McDep LLC

Meter Reader

A Monthly Analysis of Oil and Gas Stocks

August 15, 2017

Energy Outlook to 2026

			Price						Oil	Dist.	
			(US$/sh)	Market	Enterprise	EV/	EV/	PV/	Prod'n/	Yield	McDep
	Symbol/Rating		14-Aug	Cap	Value	Market	Ebitda	Ebitda	PV	NTM	Ratio
			2017	(US$mm)	($mm)	Cap	NTM	NTM	(%)	(%)	(EV/PV)
Royal Dutch Shell	RDS-A	B	55.20	229,000	356,000	1.55	7.0	9.0	51	6.8	0.78
Total S.A.	TOT	B	50.18	125,000	179,000	1.44	6.3	9.7	53	5.8	0.64
Marathon Oil Corporation	MRO	B	11.63	9,890	17,000	1.72	9.4	12.8	79	1.7	0.73
ConocoPhillips	COP	B	44.54	55,000	80,000	1.44	9.0	12.2	69	2.4	0.73
Continental Resources (32%)	CLR	B	33.32	4,000	6,100	1.54	8.7	12.5	74	-	0.69
Range Resources	RRC	B	16.92	4,200	8,500	2.06	8.6	18.2	31	0.5	0.47
Dorchester Minerals, L.P.	DMLP	B	14.60	470	470	1.00	11.2	18.4	72	8.5	0.61
Cross Timbers Royalty Trust	CRT	B	14.79	90	90	1.00	10.0	19.5	28	7.8	0.51
Suncor Energy	SU	B	32.12	53,500	71,500	1.34	9.0	11.5	84	3.1	0.78
Birchcliff Energy Ltd.	BIREF	B	4.53	1,300	1,900	1.49	7.9	14.3	37	1.7	0.55

Summary and Recommendation

Energy Outlook to 2026 features the most incremental consumption from natural gas and the highest growth rate for renewable energy, mainly wind. Global primary energy consumption of all sources would grow about 1% a year to some 323 million barrels oil equivalent daily from approximately 290 in 2016 (see chart Global Consumption by Primary Fuel on page 5). To compile our forecast, we draw on historical data from BP and examine future growth rates from ten forecasts cited by BP, including those of oil companies, government agencies and consultants. The estimates of future volume are influenced mostly by historical momentum in a capital intensive industry with a massive installed base. Oil would continue to dominate share in 2026 at 33%. Natural gas would surpass coal as it reaches a 27% share. An old fuel, hydro, keeps a mature share at 7%. Nuclear was a rapidly growing fuel in our Energy Outlook to 1980 that we presented to clients in 1970. In the surprising aftermath, nuclear would have just a 4% share in 2026. Today's exciting fuel, renewables, mostly wind and some solar, would have a 6% share in 2026. Could that become a practical limit as seems to be the case for hydro and nuclear? Might today's enthusiasm for renewables turn sour as it did for nuclear? To weigh how reasonable our forecast may be, we discuss further the impact of global warming, the drawbacks of renewable fuels, the excitement of electric cars, how coal points to demand for natural gas and the revolutionary impact of new fracking technology. All things considered, we believe that McDep oil and gas stocks have attractive features for inclusion in a diversified investment portfolio (see Tables 1-4 on pages 6-9).

Global Warming – Exaggerated and Politicized

Is the earth getting warmer? Possibly. Is warming caused by human action? Perhaps. Are consequences catastrophic? Maybe, in an imaginary sense.

Measuring the degree of warming is more complicated than it might appear at first glance. Readings have been taken from satellites, but the orbiting devices gradually lose altitude and observations must be adjusted for automatic increases in surrounding temperature, apparently.

Readings have been taken from ocean buoys, but ocean currents are constantly changing. Weather histories are recorded at airport weather stations increasingly surrounded by cities that create their own urban warming. The earth is a big place where warming in one area can be offset by cooling in another. The longer trend moves in jerks with countervailing shorter trends. As we understand, some early prominent forecasts of degree of warming have not been confirmed in actuality.

