

ENERGY ACCOUNTABILITY SERIES



U.S. CHAMBER OF COMMERCE
INSTITUTE FOR 21ST CENTURY ENERGY

WHAT IF...

ENERGY PRODUCTION WAS BANNED ON
FEDERAL LANDS AND WATERS?

A large red prohibition sign (a circle with a diagonal slash) is overlaid on a map of the United States. The words "OFF LIMITS" are written in large, bold, black, hand-painted letters across the center of the sign.

**OFF
LIMITS**

About the

ENERGY ACCOUNTABILITY SERIES

This paper marks the first in a series of reports that we will be releasing this summer and fall, each taking a substantive look at what might have happened in the past – or could happen in the future – if certain energy-related ideas and policy prescriptions put forth by prominent politicians and their supporters were actually adopted. We are calling it the Energy Accountability Series.

Certainly, one doesn't need to look far these days to find platforms or outlets that claim to be definitive “fact-checkers” of all manner of utterances candidates make on the campaign trail. On that, the Energy Accountability Series will not seek to reinvent the wheel. What we are much more interested in – and what we think will be much more valuable to voters, as well – is taking a step back to better understand (and quantify where possible) the real-world, economy-wide consequences of living in a world in which candidates' rhetoric on critical energy issues were to become reality.

Too often, there is a temptation to dismiss statements made by candidates as things said “off the cuff, or in the “heat of the moment,” or offered up merely to “appeal to their base.” This is incredibly cynical, and it needs to change. A candidate's views and the things he or she says and does to win the support of interest groups have a real impact on how policy is shaped, and ultimately implemented. That is especially true on energy issues today, as groups continue to advance a “Keep It In the Ground” agenda that, if adopted, would force our country to surrender the enormous domestic benefits and clear, global competitive advantages that increased energy development here at home have made possible. Accordingly, candidates and public opinion leaders should be taken at their word, and this series will evaluate what those words mean.

The Energy Accountability Series will ask the tough questions and provide quantitative, clear-eyed answers on the full impacts and implications of these policies, and it will do so irrespective of which candidates, groups or political parties happen to support or oppose them. Our hope is that these reports help promote and inform a fact-based debate of the critical energy issues facing our country. Armed with this information, voters will have the opportunity this fall to make the right choices for themselves and their families.



OUR MISSION

The mission of the U.S. Chamber of Commerce's Institute for 21st Century Energy is to unify policymakers, regulators, business leaders, and the American public behind a common sense energy strategy to help keep America secure, prosperous, and clean. Through policy development, education, and advocacy, the Institute is building support for meaningful action at the local, state, national, and international levels.



The U.S. Chamber of Commerce is the world's largest business federation representing the interests of more than 3 million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations.

What If Energy Production Was Banned on Federal Lands and Waters?

The public debate over federal-lands energy development has changed significantly in recent years. Less than a decade ago, only the most extreme members of Congress were antagonistic enough to argue against energy development on federal lands. In the face of rising gasoline prices, companies engaged in the exploration and production of oil and natural gas on federally controlled acreage were actually criticized for not developing their leases fast enough.

However, today it is quite rare to find bipartisan support for energy development on federal lands, with the 2016 Democratic Party Platform aggressively proposing a “phase down” of energy development. Prominent Democrats have evolved from a “use it or lose it” strategy less than a decade ago to today simply favoring a “lose it” approach, which itself is as an offshoot of the more transparent “Keep It In the Ground” philosophy.

Unfortunately, this rhetoric has already translated into anti-energy executive actions. Under the Obama administration, federal energy production has lagged behind a huge expansion of oil and natural gas development on state and private lands, in part because of overly burdensome regulations and continued foot-dragging on leasing decisions. Initially, the administration appeared to support an “all of the above” energy policy, but instead restricted energy development on federal lands with some of its first official actions.

In the past year alone, the Obama administration has canceled lease sales in the Arctic and Atlantic offshore planning areas, and even rescinded leases that had already been issued, including the post-hoc withdrawal in July of 25 previously awarded leases in Colorado. On other occasions, federal agencies required to hold quarterly onshore lease sales in western states have decided not to comply with the law. Since 2014 federal agencies have illegally refused to conduct 34 separate lease sales in eight separate states.

The administration has also imposed a blanket moratorium banning the leasing of coal on federal lands. This is a remarkable turnaround from the days when leading Democrats demanded more energy production from federal lands and pressured companies to develop their leases as quickly as possible.

What explains the change? Principally, it is the growing political influence of “Keep It In the Ground” activists who reflexively oppose the development and consumption of all fossil fuels. These activists have relentlessly lobbied the administration in recent years to oppose energy projects in the name of fighting climate change. They also benefit from a support base in Congress, with more than 20 lawmakers in the Senate and House supporting the “Keep It In the Ground” Act, which would ban oil, natural gas and coal leasing on federal lands as a first step toward banning fossil-fuel production everywhere.

Perhaps most concerning, the “Keep It In the Ground” concept gained major attention during this year’s Democratic presidential primary. It was the central plank of the energy platform proposed by U.S. Sen. Bernie Sanders (I-Vt.) and his rival for the Democratic nomination, former Secretary of State Hillary Clinton, came under intense pressure to follow suit. When asked if she would ban fossil fuel extraction on federal lands, Clinton responded “That’s a done deal.”

This begs an obvious, heretofore unexamined question: **What would a ban on fossil fuel extraction on federal lands and waters actually look like?** This report, the first in the Energy Institute’s Energy Accountability Series, seeks to answer that very question.

To estimate the economic impacts, we examined data on jobs, royalties and production levels from federal lands. We then used IMPLAN, a macro-economic model, to estimate the overall macroeconomic effects of blocking future energy development on federal lands.

We examined both a ban on all production – from existing and future leases – and a ban on future leases only. With the help of the IMPLAN model, we quantified the “ripple” (or multiplier) effect through the economy and ultimately to households.

As explained in this report, the impact of a “Keep It In the Ground” policy towards federal energy resources would be dramatically negative, especially in the Western U.S and Gulf of Mexico. Yet, the prospect of such a policy is very real, based on existing Obama administration policy coupled with the proposals and rhetoric coming from candidates and special-interest groups this election season. On the following page are just a few examples of the deeply concerning political promises and political rhetoric that have given such momentum to the “Keep It In the Ground” concept.

“ “ 350.org activist: “What did you mean by extraction on public lands is a done deal?” Hillary Clinton: “That’s where the president is moving: No future extraction. I agree with that.”

Hillary Clinton, Democratic Nominee for Preident, Feb. 4, 2016

350.org activist: “Will you support Hillary Clinton and support a ban on offshore drilling?” U.S. Sen Tim Kaine (D-Va.), vice presidential nominee, “I actually am now in that position.”

U.S. Sen. Tim Kaine (D-VA), Democratic Vice Presidential Nominee, Aug 14, 2016

“ “ We will phase down extraction of fossil fuels from our public lands.”

2016 Democratic Party Platform

“In the future, federal land – the land that is owned by all of us – will not be used for the extraction of fossil fuel: Coal, oil or gas.”

U.S. Sen. Bernie Sanders (I-Vt.), Nov. 4, 2015

“ “ Let’s make our federal lands off limits, and let’s do the smart thing and keep it in the ground.”

U.S. Sen. Jeff Merkley (D-Ore.), Nov. 4, 2015

“The natural place to start phasing out supply is on our public lands...”

Kieran Suckling, Executive Director, Center for Biological Diversity, Nov. 4, 2015

“ “ We must keep fossil fuels in the ground — starting with public lands — and transition rapidly to a clean, renewable energy future.”

Micah Parkin, 350 Colorado, Nov. 9, 2015

“These public lands are one of the easiest places for us to control the flow of carbon into the atmosphere.”

Bill McKibben, founder of 350.org & DNC platform committee member; Nov. 5, 2016

“ “ If President Obama is to keep his commitment to curbing climate change, he must do everything he can to keep fossil fuels in the ground and stop drilling and fracking on public lands.”

Wenonah Hauter, Executive Director, Food & Water Watch, Sept. 14, 2015

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EXECUTIVE SUMMARY

On January 15, 2016, the Obama administration announced its decision to immediately implement a moratorium on the leasing of federally controlled land for coal production, while also initiating a broader programmatic review of the leasing program that officials estimated would take at least three years to complete.¹

Activists aligned with the so-called “Keep It In the Ground” effort, a campaign that has called for the cessation of all development and consumption of oil, natural gas and coal, cheered the news, with Greenpeace hailing the announcement as a “historic day.”

