U.S. Supply Forecast and Potential Jobs and Economic Impacts (2012-2030)

Released – September 7, 2011

Wood Mackenzie
energy consulting

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Study Background

API has requested Wood Mackenzie undertake a study which examines the energy supply, job and government revenue implications at the state and federal levels of enacting policies in the U.S. that encourage the development of North American hydrocarbon resources. Given the high level of unemployment and budgetary stress facing the nation, the findings of this study should be of interest to policy makers as they move forward to craft solutions to these problems.

This study examines the impacts of opening access to key U.S. regions which are currently closed to development, as well as assessing a return to historical levels of development on existing U.S. producing areas (including onshore U.S., the Gulf of Mexico and Alaska). The economic impacts of the Keystone XL pipeline and other potential Canada to U.S. oil pipelines are also considered.

Additionally this report looks at the potential threats to production, jobs and government revenues associated with a continuation on the current path of an increased regulatory burden and slower permitting relative to historical levels.

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Key National Results

Wood Mackenzie's analysis found that U.S. policies which encourage the development of new and existing resources could, by 2030, increase domestic oil and natural gas production by over 10 million boed, support an additional 1.4 million jobs, and raise over $800 billion of cumulative additional government revenue. Whereas increasing regulatory burdens on the oil and gas upstream sector will result in higher development costs, which can potentially hinder the growth of production, tax revenues, and job creation.

Continuing the current path of policies which slow down the issuance of leases and drilling permits, increase the cost of hydraulic fracturing through duplicative water or air quality regulations, or delay the construction of oil sands export pipelines such as Keystone XL, will likely have a detrimental effect on production, jobs, and government revenues.

Total U.S. Oil and Natural Gas Production (Projected)
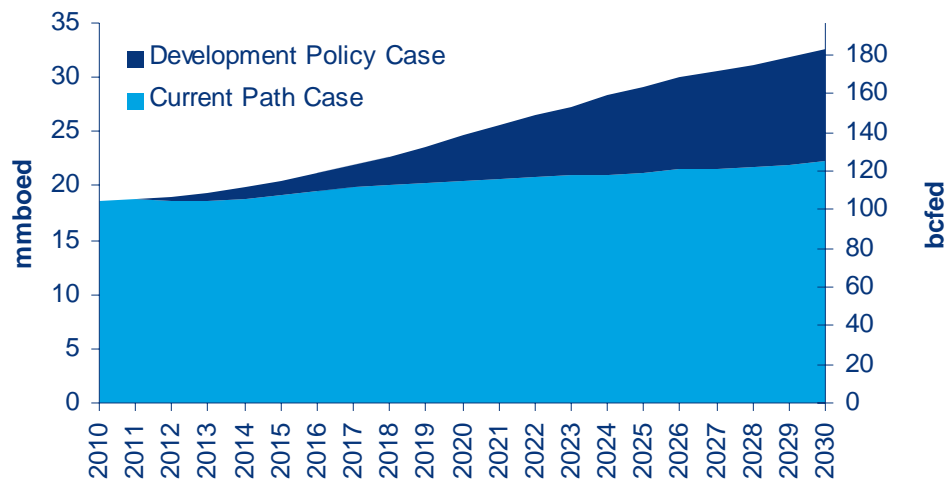
Development Policy Case Incremental Impacts:
(Change from the Current Path Case)

U.S. IMPACTS	2015	2020	2025	2030
Production (000's boed)	1,267	4,189	7,937	10,371
Jobs	668,462	1,138,567	1,262,035	1,403,877
Annual Revenues ($Millions)	10,165	27,796	67,613	99,769

Total Potential Jobs Impact:
Approximately 1.0 million jobs by 2018 and over 1.4 million by 2030

Total cumulative potential government revenue:
Additional $36 billion by 2015 and nearly $803 billion by 2030

Total Potential Production impact:
By 2015, an additional 1.27 million boed could be produced, rising to 10.4 million boed by 2030. Over the period 2012 to 2030, it is estimated an additional cumulative 35.4 billion boe of reserves could be produced through development policies

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U.S. Employment Impacts of Oil and Natural Gas Development (Projected)

- Wood Mackenzie estimates 1.4 million new jobs could be added through policies which encourage the development of U.S. and Canadian resources by 2030

- Jobs added could exceed 1.0 million by 2018

- Policies that increase access to currently undeveloped regions have the largest potential to create jobs in the U.S.. An estimated 690,000 new jobs by 2030

U.S. Employment Impacts of Oil and Natural Gas Development (Projected)

■ Development Policy Case
■ Current Path Case
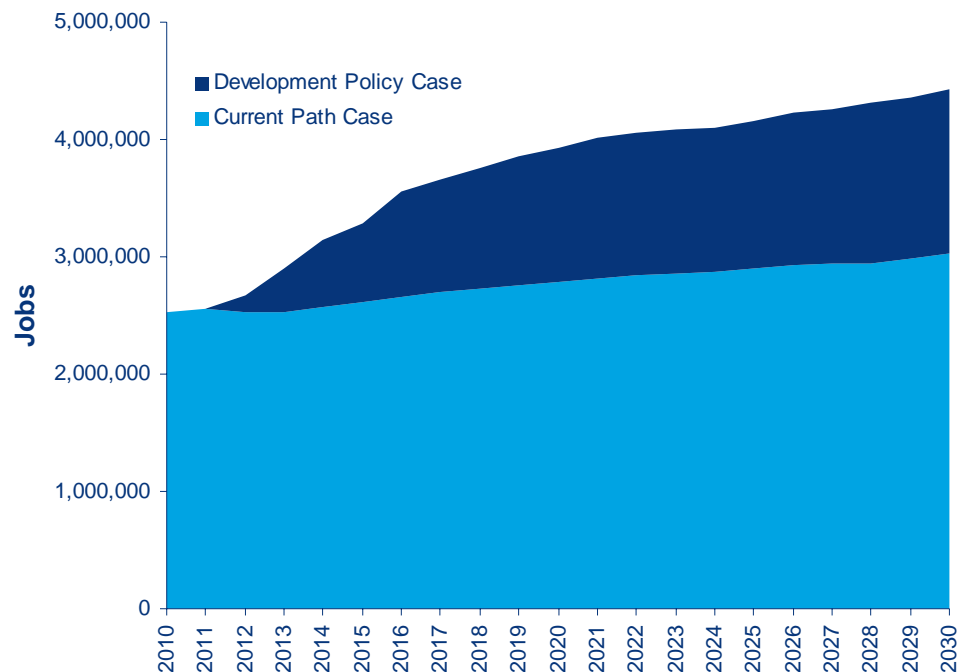
Jobs

Total U.S. employment supported by the upstream oil and natural gas sector

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Key State Results (Projected)

	Annual Production (mboed)				Total Jobs Supported				Annual Gov't Revenue ($M)			
	2010	2015	2020	2030	2010	2015	2020	2030	2010	2015	2020	2030
TEXAS - Current Path Case	5,110	5,365	5,521	5,880	939,167	1,008,652	1,059,378	1,122,682	9,728	11,884	16,018	22,030
Development Policy Case	5,110	5,713	6,438	7,655	939,167	1,118,785	1,211,604	1,297,352	9,728	13,980	20,698	38,213
Difference	-	348	917	1,775	-	110,133	152,225	174,670	-	2,096	4,679	16,183
ALASKA - Current Path Case	711	641	601	844	35,568	32,809	31,375	43,857	8,602	8,593	9,002	10,381
Development Policy Case	711	655	1,174	2,467	35,568	85,783	135,164	167,074	8,602	8,641	13,096	32,237
Difference	-	14	573	1,623	-	52,974	103,789	123,217	-	1,703	5,968	21,856
FLORIDA - Current Path Case	-	-	-	-	27,719	27,719	27,719	27,719	-	-	-	-
Development Policy Case	-	-	621	1,620	27,719	112,328	159,465	197,795	-	-	4,798	16,629
Difference	-	-	621	1,620	-	84,609	131,746	170,076	-	1,134	6,407	17,465
CALIFORNIA - Current Path Case	887	647	516	410	104,217	97,167	93,231	90,206	5,631	5,361	3,908	3,801
Development Policy Case	887	650	620	1,459	104,217	123,501	179,429	241,022	5,631	5,837	4,759	16,261
Difference	-	3	105	1,050	-	26,333	86,197	150,816	-	476	851	12,460
LOUISIANA - Current Path Case	882	951	1,097	1,040	281,625	310,905	365,819	345,022	1,066	1,771	2,764	3,128
Development Policy Case	882	1,133	1,605	1,985	281,625	376,540	453,482	433,836	1,066	2,991	5,480	12,805
Difference	-	182	508	946	-	65,635	87,663	88,814	-	1,221	2,716	9,678
NEW YORK - Current Path Case	31	9	7	2	14,811	14,811	14,811	14,811	12	14	16	6
Development Policy Case	31	328	529	791	14,811	47,052	62,628	64,883	12	203	1,177	2,899
Difference	-	319	522	789	-	32,241	47,817	50,072	-	189	1,161	2,893
NORTH CAROLINA - Current Path Case	-	-	-	-	4,834	4,834	4,834	4,834	-	-	-	-
Development Policy Case	-	-	45	382	4,834	12,479	45,407	45,231	-	-	101	3,554
Difference	-	-	45	382	-	7,646	40,573	40,398	-	-	101	3,554
UTAH - Current Path Case	341	320	419	465	27,043	25,960	34,687	38,280	927	1,170	1,888	2,679
Development Policy Case	341	379	586	707	27,043	52,514	83,991	80,528	927	1,431	2,698	4,088
Difference	-	59	167	242	-	26,554	49,304	42,248	-	261	810	1,409
COLORADO - Current Path Case	1,111	1,065	1,192	1,359	118,879	116,539	133,132	151,055	3,020	3,891	5,369	7,834
Development Policy Case	1,111	1,133	1,333	1,567	118,879	177,669	221,416	236,087	3,020	4,420	6,359	9,119
Difference	-	68	141	208	-	61,131	88,283	85,032	-	528	990	1,285
MAINE - Current Path Case	-	-	-	-	638	638	638	638	-	-	-	-
Development Policy Case	-	-	24	201	638	4,211	21,018	20,074	-	74	137	1,864
Difference	-	-	24	201	-	3,573	20,380	19,436	-	74	137	1,864
WYOMING - Current Path Case	1,455	1,452	1,627	1,731	68,944	70,383	80,493	85,228	3,954	5,306	7,329	9,980
Development Policy Case	1,455	1,521	1,753	1,912	68,944	131,672	147,603	152,090	3,954	6,362	8,905	11,263
Difference	-	69	125	180	-	61,289	67,110	66,862	-	1,056	1,576	1,283
MASSACHUSETTS - Current Path Case	-	-	-	-	2,111	2,111	2,111	2,111	-	-	-	-
Development Policy Case	-	-	20	169	2,111	5,917	20,936	21,825	-	63	116	1,570
Difference	-	-	20	169	-	3,806	18,826	19,715	-	63	116	1,570

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Key State Results (continued)

	Annual Production (mboed)				Total Jobs Supported				Annual Gov't Revenue ($M)			
	2010	2015	2020	2030	2010	2015	2020	2030	2010	2015	2020	2030
VIRGINIA - Current Path Case	112	58	53	91	15,456	15,456	15,456	15,456	42	80	118	252
Development Policy Case	112	58	71	237	15,456	19,062	31,857	33,641	42	133	218	1,584
Difference	-	1	18	146	-	3,606	16,401	18,185	-	53	100	1,332
NEW JERSEY - Current Path Case	-	-	-	-	5,359	5,359	5,359	5,359	-	-	-	-
Development Policy Case	-	-	14	114	5,359	8,407	19,212	21,322	-	42	78	1,063
Difference	-	-	14	114	-	3,049	13,853	15,964	-	42	78	1,063
PENNSYLVANIA - Current Path Case	441	1,771	2,271	2,848	121,783	184,719	236,870	296,217	167	2,438	5,051	7,862
Development Policy Case	441	1,824	2,351	2,961	121,783	200,630	257,499	322,042	167	2,510	5,229	8,172
Difference	-	52	80	112	-	15,912	20,629	25,824	-	72	178	310
OKLAHOMA - Current Path Case	1,211	1,122	1,065	1,264	239,883	227,378	220,403	260,264	1,692	2,204	2,720	4,051
Development Policy Case	1,211	1,157	1,125	1,373	239,883	234,959	231,975	277,100	1,692	2,273	2,872	4,398
Difference	-	35	59	108	-	7,581	11,572	16,836	-	69	152	347
MONTANA - Current Path Case	112	95	88	93	10,832	9,335	8,877	9,316	305	345	397	535
Development Policy Case	112	128	149	188	10,832	35,080	38,851	46,554	305	750	1,024	1,169
Difference	-	34	61	95	-	25,745	29,975	37,239	-	405	628	634
CONNECTICUT - Current Path Case	-	-	-	-	3,005	3,005	3,005	3,005	-	-	-	-
Development Policy Case	-	-	10	84	3,005	4,958	12,545	13,220	-	31	58	785
Difference	-	-	10	84	-	1,953	9,540	10,215	-	31	58	785
WEST VIRGINIA - Current Path Case	198	195	232	300	45,378	45,697	55,462	71,284	75	269	516	827
Development Policy Case	198	220	280	379	45,378	51,185	62,499	79,269	75	303	622	1,047
Difference	-	25	48	80	-	5,487	7,037	7,986	-	34	106	220
ARKANSAS - Current Path Case	692	856	1,072	1,234	46,611	58,974	75,361	86,275	967	1,683	2,738	3,952
Development Policy Case	692	873	1,106	1,281	46,611	63,197	83,281	94,145	967	1,715	2,823	4,105
Difference	-	17	33	48	-	4,223	7,920	7,870	-	32	85	152
NEW MEXICO - Current Path Case	885	668	565	603	58,535	45,182	38,970	41,421	3,132	2,810	2,886	3,901
Development Policy Case	885	682	589	654	58,535	59,785	54,955	57,013	3,132	3,049	3,232	4,265
Difference	-	14	25	51	-	14,603	15,986	15,592	-	239	346	365
SOUTH CAROLINA - Current Path Case	-	-	-	-	2,811	2,811	2,811	2,811	-	-	-	-
Development Policy Case	-	-	6	52	2,811	4,200	9,030	9,610	-	19	27	481
Difference	-	-	6	52	-	1,390	6,220	6,799	-	19	27	481
Other States and Offshore - Current Path Case	4,344	3,958	4,123	4,064	347,979	301,026	277,517	309,558	1,776	2,317	4,549	6,940
Development Policy Case	4,344	3,986	4,190	4,361	347,979	350,016	383,036	519,570	1,776	3,775	6,637	10,355
Difference	-	28	67	297	-	48,990	105,519	210,011	-	366	527	2,579
Total - Current Path Case	18,526	19,174	20,450	22,228	2,523,186	2,611,468	2,788,316	3,027,406	41,095	50,135	65,270	88,159
Development Policy Case	18,526	20,441	24,639	32,599	2,523,186	3,279,930	3,926,882	4,431,282	41,095	58,602	91,146	187,929
Difference	-	1,267	4,189	10,371	-	668,462	1,138,567	1,403,877	-	10,165	27,796	99,769

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Case Development

- The objective of the study was to evaluate the impact on production, jobs and government revenues of implementing U.S. oil and natural gas regulatory policies which support the development of North America's oil and natural gas resources

- To achieve this, Wood Mackenzie has developed two scenarios reflecting different regulatory policy with respect to North American hydrocarbon resources

- The base case will be referred to throughout this report as the **"Current Path Case"**

    - The case assumes that current policy and regulatory environment continue into the future

    - In essence, the policies in this case hinder the development of North America's oil and gas resources. Resource development increases in this case but at a relatively modest pace

- The alternative to the Current Path Case is referred to throughout this report as the **"Development Policy Case"**

    - This case evaluates the impact of policies that encourage development of the U.S. upstream oil and natural gas sector

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Current Path Case - Assumptions

- The **"Current Path Case"** assumes the following policy and regulatory initiatives:

- Continued "slow walk" of Federal permitting for offshore Gulf of Mexico

  - The case assumes an increase from current offshore exploration and development activity levels, but not back to pre-Moratorium rates

- Tighter Federal hydraulic fracturing and water disposal regulations which are beyond the current state regulations

  - Slow down of onshore drilling due to increased cost of well completions. Results in a negative impact on development economics

- No opening of new areas for exploration and development

  - No new exploration and development in frontier areas of Alaska, Eastern Gulf of Mexico, Atlantic and Pacific offshore, and Federal Rockies

- Restrictions on new pipeline development from Canada

  - Curtailment of oil sands pipeline infrastructure into the U.S.. No development of the Keystone XL pipeline or other future Canada to U.S. pipelines

Current Path Case – Assumptions (continued)

- In developing the **"Current Path Case"** Wood Mackenzie has made the following assumptions:

  - Onshore U.S.

