikely sources for energy production, partly motivated by academic and research objectives, and partly to create a new framework of energy production and extraction.

Though some raise eyebrows due to perceived feasibility challenges like China's **artificial sun** ambitions, or the device that was developed to **convert exhaust** into renewable



This Week's Key Take-Away

While crude supply dropped yesterday, the U.S. became a net exporter of oil last week for the first time on record, the result of the fracking boom which has sparked massive increases in drilling and slashed reliance on foreign energy sources.

The Department of Energy reported the U.S. exported a net 211K bbl/day for the week through Nov. 30, the first time ever dating back to the DoE's creation in 1973, as crude exports jumped to a weekly record of more than 3.2M bbl/day.

Petroleum exports until recently were dominated by products such as gasoline and diesel, but that has changed since the U.S. shale

energy, the sheer number of examples of creative energy generation are truly inspiring

Now, researchers have produced an iron molecule with **photocatalytic** promise, and it could provide large benefits in terms of both (1) electricity generation in solar cells and (2) fuel production. As iron is a more plentiful and cheaper to supply source of metal, this will also have an impact in the industry...

Petroleum exports until recently were dominated by products such as gasoline and diesel, but that has changed since the U.S. shale revolution that has sped up drilling and extraction of oil, helping raise overall U.S. production to a record 11.7M bbl/day.

The DoE data comes as OPEC adjourned a meeting without announcing an agreement to cut production as it tries to cope with falling prices due in part to the surge in U.S. output. *In related news, Scientific American reports that CO2 levels reached an all-time global high in 2018.*

Next Day On-Peak Power (traded for 12/6/2018)		
ISO-NE Mass Hub \$59.67	MISO Indiana Hub \$48.56	NYISO Zone G \$55.63
PJM West Hub \$51.06	ERCOT North \$38.19	CAISO SP15 \$76.06



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