Three weeks after the new policy was issued, Democratic presidential nominee Hillary Clinton was asked after a campaign event whether she agreed with the administration’s decision, and also whether she would support a policy to ban all fossil-fuel extraction on public lands. Clinton’s response, captured on video, was “Yeah, that’s a done deal.”² Asked to clarify, Clinton said “that’s where the president is moving. No future extraction. I agree with that.”³

U.S. Sen. Bernie Sanders (I-Vt.), previously Sec. Clinton’s main challenger for the Democratic presidential nomination, had already staked out a position in support of halting all fossil-fuel extraction on public lands, including the development of oil and natural gas.

In November 2015, he and several members of the Senate Democratic caucus introduced the “Keep It In the Ground Act,” which, according to the bill text, would prohibit the Department of the Interior from entering into “any new lease” or “renew, reinstate, or extend any” existing lease for the purpose of developing “onshore fossil fuels.”⁴ “I applaud the president for taking bold

action,” Sanders said in a statement following the Interior moratorium announcement. The best way to protect the environment, he said, “is by keeping fossil fuels in the ground.”⁵

Aside from statements by political figures, most media coverage of the movement to end energy production on federal lands to-date has only focused on how these positions might narrowly impact the coal industry. Various news outlets have characterized the policy as only having a “modest” impact on markets, while the White House itself claimed in a June 2016 report that it would have “no impact on [coal] capacity investment and dispatch decisions.”⁶

However, this new study paints a starkly different picture. In fact, we find that restricting or eliminating production of oil, natural gas and coal on federal lands would carry significant and wide-ranging negative economic consequences.

Federal lands currently account for roughly 24 percent of our nation’s oil, natural gas, and coal production. Development of these resources, while dwarfed by massive production increases on private and state-controlled acreage, has substantially contributed to the recent energy development renaissance that the United States has experienced and has made a meaningful and positive impact by lowering energy prices for consumers and dramatically reducing energy imports from abroad.

Instituting a ban on future federal-lands leasing and stopping the current production of these resources would increase energy prices for consumers by removing low-cost resources from the available supply stream. The impact would be immediate and severe to the U.S. economy, leading to the loss of hundreds of thousands of American jobs, and robbing the

federal government and primarily Western states of potentially billions of dollars in revenues in the form of lost royalties.

All told, our analysis finds that stopping energy production on federal lands and waters would result in:

- The loss of **nearly a quarter** of the nation's current production of coal, oil and natural gas
- The loss of more than **\$11.3 billion per year** in annual royalties and rental fees for federal and state governments;⁷
- Over **\$70 billion in annual U.S. GDP** threatened; and
- The loss of more than **100,000 direct jobs** associated with energy development on federal lands (both onshore and offshore), impacting another **280,000 indirect and induced jobs** across the broader economy

Several U.S. states and regions would be disproportionately affected by a cessation in federal-lands energy development. Among them:

- **Wyoming** would lose **32,600 jobs** (13,300 direct, 19,300 indirect and induced) and almost **\$900 million in annual royalty collections** (2015), representing about **20 percent** of the state's education-related expenditures.

- **New Mexico** would lose **24,300 jobs** (10,000 direct, 14,300 indirect and induced) and **\$496 million in annual royalty collections** (2015), representing **eight percent** of the state's total General Fund revenues;
- **Colorado** would lose **50,000 jobs** (15,300 direct, 34,700 indirect and induced), and as much as **\$125 million in annual royalty collections** (2015); and
- **Along the Gulf Coast**, the loss of **39,000 direct jobs** associated with Outer Continental Shelf oil and gas development, and the loss of another **71,000 indirect and induced jobs** across the broader Gulf Coast economy -- on top of **\$28 million in lost annual state royalty collections** (2015).

Our report also includes an analysis of the potential impacts associated with imposing a ban on **future** federal lands energy leases, keeping intact, for now, the ability of existing lease-holders to continue production. In the end, our analysis finds that the economic impact would be about the same under Scenario 2, if just delayed slightly over time as existing production falls off and is not replaced by new development activities owing to the ban on the issuance of future leases.

What if Energy Production was Banned on Federal Lands and Waters? Potential Consequences:



Under Scenario 2, we find that royalties generated from federal-lands development would decrease by more than **75 percent** over the next 15 years, with the federal government experiencing a drop in annual royalty collections of more than **\$6 billion**.

States would lose out on **\$780 million** in annual royalties. And more than **200,000 jobs** tied directly and indirectly to existing federal-lands development activities would also be lost. It is possible that some of these jobs might be “picked up” as a result of a shift in production to private and state lands. But this would be of minor consolation to the handful of states in which the majority of federal-lands resource development takes place today. For these states, the jobs, revenue, and royalties generated by these existing activities would be lost forever.

CITATIONS

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- 3 "Clinton Calls Ban on Future Extraction on Public Lands a 'Done Deal,'" 350.org; Feb. 5, 2016 (<http://350action.org/clinton-calls-ban-on-future-extraction-on-public-lands-a-done-deal>)
- 4 "Introducing 'Keep It in the Ground' Bill, Sanders Goes Big on Climate," Common Dreams; Nov. 4, 2015 (<http://www.commondreams.org/news/2015/11/04/introducing-keep-it-ground-bill-sanders-goes-big-climate>)
- 5 Sen. Sanders on Twitter, Jan. 15, 2016 (<https://twitter.com/sensanders/status/688104138559729664>)
- 6 "The Economics of Coal Leasing on Federal Lands," Executive Office of the President; June 2016 (https://www.whitehouse.gov/sites/default/files/page/files/20160622_cea_coal_leasing.pdf)
- 7 Based on the Department of the Interior Office of Natural Resources Revenue (ONRR) average royalty data from 2011 through 2015.

CHAPTER

1

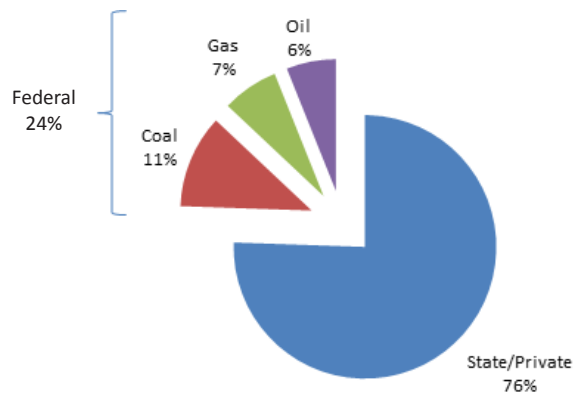
CONTRIBUTION OF
FEDERAL LANDS TO U.S.
ENERGY PRODUCTION

Over the past decade, and in particular the past five years, development of oil and natural gas resources in the United States has increased significantly, driven in large part by advances in drilling and completions technology that has allowed producers to dramatically increase the available supply of energy.

But because these developments have largely taken place on state and private-controlled lands, it's easy to lose sight of the still-significant role that federal lands development continues to play in contributing to the nation's overall production.

Acreage administered by the federal government includes both the 28 percent of the nation's total onshore land area controlled by the government, as well as the submerged federal acreage that exists along the Outer Continental Shelf¹. In 2015, 24 percent of our nation's coal, oil, and natural gas was mined or extracted from federal lands (Figure 1).

Figure 1 - Total U.S. Fossil Fuel Production (2015), (energy equivalent basis)



Source: Office of Natural Resources Revenue (ONRR)

But even as the United States continues to experience and benefit from the significant expansion of domestic energy production in the aggregate, the amount of energy produced on

federal lands has declined both in terms of total volume and share of overall U.S. production. Figure 2 highlights the steady decline that has taken place over the past 10 years, with federal lands previously accounting for 35 percent of total U.S. fossil fuel production in 2006 and in 2015 only accounting for 24 percent.

These declines have come amidst a renaissance in overall fossil fuel production in the United States. Advances in drilling, completions, and seismic mapping technology have fundamentally reshaped America's energy landscape, helping the country increase oil production by 88 percent since 2006 and natural gas production by 51 percent. Much of the growth in this production has occurred in states with relatively little federally-administered acreage, such as Texas, North Dakota, and Pennsylvania.

