

Executive Summary: Economic Impacts of Oil & Gas Development on Federal lands in the West



February 2015 Update

SWCA Environmental Consultants prepared an analysis of the economic impacts of all outstanding oil and natural gas projects proposed on federal lands in the West. A thorough review of projects undergoing environmental analysis in accordance with the National Environmental Policy Act (NEPA) as of January 1, 2012 determined that 44,329 wells were proposed in twenty-two NEPA documents under development at that time. As the majority were proposed in Utah and Wyoming, SWCA performed full analysis for the twenty projects in those two states.*

Key Findings

- The total annual impact of the twenty proposed projects is 3,164 wells drilled, **120,905 jobs, \$8 billion in wages, \$27.5 billion in economic activity, and \$139 million in government revenue.** The total economic impact of the projects over their anticipated lifespan (usually between ten and fifteen years) is **\$383.5 billion.**
- Oil and natural gas companies propose projects, and the Bureau of Land Management or the Forest Service completes the NEPA analysis before development can commence. Companies regularly pay for contractor support, yet the government is responsible for approving the documents.
- The majority of the projects examined have been delayed over three years. Federal government delays to these projects are preventing the creation of **101,121 jobs and \$24.9 billion** in economic impact every year. Delayed projects represent 39,255 proposed wells, or about 2,391 wells per year.
- These delays are preventing 58,480 jobs and \$16.2 billion in economic impact annually in Wyoming, and 42,641 jobs and \$8.7 billion in Utah.

* SWCA Environmental Consultants prepared the full economic assessment of the twenty projects, and developed the jobs and economic impact for each project and in the aggregate, which is contained in the report *Economic Impacts of Oil and Gas Development on Public Lands in the West*. This Executive Summary is written by Western Energy Alliance pulling data from the full study and drawing conclusions on the impacts of NEPA delays, and does not represent the views of SWCA.

Economic Impacts of Oil and Gas Development on Public Lands in the West

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INTRODUCTION

This report follows a progressive analysis for the estimated impacts of oil and gas development and production for the states of Wyoming and Utah. A methodology is presented, followed by baseline analysis of both states. Economic analysis of both development and production of proposed oil and gas projects in Utah and Wyoming comprise the impact study of this report. All projects analyzed in this analysis were in some phase of the National Environmental Policy Act (NEPA) process as of January 1, 2012. We estimate the yearly and aggregate estimated economic values of development and production with regards to these delayed projects (i.e., the opportunity costs of the NEPA process). There are two phases of analysis for this project, the first involved gathering data regarding projects undergoing NEPA review in Wyoming, Utah, Colorado, New Mexico, and Montana, and the second is estimating the economic impacts for oil and gas development and their relationship with the NEPA process.

RESEARCH AND METHODOLOGY

PHASE 1: PROJECTS CURRENTLY UNDERGOING THE NEPA PROCESS

Data for Phase 1 were gathered via internet databases and personal correspondences with Bureau of Land Management (BLM) State and Field Office NEPA specialists. This included internet sites such as the Environmental Notification Bulletin Board (ENBB) and other state-based NEPA planning information centers. Being that there is not a central information center for current Environmental Assessments (EAs) and Environmental Impact Statements (EISs), the states were researched one-by-one. Each state also uses different tracking mechanisms for NEPA, sometimes broken down by field office and other times presented at a state level. To maximize the validity of our findings, the projects were cross-referenced with NEPA representatives for each of the respective states. Only EAs and EISs that assess the impacts of oil and gas development on public land (BLM and U.S. Forest Service [USFS]) are contained within our results, with the caveat of a minimum restriction of at least 25 proposed total wells for each project. NEPA projects between 2006 and 2011 were considered in our analysis.

PHASE 2: ECONOMIC ANALYSIS

The data gathered in Phase 1 is analyzed in the Phase 2 analysis of this report. Data collected during Phase 1 revealed that only Wyoming, Utah, and Colorado had ongoing projects that meet the above criteria. In Colorado, only one project (Bull Mountain Unit EA) met the criteria for inclusion in the analysis; therefore, it was determined that economic modeling would only be performed for Wyoming and Utah. Baseline conditions for oil and gas development in Wyoming and Utah were established, and then an input-output model (IMPLAN) was used to estimate the impacts of proposed projects in these states.

IMPLAN

IMPLAN economic modeling was used for this analysis. IMPLAN is an input-output model that is used to yield estimates of the indirect (backward) and induced (forward) linkages in the economy. Indirect effects include changes in business demands where purchases are made for

inputs. Induced effects are the increase in demand for goods and services as household's income increases due to the associated economic activity of oil and gas wells. Jobs are reported in Annual Job Equivalents, or (AJE)s. One AJE is equal to 12 months of employment, and includes part- and full-time employment (i.e., 1 AJE could be one worker who works all year, or two workers who work 6 months each, etc.). The total impact is the sum of the indirect, direct, and induced effects. More information is available at: <http://implan.com/V4/Index.php>.

Baseline Data

Various sources were used to establish baseline indicators for the states of Wyoming and Utah. These included the Energy Information Administration (EIA), Utah Department of Oil, Gas, and Minerals (DOG M), the Office of Natural Resource Revenue (ONRR), and IMPLAN data. IMPLAN also provides descriptive baseline information in addition to the impact analysis.

Oil and Gas Well Development and Production

To determine marginal effects for oil and gas development in Utah and Wyoming, IMPLAN economic modeling was used. For this analysis the average median national cost of constructing a typical oil and gas well was used. This information is available from the Energy Information Administration (EIA 2012c). The same cost was used for both states so that the marginal effects of each state could be contrasted without bias. The costs are assumed to be constant across the development of the projects, and that wells are developed evenly across the planned time horizon.

To obtain estimates for economic activity associated with oil and gas production, IMPLAN software was also used. Employment per well was calculated using the most up-to-date data (2009). Total employment for NAICS 2111 (oil and gas extraction) for Wyoming and Utah was 3,543 and 1,241 respectively (U.S. Census Bureau 2012a). In 2009, the total number of producing oil and gas wells for Wyoming was 34,543 and for Utah was 8,920 (EIA 2012a, b), yielding 9.74 workers per well for Wyoming and 7.18 for Utah. The following sectors from the North American Industry Classification System (NAICS) were used in IMPLAN for this analysis:

- NAICS 21311(Drilling Oil and Gas Wells) - This U.S. industry comprises establishments primarily engaged in drilling oil and gas wells for others on a contract or fee basis. This industry includes contractors that specialize in spudding in, drilling in, redrilling, and directional drilling (U.S. Census Bureau 2012).
- NAICS 21211(Oil and Gas Extraction) - Industries in the Oil and Gas Extraction subsector operate and/or develop oil and gas field properties. Such activities may include exploration for crude petroleum and natural gas; drilling, completing, and equipping wells; operating separators, emulsion breakers, desilting equipment, and field gathering lines for crude petroleum and natural gas; and all other activities in the preparation of oil and gas up to the point of shipment from the producing property. This subsector includes the production of crude petroleum,

the mining and extraction of oil from oil shale and oil sands, and the production of natural gas, sulfur recovery from natural gas, and recovery of hydrocarbon liquids. Establishments in this subsector include those that operate oil and gas wells on their own account or for others on a contract or fee basis. Establishments primarily engaged in providing support services, on a fee or contract basis, required for the drilling or operation of oil and gas wells (except geophysical surveying and mapping, mine site preparation, and construction of oil/gas pipelines) are classified in Subsector 213, Support Activities for Mining (U.S. Census Bureau 2012a).

WYOMING BASELINE ANALYSIS

The section presents a baseline analysis of oil and gas activity and economic contribution for the state of Wyoming. Figure 1 illustrates historic oil and gas production for Wyoming. Since 2000 natural gas production has doubled, while oil production has remained at a near constant level, just less than one million barrels per year.

