



2018 AD VALOREM OIL & GAS PRICE ADJUSTMENT FACTORS & ESCALATION RATES

2018 PRICE ADJUSTMENT FACTOR CALCULATION			
U.S. ENERGY INFORMATION ADMINISTRATION			<i>PAF Ratio</i>
ANNUAL ENERGY OUTLOOK - JANUARY 2018			
	YEAR		(2018/2017)
	2017	2018	
CRUDE OIL (\$/BARREL)			
West Texas Intermediate Spot Average	\$ 49.69	\$ 50.57	1.018
NATURAL GAS (\$/MMBTU)			
Henry Hub Spot	\$ 3.05	\$ 3.13	1.026

2018 PRICE ESCALATION RATES*	
CRUDE OIL	
% =	0.93
NATURAL GAS	
% =	0.51
* These price escalations are used in years 2-6 (2019-2023) of the appraisals	

**PRELIMINARY 2018 PRICE ESCALATION
CALCULATION**

Most Recent Year = 2017

$X_{\text{Crude Petroleum}} = 138.2$

$X_{\text{Natural Gas}} = 119.5$

$Y = 2017 - 1982 = 35 \text{ years}$

$1/Y = 1/35 = 0.02857$

CRUDE PETROLEUM (Domestic Production)

$$= ((138.2 / 100)^{0.02857} - 1) \times 100 = 0.93\%$$

NATURAL GAS

$$= ((119.3 / 100)^{0.02857} - 1) \times 100 = 0.51\%$$

Formula for the Escalation or De-Escalation of Crude Oil and Natural Gas Prices

The formula to determine the maximum average annual escalation or de-escalation percentage for years two through six of an appraisal is:

$$((X/100)(1/Y) - 1) \times 100 = \text{Percentage}$$

Where:

X = Most recent year annual average (not seasonally adjusted) Producer Price Index (PPI) for crude petroleum (domestic production) [Commodity Code 0561, Series ID# WPU0561] or natural gas [Commodity Code 0531] obtained from the Bureau of Labor Statistics during the month of January, which may contain preliminary statistics.

Y = Number of years from base year 1982 through the most recent year (most recent year minus base year).

The 100 denominator in the formula is the PPI annual average for domestically produced petroleum and natural gas in base year 1982.

Example Computation:

Most recent year = 2010

X = 218.6 for Crude Petroleum Domestic Production (Commodity Code 0561) [Series ID# WPU0561]

185.8 for Natural Gas (Commodity Code 0531)

Y = 2010 - 1982 = 28 years

$1/Y = 1/28 = 0.035714286$

Crude Petroleum (Domestic Production):

$$((218.6/100)^{0.035714286} - 1) \times 100 = 2.832\%$$

Natural Gas:

$$((185.8/100)^{0.035714286} - 1) \times 100 = 2.237\%$$

BUREAU OF LABOR STATISTICS PRODUCER PRICE INDEX FOR CRUDE PETROLEUM AND NATURAL GAS

PPI Commodity Data

Original Data Value

as of 3/26/2018

Series Id: WPU0531

Not Seasonally Adjusted

Series Title: PPI Commodity data for Fuels and related products and power-Natural gas, not seasonally adjusted

Group: Fuels and related products and power

Item: Natural gas

Base Date: 198200

Years: 2017 to 2017

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	156.2	133	103.8	120.4	119.8	120.3	115.1	111.8	111.6	108.8	109.2	124.2
2017 Average	119.5											

PPI Commodity Data

Original Data Value

as of 3/26/2018

Series Id: WPU0561

Not Seasonally Adjusted

Series Title: PPI Commodity data for Fuels and related products and power-Crude petroleum (domestic production), not seasonally adjusted

Group: Fuels and related products and power

Item: Crude petroleum (domestic production)

Base Date: 198200

Years: 2017 to 2017

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	138.4	143.3	131	139.6	128.9	123.8	124.7	130.6	134.9	142.4	158.7	161.5
2017 Average	138.2											

PRICE ADJUSTMENT FACTOR SOURCE DATA AND CALCULATION

Total Energy Supply, Disposition, and Price Summary

<https://www.eia.gov/outlooks/aeo/data/browser/#/?id=1-AEO2018®ion=0-0&cases=ref2018&start +=2017&end=2018&f=A&sourcekey=0>

Tue Feb 20 2018 16:02:14 GMT-0600 (Central Standard Time)

Source: U.S. Energy Information Administration

Production	full name	units	2017	2018	PAF
Prices (nominal dollars per unit)					RATIO
West Texas Intermediate Spot Price (dollars per barrel)	Total Energy: Nominal Prices: West Texas Intermediate: Reference case	nom \$/bbl	49.686	50.571	101.8%
Natural Gas at Henry Hub (dollars per mmBtu)	Total Energy: Nominal Prices: Gas Price at Henry Hub: Reference case	nom \$/MMBtu	3.04541	3.129717	102.8%

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§ 23.175. Oil or Gas Interest

Text of section Effective January 1, 2016

(a)...real property interest in oil or gas in place is appraised by ... the future income from the sale of oil or gas to be produced from the interest, the method must use the average price of the oil or gas from the interest for the preceding calendar year multiplied by a price adjustment factor as the price at which the oil or gas produced from the interest is projected to be sold in the current year of the appraisal.

The average price for the preceding calendar year is calculated by dividing the sum of the monthly average prices for which oil and gas from the interest was selling during each month of the preceding calendar year by 12. If there was no production of oil or gas from the interest during any month of the preceding calendar year, the average price for which similar oil and gas from comparable interests was selling during that month is to be used.

The chief appraiser shall calculate the price adjustment factor by dividing the spot price of West Texas Intermediate crude oil in nominal dollars per barrel or the spot price of natural gas at the Henry Hub in nominal dollars per million British thermal units, as applicable, as projected for the current calendar year by the United States Energy Information Administration in the most recently published edition of the Annual Energy Outlook by the spot price of West Texas Intermediate crude oil in nominal dollars per barrel or the spot price of natural gas at the Henry Hub in nominal dollars per million British thermal units, as applicable, for the preceding calendar year as stated in the same report. If as of March 1 of the current calendar year the most recently published edition of the Annual Energy Outlook was published before December 1 of the preceding calendar year, the chief appraiser shall use the projected current and preceding calendar year spot price of West Texas Intermediate crude oil in nominal dollars per barrel or the spot price of natural gas at the Henry Hub in nominal dollars per million British thermal units, as applicable, as stated in the Short-Term Energy Outlook report published in January of the current calendar year by the United States Energy Information Administration in the price adjustment factor calculations.

The price for the interest used in the second through the sixth calendar year of the appraisal may not reflect an annual escalation or de-escalation rate that exceeds the average annual percentage change from 1982 to the most recent year for which the information is available in the producer price index for domestically produced petroleum or for natural gas, as applicable, as published by the Bureau of Labor Statistics of the United States Department of Labor.

The price for the interest used in the sixth calendar year of the appraisal must be used in each subsequent year of the appraisal.