    - Slowdown of the development of onshore plays to a rate below current company plans. This is due to increased cost resulting from slower permitting and a heavier regulatory burden. Key assumptions are that leasing and permitting continues at a slower pace relative to historical trends as borne out by a time series of BLM leasing and permitting data, and a heavier regulatory burden adds to drilling and completion costs

    - The impact of increasing costs is to increase the breakeven economics of all U.S. wells by 30 cents per mcfe relative to the Development Policy Case. This has two effects:

      - A number of marginal plays become sub-economic (primarily gas plays), i.e. their economics fall below a 15% hurdle rate. It is therefore assumed that no further drilling will occur in these plays

      - A U.S.-wide slowdown in drilling activity. This results in a 4% decline in drilling across all remaining oil and natural gas plays which have not become sub-economic as a result of increased cost

    - No lifting of moratorium on shale gas development in New York

  - Gulf of Mexico

    - In the future the leasing of deep water acreage will continue, but at 50% of the pre-Moratorium rates

    - Exploration activity picks-up from current level, but only recovers to 50% of the pre-Moratorium drilling rates, approximately 20 wells per year

  - Alaska

    - No drilling activity offshore Alaska, ANWR or the NPRA

  - No future development activity in the currently closed areas

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Current Path Case Production Projection

- If the current U.S. policy and regulatory environment continues (the Current Path Case), Wood Mackenzie predicts U.S. production will grow from 18.5 mmboed in 2010 to 22.2 mmboed in 2030, a 20% increase

- We expect to see significant production growth from the Rockies, Northeast and Gulf Coast regions

- Primarily driven by unconventional plays, development activity will more than offset declines from the conventional regions

Total U.S. Production - Current Path Case
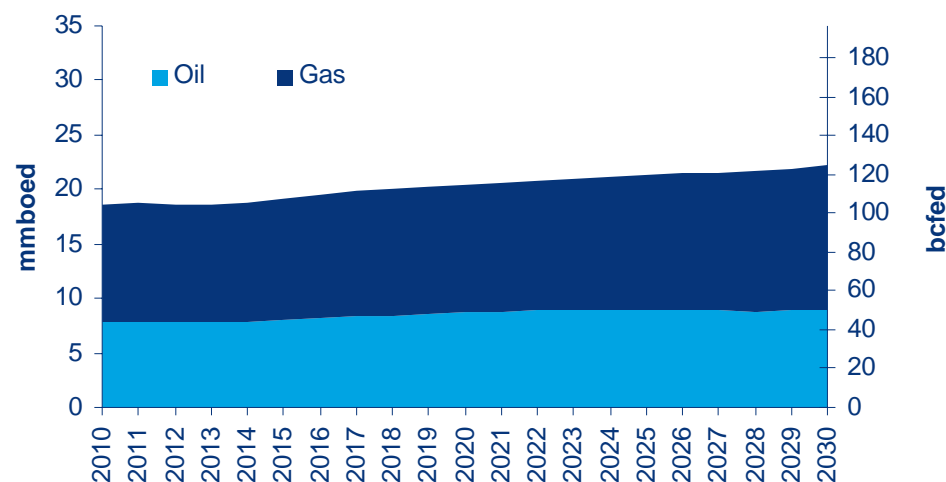
Production	2010	2030	Difference
Liquids (mmbd)	7.8	9.0	1.2
Gas (Bcfd)	60.1	74.5	14.4

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Development Policy Case – Assumptions

- The **"Development Policy Case"** assumes the following policy and regulatory initiatives:

- Opening of Federal areas that are currently "off limits" to exploration and development

  - Commencement of leasing, drilling and development activity in currently closed regions. Regions to be opened include: Eastern Gulf of Mexico, portions of the Rocky Mountains, Atlantic OCS, Pacific OCS, Alaska National Wildlife Refuge (ANWR) – 1002 Area, National Petroleum Reserve, Alaska (NPRA) and Alaska offshore

- Lifting of drilling moratorium in New York State

  - Commencement of drilling and development of Marcellus shale in New York State

- Increased rate of permitting in the offshore Gulf of Mexico

  - Allows for a return to pre-Moratorium exploration and development activity

- Approval of the Keystone XL and other future Canada to U.S. oil pipelines

  - Facilitates additional Canadian oil sands development, thereby increasing the demand for U.S. supplied equipment and infrastructure

- Regulation of shale resources remains predominately at the State level

  - Environmental regulation of shale gas and tight oil plays are not duplicative or unduly burdensome. Permitting levels are at sufficient rates to develop resources in a timely manner

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Development Policy Case – Assumptions (continued)

- In developing the **"Development Policy Case"** Wood Mackenzie has made the following assumptions:

  - Onshore U.S.

    - Development of onshore plays as per company plans. Includes tight oil, shale gas and tight gas plays

    - Leasing and permitting rates do not significantly hinder current company plans

    - No restrictions of shale development in New York state

  - Gulf of Mexico

    - Leasing of deep water acreage returns to pre-Moratorium rates

    - Exploration activity recovers to pre-Moratorium drilling rates, approximately 40 wildcat wells per year

  - Alaska

    - Resources offshore Alaska and NPRA are developed

  - Access is allowed in current and previously restricted areas

    - Atlantic Coast – Production begins 2019
    - Pacific Coast – Production begins 2019
    - Eastern Gulf of Mexico – Production begins 2016
    - ANWR – Production begins 2017
    - Portions of the Rocky Mountains – Production begins 2012

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New Resource Areas – Development Policy Case

Enbridge Northern Gateway
TMX Northern Leg
TMX Expansion
Edmonton
Hardisty
Pacific OCS
CANADA
Washington / Oregon
Rockies Region
Northern California
New York State
Keystone
Central California
North Atlantic
UNITED STATES OF AMERICA
Cushing
Southern California
Mid-Atlantic
South Atlantic
Atlantic OCS
Western Gulf
Central Gulf
Eastern Gulf
MEXICO
Straits of Florida

Alaska Planning Areas
Chukchi
Beaufort
NPRA
CANADA
Alaska
ANWR

km
0 250 500 1,000

Source: Wood Mackenzie

- Under the Development Policy Case, it is assumed that a number of new Federal areas become open for exploration drilling and field development. These are:

  - Pacific, Atlantic, Eastern GoM, portions of the Rockies, ANWR, NPRA and the Chukchi Sea
  - Also Wood Mackenzie has assumed that New York lifts its drilling moratorium

- Under this case, the permit and regulatory policies encourage the development of currently permitted onshore areas

- Permit and regulatory policies allow for relatively faster development of the Gulf of Mexico

- Canadian oil sands pipelines into the U.S. are fully developed (e.g., Keystone XL)

Region	Resources added (bnboe)
Atlantic OCS	13.5
Pacific OCS	11.3
Eastern GoM	14.5
Rockies Federal	2.0
Alaska ANWR	10.8
Alaska NPRA/Chukchi	2.1
New York	5.3
Total	59.5

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Development Policy Case Production Projection

- If the U.S. enacts policies that encourage domestic oil and natural gas development (the Development Policy Case), Wood Mackenzie expects production to grow from 18.5 mmboed in 2010 to 32.6 mmboed by 2030, a 76% increase from 2010 levels

- The opening of restricted Federal areas would add over 6.7 mmboed

- The remaining production growth comes from New York, and accelerated drilling across the onshore U.S. and the Gulf of Mexico

Development Policy Case – Production Projection
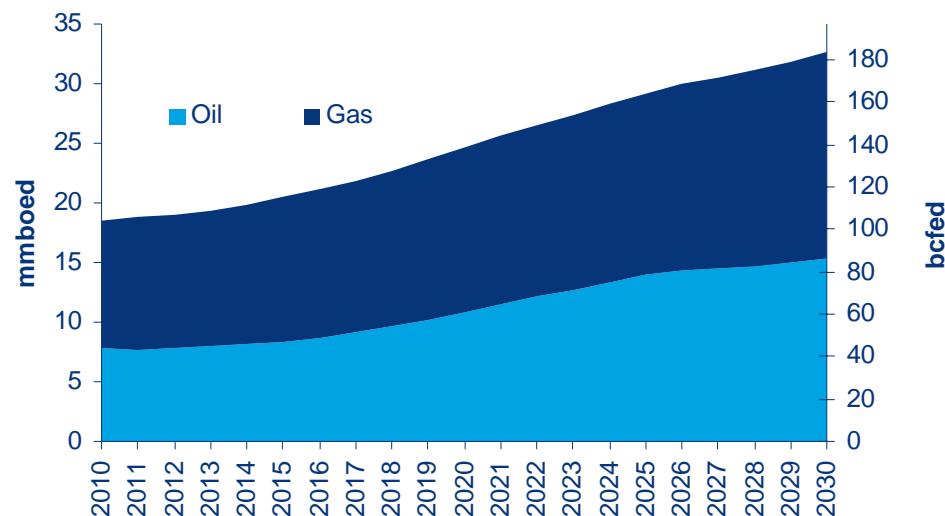
Production	Development Policy Case		Difference	Current Path	Difference
	2010	2030	2010-2030	Case 2030	2030
Liquids (mmbd)	7.8	15.4	7.6	9	6.4
Gas (Bcfd)	60.1	96.9	36.8	74.5	22.4

Scenario Modeling

- For the two scenarios described, Wood Mackenzie has developed an activity outlook based upon the expected impact of the respective policies on oil and natural gas development activity levels

- Policy impacts on production and tax revenue are estimated by contrasting the results of Wood Mackenzie's proprietary economic model (GEM) for the two stated scenarios

- The GEM (Global Economic Model) is an Excel based tool which Wood Mackenzie has developed to forecast capex, opex, production and taxation at the asset level across the whole of North America. Wood Mackenzie defines an asset as a stand-alone field or distinct play which has a distinct development scenario. GEM is capable of generating full economic analysis for each asset modeled in North America. Outputs include Internal Rates of Return, Net Present Values and $/boe estimates

- Data inputs and tax assumptions are based upon publicly available state and federal information, public and private disclosures by oil and gas operating companies, and information referenced in the appendix of this report and other public sources (industry journals, independent agencies, etc.)

- Where no such information is available, Wood Mackenzie has made assumptions based on its in-depth technical knowledge of the U.S. industry, supplemented by its many years of experience studying the activity in the North American oil and gas sector

Methodology – Production and Revenues

- The basic methodology that was developed to assess the impacts of two cases and associated production, and revenues was as follows:

  - Build individual asset models as described in the previous slide to represent each scenario

  - Generate cash flow and production information from the asset models

  - Assign assets to regions and states, then consolidate the assets to generate cash flow and production information at the state level

  - Tag each asset to a particular policy to generate the impact of each individual policy either at the national or state level, i.e. consolidation of all new Access areas

  - Consolidation of assets to generate regional impacts

  - Tax assumptions

    - Royalties from new OCS areas were split with the states (see appendix)

    - Potential state income taxes which could be generated from new OCS areas were not included

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Methodology – Employment Estimation Base (2010) Level

- Wood Mackenzie has derived the base count for the Current Path Case jobs numbers from the 2008 Implan database

- Wood Mackenzie took these direct employment numbers for the upstream sector, then added a multiplier of 2.5 for indirect and induced (income related) jobs per direct job. This multiplier is likely conservative given that total employment multipliers for the oil and natural gas sector estimated by BEA are in the rage of 5 to 7 total jobs per 1 direct jobs

- The combined direct, indirect and induced job counts gives the total economic impact for the upstream sector across the U.S.