Presuming we have warming, is there a plausible explanation? Most measures of human activity have been rising at the same time, but what is the connection since correlation is not causation. Atmospheric concentration of carbon dioxide (CO2) gets the attention because of a heat trapping capability. Yet, that effect is infinitesimal compared to the energy from the sun's rays. Deciding on the cumulative effect of the trapping is another variable subject to wide uncertainty. Meanwhile, CO2 is also a life-sustaining gas because it is required by plants for photosynthesis. Nonetheless, despite other sources, the burning of fossil fuels has been identified as a target for curtailing in order to reduce CO2 emissions to restrain global warming.

To us it seems a stretch to blame human activity as the primary culprit causing perceived global warming. Among other possible causes, the gravitational forces that move the earth closer to or further away from the sun could be more important. Apparently, we are in the warming phase of an approximate 50,000 year Milankovitch Cycle that describes orbital forces of the planets in the solar system and perhaps other bodies in space. At the same time there may be a self-correcting mechanism at work. As tropical dry areas expand more infrared radiation may escape back into space and thereby promote cooling. By another observation a cooling trend may occur by 2026. As we understand, a cyclical decline in the sun's magnetic field is approaching the low associated with the cooling period 1790-1830.

Renewable Fuels – Political Favorites

In our politicized world, hydro, wind, solar and biomass are labeled renewable, as in good, fuels while oil, natural gas, and coal are fossil, as in bad, fuels. In reality, the distinctions are not that obvious. Hydro can be politically controversial in the areas to be submerged and the water flow to be interrupted. Biomass in the form of ethanol and biodiesel is included in the oil category. Artificially mandated use of of corn ethanol misallocates economic resources. Solar remains a highly subsidized niche fuel whose total contribution is small in our forecast.

Wind also enjoys generous false economic support. As an indirect measure of the subsidy, our home electricity supplier in Massachusetts, where we live, recently offered its ratepayers the opportunity to choose to have electricity supplied only from renewable, mainly wind, sources. Of course the actual electrons would be the same mix now delivered. Only the bill would be different. The generation charge for renewable energy would be 50% higher than the generation charge for fossil fueled power. The generation charge would increase to $0.15 a kilowatt hour from $0.10. The total bill for generation and delivery would increase to $0.25 from $0.20. We passed on the offer.

Another irony of subsidized wind is that Texas, the largest oil and gas producing state, has the largest wind generation. The irony of ironies is that among the beneficiaries of subsidized wind power are the frackers who use the electricity to power the production of more oil and gas in the Permian Basin, the very industry targeted to be disadvantaged by renewable energy subsidies.

In addition to being uneconomic for the most part, renewable energy consumes large surface areas for the amount of energy produced. A single 600 feet high wind turbine may require nearly a square mile of area for optimal performance. Such a giant structure would likely be located in the ocean beyond the horizon, in which case long, expensive underwater transmission cables would be required to take the electricity ashore. Locating wind turbines, or windmills, closer to shore in Nantucket Sound off Cape Cod pitted environmentalist against environmentalist. The Cape Wind project proposal died as Nimby (Not in my back yard) overpowered the urge to replace fossil fuels.

Another well-known drawback is that wind and solar work only when the wind blows and the sun shines. In other words, reliability is erratic. Storage could solve that problem. Fundamental research on storage is a worthy effort, but economic success is not at hand today.

Electric Cars – Rising Expectations

Uneconomic and subsidized like wind and solar, electric cars are more exciting than wind and solar. A half million advance deposits to buy the new Tesla Model 3 are a convincing demonstration of rising expectations. The first vehicles have been delivered with the rest promised by the end of 2018, perhaps. It will be "manufacturing hell" to achieve that goal, according to Tesla. Building on the enthusiasm, nearly every automaker promises to have an all-electric model available in the next few years. Considering that today there are about a million electric vehicles, mostly hybrid electric and oil, in a global fleet of a billion cars, there may not be much measurable impact on our 2026 energy forecast. Thereafter, the question arising is whether gasoline and diesel demand would peak and start to turn down in favor of electric by 2045 or 2035?

