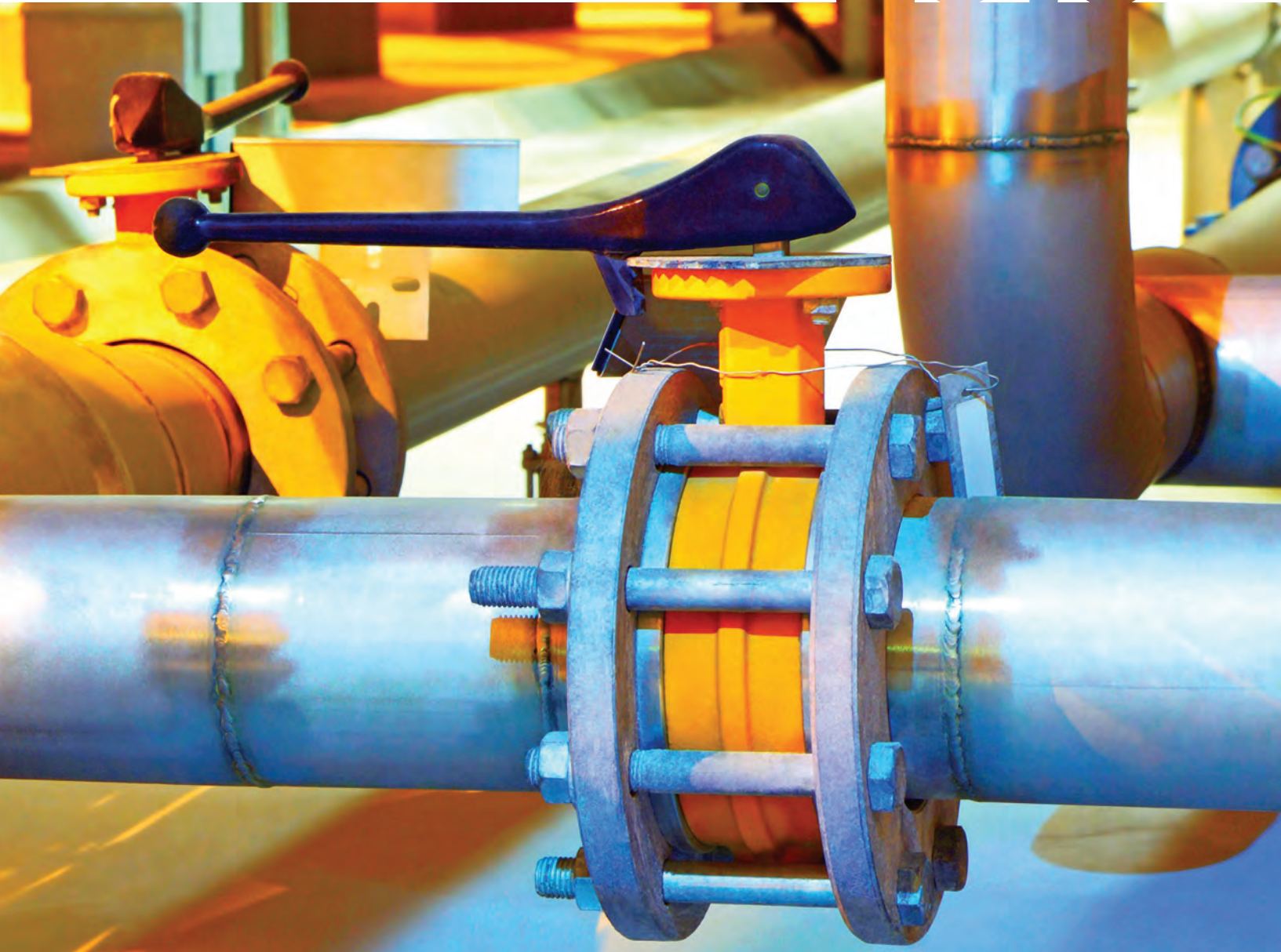




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2019



Pipeline Cost Recovery Report

32

MAJOR PIPELINES
2013-2017

Based on FERC Form No. 2 Data
Prepared by Peri Cankardes Ulrey
Chief Economist



NGSA

Natural Gas Supply Association



Interstate Natural Gas Pipeline Cost Recovery Analysis

This report is the Natural Gas Supply Association's (NGSA) 19th annual evaluation of earnings by major interstate pipelines. Each year, NGSA analyzes approximately 30 major interstate natural gas pipelines' cost recovery over a five-year period to assess the actual return on equity (ROE). The 32 companies evaluated in this year's report represent 75 percent of the pipeline capacity in the interstate market. This study examines relevant interstate pipeline costs and revenues using a cost-of-service model based on *FERC Form No. 2* (Form 2) reports. Below is a brief explanation of the results as well as the methodology used to calculate the ROE for each pipeline.

Study Results

Using the methodology described below, NGSA's analysis shows that, over a five-year period (2013 - 2017), 21 of the 32 pipelines earned revenues in excess of what they would realize based on an average allowed return of 12 percent. Nine pipelines had ROEs that averaged 15 percent or higher over the five-year period with eight of those pipelines outpacing their five-year average ROE in 2017. If an 11 percent ROE return is used as a benchmark, 24 out of the 32 pipelines reviewed would be categorized as over-earning over the five-year period.

The cost over-recovery for the 21 pipelines with ROE's at or exceeding 12 percent over the five-year period was \$4.6 billion (\$5.6 billion using an 11 percent benchmark). When totaling both over- and under-recovery of revenues for all 32 pipeline companies on a net basis, \$2.5 billion was collected in excess of what they would have collected over the five-year period using an average 12 percent allowed return on equity.

NGSA's analysis reflects an increase in the average ROE in 2017 of 13.6 percent as compared to 13.3 percent in 2016; making this the fourth year in a row of incremental increases (from 12.0 percent in 2013 to 13.6 percent in 2017). The total revenues over-recovered over a five-year period increased from \$2.2 billion to \$2.5 billion in this year's study as compared to last year's study.

NGSA supports healthy returns for interstate pipelines so they have the incentive to build infrastructure when needed to bring natural gas to market. However, NGSA, like other pipeline shipper groups, has an interest in ensuring that FERC takes action to review pipeline rates when there is evidence that a pipeline has substantially exceeded an acceptable level of return over a sustained period or when there are major changes that necessitate revised rates, such as the recent decrease in the federal corporate tax rate in the Tax Cuts and Jobs Act of 2017, which is not reflected in this study of revenues from 2013 - 2017 given that the new tax rates became effective in 2018.

Scope

NGSA's cost recovery analysis of 32 pipelines combines three elements to determine pipelines' return on equity: (1) rate base, (2) net revenues, and (3) total cost of service. NGSA reviewed the total population of major interstate pipelines and selected those pipelines that were large in terms of both revenue and physical assets, as well as the amount of time elapsed since their rates were last reviewed. For each pipeline examined, the analysis reviewed the most recent five years of financial data (2013 - 2017) available at the time the study was conducted.

Methodology

NGSA developed its cost recovery analysis using annual financial data as provided in Form 2 for a five-year period (2013 - 2017). Using annual balance sheets, as well as revenue and expense data from Form 2, NGSA built a cost-of-service model for each pipeline company. Using this information, we calculated each pipeline's annual actual return on equity; these calculations are included in the report under the respective pipeline's tab. Consistent with FERC policy, these calculations used only the jurisdictional portion of the costs reflected in Form 2. For example, NGSA utilized methodologies consistent with those that would be used by FERC in a traditional rate case proceeding, such as those applied to the debt/equity ratio as well as in the determination of total rate base and revenues. In those instances where interpretation of Form 2 accounts was required, NGSA employed the more conservative options.

NGSA used the following data analyses and processing steps to develop the three elements needed to determine the return on equity of each pipeline.

1. *Rate Base.* Rate base includes gas plant in service, accumulated depreciation, gas stored-noncurrent, accumulated deferred income taxes (ADIT), working capital (including materials and supplies) and regulatory assets and liabilities.

2. *Revenues.* We calculated net revenues from total operating revenues by excluding revenues for transition costs and take-or-pay as well as sales revenues (Accounts 480-484).
3. *Cost-of-Service.* NGSAs developed the pipeline's total cost-of-service, including an annual allowed return on rate base, federal and state income taxes, other taxes, depreciation, and operation and maintenance (O&M) costs. Multiplying the total rate base by the weighted allowed rate of return on rate base yielded the pipeline's allowed return on rate base. To determine the weighted allowed rate of return on rate base, the debt and common equity costs of capital were multiplied by their respective capitalization ratios and added together. The capitalization ratios and current debt and equity cost of capital were obtained from Form 2 when the values were within a range FERC has historically approved. Otherwise, these data were obtained from the pipeline's most recent filed and/or approved Section 4 rate case or obtained from Securities and Exchange Commission (SEC) 10-K information reported by the parent company.

To calculate the federal income taxes, the total allowed return on rate base was multiplied by the ratio of the weighted return on equity to the total return on rate base and then multiplied by the grossed-up federal income tax factor pursuant to FERC regulations. A 35 percent federal income tax rate was used for pipelines owned by corporations. For pipelines owned by Master Limited Partnerships (MLPs), the weighted federal income tax rate was used, if it was available. If not, a weighted estimated rate was used. State income tax rates were calculated as a percentage of federal income tax rates using information from each pipeline's most recent Section 4 rate case, if available. If not, state income tax rates were estimated using statutory state tax rate information from the pipeline's Form 2, and state income taxes were then added to the total cost-of-service.

Several cost components for O&M expenses listed in Form 2 were also removed, such as sales and compressor fuel expenses, in order to appropriately determine a pipeline's non-gas cost of service and properly align costs with reported revenues. Depreciation expenses and other taxes from Form 2 were added to determine the total cost of service.

Finally, we calculated the pipeline's over- or under-recovery of costs by subtracting the total cost-of-service from net revenues. Because the study's total cost of service calculation already includes the pipeline's allowed return, the difference between the cost-of-service and net revenues reflects the pipeline's

actual over- or under-recovery of costs. The formula to calculate actual earned rate of return on equity is as follows:

$$ROE = \frac{\left[\left(CR - \left(CR * \left(\frac{FGIT}{1 + FGIT} \right) \right) \right) - (CR * (SIT * FGIT)) \right] + \left(AR * \left(\frac{ER}{TR} \right) \right)}{RB * EC}$$

Where:

<i>ROE</i>	=	Actual Earned Rate on Equity
<i>CR</i>	=	Cost Over- or Under- Recovery
<i>FGIT</i>	=	Federal Grossed-Up Income Tax Rate
<i>SIT</i>	=	State Income Tax Rate as a Percentage of FIT
<i>AR</i>	=	Allowed Return on Rate Base
<i>ER</i>	=	Allowed Equity Return on Rate Base rate
<i>TR</i>	=	Allowed Total Return on Rate Base rate
<i>RB</i>	=	Total Rate Base
<i>EC</i>	=	Equity Capitalization Ratio

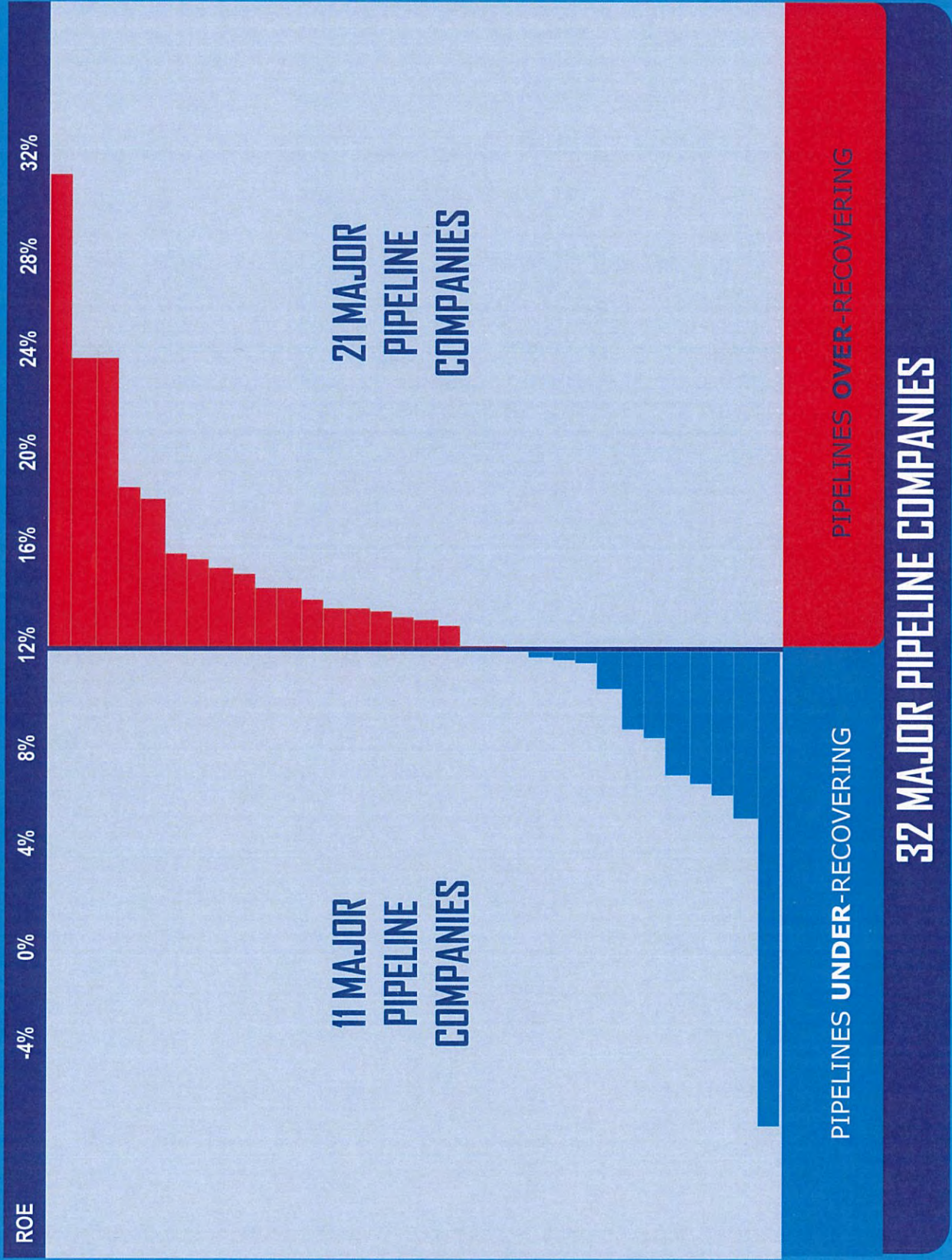
The annual rates of return on equity for each of the 32 pipelines were weighted across the five-year period based on the equity portion of rate base to calculate a weighted average rate of return on equity for each pipeline.

In addition, NGSa conducted a separate analysis to identify pipelines that do not employ a fuel tracking mechanism to true-up their fuel usage and retention volumes during the analysis period. NGSa's analysis found that five of the 32 pipelines did not employ a true-up mechanism during the analysis period. NGSa calculated the value of the fuel retained from shippers in excess of what was actually used and included that value as revenue in the ROE calculation for each of the five pipelines without a fuel tracking mechanism.

The 2017 ROE analysis does not reflect the new lower federal income tax rates as they became effective in 2018. However, for 2017, balance sheet adjustments made by pipelines in response to the Tax Cuts and Jobs Act of 2017 were incorporated into the analysis to the extent they impacted regulatory rate base accounts. For the most part, these adjustments included a reduction to ADIT and an increase to regulatory liabilities, with little or no net effect on rate base.

Actual Pipeline Rate Of Return On Equity

5 YEAR WEIGHTED AVERAGE (2013-2017)



Natural Gas Supply Association
Actual Pipeline Rate of Return on Equity

NGSA Analysis - 32 Pipelines

Pipeline Name	Year Ended 2013	Year Ended 2014	Year Ended 2015	Year Ended 2016	Year Ended 2017	5-year Average Weighted by Equity Ratebase
• 1 Northern Border Pipeline Company	28.5%	28.2%	29.2%	33.1%	37.6%	30.9%
• 2 Natural Gas Pipeline Company of America LLC 1/	27.4%	21.7%	20.9%	22.8%	26.1%	23.6%
• 3 Trailblazer Pipeline Company LLC	5.9%	26.8%	29.2%	25.1%	27.8%	23.5%
• 4 Panhandle Eastern Pipe Line Company, LP	23.9%	14.5%	18.2%	18.0%	19.6%	18.5%
• 5 Gas Transmission Northwest LLC (formerly PGT)	15.5%	15.3%	17.0%	20.7%	22.7%	18.1%
• 6 Northwest Pipeline LLC	14.6%	14.8%	16.7%	16.8%	16.6%	15.9%
• 7 El Paso Natural Gas Company, LLC	12.3%	14.9%	19.2%	14.7%	17.5%	15.7%
• 8 Kern River Gas Transmission Co.	14.1%	14.0%	17.9%	19.3%	13.1%	15.3%
• 9 Tennessee Gas Pipeline Company, LLC	11.6%	15.4%	15.8%	15.6%	16.2%	15.1%
• 10 Florida Gas Transmission Company, LLC	11.4%	12.9%	14.3%	16.5%	19.4%	14.5%
• 11 Dominion Energy Transmission, Inc. (formerly CNG Trans.)	15.0%	17.2%	15.4%	12.7%	11.8%	14.5%
• 12 Transcontinental Gas Pipe Line Company, LLC 2/	11.0%	15.2%	14.5%	16.8%	13.0%	14.1%
• 13 Southern Natural Gas Company, LLC	14.5%	14.0%	12.3%	14.9%	13.3%	13.8%
• 14 Texas Gas Transmission, LLC	12.4%	12.2%	13.4%	14.0%	16.0%	13.7%
• 15 Northern Natural Gas Company	13.6%	14.0%	13.8%	13.2%	13.6%	13.6%
• 16 National Fuel Gas Supply Corporation	12.2%	15.1%	11.6%	15.4%	13.3%	13.4%
• 17 Enable Gas Transmission, LLC (formerly CenterPoint)	11.7%	11.5%	10.7%	16.7%	16.7%	13.3%
• 18 Great Lakes Gas Transmission Ltd. Partnership	2.4%	11.0%	18.0%	16.2%	18.8%	13.1%
• 19 Southern Star Central Gas Pipeline, Inc. (formerly Williams)	7.9%	11.4%	12.8%	14.3%	15.8%	12.3%
• 20 Algonquin Gas Transmission, LLC 3/	12.0%	14.8%	14.3%	7.9%	14.2%	12.3%
• 21 Trunkline Gas Company, LLC	14.7%	13.8%	10.6%	10.9%	9.8%	12.0%
• 22 Colorado Interstate Gas Company, LLC	14.2%	12.0%	12.2%	11.0%	9.2%	11.8%
• 23 Columbia Gas Transmission, LLC	15.5%	11.4%	11.1%	9.5%	13.0%	11.7%
• 24 Columbia Gulf Transmission, LLC 4/	21.0%	22.5%	15.5%	3.5%	8.0%	11.6%
• 25 Texas Eastern Transmission, LP	8.4%	10.5%	12.4%	10.9%	10.4%	10.6%
• 26 Dominion Energy Questar Pipeline, LLC	9.3%	9.3%	8.9%	8.1%	9.3%	9.0%
• 27 Mojave Pipeline Company, LLC 5/	16.5%	11.8%	5.0%	4.1%	8.1%	8.6%
• 28 Transwestern Pipeline Company, LLC	6.2%	8.8%	6.7%	7.1%	6.6%	7.1%
• 29 ANR Pipeline Company	3.9%	3.4%	4.1%	8.9%	11.8%	6.8%
• 30 Tallgrass Interstate Gas Trans. LLC (formerly KMI GT)	3.6%	5.4%	6.2%	7.1%	11.3%	6.4%
• 31 Gulf South Pipeline Co., LP (formerly Koch Gateway)	6.1%	4.2%	4.8%	6.4%	5.6%	5.4%
• 32 Sea Robin Pipeline Company, LLC 6/	20.6%	8.7%	-5.5%	-39.0%	-23.6%	-6.7%
Simple Average	13.1%	13.6%	13.4%	12.3%	13.8%	13.0%
Weighted Average by Equity Ratebase	12.0%	13.0%	13.1%	13.3%	13.6%	13.0%

• NGSA's analysis determined these pipelines do not have a fuel tracking mechanism to true-up their fuel costs at the end of the five-year analysis period.

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Notes:

1/ Natural Gas Pipeline Company of America LLC

NGPL's 2013 through 2017 FERC Form 2s show 100% equity and thus could not be used as an accurate input for NGPL's capitalization. Therefore, NGSa utilized Kinder Morgan's cost of debt and capitalization data based on SEC Form 10-K for those years as a proxy given its ownership of NGPL.

2/ Transcontinental Gas Pipe Line Company, LLC

The decrease in Transcontinental's return on equity compared to the prior year is due primarily to several major expansions placed into service late in 2017, which creates a mismatch between project costs and project revenues. This disparity due to timing would not be expected to continue to impact future year results.

3/ Algonquin Gas Transmission, LLC

Algonquin placed into service most of the facilities of the Algonquin Incremental Market (AIM) Project in November 2016 impacting their return on equity in 2016. The decrease in Algonquin's 2016 return on equity compared to the prior year was due primarily to the major expansion placed into service late in the year, which creates a mismatch between project costs and revenues. This disparity due to timing would not continue to impact future year results.

4/ Columbia Gulf Transmission, LLC

Columbia Gulf's uncontested settlement offer after the initiation of FERC's Section 5 proceeding in 2016 was approved by FERC in 2016. Columbia Gulf had substantial increases in costs for outside services and charges from associated companies in 2016.

5/ Mojave Pipeline Company, LLC

Mojave Pipeline Company's deferred taxes were reversed in connection with Kinder Morgan, Inc.'s November 2014 acquisition of outstanding common shares of Kinder Morgan Energy Partners, LP impacting their return on equity in 2015-2017. Mojave's FERC Form 2s for each year of our analysis (2013-2017) showed 100% equity or failed to include debt/equity ratios and thus could not be used as an accurate input for Mojave's capitalization. Therefore, NGSa utilized the capitalization ratios in El Paso's Form 2 for those years as proxy given El Paso's direct control of Mojave.

6/ Sea Robin Pipeline Company, LLC

Sea Robin Pipeline Company's FERC Form 2s show 100% equity for 2013 through 2016. Since 100% equity is not within a range FERC has historically approved, NGSa utilized Energy Transfers Partners, LP capitalization ratios based on data in Securities and Exchange Commission (SEC) Form 10-Ks in 2013 through 2016.

INDEX OF INDIVIDUAL PIPELINE RETURNS ON EQUITY

TAB COMPANY

1. Algonquin Gas Transmission, LLC
2. ANR Pipeline Company
3. Colorado Interstate Gas Company, LLC
4. Columbia Gas Transmission, LLC
5. Columbia Gulf Transmission, LLC
6. Dominion Energy Questar Pipeline, LLC
7. Dominion Energy Transmission, Inc. (formerly CNG Trans.)
8. El Paso Natural Gas Company, LLC
9. Enable Gas Transmission, LLC (formerly CenterPoint Energy)
10. Florida Gas Transmission Company, LLC
11. Gas Transmission Northwest, LLC (formerly PGT)
12. Great Lakes Gas Transmission Ltd. Partnership
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14. Kern River Gas Transmission Company
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24. Southern Star Central Gas Pipeline, Inc. (formerly Williams)
25. Tallgrass Interstate Gas Transmission LLC (formerly Kinder Morgan)
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28. Texas Gas Transmission, LLC
29. Trailblazer Pipeline Company LLC
30. Transcontinental Gas Pipe Line Company, LLC
31. Transwestern Pipeline Company, LLC
32. Trunkline Gas Company, LLC

NGSA
Pipeline Cost Model

Algonquin Gas Transmission, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1	2,026,554,951	2,042,318,439	2,156,283,364	3,181,150,753	3,454,125,384 **	p. 110 Balance Sheet
2	694,552,723	736,121,941	745,705,380	748,785,422	768,285,519	p. 110 Balance Sheet
3	0	0	0	0	0	pp. 234-235
4	301,550,584	322,384,240	351,878,158	395,283,759	316,065,416 ***	pp. 274-275
5	0	0	0	0	0	pp. 276-277
6	1,774,586	1,774,586	1,774,586	1,774,586	1,774,586	p. 232
7	0	0	0	0	233,110,657 ***	p. 278
8	961,361	650,847	802,742	7,259,592	8,543,432	p. 230
9	471,756	453,405	435,401	319,667	361,397	pp. 110-111
10	0	0	0	0	0	p. 110
11	56,783	-209,747	0	0	0	p. 110
12	0	0	0	0	0	O&M
13	0	0	0	0	0	p. 322
14	0	0	0	0	0	
15	0	0	0	0	0	
16	27,380,341	24,073,832	21,034,720	18,703,348	25,523,854	p. 323
17	-5,146,448	-4,159,793	-5,792,584	-10,358,909	-5,746,679	
18	32,526,789	28,233,625	26,827,304	29,062,257	31,270,533	
19	40,902,907	39,411,143	42,256,120	41,355,795	53,705,554	pp. 323-325
20	31,699,733	31,311,489	35,893,696	35,095,550	49,043,418	p. 114 Income Statement
21	44,885,048	45,819,090	45,003,233	52,168,954	74,684,823	p. 114 Income Statement
22	914,836	837,575	1,013,800	1,073,709	1,066,261	p. 300
23	278,083,348	295,710,065	307,933,813	323,056,481	503,778,641	p. 301
24	278,998,184	296,547,640	308,947,613	324,130,190	504,844,902	
25	0	0	0	0	0	
26	278,998,184	296,547,640	308,947,613	324,130,190	504,844,902	

NGSA
Pipeline Cost Model

Algonquin Gas Transmission, LLC

Account 495

p. 308

27	Value of excess fuel retained	0	0	0	0	0	0	0
28	Penalty revenues	0	0	0	0	0	0	0
29	Gains on settlements of imbalances	0	0	0	0	0	0	0
30	Total non-cost of service revenues	0	0	0	0	0	0	0
31	Cost of Debt	3.55%	3.54%	3.54%	3.54%	3.54%	3.54%	3.54%
32	Allowed Rate of Return on Equity	11.33%	11.33%	11.33%	11.33%	11.33%	11.33%	11.33%
33	Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	0

***** end of data input *****

**NGSA
Pipeline Cost Model**

Algonquin Gas Transmission, LLC

Cost of Service Calculation

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base Capitalization					
1					
2	35.22%	34.10%	33.46%	40.00%	40.00% ****
	64.78%	65.90%	66.54%	60.00%	60.00%
3	1.25%	1.21%	1.18%	1.42%	1.42%
4	7.34%	7.47%	7.54%	6.80%	6.80%
5	8.59%	8.67%	8.72%	8.21%	8.21%
Rate Base					
6	2,026,554,951	2,042,318,439	2,156,283,364	3,181,150,753	3,454,125,384
7	0	0	0	0	0
8	-694,552,723	-736,121,941	-745,705,380	-748,785,422	-768,285,519
9	1,489,900	894,505	1,238,143	7,579,259	8,904,829
10	-301,550,584	-322,384,240	-351,878,158	-395,283,759	-316,065,416
11	1,774,586	1,774,586	1,774,586	1,774,586	1,774,586
12	0	0	0	0	-233,110,657
13	1,033,716,130	986,481,349	1,061,712,555	2,046,435,417	2,147,343,207
Cost of Service					
14	88,795,016	85,563,545	92,618,134	168,094,205	176,382,771
15	29,505,140	28,643,741	31,127,568	54,100,931	56,768,597
16	3,870,937	3,757,925	4,083,792	7,097,790	7,447,775
17	31,699,733	31,311,489	35,893,696	35,095,550	49,043,418
18	44,885,048	45,819,090	45,003,233	52,168,954	74,684,823
19	32,526,789	26,233,625	26,827,304	29,062,257	31,270,533
20	40,902,907	39,411,143	42,256,120	41,355,795	53,705,554
21	272,185,570	262,740,558	277,809,847	386,975,482	449,303,471
22	278,998,184	296,547,640	308,947,613	324,130,190	504,844,902
23	0	0	0	0	0
24	6,812,614	33,807,082	31,137,766	-62,845,292	55,541,431
25	6,812,614	33,807,082	31,137,766	-62,845,292	55,541,431
26	12.01%	14.81%	14.28%	7.91%	14.21%

* $[(\text{Line 24} - (\text{Line 24} * (.3889 / (1 + .3889)))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .3889))] + (\text{Line 14} * (\text{Line 4} / \text{Line 5})) / (\text{Line 13} * \text{Line 2})$

** Algonquin placed into service most of the facilities of the Algonquin Incremental Market (AIM) project in November 2016 impacting the year-end 2016 balance of Gas Plant in Service. The decrease in Algonquin's return on equity compared to the prior year is due primarily to the major expansion placed into service late in the year, which creates a mismatch between project costs and project revenues. This disparity due to timing would not continue to impact future year results.

*** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

****NGSA uses an estimated 60 percent equity capitalization rate instead of Algonquin's reported greater than 70% equity ratio in the 2016 and 2017 Form 28. 70% and greater equity is not within a range FERC has historically approved.