- Since these numbers were calculated for 2008, Wood Mackenzie used a production ratio to derive the 2010 base job count per state

- The production ratio is defined as a ratio of 2010 production in boed divided by 2008 production

- Future base job counts for the Current Path Case are derived by using future production ratios generated from dividing future production by 2010 production levels

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Methodology – Employment Estimation – New Activity

- For each new project being developed in the future Wood Mackenzie has developed associated employment levels

- The number of jobs generated is dependent on a number of factors, including:
    - Type of project - onshore drilling, offshore field development
    - Location of project – onshore, offshore, shallow or deep water, Alaska

- Potential employment associated with OCS production was allocated to each state based upon the percentage of the state's coastline in the region's total

- Jobs were also attributed to exploration activity
    - Relevant to new access areas and the Gulf of Mexico

- For each activity a direct job count was estimated

- Multiplying the number of each discrete activity per annum by the number of direct jobs per activity gave an overall job count

- Indirect and induced jobs which were calculated using an indirect jobs multiplier

    - A multiplier of 2.5 indirect and induced jobs per every 1.0 direct jobs was used
    (Note: this is conservative relative to other estimates, e.g. BEA estimated multipliers are typically in the 5 to 7 range)

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Methodology – Employment Estimation – New Activity (continued)

- For estimating the jobs impact for the opening of the Marcellus play in New York State, Wood Mackenzie utilized supporting material from the Timothy J. Considine study entitled "The Economic Impacts of the Marcellus Shale: Implications for New York, Pennsylvania, and West Virginia"

- For estimating the U.S. jobs impact from Canadian Oil Sands pipeline development, Wood Mackenzie has utilized outputs from the Canadian Energy Research Institute study entitled "Economic Impacts of New Oil Sands Projects in Alberta (2010-2035)"

- These two studies provided job impact data for development scenarios in the Marcellus Play and Keystone XL and other related Canada to U.S. oil pipelines

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Access Areas Resource Assumptions – Development Policy Case

- The following table details the assumptions Wood Mackenzie used for developing the resource base for each of the new Access areas in the Development Policy Case

  - These assumptions form the basis of the economic models which generate the production and revenue forecasts

  - Each discovery for each of the new Access areas has its own cash flow and production profile

  - Consolidation of each model generates the forecasts for each region

Access Areas*	Atlantic	Pacific	ANWR	NPRA/Chukchi	Eastern GoM	New York	Rockies
Acreage	40,000,000	20,000,000	1,500,000	1,500,000	16,000,000	2,560,000	10,000,000
Lease Revenue ($Billion)	8	7	15	N/A	16	N/A	15
Exploration Wells	290	157	70	10	198	N/A	N/A
Discovery Rate	20%	30%	50%	60%	33%	N/A	N/A
Commercial Discoveries	58	47	35	24	65	N/A	N/A
Average Discovery Size (mmboe)	386	239	309	90	222	N/A	N/A
Resource (bnboe)	14	11	11	2	15	3	2

* Source:
- Wood Mackenzie report January 2011 " Energy Policy at a Crossroads: An Assessment of the Impacts of Increased Access versus Higher Taxes on U.S. Oil and Natural Gas Production, Government Revenue, and Employment"
- ICF International, 2008, "Strengthening Our Economy: The Untapped U.S. Oil and Gas Resources"

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Gulf of Mexico and Onshore Areas Resource Assumptions – Development Policy Case

- In the Development Policy Case, Wood Mackenzie made specific assumptions surrounding development activity in the onshore regions and the Gulf of Mexico

- These assumptions have a direct impact on production, jobs, and government revenues

- Onshore regions assumptions

  - Addition of production from any play which becomes economic after removing the well cost of 30 cents/mcf (environmental policy costs)

  - Increase in activity across all onshore plays of 4% as marginal wells in all regions become economic

> Gulf of Mexico

  - Increasing leasing and permit rates back to pre-Macondo levels raises production relative to the Current Path Case

Production Impact (000's boed)	2015	2020	2025	2030
Onshore Lower 48*	851	1,447	1,678	1,887
Gulf of Mexico	0	1,183	2,401	3,150

*excluding New York State - Marcellus Shale

Production – Development Policy Case less Current Path Case

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Jobs Assumptions – Development Policy Case

- For each discovery and field development in the Development Policy Case, Wood Mackenzie has assigned a direct job count

- The following table details the assumptions Wood Mackenzie used for developing the job impacts for onshore and offshore new access and existing production areas

  - The indirect multiplier stated in the table is taken from a recent PriceWaterhouse Coopers study and used to assess the impact of the upstream oil and gas sector activity on employment in other sectors

Job Category	Offshore	Onshore
Landmen (jobs)	400 per million acres	200 per million acres
E&A Drilling (jobs)	280 per rig	60 per rig
Associated Drilling (jobs)	5 per rig	3 per rig
Wells per rig per year	2	9
Construction (jobs)	2,000 per field	2 per rig worker
Operations (jobs)	200 per field	100 per 10,000 boed
Indirect Multiplier	2.5	2.5

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Contents

1	**Scenarios:** Scenario descriptions, assumptions and methodology
2	**Results:** Scenario impacts; production, jobs and revenues
3	**Appendix**

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Current Path Case – Employment Forecast

- Wood Mackenzie estimates that 2010 U.S. employment supported by the upstream sector was 2,523,000

- This consists of 631,000 direct jobs and 1,892,000 indirect and induced jobs

- By 2030 Wood Mackenzie projects the total U.S. employment in the Current Path Case will be 3,027,000

- The assumption used to generate this jobs forecast, is that jobs will grow in direct proportion to the production growth over the period analyzed

U.S. Jobs Forecast – Current Path Case

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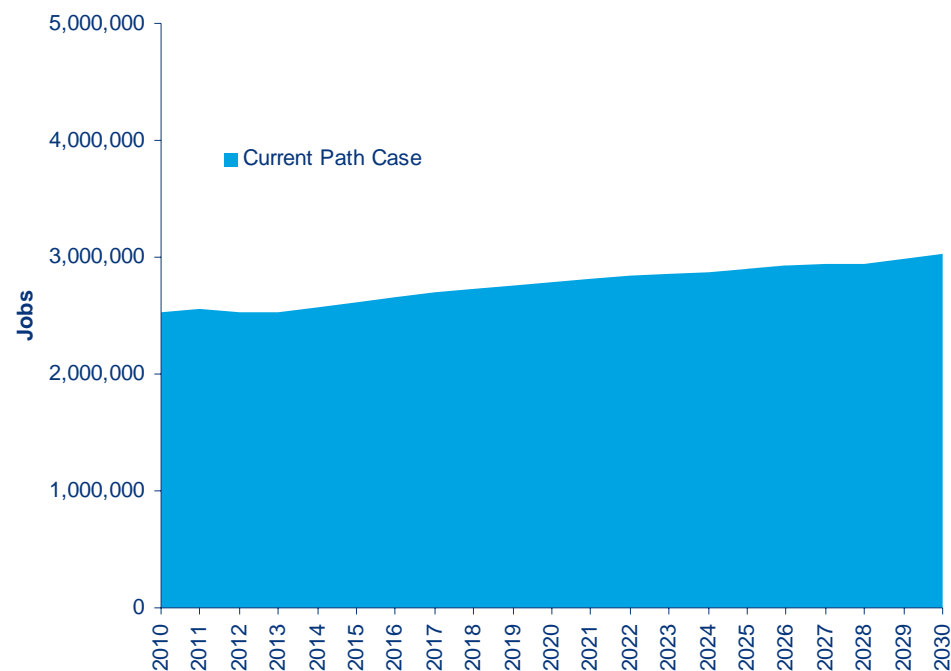
Added U.S. Production from Development Policy Case

- Wood Mackenzie projects that by 2030, an estimated 10.4 mmboed of incremental domestic production could be added through policies which encourage the development of U.S. resources

- This is a 47% increase over the estimated 2030 production levels in the Current Path Case

Total U.S. Production – Development Policy Case
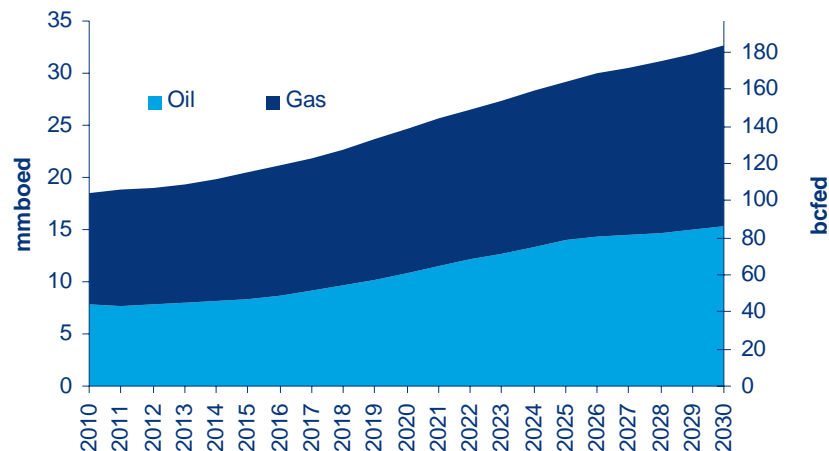
Potential U.S. Production Impact
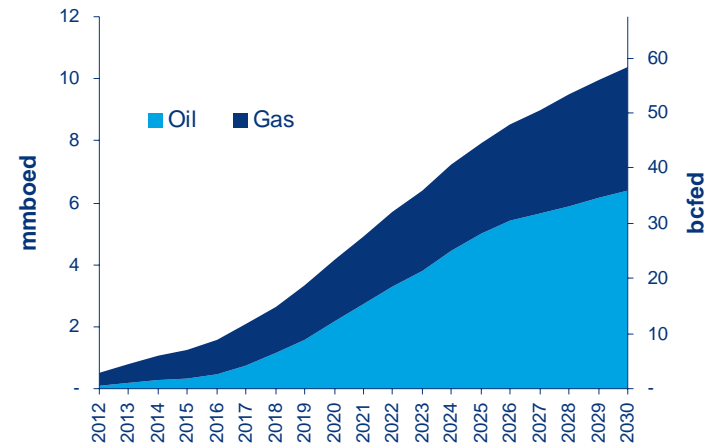
Total U.S. Production : Development Policy Case less Current Path Case

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Oil Sands Production Impacts – Current Path Case vs. Development Policy Case

- Total Alberta oil production, both conventional and oil sands, is limited by the 3.5 mmbod of oil pipeline capacity out of the region. Oil sands production is expected to increase from 2.10 mmbod in 2010 to 2.40 mmbod in 2014. Further production growth will not happen without the Keystone XL or other pipelines that can export oil out of Alberta

- Most of the incremental oil production is expected to be exported to the U.S. although the oil could also be exported to other countries with additional pipelines being built to the Canadian West coast

- The Keystone XL pipeline has a potential to import 700,000 bod into the U.S. and can be expanded to 900,000 bod

- Building sufficient oil pipeline capacity into the U.S. should allow Canadian oil sands production to increase from 2.10 mmbod in 2010 to 5.80 mmbod by 2030, an increase of 3.70 mmbod or 280%. This is 2.20 mmbod greater than the level in the Current Path Case, which assumes no additional oil pipeline capacity into the U.S.

Potential Canadian Production Impact

Legend:
- Additional Development Policy Case
- Keystone
- Current Path Case

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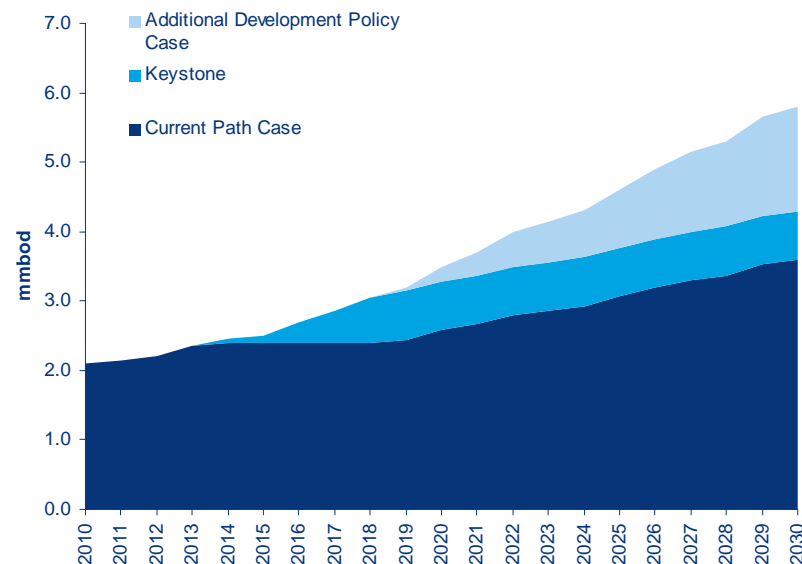
Added U.S. Jobs from Development Policy Case

- Wood Mackenzie estimates that by 2030, 1.4 million new jobs could be added through policies which encourage the development of U.S. oil and natural gas resources and facilitate Canadian oil sands production through the development of the Keystone XL and other related U.S. pipelines

- Jobs added have the potential to exceed 1.0 million by 2018

Potential U.S. Job Impact

Total U.S. Employment: Development Policy Case less Current Path Case

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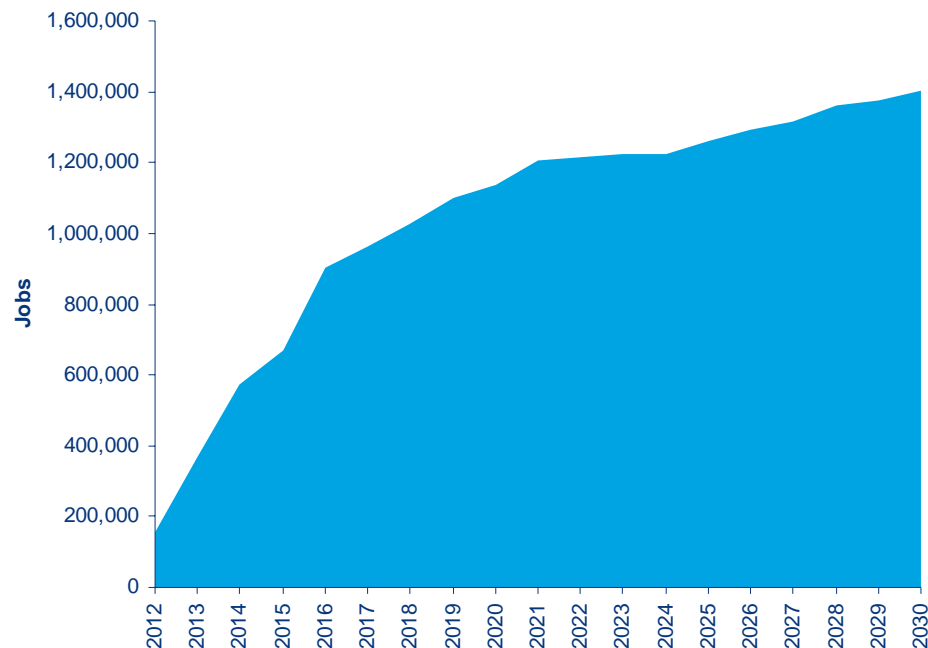
Added U.S. Jobs Canadian Oil Sands Pipelines

- Canadian oil sands production stimulates demand for U.S. produced services and equipment (e.g., large trucks and related infrastructure) and hence an increase in U.S. jobs

- U.S. employment associated with Canadian oil sands production that is expected to fill the initial phase of the Keystone XL pipeline should reach nearly 85,000 new jobs by 2020

- By 2030, U.S. employment associated with Canadian oil sands production that could fill new Canada to U.S. pipeline capacity could reach 270,000

- If 3.50 mmbod of additional oil pipeline export capacity is built out of Alberta (either to the U.S. or Canadian West Coast), the U.S. employment associated with Canadian oil sands production has the potential to reach 520,000 by 2030 (inclusive of jobs in the Current Path Case)

