



July 13, 2018

Ms. Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

Re: Tennessee Gas Pipeline Company, L.L.C.  
Broad Run Expansion Project  
Tariff Filing  
Docket Nos. RP18-\_\_\_\_-000 and CP15-77-000

Dear Ms. Bose:

Pursuant to Section 4 of the Natural Gas Act (“NGA”), Part 154 of the Regulations of the Federal Energy Regulatory Commission (“Commission”), 18 C.F.R. Part 154, and in compliance with the Order Issuing Certificate and Approving Abandonment (“Order”) for the Broad Run Expansion Project (“Project”), issued in Docket No. CP15-77-000 on September 6, 2016,<sup>1</sup> Tennessee Gas Pipeline Company, L.L.C. (“Tennessee”) hereby tenders for filing and acceptance revised tariff records to its FERC Gas Tariff, Sixth Revised Volume No. 1 (“Tariff”), as listed below.

Narrative Name	Record Contents Description	Tariff Record Title	Version
Twelfth Revised Sheet No. 19A	Sheet No. 19A		12.0.0
Original Sheet No. 19B	Sheet No. 19B		0.0.0
Fourteenth Revised Sheet No. 32	Sheet No. 32	Fuel and EPCR	14.0.0

Tennessee proposes that these Tariff records be placed into effect on the in-service date of the Project Facilities, currently anticipated to be August 15, 2018.<sup>2</sup>

<sup>1</sup> *Tennessee Gas Pipeline Company, L.L.C.*, 156 FERC ¶ 61,157 (2016); *order denying reh’g and dismissing clarification*, 163 FERC ¶ 61,190 (2018).

<sup>2</sup> Tennessee has requested permission to place in-service several Project components prior to placing the entire Project in-service. Tennessee received approval to place in-service the Project Facilities at existing Compressor Stations 106 and 114, on March 1, 2018 and on March 20, 2018, respectively. The Project Facilities at both of these existing compressor stations have been placed in service. To the extent that any incremental capacity has been made available by placing the Project Facilities at these two compressor stations in service prior to placing the entire Project in service, Tennessee has offered such transportation capacity as generally available capacity on an interim basis, and has also used such capacity on an interim basis for operational purposes and to mitigate any capacity impacts to existing customers associated with ongoing Project construction activities. Tennessee has also received approval to place in-service new Compressor Station 875, but has not yet placed that compressor station in service.

## **Statement of Nature, Reasons, and Basis for the Filing**

### **Background**

On September 6, 2016, the Commission issued the Order granting Tennessee a certificate of public convenience and necessity to construct and operate certain compression facilities to be located in Kentucky, Tennessee, and West Virginia and to abandon certain compression facilities in West Virginia (the “Project Facilities”).<sup>3</sup> The purpose of the Project is to (i) enable Tennessee to provide up to 200,000 dekatherms per day of incremental firm transportation service to Antero Resources Corporation (“Antero” or “Project Shipper”) from a primary receipt point located in Kanawha County, West Virginia (Meter No. 400459) on Tennessee’s Broad Run Lateral in Zone 3 to a primary delivery point located in Forrest County, Mississippi (Meter No. 420099) on Tennessee’s 500 Line system in Zone L (the “Market Component”) and (ii) replace older, less efficient compression facilities with more efficient and cleaner burning units at two existing compressor stations (the “Replacement Component”). All of the firm capacity created by the Market Component Project Facilities has been contracted for by Antero, which has agreed to negotiated transportation rates for firm transportation service on the Market Component Project Facilities.<sup>4</sup>

### **Instant Filing**

The purpose of this filing is to place into effect, as of the in-service date of the Project Facilities, the initial incremental recourse rates and the initial incremental fuel and electric power cost charges applicable to shippers utilizing the Market Component Project Facilities. As of the date of this filing, Tennessee anticipates that the Project Facilities will be placed in-service on August 15, 2018.

### **Incremental Recourse Rates**

In the certificate application, Tennessee proposed incremental recourse rates under Rate Schedule FT-A as the initial rates for firm transportation service on the Market Component Project Facilities.<sup>5</sup> In the Order, the Commission approved Tennessee’s proposed rates for service on the Market Component Project Facilities, subject to certain modifications.<sup>6</sup> In particular, the Commission ordered Tennessee to revise (i) its proposed incremental recourse

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<sup>3</sup> On May 24, 2018, Tennessee filed a petition to amend the abandonment authorization granted in the Order. Specifically, Tennessee has requested that, rather than abandoning seven compressor units by removal at Compressor Station 114 as originally authorized in the Order, it be allowed to retain the seven compressor units in reserve for use in providing backup capacity on an intermittent basis when the other compressor units at Compressor Station 114 are not available. This petition, filed in Docket No. CP15-77-002, remains pending before the Commission.

<sup>4</sup> Contemporaneously with this filing, Tennessee is filing the Antero negotiated rate agreement and non-conforming agreement applicable to service on the Market Component Project Facilities.

<sup>5</sup> As initial rates for service on the Market Component Project Facilities, Tennessee proposed an incremental rate comprised of: (i) a monthly reservation rate of \$30.7846 per Dth, (ii) a daily commodity rate of \$0.000 per Dth, and (iii) applicable demand and commodity surcharges.