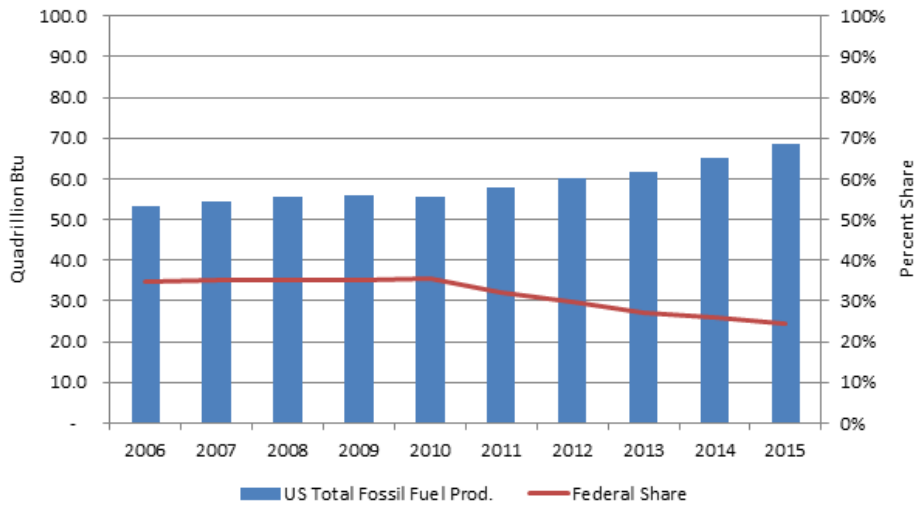
The decrease in federal-lands energy production has primarily been driven by significant drop-offs in offshore natural gas and coal development, as shown in Figure 3.

Offshore natural gas production, virtually all of which takes place on submerged lands administered by the federal government, has decreased by more than 50 percent over the last decade. Although federal lands' share of coal produced in the United States has held steady at 40 percent over the past decade, overall coal production has decreased by 14.5 percent.

COAL

The Powder River Basin (PRB) in Wyoming and southern Montana is the largest and most prolific coal-producing region in the United States. Over the last two decades, the PRB has yielded an annual average of 500 million short-tons of coal, accounting for approximately 40 percent of our nation's coal production.

Figure 2 - Federal Lands' Share of U.S. Fossil Fuel Production (energy equivalence)



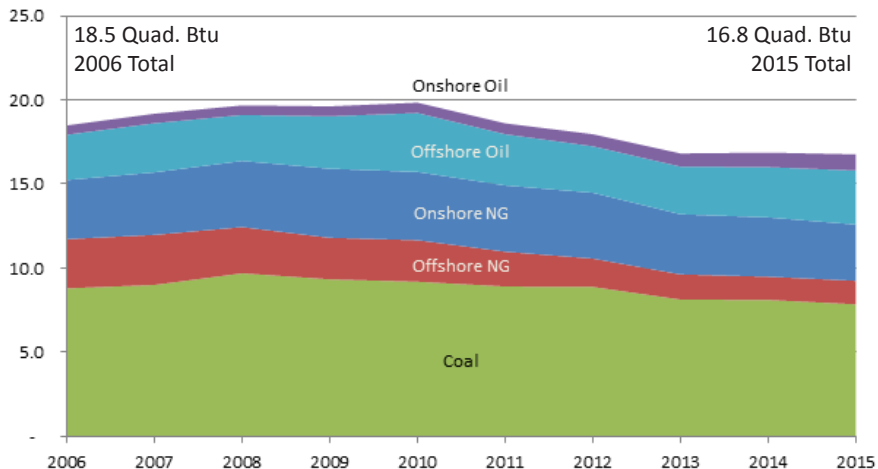
Source: ONRR

The PRB has historically yielded a cost-effective and environmentally advantageous form of coal relative to its peer basins. Coal in this region resides relatively close to the surface, allowing producers to access it more economically than other reserves. These efficiencies have been translated into cost savings that, in turn, have helped keep electricity prices low for consumers in the United States. In addition, the low-sulfur content of PRB coal has allowed producers to comply with stringent EPA regulations and to limit the need for installing costly desulfurization equipment at plants.

Coal production on federal, state, and private lands across the United States has declined by 18 percent since 2006 (Figure 4). This decrease is due in large part to three factors. First, natural gas prices have plummeted to historically low levels, from \$9.04/MMBtu in 2008 to \$3.22/MMBtu in 2015.² Second, massive new supplies of thermal coal have flooded the international market, pushing down global commodity prices and eroding the economic viability of some projects in the United States. And third, EPA has instituted dramatically more restrictive standards for air emissions, cooling water

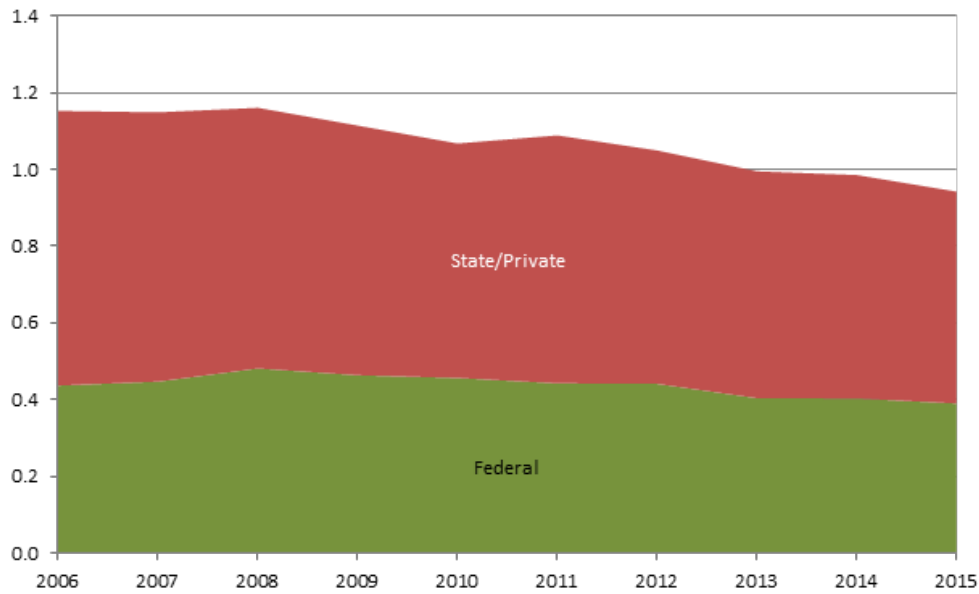


Figure 3 - Total Coal, Oil & Natural Gas Production on Federal Lands (Quadrillion Btu)



Source: ONRR

Figure 4 - U.S. Coal Production: Federal & State/Private Areas (Million Short Tons)



Source: ONRR

intakes, and coal ash containment, which has led owners of coal-fired plants either to incur higher costs or to shut down. These three factors have made coal plants less cost-competitive relative to natural gas facilities. Over the last five years, 36.5 GW of coal-fired capacity has been retired as a result of these market and regulatory forces.³

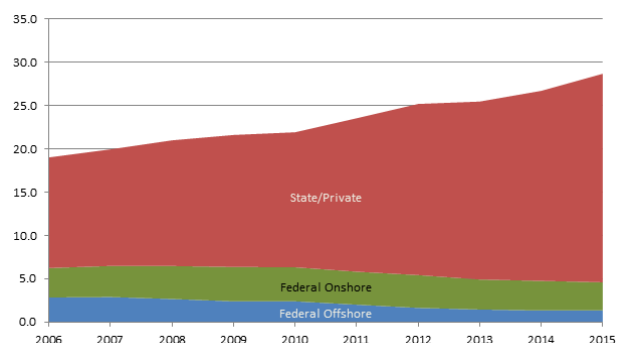
NATURAL GAS

Total U.S. natural gas production has increased by an enormous amount over the past decade, growing by 51 percent from 19.0 trillion cubic feet (Tcf) per year in 2006 to 28.7 Tcf in 2015 (Figure 5). This has been driven by new production volumes coming online from state and private lands, which have nearly doubled since 2006 from 12.8 Tcf to 24.1 Tcf. Production on federal lands, however, has declined 26 percent, from 6.2 to 4.6 Tcf during the same period. The overall federal share of the production has declined from 33 percent in 2006 to 16 percent in 2015.

The decline in overall federal natural gas production has been driven principally by the significant drop-off in federal offshore production. Since 2006, offshore production, which is primarily centered in the Gulf of Mexico, has declined by 52 percent.

Meanwhile production on state and private lands has experienced tremendous growth, primarily driven by the shale renaissance. A large share of this new development has taken place in Pennsylvania, Texas, Ohio, and West Virginia – states in which the federal government owns on average two percent or less of total land area.