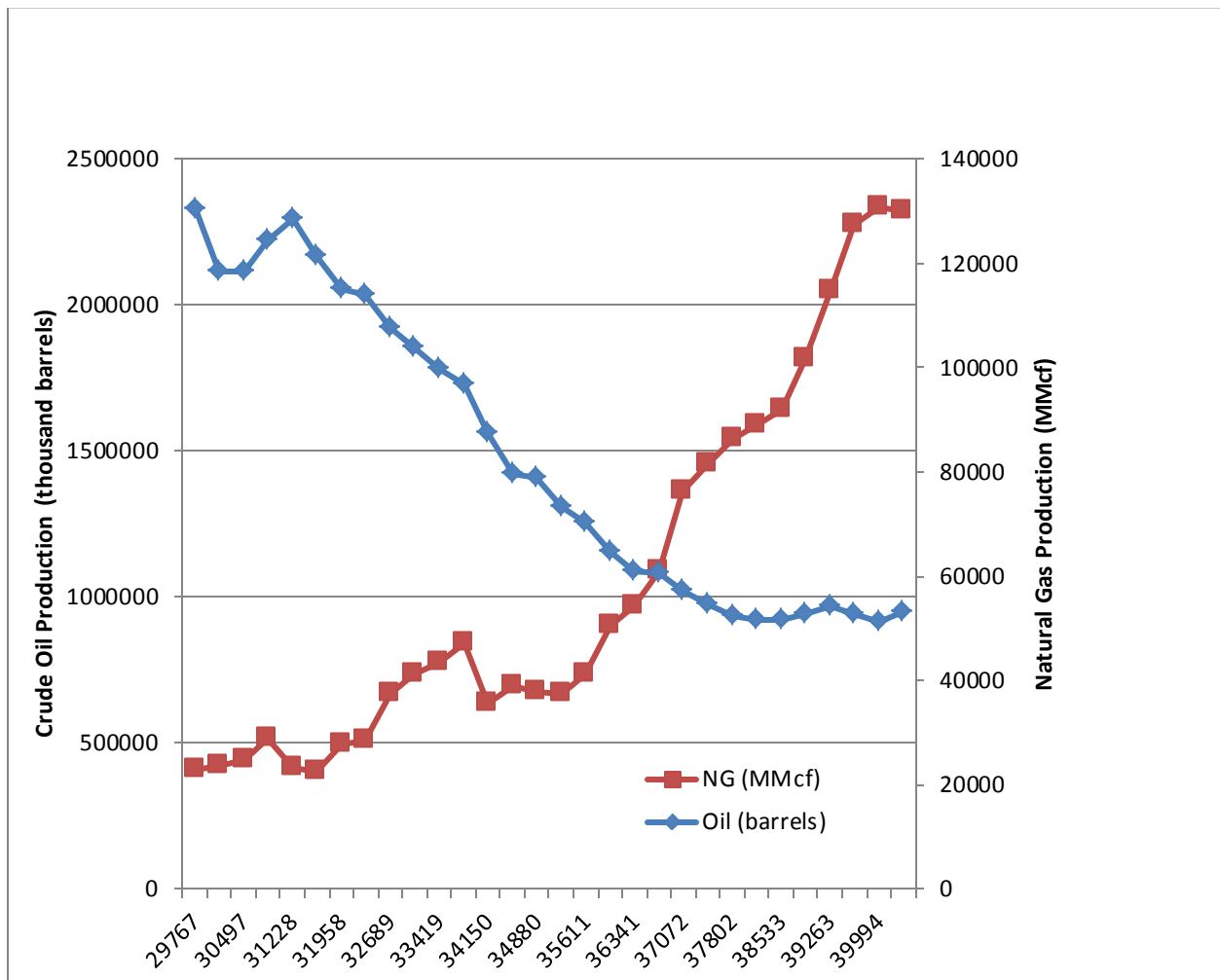


Figure 1. Historical Oil and Natural Gas Production in Wyoming. (Source: EIA 2012a)

Table 1 provides an economic summary for oil and gas activities in Wyoming in 2010 according to IMPLAN data. This includes the extraction of oil and gas, support activities for oil and gas, and drilling of wells. In 2010 these sectors generated over 22,000 AJEs and over \$9 billion in total economic contribution.

Table 1. 2010 Oil and Gas Economic Summary for Wyoming.

Industry Code	Description	Employment (AJEs)	Output*	Employee Compensation*	Proprietor Income*	Other Property Type Income*	Indirect Business Taxes*	Total Economic Contribution*
20	Extraction of oil and natural gas	9,956.50	\$2,509,661	\$483,882	\$521,046	\$542,430	\$285,100	\$4,342,120
29	Support activities for oil and gas operations	9,683.30	\$1,907,591	\$648,745	\$97,826	\$4,550	\$32,079	\$2,690,793
28	Drilling oil and gas wells	2,671.60	\$1,122,572	\$217,921	\$31,529	\$592,214	\$16,755	\$1,980,994
Wyoming Oil and Gas Industry Totals		22,311.40	\$5,539,825	\$1,350,549	\$650,402	\$1,139,195	\$333,935	\$9,013,907

* in thousand dollars (000's)

Source: IMPLAN 2010

Figures 2 and 3 break down the economic components shown in Table 1 into percentages of total activities related to oil and natural gas. Employment and economic output related to production are the largest components of natural gas activity in Wyoming.

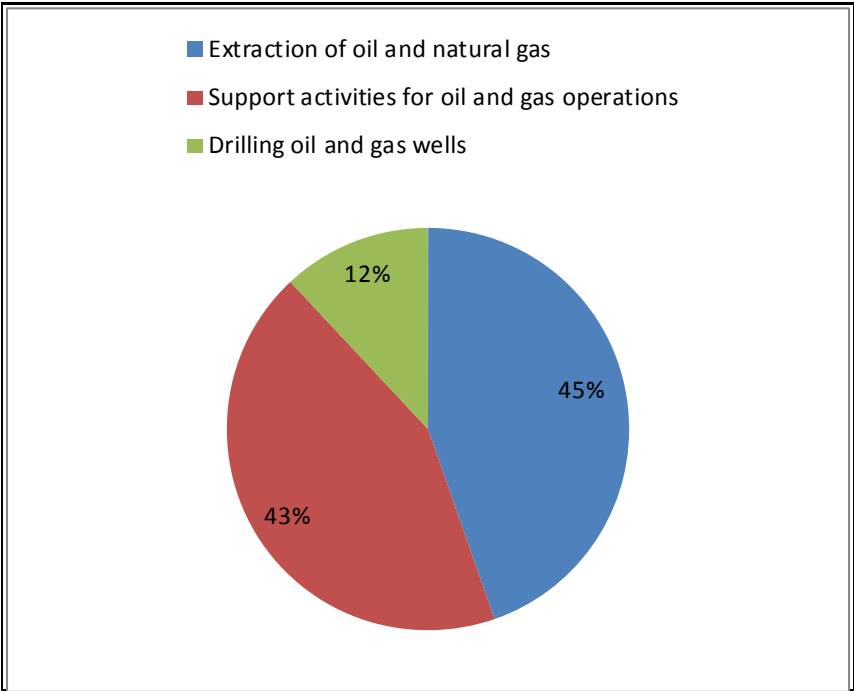


Figure 2. Employment from Oil and Natural Gas Activities in Wyoming. (Source: IMPLAN 2010)

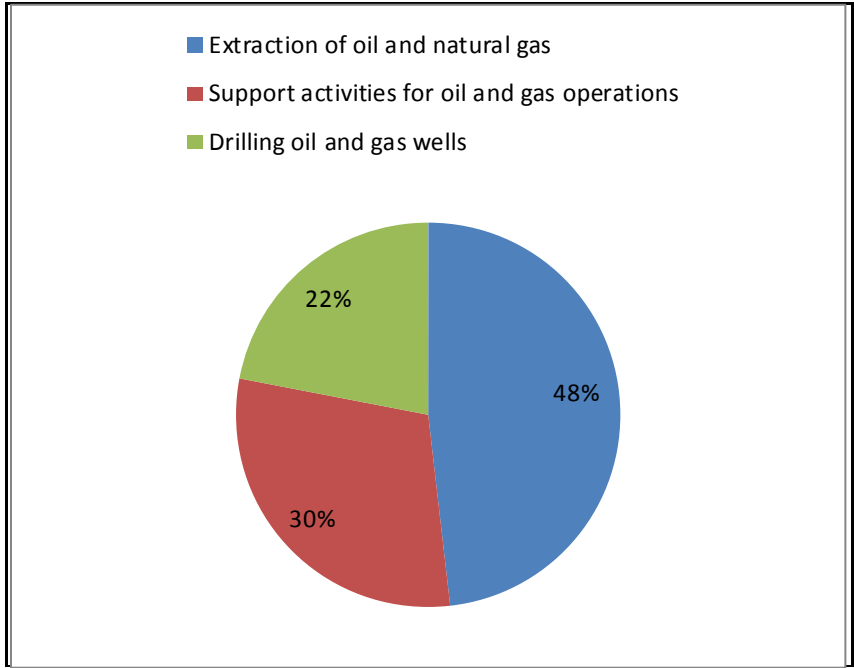


Figure 3. Economic Components of Oil and Natural Gas Activities in Wyoming. (Source: IMPLAN 2010)

Table 2 shows state and federal tax revenue for Wyoming in 2010. These numbers are based off of the 2009 production year. In 2010 there were 34,957 producing oil and gas

wells (EIA 2012b), with each well providing approximately \$47,991 in Ad Valorum tax, Severance Tax, and Federal Mineral Royalties.

Table 2. 2010 Tax Revenue for Oil and Gas Production Wyoming (34,957 producing wells).

