Tenth District Energy Activity Continued to Expand Solidly

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First quarter energy survey results indicated that Tenth District energy firm activity continued to expand solidly. Future activity outlook remained positive. Oil and natural gas prices on average needed to be $51 per barrel and $3.38 per million Btu, respectively, to be profitable. Oilfield service costs have increased slightly over the past year. There were concerns about labor shortages limiting near-term growth.

Summary of Quarterly Indicators

District energy activity continued to expand solidly in the first quarter of 2017, as reported by firms contacted between March 15 and 31 (Tables 1 & 2). Most indexes remained near their high readings of the fourth quarter of 2016. The drilling and business activity index eased from 64 to 55 but was still the second highest reading since the survey began three years ago (Chart 1). The total revenues index fell to 52, and the indexes for employee hours and wages and benefits also moderated slightly. The access to credit and employment indexes edged higher, and the supplier delivery index turned positive for the first time since the third quarter of 2015.

Most year-over-year indexes continued to improve. The revenues, profits, and capital spending indexes increased considerably, while the drilling and business activity and employment indexes rose modestly. The supplier delivery time index also increased but remained negative. The access to credit index jumped into positive territory for the first time since the third quarter of 2014. In contrast, the employee hours and wages and benefits indexes fell somewhat.

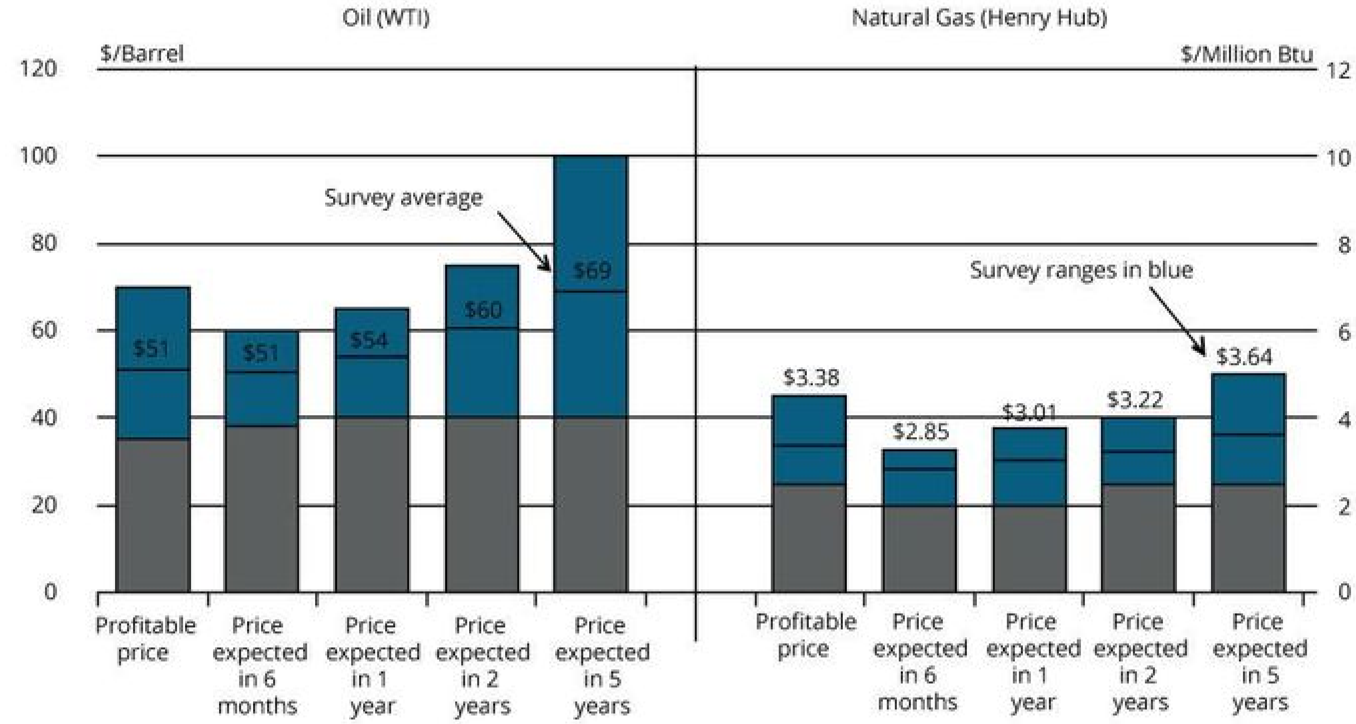
Most future expectations indexes declined but remained solid. The future drilling and business activity index decreased from 73 to 57, and the future revenues and total profits indexes were also moderately lower. The future capital spending index declined from 79 to 37, and the access to credit index fell to 0

Price expectations for oil and gas rose only slightly. The expected oil prices index fell from 72 to three, meaning most respondents expected oil prices to remain near current levels in the coming months. The NGL price and natural gas prices indexes also fell considerably but remained above 0.

