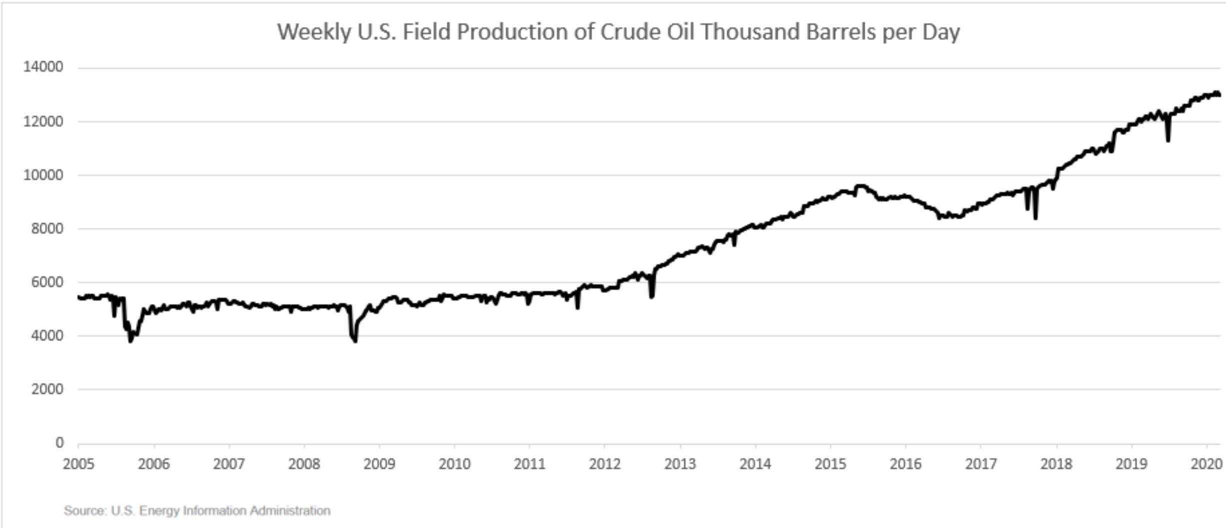
In the Quiver

Mitigating the Potential Impact of COVID-19 and a Crude Oil Price Collapse on Wyoming's Energy-Centric Economy Through Actionable Investment Strategies Available to the State

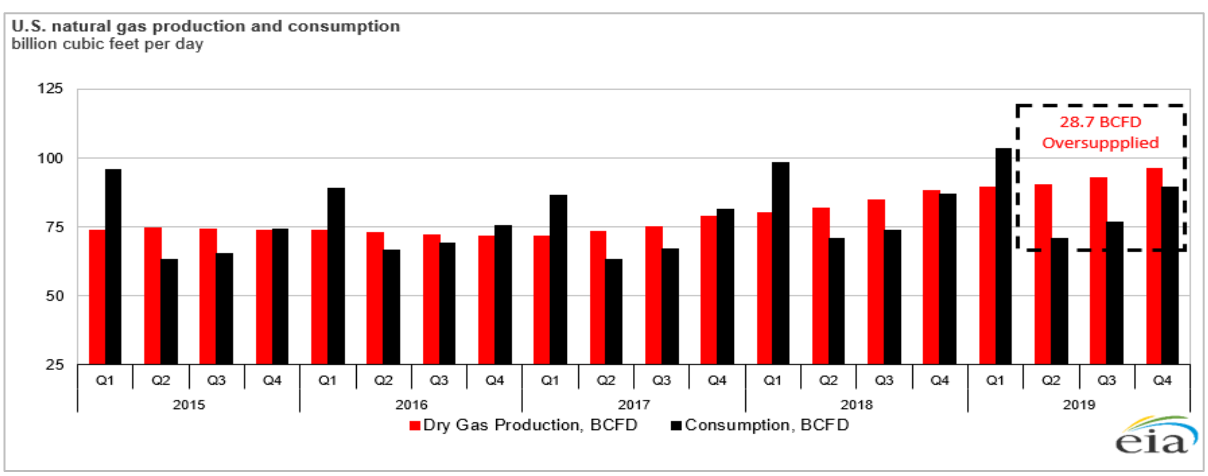
Amidst waning demand fundamentals, a beleaguered capital market system, and now the one-two punch of COVID-19 and a Saudi-Russia oil price war, energy markets are facing an unprecedented challenge for survival. Furthermore, economies that depend largely on revenue derived from natural resources are entering uncertain times and must be proactive to protect energy investments and manage constituency obligations. Wyoming has a long history of natural resources development, fostering decades of capital deployment and job growth through coal, oil, and natural gas. To maintain that energy fulcrum and mitigate the long-term effects of a protracted economic downturn, a thoughtful approach to navigating volatility will be required. The following sets out to provide a macro outlook for oil and natural gas, investigate the associated impact on Wyoming's economy, and identify strategies to limit that impact while supporting Wyoming's energy industry.

