

Unbundling Natural Gas Transportation and Processing Costs



September 30, 2015

PEARSON WATSON
MILLICAN & CO.

Outline

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Introduction

- ❖ **Privately Owned and Managed**
- ❖ **Experienced Engineers, Investigators, and Experts**
 - Chemical and Mechanical Engineers
 - Average of 25 Years of Experience
 - All Have Advanced Business Degrees
- ❖ **Industry Support From Wellhead to Consumer**
 - Refining and Chemicals Manufacturing
 - Natural Gas and NGL
 - Pipelines
 - Terminals and Distribution
 - Crude Oil Supply
 - Power Generation
- ❖ **Office in Dallas, Texas**
- ❖ **www.pearsonwatson.com**

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Background

Background

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What is Unbundling?

What is unbundling?

The process of taking gas transportation and/or processing fees, in an ARM'S-LENGTH situation, and determining the allowed and disallowed costs for Royalty Reporting and Payment.¹

¹ Federal Royalty Unbundling Information, Office of Natural Resources Revenue, PASO Federal/Indian Royalty Compliance Workshop, Tulsa, Oklahoma, February 11, 2015.

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Production on Public Lands

❖ **In spite of a steady decrease in volumes over the past decade, natural gas production on public lands still constitutes a significant portion of total production in the United States.**

- Approximately 30,005 billion cubic feet of natural gas were produced on all onshore and offshore properties in the United States in 2013.*
- Approximately 4,082 billion cubic feet (13.6%) were produced on federal and Indian lands, including offshore Gulf of Mexico.*

❖ **States/regions with the largest natural gas volumes produced on federal and Indian lands in 2013:**

- Wyoming	1,275 billion cubic feet
- Offshore Gulf of Mexico	1,086 billion cubic feet
- New Mexico	702 billion cubic feet
- Colorado	468 billion cubic feet

* U.S. Energy Information Administration website (www.eia.gov)

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Royalties on Public Lands

- ❖ **For the right to extract natural gas, exploration and production companies pay royalties to the owners of public lands:**
 - Federal government
 - State governments
 - Tribal governments.
- ❖ **After income taxes, royalties on resource development is the largest source of revenue to the federal government.**
- ❖ **For many state and tribal governments, royalty payments are an important source of revenue for supporting government services and maintaining infrastructure.**

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Royalty Rates on Public Lands

- ❖ **The royalty rates for natural gas production can vary depending on the owner of the land.**
 - Onshore federal production has a royalty rate of 12.5% (1/8).
 - Offshore federal production royalty rates vary by depth and location, but new leases typically have a royalty rate of 16.67% (1/6) to 18.75% (3/16).
 - Royalty rates for production on state lands typically range from 16.67% to 18.75%.

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Background

Administration, Valuation and Marketable Condition Requirement

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Allowances

- ❖ **Definition:**
 - 30 C.F.R. 1206.151: *Allowance* means a deduction in determining value for royalty purposes. *Processing allowance* means an allowance for the reasonable, actual costs of processing gas determined under this subpart. *Transportation allowance* means an allowance for the reasonable, actual costs of moving unprocessed gas, residue gas, or gas plant products to a point of sale or delivery off the lease, unit area, or communitized area, or away from a processing plant. The transportation allowance does not include gathering costs.
- ❖ **Prior to taking any allowances, the producer must place the gas in marketable condition.**
- ❖ **This requirement is referred to as the Marketable Condition Rule**

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Marketable Condition

- ❖ **For unprocessed gas:**
 - 30 C.F.R. 1206.152(G): The lessee must place gas in marketable condition and market the gas for the mutual benefit of the lessee and the lessor at no cost to the Federal Government.
- ❖ **For processed gas:**
 - 30 C.F.R. 1206.153(G): The lessee must place residue gas and gas plant products in marketable condition and market the residue gas and gas plant products for the mutual benefit of the lessee and the lessor at no cost to the Federal Government.

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Marketable Condition

- ❖ **Definition:**
 - 30 C.F.R. 1206.151: Marketable condition means lease products which are sufficiently free from impurities and otherwise in a condition that they will be accepted by a purchaser under a sales contract typical for the field or area.
- ❖ **What constitutes placing gas in “marketable condition” and a “sales contract typical for a field or area” can be subjective and has been and continues to be debated between producers and the ONRR.**
- ❖ **Using several historical court cases for support, the ONRR has deemed that the marketable condition requirements are typically the operating conditions and specifications of the mainline pipeline(s) downstream of the transportation and processing systems.**

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Meeting Pipeline Requirements

- ❖ Meeting the various mainline pipeline specifications requires multiple post-production functions, such as:
 - Dehydration (water content)
 - Amine treating (carbon dioxide and hydrogen sulfide content)
 - Compression (pressure)
- ❖ Once the pipeline requirements are met, producers can deduct costs associated with a function:
 - For example, if the carbon dioxide content of the gas is reduced from 5 vol% to 1 vol% in a treating plant, and the pipeline specification is 2 vol%, the producer can deduct the cost associated with reducing the carbon dioxide content from 2 vol% to 1 vol%
- ❖ For many producers, these post-production functions are performed by midstream companies.

