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Sales of Fossil Fuels Produced from Federal and Indian Lands, FY 2003 through FY 2011

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Background

This paper was prepared in response to recent requests that the U.S. Energy Information Administration (EIA) provide updated summary information regarding fossil fuel production on Federal and Indian lands¹ in the United States. It provides EIA's current best estimates of fossil fuels sales from production on Federal and Indian lands for fiscal year² (FY) 2003 through FY 2011.

Although EIA has regularly published summary information on this topic in its *Annual Energy Review*, it should be noted that the data regarding fossil fuel sales (for purposes of assessing royalty payments from production on Federal and Indian lands) are collected by various programs within the Department of the Interior (DOI), and not by EIA. The sales volumes reported in this paper, as those in EIA's earlier summaries, rely exclusively on information provided by the DOI. However, this report includes some categories of production that were not included in our earlier summaries, such as volumes on which no royalties were paid due to lease provisions and those that were transferred to add to the Nation's Strategic Petroleum Reserve under Royalty-in-Kind programs. It also reports all sales in the fiscal year in which they were made, unlike previous summaries which reported some sales in the year that royalties were collected. The sales reported in this paper provide a better proxy for marketed production volumes than do those reported in previous summaries.

EIA has worked closely with the DOI Office of Natural Resource Revenues (ONRR), which has posted on its website and shared information with EIA on sales of fossil fuels produced on Federal and Indian lands based on information reported to it through February 6, 2012. Helpful discussions between EIA staff and DOI staff between February 18, 2012, when a data file was first provided to EIA, and the issuance of this paper are gratefully acknowledged.

Data on fossil fuel sales continually flow into the DOI program offices, and those programs also conduct audit activities that may result, over time, in changes in the previously reported data to both sales and royalty payments. Past experience suggests that data for sales from production on Federal and Indian lands in FY 2011 could continue to change for some time, and that revisions to such data are more likely than not to increase reported sales. However, there is no reason to expect that such continuing updates would change the "big picture" results summarized below.

¹ Includes offshore and onshore areas the Federal Government owns or administers, including American Indian lands.

² The U.S. Government's fiscal year runs from October 1 through September 30. The fiscal year is designated by the calendar year in which it ends.

Findings

Production and sales of fossil fuels from Federal and Indian lands can be influenced by a variety of factors, including, but not limited to, Federal leasing and regulatory policies. Total sales of all fossil fuels produced on Federal and Indian lands, which are measured in terms of British thermal units (Btu) to allow for aggregation across all fossil fuels, rose by about 1 percent between fiscal year FY 2009 and FY 2010 and dropped by about 6 percent between FY 2010 and FY 2011 (Table 1).

Table 1. Fossil fuel sales of production from Federal and Indian Lands, FY 2003 – FY 2011 (quadrillion Btu)

Fiscal Year	Crude Oil and Lease Condensate	Natural Gas Plant Liquids	Natural Gas	Coal	Total Fossil Fuels
2003	4.0	0.35	7.3	9.6	21.2
2004	3.9	0.39	6.9	9.9	21.1
2005	3.8	0.36	6.6	9.8	20.5
2006	3.4	0.32	6.0	9.3	19.0
2007	3.6	0.40	6.0	9.6	19.6
2008	3.3	0.39	6.0	10.3	20.0
2009	3.7	0.34	5.8	9.8	19.6
2010	4.3	0.42	5.5	9.6	19.9
2011	3.7	0.41	5.0	9.5	18.6

Sources: U.S. Department of the Interior, Office of Natural Resources Revenue, "[Statistical Information](http://www.onrr.gov/ONRRWebStats/default.aspx)" (<http://www.onrr.gov/ONRRWebStats/default.aspx>) fossil fuel sales volumes in physical units; and U.S. Energy Information Administration, *Annual Energy Review 2010, Appendix A* – Btu conversion factors. Btu data are calculated by multiplying data in physical units by calendar year Btu conversion factors. Total Fossil Fuels is the sum of the heat content of crude oil and lease condensate, natural gas plant liquids, natural gas and coal.

