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January 23, 2019

REF: 3640

Mr. Roger Sarver
Public Utilities Commission of Ohio
180 East Broad Street, 3rd Floor
Columbus, Ohio 43215-3793

Re: Duke Energy Ohio, Inc.
Management and Performance Audit of
Gas Purchasing Practices and Policies
Case No.18-218-GA-GCR

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Dear Mr. Sarver:

Enclosed are confidential and public versions of our report (four bound and one unbound of each version) on the management and performance audit of Duke Energy Ohio's gas procurement practices and policies for the audit period September 2015 through August 2018. Our report consists of six chapters addressing various aspects of our audit. Our conclusions and recommendations are provided in separate sections at the end of each chapter and are also presented in the Executive Summary at the front of our report. Our workpapers are provided, as required.

We appreciate the opportunity to have conducted this audit and to be of service to the Commission Staff.

Very truly yours,



Jerome D. Mierzwa
Vice President

JDM/arr
Enclosures

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REPORT TO THE
PUBLIC UTILITIES COMMISSION OF OHIO
on the
MANAGEMENT AND PERFORMANCE AUDIT
OF GAS PURCHASING PRACTICES AND POLICIES OF



DUKE ENERGY OHIO, INC.

CASE NO. 18-218-GA-GCR

JANUARY 2019

Prepared by:

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EXECUTIVE SUMMARY

Exeter Associates, Inc. (Exeter) was selected by the Public Utilities Commission of Ohio (PUCO or Commission) through a request for proposal (RFP) to perform a management performance audit of the gas purchasing practices and policies of Duke Energy Ohio, Inc. (DE-Ohio or Company) for the period September 2015 through August 2018 (audit period). The conclusions and recommendations from Exeter's audit are summarized below. Exeter also performed the prior management performance audit for the period September 2012 through August 2015 in PUCO Case No. 15-218-GA-GCR (prior management performance audit).

1. Rate Comparison

The State of Ohio is served by three major natural gas utilities in addition to DE-Ohio—Columbia Gas of Ohio (COH), Dominion Energy Ohio (Dominion), and Vectren Energy Delivery of Ohio (VEDO). COH, Dominion, and VEDO are no longer subject to the GCR mechanism, and recover their gas costs through a Standard Service Offer (SSO) rate. The storage portfolios of DE-Ohio, COH, and VEDO primarily consist of interstate pipeline services, while Dominion's portfolio primarily consists of on-system storage. In Ohio, the costs associated with interstate pipeline storage service are recovered by natural gas utilities through gas cost rates, while the costs associated with owning and operating on-system storage are generally recovered through base rates. This recovery difference would tend to result in lower gas cost rates for natural gas utilities with on-system storage. Dominion also has greater access to lower-cost Marcellus Shale production region supplies than DE-Ohio, COH, and VEDO. Due to these two advantages, the audit period SSO rates of Dominion were lower than the GCR and SSO rates of DE-Ohio, COH, and VEDO. When compared to the SSO rates of COH and VEDO, which maintain storage portfolios similar to that of DE-Ohio, the GCR rates of DE-Ohio were comparable, averaging \$0.24 per Mcf higher than the SSO rates of COH and VEDO. During the audit period, DE-Ohio engaged in hedging activities that increased its GCR rate by approximately \$0.40/Mcf. COH and VEDO did not engage in hedging activity during the audit period. If the impact of hedging activities is removed from DE-Ohio's GCR rate, the rate averaged slightly less than the SSO rates of COH and VEDO during the audit period.

2. Storage Inventory Carrying Charges

DE-Ohio currently purchases storage service from both Columbia Gas Transmission (Columbia Gas) and Texas Gas Transmission (Texas Gas). Under the storage service purchased from Texas Gas, DE-Ohio is advanced gas during the winter (November – March) and returns the advanced gas during the subsequent summer (April – October). Under the storage service purchased from Columbia Gas, DE-Ohio injects into storage gas purchased during the summer and withdraws that gas during the subsequent winter. The costs associated with gas purchased during

the summer and injected into Columbia Gas storage are not recovered by DE-Ohio under the GCR mechanism until that gas is withdrawn from storage during the winter. As such, DE-Ohio incurs carrying costs on the gas it purchases and injects into storage during the summer. DE-Ohio is permitted to recover its storage carrying costs through GCR rates. DE-Ohio calculates the storage carrying costs to include in its monthly GCR rate based on 100 percent of the balance in Columbia Gas storage inventory. Suppliers purchasing Enhanced Firm Balancing Service (EFBS) from DE-Ohio purchase and pay for a portion of the gas injected into Columbia Gas storage inventory. The gas purchased by a supplier that is injected into Columbia Gas storage during the summer is subsequently withdrawn during the winter by the supplier and used to serve the supplier's firm transportation customers. It is inappropriate for DE-Ohio to assess GCR customers storage inventory carrying costs on gas injected into Columbia Gas storage that is paid for by suppliers and is subsequently used to serve firm transportation customers. DE-Ohio should be required to recalculate the storage inventory carrying costs included in its GCR rates during the audit period and issue refunds inclusive of interest to GCR rate customers through the refund and reconciliation adjustment provision of its GCR tariff.

3. Organizational Structure

Exeter's audit revealed no concerns with respect to the organizational structure of DE-Ohio or Duke Energy Corporation, either prior to or after integration of the gas procurement and supply management functions of DE-Ohio and Piedmont Natural Gas Company (Piedmont) that would interfere with the purchase of reliable supplies of gas at minimum prices.

4. FERC Participation

DE-Ohio's Federal Energy Regulatory Commission (FERC) intervention policy is consistent with a reasonable level of participation at a reasonable resource effort. Audit period participation in FERC proceedings was appropriately based on DE-Ohio's intervention policy.

5. KO Transmission FERC Base Rate Case

The Scope of Work for the current audit required an evaluation of DE-Ohio's participation in KO Transmission's FERC base rate case in Docket No. RP16-1097 and the Company's efforts to minimize costs for its customers. Since the proceeding was settled through privileged and confidential negotiations to which Exeter was not a party, and did not reach the hearing stage, it is difficult to assess whether DE-Ohio adequately represented its ratepayers' interests to minimize costs. Exeter finds that DE-Ohio adequately addressed conflict of interest concerns by assigning roles to avoid these concerns prior to KO Transmission filing its base rate application. The Joint Protest filed by DE-Ohio and Duke Energy Kentucky, Inc. (DE-Kentucky) was consistent with what would be expected from a party without a conflict of interest. Exeter also notes that the settlement agreed to

in the proceeding was uncontested by the parties, which also included FERC Staff, a number of KO Transmission shippers other than DE-Ohio and DE-KY, and the Ohio Consumers' Counsel. Finally, the settlement eliminated the incremental rates for the transportation of gas from Means to the Foster Station, which would have adversely impacted DE-Ohio. Therefore, Exeter finds no evidence that DE-Ohio's efforts in Docket No. RP16-1097 did not reasonably minimize costs to ratepayers.

6. Interstate Pipeline Capacity Entitlement Changes

DE-Ohio made a number of changes to its interstate pipeline capacity entitlements during the audit period. Exeter's audit found that DE-Ohio reasonably evaluated and assessed its capacity options during the audit period and adequately documented its analysis of those options. DE-Ohio was able to negotiate discounted rates under several contracts. These capacity entitlement changes and discounts provided a significant benefit to GCR customers.

7. Citygate Purchases

In November 2014, DE-Ohio discovered that due to fewer suppliers participating in its firm transportation program electing EFBS and an increase in the number of customers participating in its firm transportation program, the Company did not maintain sufficient firm interstate pipeline transportation capacity to meet the requirements of its GCR customers and to manage storage inventory balances. This firm interstate pipeline transportation capacity deficiency became evident when it became necessary for the Company to make citygate spot market gas supply purchases to reduce the rate of storage withdrawals and effectively manage storage inventory balances within the FERC tariff requirements of DE-Ohio's interstate pipeline storage service providers. In January 2015, DE-Ohio filed an application with the PUCO (Case No. 15-50-RDR) to address its capacity deficiency. As a result of not maintaining sufficient firm interstate transportation capacity to effectively manage storage and lower the rate of storage withdrawals, DE-Ohio was required to make citygate spot market gas purchases of 2,332,628 Dth during the winter of 2014-2015.

The Commission's Order in Case No. 15-50-RDR adopted provisions making EFBS mandatory for suppliers serving firm transportation customers with an MDQ in excess of 6,000 Dth, effective April 2017. DE-Ohio reported that this requirement has adequately addressed the GCR customer capacity deficiency previously experienced and did not result in other unintended adverse consequences. The Order also required that any citygate spot market purchases made during the winter of 2016-2017 be thoroughly audited to ensure that GCR customers were not unduly impacted. Exeter's audit found that DE-Ohio made no citygate spot market purchases during the winters of 2016-2017 or 2017-2018 and, therefore, there was no adverse impact on GCR customers from such purchases.

8. Design Day Forecast Model

The Scope of Work for this audit required the examination of DE-Ohio's design day model and its utilization of daily data and the Company's use of comparisons of forecasted and actual results to refine its model. Exeter's audit found that the Company's Load Forecasting department developed a design day forecasting model using daily data that was used for capacity planning purposes for the winters of 2016-2017 and 2017-2018. Exeter's review found that this model was statistically invalid and that there were other deficiencies with the model. However, Exeter found that there did not appear to have been adverse consequences for GCR customers resulting from the use of the model developed by Load Forecasting during the audit period.

For the winter of 2018-2019, the Company developed a new design day forecasting model.

[REDACTED]
[REDACTED]
[REDACTED]. While Exeter generally found the design day forecast developed by the Company for the winter of 2018-2019 to be reasonable, [REDACTED]
[REDACTED]. To reflect recent customer conservation efforts, Exeter believes that usage data should generally be limited to the most recent three-year period. [REDACTED]
[REDACTED]
[REDACTED]. Exeter recommends that DE-Ohio continue to explore the inclusion of these other factors in its design day forecast model.

9. Balance of Capacity Requirements and Resources

Exeter found that there was a reasonable balance between the capacity and gas supply resources maintained by DE-Ohio to meet the design day, winter season, and annual gas supply requirements of GCR customers during the audit period.

10. KO Transmission Capacity Entitlements

The prior management performance audit noted that the rates of KO Transmission would increase significantly as a result of an anticipated base rate filing at the FERC and recommended that in light of this increase, DE-Ohio reevaluate whether its current KO Transmission firm transportation capacity entitlements are reasonable. The Scope of Work in this proceeding directed the auditor to review DE-Ohio's evaluation of its KO Transmission capacity entitlements. DE-Ohio's evaluation concluded that, based on cost and reliability considerations, its current KO Transmission capacity entitlements should not be reduced at this time. Exeter concurs with DE-Ohio's evaluation and agrees that the Company should not reduce its KO Transmission firm transportation capacity entitlements at this time. Exeter recommends that if the Company's proposed Central Corridor

Project is completed and its propane facilities are retired, the Company should again evaluate its KO Transmission firm transportation capacity entitlements.

11. Replacement of Propane Facilities

The prior management performance audit recommended that DE-Ohio assess and evaluate replacement capacity alternatives in the event the Company's propane facilities become unavailable or are retired. The Scope of Work for this audit required the auditor to review the Company's assessment and evaluation of replacement capacity for its propane facilities. The Company's assessment and evaluation of the replacement options for its propane facilities found and concluded that the facilities could be readily replaced with a 10-day peaking service. Exeter concurs with the findings and conclusions of DE-Ohio's assessment and evaluation of replacement capacity options in the event that the Company's propane facilities are retired or otherwise unavailable.

12. Audit Period Purchases

DE-Ohio's gas procurement strategy is to, within operating and contractual constraints, maximize deliveries from its lowest-cost source of supply. The Company's audit period gas supply purchases were consistent with this strategy.

13. Off-System Sales

Under its Asset Management Agreements (AMAs), DE-Ohio released all of its interstate pipeline firm capacity not released to Choice suppliers to its Asset Manager. As a result, DE-Ohio was not an active participant in the off-system sales market. Although DE-Ohio did not generally engage in off-system sales activity during the audit period, DE-Ohio made [REDACTED] and [REDACTED] to [REDACTED]. These sales were made at market prices. The off-system sales in March 2016 were made to ensure that the Company's Columbia Gas FSS storage inventory did not exceed the maximum allowed by Columbia Gas' FSS FERC tariff as of April 1, 2016. A loss of \$362,470 was realized from the sale, which was charged to the GCR. This loss was incurred largely because the gas sold off-system was purchased [REDACTED].

Exeter's review of DE-Ohio's GCR and EFBS storage inventory balances indicated that it was the storage inventory balances of both GCR and Choice suppliers utilizing EFBS that required the Company to make the March 2016 off-system sales to reduce its Columbia Gas FSS storage inventory balance. Exeter finds that GCR customers were not adversely affected by the off-system sales because the GCR would have been charged for the above-market hedging program purchases if those supplies were not sold off-system. Exeter's audit also found that DE-Ohio had not evaluated whether the need to reduce its Columbia Gas FSS storage inventory balances was

attributable to activity on behalf of GCR customers or the activity of suppliers utilizing EFBS. Exeter recommends that DE-Ohio establish procedures to formally monitor EFBS storage inventory balances to ensure they comply with the requirements of Columbia Gas' FSS FERC tariff so that GCR customers are not potentially adversely impacted by EFBS storage activity in the future. GCR customers could be adversely affected by EFBS inventory balances if the balances exceed those permitted by Columbia Gas' tariff, or if the balances decline and result in a reduction in the daily deliverability from Columbia Gas FSS storage.

The [REDACTED] was necessitated by extreme warm weather and FSS injection restrictions imposed by Columbia Gas. A [REDACTED] was incurred on the off-system sale and charged to the GCR. Like the off-system sales made in [REDACTED], the gas sold off-system in [REDACTED] was purchased [REDACTED] and, therefore, GCR customers were not adversely affected by the off-system sale.

14. Lost and Unaccounted-for Gas

DE-Ohio's LUFG experienced has averaged approximately 1.0 percent over the last five years. This compares favorably with the experience of other gas utilities.

15. Choice Imbalances

DE-Ohio's current procedures and methods for projecting the daily requirements of the firm transportation customers served by Choice suppliers sufficiently minimized imbalances between the quantity of gas delivered to DE-Ohio by Choice suppliers and the consumption of firm transportation customers during the audit period.

16. Modification to Capacity Assignment Procedures

DE-Ohio modified its existing procedures for the assignment of capacity to Choice suppliers during the audit period. These modifications appear to have been reasonable and reduced the amount of capacity assigned to Choice suppliers, and did not have an adverse impact on GCR customers.

17. Contract Commitment Cost Recovery Rider Adjustment

The prior management performance audit found that, due to the timing difference between when capacity assignments to be made to Choice suppliers are determined and when they became effective, the supplier serving the City of Cincinnati was able to avoid the assignment of capacity when the City switched to firm transportation service in October 2012. As a result, GCR customers were assigned the costs associated with unneeded capacity. In the prior management performance audit, Exeter recommended that \$237,245 of the costs associated with the unneeded capacity be

removed from the GCR and recovered under the Company's Contract Commitment Cost Recovery Rider (Rider CCCR). Exeter also recommended that DE-Ohio investigate modifying its tariff to address the potential for a supplier to avoid the assignment of capacity. The Stipulation and Recommendation approved in PUCO Case No. 15-218-GA-GCR adopted Exeter's recommendations and required DE-Ohio to include \$237,245 in its Rider CCCR calculations and to file a report concerning tariff modifications to address the potential avoidance of capacity assignment.

The Scope of Work for the current audit requires the auditor to verify that the Company included \$237,245 for recovery under Rider CCCR for the costs associated with the avoided assignment of capacity when the City of Cincinnati elected to participate in the Choice program. The Scope of Work also required the auditor to examine DE-Ohio's efforts to modify its tariff to address the potential for suppliers to avoid the assignment of capacity. DE-Ohio files to adjust Rider CCCR on a quarterly basis. DE-Ohio included \$237,245 in avoided capacity assignment costs in its December 2016, March 2017, June 2017, and September 2017 Rider CCCR calculations.

To address the potential for suppliers to avoid an assignment of capacity in the future, DE-Ohio has proposed tariff language that would allow the Company to adjust capacity assignments for known changes to the customers to be served by a supplier. However, DE-Ohio has not modified its tariff to reflect the proposed language. DE-Ohio indicated that it would file to revise its capacity release tariff language in its next base rate case. There is currently no definitive date for the filing of a base rate case by DE-Ohio. Exeter's audit did not identify any instances of Choice suppliers avoiding the assignment of pipeline capacity due to circumstances similar to those that occurred during the prior management performance audit period with the conversion of the City of Cincinnati to firm transportation service. Exeter recommends that DE-Ohio file an application with the PUCO to modify its tariff to reflect the proposed language concerning adjustments to the assignment of capacity for known changes to the customers to be served by a Choice supplier.

18. Reducing Storage Entitlements

In the prior management performance audit, Exeter analyzed whether DE-Ohio could serve its GCR customers and meet the balancing requirements of its firm transportation customers at a reduced level of interstate pipeline storage service. Based on an analysis of storage injection and withdrawal activity for the winter of 2013-2014, Exeter's analysis indicated that DE-Ohio could potentially reduce current storage levels by 20 percent. However, the analysis was based on the utilization of storage prior to the potential changes to EFBS pending in PUCO Case No. 15-50-GA-RDR that was being litigated at the time. Exeter recommended that DE-Ohio reevaluate whether it could meet its firm customers' balancing requirements at reduced storage levels once Case No. 15-50-GA-RDR was decided. Exeter also recommended that any decision to adjust current storage levels consider the results of the Company's capacity portfolio evaluation in the event that its

propane facilities are no longer available. DE-Ohio agreed to Exeter's recommendations in the Stipulation and Recommendation filed in the prior audit, and the Commission ordered DE-Ohio to complete the recommended evaluation and file a report detailing the Company's findings. The Scope of Work for this audit requires the auditor to review the Company's evaluation of its ability to meet its firm customers' balancing requirements at reduced storage levels, taking into consideration the possibility that the Company's propane facilities may not be available.

DE-Ohio purchases two interstate pipeline storage services—Columbia Gulf FSS and Texas Gas NNS. DE-Ohio's analysis of reducing storage levels evaluated the potential of reducing Columbia Gulf FSS storage by 20 percent. DE-Ohio claimed that because Texas Gas NNS was the more expensive service, the Company had already reduced this service to the lowest possible operational level in 2000. To determine the total potential cost savings of reducing Columbia Gas FSS by 20 percent, the Company considered the cost of replacement firm transportation capacity and the seasonal price advantage associated with purchasing gas during the summer and withdrawing that gas during the winter.

DE-Ohio estimated the cost savings of reducing Columbia Gas FSS by 20 percent to be \$1.6 million annually. However, the Company's evaluation noted that decreasing its storage entitlements would increase the risk of being assessed penalties by Columbia Gas for exceeding its contractual entitlements. The Company's analysis assumed a penalty of \$150/Dth for exceeding storage contract entitlements during OFO periods. Based on this penalty, the Company's analysis found that during March 2014, withdrawals would have exceeded its contractual entitlements on one day, resulting in a potential penalty of \$4.9 million. Therefore, a single day of over-withdrawal penalty charges would have resulted in the elimination of several years of savings realized by reducing storage.

The Company also investigated whether the retirement of its two remaining propane-air facilities would impact its analysis of a reduction to storage entitlements. The Company's investigation revealed that nearly all of the production from its propane-air facilities was generally planned the prior day and would not materially be able to address firm customer balancing requirements. Therefore, with or without the propane-air facilities, a 20 percent reduction to its Columbia Gas storage entitlements would have led to penalties of approximately \$4.9 million during the prior audit period.

The winter of 2013-2014 was a relatively cold winter, and was not a typical winter. To assess the probability of incurring penalties if its Columbia Gas FSS storage entitlements were reduced, DE-Ohio expanded its analysis to review the potential for the incurrence of penalties over the past ten winter seasons (2007-2008 through 2016-2017). This further analysis indicated that at current storage entitlements, the Company would be at risk of incurring penalties once every ten

years. Reducing current Columbia Gas FSS storage entitlements would increase that risk to four times every ten years. DE-Ohio concluded that the average annual costs of these penalties would exceed the projected savings and, therefore, the Company concluded that it should continue to contract for storage at current levels. Exeter concurs with DE-Ohio's findings and conclusions.

19. Assignment of Propane Commodity Costs

DE-Ohio's propane facilities are required to maintain distribution operating pressures during periods of peak demand. The facilities may also be used to meet customer supply requirements during periods of peak or design demand if lower-cost alternative sources of supply are not available. Suppliers serving firm transportation under the Choice program have the option of using an allocated share of DE-Ohio's propane facilities to meet their customer requirements.

DE-Ohio utilized its propane facilities to maintain distribution operating pressures on more than 50 days during the audit period. Excluding GCR customers' allocated share of DE-Ohio's propane facilities, there were no occasions during the audit period when GCR customer demands exceeded the total capacity and gas supply resources secured by DE-Ohio to meet GCR requirements. That is, if not for the need to maintain distribution system operating pressures, it would have been unnecessary for DE-Ohio to utilize its propane facilities during the audit period. No suppliers participating in the Choice program elected to utilize their allocated share of DE-Ohio's propane facilities during the audit period and, therefore, did not pay for any portion of DE-Ohio's audit period propane costs. DE-Ohio utilized nearly [REDACTED] of propane during the audit period to serve its customers at an average cost of [REDACTED]. Based on market prices, the incremental costs associated with the propane used by DE-Ohio were [REDACTED], and these costs were assessed entirely to GCR customers. Exeter believes this to have been unreasonable.

The propane used by DE-Ohio during the audit period was required to maintain system operating pressures that benefitted all customers, not just GCR customers. Therefore, Exeter's audit recommends that responsibility for the incremental costs associated with the propane used by DE-Ohio during the audit period be borne by all firm customers. Prior to switching to transportation service, DE-Ohio's firm transportation customers paid for a proportionate share of the Company's incremental propane costs through the GCR rate. DE-Ohio's Rider CCCR provides for the full recovery of propane costs that were incurred by the Company to supply gas to firm sale customers that have elected to switch to gas transportation service. Therefore, Exeter recommends that the \$3.7 million in incremental propane costs recovered from GCR customers during the audit period be included in the Company's Rider CCCR calculations as a cost to be allocated between GCR and firm transportation customers. Under this approach, GCR and firm transportation customers will each be responsible for a proportionate share of DE-Ohio's audit period propane costs.

20. Interruptible Monthly Balancing Service (IMBS) Provisions and Rates

In the prior management performance audit, Exeter recommended that DE-Ohio evaluate whether adopting daily balancing tolerances for interruptible transportation service would improve the Company's ability to manage storage and/or would enable the Company to reduce its contract storage entitlements. Exeter also found that interruptible transportation customers were not contributing a reasonable share of the costs associated with the provision of balancing service and that DE-Ohio should investigate revising the charges for IMBS to provide a more significant contribution toward the recovery of the pipeline storage costs incurred to provide IMBS. In the Stipulation and Recommendation approved in PUCO Case No. 15-218-GA-GCR, the Company agreed to perform an evaluation of Exeter's recommendations. The Scope of Work in this proceeding requires the auditor to examine the Company's evaluation of the interruptible transportation service balancing recommendations included in the prior management performance audit.

With respect to adopting daily balancing requirements, the Company examined daily interruptible transportation usage and deliveries for the 10-year period ended August 2017, and found that 95 percent of the time the daily imbalance was less than 20,000 Dth. To approximate the impact of adopting daily balancing tolerances, the Company evaluated the impact of OFOs on daily imbalances. Under a cold-weather OFO, daily underdeliveries are penalized, and under a warm-weather OFO, daily overdeliveries are penalized. The Company's evaluation of daily imbalances during OFO periods indicated that 95 percent of the time, the daily imbalance was less than 23,000 Dth. Therefore, DE-Ohio concluded that imposing daily balancing requirements on interruptible transportation customers would not substantially improve its ability to manage storage or reduce its storage entitlements. Exeter concurs with the Company's evaluation and conclusions concerning adopting daily balancing for interruptible transportation service.

With respect to the adequacy of the current IMBS charges, the Company recognized that there were two cost components associated with providing IMBS—a daily deliverability component and a seasonal storage capacity component. The daily deliverability component consisted of those charges associated with meeting daily imbalances. The Company's analysis indicated that the average daily deliverability cost component of IMBS was \$0.0823/Mcf. To calculate the seasonal storage capacity cost component, the Company noted that the three current IMBS options differed in the amount of gas that can be carried over into the next month. This cost component was calculated by the Company for each option based on the amount that can be carried over, resulting in rates of \$0.0017/Mcf, \$0.0020/Mcf, and \$0.0025/Mcf for IMBS Options 1, 2, and 3, respectively. Combining the deliverability and seasonal storage capacity components resulted in the proposed rates per the table below:

	DAILY IMBALANCE	MONTHLY CARRY-OVER	PROPOSED RATE	CURRENT RATE
Option 1 (\$/Mcf)	\$0.0823	\$0.0017	\$0.0839	\$0.015
Option 2 (\$/Mcf)	\$0.0823	\$0.0020	\$0.0842	\$0.020
Option 3 (\$/Mcf)	\$0.0823	\$0.0025	\$0.0848	\$0.025

The Company concluded that the revenue contribution of interruptible transportation customers through IMBS has not been commensurate with the cost of providing service. DE-Ohio indicated that it would address IMBS rates in its next base rate case but had no definitive timetable for filing its next case.

DE-Ohio's current IMBS rates were approved by the PUCO in a Supplemental Opinion and Order in Case No. 95-656-GA-AIR entered July 2, 1997. The Supplemental Opinion and Order included language providing that if the Company or any intervenor reasonably believed that IMBS was not operating as intended (including imposing undue costs on the Company's GCR customers), the parties would agree to discuss and consider modifications to the appropriate tariffs. The Company's evaluation of IMBS charges and Exeter's audit found that the revenue contribution of interruptible transportation customers through IMBS has not been commensurate with the cost of providing service and, therefore, is imposing undue costs on GCR customers. Exeter recommends that DE-Ohio be required to file an application to modify its current IMBS charges to eliminate the undue costs being imposed on GCR customers. The parties to Case No. 95-656-GA-AIR and other interested parties could subsequently discuss and consider modifications to DE-Ohio's current IMBS rates to address the undue costs being imposed on GCR customers. If the parties are unable to reach an agreement on IMBS rates, litigation of the issue would proceed.

21. Pipeline Overrun and Penalty Charges

DE-Ohio was assessed a number of overrun and penalty charges during the audit period. These charges included [REDACTED] overrun, [REDACTED] overrun, [REDACTED] overrun charges, and [REDACTED] OFO penalties. The NNS service DE-Ohio purchases from Texas Gas provides for hourly deliveries equal to 1/16th of the maximum daily quantity (MDQ), and NNS overrun charges are assessed if hourly deliveries exceed 1/16th of the MDQ. NNS SQE overrun charges are assessed when deliveries to DE-Ohio's citygate during the summer under the Company's NNS firm transportation contract with Texas Gas exceed the NNS storage inventory balance that existed at the end of the previous March. Hourly overrun charges are assessed when hourly deliveries under DE-Ohio's STF transportation contract with Texas Gas exceed 1/24th of the MDQ. [REDACTED]
[REDACTED]

[REDACTED] during the audit period. All [REDACTED] overrun and [REDACTED] OFO penalties were charged to GCR customers.

DE-Ohio incurred overrun and OFO penalty charges during the audit period due to distribution system constraints and limitations. The charges were incurred in conjunction with providing service to all customers, not just GCR customers. Therefore, all customers should share responsibility for these charges. Exeter recommends that, provided they are not found to be imprudently incurred, future overrun and OFO penalty charges assessed to DE-Ohio be recovered through Rider CCCR. The overrun and OFO penalty charges are incurred by DE-Ohio to provide service to both GCR and firm sales customers that have elected to switch to gas transportation service and, therefore, recovery through Rider CCCR is appropriate.

1. INTRODUCTION

The Public Utilities Commission of Ohio (PUCO or Commission), by journalized entry dated May 9, 2018, ordered a management performance audit of the gas purchasing practices and policies of Duke Energy Ohio, Inc. (DE-Ohio or Company). Management performance audits ordered by the Commission are designed to review a local gas distribution company's (LDC's) management policies, organizational structures, and operational procedures, and to determine the LDC's effectiveness in providing an adequate and reliable supply of natural gas at minimum prices. Exeter Associates, Inc. (Exeter) was selected by the Commission through a request for proposal (RFP) to perform the management performance audit of DE-Ohio. Subject to review in this audit is the Gas Cost Recovery (GCR) rate period September 2015 through August 2018 (audit period).¹ Exeter conducted the previous management performance audit of DE-Ohio for the GCR period September 2012 through August 2015 in PUCO Case No. 15-218-GA-GCR (prior management performance audit).

Section 1.1 of this Introduction provides an overview of the Company and its relationships with its corporate affiliates. Section 1.2 provides a brief description of the structure of Exeter's audit report.

1.1 Corporate Affiliations and Ownership

DE-Ohio is a wholly-owned subsidiary of Cinergy Corporation, which is a wholly-owned subsidiary of Duke Energy Corporation (Duke Energy). Duke Energy is an energy company headquartered in Charlotte, North Carolina, subject to regulation by the Federal Energy Regulatory Commission (FERC). Duke Energy operates in the United States primarily through its direct and indirect subsidiaries that include Duke Energy Carolina, LLC; Progress Energy, Inc; Duke Energy Progress, LLC; Duke Energy Florida, LLC; Duke Energy Indiana, LLC; Piedmont Natural Gas Company (Piedmont); and DE-Ohio. Duke Energy's business structure includes three reportable operating segments: Electric Utilities and Infrastructure, Gas Utilities and Infrastructure, and Commercial Renewables. The Electric Utilities and Infrastructure segment includes Duke Energy's regulated electric utilities in the Carolinas, Florida, and the Midwest. Electric Utilities and Infrastructure also includes Duke Energy's commercial electric transmission infrastructure investments. The Gas Utilities and Infrastructure segment includes Duke Energy's regulated natural gas distribution utilities and midstream pipeline investments. Duke Energy's regulated natural gas distribution utilities include Piedmont, which provides service in North Carolina, South Carolina, and Tennessee;

¹ DE-Ohio provided retail electric and retail natural gas service in Ohio during the audit period. This audit examines the purchasing practices and policies associated with the provision of retail natural gas service. DE-Ohio no longer operates natural gas-fired electric generation facilities in Ohio and, therefore, no longer purchases natural gas to support electric operations in Ohio.

and DE-Ohio, which provides service in Ohio and Kentucky. The Commercial Renewables segment is primarily comprised of non-regulated, utility-scale wind and solar generation assets located throughout the U.S.

DE-Ohio is a regulated public utility primarily engaged in the transmission and distribution of electricity in portions of Ohio and Kentucky, the sale of electricity in portions of Kentucky, and the distribution and sale of natural gas in portions of Ohio and Kentucky. Operations in Kentucky are conducted through DE-Ohio's wholly-owned subsidiary, Duke Energy Kentucky, Inc. (DE-Kentucky). DE-Ohio's service area covers approximately 3,000 square miles. The Company supplies electric service to approximately 850,000 residential, commercial, and industrial customers, and provides natural gas distribution service to approximately 530,000 customers. DE-Ohio's two reportable operating segments are Electric Utilities and Infrastructure and Gas Utilities and Infrastructure.

1.2 Structure of Audit Report

This audit report, which is divided into five additional sections, analyzes, evaluates, and presents specific findings and recommendations with respect to the structure, policies, and procedures of DE-Ohio's gas supply procurement and management functions. With the exception of this introductory section, Exeter's conclusions and recommendations are presented at the end of each section, and are summarized in the Executive Summary that precedes this Introduction.

Section 2 of the audit report provides a description of the DE-Ohio system and the natural gas markets it serves. This section includes statistical data identifying the number of customers served, usage by customer class, and other operating information. Also included in Section 2 is a comparison of DE-Ohio's audit period GCR rates with the gas supply commodity sales rates of the other major LDCs operating in Ohio. Section 3 describes the organization and management of the gas procurement and planning functions at DE-Ohio. Section 3 also discusses the Company's intervention activities at the FERC, including its participation in the recent base rate application of KO Transmission Company (KO Transmission), an affiliated interstate pipeline serving DE-Ohio.

DE-Ohio's gas supply planning is discussed and evaluated in Section 4. This section provides a detailed discussion of the Company's capacity and gas supply arrangements, identifies the changes in those arrangements that occurred during the audit period, and examines the balance between DE-Ohio's capacity and gas supply resources and its firm customers' requirements. Section 4 also addresses DE-Ohio's audit period Asset Management Agreements (AMAs), the diversification of capacity and gas supply resources, and the Company's plans with respect to the continuation of the merchant function.

A discussion and evaluation of DE-Ohio's capacity utilization and gas supply procurement activity during the audit period are presented in Section 5. This discussion focuses on how DE-Ohio used its procurement options to meet the requirements of its customers. The Company's management of gas price volatility and lost and unaccounted-for (LUFG) and company-use gas is also addressed in Section 5.

Finally, Section 6 of the audit report and discusses and evaluates DE-Ohio's firm and interruptible end-user transportation programs. Included in this discussion are the terms and conditions of the various balancing services offered by DE-Ohio.

2. BACKGROUND AND OVERVIEW

The physical and operational characteristics of DE-Ohio's system and the Ohio natural gas markets that it serves are identified in this section. This material serves as a framework for the evaluation of DE-Ohio's natural gas procurement policies and practices as well as its marketing functions. Also presented in this section is a comparison of DE-Ohio's GCR rates with the gas supply commodity sales rates of the other major gas utilities operating in Ohio.

2.1 Duke Energy Ohio

The service territory of DE-Ohio is located in heavily populated southwestern Ohio. The Company's distribution system serves all or portions of Adams, Brown, Butler, Clermont, Clinton, Hamilton, Montgomery, and Warren Counties. Included within this service territory are the municipalities of Cincinnati and Middletown. DE-Ohio's distribution system is physically integrated with that of its subsidiary, DE-Kentucky, which provides natural gas distribution service in Kentucky.

DE-Ohio is centrally located along the major pipeline facilities that link the traditional Gulf Coast natural gas production region with the northern and northeastern U.S. markets. Several of these pipelines also access the Marcellus Shale production region in the Appalachian Basin, which has become the largest gas-producing area in the United States.² DE-Ohio has access to a number of interstate pipelines, which gives the Company some flexibility and diversity in meeting its system requirements. DE-Ohio is interconnected with five interstate pipelines. The Company has interconnects on the northern portion of its system with ANR Pipeline (ANR), Columbia Gas Transmission (Columbia Gas), Texas Eastern Transmission (Texas Eastern), and Texas Gas Transmission (Texas Gas), and interconnects with Columbia Gas and KO Transmission on the southern portion of its system. DE-Ohio's pipeline interconnects are identified on the system map presented in Figure 1.

On the northern portion of its system, DE-Ohio is interconnected with ANR at the Springboro Station. The Springboro Station is located on the Lebanon Lateral, a 114-mile pipeline that extends from Gas City, Indiana to Lebanon, Ohio. The western segment of the Lebanon Lateral is 100 percent owned and operated by Texas Eastern and extends from an interconnect with Panhandle Eastern Pipe Line (Panhandle) in Gas City, Indiana to Glen Karn, Ohio. The eastern segment of the Lebanon Lateral extends from Glen Karn to Lebanon.

² The Marcellus Shale production region stretches across Appalachia, primarily in western Pennsylvania, West Virginia, and eastern Ohio.

