

OPPORTUNITY LOST?

THE ECONOMIC VALUE OF ENERGY RESOURCES ON FEDERAL LANDS IN UTAH

KEY POINTS

Background

- More than 60 percent of Utah's lands are owned and managed by the federal government. Most of these lands were purposefully set aside for multiple use, including aesthetic, recreation, and natural resource development.
- Federal policy increasingly bars, inhibits, or raises the costs of doing business on lands otherwise available and suitable for responsible natural resource development.
- Many Western states are pushing back against federal restrictions, insisting that they be allowed to reap the benefits of the resources within their borders.

What's at stake?

- Federal lands cannot be taxed, and any potential economic benefit and jobs are lost to the state's present and future citizens when federal policy precludes responsible and balanced use, including natural resource development.
- Federal payments in lieu of taxes, royalties, and other offsets for losses to the state's tax base are purely discretionary and are being decreased as Washington deals with its own budgetary challenges.
- Utah's schools, roads, public safety, and other state and local responsibilities are feeling the squeeze as federal subsidies come under pressure, and Utahns are not allowed to benefit from resources within their borders but unavailable due to federal policies.

What's next?

- Utah has passed, and several other Western states are considering, legislation demanding the federal government honor its promise upon statehood to return certain federal lands to state tax bases, and allow the states to manage these lands for their best use.
- These demands specifically exclude lands designated for preservation – like national parks and wilderness – and land specifically set aside for other uses – like military reservations and tribal lands.

America's energy renaissance is happening in spite of, not because of, policies from Washington, D.C. Utah has vast, untapped energy resources on federal lands, but out-of-touch rules and regulations have made too many of these resources unavailable or too expensive to responsibly develop.

EXECUTIVE SUMMARY

As in all Western states, federal lands management in Utah involves controversies between pro-development and preservationist forces. To a greater extent than private or even state-owned lands, development of oil, natural gas, and coal resources on federal lands often involves years of regulatory approval and litigation. Utah, like many other states, is also concerned about the payoffs from development in terms of state revenues, employment, and tax revenues. In particular, several large renewable energy projects may be put on the fast track for approval while many oil and gas projects languish in a regulatory and legal bog. To assess the opportunity costs of such a regulatory posture, this Policy Note presents the payoffs from developing renewable and nonrenewable energy projects in Utah. These returns in terms of jobs, tax revenues, and gross state product, provide a basis for assessing the opportunity costs of regulatory delays or outright rejection of proposed energy projects on federal lands, as well as the tradeoffs between nonrenewable and renewable energy development in the state.

The geologies of oil and gas reservoirs on federal and private lands in the Rocky Mountains, including in

Utah, share many similar features. Indeed most of the production growth of crude oil has occurred in well-established oil fields. These production gains are realized from the application of new technology, such as three dimensional seismic, directional drilling, and hydraulic fracturing. The Bureau of Land Management and other federal agencies are developing new rules for the use of these technologies on federal lands that may impact the ultimate production, and therefore potential economic benefit, of these lands. In addition to the existing layers of regulatory hurdles and related litigation, delays in the implementation of these rules may have contributed to the relatively slower growth of oil and gas production on federal lands already.

To estimate the costs of these delays, this Policy Note presents scenarios for fossil fuel and renewable energy development in Utah, developed by Dr. Timothy Considine at the University of Wyoming. The scenarios for oil and gas drilling are formulated on the basis of historical data on drilling activity on federal lands and the number of wells associated with projects proposed and awaiting federal approval. The economic impacts from the construction and operation of new energy production capacity under each of these scenarios are then estimated (see the multistate study at www.EndFedAddiction.org for full methodology). These impacts include the direct stimulus provided to Utah's economy from these investments, additional gains from business-to-business or supply chain spending, and the induced impacts as households spend income earned from this additional commerce.

Two of the main findings presented in the pages below are that (1) energy resource development on federal lands holds the potential for significant economic gains for Utah's communities and revenue gains to state

coffers, and (2) that the economic benefits associated with oil and gas development are orders of magnitude larger than those arising from proposed renewable energy projects.