Potential Total Job Impact

Legend:
- Additional Development Policy Case
- Keystone
- Current Path Case

Y-axis: Jobs (0 to 600,000)
X-axis: 2010 to 2030

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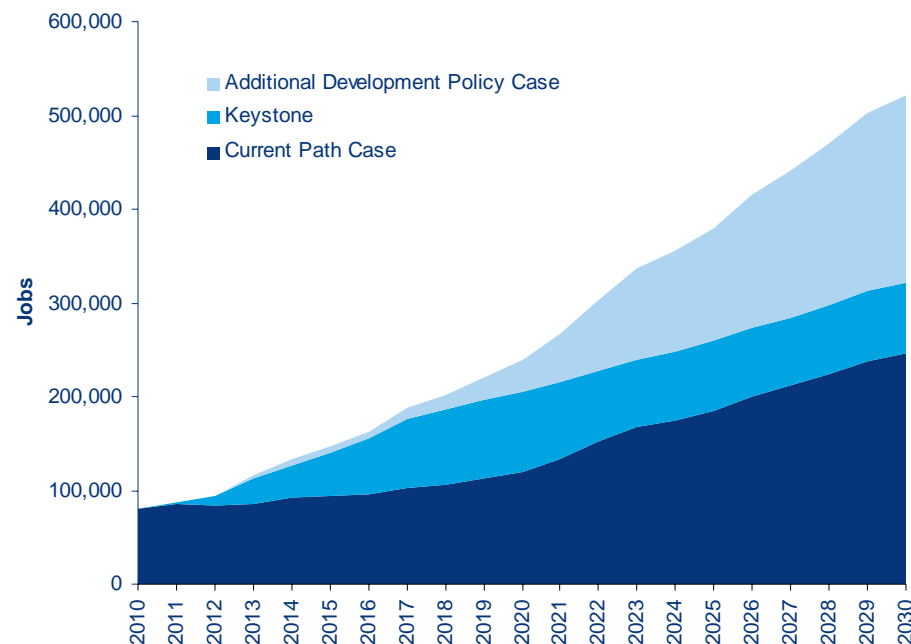
Added U.S. Government Revenue from Development Policy Case

- Wood Mackenzie estimates over $99 billion per year of new U.S. government revenue could be added by 2030 under the current taxation regime through policies which encourage the development of U.S. oil and natural gas resources

- Furthermore, Wood Mackenzie estimates total additional cumulative government revenues of $803 billion could be generated by 2030 under policies assumed in the Development Policy Case.

Potential Annual Government Revenue Impact
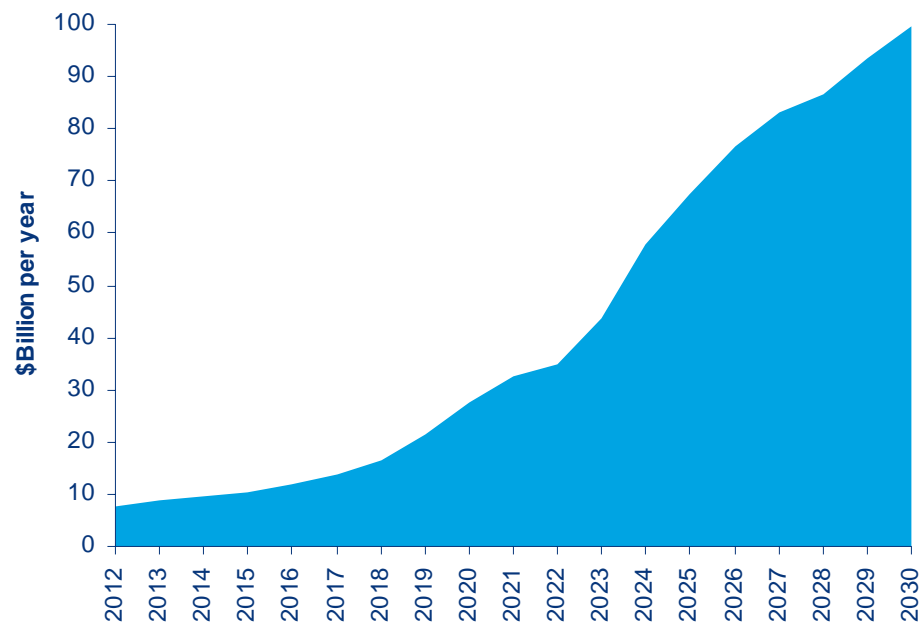
Total Government Revenue: Development Policy Case less Current Path Case

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Oil and Natural Gas Production Impacts by Policy

- Opening access to areas which are currently closed to development has the largest incremental impact on production between 2012 and 2030

- Wood Mackenzie estimates these new access areas could add up to 6.7 mmboed by 2030

- Regulations which permit timely development of GoM and the U.S. onshore would add a further 3.7 mmboed by 2030

- Total incremental production could increase by 10.4 mmboed by 2030

Potential U.S. Production Impact

Onshore Regulatory
GoM Permitting
Increased Access

Total Production: Development Policy Case less Current Path Case

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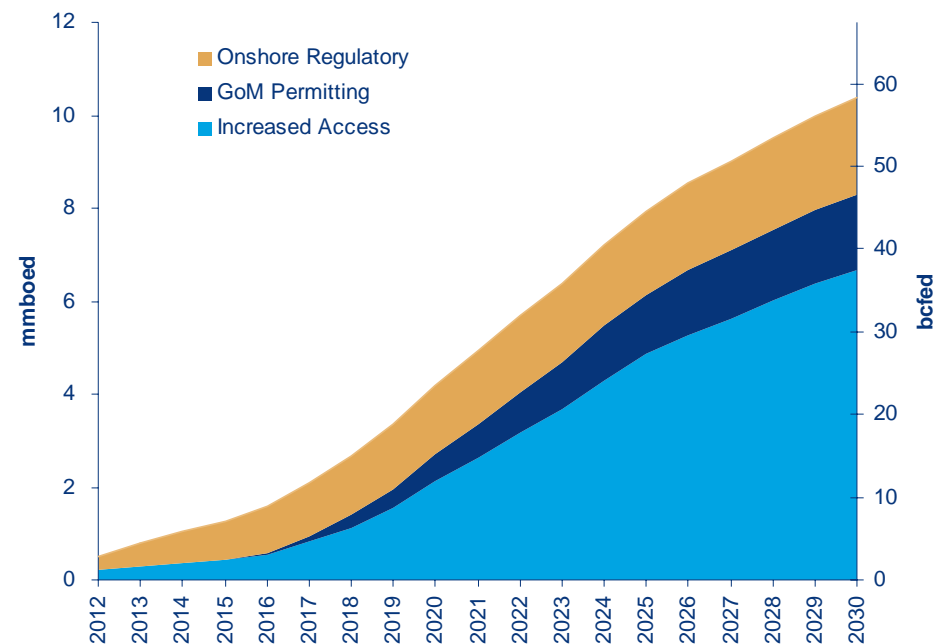
Employment Impacts by Policy

- Opening access to new areas for oil and natural gas development could add 690,000 jobs by 2030, approximately half of the total potential jobs added

- Wood Mackenzie estimates that a more favourable policy to develop pipelines from the Canadian oil sands to the U.S. would add over 270,000 U.S. jobs by 2030

- These jobs are primarily a result of U.S. services and the production of capital and intermediate goods exported to Canada for the development of the oil sands

- The impact on jobs from the GoM and onshore regions is more immediate as companies are already active in these regions with portfolios of opportunities to develop

Potential Total Job Impact

Legend:
- Oil Sands Pipelines, e.g. Keystone XL
- Onshore Regulatory
- GoM Permitting
- Increased Access

Y-axis: Jobs (0 to 1,600,000)
X-axis: 2012 to 2030

Total Employment: Development Policy Case less Current Path Case

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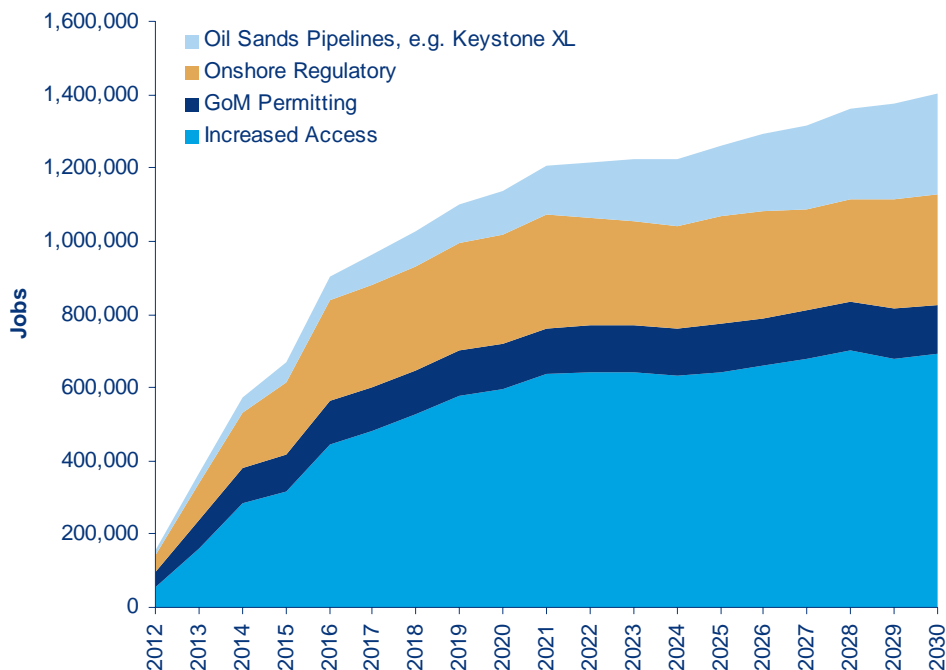
Added Revenue by Policy

- Increasing access to areas currently off-limits to oil and natural gas development has the greatest potential to increase government revenues

- Cumulative government revenue (inclusive of leases, state and local taxes) due to increased access, has the potential to reach a cumulative $127 billion by 2020 and $803 billion by 2030

- New lease sales drive the majority of revenues derived from the access policies in the short term

- From 2020 onwards, the impact of new production from these access areas drives the majority of revenue growth

- More timely development of existing oil and natural gas regions, both on and offshore, will also create additional government revenue

Potential U.S. Government Revenue Impact

Legend:
- Onshore Regulatory
- GoM Permitting
- Increased Access

Y-axis: $Billion (0–100)
X-axis: 2012–2030

Total Revenue: Development Policy Case less Current Path Case

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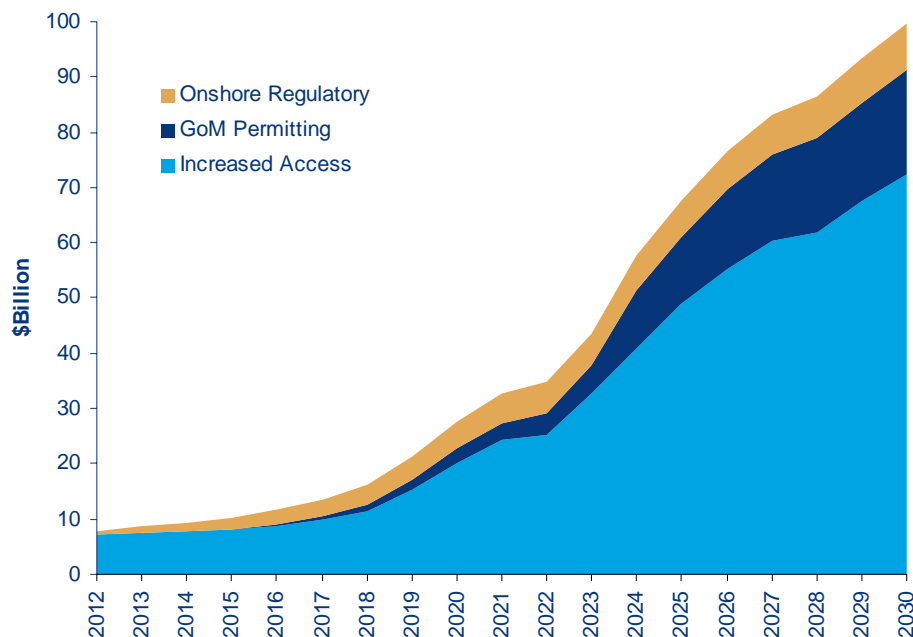
Added Revenue by Type

- Of the cumulative $803 billion of government revenues which could be generated through the Development Policy Case by 2030, $618 billion will be paid as Federal royalties and taxes. The states will generate a further $63 billion in royalties and taxes, with the remainder being new lease sales

- Revenue from both lease sales in new areas and from incremental lease sales in existing areas could reach $29 billion by 2015 and $122 billion by 2030

- Policies that encourage U.S. oil and gas development have the greatest potential to increase Federal income tax and royalty revenue

Potential U.S. Government Revenue Impact

Legend:
- Lease Sales
- Federal Royalty
- State Royalty
- State Taxes
- Federal Taxes

Y-axis: $Billion

Total Revenue: Development Policy Case less Current Path Case

Cumulative Revenue Impact ($ Billion)

	2015	2020	2025	2030
State Royalty	0.0	1.8	10.8	26.7
Federal Royalty	0.9	18.0	87.7	211.5
State Taxes	2.6	10.0	21.4	36.3
Federal Taxes	3.1	26.1	142.2	406.1
Lease Sales	29.5	70.8	101.1	122.0
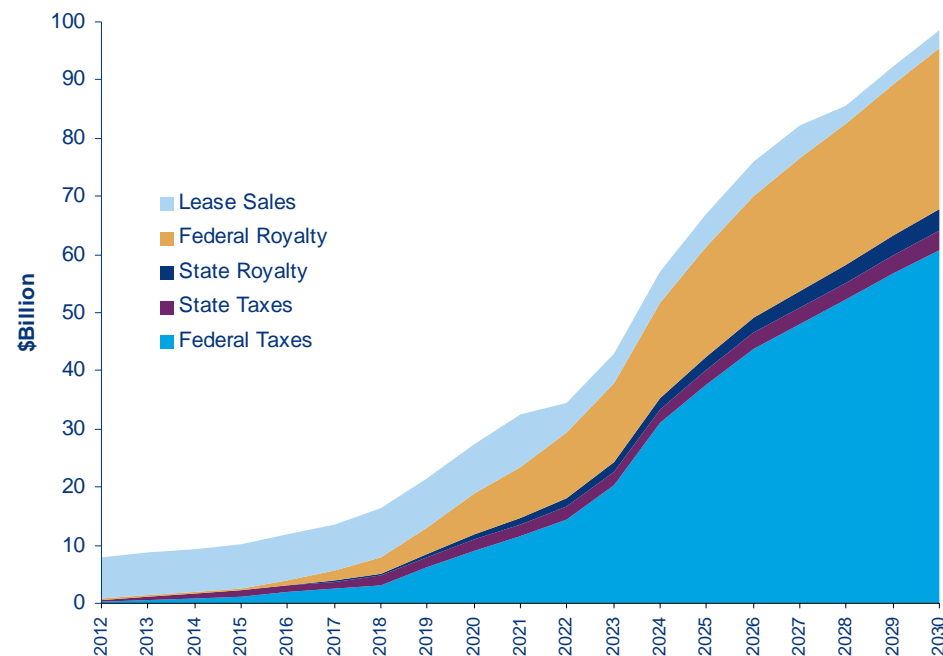
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Development Policy Case Projected Regional Impacts* - Alaska