Crude oil

Total crude oil sales of production from Federal and Indian lands increased from 642 million barrels in FY 2009 to 739 million barrels in FY 2010, but decreased to 646 million barrels in FY 2011 (Table 2). Crude oil production from Federal lands is dominated by offshore production from the Federal Outer Continental Shelf (OCS). Trends in Federal OCS production, which are shown separately in Table 2, reflect the timing of several particularly important deepwater development projects over the past decade, as well as production disruptions and damage as a result of weather events to both producing infrastructure and projects under development. The latest offshore production data also reflect government actions taken following the 2010 Macondo disaster in the Gulf of Mexico.

The crude oil data in this report reflect significant changes from the information previously presented by EIA for some years prior to FY 2011. Unlike earlier EIA summaries, sales of production on Federal lands exempt from royalty payments are included for the fiscal year in which the sales occurred. This report also presents sales volumes that reflect the sales date as opposed to the date of the royalty payment. The sales reported by ONRR are a reasonable proxy for marketed production because sales include production that leaves the lease under royalty relief and also production under a Royalty-In-Kind programs, such as that used to fill the Strategic Petroleum Reserve (SPR).

Table 2. Sales of crude oil and lease condensate production from Federal and Indian Lands, FY 2003 – FY 2011 (million barrels)

Fiscal Year	Offshore Federal	Onshore Federal	Indian Lands	Total
2003	579	101	10	689
2004	572	97	10	680
2005	542	96	10	649
2006	471	101	10	582
2007	514	105	10	629
2008	462	104	10	575
2009	527	105	10	642
2010	618	108	13	739
2011	514	112	19	646

Sources: U.S. Energy Information Administration and the U.S. Department of the Interior, Office of Natural Resources Revenue. "[Statistical Information](http://www.onrr.gov/ONRRWebStats/default.aspx)" (<http://www.onrr.gov/ONRRWebStats/default.aspx>).

Note: Totals may not equal sum of components due to independent rounding. The above categories are mutually exclusive. Onshore Federal excludes volumes on Indian Lands. Offshore Federal only includes areas in Federal waters.

Natural gas

Total natural gas sales of production from Federal and Indian lands have decreased each year since FY 2003. In FY 2011, reported sales were 4,859 Billion cubic feet (Bcf) —a 10-percent decrease from FY 2010, and a 31-percent decrease compared with the FY 2003 level (Table 3). Based on EIA's latest figures for natural gas production in FY 2011, the Federal sales share of U.S. marketed production³ in FY 2011 was 21 percent.

Offshore natural gas sales have been on a consistent downward trend over the last 9 years, falling more than 60 percent. Gas sales from onshore Federal lands were generally growing over this period, exceeding offshore sales by FY 2007. The last 2 years have seen declines, but FY 2011 sales from onshore Federal production are still higher than in FY 2007. Natural gas sales from production on Indian lands have decreased each year between 2005 and 2010, but increased slightly in 2011.

Policies that pertain directly to leasing and production activities on Federal and Indian lands are only one among the many factors that are reflected in the sales data. The rapid increase in natural gas production from shale resources over the last 5 years has significantly affected natural gas prices and the relative attractiveness of Federal and Indian lands as areas for development of conventional natural gas resources. Further, private landowners often require drilling within a relatively shorter time period to hold a lease than that required under Federal leases.

³ Marketed production includes gross withdrawals of natural gas from production reservoirs, less gas used for reservoir repressuring, nonhydrocarbon gases removed in treating and processing operations at the lease, and quantities that are vented and flared. Sales data for production from Federal and Indian lands, reported by the U.S. Department of the Interior, Office of Natural Resources Revenue, is comparable to marketed production. Therefore, sales from Federal and Indian lands, as a percent of U.S. production, is calculated, throughout this report, by dividing fiscal year sales by fiscal year marketed production volumes.