The first practical consideration concerning the impact of electric cars on energy consumption is that the global auto fleet turns over slowly. Interpolating from BP's forecast, we see the global fleet expanding to 1.3 billion cars by 2026 of which electric and hybrid might be 30 million, or 2.5%.

The second practical consideration we raise is what fuel would be used to generate the electricity to recharge the batteries of electric vehicles? It would most likely be natural gas and maybe some coal.

Related issues include adapting electric distribution to match the location of demand and a massive need for batteries. Moreover, battery power requires more weight per unit of output

compared to fossil fuels. Consequently, electric cars have shorter range. The cars are also smaller and for that reason, less safe.

Advantages of the electric car include fewer moving parts compared to gasoline or diesel, and easier electronic programming. The fast power response of electric motors excites drivers who crave hyper acceleration.

Coal – Pointing to a Virtually Unlimited Demand for Natural Gas

Smoke (particulates) and sulfur dioxide are such noxious byproducts of coal burning that most coal-fired power plants have add-on equipment to remove those unwanted byproducts. As with nuclear power the regulatory restrictions keep ratcheting up. Unwanted mercury is a more recent target for control.

The case for carbon dioxide as a pollutant is less obvious. If CO2 were truly undesirable, the practical implication would be to substitute natural gas for coal and automatically cut CO2 emission by a half for the same amount of energy output. Thoughtful persons talked of natural gas as a bridge fuel to reduce CO2 quickly until lower CO2 alternatives could be developed. Instead, environmental organizations lumped all fossil fuels together and attacked development of natural gas as well. We interpret that as a sign that the environmental movement has morphed into an anti-fossil fuel cause rather than a pro-environment cause. As a result, environmentalism has become politicized, half right and half wrong. The same extends to CO2, maybe a pollutant, maybe not. From an investment point of view, we assume the maybe not side and make our recommendations accordingly.

We have been surprised at the staying power of coal in energy forecasts over the decades. The growth has been rapid in the Asia Pacific region which consumed 75% of the world total in 2016 according to BP. China is the largest consumer at 51%, followed by India at 14%.

The U.S. energy mix shows the way to cleaner fuel. Currently, coal supplies 62% of China's primary energy consumption while natural gas supplies just 6%! For the U.S. it is 16% for coal and 32% for natural gas. That leads us to say that demand potential for natural gas is virtually unlimited, especially in China.

Fracking Changes the Game

All our life we have heard that some breakthrough would produce cheaper energy than oil and gas. That breakthrough has now arrived…it is cheaper oil and gas. Fracking has made natural gas so economical that no alternative fuel can compete as a broad-based stationary energy source.

The benefits of cheaper energy to the global economy appear to be contributing to rising global stock markets. For the time being the producers applying fracking have weathered the initial hit to price. At current prices, supply is ample. To meet growth to 2026, we see oil price trending up

to $70 a barrel from $50 and natural gas to $4 a million btu from $3. That range of price can deliver affordable energy to consumers and attractive profits to producers.

Export liftoff captures the dramatic impact of fracking. U.S. oil exports rocketed to a million barrels daily in recent months and natural gas exports to a million and a half barrels equivalent daily (see *Meter Reader* Liftoff for Energy Exports, July 11, 2017). U.S. oil exports may exceed imports a few years before 2026 while natural gas exports are headed to exceed imports for the full year 2017.

Fracking also changes the game on energy security. Many of the most enthusiastic supporters of the Paris Climate Accord were countries that produce little oil and gas. Anti-oil and gas advocacy fit with energy security rationale. Now that the sources of oil and gas are diversifying with the advent of U.S. exports, energy security is strengthened, and that part of the rationale to oppose oil and gas is weakened.