- Alaska new development production could reach over 1.6 mmboed by 2030, with up to $22 billion of government revenue, and over 120,000 jobs being created

- Creating access to new federal areas and more efficient regulatory policies have the biggest impact on the future development of Alaska's oil and gas industry

- ANWR provides the main growth opportunity in Alaska, supplemented by development of the Chukchi and NPRA

- Wood Mackenzie has assumed that the State of Alaska and the Federal Government will share royalties from these areas

Alaska Production
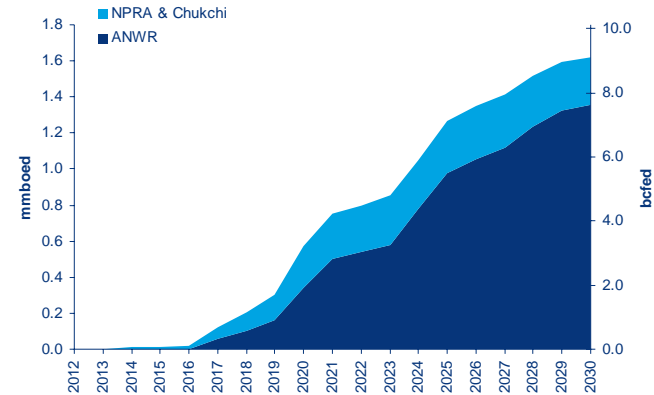
All production from Federal lands

Alaska Job Creation
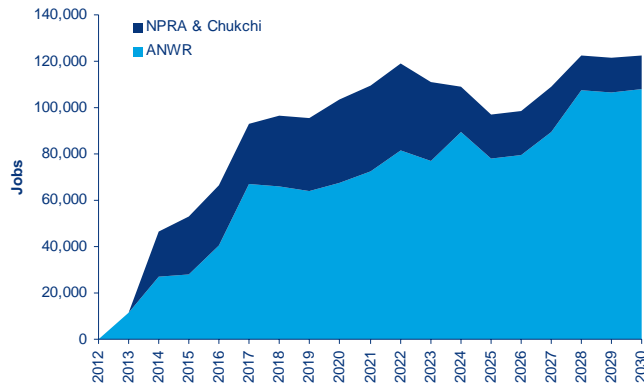
* Relative to the Current Path Case

Annual Government Revenue - Alaska
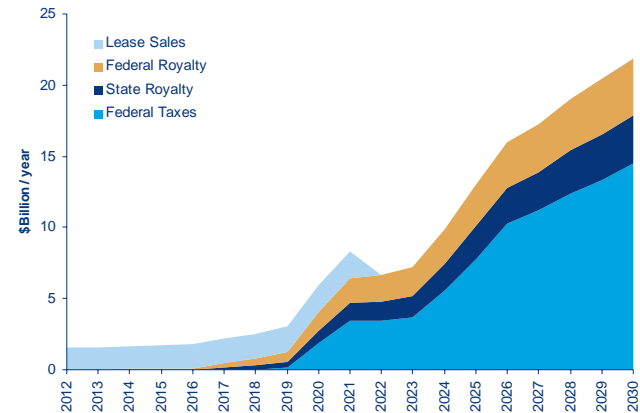
OCS and Federal BLM Royalties split with state

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Development Policy Case Projected Regional Impacts* – Gulf of Mexico

- Gulf of Mexico production could reach 3.1 mmboed by 2030, with up to $33 billion of government revenue, and 290,000 jobs being created as a result

- The opening of currently off-limits areas off the coast of Florida to exploration and development has the largest potential impact on the Gulf of Mexico's oil and gas industry

- Up to 100,000 new Florida jobs could be created by 2016

- More timely and efficient permitting for the offshore can increase production, government revenue, and jobs from Gulf of Mexico oil and natural gas development

GoM Production

Louisiana
Texas
Florida

All production from Federal lands

GoM Jobs Creation

Lousiana
Texas
Florida

* Relative to the Current Path Case

Annual Government Revenue - GoM

Lease Sales
Federal Royalty
State Royalty
Federal Tax

GoM royalties 100% Federal allocation

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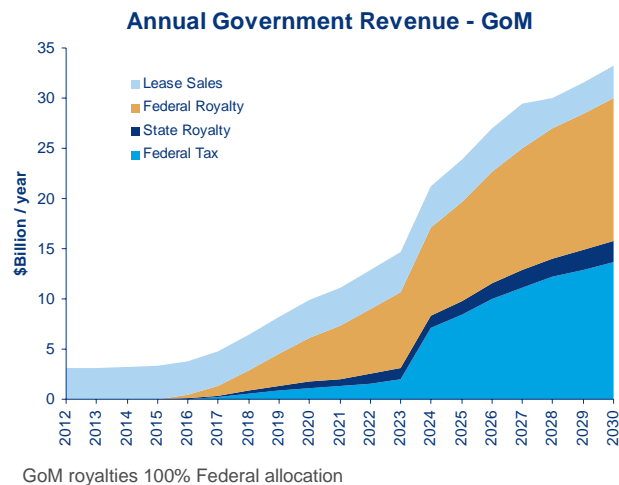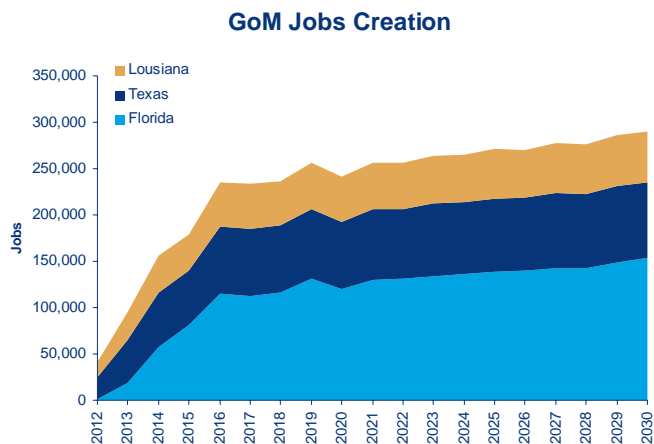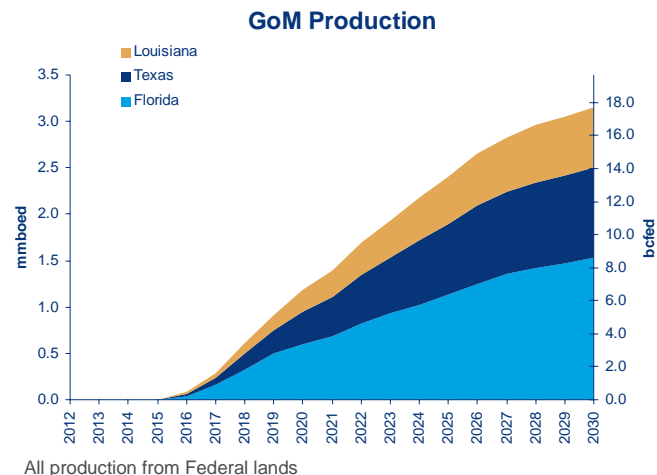
Development Policy Case Projected Regional Impacts* – Atlantic OCS

- Atlantic OCS production could reach nearly 1.6 mmboed by 2030, with up to $14 billion of government revenue per year, and 140,000 jobs being created as a result

- Cumulative government revenue for the region has the potential to reach $95 billion by 2030 (inclusive of lease bonuses)

- Wood Mackenzie assumes that states will be impacted on a proportionate basis of their coastline length

Atlantic OCS Production

Legend: Florida, Georgia, South Carolina, North Carolina, Virginia, Maryland, Delaware, New Jersey, New York, Connecticut, Rhode Island, Massachusetts, New Hampshire, Maine

All production from Federal lands

Atlantic OCS Job Creation

Legend: Florida, Georgia, South Carolina, North Carolina, Virginia, Maryland, Delaware, New Jersey, New York, Connecticut, Rhode Island, Massachusetts, New Hampshire, Maine

* Relative to the Current Path Case

Annual Government Revenue - Atlantic OCS

Legend: Lease Sales, Federal Royalty, State Royalty, Federal Tax

OCS royalties split with states

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Development Policy Case Projected Regional Impacts* – Pacific OCS

- Pacific OCS production could reach 1.1 mmboed by 2030, with up to $13 billion of government revenue, and over 120,000 jobs being created as a result

- Creating access to new federal areas and more efficient regulatory policies have the biggest impact on the future development of the Pacific OCS' oil and gas industry

- Wood Mackenzie projects that California would account for over 94% of production and job creation if the Pacific OCS were open for oil and gas development

Pacific OCS Production
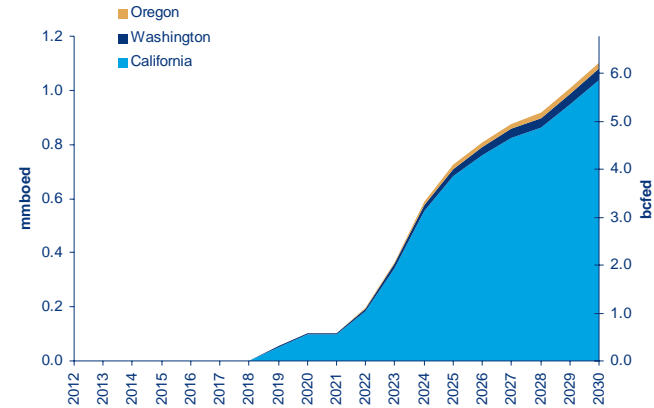
All production from Federal lands

Pacific OCS Job Creation
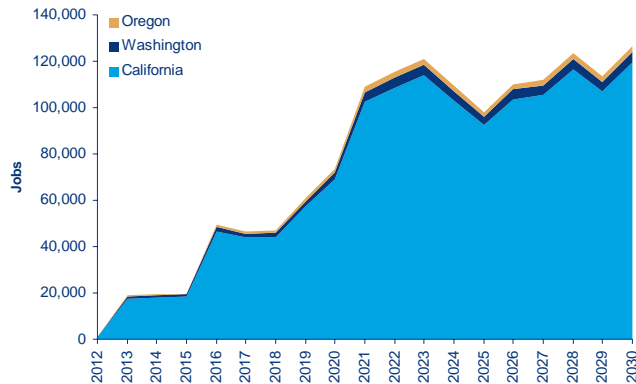
* Relative to the Current Path Case

Annual Government Revenue - Pacific OCS

OCS royalties split with states

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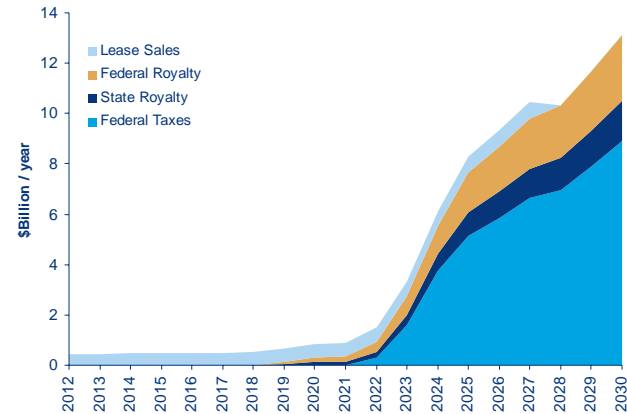
Development Policy Case Projected Regional Impacts* – Onshore U.S.

- Onshore new development production could reach 3.0 mmboed by 2030, with over $12 billion of government revenue, and over 700,000 jobs being created

- Creating greater access to portions of the Rocky Mountains, removing the moratorium on shale development in New York State, and supporting efficient onshore regulatory policies will all have a positive impact on the future development of U.S. domestic onshore oil and natural gas resources. The development of Canadian oil sands associated with Canada to U.S. pipelines will also create jobs in the U.S.

Onshore Lower 48 Production

Legend: Other States, California, North Dakota, Wyoming, Oklahoma, Pennsylvania, Colorado, Utah, Louisiana, New York, Texas
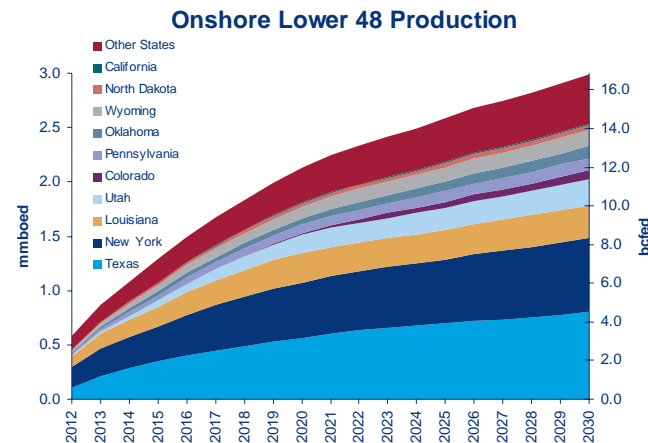
Production from Federal, State and Private lands

Onshore Lower 48 Job Creation

Legend: Other States, California, North Dakota, Wyoming, Oklahoma, Pennsylvania, Colorado, Utah, Louisiana, New York, Texas

