

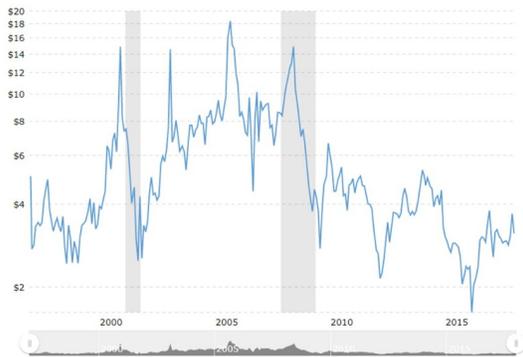


Natural Gas in Underground Storage

The weekly EIA Natural Gas Storage Report advised that there was an **injection of 90Bcf** (billion cubic feet) into Underground Storage for the week ending October 5th, 2018.

This is 2Bcf below the median forecast of a 92Bcf injection, the average prediction of sector analysts and traders in the Dow Jones Newswires weekly survey. The injection one year ago was 87Bcf and the 5-year average injection is 90Bcf. Storage is **627Bcf below last year** for the same week and **607Bcf below the 5-year average**. Working gas in storage stands at 2,956Bcf. Total demand for American natural gas is up 10.0% year-over-year to 71Bcf per day.

[Read More](#)



Natural Gas Pricing

As of 9:54AM CST, November 2018, (the prompt month) Natural Gas was trading at \$3.21, +\$0.06 from one week ago and the 1-Year Spread average was \$2.95, +\$0.06 from one week ago.

Crude Oil Pricing

As of 9:03AM CST, November, 2018, (the prompt month) Light, Sweet Crude on the NYMEX was at **\$71.95, -\$3.82** from one week ago.

Crude Oil & Natural Gas

INDEX	UNITS	PRICE	CHANGE	%CHANGE	CONTRACT	TIME (EDT)	2 DAY
CL1:COM WTI Crude Oil (Nymex)	USD/bbl	71.95	-2.22	-1.67%	Nov 2018	10:03 AM	
CO1:COM Brent Crude (ICE)	USD/bbl	81.58	-1.51	-1.82%	Dec 2018	10:03 AM	
CP1:COM Crude Oil (Tokyo)	JPY/Kl	54,410.00	-10.00	-0.02%	Mar 2019	10:08 AM	
NG1:COM Natural Gas (Nymex)	USD/MMBtu	3.19	-0.09	-2.89%	Nov 2018	10:03 AM	

U.S. Petroleum Balance Sheet, Week Ending 10/5/2018

Petroleum Stocks (Million Barrels)	Current Week	
	10/5/18	9/28/18
Crude Oil	1,068.7	1,064.0
Commercial (Excluding SPR) ¹	410.0	404.0
Strategic Petroleum Reserve (SPR) ²	658.7	660.0
Total Motor Gasoline ³	236.2	235.2
Reformulated	0.0	0.1
Conventional	23.7	25.4
Blending Components	212.5	209.8
Fuel Ethanol	24.0	23.4
Kerosene-Type Jet Fuel	47.4	46.2
Distillate Fuel Oil ³	133.5	136.1
15 ppm sulfur and Under ³	119.5	123.1
> 15 ppm to 500 ppm sulfur	4.3	4.0
> 500 ppm sulfur	9.7	9.1
Residual Fuel Oil	29.0	28.0
Propane/Propylene	80.3	76.7
Other Oils ⁴	299.7	297.0
Unfinished Oils	93.1	89.8
Total Stocks (Including SPR) ^{2,3}	1,918.7	1,908.7
Total Stocks (Excluding SPR) ³	1,260.0	1,248.7

Crude Oil Inventory

US crude inventories **increased by 6.0 million barrels** to 410 million barrels for the week ended October 5th, according to data released this morning by the US Department of Energy. Traders in the Reuters poll projected an increase of 1.6 million barrels.

U.S. Rotary Rigs

U.S. Rotary Rigs drilling for natural gas were unchanged at 189 for the week of October 5th. The number of rigs currently drilling for Natural Gas was +2 from last year. US Rigs drilling for oil were -2 at 861. There are 113 more rigs targeting oil than last year. Canadian rigs were -4 at 182 for the week. Rigs targeting oil remain 82% of all US drilling activity.

North American Rig Count	10/05/2018			09/28/2018			10/06/2017			Change		Percent Change	
	10/05/2018	09/28/2018	10/06/2017	Weekly	Annual	Weekly	Annual	Weekly	Annual	Weekly	Annual		
Total U.S.	1,052	1,054	936	936	(2)	116	-0.2%	12.4%					
Offshore	23	20	22	22	3	1	15.0%	4.5%					
Land	1,029	1,034	914	914	(5)	115	-0.5%	12.6%					
Inland Waters	3	5	1	1	(2)	2	-40.0%	200.0%					
Oil	861	863	748	748	(2)	113	-0.2%	15.1%					
Percent	81.8%	81.9%	79.9%	79.9%	-0.0%	1.9%							
Gas	189	189	187	187	0	2	0.0%	1.1%					
Percent	18.0%	17.9%	20.0%	20.0%	0.0%	-2.0%							
Directional	66	69	79	79	-3	-13	-4.3%	-16.5%					
Horizontal	919	922	792	792	-3	127	-0.3%	16.0%					
Vertical	67	63	65	65	4	2	6.3%	3.1%					
Gulf of Mexico	22	18	22	22	4	0	22.2%	0.0%					
Gulf Oil	17	16	18	18	1	-1	6.3%	-5.6%					
Percent	77.3%	88.9%	81.8%	81.8%	-11.6%	-4.5%							
Gulf Gas	5	2	4	4	3	1	150.0%	25.0%					
Percent	22.7%	11.1%	18.2%	11.6%	4.5%								
Canada	182	178	209	209	4	(27)	2.2%	-12.9%					
Oil	119	122	112	112	(3)	7	-2.5%	6.3%					
Percent	65.4%	68.5%	53.6%	53.6%	-3.2%	11.8%							
Gas	63	56	97	97	7	(34)	12.5%	-35.1%					
Percent	34.6%	31.5%	46.4%	46.4%	3.2%	-11.8%							
North America	1,234	1,232	1,145	1,145	2	89	0.2%	7.8%					
Prices													
Oil \$/bbl.	\$75.35	\$72.27	\$50.22	\$3.08	\$25.13	4.3%	50.0%						
Oil \$/mmbtu	\$12.99	\$12.46	\$8.66	\$0.53	\$4.33	4.3%	50.0%						
Gas \$/mmbtu	\$3.15	\$3.07	\$2.83	\$0.07	\$0.31	2.4%	11.0%						