NGSA
Pipeline Cost Model

ANR Pipeline Company

Data Input Section

	Year End 2013	Year End 2014	Year End 2015	Year End 2016	Year End 2017	Source (Form 2)
1 Total Plant in Service	3,483,747,011	3,615,622,960	3,820,358,763	4,136,395,700	4,384,855,704	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	1,941,380,347	1,977,931,844	1,989,209,452	1,990,358,333	2,079,846,899	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes						
4 Account 190	15,703,315	14,471,728	13,210,147	25,729,173	13,560,697	pp. 234-235
5 Account 282	415,247,609	432,542,072	458,945,201	573,837,214	445,682,912	pp. 274-275
6 Account 283	10,066,699	10,596,280	12,906,386	15,680,994	6,521,420	pp. 276-277
7 Regulatory Assets and Liabilities						
8 Account 182.3 (rate base est.)	25,965,022	27,423,085	33,401,618	40,719,276	25,811,050	p. 232
9 Account 254 (rate base est.)	98,250,336	100,543,502	106,386,118	104,881,735	352,502,918	p. 278
10 Working Capital						
11 Prepayments	2,342,148	2,433,192	2,434,496	2,185,916	2,246,992	p. 230
12 Materials and Supplies	36,882,669	34,787,923	33,372,703	34,242,457	36,386,143	pp. 110-111
13 Gas Stored Underground						
14 Acct. 117.1 Base gas	94,367,096	87,912,896	87,912,896	87,912,896	87,912,896	p. 110
15 Acct. 117.2 System balancing	20,500,749	20,500,749	20,500,749	20,500,749	20,500,749	p. 110
16 Operation and Maintenance Costs						
17 Production	283,679	1,119,858	0	0	0	O&M
18 Storage	68,265,200	70,683,946	67,913,441	63,099,742	47,202,613	p. 322
19 less: Comp. fuel and losses	6,168,435	7,792,076	5,649,752	2,932,064	3,842,611	
20 Net storage costs	62,096,765	62,891,870	62,263,689	60,167,678	43,360,002	
21 Transmission	227,077,878	253,535,201	288,803,718	247,659,754	257,664,831	p. 323
22 less: Comp. fuel	63,551,025	71,483,483	36,454,090	24,757,937	41,705,984	
23 Net transmission costs	163,526,853	182,051,718	252,349,628	222,901,817	215,958,847	
24 A&G	111,474,510	110,347,006	107,491,591	94,209,272	104,863,989	pp. 324-325
25 Other Taxes	22,092,606	22,272,971	21,800,456	22,357,081	27,881,602	p. 114 Income Statement
26 Depreciation, Amortization, and Negative Salvage	59,284,353	59,072,279	60,533,262	84,652,499	116,536,538	p. 114 Income Statement
27 Revenue						
28 ACA and GRI revenue	2,317,017	1,807,659	2,050,658	2,056,364	2,237,342	p. 300
29 Other Revenue	498,018,905	514,641,695	602,309,139	684,240,153	755,997,380	p. 301
30 Total Revenue	500,335,922	516,449,354	604,359,797	686,296,517	758,234,722	
31 Sales Revenues	0	0	0	0	0	
32 Net Revenues	500,335,922	516,449,354	604,359,797	686,296,517	758,234,722	

NGSA
Pipeline Cost Model

ANR Pipeline Company											
Account 495										p. 308	
27	Value of excess fuel retained	0	0	0	0	0	0	0	0	0	
28	Penalty revenues	0	0	0	0	0	0	0	0	0	
29	Gains on settlements of imbalances	0	0	0	0	318,024	67,707	67,707	67,707	67,707	
30	Total non-cost of service revenues	0	0	0	0	318,024	67,707	67,707	67,707	67,707	
31	Cost of Debt	8.97%	8.97%	8.97%	8.97%	8.25%	7.23%	7.23%	7.23%	7.23%	p. 218
32	Allowed Rate of Return on Equity	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	p. 218
33	Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	0	0	0	

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**NGSA
Pipeline Cost Model**

ANR Pipeline Company

		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base Capitalization						
1	Debt	31.58%	31.03%	31.26%	30.34%	33.88%
2	Equity	68.42%	68.97%	68.74%	69.66%	66.12%
3	Return on Debt	2.83%	2.78%	2.80%	2.50%	2.45%
4	Return on Equity	8.38%	8.45%	8.42%	8.53%	8.10%
5	Total Return	11.21%	11.23%	11.22%	11.04%	10.55%
Rate Base						
6	Gas Plant in Service	3,483,747,011	3,615,622,960	3,820,358,763	4,136,395,700	4,384,855,704
7	Gas Stored - Noncurrent	94,367,096	87,912,896	87,912,896	87,912,896	87,912,896
8	Accumulated Depreciation	-1,941,380,347	-1,977,931,844	-1,989,209,452	-1,990,358,333	-2,079,846,899
9	Working Capital	59,725,566	57,721,864	56,307,948	56,929,122	59,133,884
10	ADIT	-409,610,993	-428,666,624	-458,641,440	-563,789,035	-438,643,635
11	Regulatory Assets	25,965,022	27,423,085	33,401,618	40,719,276	25,811,050
12	Regulatory Liabilities	-98,250,336	-100,543,502	-106,386,118	-104,881,735	-352,502,918
13	Total Rate Base	1,214,563,019	1,281,538,835	1,443,744,215	1,662,927,891	1,686,720,082
Cost of Service						
14	Return	136,203,235	143,945,210	162,055,553	183,527,374	177,935,880
15	Federal Income Tax	54,814,303	58,301,909	65,462,195	76,409,554	73,564,220
16	State Income Tax	4,405,657	4,685,971	5,261,473	6,141,359	5,912,668
17	Other Taxes	22,092,606	22,272,971	21,800,456	22,357,081	27,881,602
18	Depreciation	59,284,353	59,072,279	60,533,262	84,652,499	116,536,538
19	O&M	225,907,297	246,063,446	314,613,317	283,069,495	259,318,849
20	A&G	111,474,510	110,347,006	107,491,591	94,209,272	104,863,989
21	Total Cost of Service	614,181,961	644,688,792	737,217,847	750,366,634	766,013,746
22	Total Revenues	500,335,922	516,449,354	604,359,797	686,296,517	758,234,722
23	Non-Cost of Service Revenues	0	0	0	318,024	67,707
24	Cost Over (Under) Recovery	-113,846,039	-128,239,438	-132,858,050	-64,070,117	-7,779,024
25	Over (Under) Recovery excl. non-COS rev	-113,846,039	-128,239,438	-132,858,050	-64,388,141	-7,846,731
26	Actual rate of return on equity *	3.94%	3.45%	4.13%	8.89%	11.83%

* $[(\text{Line 24} - (\text{Line 24} * (.5385 / (1 + .5385)))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .5385))] + (\text{Line 14} * (\text{Line 4} / \text{Line 5})) / (\text{Line 13} * \text{Line 2})$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

NGSA
Pipeline Cost Model

Colorado Interstate Gas Company, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	1,839,996,396	1,841,525,842	1,833,641,375	1,828,335,573	1,792,364,616	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	575,751,803	592,920,626	617,113,019	642,211,080	653,011,423	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes						
4 Account 190	1,131,870	840,647	514,769	514,948	333,936	pp. 234-235
5 Account 282	239,891,964	43,277,332	34,166,528	53,646,696	43,966,679 **	pp. 274-275
6 Account 283	816,746	376,069	0	0	0	pp. 276-277
7 Regulatory Assets and Liabilities						
8 Account 182.3	398,747	199,373	0	0	0	p. 232
9 Account 254	1,355,386	1,355,386	1,355,386	1,355,386	32,739,654 **	p. 278
10 Working Capital						
11 Prepayments	0	0	579	36,000	37,000	p. 230
12 Materials and Supplies	6,457,670	5,977,157	5,640,761	5,427,337	5,344,684	pp. 110-111
13 Gas Stored Underground						
14 Acct. 117.1	22,370,023	22,321,245	22,216,291	22,142,868	22,006,393	p. 110
15 Acct. 117.2	6,868,276	2,497,896	1,214,475	1,214,488	875,418	p. 110
16 Operation and Maintenance Costs						
17 Production	9,290,130	12,069,636	5,006,160	1,553,599	2,065,579	O&M
18 Storage	34,881,524	34,842,445	34,058,745	33,236,367	34,474,296	p. 322
19 less: Comp. fuel and losses	1,466,518	1,802,869	1,009,518	855,116	1,113,683	
20 Net storage costs	33,415,006	33,039,576	33,049,227	32,381,251	33,360,613	
21 Transmission	108,515,311	113,519,797	115,190,264	121,480,379	113,265,059	p. 323
22 less: Comp. fuel	14,734,834	14,144,201	7,487,802	6,359,629	8,871,921	
23 Net transmission costs	93,780,477	99,375,596	107,702,462	115,120,750	104,393,138	
24 A&G	21,772,191	20,200,577	18,547,550	18,911,011	14,171,523	pp. 323-325
25 Other Taxes	20,285,177	21,514,635	22,181,931	21,830,948	20,699,981	p. 114 Income Statement
26 Depreciation, Amortization, and Negative Salvage	34,617,800	33,323,023	32,869,645	31,349,645	31,132,329	p. 114 Income Statement
27 Revenue						
28 ACA and GRI revenue	1,254,037	1,012,322	1,261,707	1,247,728	1,162,423	p. 300
29 Other Revenue	394,345,131	401,869,366	395,168,561	364,283,018	318,813,027	p. 301
30 Total Revenue	395,599,168	402,881,688	396,430,268	365,530,746	319,975,450	
31 Sales Revenues	6,173,596	7,205,108	2,390,584	-25	2,697,401	
32 Net Revenues	389,425,572	395,676,580	394,039,684	365,530,771	317,278,049	

NGSA
Pipeline Cost Model

Colorado Interstate Gas Company, LLC

27	Account 495	0	0	0	0	0	0	p. 308
28	Value of excess fuel retained	22,972	31,402	126,699	177,433	174,874	0	
29	Penalty revenues	535,556	1,637,939	799,749	838,148	379,433	174,874	
30	Gains on settlements of imbalances	568,528	1,669,341	926,448	1,015,581	554,307	379,433	
	Total non-cost of service revenues							
31	Cost of Debt	7.06%	7.03%	7.20%	5.60%	4.82%	4.82%	p. 218
32	Allowed Rate of Return on Equity	12.72%	12.72%	12.72%	12.72%	12.72%	12.72%	p. 218
33	Account 496 - Provision for Rate Refunds	0	0	0	0	3,720	3,720	

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**NGSA
Pipeline Cost Model**

Colorado Interstate Gas Company, LLC

Cost of Service Calculation

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base					
Capitalization					
Debt	38.36%	39.42%	40.73%	42.05%	43.49%
Equity	61.64%	60.58%	59.27%	57.95%	56.51%
Return on Debt	2.71%	2.77%	2.93%	2.35%	2.10%
Return on Equity	7.84%	7.71%	7.54%	7.37%	7.19%
Total Return	10.55%	10.48%	10.47%	9.73%	9.28%
Rate Base					
Gas Plant in Service	1,839,996,396	1,841,525,842	1,833,641,375	1,828,335,573	1,792,364,616
Gas Stored - Noncurrent	22,370,023	22,321,245	22,216,291	22,142,868	22,006,393
Accumulated Depreciation	-575,751,803	-592,920,626	-617,113,019	-642,211,080	-653,011,423
Working Capital	13,325,946	8,475,053	6,855,815	6,677,825	6,257,102
ADIT	-239,566,840	-42,812,754	-33,651,759	-53,131,748	-43,632,743
Regulatory Assets	398,747	199,373	0	0	0
Regulatory Liabilities	-1,355,386	-1,355,386	-1,355,386	-1,355,386	-32,739,654
Total Rate Base	1,059,417,083	1,235,432,747	1,210,593,317	1,160,458,052	1,091,244,291
Cost of Service					
Return	111,756,044	129,436,314	126,769,749	112,866,614	101,314,285
Federal Income Tax	44,727,168	51,261,366	49,144,509	46,060,080	42,236,614
State Income Tax	4,066,106	4,660,124	4,467,683	4,187,280	3,839,892
Other Taxes	20,285,177	21,514,635	22,181,931	21,830,948	20,699,981
Depreciation	34,617,800	33,323,023	32,869,645	31,349,645	31,132,329
O&M	136,485,613	144,484,808	145,757,849	149,055,600	139,819,330
A&G	21,772,191	20,200,577	18,547,550	18,911,011	14,171,523
Total Cost of Service	373,710,099	404,880,847	399,738,915	384,261,178	353,213,753
Total Revenues	389,425,572	395,676,580	394,039,684	365,530,771	317,278,049
Non-Cost of Service Revenues	558,528	1,669,341	926,448	1,015,581	554,307
Cost Over (Under) Recovery	15,715,473	-9,204,267	-5,699,231	-18,730,407	-35,935,704
Over (Under) Recovery excl. non-COS rev	15,156,945	-10,873,608	-6,625,679	-19,745,988	-36,490,011
Actual rate of return on equity *	14.17%	11.98%	12.24%	11.05%	9.22%

* [(Line 24 - (Line 24 * (.5385/(1+.5385))))*(Line 24 * (State Income Tax Percentage * .5385))]/(Line 14*(Line 4/Line 5))] / Line 13 * Line 2

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

NGSA
Pipeline Cost Model

Columbia Gas Transmission, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1	5,120,688,987	5,624,648,241	6,315,890,867	6,834,536,646	7,241,130,069	p. 110 Balance Sheet
2	2,204,548,997	2,265,303,454	2,249,219,810	2,330,018,766	2,393,975,244	p. 110 Balance Sheet
3	33,899,619	27,775,530	32,996,386	43,063,035	24,965,116	pp. 234-235 Prior yr. changed
4	843,816,664	962,786,802	1,117,136,314	1,219,191,285	1,004,868,654 **	pp. 274-275 Prior yr. changed
5	104,846,640	120,622,241	123,805,354	128,549,715	83,623,703	pp. 276-277 Prior yr. changed
6	0	0	0	133,139	0	p. 232
7	43,648,961	63,949,839	85,860,415	79,287,873	802,541,452 **	p. 278
8	6,306,450	6,594,440	10,012,315	5,819,669	3,757,737	p. 230
9	16,660,687	17,029,325	17,619,044	18,005,325	17,607,639	pp. 110-111
10	298,394,471	298,392,929	298,392,929	298,392,929	271,551,547	p. 110
11	1,141,649	1,143,191	1,143,191	1,143,191	1,076,440	p. 110
12	1,537,824	1,573,093	1,539,696	1,057,904	1,080,215	O&M
13	46,800,862	47,610,296	39,367,282	35,632,807	66,494,164	p. 322
14	10,633,692	12,526,797	7,751,372	5,815,699	7,134,024	
15	36,167,170	35,083,499	31,615,910	29,817,108	59,360,140	
16	166,657,518	176,629,825	174,722,319	174,906,269	193,553,411	p. 323
17	-7,140,048	-13,108,059	-2,746,291	-9,209,250	-2,492,570	
18	173,797,566	189,737,884	177,468,610	184,115,519	196,045,981	
19	146,641,617	156,253,565	186,874,354	276,401,777	185,053,500	pp. 323-325
20	52,281,764	56,127,327	60,825,556	63,760,363	66,402,179	p. 114 Income Statement
21	83,310,493	89,989,948	101,732,801	116,274,386	122,117,619	p. 114 Income Statement
22	1,790,567	1,418,018	1,725,777	2,121,806	2,031,419	p. 300
23	984,811,159	1,115,297,183	1,102,817,014	1,129,218,996	1,220,259,256	p. 301
24	986,601,726	1,116,715,201	1,104,542,791	1,131,340,802	1,222,290,675	
25	170,497,980	252,138,922	142,952,033	85,282,035	134,581,449	
26	816,103,746	864,576,279	961,590,758	1,046,058,767	1,087,709,226	

Columbia Gas Transmission, LLC

NGSA
Pipeline Cost Model

27	Account 495	0	0	0	0	0	0	p. 308
28	Value of excess fuel retained	0	0	0	0	0	0	
29	Penalty revenues	0	0	0	0	0	0	
30	Gains on settlements of imbalances	364,785	3,838,126	61,132	392,279	208,761	208,761	
	Total non-cost of service revenues	364,785	3,838,126	61,132	392,279	208,761	208,761	
31	Cost of Debt	5.79%	5.27%	5.07%	4.73%	3.54%	3.54%	p. 218
32	Allowed Rate of Return on Equity	11.00%	11.56%	11.44%	9.87%	8.65%	8.65%	p. 218
33	Account 496 - Provision for Rate Refunds	6,130,517	-854,971	-1,186,840	13,045,702	3,957,128	3,957,128 ***	p. 300, p. 278

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**NGSA
Pipeline Cost Model**

Columbia Gas Transmission, LLC

Cost of Service Calculation

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base Capitalization					
1	56.46%	38.36%	37.00%	40.00%	40.00%
2	43.54%	61.64%	63.00%	60.00%	60.00% ****
3	3.27%	2.02%	1.88%	1.89%	1.42%
4	4.79%	7.13%	7.21%	5.92%	5.19%
5	8.06%	9.15%	9.08%	7.81%	6.61%
Rate Base					
6	5,120,688,987	5,624,648,241	6,315,890,867	6,834,536,646	7,241,130,069
7	298,394,471	298,392,929	298,392,929	298,392,929	271,551,547
8	-2,204,548,997	-2,265,303,454	-2,249,219,810	-2,330,018,766	-2,393,975,244
9	24,108,786	24,766,966	28,774,550	24,968,185	22,441,816
10	-914,763,685	-1,055,633,513	-1,207,945,282	-1,304,677,965	-1,063,527,241
11	0	0	0	133,139	0
12	-43,648,961	-63,949,839	-85,860,415	-79,287,873	-802,541,452
13	2,280,230,601	2,562,921,320	3,100,032,839	3,444,046,295	3,275,079,495
Cost of Service					
14	183,750,878	234,434,411	281,579,083	269,117,777	216,351,751
15	58,805,042	98,335,522	120,306,074	109,822,689	91,525,875
16	5,040,432	8,428,759	10,311,949	9,413,373	7,845,075
17	52,281,764	56,127,327	60,825,556	63,760,363	66,402,179
18	83,310,493	89,989,948	101,732,801	116,274,386	122,117,619
19	211,502,560	226,394,476	210,624,216	214,990,531	256,486,336
20	146,641,617	156,253,565	186,874,354	276,401,777	185,053,500
21	741,332,787	869,964,008	972,254,033	1,059,780,896	945,782,336
22	816,103,746	864,576,279	961,590,758	1,046,058,767	1,087,709,226
23	364,785	3,838,126	61,132	392,279	208,761
24	74,770,959	-5,387,729	-10,663,275	-13,722,129	141,926,890
25	74,406,174	-9,225,855	-10,724,407	-14,114,408	141,718,129
26	15.55%	11.35%	11.11%	9.47%	13.01%

* [(Line 24 - (Line 24 *(.5385/(1+.5385)))-(Line 24 * (State Income Tax Percentage *.5385)))+(Line 14*(Line 4/(Line 5))]/ Line 13 * Line 2

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

*** 2013 value represents Columbia Gas's accrual for refund for the Pipeline Modernization Settlement. 2014-2015 values represent liability to shippers associated with Modernization program. 2016-2017 values includes the revenue sharing liability associated with Modernization program in accordance with the Modernization Settlement.

****NGSA uses an estimated 60 percent equity capitalization rate instead of Columbia Gas' reported greater than 85.00% equity ratio in the 2016 and 2017 Form 2s. 70% and greater equity is not within a range FERC has historically approved.

NGSA
Pipeline Cost Model

Columbia Gulf Transmission, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	1,199,017,479	1,207,158,216	1,387,420,970	1,435,930,507	1,664,097,720	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	813,801,156	821,462,530	826,761,908	837,670,683	858,837,943	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes	0	0	0	0	0	pp. 234-235
4 Account 190	117,616,897	122,731,754	144,342,698	170,660,476	136,720,132 **	pp. 274-275
5 Account 282	3,799,656	2,387,924	4,071,233	4,152,405	7,274,571	pp. 276-277
6 Account 283						
6 Regulatory Assets and Liabilities						
7 Account 182.3	0	0	0	0	0	p. 232
7 Account 254	7,147,484	11,439,878	14,895,241	15,766,168	99,703,341 **	p. 278
8 Working Capital						
9 Prepayments	3,115,906	2,234,664	1,652,617	1,945,983	731,063	p. 230
9 Materials and Supplies	8,102,605	7,881,420	15,193,919	7,955,670	7,629,187	pp. 110-111
10 Gas Stored Underground						
11 Acct. 117.1	0	0	0	0	0	p. 110
11 Acct. 117.2	0	0	0	0	0	p. 110
12 Operation and Maintenance Costs						
13 Production	0	0	0	0	0	O&M
13 Storage	0	0	0	0	738,469	p. 319
14 less: Comp. fuel and losses	0	0	0	0	0	
15 Net storage costs	0	0	0	0	738,469	
16 Transmission	33,819,011	38,182,524	44,828,733	48,748,118	33,969,585	p. 323
17 less: Comp. fuel	-2,028,474	574,274	1,588,481	-1,640,960	-4,562,902	
18 Net transmission costs	35,847,485	37,608,250	43,240,252	50,389,078	38,532,487	
19 A&G	33,253,359	35,175,664	37,397,609	66,111,829	33,366,190 1/	pp. 323-325
20 Other Taxes	8,252,064	9,082,753	9,098,069	11,650,402	11,983,628	p. 114 Income Statement
21 Depreciation, Amortization, and Negative Salvage	18,414,287	18,764,955	19,551,033	22,775,194	24,224,951	p. 114 Income Statement
22 Revenue						
23 ACA and GRI revenue	1,068,746	780,451	787,508	758,251	681,493	p. 300
23 Other Revenue	142,709,359	153,787,150	164,603,398	170,441,733	158,305,543	p. 301
24 Total Revenue	143,778,105	154,567,601	165,390,906	171,199,984	158,987,036	
25 Sales Revenues	0	0	0	0	0	
26 Net Revenues	143,778,105	154,567,601	165,390,906	171,199,984	158,987,036	

**NGSA
Pipeline Cost Model**

Columbia Gulf Transmission, LLC									
Account 495									
27	Value of excess fuel retained	2,582,923	2,877,964	1,754,589	1,467,691	1,792,987			p. 308
28	Penalty revenues	0	0	0	0	0			
29	Gains on settlements of imbalances	0	204,652	0	591,882	173,222			
30	Total non-cost of service revenues	2,582,923	3,082,616	1,754,589	2,059,573	1,966,209			
31	Cost of Debt	5.79%	5.39%	5.23%	4.73%	3.26%			p. 218
32	Allowed Rate of Return on Equity	11.00%	11.00%	15.00%	15.00%	10.24%			p. 218
33	Account 496 - Provision for Rate Refunds	0	0	0	597,285	0			

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NGSA
Pipeline Cost Model

Columbia Gulf Transmission, LLC

Cost of Service Calculation

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base					
Capitalization					
1	56.46%	49.67%	56.72%	40.00%	40.00%
2	43.54%	50.33%	43.28%	60.00%	60.00%
3	3.27%	2.68%	2.97%	1.89%	1.30%
4	4.79%	5.54%	6.49%	9.00%	6.14%
5	8.06%	8.21%	9.46%	10.89%	7.45%
Rate Base					
6	1,199,017,479	1,207,158,216	1,387,420,970	1,435,930,507	1,664,097,720
7	0	0	0	0	0
8	-813,801,156	-821,462,530	-826,761,908	-837,670,683	-858,837,943
9	11,218,511	10,116,084	16,846,536	9,901,653	8,360,250
10	-121,416,553	-125,119,678	-148,413,931	-174,812,881	-143,994,703
11	0	0	0	0	0
12	-7,147,484	-11,439,878	-14,895,241	-15,766,168	-99,703,341
13	267,870,797	259,252,214	414,196,426	417,582,428	569,921,983
Cost of Service					
14	21,586,191	21,293,714	39,176,587	45,483,078	42,447,789
15	6,908,141	7,728,528	14,479,033	20,236,687	18,854,773
16	453,964	507,875	951,479	1,329,839	1,239,028
17	8,252,064	9,082,753	9,098,069	11,650,402	11,983,628
18	18,414,287	18,764,955	19,551,033	22,775,194	24,224,951
19	35,847,485	37,608,250	43,240,252	50,389,078	39,270,956
20	33,253,359	35,175,664	37,397,609	66,111,829	33,366,190
21	124,715,490	130,161,739	163,894,062	217,976,107	171,387,315
22	143,778,105	154,567,601	165,390,906	171,199,984	158,987,036
23	2,582,923	3,082,616	1,754,589	2,059,573	1,966,209
24	19,062,615	24,405,862	1,496,844	-46,776,123	-12,400,279
25	16,479,692	21,323,246	-257,745	-48,835,696	-14,366,488
26	21.05%	22.50%	15.51%	3.53%	8.01%

* $[(\text{Line 24} - (\text{Line 24} * (.5385 / (1 + .5385))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .5385))] + [(\text{Line 14} * (\text{Line 4} / \text{Line 5}))] / \text{Line 13} * \text{Line 2}$

1/ Columbia Gulf had substantial increases in costs for outside services and charges from associated companies in 2016.

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

***NGSA uses an estimated 60 percent equity capitalization rate instead of Columbia Gulf's reported greater than 75.00% equity ratio in the 2016 and 2017 Form 2s. 70% and greater equity is not within a range FERC has historically approved.

NGSA
Pipeline Cost Model

Dominion Energy Questar Pipeline, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	1,139,138,168	1,182,832,342	1,216,970,243	1,220,063,646	1,241,049,740	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	463,948,184	491,228,427	508,996,039	499,076,811	520,577,928	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes						
4 Account 190	6,275,160	6,087,194	1,143,985	4,887,575	3,257,480	pp. 234-235
5 Account 282	176,314,197	184,360,891	189,142,129	117,295,626	76,396,092	pp. 274-275
6 Account 283	0	0	0	0	505,583	pp. 276-277
7 Regulatory Assets and Liabilities						
8 Account 182.3 (rate base est.)	1,365,786	785,818	529,671	399,773	446,685	p. 232
9 Account 254 (rate base est.)	8,203,288	9,029,831	9,998,269	11,486,206	67,518,248	p. 278
10 Working Capital						
11 Prepayments	2,003,367	2,052,323	1,780,449	658,085	644,362	p. 230
12 Materials and Supplies	6,815,168	6,220,729	6,118,977	5,483,370	5,497,469	pp. 110-111 Balance Sheet
13 Gas Stored Underground						
14 Acct. 117.1	104,216,284	104,175,984	104,175,076	104,171,529	104,185,082	p. 110
15 Acct. 117.2	2,265,893	3,032,409	5,317,258	3,378,027	5,005,892	p. 110
16 Operation and Maintenance Costs						
17 Production	0	0	0	0	0	O&M
18 Storage	10,629,596	15,372,950	11,741,717	12,578,992	14,963,977	
19 less: Comp. fuel and losses	5,707,615	8,906,605	6,142,718	6,580,810	7,664,878	p. 322
20 Net storage costs	4,921,981	6,466,345	5,598,999	5,998,182	7,299,099	
21 Transmission	44,546,157	47,124,080	36,147,778	32,066,699	36,094,542	
22 less: Comp. fuel	12,946,610	15,918,894	8,660,097	7,761,786	8,603,113	pp. 320-321 Prior yr. changed
23 Net transmission costs	31,599,547	31,205,186	27,487,681	24,304,913	27,491,429	
24 A&G	29,015,443	26,569,233	26,957,963	24,583,605	14,523,702	pp. 321-322
25 Other Taxes	6,035,354	6,095,694	5,985,545	6,072,761	6,110,758	p. 114 Income Statement
26 Depreciation, Amortization, and Negative Salvage	34,016,881	35,677,808	35,626,350	35,805,313	35,731,454	p. 114 Income Statement
27 Revenue						
28 ACA and GRI revenue	662,026	494,031	536,681	525,740	487,051	p. 300
29 Other Revenue	176,564,846	174,690,879	174,756,647	172,136,217	170,657,665	p. 301
30 Total Revenue	177,226,872	175,184,910	175,293,328	172,661,957	171,144,716	
31 Sales Revenues	4,481,763	1,497,907	6,386,845	6,602,007	4,723,848	
32 Net Revenues	172,745,109	173,687,003	168,906,483	166,059,950	166,420,868	

NGSA
Pipeline Cost Model

Dominion Energy Questar Pipeline, LLC

Account 495												p. 308
27	Value of excess fuel retained	0	0	0	0	0	0	0	0	0	0	
28	Penalty revenues	0	0	0	0	0	0	0	0	0	0	
29	Gains on settlements of imbalances	0	0	0	0	0	0	0	0	0	0	
30	Total non-cost of service revenues	0	0	0	0	0	0	0	0	0	0	
31	Cost of Debt	6.35%	6.35%	6.35%	6.35%	6.35%	6.35%	6.35%	6.35%	6.35%	6.35%	p. 218
32	Allowed Rate of Return on Equity	11.75%	11.75%	11.75%	11.75%	11.75%	11.75%	11.75%	11.75%	11.75%	11.75%	p. 218
33	Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	0	0	0	0	
	Total Deliveries (Dth)	473,395,742	455,388,165	442,091,409	445,629,361	441,898,218						p.520
	Account 810 Amount of Credit	18,654,225	24,825,500	14,802,815	14,342,596	16,267,991						p.331
	Account 810 Gas Used (dth)	5,254,463	5,977,427	6,078,458	6,189,171	6,023,809						p.331

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**NGSA
Pipeline Cost Model**

Dominion Energy Questar Pipeline, LLC

		<u>Cost of Service Calculation</u>				
		Year End 2013	Year End 2014	Year End 2015	Year End 2016	Year End 2017
1	Allowed Return on Rate Base					
<u>Capitalization</u>						
2	Debt	44.43%	44.50%	43.23%	44.25%	46.52%
	Equity	55.57%	55.50%	56.77%	55.75%	53.48%
3	Return on Debt	2.82%	2.83%	2.75%	2.81%	2.95%
4	Return on Equity	6.53%	6.52%	6.67%	6.55%	6.28%
5	Total Return	9.35%	9.35%	9.42%	9.36%	9.24%
Rate Base						
6	Gas Plant in Service	1,139,138,168	1,182,832,342	1,216,970,243	1,220,063,646	1,241,049,740
7	Gas Stored - Noncurrent	104,216,284	104,175,984	104,175,076	104,171,529	104,185,082
8	Accumulated Depreciation	-463,948,184	-491,228,427	-508,996,039	-499,076,811	-520,577,928
9	Working Capital	11,084,428	11,305,461	13,216,684	9,519,482	11,147,723
10	ADIT	-170,039,037	-178,273,697	-187,998,144	-112,408,051	-73,644,195
11	Regulatory Assets	1,365,786	785,818	529,671	399,773	446,685
12	Regulatory Liabilities	-8,203,288	-9,029,831	-9,998,269	-11,486,206	-67,518,248
13	Total Rate Base	613,614,157	620,567,650	627,899,222	711,183,362	695,088,859
Cost of Service						
14	Return	57,377,710	58,004,458	59,120,354	66,570,319	64,211,753
15	Federal Income Tax	21,573,883	21,790,875	22,552,848	25,085,284	23,519,294
16	State Income Tax	4,687,697	4,734,846	4,900,412	5,450,674	5,110,407
17	Other Taxes	6,035,354	6,095,694	5,985,545	6,072,761	6,110,758
18	Depreciation	34,016,881	35,677,808	35,626,350	35,805,313	35,731,454
19	O&M	36,521,528	37,671,531	33,086,680	30,303,095	34,790,528
20	A&G	29,015,443	26,569,233	26,957,963	24,583,605	14,523,702
21	Total Cost of Service	189,228,496	190,544,445	188,230,151	193,871,050	183,997,895
22	Total Revenues	172,745,109	173,667,003	168,906,483	166,059,950	166,420,868
23	Non-Cost of Service Revenues	0	0	0	0	0
24	Cost Over (Under) Recovery	-16,483,387	-16,857,442	-19,323,668	-27,811,100	-17,577,027
25	Over (Under) Recovery excl. non-COS rev	-16,483,387	-16,857,442	-19,323,668	-27,811,100	-17,577,027
26	Actual rate of return on equity *	9.17%	9.14%	8.86%	8.01%	9.23%
* [(Line 24 - (Line 24 * (.5385/(1+.5385))))-(Line 24 * (State Income Tax Percentage * .5385)))+(Line 14*(Line 4/(Line 5)))] / Line 13 * Line 2						
** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.						
1/	Fuel Gas Reimbursement Sharing 2/	260,368	250,463	243,150	245,096	243,044
	Average price	\$3.55	\$4.15	\$2.44	\$2.32	\$2.70
	Valuation of Fuel Recovery	\$924,305	\$1,039,423	\$593,287	\$568,623	\$656,219
	Actual rate of return on equity including fuel	9.32%	9.30%	8.95%	8.09%	9.32%
2/ Annual Recalculation of Fuel - Complex Sharing Pursuant to 2005 Settlement.						