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GAS SUPPLY SYSTEM

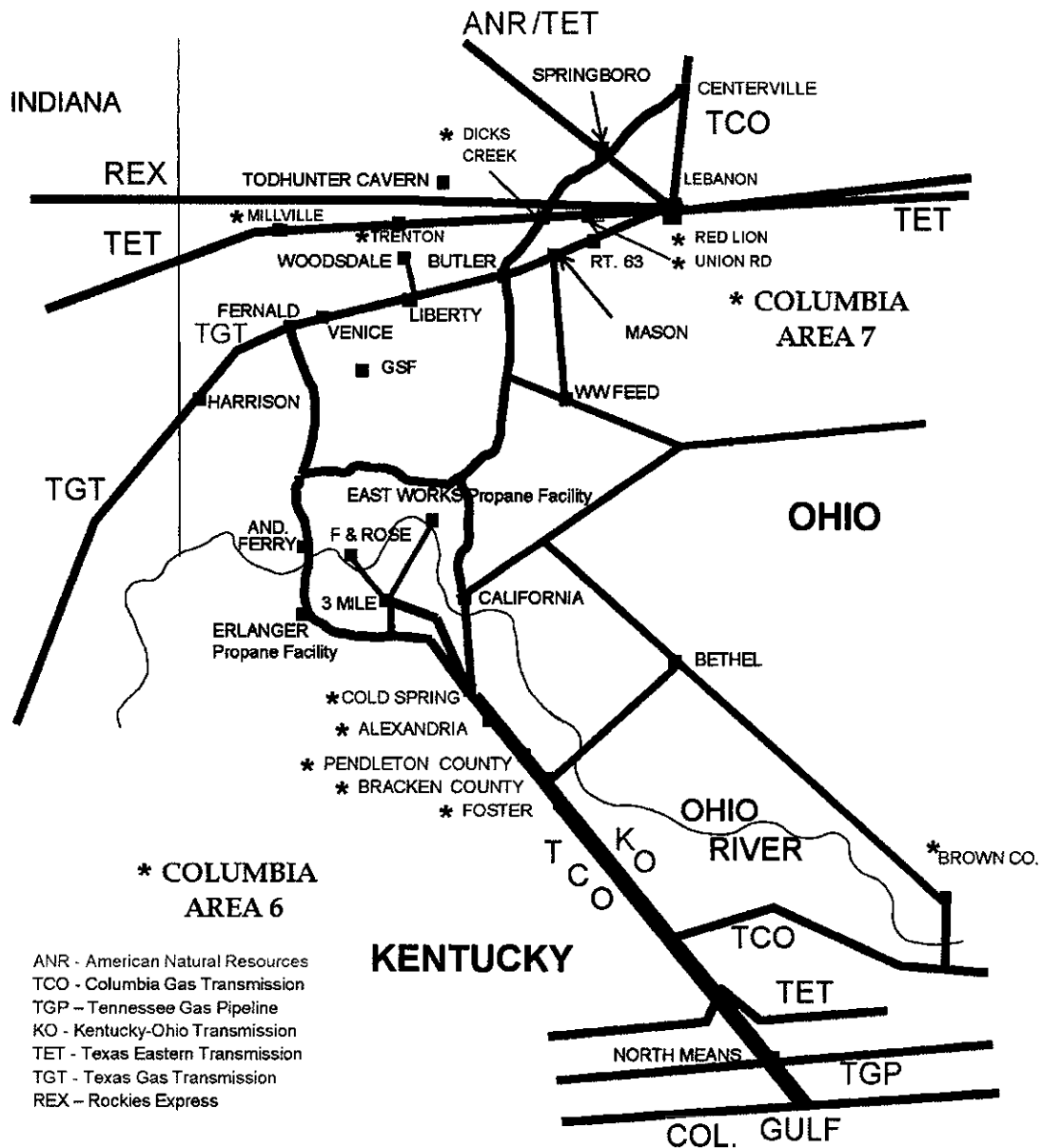


Figure 1. DE-Ohio System Map

The eastern segment of the Lebanon Lateral is also operated by Texas Eastern and is owned 50 percent by ANR and 50 percent by Texas Eastern. Because the eastern segment of the Lebanon Lateral is jointly owned by ANR and Texas Eastern, DE-Ohio is also interconnected with Texas Eastern at the Springboro Station. The quantity of gas that DE-Ohio is able to accept through the Springboro Station is limited due to downstream operational limits.

DE-Ohio has interconnects with Texas Eastern at four additional stations on the northern portion of its system—the Millville, Trenton, Dicks Creek, and Union Road Stations. Gas that is delivered to DE-Ohio through the Texas Eastern pipeline that interconnects with DE-Ohio's system at the Millville, Trenton, and Union Road Stations is delivered on behalf of Columbia Gas. Texas Eastern does not currently deliver gas to DE-Ohio on its own account at these stations. Columbia Gas has a separate arrangement with Texas Eastern for the delivery of gas to DE-Ohio at these stations. DE-Ohio owns two of the three meters located at the Dicks Creek Station. This allows DE-Ohio to take deliveries directly from Texas Eastern at the Dicks Creek Station in addition to those deliveries made on behalf of Columbia Gas.

DE-Ohio's interconnect with Columbia Gas at the Centerville Station on the northern portion of its system is not typically utilized to deliver gas to the DE-Ohio system. Gas is delivered by Columbia Gas to DE-Ohio at Columbia Gas' Red Lion and Springboro Stations, which both serve separate, isolated sections of DE-Ohio's system.

DE-Ohio receives gas from Texas Gas at eight stations. Seven of these stations are shown above in Figure 1—Harrison, Fernald, Venice, Butler, Mason, Route 63, and Liberty. The eighth station, Dry Fork, is located near the Harrison Station. The interconnect at the Liberty Station is used exclusively to serve DE-Kentucky's Woodsdale electric generating facility. The Liberty Station does not provide for the delivery of gas to DE-Ohio's gas distribution system.

On the southern portion of its system, with the exception of the Brown County Station interconnect with Columbia Gas, which serves an isolated section of DE-Ohio's system, DE-Ohio is physically interconnected only with KO Transmission. KO Transmission was formed in June 1996 when, through a FERC rate case settlement, DE-Ohio acquired a 32.67 percent interest in a 90-mile Columbia Gas system transmission pipeline (referred to as the E-Line). The E-Line extends from the interconnect of KO Transmission and Columbia Gulf Transmission (Columbia Gulf) at Means, Kentucky to the distribution systems of DE-Ohio and DE-Kentucky. KO Transmission currently owns 48.77 percent of the transmission pipeline facilities that extend from Means to the Foster Station, and 100 percent of the E-Line transmission facilities that extend from the Foster Station to the distribution systems of DE-Ohio and DE-Kentucky. Columbia Gas owns the remaining 51.23 percent of the transmission facilities that extend from South Means to the Foster Station. KO Transmission is interconnected with Columbia Gas, Columbia Gulf, and Tennessee Gas Pipeline (Tennessee Gas),

providing DE-Ohio upstream access to these pipelines. DE-Ohio is physically interconnected with KO Transmission at two points of delivery—the California and Bracken County Stations. The Bracken County interconnect serves the Bethel, Ohio area.

DE-Ohio also takes delivery of gas on the southern portion of its system through three points of interconnection with DE-Kentucky (Anderson Ferry, Front & Rose, and Eastern Avenue Stations) under a FERC-approved tariff. These gas supplies are delivered to DE-Kentucky by KO Transmission. In return, DE-Ohio provides DE-Kentucky access to gas supplies delivered by Texas Gas, ANR, and Texas Eastern under a FERC-approved tariff. Deliveries of gas by DE-Ohio to DE-Kentucky are accomplished by displacement.

Difficulties are not encountered in delivering gas to firm customers, provided that gas is delivered to DE-Ohio's system. DE-Ohio does not require or maintain compression to effectuate the delivery of gas on its distribution system.

Deliveries from interstate pipelines serving both the northern and southern portions of the system are required to meet system requirements. During the audit period, approximately 45 percent to 55 percent of DE-Ohio's system gas supply requirements were required to be delivered to the northern portion of its system, while 45 to 55 percent of supplies were required to be delivered to the southern portion of its system to satisfy system operational requirements. There were no significant gas supply-related construction activities during the audit period.

DE-Ohio does not own or operate any of its underground natural gas storage facilities. The Company historically owned and operated two propane-air peaking facilities (Eastern Avenue Plant and Dicks Creek Plant), and has access to gas stored in a propane facility owned by DE-Kentucky (Erlanger Plant). However, the Dicks Creek Plant is no longer in service. Propane for the Dicks Creek Plant was stored at the underground Todhunter Propane Cavern, which was operated by Enterprise TE Products Pipeline Company (Enterprise). On December 13, 2013, due to a geological failure at the Todhunter Propane Cavern, Enterprise declared *force majeure* and is no longer able to provide propane for the Dicks Creek Plant.

On September 13, 2016, DE-Ohio filed an Application for a Certificate of Environmental Compatibility and Public Need (Initial Application) with the Ohio Power Siting Board (OPSB) to construct the C314 Central Pipeline Extension Project (Central Corridor Project) (PUCO Case No. 16-253-GA-BTX). The Central Corridor Project is an integral part of DE-Ohio's long-term plan to retire its propane-air peaking facilities, balance system supply from north to south, and support the replacement of aging infrastructure. In its Initial Application with the OPSB, DE-Ohio indicated that retirement of its propane-air peaking facilities was necessary because the facilities utilize outdated technology that is expensive to maintain and impractical to permanently repair. The Company also

indicated that the loss of supply from the propane-air facilities on a peak day would result in widespread service outages.

The application requirements for an OPSB Certificate require an applicant to evaluate all practicable alternatives within the applicant's defined study area and ultimately select Preferred and Alternate Routes for OPSB's review. Consistent with this requirement, the Company's Initial Application included Preferred and Alternate Routes for the Central Corridor Project.

Following several public information meetings addressing the Central Corridor Project, DE-Ohio filed an Amended Application for a Certificate of Environmental Compatibility and Public Need for the Project on January 20, 2017 (Amended Application). The Amended Application incorporated several adjustments to the routes proposed in the Company's Initial Application, with the majority of the route adjustments affecting the Preferred Route. These route adjustments were largely in response to affected property owners' requests to reduce Central Corridor Project construction interference with business operations. On April 13, 2017, a procedural schedule was established by the Administrative Law Judges (ALJs) assigned to Case No. 16-253-GA-GTX. The procedural schedule included the due date for timely petitions to intervene and provided for the commencement of hearings on July 12, 2017. On May 11, 2017, DE-Ohio filed supplemental information for the Central Corridor Project reflecting a number of engineering adjustments to the Preferred Route identified in the Company's Amended Application. On May 31, 2017, in accordance with Ohio Revised Code 4906.07(c) and the rules of the OPSB, PUCO Staff issued a Staff Report of Investigation addressing the proposed Central Corridor Project that recommended that the Alternative Route be approved.

On June 21, 2017, in response to the requests for continuance of several intervening parties, the hearing date was delayed until September 11, 2017. On August 23, 2017, DE-Ohio filed a motion to suspend the procedural schedule to allow the Company to address and investigate certain information of which it had become aware related to potential concerns with construction activity along the Alternate Route in the vicinity of property on which environmental remediation had occurred. The ALJs subsequently granted the Company's request to suspend the procedural schedule.

Further investigation of the Alternate Route by DE-Ohio revealed no site-specific environmental issues that would require further Alternate Route modifications. However, as a result of additional meetings with municipalities, businesses, and property owners, several modifications were made to the Alternate Route to reduce the impact of construction activity. These Alternate Route modifications were reflected in a Supplement to DE-Ohio's Amended Application that was filed on April 13, 2018. On the same date, DE-Ohio filed a motion for reestablishment of the procedural schedule in Case No. 16-253-GA-BTX. On June 29, 2018, PUCO

Staff requested that any procedural schedule adopted in the proceeding provide sufficient time to complete a thorough review of the Supplement to DE-Ohio's Amended Application. On July 26, 2018, DE-Ohio filed two additional reports with the OPSB concerning the potential environmental impact of the Central Corridor Project. As of the filing date of this audit report, a revised procedural schedule has not been established in Case No. 16-253-GA-BTX.

Retirement of the propane-air facilities will require DE-Ohio to acquire interstate pipeline capacity to replace the capacity provided by the propane-air facilities. DE-Ohio has indicated that it will begin pursuing the acquisition of additional capacity when there is sufficient certainty concerning an in-service date for the Central Corridor Project.

2.2 Markets Served by Duke Energy Ohio

Firm bundled utility sales service is available under Residential Service (Rate RS), General Service – Small (Rate GS-S) for non-residential customers using 400 Mcf per year or less, and General Service – Large (Rate GS-L) for non-residential customers using more than 400 Mcf per year. DE-Ohio provides firm and interruptible transportation service from its citygate to end-user facilities for those customers that acquire both their own gas supplies and separately arrange for the delivery of those supplies to DE-Ohio's distribution system. DE-Ohio provides firm transportation service to residential customers under Rate RFT, to low-income residential customers under Rate RFTLI, and to small non-residential customers using less than 400 Mcf per year under Rate FT-S. Firm transportation service to non-residential customers using more than 400 Mcf per year is provided under Rate FT-L, and interruptible transportation service is provided under Rate Interruptible Transportation. DE-Ohio's firm transportation customers are also commonly referred to as Rate RFT/FT or Choice customers. Additional terms and conditions of DE-Ohio's transportation service offerings are discussed further in Section 6 of the audit report.

DE-Ohio provided natural gas sales and transportation services to approximately [REDACTED] residential customers and [REDACTED] commercial, industrial, and public authority customers during calendar year (CY) 2017. The number of customers served by DE-Ohio has increased slightly over the past five years. System throughput, that is, total sales and transportation service volumes, totaled [REDACTED] during CY 2017. Table 1 shows throughput by customer class during 2017.

Table 1. Summary of System Throughput (2017)		
	THROUGHPUT ^[1] (MCF)	PERCENT
<u>Sales Service</u>		
Residential		16.8%
Commercial		6.0
Industrial		0.9
Public Authority/Other		0.5
Subtotal:		24.2%
<u>Transportation Service</u>		
Residential		21.3%
Commercial		17.3
Industrial		6.3
Public Authority/Other		2.4
Interruptible		28.5
Subtotal:		75.8%
TOTAL THROUGHPUT:		100.0%
^[1] Includes unbilled volumes.		

Additional selected throughput, customer, and consumption statistics for the period 2013 through 2017 are presented in Table 2. As shown, total throughput has declined over the period. This decline was primarily attributable to warmer-than-normal weather during the period 2015 through 2017.³ DE-Ohio arranges for firm capacity and gas supplies sufficient to meet the design peak day requirements of its firm retail GCR customers, the balancing requirements of firm transportation customers, and, pursuant to the Stipulation and Recommendation approved in PUCO Case No. 05-732-EL-MER, a portion of the increase in the design day requirements of firm transportation customers beyond that which existed on April 1, 2007.⁴ The firm capacity maintained by DE-Ohio to meet the design day requirements of firm transportation customers is discussed in greater detail in Section 6.1.3 of the audit report.

³ Audit period weather data is presented in Table 3.

⁴ Design day is an extremely cold day that a gas utility selects and utilizes for capacity planning purposes. Peak day is the day of greatest total throughput during a given period. A gas utility's annual peak day generally occurs on the coldest day of the year. Design day is a day much colder than an average annual peak day and would be expected to occur less frequently than once per year. Design day and peak day are further discussed in Section 4.

Table 2. Annual Throughput, Customer, and Consumption Statistics

THROUGHPUT (Mcf)	2013	2014	2015	2016	2017
<u>Sales Service</u>					
Residential					
Commercial					
Industrial					
Public Authority/Other					
Subtotal Sales Service:					
<u>Transportation Service</u>					
Residential Firm					
Commercial Firm					
Industrial Firm					
Public Authority/Other					
Interruptible					
Subtotal Transportation Service:					
TOTAL Throughput:					
NUMBER OF CUSTOMERS	2013	2014	2015	2016	2017
<u>Sales Service</u>					
Residential					
Commercial					
Industrial					
Public Authority/Other					
Subtotal Sales Service:					
<u>Transportation Service</u>					
Residential Firm					
Commercial Firm					
Industrial Firm					
Public Authority/Other Firm					
Interruptible					
Subtotal Transportation Service:					
TOTAL Customers:					
AVERAGE CONSUMPTION PER CUSTOMER (Mcf/year)					
<u>Sales Service</u>					
Residential					
Commercial					
Industrial					
Public Authority/Other					
TOTAL Sales Service:					
<u>Transportation Service</u>					
Residential Firm					
Commercial Firm					
Industrial Firm					
Public Authority/Other Firm					
Interruptible					
TOTAL Transportation Service:					

A history of DE-Ohio's actual peak day and annual load characteristics and associated weather data is presented in Table 3. During the past five years, DE-Ohio's actual peak day loads, including service to sales and firm transportation customers, have ranged from a low of 585,015 Dth in the winter of 2016-2017 to a high of 820,862 Dth in the winter of 2013-2014. These variations are largely attributable to differences in peak day temperatures.

Table 3. Operating and Weather Statistics					
OPERATING STATISTICS					
	Winter Season				
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Peak Day Firm Demand (Dth)	820,862	785,015	685,015	585,015	685,015
Peak Day Temperature (Average)	32	32	32	32	32
Annual Load Factor	18	18	18	18	18
WEATHER STATISTICS					
	Calendar Year				
	2013	2014	2015	2016	2017
Number of Heating Degree Days (HDD)	5,091	5,450	4,654	4,488	4,305
Colder/(Warmer) Than Normal (4,788 HDD)	1	1	1	1	1

Annual system load factor is also an important characteristic of the gas markets that DE-Ohio serves. Load factor reflects, in percentage terms, the ratio of the average daily amount of gas required over a given period compared to the amount of gas that would have been required if maximum design day demands were experienced each day over that same period. Since 2013, DE-Ohio's total annual firm system load factor has averaged approximately 18 percent.

2.3 GCR Rate Comparison

Ohio's three other major natural gas utilities—Columbia Gas of Ohio (COH), Dominion Energy Ohio (Dominion), and Vectren Energy Delivery of Ohio (VEDO)—are no longer subject to the GCR mechanism. Instead, each has a Standard Service Offer (SSO) rate under which it continues to provide natural gas commodity service to its sales customers at the cost of acquiring supplies. The other Ohio utilities' costs of acquiring supplies are established through an auction process in which suppliers bid fixed adjustments to the New York Mercantile Exchange (NYMEX) monthly settlement price. Table 4 presents a comparison of DE-Ohio's average audit period GCR rates and the SSO rates of the other major Ohio utilities. The SSO rates of Dominion have been significantly lower than the SSO or GCR rates of the other major Ohio natural gas utilities due to Dominion's direct access to the lower-cost Marcellus Shale supply production region, and Dominion's extensive on-system storage

facilities.⁵ The costs associated with Dominion's on-system storage facilities are recovered through base rates, while gas utilities such as DE-Ohio, COH, and VEDO without extensive on-system storage must purchase storage from interstate pipelines and recover the associated costs through their GCR or SSO. As shown in Table 4, DE-Ohio's GCR rates have been comparable to the SSO rates of COH and VEDO. The SSO rates of COH and VEDO averaged \$4.24/Mcf while the GCR rate of DE-Ohio averaged \$4.46/Mcf during the audit period. DE-Ohio engaged in hedging activities that resulted in an increase in its GCR audit period rates by an average of approximately \$0.40/Mcf. DE-Ohio's hedging activities and the resulting GCR rate impacts are discussed in Section 5.3 of the audit report. The other Ohio utilities ceased hedging activity upon adoption of SSO rates. If the impact of hedging is removed from the comparison of SSO and GCR rates, DE-Ohio's GCR rates averaged slightly less than the SSO rates of COH and VEDO during the audit period.

Table 4. Comparison of DE-Ohio GCR and the SSO Rates of Other Major Ohio Utilities				
COMPANY	12 MONTHS ENDED AUGUST (\$/Mcf)			AVERAGE
	2016	2017	2018	
Columbia Gas of Ohio	\$3.6504	\$4.6378	\$4.3742	\$4.2208
Dominion Energy Ohio	2.4119	3.1951	2.9969	2.8680
Vectren Energy Delivery of Ohio	3.9667	4.6375	4.1492	4.2511
Other Ohio Utility Average:	\$3.3430	\$4.1568	\$3.8401	\$3.7800
Duke Energy Ohio	\$3.9593	\$4.7989	\$4.6337	\$4.4640
Difference Above/(Below):	\$0.6163	\$0.6421	\$0.7936	\$0.6840

2.4 Conclusions and Recommendations

2.4.1 *Rate Comparison*

As discussed above, COH, Dominion, and VEDO are no longer subject to the GCR mechanism, and recover their gas costs through an SSO rate. The storage portfolios of DE-Ohio, COH, and VEDO primarily consist of interstate pipeline services, while Dominion's portfolio primarily consists of on-system storage. In Ohio, the costs associated with interstate pipeline storage service are recovered by natural gas utilities through gas cost rates, while the costs associated with owning and operating on-system storage are generally recovered through base rates. This recovery difference would tend to result in lower gas cost rates for natural gas utilities with on-system storage. Dominion also has greater access to lower-cost Marcellus Shale production region supplies than DE-Ohio, COH, and VEDO. Due to these two advantages, the audit period SSO rates of

⁵ A Marcellus Shale production region pricing location at which Dominion purchases a significant portion of its gas supplies is Dominion South Point. Monthly index prices for this location averaged approximately [REDACTED] less during the winter of 2017-2018 than monthly prices for Columbia Gulf-sourced gas supplies in the Gulf Coast production region to which DE-Ohio had access during the same period.

Dominion were lower than the GCR and SSO rates of DE-Ohio, COH, and VEDO. When compared to the SSO rates of COH and VEDO, which maintain storage portfolios similar to that of DE-Ohio, the GCR rates of DE-Ohio were comparable, averaging \$0.24/Mcf higher than the SSO rates of COH and VEDO. During the audit period, DE-Ohio engaged in hedging activities that increased its GCR rate by approximately \$0.40/Mcf. COH and VEDO did not engage in hedging activity during the audit period. If the impact of hedging activities is removed from DE-Ohio's GCR rate, the rate averaged slightly less than the SSO rates of COH and VEDO during the audit period.

2.4.2 *Storage Inventory Carrying Charges*

DE-Ohio currently purchases storage service from both Columbia Gas and Texas Gas. Under the storage service purchased from Texas Gas, DE-Ohio is advanced gas during the winter (November – March) and returns the advanced gas during the subsequent summer (April – October). Under the storage service purchased from Columbia Gas, DE-Ohio injects into storage gas purchased during the summer and withdraws that gas during the winter. The costs associated with gas purchased during the summer and injected into Columbia Gas storage are not recovered by DE-Ohio under the GCR mechanism until that gas is withdrawn from storage during the subsequent winter. As such, DE-Ohio incurs carrying costs on the gas it purchases and injects into storage during the summer. DE-Ohio is permitted to recover its storage carrying costs through GCR rates. DE-Ohio calculates the storage carrying costs to include in its monthly GCR rate based on 100 percent of the balance in Columbia Gas storage inventory. Suppliers purchasing Enhanced Firm Balancing Service (EFBS) from DE-Ohio purchase and pay for a portion of the gas injected into Columbia Gas storage inventory. The gas purchased by a supplier that is injected into Columbia Gas storage during the summer is subsequently withdrawn during the winter by the supplier and used to serve the supplier's firm transportation customers. It is inappropriate for DE-Ohio to assess GCR customers storage inventory carrying costs on gas injected into Columbia Gas storage that is paid for by suppliers and is subsequently used to serve firm transportation customers. DE-Ohio should be required to recalculate the storage inventory carrying costs included in its GCR rates during the audit period and issue refunds inclusive of interest to GCR rate customers through the refund and reconciliation adjustment provision of its GCR.

3. MANAGEMENT AND ORGANIZATION

This section discusses Duke Energy Ohio's organizational structure as it relates to the Company's natural gas procurement and supply management functions. Section 3.1 discusses the organizational entities with primary responsibility for the gas procurement function at DE-Ohio during the audit period. This is followed by a discussion of gas supply planning committees and groups in Section 3.2. Section 3.3 discusses the sale of natural gas in Ohio by affiliates of DE-Ohio. FERC-related activities, including DE-Ohio's participation in the recent base rate application of KO Transmission, are addressed Section 3.4. The final section presents Exeter's conclusions and recommendations concerning DE-Ohio's management and organization of the gas procurement and supply management functions.

3.1 Procurement Function

In October 2016, Duke Energy acquired Piedmont Natural Gas Company (Piedmont). Piedmont provides natural gas distribution service to over one million customers, including 175,000 in Tennessee; 700,000 in North Carolina; and 140,000 in South Carolina. Like Duke Energy, Piedmont is also headquartered in Charlotte, North Carolina. As subsequently discussed, with the acquisition of Piedmont, responsibility for the gas procurement and supply management functions at DE-Ohio was reorganized and integrated with those functions at Piedmont.

Prior to the acquisition of Piedmont and its subsequent integration with Piedmont, the gas procurement and supply management functions at DE-Ohio and DE-Kentucky were primarily performed by the Gas Resources group, with input from other groups within the Midwest Delivery and Gas Operations (Midwest Gas Operations) segment of Duke Energy. Activities within Midwest Gas Operations related to the gas procurement function were performed by Gas Resources, with input from the following groups: Gas Control, City Gate Operations, and Gas Customer Accounts and Projects. These groups reported to the Senior Vice President of Midwest Gas Operations, who reported to the Executive Vice President of the Midwest and Florida Regions, who in turn reported to the President, CEO and Vice Chairman of the Board of Directors of Duke Energy.

Figure 2 presents the organizational structure of Midwest Gas Operations as it existed at the beginning of the audit period.

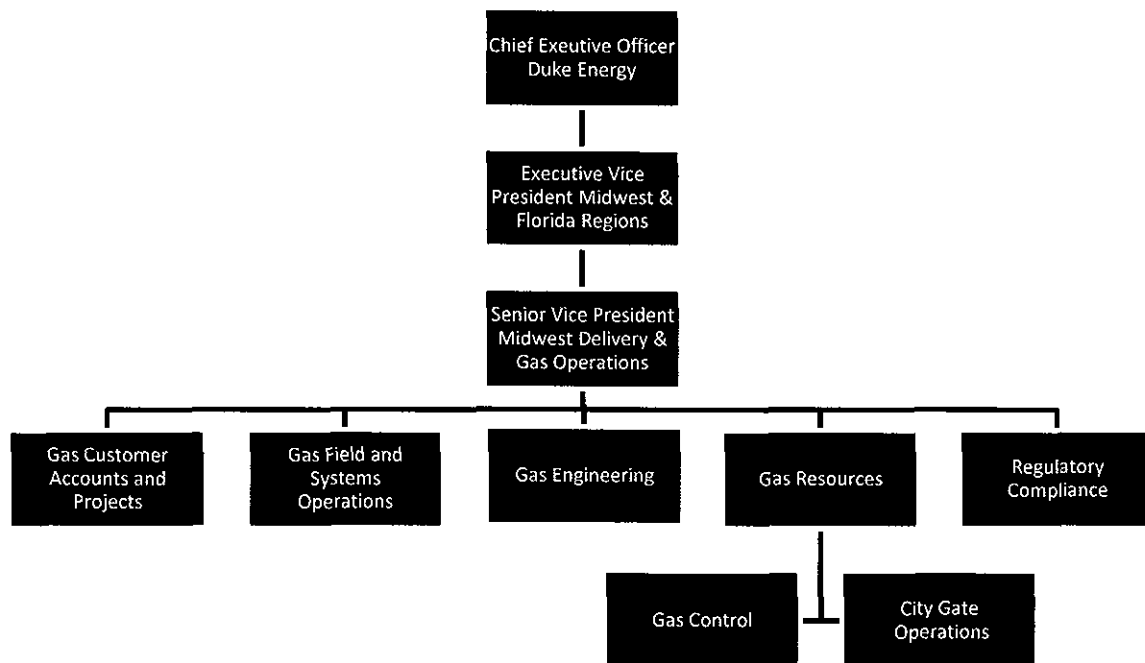


Figure 2. Organizational Structure of Duke Energy Midwest Gas Operations – Procurement and Supply Management Functions (as of September 2015)

The responsibilities and activities of the groups identified in Figure 2 at the beginning of the audit period were as follows. Gas Resources developed DE-Ohio's daily gas supply plans. Gas Resources was also responsible for the negotiation and selection of the Company's gas supply and capacity resource contract portfolios. Finally, Gas Resources was responsible for managing the operations, billing, and FERC regulatory activities of KO Transmission, an affiliated interstate pipeline. Gas Control managed the delivery of flowing gas supplies to ensure a balance between deliveries to DE-Ohio and customer requirements, within physical and contractual limitations, on an hourly and daily basis. Gas Control was also responsible for the preparation of daily forecasts of total customer requirements (sendout). City Gate Operations was responsible for the administration of physical flowing gas supplies for system supply, and DE-Ohio's firm and interruptible transportation programs. This included the accounting related to system supply and transportation customer gas supplies, and the reconciliation of gas deliveries and usage. City Gate Operations was also responsible for the verification and payment of pipeline and supplier invoices, and the billing of the Company's interruptible transportation customers. Gas Customer Accounts and Projects performed account management and marketing functions for DE-Ohio's interruptible transportation customers. Gas Field and Systems Operations managed the operation of the gas distribution system, including the installation of new and replacement facilities and mains. Gas

Engineering was responsible for developing plans for the installation of new and replacement facilities and mains. Regulatory Compliance was responsible for maintaining the integrity of the distribution system, including leak detection.

A number of departments and groups outside of Midwest Gas Operations assisted Gas Resources with the gas procurement function. These included Load Forecasting, Global Risk Management, Rates and Regulatory Strategy, Legal, and Information Technology.

Several modifications to the organizational structure of the gas procurement and supply management functions occurred at DE-Ohio during the audit period prior to the integration of those functions with Piedmont. These modifications were related to personnel changes and were known to be temporary, as the acquisition of Piedmont had been announced and integration efforts were in progress. The modifications included placing Gas Control under Gas Field and Systems Operations, placing City Gate Operations under Gas Customer Accounts and Projects, and placing Gas Resources under Regulatory Compliance.

Upon the integration of the gas procurement and supply management functions of DE-Ohio and DE-Kentucky with those of Piedmont in January 2017, these functions are now primarily performed by the Gas Supply, Optimization, and Pipeline Services (GSOP) group within the Duke Energy Natural Gas Business Unit (NGBU). The NGBU is responsible for all of the operations of Duke Energy's local gas distribution companies—DE-Ohio, DE-Kentucky, and Piedmont. The NGBU is under the direction of an Executive Vice President (EVP-NGBU), who reports directly to the Chairman, President and Chief Executive Officer of Duke Energy.

GSOP is headed by a Managing Director, who reports directly to the EVP-NGBU. Reporting to the Managing Director of GSOP is Pipeline Services, which is managed by the Director of Pipeline Services, and Gas Scheduling, which is managed by the Manager of Gas Scheduling. Also reporting directly to the Managing Director of GSOP are personnel involved in the gas trading function. Reporting to the Director of Pipeline Services is the Manager of City Gate Operations. The gas control function is now performed by Pipeline Operations, which is headed by the Director of Gas Pipeline Operations. Gas Control is now located in Charlotte. The majority, but not all, of personnel involved in the gas procurement and supply management functions of DE-Ohio are located in Charlotte, and the City Gate Operations personnel are located in Cincinnati. The organizational structure of the gas procurement and supply management functions within the NGBU is presented in Figure 3. Departments and/or groups that report to the EVP-NGBU within the Natural Gas Business Unit but are not involved in the gas procurement and supply management functions have been omitted from Figure 3.

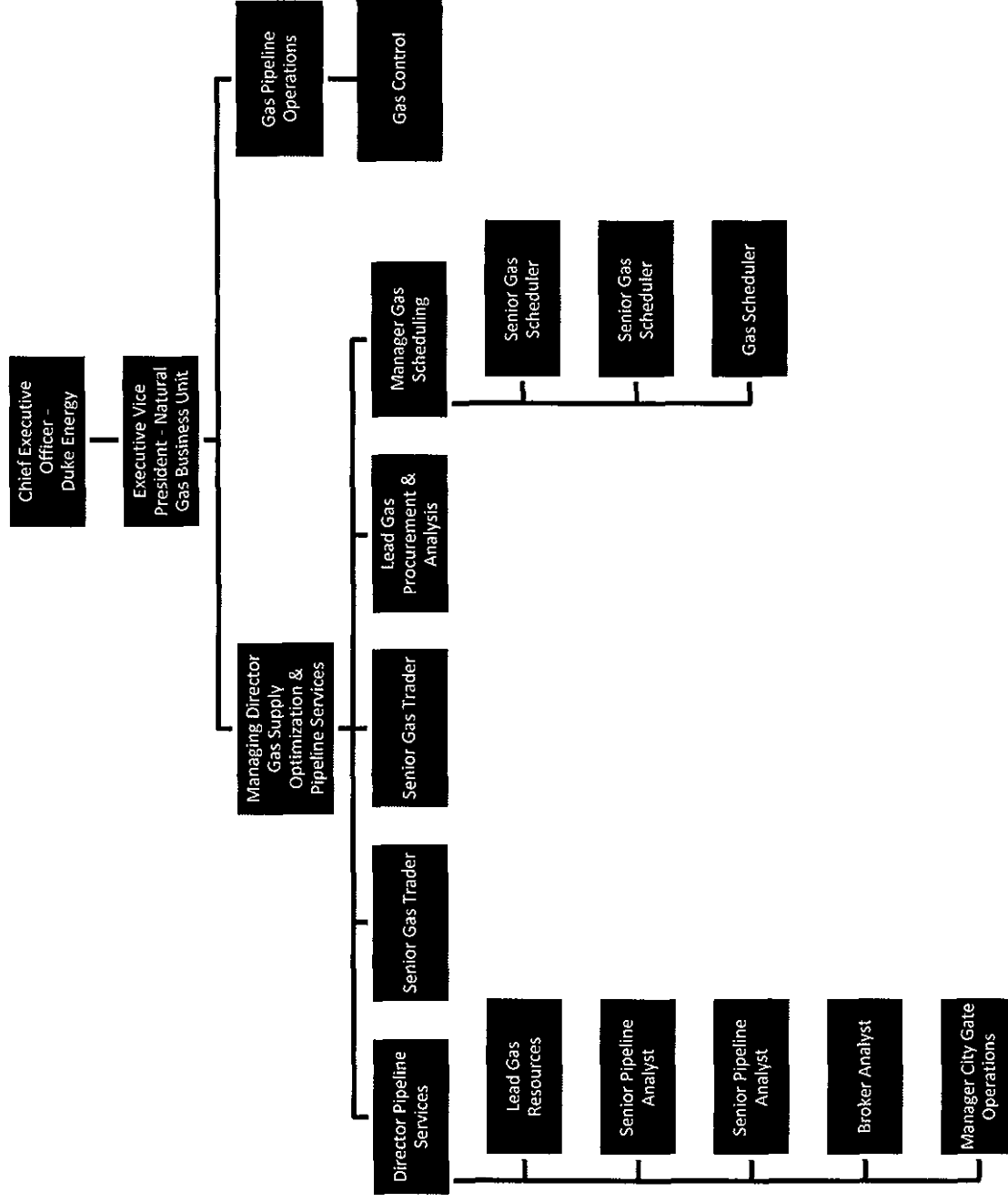


Figure 3. Organizational Structure of Duke Energy Natural Gas Business Unit

Pipeline Services is responsible for selecting and negotiating DE-Ohio's gas supply and interstate pipeline transportation and storage portfolios, preparing the Company's design day and seasonal load forecasts, and preparing daily GCR sales and Choice load forecasts and supply plans. Pipeline Services also leads the NGBU's FERC monitoring and intervention activities. Gas Trading is responsible for the daily procurement and sales of gas supplies and the Company's hedging activities. Gas Scheduling is responsible for the daily scheduling of gas supply purchases and sales. Citygate Operations is responsible for the management of the Company's transportation programs. As subsequently discussed in greater detail in Section 3.4.1 of the audit report, responsibility for the management of KO Transmission was transferred from Gas Resources to another area of Duke Energy and is no longer managed by groups performing the gas procurement and supply management functions at DE-Ohio. The same departments and/or groups that assisted Gas Resources with the gas procurement and planning function prior to the integration of that function with Piedmont (i.e., Load Forecasting, Global Risk Management, Rates and Regulatory Strategy, Legal, and Information Technology) also assist GSOP with the gas procurement and planning function.