Summary of Special Questions

Firms were asked what oil and natural gas prices were needed to be profitable in the areas in which they were active. The average oil price needed was $51 per barrel, with a range from $35 to $70 (Chart 2). This was slightly lower than the $53 average in the third quarter of 2016, and the same as the average in the first quarter of 2016. The average natural gas price needed was $3.38 per million Btu, with responses ranging from $2.50 to $4.50.

Chart 2: Special Question - What price is currently needed for drilling to be profitable for oil and natural gas, and what do you expect the WTI and Henry Hub prices to be in six months, one year, two years, and five years?



Firms were also asked what they expected oil and natural gas prices to be in six months, one year, two years, and five years. The average expected WTI prices for these periods were $51, $54, $60, and $69 per barrel, respectively. Firms overall expected global oil demand to keep increasing and eventually overtake global supply, although price expectations varied considerably. The average expected Henry Hub natural gas prices for these periods were $2.85, $3.01, $3.22, and $3.64 per million Btu. Large supply availability, particularly from the Marcellus play, was cited as the main factor driving natural gas prices.

Firms were asked how oilfield service costs have changed since the first quarter of 2016. The majority of firms reported slight increases in costs since last year (Chart 3). Some firms expected costs to keep rising through the summer, particularly for well completion services.

Firms were also asked if they were concerned about labor or physical capital shortages limiting near-term growth in activity. More than 40 percent of respondents reported having no concerns (Chart 4). However, over a third of firms reported concerns about labor shortages. Several respondents said many laid off experienced workers were not returning, so they will have to train new employees.

Firms were questioned about their hedging activity as well. Slightly more firms had increased hedging since 2014 than had decreased it. Hedging firms had on average hedged 66 percent of oil production for 2017 and 41 percent for 2018, and had hedged 59 percent of natural gas production for 2017 and 25 percent for 2018.

Selected Comments

“Increasing world demand for fossil fuels will eventually help bring supply and demand back in balance, along with production cuts in OPEC countries.”

“Worldwide demand keeps rising. Supply is also rising but so are drilling and completion costs. These rising costs will continue which should push up the need for a higher commodity price.”

“Near-term field based employees, especially those with technical and leadership skills, are expected to become tight as soon as the next 4-6 weeks and extend well into the rest of the year.”

“Total well costs on a per unit basis have increased +/- 5%. We are expecting a 10% total increase by the third or fourth quarter of 2017.”

“Many employees have left the industry for other jobs so it will take time to train and get an experienced workforce to do the job.”

“Increased oilfield service costs reflect reactivating idled equipment and also retraining personnel.”

“The glut of gas from the Marcellus Shale as well as large surplus of natural gas should keep prices low for some time.”

“Storage is at all-time high; it is going to take some years for demand to catch up, but when it does it will be a big swing up in the price.”

“Wage levels are still attractive enough to attract labor, and capital availability seems sufficient.”

Table 1
Summary of Tenth District Energy Conditions, Quarter 1, 2017

	Quarter 1 vs. Quarter 4(percent)*				Quarter 1 vs. Year Ago(percent)*				Expected in Six Months(percent)*			
Energy Company Indicators	Increase	No Change	Decrease	Diff Index^	Increase	No Change	Decrease	Diff Index^	Increase	No Change	Decrease	Diff Index^
Drilling/Business Activity	68	19	13	55	72	14	14	59	64	29	7	57
Total Revenues	61	29	10	52	69	14	17	52	59	33	7	52
Capital Expenditures					60	23	17	43	53	30	17	37
Supplier Delivery Time	7	89	4	4	7	82	11	-4	18	75	7	11
Total Profits	56	28	16	41	71	13	16	55	61	23	16	45
Number of Employees	44	44	13	31	38	38	25	13	29	58	13	16
Employee Hours	25	66	9	16	22	56	22	0	23	71	6	16
Wages and Benefits	22	69	9	13	31	47	22	9	32	58	10	23
Access to Credit	7	90	3	3	20	73	7	13	3	94	3	0
Expected Oil Prices									19	65	16	3
Expected Natural Gas Prices									16	74	10	6
Expected Natural Gas Liquids Prices									21	72	7	14

*Percentage may not add to 100 due to rounding
^Diffusion Index. The diffusion index is calculated as the percentage of total respondents reporting increases minus the percentage reporting declines.

Note: The first quarter survey ran from March 15-31, 2017 and included 33 responses from firms in Colorado, Kansas, Nebraska, Oklahoma, Wyoming, northern New Mexico, and western Missouri.