Dominion Energy Transmission, Inc.
(formerly CNG Transmission Corporation)

NGSA
Pipeline Cost Model

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form Z)</u>		
1	Total Plant in Service	5,081,817,969	5,408,016,781	5,605,470,943	5,397,085,852	5,915,312,613	p. 110	Balance Sheet
2	Total Accum. Depreciation, Amortization	1,589,498,386	1,690,799,720	1,808,521,131	1,709,494,540	1,813,731,347	p. 110	Balance Sheet
3	Accumulated Deferred Income Taxes	8,092,410	6,680,603	34,328,022	48,020,209	24,419,394	pp. 234-235	
4	Account 190	843,881,401	905,642,745	985,004,109	1,040,311,081	735,282,321 **	pp. 274-275	
5	Account 282	17,863,996	18,556,733	6,167,159	4,141,276	10,353,852	pp. 276-277	
6	Account 283							
6	Regulatory Assets and Liabilities	43,857,077	58,587,239	42,207,015	69,215,815	0	p. 232	
7	Account 182.3	0	9,459,009	23,963,426	40,225,080	502,805,403 **	p. 278	
7	Account 254							
8	Prepayments	3,914,198	3,536,938	4,848,510	3,889,410	3,406,165	p. 230	
9	Materials and Supplies	47,057,475	42,459,259	44,384,064	41,545,713	40,324,036	pp. 110-111	
10	Gas Stored Underground	53,986,868	54,348,262	54,348,262	54,348,262	54,348,262	p. 110	
11	Acct. 117.1	2,571,448	2,571,448	2,571,448	2,571,448	2,571,448	p. 110	
11	Acct. 117.2							
12	Operation and Maintenance Costs	206,737,769	139,427,820	100,971,903	61,428,076	27,881,398		O&M
12	Production							
13	Storage	33,948,594	47,320,777	45,797,519	46,298,155	61,402,526	p. 319	
14	less: Comp. fuel and losses	-10,159,267	-2,413,864	1,667,302	-640,880	-637,709		
15	Net storage costs	44,107,861	49,734,641	44,130,217	46,939,035	62,040,235		
16	Transmission	51,274,374	55,135,235	92,287,271	100,767,281	100,414,151	pp. 320-321	
17	less: Comp. fuel	-57,334,231	-62,679,196	-16,710,445	-16,017,647	-29,623,321		
18	Net transmission costs	108,608,605	117,814,431	108,997,716	116,784,928	130,037,472		
19	A&G	38,689,170	10,230,625	5,038,916	8,258,768	17,748,544	pp. 323-325	
20	Other Taxes	44,074,698	49,488,133	54,956,405	51,171,955	60,650,720	p. 114	Income Statement
21	Depreciation, Amortization, and Negative Salvage	128,839,974	137,035,142	146,303,565	142,767,578	141,365,199	p. 114	Income Statement
22	Revenue	1,835,443	1,746,371	2,145,512	2,007,567	2,118,800	p. 300	
23	ACA and GRI revenue	1,090,207,475	1,041,008,920	891,233,647	803,341,173	785,067,660	p. 301	
23	Other Revenue	72,673,702	62,048,825	16,470,740	36,544,850	0	p. 308	
24	less: Fuel Revenues	1,019,369,216	980,706,466	876,908,419	768,803,890	787,186,460		
25	Total Revenue	15,581,327	13,538,305	5,072,841	4,567,109	7,323,237		
26	Net Revenues	1,003,787,889	967,168,161	871,835,578	764,236,781	779,863,223		

Dominion Energy Transmission, Inc.
 (formerly CNG Transmission Corporation)

NGSA
Pipeline Cost Model

27	Account 495																					
28		Value of excess fuel retained	72,673,702	62,048,825	16,470,740	36,544,850	0	0	0												p. 308	
29		Penalty revenues	0	0	0	0	0	0	0													
30		Gains on settlements of imbalances	0	0	0	0	0	0	0													
		Total non-cost of service revenues	72,673,702	62,048,825	16,470,740	36,544,850	0	0	0													
31		Cost of Debt	3.24%	3.49%	3.38%	4.64%	4.65%															p. 218
32		Allowed Rate of Return on Equity	10.67%	10.67%	10.67%	10.67%	10.67%															p. 218
33		Account 496 - Provision for Rate Refunds	0	9,974,967	0	0	0															
34		Gas Received from Shippers (dth)	35,299,803	35,986,106	36,634,113	30,561,551	32,524,928															p.520
35		Gas Used for Compressor Station Fuel (dth)	15,849,785	21,013,896	21,992,947	19,963,499	24,987,591															p.520
36		Account 810 Amount of Credit	85,235,521	85,118,623	33,053,818	26,092,709	39,795,824															p.331
37		Account 810 Gas Used (dth)	24,750,716	25,543,571	23,315,457	18,715,091	18,097,900															p.331

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Dominion Energy Transmission, Inc.
(formerly CNG Transmission Corporation)

NGSA
Pipeline Cost Model

Cost of Service Calculation

	Year End 2013	Year End 2014	Year End 2015	Year End 2016	Year End 2017
Allowed Return on Rate Base					
<u>Capitalization</u>					
1					
2	29.78%	42.00%	49.00%	46.00%	49.00% ***
	70.22%	58.00%	51.00%	54.00%	51.00%
3					
4	0.96%	1.47%	1.66%	2.13%	2.28%
5	7.49%	6.19%	5.44%	5.76%	5.44%
	8.46%	7.65%	7.10%	7.90%	7.72%
Rate Base					
6	5,081,817,969	5,408,016,781	5,605,470,943	5,397,085,852	5,915,312,613
7	53,986,868	54,348,262	54,348,262	54,348,262	54,348,262
8	-1,589,498,386	-1,690,799,720	-1,808,521,131	-1,709,494,540	-1,813,731,347
9	53,543,121	48,567,645	51,804,022	48,006,571	46,301,649
10	-853,652,987	-917,518,875	-956,843,246	-996,432,148	-721,216,779
11	43,857,077	58,587,239	42,207,015	69,215,815	0
12	0	-9,459,009	-23,963,426	-40,225,080	-502,805,403
13	2,790,053,662	2,951,742,323	2,964,502,439	2,822,504,732	2,978,208,995
Cost of Service					
14	235,964,492	225,938,164	210,417,419	222,870,619	229,923,691
15	112,562,178	98,361,591	86,864,254	87,568,426	87,265,876
16	12,414,000	10,847,878	9,579,886	9,657,546	9,624,180
17	44,074,698	49,488,133	54,956,405	51,171,955	60,650,720
18	128,839,974	137,035,142	146,303,565	142,767,578	141,365,199
19	359,454,235	306,976,892	254,099,836	225,152,039	219,959,105
20	38,689,170	10,230,625	5,038,916	8,258,768	17,748,544
21	931,988,747	838,878,425	767,260,281	747,446,932	766,537,315
22	1,003,787,889	967,168,161	871,835,578	764,236,781	779,863,223
23	0	0	0	0	0
24	71,789,142	128,289,736	104,575,297	16,789,849	13,325,908
25	71,789,142	128,289,736	104,575,297	16,789,849	13,325,908
26	12.83%	15.10%	14.76%	11.32%	11.19%
* $[(\text{Line } 24 - (\text{Line } 24 * (.5385 / (1 + .5385))) - (\text{Line } 24 * (\text{State Income Tax Percentage} * .5385))] / (\text{Line } 14 * (\text{Line } 4 / \text{Line } 5))] / (\text{Line } 13 * \text{Line } 2)$					
1/ Over/Under Dth Fuel Recovery					
	Average price				7,537,337
	Valuation of Fuel Recovery	\$72,673,702	\$62,048,825	\$16,470,740	\$36,544,850
	Actual rate of return on equity including fuel	15.02%	17.24%	15.40%	12.74%
					\$16,582,141
** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.					
*** DTTI changed its capital structure ratios to that of Dominion Gas Holdings, LLC in 2013 instead of Dominion Resources, Inc. as previously provided.					

**NGSA
Pipeline Cost Model**

EI Paso Natural Gas Company, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	3,495,102,306	3,529,887,574	3,556,271,693	3,581,174,437	3,635,296,931	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	1,401,404,852	1,470,353,575	1,530,562,888	1,594,845,918	1,669,576,700	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes						
Account 190	12,081,209	19,784,485	19,481,770	19,816,471	12,438,288	pp. 234-235
Account 282	626,197,300	569,442,471	572,525,500	78,516,883	63,114,321	pp. 274-275
Account 283	8,330,129	7,036,609	5,685,791	5,745,831	3,109,432	pp. 276-277
6 Regulatory Assets and Liabilities						
Account 182.3 (rate base est.)	8,691,617	8,484,157	7,845,374	7,547,110	7,248,780	p. 232
Account 254 (rate base est.)	21,926,868	21,207,170	20,487,472	19,767,774	58,839,265	p. 278
8 Working Capital						
Prepayments	18,404,611	18,447,110	16,376,527	16,376,241	17,683,733	p. 230
Materials and Supplies	43,731,322	44,961,728	42,975,226	42,008,225	41,218,100	pp. 110-111 Balance Sheet
10 Gas Stored Underground						
Acct. 117.1	20,998,718	20,998,718	20,998,718	20,998,718	20,998,718	p. 110
Acct. 117.2	2,067,332	832,103	832,103	0	0	p. 110
12 Operation and Maintenance Costs						
Production	0	0	0	0	0	pp. 317-320 O&M
Storage	2,514,442	2,235,121	2,455,809	2,249,207	2,639,999	pp. 320-322 O&M
less: Comp. fuel and losses	638,563	536,068	837,682	436,401	389,107	
Net storage costs	1,875,879	1,699,053	1,618,127	1,812,806	2,250,892	
Transmission	233,045,017	282,522,341	225,082,723	223,512,338	242,938,177	p. 323 O&M
less: Comp. fuel	86,269,041	120,951,591	71,876,752	62,627,752	76,773,231	
Net transmission costs	146,775,976	161,570,750	153,205,971	160,884,586	166,164,946	
A&G	41,473,369	39,765,822	34,897,223	35,212,745	20,682,199	pp. 323-325 O&M
22 Other Taxes	26,725,536	27,953,564	29,508,692	33,220,425	33,793,020	p. 114 Income Statement
23 Depreciation, Amortization, and Negative Salvage	86,442,202	86,814,719	91,050,233	87,813,178	88,208,339	p. 114 Income Statement
Revenue						
ACA and GRI revenue	2,021,617	1,651,585	1,987,729	2,003,719	2,079,048	p. 300
Other Revenue	516,856,238	575,952,507	632,223,412	625,836,811	646,025,565	p. 301
26 Total Revenue	518,877,855	577,604,092	634,211,141	627,840,530	648,104,613	
Sales Revenues	0	4,522,561	23,286,311	2,107,185	631,187	
Net Revenues	518,877,855	573,081,531	610,924,830	625,733,345	647,473,426	

NGSA
Pipeline Cost Model

El Paso Natural Gas Company, LLC

27	Account 495	0	0	0	0	0	0	p. 308
28	Value of excess fuel retained	-56,507	220,545	175,537	34,059	63,040		
29	Penalty revenues	<u>649,529</u>	<u>1,646,747</u>	<u>1,626,565</u>	<u>884,698</u>	<u>1,662,434</u>		
30	Gains on settlements of imbalances	593,022	1,867,292	1,802,102	918,757	1,725,474		
31	Total non-cost of service revenues							
32	Cost of Debt	8.06%	8.03%	8.00%	7.97%	7.94%		p. 218
	Allowed Rate of Return on Equity	12.13%	12.13%	12.13%	12.13%	12.13%		p. 218
33	Account 496 - Provision for Rate Refunds	40,151,625	38,581,000	39,752,781	35,908,437	39,091,417		

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El Paso Natural Gas Company, LLC

NGSA
Pipeline Cost Model

		Cost of Service Calculation				
Allowed Return on Rate Base		Year End 2013	Year End 2014	Year End 2015	Year End 2016	Year End 2017
Capitalization						
1	Debt	47.81%	47.89%	49.22%	51.85%	53.20%
2	Equity	52.19%	52.11%	50.78%	48.15%	46.80%
Rate Base						
3	Return on Debt	3.85%	3.85%	3.94%	4.13%	4.22%
4	Return on Equity	6.33%	6.32%	6.16%	5.84%	5.68%
5	Total Return	10.18%	10.17%	10.10%	9.97%	9.90%
6	Gas Plant in Service	3,495,102,306	3,529,887,574	3,556,271,693	3,581,174,437	3,635,296,931
7	Gas Stored - Noncurrent	20,998,718	20,998,718	20,998,718	20,998,718	20,998,718
8	Accumulated Depreciation	-1,401,404,852	-1,470,353,575	-1,530,562,888	-1,594,845,918	-1,669,576,700
9	Working Capital	64,203,265	64,240,941	60,183,856	58,384,466	58,901,833
10	ADIT	-622,446,220	-556,694,595	-558,729,521	-64,446,243	-53,785,465
11	Regulatory Assets	8,691,617	8,484,157	7,845,374	7,547,110	7,248,780
12	Regulatory Liabilities	-21,926,868	-21,207,170	-20,487,472	-19,767,774	-58,839,265
13	Total Rate Base	1,543,217,966	1,575,356,050	1,535,519,760	1,989,044,796	1,940,244,832
Cost of Service						
14	Return	157,163,370	160,158,730	155,044,716	198,368,233	192,102,089
15	Federal Income Tax	52,605,367	53,618,577	50,928,818	62,554,181	59,308,628
16	State Income Tax	4,153,055	4,233,046	4,020,696	4,938,488	4,682,260
17	Other Taxes	26,725,536	27,953,564	29,508,692	33,220,425	33,793,020
18	Depreciation	86,442,202	86,814,719	91,050,233	87,813,178	88,208,339
19	O&M	148,651,855	163,269,803	154,824,098	162,697,392	168,415,838
20	A&G	41,473,369	39,765,922	34,897,223	35,212,745	20,682,199
21	Total Cost of Service	517,214,755	535,814,261	520,274,476	584,804,642	567,192,373
22	Total Revenues	518,877,855	573,081,531	610,924,830	625,733,345	647,473,426
23	Non-Cost of Service Revenues	593,022	1,867,292	1,802,102	918,757	1,725,474
24	Cost Over (Under) Recovery	1,663,100	37,267,270	90,650,354	40,928,703	80,281,053
25	Over (Under) Recovery excl. non-COS rev	1,070,078	35,399,978	88,848,252	40,009,946	78,555,579
26	Actual rate of return on equity *	12.26%	14.89%	19.19%	14.73%	17.50%

* $[[\text{Line 24} - (\text{Line 24} * (.5385 / (1 + .5385))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .5385))] + [\text{Line 14} * (\text{Line 4} / \text{Line 5})]] / \text{Line 13} * \text{Line 2}$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

***In 2016, deferred taxes were reduced in connection with Kinder Morgan, Inc.'s acquisition of all outstanding common units of Kinder Morgan Energy Partners, LP that it didn't already own. This sale is a taxable transaction under IRS rules, which increases the tax basis of the assets.

NGSA
Pipeline Cost Model

Enable Gas Transmission, LLC
(previously CenterPoint Energy Gas Transmission Company, LLC)

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	2,437,495,847	2,431,675,019	2,545,176,443	2,585,131,042	2,588,711,269	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	703,861,863	740,363,742	785,458,959	836,582,952	886,033,244	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes						
4 Account 190	422,646	676,494	1,256,718	1,884,307	1,483,918	pp. 234-235
5 Account 282	431,553,422	456,268,994	491,865,295	508,325,001	340,139,026 **	pp. 274-275
6 Account 283	2,115,157	762,536	810,784	1,187,909	873,791	pp. 276-277
7 Regulatory Assets and Liabilities						
8 Account 182.3	0	0	0	0	726,548 **	p. 232
9 Account 254	0	0	0	0	227,809,499 **	p. 278
10 Working Capital						
11 Prepayments	1,112,555	1,419,409	344,370	615,549	2,430,984	p. 230
12 Materials and Supplies	20,560,349	18,530,350	16,839,597	14,664,469	14,292,709	pp. 110-111
13 Gas Stored Underground						
14 Acct. 117.1	57,376,221	57,376,221	57,376,221	57,376,221	57,376,221	p. 110
15 Acct. 117.2	2,649,137	12,232,653	5,395,420	20,130,435	16,109,796	p. 110
16 Operation and Maintenance Costs						
17 Production	10,756,457	17,962,744	12,299,174	6,432,699	4,728,130	O&M
18 Storage	3,488,531	4,397,541	2,995,168	2,461,389	2,840,973	
19 less: Comp. fuel and losses	1,654,734	1,856,808	969,787	459,690	340,037	p. 322
20 Net storage costs	1,843,797	2,540,733	2,025,381	2,001,699	2,500,936	
21 Transmission	112,914,776	107,329,007	100,756,031	79,303,306	77,311,492	p. 323
22 less: Comp. fuel	19,102,759	19,998,091	13,726,627	9,007,684	6,305,896	
23 Net transmission costs	93,812,017	87,390,916	87,029,404	70,295,622	71,005,596	
24 A&G	51,514,608	52,807,185	50,354,803	40,497,411	37,917,907	pp. 323-325
25 Other Taxes	26,163,644	23,795,569	23,829,529	20,147,289	20,254,972	p. 114 Income Statement
26 Depreciation, Amortization, and Negative Salvage	58,396,981	61,497,813	59,631,211	62,088,251	63,255,932	p. 114 Income Statement
Revenue						
27 ACA and GRI revenue	0	0	0	0	0	p. 300
28 Other Revenue	441,535,296	494,067,033	447,765,658	483,357,194	485,061,874	p. 301
29 Total Revenue	441,535,296	494,067,033	447,765,658	483,357,194	485,061,874	
30 Sales Revenues	28,154,950	80,394,494	67,761,183	68,775,659	89,563,214	
31 Net Revenues	413,380,346	413,672,539	380,004,475	414,581,535	395,498,660	

NGSA

Pipeline Cost Model

Enable Gas Transmission, LLC
(previously CenterPoint Energy Gas Transmission Company, LLC)
Account 495

27	Value of excess fuel retained	7,975,899	10,380,960	6,321,095	5,448,201	5,919,602	p. 308
28	Penalty revenues	0	0	0	0	0	
29	Gains on settlements of imbalances	4,859,663	2,892,328	0	0	0	
30	Total non-cost of service revenues	12,835,562	13,263,288	6,321,095	5,448,201	5,919,602	
31	Cost of Debt	2.63%	3.60%	3.82%	3.35%	3.35%	p. 218
32	Allowed Rate of Return on Equity	13.25%	13.25%	13.25%	13.25%	13.10%	p. 218
33	Account 496 - Provision for Rate Refunds	0	0	0	0	0	

***** end of data input *****

Enable Gas Transmission, LLC
(previously CenterPoint Energy Gas Transmission Company, LLC)

NGSA
Pipeline Cost Model

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
1	Allowed Return on Rate Base					
2	Capitalization					
	Debt	31.81%	29.88%	40.00%	40.00%	40.00% ***
	Equity	68.19%	70.12%	60.00%	60.00%	60.00%
3	Return on Debt	0.84%	1.08%	1.53%	1.34%	1.34%
4	Return on Equity	9.04%	9.29%	7.95%	7.95%	7.86%
5	Total Return	9.87%	10.37%	9.48%	9.29%	9.20%
6	Rate Base					
7	Gas Plant in Service	2,437,495,847	2,431,675,019	2,545,176,443	2,585,131,042	2,588,711,269
8	Gas Stored - Noncurrent	57,376,221	57,376,221	57,376,221	57,376,221	57,376,221
9	Accumulated Depreciation	-703,861,863	-740,363,742	-785,458,959	-836,582,952	-886,033,244
10	Working Capital	24,322,041	32,182,412	22,579,387	35,410,453	32,833,489
11	ADIT	-433,245,933	-456,355,036	-491,419,361	-507,628,603	-339,528,899
12	Regulatory Assets	0	0	0	0	726,548
	Regulatory Liabilities	0	0	0	0	-227,809,499
13	Total Rate Base	1,382,086,313	1,324,514,874	1,348,253,731	1,333,706,161	1,226,275,885
	Cost of Service					
14	Return	136,436,493	137,306,894	127,787,489	123,901,302	112,817,381
15	Federal Income Tax	48,562,079	47,856,415	41,683,511	41,233,749	37,483,166
16	State Income Tax	7,313,452	7,207,179	6,277,539	6,209,805	5,644,967
17	Other Taxes	26,163,644	23,795,569	23,829,529	20,147,289	20,254,972
18	Depreciation	58,396,981	61,497,813	59,631,211	62,088,251	63,255,932
19	O&M	106,412,271	107,894,393	101,353,959	78,730,020	78,234,662
20	A&G	51,514,608	52,807,185	50,354,803	40,497,411	37,917,907
21	Total Cost of Service	434,799,528	438,365,448	410,918,041	372,807,827	355,608,988
22	Total Revenues	413,380,346	413,672,539	380,004,475	414,581,535	395,498,660
23	Non-Cost of Service Revenues	12,835,562	13,263,288	6,321,095	5,448,201	5,919,602
24	Cost Over (Under) Recovery	-21,419,182	-24,692,909	-30,913,566	41,773,708	39,889,672
25	Over (Under) Recovery excl. non-COS rev	-34,254,744	-37,956,197	-37,234,661	36,325,507	33,970,070
26	Actual rate of return on equity *	11.75%	11.49%	10.72%	16.70%	16.69%

* $[(\text{Line } 24 - (\text{Line } 24 * (.3889 / (1 + .3889))) - (\text{Line } 24 * (\text{State Income Tax Percentage} * .3889))] + (\text{Line } 14 * (\text{Line } 4 / \text{Line } 5))] / \text{Line } 13 * \text{Line } 2$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

***NGSA uses an estimated 60 percent equity capitalization rate instead of Enable's reported greater than 70% equity ratios in the 2015-2017 Form 2s. 70% and greater equity is not within a range FERC has historically approved.

**NGSA
Pipeline Cost Model**

Florida Gas Transmission Company, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	6,192,242,973	6,265,091,604	6,323,588,034	6,392,256,509	6,519,394,797	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	1,725,759,765	1,830,183,852	1,938,401,369	2,030,216,327	2,145,863,656	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes						
4 Account 190	90,894,742	89,746,316	0	0	0	pp. 234-235
5 Account 282	1,192,812,786	1,365,955,481	1,413,306,673	1,418,587,671	954,834,180 **	pp. 274-275
6 Account 283	60,217,291	58,834,284	59,400,913	57,038,482	36,830,461	pp. 276-277
7 Regulatory Assets and Liabilities						
8 Account 182.3	541,621,457	526,866,760	512,653,734	484,417,287	455,273,858	p. 232
9 Account 254	18,047,890	21,297,623	23,717,656	24,158,343	665,193,429 **	p. 278
10 Working Capital						
11 Prepayments	2,618,794	1,193,734	2,028,645	1,977,418	1,718,756	p. 230
12 Materials and Supplies	19,242,601	22,509,966	21,296,248	22,125,066	23,041,389	pp. 110-111
13 Gas Stored Underground						
14 Acct. 117.1	0	0	0	0	0	p. 110
15 Acct. 117.2	0	0	0	0	0	p. 110
16 Operation and Maintenance Costs						
17 Production	0	0	0	0	0	O&M
18 Storage	0	0	0	0	0	
19 less: Comp. fuel and losses	0	0	0	0	0	p. 322
20 Net storage costs	0	0	0	0	0	
21 Transmission	151,065,706	174,825,578	158,940,776	144,575,679	155,488,057	p. 323
22 less: Comp. fuel	49,376,639	72,525,227	59,581,677	53,476,111	50,142,468	
23 Net transmission costs	101,689,067	102,300,351	99,359,099	91,099,568	95,345,589	
24 A&G	36,889,300	38,176,860	39,031,051	31,938,416	36,383,192	pp. 324-325
25 Other Taxes	58,446,752	49,777,823	54,119,259	51,708,245	53,481,473	p. 114 Income Statement
26 Depreciation, Amortization, and Negative Salvage	118,923,337	120,921,044	122,403,638	120,467,877	122,069,562	p. 114 Income Statement
Revenue						
27 ACA and GRI revenue	1,409,386	1,124,229	1,374,095	1,378,614	1,244,575	p. 300
28 Other Revenue	782,677,504	794,866,249	815,113,820	828,080,688	838,031,331	p. 301
29 Total Revenue	784,086,890	795,990,478	816,487,915	829,459,302	839,275,906	
30 Sales Revenues	1,858,059	3,400,875	2,083,450	4,125,028	7,119,886	
31 Net Revenues	782,228,831	792,589,603	814,404,465	825,334,274	832,156,020	

NGSA
Pipeline Cost Model

Florida Gas Transmission Company, LLC

27	Account 495											p. 308
28		Value of excess fuel retained	0	0	0	0	0	0	0	0	0	
29		Penalty revenues	0	0	0	0	0	0	0	0	0	
		Gains on settlements of imbalances	0	0	0	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	0	0	0	
30		Total non-cost of service revenues	0	0	0	0	0	0	0	0	0	
31		Cost of Debt	6.09%	6.01%	6.02%	5.97%	5.92%					p. 218
32		Allowed Rate of Return on Equity	12.10%	12.10%	12.10%	12.50%	11.79%					p. 218
33		Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	0	0	0	

***** end of data input *****

**NGSA
Pipeline Cost Model**

Florida Gas Transmission Company, LLC

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
1	Allowed Return on Rate Base					
2	Capitalization					
	Debt	45.20%	46.10%	45.15%	48.81%	55.58%
	Equity	54.80%	53.90%	54.85%	51.19%	44.42%
3	Return on Debt	2.75%	2.77%	2.72%	2.91%	3.29%
4	Return on Equity	6.63%	6.52%	6.64%	6.40%	5.24%
5	Total Return	9.38%	9.29%	9.35%	9.31%	8.53%
6	Rate Base					
	Gas Plant in Service	6,192,242,973	6,265,091,604	6,323,588,034	6,392,256,509	6,519,394,797
7	Gas Stored - Noncurrent	0	0	0	0	0
8	Accumulated Depreciation	-1,725,759,765	-1,830,183,852	-1,938,401,369	-2,030,216,327	-2,145,863,656
9	Working Capital	21,861,395	23,703,700	23,324,893	24,102,484	24,760,145
10	ADIT	-1,162,135,335	-1,335,043,449	-1,472,707,586	-1,475,626,153	-991,664,641
11	Regulatory Assets	541,621,457	526,866,760	512,653,734	484,417,287	455,273,858
12	Regulatory Liabilities	-18,047,890	-21,297,623	-23,717,656	-24,158,343	-665,193,429
13	Total Rate Base	3,849,782,835	3,629,137,140	3,424,740,050	3,370,775,457	3,196,707,074
14	Cost of Service					
	Return	361,243,602	337,237,932	320,380,322	313,910,442	272,597,725
15	Federal Income Tax	117,387,578	108,842,247	104,522,454	99,184,760	76,986,608
16	State Income Tax	10,786,736	10,001,506	9,604,561	9,114,081	7,074,294
17	Other Taxes	58,446,752	49,777,823	54,119,259	51,708,245	53,481,473
18	Depreciation	118,923,337	120,921,044	122,403,638	120,467,877	122,069,562
19	O&M	101,689,067	102,300,351	99,359,099	91,099,568	95,345,589
20	A&G	36,889,300	38,176,860	39,031,051	31,938,416	36,383,192
21	Total Cost of Service	805,366,373	767,257,763	749,420,384	717,423,389	663,938,443
22	Total Revenues	782,228,831	792,589,603	814,404,465	825,334,274	832,156,020
23	Non-Cost of Service Revenues	0	0	0	0	0
24	Cost Over (Under) Recovery	-23,137,542	25,331,840	64,984,081	107,910,885	168,217,577
25	Over (Under) Recovery excl. non-COS rev	-23,137,542	25,331,840	64,984,081	107,910,885	168,217,577
26	Actual rate of return on equity *	11.40%	12.93%	14.32%	16.52%	19.40%

* [(Line 24 - (Line 24 * (-.4599/(1+.4599))))-(Line 24 * (State Income Tax Percentage * .4599)))+(Line 4/(Line 5))] / Line 13 * Line 2

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

NGSA
Pipeline Cost Model

Gas Transmission Northwest LLC
(formerly Pacific Gas Transmission, Northwest Corp.)