3.2 Gas Supply Planning Committees and Groups

Personnel involved in the gas procurement and supply management functions at DE-Ohio met during the audit period on a regular basis. Semi-annual meetings were held to discuss seasonal and long-term interstate pipeline capacity and firm supply planning. Monthly meetings were held to discuss supply requirements for the subsequent month. Those attending these monthly meetings also meet every business day from October 1 through April 30 at 7:30 a.m. to discuss gas supply requirements for the following day. During the summer, daily meetings were held as necessary to address any changes to daily gas supply purchases that may be required. The Hedging Committee met at least quarterly to discuss current market conditions in conjunction with the execution of the Company's natural gas hedging plan. The specific personnel attending the various meetings both prior to and after the integration of the gas procurement and supply management functions of DE-Ohio and Piedmont are identified in Table 5.

Table 5. Personnel Participating in Gas Procurement & Planning Meetings

SEMI-ANNUAL MEETING	
Pre-Integration	Post-Integration
<ul style="list-style-type: none"> • Senior Vice President of Midwest Gas Operations • Manager of Gas Resources • Lead of Gas Procurement & Analysis^[1] 	<ul style="list-style-type: none"> • Managing Director of Gas Supply Optimization and Pipeline Services • Director of Pipeline Services • Lead of Gas Resources^[1] • Lead of Gas Procurement & Analysis^[2]
MONTHLY/DAILY MEETING	
Pre-Integration	Post-Integration
<ul style="list-style-type: none"> • Senior Vice President of Midwest Gas Operations • Manager of Gas Resources • Manager of City Gate Operations • Manager of Gas Customer Accounts & Projects • Lead of Gas Procurement & Analysis^[1] • Specialists of Gas System Supply^[1] • Coordinator of Gas Control • Manager of Gas Control • Specialists of Gas Customer Accounts & Projects • Specialist of Gas Transportation Programs^[2] 	<ul style="list-style-type: none"> • Managing Director of Gas Supply Optimization and Pipeline Services • Director of Pipeline Services • Lead of Gas Resources^[1] • Manager of City Gate Operations • Lead of Gas Procurement & Analysis^[2] • Manager of Gas Control • Specialists of Gas Customer Accounts & Projects • Specialist of Gas Transportation Programs^[3]
HEDGING COMMITTEE MEETING	
Pre-Integration	Post-Integration
<ul style="list-style-type: none"> • Senior Vice President of Midwest Gas Operations • Manager of Gas Resources • Lead of Gas Procurement & Analysis • Manager of City Gate Operations • Manager of Gas Customer Accounts & Projects • Specialists of Gas Customer Accounts & Projects 	<ul style="list-style-type: none"> • Executive Vice President Natural Gas Business Unit • Managing Director of Gas Supply Optimization and Pipeline Services • Director of Pipeline Services • Lead of Gas Procurement & Analysis^[2] • Gas Traders • Director of Gas Risk Management • Director of Gas Accounting & Financial Systems • Director of Gas Credit Management
Organizational structure location: ^[1] Gas Resources ^[2] City Gate Operations	Organizational structure location: ^[1] Pipeline Services ^[2] Gas Trading ^[3] Citygate Operations

3.3 Affiliates Engaged in the Sale of Gas in Ohio

Prior to October 2012, Duke Energy Retail Sales (DE-Retail), an unregulated entity within DE-Ohio, was a supplier to a small number of customers participating in DE-Ohio's firm transportation program and also served several interruptible transportation customers. In October

2012, DE-Retail was awarded the governmental aggregation contract to be the supplier for the City of Cincinnati. DE-Retail was sold to Dynegy, Inc. in April 2015. Dynegy ceased being an active supplier to DE-Ohio's transportation customers in October 2015. Therefore, there were no DE-Ohio affiliates engaged in the sale of natural gas in Ohio during the audit period.

3.4 FERC Participation

To protect its interests and the interests of its customers, it may be necessary for DE-Ohio to intervene and participate in proceedings before the FERC. The Company utilizes the services of an outside legal firm, McGuireWoods, LLP, to monitor the FERC filings made by certain interstate pipelines. Several times per week, McGuireWoods provides the Company a summary of the FERC filings made by the pipelines that are of interest. Pipelines of interest include those on which DE-Ohio is currently a shipper, those with which DE-Ohio is interconnected, and those in close proximity to DE-Ohio. DE-Ohio currently monitors the FERC filings of the following pipelines:

- ANR Pipeline
- Columbia Gulf Transmission Company
- Columbia Gas Transmission
- Texas Gas Transmission
- Tennessee Gas Pipeline
- Rockies Express Pipeline
- Texas Eastern Transmission
- Panhandle Eastern Pipeline
- KO Transmission

Each of the summaries provided by McGuireWoods includes a recommendation as to whether the Company should intervene in a proceeding, and whether comments or a protest are warranted. The Lead of Gas Resources, in consultation with in-house attorneys and the Director of Pipeline Services, currently determines whether to intervene in a particular proceeding, and if any additional action is warranted. Factors considered by DE-Ohio in making the determination to intervene in a proceeding include:

- Impact on the rates paid by DE-Ohio to interstate pipelines;
- Potential precedent that could affect future proceedings;
- Changes to reporting requirements for DE-Ohio; and
- Changes to the calculation or application of pipeline fuel charges.

DE-Ohio typically filed a “Plain Vanilla Intervention” in those proceedings in which it chose to intervene during the audit period. DE-Ohio monitored and filed interventions in approximately 75 FERC proceedings, filed comments in five proceedings, and filed a protest in the subsequently discussed FERC base rate proceeding of KO Transmission. No other pipelines serving DE-Ohio filed FERC base rate proceedings during the audit period.

In addition to monitoring pipeline-specific FERC proceedings, the Company also monitors proceedings that have industry-wide implications such as a Notice of Inquiry (NOI), Notice of Proposed Rulemaking (NOPR), and Policy Statements (PL). However, the Company did not participate in any NOI, NOPR, or PL proceedings during the audit period.

3.4.1 KO Transmission FERC Base Rate Case

The prior management performance audit of DE-Ohio indicated that it was anticipated that KO Transmission would file a FERC base rate case application in 2016 to recover its share of the costs associated with certain pipeline improvements being made by Columbia Gas to the jointly-owned portions of the E-Line, which extends from Means to the Foster Station. The prior management audit noted that since the Gas Resources personnel at DE-Ohio were the same personnel responsible for KO Transmission’s FERC activities, this would create a conflict of interest. The prior management performance audit recommended that DE-Ohio file a report with PUCO Staff identifying the increase in KO Transmission charges that may result for the Company, and explain how the Company intended to address the conflict of interest. The Scope of Work for the current audit required an evaluation of DE-Ohio’s participation in KO Transmission’s FERC base rate case and the Company’s efforts to minimize costs for its customers.

In preparation for the filing of the KO Transmission base rate case, roles were assigned to avoid potential conflict of interest issues. KO Transmission was to be represented by the Senior Vice President of Midwest Gas Operations, Manager of Gas Resources,⁶ Director of Integrity Management, Director of Rates and Regulatory Strategies, Director of Rates and Regulatory Planning, Director of Operations and Major Projects, and Associate General Counsel for FERC Legal. Moore & Van Allen was hired as outside legal counsel and Concentric Energy Advisors was hired as a consultant.

DE-Ohio was to be represented by the Senior Vice President – Chief Accounting Office, Vice President of Government & Community Affairs, Director of Natural Gas Oil and Emissions, and Associate General Counsels for Ohio and Kentucky Regulated. Morgan, Lewis & Bockius was hired as outside legal counsel and Cass Palazzari was hired as a consultant.

⁶ KO Transmission’s FERC base rate proceeding was filed prior to the integration of DE-Ohio’s and Piedmont’s gas procurement and supply management functions and concluded after integration was completed. After integration, the title of the position of Manager of Gas Resources was changed to Lead of Gas Resources.

On March 16, 2016, Duke Energy internal legal counsel sent an internal memo detailing the responsibilities of employees during the KO Transmission rate case and laying out the rules for communications. This included instructions to restrict communication to only that which was shared simultaneously with all parties to the case and marking documents as “confidential.”

KO Transmission filed its base rate case application and proposed tariffs with the FERC on July 14, 2016 for an increase in rates to be effective February 1, 2017 (Docket No. RP16-1097). On July 27, 2016, KO Transmission submitted a correction to its initial filing, restating the effective date as September 1, 2017.⁷

On July 26, 2016, DE-Ohio and DE-Kentucky submitted a joint petition to intervene and protest KO Transmission’s application (Joint Protest). The Joint Protest noted that despite being KO Transmission’s largest customer, neither DE-Ohio nor DE-Kentucky was served a copy of the rate case application and only became aware of the application after the issuance of FERC’s notice of the proceeding. The Joint Protest noted that KO Transmission was seeking a seven-fold increase in rates and that KO Transmission had not demonstrated that the significant rate increase was just and reasonable, and that the proposed increase may be unjust and unduly discriminatory. The Joint Protest claimed that the 13 percent return on equity requested in KO Transmission’s filing was excessive. The Joint Protest further claimed that the proposed depreciation and negative salvage rates reflected in KO Transmission’s application had not been shown to be just and reasonable. The Joint Protest recommended that the FERC suspend KO Transmission’s proposed revised tariffs for the maximum allowable five-month suspension period subject to refund, and set all aspects of KO Transmission’s filing for hearing.

On August 10, 2016, KO Transmission filed a response to the protests filed in the proceeding. On August 31, 2016, the FERC suspended KO Transmission’s proposed rate increase for the maximum allowable five-month period to February 1, 2017, subject to refund, and set the case for hearing.

A prehearing conference was held at FERC’s offices on October 25, 2016 to set a procedural schedule, and a hearing date of June 13, 2017 was established. DE-Ohio submitted data requests to KO Transmission on November 8 and 29, 2016. The first settlement conference was held December 13, 2016, followed by a second settlement conference on February 9, 2017. The second conference resulted in a settlement in principle, and rates based on the settlement in principle went into effect April 1, 2017, subject to refund. On April 28, 2017, DE-Ohio and DE-Kentucky filed joint comments in support of the settlement. On July 19, 2017, FERC approved the settlement.

⁷ The FERC typically suspends the effectiveness of an increase in rates for five months after the requested effective date proposed by the applicant, which is the maximum suspension period allowed by law. The effective date initially requested by KO Transmission inadvertently included the five-month suspension period.

In addition to the significant increase in rates reflected in KO Transmission's application, the application included new incremental rates (reservation and variable charges) for the transportation of gas from the Foster Station to DE-Ohio's citygate, in addition to rates for the transportation of gas from Means to Foster. KO Transmission's existing rate structure provided for one set of rates for the transportation of gas from Means to DE-Ohio's citygate. The settlement agreed to by the parties and approved by FERC eliminated the incremental rates for service from Means to the Foster Station. The rate increase approved under the settlement was reduced from that originally requested by KO Transmission and was to be phased-in over a three-year period. A comparison of DE-Ohio's estimated KO Transmission charges prior to the filing of the initial base rate application, charges based on the rates reflected in the initial application, and the charges under the settlement are reflected in Table 6. Also shown is the estimated KO Transmission cost component of DE-Ohio's GCR rate based on the various cost estimates.

Table 6. KO Transmission Charges and GCR Rate Impact		
TIME PERIOD	COSTS	GCR COMPONENT (\$/Mcf)
Pre-Application	\$654,605	\$0.034
Initial Application	5,104,515	0.269
February 2017 – January 2018	3,848,329	0.203
February 2018 – December 2019	4,067,492	0.214
January 2020	3,974,312	0.209

With the merger of DE-Ohio and Piedmont in October 2016, it was determined that potential KO Transmission conflict of interest concerns could be permanently addressed by functionally separating the administration of KO Transmission from the gas procurement and supply management functions of DE-Ohio. Prior to the merger, KO Transmission was administered by the Manager of Gas Resources and the Specialist of Gas System Supply within Gas Resources. These employees also had responsibility for capacity planning and gas supply for DE-Ohio. Post-merger, responsibility for the administration of KO Transmission was assigned to the Director of Gas Joint Ventures & Operations Management. The Specialist of Gas System Supply was reassigned to work exclusively for KO Transmission, reporting to the Director of Gas Joint Ventures & Operations Management. The Lead of Gas Resources, who filled the position of Manager of Gas Resources prior to the merger, was reassigned to work exclusively for DE-Ohio and DE-Kentucky reporting to the Director of Pipeline Services.

The incremental costs sought for recovery by KO Transmission in FERC Docket No. RP16-1097 primarily represented KO Transmission's share of the costs associated with pipeline improvements made by Columbia Gas to the jointly-owned portion of the E-Line, which extends from Means to the

Foster Station. Since the proceeding was settled through privileged and confidential negotiations to which Exeter was not a party, and did not reach the hearing stage, it is difficult to assess whether DE-Ohio adequately represented its ratepayers' interests to minimize costs. Exeter finds that DE-Ohio adequately addressed conflict of interest concerns by assigning roles to avoid these concerns prior to KO Transmission filing its base rate application. The Joint Protest filed by DE-Ohio and DE-Kentucky was consistent with what would be expected by a party without a conflict of interest. Exeter also notes that the settlement agreed to in the proceeding was uncontested by the parties, which also included FERC Staff, a number of KO Transmission shippers other than DE-Ohio and DE-Kentucky, and the Ohio Consumers' Counsel. Finally, the settlement eliminated the incremental rates for the transportation of gas from Means to the Foster Station, which would have adversely impacted DE-Ohio. Therefore, Exeter finds no evidence that DE-Ohio's efforts in Docket No. RP16-1097 did not reasonably minimize the costs to its ratepayers. The assignment of the administration of KO Transmission to the Director of Gas Joint Ventures & Operations Management should reduce conflict of interest concerns in the future.

3.5 Conclusions and Recommendations

3.5.1 *Organizational Structure*

Exeter's audit revealed no concerns with respect to the organizational structure of DE-Ohio or Duke Energy either prior to or after the integration of the gas procurement and supply management functions of DE-Ohio and Piedmont that would interfere with the purchase of reliable supplies of gas at minimum prices.

3.5.2 *FERC Participation*

DE-Ohio's FERC intervention policy is consistent with a reasonable level of participation at a reasonable resource effort. Audit period participation in FERC proceedings was appropriately based on DE-Ohio's intervention policy.

3.5.3 *KO Transmission FERC Base Rate Case*

The Scope of Work for the current audit required an evaluation of DE-Ohio's participation in KO Transmission's FERC base rate case in Docket No. RP16-1097 and the Company's efforts to minimize costs for its customers. Since the proceeding was settled through privileged and confidential negotiations to which Exeter was not a party, and did not reach the hearing stage, it is difficult to assess whether DE-Ohio adequately represented its ratepayers' interests to minimize costs. Exeter finds that DE-Ohio adequately addressed conflict of interest concerns by assigning roles to avoid these concerns prior to KO Transmission filing its base rate application. The Joint Protest filed by DE-Ohio and DE-Kentucky was consistent with what would be expected by a party without a conflict of interest. Exeter also notes that the settlement agreed to in the proceeding was

uncontested by the parties, which also included FERC Staff, a number of KO Transmission shippers other than DE-Ohio and DE-Kentucky, and the Ohio Consumers' Counsel. Finally, the settlement eliminated the incremental rates for the transportation of gas from Means to the Foster Station, which would have adversely impacted DE-Ohio. Therefore, Exeter finds no evidence that DE-Ohio's efforts in Docket No. RP16-1097 did not reasonably minimize the costs for its ratepayers. The assignment of the administration of KO Transmission to the Director of Joint Ventures & Operations Management should reduce conflict of interest concerns in the future.

4. GAS SUPPLY PLANNING

The basic objective of gas supply planning is to develop and secure portfolios of capacity resources and gas supplies to effectuate the delivery of gas to the local gas distribution company's system to serve the projected sales service requirements of a company's customers as economically as possible, consistent with the provision of reliable service to all customers. Selection of the capacity resources and gas supply portfolios involves an evaluation of feasible options available to meet a company's design day, winter season, and annual requirements. During the audit period, DE-Ohio's options included no-notice service, firm and interruptible transportation services, storage and peaking service (collectively, capacity resources);⁸ and base load and daily swing gas supplies (collectively, gas supply resources). The factors upon which the assessment of these options is based—option prioritization and retention or exclusion, the impact of uncertainty, and the ultimate selection of options—are all important aspects of the gas supply planning process.

An overview of the capacity and gas supply resources available to DE-Ohio and a summary of the Company's audit period contract entitlements are presented in Section 4.1. These resources are discussed in greater detail in Section 4.2. Changes to the Company's capacity and gas supply arrangements that occurred during the audit period are also discussed in Section 4.2. Section 4.3 discusses the audit period gas supply arrangements of Percentage of Income Payment Plan (PIPP) customers. Section 4.4 analyzes the balance between DE-Ohio's capacity and gas supply resources and its firm customers' requirements. The diversification of the Company's capacity and gas supply resources is addressed in Section 4.5. Discussed in Section 4.6 are DE-Ohio's plans with respect to the continued provision of the merchant function. Finally, Section 4.7 contains Exeter's conclusions and recommendations concerning the Company's gas supply planning procedures.

4.1 Overview and Summary of Audit Period Capacity and Gas Supply Resources

The primary capacity and gas supply resources available to DE-Ohio to meet the natural gas requirements of its customers and to provide reliable service during the audit period are discussed below.

Transportation Service. Transportation service provides pipeline capacity to move gas supplies on behalf of a customer, or shipper, such as DE-Ohio, from a point of receipt to a point of delivery. A receipt point is the location at which gas enters the pipeline's transmission facilities, typically in a production region, but can also include an interconnection with another interstate pipeline or a pipeline storage facility. Delivery points would include a gas utility's citygate or a pipeline storage facility. Takes, or

⁸ Although peaking service is a bundled capacity and gas supply resource, it is categorized as a capacity resource throughout the audit report.

consumption at a delivery point, must balance, within certain minimal tolerances, amounts nominated by a shipper. Failure to adhere to these balancing requirements may result in the assessment of penalty charges or the curtailment of deliveries by the interstate pipeline. Transportation service is available on either a firm or interruptible basis.

No-Notice Service. No-notice service is a firm delivery or transportation service that permits a shipper to take certain volumes that differ from nominated quantities without penalty. No-notice service is required by most gas distribution companies to accommodate variability in daily demands.

No-notice service may be a stand-alone service permitting a gas distribution company to take delivery of an amount of gas that differs from nominated quantities, with the requirement that any differences (imbalances) between its nominations and actual consumption be corrected in subsequent periods. No-notice service may also be achieved by rebundling interstate pipeline firm transportation and storage service. Under the rebundled approach, imbalances between a gas distribution company's daily nominations and the actual quantities consumed are assumed to be accommodated by gas injected or withdrawn from interstate pipeline storage capacity reserved by the gas distribution company.

Storage Service. Storage service provides both a peak day and winter season gas supply resource, as well as seasonal and daily load management capabilities. Seasonal load management capabilities include the ability to store gas purchased during the summer season, when gas is typically less expensive, and to withdraw the stored gas during the winter season, when gas is traditionally more expensive. Storage enables a company to increase its purchased gas load factor. This is accomplished by increasing the ability to purchase gas during the off-peak summer months and by decreasing purchases during the peak winter months. Daily load management capabilities include the ability to accommodate unforeseen changes in gas supply requirements through storage withdrawals or injections.

Daily storage deliverability refers to the maximum daily quantity of gas that can be withdrawn from storage under a particular arrangement. Seasonal storage capacity refers to the quantity of storage space available to accommodate seasonal requirements, or the maximum seasonal quantity of gas that can be withdrawn from storage. Contract storage service available from interstate pipelines is generally provided on an unbundled basis. Thus, a separate transportation arrangement is required to deliver gas to storage for injection, and to deliver gas withdrawn from storage to the citygate. On-system storage

refers to storage directly connected to a gas utility's distribution system, which does not require transportation by an interstate pipeline at the time of withdrawal.

Gas Supply Arrangements. Gas supply arrangements typically provide for a supply of gas at a specific receipt point into an interstate pipeline. Transportation service is required to effectuate delivery of the gas. Gas supplies may also be purchased on a delivered-to-citygate basis.

Peaking Service. Peaking service is a gas supply arrangement that typically provides for the delivery of gas supplies directly to a gas utility's citygate during periods of extreme demands. The number of days for which service is available under a peaking arrangement is typically limited. A gas utility can also rely on on-system propane or liquefied natural gas facilities for peaking service.

The natural gas supplies acquired by DE-Ohio to meet its customers' requirements are procured from unregulated, non-pipeline merchant suppliers. Gas supplies were delivered to DE-Ohio during the audit period under firm transportation arrangements with Columbia Gas, Columbia Gulf, KO Transmission, Tennessee Gas, and Texas Gas. DE-Ohio's firm transportation arrangements with Columbia Gas, KO Transmission, and Texas Gas provided for the delivery of gas directly to DE-Ohio. The Company's firm transportation arrangements with Columbia Gulf and Tennessee Gas provided for the upstream delivery of gas to KO Transmission.

DE-Ohio's transportation arrangements with Columbia Gulf, Tennessee Gas, and Texas Gas provide firm access to gas supplies produced in the Gulf Coast region (primarily southern Louisiana). Columbia Gas provides access to gas produced in the Appalachian Region. KO Transmission does not directly access any major production areas. Approximately 90 percent of the gas purchased by DE-Ohio during the audit period were Gulf Coast supplies. However, a significant portion of the gas supplies physically delivered to DE-Ohio was Marcellus Shale supplies, with the delivery of Gulf Coast purchased supplies to DE-Ohio accomplished by backhaul, or displacement.⁹ The delivery of Gulf Coast supplies by Columbia Gulf, Tennessee Gas, and Texas Gas by backhaul is necessary because each pipeline is now bi-directional, with Marcellus Shale supplies flowing north to south and Gulf Coast supplies flowing south to north. These southward-flowing Marcellus Shale supplies and northward-flowing Gulf Coast supplies meet at null points. The Columbia Gulf, Tennessee Gas, and Texas Gas null points are currently well south of DE-Ohio's system.

⁹ To accomplish the delivery of Gulf Coast purchased supplies by backhaul, a third party located south of DE-Ohio would purchase Marcellus Shale supplies. The Gulf Coast supplies purchased by DE-Ohio would then be delivered to the third party, and the Marcellus Shale supplies purchased by the third party would be delivered to DE-Ohio.

A portion of the gas purchased by DE-Ohio is utilized to satisfy current customer requirements at the time the gas is purchased. These are typically referred to as “flowing gas supplies.” DE-Ohio also arranges for a portion of the gas supplies it purchases to be injected into storage during the off-peak summer months and withdrawn from storage to meet elevated winter demands and unanticipated swings in demand. DE-Ohio purchased contract storage services from Columbia Gas and Texas Gas during the audit period. The Company does not own or operate on-system gas supply storage facilities other than its propane facilities.

DE-Ohio operated under Portfolio Management Agreements, or Asset Management Agreements (AMAs), during the entire audit period. The AMA service providers, or Asset Managers, under these arrangements were BP Energy Company (BP Energy) and United Energy Trading, LLC (United Energy). The AMAs generally provided for the assignment of DE-Ohio’s interstate pipeline transportation and storage capacity and gas supply contracts to the Asset Manager and for the Asset Manager to administer the Company’s capacity and gas supply contracts. Under the terms of the AMAs, DE-Ohio determined the daily quantity of gas that it would purchase from each supplier, the delivering interstate pipeline transportation path, and the Company’s storage injection and withdrawal activity as if it continued to manage the assigned capacity and gas supply contracts. This determination is referred to as “virtual dispatch.” DE-Ohio’s gas costs under the AMAs were based on virtual dispatch. The Asset Manager was entitled to utilize DE-Ohio’s capacity and gas supply contracts to meet DE-Ohio’s daily gas supply requirements or use other capacity and gas supply resources it had available. When the capacity and gas supply contracts assigned to the Asset Manager were not required to meet DE-Ohio’s gas supply requirements, the Asset Manager was entitled to use those contracts to further its own business interests provided that the Asset Manager met the Company’s gas supply requirements. The Asset Manager’s actual use of capacity and gas supply contracts to meet DE-Ohio’s requirements is referred to as “physical dispatch.” DE-Ohio was paid a monthly management fee under each AMA. The management fee and other aspects of each AMA are confidential. Additional details concerning DE-Ohio’s AMAs are discussed in Section 4.2.5 of the audit report.

DE-Ohio’s firm capacity resources for the winter of 2017-2018 are summarized in Table 7. Table 7 identifies each capacity resource and the maximum entitlements available under each capacity resource on a daily, seasonal, and annual basis, along with the contract expiration date. Changes to the Company’s capacity resources and entitlements that occurred during the audit period are summarized in Table 8. The capacity resource descriptions provided in the following sections and in the remainder of the audit report are based on DE-Ohio’s virtual dispatch instructions and may not be consistent with the actual use of DE-Ohio’s capacity resources by the Asset Manager.

Table 7. Summary of Firm Capacity Resource Contracts (2017-2018 Winter Season)

PIPELINE – SERVICE	CONTRACT NUMBER	MDQ (Dth)		QUANTITY (Dth)		CONTRACT EXPIRATION
		Winter	Summer	Winter	Annual	
<u>Columbia Gas Transmission</u>						
Storage Service (FSS)	79969	216,514	0	9,244,079	9,244,079	3/31/2020
Storage Transportation (SST)	79971	216,514	108,257	9,244,079	9,244,079	3/31/2020
<u>Columbia Gulf Transmission</u>						
Transportation (FTS-1)	34688	49,000	31,500	7,399,000	14,140,000	10/31/2019
Transportation Backhaul (FTS-1 BH)	154403	21,000	21,000	3,171,000	7,665,000	10/31/2019
<u>KO Transmission</u>						
Transportation (FT)	001	184,000	184,000	27,784,000	67,160,000	10/31/2019
<u>Tennessee Gas Pipeline</u>						
Transportation (FT-A)	321248	24,000	24,000	3,624,000	8,760,000	3/31/2019
<u>Texas Gas Transmission</u>						
No-Notice Nominated (NNS)	N29907	6,250	10,982	943,750	3,293,898	10/31/2023
No-Notice Unnominated (NNS)	N29907	25,000	0	2,350,000	2,350,000	10/31/2023
Transportation (STF)	36389	65,000	17,000	9,815,000	13,453,000	10/31/2018
<u>Citygate</u>						
[REDACTED]	--	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	--	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	--	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Propane	--	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	--
TOTAL:^[1]	--	[REDACTED]	[REDACTED]	[REDACTED]	64,849,048	--

MDQ = maximum daily quantity.

^[1] Excludes KO Transmission FT service; Columbia Gas FSS service, which is delivered under Rate Schedule SST; and Columbia Gas summer SST service, which is used to deliver gas to Columbia Gas FSS storage. Totals reflect adjustments to Columbia Gulf and Tennessee Gas contract quantities to reflect KO Transmission fuel retention for deliveries by Columbia Gas, Columbia Gulf, and Tennessee Gas as applicable.

Table 8. Summary of Firm Maximum Daily Quantity Contract Changes

PIPELINE – SERVICE	WINTER SEASON (Dth)			
	2015-2016	2016-2017	2017-2018	2018-2019
<u>Columbia Gas Transmission</u>				
Storage Service (FSS)	216,514	216,514	216,514	216,514
Storage Transportation (SST)	216,514	216,514	216,514	216,514
<u>Columbia Gulf Transmission</u>				
Transportation (FTS-1)	79,000	49,000	49,000	49,000
Transportation Backhaul (FTS-1 BH)	21,000	21,000	21,000	21,000
<u>KO Transmission</u>				
Transportation (FT)	184,000	184,000	184,000	184,000
<u>Tennessee Gas Pipeline</u>				
Transportation (FT-A)	0	24,000	24,000	24,000
<u>Texas Gas Transmission</u>				
No-Notice Nominated (NNS)	6,250	6,250	6,250	6,250
No-Notice Unnominated (NNS)	25,000	25,000	25,000	25,000
Transportation (STF)	42,000	42,000	65,000	92,000
<u>Citygate & Peaking</u>				
Citygate Peaking Service				
Citygate Base Load Service				
Upstream Peaking Service				
Propane				

4.2 Detail of Audit Period Capacity and Gas Supply Arrangements

4.2.1 *Firm Transportation Service*

DE-Ohio reserved KO Transmission and Texas Gas firm transportation capacity during the audit period, which provided for delivery of gas supplies directly to DE-Ohio's citygates. The Company reserved firm transportation capacity on Columbia Gulf and Tennessee Gas, which provided for the upstream delivery of gas supplies to KO Transmission. Columbia Gas firm transportation capacity provided for the delivery of gas directly to DE-Ohio's citygate and to KO Transmission. DE-Ohio also utilized KO Transmission interruptible transportation service to meet a portion of its gas supply requirements during the audit period. Rates applicable under the Company's firm interstate pipeline transportation arrangements include a monthly reservation charge applicable to the maximum daily quantity (MDQ), a variable charge applicable to volumes delivered, and a fuel retention charge. In addition to its transportation arrangements with interstate pipelines, DE-Ohio also utilized firm transportation service provided by DE-Kentucky. The Company's audit period firm transportation arrangements are discussed in greater detail below.

A. Columbia Gas Transmission

Storage Service Transportation (SST). DE-Ohio purchased storage transportation service from Columbia Gas during the audit period under Rate Schedule SST. DE-Ohio purchased storage service from Columbia Gas under Rate Schedule FSS. Storage transportation service under Rate Schedule SST is primarily utilized to transport gas to and from the storage facilities of Columbia Gas. Gulf Coast gas supplies delivered to Columbia Gas by Columbia Gulf were generally purchased for injection into storage during the audit period. Under the Company's SST arrangement, the primary receipt point is Columbia Gas storage, and the primary delivery points are DE-Ohio's citygate and KO Transmission. Secondary SST receipt and delivery points may be selected anywhere on the Columbia Gas system.¹⁰ SST transportation service and FSS storage service provide DE-Ohio with no-notice balancing service under which daily differences between actual takes at DE-Ohio's citygate and quantities scheduled to DE-Ohio's citygate by the Company and on behalf of the Company's transportation customers are treated as injections or withdrawals under Rate Schedules FSS and SST.

DE-Ohio purchased SST service from Columbia Gas under Contract No. 79971 during the audit period. The MDQ under Contract No. 79971 during the months of October through March is 216,514 Dth, and 108,257 Dth during the months of April through September. SST Contract No. 79971 was initially scheduled to expire on March 31, 2015. However, DE-Ohio renegotiated its SST contract effective July 1, 2013, and extended the term of the contract through March 31, 2020. The term was extended a second time effective September 1, 2016 through March 31, 2022. Contract No. 79971 provides DE-Ohio with the ability to transport nearly 60,000,000 Dth annually. However, because this capacity is primarily utilized to deliver gas to and from storage, actual annual utilization of SST capacity was significantly less during the audit period. DE-Ohio's seasonal storage capacity quantity under companion FSS Contract No. 79969 is 9,244,079 Dth. The Company received SST service at a fixed discounted rate from Columbia Gas' maximum FERC-approved rates through the initial March 31, 2015 term of Contract No. 79971. For the original contract extension period, DE-Ohio negotiated a rate for SST service that consists of two components: a fixed-rate component that reflects a discount to Columbia Gas' maximum FERC-approved base rate, and the capital cost recovery mechanism (CCRM) surcharge that will vary throughout the term of the contract.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]. Columbia Gas' CCRM provides for

¹⁰ A shipper such as DE-Ohio has a firm entitlement to capacity at primary receipt and delivery points. Capacity at secondary receipt and delivery points is available on an interruptible basis.

the recovery of the costs associated with a number of specific facility rehabilitation and modernization projects. The CCRM was included in a settlement agreement that was approved by the FERC in Columbia Gas Docket No. RP12-1021.

B. Columbia Gulf Transmission

Firm Transportation Service (FTS-1). DE-Ohio maintained two firm transportation service arrangements with Columbia Gulf under Rate Schedule FTS-1 during the audit period that provided capacity for the firm delivery of gas supplies from the Gulf Coast production region to Columbia Gulf's interconnect with KO Transmission and Columbia Gas at Means, Kentucky (Contract Nos. 34688 and 165949). Gas delivered to KO Transmission is subsequently redelivered to DE-Ohio's citygate. Deliveries that exceed DE-Ohio's immediate requirements are subsequently accounted for as deliveries to storage under the Company's SST arrangement with Columbia Gas.

The MDQ under Contract No. 34688 was 49,000 Dth during the winter period (November through March) and 31,500 Dth during the summer period (April through October). Contract No. 34688 currently expires on October 31, 2019 and provides the Company with the ability to transport 14,140,000 Dth annually. Contract No. 165949 was a winter-only firm transportation arrangement with an MDQ of 30,000 Dth. This contract was in place for the winter of 2015-2016.

In addition to purchasing FTS-1 services from Columbia Gulf that provided for the delivery of gas from the Gulf Coast production region to KO Transmission at Means, Kentucky, DE-Ohio purchased FTS-1 backhaul (BH) service that provided for the delivery of gas supplies on a primary basis from the interconnect of Columbia Gas and Columbia Gulf at Leach, Kentucky to KO Transmission at Means, Kentucky. DE-Ohio purchased FTS-1 BH service from Columbia Gulf under Contract No. 154403 during the audit period. This contract has an MDQ of 21,000 Dth throughout the year and currently expires on October 31, 2019. DE-Ohio's FTS-1 BH service can also be used on a secondary basis to deliver gas from the Gulf Coast production region to Columbia Gas or KO Transmission. When all applicable delivery costs were considered, Columbia Gas-sourced supplies were generally more expensive than Gulf Coast-sourced supplies during the audit period. Therefore, DE-Ohio did not generally use Contract No. 154403 to deliver Columbia Gas-sourced supplies during the audit period, and DE-Ohio used its FTS-1 BH arrangement to deliver Gulf Coast-sourced supplies. DE-Ohio paid negotiated discounted rates under each Columbia Gulf firm transportation arrangement maintained during the audit period.

C. KO Transmission

Firm Transportation Service (FT). DE-Ohio purchased firm transportation service from KO Transmission under Rate Schedule FT during the audit period (Contract No. 001). KO Transmission transportation capacity is utilized to deliver upstream gas supplies flowing on Columbia Gulf and

Tennessee Gas to the citygates located on the southern portion of DE-Ohio's system. A significant percentage of the gas withdrawn from Columbia Gas FSS storage is also delivered to DE-Ohio by KO Transmission. Gas supplies are delivered by KO Transmission directly to the Company's system at the California and Bracken County Stations, and indirectly through DE-Kentucky. The MDQ under Contract No. 001 is 184,000 Dth. This provides DE-Ohio with the ability to transport 67,160,000 Dth annually.

The prior management performance audit noted that the rates of KO Transmission would increase significantly as a result of an anticipated filing of a base rate case at the FERC. The prior management performance audit recommended that in light of this increase in rates, DE-Ohio should reevaluate whether its current KO Transmission capacity entitlements are reasonable, and adjust those entitlements as appropriate. The PUCO's Order in the prior management performance audit required DE-Ohio to complete this evaluation, and the Company complied with this requirement. The Scope of Work in this proceeding directed the auditor to review DE-Ohio's evaluation of its KO Transmission capacity entitlements.

