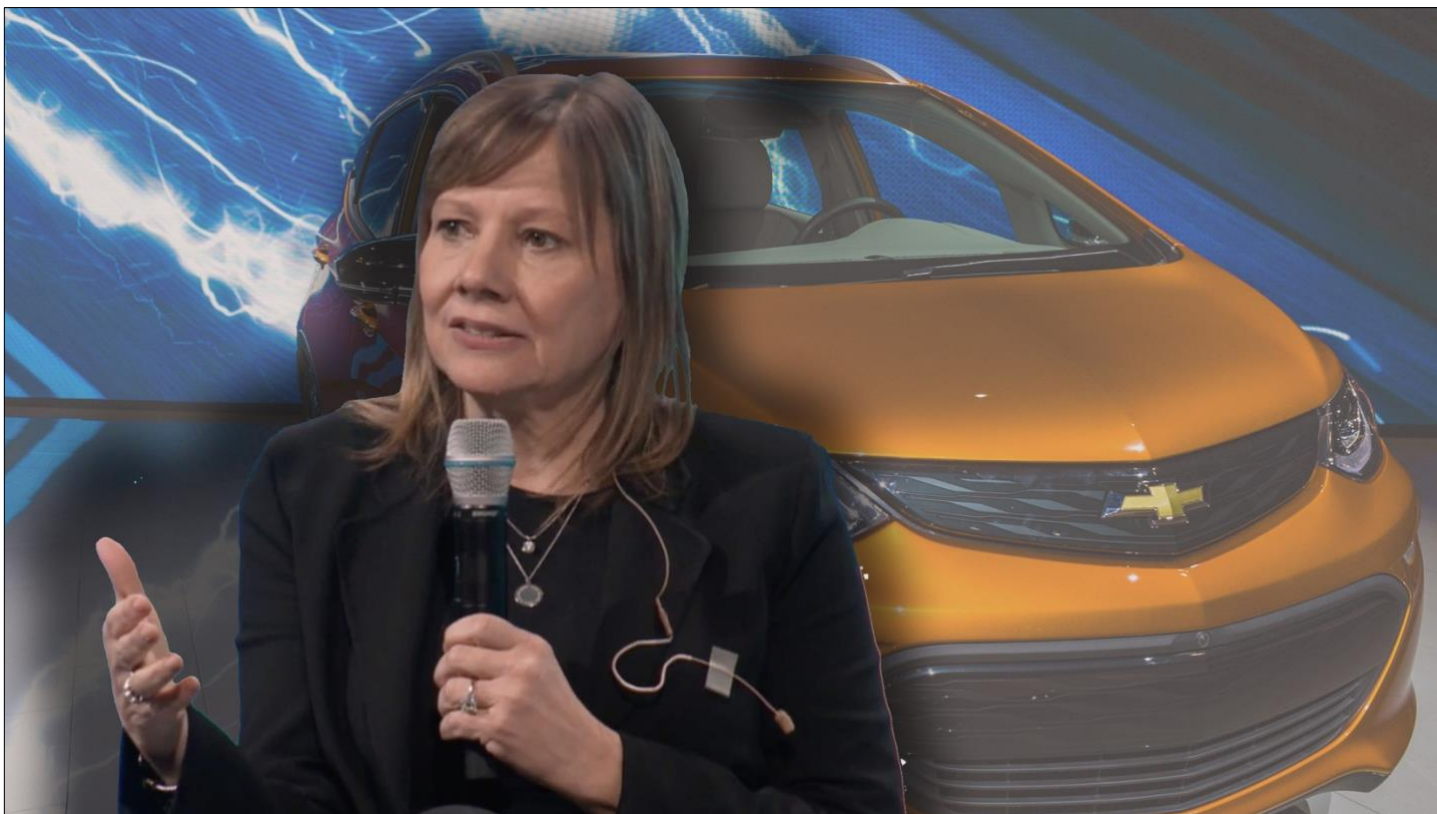


MIDSTREAM

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FEATURES



Source for Barra photo: Hart Energy; Source for Bolt photo: Shutterstock.com

Mary Barra, chairman and CEO of General Motors Co., speaks at CERAWEEK by IHS Markit last week. Behind her is a photo of the Chevrolet Bolt EV, the company's all-electric car, on display at the New York International Auto Show in 2016.

GM, EVs And That Uneasy Feeling

JOSEPH MARKMAN
HART ENERGY

HOUSTON—For some attending the luncheon keynote at CERAWEEK by IHS Markit on March 7, it might have been hard to digest. There was the conference host, Dan Yergin, dropping the F-word (“fun”) to describe his experience driving an electric vehicle.

The “zero-emission” weekend driving Chevrolet’s Bolt EV was a pleasant surprise, especially the responsiveness of the car, he told his guest, General Motors Co. Chairman

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FEELING from Page 1

and CEO Mary Barra.