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	1,716,450,882	1,716,180,274	1,774,586,281	1,782,724,412	1,811,446,718	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	968,354,677	999,808,417	1,028,877,765	1,063,266,790	1,099,854,384	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes						
4 Account 190	8,369,755	8,685,495	8,983,626	9,257,867	6,265,907	pp. 234-235
5 Account 282	68,708,652	87,114,505	82,771,244	102,866,110	82,647,304 **	pp. 274-275
6 Account 283	1,003,922	993,459	1,149,758	1,097,221	551,441	pp. 276-277
7 Regulatory Assets and Liabilities						
8 Account 182.3 (rate base est.)	613,206	767,926	1,348,822	1,386,798	896,532	p. 232
9 Account 254 (rate base est.)	0	0	0	0	53,724,064 **	p. 278
10 Working Capital						
11 Prepayments	393,022	346,185	343,055	263,746	114,489	p. 230
12 Materials and Supplies	6,124,184	5,687,779	5,854,418	6,186,439	6,152,975	pp. 110-111
13 Gas Stored Underground						
14 Acct. 117.1	0	0	0	0	0	p. 110
15 Acct. 117.2	-91,261	-370,830	-243,942	-478,804	-73,434	p. 110
16 Operation and Maintenance Costs						
17 Production	0	0	0	0	0	O&M
18 Storage	0	0	0	0	0	
19 less: Comp. fuel and losses	0	0	0	0	0	p. 322
20 Net storage costs	0	0	0	0	0	
21 Transmission	42,248,639	34,218,987	42,315,504	48,825,146	54,745,887	p. 323
22 less: Comp. fuel	27,351,657	21,845,490	29,638,090	33,297,188	36,173,548	
23 Net transmission costs	14,896,982	12,373,497	12,677,414	15,527,958	18,572,339	
24 A&G	24,042,192	24,043,741	22,005,937	18,736,253	23,844,042	p. 325
25 Other Taxes	9,231,359	8,970,358	8,642,296	8,752,718	8,811,124	p. 114 Income Statement
26 Depreciation, Amortization, and Negative Salvage	36,850,762	36,992,106	36,278,244	37,389,202	37,914,809	p. 114 Income Statement
27 Revenue						
28 ACA and GRI revenue	1,294,051	890,014	1,110,767	1,183,551	1,169,169	p. 300
29 Other Revenue	193,085,851	187,280,113	196,237,114	210,876,498	216,849,103	p. 301
30 Total Revenue	194,379,902	188,170,127	197,347,881	212,060,049	218,018,272	
31 Sales Revenues	0	0	0	0	0	
32 Net Revenues	194,379,902	188,170,127	197,347,881	212,060,049	218,018,272	

**NGSA
Pipeline Cost Model**

**Gas Transmission Northwest LLC
(formerly Pacific Gas Transmission, Northwest Corp.)**

27	Account 495	0	0	0	0	0	0		
28	Value of excess fuel retained	0	0	0	0	0	0	0	P. 308
29	Penalty revenues	0	0	0	0	0	0	0	
30	Gains on settlements of imbalances	0	0	0	0	0	0	0	
	Total non-cost of service revenues	0	0	0	0	0	0	0	
31	Cost of Debt	5.53%	5.53%	5.07%	4.91%	4.68%			p. 218
32	Allowed Rate of Return on Equity	12.20%	12.20%	12.20%	12.20%	12.20%			p. 218
33	Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	0	

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**NGSA
Pipeline Cost Model**

**Gas Transmission Northwest LLC
(formerly Pacific Gas Transmission, Northwest Corp.)**

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base						
Capitalization						
1	Debt	39.00%	33.70%	36.55%	36.20%	38.73%
2	Equity	61.00%	66.30%	63.45%	63.80%	61.27%
3	Return on Debt	2.16%	1.86%	1.85%	1.78%	1.81%
4	Return on Equity	7.44%	8.09%	7.74%	7.78%	7.47%
5	Total Return	9.60%	9.95%	9.59%	9.56%	9.29%
Rate Base						
6	Gas Plant in Service	1,716,450,882	1,716,180,274	1,774,586,281	1,782,724,412	1,811,446,718
7	Gas Stored - Noncurrent	0	0	0	0	0
8	Accumulated Depreciation	-968,354,677	-999,808,417	-1,028,877,765	-1,063,266,790	-1,099,854,384
9	Working Capital	6,425,945	5,663,134	5,953,531	5,971,381	6,194,030
10	ADIT	-61,342,819	-79,422,469	-74,937,376	-94,705,464	-76,932,838
11	Regulatory Assets	613,206	767,926	1,348,822	1,386,798	896,532
12	Regulatory Liabilities	0	0	0	0	-53,724,064
13	Total Rate Base	693,792,537	643,380,448	678,073,493	632,110,337	588,025,994
Cost of Service						
14	Return	66,595,064	64,030,573	65,054,269	60,436,196	54,612,938
15	Federal Income Tax	20,079,127	20,237,961	20,412,385	19,133,699	17,093,452
16	State Income Tax	1,979,228	1,994,885	2,012,078	1,886,036	1,684,926
17	Other Taxes	9,231,359	8,970,358	8,642,296	8,752,718	8,811,124
18	Depreciation	36,850,762	36,992,106	36,278,244	37,389,202	37,914,809
19	O&M	14,896,982	12,373,497	12,677,414	15,527,958	18,572,339
20	A&G	24,042,192	24,043,741	22,005,937	18,736,253	23,844,042
21	Total Cost of Service	173,674,714	168,643,121	167,082,624	161,862,062	162,533,629
22	Total Revenues	194,379,902	188,170,127	197,347,881	212,060,049	218,018,272
23	Non-Cost of Service Revenues	0	0	0	0	0
24	Cost Over (Under) Recovery	20,705,188	19,527,006	30,265,257	50,197,987	55,484,643
25	Over (Under) Recovery excl. non-COS rev	20,705,188	19,527,006	30,265,257	50,197,987	55,484,643
26	Actual rate of return on equity *	15.53%	15.32%	17.00%	20.68%	22.70%

* $[(\text{Line 24} - (\text{Line 24} * (.3889 / (1 + .3889)))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .3889))] + [(\text{Line 4} / (\text{Line 5}))] / \text{Line 13} * \text{Line 2}$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

NGSA
Pipeline Cost Model

Great Lakes Gas Transmission Ltd. Partnership

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	2,069,560,368	2,074,859,217	2,076,414,060	2,087,281,562	2,105,807,765	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	1,300,815,616	1,328,100,415	1,352,605,205	1,379,043,274	1,407,091,302	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes						
4 Account 190	15,164	8,371	0	2,469	2,256,749	pp. 234-235
5 Account 282	198,560,108	201,968,470	204,805,335	207,957,097	136,504,588 **	pp. 274-275
5 Account 283	1,346,309	1,285,597	1,232,194	1,112,575	330,722	pp. 276-277
6 Regulatory Assets and Liabilities						
7 Account 182.3 (rate base est.)	3,548,101	3,388,098	3,247,359	2,932,113	1,345,567	p. 232
7 Account 254 (rate base est.)	0	0	0	0	97,031,071 **	p. 278
8 Working Capital						
9 Prepayments	848,939	891,529	919,695	777,693	659,516	p. 230
9 Materials and Supplies	10,703,345	10,635,245	10,613,690	10,150,171	9,689,167	pp. 110-111
10 Gas Stored Underground						
11 Acct. 117.1 Base gas	0	0	0	0	0	p. 110
11 Acct. 117.2 System balancing	0	0	0	0	0	p. 110
12 Operation and Maintenance Costs						
12 Production	0	0	0	0	0	O&M
13 Storage	0	0	0	0	0	
14 less: Comp. fuel and losses	0	0	0	0	0	p. 322
15 Net storage costs	0	0	0	0	0	
16 Transmission	25,313,749	35,071,770	32,007,970	43,014,715	35,451,256	p. 323
17 less: Comp. fuel	9,071,460	18,059,992	4,976,833	3,881,854	8,735,270	
18 Net transmission costs	16,242,289	17,011,778	27,031,137	39,132,861	26,715,986	
19 A&G	28,196,314	25,487,736	22,427,658	19,387,004	28,402,508	pp. 323-325
20 Other Taxes	15,924,406	10,774,007	10,636,987	10,872,437	10,829,895	p. 114 Income Statement
21 Depreciation, Amortization, and Negative Salvage	30,979,863	27,735,870	27,756,290	27,910,749	29,473,530	p. 114 Income Statement
22 Revenue						
23 ACA and GRI revenue	885,096	676,829	635,338	629,957	807,477	p. 300
23 Other Revenue	123,595,154	144,990,198	176,265,387	178,502,793	180,679,353	p. 301
24 Total Revenue	124,480,250	145,667,027	176,900,725	179,132,750	181,486,830	
25 Sales Revenues	0	0	0	0	0	
26 Net Revenues	124,480,250	145,667,027	176,900,725	179,132,750	181,486,830	

Great Lakes Gas Transmission Ltd. Partnership

NGSA
Pipeline Cost Model

27	Account 495									p. 308
28	Value of excess fuel retained	0	0	0	0	0	0	0	0	
29	Penalty revenues	0	0	0	0	0	0	0	0	
30	Gains on settlements of imbalances	0	0	0	0	0	0	0	0	
31	Other	0	0	0	0	0	0	0	0	
32	Total non-cost of service revenues	0	0	0	0	0	0	0	0	
33	Cost of Debt	7.79%	7.78%	7.77%	7.75%	7.75%	8.12%			p. 218
	Allowed Rate of Return on Equity	13.25%	13.25%	13.25%	13.25%	13.25%	13.25%			p. 218
	Account 496 - Provision for Rate Refunds	0	0	1,900,000	7,802,120	47,299,949				

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	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base					
<u>Capitalization</u>					
1	55.79%	55.96%	54.44%	51.00%	51.89%
2	44.21%	44.04%	45.56%	49.00%	48.11%
3	4.35%	4.35%	4.23%	3.95%	4.21%
4	5.86%	5.84%	6.04%	6.49%	6.37%
5	10.20%	10.19%	10.27%	10.45%	10.59%
Rate Base					
6	2,069,560,368	2,074,859,217	2,076,414,060	2,087,281,582	2,105,807,765
7	0	0	0	0	0
8	-1,300,815,616	-1,328,100,415	-1,352,605,205	-1,379,043,274	-1,407,091,302
9	11,552,284	11,526,774	11,533,385	10,927,864	10,348,683
10	-199,891,253	-203,245,696	-206,037,529	-209,067,203	-134,578,561
11	3,548,101	3,388,098	3,247,359	2,932,113	1,345,567
12	0	0	0	0	-97,031,071
13	583,953,884	558,427,978	532,552,070	513,031,082	478,801,081
Cost of Service					
14	59,585,872	56,898,160	54,675,459	53,586,097	50,695,664
15	15,935,185	15,180,027	14,976,276	15,516,645	14,218,328
16	1,365,873	1,301,145	1,283,681	1,329,998	1,218,714
17	15,924,406	10,774,007	10,636,987	10,872,437	10,829,895
18	30,979,863	27,735,870	27,756,290	27,910,749	29,473,530
19	16,242,289	17,011,778	27,031,137	39,132,861	26,715,986
20	28,196,314	25,487,736	22,427,658	19,387,004	28,402,508
21	168,229,802	154,388,723	158,787,489	167,735,790	161,554,625
22	124,480,250	145,667,027	176,900,725	179,132,750	181,486,830
23	0	0	0	0	0
24	-43,749,552	-8,721,696	18,113,236	11,396,960	19,932,205
25	-43,749,552	-8,721,696	18,113,236	11,396,960	19,932,205
26	2.37%	10.97%	18.04%	16.16%	18.81%

* $[(\text{Line 24} - (\text{Line 24} * (.4658 / (1 + .4658)))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .4658))] + (\text{Line 14} * (\text{Line 4} / \text{Line 5})) / \text{Line 13} * \text{Line 2}$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

Gulf South Pipeline Company, LP
(formerly Koch Gateway Pipeline Company)

NGSA
Pipeline Cost Model

Data Input Section

	Year End 2013	Year End 2014	Year End 2015	Year End 2016	Year End 2017	Source (Form 2)
1	3,466,196,833	3,808,324,424	4,365,395,853	4,432,367,018	4,824,047,159 **	p. 110 Balance Sheet
2	1,279,664,777	1,349,403,446	1,598,592,177	1,687,125,611	1,773,723,024	p. 110 Balance Sheet
3	0	0	0	0	0	pp. 234-235
4	261,298,741	300,453,658	360,353,993	416,883,559	348,483,881 ***	pp. 274-275
5	35,457,559	36,848,272	37,776,934	39,547,571	15,939,882	pp. 276-277
6	35,175,818	39,774,498	40,851,858	44,572,061	38,546,405	p. 232
7	0	0	0	0	120,436,998 ***	p. 278
8	4,319,121	5,316,781	8,492,046	9,389,636	9,489,495	p. 230
9	1,297,886	2,702,390	7,472,879	3,484,088	3,917,186	pp. 110-111
10	4,439,248	18,990,310	78,033,688	78,033,688	78,033,688	p. 110
11	22,046,914	22,046,914	22,046,914	22,046,914	22,046,914	p. 110
12	1,295,999	1,467,660	1,248,625	956,469	1,174,746	O&M
13	-32,616,688	1,588,816	10,569,975	9,696,181	10,987,141	p. 322
14	1,171,282	1,464,917	2,225,044	1,202,944	1,845,688	
	-37,004,139	-4,537,434	319,700	295,230	372,990	
15	3,216,169	4,661,333	8,025,231	8,198,007	8,768,473	
16	136,301,905	146,139,046	141,194,908	136,551,529	145,104,474	p. 323
17	35,018,375	40,284,888	24,202,155	24,552,957	37,263,906	
18	101,283,530	105,894,158	116,992,753	111,998,572	107,840,568	
19	49,997,014	51,726,897	59,143,993	60,146,635	57,107,536	pp. 323-325
20	41,717,214	40,503,445	44,260,204	44,942,750	47,825,250	p. 114 Income Statement
21	77,214,536	76,974,852	93,687,243	97,186,324	102,355,955	p. 114 Income Statement
22	1,533,870	1,223,478	1,432,264	1,411,123	1,340,625	p. 300
23	411,926,981	398,473,011	471,453,016	510,144,745	508,844,559	p. 301
24	413,460,851	399,696,489	472,885,280	511,555,868	510,185,184	
25	1,709,136	0	0	6,681,400	0	
26	411,751,715	399,696,489	472,885,280	504,874,468	510,185,184	

Gulf South Pipeline Company, LP
(formerly Koch Gateway Pipeline Company)

NGSA
Pipeline Cost Model

Account 495														
27	Value of excess fuel retained	5,988,474	9,415,231	6,694,212	1,513,670	366,209								p. 308
28	Penalty revenues	0	0	0	0	0								
29	Gains on settlements of imbalances	0	0	0	0	0								
30	Total non-cost of service revenues	5,988,474	9,415,231	6,694,212	1,513,670	366,209								
31	Cost of Debt	4.85%	5.36%	5.36%	5.47%	5.50%								p. 218
32	Allowed Rate of Return on Equity	12.25%	12.25%	12.25%	12.25%	12.25%								p. 218
33	Account 496 - Provision for Rate Refunds	0	0	16,166,481	123,258	0								
34	Gas Received from Shippers (dth)	11,890,630	11,451,368	12,167,872	12,015,015									p.520
35	Gas Used for Compressor Station Fuel (dth)	12,018,277	10,385,802	9,492,470	10,930,264									p.520
36	Account 810 Amount of Credit	36,087,980	41,561,692	26,232,971	25,607,668									p.331
37	Account 810 Gas Used (dth)	9,903,090	9,385,135	9,797,798	10,310,726									p.331

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Gulf South Pipeline Company, LP
(formerly Koch Gateway Pipeline Company)

NGSA
Pipeline Cost Model

Cost of Service Calculation

	Year End 2013	Year End 2014	Year End 2015	Year End 2016	Year End 2017
Allowed Return on Rate Base					
Capitalization					
Debt	41.02%	38.85%	31.93%	40.00%	40.00% ****
Equity	58.98%	61.15%	68.07%	60.00%	60.00%
Return on Debt	1.99%	2.08%	1.71%	2.19%	2.20%
Return on Equity	7.23%	7.49%	8.34%	7.35%	7.35%
Total Return	9.21%	9.57%	10.05%	9.54%	9.55%
Rate Base					
Gas Plant in Service	3,466,196,833	3,808,324,424	4,365,395,853	4,432,367,018	4,824,047,159
Gas Stored - Noncurrent	4,439,248	18,990,310	78,033,688	78,033,688	78,033,688
Accumulated Depreciation	-1,279,664,777	-1,349,403,446	-1,598,592,177	-1,687,125,611	-1,773,723,024
Working Capital	27,663,921	30,066,085	38,011,839	34,920,638	35,453,595
ADIT	-296,756,300	-337,301,930	-398,130,927	-456,431,130	-364,423,763
Regulatory Assets	35,175,818	39,774,498	40,851,858	44,572,061	38,546,405
Regulatory Liabilities	0	0	0	0	-120,436,998
Total Rate Base	1,957,054,743	2,210,449,941	2,525,570,134	2,446,336,664	2,717,497,062
Cost of Service					
Return	180,333,201	211,611,567	253,820,379	233,331,591	259,520,969
Federal Income Tax	54,988,183	64,393,016	81,898,662	69,924,456	77,675,124
State Income Tax	5,388,842	6,310,516	8,026,069	6,852,597	7,612,162
Other Taxes	41,717,214	40,503,445	44,260,204	44,942,750	47,825,250
Depreciation	77,214,536	76,974,852	93,687,243	97,188,324	102,355,955
O&M	105,795,698	111,993,151	126,266,609	121,153,048	117,783,787
A&G	49,997,014	51,726,897	59,143,993	60,146,635	57,107,536
Total Cost of Service	515,434,687	563,503,444	667,103,159	633,539,401	669,880,784
Total Revenues	411,751,715	399,696,489	472,885,280	504,874,468	510,185,184
Non-Cost of Service Revenues	5,988,474	9,415,231	6,694,212	1,513,670	366,209
Cost Over (Under) Recovery	-103,682,972	-163,806,955	-194,217,879	-128,664,933	-159,695,600
Over (Under) Recovery excl. non-COS rev	-109,671,446	-173,222,186	-200,912,091	-130,178,603	-160,061,809
Actual rate of return on equity *	6.12%	3.99%	4.55%	6.27%	5.57%

* $[(\text{Line 24} - (\text{Line 24} \times (.3889 / (1 + .3889))) - (\text{Line 24} \times (\text{State Income Tax Percentage} \times .3889))] / (\text{Line 4} / (\text{Line 5}))] / (\text{Line 13} \times \text{Line 2})$

** Effective January 1, 2015, Petal Gas Storage, LLC was merged into Gulf South. The merger was accounted for as a transaction between entities under common control, wholly owned subsidiaries of Boardwalk Pipelines, LP.

*** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

****NGSA uses an estimated 60 percent equity capitalization rate instead of Gulf South's reported greater than 75% equity ratio in the 2016 and 2017 Form2s. Above 70% equity is not within a range FERC has historically approved.

1/ Over/Under Dth Fuel Recovery	-127,647	1,065,566	2,665,402	1,084,751	2/
Average price	\$3.64	\$4.43	\$2.68	\$2.48	
Valuation of Fuel Recovery	-\$464,635	\$4,720,457	\$7,143,277	\$2,690,182	
Actual rate of return on equity including fuel	6.10%	4.22%	4.83%	6.40%	

2/ Gulf South's fuel tracker went into effect in April 2016.

NGSA
Pipeline Cost Model

Kern River Gas Transmission Company

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1	2,810,712,592	2,820,261,484	2,839,553,921	2,868,937,995	2,878,462,045	p. 110
2	1,052,478,285	1,132,272,576	1,215,787,484	1,278,667,956	1,332,265,996	p. 110
3	-77,039,114	-109,259,911	-150,144,055	-254,042,339	-281,617,980	p. 232 + p. 278
4	127,537,265	119,536,183	122,973,693	136,119,503	152,057,936	pp. 234-235
5	478,396,697	485,998,797	494,787,977	513,752,529	338,186,264 **	pp. 274-275
6	21,299,484	19,985,164	24,411,046	26,763,481	34,814,062	pp. 276-277
7	26,339,300	24,610,000	22,845,000	21,346,800	14,706,352	p. 232
8	3,365,278	3,134,365	3,639,928	4,620,779	201,904,375 **	p. 278
9	1,420,190	1,302,799	1,499,806	1,476,392	1,289,626	p. 230
10	10,058,485	10,396,000	10,522,048	10,614,902	11,097,449	pp. 110-111
11	0	0	0	0	0	p. 110
12	0	0	0	0	0	p. 110
13	0	0	0	0	0	O&M
14	0	0	0	0	0	p. 322
15	0	0	0	0	0	
16	0	0	0	0	0	
17	79,440,925	96,361,175	69,415,504	61,481,926	63,650,901	p. 323
18	58,209,624	67,105,353	44,499,225	38,811,796	41,822,234	
19	21,231,301	29,255,822	24,916,279	22,670,130	21,828,667	
20	17,582,540	18,386,733	17,225,642	16,066,995	18,644,936	pp. 323-325
21	17,325,531	16,240,434	15,245,464	14,125,937	12,897,704	p. 114
22	84,827,922	85,857,119	86,314,999	86,978,525	66,122,810	p. 114
23	1,495,450	1,090,521	1,278,525	1,217,280	1,083,634	p. 300
24	357,561,113	353,165,624	358,719,227	340,867,106	300,536,593	p. 301
25	359,056,563	354,256,145	359,997,752	342,084,386	301,620,227	
26	0	0	0	277,204	0	
27	359,056,563	354,256,145	359,997,752	341,807,182	301,620,227	

NGSA
Pipeline Cost Model

Kern River Gas Transmission Company

28	Account 495	0	0	0	0	0	p. 308
29	Value of excess fuel retained	0	0	0	0	0	
30	Penalty revenues	0	0	0	0	0	
31	Gains on settlements of imbalances	0	0	0	0	0	
	Total non-cost of service revenues	0	0	0	0	0	
32	Cost of Debt	6.45%	6.50%	5.32%	5.49%	5.49%	p. 218
33	Allowed Rate of Return on Equity	11.55%	11.55%	11.55%	11.55%	11.55%	p. 218
34	Account 496 - Provision for Rate Refunds	0	0	0	0	4,773,833	

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**NGSA
Pipeline Cost Model**

Kern River Gas Transmission Company

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base					
Capitalization					
1	39.80%	36.33%	40.00%	40.00%	0.00% ***
2	60.20%	63.67%	60.00%	60.00%	100.00%
Return on Debt					
3	2.57%	2.36%	2.13%	2.20%	0.00%
4	6.95%	7.35%	6.93%	6.93%	11.55%
5	9.52%	9.72%	9.06%	9.13%	11.55%
Total Return					
6	2,810,712,592	2,820,261,484	2,839,563,921	2,868,937,995	2,878,462,045
7	0	0	0	0	0
8	-1,052,478,285	-1,132,272,576	-1,215,787,484	-1,278,667,956	-1,332,265,996
9	-77,039,114	-109,259,911	-150,144,055	-254,042,339	-281,617,960
10	11,478,675	11,698,799	12,021,854	12,091,294	12,387,075
11	-372,158,916	-386,447,778	-396,225,330	-404,396,507	-220,942,390
12	26,339,300	24,610,000	22,845,000	21,346,800	14,706,352
13	-3,365,278	-3,134,365	-3,639,928	-4,620,779	-201,904,375
14	1,343,488,974	1,225,455,653	1,108,623,978	960,648,508	868,824,751
Total Rate Base					
Cost of Service					
15	127,902,837	119,057,122	100,419,160	87,668,783	100,349,259
16	50,299,917	48,525,400	41,368,730	35,846,969	54,034,216
17	5,029,992	4,852,540	4,136,873	3,584,697	5,403,422
18	17,325,531	16,240,434	15,245,464	14,125,937	12,897,704
19	84,827,922	85,857,119	86,314,999	86,978,525	66,122,810
20	21,231,301	29,255,822	24,916,279	22,670,130	21,828,667
21	17,582,540	18,386,733	17,225,642	16,066,995	18,644,936
22	324,200,040	322,175,170	289,627,147	266,942,035	279,281,014
23	359,056,563	354,256,145	359,997,752	341,807,182	301,620,227
24	0	0	0	0	0
25	34,856,523	32,080,975	70,370,605	74,865,147	22,339,213
26	34,856,523	32,080,975	70,370,605	74,865,147	22,339,213
27	14.12%	14.00%	17.86%	19.29%	13.08%

* [(Line 25 - (Line 25 * (.5385/(1 + .5385)))) - (Line 25 * (State Income Tax Percentage * .5385))] + [(Line 15 * (Line 4/Line 5))] / Line 14 * Line 2

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

***NGSA uses an estimated 60 percent equity capitalization rate instead of Kern River's reported greater than 70% equity ratios in the 2015-2016 Form 2s. FERC Commission approved Kern River's use of 100% equity capitalization in their last rate case for design of their "Period Two" levelized rates. 2017 cost of debt held constant from 2016 Form 2.