The Company's evaluation noted that approximately 55 percent of its gas supplies were required to be delivered into the southern portion of its system and that the only current delivery option into DE-Ohio's system from the south was KO Transmission. The evaluation further noted that since KO Transmission did not directly access gas production regions, transportation by upstream interstate pipelines was necessary to deliver gas to KO Transmission. The upstream pipelines that can deliver gas to KO Transmission are Columbia Gulf and Tennessee Gas. Since the winter of 2014-2015, DE-Ohio has maintained approximately 100,000 Dth per day of upstream capacity on Columbia Gulf and Tennessee Gas to deliver gas to KO Transmission. Thus, DE-Ohio's current KO Transmission capacity entitlements of 184,000 Dth/day have exceeded the capacity necessary to deliver upstream supplies. However, the evaluation also noted that a portion of DE-Ohio's Columbia Gas FSS withdrawals flow on the Company's KO Transmission capacity. The Company's analysis indicated that during the period November 2013 through December 2017, after accounting for the capacity released to Choice suppliers, there were ■ days when DE-Ohio's KO Transmission capacity was fully utilized and Columbia Gas FSS withdrawals were delivered under an interruptible transportation contract that the Company maintains with KO Transmission, and potentially subject to interruption.

With completion of the Central Corridor Project and the retirement of DE-Ohio's propane facilities, as much as ■ percent of DE-Ohio's gas supplies could come from the north, which might enable the Company to reduce its southern KO Transmission capacity entitlements. However, at currently available rates, capacity serving the northern portion of DE-Ohio's system is more expensive than the Columbia Gas/KO Transmission and Tennessee Gas/KO Transmission options available on the southern portion of the system. Commodity gas costs from the north and south

are currently comparable. Therefore, the Company found southern-sourced deliveries to be the more economical alternative.

DE-Ohio's evaluation concluded that, based on cost and reliability considerations, its current KO Transmission firm transportation capacity entitlements should not be reduced at this time. Exeter concurs with DE-Ohio's evaluation of its KO Transmission capacity entitlements and agrees that they should not be reduced at this time. Exeter recommends that if the Central Corridor Project is completed and the propane facilities are retired, the Company should again evaluate its KO Transmission capacity entitlements.

D. Tennessee Gas Pipeline

Firm Transportation Service (FT-A).

[REDACTED]

E. Texas Gas Transmission

Short-Term Firm Transportation Service (STF). DE-Ohio initially purchased short-term firm transportation service from Texas Gas under Rate Schedule STF during the audit period under Contract No. 33501. Under Rate Schedule STF, shippers like DE-Ohio are able to purchase firm transportation service for periods of less than one year, or the MDQ may vary by month or season over the term of an agreement one year or longer in length. STF Contract No. 33501 was an annual arrangement with an MDQ of 42,000 Dth during the winter period and 14,000 Dth during the summer period. Contract No. 33501 provided the Company with the ability to transport 9,338,000 Dth annually. [REDACTED]

[REDACTED]. Contract No. 35501 expired on October 31, 2017.

[REDACTED]

No-Notice Transportation Service (NNS). DE-Ohio purchases no-notice transportation service from Texas Gas under Rate Schedule NNS (Contract No. N29907). No-notice service provides the Company with the flexibility to take delivery of quantities not nominated for delivery. The MDQ under Contract No. N29907 is comprised of unnominated and nominated components.

The unnominated component of NNS is a bundled firm transportation and storage arrangement. During the winter period, daily actual takes at DE-Ohio's citygate in excess of the nominated quantities scheduled to DE-Ohio's citygate by the Company and on behalf of the Company's transportation customers under any Texas Gas firm transportation rate schedule are considered no-notice volumes that are withdrawn from storage. Under NNS, Texas Gas advances gas to DE-Ohio during the winter period and the Company returns the advanced gas supplies the following summer period. The gas advanced to DE-Ohio is included in the GCR at the anticipated replacement cost. Differences between the actual and anticipated replacement cost are later reconciled. DE-Ohio typically hedges the cost of the replacement gas to minimize reconciliation adjustments. The unnominated component of no-notice service cannot be used to deliver nominated supplies.

The nominated component of NNS functions as a standard firm transportation arrangement that is generally used to fill no-notice storage in the summer period and provide citygate delivery service in the winter period. During the summer period, nominated deliveries to DE-Ohio's citygate in excess of actual takes are considered storage injections.

During the audit period, the MDQ for the unnominated component of NNS was 25,000 Dth during the November through March winter period. The MDQ was reduced to 15,625 Dth and 20,268 Dth during April and October, respectively, and was zero for all other months. The maximum net seasonal withdrawal quantity under Contract No. N29907 is 2,350,000 Dth. The MDQ associated with the nominated component of NNS is 6,250 Dth during the winter period and 10,982 Dth during the summer period.

F. Duke Energy Kentucky

DE-Ohio maintained a firm transportation arrangement with DE-Kentucky during the audit period that provided for the delivery of gas supplies from KO Transmission at the Cold Spring Station to DE-Ohio's Front & Rose, Eastern Avenue, and Anderson Ferry Stations (Contract No. 001). The MDQ under Contract No. 001 is 180,000 Dth/day. Contract No. 001 is effective under evergreen provisions of the contract on a year-to-year basis, subject to termination with 30 days' notice. The transportation service provided by DE-Kentucky is FERC-jurisdictional. During the audit period, DE-Ohio paid a monthly demand charge of \$43,506 to DE-Kentucky through July 31, 2018 with the charge increasing to \$50,292 effective August 1, 2018. A portion of these demand charges

is assessed to firm transportation customers through the Company's Contract Commitment Cost Recovery Rider (Rider CCCR), which is discussed in greater detail in Section 6.1.3 of the audit report.

DE-Ohio provides a transportation service to DE-Kentucky. Under this arrangement, gas supplies delivered to the northern portion of the Company's system are delivered to DE-Kentucky by displacement. This service is also FERC-regulated. DE-Kentucky was assessed a charge of 5.78 cents per Mcf for this service through February 2018, and 4.58 cents per Mcf thereafter.

4.2.2 Citygate & Peaking Services

DE-Ohio purchased citygate peaking services from [REDACTED], [REDACTED], and [REDACTED] during the audit period. DE-Ohio purchased a [REDACTED] from [REDACTED] during the audit period. DE-Ohio also purchased [REDACTED] from [REDACTED] and [REDACTED], during the audit period. DE-Ohio requires its citygate and peaking services to be asset-backed. That is, the Company requires the service provider to demonstrate that the provider has secured pipeline capacity to provide the service. This requirement was adopted by DE-Ohio due to the failure of a peaking service provider to supply the agreed-upon quantity during the winter of 2013-2014. [REDACTED]
[REDACTED]. The Company's audit period peaking service arrangements are discussed in greater detail below.

A. [REDACTED]

DE-Ohio's [REDACTED] with [REDACTED] was effective for the period [REDACTED]. DE-Ohio was entitled to purchase up to [REDACTED] on up to [REDACTED] days during the contract period. Contract quantities were deliverable to the Company's [REDACTED] citygates.

B. [REDACTED]

DE-Ohio [REDACTED] from [REDACTED] under two separate agreements during the audit period. Under an agreement effective [REDACTED], the Company was entitled to purchase up to [REDACTED] on up to [REDACTED] days during the contract period. Under an agreement effective [REDACTED], the Company was entitled to purchase up to [REDACTED] on up to [REDACTED] days during the contract period. Each of the peaking service arrangements with [REDACTED] provided for the delivery of gas to DE-Ohio's [REDACTED] citygates.

C. [REDACTED]

DE-Ohio purchased [REDACTED] from [REDACTED] under two separate agreements during the audit period. Under an agreement effective [REDACTED], the Company was entitled to purchase up to [REDACTED] on up to [REDACTED] days during the contract period. Under an agreement effective [REDACTED], the Company was entitled to purchase up to [REDACTED] on up to [REDACTED] days. Contract quantities under both agreements were deliverable to DE-Ohio's [REDACTED] citygates.

D. [REDACTED]

DE-Ohio purchased a [REDACTED] from [REDACTED] during the period [REDACTED]. Under this arrangement, DE-Ohio was required to purchase [REDACTED] during the winter period and [REDACTED] during the summer period. Contract quantities were delivered to [REDACTED], which is interconnected to [REDACTED].

E. [REDACTED]

DE-Ohio's [REDACTED] arrangement with [REDACTED] was effective for the period [REDACTED]. DE-Ohio was entitled to purchase up to [REDACTED] on up to [REDACTED] days during the contract period. Contract quantities were deliverable to [REDACTED].

F. [REDACTED]

DE-Ohio's [REDACTED] arrangement with [REDACTED] was effective for the period [REDACTED]. DE-Ohio was entitled to purchase [REDACTED] on up to [REDACTED] days during the contract period. Contract quantities were deliverable to [REDACTED].

4.2.3 Propane-Air Facilities

Historically, DE-Ohio owned and operated two propane-air facilities for peak-shaving purposes as well as to maintain pressure in its distribution system on extremely cold days—the Dicks Creek Plant and the Eastern Avenue Plant. [REDACTED]

As previously explained in Section 2.1 of the audit report, in December 2013, a *force majeure* was declared at the Todhunter Propane Cavern, which supplied propane to the Dicks Creek Plant, and the Dicks Creek Plant is no longer operational. This reduced the MDQ from the Company's propane facilities to [REDACTED]. The current seasonal design capacity of the Company's propane facilities is approximately [REDACTED]. As discussed in greater detail in Section 6.1.3 of the audit report,

an allocated share of DE-Ohio's propane facilities is available to the suppliers of firm transportation customers and, therefore, may not be available to serve GCR customers. As discussed in Section 2.1 of the audit report, DE-Ohio is pursuing the Central Corridor Project, which will enable the Company to retire its propane facilities.

The prior management performance audit recommended that DE-Ohio assess and evaluate replacement capacity alternatives in the event that the Company's remaining propane facilities become unavailable or are retired. DE-Ohio agreed to perform this assessment and evaluation in the Stipulation and Recommendation approved in the prior audit, and the PUCO required the Company to file a report detailing the results of the Company's assessment and evaluation. The Scope of Work for this audit required the auditor to review the Company's assessment and evaluation of replacement capacity for its propane facilities. DE-Ohio performed the required assessment and evaluation and filed its report with the Commission. The report only addressed replacement capacity, and not any improvements that would be necessary to its distribution system such as the Central Corridor Project.

To determine the effect of the unavailability of the propane facilities on the Company's capacity portfolio, the capacity portfolio for the winter of 2017-2018 was used in the analysis. The Company determined that the current annual base rate charges assessed to GCR customers associated with maintaining the existing propane facilities were approximately [REDACTED]. The Company determined that the capacity provided by the propane facilities could be replaced with a [REDACTED] that the Company estimated to cost [REDACTED] than the current propane facility base rate charges. These savings did not account for the higher costs of propane compared to the cost of natural gas. The Company also concluded that, based on the bids it received for peaking service for the winter of 2017-2018, [REDACTED]. The Company's assessment and evaluation of its propane facilities replacement options found and concluded that the facilities could be readily replaced with a [REDACTED]. Exeter concurs with the findings and conclusions of DE-Ohio's assessment and evaluation of replacement capacity options in the event the propane facilities are retired or otherwise unavailable.

4.2.4 Storage Service

DE-Ohio subscribed to unbundled firm contract storage service provided by Columbia Gas during the audit period. As previously described, the no-notice service DE-Ohio purchases from Texas Gas also includes a storage component. DE-Ohio pays the maximum FERC-approved rates for the storage services provided by Columbia Gas and Texas Gas.

A. Columbia Gas Transmission

Firm Storage Service (FSS). DE-Ohio purchased firm storage service from Columbia Gas under Rate Schedule FSS during the audit period. FSS storage service, in combination with Columbia Gas transportation capacity under Rate Schedule SST, provides DE-Ohio with no-notice balancing service. Daily differences between actual takes at DE-Ohio's citygate and the quantities scheduled to the Company's citygate by DE-Ohio and its transportation customers become no-notice injections or withdrawals under Rate Schedules FSS and SST. In addition to accommodating daily imbalances between actual takes at its citygate and nominated deliveries, DE-Ohio utilizes FSS service for seasonal load management purposes and to capture seasonal gas price differences.

DE-Ohio purchased FSS service from Columbia Gas under Contract No. 79969 during the audit period. The maximum daily storage withdrawal quantity (MDWQ) under DE-Ohio's FSS contract was 216,514 Dth. The seasonal contract storage quantity (SCQ) was 9,244,079 Dth. This provided the Company with 43 days of maximum withdrawal capabilities.

The FSS rate schedule provides for maximum daily and monthly injection volumes. Generally, as storage is filled, the volumes permitted for injection, both daily and monthly, are reduced. Conversely, as storage volumes are withdrawn, daily and monthly injection quantities increase. The maximum daily and monthly injection quantities under Rate Schedule FSS are specified in Columbia Gas' FERC-approved tariff. The maximum monthly injection quantities (MMIQ) are a specified percentage of the SCQ. The maximum daily injection quantities (MDIQ) are determined by dividing the MMIQ by a daily injection factor. These percentages and factors, and DE-Ohio's maximum daily injection rights under its Columbia Gas FSS contract, are as follows:

MONTH	MMIQ % OF SCQ	MMIQ (Dth)	DAILY INJECTION FACTOR	MDIQ (Dth)
November	5%	462,204	30	15,407
December	10%	924,408	30	30,814
January – March	10%	924,408	25	36,976
April	15%	1,386,612	25	55,464
May – August	20%	1,848,816	25	73,953
September	13%	1,201,730	25	48,069
October	7%	647,086	25	25,883

The maximum daily withdrawal quantities are also a function of the amount of gas in storage. The MDWQ declines as the amount of gas in storage inventory declines by the following ratchets:

STORAGE INVENTORY	MDWQ (Dth)
100-30%	216,514
30-20%	173,211
20-10%	140,734
10-0%	108,257

In addition, maximum and minimum net monthly withdrawal quantity restrictions are imposed by Columbia Gas during the winter season as follows:

MONTH	WITHDRAWAL QUANTITIES (Dth)	
	Maximum	Minimum
November	3,697,632	0
December	3,697,632	0
January	3,697,632	0
February	2,773,224	924,408
March	1,848,816	924,408

Finally, storage inventory levels are limited to 65 percent of the SCQ on February 1; 25 percent of the SCQ on April 1; 60 percent of the SCQ on June 30; and 85 percent of the SCQ on August 31. Failure to adhere to Columbia Gas' storage injection and withdrawal and inventory restrictions may result in the assessment of penalty charges. Monthly charges for FSS service include a deliverability charge applicable to the maximum daily withdrawal quantity, a capacity charge applicable to injection and withdrawal quantities, and a charge for storage losses.

B. Texas Gas Transmission

No-Notice Service (NNS). Texas Gas NNS has a storage component which, in combination with the nominated transportation component of NNS, provides DE-Ohio with no-notice service. Daily differences between actual takes at DE-Ohio's citygate and the quantities scheduled to the Company's citygate by DE-Ohio and its transportation customers become no-notice storage injections or withdrawals. DE-Ohio's NNS contract entitlements were identified in Section 4.2.1 (E) of the audit report.

Rate Schedule NNS provides for maximum daily injection and withdrawal quantities. Winter-period injections and summer-period withdrawals are provided on a "best effort" interruptible basis. The maximum daily injection and withdrawal quantities are a function of the amount of gas in storage. The MDIQ declines as the amount of gas in storage inventory increases by the following ratchets:

STORAGE INVENTORY	MDIQ (Dth)
0-65%	30,550
65-90%	25,850
90-100%	14,100

The MDWQ declines as the amount of gas in storage inventory declines by the following ratchets:

STORAGE INVENTORY	MDWQ (Dth)
100-25%	25,000
25-20%	22,500
20-15%	21,250
15-10%	20,000
10-0%	18,750

Storage inventory is limited to 47 percent of the SCQ, or 1,104,500 Dth, on April 1.

4.2.5 Asset Management Agreements

Asset Management Agreements with two different Asset Managers were in place during the audit period. Each AMA was awarded through an RFP process. An AMA with BP Energy was initially in place for the period November 2014 – October 2015. [REDACTED]

[REDACTED]. An AMA with United Energy was in place for the period November 2016 – October 2018.

Under the AMAs, with limited minor exceptions and the capacity assigned to the suppliers of firm transportation customers, which is discussed in greater detail in Section 6.1.3 of the audit report, all of DE-Ohio's capacity and [REDACTED]

[REDACTED]. The fees received by the Company from AMAs during the audit period are confidential. DE-Ohio was entitled to retain 20 percent of the AMA management fees, and the remainder of the fees were allocated between GCR and firm transportation customers based on the interstate pipeline demand charges paid by DE-Ohio. The AMA fees allocated to firm transportation customers are included as a credit under Rider CCCR.

4.2.6 Gas Supply Arrangements

DE-Ohio relied upon firm-term gas supply contracts to meet its winter audit period natural gas supply requirements. The Company's audit period winter firm gas supply contracts were for

terms of one winter period (November – March). DE-Ohio's term gas supply arrangements specify baseload and/or daily swing supply quantities. Under baseload arrangements, the Company agrees to nominate and accept a fixed daily quantity of gas during a particular month. The Company's term swing supply contracts provide flexibility through daily changes to nominated quantities.

[REDACTED]

[REDACTED]

DE-Ohio solicits bids for winter term gas supplies through an RFP process that is generally initiated late each spring and concluded in the summer. The Company solicits bids for specific quantities of baseload and swing gas supplies on each interstate pipeline. DE-Ohio's winter audit period term gas supply arrangements are summarized in Table 9. Also shown are the Company's firm capacity contract quantities by pipeline, adjusted for capacity released to Choice suppliers. The Columbia Gulf and Tennessee Gas gas supply contract quantities identified in Table 9 are adjusted to account for fuel retention and reflect delivered-to-KO Transmission quantities. The Texas Gas gas supply contract quantities identified in Table 9 are adjusted to account for fuel retention and reflect delivered-to-citygate quantities. As shown in Table 9, DE-Ohio generally reserved term-firm supplies during the winter sufficient to fill its available pipeline capacity. Winter term supply quantities occasionally exceeded the available pipeline capacity as a result of the migration of GCR customers to firm transportation service after DE-Ohio entered into its winter term supply arrangements. Table 9 indicates that DE-Ohio reserved winter term supplies that significantly exceeded its Columbia Gulf capacity entitlements. However, these term supplies were baseload supplies reserved to provide DE-Ohio the option of securing Gulf Coast supplies to be delivered on a secondary basis under the Company's Columbia Gulf FTS-1 BH arrangement when these supplies were lower-cost than Columbia Gas-sourced supplies delivered under the Columbia Gulf FTS-1 BH arrangement on a primary basis. These excess Columbia Gas supplies were baseload supplies that did not require the payment of supplier reservation charges and, therefore, Exeter's audit did not find that DE-Ohio unnecessarily incurred supplier reservation charges as a result of the excess winter term supplies.

Table 9. Summary of Winter Term Gas Supply & Firm Transportation Maximum Daily Contract Quantities (Dth)

MONTH	COLUMBIA GULF				TEXAS GAS				TENNESSEE GAS	
	FTS-1		FTS-1(BH)		NNS		STF		FT-A	
	Gas	Capacity	Gas	Capacity	Gas	Capacity	Gas	Capacity	Gas	Capacity
November 2015		37,669		10,667		6,250		18,938		0
December		37,669		10,667		6,250		18,938		0
January 2016		37,669		10,667		6,250		18,938		0
February		37,669		10,667		6,250		18,938		0
March		37,669		10,667		6,250		18,938		0
November		19,469		10,962		6,250		17,805		10,724
December		19,469		10,962		6,250		17,805		10,724
January 2017		19,469		10,962		6,250		17,805		10,724
February		19,469		10,962		6,250		17,805		10,724
March		19,469		10,962		6,250		17,805		10,724
November		25,736		12,732		6,250		27,043		8,859
December		25,736		12,732		6,250		27,043		8,859
January 2018		25,736		12,732		6,250		27,043		8,859
February		25,736		12,732		6,250		27,043		8,859
March		25,736		12,732		6,250		27,043		8,859

DE-Ohio did not solicit for summer term gas supplies through an RFP process during the audit period. For summer gas supplies, typically towards the end of February, DE-Ohio presents its Asset Manager with the Company's anticipated summer baseload and swing gas supply requirements. During the audit period, the Asset Manager was willing to meet DE-Ohio's requirements at a price agreeable to the Company. [REDACTED]

[REDACTED]. DE-Ohio's approach to contracting for gas supplies ensures winter-period supply reliability and [REDACTED]

4.2.7 Local Ohio Production

DE-Ohio's ability to purchase local, Ohio-produced gas delivered directly to its system is limited because the Company's territory is not conducive to natural gas formation. Most of Ohio's proven gas reserves are located in the northeast region of the state. DE-Ohio may purchase Ohio-

produced gas that is produced in other regions of the state and delivered to the Company by interstate pipelines.

DE-Ohio purchased from a third party methane gas recovered from the [REDACTED] located in [REDACTED] during the audit period. These supplies are delivered directly to DE-Ohio's system. Audit period purchases totaled approximately [REDACTED]. The gas recovered from the [REDACTED] was purchased under a contract with [REDACTED] until that [REDACTED]. The purchases from [REDACTED] were priced based on [REDACTED]. Since expiration of the [REDACTED] contract, the Company has purchased the landfill gas from [REDACTED]. The purchases from [REDACTED] are also based on [REDACTED]. The contract with [REDACTED] extends through [REDACTED].

4.3 Percentage of Income Payment Plan Customers

PIPP is a payment plan for income-eligible customers. PIPP customers pay a percentage of their income regardless of usage. Prior to April 2014, DE-Ohio typically issued an RFP each year to potential suppliers soliciting gas supplies to serve PIPP customers. Suppliers were requested to deliver an equal quantity of gas each day, based on the estimated average annual usage of PIPP customers. The requested bid price was based on the *Inside FERC* monthly index price for Columbia Gulf Mainline, plus fuel, variable, and reservation charges on Columbia Gulf Transmission and KO Transmission to determine a citygate-delivered market price. Each supplier was instructed to bid a "Supplier Bid Credit" representing a fixed discount from the calculated market price. Suppliers were paid the calculated market price less the Supplier Bid Credit. PIPP customers paid the Expected Gas Cost (EGC) portion of the GCR rate, less the Supplier Bid Credit. Since PIPP customers were served by third-party suppliers, they were considered to be firm transportation customers. However, the Company managed any daily, monthly, or annual imbalances, and the supply contracts were between DE-Ohio and the PIPP suppliers.

To serve PIPP customers beginning on April 1, 2014, DE-Ohio received only one response to its RFP soliciting gas supplies, and the bid credit was relatively small and would have resulted in PIPP customers being charged a rate that was higher than the GCR. As a result, DE-Ohio filed an application with the PUCO requesting that PIPP customers be returned to GCR service, which was granted by the Commission (Case No. 14-315-GA-UNC).

After PIPP customers were returned to GCR service, the Company developed new procedures for serving PIPP customers under which the supplier would act just as any other supplier under the Choice program, including delivering supplies equal to the estimated daily usage of PIPP customers. The RFP bid price was also changed to reflect an adder to the NYMEX closing price each month. The bid price was modified so that, based on comparing historical GCR rates and the

NYMEX closing price, it could be determined whether the bid price would likely result in cost savings to PIPP customers. DE-Ohio delayed implementing its newly developed PIPP service and pricing procedures until issues related to firm transportation service balancing requirements were resolved in Case No. 15-50-GA-RDR due to the uncertainty associated with the balancing requirements that would be imposed on PIPP suppliers.¹¹

PUCO Case No. 15-50-GA-RDR was decided by the Commission in January 2016, but the effectiveness of the changes to the firm transportation balancing services addressed in this proceeding was deferred until April 2017. An RFP soliciting gas supplies for PIPP customers reflecting DE-Ohio's new PIPP service and pricing procedures was issued in January 2017 for a one to three-year period beginning April 2017. The RFP was awarded to Utility Gas & Power for a three-year term at a price based on the NYMEX closing price each month plus \$0.56/Dth. This price is then converted to an Mcf price utilizing the Company's loss factor and the 12-month weighted Dth-to-Mcf conversion factor. Table 10 provides a comparison of audit period PIPP and GCR rates.

Table 10. Comparison of GCR and PIPP Customer Rates (\$/Mcf)			
MONTH	GCR	PIPP	DIFFERENCE
April 2017	\$4.709		
May	5.090		
June	4.754		
July	4.700		
August	4.695		
September	4.728		
October	4.780		
November	4.415		
December	4.875		
January 2018	4.808		
February	4.701		
March	4.385		
April	4.267		
May	4.354		
June	4.162		
July	4.724		
August	5.405		
AVERAGE:	\$4.680		

¹¹ Case No. 15-50-GA-RDR is discussed in greater detail in Section 6.1.5 of the audit report.

4.4 Balance of Capacity Resources and Requirements

DE-Ohio's capacity requirements can be affected by customer conversions from sales to transportation service and vice versa, customer conservation efforts, increases and decreases in the number of customers served, and other factors. Maintaining capacity in excess of the Company's customers' requirements would be inconsistent with the minimization of gas costs, while failing to maintain sufficient capacity may compromise service reliability.

4.4.1 *Design Day Capacity Resources and Requirements*

DE-Ohio reserves sufficient capacity to meet the design day sendout requirements of its firm sales customers and a portion of the increase in the design day requirements of a Choice supplier's firm transportation customers beyond that which existed on April 1, 2007. Historically, DE-Ohio's design day forecasts were prepared by the Company's Load Forecasting Department utilizing monthly data and statistical techniques to determine a peak day with various probabilities of being exceeded. Based on expected value calculations, a design day was then chosen with the lowest expected value. This method typically resulted in the selection of a design day with a one percent probability of occurrence. However, this method did not enable the Company to compare its actual peak day sendout with the sendout predicted by the Company's model to assess the accuracy of its model. In the prior management performance audit, Exeter recommended, and the Company agreed in the Stipulation and Recommendation approved by the PUCO in Case No. 15-218-GA-GCR, to develop a design day forecasting model that utilized daily data and to perform annual comparisons of forecasted and actual demands and assess whether refinements to the Company's model were appropriate. The Scope of Work for this audit required examination of DE-Ohio's design day model and its utilization of daily data and the Company's use of comparisons of forecasted to actual results to refine its model.

To comply with this requirement of the Stipulation and Recommendation approved in Case No. 15-218-GA-GCR, the Company's Load Forecasting Department developed a design day model utilizing regression analysis of daily annual sendout and weather data back to 1995. Temperature data was converted to heating degree days (HDD) relative to a base average daily temperature of 59°F. Although HDD are typically calculated based on 65°F, the Load Forecasting Department observed that there was no significant effect of temperature on sendout when temperatures exceed 59°F, and determined that calculating HDD based on 59°F would provide a better statistical relationship with sendout. In addition to current-day HDD, other independent variables included in the Company's regression analysis were prior-day HDD and variables representing the day of the week and holidays.

Once the design day model by Load Forecasting was developed, weather data from approximately 20 extremely cold days over the past 20 years were entered into the model, along

with the applicable values for the non-weather independent variables, to assess the predictive capability of the model. After estimation, a comparison revealed that on peak days, on average, forecasted and actual sendout were within 3.3 percent. The predictive equation estimated by the Company from its new design day forecasting model was as follows:

[REDACTED]

The independent weather values used in the model to develop the Company's design day forecast for the winter of 2016-2017 were [REDACTED] for the current-day HDD and [REDACTED] for the prior-day HDD. The current-day HDD was based on the actual lowest temperature experienced in DE-Ohio's service territory during the last 20 years, which occurred on January 30, [REDACTED] rather than the average daily temperature typically used to determine HDD. The prior-day HDD was based on the actual lowest temperature on the day prior to [REDACTED]
[REDACTED]
[REDACTED]. Design day forecasts through the winter of 2025-2026 were prepared utilizing this approach.

With the integration of the gas procurement function of DE-Ohio and Piedmont, it was determined that responsibility for preparing DE-Ohio's design day forecast would be transferred from DE-Ohio's Load Forecasting Department to the newly created integrated Pipeline Services Department. With the transition of responsibility for the design day forecast, DE-Ohio decided that the projection from Load Forecasting's model for the winter of 2017-2018 would be used for capacity planning purposes.

For the winter of 2018-2019, Pipeline Services evaluated two alternative design-day forecast models. Both alternatives utilized linear regression analysis of historical daily firm system sendout (total system sendout less usage by interruptible transportation customers) for those days with more than 10 HDD (HDD as utilized by Pipeline Services is based on 65°F) during the months of December, January, and February over the period December 2013 through February 2018. One alternative utilized HDD based on effective daily temperature and the other utilized HDD based on actual daily mean temperature. Effective HDD had been used by DE-Ohio for daily sendout load forecasting and calculation of the Target Supply Quantity required to be delivered by suppliers serving Choice customers. Effective HDD attempts to combine, into one variable, the effect of the following on customer natural gas requirements: current- and prior-day temperature, the spread of current-day temperature, sun, and windspeed. DE-Ohio then compared the design day firm sendout forecasts resulting from the regression equations of each alternative model based on actual HDD (79 HDD) and effective HDD (83 HDD) experienced on January 19, 1994, the coldest day observed over the last 30 years in the Company's service territory. The design day demand

projected by the actual temperature model was slightly higher than the demand projected by the effective HDD model and, therefore, to be conservative and consistent with the approach that had been adopted by Piedmont, DE-Ohio elected to use the results of the actual temperature model for the winter of 2018-2019.¹² The forecasting equation from the Company's new model was as follows, and resulted in a design day forecast of [REDACTED]:

[REDACTED]

DE-Ohio's interruptible transportation customers also contract for firm transportation service, which is referred to as "FT for IT." [REDACTED]

[REDACTED]

For purposes of determining design day requirements, gas utilities typically use a current day with a mean temperature that has a 3 percent to 10 percent probability of occurrence. Probability of occurrence is frequently determined based on the actual number of occurrences over a specific historical period. The current-day temperature utilized by DE-Ohio to forecast design day requirements for the winter of 2018-2019 was [REDACTED]. This reflects the lowest mean daily temperature experienced in DE-Ohio's service territory over the [REDACTED]. DE-Ohio has experienced mean daily temperatures of [REDACTED] or [REDACTED]. [REDACTED]. Based on the frequency of occurrence [REDACTED], this [REDACTED] an annual probability of occurrence of [REDACTED], which would be consistent with the probability of occurrence used by other gas utilities.

The predictive capability of DE-Ohio's design day forecast models can be evaluated by comparing forecasted model results with actual experience on peak, or near design, days. Table 11 illustrates the predictive capability of the forecasting model developed by the Load Forecasting Department that was used during the audit period and the new model developed by Pipeline Services. The projected demands reflected in Table 11 are for firm customers (GCR and firm transportation) using each design day model and actual observed peak day and prior temperature data as applicable. As shown in Table 11, the forecasting model developed by Load Forecasting overestimated actual demands, while the model developed by Pipeline Services slightly underestimated actual demands.

¹² The difference between the two alternatives was 14,628 Dth, or 1.8 percent.

Table 11. Comparison of Projected and Actual Firm Peak Day Demands Utilizing Design Day Forecasting Models						
DATE	ACTUAL (Dth)	PROJECTED (Dth)	VARIATION (Dth)	PERCENT	TEMPERATURE	
					Current-day	Prior-day
<u>Load Forecasting Model</u>						
January 6, 2017						
January 5, 2018						
<u>Pipeline Services Model</u>						
January 6, 2017						
January 5, 2018						

The projected design day requirements of DE-Ohio's GCR sales customers, firm transportation customers, and the capacity resources available to meet those requirements just prior to each audit period winter season are summarized in Table 12. As explained in greater detail in Sections 6.1.3 and 6.1.5 of the audit report, the capacity resources shown in Table 12 have been adjusted to reflect a *pro rata* share of propane made available to the suppliers of firm transportation customers, the assignment of capacity to suppliers of firm transportation customers, and the storage utilized by firm suppliers in conjunction with EFBS. As shown in Table 12, the projected design day capacity requirements of GCR customers and the resources available to serve GCR customers were in close balance just prior to each winter of the audit period.

Table 12. Design Day Requirements and Capacity Resources (Dth)			
	WINTER SEASON		
	2015-2016	2016-2017	2017-2018
<u>GCR Requirements</u>			
Firm Customer Requirements	██████	██████	██████
Less: RFT/FT Requirements	██████	██████	██████
TOTAL GCR Requirements:	██████	██████	██████
<u>GCR Resources</u>			
DE-Ohio Capacity Resources	██████	██████	██████
Less: RFT/FT Capacity Assignment	██████	██████	██████
Less: EFBS	██████	██████	██████
Less: RFT/FT Propane	██████	██████	██████
TOTAL GCR Resources:	██████	██████	██████
Excess/(Deficiency):	████	████	████

Exeter's assessment of DE-Ohio's design day forecast modeling as specified in the Scope of Work for this audit is as follows. With respect to the model developed by Load Forecasting utilized

for the winters of [REDACTED] and [REDACTED], DE-Ohio did not correctly apply the output of its regression analysis. For example, independent variables for each day of the week were included in DE-Ohio's regression analysis. DE-Ohio used temperatures observed on January 30, 2004 to [REDACTED] design day demands, which was a Friday. However, in developing the constant term utilized in its forecast equation, the Company included day-of-the-week co-efficients for both Thursday and Friday. This is [REDACTED] invalid and will result in a higher forecast than it would otherwise be. Load Forecasting used 30 years of data to develop its model. This did not explicitly account for customer growth and customer conservation efforts over the period. The Company also used sendout data for each day of the year, rather than periods during which a design day is likely to occur, potentially distorting model results. The deficiencies resulting from Load Forecasting's model are highlighted earlier in Table 11, which indicates that the model consistently over-forecasted projected firm demands under actual peak-day conditions.

With respect to the models evaluated by Pipeline Services, Exeter found that the use of daily firm sendout data on days during the months of December, January, and February on which more than [REDACTED] were observed to be reasonable. The models evaluated by Pipeline Services utilized daily data from the most recent five-year period. To reflect recent customer conservation efforts, Exeter believes that usage data should generally be limited to the most recent three-year period. Due to the insignificant difference between the projections of the model using actual temperatures and the model using effective temperatures, Exeter finds the Company's election to use the actual temperature model to be reasonable. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

As just described, Exeter has identified a number of concerns and deficiencies associated with the design day model developed by Load Forecasting that was utilized for the winters of 2016-2017 and 2017-2018. However, the design day forecast resulting from that model did not differ significantly from the forecast resulting from the actual temperature model developed by Pipeline Services. For example, for the winter of 2018-2019, the design day forecast from the Load Forecasting model was [REDACTED], and the forecast from the actual temperature model developed by Pipeline Services was [REDACTED], a difference of [REDACTED]. Therefore, there does not appear to have been adverse consequences for GCR customers resulting from the use of the model developed by Load Forecasting during the audit period.

4.4.2 Winter Season Capacity Resources and Requirements

For winter season capacity planning purposes, DE-Ohio utilizes weather data from the winter of [REDACTED]. This winter was approximately [REDACTED] colder than normal. Temperature

variances from normal, along with normal winter temperatures, are used by the Company in selecting and determining the use of its capacity resources. DE-Ohio developed its audit period winter season firm load forecasts utilizing use per customer by class per effective HDD factors that were initially developed in 2009. These factors are then applied to the projected number of customers by class for the winter season being forecasted and the actual daily effective HDD experienced in the winter of [REDACTED]. The Company utilizes its Gas Transportation Management System (GTMS) to determine the GCR and firm transportation customer components of forecasted firm winter requirements. DE-Ohio's GTMS is discussed in greater detail in Section 5.2 of the audit report. The projected requirements of GCR customers under design colder-than-normal winter weather conditions were estimated to be approximately [REDACTED] for the [REDACTED] winter season. DE-Ohio's [REDACTED] winter season firm citygate capacity entitlements were approximately [REDACTED]. Thus, the winter requirements of GCR customers and the winter season capacity resources maintained by the Company to meet those requirements were in reasonable balance. For the winter of 2018-2019, the Company began utilizing its 2018-2019 design day model predictive equations and actual temperatures from the winter of [REDACTED] to develop its projected firm design winter season requirements.