Figure 5 - U.S. Natural Gas Production: Federal & State/Private Areas (Tcf)



Source: ONRR

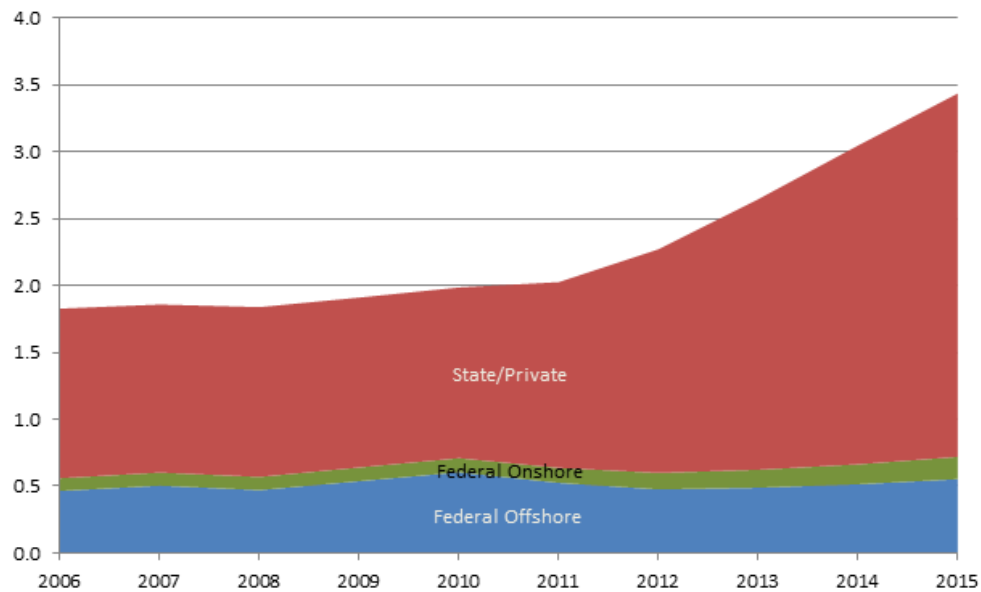
CRUDE OIL

U.S. crude oil production also has risen substantially since 2006. Similar to natural gas, just about every bit of that growth has come from non-federal lands where most of these deposits are located. Texas, where the federal government owns two percent of the land, and North Dakota (four percent) in particular have seen dramatic increases in oil production.

Federal offshore oil production, primarily in the U.S. Gulf of Mexico, has not experienced the

same decline as has been the case for natural gas. In 2015, oil production was up 7.5 percent over the prior year, and up 19 percent since 2006. Federal onshore oil production volumes are still relatively small, representing only five percent of total U.S. production. Federal lands' share of production has declined from 31 percent in 2006 to 21 percent in 2015, driven primarily by the high growth in state and private lands

Figure 6 - U.S. Crude Oil Production: Federal & State/Private Lands (billion barrels)



Source: ONRR

production (Figure 6).

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CHAPTER 2

REGULATORY BARRIERS IMPEDING PRODUCTION

As production volumes of energy have continued to decline on U.S. federal lands, additional attention has been paid to the myriad factors that have conspired over the past decade to perpetuate this trend. Poor federal land management and an onerous application and approval process have frustrated many potential development opportunities. Additional regulatory requirements on developing energy offshore currently being contemplated by policy-makers have the potential to inflict further harm on the long-term viability and prospectivity of offshore projects currently being considered.

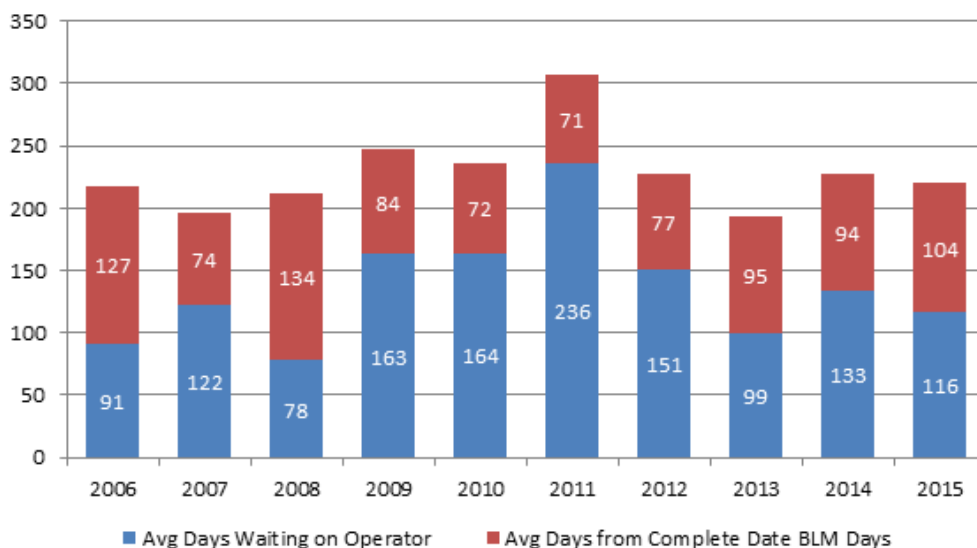
One of the primary factors that has helped contribute to the diminution of energy resource production on federal lands is the length and inherent uncertainty embedded in the permitting process. According to the Bureau of Land Management (BLM), it takes on average 220 days for the agency to approve an Application for Permit to Drill (APD),¹ this despite a provision in the Energy Policy Act of 2005 directing BLM to take action on submitted APDs within 30 days.

More than half of this BLM delay (116 days) can be traced back to the time it takes to fill out all of the required forms. It then takes on average **an additional 104 days** for BLM to complete the permitting process (Figure 7). In comparison, approval of submitted applications by state regulators overseeing development on state and private lands averages 30 days, but at times approval can be granted in as little as 10 days.²

Myriad factors contribute to the inefficacy of this system, but ultimately the responsibility to fix it resides with the federal government. In June 2014, Interior’s Inspector General (IG) released a report finding that the agency lacked the systems needed to ensure permits were approved on time.³

The IG report found that it takes BLM nearly three times as long as state regulators to approve each permit, even when faced with the same request circumstances and workload. The report warned that federal, state, and local governments as well as Native communities “risk

Figure 7 – BLM: Average No. of Days to Approve APD for Onshore Project



Source: BLM

losing royalties” from delayed production and that these “delays cause some wells not to be drilled, resulting in additional lost production and royalties”. The IG also acknowledged that BLM was operating on a limited budget, which led to severe understaffing in many key administrative and supervisory roles.⁴

In April 2016, the Interior Department released new regulations on offshore energy development in the Gulf of Mexico. Although there remains some disagreement on how much these new rules will cost producers, there is no disagreement that developing offshore resources will be made more expensive as a result. The Interior Department estimates the additional costs to amount to \$1 billion over 10 years, while some large offshore producers estimate costs could be **as high as \$25 billion** over that same period.⁵

In January, the Obama administration imposed a moratorium on new coal leases on federal lands. This action is not likely to have a near-term impact on coal production, given that there have only been three coal-lease applications filed since 2006, two of which are still pending.

The Department of the Interior believes enough coal can be extracted from existing mines to maintain current production levels for the next 20 years.⁶ Nevertheless, the precedent this regulatory action sets is a troubling one, and under a new administration could be expanded dramatically (and relatively easily, without the approbation of Congress) to limit or completely eliminate production from existing mines on federal lands.

THIS DISCUSSION leads us back to the underlying question of this report: “What if energy production was banned on federal lands and waters?”

To answer this, we have undertaken two separate and distinct analyses. In Scenario 1, we look at the impacts of canceling all federal leases immediately and the subsequent elimination of oil, natural gas, and coal production on federal lands.

As such, Scenario 1 provides a snapshot of the economic output that would be lost and/or placed at risk if energy development was immediately stopped on all federal acreage. Our methodology is inherently conservative and represents the lower bands of economic impact from such a precipitous action. While it is possible some number of jobs and some amount of GDP could be salvaged under such a policy, as some production activities shift over to non-federal lands and displaced workers eventually find employment in other sectors, the vast majority of this output would be lost in the near-term.

In Scenario 2, we analyze the cumulative impacts of immediately ceasing new leasing while leaving existing leases untouched. Since elected officials, candidates, and activist organizations have made comments and put forth proposals specifically aimed at stopping energy production on federal lands, we felt it was important to look at impacts from both of these scenarios to demonstrate the tremendous consequences that either policy would have, especially in states that host federal energy production.