NGSA
Pipeline Cost Model

Mojave Pipeline Company, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1						
2	247,467,318	248,627,498	249,176,786	249,357,053	249,916,323	p. 110 Balance Sheet
3	169,189,496	173,069,473	176,477,465	180,382,864	184,361,760	p. 110 Balance Sheet
4	0	0	0	0	0	pp. 234-235
5	29,209,578	22,099,232	-421,864	243,785	655,296	pp. 274-275
6	0	0	0	0	0	pp. 276-277
7	0	0	0	0	409,612 **	p. 232
8	0	0	0	0	0	p. 278
9	9,498	0	0	0	0	p. 230
10	0	0	0	0	0	pp. 110-111
11	1,039,749	1,039,749	1,039,749	1,039,749	1,039,749	p. 110
12	0	0	0	0	0	p. 110
13	0	0	0	0	0	O&M
14	0	0	0	0	0	
15	0	0	0	0	0	p. 322
16	3,341,721	4,169,708	2,894,783	3,358,858	4,161,349	p. 323
17	2,373,224	2,511,668	1,477,623	1,532,145	1,847,482	
18	-1,909,513	-2,816,638	-2,502,042	-2,091,858	207,111	
19	2,878,010	4,474,678	3,919,202	3,918,571	2,106,756	
20	1,952,178	1,801,827	1,946,738	1,971,764	1,772,652	pp. 323-325
21	911,497	864,080	980,902	1,196,123	1,161,692	p. 114 Income Statement
22	4,002,969	3,988,297	4,010,650	4,024,875	4,061,460	p. 114 Income Statement
23	242,523	162,100	170,839	199,873	173,328	p. 300
24	18,650,554	18,541,629	16,247,416	15,608,714	15,545,073	p. 301
25	18,993,077	18,703,729	16,418,255	15,808,587	15,718,401	
26	0	0	0	0	0	
	18,893,077	18,703,729	16,418,255	15,808,587	15,718,401	

NGSA
Pipeline Cost Model

Mojave Pipeline Company, LLC

27	Account 495						p. 308
28	Value of excess fuel retained	0	0	0	0	0	
29	Penalty revenues	0	0	0	0	0	
30	Gains on settlements of imbalances	0	0	0	0	14	
	Total non-cost of service revenues	0	0	0	0	14	
31	Cost of Debt	8.06%	8.03%	8.00%	7.97%	7.94% ****	p. 218
32	Allowed Rate of Return on Equity	12.13%	12.13%	12.13%	12.13%	12.13%	p. 218
33	Account 496 - Provision for Rate Refunds	0	0	0	0	0	

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**NGSA
Pipeline Cost Model**

Mojave Pipeline Company, LLC

Cost of Service Calculation

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base					
<u>Capitalization</u>					
1	47.81%	47.89%	49.22%	51.85%	53.20% ****
2	52.19%	52.11%	50.78%	48.15%	46.80%
Return on Debt					
3	3.85%	3.85%	3.94%	4.13%	4.22%
4	6.33%	6.32%	6.16%	5.84%	5.68%
5	10.18%	10.17%	10.10%	9.97%	9.90%
Rate Base					
6	247,467,318	248,627,498	249,176,786	249,357,053	249,916,323
7	0	0	0	0	0
8	-169,189,496	-173,069,473	-176,477,465	-180,382,864	-184,361,760
9	1,049,247	1,039,749	1,039,749	1,039,749	1,039,749
10	-29,209,578	-22,099,232	421,864	-243,785	-655,296
11	0	0	0	0	0
12	0	0	0	0	-409,612
13	50,117,491	54,498,542	74,160,934	69,770,153	65,529,404
Cost of Service					
14	5,104,032	5,540,600	7,488,188	6,958,205	6,488,014
15	1,708,410	1,854,904	2,459,707	2,194,226	2,003,077
16	297,115	322,592	427,775	381,605	348,361
17	911,497	864,080	980,902	1,196,123	1,161,692
18	4,002,969	3,988,297	4,010,650	4,024,875	4,061,460
19	2,878,010	4,474,678	3,919,202	3,918,571	2,106,756
20	1,952,178	1,801,827	1,946,738	1,971,764	1,772,652
21	16,854,211	18,846,978	21,233,162	20,645,369	17,942,012
22	18,893,077	18,703,729	16,418,255	15,808,587	15,718,401
23	0	0	0	0	14
24	2,038,866	-143,249	-4,814,907	-4,836,782	-2,223,611
25	2,038,866	-143,249	-4,814,907	-4,836,782	-2,223,625
26	16.47%	11.85%	5.02%	4.12%	8.10%

* [(Line 25 - (Line 25 * (.5385/(1+.5385))))-(Line 25 * (State Income Tax Percentage * .5385)))+(Line 15*(Line 4/Line 5))] / Line 14 * Line 2

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

*** Mojave's accumulated deferred income taxes reversed in 2015 in connection with Kinder Morgan, Inc. (KMI's) November 2014 acquisition of all outstanding common shares of Kinder Morgan Energy Partners, LP.

****NGSA's analysis uses equity and debt ratios provided in El Paso's FERC Form 2 instead of Mojave's reported missing or 100% equity for 2013-2017.

**NGSA
Pipeline Cost Model**

National Fuel Gas Supply Corp.

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	1,101,695,932	1,208,328,271	1,402,470,058	1,461,863,208	1,535,502,415	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	521,837,659	532,690,035	548,143,926	566,876,954	583,275,847	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes						
4 Account 190	15,612,971	5,019,586	3,594,393	11,308,401	287,998	pp. 234-235
5 Account 282	168,500,440	175,340,764	207,428,539	246,672,921	252,572,472	pp. 274-275
6 Account 283	-802,306	-4,782,309	-5,869,170	-7,289,062	-118,419,897 **	pp. 276-277
7 Regulatory Assets and Liabilities						
8 Account 182.3 (rate base est.)	13,648,431	14,802,537	30,101,528	38,610,243	18,117,256	p. 232
9 Account 254 (rate base est.)	4,948,221	6,226,844	14,277,213	15,343,095	130,925,633 **	p. 278
10 Working Capital						
11 Prepayments	837,650	992,648	1,157,963	1,237,942	1,160,067	p. 230
12 Materials and Supplies	8,731,786	8,820,753	9,026,253	9,896,972	11,084,968	pp. 110-111
13 Gas Stored Underground						
14 Acct. 117.1 Base gas	80,409,898	80,409,898	80,409,898	80,409,898	80,409,898	p. 110
15 Acct. 117.2 System balancing	2,882,543	2,882,543	2,882,543	2,882,543	2,882,543	p. 110
16 Operation and Maintenance Costs						
17 Production	887,031	1,002,671	807,219	899,549	878,487	O&M
18 Storage	13,221,354	13,387,717	12,504,874	11,966,141	13,487,560	p. 322
19 less: Comp. fuel and losses	18,540	16,712	17,488	12,452	16,287	
20 Net storage costs	13,202,814	13,371,005	12,487,386	11,953,689	13,471,273	
21 Transmission	34,617,757	38,775,802	30,399,603	30,114,919	37,157,291	p. 323
22 less: Comp. fuel	12,667,842	15,116,172	6,655,700	5,821,488	10,907,498	
23 Net transmission costs	21,949,915	23,659,630	23,743,903	24,293,431	26,249,793	
24 A&G	43,695,231	29,281,172	32,932,253	31,086,680	35,216,123	pp. 323-325
25 Other Taxes	13,048,008	13,892,771	14,547,997	14,912,649	16,015,313	p. 114 Income Statement
26 Depreciation, Amortization, and Negative Salvage	20,937,557	21,738,593	24,381,580	27,866,935	28,613,006	p. 114 Income Statement
27 Revenue						
28 ACA and GRI revenue	919,175	815,819	888,552	861,463	845,601	p. 300
29 Other Revenue	194,323,780	203,416,328	211,754,044	225,428,734	218,912,091	p. 301
30 Total Revenue	195,242,955	204,232,147	212,642,596	226,290,197	219,757,692	
31 Sales Revenues	0	0	0	0	0	
32 Net Revenues	195,242,955	204,232,147	212,642,596	226,290,197	219,757,692	

**NGSA
Pipeline Cost Model**

National Fuel Gas Supply Corp.

28	Account 495												
29	Value of excess fuel retained	3,882	0	0	0	0	0	0	0	0	0	0	p. 308
30	Penalty revenues	84,033	236,019	296,922	193,250	94,987	94,987						
31	Gains on settlements of imbalances	0	0	0	0	0	0						
31	Total non-cost of service revenues	87,915	236,019	296,922	193,250	94,987	94,987						
32	Cost of Debt	6.17%	5.58%	5.58%	5.49%	5.49%	5.49%						p. 218
33	Allowed Rate of Return on Equity	11.30%	11.30%	11.30%	11.30%	11.30%	11.30%						p. 218
34	Account 496 - Provision for Rate Refunds	0	0	0	0	0	0						
35	Gas Received from Shippers (dth)	3,779,488	5,670,931	5,811,910	6,461,753	7,966,278	7,966,278						p. 520
36	Gas Used for Compressor Station Fuel (dth)	5,121,694	5,164,952	5,764,075	7,388,754	6,849,309	6,849,309						p. 520
37	Account 810 Amount of Credit	12,505,746	14,960,192	6,542,865	5,729,009	10,788,083	10,788,083						p. 331
38	Account 810 Gas Used (dth)	3,538,606	3,502,955	3,395,227	4,663,659	5,314,713	5,314,713						p. 331

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**NGSA
Pipeline Cost Model**

National Fuel Gas Supply Corp.

Cost of Service Calculation

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base					
Capitalization					
1 Debt	39.97%	42.05%	39.93%	55.05%	56.38%
2 Equity	60.03%	57.95%	60.07%	44.95%	43.62%
3 Return on Debt	2.47%	2.35%	2.23%	3.02%	3.10%
4 Return on Equity	6.78%	6.55%	6.79%	5.08%	4.93%
5 Total Return	9.25%	8.89%	9.02%	8.10%	8.02%
Rate Base					
6 Gas Plant in Service	1,101,695,932	1,208,328,271	1,402,470,058	1,461,863,208	1,535,502,415
7 Gas Stored - Noncurrent	80,409,898	80,409,898	80,409,898	80,409,898	80,409,898
8 Accumulated Depreciation	-521,837,659	-532,690,035	-548,143,926	-566,876,954	-583,275,847
9 Working Capital	12,451,979	12,695,944	13,066,759	14,017,457	15,127,578
10 ADIT	-152,085,163	-166,538,869	-197,964,976	-228,075,458	-133,864,577
11 Regulatory Assets	13,648,431	14,802,537	30,101,528	38,610,243	18,117,256
12 Regulatory Liabilities	-4,948,221	-6,226,844	-14,277,213	-15,343,095	-130,925,633
13 Total Rate Base	529,335,197	611,780,902	765,662,128	784,605,299	801,091,090
Cost of Service					
14 Return	48,961,065	54,416,321	69,032,128	63,565,544	64,282,129
15 Federal Income Tax	19,334,469	21,571,606	27,985,169	21,459,227	21,261,833
16 State Income Tax	3,234,558	3,608,820	4,681,777	3,590,020	3,556,997
17 Other Taxes	13,048,008	13,892,771	14,547,997	14,912,649	16,015,313
18 Depreciation	20,937,557	21,738,593	24,381,580	27,866,935	28,613,006
19 O&M	36,039,760	38,033,306	37,038,508	37,146,669	40,599,553
20 A&G	43,695,231	29,281,172	32,932,253	31,086,680	35,216,123
21 Total Cost of Service	185,250,649	182,542,589	210,599,411	199,627,723	209,544,953
22 Total Revenues	195,242,955	204,232,147	212,642,596	226,290,197	219,757,692
23 Non-Cost of Service Revenues	87,915	236,019	296,922	193,250	94,987
24 Cost Over (Under) Recovery	9,992,306	21,689,558	2,043,185	26,662,474	10,212,739
25 Over (Under) Recovery excl. non-COS rev	9,904,391	21,453,539	1,746,263	26,469,224	10,117,752
26 Actual rate of return on equity *	13.06%	14.73%	11.55%	15.53%	12.94%

* $[(\text{Line 24} - (\text{Line 24} * (.5385 / (1 + .5385))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .5385)))] / (\text{Line 14} * (\text{Line 4} / \text{Line 5}))] / \text{Line 13} * \text{Line 2}$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

1/ Over/Under Dth Fuel Recovery	-1,342,206	505,979	47,835	-927,001	1,116,969
Average price	\$3.53	\$4.27	\$1.93	\$1.23	\$2.03
Valuation of Fuel Recovery	-\$4,737,987	\$2,160,530	\$92,322	-\$1,140,211	\$2,267,447
Actual rate of return on equity including fuel	12.23%	15.07%	11.56%	15.35%	13.30%

**NGSA
Pipeline Cost Model**

Natural Gas Pipeline Company of America LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	3,930,456,510	3,984,762,026	4,015,890,376	4,127,896,824	4,193,219,694	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	2,513,052,555	2,556,491,097	2,595,000,737	2,644,046,219	2,703,009,099	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes	0	0	0	0	0	pp. 234-235
4 Account 190	394,335,191	402,152,287	406,776,008	419,960,832	298,861,877	pp. 274-275
5 Account 282	5,084,334	5,106,035	0	0	0	pp. 276-277
6 Account 283						
6 Regulatory Assets and Liabilities	476,186	0	0	0	0	p. 232
7 Account 182.3 (rate base est.)	0	0	0	0	204,839,713	p. 278
7 Account 254 (rate base est.)						
8 Working Capital	578,545	508,849	490,348	30,652	225,527	p. 230
9 Prepayments	27,086,580	19,175,027	17,445,643	16,455,799	16,302,391	pp. 110-111
9 Materials and Supplies						
10 Gas Stored Underground	154,207,750	148,705,690	185,497,856	185,497,856	185,497,856	p. 110
11 Acct. 117.1 Base gas	-10,964,147	10,907,449	3,506,780	9,614,875	2,962,475	p. 110
11 Acct. 117.2 System balancing						
12 Operation and Maintenance Costs	4,028	2,846	1,660	0	0	O&M
12 Production						
13 Storage	31,381,585	40,158,105	32,197,369	30,120,605	34,682,493	p. 322
14 less: Comp. fuel and losses	10,490,070	11,497,319	7,862,271	5,453,548	6,565,180	
15 Net storage costs	20,891,515	28,660,786	24,335,098	24,667,057	28,117,313	
16 Transmission	220,510,068	236,958,392	187,971,302	164,107,506	188,529,340	p. 323
17 less: Comp. Fuel	85,806,578	108,485,122	53,574,897	42,270,476	60,581,723	
17 less: Comp. Of Gas by Others Acct. 858	1,389,102	611,930	861,497	586,597	876,134	
18 Net transmission costs	133,314,388	127,861,340	133,534,908	121,250,433	127,071,483	
19 A&G	40,101,872	40,702,351	41,839,074	35,490,471	38,561,958	pp. 323-325
20 Other Taxes	31,064,069	24,935,879	24,347,375	23,986,061	24,060,565	p. 114 Income Statement
21 Depreciation, Amortization, and Negative Salvage	89,239,757	88,455,053	88,564,362	91,458,795	92,741,208	p. 114 Income Statement
22 Revenue	2,035,554	1,604,873	1,889,121	2,009,719	2,092,691	p. 300
23 ACA and GRI revenue	614,752,815	652,217,389	576,050,465	611,389,290	677,386,553	p. 301, 304-307
23 Other Revenue	92,312,045	117,750,587	65,026,085	58,736,067	71,515,515	p. 304-305
24 less: Fuel Revenues	524,476,324	536,071,675	512,913,501	554,662,942	607,963,729	
24 Total Revenue	19,340,706	19,614,456	10,379,378	34,358,408	54,052,577	
25 Sales Revenues	505,135,618	516,457,219	502,534,123	520,304,534	553,911,152	
26 Net Revenues						

NGSA
Pipeline Cost Model

Natural Gas Pipeline Company of America LLC

27	Account 495	0	0	0	0	0	0	0	p. 308
28	Value of excess fuel retained	-265,483	-273,756	0	0	0	0	0	
29	Penalty revenues	0	311,535	0	0	0	0	0	
30	Gains on settlements of imbalances	-265,483	37,779	0	0	0	0	0	
31	Total non-cost of service revenues	4.64%	5.02%	4.92%	4.95%	5.02% **	5.02% **	5.02% **	p. 218
32	Cost of Debt	12.17%	12.17%	12.17%	12.17%	12.17%	12.17%	12.17%	p. 218
33	Allowed Rate of Return on Equity	0	0	0	0	0	0	0	
34	Account 496 - Provision for Rate Refunds	25,228,404	26,062,320	25,334,996	24,197,288	25,096,115	25,096,115	25,096,115	p.520
35	Gas Received from Shippers (dth)	20,107,167	23,267,537	16,418,790	13,167,825	14,523,420	14,523,420	14,523,420	p.520
36	Gas Used for Compressor Station Fuel (dth)	71,297,848	99,624,583	38,755,073	26,493,582	36,401,999	36,401,999	36,401,999	p.331
37	Account 810 Amount of Credit	19,543,467	21,198,033	14,910,330	10,695,438	12,844,328	12,844,328	12,844,328	p.331
	Account 810 Gas Used (dth)								

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**NGSA
Pipeline Cost Model**

Natural Gas Pipeline Company of America LLC

Cost of Service Calculation

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base Capitalization					
1 Debt	66.06%	53.90%	54.50%	51.77%	49.92% ***
2 Equity	33.94%	46.10%	45.50%	48.23%	50.08%
3 Return on Debt	3.07%	2.71%	2.68%	2.56%	2.51%
4 Return on Equity	4.13%	5.61%	5.54%	5.87%	6.09%
5 Total Return	7.20%	8.32%	8.22%	8.43%	8.60%
Rate Base					
6 Gas Plant in Service	3,930,456,510	3,984,762,026	4,015,890,376	4,127,896,824	4,193,219,694
7 Gas Stored - Noncurrent	154,207,750	148,705,690	185,497,856	185,497,856	185,497,856
8 Accumulated Depreciation	-2,513,052,555	-2,556,491,097	-2,595,000,737	-2,644,046,219	-2,703,009,099
9 Working Capital	16,700,978	30,591,325	21,442,771	26,101,326	19,490,393
10 ADIT	-399,419,525	-407,258,322	-406,776,008	-419,960,832	-298,861,877
11 Regulatory Assets	476,186	0	0	0	0
12 Regulatory Liabilities	0	0	0	0	-204,839,713
13 Total Rate Base	1,189,369,344	1,200,309,622	1,221,054,258	1,275,488,955	1,191,497,254
Cost of Service					
14 Return	85,583,236	99,819,549	100,355,397	107,551,856	102,477,343
15 Federal Income Tax	22,591,192	30,967,402	31,092,591	34,427,424	33,393,960
16 State Income Tax	2,904,582	3,981,523	3,997,619	4,426,383	4,293,509
17 Other Taxes	31,064,069	24,935,879	24,347,375	23,986,061	24,060,565
18 Depreciation	89,239,757	88,455,053	88,564,362	91,458,795	92,741,208
19 O&M	154,209,931	156,524,972	157,871,666	145,917,490	155,188,796
20 A&G	40,101,872	40,702,351	41,839,074	35,490,471	38,561,958
21 Total Cost of Service	425,694,638	445,386,729	448,068,084	443,258,480	450,717,339
22 Total Revenues	505,135,618	516,457,219	502,534,123	520,304,534	553,911,152
23 Non-Cost of Service Revenues	-265,483	37,779	0	0	0
24 Cost Over (Under) Recovery	79,440,980	71,070,490	54,466,039	77,046,054	103,193,813
25 Over (Under) Recovery excl. non-COS rev	79,706,463	71,032,711	54,466,039	77,046,054	103,193,813
26 Actual rate of return on equity *	24.49%	20.21%	18.31%	20.01%	22.99%

* $[(\text{Line } 24 - (\text{Line } 24 * (.4599 / (1 + .4599))) - (\text{Line } 24 * (\text{State Income Tax Percentage} * .4599))] + (\text{Line } 14 * (\text{Line } 4 / \text{Line } 5))] / (\text{Line } 13 * \text{Line } 2)$

1/ Over/Under Dth Fuel Recovery	5,121,237	2,794,783	8,916,206	11,029,463	10,572,695
Average price	\$3.65	\$4.70	\$2.60	\$2.48	\$2.83
Valuation of Fuel Recovery	\$18,692,515	\$13,135,480	\$23,182,136	\$27,353,068	\$29,920,727
Actual rate of return on equity including fuel	27.39%	21.69%	20.92%	22.79%	26.13%

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.
 ***NGSA uses Kinder Morgan Energy Partners, LP cost of debt, equity and debt capitalization data based on SEC Form 10-K in 2013 and Kinder Morgan, Inc. SEC Form 10-K in 2014 thru 2017 due to NGPL's reported 100% equity ratios in the Form 2. 100% equity is not within a range FERC has historically approved.

NGSA
Pipeline Cost Model

Northern Border Pipeline Company

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form)</u>
1	2,561,820,884	2,579,060,825	2,566,710,335	2,580,555,618	2,602,115,143	p. 110
2	1,382,702,388	1,436,140,349	1,467,447,709	1,517,823,058	1,572,156,310	p. 110
3	7,886,429	7,013,156	6,148,297	5,276,164	4,395,748	pp. 234-235
4	403,668,028	392,212,717	382,204,770	370,380,939	235,333,106 **	pp. 274-275
5	4,848,273	4,465,636	4,058,777	3,759,566	2,257,046	pp. 276-277
6	0	0	0	0	0	p. 232
7	20,540,718	18,273,076	16,027,277	13,762,596	136,017,031 **	p. 278
8	874,255	890,072	907,532	847,908	741,334	p. 230
9	5,469,560	5,539,362	5,648,703	5,727,004	5,216,019	pp. 110-111
10	0	0	0	0	0	p. 110
11	0	0	0	0	0	p. 110
12	0	0	0	0	0	
13	0	0	0	0	0	p. 319
14	0	0	0	0	0	
15	0	0	0	0	0	
16	121,293,332	137,925,767	77,468,138	82,154,327	91,546,547	p. 323
17	105,028,112	122,803,689	61,896,828	64,159,686	73,733,812	
18	16,265,220	15,122,078	15,571,310	17,994,641	17,812,735	
19	24,920,178	25,953,757	22,959,058	19,760,736	27,415,390	p. 325
20	23,052,460	23,383,208	22,825,566	24,199,847	23,480,563	p. 114
21	57,452,005	57,941,549	58,760,573	58,002,578	58,615,483	p. 114
22	1,691,090	1,225,881	1,463,205	1,471,741	1,418,640	p. 300
23	284,157,574	292,092,584	284,046,766	290,169,977	289,977,478	p. 301
24	285,848,664	293,318,465	285,509,971	291,641,718	291,396,118	
25	0	0	0	0	0	
26	285,848,664	293,318,465	285,509,971	291,641,718	291,396,118	

Northern Border Pipeline Company

NGSA
Pipeline Cost Model

27	Account 495														
28	Value of excess fuel retained		0		0		0		0		0		0		p. 308
29	Penalty revenues		0		0		0		0		0		0		
30	Gains on settlements of imbalances		0		0		0		0		0		0		
	Total non-cost of service revenues		0		0		0		0		0		0		
31	Cost of Debt		5.67%		6.32%		6.30%		6.36%		5.21%		5.21%		p. 218
32	Allowed Rate of Return on Equity		22.23%		21.69%		22.20%		22.48%		25.83%		25.83%		p. 218
33	Account 496 - Provision for Rate Refunds		0		0		0		0		0		0		

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Cost of Service Calculation

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	
Allowed Return on Rate Base						
<u>Capitalization</u>						
1	Debt	55.10%	51.03%	52.34%	54.86%	60.37%
2	Equity	44.90%	48.97%	47.66%	45.14%	39.63%
3	Return on Debt	3.12%	3.23%	3.30%	3.49%	3.15%
4	Return on Equity	9.98%	10.62%	10.58%	10.15%	10.24%
5	Total Return	13.11%	13.85%	13.88%	13.64%	13.38%
Rate Base						
6	Gas Plant in Service	2,561,820,884	2,579,060,825	2,566,710,335	2,580,555,618	2,602,115,143
7	Gas Stored - Noncurrent	0	0	0	0	0
8	Accumulated Depreciation	-1,382,702,388	-1,436,140,349	-1,467,447,709	-1,517,823,058	-1,572,156,310
9	Working Capital	6,343,815	6,429,434	6,556,235	6,574,912	5,957,353
10	ADIT	-400,629,872	-389,665,197	-380,115,250	-368,864,341	-233,194,404
11	Regulatory Assets	0	0	0	0	0
12	Regulatory Liabilities	-20,540,718	-18,273,076	-16,027,277	-13,762,596	-136,017,031
13	Total Rate Base	764,291,721	741,411,637	709,676,334	686,680,535	666,704,751
Cost of Service						
14	Return	100,163,793	102,660,964	98,488,456	93,639,658	89,216,470
15	Federal Income Tax	29,666,786	30,624,894	29,200,674	27,098,056	26,540,406
16	State Income Tax	2,966,679	3,062,489	2,920,677	2,709,806	2,654,041
17	Other Taxes	23,052,460	23,383,208	22,825,566	24,199,847	23,480,563
18	Depreciation	57,452,005	57,941,549	58,760,573	58,002,578	58,615,483
19	O&M	16,265,220	15,122,078	15,571,310	17,994,641	17,812,735
20	A&G	24,920,178	25,953,757	22,959,058	19,760,736	27,415,390
21	Total Cost of Service	254,487,120	258,748,939	250,725,704	243,405,322	245,735,087
22	Total Revenues	285,848,664	293,318,465	285,509,971	291,641,718	291,396,118
23	Non-Cost of Service Revenues	0	0	0	0	0
24	Cost Over (Under) Recovery	31,361,544	34,569,526	34,784,267	48,236,396	45,661,031
25	Over (Under) Recovery excl. non-COS rev	31,361,544	34,569,526	34,784,267	48,236,396	45,661,031
26	Actual rate of return on equity *	28.45%	28.18%	29.20%	33.08%	37.60%

* $[(\text{Line } 24 - (\text{Line } 24 * (.3889 / (1 + .3889))) - (\text{Line } 24 * (\text{State Income Tax Percentage} * .3889))] + [(\text{Line } 14 / (\text{Line } 5))] / [(\text{Line } 13 * \text{Line } 2)$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

1/ Compressor Usage Surcharge Tracker \$2,311,527 \$1,081,252 \$0 \$196,166 \$823,326 p. 232 & 278

**NGSA
Pipeline Cost Model**

Northern Natural Gas Company

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1						
2	3,484,949,717	3,681,036,431	3,838,473,638	3,995,661,549	4,224,383,452	p. 110 Balance Sheet
	1,253,886,542	1,254,423,493	1,284,588,325	1,320,392,762	1,360,160,345	p. 110 Balance Sheet
3	19,556,640	19,307,128	19,309,995	19,201,016	20,917,737	pp. 234-235
4	588,565,757	661,254,709	781,598,340	844,871,731	616,180,726 **	pp. 274-275
5	14,308,196	14,342,693	14,254,693	14,038,474	23,024,870	pp. 276-277
6	30,072,462	29,768,648	29,191,581	28,385,813	27,460,594	p. 232
7	24,871,421	24,190,051	23,908,645	25,800,456	450,174,020 **	p. 278
8	4,317,470	4,002,590	4,237,714	4,354,809	5,182,984	p. 230
9	24,793,032	26,252,771	26,839,547	28,313,724	30,037,986	pp. 110-111
10	28,429,396	28,429,396	28,429,396	28,429,396	28,429,396	p. 110
11	41,211,532	41,211,532	41,211,532	41,211,532	41,211,532	p. 110
12	19,502	1,394	1,086	0	0	O&M
13	30,595,867	44,776,105	28,814,690	28,058,245	33,683,355	p. 322
14	3,227,745	4,718,973	1,977,338	1,875,834	2,902,986	
15	27,368,122	40,057,132	26,837,352	26,182,411	30,780,369	
16	133,627,170	204,269,979	131,131,359	112,283,068	135,557,737	p. 323
17	43,303,561	86,283,955	34,642,137	19,773,475	29,716,005	
18	90,323,609	117,986,024	96,489,222	92,509,593	105,841,732	
19	62,948,504	73,651,891	70,701,091	74,378,674	78,719,297	pp. 324-325 Prior yr. changed
20	52,683,283	52,638,789	55,433,507	57,118,801	57,065,839	p. 114 Income Statement
21	64,656,813	68,727,594	70,201,331	74,360,354	76,908,621	p. 114 Income Statement
22	1,651,333	1,287,801	1,473,867	1,496,315	1,475,875	p. 300
23	590,928,901	747,751,586	658,404,510	634,953,584	691,962,424	p. 301
24	592,580,234	749,039,387	659,878,377	636,449,699	693,438,299	
25	25,370,869	102,300,391	34,467,234	9,872,829	28,436,340	
26	567,209,365	646,738,996	625,411,143	626,576,870	665,001,959	

**NGSA
Pipeline Cost Model**

Northern Natural Gas Company

27	Account 495														
28		Value of excess fuel retained	0	0	0	0	0	0	0	0	0	0	0	0	
29		Penalty revenues	540,802	2,485,422	803,286	678,880	1,600,662								p. 308
30		Gains on settlements of imbalances	0	0	0	0	0								
		Total non-cost of service revenues	540,802	2,485,422	803,286	678,880	1,600,662	2,217,985	3,818,647						
31		Cost of Debt	4.96%	4.96%	4.96%	4.96%	4.96%	4.96%	4.96%						p. 218
32		Allowed Rate of Return on Equity	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%						p. 218
33		Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	0						

***** end of data input *****

NGSA
Pipeline Cost Model

Northern Natural Gas Company

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
1	Allowed Return on Rate Base					
2	Capitalization					
	Debt	39.82%	40.36%	36.20%	36.21%	33.61%
	Equity	60.18%	59.64%	63.80%	63.79%	66.39%
3	Return on Debt	1.98%	2.00%	1.80%	1.80%	1.67%
4	Return on Equity	7.22%	7.16%	7.66%	7.65%	7.97%
5	Total Return	9.20%	9.16%	9.45%	9.45%	9.63%
6	Rate Base					
7	Gas Plant in Service	3,484,949,717	3,681,036,431	3,838,473,638	3,995,661,549	4,224,383,452
8	Gas Stored - Noncurrent	28,429,396	28,429,396	28,429,396	28,429,396	28,429,396
9	Accumulated Depreciation	-1,253,886,542	-1,254,423,493	-1,320,392,762	-1,360,160,345	-1,360,160,345
10	Working Capital	70,322,034	71,466,893	72,288,793	73,880,065	76,432,502
11	ADIT	-583,317,313	-656,290,274	-776,543,038	-839,709,189	-618,287,859
12	Regulatory Assets	30,072,462	29,768,648	29,191,581	28,385,813	27,460,594
13	Regulatory Liabilities	-24,871,421	-24,190,051	-23,908,645	-25,800,456	-450,174,020
	Total Rate Base	1,751,698,333	1,875,797,550	1,883,343,400	1,940,454,416	1,928,083,720
14	Cost of Service					
15	Return	161,097,950	171,797,845	178,004,578	183,388,776	185,748,809
16	Federal Income Tax	68,115,733	72,286,889	77,640,107	79,981,949	82,711,232
17	State Income Tax	9,925,435	10,533,232	11,313,273	11,654,513	12,052,208
18	Other Taxes	52,683,283	52,638,789	55,433,507	57,118,801	57,065,839
19	Depreciation	64,656,813	66,727,594	70,201,331	74,360,354	76,908,621
20	O&M	117,711,233	158,044,550	123,327,660	118,692,004	136,622,101
	A&G	62,948,504	73,651,891	70,701,091	74,378,674	78,719,297
21	Total Cost of Service	537,138,951	607,680,790	586,621,547	599,575,071	629,828,107
22	Total Revenues	567,209,365	646,738,996	625,411,143	626,576,870	665,001,959
23	Non-Cost of Service Revenues	540,802	2,485,422	803,286	678,880	3,818,647
24	Cost Over (Under) Recovery	30,070,414	39,058,206	38,789,596	27,001,799	35,173,852
25	Over (Under) Recovery excl. non-COS rev	29,529,612	36,572,784	37,986,310	26,322,919	31,355,205
26	Actual rate of return on equity *	13.63%	14.00%	13.85%	13.25%	13.57%