4.4.3 Annual Capacity Resources and Requirements

The Company used econometric modeling to develop its projections of annual firm customer requirements during the audit period. The GCR and firm transportation customer components of annual requirements are determined based on the winter season requirements as described in Section 4.4.2 plus the actual summer season requirements from a summer with unusually cold shoulder months (summer of 2005). These requirements are split between GCR and firm transportation customers based on regression equations utilizing the most recent winter's daily Target Supply Quantity (TSQ) as the dependent variable and total firm requirements as the independent variable. The resulting equation is adjusted for actual changes to the MDQ of Choice customers and known significant future changes. The annual gas supply requirements of DE-Ohio's GCR customers under design colder-than-normal winter weather conditions were approximately [REDACTED] for CY 2018. DE-Ohio maintains capacity resources to meet the annual requirements of its GCR customers and to inject gas into storage during the summer to serve GCR customers in the winter. Approximately [REDACTED] of storage is currently assigned to GCR customers. Therefore, in total, capacity resources providing approximately [REDACTED] of service are required to serve GCR customers. For CY 2018, DE-Ohio maintained capacity resources sufficient to deliver [REDACTED] to GCR customers. Therefore, the annual requirements of GCR customers and the annual capacity resources maintained to meet those requirements were in reasonable balance. DE-Ohio obtains value for its unutilized capacity resources by releasing that capacity under AMAs.

4.4.4 Load Duration Curve

The load duration curve presented in Figure 4 compares DE-Ohio's projected daily GCR customer requirements with the capacity resources currently reserved to meet those requirements for the winter of 2018-2019. As shown in Figure 4, DE-Ohio's current capacity portfolio closely matches its GCR customer service requirements.

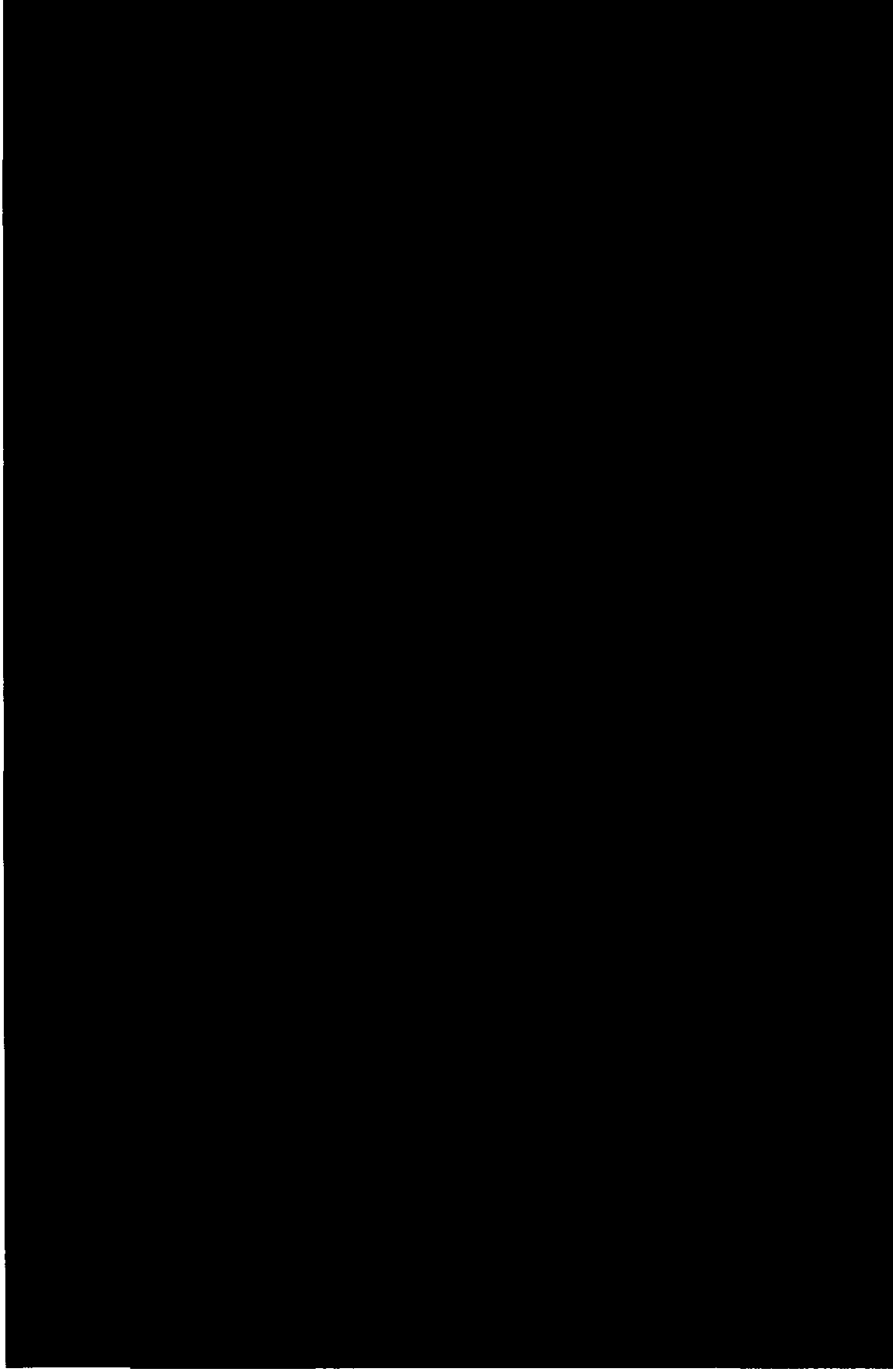


Figure 4. Design Winter 2018-2019 Load Duration Curve

4.5 Diversification of Capacity and Gas Supply Resources

Diversification of pipeline capacity and gas supply resources can reduce the risk of supply disruptions attributable to either the interruption of gas production in a particular supply region accessed by a pipeline, or to pipeline delivery disruptions. Such disruptions can significantly increase the price of gas in the affected production region, or the price of gas delivered to specific pipelines within a supply region. For example, Hurricanes Katrina and Rita caused the shut-in of a significant percentage of Gulf Coast-area gas production in the late summer of 2005, causing the price of gas in this region to increase more significantly than in other production areas. Although the supply disruptions from Hurricanes Katrina and Rita did not have a significant impact on DE-Ohio's supply, the disruptions highlighted DE-Ohio's heavy dependence on supplies from the Gulf Coast region, particularly southern Louisiana.

As initially discussed in Section 4.1 of the audit report, although the majority of the interstate gas currently purchased by DE-Ohio is Gulf Coast supplies, all of the interstate gas supplies physically received by DE-Ohio are sourced from the Marcellus Shale production region. This is unlikely to change in the near future due to the prolific level of production in the Marcellus Shale region that is causing pipelines that access this region and serve DE-Ohio to flow gas supplies north to south. For the foreseeable future, DE-Ohio will remain physically dependent on Marcellus Shale supplies with no opportunities for physical diversification.

4.6 Continuation of Merchant Function

DE-Ohio retains the supplier of last resort responsibility (SOLR) for the merchant function. Customers may voluntarily, on a self-selection basis, seek gas supply service from an alternate supplier, but DE-Ohio presently provides service to customers who do not "shop" their gas requirements. This SOLR extends both to customers who do not convert to an alternate gas supply provider and to customers who leave the alternate supplier market and return to DE-Ohio's merchant GCR service.

Ohio's other major natural gas utilities—COH, Dominion, and VEDO—are no longer subject to the GCR mechanism. Instead, as previously explained in Section 2.3 of the audit report, each has an SSO rate under which it continues to provide natural gas commodity service to its sales customers at the cost of acquiring supplies. The cost of acquiring supplies for the other Ohio utilities is established through an auction process in which suppliers bid fixed adjustments to the NYMEX monthly settlement price.

On May 15, 2007, DE-Ohio filed an Application to increase rates in PUCO Case No. 07-589-GA-AIR, *et al.* On February 28, 2008, DE-Ohio reached a settlement with the Parties to that proceeding and submitted a Stipulation and Recommendation to the PUCO. On May 28, 2008, the

Commission approved the Stipulation and Recommendation in its entirety. One element of the Stipulation and Recommendation was DE-Ohio's commitment to convene a working group or collaborative process, open to interested stakeholders, to explore implementing an auction and adopting an SSO for its natural gas customers. DE-Ohio agreed to report the findings of the working group to the PUCO within one year. On May 27, 2009, DE-Ohio filed its report with the Commission.

DE-Ohio's report concluded that maintaining the current GCR mechanism would result in lower rates for its customers than would an auction process. Therefore, the Company has no current plans to exit the merchant function.

4.7 Conclusions and Recommendations

4.7.1 *Interstate Pipeline Capacity Entitlement Changes*

DE-Ohio made a number of changes to its interstate pipeline capacity entitlements during the audit period. Exeter's audit found that DE-Ohio reasonably evaluated and assessed its capacity options during the audit period and adequately documented its analysis of those options. DE-Ohio was able to negotiate discounted rates under several contracts. These capacity entitlement changes and discounts provided a significant benefit to GCR customers.

4.7.2 *Citygate Purchases*

In November 2014, DE-Ohio discovered that due to fewer suppliers participating in its firm transportation program electing EFBS and an increase in the number of customers participating in its firm transportation program, the Company did not maintain sufficient firm interstate pipeline transportation capacity to meet the requirements of its GCR customers and to manage storage inventory balances. This firm interstate pipeline transportation capacity deficiency became evident when it became necessary for the Company to make citygate spot market gas supply purchases to reduce the rate of storage withdrawals and effectively manage storage inventory balances within the FERC tariff requirements of DE-Ohio's interstate pipeline storage service providers. In January 2015, DE-Ohio filed an application with the PUCO (Case No. 15-50-RDR) to address its capacity deficiency. As a result of not maintaining sufficient firm interstate transportation capacity to effectively manage storage and lower the rate of storage withdrawals, DE-Ohio was required to make citygate spot market gas purchases of 2,332,628 Dth during the winter of 2014-2015.

The PUCO's Order in Case No. 15-50-RDR adopted provisions making EFBS mandatory for suppliers serving firm transportation customers with an MDQ in excess of 6,000 Dth effective April 2017. DE-Ohio reported that this requirement has adequately addressed the GCR customer capacity deficiency previously experienced and did not result in other unintended adverse consequences. The Order in Case No. 15-50-RDR also required that any citygate spot market

purchases made during the winter of 2016-2017 be thoroughly audited to ensure that GCR customers were not unduly impacted. Exeter's audit found that DE-Ohio made no citygate spot market purchases during either the winter of 2016-2017 or 2017-2018 and, therefore, there was no adverse impact on GCR customers from such purchases.

4.7.3 Design Day Forecast Model

The Scope of Work for this audit required the examination of DE-Ohio's design day model and its utilization of daily data and the Company's use of comparisons of forecasted and actual results to refine its model. Exeter's audit found that the Company's Load Forecasting Department developed a design day forecasting model using daily data that was used for capacity planning purposes for the winters of 2016-2017 and 2017-2018. Exeter's review found that this model was statistically invalid and that there were other deficiencies with the model. However, Exeter found that there did not appear to have been adverse consequences for GCR customers resulting from the use of the model developed by Load Forecasting during the audit period.

For the winter of 2018-2019, the Company developed a new design day forecasting model. This model was based on a regression analysis of daily firm sendout on days during the months of December, January, and February on which more than [REDACTED] were observed. While Exeter generally found the design day forecast developed by the Company for the winter of 2018-2019 to be reasonable, Exeter notes that the model utilized daily data from the most recent five-year period. To reflect recent customer conservation efforts, Exeter believes that usage data should generally be limited to the most recent three-year period. [REDACTED]

4.7.4 Balance of Capacity Requirements and Resources

Exeter found that there was a reasonable balance between the capacity and gas supply resources maintained by DE-Ohio to meet the design day, winter season, and annual gas supply requirements of GCR customers during the audit period.

4.7.5 KO Transmission Capacity Entitlements

The prior management performance audit noted that the rates of KO Transmission would increase significantly as a result of an anticipated base rate filing at the FERC and recommended that in light of this increase, DE-Ohio reevaluate whether its current KO Transmission firm transportation capacity entitlements are reasonable. The Scope of Work in this proceeding directed the auditor to review DE-Ohio's evaluation of its KO Transmission capacity entitlements. DE-Ohio's

evaluation concluded that, based on cost and reliability considerations, its current KO Transmission capacity entitlements should not be reduced at this time. Exeter concurs with DE-Ohio's evaluation and agrees that the Company should not reduce its KO Transmission firm transportation capacity entitlements at this time. [REDACTED]

4.7.6 Replacement of Propane Facilities

The prior management performance audit recommended that DE-Ohio assess and evaluate replacement capacity alternatives in the event the Company's propane facilities become unavailable or are retired. The Scope of Work for this audit required the auditor to review the Company's assessment and evaluation of replacement capacity for its propane facilities. The Company's assessment and evaluation of the replacement options for its propane facilities found and concluded that the facilities could be readily replaced with a [REDACTED]. Exeter concurs with the findings and conclusions of DE-Ohio's assessment and evaluation of replacement capacity options in the event that the Company's propane facilities are retired or otherwise unavailable.

5. AUDIT PERIOD CAPACITY UTILIZATION AND PROCUREMENT ACTIVITY

DE-Ohio's utilization of capacity resources and gas supply procurement activity is evaluated in this section. Section 5.1 summarizes the Company's audit period gas supply purchases. Section 5.2 discusses the Company's use of capacity resources to procure gas supplies as well as the Company's gas supply procurement planning process. A detailed discussion of DE-Ohio's efforts to minimize price volatility is presented in Section 5.3. Storage operations are discussed in Section 5.4. Section 5.5 discusses the Company's capacity release and off-system sales activities. Discussed in Section 5.6 are locational differences in gas prices and their impact on DE-Ohio's purchased gas costs. Section 5.7 addresses lost-and-unaccounted-for and company-use gas. The final section presents Exeter's conclusions and recommendations.

5.1 Summary of Purchases

DE-Ohio purchased nearly [REDACTED] of natural gas during the audit period. Gas supplies purchased by DE-Ohio may be utilized to meet current GCR customer demands or may be injected into storage. Table 13 summarizes the Company's audit period gas supply purchases by pipeline. The quantities identified in Table 13 reflect the pipeline of initial receipt, or the pipeline on which DE-Ohio first takes title to the gas. Those purchases were subsequently delivered to the Company's citygate or storage. As shown in Table 13, [REDACTED] of the gas supplies purchased by DE-Ohio were sourced on Columbia Gulf and either subsequently delivered to the Company by KO Transmission or injected into Columbia Gas storage and subsequently delivered to DE-Ohio by Columbia Gas or KO Transmission.

Table 13. Summary of Audit Period Purchases by Source		
SOURCE	QUANTITY (Dth)	PERCENT
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

5.2 Capacity Utilization and Gas Supply Procurement Strategy

Appendix A to the audit report summarizes DE-Ohio's actual capacity entitlements and utilization of capacity resources for each month of the audit period, inclusive of capacity release

activity. Appendix A also identifies the Company's monthly gas supply purchases by the pipeline of initial receipt.

As initially explained in Section 2 of the audit report, during the audit period, approximately 45 percent to 55 percent of DE-Ohio's gas supply requirements needed to be delivered into the northern portion of its system, and 45 percent to 55 percent needed to be delivered into the southern portion of its system. DE-Ohio acquires firm interstate pipeline capacity to minimize overall gas procurement costs (gas commodity and capacity) within these system operational delivery constraints.

DE-Ohio utilizes its firm transportation capacity to meet both current requirements and to fill storage. The utilization of firm transportation capacity by DE-Ohio during each year of the audit period, exclusive of the no-notice services that the Company purchases from Columbia Gas (FSS/SST) and Texas Gas (NNS Unnominated), and net of capacity release activity, is summarized in Table 14. Utilization of DE-Ohio's Columbia Gulf FTS-1 and FTS-1 BH capacity has been combined in Table 14 because the Company primarily used its FTS-1 BH capacity to acquire Gulf Coast-sourced supplies rather than Columbia Gas-sourced backhaul supplies.

Table 14. Utilization of Firm Transportation Capacity Annual Load Factors				
ARRANGEMENT	12 MONTHS ENDED AUGUST 31			AVERAGE
	2016	2017	2018	
Columbia Gulf FTS-1/FTS-1 BH	■	■	■	■
KO Transmission FT	■	■	■	■
Tennessee Gas ^[1]	■	■	■	■
Texas Gas NNS Nominated	■	■	■	■
Texas Gas STF	■	■	■	■
^[1] Arrangement effective November 1, 2016.				

The resources utilized to accommodate the peak day requirements of DE-Ohio's sales and transportation customers during each winter season of the audit period are identified in Table 15.

Table 15. Summary of Actual Peak Day Requirements and Supplies (Dth)

DESCRIPTION	JANUARY 18, 2016	JANUARY 6, 2017	JANUARY 5, 2018
Requirements			
GCR Sales			
Firm Transportation			
Interruptible Transportation			
Subtotal Requirements:			
GCR System Supply			
<i>Gas Supply</i>			
Texas Gas NNS Nominated			
Texas Gas STF			
Peaking Service – Texas Gas			
Springboro City Gate Deliveries			
Columbia Gulf FTS			
Tennessee Gas FT-A			
Peaking Service – Columbia Gulf/KO Transmission			
<i>Storage Withdrawal</i>			
Texas Gas NNS Unnominated			
Columbia Gas FSS			
<i>Other</i>			
Landfill			
Propane			
ANR/Texas Eastern Imbalance			
Less EFBS Withdrawals			
Imbalance			
Subtotal System Supply:			
Customer Choice (FT/RFT)			
Texas Gas			
Columbia Gas			
ANR			
Texas Eastern			
EFBS Withdrawals			
Less Nominations ^[1]			
FT for ^[2]			
Subtotal Customer Choice Supply:			
Interruptible Transportation (IT)			
IT Nominations			
IT Imbalance			
Less FT for IT ^[2]			
Subtotal Interruptible Transportation:			
TOTAL Throughput:			
Peak Day Temperature:	10°F	8°F	6°F
^[1] Nominations on pipelines include IT. IT nominations are subtracted to determine total nominations for Choice FT/RFT. ^[2] IT customers may also utilize FT. The FT amount is the first through the meter and is included in the meter reads for IT customers, so it is subtracted from the IT usage and added to Choice supply.			

DE-Ohio prepares a number of planning documents as part of its capacity and gas supply procurement process. As initially discussed in Section 4.4.1 of the audit report, on an annual basis, design day forecasts are prepared for the upcoming winter and subsequent ten years. As explained in greater detail in Section 4.4.2 of the audit report, DE-Ohio uses effective HDD from the winter of [REDACTED] for winter season capacity planning purposes, use [REDACTED] to determine its design winter season requirements. The [REDACTED] is developed by the Load Forecasting Department. Design winter season requirement forecasts are prepared for the upcoming winter on an annual basis and for future periods that require capacity contracting decisions.

As explained in Section 4.2.6 of the audit report, DE-Ohio purchases [REDACTED] gas supplies sufficient to fill its available pipeline capacity during the winter season. [REDACTED]. The remainder of DE-Ohio's interstate pipeline capacity is used for daily swing gas.

A Monthly Gas Supply Plan is prepared approximately two weeks prior to the operating month to determine how the capacity and gas supply resources secured by the Company will be used to meet customer requirements. To assist with the development of the Monthly Gas Supply Plan, [REDACTED] is used. [REDACTED] requirements based on historical temperature data for the operating month. [REDACTED] then identifies the [REDACTED] gas supplies identified in the Monthly Gas Supply Plan are submitted to DE-Ohio's Asset Manager several days prior to the operating month.

DE-Ohio prepares five-day forecasts of total system requirements (GCR, firm, and interruptible transportation customers), or sendout. These five-day forecasts were initially prepared by Gas Control. With the integration of the gas procurement and planning functions of Piedmont and DE-Ohio, effective August 2017, these forecasts are now prepared by Pipeline Services. The same model was used to prepare the five-day requirements forecasts during the audit period, and a forecasted effective HDD variable was used to develop the requirements forecasts. [REDACTED]. The day-ahead forecast applies to the next gas day, which is the 24-hour period beginning at 10:00 a.m. the following day. The day-ahead forecast is utilized to determine swing gas purchase requirements for the following gas day. As discussed in Section 6.1.8 of the audit report, the Company Gas Transportation Management system is used to separately determine the requirements of GCR and firm transportation customers.

Suppliers serving firm transportation customers are notified of the projected next-day demands of their customers and are required to deliver these quantities to DE-Ohio. The Company initially assumes [REDACTED] and these suppliers may nominate a portion of the current day's interruptible transportation deliveries as firm transportation deliveries on the next gas day. This occurs because interruptible transportation customers are not generally required to deliver specific quantities of gas on a daily basis. Firm and interruptible transportation customer balancing requirements are discussed in detail in Section 6 of the audit report. DE-Ohio generally arranges for the purchase of swing supplies sufficient to meet the requirements of all its customers not already met by baseload supplies and storage withdrawals. In addition to customer requirements projections, north and south delivery point requirements, the current price of gas, the cost of gas in storage, storage withdrawal requirements, and storage inventory balances all affect the Company's daily swing gas purchase decisions.

5.3 Gas Price Volatility Mitigation – Hedging Plan

DE-Ohio has operated under various hedging plans to mitigate the volatility of its GCR rates since 2001. The hedging plan in place during the audit period prior to the acquisition of Piedmont was adopted in 2015. Under this plan, the Company hedged between [REDACTED] percent and [REDACTED] percent of its estimated total normal winter system supply requirements. [REDACTED] percent to [REDACTED] percent of the Company's winter gas supplies were insulated from price volatility. DE-Ohio hedged [REDACTED] percent to [REDACTED] percent of its summer system supply, [REDACTED]. The hedging plan specified a range for the quantities that the Company would acquire each month, up to [REDACTED] months into the future, as indicated in Table 16.

Table 16. Hedging Plan Purchase Percentages				
WINTER SEASON				
October X	Nov X – Mar X+1	Nov X+1 – Mar X+2	Nov X+2 – Mar X+3	
Minimum	■	■	■	
Maximum	■	■	■	
SUMMER SEASON				
March X	Apr X – Oct X	Apr X+1 – Oct X+1	Apr X+2 – Oct X+2	
Minimum	■	■	■	
Maximum	■	■	■	
For example, as of October 2016, DE-Ohio would have hedged a minimum of 10 percent of its supplies for the winter of 2016-2017 and a maximum of 25 percent, and DE-Ohio would have hedged a ■ percent of its supplies for the winter of 2018-2019 and a maximum of 5 percent.				

The purpose of DE-Ohio's hedging plan was to decrease volatility in gas costs rather than to "beat the market" or guarantee the lowest possible cost. The Company targeted as its goal a reduction in the standard deviation of the monthly average commodity cost of gas of at least [REDACTED] percent, when compared to what the standard deviation would have been, absent the hedging plan.

DE-Ohio's hedging decisions were made by the Hedging Committee and were based on its analysis of gas prices. The members of the Hedging Committee are identified in Section 3.2 of the audit report. The Company monitored gas prices on a daily basis by reviewing NYMEX futures prices versus historical prices and expected future prices. DE-Ohio evaluated expected future gas prices based on a review of various industry publications such as the U.S. Energy Information Administration's (EIA's) *Short-Term Energy Outlook*.

DE-Ohio's hedging plan provided for the use of [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

DE-Ohio selected the suppliers from which to purchase its hedged supplies from a list of suppliers provided by the Credit Department. Suppliers on the list were deemed to be financially qualified to support hedging transactions. For each hedging purchase, the Company [REDACTED]

After the integration of the gas procurement and planning function of DE-Ohio with Piedmont during the audit period, several changes were made to DE-Ohio's hedging program. However, the goals of the program and seasonal hedging percentages remained unchanged. Purchases under the Company's hedging program are no longer determined by a Hedging Committee and are now guided by [REDACTED]. DE-Ohio's hedging activities are now performed by Gas Trading and overseen by the Gas Market Risk Committee. Hedging purchases are determined [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[illegible]

JUNE 2018 EXPIRATION (\$/Dth)			
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[illegible]

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those that would have been incurred without a hedging program. DE-Ohio's audit period hedging activities achieved an average reduction of [REDACTED] of the hedging program. A summary of DE-Ohio's audit period hedging activity is presented in Table 17.

Table 17. Summary of Audit Period Hedging Activity						
SEASON	TOTAL HEDGE QUANTITY (Dth)			PERCENT HEDGED	GAS IMPACT COST (\$/Dth) ^[1]	STANDARD DEVIATION CHANGE ^[1]
Summer 2015	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Winter 2015-16	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Summer 2016	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Winter 2016-17	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Summer 2017	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Winter 2017-18	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
TOTAL/AVERAGE:	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

^[1] Calculated based on 12-month period ended March 31, in Mcf.

Each year, DE-Ohio prepares an Annual Report on Hedging Activity (Annual Hedging Report) that provides a detailed description of the market conditions that existed at the time the Company entered into each of its hedging transactions, and summarizes the decisions made with respect to future hedging transactions.

5.4 Storage, Peaking, and Propane Operations

During the audit period, DE-Ohio purchased contract storage service from Columbia Gas under Rate Schedule FSS and, effectively, through no-notice service, storage service from Texas Gas under Rate NNS. These storage arrangements provide the Company with a maximum daily deliverability of 241,514 Dth, and a maximum winter season deliverability of 11,594,079 Dth. DE-Ohio used its Columbia Gas and Texas Gas storage arrangements to serve GCR customers and provide EFBS to Choice suppliers. [REDACTED]

In addition, DE-Ohio had access to propane supplies with a current total daily deliverability of [REDACTED] and a seasonal capacity of [REDACTED]. As discussed in Section 6 of the audit report, a portion of DE-Ohio's propane capacity is made available to suppliers of firm transportation customers.

DE-Ohio attempts to fill its Columbia Gas FSS storage and the storage associated with no-notice service from Texas Gas to [REDACTED] percent of capacity prior to the commencement of the

heating season on November 1.¹³ [REDACTED]
[REDACTED]. Targeted, beginning-of-month storage inventory levels for Columbia Gas FSS and Texas Gas NNS storage capacity were as follows for the winter of 2017-2018:

DATE	INVENTORY TARGET	
	Texas Gas NNS	Columbia Gas FSS
November 1	[REDACTED]	[REDACTED]
December 1	[REDACTED]	[REDACTED]
January 1	[REDACTED]	[REDACTED]
February 1	[REDACTED]	[REDACTED]
March 1	[REDACTED]	[REDACTED]
April 1	[REDACTED]	[REDACTED]

These inventory targets are designed to prevent the triggering of storage deliverability reduction ratchets too early during the winter season when the potential for the occurrence of design day conditions are highest, and to comply with maximum storage inventory requirements by April 1. DE-Ohio fills its propane facilities as needed to meet winter season requirements.

Table 18 identifies DE-Ohio's actual monthly utilization of storage during the audit period to serve GCR customers. That is, it excludes EFBS storage activity. DE-Ohio generally filled and depleted its GCR Columbia Gas FSS and Texas Gas NNS storage inventory consistent with its targeted planning criteria during the audit period.

¹³ Under the storage associated with no-notice service from Texas Gas, gas is advanced to DE-Ohio during the winter period. The Company returns the advanced gas during the subsequent summer period. References to injecting or filling Texas Gas storage indicate a return of advanced gas. Withdrawals refer to gas advanced to the Company.

Table 18. Summary of Audit Period Storage Activity (Dth)

MONTH	COLUMBIA GAS FSS				TEXAS GAS NO-NOTICE				PIPELINE TOTAL			
	MDQ	SCQ	Injection/ (Withdrawal)	Balance & % Capacity	MDQ	SCQ	Injection/ (Withdrawal)	Balance & % Capacity	Injection/ (Withdrawal)	Balance	% Capacity	
September 2015	170,524	6,832,979			19,690	1,861,295						
October	169,717	6,790,679			19,597	1,852,721						
Seasonal Total:												
November 2015	153,339	5,931,989			17,705	1,678,674						
December	150,999	5,809,319			17,435	1,653,810						
January 2016	150,999	5,809,319			17,435	1,653,810						
February	150,219	5,768,429			17,345	1,645,522						
March	151,779	5,850,209			17,525	1,662,098						
Seasonal Total:												
April 2016	152,317	5,878,409			17,587	1,667,813						
May	153,339	5,931,989			17,705	1,678,674						
June	153,339	5,931,989			17,705	1,678,674						
July	155,678	6,054,659			17,976	1,703,538						
August	155,678	6,054,659			17,976	1,703,538						
September	155,678	6,054,659			17,976	1,703,538						
October	154,898	6,013,769			17,886	1,695,250						
Seasonal Total:												
November 2016	153,581	5,944,679			17,733	1,681,246						
December	155,194	6,029,279			17,920	1,698,393						
January 2017	156,001	6,071,579			18,013	1,706,967						
February	150,353	5,775,479			17,361	1,646,951						
March	149,546	5,733,179			17,268	1,638,377						
Seasonal Total:												
April 2017	89,840	2,602,979			10,374	1,003,918						
May	82,579	2,222,279			9,535	926,754						
June	80,965	2,137,679			9,349	909,606						
July	88,227	2,518,379			10,187	986,770						
August	87,420	2,476,079			10,094	978,196						
September	88,227	2,518,379			10,187	986,770						
October	80,965	2,137,679			9,349	909,606						
Seasonal Total:												
November 2017	86,264	2,415,449			9,960	965,907						
December	83,924	2,292,779			9,690	941,043						
January 2018	84,704	2,333,669			9,780	949,331						
February	87,043	2,456,339			10,051	974,195						
March	85,484	2,374,559			9,870	957,619						
Seasonal Total:												
April 2018	80,804	2,129,219			9,330	907,891						
May	80,804	2,129,219			9,330	907,891						
June	81,584	2,170,109			9,420	916,179						
July	85,484	2,374,559			9,870	957,619						
August	86,264	2,415,449			9,960	965,907						
Seasonal Total:												

DE-Ohio purchased [REDACTED]
[REDACTED]
[REDACTED].

Exeter's prior management performance audit noted that one of the Company's peaking service providers failed to deliver a portion of the nominated quantities during the winter of 2013-2014. All peaking service providers met their delivery obligations during the audit period. DE-Ohio utilized the equivalent of nearly [REDACTED] of propane at an average cost of [REDACTED] to meet the requirements of GCR customers during the audit period.

5.5 Capacity Release and Off-System Sales Activities

Twice each year, DE-Ohio releases a portion of its interstate pipeline firm transportation capacity to suppliers serving firm transportation customers pursuant to the procedures discussed in Section 6.1.3 of the audit report. Under DE-Ohio's AMAs, the Company releases its remaining capacity to the Asset Manager. Therefore, DE-Ohio is not generally active in the capacity release or off-system sales markets. All releases to suppliers of firm transportation customers are made at the same rate DE-Ohio paid for the capacity. A complete history of the Company's audit period interstate pipeline firm transportation capacity release activity to suppliers is included in Appendix A to the audit report.

Although DE-Ohio did not generally engage in off-system sales activity during the audit period, the Company made off-system sales in [REDACTED] and [REDACTED] to [REDACTED]. In [REDACTED], DE-Ohio sold [REDACTED] off-system to ensure that its Columbia Gas FSS storage inventory balance did not exceed the maximum allowed by Columbia Gas' FSS FERC tariff as of April 1. The cost of the gas sold in [REDACTED] exceeded the revenues realized from the off-system sales by [REDACTED], and the loss was charged to the GCR. [REDACTED]
[REDACTED]
[REDACTED]

Exeter's review of DE-Ohio's GCR and EFBS storage inventory balances indicated that it was the storage inventory balances of both GCR customers and suppliers utilizing EFBS that required the Company to make the [REDACTED] off-system sales to reduce its Columbia Gas FSS storage inventory balance. Exeter finds that GCR customers were not adversely affected by the off-system sales because the GCR would have been charged for the above-market hedging program purchases if those supplies were not sold off-system. DE-Ohio claims that by making the off-system sales in [REDACTED], it avoided nearly [REDACTED] in Columbia Gas penalties.

DE-Ohio claims that the off-system sale made in [REDACTED] was necessitated by extreme warm weather and FSS injection restrictions imposed by Columbia Gas. The cost of the gas sold in [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED] and, therefore, GCR customers were not adversely affected by the off-system sale.

5.6 Gas Price Locational Differentials

Table 19 provides published first-of-the-month index prices and reveals the locational differentials that existed between the various delivered-to-pipeline locations at which DE-Ohio purchased its gas supplies during the audit period. The Columbia Gulf Mainline index prices in Table 19 reflect average market prices applicable for purchases delivered under the Company's Columbia Gulf FTS-1 capacity, the Texas Gas Zone 1 index prices reflect average market prices applicable for purchases delivered under the Company's Texas Gas NNS and STF capacity, and the Tennessee Gas 800 Leg index prices reflect average market prices applicable for purchases delivered under the Company's Tennessee Gas FT-A capacity. The Columbia Gas index prices reflect market prices for gas deliverable under DE-Ohio's Columbia Gulf FTS-1 BH arrangement. The Lebanon Hub index prices identified in Table 19 reflect market prices for gas deliverable by ANR Pipeline and Texas Eastern to DE-Ohio's Springboro Station. DE-Ohio evaluated securing firm transportation capacity on ANR Pipeline and Texas Eastern during the audit period that would have provided for the delivery of gas to the Springboro Station. However, securing ANR Pipeline or Texas Eastern capacity was not the lowest-cost option among the alternatives available when evaluated by DE-Ohio. The locational differentials shown in Table 19 reflect, among other things, the cost of transporting gas supplies from a particular index location to a market area and the economics specific to the particular producing region index location. Also shown in Table 19 is an average of prices applicable at each delivered-to-pipeline index location during the audit period. For example, the table shows that the average price paid for Columbia Gulf Mainline-sourced supplies by market participants during the audit period was [REDACTED]. Price relationships between DE-Ohio's available delivered-to-pipeline locations can and do change over time due to a number of factors. Table 19 reveals that prices for gas available for purchase by the Company varied little by location during the audit period.

Table 19. Comparison of First-of-the-Month Published Index Prices (\$/Dth)					
MONTH	COLUMBIA GAS APPALACHIA	COLUMBIA GULF MAINLINE	TENNESSEE GAS 800 LEG	TEXAS GAS ZONE 1	LEBANON HUB
September 2015					
October					
November					
December					
January 2016					
February					
March					
April					
May					
June					
July					
August					
Year Average:					
September 2016					
October					
November					
December					
January 2017					
February					
March					
April					
May					
June					
July					
August					
Year Average:					
September 2017					
October					
November					
December					
January 2018					
February					
March					
April					
May					
June					
July					
August					
Year Average:					
Audit Period Average:					
Source: Inside FERC Gas Market Report					

5.7 Lost-and-Unaccounted-for and Company-Use Gas

One of the objectives of the management and performance audit of DE-Ohio's gas supply policies and practices is to identify and evaluate the Company's programs to minimize lost-and-unaccounted-for gas. LUFG and gas used in company operations, or company-use gas, represent the difference between the volume of gas purchased from suppliers and the volume of gas sold to customers. LUFG and company-use gas are important when considering the ability of Ohio gas distribution companies to provide reliable gas supplies at a minimum cost because of the treatment they receive. The GCR is determined by dividing the cost of all volumes purchased to serve GCR customers by the volume of gas sold to GCR customers. As a result, the costs of unaccounted-for gas and company-use gas are passed through to customers through the GCR mechanism.