ENERGY RESOURCE DEVELOPMENT IN UTAH

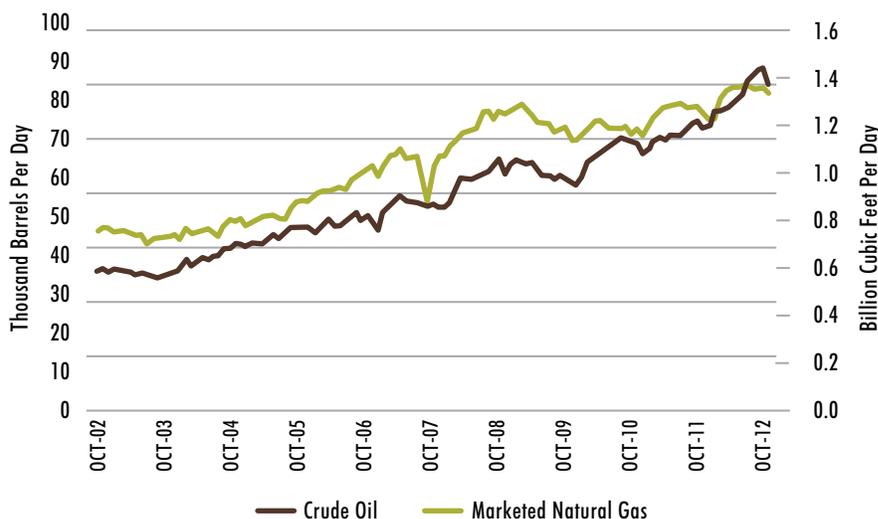
Production of crude oil in Utah has increased in recent years. In 2008, crude oil production averaged 60,000 barrels per day. During 2012, production of crude oil averaged 83,000 barrels per day (Figure 1). Natural gas production is up 12 percent over the same period. The shares of total Utah oil and gas production from federal lands are 38 percent and 61 percent respectively.

During 2011, the minerals sector contributed \$2 billion in value added to the Utah state economy (Table 1). Given Utah's relatively large economy in the region, the mineral sector comprises only 1.7 percent of gross state product. Within the Utah minerals sector, oil and gas is a major contributor, generating about \$1.3 billion in value added during 2011. In total, oil and gas contributed nearly 1 percent of Utah's gross state product.

Minerals also generate substantial tax revenue for local, state and federal governments in Utah. The share going to state and local governments is represented in Table 1 as indirect business taxes, which totaled \$224 million, or roughly 2.7 percent of the state total. Gross tax collections and royalties from the oil and gas sector contribute an even larger share, which is revealed in Table 2. For instance, during 2011, the minerals sector collected more than \$373 million in taxes and royalties.

IMPACTS FROM DEVELOPING OIL AND GAS ON FEDERAL LANDS IN UTAH

Figure 1: Utah oil and natural gas production, 2002-2012



Source: U.S. Energy Information Administration

Based on estimated development levels, the impact of investments in oil and gas wells on the Utah economy is significant. Gross output for the oil and gas drilling sector is increased by \$4,387,260. This represents

an exogenous investment in the oil and gas sector. A typical Utah oil and gas well generates \$1,622,814 in annual gross output. This amount per well is used to estimate the economic and fiscal impacts of the drill-

Table 1: Economic contribution of mineral sector in Utah during 2011

(MILLIONS OF 2013 DOLLARS)

	JOBS	GROSS OUTPUT	WAGES	PROPRIETOR INCOME	OTHER PROPERTY INCOME	INDIRECT BUSINESS TAX	TOTAL VALUE ADDED
Oil & Gas							
Drilling	836	533.3	64.1	0.4	115.6	8.9	189.0
Support	3,816	710.6	235.5	2.6	41.6	11.9	291.6
Extraction	3,709	1,630.9	178.2	16.7	456.2	135.0	786.1
Sub-Total	8,361	2,874.8	477.8	19.7	613.5	155.8	1,266.8
Coal	2,294	753.3	168.3	5.1	136.9	52.2	362.4
Other Minerals	2,896	837.3	200.4	3.3	186.8	16.0	406.4
Coal & Other	5,190	1,590.6	368.7	8.4	323.7	68.1	768.9
Total Minerals	13,551	4,465	846	28	937	224	2,035.6
Total Utah	1,637,462	233,745.1	66,468.6	11,047.7	36,208.3	8,226.1	121,950.7
Oil & Gas Share	0.5%	1.2%	0.7%	0.2%	1.7%	1.9%	1.0%
Minerals Share	0.8%	1.9%	1.3%	0.3%	2.6%	2.7%	1.7%

Source: IMPLAN Inc.