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3

CHAPTER

SCENARIO 1:

ECONOMIC REVIEW OF
IMMEDIATELY CEASING ENERGY
PRODUCTION ON FEDERAL
LANDS AND WATERS

Scenario 1 models and analyzes the impact on economic output if the production of oil, natural gas, and coal were immediately ceased. In ascertaining the economic output of these activities today, we are able to establish what is at risk immediately on day one if this policy is implemented as proposed.

Notwithstanding all the attention that has been paid to the expansion of U.S. oil and gas development on state and private lands, federal-lands energy development continues to account for a significant share of total U.S. energy development. On that basis, it remains a driver of jobs retention and wage growth for American workers, and a critical source of revenue for states and localities that host these activities. Losing these jobs, resources and revenues would have a severe, deleterious and immediate impact on the U.S. economy and its workforce.

TOTAL EMPLOYMENT

Energy production on federal lands is currently responsible for 380,300 jobs across the United States. Over 100,000 of these jobs are directly tied to oil and gas extraction and coal mining. Another 75,300 workers are employed indirectly by suppliers to these industries. In addition, the wages earned and spent by these direct and indirect workers contribute to growth in employment in other sectors of the economy. These “induced” jobs support an additional 203,400 jobs (Table 1).

Table 1 - U.S. Jobs from Fossil Fuel Production on Federal Lands

Type	Employment (2015)
Direct	101,600
Indirect	75,300
Induced	203,400
Total	380,300

OIL AND GAS

The production of oil and natural gas on federal lands is the source of the vast majority of jobs supported by federal-lands energy development, with 336,500 jobs associated either directly or indirectly with these activities.

Nearly 92,000 employees work directly for companies that produce on federal lands, either as in-house employees or contractors.¹ The industry is responsible for generating and supporting an additional 60,300 jobs among suppliers, and 184,300 jobs in other sectors that are induced as a result of the work it does (Table 2).

Table 2 - U.S. Jobs from Oil and Gas Extraction on Federal Lands

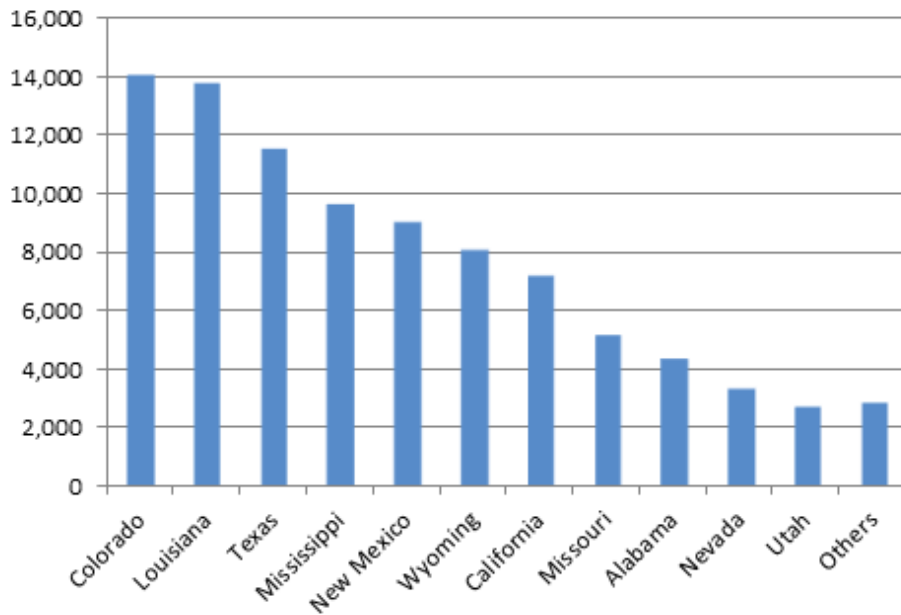
Type	Employment (2015)
Direct	91,900
Indirect	60,300
Induced	184,300
Total	336,500

Among U.S. states, Colorado has the most direct oil and gas employees operating on federal lands, followed by Louisiana and Texas, primarily on the basis of those states' proximity to offshore operations in the Gulf of Mexico (Figure 8).

COAL

Coal mining activities on federal lands are responsible for nearly 44,000 jobs, with 9,700 jobs tied directly to mining itself. This number may appear small given the volume of coal production on federal lands, but it's important to note that a large amount of coal on the western federal lands is produced from surface mines, which often require less labor than underground projects in eastern states.

Figure 8 – Direct Oil & Natural Gas Employment of Federal Lands (2015)



Source: Bureau of Economic Analysis

As a result, per-miner coal production on federal lands in states such as Wyoming is much greater than production volumes in sub-surface mining operations in the eastern United States. More than half of the number of direct coal-mining employees work in Wyoming and represent two percent of that state’s workforce. Coal production on federal lands also generates more than 15,000 jobs among suppliers to the industry and more than 19,000 induced jobs (Table 3).

Table 3 - U.S. Jobs from Coal Mining on Federal Lands

Type	Employment (2015)
Direct	9,700
Indirect	15,100
Induced	19,100
Total	43,900

EMPLOYMENT COMPENSATION

Oil, natural gas, and coal production is not only responsible for supporting hundreds of thousands of U.S. jobs, but it also offers both

direct and indirect employee wages that are much higher than the national average. As Table 4 shows, labor income in the oil and gas industry is 199 percent higher than the national average, and labor income in the coal industry is 83 percent higher. The indirect jobs, or jobs created for suppliers to these industries, have an income level that is 48 percent higher than the national average.

OIL AND NATURAL GAS

Labor income associated with the development of oil and natural gas on federal lands is particularly high relative to median incomes in states that support significant energy production activities from federal lands.

Figure 9 compares oil and gas wages from federal lands with wages collected in states that have the greatest amount of direct employment on federal lands. In each instance, federal-land oil and gas incomes are much higher than the median income level for all other jobs in that state. The comparison is particularly stark when

Table 4 - Labor Income from Fossil Fuel Production on Federal Lands

Type	Labor Income (2015)	Above U.S. Average
Direct – Oil & Gas	\$173,000	199%
Direct – Coal	\$105,900	83%
Indirect (Both)	\$85,800	48%
U.S. Average	\$57,900	

the income levels are compared against those in the Gulf States.

COAL

The difference in worker income levels is not as great for coal as it is for oil and gas, but direct and indirect coal incomes are still higher than the median income in each state with the highest federal coal mining employment. Direct coal incomes on federal lands are approximately 80 percent higher than the median state income levels in Utah, Colorado and Wyoming and 126 percent higher than those in Montana (Figure 10).

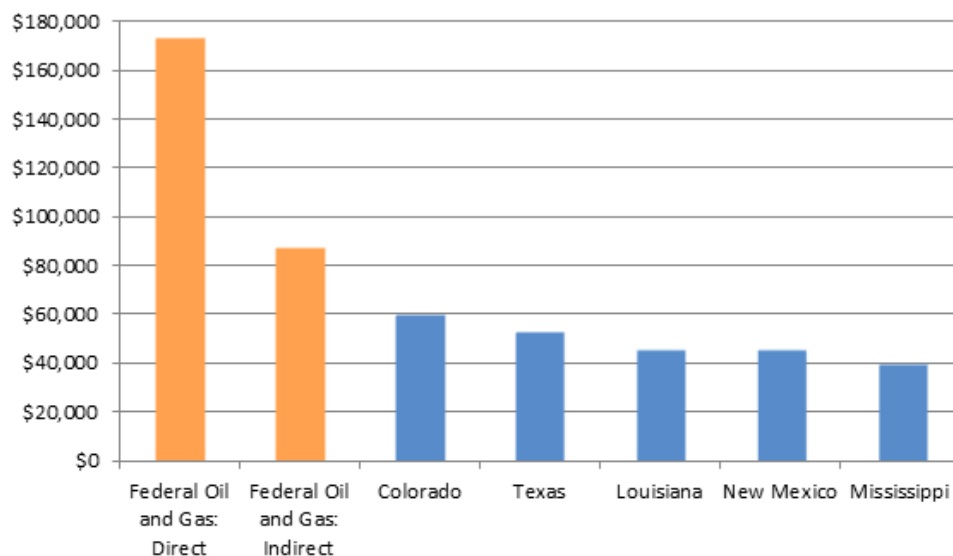
GROSS DOMESTIC PRODUCT

Oil, natural gas, and coal extraction on federal lands contributes an estimated \$72.3 billion

in gross domestic product. The majority of these impacts, \$44.7 billion, can be traced back directly to extraction and mining. The remaining \$10.7 billion is realized in the form of indirect impacts from suppliers and an additional \$16.8 billion from induced impacts to other segments of the economy (Table 5).