Lost-and-unaccounted-for gas is the difference between the measured volume of total gas supply or gas purchased and the measured volume of gas disposition. Gas disposition includes both gas billed to customers and company-use gas. There are a variety of reasons why some gas is unaccounted for. Some LUFG is due to problems in the measurement of gas supply and disposition. The volume of a given quantity (i.e., weight or heating value) of natural gas depends upon temperature and pressure conditions, and these may vary. Another measurement factor that can affect LUFG is cycle billing, which causes a mismatch between the timing of gas supply measurements and recorded gas sales volumes. A final measurement factor is meter inaccuracies. In addition to these measurement problems, some gas is lost through leakage in pipelines and other facilities, and through meter tampering or other kinds of theft.

DE-Ohio traditionally utilized 12-month periods ending June 30 to measure and compare LUFG on a year-to-year basis. In 2017, DE-Ohio began using 12-month periods ending August 31 to measure and compare LUFG. By using 12-month ended information beginning and ending in a low gas usage month, the imbalances caused by cycle billing are reduced. The Company's LUFG for the past five years is shown below:

LOST-AND- UNACCOUNTED-FOR GAS	
Year Ended August 31	Percent
2013	
2014	
2015	
2016	
2017	
Average	

Company-use gas is the gas that DE-Ohio itself utilizes in operating its system. The uses of

this gas include heating Company buildings and stations. During CY 2017, company-use gas totaled [REDACTED]. This represented approximately [REDACTED] of total gas delivered to DE-Ohio in 2017. Shown below are company-use gas volumes for the past five years:

COMPANY-USE GAS	
Year	Mcf
2013	[REDACTED]
2014	[REDACTED]
2015	[REDACTED]
2016	[REDACTED]
2017	[REDACTED]

DE-Ohio transportation customers are charged for LUFG and company-use gas through a fuel retention charge. Traditionally, the fuel retention charge was adjusted annually each November 1 to reflect the Company's actual 12-month period ended June 30 LUFG and company-use gas experience. With the change to using a 12-month period ending August 31 to measure and compare LUFG, the Company began adjusting the fuel retention charge effective each April 1. In 2017, to align the method used by DE-Ohio with the method used by Piedmont, DE-Ohio began adjusting its fuel retention charge based on a 36-month period ending August 31 basis.

5.8 Conclusions and Recommendations

5.8.1 *Audit Period Purchases*

DE-Ohio's gas procurement strategy is to, within operating and contractual constraints, maximize deliveries from its lowest-cost source of supply. The Company's audit period gas supply purchases were consistent with this strategy.

5.8.2 *Off-System Sales*

Under its AMAs, DE-Ohio released all of its interstate pipeline firm capacity not released to Choice suppliers to its Asset Manager. As a result, DE-Ohio was not an active participant in the off-system sales market. Although DE-Ohio did not generally engage in off-system sales activity during the audit period, the Company made off-system sales in [REDACTED] and [REDACTED] to [REDACTED]. The off-system sales in [REDACTED] were made to ensure that the Company's Columbia Gas FSS storage inventory did not exceed the maximum allowed by Columbia Gas' FSS FERC tariff as of April 1. A loss of [REDACTED] was realized from these off-system sales, which was charged to the GCR. [REDACTED]

Exeter's review of DE-Ohio's GCR and EFBS storage inventory balances indicated that it was storage inventory balances of both GCR customers and Choice suppliers utilizing EFBS that required the

Company to make the [REDACTED] off-system sales to reduce its Columbia Gas FSS storage inventory balance. Exeter finds that GCR customers were not adversely affected by the off-system sales because the GCR would have been charged for the above-market hedging program purchases if those supplies were not sold off-system. Exeter's audit also found that DE-Ohio had not evaluated whether the need to reduce its Columbia Gas FSS storage inventory balances was attributable to activity on behalf of GCR customers or the activity of suppliers utilizing EFBS. Exeter recommends that DE-Ohio establish procedures to formally monitor EFBS storage inventory balances to ensure they comply with the requirements of Columbia Gas' FSS FERC tariff to ensure GCR customers are not potentially adversely impacted by EFBS storage activity in the future. GCR customers could be adversely affected by EFBS inventory balances if the balances exceed those permitted by Columbia Gas' FSS tariff, or if the balances decline and result in a reduction in the daily deliverability from Columbia Gas FSS storage.

The [REDACTED] off-system sale was necessitated by extreme warm weather and FSS injection restrictions imposed by Columbia Gas. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED] and, therefore, GCR customers were not adversely affected by the off-system sale.

5.8.3 *Lost-and-Unaccounted-for Gas*

DE-Ohio's LUFG experienced has averaged approximately [REDACTED] over the last five years. This compares favorably with the experience of other gas utilities.

6. TRANSPORTATION SERVICE

Duke Energy Ohio provides transportation service to customers who acquire their own natural gas supplies separate from the purchase of the Company's system supply. DE-Ohio transports approximately [REDACTED] of gas annually for its residential, commercial, and industrial transportation customers. This represents [REDACTED] percent of the Company's total combined annual sales and transportation volumes of approximately [REDACTED]. DE-Ohio began offering its residential and small commercial customers a practical opportunity to utilize transportation service under the Company's Choice program in September 1997. In addition to residential and small commercial customers, the term "Choice" has been extended to include all DE-Ohio customers utilizing firm transportation service, including those utilizing transportation service prior to September 1997. Table 20 identifies deliveries of gas to DE-Ohio by transportation customers by pipeline during the audit period.

Section 6.1 discusses DE-Ohio's firm transportation program, including the assignment of capacity resources to suppliers participating in DE-Ohio's Choice program. Section 6.2 discusses interruptible transportation service. The audit period imbalances between deliveries to DE-Ohio on behalf of transportation customers and the consumption of transportation customers are examined in Section 6.3. Section 6.4 examines whether the Company could serve its GCR customers and meet the balancing requirements of firm transportation customers at a reduced level of interstate pipeline storage service. The final section presents Exeter's conclusions and recommendations concerning DE-Ohio's transportation service offerings.

6.1 Firm Transportation Service

6.1.1 Background and Participation

Firm transportation service is available to DE-Ohio's residential customers under Rate RFT (Residential Firm Transportation Service) and Rate RFTLI (Residential Firm Transportation Service – Low Income); to non-residential customers using 400 Mcf or less per year under Rate FT-S (Firm Transportation Service – Small); and to non-residential customers using more than 400 Mcf per year under Rate FT-L (Firm Transportation Service – Large). With the exception of Percentage of Income Payment Program customers, all customers in DE-Ohio's service territory are eligible to choose an alternative provider of natural gas supply service. [REDACTED]
[REDACTED]. Firm transportation service currently represents approximately [REDACTED] percent of total firm throughput, and [REDACTED] percent of residential customer throughput. Customers may enroll in DE-Ohio's firm transportation program at any time.

Table 20. Summary of Deliveries by Transportation Customers by Source (Dth)

MONTH	KO TRANSMISSION	TEXAS GAS	ANR	TEXAS EASTERN	COLUMBIA GAS	TOTAL DELIVERIES
September 2015						
October						
November						
December						
January 2016						
February						
March						
April						
May						
June						
July						
August						
September 2016						
October						
November						
December						
January 2017						
February						
March						
April						
May						
June						
July						
August						
September 2017						
October						
November						
December						
January 2018						
February						
March						
April						
May						
June						
July						
August						
TOTAL Audit Period:						
Percent:						
Note: KO Transmission deliveries are generally initially sourced on Columbia Gulf or Tennessee Gas.						

Supplier participation in DE-Ohio's firm transportation program increased from ■ to ■ suppliers during the audit period. Of the ■ suppliers currently participating in DE-Ohio's firm transportation program, ■ serve residential customers. Slightly more than ■ percent of firm transportation customers are served by ■ supplier.

6.1.2 Rate Schedules

DE-Ohio's firm transportation program features four transportation services—Rate RFT, Rate RFTLI, Rate FT-S, and Rate FT-L. All customers participating in the Company's firm transportation program must enter into an agreement with a supplier who meets the requirements for participation in the Company's pooling program under Rate FRAS (Full Requirements Aggregation Service). Suppliers must enter into a Gas Supply Aggregation/Customer Pooling Agreement, which has a minimum term of two years. Aggregation service allows suppliers to schedule and nominate, and to balance, deliveries to DE-Ohio with usage on a total customer rather than individual customer basis. That is, a supplier need only arrange for delivery to DE-Ohio the total quantity of gas required to service its customers and not designate the amount specifically delivered for each customer.

6.1.3 Capacity Assignment and Propane Facilities

Pursuant to the Stipulation and Recommendation approved in PUCO Case No. 05-732-EL-MER, DE-Ohio revised its FRAS tariff to include the mandatory assignment of firm interstate pipeline capacity to suppliers as their customer base and associated capacity requirements increased beyond that which existed on April 1, 2007. The change to the assignment of firm pipeline capacity was implemented to mitigate the risk of DE-Ohio incurring stranded capacity costs as customers migrate to alternative suppliers, and provides for the availability of capacity as customers return to DE-Ohio's system supply portfolio. Supplier capacity assignment is based on the increase in the MDQ of the supplier's customers from that which existed on April 1, 2007. Assignments are made effective each April 1 and November 1 and are not made unless the MDQ of the supplier's customers exceeds 6,000 Dth, and the incremental amount of the increase above the April 1, 2007 MDQ is 3,000 Dth. Only DE-Ohio's firm transportation capacity is assigned. Storage and no-notice service is not assigned. At the conclusion of the audit period, 11 choice suppliers were assigned interstate pipeline capacity.

Since the inception of capacity assignment to Choice suppliers in 2007, the allocation of capacity had been based on the increase in the suppliers' MDQ and the percentage share of DE-Ohio's firm transportation pipeline contracts compared to the Company's total design day capacity resources less the propane quantity available to suppliers. Under this approach, since only firm transportation capacity was assigned, the Company and GCR customers were left with a lower percentage share of firm transportation capacity than prior to assignment.

As the Choice program has grown, the differences in the firm transportation percentages for Choice suppliers and GCR customers has become more apparent. To address this difference, beginning with the winter of 2017-2018, DE-Ohio revised the Choice supplier capacity assignment allocation. Under the revised approach, the capacity to be released is determined based on the percentage of pipeline firm transportation capacity that is utilized to meet GCR customer design day demands after the allocation. This calculation is circular since the amount of pipeline firm transportation capacity available for GCR customers is dependent on the amount of capacity that is released to Choice suppliers. A comparison of the pipeline capacity assignments to Choice suppliers under the approach used prior to the winter of 2017-2018 and the approach used for the winter of 2017-2018 and thereafter is presented in Table 21. As shown, the capacity allocations to Choice suppliers under the method adopted for the winter of 2017-2018 slightly reduced the amount of capacity assigned. The MDQ of Choice suppliers eligible for assignment for the winter of 2017-2018 as provided for under the procedures approved in PUCO Case No. 05-732-EL-MER was [REDACTED].

Table 21. Impact of Interstate Pipeline Firm Transportation Capacity Assignments (2017-2018 Winter Season)					
PIPELINE/SERVICE	Contract Quantity (Dth) ^[1]	ASSIGNMENT METHOD			
		Pre-Winter 2017-2018		Winter 2017-2018	
		MDQ (Dth)	Percent	MDQ (Dth)	Percent
Texas Gas STF	65,000	39,525	60.8%	34,004	53.2%
Columbia Gulf FTS-1	48,850	29,704	60.8	26,005	53.2
Columbia Gulf BH	20,936	12,728	60.8	11,133	53.2
Tennessee FT-A	23,926	14,547	60.8	12,741	53.2
TOTAL:	158,712	96,505	60.8%	84,483	53.2%
^[1] Contract quantity adjusted for KO Transmission fuel retention.					

DE-Ohio's FRAS tariff provides that pipeline capacity is to be released in proportionate shares unless both parties agreed to a different allocation. Relatively minor adjustments to proportionate share allocations were agreed to by the parties during the audit period. DE-Ohio's FRAS tariff also provides that during the summer months of April through October, DE-Ohio's contractual pipeline capacity quantities are to be reduced to reflect the Company's maximum daily injection rights for Columbia Gas FSS for purposes of determining the *pro rata* capacity assignment for suppliers that have elected Firm Balancing Service (FBS) rather than Enhanced Firm Balancing Service (EFBS). This provision in DE-Ohio's tariff is no longer utilized in the capacity assignment process, and was adopted to address the concern of certain suppliers electing FBS that their summer allocation of capacity was higher than their actual load due to the inclusion of capacity used for storage injections. With the requirement that all suppliers with a customer MDQ of 6,000 Dth or greater utilize EFBS approved in Case No. 15-50-GA-RDR, and the requirement that

only suppliers with a customer MDQ of 6,000 Dth or greater accept an assignment of capacity, there are no suppliers using FBS that are assigned capacity. FBS and EFBS are further discussed in Section 6.1.5 of the audit report.

DE-Ohio's system is designed to use propane for maintaining system pressures during peak periods. Propane is also used for peak shaving and, therefore, propane has been made available to suppliers serving firm transportation customers. Suppliers are allocated propane based on the product of the projected design day requirements (MDQ) of each supplier's customers and the percentage of the Company's total firm system design day requirements to be met by propane. With the decline in the deliverability of DE-Ohio's propane facilities to [REDACTED] due to the unavailability of the Dicks Creek Plant, propane is currently available to meet [REDACTED] percent of DE-Ohio's design day requirements. The MDQ of a supplier's customers less the supplier's allocated share of propane is referred to as the "Adjusted MDQ."

At times, due to the migration of sales customers to transportation service, DE-Ohio could maintain unneeded pipeline capacity. The costs associated with any unneeded pipeline capacity are recovered from all firm sales and transportation customers. The unneeded capacity costs are recovered from sales customers through GCR rates, and from firm transportation customers through Rider CCCR. Also recovered through Rider CCCR is a proportional share of the transportation charges associated with the transportation service provided by DE-Kentucky to DE-Ohio, and the propane costs incurred to supply gas to firm sales customers that have elected to switch to firm transportation service. The AMA fees allocated to firm transportation customers are reflected as a credit under Rider CCCR. Rider CCCR is discussed in greater detail in Section 6.1.9 of the audit report.

6.1.4 Deliveries by Suppliers

Each morning, by 9:00 a.m., the Company posts on its Gas Transportation Management System (GTMS) an Adjusted Target Supply Quantity (Adjusted TSQ) that a supplier is required to deliver to DE-Ohio on the following gas day.¹⁴ [REDACTED]

[REDACTED]. The TSQ reflects DE-Ohio's estimate of the amount of gas to be consumed by a supplier's customers. [REDACTED]

[REDACTED]. If the Adjusted TSQ exceeds the Adjusted MDQ, a supplier has two options with respect to the incremental volume difference between the Adjusted TSQ and the Adjusted MDQ. A supplier may deliver the incremental volumes, or may rely on deliveries from the Company's propane facilities or from other Company peaking supplies. The costs associated with the propane or other peaking

¹⁴ A gas day begins at 10:00 a.m. and ends the following day at 10:00 a.m.

supplies used by the supplier are then billed to the supplier. Due to the physical configuration of the Company's system, DE-Ohio may require suppliers to deliver specific percentages of required daily deliveries through those receipt points located on the northern and southern portions of the system.

If a supplier fails to deliver gas in accordance with the requirements of the Company's Gas Supply Aggregation/Customer Pooling Agreement or otherwise fails to comply with the provisions of the tariff, the Company has the discretion to temporarily suspend or terminate the supplier from the firm transportation program. If the supplier is suspended or terminated from further participation in the Company's firm transportation program, the supplier's customers are returned to sales service unless and until the customers elect another supplier. No suppliers were terminated from DE-Ohio's firm transportation program during the audit period.

6.1.5 *Balancing Requirements and Rates*

DE-Ohio provides firm balancing service to accommodate differences between the quantity of gas delivered to the Company by a supplier and the actual consumption of the supplier's customers. DE-Ohio offered two firm balancing service options during the audit period—Firm Balancing Service and Enhanced Firm Balancing Service. Initially during the audit period, suppliers whose customers' MDQ exceeded 1,000 Dth/day were required to purchase, at their option, either FBS or EFBS on an annual basis, effective each April 1. Suppliers whose customers' MDQ was less than 1,000 Dth/day were required to receive FBS. In January 2015, the Company filed an application to modify the terms of election for EFBS to make EFBS mandatory for all firm suppliers whose customers' MDQ exceeded 20,000 Dth/day (PUCO Case No. 15-50-GA-RDR). DE-Ohio filed to make EFBS mandatory due to growth in the Company's Choice program and a decline in the number of Choice suppliers electing EFBS, which resulted in insufficient firm transportation capacity being available in relation to storage to serve GCR customers. In an Opinion and Order issued January 6, 2016, the PUCO made EFBS mandatory for suppliers serving customers with an MDQ that exceeded 6,000 Dth effective April 1, 2017. Suppliers whose customers' MDQ was greater than 1,000 Dth/day but less than 6,000 Dth/day continued to have the option of selecting FBS or EFBS.

Under FBS, a supplier is required to deliver the Adjusted TSQ, and DE-Ohio will accommodate the difference between the Adjusted TSQ and the actual consumption of the supplier's customers. For those suppliers electing FBS, a balancing charge is assessed on the consumption of the supplier's customers. The FBS charge effective June 1, 2018 was 21.0 cents per Mcf, and is based on the costs associated with the no-notice service that DE-Ohio purchases from Columbia Gas under Rate Schedules FSS and SST. The FBS rate is recalculated when Columbia Gas' FSS/SST rates are revised.

Under EFBS, suppliers are provided greater flexibility in managing their gas supplies. Suppliers served under EFBS are assigned a Maximum Daily Delivery Quantity (MDDQ) equal to the

proportion of the Company's no-notice daily balancing services (Columbia Gas FSS/SST and Texas Gas NNS) to the Company's total daily firm system design day multiplied by the design day demand of the supplier's customers. Assignments are based on MDDQ increments of 3,000 Dth. A Bank Contract Quantity (BCQ) is also established for the supplier equal to a proportional share of the Company's total seasonal no-notice storage capacity.

The TSQ that a supplier is required to deliver each day, absent any prior or current period adjustments, is based on forecasted temperature. Under EFBS, on a daily basis, a supplier's EFBS BCQ account, or bank, is increased or decreased by the daily difference between the actual volumes received by the Company at its citygate from the supplier's back-casted TSQ (i.e., TSQ based on the actual temperature), adjusted for fuel retainage as follows:

- If the supplier delivers more natural gas than the back-casted TSQ, the supplier's EFBS bank is increased by the amount of the overdelivery, calculated at the Company's citygate, plus the current KO Transmission fuel retainage charge and minus the current Columbia Gas SST and FSS fuel retainage charge.
- If the supplier delivers less natural gas than the back-casted TSQ, the supplier's EFBS bank is decreased by the amount of the underdelivery, calculated at the Company's citygate, plus the current Columbia Gas SST fuel retainage charge.

On a day when a supplier's TSQ is greater than or equal to the MDQ of its customers, a supplier has full access to the total MDDQ. The supplier is not required to make total deliveries, including the back-casted MDDQ, above the MDQ.

EFBS assignments are adjusted monthly, based on 3,000-Dth increments. Maximum and minimum monthly bank inventory quantities and maximum and minimum monthly injection and withdrawal quantity restrictions are imposed under EFBS consistent with those imposed by Columbia Gas under Rate FSS. Suppliers are assessed a demand cost based on their MDDQ, and a commodity charge is assessed on all monthly consumption of the supplier's customers. EFBS charges are recalculated when Columbia Gas' FSS/SST or Texas Gas' NNS rates are revised. Effective June 1, 2018, the EFBS demand charge was \$7.10/Dth per month and the commodity charge was 2.9 cents per Mcf. As of the conclusion of the audit period, 13 of the approximately 60 suppliers on DE-Ohio's system utilized EFBS.

6.1.6 Imbalance Resolution

There are two types of imbalances that may occur under the Company's firm transportation program. First, a supplier may not deliver the Adjusted TSQ on a particular day. That is, a supplier may deliver more (overrun or excess) or less (underrun or underdeliveries) than the Adjusted TSQ (collectively, daily delivery imbalances). Second, the TSQ may not precisely match the consumption of the supplier's customers (consumption imbalances). Consumption imbalances can be

attributable to forecast errors in the Company's TSQ estimation models and differences in forecasted and actual weather.

Cash-out procedures are applicable for daily delivery imbalances, except when a supplier has elected EFBS. Excess deliveries are purchased by the Company from the supplier, and underdeliveries are sold by the Company to the supplier, at the first-of-the-month index price published in *Inside FERC's Gas Market Report*, "Prices of Spot Gas Delivered to Pipelines," Columbia Gulf Transmission Co., Mainline Index, first publication of the month following the delivery month, plus the variable and fuel transportation charges of Columbia Gulf and Columbia Gas to the Company's citygate. Also included in the sale price for underdeliveries are the applicable excise taxes.

DE-Ohio's tariff provides for consumption imbalances to be reconciled on an annual basis. During the audit period, consumption imbalances were reconciled on a 12-month ended June 30 basis. Suppliers have the option to eliminate consumption imbalances through either (1) the exchange of gas with the Company through a storage inventory transfer; (2) an adjustment to their EFBS bank balance; or (3) delivery over the next 30 days or longer, if agreed upon.

6.1.7 Operational Flow Orders

Suppliers are subject to the issuance of warm and cold weather operational flow orders (OFOs) that will direct each supplier to adjust delivered volumes to match the estimated usage of its customers. For suppliers that have elected EFBS as their balancing option, the difference between scheduled deliveries from interstate pipelines and estimated usage will be met by EFBS. In the event that the Company's storage service provider has restricted excess storage withdrawals/injections and a supplier exceeds the EFBS MDDQ or maximum BCQ, the excess quantities will be considered a failure to comply with the OFO. On days with projected temperatures colder than the design peak day temperature utilized by DE-Ohio, a supplier has two options: (1) deliver to the Company the quantity of gas equal to the Adjusted TSQ; or (2) deliver to the Company only the quantity of gas equal to the Adjusted MDQ, and rely on the Company to acquire the incremental volume (the difference between the Adjusted TSQ and the Adjusted MDQ). If a supplier selects the second option, the supplier is required to pay the Company for the costs incurred in obtaining the incremental supply and may meet the delivery requirement with both flowing supply and EFBS supply. Failure of the supplier to deliver volumes in accordance with its selected option may result in suspension or termination from further participation in the Company's firm transportation program.

Failure to comply with an OFO results in the following charges that are applicable to the difference between the daily OFO quantity and the actual volume delivered:

Cold Weather OFO Underdelivery

1. The payment of a gas cost equal to the highest incremental cost paid by the Company on the date of non-compliance;
2. One month of DE-Ohio's demand charges from its interstate pipelines on the OFO's shortfall. This charge is not imposed more frequently than once in any 30-day period; and
3. The payment of all other charges incurred by the Company, including interstate pipeline penalty charges on the date of the OFO shortfall.

Warm Weather OFO Overdelivery

1. Any overdelivery by a supplier will be confiscated by DE-Ohio and used for the Company's general supply requirements, without compensation to the supplier; and
2. The supplier will pay any penalty charges that the Company incurs from the interstate pipelines for such excess deliveries, provided such penalties can be attributed to the supplier's overdelivery.

DE-Ohio issued OFOs on several occasions during the audit period. Warm-weather OFOs were in effect for 35 days during the audit period, and cold-weather OFOs were in effect for 13 days during the audit period. There were no additional pipeline or supplier costs incurred by the Company due to OFO violations.

6.1.8 Gas Transportation Management System and Monitoring of Imbalances

DE-Ohio utilizes its Gas Transportation Management System (GTMS) to split projected firm day-ahead sendout between GCR sales and firm transportation customers, and to develop daily TSQs for each supplier. To develop these projections, the GTMS uses [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]. Shown below are the consumption imbalances for each 12-month ended June 30 reconciliation period during the audit period. As shown, consumption imbalances averaged less than [REDACTED] percent during the audit period.

AUDIT PERIOD CONSUMPTION IMBALANCES (Dth)				
12 Months Ended June 30	Usage	Deliveries	Imbalance	
			Quantity	Percent
2016				
2017				
2018				
AVERAGE:				

6.1.9 Contract Commitment Cost Recovery Rider

In Case No. 95-656-GA-AIR, the PUCO approved customer Choice firm transportation tariffs that provided for the establishment of a Contract Commitment Cost Recovery Rider. Rider CCCR provided a mechanism for the Company to fully recover the costs of upstream pipeline contract commitments, propane costs, and other costs that were incurred to supply gas to firm sales service customers that have subsequently elected to switch to transportation service.

During the prior management performance audit period, DE-Ohio's capacity assignment procedures provided for the assignment of capacity effective each November 1 and April 1, based on the aggregate demands of the customers served by a supplier at the end of the previous September and February, respectively. The prior arrangement performance audit found that the City of Cincinnati switched to firm transportation service in October 2012. As a result, DE-Retail, the supplier serving the City of Cincinnati, was able to avoid an assignment of capacity effective November 1, 2012, and DE-Ohio was left with unneeded capacity. The costs associated with the unneeded capacity were recovered entirely from GCR customers. DE-Ohio's Rider CCCR was designed to recover a portion of the costs associated with unneeded interstate pipeline capacity incurred to serve GCR customers that have elected to switch to transportation service. Exeter's prior audit found that a portion of the costs associated with the unneeded capacity should have been recovered under Rider CCCR rather than through the GCR. Exeter recommended that \$237,245 of the costs associated with the unneeded capacity be removed from the GCR and recovered under Rider CCCR. Exeter also recommended that DE-Ohio should investigate modifying its tariff to address the potential for a supplier to avoid the assignment of capacity. The Stipulation and Recommendation approved in Case No. 15-218-GA-GCR adopted Exeter's recommendations and required DE-Ohio to include \$237,245 in its Rider CCCR calculations and to file a report concerning tariff modifications to address the potential avoidance of capacity assignment.

The Scope of Work for the current audit requires the auditor to verify that the Company included \$237,245 for recovery under Rider CCCR for the costs associated with the avoided assignment of capacity when the City of Cincinnati elected to participate in the Choice program. The Scope of Work also required the auditor to examine DE-Ohio's efforts to modify its tariff to address the potential for suppliers to avoid the assignment of capacity. DE-Ohio files to adjust Rider

CCCR on a quarterly basis. DE-Ohio included \$237,245 in avoided capacity assignment costs in its December 2016, March 2017, June 2017, and September 2017 Rider CCCR calculations.

To address the potential for suppliers to avoid an assignment of capacity in the future, the Company has proposed adding the following sentence to the capacity assignment provision of its tariff:

For purposes for determining the amount of capacity to be released, the MDQ will be adjusted for known changes to the suppliers' pool expected for the following season.

However, DE-Ohio has not modified its tariff to reflect the proposed language. DE-Ohio indicated that it would file to revise its capacity release tariff language in its next base rate case application. There is currently no definitive date for the filing of a base rate case application by DE-Ohio. Exeter's audit did not identify any instances of Choice suppliers avoiding the assignment of pipeline capacity due to circumstances similar to those that occurred during the prior management performance audit period with the conversion of the City of Cincinnati to firm transportation service.

6.2 Interruptible Transportation Service

6.2.1 *Background*

DE-Ohio provides interruptible transportation service pursuant to Rate IT. Service under Rate IT is available to any customer who: (1) signs a contract with the Company for service under Rate IT; (2) utilizes a minimum of 1,000 Mcf per month during the seven consecutive billing periods commencing with the customer's first meter reading taken on or after April 1; (3) has arranged for the delivery of gas into the Company's system for that customer's sole use at one point of delivery where distribution mains are adjacent to the premises to be served; and (4) has become a member of a pool under Rate AS (Aggregation Service) and elects Interruptible Monthly Balancing Service Under Rate IMBS. Service under Rate IT may be provided by displacement and on a "best efforts" basis. The Company reserves the right to decline requests to initiate or continue service whenever, in the Company's judgment, rendering the service would be detrimental to the operation of the Company's system or its ability to supply gas to customers receiving firm service.

The rates for interruptible transportation service are reflected in DE-Ohio's tariff, but the Company may negotiate a lower, discounted rate on an individual basis. Presently, [REDACTED] interruptible transportation customers receive service at discounted rates. The Company reviews the eligibility and economics of discounted rate contracts prior to renewal.

In order to administer the provisions of the tariff for interruptible transportation service and

monitor daily usage, DE-Ohio installs remote metering equipment on the customer's meter site. The customer is responsible for payment of the costs associated with the equipment. The customer is also responsible for providing the Company with access to telephone service at the customer's metering site, or other equipment that may be necessary, and the monthly charges for telephone service or other necessary equipment.

In the event that a customer fails to interrupt transportation deliveries at the Company's request, any excess deliveries through the customer's meter will be considered unauthorized deliveries that are subject to the flow-through of pipeline penalty charges to the extent that they are incurred by the Company. In addition, any customer accepting unauthorized deliveries will be billed an amount reflective of the otherwise applicable general service sales rate, or the Company's highest-cost gas, plus one month of demand charges on the volume difference (this charge is not imposed more frequently than once in any 30-day period) and/or the cost of operating the Company's propane peak-shaving facilities. DE-Ohio may physically discontinue service to a customer if the customer refuses to interrupt service when requested to do so by the Company.

Pooling service for customers receiving service under Rate IT is provided under Rate AS – Pooling Service for Interruptible Transportation. Rate IT customers must elect whether they, acting on their own behalf, will function as a pool operator and manage their own gas supplies or choose a pool operator. Pool operators are responsible for meeting the aggregated daily and monthly requirements of those customers that comprise their pool.

6.2.2 *Balancing Requirements and Rates*

Interruptible transportation customers and/or their suppliers (pool operators) determine the quantity of gas to deliver to DE-Ohio on a daily basis. Balancing service is available to interruptible transportation customers under Rate IMBS – Interruptible Monthly Balancing Service. The service provided under Rate IMBS is a "best efforts," interruptible, monthly gas balancing service that requires only a general obligation to balance daily pool usage with pool deliveries and provides that no daily imbalance charges or penalties will be levied on the pool operators, except on those days when operational flow orders have been issued. However, pool operators are under a continuing obligation to work with the Company in a good faith manner to respond to both formal and informal system management requests, and to strive to maintain relative daily balancing on the system throughout the course of the month. Interruptible transportation customers who purchase service under Rate IMBS select monthly imbalance carryover tolerance levels from among the following options, with charges applicable as follows:

OPTION	ALLOWED MONTHLY UNDERRUN	MONTHLY CARRYOVER TOLERANCE		CHARGE ON ALL THROUGHPUT (\$/Mcf)
		May – November	December – April	
1	0%	5%	7%	\$0.015
2	0%	6%	8%	\$0.020
3	0%	8%	10%	\$0.025

Imbalances under Rate IT in excess of the carryover tolerance are cashed out by the Company on a monthly basis pursuant to the same procedures applicable for firm transportation delivery imbalances. The Company may issue an OFO that directs pool operators to deliver gas at specified citygate receipt points.

In the prior management performance audit, Exeter recommended that DE-Ohio evaluate whether adopting daily balancing tolerances for interruptible transportation service would improve the Company's ability to manage storage and/or would enable the Company to reduce its contract storage entitlements. Exeter also found that interruptible transportation customers were not contributing a reasonable share of the costs associated with the provision of balancing service and that DE-Ohio should investigate revising the charges for IMBS to provide a more significant contribution toward the recovery of the pipeline storage costs incurred to provide IMBS. In the Stipulation and Recommendation approved in PUCO Case No. 15-218-GA-GCR, the Company agreed to perform an evaluation of Exeter's recommendations. The Scope of Work in this proceeding requires the auditor to examine the Company's evaluation of the interruptible transportation service balancing recommendations included in the prior management performance audit.

With respect to adopting daily balancing requirements, the Company examined daily interruptible transportation usage and deliveries for the 10-year period ended August 2017, and found that daily imbalances ranged from an underdelivery of 43,302 Dth to an overdelivery of 53,099 Dth, and that 95 percent of the time, the daily imbalance was less than 20,000 Dth. To approximate the impact of adopting daily balancing tolerances, the Company evaluated the impact of OFOs on daily imbalances. Under a cold-weather OFO, daily underdeliveries are penalized, and under a warm-weather OFO, daily overdeliveries are penalized. The Company's evaluation of daily imbalances during OFO periods indicated that 95 percent of the time, the daily imbalance was less than 23,000 Dth. Therefore, DE-Ohio concluded that imposing daily balancing requirements on interruptible transportation customers would not substantially improve its ability to manage storage or reduce its storage entitlements. Exeter concurs with the Company's evaluation and conclusions concerning adopting daily balancing for interruptible transportation service.

With respect to the adequacy of the current IMBS charges, the Company recognized that there were two cost components associated with providing IMBS—a daily deliverability component and a seasonal storage capacity component. The daily deliverability component consisted of those

charges associated with meeting daily imbalances. Since daily imbalances are largely accommodated by Columbia Gas FFS/SST service, daily delivery costs included FSS daily deliverability demand charges, SST demand charges, FSS injection and withdrawal charges, and SST fuel charges, as well as KO Transmission demand charges. To determine the deliverability costs associated with providing IMBS, the Company assumed that, consistent with its analysis of daily balancing, 20,000 Dth of Columbia FFS/SST service was required to provide IMBS and variable charges would be incurred on the annual average overdelivered volumes. The Company's analysis indicated that the average daily deliverability cost component of IMBS was \$0.0823/Mcf.

As described previously in this section, there are three monthly carryover options available under IMBS, and Columbia FSS storage capacity costs are assessed based on the seasonal storage capacity entitlements. Therefore, the applicable FSS storage capacity costs associated with each carryover option would differ. To calculate the seasonal storage capacity cost component, the Company noted that the three current IMBS options differed in the amount of gas that can be carried over into the next month. Since this only affects the storage balance rather than deliverability, this component was calculated by the Company for each option based on the amount that can be carried over, priced out at the current seasonal capacity demand rate for Columbia Gas FSS service. The carry-over amount was estimated by dividing average annual throughput by 12 to get a monthly volume, and then applying the appropriate carryover percentage. This resulted in rates of \$0.0017/Mcf, \$0.0020/Mcf, and \$0.0025/Mcf for IMBS Options 1, 2, and 3, respectively. Combining the deliverability and seasonal storage capacity components results in the proposed rates per the table below:

	DAILY IMBALANCE	MONTHLY CARRY-OVER	PROPOSED RATE	CURRENT RATE
Option 1 (\$/Mcf)	\$0.0823	\$0.0017	\$0.0839	\$0.015
Option 2 (\$/Mcf)	\$0.0823	\$0.0020	\$0.0842	\$0.020
Option 3 (\$/Mcf)	\$0.0823	\$0.0025	\$0.0848	\$0.025

The Company concluded that the revenue contribution of interruptible transportation customers through IMBS has not been commensurate with the cost of providing service. DE-Ohio indicated that it would address IMBS rates in its next base rate case, but had no definitive timetable for filing its next case.

DE-Ohio's current IMBS rates were approved by the PUCO in a Supplemental Opinion and Order in Case No. 95-656-GA-AIR entered July 2, 1997. The Supplemental Opinion and Order included language providing that if the Company or any intervenor reasonably believed that IMBS was not operating as intended (including imposing undue costs on the Company's GCR customers), the parties would agree to discuss and consider modifications to the appropriate tariffs. The

Company's evaluation of IMBS charges and Exeter's audit found that the revenue contribution of interruptible transportation customers through IMBS has not been commensurate with the cost of providing service and, therefore, is imposing undue costs on GCR customers.

6.2.3 Interruptible Transportation Service Curtailment

DE-Ohio's interruptible transportation customers are subject to curtailment on the coldest days. The Company has an automated system in place that calls its interruptible transportation customers in the event a curtailment is required. The Company may initiate a curtailment when, in its judgment, service to firm customers may be jeopardized. DE-Ohio initiated [REDACTED] interruptible transportation service curtailments during the audit period.¹⁵ Prior to these curtailments, there were [REDACTED] customers taking service under Rate IT. Exeter's audit indicates that these curtailments did not result in the switching of interruptible transportation customers to firm transportation service as was observed in Exeter's prior management performance audit when [REDACTED] interruptible transportation customers returned to firm transportation service due to curtailments initiated during the winter of 2014-2015.