<sup>6</sup> 156 FERC ¶ 61,157, at P 26-28, and Ordering Paragraph (D).

reservation charge to reflect only fixed costs,<sup>7</sup> and (ii) its proposed incremental commodity charge to reflect all variable costs.<sup>8</sup>

### Incremental Fuel and Electric Power Cost Charges

In the certificate application, as clarified in a May 12, 2015 data response, Tennessee proposed to use its applicable general system fuel and lost and unaccounted-for charges and electric power cost charges under Rate Schedule FT-A as the initial fuel and electric power cost charges applicable to service on the Market Component Project Facilities. In the Order, the Commission found that rolling in the Project fuel costs into Tennessee's system-wide fuel rates may result in the Project being subsidized by existing customers and ordered Tennessee to separately identify the incremental fuel associated with the Market Component of the Project and develop and propose incremental fuel charges for the Market Component of the Project when it files actual Tariff records.<sup>9</sup> On October 6, 2016, Tennessee filed a request for rehearing and clarification of certain portions of the Order. In particular, Tennessee requested rehearing of the Commission's denial of Tennessee's proposal to use its general system fuel rates for service on the Market Component of the Project and the requirement that Tennessee separately identify the incremental fuel associated with the Market Component of the Project and develop and propose incremental fuel rates for the Market Component of the Project. On June 12, 2018, the Commission issued an order which, among other things, denied Tennessee's request for rehearing on this issue.<sup>10</sup>

This filing is in compliance with Paragraphs 26-28, 30, and 33 and Ordering Paragraphs (D), (H) and (I) of the Order, which requires Tennessee to file Tariff records to implement the revised incremental recourse rates and the incremental fuel charges for the Market Component of the Project, within the 30 to 60 day period prior to the date the Project Facilities go into service. Tennessee currently anticipates that all the Project Facilities will go into service as early as August 15, 2018.<sup>11</sup>

Tennessee includes with this filing Exhibit 1 detailing the derivation of the revised incremental reservation and commodity recourse rates and Exhibit 2 detailing the methodology and derivation of the initial incremental fuel and electric power charges applicable to service on the Market Component Project Facilities, as proposed in the instant filing.

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<sup>7</sup> 156 FERC ¶ 61,157, at P 25-27. In the Order, the Commission stated that under its traditional cost classification method, all non-labor costs included in FERC Account Nos. 853, 864 and 855 should be classified as variable costs and be recovered through the commodity charge. Based on this cost classification, the Commission found that Tennessee's variable costs were \$2,087,000 and ordered Tennessee to recalculate its base reservation charge to recover only fixed costs and its commodity charge to recover the \$2,087,000 of variable costs.

<sup>8</sup> See id. at 7.

<sup>9</sup> 156 FERC ¶ 61,157, at P 33, and Ordering Paragraph (H).

<sup>10</sup> 163 FERC ¶ 61,190, at P 75.

<sup>11</sup> Tennessee will file a request to place the entire Project in service prior to the current August 15, 2018 anticipated in-service date.

### **Materials Enclosed**

In accordance with the applicable provisions of Part 154 of the Commission's regulations, Tennessee provides an eTariff .xml filing package containing:

- (1) A transmittal letter in PDF format;
- (2) Tariff records in RTF format with metadata attached;
- (3) A clean and marked version of the Tariff records in PDF format for posting on eLibrary;
- (4) Exhibits 1-2 detailing the derivation of the revised incremental recourse rates and the incremental fuel and electric power charges in Xcel and PDF format; and
- (5) A copy of the entire filing in PDF format for posting on eLibrary.

### **Service and Correspondence**

The undersigned certifies that a copy of this filing has been served electronically pursuant to 18 C.F.R. § 154.208 of the Commission's regulations on Tennessee's customers and affected state regulatory commissions, as well as to all parties on the official service list for Docket No. CP15-77-000. A paper copy of this filing may only be served if a customer has been granted waiver of electronic service pursuant to 18 C.F.R. Part 390 of the Commission's regulations. In addition, an electronic copy of this filing is available for public inspection during regular business hours in Tennessee's office at 1001 Louisiana Street, Suite 1000, Houston, Texas 77002.

Pursuant to 18 C.F.R. § 154.385.2005 and § 385.2011(c)(5) of the Commission's regulations, the undersigned has read this filing and knows its contents, and the contents are true as stated, to the best knowledge and belief of the undersigned.

The names, titles, and mailing addresses of the persons to whom correspondence and communications concerning this filing should be directed are as follows:

\* Jacquelyne M. Rocan  
Assistant General Counsel  
Tennessee Gas Pipeline Company, L.L.C.  
1001 Louisiana Street, Suite 1000  
Houston, TX 77002  
Telephone: (713) 420-4544  
[jacquelyne\\_rocan@kindermorgan.com](mailto:jacquelyne_rocan@kindermorgan.com)

\* Carlos Oblitas  
Director, Rates and Regulatory Affairs  
Tennessee Gas Pipeline Company, L.L.C.  
1001 Louisiana Street, Suite 1000  
Houston, TX 77002  
Telephone: (713) 420-5771  
[carlos\\_oblitas@kindermorgan.com](mailto:carlos_oblitas@kindermorgan.com)

\* Persons designated for service in accordance with Rule 2010 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.2010. Additionally, service via email is requested in lieu of paper copies.

**Effective Date and Waiver**

Tennessee respectfully requests all waivers that may be necessary to accept the Tariff record filed herein to become effective on the in-service date of the Project Facilities, currently anticipated to be August 15, 2018.

Pursuant to Section 154.7(a)(9) of the Commission's regulations, Tennessee hereby moves to place the revised Tariff record into effect on the requested effective date.

Any questions regarding this filing may be directed to the undersigned at (713) 420-5771.