Kurt H. Wulff, CFA

Energy Outlook to 2026

Global Consumption by Primary Fuel

(million barrels oil equivalent daily)

	2006	2016	2026	Annual Growth 2016-26
Oil	85.8	96.7	107.7	1%
Natural Gas	55.4	70.1	86.2	2%
Coal	70.9	81.7	74.5	-1%
Nuclear	13.7	13.0	14.4	1%
Hydro	14.8	19.9	22.2	1%
Renewables	2.0	9.2	18.2	7%
Total	242.6	290.6	323.2	1%

Source: BP, McDep LLC

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Table 1

McDep Energy Stocks
Ranked by McDep Ratio

	Symbol/Rating		Price (US$/sh) 14-Aug 2017	Market Cap (US$mm)	Enterprise Value ($mm)	EV/ Market Cap	EV/ Ebitda NTM	PV/ Ebitda NTM	Oil Prod'n/ PV (%)	Dist. Yield NTM (%)	McDep Ratio (EV/PV)
Global Integrated											
Chevron Corporation	CVX		108.71	206,000	273,000	1.32	8.8	10.4	60	4.0	0.85
Exxon Mobil Corporation	XOM		78.23	334,000	425,000	1.27	9.9	12.0	49	3.9	0.82
Royal Dutch Shell	RDS-A	B	55.20	229,000	356,000	1.55	7.0	9.0	51	6.8	0.78
Total S.A.	TOT	B	50.18	125,000	179,000	1.44	6.3	9.7	53	5.8	0.64
Total or Median				*894,000*	*1,233,000*	*1.38*	*7.9*	*10.0*	*52*	*4.9*	*0.80*
Large Independent											
EOG Resources, Inc.	EOG		87.99	51,000	58,200	1.14	11.8	11.5	86	0.8	1.03
Pioneer Natural Resources	PXD		132.84	22,600	24,300	1.08	10.4	11.6	87	0.1	0.89
Occidental Petroleum Corp.	OXY		61.24	46,900	59,700	1.27	9.9	11.6	81	5.0	0.85
Devon Energy Corporation	DVN		31.07	16,400	24,400	1.49	10.1	13.2	62	0.8	0.77
Marathon Oil Corporation	MRO	B	11.63	9,890	17,000	1.72	9.4	12.8	79	1.7	0.73
ConocoPhillips	COP	B	44.54	55,000	80,000	1.44	9.0	12.2	69	2.4	0.73
Total or Median				*201,800*	*264,000*	*1.36*	*10.0*	*11.9*	*80*	*1.2*	*0.81*
Small Independent											
Cimarex Energy Company	XEC		96.23	9,200	10,600	1.16	10.0	12.1	63	0.3	0.82
California Resources	CRC		7.03	300	6,300	21.0	11.5	14.8	89	-	0.78
Continental Resources (32%)	CLR	B	33.32	4,000	6,100	1.54	8.7	12.5	74	-	0.69
Whiting Petroleum Corporation	WLL		4.59	1,700	5,300	3.15	6.7	12.9	92	-	0.52
Range Resources	RRC	B	16.92	4,200	8,500	2.06	8.6	18.2	31	0.5	0.47
Total or Median				*19,000*	*37,000*	*2.06*	*8.7*	*12.9*	*74*	-	*0.69*
Income											
San Juan Basin Royalty Trust	SJT		7.53	350	350	1.00	13.8	14.7	-	7.2	0.94
Permian Basin RT	PBT		8.43	390	390	1.00	11.7	15.2	78	8.2	0.77
Sabine Royalty Trust	SBR		39.05	570	570	1.00	18.1	27.8	59	5.5	0.65
Dorchester Minerals, L.P.	DMLP	B	14.60	470	470	1.00	11.2	18.4	72	8.5	0.61
Cross Timbers Royalty Trust	CRT	B	14.79	90	90	1.00	10.0	19.5	28	7.8	0.51
Total or Median				*1,900*	*1,900*	*1.00*	*11.7*	*18.4*	*59*	*7.8*	*0.65*
Canada											
EnCana Corporation	ECA		9.53	9,300	15,800	1.69	9.3	10.7	56	0.6	0.87
Imperial Oil Limited (30%)	IMO		28.44	7,300	9,300	1.28	9.0	11.4	67	1.8	0.79
Suncor Energy	SU	B	32.12	53,500	71,500	1.34	9.0	11.5	84	3.1	0.78
Birchcliff Energy Ltd.	BIREF	B	4.53	1,300	1,900	1.49	7.9	14.3	37	1.7	0.55
Cenovus Energy Inc.	CVE		7.73	9,500	19,500	2.06	5.7	10.8	83	2.0	0.53
Total or Median				*81,000*	*118,000*	*1.49*	*9.0*	*11.4*	*67*	*1.8*	*0.78*

EV = Enterprise Value = Market Cap and Debt; Ebitda = Earnings before interest, tax, depreciation, amort.