6.3 Audit Period Imbalances

In order to minimize their balancing service requirements, suppliers serving DE-Ohio's transportation customers are encouraged to utilize the Company's interpool imbalance trading services. DE-Ohio operates an electronic bulletin board through which suppliers may post offers to purchase or sell gas supplies or trade imbalances. This trading service is provided under Rate GTS – Gas Trading Service. A charge of \$5.00 per transaction is applicable under Rate GTS. Daily imbalance trades must be made within four business days from the date of the imbalance. Monthly imbalance trades must be completed within four business days following the end of the month. If a pool operator is receiving EFBS, daily imbalance trades or transfers must be made within three days from the date that the pool operator is notified of the back-casted TSQ.

6.3.1 Firm Transportation Imbalances

The performance of suppliers serving firm transportation customers in delivering the Adjusted TSQ determined by DE-Ohio is summarized in Table 22. As indicated in the "Imbalance" column under "Daily Delivery Imbalances," suppliers participating in the firm transportation program, with limited exceptions, delivered the Adjusted TSQ determined by DE-Ohio during the audit period. Table 22 also shows that during the audit period, firm customers paid FBS balancing charges of [REDACTED] and EFBS balancing charges of [REDACTED], which were both credited to GCR customers. Included in the imbalances shown in Table 22 but not explicitly identified are [REDACTED] Mcf of unauthorized OFO overdeliveries, which were confiscated by the Company, and

¹⁵ Curtailments were initiated on December 27, 2017 and January 2, 3, and 5, 2018.

██████████ of unauthorized OFO underdeliveries, which generated ██████████ in revenue.

6.3.2 *Interruptible Transportation Imbalances*

Interruptible transportation customer imbalances during the audit period are summarized in Table 23. Monthly imbalances between deliveries and consumption were generally less than ██████████ of consumption, averaging slightly less than ██████████ during the audit period. In addition to the charges reflected in Table 23, DE-Ohio assessed interruptible transportation customers charges for violating OFOs. In total, interruptible pool operators were charged ██████████ for unauthorized underdeliveries of ██████████; and ██████████ for unauthorized overdeliveries of ██████████.

Table 22. Summary of Firm Transportation Customer Balancing Activity

MONTH	DAILY DELIVERY IMBALANCES (Mcf)										FBS BALANCING REVENUES	EFBS BALANCING REVENUES
	DELIVERIES				UNDERDELIVERY CASHOUT		OVERDELIVERY CASHOUT		MONTHLY CONSUMPTION IMBALANCES (Dth)			
	Required	Actual	EFBS/Other	Imbalance	Quantity	Revenue	Quantity	Revenue				
September 2015												
October												
November												
December												
January 2016												
February												
March												
April												
May												
June												
July												
August												
Subtotal:												
September 2016												
October												
November												
December												
January 2017												
February												
March												
April												
May												
June												
July												
August												
Subtotal:												
September 2017												
October												
November												
December												
January 2018												
February												
March												
April												
May												
June												
July												
August												
Subtotal:												
TOTAL:												

Table 23. Summary of Interruptible Transportation Customer Balancing Activity (Mcf)

MONTH	IMBALANCE		DELIVERIES	USAGE	MONTHLY		PERCENT	IMBS	UNDERDELIVERY CASHOUT			OVERDELIVERY CASHOUT		
	CARRYOVER	IMBALANCE			IMBALANCE	CHARGES			Quantity	Price	Revenues	Quantity	Price	Revenue
September 2015														
October														
November														
December														
January 2016														
February														
March														
April														
May														
June														
July														
August														
Subtotal:														
September 2016														
October														
November														
December														
January 2017														
February														
March														
April														
May														
June														
July														
August														
Subtotal:														
September 2017														
October														
November														
December														
January 2018														
February														
March														
April														
May														
June														
July														
August														
Subtotal:														
TOTAL:														

6.4 Reducing Storage Entitlements

In the prior management performance audit, Exeter analyzed whether DE-Ohio could serve its GCR customers and meet the balancing requirements of its firm transportation customers at a reduced level of interstate pipeline storage service. Based on an analysis of storage injection and withdrawal activity for the winter of 2013-2014, Exeter's analysis indicated that DE-Ohio could potentially reduce current storage levels by 20 percent. However, the analysis was based on the utilization of storage prior to the potential changes to EFBS pending in PUCO Case No. 15-50-GA-RDR that was being litigated at the time. Case No. 15-50-GA-RDR is discussed in greater detail in Section 6.1.5 of the audit report. Exeter recommended that DE-Ohio reevaluate whether it could meet its firm customers' balancing requirements at reduced storage levels once Case No. 15-50-GA-RDR was decided. Exeter also recommended that any decision to adjust current storage levels also consider the results of the Company's capacity portfolio evaluation in the event that its propane facilities are no longer available. DE-Ohio agreed to Exeter's recommendations in the Stipulation and Recommendation filed in the prior audit, and the Commission ordered DE-Ohio to complete the recommended evaluation and file a report detailing the Company's findings. The Scope of Work for this audit requires the auditor to review the Company's evaluation of its ability to meet its firm customers' balancing requirements at reduced storage levels, taking into consideration the possibility that the Company's propane facilities may not be available.

As previously discussed, DE-Ohio purchases two interstate pipeline storage services—Columbia Gulf FSS and Texas Gas NNS. DE-Ohio's analysis of reducing storage levels evaluated the potential of reducing Columbia Gulf FSS storage by 20 percent. The Company claimed that because Texas Gas NNS was the more expensive service, it had already reduced this service to the lowest possible operational level in 2000. To determine the total potential cost savings of reducing Columbia Gas FSS by 20 percent, the Company considered the cost of replacement firm transportation capacity and the seasonal price advantage associated with purchasing gas during the summer and withdrawing that gas during the winter. For this analysis, the cost of replacement capacity was based on the cost of Columbia Gulf and KO Transmission capacity and the historical seasonal price differential for Columbia Gulf gas supplies observed since 1996.

The Company estimated the cost savings of reducing Columbia Gas FSS by 20 percent to be \$1.6 million annually. However, the Company's evaluation noted that decreasing its storage entitlements would increase the risk of being assessed penalties by Columbia Gas for exceeding its contractual entitlements. The penalties set by Columbia Gas for violating OFO requirements are currently equal to three times the highest of three selected index prices. Based on these provisions and recent prices for the three index locations, the Company's analysis assumed a penalty of \$150/Dth for exceeding storage contract entitlements during OFO periods. The Company's analysis also noted that Columbia Gas FSS imposes restrictions as to maximum and minimize storage

inventory balances, and that the Company's contracted injection and withdrawal entitlements varied based on the amount of gas in storage inventory (see Section 4.2.4 (A) of the audit report). The Company's analysis found that if its Columbia Gas FSS storage entitlements had been reduced by 20 percent, on several days during November 2013 injections would have exceeded its contractual entitlements. However, Columbia Gas FSS over-injections are generally permitted without penalty. The Company's analysis found that during March 2014, withdrawals would have exceeded its contractual entitlements on one day, resulting in a potential penalty of \$4.9 million. Therefore, a single day of over-withdrawal penalty charges would have resulted in the elimination of several years of savings realized by reducing storage.

The Company also investigated whether the retirement of its two remaining propane-air facilities would impact its analysis of a reduction to storage entitlements. The Company's investigation revealed that nearly all of the production from its propane-air facilities was generally planned the prior day and would not materially be able to address firm customer balancing requirements. Therefore, with or without the propane-air facilities, a 20 percent reduction to its Columbia Gas storage entitlements would have led to penalties of approximately \$4.9 million during the prior audit period.

The winter of 2013-2014 was a relatively cold winter, and was not a typical winter. To assess the probability of incurring penalties if its Columbia Gas FSS storage entitlements were reduced, DE-Ohio expanded its analysis to review the potential for the incurrence of penalties over the past ten winter seasons (2007-2008 through 2016-2017). This further analysis indicated that at current storage entitlements, the Company would be at risk of incurring penalties once every ten years. Reducing current Columbia Gas FSS storage entitlements would increase that risk to four times every ten years. DE-Ohio concluded that the average annual costs of these penalties would exceed the projected savings and, therefore, the Company concluded that it should continue to contract for storage at current levels. Exeter concurs with DE-Ohio's findings and conclusions.

6.5 Conclusions and Recommendations

6.5.1 *Choice Imbalances*

DE-Ohio's current procedures and methods for projecting the daily requirements of the firm transportation customers served by Choice suppliers sufficiently minimized imbalances between the quantity of gas delivered to DE-Ohio by Choice suppliers and the consumption of firm transportation customers during the audit period.

6.5.2 *Modification to Capacity Assignment Procedures*

DE-Ohio modified its existing procedures for the assignment of capacity to Choice suppliers during the audit period. These modifications appear to have been reasonable and reduced the

amount of capacity assigned to Choice suppliers and did not have an adverse impact on GCR customers.

6.5.3 Contract Commitment Cost Recovery Rider

The prior management performance audit found that due to the timing difference between when capacity assignments to be made to Choice suppliers are determined and when they became effective, the supplier serving the City of Cincinnati was able to avoid the assignment of capacity when the City switched to firm transportation service in October 2012. As a result, GCR customers were assigned the costs associated with unneeded capacity. In the prior management performance audit, Exeter recommended that \$237,245 of the costs associated with the unneeded capacity be removed from the GCR and recovered under Rider CCCR. Exeter also recommended that DE-Ohio investigate modifying its tariff to address the potential for a supplier to avoid the assignment of capacity. The Stipulation and Recommendation approved in PUCO Case No. 15-218-GA-GCR adopted Exeter's recommendations and required DE-Ohio to include \$237,245 in its Rider CCCR calculations and to file a report concerning tariff modifications to address the potential avoidance of capacity assignment.

The Scope of Work for the current audit requires the auditor to verify that the Company included \$237,245 for recovery under Rider CCCR for the costs associated with the avoided assignment of capacity when the City of Cincinnati elected to participate in the Choice program. The Scope of Work also required the auditor to examine DE-Ohio's efforts to modify its tariff to address the potential for suppliers to avoid the assignment of capacity. DE-Ohio files to adjust Rider CCCR on a quarterly basis. DE-Ohio included \$237,245 in avoided capacity assignment costs in its December 2016, March 2017, June 2017, and September 2017, Rider CCCR calculations.

To address the potential for suppliers to avoid an assignment of capacity in the future, DE-Ohio has proposed tariff language that would allow the Company to adjust capacity assignments for known changes to the customers to be served by a supplier. However, DE-Ohio has not modified its tariff to reflect the proposed language. DE-Ohio indicated that it would file to revise its capacity release tariff language in its next base rate case. There is currently no definitive date for the filing of a base rate case by DE-Ohio. Exeter's audit did not identify any instances of Choice suppliers avoiding the assignment of pipeline capacity due to circumstances similar to those that occurred during the prior management performance audit period with the conversion of the City of Cincinnati to firm transportation service. Exeter recommends that DE-Ohio file an application with the PUCO to modify its tariff to reflect the proposed language concerning adjustments to the assignment of capacity for known changes to the customers to be served by a Choice supplier.

6.5.4 Reducing Storage Entitlements

In the prior management performance audit, Exeter analyzed whether DE-Ohio could serve its GCR customers and meet the balancing requirements of its firm transportation customers at a reduced level of interstate pipeline storage service. Based on an analysis of storage injection and withdrawal activity for the winter of 2013-2014, Exeter's analysis indicated that DE-Ohio could potentially reduce current storage levels by 20 percent. However, the analysis was based on the utilization of storage prior to the potential changes to EFBS pending in Case No. 15-50-GA-RDR that was being litigated at the time. Exeter recommended that DE-Ohio reevaluate whether it could meet its firm customers' balancing requirements at reduced storage levels once Case No. 15-50-GA-RDR was decided. Exeter also recommended that any decision to adjust current storage levels consider the results of the Company's capacity portfolio evaluation in the event that its propane facilities are no longer available. DE-Ohio agreed to Exeter's recommendations in the Stipulation and Recommendation filed in the prior audit, and the Commission ordered DE-Ohio to complete the recommended evaluation and file a report detailing the Company's findings. The Scope of Work for the current audit requires the auditor to review the Company's evaluation of its ability to meet its firm customers' balancing requirements at reduced storage levels, taking into consideration the possibility that the Company's propane facilities may not be available.

DE-Ohio purchases two interstate pipeline storage services—Columbia Gulf FSS and Texas Gas NNS. DE-Ohio's analysis of reducing storage levels evaluated the potential of reducing Columbia Gulf FSS storage by 20 percent. The Company claimed that because Texas Gas NNS was the more expensive service, it had already reduced this service to the lowest possible operational level in 2000. To determine the total potential cost savings of reducing Columbia Gas FSS by 20 percent, the Company considered the cost of replacement firm transportation capacity and the seasonal price advantage associated with purchasing gas during the summer and withdrawing that gas during the winter.

The Company estimated the cost savings of reducing Columbia Gas FSS by 20 percent to be \$1.6 million annually. However, the Company's evaluation noted that decreasing its storage entitlements would increase the risk of being assessed penalties by Columbia Gas for exceeding its contractual entitlements. The Company's analysis assumed a penalty of \$150/Dth for exceeding storage contract entitlements during OFO periods. Based on this penalty, the Company's analysis found that during March 2014, withdrawals would have exceeded its contractual entitlements on one day, resulting in a potential penalty of \$4.9 million. Therefore, a single day of over-withdrawal penalty charges would have resulted in the elimination of several years of savings realized by reducing storage.

The Company also investigated whether the retirement of its two remaining propane-air

facilities would impact its analysis of a reduction to storage entitlements. The Company's investigation revealed that nearly all of the production from its propane-air facilities was generally planned the prior day and would not materially be able to address firm customer balancing requirements. Therefore, with or without the propane-air facilities, a 20 percent reduction to its Columbia Gas storage entitlements would have led to penalties of approximately \$4.9 million during the prior audit period.

The winter of 2013-2014 was a relatively cold winter, and was not a typical winter. To assess the probability of incurring penalties if its Columbia Gas FSS storage entitlements were reduced, DE-Ohio expanded its analysis to review the potential for the incurrence of penalties over the past ten winter seasons (2007-2008 through 2016-2017). This further analysis indicated that at current storage entitlements, the Company would be at risk of incurring penalties once every ten years. Reducing current Columbia Gas FSS storage entitlements would increase that risk to four times every ten years. DE-Ohio concluded that the average annual costs of these penalties would exceed the projected savings and, therefore, the Company concluded that it should continue to contract for storage at current levels.

Exeter's recommendation from the prior management performance audit was for DE-Ohio to assess whether it could reduce its storage entitlements after Case No. 15-50-GA-RDR was decided so that changes to EFBS approved in that case could be reflected in the assessment. The changes to EFBS approved in Case No. 15-50-GA-RDR were not implemented until April 2017. DE-Ohio's analysis of storage entitlements only extended through the winter of 2016-2017. At the time Exeter made its recommendations in the prior management performance audit, it was anticipated that any changes in EFBS would have been implemented prior to the winter of 2016-2017. As a result, DE-Ohio's analysis did not account for the impact of the changes to EFBS on reducing storage entitlements. DE-Ohio could have performed its analysis based on the winter of 2017-2018, but did not do so. However, the winter of 2017-2018 would have been the first winter in which the changes to EFBS would have been in place, and it may not have been reasonable to reduce storage entitlements based on one year's experience. Therefore, Exeter recommends that DE-Ohio update its evaluation examining a reduction to storage entitlements after the winter of 2018-2019 when two years of operating experience under the changes approved to EFBS in Case No. 15-50-GA-RDR is available.

6.5.5 Assignment of Propane Commodity Costs

DE-Ohio's propane facilities are required to maintain distribution operating pressures during periods of peak demand. The facilities may also be used to meet customer requirements during periods of peak or design demand if lower-cost alternative sources of supply are not available. Suppliers serving firm transportation under the Choice program have the option of using an

allocated share of DE-Ohio's propane facilities to meet their customer requirements.

During the audit period, DE-Ohio utilized its propane facilities to maintain distribution operating pressures on more than █ days. Excluding GCR customers' allocated share of DE-Ohio's propane facilities, there were no occasions during the audit period when GCR customer demands exceeded the total capacity and gas supply resources secured by DE-Ohio to meet GCR requirements. That is, if not for the need to maintain distribution system operating pressures, it would have been unnecessary for DE-Ohio to utilize its propane facilities during the audit period. No suppliers participating in the Choice program elected to utilize their allocated share of DE-Ohio's propane facilities during the audit period and, therefore, did not pay for any portion of DE-Ohio's audit period propane costs. DE-Ohio utilized nearly █ of propane during the audit period to serve its customers, at an average cost of █. Based on market prices, the incremental costs associated with the propane used by DE-Ohio were █, and these costs were assessed entirely to GCR customers. Exeter believes this to have been unreasonable.

The propane used by DE-Ohio during the audit period was required to maintain system operating pressures that benefitted all customers, not just GCR customers. Therefore, Exeter's audit recommends that responsibility for the incremental costs associated with the propane used by DE-Ohio during the audit period be borne by all firm customers. Prior to switching to transportation service, DE-Ohio's firm transportation customers paid for a proportionate share of the Company's incremental propane costs through the GCR rate. DE-Ohio's Rider CCCR provides for the full recovery of propane costs incurred by the Company that were incurred to supply gas to firm sales customers that have elected to switch to gas transportation service. █
█
█
█

Under this approach, GCR and firm transportation customers will each be responsible for a proportionate share of DE-Ohio's audit period propane costs.

6.5.6 Interruptible Monthly Balancing Service (IMBS) Provisions and Rates

In the prior management performance audit, Exeter recommended that DE-Ohio evaluate whether adopting daily balancing tolerances for interruptible transportation service would improve the Company's ability to manage storage and/or would enable the Company to reduce its contract storage entitlements. Exeter also found that interruptible transportation customers were not contributing a reasonable share of the costs associated with the provision of balancing service and that DE-Ohio should investigate revising the charges for IMBS to provide a more significant contribution toward the recovery of the pipeline storage costs incurred to provide IMBS. In the Stipulation and Recommendation approved in PUCO Case No. 15-218-GA-GCR, the Company agreed

to perform an evaluation of Exeter's recommendations. The Scope of Work in this proceeding requires the auditor to examine the Company's evaluation of the interruptible transportation service balancing recommendations included in the prior management performance audit.

With respect to adopting daily balancing requirements, the Company examined daily interruptible transportation usage and deliveries for the 10-year period ended August 2017, and found that 95 percent of the time the daily imbalance was less than 20,000 Dth. To approximate the impact of adopting daily balancing tolerances, the Company evaluated the impact of OFOs on daily imbalances. Under a cold-weather OFO, daily underdeliveries are penalized, and under a warm-weather OFO, daily overdeliveries are penalized. The Company's evaluation of daily imbalances during OFO periods indicated that 95 percent of the time, the daily imbalance was less than 23,000 Dth. Therefore, DE-Ohio concluded that imposing daily balancing requirements on interruptible transportation customers would not substantially improve its ability to manage storage or reduce its storage entitlements. Exeter concurs with the Company's evaluation and conclusions concerning adopting daily balancing for interruptible transportation service.

With respect to the adequacy of the current IMBS charges, the Company recognized that there were two cost components associated with providing IMBS—a daily deliverability component and a seasonal storage capacity component. The daily deliverability component consisted of those charges associated with meeting daily imbalances. The Company's analysis indicated that the average daily deliverability cost component of IMBS was \$0.0823/Mcf. To calculate the seasonal storage capacity cost component, the Company noted that the three current IMBS options differed in the amount of gas that can be carried over into the next month. This cost component was calculated by the Company for each option based on the amount that can be carried over, resulting in rates of \$0.0017/Mcf, \$0.0020/Mcf, and \$0.0025/Mcf for IMBS Options 1, 2, and 3, respectively. Combining the deliverability and seasonal storage capacity components resulted in the proposed rates per the table below:

	DAILY IMBALANCE	MONTHLY CARRY-OVER	PROPOSED RATE	CURRENT RATE
Option 1 (\$/Mcf)	\$0.0823	\$0.0017	\$0.0839	\$0.015
Option 2 (\$/Mcf)	\$0.0823	\$0.0020	\$0.0842	\$0.020
Option 3 (\$/Mcf)	\$0.0823	\$0.0025	\$0.0848	\$0.025

The Company concluded that the revenue contribution of interruptible transportation customers through IMBS has not been commensurate with the cost of providing service. DE-Ohio indicated that it would address IMBS rates in its next base rate case but had no definitive timetable for filing its next case.

DE-Ohio's current IMBS rates were approved by the PUCO in a Supplemental Opinion and

Order in Case No. 95-656-GA-AIR entered July 2, 1997. The Supplemental Opinion and Order included language providing that if the Company or any intervenor reasonably believed that IMBS was not operating as intended (including imposing undue costs on the Company's GCR customers), the parties would agree to discuss and consider modifications to the appropriate tariffs. The Company's evaluation of IMBS charges and Exeter's audit found that the revenue contribution of interruptible transportation customers through IMBS has not been commensurate with the cost of providing service and, therefore, is imposing undue costs on GCR customers. Exeter recommends that DE-Ohio be required to file an application to modify its current IMBS charges to eliminate the undue costs being imposed on GCR customers. The parties to Case No. 95-656-GA-AIR and other interested parties could subsequently discuss and consider modifications to DE-Ohio's current IMBS rates to address the undue costs being imposed on GCR customers. If the parties are unable to reach an agreement on IMBS rates, litigation of the issue would proceed.

6.5.7 Pipeline Overrun and Penalty Charges

DE-Ohio was assessed a number of overrun and penalty charges during the audit period. These charges included [REDACTED] overrun, [REDACTED] overrun, [REDACTED] overrun charges, and [REDACTED] OFO penalties. The NNS service DE-Ohio purchases from Texas Gas provides for hourly deliveries equal to 1/16th of the MDQ, and NNS overrun charges are assessed if hourly deliveries exceed 1/16th of the MDQ. NNS SQE overrun charges are assessed when deliveries to DE-Ohio's citygate during the summer under the Company's NNS firm transportation contract with Texas Gas exceed the NNS storage inventory balance that existed at the end of the previous March. Hourly overrun charges are assessed when hourly deliveries under DE-Ohio's STF transportation contract with Texas Gas exceed 1/24th of the MDQ. [REDACTED]
[REDACTED]
[REDACTED] overrun charges totaled [REDACTED] and [REDACTED] OFO penalties totaled [REDACTED] during the audit period. All [REDACTED] overrun and [REDACTED] OFO penalties were charged to GCR customers.

DE-Ohio incurred overrun and OFO penalty charges during the audit period due to distribution system constraints and limitations. The charges were incurred in conjunction with providing service to all customers, not just GCR customers. Therefore, all customers should share responsibility for these charges. Exeter recommends that, provided they are not found to be imprudently incurred, future overrun and OFO penalty charges assessed to DE-Ohio be recovered through Rider CCCR. The overrun and OFO penalty charges are incurred by DE-Ohio to provide service to both GCR and firm sales customers that have elected to switch to gas transportation service and, therefore, recovery through Rider CCCR is appropriate.

APPENDIX A

Audit Period Purchased Gas Activity

APPENDIX A
DUKE ENERGY OHIO, Inc.
Audit Period Purchased Gas Cost Billing Determinants
(Dth)

	September 2015	October 2015	November 2015	December 2015	January 2016	February 2016	March 2016	April 2016	May 2016	June 2016	July 2016	August 2016
TRANSPORTATION SERVICE												
Duke Energy Kentucky												
FT Reservation	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000
Variable	292,552	279,220	1,028,064	1,528,444	1,982,107	1,810,146	1,751,301	580,422	303,125	75,487	61,986	84,748
KO Transmission												
FT Reservation	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000
Released	15,786	15,786	51,951	51,951	51,951	51,951	51,951	22,176	22,175	22,175	22,175	22,175
Net Reservation	168,214	168,214	132,049	132,049	132,049	132,049	132,049	161,825	161,825	161,825	161,825	161,825
Variable	0	0	1,063,215	1,649,798	2,716,943	1,691,528	1,538,488	439,397	0	0	0	0
IT Variable	0	0	0	6,712	183,181	98,179	27,124	0	0	0	0	0
COLUMBIA GULF TRANSMISSION												
FTS-1 Reservation	31,500	31,500	79,000	79,000	79,000	79,000	79,000	31,500	31,500	31,500	31,500	31,500
Released	12,422	12,422	42,034	42,034	42,034	42,034	42,034	13,603	13,603	13,603	13,603	13,603
Net Reservation	19,078	19,078	36,966	36,966	36,966	36,966	36,966	17,897	17,897	17,897	17,897	17,897
FTS-1 Reservation	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000
Backhaul Released	3,491	3,491	10,333	10,333	10,333	10,333	10,333	8,772	8,772	8,772	8,772	8,772
Net Reservation	17,509	17,509	10,667	10,667	10,667	10,667	10,667	12,228	12,228	12,228	12,228	12,228
Variable	870,156	842,206	756,609	790,407	1,257,461	978,157	500,060	903,750	933,875	903,750	933,875	933,875
Gas Commodity	880,500	852,220	765,597	799,800	1,272,410	989,791	713,000	909,660	939,982	909,660	939,982	939,982
TENNESSEE GAS PIPELINE												
FT-A Reservation	0	0	0	0	0	0	0	0	0	0	0	0
Released	0	0	0	0	0	0	0	0	0	0	0	0
Net Reservation	0	0	0	0	0	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0	0	0	0	0	0
Gas Commodity	0	0	0	0	0	0	0	0	0	0	0	0
TEXAS GAS TRANSMISSION												
NNS Reservation (Nom)	10,982	10,982	6,250	6,250	6,250	6,250	6,250	10,982	10,982	10,982	10,982	10,982
Variable	96,992	69,913	187,500	193,750	193,750	181,250	193,750	156,645	117,350	38,371	46,570	54,144
Gas Commodity	340,140	351,478	192,390	199,803	199,803	185,977	199,803	338,010	349,308	338,040	349,308	349,308
STF Reservation	14,000	14,000	42,000	42,000	42,000	42,000	42,000	14,000	14,000	14,000	14,000	14,000
Released	4,447	4,447	23,376	23,376	23,376	23,376	23,376	8,534	8,534	8,534	8,534	8,534
Net Reservation	9,553	9,553	18,624	18,624	18,624	18,624	18,624	5,466	5,466	5,466	5,466	5,466
Variable	223,856	146,553	60,748	48,329	287,239	236,483	21,820	163,980	169,446	163,980	152,241	169,446
Gas Commodity	229,500	152,439	61,861	49,197	282,461	240,783	22,217	166,980	172,546	166,980	155,000	172,546
Hourly Overrun	0	538	1,561	318	7,343	539	1,362	4,207	(936)	0	122	1,070
CITYGATE PURCHASES												
Commodity	0	0	0	0	0	0	0	0	0	0	0	0
LANDFILL PURCHASES												
Commodity	116,937	117,203	116,056	122,998	120,808	115,457	125,625	112,905	131,522	118,947	117,292	111,443
STORAGE SERVICE												
COLUMBIA GAS												
FSS Deliverability	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514
Capacity	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079
Injection	1,139,588	366,139	287,067	123,329	163,360	134,964	48,681	733,955	918,917	1,029,922	1,289,841	1,260,404
Withdrawal	0	42,119	521,944	1,383,698	2,231,194	1,241,112	1,567,873	542,252	46,665	0	0	0
SST Reservation	108,257	216,514	216,514	216,514	216,514	216,514	216,514	108,257	108,257	108,257	108,257	108,257
Variable Injection	1,139,588	366,139	287,067	123,329	163,360	134,964	48,681	733,955	918,917	1,029,922	1,289,841	1,260,404
Variable Withdrawal	0	41,324	512,107	1,357,614	2,189,135	1,217,719	1,538,319	531,179	45,712	0	0	0
TEXAS GAS TRANSMISSION												
NNS Reservation (Unnom)	0	20,268	25,000	25,000	25,000	25,000	25,000	15,625	0	0	0	0
Variable Withdrawal	0	0	49,451	367,210	602,385	433,128	209,322	0	0	0	0	0
Hourly Overrun	0	0	0	0	3,712	954	884	0	0	0	0	0
SQE Overrun	0	37,782	0	0	0	0	0	0	0	0	0	0
PEAKING SERVICE												
Reservation	0	0	0	40,000	40,000	40,000	0	0	0	0	0	0
Gas Commodity	0	0	0	0	528,000	432,000	0	0	0	0	0	0
Propane Commodity	0	0	2,869	1,454	83,064	27,820	0	0	0	0	0	0
TOTAL GAS COMMODITY	1,567,077	1,473,340	1,138,773	1,172,252	2,495,546	1,991,828	1,059,645	1,627,555	1,593,358	1,533,627	1,561,582	1,573,279

APPENDIX A
DUKE ENERGY OHIO, Inc.
Audit Period Purchased Gas Cost Billing Determinants
(Dth)

	September 2016	October 2016	November 2016	December 2016	January 2017	February 2017	March 2017	April 2017	May 2017	June 2017	July 2017	August 2017
TRANSPORTATION SERVICE												
Duke Energy Kentucky												
FT Reservation	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000
Variable	88,995	446,826	1,365,882	1,621,016	2,991,737	2,152,684	1,136,488	721,002	248,613	236,371	251,770	253,537
KO Transmission												
FT Reservation	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000
Released	22,175	22,175	52,378	52,378	52,378	52,378	52,378	48,649	48,649	48,649	48,649	48,649
Net Reservation	161,825	161,825	131,622	131,622	131,622	131,622	131,622	135,351	135,351	135,351	135,351	135,351
Variable	0	203,879	1,091,353	2,418,452	2,299,474	1,456,616	1,728,641	0	0	0	0	0
IT Variable	0	0	0	91,152	87,630	47,043	121,962	0	0	0	0	0
COLUMBIA GULF TRANSMISSION												
FTS-1 Reservation	31,500	31,500	49,000	49,000	49,000	49,000	49,000	31,500	31,500	31,500	31,500	31,500
Released	13,603	13,603	29,531	29,531	29,531	29,531	29,531	21,348	21,348	21,348	21,348	21,348
Net Reservation	17,897	17,897	19,469	19,469	19,469	19,469	19,469	10,152	10,152	10,152	10,152	10,152
FTS-1 Reservation	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000
Backhaul Released	8,772	8,772	10,038	10,038	10,038	10,038	10,038	12,199	12,199	12,199	12,199	12,199
Net Reservation	12,228	12,228	10,962	10,962	10,962	10,962	10,962	8,801	8,801	8,801	8,801	8,801
Variable	898,980	769,531	781,892	908,211	842,321	775,961	558,069	358,149	338,427	416,820	439,952	276,892
Gas Commodity	904,860	774,576	766,890	914,160	847,840	781,050	561,670	360,873	341,000	420,000	443,300	279,000
TENNESSEE GAS PIPELINE												
FT-A Reservation	0	0	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
Released	0	0	13,276	13,276	13,276	13,276	13,276	15,251	15,251	15,251	15,251	15,251
Net Reservation	0	0	10,724	10,724	10,724	10,724	10,724	8,749	8,749	8,749	8,749	8,749
Variable	0	0	88,600	251,384	237,044	161,312	130,590	78,741	45,663	0	30,442	0
Gas Commodity	0	0	90,000	254,739	240,202	163,468	132,335	80,181	46,500	0	31,000	0
TEXAS GAS TRANSMISSION												
NNS Reservation (Nom)	10,982	10,982	6,250	6,250	6,250	6,250	6,250	10,982	10,982	10,982	10,982	10,982
Variable	18,681	90,178	187,500	189,131	193,750	175,000	193,750	137,417	105,341	40,279	122,405	14,717
Gas Commodity	255,000	264,852	188,250	189,688	194,525	175,700	194,525	221,034	341,806	330,780	341,775	313,100
STF Reservation	14,000	14,000	42,000	42,000	42,000	42,000	42,000	14,000	14,000	14,000	14,000	14,000
Released	8,534	8,534	24,195	24,195	24,195	24,195	24,195	9,122	9,122	9,122	9,122	9,122
Net Reservation	5,466	5,466	17,805	17,805	17,805	17,805	17,805	4,878	4,878	4,878	4,878	4,878
Variable	149,310	38,262	99,639	418,476	448,475	256,100	244,203	43,902	151,218	0	151,218	0
Gas Commodity	152,040	38,962	100,389	421,597	451,818	258,004	246,031	44,226	152,334	0	152,334	0
Hourly Overrun	0	0	1,432	4,086	4,865	782	772	5,515	809	1,080	36	0
CITYGATE PURCHASES												
Commodity	0	0	0	0	0	0	0	0	0	0	0	0
LANDFILL PURCHASES												
Commodity	115,573	124,976	116,185	123,213	132,239	116,547	137,525	132,624	126,191	126,738	126,245	129,906
STORAGE SERVICE												
COLUMBIA GAS												
FSS Deliverability	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514
Capacity	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079
Injection	1,160,484	410,596	243,406	136,430	80,632	229,385	179,181	763,435	1,180,739	1,386,695	1,529,331	1,101,563
Withdrawal	0	27,412	598,787	2,218,726	2,032,645	1,278,909	1,829,779	194,854	37,448	0	0	0
SST Reservation	108,257	216,514	216,514	216,514	216,514	216,514	216,514	108,257	108,257	108,257	108,257	108,257
Variable Injection	1,160,484	410,596	119,297	136,430	80,632	229,385	179,181	763,435	1,180,739	1,386,695	1,529,331	1,101,563
Variable Withdrawal	0	26,852	709,222	2,176,727	1,994,167	1,254,699	1,795,143	191,866	36,912	0	0	0
TEXAS GAS TRANSMISSION												
NNS Reservation (Unnom)	0	20,288	25,000	25,000	25,000	25,000	25,000	15,625	0	0	0	0
Variable Withdrawal	0	0	227,016	321,475	459,873	232,239	257,595	0	0	0	0	0
Hourly Overrun	0	0	0	1,508	7,372	4,468	661	0	0	0	0	0
SQE Overrun	0	0	0	0	0	0	0	0	0	0	0	0
PEAKING SERVICE												
Reservation	0	0	0	46,000	46,000	46,000	0	0	0	0	0	0
Gas Commodity	0	0	0	196,000	230,000	0	0	0	0	0	0	0
Propane Commodity	0	0	0	69,621	85,699	0	0	0	0	0	0	0
TOTAL GAS COMMODITY	1,427,473	1,203,366	1,261,694	2,169,218	2,182,323	1,496,769	1,272,086	838,938	1,007,831	877,518	1,096,654	722,006

APPENDIX A
DUKE ENERGY OHIO, Inc.
Audit Period Purchased Gas Cost Billing Determinants
(Dth)