Table 5 - GDP from Fossil Fuel Production on Federal Lands

Type	GDP (\$2015 billions)
Direct	\$44.7
Indirect	\$10.7
Induced	\$16.8
Total	\$72.3

Figure 9 - Oil and Gas Labor Income on Federal Lands vs. Select States

Source: IMPLAN, Census, Chamber of Commerce analysis

Table 6 - Total Royalty Disbursements from Fossil Fuel Production on Federal Lands (\$Millions)

FUND	2011	2012	2013	2014	2015	Grand Total
U.S. Government	8,625	9,308	11,287	10,081	7,186	46,487
State Share: Onshore	1,957	2,088	1,964	2,188	1,815	10,012
State Share: Offshore	42	37	41	38	25	183
Grand Total	10,624	11,433	13,292	12,307	9,026	56,682

ROYALTIES

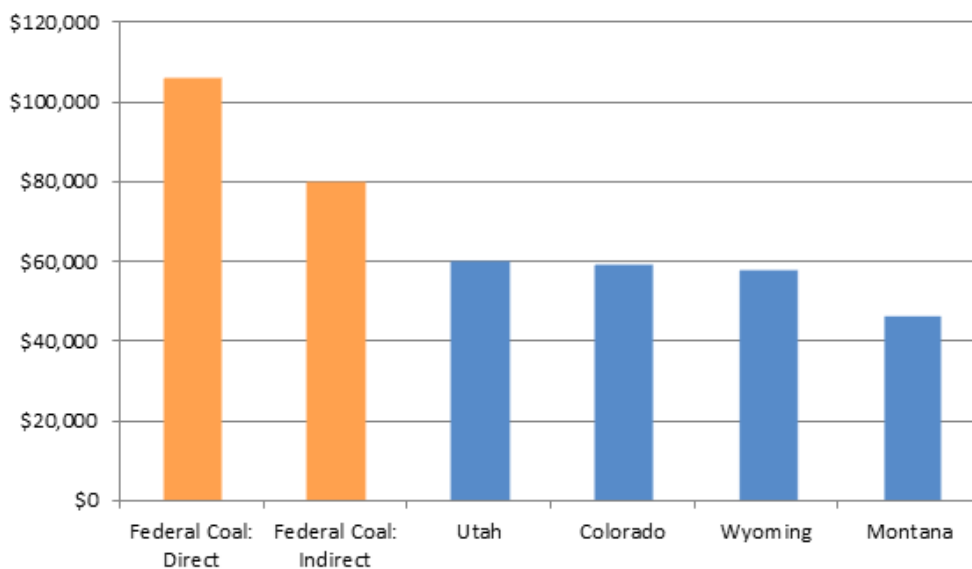
Royalties generated from energy production on federal lands are a significant source of revenue for the federal government as well as state and local governments, helping to balance budgets and fund education, infrastructure, public safety and other critical projects. More than \$57 billion was distributed to various federal and state funds from federal lands development over the last five years alone (Table 6).

The U.S. government collected \$7.2 billion in royalties from fossil fuel production on federal lands in 2015 and a cumulative \$46.5 billion from 2011 to 2015 – enough to fund the budgets of the EPA or the Army Corps of Engineers over that time. Over \$10 billion in royalties was distributed to states, primarily from onshore development.

Some of the biggest benefactors of royalties generated from federal land production have been Wyoming, New Mexico, Colorado, and



Figure 10 - Coal Labor Income on Federal Lands vs. Select States



Source: IMPLAN, Census, Chamber of Commerce analysis

Table 7 - Federal Royalties Disbursed to States by Energy Source

	2015 Royalties (millions)	% of Total	Natural Gas (bcf)	Oil (mill. barrels)	Coal (million short tons)
Total	\$1,835		3,790	706	421
Wyoming	\$ 886	48%	29%	5%	80%
New Mexico	496	27%	18%	8%	3%
Colorado	124	7%	13%	1%	4%
Utah	116	6%	7%	3%	3%
California	62	3%	0%	3%	0%
North Dakota	47	3%	1%	8%	1%
Montana	34	2%	0%	0%	6%
Alaska	18	1%	0%	0%	0%
Louisiana	14	1%	1%	1%	0%
All Others	38	2%	4%	2%	2%
Gulf of Mexico			26%	68%	

Utah, which combined received more than \$1.6 billion in royalties -- about 88 percent of the 2015 U.S. total -- from hydrocarbon development on federally controlled acreage (Table 7).

Wyoming received the largest share of royalty revenue from federal-lands development. The state is home to 80 percent of the coal mined on federal lands, 40 percent of the onshore natural gas and 18 percent of the onshore oil.

These royalties amounted to nearly \$900 million for the state in 2015. New Mexico, with approximately one-quarter of all federal natural gas and oil production, collected the second-highest federal royalty share, with development activities delivering it nearly half a billion dollars in 2015. Colorado derives most of its federal royalties, \$124 million in 2015, from natural gas development and sales.

It can be argued that the imposition of an immediate ban on all federal lands development is unlikely. After all, the recent Obama administration policy promulgation on coal leases applies only to new leases. According to the Interior Department, there is enough

coal from existing mines in Wyoming's PRB to maintain current production levels for the next 20 years, and applications filed by producers for new leases have been sparse.

Nevertheless, taking at face-value the statements that continue to be made by various politicians, and incorporating into that analysis the known-positions of interest groups that have assigned a high priority to attacking federal-lands resource development, it's not difficult to imagine a scenario in which a policy that forbids future federal-land development can be adapted to restrict current development as well.

Under such a scenario, the coal market would stand to be hit particularly hard, with **379 million tons** of low-sulfur coal disappearing from the supply mix. Those volumes represent **42 percent** of the nation's current tonnage, and at present, there is not enough non-coal capacity in the U.S. electricity market to shift generation away from this much coal in a reasonable timeframe. As a result, electricity prices would dramatically increase across the country and **\$1.5 billion in federal land royalties** would disappear, including **\$700 million annually** for Wyoming.

CITATIONS

- 1 Bureau of Economic Analysis, Table SA25N, www.bea.gov; supplemented by U.S. Chamber of Commerce analysis.

4

CHAPTER

SCENARIO 2:
ECONOMIC IMPACT
OF LIMITING BAN TO
FUTURE LEASING

Proposals being discussed that seek to prevent future leases from being issued for federal-lands development would also have a severe impact on many states – it’s just that these impacts would be more delayed in arriving relative to Scenario 1 in which existing production is also taken off the table.

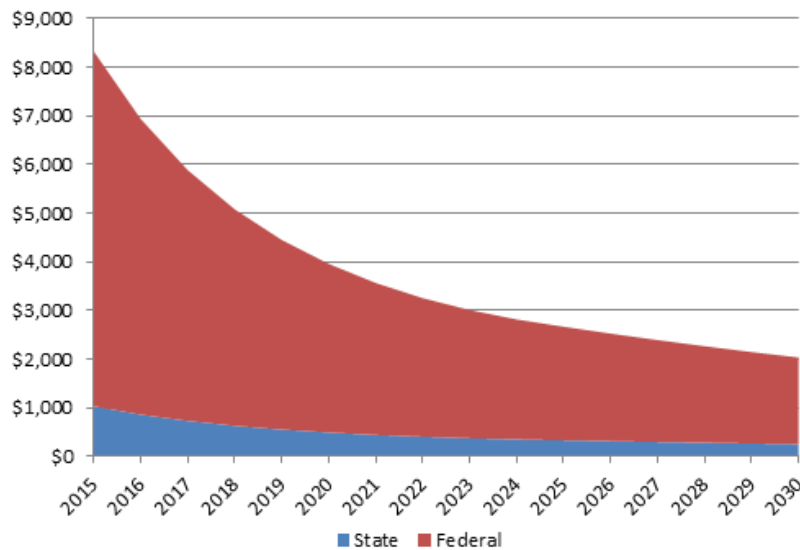
Under Scenario 2, most of the 4.5 Tcf of natural gas and the 719 million barrels of oil that are produced on federal lands would either shift to other states or be replaced by foreign sources. In either case, the impact on states where that development had previously occurred would be significant.

The most identifiable impact would be on royalties from federal land production, which

would decrease by more than **75 percent** over the next 15 years, with annual royalties dropping by more than **\$6 billion**. States would lose **\$780 million in annual royalties** (Figure 11). At the same time, **73,000 direct jobs** would immediately be impacted, as would **195,000 indirect and induced jobs**. Some of these may be “picked up” by production on private lands, but those that would be lost to foreign producers (imports) would disappear.