	Total Tax \$	Tax \$ per well
Ad Valorum Tax	\$784,912,412	\$22,454
Severance Tax	\$460,013,007	\$13,159
Federal Mineral Royalties	\$432,704,926	\$12,378
Total	\$1,677,630,345	\$47,991

Sources: Wyoming Department of Revenue, ONRR 2012b, EIA 2012b

Table 3 represents the major projects (more than 25 wells proposed) undergoing the NEPA process in Wyoming. This table is current through January 1, 2012. There are currently a total of nine EA's and EIS's that are proposed in Wyoming representing over 24,000 proposed wells to be drilled over the full duration of these projects.

Table 3. Current Oil and Gas Projects Undergoing the NEPA Process in Wyoming.

Land Management Agency	EIS/EA	Project Initiation	Wells Proposed	Wells/Year
BLM - Kemmerer Field Office	Moxa Arch Infill Drilling Project EIS	10/5/05	1,861	186
BLM - Lander Field Office	Beaver Creek Coal Bed NG Development Project EIS	7/29/08	228	23-46
	Moneta Divide EIS	Pending	4,250	295
BLM - Pinedale Field Office	LaBarge Platform Infill OG EIS	8/3/09	838	60
	Normally Pressure Lance Natural Gas Development Project EIS	4/12/11	3,500	350
BLM - Rawlins Field Office	Continental Divide-Creston Natural Gas Project EIS	3/5/06	8,950	600
	Table Rock Oil and Gas EA	5/11	88	6
Rock Springs	Hiawatha Regional Energy Development Project EIS	9/6/06	4,208	140-210
USFS - Big Piney Ranger District	Plains Exploration Eagles Prospect and Noble Basin Oil and Gas Master Development Plan	1/11/06	136	12
Total Proposed Wells			24,059	1,720

UTAH BASELINE ANALYSIS

The section presents a baseline analysis of oil and gas activity and economic contribution for the state of Utah. Figure 4 summarizes historical oil and gas production over the last 30 years. Both oil and natural gas production in Utah has been on a generalized downward trend since 2005.

Table 4 provides an economic summary for oil and gas activities in Utah in 2010 according to IMPLAN data. This includes the extraction of oil and gas, support activities for oil and gas, and drilling of oil and gas wells. In 2010 these sectors generated over 8,000 AJEs and over \$3 billion in total economic contribution.

Figures 5 and 6 break down the economic components exhibited in Table 3 into percentages of total activities related to oil and natural gas. Like Wyoming, employment and economic output related to production are the largest components of natural gas activity in Utah.

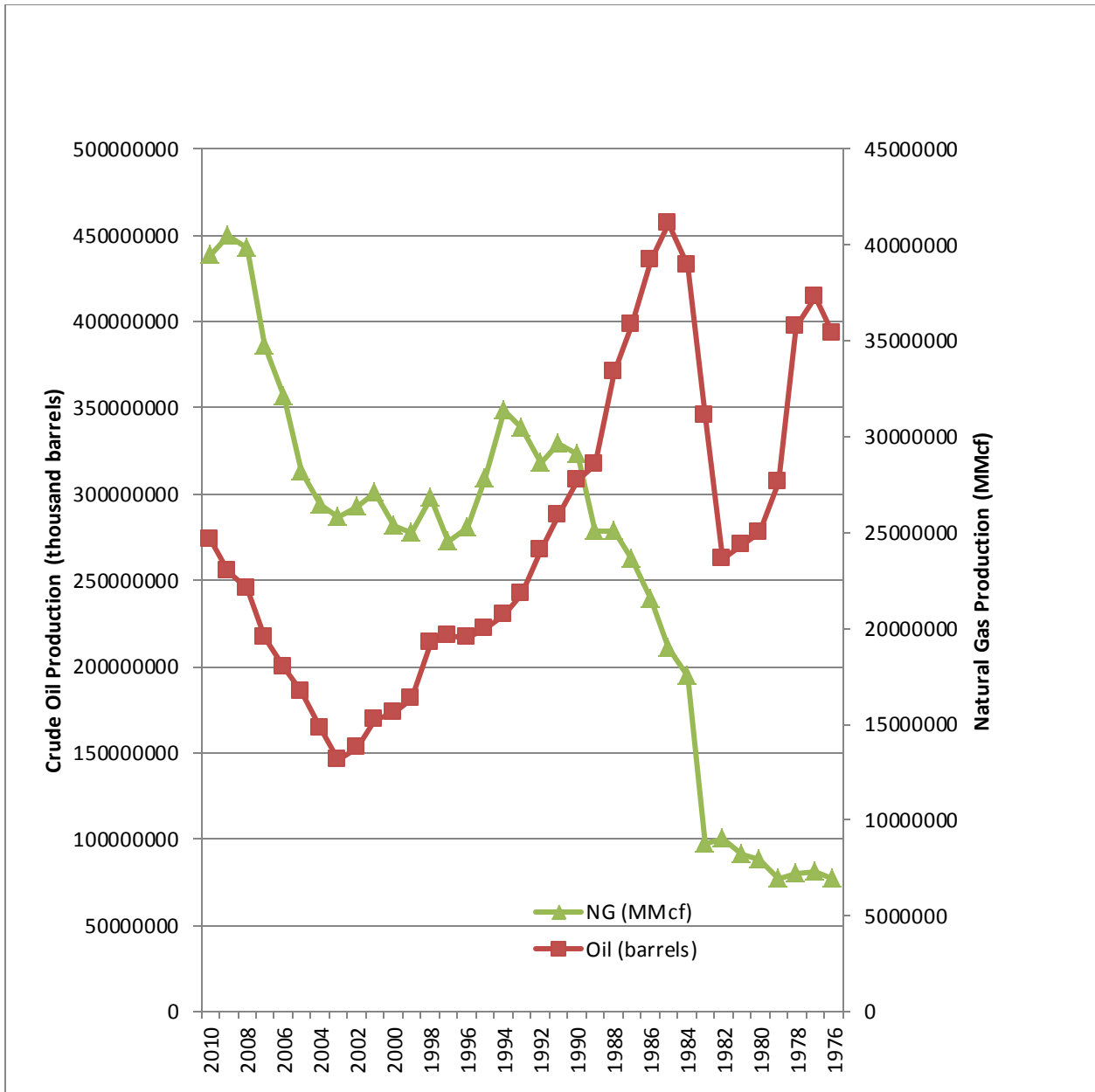


Figure 4. Historical Oil and Natural Gas Production in Utah. (Source: Utah DOGM 2012)

Table 4. 2010 Oil and Gas Summary for Utah

Industry Code	Industry	Employment (AJEs)	Output*	Employee Compensation*	Proprietor Income*	Other Property Type Income*	Indirect Business Taxes*	Total Economic Contribution*
20	Extraction of oil and natural gas	4,092.40	\$918,700	\$157,982	\$210	\$198,221	\$104,185	\$1,589,499
29	Support activities for oil and gas operations	3,410.70	\$651,478	\$200	\$44,601	\$1,473	\$10,389	\$908,833
28	Drilling oil and gas wells	769.8	\$284,472	\$52	\$11,181	\$149,946	\$4,242	\$502,006
Oil and Gas Industry Totals		8,272.90	\$1,854,650	\$411,036	\$266,193	\$349,641	\$118,817	\$3,000,340

Source: IMPLAN 2010

* in thousand dollars (000's)

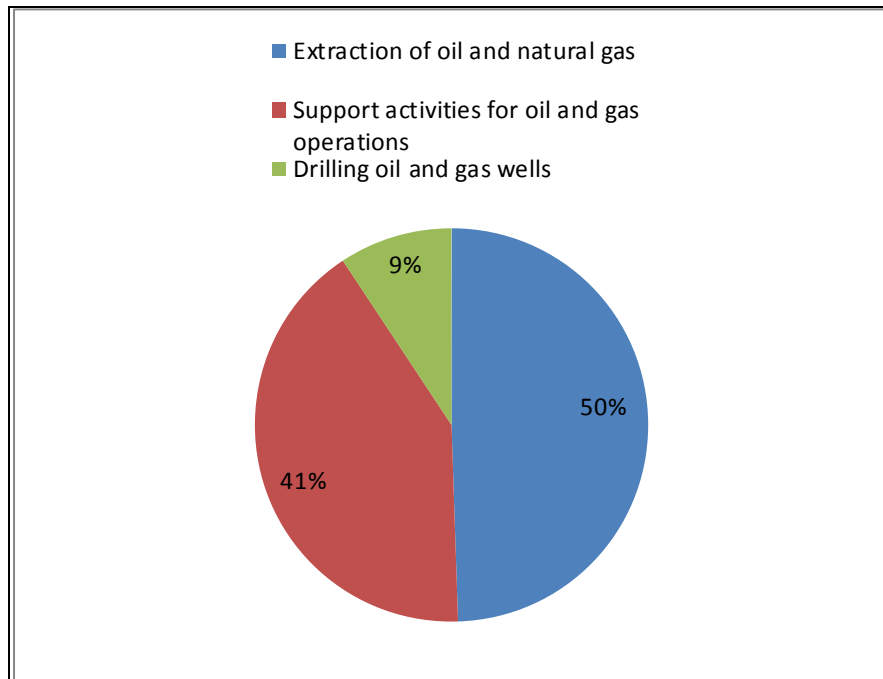


Figure 5. Components of Employment Related to Natural Gas and Oil Activities in Utah.