* $[(\text{Line 24} - (\text{Line 24} * (.5385 / (1 + .5385))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .5385))] + [(\text{Line 14} * (\text{Line 4} / \text{Line 5}))] / \text{Line 13} * \text{Line 2}$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

NGSA
Pipeline Cost Model

Northwest Pipeline LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1	3,212,419,994	3,281,074,219	3,309,567,975	3,343,170,973	3,406,033,465	
2	1,345,841,255	1,421,672,610	1,506,238,210	1,578,282,591	1,662,747,009	p. 110 Balance Sheet
3	7,293,837	8,946,000	10,275,776	11,699,718	8,329,539	pp. 234-235
4	434,397,498	450,545,498	458,735,278	439,688,442	283,979,530 **	pp. 274-275
5	23,665,000	22,587,000	21,353,876	19,743,670	9,695,934	pp. 276-277
6	59,825,781	55,861,010	54,588,288	50,631,180	38,945,453	p. 232
7	19,047,701	23,375,401	26,801,499	30,586,547	241,094,277 **	p. 278
8	2,348,439	2,014,439	2,426,997	1,911,775	1,723,010	p. 230
9	9,668,547	9,457,013	9,563,929	9,493,074	9,462,450	pp. 110-111
10	7,719,255	7,719,255	7,719,255	7,719,255	7,719,255	p. 110
11	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	p. 110
12	1,636	0	1,605	0	0	O&M
13	6,831,361	8,100,705	6,716,601	8,982,658	7,796,843	
14	179,113	298,116	133,340	138,057	217,329	pp. 320-322
15	6,652,248	7,802,589	6,583,261	8,844,601	7,579,514	
16	53,031,612	52,735,379	56,589,406	63,440,619	61,196,150	p. 323
17	6,759,648	7,053,167	3,223,375	1,414,650	543,930	
18	59,791,260	59,788,546	59,812,781	64,855,269	61,740,080	
19	71,094,595	68,620,332	63,139,820	57,276,780	62,712,059	p. 325
20	19,420,338	19,425,139	19,749,428	20,354,949	20,538,059	p. 114 Income Statement
21	92,530,781	95,559,548	96,975,543	98,094,011	98,506,449	p. 114 Income Statement
22	1,723,079	1,426,953	1,619,467	1,497,382	1,483,109	p. 300
23	467,937,794	468,622,704	471,379,106	472,553,135	471,923,296	p. 301
24	469,660,873	470,049,657	472,998,573	474,050,517	473,406,405	
25	0	0	0	0	0	
26	469,660,873	470,049,657	472,998,573	474,050,517	473,406,405	

NGSA
Pipeline Cost Model

Northwest Pipeline LLC

27	Account 495									p. 308
28	Value of excess fuel retained	0	0	0	0	0	0	0	0	
29	Penalty revenues	0	0	0	0	0	0	0	0	
30	Gains on settlements of imbalances	0	0	0	0	0	0	0	0	
	Total non-cost. of service revenues	0	0	0	0	0	0	0	0	
31	Cost of Debt	6.71%	6.70%	6.69%	6.67%	6.67%	6.45%	6.45%		p. 218
32	Allowed Rate of Return on Equity	10.37%	10.73%	11.09%	12.14%	12.14%	12.52%	12.52%		p. 218
33	Account 496 - Provision for Rate Refunds	0	1,225,001	1,225,001	1,225,001	1,225,001	669,606	669,606		

***** end of data input *****

NGSA
Pipeline Cost Model

Northwest Pipeline LLC

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
1	Allowed Return on Rate Base					
<u>Capitalization</u>						
2	Debt	43.13%	42.62%	44.00%	43.91%	36.94%
	Equity	56.87%	57.38%	56.00%	56.09%	63.06%
3	Return on Debt	2.89%	2.86%	2.94%	2.93%	2.38%
4	Return on Equity	5.90%	6.16%	6.21%	6.81%	7.90%
5	Total Return	8.79%	9.01%	9.15%	9.74%	10.28%
<u>Rate Base</u>						
6	Gas Plant in Service	3,212,419,994	3,281,074,219	3,309,567,975	3,343,170,973	3,406,033,465
7	Gas Stored - Noncurrent	7,719,255	7,719,255	7,719,255	7,719,255	7,719,255
8	Accumulated Depreciation	-1,345,841,255	-1,421,672,610	-1,506,238,210	-1,578,282,591	-1,662,747,009
9	Working Capital	17,716,986	17,171,452	17,690,926	17,104,849	16,885,460
10	ADIT	-450,768,661	-464,186,498	-469,813,378	-447,732,394	-285,345,925
11	Regulatory Assets	59,825,781	55,861,010	54,588,288	50,631,180	38,945,453
12	Regulatory Liabilities	-19,047,701	-23,375,401	-26,801,499	-30,586,547	-241,094,277
13	Total Rate Base	1,482,024,399	1,452,591,427	1,386,713,357	1,362,024,725	1,280,396,422
<u>Cost of Service</u>						
14	Return	130,291,315	130,913,553	126,939,741	132,635,643	131,595,841
15	Federal Income Tax	33,989,351	34,779,976	33,491,285	36,067,385	39,312,284
16	State Income Tax	3,180,180	3,254,154	3,133,578	3,374,609	3,678,214
17	Other Taxes	19,420,338	19,425,139	19,749,428	20,354,949	20,538,059
18	Depreciation	92,530,781	95,559,548	96,975,543	98,094,011	98,506,449
19	O&M	66,445,144	67,591,135	66,397,647	73,699,870	69,319,594
20	A&G	71,094,595	68,620,332	63,139,820	57,276,780	62,712,059
21	Total Cost of Service	416,951,704	420,143,837	409,827,042	421,503,246	425,662,501
22	Total Revenues	469,660,873	470,049,657	472,998,573	474,050,517	473,406,405
23	Non-Cost of Service Revenues	0	0	0	0	0
24	Cost Over (Under) Recovery	52,709,169	49,905,820	63,171,531	52,547,271	47,743,904
25	Over (Under) Recovery excl. non-COS rev	52,709,169	49,905,820	63,171,531	52,547,271	47,743,904
26	Actual rate of return on equity *	14.65%	14.82%	16.65%	16.84%	16.56%

* $[(\text{Line } 24 - (\text{Line } 24 * (-.3889/(1 + .3889)))) - (\text{Line } 24 * (\text{State Income Tax Percentage} * .3889))] + [(\text{Line } 4/(\text{Line } 5))] / \text{Line } 13 * \text{Line } 2$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

NGSA
Pipeline Cost Model

Panhandle Eastern Pipe Line Company, LP

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	1,820,764,533	1,904,784,897	1,945,159,089	1,973,904,304	2,048,727,053	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	954,986,736	1,003,103,815	1,038,281,051	1,074,609,401	1,115,676,108	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes	0	0	-1,136,616	-1,509,897	-1,397,832	pp. 234-235
4 Account 190	257,427,246	105,652,983	344,815,297	363,751,132	251,666,506 **	pp. 274-275
5 Account 282	5,052,086	4,923,812	-531,311	-949,302	-629,319	pp. 276-277
6 Account 283						
7 Regulatory Assets and Liabilities						
8 Account 182.3 (rate base est.)	13,193,593	14,382,504	14,834,268	15,216,106	15,860,425	p. 232
9 Account 254 (rate base est.)	56,753,750	61,654,810	67,172,788	74,749,560	316,089,959 **	p. 278
10 Working Capital						
11 Prepayments	859,704	668,553	671,282	705,916	651,742	p. 230
12 Materials and Supplies	7,578,697	8,595,775	8,726,628	9,677,977	11,154,151	pp. 110-111 Balance Sheet
13 Gas Stored Underground						
14 Acct. 117.1 Base gas	0	0	0	0	0	p. 110
15 Acct. 117.2 System balancing	0	0	0	0	1,046,188	p. 110
16 Operation and Maintenance Costs						
17 Production	0	0	0	0	0	p. 320 O&M
18 Storage	80,979,369	84,055,620	78,057,860	75,730,020	70,363,980	p. 322
19 less: Comp. fuel and losses	5,346,342	9,071,973	5,342,236	3,151,104	3,065,504	
20 Net storage costs	75,633,027	74,983,647	72,715,624	72,578,916	67,298,476	
21 Transmission	154,906,509	172,561,374	117,196,837	110,874,998	111,092,364	p. 323
22 less: Comp. fuel	74,042,697	91,695,788	36,622,947	35,031,832	36,619,497	
23 Net transmission costs	80,863,812	80,865,586	80,573,890	75,843,166	74,472,867	
24 A&G	31,656,941	29,418,784	31,159,787	29,838,570	26,934,216	pp. 323-325
25 Other Taxes	18,588,924	17,297,682	13,541,131	16,252,654	14,206,792	p. 114 Income Statement
26 Depreciation, Amortization, and Negative Salvage	37,198,256	38,005,438	39,073,862	40,322,962	40,819,306	p. 114 Income Statement
27 Revenue						
28 ACA and GRI revenue	968,883	764,493	849,299	837,960	826,826	p. 300
29 Other Revenue	379,645,310	356,480,846	334,097,088	324,271,575	299,257,488	p. 301
30 Total Revenue	380,614,193	357,245,339	334,946,387	325,109,535	300,084,314	
31 Sales Revenues	0	0	0	0	0	
32 Net Revenues	380,614,193	357,245,339	334,946,387	325,109,535	300,084,314	

NGSA
Pipeline Cost Model

Panhandle Eastern Pipe Line Company, LP

29	Account 495	0	0	0	0	0	0	0	p. 308
30	Value of excess fuel retained	0	0	0	0	0	0	0	
31	Penalty revenues	0	0	0	0	0	0	0	
32	Gains on settlements of imbalances	0	0	0	0	0	0	0	
	Total non-cost of service revenues	0	0	0	0	0	0	0	
33	Cost of Debt	6.89%	7.08%	7.08%	6.70%	6.98%	6.98%	6.98%	p. 218
34	Allowed Rate of Return on Equity	13.25%	13.25%	13.25%	13.25%	13.25%	13.25%	13.25%	p. 218
35	Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	0	

**NGSA
Pipeline Cost Model**

Panhandle Eastern Pipe Line Company, LP

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base						
<u>Capitalization</u>						
1	Debt	40.00%	40.00%	40.00%	40.00%	43.36%
2	Equity	60.00%	60.00%	60.00%	60.00%	56.64% ***
3	Return on Debt	2.76%	2.83%	2.83%	2.68%	3.03%
4	Return on Equity	7.95%	7.95%	7.95%	7.95%	7.50%
5	Total Return	10.71%	10.78%	10.78%	10.63%	10.53%
Rate Base						
6	Gas Plant in Service	1,820,764,533	1,904,784,897	1,945,159,089	1,973,904,304	2,048,727,053
8	Gas Stored - Noncurrent	0	0	0	0	0
9	Accumulated Depreciation	-954,986,736	-1,003,103,815	-1,038,281,051	-1,074,609,401	-1,115,676,108
11	Working Capital	8,438,401	9,264,328	9,397,910	10,383,893	12,852,081
12	ADIT	-262,479,332	-110,576,795	-345,420,602	-364,311,727	-252,435,019
13	Regulatory Assets	13,193,593	14,382,504	14,834,268	15,216,106	15,860,425
14	Regulatory Liabilities	-56,753,750	-61,654,810	-67,172,788	-74,749,560	-81,089,959
15	Total Rate Base	568,176,709	753,096,309	518,516,826	485,833,615	393,238,473
Cost of Service						
16	Return	60,828,998	81,198,844	55,906,484	51,644,113	41,413,233
17	Federal Income Tax	17,566,130	23,283,228	16,030,812	15,020,356	11,476,796
18	State Income Tax	2,842,200	3,767,226	2,593,785	2,430,294	1,856,946
19	Other Taxes	18,588,924	17,297,662	13,541,131	16,252,654	14,206,792
20	Depreciation	37,198,256	38,005,438	39,073,862	40,322,962	40,819,306
21	O&M	156,496,839	155,849,233	153,289,514	148,422,082	141,771,343
22	A&G	31,656,941	29,418,784	31,159,787	29,838,570	26,934,216
23	Total Cost of Service	325,178,288	348,820,435	311,595,375	303,931,031	278,478,632
24	Total Revenues	380,614,193	357,245,339	334,946,387	325,109,535	300,084,314
25	Non-Cost of Service Revenues	0	0	0	0	0
26	Cost Over (Under) Recovery	55,435,905	8,424,904	23,351,012	21,178,504	21,605,682
27	Over (Under) Recovery excl. non-COS rev	55,435,905	8,424,904	23,351,012	21,178,504	21,605,682
28	Actual rate of return on equity *	23.93%	14.48%	18.18%	18.02%	19.62%

* [(Line 26 - (Line 26 * (.3889)/(1+.3889)))-(Line 26 * (State Income Tax Percentage * .3889)))+(Line 16*(Line 4/Line 5))]/ Line 15 * Line 2

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

***NGSA uses an estimated 60 percent equity capitalization rate instead of Panhandle's reported greater than 70% equity ratios in the Form 2s for 2013 thru 2016. 70% and greater equity ratios are not within a range FERC has historically approved.

NGSA
Pipeline Cost Model

Sea Robin Pipeline Company, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1						
2	659,540,217	662,241,197	662,436,549	627,511,990	636,941,009	p. 110 Balance Sheet
3	526,289,589	519,353,597	535,402,078	526,645,197	541,740,689	p. 110 Balance Sheet
4	0	0	0	0	0	pp. 234-235
5	24,347,689	9,657,312	7,534,060	1,157,767	3,184,999	pp. 274-275
6	204,348	303,057	278,890	377,644	200,627	pp. 276-277
7	575,705	633,083	854,656	1,042,737	1,159,129	p. 232
8	0	0	0	0	3,251,247 **	p. 278
9	29,705	215,523	176,866	145,190	141,008	p. 230
10	663,867	800,972	1,031,464	1,016,674	1,054,239	pp. 110-111
11	0	0	0	0	0	p. 110
12	4,888,844	6,991,068	6,041,148	6,640,635	6,370,706	p. 110 p. 110
13	0	0	0	0	0	O&M
14	0	0	0	0	0	p. 322
15	0	0	0	0	0	
16	10,197,020	11,244,756	9,004,660	11,305,280	11,266,414	p. 323
17	3,153,565	5,734,089	1,494,364	4,430,236	4,227,134	
18	7,043,455	5,510,667	7,510,296	6,875,044	7,039,280	
19	5,447,294	3,049,209	1,511,864	2,448,392	2,301,716	pp. 323-325
20	720,326	615,686	658,691	619,425	567,035	p. 114 Income Statement
21	10,285,538	8,251,754	21,707,515	23,521,254	18,530,586	p. 114 Income Statement
22	233,794	161,426	157,727	117,360	94,819	p. 300
23	44,218,296	36,203,595	37,923,825	27,715,724	22,883,708	p. 301
24	44,452,090	36,365,021	38,081,552	27,833,084	22,978,527	
25	0	0	0	0	0	
26	44,452,090	36,365,021	38,081,552	27,833,084	22,978,527	

NGSA
Pipeline Cost Model

Sea Robin Pipeline Company, LLC

27	Account 495	Value of excess fuel retained	0	0	0	0	0	0	0	p. 308
28		Penalty revenues	0	0	0	0	0	0	0	
29		Gains on settlements of imbalances	0	0	0	0	0	0	0	
30		Total non-cost of service revenues	0	0	0	0	0	0	0	
31		Cost of Debt **	5.16%	4.69%	4.52%	4.15%	6.98% **			
32		Allowed Rate of Return on Equity	11.35%	11.35%	11.39%	11.39%	11.39%			p. 218
33		Account 496 - Provision for Rate Refunds	0	10,450,161	-132,680	0	0	0	0	
34		Gas Received from Shippers (dth)	846,798	804,325	689,811	521,592	446,532			p.520
35		Gas Used for Compressor Station Fuel (dth)	983,738	1,266,636	1,260,466	1,646,255	1,411,631			p.520
36		Account 810 Amount of Credit	3,153,565	5,837,929	1,494,364	4,430,236	4,227,134			p.331
37		Account 810 Gas Used (dth)	846,383	1,376,726	968,168	1,631,670	1,411,632			p.331

***** end of data input *****

NGSA
Pipeline Cost Model

Sea Robin Pipeline Company, LLC

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
1	Allowed Return on Rate Base					
2	Capitalization					
	Debt	62.68%	63.74%	62.62%	67.99%	43.36% ***
	Equity	37.32%	36.26%	37.38%	32.01%	56.64%
3	Return on Debt	3.23%	2.99%	2.83%	2.82%	3.03%
4	Return on Equity	4.24%	4.12%	4.26%	3.65%	6.45%
5	Total Return	7.47%	7.10%	7.09%	6.47%	9.48%
6	Rate Base					
7	Gas Plant in Service	659,540,217	662,241,197	662,436,549	627,511,990	636,941,009
8	Gas Stored - Noncurrent	0	0	0	0	0
9	Accumulated Depreciation	-526,289,589	-519,353,597	-535,402,078	-526,645,197	-541,740,689
10	Working Capital	693,572	1,016,495	1,206,330	1,161,864	1,195,247
11	ADIT	-24,552,037	-9,960,369	-7,812,950	-1,535,411	-3,385,626
12	Regulatory Assets	575,705	633,083	854,656	1,042,737	1,159,129
13	Regulatory Liabilities	0	0	0	0	-3,251,247
14	Total Rate Base	109,967,868	134,576,809	121,284,507	101,535,983	90,917,823
15	Cost of Service					
16	Return	8,214,719	9,561,569	8,596,653	6,566,864	8,617,031
17	Federal Income Tax	1,811,460	2,153,870	2,008,140	1,439,643	2,280,980
18	State Income Tax	91,963	109,346	101,948	73,087	115,799
19	Other Taxes	720,326	615,686	658,691	619,425	567,035
20	Depreciation	10,285,638	8,251,754	21,707,515	23,521,254	18,530,586
21	O&M	11,932,299	12,501,725	13,551,444	13,515,679	13,409,986
22	A&G	5,447,294	3,049,209	1,511,864	2,448,392	2,301,716
23	Total Cost of Service	38,503,599	36,243,159	48,136,255	48,184,344	45,823,134
24	Total Revenues	44,452,090	36,365,021	38,081,552	27,833,084	22,978,527
25	Non-Cost of Service Revenues	0	0	0	0	0
26	Cost Over (Under) Recovery	5,948,491	121,862	-10,054,703	-20,351,260	-22,844,607
	Over (Under) Recovery excl. non-COS rev	5,948,491	121,862	-10,054,703	-20,351,260	-22,844,607
	Actual rate of return on equity *	21.50%	11.52%	-4.14%	-32.46%	-19.67%
* [(Line 24 - (Line 24 *(.3889/(1+.3889)))-(Line 24 *(State Income Tax Percentage *.3889))]/(Line 14*(Line 4/Line 5))]/Line 13 * Line 2						
** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.						
*** NGSAs uses Energy Transfers Partners, LP cost of debt, equity and debt capitalization data based on SEC Form 10Ks from 2013 to 2016 due to Sea Robin's reported 100% equity ratios in the Form 2. 100% equity is not within a range FERC has historically approved.						
1/	Over/Under Dth Fuel Recovery	-136,940	-462,311	-570,655	-1,124,663	-965,099
	Average price	\$3.73	\$4.24	\$1.54	\$2.72	\$2.99
	Valuation of Fuel Recovery	-\$510,786	-\$1,990,199	-\$878,809	-\$3,059,083	-\$2,885,646
	Actual rate of return on equity including fuel	20.63%	8.71%	-5.50%	-39.05%	-23.60%
2/	Hurricane Surcharge	\$5,177,587	\$600,924	\$363,058	\$212,826	\$62,595

NGSA
Pipeline Cost Model

Southern Natural Gas Company, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
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	Total Plant in Service	3,554,712,565	3,540,320,185	3,542,908,191	3,700,205,818	p. 110 Balance Sheet
	Total Accum. Depreciation, Amortization	1,190,920,224	1,215,386,761	1,280,857,193	1,411,995,535	p. 110 Balance Sheet
	Accumulated Deferred Income Taxes					
	Account 190	2,511,878	2,533,047	0	0	pp. 234-235
	Account 282	300,658,445	347,169,747	87,784,493	144,513,011	pp. 274-275
	Account 283	3,006,955	1,781,059	5,151,487	3,929,414	pp. 276-277
	Regulatory Assets and Liabilities					
	Account 182.3					
	Account 254	35,032,078	35,033,346	17,661,960	19,220,980	p. 232 p. 278
	Working Capital					
	Prepayments	32,909	32,909	32,909	34,105	p. 230
	Materials and Supplies	18,441,275	18,327,165	18,247,602	18,562,826	pp. 110-111
	Gas Stored Underground					
	Acct. 117.1	112,439,891	109,965,196	109,965,196	109,965,196	p. 110
	Acct. 117.2	6,166,906	6,166,906	6,166,906	6,166,906	p. 110
	Operation and Maintenance Costs					
	Production	0	0	0	0	O&M
	Storage					
	less: Comp. fuel and losses	21,583,713	23,062,065	20,147,815	19,486,462	p. 322
	Net storage costs	3,867,708	4,743,503	2,546,516	1,850,543	
		17,716,005	18,318,562	17,601,299	17,635,919	21,413,406
	Transmission					
	less: Comp. fuel	165,423,286	170,271,699	165,368,643	158,090,782	pp. 323
	Net transmission costs	71,870,497	79,111,220	67,980,229	61,143,458	56,019,809
		93,552,789	91,160,479	97,388,414	96,947,324	129,161,054
	A&G	34,517,562	33,742,878	34,033,006	31,419,628	pp. 323-325
	Other Taxes	40,149,262	39,120,464	40,226,031	40,364,606	p. 114 Income Statement
	Depreciation, Amortization, and Negative Salvage	68,961,779	82,728,754	81,487,607	82,270,240	p. 114 Income Statement
	Revenue					
	ACA and GRI revenue	1,420,122	1,136,474	1,324,279	1,329,870	p. 300
	Other Revenue	581,804,931	575,900,583	578,535,588	608,266,790	p. 301
	Total Revenue	583,225,053	577,037,057	579,859,867	609,596,660	606,097,971
	Net Revenues	583,225,053	577,037,057	579,859,867	609,596,660	606,097,971

NGSA
Pipeline Cost Model

Southern Natural Gas Company, LLC

27	Account 495	Value of excess fuel retained	0	0	1,429	240,948	24,552	p. 308
28		Penalty revenues	0	0	0	0	0	
29		Gains on settlements of imbalances	0	0	0	0	0	
30		Total non-cost of service revenues	0	0	1,429	240,948	24,552	
31		Cost of Debt	6.72%	6.58%	6.58%	6.57%	6.56%	p. 218
32		Allowed Rate of Return on Equity	12.00%	12.00%	12.00%	12.00%	12.00%	p. 218
33		Account 496 - Provision for Rate Refunds	0	0	0	0	0	
34		Gas Received from Shippers (dth)	28,467,618	20,193,938	21,294,774	31,071,657	23,651,957	p.520
35		Gas Used for Compressor Station Fuel (dth)	14,048,117	13,889,320	15,127,997	14,583,720	10,891,065	p.520
36		Account 810 Amount of Credit	51,344,224	57,456,913	42,158,416	36,623,186	37,924,943	p.331
37		Account 810 Gas Used (dth)	14,101,960	13,261,949	15,951,243	14,928,581	12,919,730	p.331

***** end of data input *****

NGSA
Pipeline Cost Model

Southern Natural Gas Company, LLC

Cost of Service Calculation

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base					
Capitalization					
1					
2	42.29%	43.38%	44.29%	46.00%	47.25%
	57.71%	56.62%	55.71%	54.00%	52.75%
3	2.84%	2.85%	2.91%	3.02%	3.10%
4	6.93%	6.79%	6.69%	6.48%	6.33%
5	9.77%	9.65%	9.60%	9.50%	9.43%
Rate Base					
6	3,554,712,565	3,540,320,185	3,542,908,191	3,625,652,229	3,700,205,818
7	112,439,891	109,965,196	109,965,196	109,965,196	109,965,196
8	-1,190,920,224	-1,215,386,761	-1,280,857,193	-1,344,104,230	-1,411,995,535
9	24,641,090	24,526,980	24,447,417	24,763,837	23,937,275
10	-301,153,522	-346,417,759	-92,935,980	-148,442,425	-102,208,178
11	0	0	0	0	0
12	-35,032,078	-35,033,346	-17,661,960	-19,220,980	-89,799,668
13	2,164,687,722	2,077,974,495	2,285,865,671	2,248,613,627	2,230,104,908
Cost of Service					
14					
15	211,426,955	200,499,686	219,431,264	213,667,764	210,289,972
16	53.85%	80,720,206	82,284,834	78,459,319	76,012,268
17	11.34%	9,153,838	8,621,185	9,331,270	8,897,448
18		40,149,262	39,120,464	40,364,606	39,668,497
19		68,961,779	82,728,754	81,487,607	82,270,240
20		111,268,794	109,479,041	114,989,713	114,583,243
		34,517,562	33,742,878	34,033,006	31,419,628
21		556,198,396	581,783,725	569,662,248	599,669,902
22		583,225,053	577,037,057	579,859,867	609,596,660
23		0	0	1,429	240,948
24		27,026,657	26,821,872	-1,923,858	39,934,412
25		27,026,657	26,821,872	-1,925,287	39,693,464
26		13.27%	13.34%	11.91%	13.94%
					12.32%

* [(Line 24 - (Line 24 *(.5385/(1+.5385)))-(Line 24 * (State Income Tax Percentage *.5385))]/(Line 14*(Line 4/Line 5))] / Line 13 * Line 2

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

*** Effective January 1, 2015, Southern Natural became a subsidiary of Kinder Morgan as a result of its merger with EI Paso. In accordance, \$318 million of ADIT was reduced in connection with KM's acquisition of all of outstanding Southern Natural common shares.

1/ Over/Under Dth Fuel Recovery 2/
Average price 3,083,389 8,243,969 6,380,446
Valuation of Fuel Recovery \$3.64 \$4.33 \$2.45 \$2.94
\$26,243,492 \$13,649,498 \$8,140,146 \$20,197,723 \$18,756,511

Actual rate of return on equity including fuel 14.51% 14.03% 12.29% 14.92% 13.26%

2/ Southern's annual recalculation of fuel is based on a complex formula - NGSA assumes 50 percent sharing.

**NGSA
Pipeline Cost Model**

**Southern Star Central Gas Pipeline, Inc.
(formerly Williams Gas Pipelines Central, Inc.)**

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	1,426,888,120	1,490,032,582	1,543,588,329	1,572,303,780	1,610,430,289	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	685,443,027	713,945,147	752,156,521	783,914,518	815,895,261	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes	0	0	0	0	0	pp. 234-235
4 Account 190	119,180,935	141,030,557	155,759,712	173,767,349	118,613,376 **	pp. 274-275
5 Account 282	0	0	0	0	0	pp. 276-277
6 Account 283	0	0	0	0	0	
6 Regulatory Assets and Liabilities	23,994,492	44,092,152	43,658,361	53,326,024	42,327,297	p. 232
7 Account 182.3 (rate base est.)	3,700,575	0	0	0	82,877,507 **	p. 278
7 Account 254 (rate base est.)	0	0	0	0	0	
8 Working Capital	5,245,739	4,208,073	3,912,529	3,701,758	3,643,420	p. 230
9 Prepayments	10,676,525	10,559,542	12,238,778	12,393,769	13,958,175	pp. 110-111
9 Materials and Supplies	0	0	0	0	0	
10 Gas Stored Underground	8,947,605	8,947,605	8,947,605	8,947,605	8,947,605	p. 110
11 Acct. 117.1 Base gas	397,435	546,286	364,105	274,680	269,979	p. 110
11 Acct. 117.2 System balancing	0	0	0	0	0	
12 Operation and Maintenance Costs	0	0	0	0	0	O&M
12 Production	0	0	0	0	0	
13 Storage	5,775,123	5,857,741	5,510,999	4,787,722	6,384,117	p. 322
14 less: Comp. fuel and losses	1,320,169	1,374,298	801,551	623,087	711,850	
15 Net storage costs	4,454,954	4,483,443	4,709,448	4,164,635	5,672,267	
16 Transmission	61,716,945	65,969,578	59,416,551	56,927,397	54,366,584	p. 323
17 less: Comp. fuel	11,548,156	14,058,531	8,267,471	7,271,982	9,228,503	
18 Net transmission costs	50,168,789	51,911,047	51,149,080	49,655,415	45,138,081	
19 A&G	39,585,765	39,604,119	45,016,587	42,617,963	42,785,824	pp. 323-325
20 Other Taxes	18,376,601	18,153,088	18,860,170	19,768,676	20,583,735	p. 114 Income Statement
21 Depreciation, Amortization, and Negative Salvage	36,439,699	37,966,997	40,006,867	41,247,576	42,389,991	p. 114 Income Statement
22 Revenue	524,816	424,621	481,829	470,628	477,638	p. 300
23 ACA and GRI revenue	215,653,799	248,148,474	255,310,327	260,554,551	260,458,163	p. 301
24 Other Revenue	216,178,615	248,573,095	255,792,156	261,025,179	260,935,801	
25 Total Revenue	0	0	0	0	0	
25 Sales revenues	0	0	0	0	0	
26 Net Revenues	216,178,615	248,573,095	255,792,156	261,025,179	260,935,801	

Southern Star Central Gas Pipeline, Inc.
(formerly Williams Gas Pipelines Central, Inc.)