<u>Why This Downturn is Different</u>

To understand why energy valuations and crude oil collapsed with such velocity in recent weeks, it is imperative to consider the market conditions as we entered the new year. Beginning fifteen years ago in 2005, a veritable Golden Decade began for oil and gas producers. Alongside a rising tide of commodity prices driven by unprecedented Asian demand and historically low interest rates for debt financing, energy producers launched a revolution in drilling and completions technology that unlocked vast shale resources and established the United States as a worthy opponent to the Organization of Petroleum Exporting Countries (OPEC) and Russia. Capital investment through public and private equity, institutional investors, and a robust high yield market fueled this growth trajectory with an unofficial "Growth at any Cost" mantra. As shale oil propelled U.S. production up from 5 million barrels per day (bpd) in 2005 to 9 million bpd in 2014, cracks were surfacing in the foundational supply and demand balance; Asian demand was slowing, crude oil price was slipping, and Saudi Arabia was losing market share.

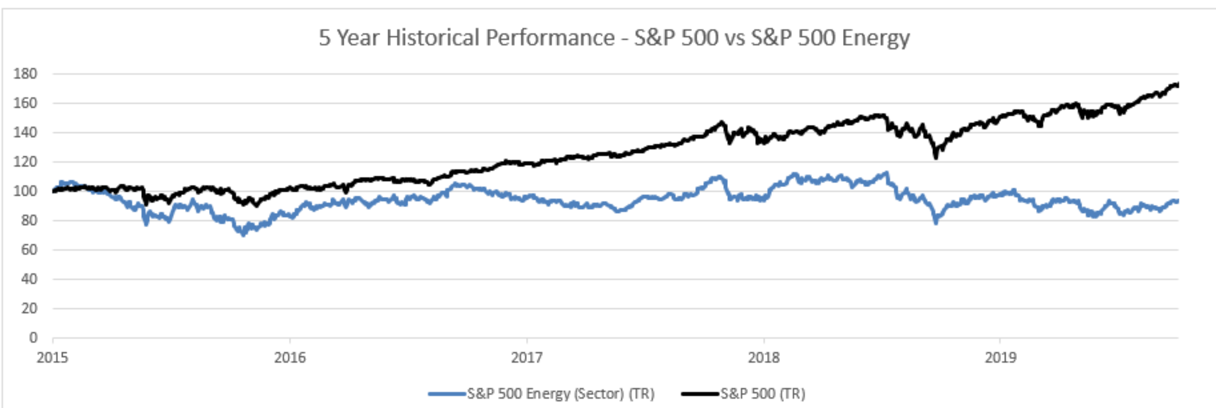


OPEC, led by Saudi Arabia, collectively manages approximately 1/3 of the world's oil supply. Since the early 1990s, they have maintained critical leverage over energy producers by adjusting production volumes to support price and maintain market share. As US shale output began to outpace global demand in early 2011, crude oil price fell from $106 per barrel in January 2011 to $79 per barrel by that summer. To combat the oversupply and maintain price support, OPEC established a production limit on it's members of 30 million bpd with Saudi Arabia leading the curtailment efforts. Now with a new price floor in place and still-eager capital markets, U.S. producers continued their rapid development of shale reserves driving domestic production towards 9 million bpd. As 2014 unfolded, Asian demand driven by Beijing policies pre- and post- the 2008 Olympics started to wane, U.S. oil production was continuing to grow, and the likelihood of an oversupplied oil market was emerging. This was a familiar scenario, though, and the market expectation was that once again OPEC would curtail its own production volumes to protect price. Saudi Arabia, unwilling to further artificially support the U.S. oil economy, did the unexpected in November 2014 and led OPEC to maintain its current output of 30 million bpd, rapidly accelerating an oversupply imbalance that pushed crude oil as low as $38 per barrel by fall of 2016. Natural gas prices, which had already been suppressed because of a multi-year oversupply driven by shale oil production and the associated gas from that production, slid further to a low of $1.73 per mmbtu by March 2016.