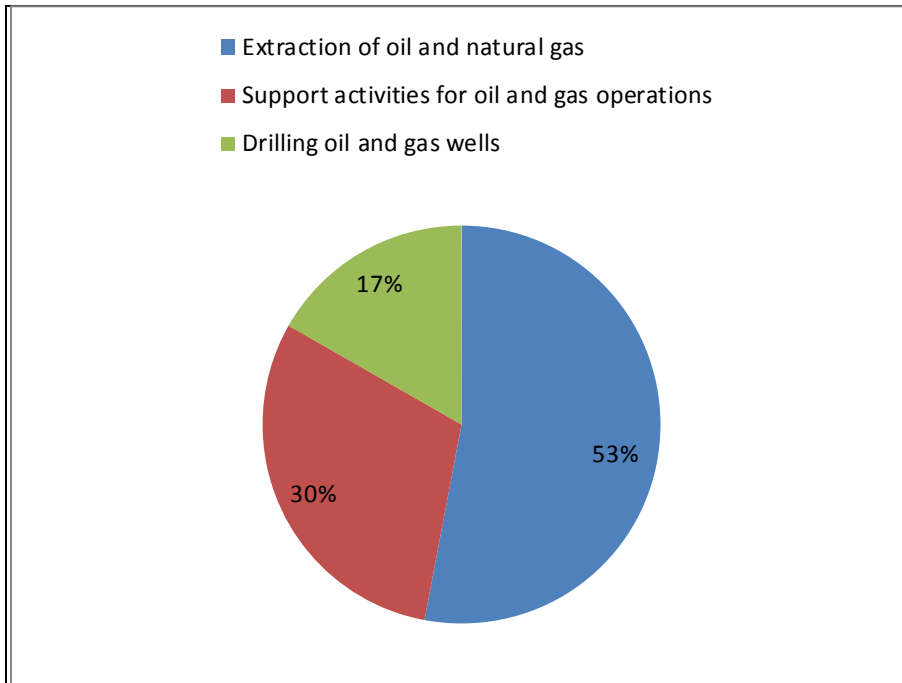


Figure 6. Total Economic Contribution from Natural Gas and Oil Activities in Utah.

Table 5 shows state and federal tax revenue for Utah in 2010. These numbers are based off of the 2009 production year. In 2010 there were 9,221 producing oil and gas wells (EIA 2012a), with each well providing approximately \$39,326 in Ad Valorem tax, Severance Tax, Federal Mineral Royalties, and Conservation Fees.

Table 5. 2010 Tax Revenue for Oil and Gas Production Utah (9,221 producing wells).

	Total Tax \$	Tax \$ per well
Oil and Gas Severance Tax	\$56,200,970	\$6,095
Ad Valorem Tax	\$42,581,114	\$4,618
Conservation Fees	\$4,191,039	\$455
Federal Royalties	\$259,372,275	\$28,128
Total	\$362,345,398	\$39,296

Sources: Utah Tax Commission 2010, ONRR 2012a, EIA 2012a

Table 6 represents the major projects (more than 25 wells) undergoing the NEPA process in Utah. This table is current through January 1, 2012. There are currently a total of eleven EA's and EIS's that are proposed in Utah representing over 20,000 proposed wells to be drilled over the project's lifetimes.

Table 6. Current Oil and Gas Projects Undergoing the NEPA Process in Utah.

Land Management Agency	EIS/EA	Project Initiation	Wells Proposed	Wells/Year
BLM - Vernal Field Office	Gasco Energy Uintah Basin NG Development Project EIS	2/10/06	1,538	100
	Anadarko Greater Natural Buttes EIS	10/5/07	3,496	358
	Greater Chapita Wells NG Infill EIS	9/9/09	7,028	469
	Monument Butte Area OG Development Project EIS	8/25/10	5,750	250
	XTO's Little Canyon Field EA	10/17/06	510	73
	XTO's Kings Canyon Plan of Development	2008	90	Unknown
	XTO's Hill Creek Unit EA	4/30/09	137	14-24
	XTO's River Bend Unit Infill Development EA	7/17/07	368	37-93
	Big Pack Natural Gas EA	9/26/06	664	66
	Southam Canyon Gas Field EA	9/24/08	249	25
USFS - Duchesne Ranger District	South Unit Oil and Gas Development EIS	8/29/07	400	20
Total Proposed Wells			20,230	1,445

Sources: (BLM 2012a-c, 2012e, 2011a, 2010, 2009a, 2008a, 2006a; USFS 2011)

ECONOMIC IMPACT ANALYSIS

DEVELOPMENT OF OIL AND GAS WELLS IN WYOMING

Table 7 shows the economic impacts of a typical well developed in Wyoming. IMPLAN was used to estimate indirect and induced effects. Development and completion of one typical oil and gas well is estimated to produce over \$5 million in economic activity and provide over 17 AJEs, with an average labor income of \$73,944 per AJe.

Table 8 summarizes the top ten sectors impacted through the development of a typical oil and gas well in Wyoming. These include direct, indirect, and induced effects. These sectors are economically tied to the drilling activities of oil and gas well development.

Tables 9 and 10 show the annual and total economic impacts of the proposed projects that are undergoing the NEPA process in Wyoming. The development impacts are illustrated in the number of wells that are proposed to be developed on an annual basis and at a total project level. The total project economic activity represents the estimated

economic impact
of each project at the aggregate level over the trajectory of the project's lifetime.

Table 7. Impacts from Development and Completion of a Typical Oil and Gas Well Wyoming (2010).

Estimated Activity	Conventional Well
Total Cost (direct effect)	\$4,387,260
Indirect effect	\$272,404
Induced Effect	\$538,869
Total Economic Activity	\$5,198,533
Employment (AJE)	
Direct Annual AJE	10.4
Indirect and Induced AJE	7
Total AJE	17.4
Total Labor Income	\$1,286,630
Average Labor Income per AJE	\$73,944

Sources: (IMLPLAN 2010, EIA 2012c)

Table 8. Top Ten Sectors Impacted Per Well Developed.

Sector #	Description	Total Employment	Total Labor Income	Total Value Added	Total Output
28	Drilling oil and gas wells	10.4	\$974,909	\$3,354,901	\$4,387,260
413	Food services and drinking places	0.7	\$12,109	\$18,343	\$35,216
360	Real estate establishments	0.5	\$4,805	\$34,974	\$39,325
394	Offices of physicians, dentists, and other health practitioners	0.3	\$25,132	\$25,948	\$39,152
369	Architectural, engineering, and related services	0.3	\$16,867	\$17,149	\$29,829
356	Securities, commodity contracts, investments, and related activities	0.3	\$835	\$883	\$34,672
319	Wholesale trade businesses	0.3	\$19,546	\$34,822	\$44,722
335	Transport by truck	0.2	\$15,713	\$18,929	\$32,593
329	Retail Stores - General merchandise	0.2	\$5,790	\$9,020	\$11,780
367	Legal services	0.2	\$10,875	\$16,560	\$19,964

Source: (IMPLAN 2010)

Table 9. Annual Estimated Economic Activity from Gas and Oil Well Development and Completion for Wyoming by Project.

Proposed Project	Total Wells Proposed	Annual Wells Proposed for Development	Total Cost (Direct Effect)	Indirect Effect	Induced Effect	Total Annual Economic Activity	Total Project Economic Activity
Moxa Arch Infill Drilling Project EIS	1,861	186	\$816,030,360	\$50,667,144	\$100,229,634	\$966,927,138	\$9,674,469,913
Beaver Creek Coal Bed NG Development Project EIS	228	36	\$157,941,360	\$9,806,544	\$19,399,284	\$187,147,188	\$1,185,265,524
Moneta Divide EIS	4,250	295	\$1,294,241,700	\$80,359,180	\$158,966,355	\$1,533,567,235	\$22,093,765,250
LaBarge Platform Infill OGEIS	838	60	\$263,235,600	\$16,344,240	\$32,332,140	\$311,911,980	\$4,356,370,654
Normally Pressure Lance Natural Gas Development Project EIS	3,500	350	\$1,535,541,000	\$95,341,400	\$188,604,150	\$1,819,486,550	\$18,194,865,500
Continental Divide-Creston Natural Gas Project EIS	8,950	600	\$2,632,356,000	\$163,442,400	\$323,321,400	\$3,119,119,800	\$46,526,870,350
Table Rock Oil and Gas EA	88	6	\$26,323,560	\$1,634,424	\$3,233,214	\$31,191,198	\$457,470,904
Hiawatha Regional Energy Development Project EIS	4,208	175	\$767,770,500	\$47,670,700	\$94,302,075	\$909,743,275	\$21,875,426,864
Plains Exploration Eagles Prospect and Noble Basin Oil and Gas Master Development Plan	136	12	\$52,647,120	\$3,268,848	\$6,466,428	\$62,382,396	\$707,000,488
Totals	24,059	1,720	\$7,546,087,200	\$468,534,880	\$926,854,680	\$8,941,476,760	\$125,071,505,447

Table 10. Annual Employment from Oil and Gas Well Development and Completion for Wyoming by Project.