Respectfully submitted,

**TENNESSEE GAS PIPELINE COMPANY, L.L.C.**

By: /s/ Carlos Oblitas  
Carlos J. Oblitas  
Director, Rates and Regulatory Affairs

Enclosures

cc: All parties on the official service list in Docket No. CP15-77-000

## **CLEAN TARIFF SHEETS / RECORDS**

FIRM TRANSPORTATION RATES  
 RATE SCHEDULE FT-A

Recourse Rates Applicable to Shippers Utilizing Capacity  
 Pursuant to Incremental Capacity Expansions

	Base Tariff Rate	Total Rate
CP11-161-000 Northeast Upgrade Project		
Reservation Charge:		
Maximum	\$9.0307	\$9.0523 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0000	\$0.0009 2/, 3/, 4/
Minimum	\$0.0000	\$0.0000 2/, 3/
CP14-88-000 Niagara Expansion Project		
Reservation Charge:		
Maximum	\$9.9615	\$9.9831 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0000	\$0.0009 2/, 3/, 4/, 5/
Minimum	\$0.0000	\$0.0000 2/, 3/, 5/
CP14-529-000 Connecticut Expansion Project		
Reservation Charge:		
Maximum	\$19.3689	\$19.3905 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0787	\$0.0796 2/, 3/, 4/
Minimum	\$0.0066	\$0.0066 2/, 3/
CP15-77-000 Broad Run Expansion Project – Market Component		
Reservation Charge:		
Maximum	\$29.9148	\$29.9364 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0336	\$0.0345 2/, 3/, 4/
Minimum	\$0.0336	\$0.0336 2/, 3/
CP15-148-000 Susquehanna West Project		
Reservation Charge:		
Maximum	\$17.1194	\$17.1410 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0454	\$0.0463 2/, 3/, 4/
Minimum	\$0.0028	\$0.0028 2/, 3/
CP15-520-000 Triad Expansion Project		
Reservation Charge:		
Maximum	\$7.5292	\$7.5508 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0454	\$0.0463 2/, 3/, 4/
Minimum	\$0.0028	\$0.0028 2/, 3/

Notes:

- 1/ Includes a per Dth charge for the PCB Surcharge Adjustment per Article XXXII of the General Terms and Conditions of \$0.0000.
- 2/ Rates stated above exclude the ACA Surcharge as revised annually and posted on the FERC website at <http://www.ferc.gov> on the Annual Charges page of the Natural Gas section. The ACA Surcharge is incorporated by reference into Transporter's Tariff and shall apply to all transportation under this Rate Schedule as provided in Article XXIV of the General Terms and Conditions.
- 3/ The applicable F&LR's and EPCR's, determined pursuant to Article XXXVII of the General Terms and Conditions, are listed on Sheet No. 32.
- 4/ Includes a per Dth charge for the PS/GHG Surcharge Adjustment per Article XXXVIII of the General Terms and Conditions of \$0.0216 Reservation, \$0.0009 Commodity.
- 5/ Applicable fuel and lost and unaccounted for charges pursuant to the National Fuel Lease.

FIRM TRANSPORTATION RATES  
 RATE SCHEDULE FT-A

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Recourse Rates Applicable to Shippers Utilizing Capacity  
 Pursuant to Incremental Capacity Expansions

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Base Tariff Rate	Total Rate
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CP16-4-000 Orion Project

Reservation Charge:

Maximum	\$16.5208	\$16.5424 1/, 4/
Minimum	\$0.0000	\$0.0000

Commodity Charge:

Maximum	\$0.0454	\$0.0463 2/, 3/, 4/
Minimum	\$0.0028	\$0.0028 2/, 3/

Notes:

- 1/ Includes a per Dth charge for the PCB Surcharge Adjustment per Article XXXII of the General Terms and Conditions of \$0.0000.
- 2/ Rates stated above exclude the ACA Surcharge as revised annually and posted on the FERC website at <http://www.ferc.gov> on the Annual Charges page of the Natural Gas section. The ACA Surcharge is incorporated by reference into Transporter's Tariff and shall apply to all transportation under this Rate Schedule as provided in Article XXIV of the General Terms and Conditions.
- 3/ The applicable F&LR's and EPCR's, determined pursuant to Article XXXVII of the General Terms and Conditions, are listed on Sheet No. 32.
- 4/ Includes a per Dth charge for the PS/GHG Surcharge Adjustment per Article XXXVIII of the General Terms and Conditions of \$.0.0216 Reservation, \$.0009 Commodity.



FUEL AND EPCR

F&LR 1/, 2/, 3/, 4/ -----	RECEIPT ZONE	DELIVERY ZONE -----							
		0	L	1	2	3	4	5	6
	0	0.51%		1.54%	2.28%	2.86%	3.33%	3.75%	4.44%
	L		0.26%						
	1	0.63%		1.12%	1.92%	2.31%	2.82%	3.41%	3.88%
	2	2.33%		1.19%	0.25%	0.46%	0.85%	1.43%	1.93%
	3	2.86%		2.31%	0.46%	0.14%	1.17%	1.69%	2.20%
	4	3.33%		2.62%	1.19%	1.41%	0.48%	0.73%	1.24%
	5	3.88%		3.41%	1.44%	1.69%	0.72%	0.71%	0.91%
	6	4.63%		4.02%	1.93%	2.20%	1.17%	0.57%	0.30%

Broad Run Expansion Project – Market Component (Z3-Z1): 5/ 4.76%

EPCR 3/, 4/ -----	RECEIPT ZONE	DELIVERY ZONE -----							
		0	L	1	2	3	4	5	6
	0	\$0.0039		\$0.0151	\$0.0233	\$0.0290	\$0.0350	\$0.0398	\$0.0477
	L		\$0.0013						
	1	\$0.0053		\$0.0105	\$0.0193	\$0.0236	\$0.0293	\$0.0359	\$0.0412
	2	\$0.0233		\$0.0113	\$0.0012	\$0.0034	\$0.0076	\$0.0138	\$0.0190
	3	\$0.0290		\$0.0236	\$0.0034	\$0.0000	\$0.0111	\$0.0164	\$0.0219
	4	\$0.0350		\$0.0271	\$0.0113	\$0.0137	\$0.0036	\$0.0063	\$0.0118
	5	\$0.0398		\$0.0359	\$0.0138	\$0.0164	\$0.0062	\$0.0061	\$0.0082
	6	\$0.0477		\$0.0412	\$0.0190	\$0.0219	\$0.0110	\$0.0046	\$0.0017