At a state level, New Mexico would be the hardest hit by a ban on new federal leases. Its annual royalties would decline by **\$363 million** over the next 15 years, and cumulative royalty losses would amount to more than **\$4 billion** (Table 8).

Figure 11 - Oil and Natural Gas Royalties from Federal Lands (millions)



Source: ONRR

Table 8 – Projected Royalty Losses

State	Annual Royalty Loss by 2030 (millions)	Cumulative Loss -- 2016-2030 (millions)
1 New Mexico	(\$363)	(\$4,091)
2 Wyoming	(132)	(1,470)
3 Utah	(76)	(991)
4 Colorado	(74)	(792)
5 California	(51)	(591)

CHAPTER

5

WHAT WOULD INDIVIDUAL
STATES LOSE UNDER A
FEDERAL-LANDS
AND WATERS
PRODUCTION BAN?

Colorado

Colorado has the highest number of direct oil and gas employees and contractors working on federal lands, registering 15,300 in 2015. In addition, the federal-lands oil and gas sector is responsible for 13,000 indirect jobs from suppliers and 21,700 induced jobs.

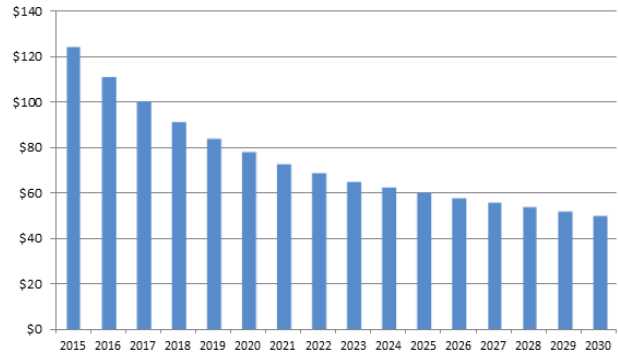
The sector contributes **\$2.4 billion dollars** in direct labor income, with a total impact of **\$4.5 billion**. The overall GDP impact to the state's economy is **\$8.3 billion**. If future leases for oil and gas development were disallowed, these jobs would be at risk of moving to other states in the best case, or disappearing altogether in the most likely one (Table 9).

In addition, Colorado received the third largest disbursement of federal royalties of any state in 2015, collecting **\$124 million**. That's down from an average of **\$153 million** in the previous four years. Roughly half, or about **\$62 million** in 2015, was earmarked by the state to be spent on education programs. Approximately 40 percent, or **\$50 million** last year, was distributed to local governments. Education systems and local

governments would need to quickly identify alternative funding sources to be made whole.

The remaining 10 percent was distributed to the Colorado Water Conservation Board, which is an agency that provides policy direction on the state's water issues.¹ As Figure 12 shows, a ban on future leases would deplete these funds, reducing them by **\$64 million** over the next 10 years.

Figure 12 – Colorado Project Royalties from Federal Lands (\$millions)



Source: ONRR, Chamber of Commerce analysis

Table 9 – Economic Impact of Production on Federal Lands in Colorado

	Employment	Labor Income	GDP	State Royalties
Direct	15,300	\$2.4 billion	\$4.9 billion	
Indirect	13,000	\$1.1 billion	\$1.6 billion	
Induced	21,700	\$1.0 billion	\$1.8 billion	
Total	50,000	\$4.5 billion	\$8.3 billion	\$124 million

New Mexico

New Mexico’s oil and gas sector, combined with coal, is responsible for **10,000 direct jobs** in the state, with an additional **7,000 indirect and 7,400 induced jobs** for a total job impact of **24,300**. As Table 10 shows, these industries contribute **\$1.6 billion** in labor impact, with more than half of that amount coming from direct impacts. That income translates into a **\$4 billion** boost to New Mexico’s state GDP.

New Mexico likewise would be devastated under a scenario in which energy production was curtailed or halted entirely on federal lands. Our analysis indicates the state would stand to lose nearly a half-billion dollars (**\$496 million**) in annual royalty collections, which represent more than eight percent of the entire New Mexico General Fund. Outside of sales and personal income taxes, this is the highest source of revenue for the state.

All told, **42 percent** of all crude oil production and **62 percent** of all natural gas production in New Mexico comes from federal lands.² Those who support instituting bans on federal-lands energy development have offered no economic alternatives that can serve as a sustaining substitute for the loss of revenue from federal fossil fuel production in states such as New Mexico, where the budget is heavily dependent on federal royalties.

This figure does not account for any residual revenues generated as a result of businesses investing and operating within New Mexico; in that way, the half billion dollar loss estimate represents a minimum impact figure. The indirect and induced impacts would likely be even greater.

Table 10 – Economic Impact of Production on Federal Lands in New Mexico

	Employment	Labor Income	GDP	State Royalties
Direct	10,000	\$0.9 billion	\$2.7 billion	
Indirect	7,000	\$0.5 billion	\$0.8 billion	
Induced	7,400	\$0.3 billion	\$0.5 billion	
Total	24,300	\$1.6 billion	\$4.0 billion	\$496 million

Wyoming

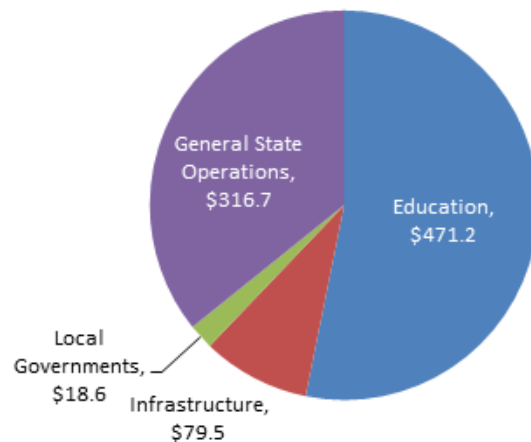
In Wyoming, oil, gas and coal development activities provide **32,500 total jobs** and roughly **\$2.7 billion** in labor income. When Wyoming's total population and the size of its state economy are taken into account, the **\$7.2 billion** in direct GDP impacts as well as **\$1.5 billion** in indirect and **\$0.6 billion** in induced economic impacts show how important these industries are to the state. All these economic benefits currently enjoyed by the state would virtually disappear should production on federal land be curtailed (Table 11).

In Wyoming, coal is the second largest source of revenue for the state and local government, contributing over **\$1 billion annually** in revenue to state and local governments. Wyoming generated royalties of **\$886 million** from federal lands in 2015, which represents 20 percent of Wyoming's entire annual expenditures for that year.³

Wyoming in particular would be forced to confront a difficult economic situation if energy production were to come to a halt on federal acreage. Figure 13 shows how the **\$886 million** that the state received from federal-land production is appropriated within the state budget.

Wyoming is projected to spend \$1.5 billion on all education related expenditures for FY 2015.⁴ Thirty percent of that amount comes directly from federal royalty disbursements. The ability of the state to deliver on its public-education related priorities would be negatively and disproportionately affected by any decrease in federal royalty revenues.

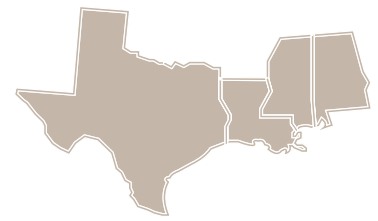
Figure 13 - Wyoming Federal Royalty Disbursements (2015)



Source: Wyoming State Government Revenue Forecast⁵

Table 11 – Economic Impact of Production on Federal Lands in Wyoming

	Employment	Labor Income	GDP	State Royalties
Direct	13,300	\$1.6 billion	\$7.2 billion	
Indirect	10,800	\$0.8 billion	\$1.5 billion	
Induced	8,500	\$0.3 billion	\$0.6 billion	
Total	32,500	\$2.7 billion	\$9.3 billion	\$886 million



Gulf Coast States

The U.S. portion of the Gulf of Mexico, which, for this analysis, comprises Texas, Louisiana, Alabama and Mississippi, is responsible for supporting **39,300 direct jobs** owing to offshore oil and gas development, with an additional **27,700 indirect jobs** and **43,200 induced jobs**. Total labor income impacts total **\$9.4 billion**. Of the **\$24.2 billion** in GDP impacts, Texas is responsible for half that amount.

As the data shows, states along the Gulf Coast have a lot at stake as part of the debate over federal-lands energy development. In each case, these states would experience significant economic harm if measures were adopted that would limit or prevent energy extraction from taking place in adjacent federal waters (Table 12).