* Relative to the Current Path Case

Annual Government Revenue - Onshore Lower 48

Legend: Lease Sales, Federal Royalty, State Royalty, Federal Tax, State Tax
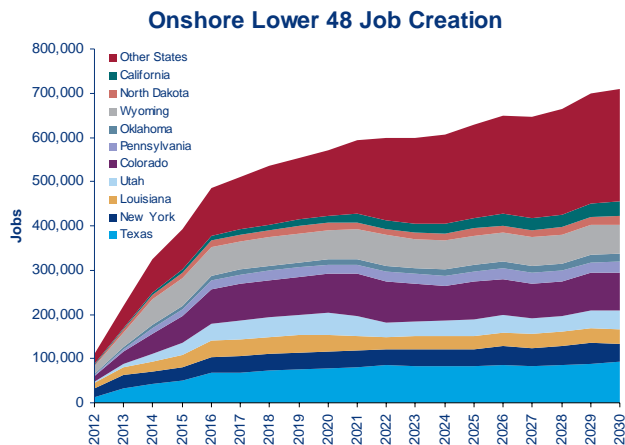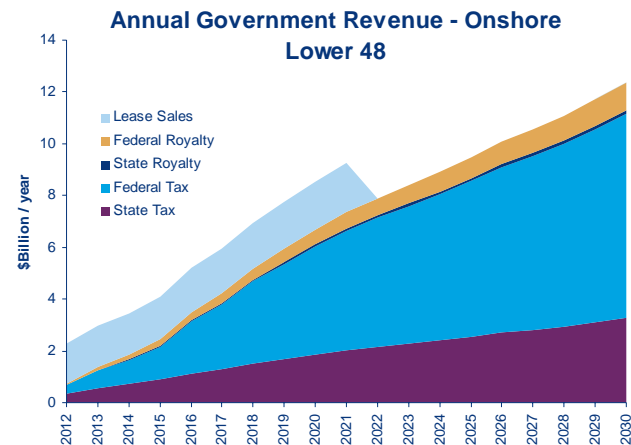
Royalties allocated 100% to Federal, Sate or Private depending on ownership rights

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Development Policy Case - Production Impact Forecasts by State ('000 boed)

	2015	2020	2025	2030
TEXAS	348	917	1,458	1,775
LOUISIANA	182	508	783	946
MISSISSIPPI	2	2	2	1
ALABAMA	1	1	2	2
ARKANSAS	17	33	41	48
KANSAS	2	5	17	23
OKLAHOMA	35	59	87	108
NEW MEXICO	14	25	41	51
COLORADO	68	141	184	208
N. DAKOTA	22	32	38	47
S. DAKOTA	0	0	0	0
WYOMING	69	125	160	180
UTAH	59	167	204	242
MONTANA	34	61	81	95
ILLINOIS	0	0	0	0
INDIANA	0	0	0	0
PENNSYLVANIA	52	80	97	112
VIRGINIA	1	18	92	146
KENTUCKY	0	1	2	2
OHIO	0	0	0	0

	2015	2020	2025	2,030
MICHIGAN	0	1	2	1
NEW YORK	319	522	661	789
WEST VIRGINIA	25	48	69	80
TENNESSEE	1	1	1	1
CALIFORNIA	3	105	691	1,050
ALASKA	14	573	1,270	1,623
WASHINGTON	0	2	15	22
OREGON	0	4	28	42
NEW HAMPSHIRE	0	2	10	16
MASSACHUSETTS	0	20	106	169
S. CAROLINA	0	6	32	52
RHODE ISLAND	0	4	22	35
GEORGIA	0	3	17	28
N. CAROLINA	0	45	240	382
NEW JERSEY	0	14	72	114
MARYLAND	0	5	25	39
DELAWARE	0	4	22	36
CONNECTICUT	0	10	53	84
MAINE	0	24	126	201
FLORIDA	0	621	1,187	1,620
TOTAL:	1,267	4,189	7,937	10,371

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Development Policy Case - Annual Job Creation Forecasts by State

	2015	2020	2025	2030
TEXAS	110,133	152,225	161,539	174,670
LOUISIANA	65,635	87,663	83,884	88,814
MISSISSIPPI	815	1,278	1,438	1,564
ALABAMA	922	1,438	2,460	2,249
ARKANSAS	4,223	7,920	7,464	7,870
KANSAS	3,224	6,832	20,411	19,820
OKLAHOMA	7,581	11,572	14,826	16,836
NEW MEXICO	14,603	15,986	15,561	15,592
COLORADO	61,131	88,283	83,817	85,032
N. DAKOTA	13,144	15,840	16,093	19,119
S. DAKOTA	125	240	363	466
WYOMING	61,289	67,110	66,054	66,862
UTAH	26,554	49,304	38,132	42,248
MONTANA	25,745	29,975	33,017	37,239
ILLINOIS	6,914	17,670	32,899	49,237
INDIANA	1,179	2,037	3,177	4,059
PENNSYLVANIA	15,912	20,629	23,512	25,824
VIRGINIA	3,606	16,401	19,163	18,185
KENTUCKY	876	2,071	2,823	3,043
OHIO	2,751	6,437	10,986	15,585

	2015	2020	2025	2030
MICHIGAN	2,428	4,426	7,766	9,797
NEW YORK	32,241	47,817	50,823	50,072
WEST VIRGINIA	5,487	7,037	8,683	7,986
TENNESSEE	1,534	1,848	3,245	3,808
CALIFORNIA	26,333	86,197	116,582	150,816
ALASKA	52,974	103,789	97,592	123,217
WASHINGTON	2,110	5,708	9,496	13,601
OREGON	1,400	4,034	5,390	6,866
NEW HAMPSHIRE	453	1,956	2,242	2,181
MASSACHUSETTS	3,806	18,826	21,097	19,715
S. CAROLINA	1,390	6,220	7,075	6,799
RHODE ISLAND	723	3,782	4,192	3,841
GEORGIA	1,540	5,066	6,451	7,247
N. CAROLINA	7,646	40,573	44,628	40,398
NEW JERSEY	3,049	13,853	16,126	15,964
MARYLAND	1,320	5,344	6,417	6,652
DELAWARE	732	3,841	4,296	3,989
CONNECTICUT	1,953	9,540	10,786	10,215
MAINE	3,573	20,380	22,079	19,436
FLORIDA	84,609	131,746	153,428	170,076
OTHER STATES	6,800	15,671	26,022	36,886
TOTAL:	668,462	1,138,567	1,262,035	1,403,877

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Development Policy Case – Annual Gov't Revenue Impact by State (US$M)

	2015	2020	2025	2030
TEXAS	2,096	4,679	11,325	16,183
LOUISIANA	1,221	2,716	6,782	9,678
MISSISSIPPI	8	7	6	4
ALABAMA	1	3	6	6
ARKANSAS	32	85	116	152
KANSAS	4	12	49	75
OKLAHOMA	69	152	249	347
NEW MEXICO	239	346	260	365
COLORADO	528	990	995	1,285
N. DAKOTA	125	201	203	285
S. DAKOTA	0	0	0	1
WYOMING	1,056	1,576	992	1,283
UTAH	261	810	1,043	1,409
MONTANA	405	610	472	634
ILLINOIS	0	0	0	1
INDIANA	0	0	0	1
PENNSYLVANIA	72	178	242	310
VIRGINIA	53	100	919	1,332
KENTUCKY	0	2	4	5
OHIO	0.0	0.1	0.3	0

	2015	2020	2025	2,030
MICHIGAN	1	1	4	4
NEW YORK	189	1,161	2,182	2,893
WEST VIRGINIA	34	106	172	220
TENNESSEE	1	1	3	4
CALIFORNIA	476	851	7,868	12,460
ALASKA	1,703	5,968	13,045	21,856
WASHINGTON	10	17	168	266
OREGON	18	33	316	501
NEW HAMPSHIRE	6	11	102	147
MASSACHUSETTS	63	116	1,084	1,570
S. CAROLINA	19	27	332	481
RHODE ISLAND	13	24	226	327
GEORGIA	10	19	178	257
N. CAROLINA	142	262	2,454	3,554
NEW JERSEY	42	78	734	1,063
MARYLAND	15	27	253	366
DELAWARE	13	24	228	331
CONNECTICUT	31	58	542	785
MAINE	74	137	1,287	1,864
FLORIDA	1,134	6,407	12,772	17,465
TOTAL:	10,165	27,796	67,613	99,769

Lease Sales by Region ($M)	2015	2020	2025	2030
Rockies	1,656	1,873	0	0
ANWR	1,656	1,873	0	0
Atlantic OCS	552	624	706	0
East Gulf of Mexico	1,104	1,249	1,413	0
Pacific OCS	483	546	618	0
Central and West Gulf of Mexico	2,208	2,498	2,826	3,197

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Projected Results by State and Policy

	Annual Production (mboed)					Total Jobs Supported (Upstream)					Total Government Revenue ($M)					State Government Revenue ($M)				
	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
AL Current Path	36	26	22	24	17	10,283	7,469	6,478	6,998	5,031	40	46	55	66	51	25	20	19	23	18
On-shore Regulatory		1	1	2	2		373	300	810	93		1	3	6	6		1	1	2	2
Oil Sands Support							548	1,138	1,651	2,155										
Incremental		**1**	**1**	**2**	**2**		**922**	**1,438**	**2,460**	**2,249**		**1**	**3**	**6**	**6**	**0**	**1**	**1**	**2**	**2**
Development Policy	36	26	23	26	19	10,283	8,390	7,915	9,459	7,280	40	47	58	72	57	25	21	20	25	19
AK Current Path	711	641	601	574	844	35,568	32,809	31,375	29,961	43,857	8,602	8,593	9,002	7,579	10,381	6,083	6,375	6,748	4,950	7,703
Federal Access		14	573	1,270	1,623		52,885	103,583	97,248	122,728		1,703	5,968	13,045	21,856		12	876	2,338	3,393
Oil Sands Support							89	206	345	490										
Incremental		**14**	**573**	**1,270**	**1,623**		**52,974**	**103,789**	**97,592**	**123,217**		**1,703**	**5,968**	**13,045**	**21,856**	**0**	**12**	**876**	**2,338**	**3,393**
Development Policy	711	655	1,174	1,844	2,467	35,568	85,783	135,164	127,553	167,074	8,602	10,297	14,970	20,624	32,237	6,083	6,387	7,624	7,288	11,097
AZ Current Path	0	0	0	0	0	12,781	12,781	12,781	12,781	12,781	0	0	0	0	0	0	0	0	0	0
Oil Sands Support							682	1,443	2,169	2,897										
Incremental		**0**	**0**	**0**	**0**		**682**	**1,443**	**2,169**	**2,897**		**0**	**0**	**0**	**0**		**0**	**0**	**0**	**0**
Development Policy	0	0	0	0	0	12,781	13,463	14,224	14,950	15,678	0	0	0	0	0	0	0	0	0	0
AR Current Path	692	856	1,072	1,134	1,234	46,611	58,974	75,361	79,714	86,275	967	1,683	2,738	3,239	3,952	436	575	818	967	1,180
On-shore Regulatory		17	33	41	48		3,912	7,269	6,516	6,629		32	85	116	152		11	25	35	46
Oil Sands Support							311	652	948	1,241										
Incremental		**17**	**33**	**41**	**48**		**4,223**	**7,920**	**7,464**	**7,870**		**32**	**85**	**116**	**152**	**0**	**11**	**25**	**35**	**46**
Development Policy	692	873	1,106	1,175	1,281	46,611	63,197	83,281	87,178	94,145	967	1,715	2,823	3,355	4,105	436	586	843	1,002	1,226
CA Current Path	887	647	516	438	410	104,217	97,167	93,231	92,778	90,206	5,631	3,950	3,798	3,832	3,882	1,278	890	846	848	863
On-shore Regulatory		3	7	9	11		2,758	6,180	7,620	8,957		15	36	57	78		5	10	16	22
Federal Access		0	98	682	1,039		18,545	69,249	92,344	119,286		460	815	7,811	12,383		0	106	887	1,491
Oil Sands Support							5,030	10,769	16,618	22,573										
Incremental		**3**	**105**	**691**	**1,050**		**26,333**	**86,197**	**116,582**	**150,816**		**476**	**851**	**7,868**	**12,460**		**5**	**116**	**904**	**1,513**
Development Policy	887	650	620	1,129	1,459	104,217	123,501	179,429	209,360	241,022	5,631	4,426	4,648	11,700	16,343	1,278	895	963	1,752	2,376
CO Current Path	1,111	1,065	1,192	1,306	1,359	118,879	116,539	133,132	145,834	151,055	3,020	3,891	5,369	6,600	7,834	1,289	1,534	1,884	2,311	2,743
On-shore Regulatory		53	114	148	167		40,895	64,611	58,281	56,872		245	670	995	1,285		98	224	324	415
Federal Access		14	28	36	42		18,993	20,652	20,234	20,422		283	320							
Oil Sands Support							1,242	3,020	5,302	7,738										
Incremental		**68**	**141**	**184**	**208**		**61,131**	**88,283**	**83,817**	**85,032**		**528**	**990**	**995**	**1,285**	**0**	**98**	**224**	**324**	**415**
Development Policy	1,111	1,133	1,333	1,490	1,567	118,879	177,669	221,416	229,652	236,087	3,020	4,420	6,359	7,595	9,119	1,289	1,631	2,108	2,635	3,158

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Projected Results by State and Policy (continued)

		Annual Production (mboed)					Total Jobs Supported (Upstream)					Total Government Revenue ($M)					State Government Revenue ($M)				
		2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
CT	Current Path	0	0	0	0	0	3,005	3,005	3,005	3,005	3,005	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	10	53	84		1,438	8,441	9,091	7,914		31	58	542	785		0	11	88	137
	Oil Sands Support							515	1,099	1,695	2,301										
	Incremental		**0**	**10**	**53**	**84**		**1,953**	**9,540**	**10,786**	**10,215**		**31**	**58**	**542**	**785**	**0**	**0**	**11**	**88**	**137**
	Development Policy	0	0	10	53	84	3,005	4,958	12,545	13,791	13,220	0	31	58	542	785	0	0	11	88	137
DC	Current Path	0	0	0	0	0	581	581	581	581	581	0	0	0	0	0	0	0	0	0	0
	Oil Sands Support							155	359	606	867										
	Incremental		**0**	**0**	**0**	**0**		**155**	**359**	**606**	**867**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Development Policy	0	0	0	0	0	581	736	940	1,187	1,448	0	0	0	0	0	0	0	0	0	0
DE	Current Path	0	0	0	0	0	522	522	522	522	522	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	4	22	36		606	3,555	3,829	3,333		13	24	228	331		0	8	65	101
	Oil Sands Support							126	285	467	656										
	Incremental		**0**	**4**	**22**	**36**		**732**	**3,841**	**4,296**	**3,989**		**13**	**24**	**228**	**331**	**0**	**0**	**8**	**65**	**101**
	Development Policy	0	0	4	22	36	522	1,254	4,363	4,818	4,511	0	13	24	228	331	0	0	8	65	101
FL	Current Path	0	0	0	0	0	27,719	27,719	27,719	27,719	27,719	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	621	1,187	1,620		82,642	127,486	146,940	161,332		1,134	6,407	12,772	17,465		0	968	1,465	2,215
	Oil Sands Support							1,967	4,260	6,488	8,745										
	Incremental		**0**	**621**	**1,187**	**1,620**		**84,609**	**131,746**	**153,428**	**170,076**		**1,134**	**6,407**	**12,772**	**17,465**	**0**	**0**	**968**	**1,465**	**2,215**
	Development Policy	0	0	621	1,187	1,620	27,719	112,328	159,465	181,147	197,795	0	1,134	6,407	12,772	17,465	0	0	968	1,465	2,215
GA	Current Path	0	0	0	0	0	2,469	2,469	2,469	2,469	2,469	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	3	17	28		471	2,765	2,979	2,593		0	7	164	257		0	3	21	33
	Oil Sands Support							1,069	2,301	3,473	4,654										
	Incremental		**0**	**3**	**17**	**28**		**1,540**	**5,066**	**6,451**	**7,247**		**0**	**7**	**164**	**257**	**0**	**0**	**3**	**21**	**33**
	Development Policy	0	0	3	17	28	2,469	4,009	7,535	8,920	9,716	0	0	7	164	257	0	0	3	21	33
HI	Current Path	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Oil Sands Support							152	341	538	740										
	Incremental		**0**	**0**	**0**	**0**		**152**	**341**	**538**	**740**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Development Policy	0	0	0	0	0	0	152	341	538	740	0	0	0	0	0	0	0	0	0	0