Broad Run Expansion Project – Market Component (Z3-Z1): 5/ \$0.0308

- 1/ Included in the above F&LR is the Losses component of the F&LR equal to 0.10%.
- 2/ For service that is rendered entirely by displacement and for gas scheduled and allocated for receipt at the Dracut, Massachusetts receipt point, Shipper shall render only the quantity of gas associated with Losses of 0.10%.
- 3/ The F&LR's and EPCR's listed above are applicable to FT-A, FT-BH, FT-G, FT-GS, and IT.
- 4/ The F&LR's and EPCR's determined pursuant to Article XXXVII of the General Terms and Conditions.
- 5/ The incremental F&LR and EPCR set forth above are applicable to a Shipper(s) utilizing capacity on the Broad Run Expansion Project – Market Component facilities, from any receipt point(s) to any delivery point(s) located on the project's transportation path. Any service provided to a Shipper(s) outside the project's transportation path shall be subject to the greater of the incremental F&LR and EPCR for the project or the applicable F&LR and EPCR for the applicable receipt(s) and delivery point(s) as shown in the rate matrices above.

## **MARKED TARIFF SHEETS / RECORDS**

FIRM TRANSPORTATION RATES  
 RATE SCHEDULE FT-A

Recourse Rates Applicable to Shippers Utilizing Capacity  
 Pursuant to Incremental Capacity Expansions

	Base Tariff Rate	Total Rate
<b>CP11-161-000 Northeast Upgrade Project</b>		
Reservation Charge:		
Maximum	\$9.0307	\$9.0523 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0000	\$0.0009 2/, 3/, 4/
Minimum	\$0.0000	\$0.0000 2/, 3/
<b>CP14-88-000 Niagara Expansion Project</b>		
Reservation Charge:		
Maximum	\$9.9615	\$9.9831 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0000	\$0.0009 2/, 3/, 4/, 5/
Minimum	\$0.0000	\$0.0000 2/, 3/, 5/
<b>CP14-529-000 Connecticut Expansion Project</b>		
Reservation Charge:		
Maximum	\$19.3689	\$19.3905 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0787	\$0.0796 2/, 3/, 4/
Minimum	\$0.0066	\$0.0066 2/, 3/
<b>CP15-77-000 Broad Run Expansion Project – Market Component</b>		
Reservation Charge:		
Maximum	\$29.9148	\$29.9364 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0336	\$0.0345 2/, 3/, 4/
Minimum	\$0.0336	\$0.0336 2/, 3/
<b>CP15-148-000 Susquehanna West Project</b>		
Reservation Charge:		
Maximum	\$17.1194	\$17.1410 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0454	\$0.0463 2/, 3/, 4/
Minimum	\$0.0028	\$0.0028 2/, 3/
<b>CP15-520-000 Triad Expansion Project</b>		
Reservation Charge:		
Maximum	\$7.5292	\$7.5508 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0454	\$0.0463 2/, 3/, 4/
Minimum	\$0.0028	\$0.0028 2/, 3/
<b>CP16-4-000 Orion Project</b>		
Reservation Charge:		
Maximum	\$16.5208	\$16.5424 1/, 4/
Minimum	\$0.0000	\$0.0000
Commodity Charge:		
Maximum	\$0.0454	\$0.0463 2/, 3/, 4/
Minimum	\$0.0028	\$0.0028 2/, 3/

Notes:

- 1/ Includes a per Dth charge for the PCB Surcharge Adjustment per Article XXXII of the General Terms and Conditions of \$0.0000.
- 2/ Rates stated above exclude the ACA Surcharge as revised annually and posted on the FERC website at <http://www.ferc.gov> on the Annual Charges page of the Natural Gas section. The ACA Surcharge is incorporated by reference into Transporter's Tariff and shall apply to all transportation under this Rate Schedule as provided in Article XXIV of the General Terms and Conditions.
- 3/ The applicable F&LR's and EPCR's, determined pursuant to Article XXXVII of the General Terms and Conditions, are listed on Sheet No. 32.
- 4/ Includes a per Dth charge for the PS/GHG Surcharge Adjustment per Article XXXVIII of the General Terms and Conditions of \$.0.0216 Reservation, \$0.0009 Commodity.
- 5/ Applicable fuel and lost and unaccounted for charges pursuant to the National Fuel Lease.

FIRM TRANSPORTATION RATES  
RATE SCHEDULE FT-A

Recourse Rates Applicable to Shippers Utilizing Capacity  
Pursuant to Incremental Capacity Expansions

<u>-----</u>		
	<u>Base</u>	
	<u>Tariff</u>	<u>Total</u>
	<u>Rate</u>	<u>Rate</u>
<u>-----</u>		

CP16-4-000 Orion Project

Reservation Charge:

<u>Maximum</u>	<u>\$16.5208</u>	<u>\$16.5424 1/, 4/</u>
<u>Minimum</u>	<u>\$0.0000</u>	<u>\$0.0000</u>

Commodity Charge:

<u>Maximum</u>	<u>\$0.0454</u>	<u>\$0.0463 2/, 3/, 4/</u>
<u>Minimum</u>	<u>\$0.0028</u>	<u>\$0.0028 2/, 3/</u>

Notes:

- 1/ Includes a per Dth charge for the PCB Surcharge Adjustment per Article XXXII of the General Terms and Conditions of \$0.0000.
- 2/ Rates stated above exclude the ACA Surcharge as revised annually and posted on the FERC website at <http://www.ferc.gov> on the Annual Charges page of the Natural Gas section. The ACA Surcharge is incorporated by reference into Transporter's Tariff and shall apply to all transportation under this Rate Schedule as provided in Article XXIV of the General Terms and Conditions.
- 3/ The applicable F&LR's and EPCR's, determined pursuant to Article XXXVII of the General Terms and Conditions, are listed on Sheet No. 32.
- 4/ Includes a per Dth charge for the PS/GHG Surcharge Adjustment per Article XXXVIII of the General Terms and Conditions of \$0.0216 Reservation, \$0.0009 Commodity.