Geopolitical

(CNN) Governments around the world must take "rapid, far-reaching and unprecedented changes in all aspects of society" to avoid disastrous levels of global warming, says a stark new report from the global scientific authority on climate change.

The report issued Monday by the UN Intergovernmental Panel on Climate Change (IPCC), says the planet will reach the crucial threshold of 1.5 degrees Celsius (2.7 degrees Fahrenheit) above pre-industrial levels by as early as 2030, precipitating the risk of extreme drought, wildfires, floods and food

Weather

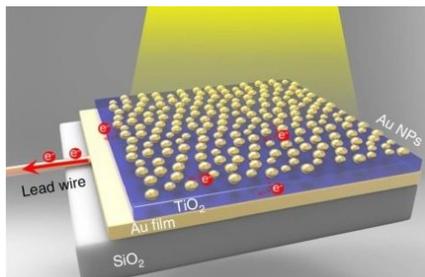
The AccuWeather 1-5 day Outlook forecasts above-normal temps for the East Coast with most of the Western US at below-normal temps. The 6-10 Day Outlook shows all of the US at below-normal temps with the exception of the Northwest and Southeast, which are expected to be at above-normal temps.

11-15 Day Outlook forecasts most of the Eastern states at below-normal temperatures with above-normal temps for the Northwest normal temperatures for the balance of the country. The 30-day Outlook

shortages for hundreds of millions of people.

The date, which falls well within the lifetime of many people alive today, is based on current levels of greenhouse gas emissions.

The planet is already two-thirds of the way there, with **global temperatures having warmed about 1 degree C**. Avoiding going even...



Sustainability and Renewables

Crazy energy breakthrough: Golden Sandwich electrode harvests 85% of sunlight:

Scientists at the Research Institute for Electronic Science at Hokkaido University have created what they call a “golden sandwich,” a photoelectrode that captures 85% of sunlight and uses it to split water and thus create hydrogen. Yes, this is experimental stuff, and no, it has not yet reached commercial production. But stop and think for a minute what that could mean to the renewable energy revolution.

The breakthrough from Hokkaido University hints at renewable energy production that is 11 times more efficient than current systems. Of course, we have no idea what commercial versions of the

projects normal temps for most of the US with the exception of the Southeast coastal states and a small part of the West, which are expected to be at above-normal temperatures.

The 90-Day Outlook shows normal temps for the entire country, with the exception of the Northeast and Far-North Central States, which are expected to be above-normal. And then there is Hurricane Michael, now downgraded to a tropical storm.



This Week's Key Take-Away

Hurricane Michael dominated the news this week, creating demand destruction in the Southeast, while causing 42% of the crude and 32% of the natural gas production in the Gulf of Mexico to shut down.

These are reportedly the largest reductions in a year, and companies evacuated staff and shut in platforms in order to ensure safety. According to the Bureau of Safety and Environmental Enforcement (BSEE), companies turned off daily production of 718 877 barrels of oil and 812 million ft³ of natural gas.

Regardless, Reuters reports that claims that despite this large impact, US crude futures CLc1 settled down over 2% at US\$73.17/bbl on Wednesday, tracking the weaker US stock market, and reflecting the Gulf of Mexico's declining importance

technology might cost (if 11 times more than current systems, it's a net-zero benefit), but just imagine getting 11 times as much zero-emissions energy from a photoelectrode. The implications are staggering.

So what's the secret sauce for making a golden sandwich? A titanium dioxide film just 30 nanometers thick with a 100 nanometer thick gold film on one side and gold nano-particles on the other. When sunlight strikes the nanoparticle side, the gold film below acts as a mirror trapping the light in the cavity between the two gold layers. That helps the nano-particles to absorb more of the available light, which is critical to the surprisingly high energy conversion factor...

because of growth from onshore shale fields.

There's no threat to gasoline output since most facilities in the Gulf Coast's refinery row are still up and running. The storm has stayed east of much of the region's production, which means supply should be back online quickly.

"We expect the impact on refined products demand to be below that of previous hurricanes in the Gulf Coast such as Harvey in 2017, as the region impacted by Michael has lower population density than Houston," said Claudio Giamberti, Head of Demand and Refining at S&P Global Platts Analytics.

Next Day On-Peak Power (traded for 10/11/2018)		
ISO-NE Mass Hub \$43.83	MISO Indiana Hub \$36.38	NYISO Zone G \$40.02
PJM West Hub \$37.49	ERCOT North \$26.49	CAISO SP15 \$60.54