Estimated Ebitda (cash flow) tied to NTM futures prices for oil and natural gas. NTM = Next Twelve Months ending 6/30/18.

Estimated Present Value (PV) presumes a long-term price for oil of US$70 a barrel and natural gas, $4.00 a million btu.

McDep Ratio = **M**arket **c**ap and **De**bt to **p**resent value of oil and gas and other businesses. For historical research see www.mcdep.com

Table 2

McDep Energy Stocks
Production Operating Leverage
Ranked by McDep Ratio

	Symbol/Rating	B = Buy	Price (US$/sh) 14-Aug 2017	Volume (mmboe)	Oil Equiv. Price ($/boe)	Operating Expense Fixed ($/boe)	Operating Expense Var. (%)	Ebitda NTM ($/boe)	Ebitda NTM ($mm)	Oper Lev Ebitda chg/ Price chg	McDep Ratio
Global Integrated (excl. Downstream)											
Chevron Corporation	CVX		108.71	889	37.01	8	22	20.90	18,587	1.38	0.85
Exxon Mobil Corporation	XOM		78.23	1,463	37.41	7	35	17.30	25,313	1.40	0.82
Royal Dutch Shell	RDS-A	B	55.20	1,292	36.12	2	25	25.10	32,418	1.08	0.78
Total S.A.	TOT	B	50.18	910	35.83	0	42	20.80	18,924	1.00	0.64
Total or Median										*1.23*	*0.80*
Large Independent											
EOG Resources, Inc.	EOG		87.99	228	33.83	10	7	21.60	4,921	1.46	1.03
Pioneer Natural Resources	PXD		132.84	110	33.10	9	9	21.20	2,337	1.42	0.89
Occidental Petroleum Corp.	OXY		61.24	290	34.76	8	17	20.90	6,059	1.38	0.85
Devon Energy Corporation	DVN		31.07	173	25.42	9	10	14.00	2,417	1.64	0.77
Marathon Oil Corporation	MRO	B	11.63	131	27.02	13	0	13.90	1,815	1.94	0.73
ConocoPhillips	COP	B	44.54	437	34.07	6	23	20.30	8,874	1.30	0.73
Total or Median										*1.44*	*0.81*
Small Independent											
Cimarex Energy Company	XEC		96.23	70	25.11	6	16	15.10	1,064	1.40	0.82
California Resources	CRC		7.03	47	37.76	15	30	11.60	549	2.29	0.78
Continental Resources (32%)	CLR	B	33.32	31	30.17	3	14	22.80	701	1.13	0.69
Whiting Petroleum Corporation	WLL		4.59	46	31.23	9	17	16.90	784	1.53	0.52
Range Resources	RRC	B	16.92	129	16.75	8	6	7.70	995	2.04	0.47
Total or Median										*1.53*	*0.69*
Income											
San Juan Basin Royalty Trust	SJT		7.53	3	16.35	5	18	8.40	25	1.60	0.94
Permian Basin RT	PBT		8.43	1	33.20	10	2	22.52	34	1.44	0.77
Sabine Royalty Trust	SBR		39.05	1	28.12	2	11	22.99	31	1.09	0.65
Dorchester Minerals, L.P.	DMLP	B	14.60	2	30.81	7	9	20.93	42	1.33	0.61
Cross Timbers Royalty Trust	CRT	B	14.79	0	33.95	8	10	22.67	9	1.35	0.51
Total or Median										*1.35*	*0.65*
Canada (excl. Downstream)											
EnCana Corporation	ECA		9.53	112	28.15	11	7	15.15	1,696	1.73	0.87
Imperial Oil Limited (30%)	IMO		28.44	64	34.90	14	14	16.00	1,028	1.88	0.79
Suncor Energy	SU	B	32.12	365	45.28	18	12	21.71	7,932	1.83	0.78
Birchcliff Energy Ltd.	BIREF	B	4.53	23	17.82	1	35	10.60	244	1.09	0.55
Cenovus Energy Inc.	CVE		7.73	225	26.69	11	2	15.19	3,422	1.72	0.53
Total or Median										*1.73*	*0.78*