Table 3. Sales of natural gas production from Federal and Indian Lands, FY 2003 – FY 2011
(billion cubic feet)

Fiscal Year	Offshore Federal	Onshore Federal	Indian Lands	Total
2003	4,523	2,274	283	7,080
2004	4,025	2,346	312	6,683
2005	3,522	2,529	327	6,377
2006	2,754	2,791	308	5,853
2007	2,709	2,835	284	5,828
2008	2,496	3,051	272	5,819
2009	2,206	3,170	265	5,640
2010	2,098	3,068	249	5,415
2011	1,654	2,955	250	4,859

Sources: U.S. Energy Information Administration and the U.S. Department of the Interior, Office of Natural Resources Revenue. ["Statistical Information"](http://www.onrr.gov/ONRRWebStats/default.aspx) (<http://www.onrr.gov/ONRRWebStats/default.aspx>).

Note: Totals may not equal sum of components due to independent rounding. The above categories are mutually exclusive. Onshore Federal excludes volumes on Indian Lands. Offshore Federal only includes areas in Federal waters.

Natural gas plant liquids

Sales of natural gas plant liquids (NGPL) from production on Federal and Indian lands peaked in FY 2010 at 115 million barrels before decreasing slightly to 111 million barrels in FY 2011. Federal natural gas plant liquids sales have been relatively constant at 14-17 percent of U.S. NGPL production since 2003, comparing ONRR sales data with EIA's latest figures for total U.S. natural gas plant liquids production.

Table 4. Sales of natural gas plant liquids production from Federal and Indian Lands, FY 2003 – FY 2011
(million barrels)

Fiscal Year	Offshore Federal	Onshore Federal	Indian Lands	Total
2003	51	42	2	94
2004	62	41	2	105
2005	56	40	2	98
2006	46	40	2	87
2007	60	44	3	107
2008	53	50	3	106
2009	44	45	3	93
2010	58	54	3	115
2011	49	59	3	111

Sources: U.S. Energy Information Administration and the U.S. Department of the Interior, Office of Natural Resources Revenue. ["Statistical Information"](http://www.onrr.gov/ONRRWebStats/default.aspx) (<http://www.onrr.gov/ONRRWebStats/default.aspx>).

Note: Totals may not equal sum of components due to independent rounding. The above categories are mutually exclusive. Onshore Federal excludes volumes on Indian Lands. Offshore Federal only includes areas in Federal waters.

Coal

Coal sales from production on Federal and Indian lands have remained fairly steady at around 40-45 percent of total U.S. coal production each year since FY 2003. Sales of coal produced on Federal and Indian lands peaked at 509 million short tons in FY 2008 and have been decreasing slightly each year since then. In FY 2011, coal sales from production on Federal and Indian lands reached 470 million short tons, a 2-percent decrease from FY 2010 and an 8-percent decrease since the peak in FY 2008.

The electric power sector accounts for over 90 percent of U.S. coal use. For this reason, aggregate coal production trends are strongly influenced by coal demand in this sector, which is sensitive to both changes in the overall demand for electricity generation and changes in the mix of generation fuels. Overall electricity demand is affected by economic conditions, weather conditions affecting heating and cooling requirements, and changes in standards for appliances and other electricity-using equipment. The fuel mix is influenced by some of the same factors, as well by the relative prices of different generation fuels and policies to promote the use of certain generation sources.

Table 5. Sales of coal production from Federal and Indian Lands, FY 2003 – FY 2011 (million short tons)

Fiscal Year	Offshore Federal	Onshore Federal	Indian Lands	Total
2003	NA	436	30	466
2004	NA	451	33	484
2005	NA	447	34	482
2006	NA	429	29	458
2007	NA	443	27	471
2008	NA	483	26	509
2009	NA	462	26	488
2010	NA	456	22	478
2011	NA	448	22	470

Sources: U.S. Energy Information Administration and the U.S. Department of the Interior, Office of Natural Resources Revenue. ["Statistical Information"](http://www.onrr.gov/ONRRWebStats/default.aspx) (<http://www.onrr.gov/ONRRWebStats/default.aspx>).