As the impact of OPEC's decision and continued oversupply spread throughout the commodities market, the financial health of many oil and gas operators began failing. With evaporating revenue, high capital costs, and dwindling liquidity, a wave of bankruptcies began to unfold in 2015. In the following 24 months, more than 100 oil and gas producers filed for bankruptcy and forced the restructuring of $74 billion in secured and unsecured debt. U.S. oil production fell almost 1 million bpd to 8.8 million bpd by late 2016. Not unscathed by falling prices, Saudi Arabia finally capitulated by leading OPEC and certain affiliated producers to curtail production in November 2016.

In a vacuum, this type of volatility and capital destruction would seemingly dissuade future investment. From an investment perspective, though, energy valuations were dislocated relative to a robust broader market. This prompted a massive infusion of new capital into the energy space with investors taking large equity and credit positions in post-reorg bankrupt firms and surviving firms alike. With refilled coffers and price support from the Middle East, U.S. energy producers plowed ahead ultimately pushing crude production north of 12 million bpd in 2019. As the U.S.-China trade dispute accelerated in early 2019 and demand concerns began to percolate up, the capital markets that rescued oil and gas producers in 2016 began to retreat. Investors shifted their focus to sectors with less volatility and less reliant on a robust M&A market to create value, ultimately removing more than $100 billion of liquidity from the energy space.



Although in recent weeks, many upstream companies have signified a shift towards cash flow neutrality and limited spending, those goals may be difficult to achieve given the backdrop of extraordinarily volatile commodity markets. And, amidst a wholesale "exit" of energy capital investment by certain commercial banks and institutional investors, there remains significant difficulty for many upstream companies to meet their debt service and refinancing needs. Since the initiation of the OPEC+ price war, numerous mid- and large-cap E&Ps have been downgraded by the major credit agencies, a foreboding sign towards the vitality of the micro-, small-, and mid-cap upstream universe. However, there are some bright spots on the horizon, specifically natural gas production. With an expected decline in associated gas production as crude production drops, consolidation in the major unconventional gas basins (Appalachia and Haynesville), and an expected increase in demand via LNG and Mexican exports, the 2021 and beyond gas futures price has traded up in recent weeks.

The Potential Impact on the Wyoming Economy

Simply put, the State of Wyoming has a long history of natural resource development and relies heavily on revenue from oil, gas, coal, and other natural resources to support the state budget. As of June 30, 2019, the State of Wyoming managed a total investment portfolio valued at $20,296 million across eight portfolio funds. Within these pools of capital, two funds account for more than half of the total investment portfolio: The Permanent Wyoming Mineral Trust Fund ("PWMTF") with $7,437 million and the Permanent Land Funds ("PLF") with $4,039 million. The PWMTF, established in 1974 by the Wyoming Legislature, is funded by mineral severance tax revenue and provides income to the State General Fund. The PLF is funded by royalties, leases, and other fees generated from state land and provides income to the various land funds, the largest being the Common School Land Fund that provides for Wyoming's K-12 educational program.

Wyoming State Investment Portfolio - June 30th 2019					Percent of Total Market
		Cost Basis		Market Value	Value
Permanent Wyoming Mineral Trust Fund	**$**	**7,437,123,662.00**	**$**	**8,020,683,874.00**	**37%**
State Agency Pool	$	4,303,297,337.00	$	4,352,175,275.00	20%
Permant Land Funds	**$**	**4,038,953,167.00**	**$**	**4,334,006,824.00**	**20%**
Workers Compensation Fund	$	2,097,734,927.00	$	2,248,008,408.00	10%
LSRA	$	1,505,653,778.00	$	1,534,130,150.00	7%
Hathaway Scholarship Endowment Fund	$	557,662,653.00	$	595,618,082.00	3%
Pool A	$	241,830,127.00	$	238,994,704.00	1%
Excellence in Higher Education Endowment Fund	$	114,147,275.00	$	121,336,620.00	1%
FY 2019 Total	$	20,296,402,926.00	$	21,444,953,937.00	100%