For historical research see www.mcdep.com

Table 3

McDep Energy Stocks
Net Present Value Per Share
Ranked by Reserve Life (Adjustd Resrvs/Prod NTM)

	Symbol/Rating B = Buy		Price (US$/sh) 14-Aug 2017	Shares (mm)	Debt ($mm)	Dividend NTM ($/sh)	P/E NTM	Down-stream/ PV (%)	Proven Undev. Resrvs (%)	Adjustd Resrvs/ Prod NTM	Net Present Value (US$/sh)
Global Integrated											
Exxon Mobil Corporation	XOM		78.23	4,271	91,152	3.08	24	27	31	11.5	100.00
Total S.A.	TOT	B	50.18	2,485	54,515	2.92	12	23	42	9.5	90.00
Chevron Corporation	CVX		108.71	1,893	66,793	4.32	26	20	32	9.0	135.00
Royal Dutch Shell	RDS-A	B	55.20	4,146	126,975	3.76	16	24	25	8.8	80.00
Median										*9.2*	
Large Independent											
ConocoPhillips	COP	B	44.54	1,237	24,405	1.06		-	20	10.3	68.00
Devon Energy Corporation	DVN		31.07	529	8,019	0.24	63	9	20	9.0	45.00
Occidental Petroleum Corp.	OXY		61.24	766	12,800	3.04	48	13	23	9.5	75.00
Marathon Oil Corporation	MRO	B	11.63	850	7,129	0.20		-	39	8.6	19.00
EOG Resources, Inc.	EOG		87.99	579	7,250	0.67		-	30	7.2	85.00
Pioneer Natural Resources	PXD		132.84	170	1,700	0.08	79	-	7	6.3	150.00
Median										*8.8*	
Small Independent											
Range Resources	RRC	B	16.92	245	4,392	0.08	132	-	44	12.1	56.00
Continental Resources (32%)	CLR	B	33.32	119	2,124	-		-	59	11.4	56.00
California Resources	CRC		7.03	42	6,000	-		-	29	10.3	50.00
Whiting Petroleum Corporation	WLL		4.59	363	3,589	-		-	53	12.0	18.00
Cimarex Energy Company	XEC		96.23	95	1,442	0.32	26	-	21	6.2	120.00
Median										*11.4*	
Income											
Sabine Royalty Trust	SBR		39.05	15	-	2.15	18	-	4	12.3	60.00
San Juan Basin Royalty Trust	SJT		7.53	47	-	0.54	14	-	-	10.2	8.00
Permian Basin RT	PBT		8.43	47	-	0.69	12	-	13	9.4	11.00
Cross Timbers Royalty Trust	CRT	B	14.79	6	-	1.15	13	-	-	8.6	29.00
Dorchester Minerals, L.P.	DMLP	B	14.60	32	-	1.25	15	-	-	6.9	24.00
Median										*9.4*	
Canada											
Suncor Energy	SU	B	32.12	1,665	18,069	1.01	23	16	44	13.8	44.00
Cenovus Energy Inc.	CVE		7.73	1,229	10,027	0.16		4	55	12.8	22.00
Birchcliff Energy Ltd.	BIREF	B	4.53	284	638	0.08	46	-	69	12.5	10.00
Imperial Oil Limited (30%)	IMO		28.44	255	2,002	0.50	14	32	23	9.4	38.00
EnCana Corporation	ECA		9.53	973	6,457	0.06		-	43	5.5	12.00
Median										*12.5*	

P/E = Stock Price to Earnings. For historical research see www.mcdep.com.