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Projected Results by State and Policy (continued)

		Annual Production (mboed)					Total Jobs Supported (Upstream)					Total Government Revenue ($M)					State Government Revenue ($M)				
		2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
ID	Current Path	0	0	0	0	0	1,948	1,948	1,948	1,948	1,948	0	0	0	0	0	0	0	0	0	0
	Oil Sands Support							189	380	531	674										
	Incremental		**0**	**0**	**0**	**0**		**189**	**380**	**531**	**674**		**0**	**0**	**0**	**0**		**0**	**0**	**0**	**0**
	Development Policy	0	0	0	0	0	1,948	2,137	2,328	2,479	2,622	0	0	0	0	0	0	0	0	0	0
IL	Current Path	4	3	3	4	5	30,320	24,507	22,238	37,582	46,575	1	4	6	11	15	1	1	1	1	2
	On-shore Regulatory		0	0	0	0		52	28	138	118		0	0	0	1		0	0	0	0
	Oil Sands Support							6,862	17,642	32,761	49,120										
	Incremental		**0**	**0**	**0**	**0**		**6,914**	**17,670**	**32,899**	**49,237**		**0**	**0**	**0**	**1**		**0**	**0**	**0**	**0**
	Development Policy	4	3	3	5	6	30,320	31,421	39,908	70,481	95,813	1	4	6	11	16	1	1	1	2	2
IN	Current Path	2	5	3	4	4	9,168	19,284	12,393	17,107	17,853	1	6	6	10	12	1	1	1	1	2
	On-shore Regulatory		0	0	0	0		185	5	209	168		0	0	1	1		0	0	0	0
	Oil Sands Support							994	2,032	2,968	3,890										
	Incremental		**0**	**0**	**0**	**0**		**1,179**	**2,037**	**3,177**	**4,059**		**0**	**0**	**1**	**1**		**0**	**0**	**0**	**0**
	Development Policy	2	5	3	4	4	9,168	20,463	14,430	20,284	21,912	1	7	7	11	13	1	1	1	1	2
IA	Current Path	0	0	0	0	0	1,512	1,512	1,512	1,512	1,512	0	0	0	0	0	0	0	0	0	0
	Oil Sands Support							437	884	1,251	1,604										
	Incremental		**0**	**0**	**0**	**0**		**437**	**884**	**1,251**	**1,604**		**0**	**0**	**0**	**0**		**0**	**0**	**0**	**0**
	Development Policy	0	0	0	0	0	1,512	1,949	2,396	2,763	3,116	0	0	0	0	0	0	0	0	0	0
KS	Current Path	222	116	81	88	88	67,469	36,157	25,610	27,875	27,729	310	229	206	251	282	140	78	62	75	84
	On-shore Regulatory		2	5	17	23		2,409	4,832	16,877	14,647		4	12	49	75		1	4	15	22
	Oil Sands Support							815	2,000	3,534	5,173										
	Incremental		**2**	**5**	**17**	**23**		**3,224**	**6,832**	**20,411**	**19,820**		**4**	**12**	**49**	**75**		**1**	**4**	**15**	**22**
	Development Policy	222	118	86	105	111	67,469	39,381	32,443	48,286	47,549	310	232	219	301	356	140	79	65	90	106
KY	Current Path	59	32	39	50	52	20,024	11,012	13,924	17,500	18,156	22	44	88	124	143	22	7	12	16	19
	On-shore Regulatory		0	1	2	2		352	989	1,258	1,005		0	2	4	5		0	0	1	1
	Oil Sands Support							524	1,081	1,564	2,038										
	Incremental		**0**	**1**	**2**	**2**		**876**	**2,071**	**2,823**	**3,043**		**0**	**2**	**4**	**5**		**0**	**0**	**1**	**1**
	Development Policy	59	32	41	51	54	20,024	11,888	15,994	20,323	21,199	22	44	90	128	148	22	7	12	17	20

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Projected Results by State and Policy (continued)

		Annual Production (mboed)					Total Jobs Supported (Upstream)					Total Government Revenue ($M)					State Government Revenue ($M)				
		2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
LA	Current Path	882	951	1,097	1,014	1,040	281,625	310,905	365,819	338,048	345,022	1,066	1,771	2,764	2,826	3,128	669	782	954	969	1,071
	On-shore Regulatory		182	275	275	299		25,547	36,439	26,759	28,476		338	693	767	901		139	234	262	308
	GoM Permitting		0	234	508	646		39,144	48,944	53,144	54,544		883	2,023	6,015	8,777					
	Oil Sands Support							944	2,281	3,982	5,794										
	Incremental		**182**	**508**	**783**	**946**		**65,635**	**87,663**	**83,884**	**88,814**		**1,221**	**2,716**	**6,782**	**9,678**	**0**	**139**	**234**	**262**	**308**
	Development Policy	882	1,133	1,605	1,797	1,985	281,625	376,540	453,482	421,933	433,836	1,066	2,991	5,480	9,608	12,805	669	921	1,188	1,231	1,379
ME	Current Path	0	0	0	0	0	638	638	638	638	638	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	24	126	201		3,416	20,047	21,592	18,796		74	137	1,287	1,864		0	20	154	239
	Oil Sands Support							157	333	487	639										
	Incremental		**0**	**24**	**126**	**201**		**3,573**	**20,380**	**22,079**	**19,436**		**74**	**137**	**1,287**	**1,864**	**0**	**0**	**20**	**154**	**239**
	Development Policy	0	0	24	126	201	638	4,211	21,018	22,717	20,074	0	74	137	1,287	1,864	0	0	20	154	239
MD	Current Path	0	0	0	0	0	4,313	4,313	4,313	4,313	4,313	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	5	25	39		671	3,936	4,239	3,691		15	27	253	366		0	4	30	47
	Oil Sands Support							649	1,408	2,177	2,962										
	Incremental		**0**	**5**	**25**	**39**		**1,320**	**5,344**	**6,417**	**6,652**		**15**	**27**	**253**	**366**	**0**	**0**	**4**	**30**	**47**
	Development Policy	0	0	5	25	39	4,313	5,633	9,657	10,730	10,965	0	15	27	253	366	0	0	4	30	47
MA	Current Path	0	0	0	0	0	2,111	2,111	2,111	2,111	2,111	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	20	106	169		2,877	16,882	18,183	15,829		63	116	1,084	1,570		0	17	129	202
	Oil Sands Support							930	1,944	2,914	3,886										
	Incremental		**0**	**20**	**106**	**169**		**3,806**	**18,826**	**21,097**	**19,715**		**63**	**116**	**1,084**	**1,570**	**0**	**0**	**17**	**129**	**202**
	Development Policy	0	0	20	106	169	2,111	5,917	20,937	23,208	21,826	0	63	116	1,084	1,570	0	0	17	129	202
MI	Current Path	104	49	41	57	43	30,136	14,675	12,361	17,275	12,973	39	68	91	142	119	39	10	12	19	16
	On-shore Regulatory		0	1	2	1		515	207	991	373		1	1	4	4		0	0	1	0
	Oil Sands Support							1,913	4,218	6,775	9,424										
	Incremental		**0**	**1**	**2**	**1**		**2,428**	**4,426**	**7,766**	**9,797**		**1**	**1**	**4**	**4**	**0**	**0**	**0**	**1**	**0**
	Development Policy	104	49	42	59	44	30,136	17,103	16,787	25,041	22,770	39	69	92	146	122	39	10	12	19	16
MN	Current Path	0	0	0	0	0	4,551	4,551	4,551	4,551	4,551	0	0	0	0	0	0	0	0	0	0
	Oil Sands Support							796	1,675	2,499	3,322										
	Incremental		**0**	**0**	**0**	**0**		**796**	**1,675**	**2,499**	**3,322**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Development Policy	0	0	0	0	0	4,551	5,347	6,226	7,050	7,873	0	0	0	0	0	0	0	0	0	0

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	Annual Production (mboed)					Total Jobs Supported (Upstream)					Total Government Revenue ($M)					State Government Revenue ($M)				
	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
MS Current Path	125	106	80	58	39	28,980	25,126	19,294	13,985	9,252	326	345	242	166	116	187	170	101	61	40
On-shore Regulatory		2	2	2	1		485	570	378	151		8	7	6	4		1	2	2	1
Oil Sands Support							330	708	1,060	1,413										
Incremental		2	2	2	1		815	1,278	1,438	1,564		8	7	6	4	0	1	2	2	1
Development Policy	125	109	82	60	40	28,980	25,941	20,573	15,423	10,817	326	352	249	171	120	187	171	103	63	42
MO Current Path	0	0	0	0	0	11,553	11,553	11,553	11,553	11,553	0	0	0	0	0	0	0	0	0	0
Oil Sands Support							714	1,499	2,195	2,883										
Incremental		0	0	0	0		714	1,499	2,195	2,883		0	0	0	0		0	0	0	0
Development Policy	0	0	0	0	0	11,553	12,267	13,052	13,748	14,436	0	0	0	0	0	0	0	0	0	0
MT Current Path	112	95	88	89	93	10,832	9,335	8,877	8,938	9,316	305	345	397	448	535	165	165	168	191	228
On-shore Regulatory		20	33	44	54		5,441	5,794	6,000	6,486		121	290	472	634		55	91	158	210
Federal Access		14	28	36	42		18,993	20,652	20,234	20,422		283	320							
Oil Sands Support							1,311	3,529	6,784	10,331										
Incremental		34	61	81	95		25,745	29,975	33,017	37,239		405	610	472	634	0	55	91	158	210
Development Policy	112	128	149	169	188	10,832	35,080	38,851	41,955	46,554	305	750	1,007	920	1,169	165	219	259	349	439
NE Current Path	0	0	0	0	0	3,095	3,095	3,095	3,095	3,095	0	0	0	0	0	0	0	0	0	0
Oil Sands Support							240	503	735	964										
Incremental		0	0	0	0		240	503	735	964		0	0	0	0		0	0	0	0
Development Policy	0	0	0	0	0	3,095	3,335	3,598	3,830	4,059	0	0	0	0	0	0	0	0	0	0
NV Current Path	0	0	0	0	0	4,248	4,248	4,248	4,248	4,248	0	0	0	0	0	0	0	0	0	0
Oil Sands Support							310	692	1,077	1,471										
Incremental		0	0	0	0		310	692	1,077	1,471		0	0	0	0		0	0	0	0
Development Policy	0	0	0	0	0	4,248	4,558	4,940	5,325	5,719	0	0	0	0	0	0	0	0	0	0
NH Current Path	0	0	0	0	0	879	879	879	879	879	0	0	0	0	0	0	0	0	0	0
Federal Access		0	2	10	16		270	1,583	1,705	1,484		6	11	102	147		0	2	12	19
Oil Sands Support							184	373	537	697										
Incremental		0	2	10	16		453	1,956	2,242	2,181		6	11	102	147	0	0	2	12	19
Development Policy	0	0	2	10	16	879	1,332	2,835	3,121	3,060	0	6	11	102	147	0	0	2	12	19

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Projected Results by State and Policy (continued)

		Annual Production (mboed)					Total Jobs Supported (Upstream)					Total Government Revenue ($M)					State Government Revenue ($M)				
		2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
NJ	Current Path	0	0	0	0	0	5,359	5,359	5,359	5,359	5,359	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	14	72	114		1,948	11,430	12,311	10,717		42	78	734	1,063		0	11	88	137
	Oil Sands Support							1,101	2,423	3,815	5,246										
	Incremental		**0**	**14**	**72**	**114**		**3,049**	**13,853**	**16,126**	**15,964**		**42**	**78**	**734**	**1,063**	**0**	**0**	**11**	**88**	**137**
	Development Policy	0	0	14	72	114	5,359	8,408	19,212	21,485	21,323	0	42	78	734	1,063	0	0	11	88	137
NM	Current Path	885	668	565	596	603	58,535	45,182	38,970	41,128	41,421	3,132	2,810	2,886	3,424	3,901	1,004	934	867	1,038	1,189
	On-shore Regulatory		5	7	17	24		1,956	2,023	1,658	1,352		54	136	260	365		21	39	71	98
	Federal Access		9	18	24	27		12,440	13,526	13,252	13,376		185	210							
	Oil Sands Support							207	436	650	865										
	Incremental		**14**	**25**	**41**	**51**		**14,603**	**15,986**	**15,561**	**15,592**		**239**	**346**	**260**	**365**	**0**	**21**	**39**	**71**	**98**
	Development Policy	885	682	589	637	654	58,535	59,785	54,955	56,689	57,013	3,132	3,049	3,232	3,684	4,265	1,004	955	906	1,108	1,287
NY	Current Path	31	10	7	8	2	14,811	14,811	14,811	14,811	14,811	12	14	16	20	6	12	2	2	3	1
	On-shore Regulatory (incl Moratorium)		319	522	661	789		29,905	42,699	42,737	38,932		189	1,161	2,182	2,893		66	144	195	247
	Oil Sands Support							2,336	5,118	8,086	11,141										
	Incremental		**319**	**522**	**661**	**789**		**32,241**	**47,817**	**50,823**	**50,072**		**189**	**1,161**	**2,182**	**2,893**		**66**	**144**	**195**	**247**
	Development Policy	31	329	529	669	791	14,811	47,052	62,628	65,634	64,883	12	203	1,177	2,202	2,899	12	68	146	198	248
NC	Current Path	0	0	0	0	0	4,834	4,834	4,834	4,834	4,834	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	45	240	382		6,513	38,218	41,164	35,834		142	262	2,454	3,554					
	Oil Sands Support							1,133	2,355	3,464	4,564										
	Incremental		**0**	**45**	**240**	**382**		**7,646**	**40,573**	**44,628**	**40,398**		**142**	**262**	**2,454**	**3,554**	**0**	**0**	**0**	**0**	**0**
	Development Policy	0	0	45	240	382	4,834	12,480	45,407	49,462	45,232	0	142	262	2,454	3,554	0	0	0	0	0
ND	Current Path	376	812	876	913	1,056	33,098	73,127	80,489	83,857	96,553	1,022	2,968	3,946	4,614	6,088	450	1,197	1,417	1,654	2,183
	On-shore Regulatory		19	27	32	40		9,939	12,264	12,501	15,414		78	148	203	285		32	51	68	96
	Federal Access		2	5	6	7		3,110	3,382	3,313	3,344		46	52							
	Oil Sands Support							95	195	279	361										
	Incremental		**22**	**32**	**38**	**47**		**13,144**	**15,840**	**16,093**	**19,119**		**125**	**201**	**203**	**285**	**0**	**32**	**51**	**68**	**96**
	Development Policy	376	834	908	951	1,103	33,098	86,272	96,329	99,950	115,672	1,022	3,093	4,147	4,817	6,373	450	1,229	1,468	1,723	2,279
OH	Current Path	5	2	1	2	0	48,111	16,608	14,428	21,134	0	2	2	3	5	0	2	0	0	1	0
	On-shore Regulatory		0	0	0	0		13	53	172	93		0	0	1	0		0	0	0	0
	Oil Sands Support							2,738	6,384	10,814	15,491										
	Incremental		**0**	**0**	**0**	**0**		**2,751**	**6,437**	**10,986**	**15,585**		**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
	Development Policy	5	2	1	2	0	48,111	19,360	20,865	32,119	15,585	2	2	3	6	0	2	0	0	1	0