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Bundled Fee

- ❖ Often, several, if not all, of the functions performed by the midstream company are assessed as a single fee, such as a percent-of-proceeds or a fixed fee.
- ❖ It may not be obvious what functions are being performed by the midstream company.
 - Transportation and processing agreements do not always specify the functions being performed.
- ❖ Regardless, when a lessee pays a bundled rate under an arm's-length contract, the lessee must unbundle that rate in order to comply with the regulations.
- ❖ Unbundling is required for the producer to determine what percentage of the fee(s) is an allowable transportation and/or processing deduction ("allowable percentage").

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Options for the Producer

- ❖ The producer typically has three options regarding the determination of federal deduction allowances:
 - Take no deductions
 - Utilize allowable percentages published by the ONRR
 - Calculate allowable percentages by unbundling the fee(s) themselves

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Scenario

- ❖ **“Producer Client” with Permian Basin natural gas production transported and processed by a midstream company.**
- ❖ **PWM asked to assist producer in unbundling the POP fee charged by the midstream company.**
- ❖ **Limited system operating information provided by midstream company.**

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PWM Approach

- ❖ **Functions performed by the midstream company identified and organized based on ONRR function categories.**
- ❖ **Sources of information:**
 - Gas composition and pressure data provided by the producer
 - Publicly available permit information
 - Midstream company public information
 - Field observation
 - Input from the producer’s field personnel
- ❖ **Each function was assessed against the marketable condition requirement to determine an overall allowable percentage.**

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ONRR Function Categories

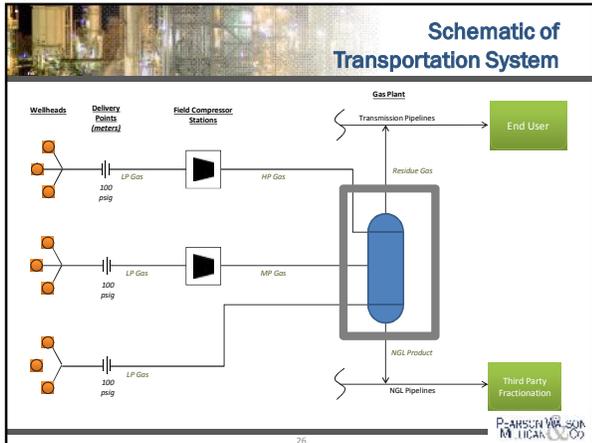
<ul style="list-style-type: none"> ❖ Transportation - Individual compressor stations - Individual dehydration units - Field sweetening units - Meters - Gathering - Pipe - Everything Else 	<ul style="list-style-type: none"> ❖ Processing - Compression facilities for refrigeration - All other compression except boosting - Residue boosting compressors - Dehydrators - Sweetening (amine) units - Any equipment whose primary function is the recovery of plant products, including NGLs - Equipment that supports NGL recovery (heat exchangers, etc.) - Meters - Storage tanks
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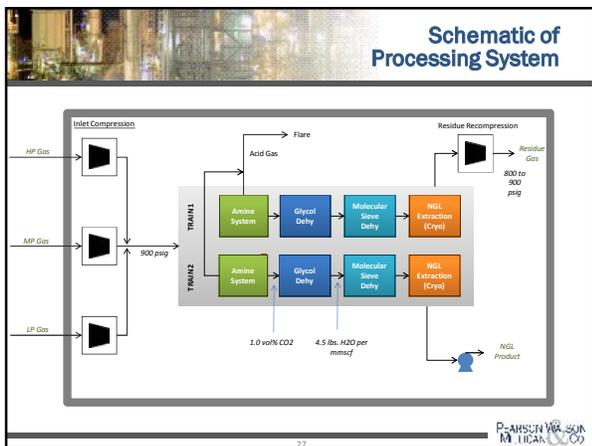
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Producer's Gas vs. Marketable Condition Requirement

- ❖ **Producer's gas is delivered at the following conditions:**
 - 100 psig at the sales meter
 - Gas contains 100 lbs. of water per million standard cubic feet of gas (lbs./mmscf).
 - Gas contains a weighted-average of 3.0 vol% of carbon dioxide (CO₂).
- ❖ **Marketable condition requirement is based on the pressure requirements and quality specifications of the interstate pipeline receiving the residue gas:**
 - 800-900 psig at the pipeline
 - Water limit of 7 lbs./mmscf.
 - Carbon dioxide limit of 2.0 vol% of carbon.