MILLIONS OF 2013 DOLLARS	
Oil and Gas Severance Tax	59.9
Ad Valorem Tax	44.0
Conservation Fees	5.8
Federal Royalties	263.7
TOTAL	373.3

Sources: Utah State Tax Commission, Office of Natural Resources Revenues

Table 2: Utah oil and gas tax and royalty collections during 2011

ing scenarios for Utah presented in Table 2. The results appear in Table 3.

Under the medium scenario for drilling activity on federal land, well spuds average 373 over the next 10 years. This level of activity contributes \$1.7 billion in value added or gross state product per annum. Corresponding with this activity is more than 14,000 annual job equivalents, and more than \$300 million in taxes and royalties.

If all the proposed oil and gas projects on federal lands were undertaken, which is the high scenario presented in Table 3, the annual economic contribution from federal lands would more than triple to \$6.6 billion with more than 50,000 jobs and \$1.2 billion in government revenue (see Table 3). If the low scenario came to pass, drilling activity would decline to an average of 244 wells per year on federal lands. Under this case, the contribution from federal lands is much smaller, with only \$1.1 billion of value added, 9,000 job equivalents, and \$200 million in government revenue.

The high scenario for Utah represents a break from the historically modest level of drilling in Utah. While this scenario seems unlikely given current federal policy, it should not be dismissed as unrealistic, because it simply requires fed-

	WELLS DRILLED PER ANNUM		
	LOW	MEDIUM	HIGH
Well Spuds	244	373	1,445
	MILLIONS OF 2013 DOLLARS		
Gross Output	2,568.2	3,934.1	15,240.5
Value Added	1,111.8	1,703.2	6,598.0
Wages	506.3	775.6	3004.6
506.3	2,294	753.3	168.3
Taxes			
State & Local	91.9	140.8	545.3
Federal	91.7	140.5	544.4
Ad Valorem	4.7	7.3	28.1
Severance	4.4	6.8	26.3
Federal Royalties	8.0	12.2	47.4
Taxes & Royalties	200.8	307.6	1,191.5
	ANNUAL JOB EQUIVALENTS		
Employment	9,411	14,416	55,848

Table 3: Impacts of proposed oil & gas projects on Utah federal lands

eral authorities to approved proposed projects. If approval is granted, the gains to the Utah economy are best approximated by the difference in the contributions from energy development on federal lands from the medium scenario. For example, approving these projects would contribute close to \$5 billion in gross state product, 40,000 jobs, and \$880 in government revenue. Over 10 years, these gains mount, approaching \$50 billion in value added and \$9 billion in government revenue.

IMPACTS FROM DEVELOPING RENEWABLE ENERGY ON FEDERAL LANDS IN UTAH

There are a number of renewable energy projects proposed in Utah, some of which are likely to be constructed on federal lands. In particular, federal officials in 2012 set aside 285,000 acres of public land for the development of large-scale solar power plants. The

plan involves establishing 17 new solar energy zones, and three of these are located in Utah: 6,533 acres in Escalante Valley, 6,252 acres in Milford Flats South, and 5,873 acres in Wah Wah Valley.

To form a business-as-usual or low projection for the development of renewables, this study assumes that the renewable electricity generation capacity in Utah grows at the same rate as that forecast for the Northwest Power Pool Area of the Western Electricity Coordinating Council by the EIA's 2013 Annual Energy Outlook, Reference Case Scenario. These projections imply that over the next 10 years, wind-generating capacity in Utah will expand from 411 megawatts (MW) in 2012 to 455 MW in 2022. This implies an average annual growth rate of wind of 1 percent. This business as usual path does not include any build-out of solar.

The medium renewable energy scenario assumes a higher average annual growth rate for wind of 3 percent, with wind capacity reaching 553 MW by 2022. In addition, the medium renewable path assumes some development of the solar energy zones: 25 MW of PV coming online annually from 2016 onwards, reaching a total of 175 MW by the end of the forecast horizon.

Finally, the high renewable energy scenario is designed to reflect the possibility that large wind projects, such as the third phase of the Milford Wind project (which could include up to 300 wind turbines), go ahead. Hence, it is assumed that an additional 100 MW of wind power is installed annually from 2014 onwards, over and above the projected build-out under the medium development path. This implies by 2022 a wind capacity base of 1,453 MW in Utah. In addition, in the high renewable scenario there is also extensive development of the solar energy zones, with 50 MW of PV and 25 MW of central station power (CSP) coming online annually from 2016 onwards.