Production in the U.S. portion of the Gulf of Mexico is also a significant source of royalty revenue for adjacent states. As Table 13 shows, the largest federal disbursements to states for offshore oil and gas development come from near-offshore development, which is defined as activities taking place between three and six miles from the shore.⁶

Until 2006, when the Gulf of Mexico Energy Security Act of 2006 (GOMESA) was enacted, Gulf States did not receive royalties for offshore activities that took place on adjacent submerged federal lands. GOMESA for the first time allowed states to collect royalties from a small portion of the Gulf. Table 13 shows that GOMESA provided the Gulf States with **\$2.4 million in additional disbursements in 2015**, on top of near-offshore disbursements that totaled \$16.5 million.

Table 12 – Economic Impact of Production on Federal Lands in the Gulf Coast

	Employment	Labor Income	GDP	State Royalties
Direct	39,300	\$5.3 billion	\$17.4 billion	
Indirect	27,700	\$2.2 billion	\$3.4 billion	
Induced	43,200	\$1.9 billion	\$3.3 billion	
Total	110,200	\$9.4 billion	\$24.2 billion	\$28 million

Table 13 – Offshore Disbursements by State (2015)

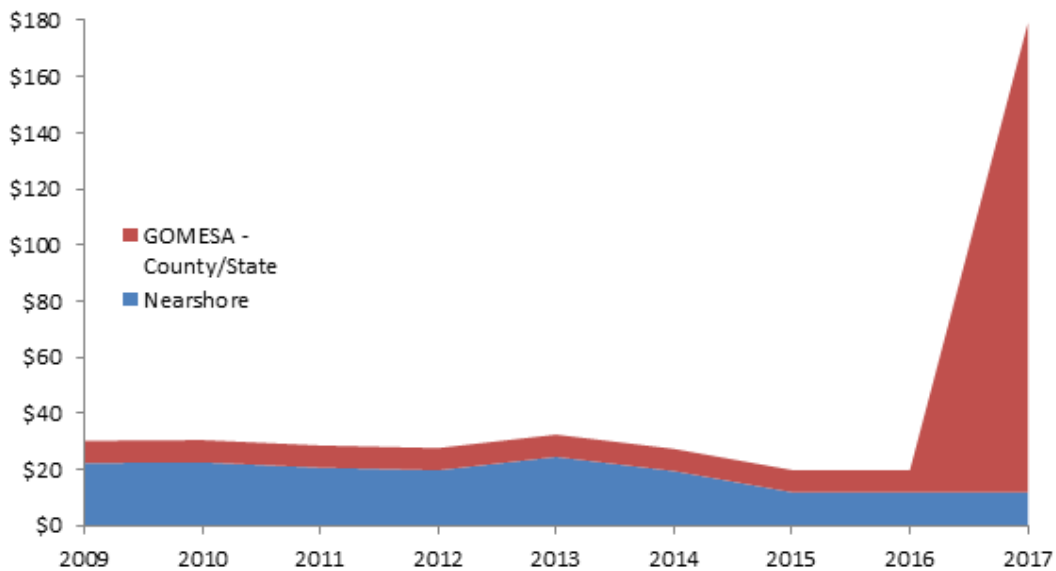
	Near Offshore	GOMESA Offshore	Total by State
Louisiana	\$11.9 million	\$0.8 million	\$12.7 million
Alabama	\$4.0 million	\$0.7 million	\$4.7 million
Texas	0.5 million	\$0.3 million	\$0.8 million
Mississippi	\$0.1 million	\$0.7 million	\$0.8 million
Total by category	\$16.5 million	\$2.4 million	\$19.0 million
Percent of Total	87 %	13 %	

The second phase of GOMESA, scheduled to take effect next year, will substantially increase disbursements to Gulf States. While the first phase was limited to a small area of the Gulf, phase two will expand that area to include nearly all of the Central and Western Planning Areas of the Gulf.

The Obama administration has threatened to prevent phase two from being implemented, but

these actions have been met by stiff resistance in Congress and among representatives of both parties from Gulf States. Louisiana's revenues from federal offshore oil and gas are expected to increase by more than 10-fold under phase two provisions, and the other Gulf States are expected to benefit similarly (Figure 14).

Figure 14 - Louisiana: Estimated Disbursements from Oil and Gas Activity on Offshore Federal Lands (\$ Millions)



Source: ONRR

CITATIONS

- 1 "Federal Mineral Lease and State Severance Tax Direct Distribution: Program Guidelines," Colorado Department of Local Affairs. July 2015.
- 2 <https://www.nmlegis.gov/lcs/handouts/Oilpercent20andpercent20Naturalpercent20Gaspercent20Taxingpercent20inpercent20Newpercent20Mexico.pdf>
- 3 <http://ai.wyo.gov/budget-division/budget-fiscal-years/2015-2016-budget>. Biennium total spending is \$8.8 billion for FY 2015-2016
- 4 <http://ai.wyo.gov/budget-division/budget-fiscal-years/2015-2016-budget> see page 31 of budget, \$3 billion for education for FY 2015-2016
- 5 http://eadiv.state.wy.us/creg/GreenCREG_Jan16.pdf
- 6 The area from the shoreline to approximately three miles offshore is considered to be the jurisdiction of the adjacent state.

TECHNICAL APPENDIX

This technical appendix describes the economic impact modeling data, assumptions, and methodology for natural gas, oil and coal. IMPLAN was used to calculate:

- Indirect and Induced Employment
- Labor Income
- GDP

SCENARIO 1

NATURAL GAS AND OIL

- For royalties:
 - Started with royalty data for 2015 broken out by state and federal.¹
 - State royalties are further broken out by offshore (8g, CPS and GOMESA) and onshore.²
 - Broke out onshore federal between coal and NG/Oil using production data from Dept. of Interior.³
- For employment:
 - Started with 2014 (most recent) employment for NAICS 211 (Oil and Gas Extraction) by state.
 - Used data from the Bureau of Labor Statistics (BLS) rather than Bureau of Economic Analysis (BEA) since BLS data is more detailed; it breaks out coal mining, while BEA aggregates all mining. Also coal mining does not have the same issue regarding contract workers as oil and gas.
 - Broke out employment in each state between federal and state/private lands.
 - Used EIA data to determine overall production of coal in each state.
 - Used Department of the Interior data to determine production on federal lands.
 - Applied federal production percentage to employment levels in each state.

Adjusted to 2015 using BLS data, which showed a 3% decline in average monthly direct oil and gas employment from 2014 to 2015.

COAL

- For royalties:
 - Started with royalty data for 2015 broken out by state and federal.⁴
 - Broke out onshore federal between coal and NG/Oil using production data from Dept. of Interior.⁵
- For employment:
 - Started with 2014 (most recent) Census employment data for NAICS 2121 (Coal Mining) by state. (<http://ledextract.ces.census.gov/>)

- Broke out employment in each state between federal and state/private lands.
 - Used 2014 EIA data to determine overall production of coal in each state.
 - Used Department of the Interior data to determine production on federal lands.
 - Applied federal production percentage to employment levels in each state.
- Adjusted employment to 2015 based on total EIA production data for each state.

SCENARIO 2

- The forecasted impact is based on a scenario where no future leases are granted, and extraction would continue on current leases.
 - We only calculated the impact for oil and gas.
 - There is enough coal in the ground within existing leases to last 15-20 years, so a scenario that only impacts future leases would not have much of an impact on coal.
- We based the impacts on 2015 employment and royalties, which implicitly assumes that volumes would decline based off 2015 volumes and that prices would remain constant. Forecasted future employment and royalties using decline rates for each state/region:

Table 14 - Future Royalty Decline

State/Region	1st Year Decline Rate	>=10 Year Decline Rate
Onshore		
Colorado	12 percent	5 percent
Wyoming	14 percent	5 percent
Utah	35 percent	10 percent
New Mexico	15 percent	5 percent
All Others (average of onshore)	19 percent	6 percent
Offshore	20 percent	10 percent

- Used a straight-line decrease in rates from 1st year to 10th year.

CITATIONS

- 1 Office of Natural Resources Revenue (www.onrr.gov).
- 2 8g represents the area between 3 and 6 miles offshore. CPS payments are royalties paid to coastal counties. GOMESA is the Gulf of Mexico Energy Security Act, which governs payments to states from extraction in federal waters.
- 3 <https://useiti.doi.gov/downloads/federal-production/>
- 4 Office of Natural Resources Revenue (www.onrr.gov).
- 5 <https://useiti.doi.gov/downloads/federal-production/>



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