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Capital Costs

- ❖ Annual capital costs are calculated based on annual depreciation cost plus a return on undepreciated capital investment or a cost equal to the initial depreciable investment multiplied by a rate of return.
- ❖ When depreciation or initial investment costs are not available, the ONRR allows for replacement costs to be utilized.
- ❖ Per ONRR guidelines, the rate of return is 1.3 times the industrial bond yield index for Standard & Poor's BBB bond rating.

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Transportation Capital Costs

Function	Relative Replacement Cost	Annual Cost (Replacement * 4% * 1.3)
Pipeline	\$146 million	\$7,592,000
Meters	\$4.0 million	\$208,000
Compression	\$27 million	\$1,404,000
Total	\$177 million	\$9,204,000

- Capital costs estimated from public and PWM proprietary sources.
 - Direct costs only
 - 4% assumed for industrial bond yield index for Standard & Poor's BBB bond rating

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Total Annual Transportation Costs

Function	Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Allowable Percentage	Total Allowable Annual Costs
Pipeline	\$7,592,000	\$1,500,000	\$9,092,000	100%	\$9,092,000
Meters	\$208,000	\$400,000	\$608,000	0%	\$0
Compression	\$1,404,000	\$1,200,000	\$2,604,000	6.25%	\$162,750
Total	\$9,204,000	\$3,100,000	\$12,304,000		\$9,254,750

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Processing Capital Costs

Function	Design Basis	Relative Replacement Cost	Annual Cost (Relacement * 4% * 1.3)
Amine Treating	MDEA	\$5.0 million	\$260,000
Dehydration	Ethylene glycol	\$1.7 million	\$88,400
NGL Extraction (w/ Mole Sieve)	Turbo-Expander	\$35.0 million	\$1,820,000
Recompression	300 to 850 psig	\$5.2 million	\$270,400
Total		\$46.9 million	\$2,438,800

- Capital costs estimated from public and PWM proprietary sources.
 - Direct costs only
 - 4% assumed for industrial bond yield index for Standard & Poor's BBB bond rating



Total Annual Processing Costs

Function	Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Allowable Percentage	Total Allowable Annual Costs
Amine Treating	\$260,000	\$800,000	\$1,060,000	25%	\$265,000
Dehydration (glycol)	\$88,400	\$200,000	\$288,400	2.62%	\$7,556
NGL Extraction (w/ Mole Sieve)	\$1,820,000	\$3,000,000	\$4,820,000	100%	\$4,820,000
Recompression	\$270,400	\$250,000	\$520,400	0%	\$0
Total	\$2,438,800	\$4,250,000	\$6,788,800		\$5,092,556



UCA's

❖ **Transportation UCA:**

$$\frac{\$12,304,000}{(\$12,304,000 + \$6,788,800)} = 64.4\%$$

❖ **Processing UCA:**

$$\frac{\$6,788,800}{(\$12,304,000 + \$6,788,800)} = 35.6\%$$

❖ **Apply these UCA's to the overall fee to determine transportation and processing costs.**



Allowable UCA's

❖ **Transportation Allowable UCA:**

$$\frac{\$9,254,750}{\$12,304,000} = 75.2\%$$

❖ **Processing Allowable UCA:**

$$\frac{\$5,092,556}{\$6,788,800} = 75.0\%$$

❖ **Apply these allowable UCA's to the corresponding transportation and processing costs to determine allowable costs.**

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Overall Unbundled Cost Allocation

❖ **Overall Unbundled Cost Allocation:**

$$\frac{(\$9,254,750 + \$5,092,556)}{(\$12,304,000 + \$6,788,800)} = 75.2\%$$

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Questions?

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Fuel Consumption

Fuel Consumption





Background

- ❖ **Transportation and processing of natural gas require energy. This energy is often provided via the burning of the natural gas production at various points in the system.**
- ❖ **From Dear Reporter Letter, “Revised: Royalty on Gas Used or Lost Along a Pipeline Prior to the Point of Sale” issued by the ONRR on Dec 18, 2014:**

ONRR regulations¹ provide that royalty is due on all gas produced from Federal and Indian leases except for gas used on or for the benefit of the lease and residue gas used to operate a gas processing plant.² The regulations do not allow a royalty exemption for gas used or lost in the operation of a transportation system, but they do allow lessees to include certain costs of gas used or lost as part of a transportation allowance.