Note: NA=not applicable. Total may not equal sum of components due to independent rounding. The above categories are mutually exclusive. Onshore Federal excludes volumes on Indian lands. Offshore Federal only includes areas in Federal waters.

Three appendices provide additional or reformatted information that may be of interest to readers. Appendix A presents the information reviewed in the paper (Table 1 through 5) in the format used in EIA's *Annual Energy Review*, Table 1.14, where EIA has historically presented information on sales of fossil fuels produced on Federal lands. Appendix B provides an overview of the agencies with primary responsibilities and involvement in the production of fossil fuels on Federally-administered lands. Appendix C provides background information about the DOI data sources used in this report.

Appendix A

Table 1- 14. Fossil fuel sales of production from Federal and Indian Lands, FY 2003 – FY 2011

Fiscal Year	Crude Oil and Lease Condensate			Natural Gas Plant Liquids ²			Natural Gas			Coal			Fossil Fuels	
	Million Barrels ¹	Trillion Btu	Percent of U.S. Total	Million Barrels ¹	Trillion Btu	Percent of U.S. Total	Billion Cubic Feet ¹	Trillion Btu	Percent of U.S. Total	Million Short Tons ¹	Trillion Btu	Percent of U.S. Total	Trillion Btu	Percent of U.S. Total
2003	689	3,999	33.3%	94	352	14.9%	7,080	7,277	35.5%	466	9,577	43.3%	21,204	37.8%
2004	680	3,942	33.8%	105	392	16.0%	6,683	6,860	34.0%	484	9,893	43.9%	21,089	37.7%
2005	649	3,761	33.4%	98	365	15.0%	6,377	6,553	33.3%	482	9,809	42.6%	20,487	36.8%
2006	582	3,374	31.8%	87	324	14.2%	5,853	6,017	30.8%	458	9,308	39.7%	19,022	34.5%
2007	629	3,648	33.9%	107	395	16.6%	5,828	5,996	29.2%	471	9,575	41.0%	19,613	34.9%
2008	575	3,336	31.5%	106	392	15.9%	5,819	5,979	27.7%	509	10,297	43.8%	20,005	34.9%
2009	642	3,723	33.7%	93	342	13.8%	5,640	5,784	26.1%	488	9,783	43.8%	19,633	34.4%
2010	739	4,286	37.2%	115	422	15.4%	5,415	5,546	24.6%	478	9,627	44.8%	19,882	34.5%
2011	646	3,745	31.8%	111	410	14.3%	4,859	4,977	20.6%	470	9,464	43.2%	18,596	32.3%

¹Includes sales volumes for production from Federal and Indian lands including all classes of land owned by the Federal Government, including acquired military, Outer Continental Shelf, and public lands.

²Includes only those quantities for which the royalties were paid on the basis of the value of the natural gas plant liquids produced. Additional quantities of natural gas plant liquids were produced; however, the royalties paid were based on the value of natural gas processed. These latter quantities are included with natural gas.

Note: Total fossil fuels equals the sum of crude oil and lease condensate, natural gas plant liquids, natural gas, and coal. In addition, the sales volumes are reported for the fiscal year in which the sales occurred as opposed to the date of the royalty payment. Volumes include fossil fuels for which royalties were paid, as well as those amounts exempt from royalty payments, such as additions to the Strategic Petroleum Reserve.

Sources: **Physical Data:** U.S. Department of the Interior, Office of Natural Resources Revenue, “Statistical Information.” (<http://www.onrr.gov/ONRRWebStats/default.aspx>)

Btu Data: U.S. Energy Information Administration. Btu are calculated using average, calendar-year heat rates for production of each fossil fuel, as reported in the *Annual Energy Review 2010*. The total Btu-content per fossil fuel is calculated by multiplying the physical data by the approximate heat content. The fossil fuel total is the sum of the total heat content for crude oil and lease condensate, natural gas plant liquids, natural gas, and coal.