FUEL AND EPCR

F&LR 1/, 2/, 3/, 4/ -----	RECEIPT ZONE	DELIVERY ZONE -----							
		0	L	1	2	3	4	5	6
	0	0.51%		1.54%	2.28%	2.86%	3.33%	3.75%	4.44%
	L		0.26%						
	1	0.63%		1.12%	1.92%	2.31%	2.82%	3.41%	3.88%
	2	2.33%		1.19%	0.25%	0.46%	0.85%	1.43%	1.93%
	3	2.86%		2.31%	0.46%	0.14%	1.17%	1.69%	2.20%
	4	3.33%		2.62%	1.19%	1.41%	0.48%	0.73%	1.24%
	5	3.88%		3.41%	1.44%	1.69%	0.72%	0.71%	0.91%
	6	4.63%		4.02%	1.93%	2.20%	1.17%	0.57%	0.30%

Broad Run Expansion Project – Market Component (Z3-Z1): 5/ 4.76%

EPCR 3/, 4/ -----	RECEIPT ZONE	DELIVERY ZONE -----							
		0	L	1	2	3	4	5	6
	0	\$0.0039		\$0.0151	\$0.0233	\$0.0290	\$0.0350	\$0.0398	\$0.0477
	L		\$0.0013						
	1	\$0.0053		\$0.0105	\$0.0193	\$0.0236	\$0.0293	\$0.0359	\$0.0412
	2	\$0.0233		\$0.0113	\$0.0012	\$0.0034	\$0.0076	\$0.0138	\$0.0190
	3	\$0.0290		\$0.0236	\$0.0034	\$0.0000	\$0.0111	\$0.0164	\$0.0219
	4	\$0.0350		\$0.0271	\$0.0113	\$0.0137	\$0.0036	\$0.0063	\$0.0118
	5	\$0.0398		\$0.0359	\$0.0138	\$0.0164	\$0.0062	\$0.0061	\$0.0082
	6	\$0.0477		\$0.0412	\$0.0190	\$0.0219	\$0.0110	\$0.0046	\$0.0017

Broad Run Expansion Project – Market Component (Z3-Z1): 5/ \$0.0308

- 1/ Included in the above F&LR is the Losses component of the F&LR equal to 0.10%.
- 2/ For service that is rendered entirely by displacement and for gas scheduled and allocated for receipt at the Dracut, Massachusetts receipt point, Shipper shall render only the quantity of gas associated with Losses of 0.10%.
- 3/ The F&LR's and EPCR's listed above are applicable to FT-A, FT-BH, FT-G, FT-GS, and IT.
- 4/ The F&LR's and EPCR's determined pursuant to Article XXXVII of the General Terms and Conditions.
- 5/ The incremental F&LR and EPCR set forth above are applicable to a Shipper(s) utilizing capacity on the Broad Run Expansion Project – Market Component facilities, from any receipt point(s) to any delivery point(s) located on the project's transportation path. Any service provided to a Shipper(s) outside the project's transportation path shall be subject to the greater of the incremental F&LR and EPCR for the project or the applicable F&LR and EPCR for the applicable receipt(s) and delivery point(s) as shown in the rate matrices above.

## **EXHIBITS 1-2**

**Tennessee Gas Pipeline Company, L.L.C.**  
**Broad Run Expansion Project - Market Component**  
**Calculation of Incremental FT-A Recourse Rates**

Line No.	Particulars (a)	Demand (b)	Commodity (c)	Total (d)
1	Operation and Maintenance Expense	\$ 4,402	\$ 2,087	\$ 6,489
2	Depreciation Expense	11,262	-	11,262
	Taxes:			
3	Income Taxes	13,115	-	13,115
4	Other Taxes	4,497	-	4,497
5	Return	38,520	-	38,520
6	First Year Incremental Cost of Service, \$000	\$ 71,796	\$ 2,087	\$ 73,883
7	Billing Determinants - Dth/d [1]	200,000	170,000	
8	Incremental Recourse Rate, \$/Dth	\$ 29.9148	\$ 0.0336	\$ 1.0171

[1] Tennessee Gas Pipeline Company, L.L.C., CP15-77-000 Certification Application, Exhibit N, p7.



**Tennessee Gas Pipeline Company, L.L.C.**  
**Broad Run Expansion Project - Market Component**

**O&M Expense**

In \$000's

Line No.	Particulars	Total	Labor Costs	Non-Labor Costs	Variable Costs	
	(a)	(b)	(c)	(d)	(e)	
	<b>Transmission Expenses</b>					
	<b>Operation</b>					
1	Operation Supervision and Engineering	850.0	\$334.28	\$248	\$86	\$0
2	System Control and Load Dispatching	851.0	0	0	0	0
3	Communication System Expenses	852.0	0	0	0	0
4	Compressor Station Labor and Expenses	853.0	3,382	1,714	1,668	1,668
5	Gas for Compressor Station Fuel	854.0	0	0	0	0
6	Other Fuel and Power for Compressor Stations	855.0	34	0	34	34
7	Mains Expenses	856.0	0	0	0	0
8	Measuring and Regulating Station Expenses	857.0	0	0	0	0
9	Transmission and Compression of Gas by Others	858.0	0	0	0	0
10	Other Expenses	859.0	0	0	0	0
11	Rents	860.0	0	0	0	0
12	<b>Total Operation</b>	<b>\$3,750</b>	<b>\$1,962</b>	<b>\$1,788</b>	<b>\$1,702</b>	
	<b>Maintenance</b>					
13	Maintenance of Supervision and Engineering	861.0	\$0	\$0	\$0	\$0
14	Maintenance of Structures and Improvements	862.0	2	1	1	0
15	Maintenance of Mains	863.0	0	0	0	0
16	Maintenance of Compressor Station Equipment	864.0	797	412	385	385
17	Maintenance of Measuring and Regulating Station Equipment	865.0	0	0	0	0
18	Maintenance of Communication Equipment	866.0	0	0	0	0
19	Maintenance of Other Equipment	867.0	0	0	0	0
20	<b>Total Maintenance</b>	<b>\$800</b>	<b>\$413</b>	<b>\$386</b>	<b>\$385</b>	
21	<b>Subtotal</b>	<b>\$4,550</b>	<b>\$2,375</b>	<b>\$2,175</b>	<b>\$2,087</b>	
22	A&G	1,939	1,012	927	0	
23	<b>Total</b>	<b>\$6,489</b>	<b>\$3,387</b>	<b>\$3,102</b>	<b>\$2,087</b>	