Proposed Project	Direct Annual AJE	Indirect and Induced AJE	Total AJE	Total Labor Income
Moxa Arch Infill Drilling Project EIS	1,934.4	1,302.0	3,236	\$239,313,180
Beaver Creek Coal Bed NG Development Project EIS	374.4	252.0	626	\$46,318,680
Moneta Divide EIS	3,068.0	2,065.0	5,133	\$379,555,850
LaBarge Platform Infill OG EIS	624.0	420.0	1,044	\$77,197,800
Normally Pressure Lance Natural Gas Development Project EIS	3,640.0	2,450.0	6,090	\$450,320,500
Continental Divide-Creston Natural Gas Project EIS	6,240.0	4,200.0	10,440	\$771,978,000
Table Rock Oil and Gas EA	62.4	42.0	104	\$7,719,780
Hiawatha Regional Energy Development Project EIS	1,820.0	1,225.0	3,045	\$225,160,250
Plains Exploration Eagles Prospect and Noble Basin Oil and Gas Master Development Plan	124.8	84.0	209	\$15,439,560
Totals	17,888.0	12,040.0	29,928	\$2,213,003,600

Source: IMPLAN 2010

Table 11 and Figure 7 summarize the opportunity costs associated with the delay of oil and gas development in Wyoming annually; and at 5-year impacts and 10-year impacts. A 10-year time period is used because development would occur over at least a 10-year period for all of the proposed projects (with exception to the Beaver Creek EIS which will take place over 9 years, proposing 36 wells per year).

Table 11. Total Economic Impacts of Delays of Oil and Gas Development Wyoming.

Impact	Project Delay		
	1-year	5-year	10-year
Labor Income	\$2,213,003,600	\$11,065,018,000	\$22,130,036,000
Total AJE	29,928	149,640	299,280
Economic Output	\$8,941,476,760	\$44,707,383,800	\$89,414,767,600

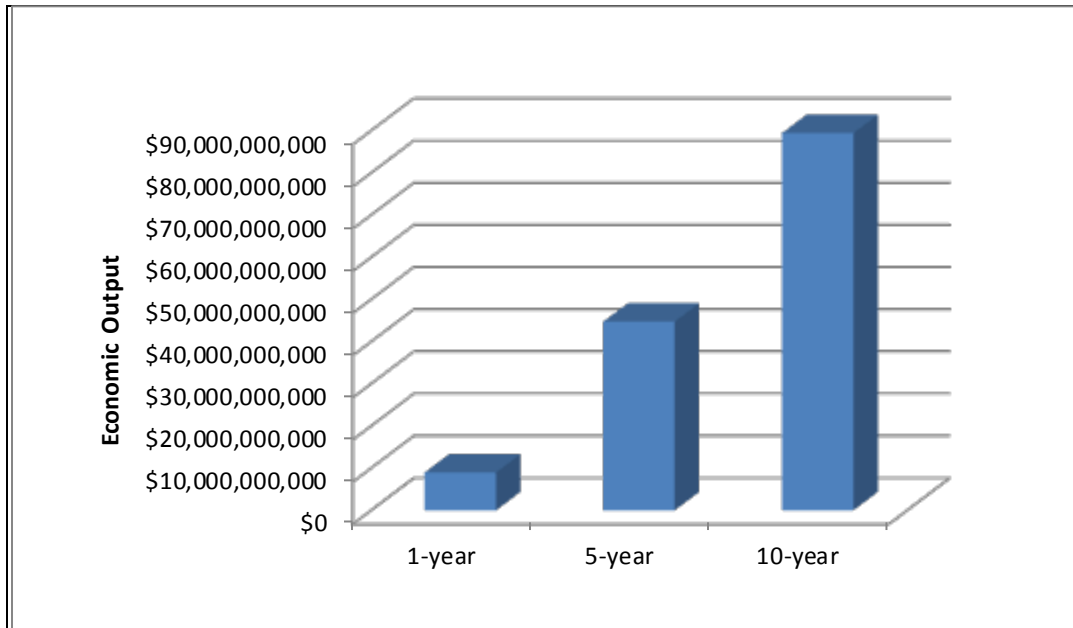


Figure 7. Economic Impacts of Delays of Oil and Gas Development in Wyoming.

ESTIMATED ECONOMIC IMPACTS OF OIL AND GAS PRODUCTION IN WYOMING

Table 11 shows the economic impacts of a typical oil or gas well producing in Wyoming. IMPLAN was used to estimate indirect and induced effects. One typical oil and gas well is estimated to produce over \$3.3 million in economic activity annually and provide over 16 AJEs per producing year, with an average labor income of \$75,224 per AJE.

Table 11. Economic Impacts of Production from a Typical Oil and Gas Well Wyoming (2010).

Estimated Activity	Conventional Well
Direct effect	\$2,455,087
Indirect effect	\$394,370
Induced effect	\$540,128
Total Economic Activity	\$3,389,585
Employment (AJE)	
Direct Annual AJE	9.7
Indirect and Induced AJE	6.9
Total AJE	16.6
Total Labor Income	\$1,248,712
Average Labor Income per AJE	\$75,224

Sources: IMPLAN 2010, Census Bureau 2012b

Table 12 summarizes the top ten sectors impacted through the production effects of a typical oil and gas well in Wyoming. These include direct, indirect, and induced effects. These sectors are economically tied to the production activities of oil and gas wells.

Table 12. Top Ten Sectors Impacted Per Well in Operation in Wyoming.

Sector #	Description	Total Employment	Total Labor Income	Total Value Added	Total Output
20	Extraction of oil and natural gas	9.7	\$983,575	\$1,793,521	\$2,456,334
413	Food services and drinking places	0.7	\$11,839	\$17,933	\$34,429
39	Maintenance and repair construction of nonresidential structures	0.5	\$28,273	\$34,792	\$65,287
360	Real estate establishments	0.4	\$4,165	\$30,315	\$34,086
29	Support activities for oil and gas operations	0.3	\$24,705	\$25,917	\$63,125
394	Offices of physicians, dentists, and other health practitioners	0.3	\$24,816	\$25,621	\$38,659
329	Retail Stores - General merchandise	0.2	\$6,060	\$9,441	\$12,329
356	Securities, commodity contracts, investments, and related activities	0.2	\$652	\$689	\$27,075
324	Retail Stores - Food and beverage	0.2	\$5,639	\$8,134	\$11,093
398	Nursing and residential care facilities	0.2	\$6,296	\$7,242	\$10,410

Source: IMPLAN 2010

Tables 13 and 14 show the annual and total economic impacts for the proposed projects undergoing the NEPA process in Wyoming. The number of wells that are proposed to be producing on an annual basis and total project economic activity are presented. Annual and the lifetime production effects are shown for each project.

Table 13. Annual Estimated Economic Activity from Gas and Oil Well Production for Wyoming by Project.

Proposed Project	Total Wells Proposed	Annual Wells Proposed for Production	Direct Effects	Indirect Effects	Induced Effects	Total Annual Economic Activity	Total Project Economic Activity
Moxa Arch Infill Drilling Project EIS	1,861	186	\$456,646,229	\$73,352,870	\$100,463,765	\$630,462,864	\$6,308,018,222
Beaver Creek Coal Bed NG Development Project EIS	228	36	\$88,383,141	\$14,197,330	\$19,444,600	\$122,025,070	\$772,825,446
Moneta Divide EIS	4,250	295	\$724,250,739	\$116,339,229	\$159,337,693	\$999,927,660	\$14,405,737,476
LaBarge Platform Infill OG EIS	838	60	\$147,305,235	\$23,662,216	\$32,407,666	\$203,375,117	\$2,840,472,472
Normally Pressure Lance Natural Gas Development Project EIS	3,500	350	\$859,280,538	\$138,029,594	\$189,044,720	\$1,186,354,851	\$11,863,548,510
Continental Divide-Creston Natural Gas Project EIS	8,950	600	\$1,473,052,350	\$236,622,160	\$324,076,663	\$2,033,751,173	\$30,336,788,332
Table Rock Oil and Gas EA	88	6	\$14,730,524	\$2,366,222	\$3,240,767	\$20,337,512	\$298,283,505
Hiawatha Regional Energy Development Project EIS	4,208	175	\$429,640,269	\$69,014,797	\$94,522,360	\$593,177,425	\$14,263,374,894
Plains Exploration Eagles Prospect and Noble Basin Oil and Gas Master Development Plan	136	12	\$29,461,047	\$4,732,443	\$6,481,533	\$40,675,023	\$460,983,599
Totals	24,059	1,720	\$4,222,750,070	\$678,316,860	\$929,019,767	\$5,830,086,696	\$81,550,032,456

Source: IMPLAN 2010

Table 14. Annual Estimated Employment from Oil and Gas Production for Wyoming by Project.

