

Federal Oil and Gas Resources

The DOI is responsible for managing the nation's oil and natural gas resources and the mineral revenues on federal lands, both onshore and on the Outer Continental Shelf. This management process can be broken down into six essential analysis components: pre-leasing, post-leasing and pre-production, production and post-production, revenue collection, fund disbursement, and compliance.

(In billions of dollars)	Offshore		Onshore		Total	
	2018	2017	2018	2017	2018	2017
Oil and lease condensate.....	20.9	23.7	11.6	12.2	32.5	35.9
Natural gas, wet after lease separation.....	1.9	1.8	11.3	9.3	13.2	11.1
Total	<u>22.8</u>	<u>25.5</u>	<u>22.9</u>	<u>21.5</u>	<u>45.7</u>	<u>47.0</u>

The above table presents the estimated present value of future federal royalty receipts on estimated proved reserves¹⁶ as of September 30, 2018 and 2017. The federal government's estimated petroleum royalties have as their basis the DOE's EIA estimates of proved reserves. The EIA provides such estimates directly for federal offshore areas and they are adjusted to extract the federal subset of onshore proved reserves. The federal proved reserves were then further adjusted to correspond with the effective date of the actual production for calendar year 2016, the most recently published EIA proved reserves report and then are projected, separately for oil and natural gas, over time to simulate a schedule of when the reserves would be produced. Future royalties are then calculated from these production streams by applying future price estimates by the OMB, and effective royalty rates, adjusted for transportation allowances and other allowable deductions. The valuation method used for gas captures royalties from three products—dry gas, wet gas, and natural gas liquids—which collectively are reported as natural gas, wet after lease separation. The present value of these royalties are then determined by discounting the revenue stream back to the effective date at a public discount rate assumed to be equal to the OMB's estimates of future 30-year Treasury bill rates. The 30-year rate was chosen because this maturity life most closely approximates the productive lives of the proved reserves estimates.

¹⁶ Per the EIA, lease condensate is a mixture consisting primarily of pentanes and heavier hydrocarbons which is recovered as a liquid from natural gas in lease separation facilities. This category excludes natural gas plant liquids, such as butane and propane, which are recovered at downstream natural gas processing plants or facilities. Also per the EIA, natural gas, wet after lease separation, is the volume of natural gas remaining after removal of lease condensate in lease and/or field separation facilities, if any, and after exclusion of nonhydrocarbon gases where they occur in sufficient quantity to render the gas unmarketable. Natural gas liquids may be recovered from volume of natural gas, wet after lease separation, and at natural gas processing plants (<https://www.eia.gov/naturalgas/data.cfm>).

**Estimated Federal Oil and Gas Petroleum Royalties (Proved Reserves)
As of September 30, 2018, and 2017**

Petroleum Category	Quantity (in millions)		Average Purchase Price (\$)		Average Royalty Rate (%)	
	2018	2017	2018	2017	2018	2017
Oil and lease condensate (Bbl):						
Offshore	3,491.3	4,022.4	65.41	46.86	12.96	13.06
Onshore	2,361.0	2,278.0	60.16	45.20	12.19	12.12
Total	<u>5,852.3</u>	<u>6,300.4</u>				
Natural gas, wet after lease separation (Mcf):						
Offshore	5,370.3	5,946.4	3.50	3.28	11.89	11.99
Onshore	37,828.7	39,877.7	2.94	3.07	10.36	10.58
Total	<u>43,199.0</u>	<u>45,824.1</u>				

Bbl = barrels

Mcf = 1,000 cubic feet

The table above provides the estimated quantity, a weighted average purchase price, and a weighted average royalty rate by category of estimated federal petroleum royalties at the end of fiscal years 2018 and 2017.¹⁷ The estimated quantities, average purchase prices and royalty rates vary by region; the above table reflects an overall weighted average purchase price and royalty rate, and is not presented on a regional basis, but is instead calculated based on regional averages. The prices and royalty rates are based upon historical (or estimated) averages, excluding prior-period adjustments, if any, and are affected by such factors as accounting adjustments and transportation allowances, resulting in effective average prices and royalty rates. Prices are valued at the lease rather than at the market center, and differ from those used to compute the asset estimated present values, which are forecasted and discounted based upon OMB economic assumptions. For further details on federal oil and gas resources, refer to the financial statements of DOI. In addition to the oil and gas resources discussed above, the federal government also owns oil and gas resources that are not currently under lease.

¹⁷ Gulf of Mexico proved reserves are royalty bearing volumes. In the Gulf of Mexico, an additional 860.6 million Bbl for fiscal year 2018 and 689.7 million Bbl for fiscal year 2017 of proved oil reserves, and 739.9 million Mcf for fiscal year 2018 and 1,180.3 million Mcf for fiscal year 2017 of proved gas reserves are not reflected in these totals as they are estimated to be producible royalty free under various royalty relief provisions. The net present value of the royalty value of the royalty free proved reserves volumes in the Gulf of Mexico is estimated to be \$5.4 billion for fiscal year 2018 and \$4.4 billion for fiscal year 2017.