In the prior fiscal year, the PWMTF received mineral severance tax revenue of $142 million. Of that $142 million, approximately 84.5%, or $120.1 million, was received from oil, natural gas, and condensate. Critically, this is against a backdrop of upstream oil and gas development that increased gross Wyoming crude oil production by more than 40 thousand barrels of oil per day ("bopd") during the same period. Through its main revenue source, this fund is highly levered to commodity performance. The impact of a downcycle is clearly illustrated in FY2017 income when revenue decreased to $53.9 million, versus $180 million in FY2016 and $208 million in FY2015. Recall during the period from July 1, 2015, through June 30, 2017, crude oil averaged $45.70 per barrel, natural gas averaged $2.62 per mmbtu, but Wyoming oil and gas production fell by 12% and 7.5%, respectively, as the industry struggled through an oversupplied market.

The PLF received $99.4 million of revenue in FY2019. Of the total received revenue, $60.3 million came from oil and gas lease royalties. Over the last five years, the annual revenue received by the PLF has declined 75% from a peak of $414 million in 2015 to $99.4 million in 2019. Examining the year-over-year royalty income for PLF highlights the tremendous energy exposure of this fund with combined royalty income from oil, gas, and coal falling nearly $40 million from FY2018 to FY2019.

Combined, the PWMTF and the PLF account for greater than half of the state's investment portfolio. Of the nearly $245 million of received revenue in these funds last year, nearly three quarters [73.4%] was derived from the performance of the oil and gas industry and its underlying commodities. With the profoundly negative impact to economic demand from COVID-19, massively disrupted crude oil fundamentals, and no available capital market rescue, revenue income for these funds will be significantly impacted in FY2020 and FY2021.

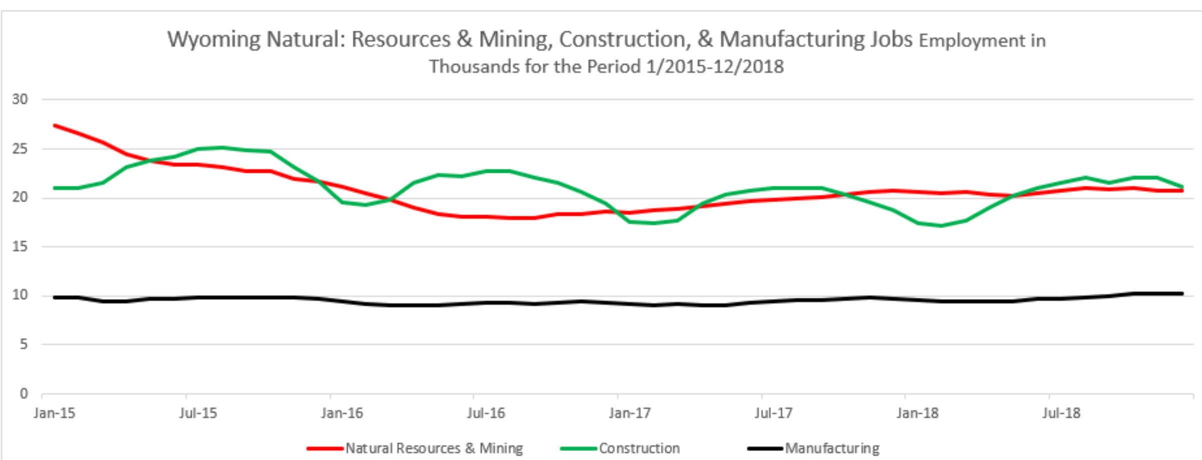
Permanent Wyoming Mineral Trust Fund

	June 30, 2018 Balance	Revenue	June 30, 2019 Balance
Beginning Balance	$ 7,294,935,589		
Severance Tax			
Oil		$ 59,286,483	
Natural Gas		$ 48,743,851	
Condensate-Gas		$ 6,240,152	
Stripper Oil		$ 5,958,845	
Coal		$ 39,159,235	
Other Valuable Products		$ 109,148	
Recognized Deferred Gain (Loss)		$ 6,257,118	
Income Distribution Adj-Prior Year		$ (23,566,864)	
TOTAL		**$ 142,187,967**	**$ 7,437,123,556**