In the case of wind, these three development scenarios provide projections for the total build-out of wind in Utah (i.e., on both state and federal lands). Fifty-seven percent of land in Utah is federal land. Therefore, this study assumes that 57 percent of the build-out of wind and geothermal in each of the three development scenarios will take place on federal lands. In contrast, the build-out of PV and solar thermal is assumed to entirely take place within the solar energy zones, and since these zones are on federal lands, 100 percent of the solar build-out is on federal lands.

The average annual total economic impacts (i.e., impacts from construction and operation) over the next decade associated with each of these development scenarios are presented in Table 4. Under the medium scenario, value added and taxes are \$36 million and \$8 million higher,

Table 4: Economic and fiscal impacts of renewable energy on Utah federal lands

	CONSTRUCTION PER ANNUM (MW NAMEPLATE)		
	LOW	MEDIUM	HIGH
Wind	3	8	60
PV	0	18	35
CSP	0	0	18
	ECONOMIC IMPACTS IN MILLIONS OF 2013 DOLLARS		
Gross Output	2.4	63.6	226.5
Value Added	1.3	35.6	122.7
Wages	0.9	24.7	88.2
Taxes			
State & Local	0.1	2.7	10.2
Federal	0.2	5.3	20.2
Severance	0.0	0.0	0.1
Total taxes	0.3	8.0	30.5
	ANNUAL JOB EQUIVALENTS		
Employment	9.7	601.4	1,839.2

respectively, and the employment level is 601 higher. This means that delays in the approval of renewable projects on federal lands forgo these gains. Hence, the annual average cost of delays is \$36 million in terms of lost economic output, or value added. Under the low renewable scenario, the costs of delays could be \$1.3 million, while under the higher wind scenario the costs of delays could be \$123 million. The economic value of approving proposed oil and gas projects on federal lands in Utah are much greater than the gains that could be realized from developing renewable energy.

CONCLUSION

Oil and gas development over the next 10 years could generate nearly \$2 billion in value added per annum under the medium drilling scenario that envisions slightly under 400 wells drilled per year. This scenario also would support more than 14,000 job equivalents and generate more than \$300 million in tax and royalty payments per year. This scenario assumes that a substantial proportion of the projects proposed on federal lands would be approved in a timely fashion so that drilling activity returns to levels above currently depressed levels. If drilling on federal lands remains at currently depressed levels, which are due in part to restrictive regulatory policies, then the gains under the medium scenario would not be realized. Hence, these forgone opportunities would represent the opportunity cost of restrictive regulatory policy.

If federal policy is accommodative and resource prices favorable, federal lands in the Utah could contribute more than \$6 billion in value added and nearly 60,000 jobs per annum. However one views the posture of fed-

eral policy, this scenario clearly demonstrates there is considerable upside potential from developing oil and natural gas on federal lands. These gains should be kept in mind in formulating regulatory policies affecting access and management of federal lands.

There is also a significant tradeoff between developing nonrenewable versus renewable energy projects on federal lands. Under the medium development scenario an average of 26 MW of renewable energy generation capacity is built each year. Under this scenario, the construction and operation of these facilities would on average generate \$35.6 million in value added, support 600 jobs per annum, and provide \$8 million in government revenues. Under the high development scenario, 113 MW capacity results in about \$123 million in value added, just over \$30 million in taxes, and 1,800 jobs. The net economic value of these projects would be lower because the relatively high cost of electricity produced from these projects would raise electricity rates and lower economic activity. Regardless, even the gross economic gains from building and operating renewable energy projects are orders of magnitude lower than the gains achieved from developing oil and gas on federal lands.

It's also important to remember that this study only included lands that are eligible for resource development. Nobody is talking about poking holes in Arches National Park or coal mining in Utah's scenic wilderness areas. The point is that we need to balance the well-being of our citizens with the desire to preserve our special lands. Our schools, our needy, and our public safety all require resources as well. Utah has enough to meet all of these needs if we use them responsibly.

This Policy Note is based upon "The Economic Value of Energy Resources on Federal Lands in the Rocky Mountain Region" by Timothy Considine, Professor of Energy Economics and Director of the Center for Energy Economics and Public Policy (CEEPP) with School of Energy Resources and the Department of Economics and Finance at the University of Wyoming. The full study is available at the Sutherland Institute Center for Self-Government in the West, www.EndFedAddiction.org.

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