**Tennessee Gas Pipeline Company, L.L.C.  
Broad Run Expansion Project – Market Component  
Incremental F&LR and EPCR**

The work papers in this Exhibit 2 detail the derivation of the initial incremental fuel and electric power charges applicable to service on the Market Component Project Facilities.

The initial incremental fuel and electric power charges associated with the Market Component Project Facilities were determined utilizing a normalized fuel curve (Figure 1) to calculate incremental fuel use as a function of incremental Project volumes for each of the Tennessee DART segments<sup>1</sup> located along the Project’s primary path.

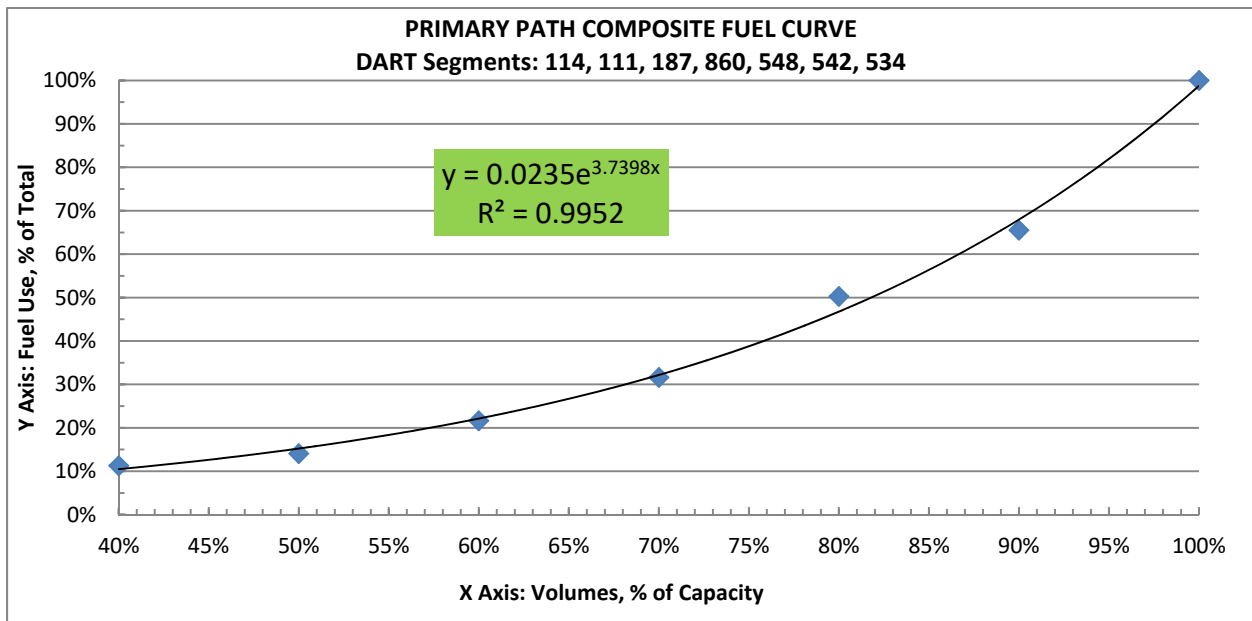


Figure 1

The fuel curve was developed by modeling fuel utilization, at various load factors, of all the existing and Project-related compressor units located along the Project’s primary path,<sup>2</sup> using Gregg WinFlow pipeline simulation software. The model was run at peak flow conditions to determine fuel consumed at peak flow. Subsequent model simulations were performed for flows of 90%, 80%, 70%, 60%, 50% and 40% of peak flow to determine the corresponding fuel consumption at these lower flow

<sup>1</sup> DART refers to Tennessee’s electronic portal used by shippers to nominate and schedule gas and perform other customer activities. Within DART, the Tennessee system is broken into segments, 7 of which are located along the Project’s primary path.

<sup>2</sup> Existing compressor stations include: CS 96, 110 and 114 (electric), CS 96, 106, 871, 87, 550, 555, 860, 542, 546, 534 and 538 (gas). Project-related compressor units include: CS 118A, 119A, 875 and 563 (gas). For purposes of the WinFlow simulation, electric utilization for the existing electric units was converted to Dth using a 7,500 Btu/HP-hour heat rate.

rates. The fuel data was then normalized using regression analysis to determine the non-linear mathematical relationship between flow (x-axis load factor) and fuel consumption (y-axis fuel factor). The resultant fuel factor formula from the regression analysis is shown below:

$$\text{Fuel Factor (Y)} = 0.0235e^{3.7398X}, \text{ where X = percent increase in volume.}$$

The Coefficient of Determination  $R^2$  for the resultant fuel factor formula, is 0.9952<sup>3</sup>, indicating excellent correlation between the formula developed using regression analysis and the data points from the WinFlow simulations.