Proposed Project	Direct Annual AJE	Indirect and Induced AJE	Total AJE	Total Labor Income
Moxa Arch Infill Drilling Project EIS	1,804.2	1,283.4	3,088	\$232,260,456
Beaver Creek Coal Bed NG Development Project EIS	349.2	248.4	598	\$44,953,637
Moneta Divide EIS	2,861.5	2,035.5	4,897	\$368,370,078
LaBarge Platform Infill OG EIS	582.0	414.0	996	\$74,922,728
Normally Pressure Lance Natural Gas Development Project EIS	3,395.0	2,415.0	5,810	\$437,049,245
Continental Divide-Creston Natural Gas Project EIS	5,820.0	4,140.0	9,960	\$749,227,277
Table Rock Oil and Gas EA	58.2	41.4	100	\$7,492,273
Hiawatha Regional Energy Development Project EIS	1,697.5	1,207.5	2,905	\$218,524,622
Plains Exploration Eagles Prospect and Noble Basin Oil and Gas Master Development Plan	116.4	82.8	199	\$14,984,546
Totals	16,684.0	11,868.0	28,552	\$2,147,784,861

Source: IMPLAN 2010

Table 15 and Figure 8 summarize the opportunity costs associated with the delay of oil and gas production in Wyoming annually; and at 5-year and 10-year impacts. A 10-year time period is used because development would occur over at least a 10-year period for all of the proposed projects (with exception to the Beaver Creek EIS which will take place over 9 years, proposing 36 wells per year).

Table 16 and Figure 9 summarize estimated tax and royalty revenue that is lost in the state of Wyoming while these projects are being delayed.

Table 15. Economic Impacts of Delays of Oil and Gas Production in Wyoming

Impact	Project Delay		
	1-year	5-year	10-year
Labor Income	\$2,147,784,861	\$10,738,924,303	\$21,477,848,605
Total AJE	28,552	142,760	285,520
Economic Output	\$5,830,086,696	\$29,150,433,481	\$58,300,866,962

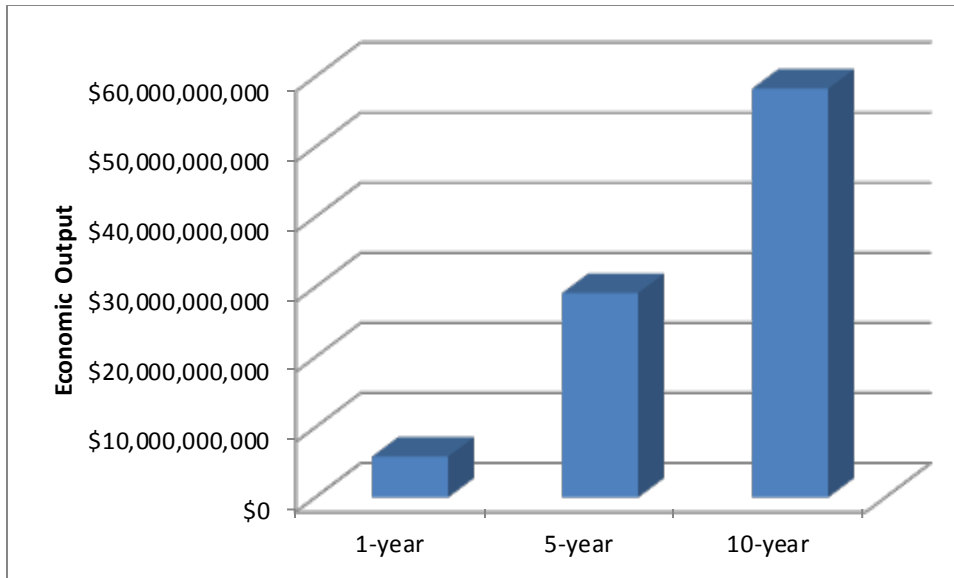


Figure 8. Economic Impacts of Delays of Oil and Gas Production in Wyoming.

Table 16. Tax Revenue and Royalty Impacts of Delays of Oil and Gas Production in Wyoming.

Impact	Project Delay		
	1-year	5-year	10-year
Ad Valorem Tax	\$38,620,286	\$193,101,431.56	\$386,202,863.13
Severance Tax	\$22,634,161	\$113,170,805.85	\$226,341,611.71
Federal Mineral Royalties	\$21,290,513	\$106,452,566.40	\$212,905,132.80
Total Royalty and Tax Revenue	\$82,544,961	\$412,724,804	\$825,449,608

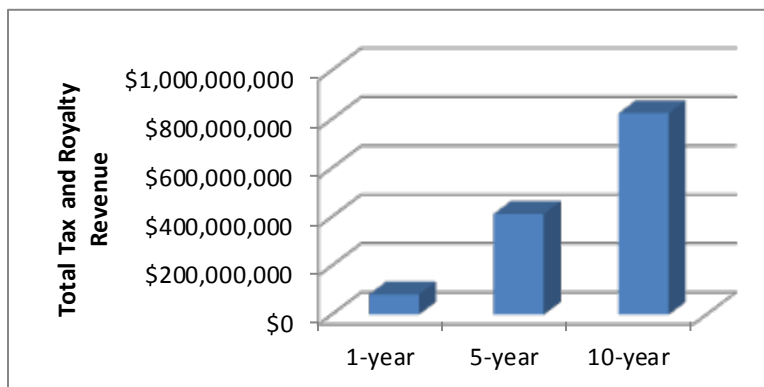


Figure 9. Tax Revenue and Royalty Impacts of Delays of Oil and Gas Production in Wyoming.

DEVELOPMENT OF OIL AND GAS WELLS IN UTAH

Table 17 shows the economic impacts of a typical well developed in Utah. IMPLAN was used to estimate indirect and induced effects. Development and completion of one typical oil and gas well is estimated to produce over \$6 million in economic activity (spending in the economy) and provide over 27 AJEs, with an average labor income of \$57,418 per AJE.

Table 17. Impacts from Development and Completion of a Typical Oil and Gas Well Utah (2010).

Estimated Activity	Conventional Well
Total Cost (direct effect)	\$4,387,260
Indirect effect	\$595,717
Induced Effect	\$1,153,425
Total Economic Activity	\$6,136,402
Employment (AJE)	
Direct Annual AJE	11.9
Indirect and Induced AJE	15.2
Total AJE	27.1
Total Labor Income	\$1,556,032
Average Labor Income per AJE	\$57,418
Sources: IMPLAN 2010, EIA 2012c	

Table 18 summarizes the top ten sectors impacted through the development of a typical oil and gas well in Utah. These include direct, indirect, and induced effects. These sectors are economically tied to the drilling activities of oil and gas well development.

Table 18. Top Ten Sectors Impacted Per Well Developed in Utah.

Sector #	Description	Total Employment	Total Labor Income	Total Value Added	Total Output
28	Drilling oil and gas wells	11.9	\$976,937	\$3,354,900	\$4,387,260
413	Food services and drinking places	1.2	\$20,950	\$31,984	\$60,848
360	Real estate establishments	1.1	\$11,026	\$80,801	\$90,853
394	Offices of physicians, dentists, and other health practitioners	0.6	\$37,548	\$38,773	\$63,082
319	Wholesale trade businesses	0.6	\$38,519	\$68,293	\$87,708
356	Securities, commodity contracts, investments, and related activities	0.6	\$6,755	\$7,116	\$77,828

369	Architectural, engineering, and related services	0.6	\$34,037	\$34,595	\$59,653
355	Nondepository credit intermediation and related activities	0.5	\$26,036	\$30,536	\$57,845

Table 18. Top Ten Sectors Impacted Per Well Developed in Utah (Continued).

Sector #	Description	Total Employment	Total Labor Income	Total Value Added	Total Output
367	Legal services	0.4	\$28,812	\$44,159	\$53,236
381	Management of companies and enterprises	0.4	\$29,535	\$33,886	\$58,669

Source: IMPLAN 2010

Tables 19 and 20 show the annual and total project economic impacts for the proposed projects undergoing the NEPA process in Utah. The number of wells that are proposed to be developed on an annual basis and total project economic activity are presented. The total project economic activity represents the estimated economic impact of each project at the aggregate level over the course of the project's lifetime.