Common School Lands Fund

	June 30, 2018- Balance	Revenue	June 30, 2019 Balance
Beginning Balance	$ 3,741,256,005		
Oil & Gas Lease Royalties		$60,326,437	
Coal Lease Royalties		$28,119,474	
Sodium & Trona Lease Royalties		$ 3,781,843	
Surface Damage		$ 2,827,915	
Real Estate Sales		$ 1,864,685	
Right-of-Way Easements		$ 1,818,216	
Bentonite Lease Royalties		$ 440,114	
Sand & Gravel Royalties		$ 171,146	
Misc Mineral Lease Royalties		$ 18,481	
Uranium Lease Royalties		$ 10,990	
TOTAL		**$99,379,301**	**$ 3,840,635,306**

Of equal relevance to the decline of severance tax and royalty income is the negative impact on Wyoming jobs in an energy-centric economic downcycle. Natural resources and mining jobs account for ten percent of all private, non-agricultural employment in the state. Combine these with construction and manufacturing jobs, which undoubtedly have cross-alignment with natural resources and mining, and the total notional energy employment exposure is approximately 25% of state employment. In January 2015, natural resources and mining accounted for 27,400 Wyoming jobs. Eighteen months later, at the trough of the last commodity cycle, the natural resources and mining job count was 18,000. Ten thousand direct jobs were lost as a result of the prior downturn in commodity price. Alarmingly, as of January 2019, that same job count was 20,800 implying that only 2,800 of the lost jobs had returned. Of further concern is that construction and manufacturing jobs have effectively remained stagnant over the same period at 21,000 jobs and 9,500 jobs, respectively. Backdrop this against the performance of the S&P 500 over the same five years and it becomes very clear how closely these Wyoming jobs are correlated to the energy sector. As crude oil and natural gas settle at historic lows, there is heightened risk of a downward step-change in Wyoming energy jobs. Evidenced by the prior downturn, a substantial number of these jobs may not return leading to negative effects throughout the broader state economy.



Wyoming Dept of Workforce Services

Actionable Strategies to Mitigate Economic Impact

While the financial and employment outlook appears grim in an extended energy-centric economic downturn, the State of Wyoming and the Wyoming Oil & Gas Commission are uniquely equipped to pro-actively support the oil and gas industry through this cycle. A three-pronged approach provides immediate financial relief to operators, access to longer term liquidity amidst the volatility, and establishes a platform to more broadly diversify state revenue streams. This paper advocates the use of existing legislative authority to prosecute the following three programs:

1. Amend Chapter 3, Sec 16 of the Wyoming Oil & Gas Conservation Commission Rules to extend the permitted allowable idle well period, defer idle well bonding requirements for wells shut in as a result the current oil price collapse, and defer required mechanical integrity testing on idle wells.
2. As permitted by the State's Master Investment Policy, deploy the 5% Opportunistic Allocation of the Permanent Wyoming Mineral Trust Fund to acquire distressed credit positions of Wyoming oil and gas producers and restructure those loans with more flexible terms.
3. As permitted under Article 16, Sec 12 of the Wyoming State Constitution, utilize the Authorized Revolving Economic Development Loan program alongside the Permanent Wyoming Mineral Trust Fund Opportunistic Investment allocation to inject senior liquidity to oil and gas producers by extending new credit lines and backstopping existing loans.

First, an immediate extension to the permitted allowable idle well period offers near-term liquidity relief to oil and gas producers. With falling revenue from the rapid decline in commodity prices, obligating an operator to plug and abandon wells in this environment is financially onerous and may well create economic waste. Of the 10,980 idle wells in Wyoming (exclusive of CBM), 47% produced oil or gas within the last five years suggesting they may be reactivated in a more robust commodity environment. Chapter 3, Sec 16 of the WYOGCC rules states that a well may not remain temporarily abandoned or shut-in for more than 24 months, subject to an extension of up to two years. By providing an initial 12-month extension to all operators with outstanding temporarily abandoned or shut-in wells, the WYOGCC can immediately free up additional liquidity for these producers. Other oil and gas producing states are investigating or actively employing this strategy, most notably North Dakota and Michigan. Alongside these extensions, a temporary moratorium on new idle well bonds and mechanical integrity testing should be implemented. These changes will provide immediate, critical operating cash that can be allocated to operating expenses, payroll, and debt service for producers. Furthermore, these initial steps should be augmented by a more fulsome review of State oil and gas policies that affect a financial burden on operators to determine others which could be waived or extended.