This fuel factor formula was used to derive the initial incremental fuel and electric power charges associated with the Market Component Project Facilities for each of the Tennessee DART segments as a function of the projected increase in Project volumes within each segment along the Project's primary path.

Page 1 of Exhibit 2 details the derivation of the initial incremental F&LR<sup>4</sup> and EPCR applicable to service on the Market Component Project Facilities. The incremental F&LR and EPCR reflect the incremental fuel use and electric power costs expected to be incurred by Tennessee as a result of the incremental Project volumes at an assumed 89 percent load factor utilization.

Page 2 of Exhibit 2 details the north-to-south pipeline capacity and related volumes for each of the DART segments located along the Project's primary path, both prior to and after the Project. Volumes prior to the Project are based on actuals for the 12 month period ending 12/31/2017. Project volumes reflect an assumed 89% load factor utilization based on historical evaluation of usage under an existing FT-A transportation service agreement that the Project Shipper has in place with Tennessee along the Project's primary path.

Page 3 of Exhibit 2 details the projected increase in fuel use in each of the DART segments due to the increase in Project volumes flowing through each of these segments. The fuel increase for each of the DART segments was derived using the fuel factor formula.

Page 4 of Exhibit 2 details the compressor fuel and electric power costs assigned to the Project for each of the DART segments based on the fuel factor formula detailed above. Compressor fuel and electric power costs prior to the Project for each of the DART segments are based on actuals for the 12 month period ending 12/31/2017. Electric power costs assigned to the Project for DART segments 114, 111 and 187 were capped to reflect utilization of the existing electric units up to their full rated capacity.<sup>5</sup> Any incremental fuel requirements in excess of the electric units full rated capacity was assigned to the new gas units.

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<sup>3</sup> A Coefficient of Determination of 1.0 indicates perfect correlation.

<sup>4</sup> The Losses component of the F&LR was not included in the incremental fuel analysis. Tennessee proposes to use as part of the initial incremental F&LR, a 0.1% Losses component rate, reflecting the currently effective Losses component rate as approved by the Commission in Docket No. RP18-531-000.

<sup>5</sup> This was necessary to ensure that increased electric power consumption at the 3 existing electric compressor stations did not exceed their maximum theoretical electric power consumption (stations 114, 110 and 96).

Tennessee proposes to adjust the initial incremental fuel and electric power charges proposed herein as part of its annual fuel adjustment filing<sup>6</sup> and will maintain separate Deferred F&LR and EPCR subaccounts to track any over or under-recoveries of fuel and electric power costs assigned to the Market Component Project shippers in conformance with Articles XXXVII of the General Terms and Conditions of its Tariff. In its annual fuel filings, Tennessee will include appropriate schedules detailing the calculation of the incremental F&LR and EPCR, including the impact of any over or under-recoveries of fuel and electric power costs assigned to the Market Component Project shippers.

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<sup>6</sup> Pursuant to Section 3 of Article XXXVII of the General Terms and Conditions of its Tariff, Tennessee is required to file annually to revise its F&LR and EPCR at least 30 days prior to the effective date of the proposed change in the F&LR and EPCR, to become effective on April 1<sup>st</sup> of each year.

**Tennessee Gas Pipeline Company, L.L.C.**  
**Broad Run Expansion Project - Market Component**  
**Incremental F&LR and EPCR**

Line No.	Description	Reference	Amount
	(a)	(b)	(c)
<b><u>F&amp;LR:</u></b>			
1	Compressor Fuel, Dth	Exhibit 2, p4, col (g), ln 8	3,174,156
2	Estimated Volumes, Dth	Exhibit 2, p2, col (j), ln 1 x 365 days	64,970,000
3	Fuel %	Ln 1 / (Ln 1 + Ln 2)	<b>4.66%</b>
4	Losses %	[1]	<u>0.10%</u>
5	<b>F&amp;LR Rate, %</b>	Ln 4 + Ln 5	<b>4.76%</b>
<b><u>EPCR:</u></b>			
6	Electric Power Costs, \$	Exhibit 2, p4, col (k), ln 8	\$2,001,301
7	Estimated Volumes, Dth	Exhibit 2, p2, col (j), ln 1 x 365 days	64,970,000
8	<b>EPCR Rate, \$/Dth</b>	Ln 6 / Ln 7	<b>\$0.0308</b>

Notes:

[1] Reflects TGP's currently effective Losses component of the F&LR as approved by the Commission in Docket No. RP18-531-000.

**Tennessee Gas Pipeline Company, L.L.C.**  
**Broad Run Expansion Project - Market Component**  
**Segment Capacity and Volumes, Dth/d**

Line No.	Zone	Primary Path Segment	Excl. Broad Run Exp. [1]			Incl. Broad Run Exp.			Broad Run Exp. [2]		
			Segment Capacity	Segment Volumes	Load Factor	Segment Capacity	Segment Volumes	Load Factor	Segment Capacity	Segment Volumes	Load Factor
	(a)	(b)	(c)	(d)	(e) = (d) / (c)	(f) = (c)+(i)	(g) = (d)+(j)	(h) = (g) / (f)	(i)	(j)	(k) = (j) / (i)
1	Z3-100 Line	114	720,211	393,021	54.6%	920,211	571,021	62.1%	200,000	178,000	89.0%
2	Z2-100 Line	111	720,217	351,649	48.8%	920,217	529,649	57.6%	200,000	178,000	89.0%
3	Z2-100 Line	187	2,415,416	2,053,061	85.0%	2,615,416	2,231,061	85.3%	200,000	178,000	89.0%
4	Z1-800 Line	860	2,366,833	1,390,813	58.8%	2,566,833	1,568,813	61.1%	200,000	178,000	89.0%
5	Z1-500 Line	548	1,534,156	1,122,006	73.1%	1,734,156	1,286,845	74.2%	200,000	164,839	82.4%
6	Z1-500 Line	542	1,505,064	985,791	65.5%	1,705,064	1,129,210	66.2%	200,000	143,419	71.7%
7	Z1-500 Line	534	1,322,417	789,141	59.7%	1,522,417	882,118	57.9%	200,000	92,977	46.5%

Notes:

[1] Represents average daily segment backhaul capacity and volumes for the twelve month period ending 12/31/2017.