Table 19. Annual Estimated Economic Activity from Gas and Oil Well Development and Completion for Utah by Project.

Proposed Project	Total Wells Proposed	Annual Wells Proposed for Development	Total Cost (Direct Effect)	Indirect Effect	Induced Effect	Total Annual Economic Activity	Total Project Economic Activity
Gasco Energy Uintah Basin NG Development Project EIS	1,538	100	\$438,726,000	\$59,571,743	\$115,342,502	\$613,640,244	\$9,437,786,960
Anadarko Greater Natural Buttes EIS	3,496	358	\$1,570,639,080	\$213,266,839	\$412,926,156	\$2,196,832,075	\$21,452,862,946
Greater Chapita Wells NG Infill EIS	7,028	469	\$2,057,624,940	\$279,391,474	\$540,956,333	\$2,877,972,747	\$43,126,636,381
Monument Butte Area OG Development Project EIS	5,750	250	\$1,096,815,000	\$148,929,357	\$288,356,254	\$1,534,100,611	\$35,284,314,056
XTO's Little Canyon Field EA	510	73	\$320,269,980	\$43,487,372	\$84,200,026	\$447,957,378	\$3,129,565,247
XTO's Hill Creek Unit EA	137	19	\$83,357,940	\$11,318,631	\$21,915,075	\$116,591,646	\$840,687,135

XTO's River Bend Unit Infill Development EA	368	65	\$285,171,900	\$38,721,633	\$74,972,626	\$398,866,159	\$2,258,196,100
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Table 19. Annual Estimated Economic Activity from Gas and Oil Well Development and Completion for Utah by Project (Continued).

Proposed Project	Total Wells Proposed	Annual Wells Proposed for Development	Total Cost (Direct Effect)	Indirect Effect	Induced Effect	Total Annual Economic Activity	Total Project Economic Activity
Big Pack Natural Gas EA	664	66	\$289,559,160	\$39,317,350	\$76,126,051	\$405,002,561	\$4,074,571,223
Southam Canyon Gas Field EA	269	25	\$109,681,500	\$14,892,936	\$28,835,625	\$153,410,061	\$1,650,692,258
South Unit Oil and Gas Development EIS	400	20	\$87,745,200	\$11,914,349	\$23,068,500	\$122,728,049	\$2,454,560,978
Totals	20,160	1,445	\$6,339,590,700	\$860,811,684	\$1,666,699,148	\$8,867,101,532	\$123,709,873,283

Source: IMPLAN 2010

Table 20. Annual Estimated Employment from Oil and Gas Well Development and Completion for Utah by Project.

Proposed Projects	Direct Annual AJE	Indirect and Induced AJE	Total AJE	Total Labor Income
Gasco Energy Uintah Basin NG Development Project EIS	1,190.0	1,520.0	2,710	\$155,603,200
Anadarko Greater Natural Buttes EIS	4,260.2	5,441.6	9,702	\$557,059,456
Greater Chapita Wells NG Infill EIS	5,581.1	7,128.8	12,710	\$729,779,008
Monument Butte Area OG Development Project EIS	2,975.0	3,800.0	6,775	\$389,008,000
XTO's Little Canyon Field EA	868.7	1,109.6	1,978	\$113,590,336
XTO's Hill Creek Unit EA	226.1	288.8	515	\$29,564,608
XTO's River Bend Unit Infill Development EA	773.5	988.0	1,762	\$101,142,080
Big Pack Natural Gas EA	785.4	1,003.2	1,789	\$102,698,112

Southam Canyon Gas Field EA	297.5	380.0	678	\$38,900,800
South Unit Oil and Gas Development EIS	238.0	304.0	542	\$31,120,640
Totals	17,195.5	21,964.0	39,160	\$2,248,466,240

Source: IMPLAN 2010

Table 21 and Figure 10 summarize the opportunity costs associated with the delay of oil and gas development in Utah annually; and with 5-year impacts and 10-year impacts. A 10-year time period is used because development would occur over at least a 10-year period for all of the proposed projects (with exception to the XTO's Little Canyon Field EA which will take place over approximately 7 years, proposing 73 wells per year).

Table 21. Economic Impacts of Delays of Oil and Gas Development in Utah.

Impact	Project Delay		
	1-year	5-year	10-year
Labor Income	\$2,248,466,240	\$11,242,331,200	\$22,484,662,400
Total AJE	39,160	195,798	391,595
Economic Output	\$8,867,101,532	\$44,335,507,662	\$88,671,015,324

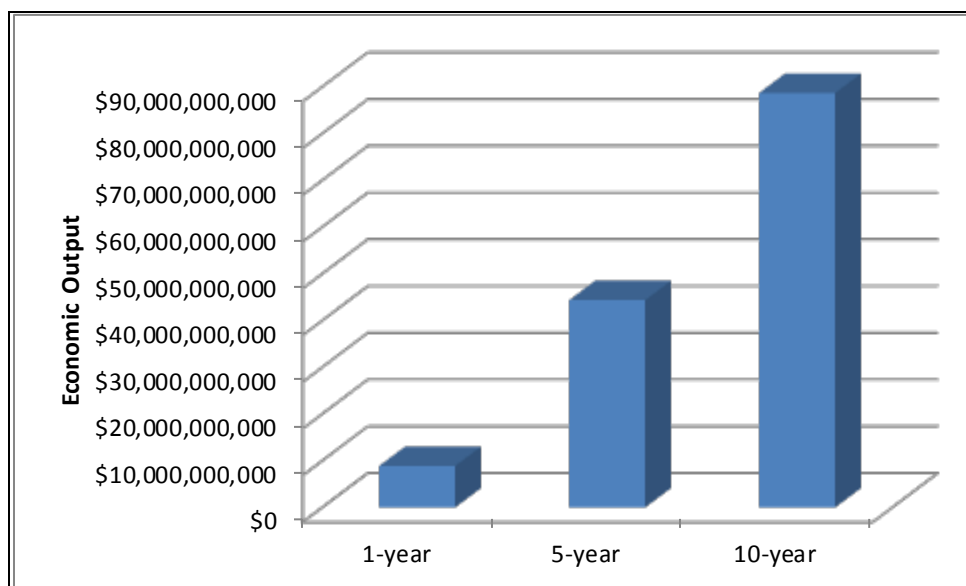


Figure 10. Economic Impacts of Delays of Oil and Gas Development in Utah.

ESTIMATED ECONOMIC IMPACTS OF OIL AND GAS PRODUCTION IN UTAH

Table 22 shows the economic impacts of a typical oil or gas well producing in Utah. IMPLAN was used to estimate indirect and induced effects. One typical oil and gas well is estimated to produce over \$2.6 million in economic activity annually and provide over 16 AJEs per year in production, with an average labor income of \$60,586 per AJE.

Table 22. Economic Impacts of Production from a Typical Oil and Gas Well in Utah (2010).

Estimated Activity	Conventional Well
Direct effect	\$1,611,814
Indirect effect	\$301,714
Induced effect	\$721,956
Total Economic Activity	\$2,635,484
Employment (AJE)	
Direct Annual AJE	7.2
Indirect and Induced AJE	8.9
Total AJE	16.1
Total Labor Income	\$975,441
Average Labor Income per AJE	\$60,586

Source: IMPLAN 2010, U.S. Census Bureau 2012a

Table 23 summarizes the top ten sectors impacted through the production effects of a typical oil and gas well in Utah. These include direct, indirect, and induced effects. These sectors are economically tied to the production activities of oil and gas wells.

Table 23. Top Ten Sectors Impacted Per Well in Operation in Utah.

Sector #	Description	Total Employment	Total Labor Income	Total Value Added	Total Output
20	Extraction of oil and natural gas	7.2	\$646,475	\$1,177,154	\$1,612,182
413	Food services and drinking places	0.7	\$12,590	\$19,221	\$36,567
360	Real estate establishments	0.6	\$6,019	\$44,109	\$49,597
39	Maintenance and repair construction of nonresidential structures	0.6	\$27,221	\$34,569	\$68,067

394	Offices of physicians, dentists, and other health practitioners	0.4	\$23,209	\$23,966	\$38,991
356	Securities, commodity contracts, investments, and related activities	0.3	\$3,365	\$3,545	\$38,770
355	Nondepository credit intermediation and related activities	0.3	\$13,778	\$16,160	\$30,612
319	Wholesale trade businesses	0.2	\$14,967	\$26,537	\$34,081
397	Private hospitals	0.2	\$12,743	\$13,915	\$26,674
324	Retail Stores - Food and beverage	0.2	\$6,238	\$9,011	\$12,290

Source: IMPLAN 2010

Tables 24 and 25 show the annual and aggregate economic impacts for the proposed projects undergoing the NEPA process in Utah. The number of wells that are proposed to be producing on an annual basis and total project economic activity are presented. Annual and the lifetime production effects are shown for each project.