Secondly, by modifying asset allocation instructions to the external managers of the State's investment portfolio, Wyoming can shift considerable investment capital in the PWMTF towards supportive credit investments in the energy sector. As a background, many Wyoming oil and gas producers utilize some form of debt capital to fund operations and development. The size of these loans is determined and collateralized by the value of a producer's proven oil and gas reserves. With the downward revision in future commodity prices, the value of this collateral has decreased creating a situation where these loans are now impaired. Unable to service this debt due to falling revenue or issue equity capital to cure a deficiency, some of these producers may face a costly and time-consuming bankruptcy that would further exacerbate the negative trend in energy jobs. Per the Master Investment Policy of the State Loan and Investment Board, the PWMTF is allowed an "Opportunistic Investment" allocation of up to 5%. Appendix

A of the Policy directs that the Opportunistic Investments allocation be used to pursue investment opportunities that are "episodic in nature" and notes "the best opportunities tend to appear during periods of market stress." Under the existing policy, $350 million in investment capital could be made available for a strategy whereby the State's investment managers purchase existing bank loans of Wyoming oil and gas producers from the banks that currently hold the loan, likely at a discounted price given current market conditions, and restructure them with more flexibility. Additionally, the PWMTF is permitted to hold an allocation of up to 9% in bank loans which could further support this strategy.

Lastly, Article 16, Sec 12 of the Wyoming State Constitution provides for another powerful tool to inject liquidity to the energy sector. Through the constitution, the State is permitted to create an Economic Development Loan Fund "in an amount not exceeding one percent (1%) times the assessed value of the taxable property in the state as shown by the last preceding general assessment for taxation." The Economic Development Loan Fund can be used "to provide fully-funded loan guarantees or loans to proposed or existing enterprises, which will employ people within the state, provide services within the state, use resources within the state or otherwise add economic value to goods, services or resources within the state." The assessed value of taxable property currently stands just shy of $13,000 million and would allow for approximately $130 million of fresh capital to provide loan guarantees or write new loans to existing Wyoming oil and gas firms. Through prudent underwriting, the State can provide a liquidity backstop to the energy industry while generating substantial new revenue through interest expense and mineral royalty collateralization. Further, as part of a stronger effort to de-lever the economy from its current energy exposure, the state should consider broader use of the Economic Development Loan Fund to foster non-energy business growth. Wyoming offers access to infrastructure, low utility costs, and a workforce wherein a quarter of the population is college educated. Moreover, it boasts one of the lowest effective tax rates in the United States with no state-income tax and a relatively low property tax rate. With these resources, Wyoming is well positioned to capitalize on the increasing regulatory and political friction of neighboring mountains states and create a more accommodating business environment. By allocating an existing portion of the current fund allotment or amending the 1% limit upward, the state can use the loan fund to support new business growth and an existing workforce facing potential employment challenges.

As the market volatility accelerates and real-time data continues to suggest a prolonged economic downturn, now is the time to be on the front foot. With such elevated exposure to the energy markets, Wyoming will undoubtedly be impacted. However, unlike many other states, Wyoming has access to a quiver of powerful financial tools to manage through this cycle. By employing a proactive and thoughtful investment approach, the state could use the tools at hand to provide nearly $500 million of liquidity to the energy sector; all the while protecting jobs, generating new sources of revenue, and furthering the diversification of revenue sources.

About Open Water Capital Partners

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In today's world, it is imperative to have a partner who can navigate volatility and develop solutions that drive value for tomorrow. The Open Water team is comprised of life-long energy professionals with backgrounds in engineering, consulting, management, and financial expertise. With nearly two decades of boots-on-the-ground operating experience, more than twenty years of technical reserve evaluations, and ten years of capital restructuring, our team is uniquely suited to drive value from the asset level through the entire organization.

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