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Projected Results by State and Policy (continued)

		Annual Production (mboed)					Total Jobs Supported (Upstream)					Total Government Revenue ($M)					State Government Revenue ($M)				
		2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
OK	Current Path	1,211	1,122	1,065	1,159	1,264	239,883	227,378	220,403	239,820	260,264	1,692	2,204	2,720	3,311	4,051	762	753	812	989	1,210
	On-shore Regulatory		35	59	87	108		7,094	10,547	13,303	14,818		69	152	249	347		24	45	74	104
	Oil Sands Support							487	1,026	1,522	2,018										
	Incremental		**35**	**59**	**87**	**108**		**7,581**	**11,572**	**14,826**	**16,836**		**69**	**152**	**249**	**347**		**24**	**45**	**74**	**104**
	Development Policy	1,211	1,157	1,125	1,246	1,373	239,883	234,959	231,975	254,646	277,100	1,692	2,273	2,872	3,559	4,398	762	776	858	1,063	1,313
OR	Current Path	0	0	0	0	0	3,143	3,143	3,143	3,143	3,143	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	4	28	42		752	2,809	3,745	4,838		18	33	316	501		0	4	36	60
	Oil Sands Support							648	1,225	1,645	2,028										
	Incremental		**0**	**4**	**28**	**42**		**1,400**	**4,034**	**5,390**	**6,866**		**18**	**33**	**316**	**501**		**0**	**4**	**36**	**60**
	Development Policy	0	0	4	28	42	3,143	4,543	7,177	8,533	10,009	0	18	33	316	501	0	0	4	36	60
PA	Current Path	441	1,771	2,271	2,566	2,848	121,783	184,719	236,870	267,677	296,217	167	2,438	5,051	6,386	7,862	167	365	674	852	1,049
	On-shore Regulatory		52	80	97	112		14,403	17,423	18,696	19,390		72	178	242	310		11	24	32	41
	Oil Sands Support							1,509	3,206	4,816	6,434										
	Incremental		**52**	**80**	**97**	**112**		**15,912**	**20,629**	**23,512**	**25,824**		**72**	**178**	**242**	**310**		**11**	**24**	**32**	**41**
	Development Policy	441	1,824	2,351	2,663	2,961	121,783	200,630	257,499	291,189	322,042	167	2,510	5,229	6,629	8,172	167	376	697	884	1,090
RI	Current Path	0	0	0	0	0	548	548	548	548	548	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	4	22	35		599	3,517	3,788	3,298		0	9	209	327		0	3	27	42
	Oil Sands Support							123	265	404	544										
	Incremental		**0**	**4**	**22**	**35**		**723**	**3,782**	**4,192**	**3,841**		**0**	**9**	**209**	**327**		**0**	**3**	**27**	**42**
	Development Policy	0	0	4	22	35	548	1,271	4,330	4,740	4,389	0	0	9	209	327	0	0	3	27	42
SC	Current Path	0	0	0	0	0	2,811	2,811	2,811	2,811	2,811	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	6	32	52		881	5,171	5,570	4,849		0	6	307	481		0	5	40	62
	Oil Sands Support							508	1,049	1,505	1,950										
	Incremental		**0**	**6**	**32**	**52**		**1,390**	**6,220**	**7,075**	**6,799**		**0**	**6**	**307**	**481**		**0**	**5**	**40**	**62**
	Development Policy	0	0	6	32	52	2,811	4,201	9,031	9,886	9,610	0	0	6	307	481	0	0	5	40	62
SD	Current Path	4	3	2	3	3	1,881	1,214	1,000	1,310	1,585	11	9	9	14	19	5	4	3	5	7
	On-shore Regulatory		0	0	0	0		15	12	36	43		0	0	0	1		0	0	0	0
	Oil Sands Support							110	227	327	423										
	Incremental		**0**	**0**	**0**	**0**		**125**	**240**	**363**	**466**		**0**	**0**	**0**	**1**		**0**	**0**	**0**	**0**
	Development Policy	4	3	2	3	3	1,881	1,339	1,240	1,673	2,050	11	9	9	14	19	5	4	3	5	7

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Projected Results by State and Policy (continued)

		Annual Production (mboed)					Total Jobs Supported (Upstream)					Total Government Revenue ($M)					State Government Revenue ($M)				
		2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
TN	Current Path	3	5	3	5	5	6,762	10,100	7,557	10,990	12,107	1	6	7	12	15	1	1	1	2	2
	On-shore Regulatory		1	1	1	1		725	191	867	725		1	1	3	4		0	0	0	0
	Oil Sands Support							808	1,656	2,378	3,082										
	Incremental		**1**	**1**	**1**	**1**		**1,534**	**1,848**	**3,245**	**3,808**		**1**	**1**	**3**	**4**		**0**	**0**	**0**	**0**
	Development Policy	3	5	4	6	7	6,762	11,634	9,405	14,235	15,915	1	7	9	15	18	1	1	1	2	2
TX	Current Path	5,110	5,365	5,521	5,621	5,880	939,167	1,008,652	1,059,378	1,078,627	1,122,682	9,728	11,884	16,018	18,601	22,030	4,135	4,678	5,221	6,045	7,109
	On-shore Regulatory		348	567	696	806		47,400	69,880	67,479	72,899		772	1,645	2,302	3,018		304	536	748	974
	GoM Permitting		0	350	762	970		58,716	73,416	79,716	81,816		1,325	3,035	9,023	13,165					
	Oil Sands Support							4,017	8,929	14,344	19,955										
	Incremental		**348**	**917**	**1,458**	**1,775**		**110,133**	**152,225**	**161,539**	**174,670**		**2,096**	**4,679**	**11,325**	**16,183**		**304**	**536**	**748**	**974**
	Development Policy	5,110	5,713	6,438	7,079	7,655	939,167	1,118,785	1,211,604	1,240,166	1,297,352	9,728	13,980	20,698	29,926	38,213	4,135	4,982	5,757	6,793	8,083
UT	Current Path	341	320	419	434	465	27,043	25,960	34,687	35,945	38,280	927	1,170	1,888	2,195	2,679	389	455	653	758	925
	On-shore Regulatory		56	162	198	235		23,124	45,238	33,791	37,531		215	757	1,043	1,409		84	260	356	481
	Federal Access		2	5	6	7		3,110	3,382	3,313	3,344		46	52							
	Oil Sands Support							320	685	1,028	1,373										
	Incremental		**59**	**167**	**204**	**242**		**26,554**	**49,304**	**38,132**	**42,248**		**261**	**810**	**1,043**	**1,409**		**84**	**260**	**356**	**481**
	Development Policy	341	379	586	639	707	27,043	52,514	83,991	74,078	80,528	927	1,431	2,698	3,239	4,088	389	538	913	1,114	1,405
VT	Current Path	0	0	0	0	0	539	539	539	539	539	0	0	0	0	0	0	0	0	0	0
	Oil Sands Support							78	163	235	306										
	Incremental		**0**	**0**	**0**	**0**		**78**	**163**	**235**	**306**		**0**	**0**	**0**	**0**		**0**	**0**	**0**	**0**
	Development Policy	0	0	0	0	0	539	617	702	774	845	0	0	0	0	0	0	0	0	0	0
VA	Current Path	112	58	53	80	91	15,456	15,456	15,456	15,456	15,456	42	80	118	199	252	42	12	16	27	34
	On-shore Regulatory		1	1	3	3		249	149	702	575		0	0	1	1		0	0	1	1
	Federal Access		0	17	89	142		2,423	14,221	15,317	13,334		54	99	919	1,331		0	14	110	171
	Oil Sands Support							934	2,032	3,143	4,277										
	Incremental		**1**	**18**	**92**	**146**		**3,606**	**16,401**	**19,163**	**18,185**		**54**	**100**	**920**	**1,332**		**0**	**15**	**111**	**172**
	Development Policy	112	58	71	172	237	15,456	19,062	31,857	34,619	33,641	42	133	218	1,119	1,584	42	12	31	137	206
WA	Current Path	0	0	0	0	0	6,204	6,204	6,204	6,204	6,204	0	0	0	0	0	0	0	0	0	0
	Federal Access		0	2	15	22		399	1,490	1,987	2,566		10	17	168	266		0	2	19	32
	Oil Sands Support							1,711	4,218	7,510	11,035										
	Incremental		**0**	**2**	**15**	**22**		**2,110**	**5,708**	**9,496**	**13,601**		**10**	**17**	**168**	**266**		**0**	**2**	**19**	**32**
	Development Policy	0	0	2	15	22	6,204	8,314	11,912	15,700	19,805	0	10	17	168	266	0	0	2	19	32

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Projected Results by State and Policy (continued)

		Annual Production (mboed)					Total Jobs Supported (Upstream)					Total Government Revenue ($M)					State Government Revenue ($M)				
		2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
WV	Current Path	198	195	232	280	300	45,378	45,697	55,462	66,965	71,284	75	269	516	697	827	75	40	69	93	110
	On-shore Regulatory		25	48	69	80		5,320	6,677	8,143	7,265		34	106	172	220		5	14	23	29
	Oil Sands Support							168	360	540	720										
	Incremental		**25**	**48**	**69**	**80**		**5,487**	**7,037**	**8,683**	**7,986**		**34**	**106**	**172**	**220**		**5**	**14**	**23**	**29**
	Development Policy	198	220	280	349	379	45,378	51,185	62,499	75,648	79,269	75	303	622	869	1,047	75	45	83	116	140
WI	Current Path	0	0	0	0	0	2,860	2,860	2,860	2,860	2,860	0	0	0	0	0	0	0	0	0	0
	Oil Sands Support							3,046	7,732	14,189	21,157										
	Incremental		**0**	**0**	**0**	**0**		**3,046**	**7,732**	**14,189**	**21,157**		**0**	**0**	**0**	**0**		**0**	**0**	**0**	**0**
	Development Policy	0	0	0	0	0	2,860	5,906	10,592	17,049	24,017	0	0	0	0	0	0	0	0	0	0
WY	Current Path	1,455	1,452	1,627	1,706	1,731	68,944	70,383	80,493	84,382	85,228	3,954	5,306	7,329	8,622	9,980	1,576	1,984	2,440	2,859	3,309
	On-shore Regulatory		28	46	56	61		6,780	7,738	7,755	7,891		245	658	992	1,283		97	196	273	342
	Federal Access		41	79	104	119		54,425	59,177	57,980	58,519		811	918							
	Oil Sands Support							84	195	320	451										
	Incremental		**69**	**125**	**160**	**180**		**61,289**	**67,110**	**66,054**	**66,862**		**1,056**	**1,576**	**992**	**1,283**		**0**	**97**	**196**	**273**	**342**
	Development Policy	1,455	1,521	1,753	1,866	1,912	68,944	131,672	147,603	150,436	152,090	3,954	6,362	8,905	9,614	11,263	1,576	2,081	2,636	3,132	3,652

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GEM Tool Description

The Global Economic Model (GEM) is Wood Mackenzie's proprietary economic modeling software

- GEM combines Wood Mackenzie's unique and proprietary data, both historic and forecast, with company interests, price decks and fiscal models to produce cash flow and valuation reports. It contains more than 190 fiscal regimes covering the globe

- GEM generates cash flow and production forecasts based on user input development plans. These include drilling forecasts and assumed type well profiles and well costs for onshore U.S. plays. For offshore developments, Alaska and the Canadian oil sands, production facilities and export pipelines are also included

- GEM includes a sensitivity tool to show the economics impact of changes in costs, taxes, production and prices. Outputs include cash flow summaries, IRR, NPV and $/boe calculations

- Wood Mackenzie has developed cost, tax and production data in the following productive regions:

  - Alaska – 57 fields

  - Gulf of Mexico – 212 fields

  - Canadian oil sands – 25 projects

  - Onshore U.S. – 245 plays

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Tax Assumptions

- Models included the following assumptions:

  - Federal royalty rates modelled at 12.5%

  - Federal income tax modelled at 35%

- Wood Mackenzie's commodity price forecast was used. For all new Access region models, oil was priced at WTI, gas was priced at Henry Hub (HH). Oil price forecast was $80/bbl in 2012 inflating at 2.50%. Gas price forecast was $6.00/mcf in 2012 inflating at 2.50%

- In the Atlantic and Pacific OCS regions royalties were split with 37.5/62.5 between the states and the federal government respectively. In Alaska federal areas the royalty split with the state was 50/50.

- Production and revenue from new access regions were split by state according to the following:

  - Atlantic OCS – Maine 13%, New Hampshire 1%, Massachusetts 11%, Rhode Island 2%, Connecticut 6%, New York 7%, New Jersey 8%, Delaware 2%, Maryland 3%, Virginia 10%, North Carolina 26%, South Carolina 3%, Georgia 2%, Florida 5%

  - Pacific OCS – California 94%, Oregon 4%, Washington 2%

  - East Gulf of Mexico – Florida 100%

  - Rockies – Colorado 27.0%, North Dakota 19.4%, South Dakota 0.1%, Wyoming 31.7%, Utah 12.4%, New Mexico 6.8%, Montana 2.6%

- For the existing producing areas; Gulf of Mexico, Alaska and onshore U.S., Wood Mackenzie has modeled each producing field or play by its applicable state and federal royalty

- Other state taxes, such as Ad Valorem, Severance Taxes, and fee royalties have been applied which applicable

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