Percent of Total: Percentages are calculated by dividing sales of production from Federal and Indian lands by total U.S. production, then multiplying by 100. Fiscal year values for total U.S. production are the sum of October-September values from the *Monthly Energy Review* (February 2012) and reflect EIA’s current data updates.

Appendix B

Federal agencies involved in fossil fuel production from Federal and Indian lands

U.S. Department of the Interior

- The Office of Natural Resources Revenue (ONRR) of the U.S. Department of the Interior was created in 2010 to manage revenues associated with Federal and American Indian mineral leases. It publishes royalty revenue data for American Indian lands, the Federal Offshore, and the Federal Onshore annually. It collects four types of mineral lease revenues: bonuses, rents, minimum royalties, and royalties.
- The [Bureau of Ocean Energy Management \(BOEM\)](#) of the U.S. Department of the Interior was created in 2011 to manage development of offshore resources. Functions include leasing, plan administration, environmental studies, National Environmental Policy Act (NEPA) analysis, resource evaluation, economic analysis, and the renewable energy program.
- The Bureau of Safety and Environmental Enforcement (BSEE) of the U.S. Department of the Interior was created in 2011 to promote safety, protect the environment, and conserve resources offshore through vigorous regulatory oversight and enforcement.
- The Bureau of Indian Affairs (BIA) in the U.S. Department of the Interior provides services directly or through contracts, grants, or compacts to 566 Federally-recognized tribes. This includes natural resources management on trust lands representing 55 million surface acres and 57 million acres of subsurface mineral estates.
- The Bureau of Land Management (BLM) in the U.S. Department of the Interior manages more Federal land than any other agency--about 245 million surface acres as well as 700 million subsurface acres of mineral estate. It maintains the land status data for all Federally-owned lands within the United States onshore, as well as oil and gas lease stipulation information.

U.S. Department of Agriculture

The U.S. Forest Service is the primary land management agency for the U.S. Department of Agriculture. It maintains information regarding oil and gas lease availability and leasing stipulations within the National Forest System.

Appendix C

Data sources from the U.S. Department of the Interior

Data on sales of fossil fuel production from Federal and Indian lands are available from the U.S. Department of the Interior's Office of Natural Resources Revenue (ONRR) which is responsible for collecting, accounting for, and disbursing royalty payments on sales of minerals produced from Federal and Indian lands. These areas include energy and mineral leasing on Federally-administered areas under the jurisdiction of the Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), Bureau of Ocean Energy Management (BOEM), Bureau of Safety and Environmental Enforcement (BSEE) and the U.S. Forest Service.

ONRR collects data on mineral sales on two survey forms: the Form MMS-2014, "Report of Sales and Royalty Remittance," and the Form MMS-4430, "Solid Mineral Production and Royalty Report." The forms are used to report sales and royalties and other obligations due on Federal and Indian, oil, gas and geothermal leases (Form MMS-2014), and solid minerals (Form MMS-4430). Form MMS-2014 and Form MMS-4430 are the sources of sales data used in this report. ONRR provides aggregate data on its website at ["Statistical Information" http://www.onrr.gov/ONRRWebStats/default.aspx](http://www.onrr.gov/ONRRWebStats/default.aspx).

The information presented here must be cited with some care. Most importantly, the fossil fuel volumes represent wellhead or first-purchaser sales and not gross production. Sales volumes, which are a reasonable proxy for marketed production, exclude certain produced amounts used or extracted in field operations and storage volumes at the lease. EIA has no information regarding production of these volumes from Federal and Indian lands. ONRR reports data both on the basis of when royalty payments were received ("accounting-year" basis) and when the sale actually took place ("sales-year" basis). In order to associate timing with the actual movement of the fossil fuel, ONRR data in this report are reported on a sales-year basis. In addition, reported sales volumes are presented within Federal fiscal years rather than calendar years. For example, FY 2011 covers the period from October 1, 2010, through September 30, 2011.

Finally, the most recent ONRR report includes sales recorded as of February 6, 2012. It is possible that data for FY 2011 (and possibly before) will be adjusted in the future.