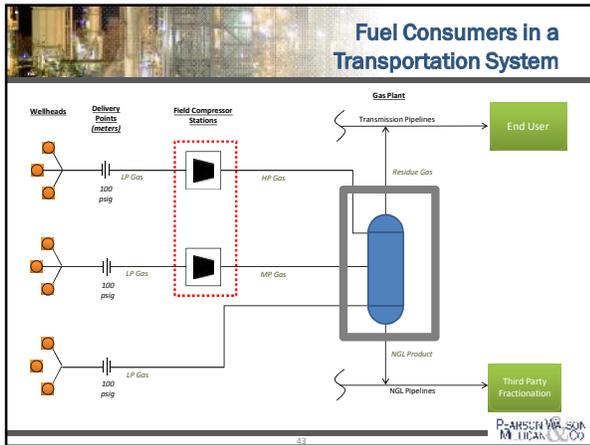


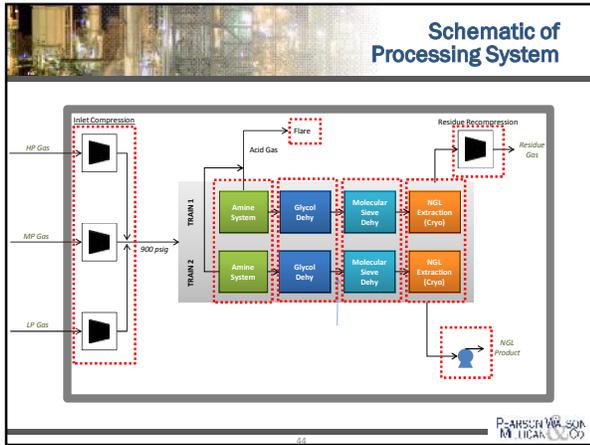


Options for the Producer

- ❖ **Gas used and lost gas is typically reported on the settlement statement:**
 - Transportation deductions upstream of the plant
 - Plant fuel
 - Lost and unaccounted (L&U) for gas is not always reported as a separate item
- ❖ **The producer typically has three options regarding used and lost gas:**
 - Take no deductions
 - Utilize allowable fuel published by the ONRR
 - Calculate allowable fuel by unbundling the fuel consumption themselves







Transportation Fuel

Function	Fuel Consumption (% of wellhead)	Allowable Percentage	Allowable Fuel Consumption (% of wellhead)
Pipeline	0%	n/a	0%
Meters	0%	n/a	0%
Compression	3.5%	6.25%	0.22%
Total	3.5%		0.22%

Allowable transportation fuel: $0.22\% / 3.5\% = 6.25\%$

- Fuel consumption estimated from public and PWM proprietary sources.

Processing Fuel

Function	Fuel Consumption (% of wellhead)	Allowable Percentage	Allowable Fuel Consumption (% of wellhead)
Amine Treating	0.1%	25%	0.025%
Dehydration	0.02%	2.62%	0.00%
NGL Extraction (w/ Mole Sieve)	0.3%	100%	0.3%
Recompression	1.0%	0%	0%
Total	1.42%		0.325%

Allowable processing fuel: $0.325\% / 1.42\% = 22.9\%$

- Fuel consumption estimated from public and PWM proprietary sources.



Lost & Unaccounted For Gas

❖ **Transportation and processing fuel reported on the settlement statements can exceed the calculated fuel consumed.**

❖ **This imbalance between wellhead volumes and residue and NGL volume, fuel consumed and reported condensate volume reduction is considered the L&U:**

- Unreported condensate production upstream of the gas plant
- Pilot gas to flares and other emission combustion devices
- Light ends that flash from condensate
- Line leaks and gas vented for maintenance and equipment malfunctions



Questions?

Questions?



Final Thoughts

- ❖ Each transportation and processing system is unique and should be assessed on an individual analysis.
- ❖ A producer may deliver gas from different areas of a single play to a midstream company at different conditions (e.g. pressure) and different quality (e.g. CO2 content). Subsequently, several UCA's may need to be calculated.
- ❖ For royalties on natural gas produced on state lands, state taxing authorities often work in conjunction with the ONRR and adopt the same approach.
- ❖ The ONRR has stated that other methods may be used, "...provided they are in accordance with appropriate regulations."

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Questions?

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