Table 24. Annual Estimated Economic Activity from Gas and Oil Well Production for Utah by Project

Proposed Project	Total Wells Proposed	Annual Wells Proposed for Production	Direct Effects	Indirect effects	Induced Effects	Total Annual Economic Activity	Total Project Economic Activity
Gasco Energy Uintah Basin NG Development Project EIS	1,538	100	\$161,181,400	\$30,171,400	\$72,195,600	\$263,548,400	\$4,053,374,392
Anadarko Greater Natural Buttes EIS	3,496	358	\$577,029,412	\$108,013,612	\$258,460,248	\$943,503,272	\$9,213,652,064
Greater Chapita Wells NG Infill EIS	7,028	469	\$755,940,766	\$141,503,866	\$338,597,364	\$1,236,041,996	\$18,522,181,552
Monument Butte Area OG Development Project EIS	5,750	250	\$402,953,500	\$75,428,500	\$180,489,000	\$658,871,000	\$15,154,033,000
XTO's Little Canyon Field EA	510	73	\$117,662,422	\$22,025,122	\$52,702,788	\$192,390,332	\$1,344,096,840

XTO's Hill Creek Unit EA	137	19	\$30,624,466	\$5,732,566	\$13,717,164	\$50,074,196	\$361,061,308
XTO's River Bend Unit Infill Development EA	368	65	\$104,767,910	\$19,611,410	\$46,927,140	\$171,306,460	\$969,858,112
Big Pack Natural Gas EA	664	66	\$106,379,724	\$19,913,124	\$47,649,096	\$173,941,944	\$1,749,961,376
Southam Canyon Gas Field EA	269	25	\$40,295,350	\$7,542,850	\$18,048,900	\$65,887,100	\$708,945,196
South Unit Oil and Gas Development EIS	400	20	\$32,236,280	\$6,034,280	\$14,439,120	\$52,709,680	\$1,054,193,600
Totals	20,160	1,445	\$2,329,071,230	\$435,976,730	\$1,043,226,420	\$3,808,274,380	\$53,131,357,440

Source: IMPLAN 2010

Table 25. Annual Estimated Employment from Oil and Gas Production for Utah by Project

Proposed Project	Direct Annual AJE	Indirect and Induced AJE	Total AJE	Total Labor Income
Gasco Energy Uintah Basin NG Development Project EIS	720.0	890.0	1,610	\$97,544,100
Anadarko Greater Natural Buttes EIS	2,577.6	3,186.2	5,764	\$349,207,878
Greater Chapita Wells NG Infill EIS	3,376.8	4,174.1	7,551	\$457,481,829
Monument Butte Area OG Development Project EIS	1,800.0	2,225.0	4,025	\$243,860,250
XTO's Little Canyon Field EA	525.6	649.7	1,175	\$71,207,193
XTO's Hill Creek Unit EA	136.8	169.1	306	\$18,533,379
XTO's River Bend Unit Infill Development EA	468.0	578.5	1,047	\$63,403,665
Big Pack Natural Gas EA	475.2	587.4	1,063	\$64,379,106
Southam Canyon Gas Field EA	180.0	222.5	403	\$24,386,025
South Unit Oil and Gas Development EIS	144.0	178.0	322	\$19,508,820
Totals	10,404.0	12,860.5	23,264.5	\$1,409,512,245

Source: IMPLAN 2010

Table 26 and Figure 11 summarize the opportunity costs associated with the delay of oil and gas production in Utah annually; and with 5-year and 10-year impacts. A 10-year time period is used because development would occur over at least a 10-year period for all of the proposed projects (with exception to the XTO's Little Canyon Field EA which will take place over approximately 7 years, proposing 73 wells per year).

Table 26. Economic Impacts of Delays of Oil and Gas Production in Utah

Impact	Project Delay		
	1-year	5-year	10-year
Labor Income	\$1,409,512,245	\$7,047,561,225	\$14,095,122,450
Total AJE	23,265	116,323	232,645
Economic Output	\$3,808,274,380	\$19,041,371,900	\$38,082,743,800

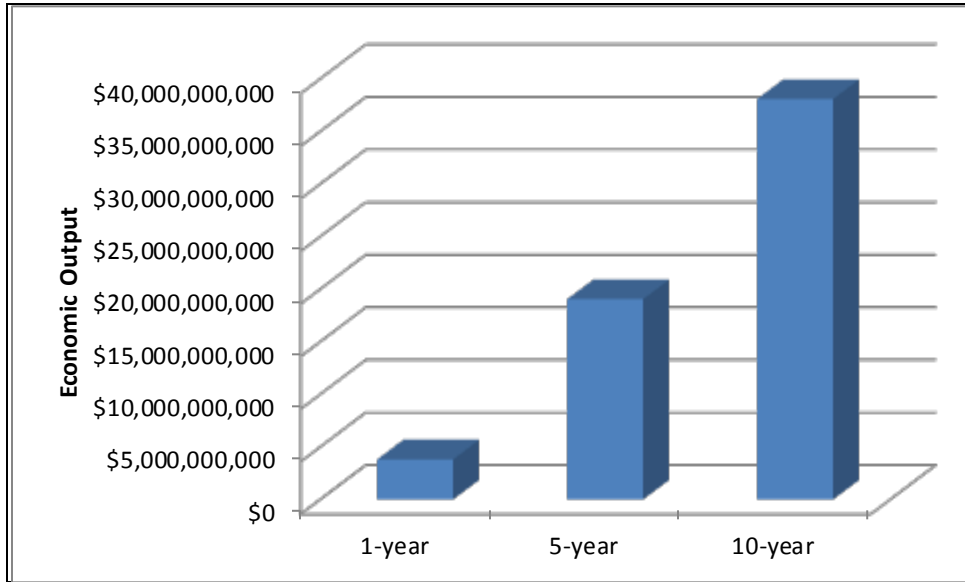


Figure 11. Economic Impacts of Delays of Oil and Gas Production in Utah

Table 27 and Figure 12 summarize estimated tax and royalty revenue in Utah that is lost while these projects are being delayed.

Table 27. Tax Revenue and Royalty Impacts of Delays of Oil and Gas Production in Utah

Impact	Project Delay		
	1-year	5-year	10-year
Ad Valorem Tax	\$8,807,114	\$44,035,572	\$88,071,144
Severance Tax	\$6,672,781	\$33,363,903	\$66,727,806
Conservation Fees	\$656,767	\$3,283,837	\$6,567,673
Federal Mineral Royalties	\$40,645,585	\$203,227,924	\$406,455,848
Total Royalty and Tax Revenue	\$56,782,247	\$283,911,235	\$567,822,471

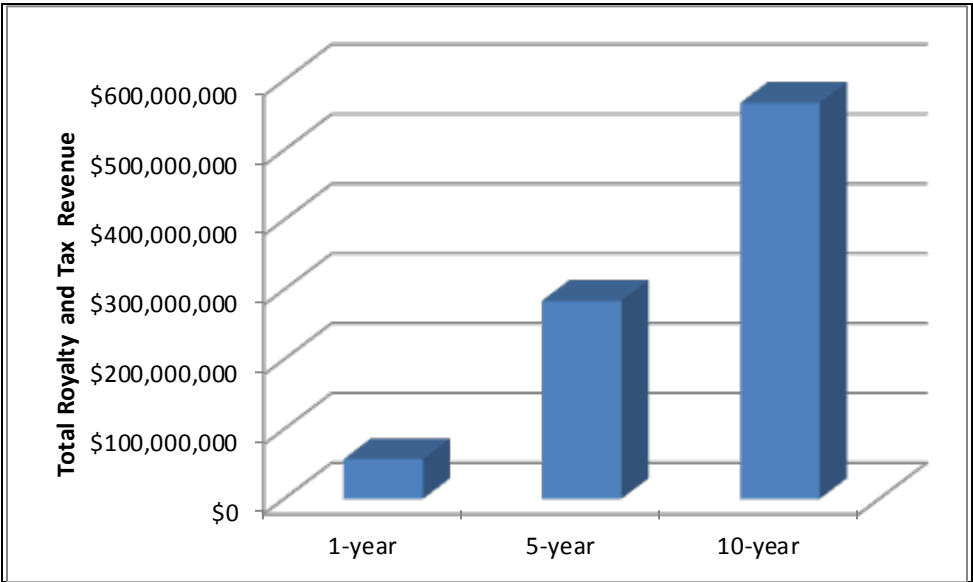


Figure 12. Tax Revenue and Royalty Impacts of Delays of Oil and Gas Production in Utah

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