"That's one of the things that most people think they're giving something up when they drive an electric vehicle, and they're not," Barra said. "That instant torque really makes the vehicle fun to drive."

It's one thing for the tree-hugger community to embrace all-electric transportation. It's quite another when Yergin, vice chairman of IHS Markit and author of "The Prize," the Pulitzer Prize-winning history of the oil industry, thinks it's cool.

More telling was the defensive posture taken by several of the most celebrated speakers at CERAWEEK:



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- **Amin Nasser, president and CEO of Saudi Aramco:** "Many wrongly believe it is a simple matter of electric vehicles quickly and smoothly replacing the internal combustion engine. It is not an either/or future, but far more complex."
- **Bob Dudley, CEO of BP PLC:** "The pace of decline is likely to be very slow. Think plateau."
- **Rick Perry, U.S. secretary of energy:** "Look those people [in developing nations] in the eyes that are starving and tell them, 'You can't have electricity' because as a society we decided fossil fuels were bad. I think that is immoral."

But Barra insisted during an interview that day on CNBC's "Power Lunch" that she didn't come to CERAWEEK looking for a fight with the oil and gas industry.

"I think it is an energy conference," she told Brian Sullivan. "And I think we have to work together."

During her prepared remarks at the luncheon, Barra almost seemed to be channeling oil and gas executives as she declared the need for new infrastructure. But it wasn't pipelines that she sought.

"We encourage the energy and power industry and other stakeholders to partner with us on a robust charging infrastructure that drives consumer confidence and enables people to trust that they can drive their cars anywhere at any time," she said. ■

Tellurian's Long Bet On LNG

SHREVEPORT, La.—The global LNG market is growing and "it's growing very rapidly," said John Howie, senior vice president of upstream for Tellurian Inc. (NASDAQ: **TELL**), during the inaugural DUG Haynesville conference and exhibition in February.

Natural gas, he said, is "going to displace coal as we industrialize and commercialize the third world and as the population simply grows."



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With very attractive economics, the U.S. is best positioned to deliver this gas, Howie said. "We've got the infrastructure, we've got the Haynesville and we've got a business model designed to align our customers and our investors."

Tellurian's business model includes construction of the \$15.2 billion Driftwood LNG terminal near Lake Charles on the Calcasieu River, a pipeline network and upstream assets in the Haynesville Shale. "Tellurian is a massive long bet on global growth," he said.

The aggregated system is going to deliver up to 4 billion cubic feet per day (Bcf/d) of gas to global markets. Tellurian's marketing arm will help sell the LNG. "What we're trying to do is reintegrate our value chain. So we're putting together the pieces; we feel like it's absolutely the most economical solution for our customers and for our investors," Howie said.

The terminal has the capacity of 27.6 million tons per year. "That's 4 Bcf of gas a day. If you do the math ... that is 40 Tcf of natural gas resource over the life for this plan." Tellurian currently produces .004 Bcf/d. "I've got a chart that I have next to my desk to remind myself of where we are and where we want to go. That's very ambitious."

The start of the chain in building Tellurian into a global natural gas company is gas production from the U.S., he said. That includes Tellurian Production Co., the upstream portion of the Tellurian model, which is "absolutely critical" to the company's business model, he said. —**BRANDY FIDLER | HART ENERGY**

FRAC SPREAD

Will The Hawks Take Flight?

JOSEPH MARKMAN | HART ENERGY

Crude oil traders might end up liking Secretary of State nominee Mike Pompeo more than his predecessor Rex Tillerson, who formerly ran the world's largest publicly owned oil company.

Tillerson was a voice of moderation in the Trump administration. He wanted to stick with the Paris climate accord, keep the nuclear deal with Iran and take a measured approach to sanctions against Venezuela.

CURRENT FRAC SPREAD (CENTS/GAL)				
MARCH 16, 2018	Conway	Change from Start of Week	Mont Belvieu	Last Week
Ethane	11.45		23.95	
Shrink	16.75		18.34	
Margin	-5.30	13.99%	5.61	-8.10%
Propane	61.20		76.09	
Shrink	23.14		25.33	
Margin	38.06	-4.71%	50.76	5.99%
Normal Butane	69.28		81.73	
Shrink	26.19		28.68	
Margin	43.09	-12.67%	53.05	-4.25%
Isobutane	87.80		90.80	
Shrink	25.16		27.55	
Margin	62.64	0.29%	63.25	-6.09%
Pentane+	138.30		146.30	
Shrink	28.01		30.67	
Margin	110.29	1.38%	115.63	2.19%
NGL \$/Bbl	24.54	-2.19%	29.39	1.68%
Shrink	9.23		10.10	
Margin	15.31	-3.46%	19.29	1.06%
Gas (\$/mmBtu)	2.53	-2.70%	2.77	2.89%
Gross Bbl Margin (in cents/gal)	34.65	-3.64%	44.59	1.29%
NGL Value in \$/mmBtu (Basket Value)				
Ethane	0.63	-5.37%	1.32	0.08%
Propane	2.12	-2.98%	2.64	4.94%
Normal Butane	0.75	-8.27%	0.88	-1.86%
Isobutane	0.55	0.21%	0.57	-3.54%
Pentane+	1.78	1.10%	1.89	2.34%
Total Barrel Value in \$/mmbtu	5.83	-2.48%	7.29	1.83%
Margin	3.31	-4.29%	4.53	1.19%