NGSA
Pipeline Cost Model

27	Account 495												p. 308
28	Value of excess fuel retained	0	0	0	0	0	0	0	0	0	0	0	
29	Penalty revenues	0	0	0	0	0	0	0	0	0	0	0	
30	Gains on settlements of imbalances	0	0	0	0	0	0	0	0	0	0	0	
31	Total non-cost of service revenues	0	0	0	0	0	0	0	0	0	0	0	
32	Cost of Debt	6.32%	6.32%	5.23%	5.23%	5.29%	5.29%	4.07%	4.07%				p. 218
33	Allowed Rate of Return on Equity	11.25%	11.25%	10.53%	10.53%	11.42%	11.42%	14.32%	14.32%				p. 218
33	Account 496 - Provision for Rate Refunds	4,445,543	4,803,164	0	0	0	0	0	0	0	0	0	

***** end of data input *****

Southern Star Central Gas Pipeline, Inc.
(formerly Williams Gas Pipelines Central, Inc.)

NGSA
Pipeline Cost Model

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
1	Allowed Return on Rate Base					
	Capitalization					
2	Debt	36.52%	36.55%	44.60%	44.72%	44.47%
	Equity	63.48%	63.45%	55.40%	55.28%	55.53%
3	Return on Debt	2.31%	2.31%	2.33%	2.37%	1.81%
4	Return on Equity	7.14%	7.14%	5.83%	6.31%	7.95%
5	Total Return	9.45%	9.45%	8.17%	8.68%	9.76%
	Rate Base					
6	Gas Plant in Service	1,426,888,120	1,490,032,582	1,543,588,329	1,572,303,780	1,610,430,289
7	Gas Stored - Noncurrent	8,947,605	8,947,605	8,947,605	8,947,605	8,947,605
8	Accumulated Depreciation	-685,443,027	-713,945,147	-752,156,521	-783,914,518	-815,895,261
9	Working Capital	16,319,699	15,313,901	16,515,412	16,370,207	17,871,574
10	ADIT	-119,180,935	-141,030,557	-155,759,712	-173,767,349	-118,613,376
11	Regulatory Assets	23,984,492	44,092,152	43,658,361	53,326,024	42,327,297
12	Regulatory Liabilities	-3,700,575	0	0	0	-82,877,507
13	Total Rate Base	667,815,379	703,410,536	704,793,474	693,265,749	662,190,621
	Cost of Service					
14	Return	63,105,642	66,458,825	57,554,845	60,166,205	64,641,890
15	Federal Income Tax	25,680,327	27,036,328	22,138,832	23,566,146	28,353,613
16	State Income Tax	1,981,054	2,085,660	1,707,853	1,817,960	2,187,279
17	Other Taxes	18,376,601	18,153,088	18,860,170	19,768,676	20,583,735
18	Depreciation	36,439,699	37,966,997	40,006,867	41,247,576	42,389,991
19	O&M	54,623,743	56,394,490	55,858,528	53,820,050	50,810,348
20	A&G	39,585,765	39,604,119	45,016,587	42,617,963	42,785,824
21	Total Cost of Service	239,792,830	247,699,507	241,143,681	243,004,576	251,752,679
22	Total Revenues	216,178,615	248,573,095	255,792,156	261,025,179	260,935,801
23	Non-Cost of Service Revenues	0	0	0	0	0
24	Cost Over (Under) Recovery	-23,614,215	873,588	14,648,475	18,020,603	9,183,122
25	Over (Under) Recovery excl. non-COS rev	-23,614,215	873,588	14,648,475	18,020,603	9,183,122
26	Actual rate of return on equity *	7.86%	11.37%	12.81%	14.28%	15.84%

* $[(\text{Line 24} - (\text{Line 24} * (.5385 / (1 + .5385))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .5385))] + (\text{Line 14} * (\text{Line 4} / \text{Line 5}))] / \text{Line 13} * \text{Line 2}$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

NGSA
Pipeline Cost Model

Tailgrass Interstate Gas Transmission LLC
(formerly Kinder Morgan Interstate Gas Transmission, LLC)

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1	681,893,111	693,204,696	704,650,518	691,351,581	699,238,344	p. 110 Balance Sheet
2	284,279,428	299,834,480	318,527,709	314,229,662	328,911,163	p. 110 Balance Sheet
3	0	1,999,060	4,980,058	20,978,311	14,388,391	pp. 234-235
4	-44,635,101	-39,866,941	32,951,100	1,895,365	11,454,322 **	pp. 274-275
5	0	0	604,395	670,655	318,722	pp. 276-277
6	377,020	377,020	377,020	293,240	609,821 **	p. 232
7	0	0	0	0	0	p. 278
8	21,734	23,365	50,419	204,384	18,551	p. 230
9	1,736,127	1,771,359	1,777,430	1,555,629	1,739,248	pp. 110-111
10	8,914,347	9,807,050	18,871,776	18,871,776	18,871,776	p. 110
11	0	0	0	0	0	p. 110
12	0	0	0	0	0	O&M
13	837,550	684,204	888,771	728,651	768,033	p. 322
14	264,346	15,926	0	0	0	
15	573,204	668,278	888,771	728,651	768,033	
16	27,975,512	41,294,139	30,997,194	30,531,373	28,374,888	p. 323
17	6,333,471	16,952,736	4,418,280	2,423,133	2,206,573	
18	21,642,041	24,341,403	26,578,914	28,108,240	26,168,315	
19	21,997,894	17,580,665	12,398,292	12,973,220	12,239,928	pp. 323-325
20	6,999,110	5,707,365	5,054,518	4,590,114	4,626,237	p. 114 Income Statement
21	22,499,103	19,647,180	19,487,670	17,131,828	15,229,558	p. 114 Income Statement
22	204,748	155,882	178,808	161,820	174,898	p. 300
23	106,418,487	111,030,410	102,474,425	104,893,547	107,380,871	p. 301, 304, 306
24	10,166,044	13,727,863	8,093,517	4,657,319	3,786,145	pp. 304-305
25	96,457,191	97,458,429	94,559,716	100,398,048	103,769,624	
26	5,036,359	5,439,909	5,409,397	2,968,058	2,484,301	
	91,420,832	92,018,520	89,150,319	97,429,990	101,285,323	

NGSA
Pipeline Cost Model

Tallgrass Interstate Gas Transmission LLC
(formerly Kinder Morgan Interstate Gas Transmission, LLC)

27	Account 495												p. 308
28		Value of excess fuel retained	0	0	0	0	0	0	0	1,754,665	1,226,597		
29		Penalty revenues	0	0	0	0	0	0	0	0	0		
30		Gains on settlements of imbalances	0	0	0	0	0	0	0	0	0		
30		Total non-cost of service revenues	0	0	0	0	0	0	0	1,754,665	1,226,597		
31		Cost of Debt	2.52%	2.45%	2.08%	5.50%	5.50% **			5.50%	5.50% **		p. 218
32		Allowed Rate of Return on Equity	12.45%	12.45%	12.45%	13.02%	13.02%			13.02%	13.02%		p. 218
33		Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	0	0	0		

***** end of data input *****

**NGSA
Pipeline Cost Model**

Tallgrass Interstate Gas Transmission LLC
(formerly Kinder Morgan Interstate Gas Transmission, LLC)

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
1	Allowed Return on Rate Base					
2	Capitalization					
	Debt	40.00%	41.12%	31.75%	40.48%	50.44% ***
	Equity	60.00%	58.88%	68.25%	59.52%	49.56%
3	Return on Debt	1.01%	1.01%	0.66%	2.23%	2.77%
4	Return on Equity	7.47%	7.33%	8.50%	7.75%	6.45%
5	Total Return	8.48%	8.34%	9.16%	9.98%	9.23%
6	Rate Base					
	Gas Plant in Service	681,893,111	693,204,696	704,650,518	691,351,581	699,238,344
	Gas Stored - Noncurrent	8,914,347	9,807,050	18,871,776	18,871,776	18,871,776
	Accumulated Depreciation	-284,279,428	-299,834,480	-318,527,709	-314,229,662	-328,911,163
	Working Capital	1,757,861	1,794,724	1,827,849	1,760,013	1,757,799
	ADIT	44,635,101	41,866,001	-28,575,437	18,412,291	2,615,347
	Regulatory Assets	377,020	377,020	377,020	293,240	609,821
	Regulatory Liabilities	0	0	0	0	0
13	Total Rate Base	453,298,012	447,215,011	378,624,017	416,459,239	394,181,924
14	Cost of Service					
	Return	38,430,605	37,288,788	34,672,589	41,545,574	36,370,819
	Federal Income Tax	13,168,307	12,749,086	12,511,394	12,550,815	9,891,554
	State Income Tax	1,127,244	1,091,357	1,071,010	1,074,385	846,745
	Other Taxes	6,999,110	5,707,365	5,054,518	4,590,114	4,626,237
	Depreciation	22,499,103	19,647,180	19,487,670	17,131,828	15,229,558
	O&M	22,215,245	25,009,681	27,467,685	28,836,891	26,936,348
	A&G	21,997,894	17,580,665	12,398,292	12,973,220	12,239,928
21	Total Cost of Service	126,437,509	119,074,122	112,663,158	118,702,827	106,141,189
22	Total Revenues	91,420,832	92,018,520	89,150,319	97,429,990	101,285,323
23	Non-Cost of Service Revenues	0	0	0	1,754,665	1,226,597
24	Cost Over (Under) Recovery	-35,016,677	-27,055,602	-23,512,839	-21,272,837	-4,855,866
25	Over (Under) Recovery excl. non-COS rev	-35,016,677	-27,055,602	-23,512,839	-23,027,502	-6,082,463
26	Actual rate of return on equity *	3.61%	5.39%	6.20%	7.13%	11.31%

* $[(\text{Line 24} - (\text{Line 24} * (-.3889 / (1 + .3889))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .3889))] + (\text{Line 14} * (\text{Line 4} / \text{Line 5}))] / \text{Line 13} * \text{Line 2}$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.
*** NGSA uses 60% equity and 40% debt instead of TIGT's missing debt and equity ratios for 2013. 2014-2017 capitalization in addition to 2013-2015 cost of debt ratios derived from data in Tallgrass Energy Partners, LP 2013-2017 SEC Form 10-K.

1/ The accrual of expenses in 2015 reimbursed by PXP Abandonment of \$60,834,748 is included using data from Rate Case Docket No. RP16-137, Schedule B-1, page 2. The 2016 ADIT is likely underestimated by \$50 to \$60 million attributable to the PXP Abandonment. Unfortunately, Form 2 does not provide specificity.

NGSA
Pipeline Cost Model

Tennessee Gas Pipeline Company, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	7,315,979,000	7,443,590,861	7,789,831,516	8,093,617,755	8,609,956,465	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	3,159,560,732	3,221,922,169	3,351,751,345	3,462,884,909	3,612,109,795	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes						
4 Account 190	390,317,056	259,582,704	178,777,281	1,128	0	p. 234-235
5 Account 282	955,222,867	1,018,429,944	1,074,477,185	264,315,540	223,811,548	pp. 274-275
6 Account 283	61,157	168,854	-236,755	1,535	0	pp. 276-277
7 Regulatory Assets and Liabilities						Prior yr. changed
8 Account 182.3	20,421,158	20,421,158	0	0	0	p. 232
9 Account 254	0	0	0	0	157,792,762	p. 278
10 Working Capital						
11 Prepayments	0	0	2,896	4,185	4,255	p. 230
12 Materials and Supplies	50,233,141	45,734,169	45,458,667	48,699,141	49,928,973	pp. 110-111
13 Gas Stored Underground						
14 Acct. 117.1	71,152,074	71,152,074	71,152,074	71,152,074	71,152,074	p. 110
15 Acct. 117.2	0	0	0	0	0	p. 110
16 Operation and Maintenance Costs						
17 Production	0	0	0	0	0	p. 320 O&M
18 Storage	33,778,269	31,540,239	30,482,109	35,948,745	41,811,045	p. 322
19 less: Comp. fuel and losses	4,087,370	4,504,973	2,097,152	3,434,323	4,413,040	
20 Net storage costs	29,690,899	27,035,266	28,384,957	32,514,422	37,398,005	
21 Transmission	268,906,207	328,876,598	291,185,048	318,082,342	349,679,120	pp. 323
22 less: Comp. fuel	80,040,665	125,063,868	78,821,909	84,763,336	110,973,081	
23 Net transmission costs	188,865,542	203,812,730	212,363,139	233,319,006	238,706,039	
24 A&G	73,462,451	63,869,213	64,863,341	66,911,382	63,346,697	pp. 325
25 Other Taxes	63,357,282	65,532,583	73,218,555	76,918,126	87,731,779	p. 114 Income Statement
26 Depreciation, Amortization, and Negative Salvage	163,624,642	167,353,276	175,471,550	179,130,112	183,225,123	p. 114 Income Statement
27 Revenue						
28 ACA and GRI revenue	4,239,143	3,743,574	4,384,780	4,507,403	4,420,287	p. 300
29 Other Revenue	1,038,458,405	1,188,877,546	1,235,802,658	1,441,429,542	1,545,990,962	p. 301
30 Total Revenue	1,042,695,548	1,192,621,120	1,240,187,438	1,445,936,945	1,550,411,249	
31 Sales Revenues	0	0	0	0	0	p. 301
32 Net Revenues	1,042,695,548	1,192,621,120	1,240,187,438	1,445,936,945	1,550,411,249	

NGSA
Pipeline Cost Model

Tennessee Gas Pipeline Company, LLC

27	Account 495	0	0	0	0	0	0	0	p. 308
28	Value of excess fuel retained	0	0	0	0	0	0	0	
29	Penalty revenues	0	0	0	0	0	0	0	
29	Gains on settlements of imbalances	<u>581,243</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
30	Total non-cost of service revenues	581,243	0	0	0	0	0	0	
31	Cost of Debt	7.79%	7.77%	7.76%	7.75%	7.71%	7.17%	7.17%	p. 218
32	Allowed Rate of Return on Equity	12.71%	12.71%	12.71%	12.71%	12.71%	12.71%	12.71%	p. 218
33	Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	0	
34	Gas Received from Shippers (dth)								p.520
35	Gas Used for Compressor Station Fuel (dth)								p.520
36	Account 810 Amount of Credit								p.331
37	Account 810 Gas Used (dth)								p.331

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NGSA
Pipeline Cost Model

Tennessee Gas Pipeline Company, LLC

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base						
Capitalization						
1	Debt	41.33%	37.05%	38.11%	34.94%	33.43%
2	Equity	58.67%	62.95%	61.89%	65.06%	66.57%
3	Return on Debt	3.22%	2.88%	2.96%	2.71%	2.40%
4	Return on Equity	7.46%	8.00%	7.87%	8.27%	8.46%
5	Total Return	10.68%	10.88%	10.82%	10.98%	10.86%
Rate Base						
6	Gas Plant in Service	7,315,979,000	7,443,590,861	7,789,831,516	8,093,617,755	8,609,956,465
7	Gas Stored - Noncurrent	71,152,074	71,152,074	71,152,074	71,152,074	71,152,074
8	Accumulated Depreciation	-3,159,560,732	-3,221,922,169	-3,351,751,345	-3,462,884,909	-3,612,109,795
9	Working Capital	50,233,141	45,734,169	45,461,563	48,703,326	49,933,228
10	ADIT	-564,966,968	-759,016,094	-895,463,149	-264,315,947	-223,811,548
11	Regulatory Assets	20,421,158	0	0	0	0
12	Regulatory Liabilities	0	0	0	0	-157,792,762
13	Total Rate Base	3,733,257,673	3,599,959,999	3,659,230,659	4,486,272,299	4,737,327,662
Cost of Service						
14	Return	398,583,645	391,665,928	396,058,843	492,457,034	514,377,995
15	Federal Income Tax	149,900,918	155,093,518	154,992,437	199,756,043	215,830,203
16	State Income Tax	15,838,588	16,387,240	16,376,559	21,106,299	22,804,701
17	Other Taxes	63,357,282	65,532,583	73,218,555	76,918,126	87,731,779
18	Depreciation	163,624,642	167,353,276	175,471,550	179,130,112	183,225,123
19	O&M	218,556,441	230,847,996	240,748,096	265,833,428	276,104,044
20	A&G	73,462,451	63,869,213	64,863,341	66,911,382	63,346,697
21	Total Cost of Service	1,083,323,966	1,090,749,754	1,121,729,381	1,302,112,424	1,363,420,542
22	Total Revenues	1,042,695,548	1,192,621,120	1,240,187,438	1,445,936,945	1,550,411,249
23	Non-Cost of Service Revenues	581,243	0	0	0	0
24	Cost Over (Under) Recovery	-40,628,418	101,871,366	118,458,057	143,824,521	186,990,707
25	Over (Under) Recovery excl. non-COS rev	-41,209,661	101,871,366	118,458,057	143,824,521	186,990,707
26	Actual rate of return on equity *	11.61%	15.38%	15.81%	15.63%	16.23%
* $[(\text{Line 24} - (\text{Line 24} * (.5385/(1+.5385)))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .5385))] + (\text{Line 14} * (\text{Line 4}/(\text{Line 5}))) / \text{Line 13} * \text{Line 2}$						

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.
 1/ In 2016, deferred taxes were reduced in connection with Kinder Morgan, Inc.'s acquisition of all outstanding common units of Kinder Morgan Energy Partners, LP that it didn't already own. This sale is a taxable transaction under IRS rules, which increases the tax basis of the assets.

NGSA
Pipeline Cost Model

Texas Eastern Transmission, LP

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1	8,272,415,886	8,832,190,925	9,748,131,481	10,008,393,561	10,610,781,746	p. 110 Balance Sheet
2	3,154,604,283	3,212,117,812	3,274,569,067	3,338,709,741	3,405,087,680	p. 110 Balance Sheet
3	0	0	0	0	0	pp. 234-235
4	984,687,072	1,068,612,975	1,222,295,760	1,373,882,592	793,132,966**	pp. 274-275
5	0	0	0	0	0	pp. 276-277
6	15,731,513	17,317,268	17,864,217	17,843,553	14,912,242	p. 232
7	0	0	0	0	746,934,981**	p. 278
8	9,293,865	12,214,435	12,786,301	9,876,818	7,655,762	p. 230
9	18,980,692	20,404,723	19,224,558	19,628,937	19,764,050	pp. 110-111 Balance Sheet
10	23,464,246	23,464,246	23,464,246	23,464,246	23,464,246	p. 110
11	12,959,121	12,959,121	12,959,121	12,959,121	12,959,121	p. 110
13	75,086,938	92,297,199	56,251,435	40,240,344	40,434,983	
14	23,234,293	30,972,386	29,894,870	20,913,706	19,536,386	p. 319
15	6,263,798	8,220,382	5,335,720	5,083,279	3,630,539	
16	16,970,495	22,752,004	24,559,150	15,830,427	15,905,847	
17	257,946,350	281,512,698	331,857,312	438,468,173	359,156,143	pp. 320-321
18	80,588,244	91,699,790	133,884,925	146,274,401	127,622,312	
19	177,358,106	189,812,908	197,972,387	292,193,772	231,533,831	
20	160,265,684	170,356,734	157,117,297	154,526,304	215,180,562	pp. 324-325
21	50,695,860	77,026,804	50,414,779	83,505,809	95,243,589	p. 114 Income Statement
22	92,499,172	104,312,548	110,354,556	122,604,293	123,167,525	p. 114 Income Statement
23	2,805,079	2,892,133	4,061,656	4,521,945	4,501,382	p. 300
24	942,829,304	1,162,356,259	1,285,292,076	1,345,639,718	1,385,009,217	p. 301
25	945,634,383	1,165,248,392	1,289,353,732	1,350,161,663	1,389,510,599	
26	945,634,383	1,165,248,392	1,289,353,732	1,350,161,663	1,389,510,599	

NGSA
Pipeline Cost Model

Texas Eastern Transmission, LP

27	Account 495	Value of excess fuel retained	0	0	0	0	0	0	p. 308
28		Penalty revenues	0	0	0	0	0	0	
29		Gains on settlements of imbalances	0	0	0	0	0	0	
30		Total non-cost of service revenues	0	0	0	0	0	0	
31		Cost of Debt	5.02%	5.06%	5.06%	5.00%	5.00%	5.00%	p. 218
32		Allowed Rate of Return on Equity	12.75%	12.75%	12.75%	12.75%	12.75%	12.75%	p. 218
33		Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	

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NGSA
Pipeline Cost Model

Texas Eastern Transmission, LP

		Year End 2013	Year End 2014	Year End 2015	Year End 2016	Year End 2017
Allowed Return on Rate Base						
Capitalization						
1	Debt	43.77%	40.73%	38.61%	35.20%	33.15%
2	Equity	56.23%	59.27%	61.39%	64.80%	66.85%
3	Return on Debt	2.20%	2.06%	1.95%	1.76%	1.66%
4	Return on Equity	7.17%	7.56%	7.83%	8.26%	8.52%
5	Total Return	9.37%	9.62%	9.78%	10.02%	10.18%
Rate Base						
6	Gas Plant in Service	8,272,415,886	8,832,190,925	9,748,131,481	10,008,393,561	10,610,781,746
7	Gas Stored - Noncurrent	23,464,246	23,464,246	23,464,246	23,464,246	23,464,246
8	Accumulated Depreciation	-3,154,604,283	-3,212,117,812	-3,274,569,067	-3,338,709,741	-3,405,087,680
9	Working Capital	41,233,678	45,578,279	44,969,980	42,464,876	40,378,933
10	ADIT	-984,687,072	-1,068,612,975	-1,222,295,760	-1,373,882,592	-793,132,966
11	Regulatory Assets	15,731,513	17,317,268	17,864,217	17,843,553	14,912,242
12	Regulatory Liabilities	0	0	0	0	-746,934,981
13	Total Rate Base	4,213,553,968	4,637,819,931	5,337,565,097	5,379,573,903	5,744,381,540
Cost of Service						
14	Return	394,665,861	446,059,167	522,061,424	539,140,897	584,828,304
15	Federal Income Tax	117,476,869	136,296,445	162,471,256	172,845,710	190,405,903
16	State Income Tax	17,410,072	20,199,133	24,078,240	25,615,734	28,218,155
17	Other Taxes	50,695,860	77,026,804	50,414,779	83,505,809	95,243,589
18	Depreciation	92,499,172	104,312,548	110,354,556	122,604,293	123,167,525
19	O&M	269,415,539	304,862,111	278,782,972	348,264,543	287,874,661
20	A&G	160,265,684	170,356,734	157,117,297	154,526,304	215,180,562
21	Total Cost of Service	1,102,429,057	1,259,112,943	1,305,280,524	1,446,503,289	1,524,918,699
22	Total Revenues	945,634,383	1,165,248,392	1,289,353,732	1,350,161,663	1,389,510,599
23	Non-Cost of Service Revenues	0	0	0	0	0
24	Cost Over (Under) Recovery	-156,794,674	-93,864,551	-15,926,792	-96,341,626	-135,408,100
25	Over (Under) Recovery excl. non-COS rev	-156,794,674	-93,864,551	-15,926,792	-96,341,626	-135,408,100
26	Actual rate of return on equity *	8.37%	10.49%	12.43%	10.92%	10.41%

* $[(\text{Line 24} - (\text{Line 24} * (.3889 / (1 + .3889))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .3889))] + [(\text{Line 14} * (\text{Line 4} / \text{Line 5}))] / \text{Line 13} * \text{Line 2}$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

**NGSA
Pipeline Cost Model**

Texas Gas Transmission, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	2,934,729,769	2,959,989,889	2,995,069,417	3,280,870,547	3,458,989,883	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	1,300,202,934	1,369,880,919	1,431,251,727	1,478,998,719	1,549,938,166	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes						
Account 190	1,600,000	1,400,000	1,200,000	1,300,000	1,600,000	pp. 234-235
Account 282	181,139,786	203,883,920	228,896,604	265,435,728	217,050,113	pp. 274-275
Account 283	23,110,144	28,597,279	30,761,052	28,550,542	27,798,495	pp. 276-277
4 Regulatory Assets and Liabilities						
Account 182.3 (rate base est.)	10,581,766	10,581,766	10,581,766	10,581,766	10,581,766	p. 232
Account 254 (rate base est.)	32,686,653	34,232,810	39,944,979	45,886,099	159,420,077	p. 278
5 Working Capital						
Prepayments	3,804,115	4,419,326	4,683,966	4,540,746	4,582,299	p. 230
Materials and Supplies	11,416,230	12,115,122	13,204,741	13,941,922	12,644,461	pp. 110-111
6 Gas Stored Underground						
Acct. 117.1 Base gas	25,202,872	25,202,872	25,202,872	25,202,872	25,202,872	p. 110
Acct. 117.2 System balancing	106,998,287	114,605,903	148,668,398	133,201,761	102,000,672	p. 110
7 Operation and Maintenance Costs						
Production	0	0	0	0	0	O&M
Storage	7,027,169	15,461,987	10,520,653	5,477,353	12,977,453	p. 322
less: Comp. fuel and losses	1,509,829	2,280,122	1,391,870	1,083,348	1,381,059	
Net storage costs	5,517,340	13,181,865	9,128,783	4,394,005	11,596,394	
Transmission	90,359,500	98,680,579	80,024,084	72,509,123	77,640,759	p. 323
less: Comp. fuel	27,190,264	31,880,247	16,481,496	12,583,127	16,393,248	
Net transmission costs	63,169,236	66,800,332	63,542,588	59,925,996	61,247,511	
A&G	37,778,528	38,518,645	41,597,176	53,444,487	48,641,629	pp. 323-325
8 Other Taxes	26,927,465	26,080,071	25,306,003	28,620,794	31,266,736	p. 114 Income Statement
9 Depreciation, Amortization, and Negative Salvage	72,268,376	73,671,181	74,768,178	74,450,824	78,211,587	p. 114 Income Statement
10 Revenue						
ACA and GRI revenue	1,793,908	1,444,165	1,567,900	1,395,642	1,334,961	p. 300
Other Revenue	402,206,160	405,117,823	416,034,259	461,867,813	499,296,405	p. 301
11 Total Revenue	404,000,068	406,561,988	417,602,159	463,263,455	500,631,366	
12 Sales Revenues	10,792,826	1,864,800	0	3,686,200	0	
13 Net Revenues	393,207,242	404,697,188	417,602,159	459,577,255	500,631,366	

NGSA
Pipeline Cost Model

Texas Gas Transmission, LLC

Account 495									p. 308
27 Value of excess fuel retained	0	0	0	0	0	0	0	0	
28 Penalty revenues	0	0	0	0	0	0	0	0	
29 Gains on settlements of imbalances	0	0	0	0	0	0	0	0	
30 Total non-cost of service revenues	0	0	0	0	0	0	0	0	
31 Cost of Debt	5.03%	5.42%	5.35%	5.52%	5.65%				p. 218
32 Allowed Rate of Return on Equity	10.04%	10.30%	10.87%	11.00%	11.55%				p. 218
33 Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	0	0	

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**NGSA
Pipeline Cost Model**

Texas Gas Transmission, LLC

Cost of Service Calculation

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base Capitalization					
1					
2	45.94%	42.41%	39.72%	40.00%	40.00% ***
	54.06%	57.59%	60.28%	60.00%	60.00%
3	2.31%	2.30%	2.13%	2.21%	2.26%
4	5.43%	5.93%	6.55%	6.60%	6.93%
5	7.74%	8.23%	8.68%	8.81%	9.19%
Rate Base					
6	2,934,729,769	2,959,989,889	2,995,069,417	3,280,870,547	3,458,989,883
7	25,202,872	25,202,872	25,202,872	25,202,872	25,202,872
8	-1,300,202,934	-1,369,880,919	-1,431,251,727	-1,478,998,719	-1,549,938,166
9	122,218,632	131,140,351	166,557,105	151,684,429	119,227,432
10	-202,649,930	-231,081,199	-258,457,656	-292,686,270	-243,248,608
11	10,581,766	10,581,766	10,581,766	10,581,766	10,581,766
12	-32,686,653	-34,232,810	-39,944,979	-45,886,099	-159,420,077
13	1,557,193,522	1,491,719,950	1,467,756,798	1,650,768,526	1,661,395,102
Cost of Service					
14	120,501,957	122,774,399	127,363,950	145,399,692	152,682,210
15	32,868,348	34,410,988	37,400,932	42,369,726	44,774,598
16	4,515,012	4,726,919	5,137,637	5,820,183	6,150,532
17	26,927,465	26,080,071	25,306,003	28,620,794	31,266,736
18	72,268,376	73,671,181	74,768,178	74,450,824	78,211,587
19	68,686,576	79,982,197	72,671,371	64,320,001	72,843,905
20	<u>37,778,528</u>	<u>38,518,645</u>	<u>41,597,176</u>	<u>53,444,487</u>	<u>48,641,629</u>
21	363,546,262	380,164,400	384,245,247	414,425,706	434,571,197
22	393,207,242	404,697,188	417,602,159	459,577,255	500,631,366
23	0	0	0	0	0
24	29,660,980	24,532,788	33,356,912	45,151,549	66,060,169
25	29,660,980	24,532,788	33,356,912	45,151,549	66,060,169
26	12.39%	12.20%	13.38%	14.04%	15.97%

* $[(\text{Line 24} - (\text{Line 24} * (.3889 / (1 + .3889)))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .3889))] + [(\text{Line 14} - (\text{Line 4} / (\text{Line 5})))] / \text{Line 13} * \text{Line 2}$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

*** NCSA uses an estimated 60 percent equity capitalization rate instead of Texas Gas' reported equal to or greater than 70% equity ratios in the 2016-2017 Form 2s. 70% and greater equity ratios are not within a range FERC has historically approved.