	Q1'14	Q2'14	Q3'14	Q4'14	Q1'15	Q2'15	Q3'15	Q4'15	Q1'16	Q2'16	Q3'16	Q4'16	Q1'17
Versus a Quarter Ago													
(not seasonally adjusted)													
Drilling/Business Activity	39	38	50	-24	-68	-37	-37	-56	-72	0	26	64	55
Total Revenues	33	57	72	-42	-81	-45	-58	-86	-67	-31	5	62	52
Supplier Delivery Time	-3	12	-15	4	-3	11	6	-6	-9	-3	-8	-7	4
Total Profits	31	34	50	-44	-86	-53	-61	-76	-78	-22	-10	42	41
Number of Employees	42	28	41	0	-26	-37	-41	-49	-69	-59	-11	26	31
Employee Hours	20	14	34	-19	-43	-19	-39	-39	-54	-52	-10	20	16
Wages and Benefits	48	34	45	12	0	-16	-30	-33	-50	-37	-22	17	13
Access to Credit	6	15	14	-12	-17	-10	-41	-49	-39	-17	-5	0	3
Versus a Year Ago													
Drilling/Business Activity	26	19	56	-23	-63	-84	-91	-89	-84	-65	-21	41	59
Total Revenues	53	63	71	-4	-70	-77	-88	-92	-81	-69	-31	15	52
Capital Expenditures	19	30	52	-11	-67	-62	-84	-76	-73	-84	-58	14	43
Supplier Delivery Time	-3	12	-15	8	11	-4	-18	-3	-6	-14	-11	-14	-4
Total Profits	38	46	62	-16	-74	-90	-89	-92	-81	-71	-49	23	55
Number of Employees	35	28	67	35	-13	-32	-47	-56	-78	-67	-50	-7	13
Employee Hours	20	11	33	4	-43	-38	-54	-40	-66	-48	-37	3	0
Wages and Benefits	59	38	67	38	3	-28	-25	-26	-47	-42	-33	17	9
Access to Credit	3	11	26	-25	-43	-32	-40	-56	-53	-47	-30	-17	13
Expected in Six Months													
(not seasonally adjusted)													
Drilling/Business Activity	34	58	46	-83	-53	20	-26	-43	-31	39	21	73	57
Total Revenues	59	74	69	-60	-42	19	-36	-56	-17	26	6	67	52
Capital Expenditures	20	33	44	-64	-67	-3	-41	-67	-50	17	9	79	37
Supplier Delivery Time	-3	4	-11	15	10	-10	-3	-9	-3	-3	-8	-7	11
Total Profits	47	59	61	-76	-52	-3	-38	-63	-22	23	5	76	45
Number of Employees	42	50	59	-23	-29	-7	-34	-51	-39	6	-22	32	16
Employee Hours	29	26	39	-48	-26	0	-24	-42	-39	6	-8	28	16
Wages and Benefits	34	32	69	-8	-26	7	-14	-27	-38	-3	3	52	23
Access to Credit	13	29	23	-40	-21	0	-31	-40	-35	0	-6	3	0
Expected Oil Prices	3	24	-23	-52	3	32	20	-9	41	58	49	72	3
Expected Natural Gas Prices	22	30	37	-26	-19	16	11	-15	18	61	44	26	6
Expected Natural Gas Liquids Prices	26	26	-4	-42	-13	10	6	-15	29	59	31	64	14
Special Price Questions													
(averages)													
Profitable WTI Oil Price (per barrel)			$79		$62		$60		$51		$53		$51
WTI Price to Significantly Increase Drilling						$73		$60		$64		$60	
Profitable Natural Gas Price (per million BTU)									$ 3.29		$ 3.45		$ 3.38
Natural Gas Price to Significantly Increase Drilling										$ 3.65		$ 3.97	

Additional Resources

Current Release

About the Energy Survey

Author

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Senior Vice President and Oklahoma City Branch Executive

Chad Wilkerson serves as Oklahoma City Branch Executive and Senior Vice President of Community Development for the Federal Reserve Bank of Kansas City. Wilkerson has been with the Federal Reserve since 1998, starting in Kansas City's research department.Appointed in 2006 as Oklahoma City Branch Executive, Wilkerson is the Bank's lead officer and regional economist in Oklahoma. He recruits and works closely with the Oklahoma City Branch Board of Directors and is responsible for briefing the Kansas City Fed president, a member of the Federal Open Market Committee, on economic trends in the state. His team conducts research and surveys on key regional issues such as energy, manufacturing and migration.Wilkerson was appointed Senior Vice President in 2022, and supports a Community Development team located across the Kansas City Fed's seven-state region. This group works to understand and address issues affecting the ability of underserved communities and small businesses to access credit. Community development focus areas include financial resiliency, affordable housing, community investments, workforce development, rural development and digital inclusion.Wilkerson holds a master's degree in public policy from the University of Chicago, as well as a master's degree from Southwestern Seminary and bachelor's degree from William Jewell College. He serves on the boards of the Economic Club of Oklahoma, the United Way of Central Oklahoma and City Rescue Mission. He lives in Edmond, Oklahoma, with his wife and children.