Price, Shrink of 42-gal NGL barrel based on following: Ethane, 36.5%; Propane, 31.8%; Normal Butane, 11.2%; Isobutane, 6.2%; Pentane+, 14.3%. Fuel, frac, transport costs not included. Conway gas based on Midwest region, Mont Belvieu based on Houston region. Shrink is defined as Btus that are removed from natural gas through the gathering and processing operation.

tougher sanctions then it is possible that the government of Nicolas Maduro could collapse.

That would reduce Venezuela's expected oil output to roughly ... nothing, which would put more upward pressure on world prices.

At Mont Belvieu, pentanes-plus edged up 2.3% last week to hit a 40-month high at \$1.463 per gallon (gal). The Conway, Kan., rise was 1.1% but that was enough to hit \$1.383/gal, its highest point since early December 2014.

Margins narrowed for all NGL last week except for pentanes-plus and Mont Belvieu, Texas, propane. The spread for the hypothetical NGL barrel tightened by about 2.2% at Conway but expanded by about 1.7% at Mont Belvieu. ■

Pompeo, a former U.S. representative from Kansas and current director of the CIA, would bring a tougher approach to the position.

In Iran, hardliners who were opposed to the transaction ending the country's uranium enrichment program were delighted that it might be closer to an end. Most others were not as thrilled.

He is "cowboyish in character and eager to start a war," wrote Ali

Khorrani, a former Iranian diplomat, in an op-ed in *Arman*, a daily newspaper aligned with reformists, the *Los Angeles Times*

reported. After all, Pompeo argued for air strikes against Iran's nuclear

facilities during negotiations for the deal in 2014.

Tension in the Middle East can be counted on to propel global crude prices, which would lead to higher natural gas prices and buoy NGL prices. Sanctions against Venezuela could contribute to that result as well. Or maybe tougher sanctions won't be needed. That country seems well on its way to a meltdown all on its own.

Oil production in Venezuela is down to 1.6 million barrels per day (MMbbl/d) from a 2.2 MMbbl/d average in 2016. Production is expected to fall to about 1 MMbbl/d this year but if Pompeo were to convince President Donald Trump to enact



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Integrated Measurement Automation Serves Today's Lean, Mean and Agile Midstream Industry

How are today's midstream companies operating profitably in light of \$60 oil?

Granted, they're processing more of it since drilling and production have ramped up—but they're also exploiting the numerous transformations in their business processes they began when oil was below \$50.

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They're lean and mean. They've increased their organizational agility. They've digitized. And they're embracing millennials. Millennials will soon constitute a majority of the workforce in the United States and have new expectations when it comes to technology deployment in the workplace.

Today, the industry is putting the latest technology to work. Midstream companies are taking advantage of such recent developments as Big Data analytics, fog computing, machine learning and the Internet of Things (IoT).

Flow-Cal has been a key enabler of the digitalization and business process transformations that midstream measurement operations have put into practice. Our integrated measurement automation application, FLOWCAL Enterprise, is capable of managing natural gas, natural gas liquids (NGLs), chemicals, crude oil and refined products. It allows measurement professionals to track the flow of gas and liquids from the wellhead to the tailgate of a midstream operation.

Ways to Attract a New Generation of Midstream Drivers

The shortage of qualified drivers has been a challenge for trucking companies in recent years. The problem continues to grow as the current workforce of long-haul and regional drivers age and retire with fewer recruits coming up to replace them. And now, with oil prices and production starting to climb again, the shortage is likely to hit the oil and gas industry hard, unless companies find ways

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to attract and incentivize a new generation of drivers. **Try a Brother Mobile Printer for Free**

A recent report¹ from the American Trucking Associations notes: "The driver shortage is really a problem for the entire supply chain as 70.6% of all freight tonnage is moved on the nation's highways." According to the report, the shortfall is expected to rise by the end of 2017 to the highest level on record as freight volumes recover and the industry transitions to the use of electronic logging devices to record driver hours-of-service."

Some freight transportation companies are seeking creative ways to recruit new drivers offering incentives such as sign-on bonuses, training for CDLs, on-the-job apprenticeships, and other enticements to make the driver lifestyle more appealing for a diverse new generation of truckers. The energy sector might do the same by offering on-the-job training, financial incentives, and/or a range of lifestyle perks.

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