NGSA
Pipeline Cost Model

Trailblazer Pipeline Company LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1						
2	335,769,353	348,724,398	348,928,845	359,051,513	369,044,341	p. 110 Balance Sheet
	280,883,560	284,773,879	288,209,654	286,319,251	289,350,896	p. 110 Balance Sheet
3	1,128,476	193,841	318,419	451,763	1,701,528 **	pp. 234-235
4	-538,749	-134,071	1,014,392	4,945,227	6,420,884 **	pp. 274-275
5	0	0	0	0	0	pp. 276-277
6	32,227	0	0	0	0	p. 232
7	0	0	0	0	1,628,479 **	p. 278
8	1,221	4,023	10,547	4,242	350	p. 230
9	400,575	528,233	2,502,513	424,047	361,755	pp. 110-111
10	0	0	0	0	0	p. 110
11	0	0	0	0	0	p. 110
12	0	0	0	0	0	O&M
13	0	0	0	0	0	
14	0	0	0	0	0	p. 322
15	0	0	0	0	0	
16	6,669,786	8,741,191	8,886,558	7,882,191	9,294,253	pp. 323
17	3,940,578	4,387,806	5,225,999	4,425,459	5,361,875	
18	2,729,208	4,353,385	3,660,559	3,456,732	3,932,378	
19	6,648,179	5,285,942	4,101,201	4,077,386	4,390,815	pp. 323-325
20	1,268,968	1,607,386	1,122,290	1,023,110	1,062,252	p. 114 Income Statement
21	7,339,898	4,211,767	3,439,447	3,844,266	3,951,133	p. 114 Income Statement
22	425,161	310,874	393,237	386,104	398,172	p. 300
23	22,721,444	38,609,512	32,287,908	30,068,943	32,893,323	p. 301, 304
	55,433	5,019,078	1,246,304	1,083,243	2,479,617	pp. 304-305
24	23,091,172	33,901,308	31,434,841	29,371,804	30,811,878	
25	1,417,610	2,838,304	509,548	489,225	581,570	
26	21,673,562	31,063,004	30,925,293	28,882,579	30,230,308	

Trailblazer Pipeline Company LLC

Account 495

**NGSA
Pipeline Cost Model**

27	Value of excess fuel retained	0	190,959	0	0	0	0
28	Penalty revenues	0	0	0	0	0	0
29	Gains on settlements of imbalances	138,576	718,140	362,026	243,868	114,880	114,880
30	Total non-cost of service revenues	138,576	909,099	362,026	243,868	114,880	114,880
31	Cost of Debt	4.25%	2.45%	2.08%	5.50%	5.50%	5.50%
32	Allowed Rate of Return on Equity	15.00%	11.20%	11.20%	11.20%	11.20%	11.20%
33	Account 496 - Provision for Rate Refunds	0	0	0	0	0	0

p. 308

p. 218

p. 218

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NGSA
Pipeline Cost Model

Trailblazer Pipeline Company LLC

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
1	Allowed Return on Rate Base					
2	Capitalization					
3	Debt	40.91%	41.12%	31.75%	40.48%	50.44% ***
4	Equity	59.09%	58.88%	68.25%	59.52%	49.56%
5	Return on Debt	1.74%	1.01%	0.66%	2.23%	2.77%
6	Return on Equity	8.86%	6.59%	7.64%	6.67%	5.55%
7	Total Return	10.60%	7.60%	8.30%	8.89%	8.32%
8	Rate Base					
9	Gas Plant in Service	335,769,353	348,724,398	348,928,845	359,051,513	369,044,341
10	Gas Stored - Noncurrent	0	0	0	0	0
11	Accumulated Depreciation	-280,883,560	-284,773,879	-288,209,654	-286,319,251	-289,350,896
12	Working Capital	401,796	532,256	2,513,060	428,289	362,105
13	ADIT	1,667,225	327,912	-695,973	-4,493,464	-4,719,356
14	Regulatory Assets	32,227	0	0	0	0
15	Regulatory Liabilities	0	0	0	0	-1,628,479
16	Total Rate Base	56,987,041	64,810,687	62,536,278	68,667,087	73,707,715
17	Cost of Service					
18	Return	6,041,866	4,926,908	5,193,263	6,106,317	6,136,108
19	Federal Income Tax	1,964,296	1,662,103	1,858,995	1,780,144	1,591,065
20	State Income Tax	221,463	187,392	209,590	200,700	179,383
21	Other Taxes	1,268,968	1,607,386	1,122,290	1,023,110	1,062,252
22	Depreciation	7,339,898	4,211,767	3,439,447	3,844,266	3,951,133
23	O&M	2,729,208	4,353,385	3,660,559	3,456,732	3,932,378
24	A&G	6,648,179	5,285,942	4,101,201	4,077,386	4,390,815
25	Total Cost of Service	26,213,877	22,234,884	19,585,345	20,488,655	21,243,134
26	Total Revenues	21,673,562	31,063,004	30,925,293	28,882,579	30,230,308
27	Non-Cost of Service Revenues	138,576	909,099	362,026	243,868	114,880
28	Cost Over (Under) Recovery	-4,540,315	8,828,120	11,339,948	8,393,924	8,987,174
29	Over (Under) Recovery excl. non-COS rev	-4,678,891	7,919,021	10,977,922	8,150,056	8,872,294
30	Actual rate of return on equity *	5.88%	26.84%	29.16%	25.09%	27.84%

* $[(\text{Line 24} - (\text{Line 24} * (-3889 / (1 + 3889))) - (\text{Line 24} * (\text{State Income Tax Percentage} * -3889))] / (\text{Line 13} * \text{Line 2})$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.
 ***NGSA uses 2014-2017 capitalization and 2014-2015 cost of debt ratios derived from data in Trailblazer Energy Partners, LP SEC Form 10-Ks due to Trailblazer's reported missing debt and equity ratios in the Form 2s.

NGSA
Pipeline Cost Model

Transcontinental Gas Pipe Line Company, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1 Total Plant in Service	9,196,338,409	9,350,471,844	10,660,114,642	10,945,386,071	12,562,677,365	p. 110 Balance Sheet
2 Total Accum. Depreciation, Amortization	4,651,309,345	4,800,830,537	5,001,227,826	5,203,258,907	5,377,699,428	p. 110 Balance Sheet
3 Accumulated Deferred Income Taxes	133,835,104	144,993,307	161,215,407	186,352,890	61,414,613	pp. 234-235
4 Account 190	1,264,711,761	1,320,592,782	1,591,531,181	1,701,783,965	1,195,989,557 **	pp. 274-275
5 Account 283	574,568	388,239	201,909	15,580	26,407,128	pp. 276-277
6 Regulatory Assets and Liabilities						
7 Account 182.3 (rate base est.)	0	0	0	0	0	p. 232
Account 254 (rate base est.)	0	0	0	0	840,396,422 **	p. 278
8 Working Capital						
9 Prepayments Materials and Supplies	9,482,329	9,851,166	9,708,715	9,562,752	8,614,548	p. 230
	36,980,143	36,927,192	36,127,599	36,959,613	37,037,044	pp. 110-111
10 Gas Stored Underground						
11 Acct. 117.1 Base gas	76,011,237	76,011,237	76,001,991	76,273,878	76,273,878	p. 110
Acct. 117.2 System balancing	18,620,789	36,329,052	26,298,224	22,753,384	8,867,537	p. 110
12 Operation and Maintenance Costs						
Production	7,552,109	6,316,414	5,350,416	3,226,481	4,596,521	O&M
13 Storage	90,611,563	90,744,348	81,543,815	75,160,292	82,601,616	
14 less: Comp. fuel and losses	11,272,824	12,262,858	7,412,031	6,186,332	6,369,041	p. 322
15 Net storage costs	79,338,739	78,481,490	74,131,784	68,973,960	76,232,575	
16 Transmission	124,115,674	179,086,172	207,005,189	231,545,880	294,815,655	p. 323
17 less: Comp. fuel	35,095,065	2,409,805	12,215,019	215,411	3,264,410	
18 Net transmission costs	159,210,739	176,676,367	194,790,170	231,330,469	298,080,065	
19 A&G	199,590,915	187,011,413	183,160,505	171,237,808	194,297,301	pp. 323-325
20 Other Taxes	50,556,007	51,346,011	56,858,655	67,425,132	73,431,358	p. 114 Income Statement
21 Depreciation, Amortization, and Negative Salvage	328,039,512	233,969,800	242,300,633	272,235,729	282,015,729	p. 114 Income Statement
22 Revenue						
23 ACA and GRI revenue	4,766,305	4,011,028	4,396,188	4,494,824	4,524,790	p. 300
24 Other Revenue	1,243,203,586	1,300,578,593	1,445,718,600	1,546,741,266	1,689,786,114	p. 301 & p. 308
25 Total Revenue	1,247,969,891	1,304,589,621	1,450,114,788	1,551,236,090	1,694,310,904	
26 Net Revenues	1,247,969,891	1,304,589,621	1,450,114,788	1,549,744,795	1,694,310,904	

Transcontinental Gas Pipe Line Company, LLC

NGSA Pipeline Cost Model

27	Account 495	Value of excess fuel retained	0	0	0	0	0	0		
28		Penalty revenues	-582,050	1,191,915	369,658	171,603	6,736,070			p. 308
29		Gains on settlements of imbalances	124,118	293,195	15,948	36,137	362,108			
30		Total non-cost of service revenues	-457,932	1,485,110	385,606	207,740	7,098,178			
31		Cost of Debt	5.81%	5.81%	5.81%	5.81%	6.72%			p. 218
32		Allowed Rate of Return on Equity	9.11%	9.39%	9.68%	10.78%	10.63%			p. 218
33		Account 496 - Provision for Rate Refunds	97,013,595	19,122,024	14,993,200	267,027	2,137			

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**NGSA
Pipeline Cost Model**

Transcontinental Gas Pipe Line Company, LLC

		<u>Cost of Service Calculation</u>				
		<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
1	Allowed Return on Rate Base					
2	<u>Capitalization</u>					
	Debt	37.76%	35.23%	33.07%	40.00%	35.29% ***
	Equity	62.24%	64.77%	66.93%	60.00%	64.71%
3	Return on Debt	2.19%	2.05%	1.92%	2.32%	2.37%
4	Return on Equity	5.67%	6.08%	6.48%	6.47%	6.88%
5	Total Return	7.86%	8.13%	8.40%	8.79%	9.25%
6	Rate Base					
7	Gas Plant in Service	9,196,338,409	9,350,471,844	10,660,114,642	10,945,386,071	12,562,677,365
8	Gas Stored - Noncurrent	76,011,237	76,011,237	76,001,991	76,273,878	76,273,878
9	Accumulated Depreciation	-4,651,309,345	-4,800,830,537	-5,001,227,826	-5,203,258,907	-5,377,699,428
10	Working Capital	65,083,261	83,107,410	72,134,538	69,275,749	54,519,129
11	ADIT	-1,131,451,225	-1,175,987,714	-1,430,517,683	-1,515,446,655	-1,160,982,072
12	Regulatory Assets	0	0	0	0	0
	Regulatory Liabilities	0	0	0	0	-840,396,422
13	Total Rate Base	3,554,672,337	3,532,772,240	4,376,505,662	4,372,230,136	5,314,392,450
14	Cost of Service					
15	Return	279,536,589	287,170,789	367,634,835	384,406,474	491,589,858
16	Federal Income Tax	78,381,410	83,556,581	110,267,927	109,976,162	142,162,097
17	State Income Tax	6,614,551	7,051,280	9,305,432	9,280,810	11,996,958
18	Other Taxes	50,556,007	51,346,011	56,858,655	67,425,132	73,431,358
19	Depreciation	328,039,512	233,969,800	242,300,633	272,235,729	282,015,729
	O&M	246,101,587	261,474,271	274,272,370	303,530,910	378,909,161
	A&G	198,590,915	187,011,413	183,160,505	171,237,808	194,297,301
20	Total Cost of Service	1,187,820,571	1,111,580,146	1,243,800,357	1,318,093,025	1,574,402,462
21	Total Revenues	1,247,969,891	1,304,589,621	1,450,114,788	1,549,744,795	1,694,310,904
22	Non-Cost of Service Revenues	-457,932	1,485,110	385,606	207,740	7,098,178
23	Cost Over (Under) Recovery	60,149,320	193,009,475	206,314,431	231,651,770	119,908,442
24	Over (Under) Recovery excl. non-COS rev	60,607,252	191,524,365	205,928,825	231,444,030	112,810,264
25	Actual rate of return on equity *	10.98%	15.19%	14.52%	16.85%	13.03%

* $[(\text{Line } 24 - (\text{Line } 24 * (.3889 / (1 + .3889))) - (\text{Line } 24 * (\text{State Income Tax Percentage} * .3889))] / [(\text{Line } 4 / (\text{Line } 5))] / (\text{Line } 13 * \text{Line } 2)$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

***NGSA uses an estimated 60 percent equity capitalization rate instead of Transcontinental's reported greater than 70% equity ratios in the 2016 Form 2. 70% and greater equity ratios are not within a range FERC has historically approved.

Transwestern Pipeline Company, LLC

NGSA
Pipeline Cost Model

Data Input Section

	Year End 2013	Year End 2014	Year End 2015	Year End 2016	Year End 2017	Source (Form 2)
Total Plant in Service	2,266,746,866	2,310,950,876	2,316,782,671	2,354,992,633	2,348,416,593 2/	p. 110 Balance Sheet
Total Accum. Depreciation, Amortization	593,002,768	625,717,314	657,096,820	699,239,303	723,507,230	p. 110 Balance Sheet
Accumulated Deferred Income Taxes	0	0	33,619,716	33,011,212	31,900,386 **	pp. 234-235
Account 190	277,809,557	319,145,986	267,275,912	292,632,818	313,145,049	pp. 274-275
Account 282	876,548	15,652,994	11,718,958	11,468,503	11,181,285	pp. 276-277
Account 283						
Regulatory Assets and Liabilities						
Account 182.3 (rate base est.)	2,249,225	3,515,647	2,432,184	2,103,641	2,055,113	p. 232
Account 254 (rate base est.)	442,767	0	114,070,701	112,456,038	113,915,775 **	p. 278
Working Capital						
Prepayments	10,118,410	10,203,618	10,185,432	10,387,992	10,540,856	p. 230
Materials and Supplies	7,204,804	7,991,649	12,547,722	12,843,115	17,219,592	pp. 110-111
Gas Stored Underground						
Acct. 117.1	0	0	0	0	0	p. 110
Acct. 117.2	9,406,006	9,406,006	9,406,006	9,406,006	9,406,006	p. 110
Base gas System balancing						
Operation and Maintenance Costs						
Production	0	0	0	0	0	O&M
Storage	0	0	0	0	0	
less: Comp. fuel and losses	0	0	0	0	0	p. 322
Net storage costs	0	0	0	0	0	
Transmission	74,445,531	70,704,070	61,979,174	60,639,599	60,107,967	p. 323
less: Comp. fuel	26,919,738	29,411,146	21,896,072	18,447,366	20,410,362	
Net transmission costs	47,525,793	41,292,924	40,083,102	42,192,233	39,697,605	
A&G	14,526,280	13,943,767	12,737,295	10,470,006	11,083,954	pp. 323-325
Other Taxes	23,722,344	10,015,328	15,920,353	18,712,489	21,970,978	p. 114 Income Statement
Depreciation, Amortization, and Negative Salvage	32,219,563	27,503,210	31,782,130	31,660,544	32,130,337	p. 114 Income Statement
Revenue						
ACA and GRI revenue	794,137	575,592	678,949	628,143	595,304	p. 300
Other Revenue	228,135,220	227,609,158	211,787,477	212,958,452	208,247,171	p. 301
Total Revenue	228,932,357	228,184,750	212,466,426	213,586,595	208,842,475	
Sales Revenues	24,848,072	24,981,555	18,012,072	15,639,674	17,977,402	
Net Revenues	204,084,285	203,203,195	194,454,354	197,946,921	190,865,073	

NGSA
Pipeline Cost Model

Transwestern Pipeline Company, LLC											
Account 495											p. 308
Value of excess fuel retained	0	0	0	0	0	0	0	0	0	0	
Penalty revenues	0	0	0	712	0	0	0	0	0	0	
Gains on settlements of imbalances	0	0	0	0	0	0	0	0	0	0	
Total non-cost of service revenues	0	0	0	-712	0	0	0	0	0	0	
Cost of Debt	5.81%	5.82%	5.82%	5.57%	5.74%	5.74%	5.74%	5.74%	5.74%	5.74%	p. 218
Allowed Rate of Return on Equity	11.20%	11.20%	11.20%	10.52%	11.20%	11.20%	11.20%	11.20%	11.20%	10.52%	p. 218
Account 496 - Provision for Rate Refunds	0	0	0	0	-80,501	-80,501	-80,501	-80,501	-80,501	0	
Gas Received from Shippers (dth)	9,586,920	9,312,011	9,312,011	10,310,718	9,808,317	9,808,317	9,808,317	9,808,317	9,808,317	9,435,809	p. 520
Gas Used for Compressor Station Fuel (dth)	4,223,588	3,716,693	3,716,693	5,136,956	4,584,222	4,584,222	4,584,222	4,584,222	4,584,222	4,322,787	p. 520
Account 810 Amount of Credit	16,997,046	17,693,078	17,693,078	11,938,970	9,642,437	9,642,437	9,642,437	9,642,437	9,642,437	10,150,192	p. 331
Account 810 Gas Used (dth)	4,451,624	4,190,340	4,190,340	4,938,041	4,111,443	4,111,443	4,111,443	4,111,443	4,111,443	3,851,897	p. 331

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NGSA
Pipeline Cost Model

Transwestern Pipeline Company, LLC

Cost of Service Calculation

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>
Allowed Return on Rate Base					
Capitalization					
Debt	40.55%	41.05%	37.30%	40.66%	36.64%
Equity	59.45%	58.95%	62.70%	59.34%	63.36%
Return on Debt	2.36%	2.39%	2.08%	2.33%	2.10%
Return on Equity	6.66%	6.60%	6.60%	6.65%	6.67%
Total Return	9.01%	8.99%	8.67%	8.98%	8.77%
Rate Base					
Gas Plant in Service	2,266,746,866	2,310,950,876	2,316,782,671	2,354,992,633	2,348,416,593
Gas Stored - Noncurrent	0	0	0	0	0
Accumulated Depreciation	-593,002,768	-625,717,314	-657,096,820	-699,239,303	-723,507,230
Working Capital	26,729,220	27,601,273	32,139,160	32,637,113	37,166,454
ADIT	-278,686,105	-334,798,980	-245,375,154	-271,090,109	-292,425,948
Regulatory Assets	2,249,225	3,515,647	2,432,184	2,103,641	2,055,113
Regulatory Liabilities	<u>-442,767</u>	<u>0</u>	<u>-114,070,701</u>	<u>-112,456,038</u>	<u>-113,915,775</u>
Total Rate Base	1,423,593,671	1,381,551,502	1,334,811,340	1,306,947,937	1,257,789,207
Cost of Service					
Return	128,327,787	124,222,341	115,776,864	117,363,454	110,290,605
Federal Income Tax	36,862,218	35,472,716	34,239,602	33,779,202	32,603,506
State Income Tax	2,397,167	2,306,807	2,226,617	2,196,677	2,120,221
Other Taxes	23,722,344	10,015,328	15,920,353	18,712,489	21,970,978
Depreciation	32,219,563	27,503,210	31,782,130	31,660,544	32,130,337
O&M	47,525,793	41,292,924	40,083,102	42,192,233	39,697,605
A&G	<u>14,526,280</u>	<u>13,943,767</u>	<u>12,737,295</u>	<u>10,470,006</u>	<u>11,083,954</u>
Total Cost of Service	285,581,152	254,757,094	252,765,962	256,374,605	249,897,206
Total Revenues	204,084,285	203,203,195	194,454,354	197,946,921	190,865,073
Non-Cost of Service Revenues	0	0	712	0	0
Cost Over (Under) Recovery	-81,496,867	-51,553,899	-58,311,608	-58,427,684	-59,032,133
Over (Under) Recovery excl. non-COS rev	-81,496,867	-51,553,899	-58,312,320	-58,427,684	-59,032,133
Actual rate of return on equity *	4.51%	6.80%	5.68%	5.97%	5.37%

* [(Line 24 - (Line 24 * (.3889/(1+.3889))))-(Line 24 * (State Income Tax Percentage * .3889))]/(Line 14*(Line 4/(Line 5)))] / Line 13 * Line 2

** Includes Reversal of South Georgia deferred tax liability in 2015.

1/ Over/Under Dth Fuel Recovery	5,363,332	5,595,318	5,173,762	5,224,095	5,113,022
Average price	<u>\$3.82</u>	<u>\$4.22</u>	<u>\$2.42</u>	<u>\$2.35</u>	<u>\$2.64</u>
Valuation of Fuel Recovery	\$20,487,928	\$23,612,242	\$12,520,504	\$12,276,623	\$13,498,378
Actual rate of return on equity including fuel	6.19%	8.82%	6.72%	7.07%	6.55%

2/ Pursuant to Enron's plan of reorganization, effective in 2004, Transwestern Pipeline became a subsidiary of CCE Holdings, LLC, which is a joint venture owned by Southern Union Company, GE Commercial Finance Energy Financial Services and four minority interest owners. Transwestern Pipeline was converted to a limited liability company (LLC) and will cease to exist on November 15, 2034, unless terminated sooner. On December 1, 2006 Transwestern was acquired by Energy Transfer Partners, L.P. The acquisition was accounted for using the purchase method of accounting with Transwestern recording their net assets at the estimated value as of the acquisition date. In accordance with FERC accepted rate base calculation, the acquisition adjustment has been excluded from plant.

NGSA
Pipeline Cost Model

Trunkline Gas Company, LLC

Data Input Section

	<u>Year End 2013</u>	<u>Year End 2014</u>	<u>Year End 2015</u>	<u>Year End 2016</u>	<u>Year End 2017</u>	<u>Source (Form 2)</u>
1	1,403,106,615	1,420,086,390	1,365,407,682	1,376,890,098	1,442,474,224	p. 110 Balance Sheet
2	766,272,506	783,484,764	719,803,066	734,483,107	753,496,793	p. 110 Balance Sheet
3	0	0	0	0	0	pp. 234-235
4	155,623,936	156,482,833	172,350,544	182,397,701	131,053,079 **	pp. 274-275
5	4,097,287	4,074,450	3,866,204	4,981,342	2,946,521	pp. 276-277
6	9,923,867	10,185,747	10,523,282	12,279,766	12,576,343	p. 232
7	20,902,756	24,845,968	25,683,713	27,720,090	105,019,965 **	p. 278
8	674,866	352,319	356,734	422,850	359,652	p. 230
9	6,054,213	6,635,758	7,678,572	8,083,341	8,544,998	pp. 110-111
10	42,131,376	42,131,376	42,131,376	42,131,376	42,131,376	p. 110
11	0	3,753,408	7,136,593	8,147,004	8,446,839	p. 110
12	-7,504	148	0	0	0	O&M
13	1,248,353	1,374,363	1,334,491	1,004,661	1,250,284	p. 322
14	158,709	263,132	137,775	77,713	67,728	
15	1,089,644	1,111,231	1,196,716	926,948	1,182,556	
16	63,209,901	65,736,267	59,802,468	35,917,454	38,111,026	pp. 323
17	28,003,502	28,074,517	18,923,871	4,357,304	4,379,500	
18	35,206,399	37,661,750	40,878,597	31,560,150	33,731,526	
19	16,353,045	15,237,440	20,046,672	16,611,696	13,909,049	pp. 323-325
20	11,847,871	10,723,558	6,431,716	8,669,494	9,409,963	p. 114 Income Statement
21	24,037,474	24,353,344	25,402,816	24,190,026	24,835,475	p. 114 Income Statement
22	1,188,274	867,350	886,314	660,590	682,572	p. 300
23	169,597,613	166,416,288	156,028,793	144,337,814	139,589,582	p. 301
24	170,785,887	167,283,638	156,915,107	144,998,404	140,272,154	
25	0	0	0	0	0	
26	170,785,887	167,283,638	156,915,107	144,998,404	140,272,154	

NGSA
Pipeline Cost Model

27	Trunkline Gas Company, LLC										
28	Account 495										p. 308
29	Value of excess fuel retained	0	0	0	0	0	0	0	0	0	
30	Penalty revenues	0	0	0	0	0	0	0	0	0	
	Gains on settlements of imbalances	0	0	0	0	0	0	0	0	0	
	Total non-cost of service revenues	0	0	0	0	0	0	0	0	0	
31	Cost of Debt	8.25%	8.25%	8.25%	8.25%	8.25%	8.25%	8.25%	8.25%	6.98%	p. 218
32	Allowed Rate of Return on Equity	12.56%	12.56%	12.56%	12.56%	12.56%	12.56%	12.56%	12.56%	11.96%	p. 218
33	Account 496 - Provision for Rate Refunds	0	0	0	0	0	0	0	0	0	

***** end of data input *****

NGSA
Pipeline Cost Model

Trunkline Gas Company, LLC

		<u>Cost of Service Calculation</u>				
		Year End 2013	Year End 2014	Year End 2015	Year End 2016	Year End 2017
1	Allowed Return on Rate Base					
Capitalization						
2	Debt	40.00%	40.00%	40.00%	40.00%	43.36%
2	Equity	60.00%	60.00%	60.00%	60.00%	56.64% ***
3	Return on Debt	3.30%	3.30%	3.30%	3.30%	3.03%
4	Return on Equity	7.54%	7.54%	7.54%	7.54%	6.77%
5	Total Return	10.84%	10.84%	10.84%	10.84%	9.80%
Rate Base						
6	Gas Plant in Service	1,403,106,615	1,420,086,390	1,365,407,682	1,376,890,098	1,442,474,224
7	Gas Stored - Noncurrent	42,131,376	42,131,376	42,131,376	42,131,376	42,131,376
8	Accumulated Depreciation	-766,272,506	-783,484,764	-719,803,066	-734,483,107	-753,496,793
9	Working Capital	6,729,079	10,741,485	15,171,899	16,653,195	17,351,489
10	ADIT	-159,721,223	-160,557,283	-176,216,748	-187,379,043	-133,999,600
11	Regulatory Assets	9,923,867	10,185,747	10,523,282	12,279,766	12,576,343
12	Regulatory Liabilities	-20,902,756	-24,845,968	-25,683,713	-27,720,090	-105,019,965
13	Total Rate Base	514,994,452	514,256,983	511,530,712	498,372,195	522,017,074
Cost of Service						
14	Return	55,804,799	55,724,887	55,429,468	54,003,611	51,161,181
15	Federal Income Tax	15,092,771	15,071,158	14,991,260	14,605,628	13,751,962
16	State Income Tax	1,656,991	1,654,618	1,645,846	1,603,509	1,509,787
17	Other Taxes	11,847,871	10,723,558	6,431,716	8,669,494	9,409,963
18	Depreciation	24,037,474	24,353,344	25,402,816	24,190,026	24,835,475
19	O&M	36,288,539	38,773,129	42,075,313	32,487,098	34,914,082
20	A&G	16,353,045	15,237,440	20,046,672	16,611,696	13,909,049
21	Total Cost of Service	161,081,489	161,538,134	166,023,091	152,171,062	149,491,500
22	Total Revenues	170,785,887	167,283,638	156,915,107	144,998,404	140,272,154
23	Non-Cost of Service Revenues	0	0	0	0	0
24	Cost Over (Under) Recovery	9,704,398	5,745,504	-9,107,984	-7,172,658	-9,219,346
25	Over (Under) Recovery excl. non-COS rev	9,704,398	5,745,504	-9,107,984	-7,172,658	-9,219,346
26	Actual rate of return on equity *	14.69%	13.82%	10.55%	10.94%	9.85%

* $[(\text{Line 24} - (\text{Line 24} * (.3889 / (1 + .3889))) - (\text{Line 24} * (\text{State Income Tax Percentage} * .3889))] + [(\text{Line 14} * (\text{Line 4} / \text{Line 5}))] / \text{Line 13} * \text{Line 2}$

** Includes deferred income tax adjustment as recorded by the pipeline as a result of U.S. Tax Reform Legislation of 2017.

*** NCSA uses an estimated 60 percent equity capitalization rate instead of Trunkline's reported greater than 85% equity ratios in the Form 2s from 2013-2016. Above 85% equity is not within a range FERC has historically approved.