Table 4

McDep Energy Stocks

Total Return Year-to-Date 2017

Ranked by Unlevered Total Return

	Symbol/Rati		Price ($/sh) 14-Aug 2017	Price ($/sh) 30-Dec 2016	Price Change (%)	Cash Distrib. (%)	Equity Total Return (%)	Debt ($/sh)	Unlevered Total Return (%)	McDep Ratio
Global Integrated										
Royal Dutch Shell	RDS-A	B	55.20	54.38	2	3	5	31	3	0.78
Total S.A.	TOT	B	50.18	50.97	(2)	3	1	22	1	0.64
Chevron Corporation	CVX		108.71	117.70	(8)	2	(6)	35	(4)	0.85
Exxon Mobil Corporation	XOM		78.23	90.26	(13)	2	(12)	21	(9)	0.82
Median					*(5)*		*(2)*		*(2)*	*0.80*
Large Independent										
ConocoPhillips	COP	B	44.54	50.14	(11)	1	(10)	20	(7)	0.73
Occidental Petroleum Corp.	OXY		61.24	71.23	(14)	2	(12)	17	(10)	0.85
EOG Resources, Inc.	EOG		87.99	101.10	(13)	0	(12)	13	(11)	1.03
Marathon Oil Corporation	MRO	B	11.63	17.31	(33)	1	(32)	8	(22)	0.73
Devon Energy Corporation	DVN		31.07	45.67	(32)	0	(32)	15	(24)	0.77
Pioneer Natural Resources	PXD		132.84	180.00	(26)	0	(26)	10	(25)	0.89
Median					*(20)*		*(19)*		*(16)*	*0.81*
Small Independent										
California Resources	CRC		7.03	21.29	(67)	-	(67)	142	(9)	0.78
Cimarex Energy Company	XEC		96.23	135.90	(29)	0	(29)	15	(26)	0.82
Continental Resources (32%)	CLR	B	33.32	51.54	(35)	-	(35)	18	(26)	0.69
Range Resources	RRC	B	16.92	34.36	(51)	0	(51)	18	(33)	0.47
Whiting Petroleum Corporation	WLL		4.59	12.02	(62)	-	(62)	10	(34)	0.52
Median					*(51)*		*(51)*		*(26)*	*0.69*
Income										
San Juan Basin Royalty Trust	SJT		7.53	6.62	14	5	19	-	19	0.94
Sabine Royalty Trust	SBR		39.05	35.15	11	4	15	-	15	0.65
Permian Basin RT	PBT		8.43	7.71	9	5	15	-	15	0.77
Dorchester Minerals, L.P.	DMLP	B	14.60	17.55	(17)	5	(12)	-	(12)	0.61
Cross Timbers Royalty Trust	CRT	B	14.79	17.97	(18)	3	(14)	-	(14)	0.51
Median					*9*		*15*		*15*	*0.65*
Canada										
Suncor Energy	SU	B	32.12	32.69	(2)	1	(0)	11	(0)	0.78
EnCana Corporation	ECA		9.53	11.74	(19)	0	(19)	7	(12)	0.87
Imperial Oil Limited (30%)	IMO		28.44	34.76	(18)	1	(18)	8	(14)	0.79
Birchcliff Energy Ltd.	BIREF	B	4.53	7.01	(35)	1	(35)	2	(26)	0.55
Cenovus Energy Inc.	CVE		7.73	15.13	(49)	1	(48)	8	(31)	0.53
Median					*(19)*		*(19)*		*(14)*	*0.78*
Grand Median					*(18)*		*(14)*		*(12)*	*0.77*
Natural Gas ($/mmbtu)			2.96	3.74	(21)					
Oil -West Texas Intermediate ($/bbl)			47.52	53.72	(12)					
Total Stock Market - U.S.	VTI		126.27	115.32	9					
Developed Markets - ex US	VEA		42.10	36.54	15					
Emerging Markets	VWO		42.78	35.78	20					