[2] Represents average daily segment backhaul capacity and estimated volumes for the Broad Run Expansion Project assuming an 89% load factor utilization.  
Load factor segment profile based on an existing contract with the Project Shipper for a similar contractual path.

**Tennessee Gas Pipeline Company, L.L.C.**  
**Broad Run Expansion Project - Market Component**  
**Fuel Factors**

Line No.	Zone	Primary Path Segment	(X) = Segment Volumes, % of Capacity			% Change in Throughput (f) = (e)/(c)	(Y) = Fuel Use, % of Total [3]			% Change in Fuel Use (j) = (i) / (g)
			Excl. BR Exp. [1] (a)	Incl. BR Exp. [2] (b)	BR Expansion (c) = (b)-(a)		Excl. BR Exp. (g) [4]	Incl. BR Exp. (h) [4]	BR Expansion (i) = (h)-(g)	
1	Z3-100 Line	114	42.7%	62.1%	19.3%	45.3%	11.6%	23.9%	12.3%	106.1%
2	Z2-100 Line	111	38.2%	57.6%	19.4%	50.6%	9.8%	20.2%	10.4%	106.2%
3	Z2-100 Line	187	78.5%	85.3%	6.8%	8.7%	44.3%	57.1%	12.8%	29.0%
4	Z1-800 Line	860	54.2%	61.1%	6.9%	12.8%	17.8%	23.1%	5.3%	29.6%
5	Z1-500 Line	548	64.7%	74.2%	9.5%	14.7%	26.4%	37.7%	11.3%	42.7%
6	Z1-500 Line	542	57.8%	66.2%	8.4%	14.6%	20.4%	28.0%	7.5%	37.0%
7	Z1-500 Line	534	51.8%	57.9%	6.1%	11.8%	16.3%	20.5%	4.2%	25.7%

Notes:

[1] Exhibit 2, p2, col (d) / col (f).

[2] Exhibit 2, p2, col (h).

[3] Percent of total fuel use at 100% load factor utilization.

[4] Fuel Factor (Y) = 0.0235 x exp [3.7398 \* (X)] where X is either col (c) or (d), as applicable. 'The fuel factor formula represents the "best-fit" composite fuel curve for the compressor units located in the primary path segments set forth above. The fuel curve was derived by determining fuel consumption along the primary path at various load factors.

**Notes:**

[1] Exhibit 2, p3, col (j).

[2] Exhibit 2, p5, col (h).

[3] Exhibit 2, p5, col(m).

[4] Electric power costs for segments 114, 111 and 187 shown in Cols (j) and (k) above, were capped to reflect utilization of the existing electric units up to their full rated capacity. Any incremental fuel requirements in excess of the electric units full rated capacity was assigned to the new gas units (Cols (f) and (g)).

The fuel adjustment for these electric units was determined as follows:

[illegible]



Tennessee Gas Pipeline Company, L.L.C.  
Broad Run Expansion Project - Market Component  
Compressor Fuel and Electric Costs Detail by Primary Path Segment and Compressor Station  
Actuals for 12-Month Period Ending 12/31/2017

Line No.	Zone	Primary Path Segment	Compr St.	Gas	Electric	Compressor Fuel (Dth)			Electric Power Costs (\$)				
						Total	Primary Path %	Primary Path	Total	Fixed Costs [2]	Variable Costs	Primary Path %	Primary Path Variable Costs
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
1	Z3-100 Line	114	114		x				\$3,734,350	\$1,302,834	\$2,431,516	100.0%	\$2,431,516
2	Z2-100 Line	111	110 [1]		x				\$6,894,002	\$978,131	\$5,915,870	17.4%	\$1,029,361
3	Z2-100 Line	187	96	x	x	668,918	100.0%	668,918	\$4,045,558	\$473,316	\$3,572,242	100.0%	\$3,572,242
4		187	106	x		1,798,767	100.0%	1,798,767					
5		187	871	x		445,828	100.0%	445,828					
6		Subtotal				2,913,513		2,913,513					
7	Z1-800 Line	860	87 [1]	x		1,452,221	72.6%	1,054,312					
8	Z1-500 Line	548	550	x		537,378	100.0%	537,378					
9		548	555	x		570,125	100.0%	570,125					
10		548	860	x		1,188,346	100.0%	1,188,346					
11		Subtotal				2,295,849		2,295,849					
12	Z1-500 Line	542	542	x		738,934	100.0%	738,934					
13		542	546	x		400,638	100.0%	400,638					
14		Subtotal				1,139,572		1,139,572					
15	Z1-500 Line	534	534	x		2,040	100.0%	2,040					
16		534	538	x		1,182	100.0%	1,182					
17		Subtotal				3,222		3,222					
18		TOTAL				7,804,377		7,406,468	\$14,673,910	\$2,754,281	\$11,919,629		\$7,033,120

Notes:

- [1] CS 110 is located in TGP's DART segments 111 (primary path segment) and 110. CS 87 is located in TGP's DART segments 860 (primary path segment) and 163. Compressor fuel and electric costs for these 2 compressor stations were allocated to the primary path segments based on volumes scheduled through each respective segment during calendar year 2017.
- [2] Includes minimum demand charges and miscellaneous facilities and service charges plus related taxes incurred by Tennessee irrespective of electric utilization.