Source: *McDep LLC, Yahoo, CME Group, Bloomberg* For historical research see www.mcdep.com

Index of Recent Research

Date	Series	Symbol	Subject	Theme
8-Aug	ISI	SJT	San Juan Basin Royalty Trust	BP Tests Best San Juan Well in 14 Years
4-Aug	ISI	DMLP	Dorchester Minerals, L.P.	Raise Distribution Yield to 8.5%
31-Jul	ISI	CVX	Chevron	Valuable Permian Lands
25-Jul	II	CRT, DMLP, PBT, SBR, SJT		Control Reinvestment with Income Payers
19-Jul	II	COP, DVN, EOG, MRO,PXD, OXY		Potential to Prosper
11-Jul	Meter Reader			Liftoff for Energy Exports
3-Jul	ISI	DMLP	Dorchester Minerals, L.P.	Core Midland Acquisition – Upgrade to Buy
27-Jun	ISI	CLR	Continental Resources	Well-Managed Shale Pioneer
20-Jun	ISI	XOM	Exxon Mobil	Profit from Low-Risk Energy Growth
13-Jun	Meter Reader			Value Beckoning
6-Jun	ISI	MRO	Marathon Oil	A Fourth Shale Focus
30-May	ISI	RDS	Royal Dutch Shell	High Yield While Waiting
26-May	ISI	CVE	Cenovus Energy	High Operating and Financial Leverage
18-May	ISI	DMLP	Dorchester Minerals, L.P.	Midland Basin Spotlight
9-May	Meter Reader			Positive Progress
2-May	ISI	RRC	Range Resources	Growth Accelerating
24-Apr	II	CRT, DMLP, PBT, SBR, SJT		Income Payer Distributions Beat
21-Apr	ISI	PXD	Pioneer Natural Resources	Prominent Permian Producer
17-Apr	ISI	SJT	San Juan Basin Royalty Trust	New Operator to Enhance Value
11-Apr	Meter Reader			IPAA Ideas
30-Mar	ISI	CVE	Cenovus Energy	Buying Out 50% Partner
30-Mar	ISI	COP	ConocoPhillips	Selling Canada
27-Mar	ISI	TOT	Total S.A.	Most Undervalued Global Integrated
21-Mar	ISI	CRT	Cross Timbers Royalty Trust	Top Line Value with Bottom Line Option
14-Mar	Meter Reader			Extra Inventory
3-Mar	ISI	DMLP	Dorchester Minerals, L.P.	Shale Oil Royalties Rising
26-Feb	II	CLR, CRC, RRC, WLL, XEC		Small Cap Producers Rising Again
21-Feb	ISI	MRO	Marathon Oil	A Third, a Third, a Third
14-Feb	Meter Reader			Non-U.S. Buys at Low McDep Ratio
6-Feb	ISI	COP	ConocoPhillips	Steady Volume
3-Feb	ISI	RDS	Royal Dutch Shell	BG Paying Off
1-Feb	ISI	XOM	Exxon Mobil	Looking to New Leader
30-Jan	ISI	CVX	Chevron	LNG and Permian Positives
17-Jan	Meter Reader			Buy Stocks with Low McDep Ratio
31-Dec	Meter Reader		Year-End Special with New Tables	Natural Gas Storage Trend Reverses
13-Dec	Meter Reader			Optimistic Outlook 2017
6-Dec	II	XOM, RDS, CVX, TOT		Total Return Upside
28-Nov	II	COP, DVN, EOG, MRO, OXY		Permian Players
22-Nov	II	CRT, DMLP, PBT, SBR, SJT		Income Payers Sparkle
15-Nov	Meter Reader			Growth, Inflation and Trump
9-Nov	ISI	ECA	Encana Corporation	Raise NPV to US$10 from US$6

MR = Meter Reader (published monthly on or about second or third Tuesday)
ISI = Independent Stock Idea
II = Industry Idea
For historical research by stock, go to mcdep.com, click on Stock Ideas, click on stock by name.

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