		September 2017	October 2017	November 2017	December 2017	January 2018	February 2018	March 2018	April 2018	May 2018	June 2018	July 2018	August 2018
TRANSPORTATION SERVICE													
Duke Energy Kentucky													
FT	Reservation	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000
	Variable	273,697	272,885	1,353,048	1,622,109	2,685,246	3,030,437	2,246,205	696,309	303,241	192,923	108,822	206,147
KO Transmission													
FT	Reservation	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000
	Released	48,649	48,649	46,530	46,530	46,530	46,530	46,530	42,474	42,474	42,474	42,474	42,474
	Net Reservation	135,351	135,351	137,470	137,470	137,470	137,470	137,470	141,526	141,526	141,526	141,526	141,526
	Variable	0	170,453	713,809	2,096,007	2,470,376	1,569,808	1,667,235	364,224	0	0	0	0
IT	Variable	0	0	0	80,708	191,624	35,875	3,918	42,982	0	0	0	0
COLUMBIA GULF TRANSMISSION													
FTS-1	Reservation	31,500	31,500	49,000	49,000	49,000	49,000	49,000	31,500	31,500	31,500	31,500	31,500
	Released	21,348	21,348	23,264	23,264	23,264	23,264	23,264	17,542	17,542	17,542	17,542	17,542
	Net Reservation	10,152	10,152	25,736	25,736	25,736	25,736	25,736	13,958	13,958	13,958	13,958	13,958
FTS-1	Reservation	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000
Backhaul	Released	12,199	12,199	8,268	8,268	8,268	8,268	8,268	11,705	11,705	11,705	11,705	11,705
	Net Reservation	8,801	8,801	12,732	12,732	12,732	12,732	12,732	9,295	9,295	9,295	9,295	9,295
	Variable	267,960	357,060	715,019	908,515	1,081,170	631,315	540,958	659,028	341,184	163,850	215,481	123,132
	Gas Commodity	270,000	359,776	720,460	915,420	1,089,380	636,120	545,060	663,676	343,600	165,000	217,000	124,000
TENNESSEE GAS PIPELINE													
FT-A	Reservation	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
	Released	15,251	15,251	15,141	15,141	15,141	15,141	15,141	13,368	13,368	13,368	13,368	13,368
	Net Reservation	8,749	8,749	8,859	8,859	8,859	8,859	8,859	10,632	10,632	10,632	10,632	10,632
	Variable	0	69,992	94,293	259,296	273,978	231,105	102,254	267,064	17,658	29,430	30,411	0
	Gas Commodity	0	71,272	96,021	264,052	279,000	235,347	104,128	292,680	18,000	30,000	31,000	0
TEXAS GAS TRANSMISSION													
NNS	Reservation (Nom)	10,982	10,982	6,250	6,250	6,250	6,250	6,250	10,982	10,982	10,982	10,982	10,982
	Variable	6,218	16,817	187,500	193,750	193,750	175,000	193,750	307,170	12,741	16,658	11,278	5,438
	Gas Commodity	153,000	219,078	190,020	196,354	196,354	177,352	196,354	311,283	344,999	327,290	294,274	310,000
STF	Reservation	14,000	14,000	65,000	65,000	65,000	65,000	65,000	17,000	17,000	17,000	17,000	17,000
	Released	9,122	9,122	37,957	37,957	37,957	37,957	37,957	9,456	9,456	9,456	9,456	9,456
	Net Reservation	4,878	4,878	27,043	27,043	27,043	27,043	27,043	7,544	7,544	7,544	7,544	7,544
	Variable	0	39,024	317,030	657,548	778,093	487,524	583,848	203,688	135,792	24,784	109,802	0
	Gas Commodity	0	39,312	319,520	662,726	784,216	491,368	588,446	205,261	136,854	24,990	110,670	0
	Hourly Overrun	0	0	0	1,521	2,079	112	2,813	1,737	14,362	8,745	0	0
CITYGATE PURCHASES													
	Commodity	0	0	420,000	434,000	434,000	392,000	434,000	210,000	217,000	208,676	217,000	217,000
LANDFILL PURCHASES													
	Commodity	129,928	132,930	133,455	133,243	129,516	118,664	125,190	122,808	127,540	109,455	122,766	120,850
STORAGE SERVICE													
COLUMBIA GAS													
FSS	Deliverability	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514	216,514
	Capacity	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079	9,244,079
	Injection	1,138,173	296,034	256,122	186,532	189,310	241,618	32,129	1,301,103	1,603,271	1,352,043	1,492,039	1,404,438
	Withdrawal	0	281,528	606,365	1,883,806	1,971,213	1,239,556	1,777,241	365,116	0	0	0	0
SST	Reservation	108,257	216,514	216,514	216,514	216,514	216,514	216,514	108,257	108,257	108,257	108,257	108,257
	Variable Injection	1,138,173	296,034	256,122	186,532	189,310	241,618	32,129	917,228	1,603,271	1,352,043	1,492,039	1,404,438
	Variable Withdrawal	0	277,497	587,681	1,856,829	1,942,984	1,221,804	1,751,790	738,101	0	0	0	0
TEXAS GAS TRANSMISSION													
NNS	Reservation (Unnom)	0	20,268	25,000	25,000	25,000	25,000	25,000	15,625	0	0	0	0
	Variable Withdrawal	0	0	200,477	371,742	575,700	1,474	460,459	79,249	0	0	0	0
	Hourly Overrun	0	0	241	0	19,862	0	3,107	0	0	4,168	0	0
	SQE Overrun	0	0	0	0	0	0	0	0	0	0	0	0
PEAKING SERVICE													
	Reservation	0	0	0	41,000	41,000	41,000	0	0	0	0	0	0
	Gas Commodity	0	0	0	137,000	619,000	191,000	0	0	0	0	0	0
Propane	Commodity	95,446	0	0	82,283	173,333	2,960	0	0	0	0	0	0
TOTAL GAS COMMODITY													
		648,374	822,368	1,879,476	2,825,078	3,704,799	2,244,811	1,993,176	1,805,728	1,187,993	865,411	992,710	771,850

APPENDIX A
DUKE ENERGY OHIO, Inc.
Audit Period Purchased Gas Cost Rates
(\$/Dth)

	September 2015	October 2015	November 2015	December 2015	January 2016	February 2016	March 2016	April 2016	May 2016	June 2016	July 2016	August 2016
TRANSPORTATION SERVICE												
Duke Energy Kentucky												
FT Reservation	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781
Variable	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
KO Transmission												
FT Reservation	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560
Released	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560
Net Reservation	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560	0.3560
Variable	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
IT Variable	0.0131	0.0131	0.0131	0.0131	0.0131	0.0131	0.0131	0.0131	0.0131	0.0131	0.0131	0.0131
COLUMBIA GULF TRANSMISSION												
FTS-1 Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
Released	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
Net Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
FTS-1 Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
Backhaul Released	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
Net Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
Variable	0.0123	0.0123	0.0123	0.0123	0.0123	0.0123	0.0123	0.0123	0.0123	0.0123	0.0123	0.0123
Gas Commodity	3.2242	3.1571	3.2920	3.2764	2.9201	2.9736	3.4172	3.0791	3.0853	3.1932	3.3058	3.2765
TENNESSEE GAS PIPELINE												
FT-A Reservation	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Released	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Net Reservation	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Variable	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Gas Commodity	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
TEXAS GAS TRANSMISSION												
NNS Reservation (Nom)	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
Variable	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628
Gas Commodity	3.3715	3.0043	1.9500	2.1300	2.3200	2.1400	1.6326	2.2867	2.4567	2.3639	2.6940	2.6509
STF Reservation	0.1200	0.1200	0.1950	0.1950	0.1950	0.1950	0.1950	0.1200	0.1200	0.1200	0.1200	0.1200
Released	0.1200	0.1200	0.1950	0.1950	0.1950	0.1950	0.1950	0.1200	0.1200	0.1200	0.1200	0.1200
Net Reservation	0.1200	0.1200	0.1950	0.1950	0.1950	0.1950	0.1950	0.1200	0.1200	0.1200	0.1200	0.1200
Variable	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214	0.0214
Gas Commodity	2.5849	2.2185	2.1534	2.1300	2.2722	2.0232	1.5123	1.8218	1.8255	2.4378	2.6894	2.6842
Hourly Overrun	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405
CITYGATE PURCHASES												
Commodity	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LANDFILL PURCHASES												
Commodity	2.6100	2.4400	1.9300	2.1000	2.2600	2.1000	1.6300	1.8400	1.9200	1.9000	2.8600	2.6400
STORAGE SERVICE												
COLUMBIA GAS												
FSS Deliverability	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010
Capacity	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288
Injection	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153
Withdrawal	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153
SST Reservation	5.1700	5.1700	5.1700	5.1700	5.1700	5.4950	5.4950	5.4950	5.4950	5.4950	5.4950	5.4950
Variable Injection	0.0192	0.0192	0.0192	0.0192	0.0192	0.0192	0.0192	0.0193	0.0193	0.0193	0.0193	0.0193
Variable Withdrawal	0.0178	0.0178	0.0178	0.0178	0.0178	0.0178	0.0178	0.0179	0.0179	0.0179	0.0179	0.0179
TEXAS GAS TRANSMISSION												
NNS Reservation (Unnom)	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
Variable Withdrawal	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628	0.0628
Hourly Overrun	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
SQE Overrun	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
PEAKING SERVICE												
Reservation	0.0000	0.0000	0.0000	0.6733	0.6733	0.6433	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Gas Commodity	0.0000	0.0000	0.0000	0.0000	2.4388	2.2505	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Propane Commodity	0.0000	0.0000	9.0736	7.9732	8.3213	8.1487	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

APPENDIX A
DUKE ENERGY OHIO, Inc.
Audit Period Purchased Gas Cost Rates
(\$/Dth)

		September 2016	October 2016	November 2016	December 2016	January 2017	February 2017	March 2017	April 2017	May 2017	June 2017	July 2017	August 2017
TRANSPORTATION SERVICE													
Duke Energy Kentucky													
FT	Reservation	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781	0.2781	0.2699	0.2417
	Variable	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
KO Transmission													
FT	Reservation	0.3560	0.3560	0.3560	0.3560	0.3560	2.6168	2.6168	2.1280	2.1280	2.1280	2.1280	2.1280
	Released	0.3560	0.3580	0.3560	0.3560	0.3560	2.6168	2.6168	2.1280	2.1280	2.1280	2.1280	2.1280
	Net Reservation	0.3560	0.3560	0.3560	0.3560	0.3560	2.6168	2.6168	2.1280	2.1280	2.1280	2.1280	2.1280
	Variable	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
IT	Variable	0.0131	0.0130	0.0130	0.0130	0.0130	0.0874	0.0874	0.0000	0.0000	0.0000	0.0000	0.0000
COLUMBIA GULF TRANSMISSION													
FTS-1	Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
	Released	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
	Net Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
FTS-1	Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
Backhaul	Released	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
	Net Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
	Variable	0.0123	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122
	Gas Commodity	3.3322	3.4267	3.0351	3.2886	3.6351	3.3495	3.2378	3.2467	3.2712	3.1485	3.1532	3.3256
TENNESSEE GAS PIPELINE													
FT-A	Reservation	0.0000	0.0000	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544
	Released	0.0000	0.0000	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544
	Net Reservation	0.0000	0.0000	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544	2.4544
	Variable	0.0000	0.0000	0.0291	0.0291	0.0291	0.0291	0.0291	0.0336	0.0336	0.0336	0.0336	0.0336
	Gas Commodity	0.0000	0.0000	2.6900	3.2634	3.8017	3.2535	2.6457	3.0344	3.0466	0.0000	2.8621	0.0000
TEXAS GAS TRANSMISSION													
NNS	Reservation (Nom)	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
	Variable	0.0628	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627
	Gas Commodity	2.6907	2.7325	2.6800	3.1400	3.8600	3.2900	2.5000	2.9700	2.9808	2.9383	2.9440	2.9600
STF	Reservation	0.1200	0.1200	0.1950	0.1950	0.1950	0.1950	0.1950	0.1200	0.1200	0.1200	0.1200	0.1200
	Released	0.1200	0.1200	0.1950	0.1950	0.1950	0.1950	0.1950	0.1200	0.1200	0.1200	0.1200	0.1200
	Net Reservation	0.1200	0.1200	0.1950	0.1950	0.1950	0.1950	0.1950	0.1200	0.1200	0.1200	0.1200	0.1200
	Variable	0.0214	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213
	Gas Commodity	2.8677	2.7786	2.5873	3.3176	3.7795	3.0801	2.7862	3.0072	3.0169	0.0000	2.8516	0.0000
	Hourly Overrun	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405
CITYGATE PURCHASES													
	Commodity	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LANDFILL PURCHASES													
	Commodity	2.7400	2.8300	2.6100	3.1200	3.7800	3.2100	2.4300	3.0400	3.0200	3.1100	2.9200	2.8300
STORAGE SERVICE													
COLUMBIA GAS													
FSS	Deliverability	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010
	Capacity	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288
	Injection	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153
	Withdrawal	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153
SST	Reservation	5.4950	5.4950	5.4950	5.4950	5.4950	5.7870	5.7870	5.7870	5.7870	5.7870	5.7870	5.7870
	Variable Injection	0.0193	0.0192	0.0192	0.0192	0.0192	0.0192	0.0192	0.0222	0.0222	0.0222	0.0222	0.0222
	Variable Withdrawal	0.0179	0.0179	0.0179	0.0179	0.0179	0.0179	0.0179	0.0209	0.0209	0.0209	0.0209	0.0209
TEXAS GAS TRANSMISSION													
NNS	Reservation (Unnom)	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
	Variable Withdrawal	0.0628	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627
	Hourly Overrun	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
	SQE Overrun	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
PEAKING SERVICE													
	Reservation	0.0000	0.0000	0.0000	0.7750	0.7750	0.7000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Gas Commodity	0.0000	0.0000	0.0000	3.7899	3.4807	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Propane	Commodity	0.0000	0.0000	0.0000	8.4650	7.3383	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

APPENDIX A
DUKE ENERGY OHIO, Inc.
Audit Period Purchased Gas Cost Rates
(\$/Dth)

		September 2017	October 2017	November 2017	December 2017	January 2018	February 2018	March 2018	April 2018	May 2018	June 2018	July 2018	August 2018
TRANSPORTATION SERVICE													
<i>Duke Energy Kentucky</i>													
FT	Reservation	0.2417	0.2417	0.2417	0.2417	0.2417	0.2417	0.2417	0.2417	0.2417	0.2417	0.2417	0.2417
	Variable	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
KO Transmission													
FT	Reservation	2.1280	2.1280	2.1280	2.1280	2.1280	2.2496	2.2496	2.2496	2.2496	2.2496	2.2496	2.2496
	Released	2.1280	2.1280	2.1280	2.1280	2.1280	2.2496	2.2496	2.2496	2.2496	2.2496	2.2496	2.2496
	Net Reservation	2.1280	2.1280	2.1280	2.1280	2.1280	2.2496	2.2496	2.2496	2.2496	2.2496	2.2496	2.2496
	Variable	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
IT	Variable	0.0000	0.0713	0.0713	0.0713	0.0713	0.0753	0.0753	0.0753	0.0753	0.0753	0.0753	0.0753
COLUMBIA GULF TRANSMISSION													
FTS-1	Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
	Released	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
	Net Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
FTS-1	Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
Backhaul	Released	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
	Net Reservation	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300	3.3300
	Variable	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122	0.0122
	Gas Commodity	3.3256	3.2001	2.7505	2.9078	3.0228	3.2395	2.6992	2.6909	2.7247	2.9127	2.8380	2.9525
TENNESSEE GAS PIPELINE													
FT-A	Reservation	2.4544	2.4544	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550
	Released	2.4544	2.4544	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550
	Net Reservation	2.4544	2.4544	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550	2.4550
	Variable	0.0336	0.0336	0.0336	0.0336	0.0336	0.0336	0.0336	0.0362	0.0362	0.0362	0.0362	0.0362
	Gas Commodity	0.0000	2.8075	2.8792	2.9708	2.6500	3.5229	2.5803	2.6776	2.6769	2.8313	2.7240	0.0000
TEXAS GAS TRANSMISSION													
NNS	Reservation (Nom)	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
	Variable	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627
	Gas Commodity	2.9600	2.9485	2.5975	2.9575	2.6175	3.5275	2.4975	2.6834	2.7833	2.8159	2.8003	2.8200
STF	Reservation	0.1200	0.1200	0.1950	0.1950	0.1950	0.1950	0.1950	0.1300	0.1300	0.1300	0.1300	0.1300
	Released	0.1200	0.1200	0.1950	0.1950	0.1950	0.1950	0.1950	0.1300	0.1300	0.1300	0.1300	0.1300
	Net Reservation	0.1200	0.1200	0.1950	0.1950	0.1950	0.1950	0.1950	0.1300	0.1300	0.1300	0.1300	0.1300
	Variable	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213	0.0213
	Gas Commodity	0.0000	2.7856	2.7747	2.9184	2.8768	3.3618	2.5488	2.6261	2.5897	2.7207	2.6677	0.0000
	Hourly Overrun	0.6406	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405	0.6405
CITYGATE PURCHASES													
	Commodity	0.0000	0.0000	2.6320	2.9540	2.6180	3.5110	2.5190	2.5510	2.6810	2.7350	2.8560	2.6820
LANDFILL PURCHASES													
	Commodity	2.8300	2.8100	2.4800	2.9600	2.5700	3.3900	2.4200	2.5500	2.6600	2.7000	2.8600	2.6700
STORAGE SERVICE													
COLUMBIA GAS													
FSS	Deliverability	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010	1.5010
	Capacity	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288	0.0288
	Injection	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153
	Withdrawal	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153	0.0153
SST	Reservation	5.7870	5.7870	5.7870	5.7870	5.6440	5.9380	5.6850	5.6820	5.6820	5.6820	5.6820	5.6820
	Variable Injection	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222	0.0200	0.0200	0.0200	0.0200	0.0200
	Variable Withdrawal	0.0209	0.0209	0.0209	0.0209	0.0209	0.0209	0.0209	0.0187	0.0187	0.0187	0.0187	0.0187
TEXAS GAS TRANSMISSION													
NNS	Reservation (Unnom)	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
	Variable Withdrawal	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627	0.0627
	Hourly Overrun	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
	SQE Overrun	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190	0.4190
PEAKING SERVICE													
	Reservation	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Gas Commodity	0.0000	0.0000	0.0000	3.0809	4.1077	2.8521	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Propane	Commodity	6.7024	0.0000	0.0000	9.4542	9.4146	9.6652	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

APPENDIX A
DUKE ENERGY OHIO, Inc.
Audit Period Purchased Gas Costs
(S)

		September 2015	October 2015	November 2015	December 2015	January 2016	February 2016	March 2016	April 2016	May 2016	June 2016	July 2016	August 2016
TRANSPORTATION SERVICE													
Duke Energy Kentucky													
FT	Reservation	50,058	50,058	50,058	50,058	50,058	50,058	50,058	50,058	50,058	50,058	50,058	50,058
	Variable	0	0	0	0	0	0	0	0	0	0	0	0
KO Transmission													
FTS	Reservation	65,504	65,504	65,504	65,504	65,504	65,504	65,504	65,504	65,504	65,504	65,504	65,504
	Released	5,620	5,620	18,495	18,495	18,495	18,495	18,495	7,894	7,894	7,894	7,894	7,894
	Net Reservation	59,884	59,884	47,009	47,009	47,009	47,009	47,009	57,610	57,610	57,610	57,610	57,610
	Variable	0	0	1,489	2,310	3,804	2,368	2,154	615	0	0	0	0
ITS	Variable	0	0	0	88	2,400	1,286	355	0	0	0	0	0
COLUMBIA GULF TRANSMISSION													
FTS-1	Reservation	104,895	104,895	263,070	263,070	263,070	263,070	263,070	104,895	104,895	104,895	104,895	104,895
	Released	41,365	41,365	139,973	139,973	139,973	139,973	139,973	45,298	45,298	45,298	45,298	45,298
	Net Reservation	63,530	63,530	123,097	123,097	123,097	123,097	123,097	59,597	59,597	59,597	59,597	59,597
FTS-1	Reservation	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930
Backhaul	Released	11,625	11,625	34,409	34,409	34,409	34,409	34,409	29,211	29,211	29,211	29,211	29,211
	Net Reservation	58,305	58,305	35,521	35,521	35,521	35,521	35,521	40,719	40,719	40,719	40,719	40,719
	Variable	10,703	10,359	9,306	9,722	15,467	12,031	6,151	11,116	11,487	11,116	11,487	11,487
	Gas Commodity	2,838,930	2,690,582	2,520,384	2,620,461	3,715,592	2,843,239	2,436,445	2,800,951	2,900,167	2,904,701	3,107,432	3,079,810
TENNESSEE GAS PIPELINE													
FT-A	Reservation	0	0	0	0	0	0	0	0	0	0	0	0
	Released	0	0	0	0	0	0	0	0	0	0	0	0
	Net Reservation	0	0	0	0	0	0	0	0	0	0	0	0
	Variable	0	0	0	0	0	0	0	0	0	0	0	0
	Gas Commodity	0	0	0	0	0	0	0	0	0	0	0	0
TEXAS GAS TRANSMISSION													
NNS	Reservation (Nom)	138,044	142,645	78,563	81,181	81,181	75,944	81,181	138,044	142,645	138,044	142,645	142,645
	Variable	6,091	4,381	11,775	12,168	12,168	11,383	12,168	9,837	7,370	2,410	2,925	3,400
	Gas Commodity	1,146,770	1,055,931	375,161	423,450	461,223	397,981	324,562	772,921	858,148	799,085	941,040	925,984
STF	Reservation	50,400	52,080	245,700	253,890	253,890	237,510	253,890	50,400	52,080	50,400	52,080	52,080
	Released	16,009	16,543	136,750	141,308	141,308	132,191	141,308	30,722	31,746	30,722	31,746	31,746
	Net Reservation	34,391	35,537	108,950	112,582	112,582	105,319	112,582	19,678	20,334	19,678	20,334	20,334
	Variable	4,786	3,179	1,300	1,034	6,147	5,081	467	3,509	3,626	3,509	3,258	3,626
	Gas Commodity	593,235	338,179	133,212	104,790	664,522	467,144	33,589	304,210	314,980	407,069	416,850	463,147
	Hourly Overrun	0	245	1,000	204	4,703	345	872	2,895	(600)	0	78	685
CITYGATE PURCHASES													
	Commodity	0	0	0	0	0	0	0	0	0	0	0	0
LANDFILL PURCHASES													
	Commodity	305,206	285,975	223,988	258,296	273,026	242,460	204,769	207,745	252,522	225,999	335,455	294,210
STORAGE SERVICE													
COLUMBIA GAS													
FSS	Deliverability	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988
	Capacity	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229
	Injection	17,436	6,602	4,392	1,887	2,346	2,065	745	11,230	14,059	15,758	19,735	19,284
	Withdrawal	0	844	7,986	21,171	34,137	18,989	23,988	8,296	714	0	0	0
SST	Reservation	559,689	1,119,377	1,119,377	1,119,377	1,119,377	1,189,744	1,189,744	594,872	594,872	594,872	594,872	594,872
	Variable Injection	21,880	7,030	5,512	2,368	2,945	2,591	835	14,165	17,735	19,877	24,894	24,326
	Variable Withdrawal	0	736	9,116	24,166	38,967	21,675	27,382	9,508	818	0	0	0
TEXAS GAS TRANSMISSION													
NNS	Reservation (Unnom)	0	263,281	314,250	324,725	324,725	303,775	324,725	196,406	0	0	0	0
	Variable Withdrawal	0	0	3,106	23,061	37,830	27,200	13,145	0	0	0	0	0
	Hourly Overrun	0	0	0	0	1,555	400	370	0	0	0	0	0
	SQE Overrun	0	15,831	0	0	0	0	0	0	0	0	0	0
PEAKING SERVICE													
	Reservation	0	0	0	26,933	26,933	25,733	0	0	0	0	0	0
	Gas Commodity	0	0	0	0	1,287,664	972,211	0	0	0	0	0	0
Propane	Commodity	0	0	25,032	11,593	691,196	226,697	0	0	0	0	0	0

Notes:

- (a) KO Transmission May 2017 demand charge reflects refund of \$129,253.
(b) Excludes prior period adjustments and Texas Eastern OFO penalty charges.

APPENDIX A
DUKE ENERGY OHIO, Inc.
Audit Period Purchased Gas Costs
(\$)

		September 2016	October 2016	November 2016	December 2016	January 2017	February 2017	March 2017	April 2017	May 2017	June 2017	July 2017	August 2017
TRANSPORTATION SERVICE													
Duke Energy Kentucky													
FT	Reservation	50,058	50,058	50,058	50,058	50,058	50,058	50,058	50,058	50,058	50,058	48,579	43,506
	Variable	0	0	0	0	0	0	0	0	0	0	0	0
KO Transmission													
FTS	Reservation	65,504	65,504	65,504	65,504	65,504	481,491	481,491	391,552	391,552	391,552	391,552	391,552
	Released	7,894	7,894	18,647	18,647	18,647	137,063	137,063	103,525	103,525	103,525	103,525	103,525
	Net Reservation	57,610	57,610	46,857	46,857	46,857	344,428	344,428	288,027	158,774	288,027	288,027	288,027
	Variable	0	265	1,419	3,144	2,989	1,894	2,247	0	0	0	0	0
ITS	Variable	0	0	0	1,185	1,139	4,112	10,659	0	0	0	0	0
COLUMBIA GULF TRANSMISSION													
FTS-1	Reservation	104,895	104,895	163,170	163,170	163,170	163,170	163,170	104,895	104,895	104,895	104,895	104,895
	Released	45,298	45,298	98,338	98,338	98,338	98,338	98,338	71,089	71,089	71,089	71,089	71,089
	Net Reservation	59,597	59,597	64,832	64,832	64,832	64,832	64,832	33,806	33,806	33,806	33,806	33,806
FTS-1	Reservation	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930
Backhaul	Released	29,211	29,211	33,427	33,427	33,427	33,427	33,427	40,623	40,623	40,623	40,623	40,623
	Net Reservation	40,719	40,719	36,503	36,503	36,503	36,503	36,503	29,307	29,307	29,307	29,307	29,307
	Variable	11,057	9,388	9,295	11,080	10,276	9,487	6,808	4,369	4,129	5,085	5,367	3,378
	Gas Commodity	3,015,143	2,654,235	2,327,565	3,006,263	3,081,990	2,618,097	1,818,583	1,171,630	1,115,470	1,322,375	1,397,808	927,830
TENNESSEE GAS PIPELINE													
FT-A	Reservation	0	0	58,906	58,906	58,906	58,906	58,906	58,906	58,906	58,906	58,906	58,906
	Released	0	0	32,585	32,585	32,585	32,585	32,585	37,432	37,432	37,432	37,432	37,432
	Net Reservation	0	0	26,321	26,321	26,321	26,321	26,321	21,474	21,474	21,474	21,474	21,474
	Variable	0	0	2,584	7,315	6,898	4,694	3,600	2,646	1,534	0	1,023	0
	Gas Commodity	0	0	242,100	831,318	913,181	531,847	350,123	243,305	141,668	0	88,725	0
TEXAS GAS TRANSMISSION													
NNS	Reservation (Nom)	138,044	142,645	78,563	81,181	81,181	73,325	81,181	138,044	142,645	138,044	142,645	142,645
	Variable	1,172	5,654	11,756	11,859	12,148	10,973	12,148	8,616	6,605	2,525	7,675	923
	Gas Commodity	688,130	723,715	500,745	596,248	750,867	578,053	486,313	656,482	1,018,852	971,944	1,006,194	926,776
STF	Reservation	50,400	52,080	245,700	253,890	253,890	229,320	253,890	50,400	52,080	50,400	52,080	52,080
	Released	30,722	31,748	141,541	146,259	146,259	132,105	146,259	32,839	33,934	32,839	33,934	33,934
	Net Reservation	19,678	20,334	104,159	107,631	107,631	97,215	107,631	17,561	18,146	17,561	18,146	18,146
	Variable	3,195	815	2,122	8,914	9,553	5,455	5,202	935	3,221	0	3,221	0
	Gas Commodity	436,000	108,259	259,739	1,398,680	1,707,631	794,669	685,482	132,997	459,582	0	434,398	0
	Hourly Overrun	0	0	817	2,617	3,116	501	494	3,532	518	692	23	0
CITYGATE PURCHASES													
	Commodity	0	0	0	0	0	0	0	0	0	0	0	0
LANDFILL PURCHASES													
	Commodity	316,670	353,682	303,191	384,425	499,863	380,536	334,186	403,177	381,097	394,155	374,475	367,634
STORAGE SERVICE													
COLUMBIA GAS													
FSS	Deliverability	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988
	Capacity	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229
	Injection	17,755	6,282	3,724	2,087	1,234	3,510	2,741	11,681	18,065	21,216	23,399	16,854
	Withdrawal	0	419	9,162	33,947	31,099	19,567	27,996	2,978	573	0	0	0
SST	Reservation	594,872	1,189,744	1,189,744	1,189,744	1,189,744	1,252,967	1,252,967	626,483	626,483	626,483	626,483	626,483
	Variable Injection	22,397	7,883	2,291	2,619	1,548	4,404	3,440	16,948	26,212	30,785	33,951	24,455
	Variable Withdrawal	0	481	12,695	38,963	35,696	22,459	32,133	4,010	771	0	0	0
TEXAS GAS TRANSMISSION													
NNS	Reservation (Unnom)	0	263,261	314,250	324,725	324,725	293,300	324,725	198,406	0	0	0	0
	Variable Withdrawal	0	0	14,234	20,156	28,834	14,561	16,151	0	0	0	0	0
	Hourly Overrun	0	0	0	632	3,089	1,872	277	0	0	0	0	0
	SQE Overrun	0	0	0	0	0	0	0	0	0	0	0	0
PEAKING SERVICE													
	Reservation	0	0	0	35,650	35,650	32,200	0	0	0	0	0	0
	Gas Commodity	0	0	0	742,820	800,550	0	0	0	0	0	0	0
Propane	Commodity	0	0	0	589,344	628,887	0	0	0	0	0	0	0

Notes:

- (a) KO Transmission May 2017 demand charge reflects refund of \$129,253.
(b) Excludes prior period adjustments and Texas Eastern OFO penalty charges.

APPENDIX A
DUKE ENERGY OHIO, Inc.
Audit Period Purchased Gas Costs
(\$)

		September 2017	October 2017	November 2017	December 2017	January 2018	February 2018	March 2018	April 2018	May 2018	June 2018	July 2018	August 2018
TRANSPORTATION SERVICE													
Duke Energy Kentucky													
FT	Reservation	43,506	43,506	43,506	43,506	43,506	43,506	43,506	43,506	43,506	43,506	43,506	43,506
	Variable	0	0	0	0	0	0	0	0	0	0	0	0
KO Transmission													
FTS	Reservation	391,552	391,552	391,552	391,552	391,552	413,926	413,926	413,926	413,926	413,926	413,926	413,926
	Released	103,525	103,526	99,016	99,016	99,016	104,674	104,674	95,550	95,550	95,550	95,550	95,550
	Net Reservation	288,027	288,027	292,536	292,536	292,536	309,253	309,253	318,377	318,377	318,377	318,377	318,377
	Variable	0	222	928	2,725	3,211	2,040	2,453	473	0	0	0	0
ITS	Variable	0	0	0	5,754	13,663	2,701	295	3,237	0	0	0	0
COLUMBIA GULF TRANSMISSION													
FTS-1	Reservation	104,895	104,895	163,170	163,170	163,170	163,170	163,170	104,895	104,895	104,895	104,895	104,895
	Released	71,089	71,089	77,469	77,469	77,469	77,469	77,469	58,415	58,415	58,415	58,415	58,415
	Net Reservation	33,806	33,806	85,701	85,701	85,701	85,701	85,701	46,480	46,480	46,480	46,480	46,480
FTS-1	Reservation	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930	69,930
Backhaul	Released	40,623	40,623	27,532	27,532	27,532	27,532	27,532	38,978	38,978	38,978	38,978	38,978
	Net Reservation	29,307	29,307	42,398	42,398	42,398	42,398	42,398	30,952	30,952	30,952	30,952	30,952
	Variable	3,269	4,356	8,723	11,084	13,190	7,702	6,600	8,040	4,162	1,999	2,629	1,502
	Gas Commodity	897,900	1,151,327	1,981,642	2,661,705	3,292,968	2,060,735	1,471,213	1,785,915	936,216	480,600	615,845	365,110
TENNESSEE GAS PIPELINE													
FT-A	Reservation	58,906	58,906	58,920	58,920	58,920	58,920	58,920	58,920	58,920	58,920	58,920	58,920
	Released	37,432	37,432	37,171	37,171	37,171	37,171	37,171	32,818	32,818	32,818	32,818	32,818
	Net Reservation	21,474	21,474	21,749	21,749	21,749	21,749	21,749	26,102	26,102	26,102	26,102	26,102
	Variable	0	2,352	3,188	8,712	9,206	7,765	3,436	10,392	639	1,065	1,101	0
	Gas Commodity	0	200,096	257,255	784,437	739,350	829,097	268,681	783,678	48,185	84,940	84,445	0
TEXAS GAS TRANSMISSION													
NNS	Reservation (Nom)	138,044	142,645	78,563	81,181	81,181	73,325	81,181	138,044	142,645	138,044	142,645	142,645
	Variable	390	1,054	11,756	12,148	12,148	10,973	12,148	19,260	799	1,044	707	341
	Gas Commodity	452,880	646,173	493,577	580,717	513,957	625,609	490,394	838,404	950,242	921,631	824,067	874,200
STF	Reservation	50,400	62,080	380,250	392,925	392,925	354,900	392,925	66,300	68,510	68,300	68,510	68,510
	Released	32,839	33,934	222,048	229,450	229,450	207,245	229,450	36,878	38,108	38,878	38,108	38,108
	Net Reservation	17,561	18,146	158,202	163,475	163,475	147,655	163,475	29,422	30,402	29,422	30,402	30,402
	Variable	0	831	6,753	14,006	16,579	10,384	12,436	4,339	2,892	528	2,339	0
	Gas Commodity	0	109,508	886,559	1,934,071	2,257,615	1,651,897	1,500,416	539,091	355,782	67,991	295,239	0
	Hourly Overrun	0	0	0	974	1,332	72	1,802	1,113	9,199	5,601	0	0
CITYGATE PURCHASES													
	Commodity	0	0	1,105,440	1,282,036	1,138,212	1,376,312	1,093,246	535,710	581,777	570,728	619,752	581,994
LANDFILL PURCHASES													
	Commodity	367,696	373,533	332,303	394,399	332,856	402,271	302,960	313,160	338,256	295,528	351,111	322,670
STORAGE SERVICE													
COLUMBIA GAS													
FSS	Deliverability	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988	324,988
	Capacity	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229	266,229
	Injection	17,414	4,529	3,919	2,854	2,886	3,697	492	19,907	24,530	20,688	22,828	21,488
	Withdrawal	0	4,307	9,277	28,822	30,160	18,985	27,192	5,586	0	0	0	0
SST	Reservation	626,483	1,252,967	1,252,967	1,252,967	1,222,005	1,285,660	1,230,882	615,116	615,116	615,116	615,116	615,116
	Variable Injection	25,267	6,572	5,688	4,141	4,203	5,384	713	18,345	32,065	27,041	29,841	28,089
	Variable Withdrawal	0	5,800	12,492	38,808	40,808	25,536	36,612	13,802	0	0	0	0
TEXAS GAS TRANSMISSION													
NNS	Reservation (Unnom)	0	263,261	314,250	324,725	324,725	293,300	324,725	186,406	0	0	0	0
	Variable Withdrawal	0	0	12,570	23,308	36,096	92	28,871	4,999	0	0	0	0
	Hourly Overrun	0	0	101	0	8,238	0	1,302	0	0	1,746	0	0
	SQE Overrun	0	0	0	0	0	0	0	0	0	0	0	0
PEAKING SERVICE													
	Reservation	0	0	0				0	0	0	0	0	0
	Gas Commodity	0	0	0	422,090	2,542,690	546,670	0	0	0	0	0	0
Propane	Commodity	639,716	0	0	777,922	1,631,854	28,609	0	0	0	0	0	0

Notes:

- (a) KO Transmission May 2017 demand charge reflects refund of \$129,253.
(b) Excludes prior period adjustments and Texas Eastern OFO penalty charges.

APPENDIX B

RFP Scope of Work Company-Specific Audit Requirements

Requirement	Section
1. Evaluate Duke's participation in the KO Transmission Company (KO Transmission) base rate increase case and its efforts to minimize cost to its customers.	3.4.1
2. Review the Company's KO Transmission capacity entitlements that incorporate the impact of the KO Transmission recent base rate increase.	4.2.1 (C)
3. Examine the Company's design day model and its utilization of daily data and comparisons of forecasted to actual to refine its model.	4.4.1
4. Review Duke's assessment of the potential loss of its propane facilities and the optimal interstate pipeline capacity portfolio that would be required to replace the loss of supply.	4.2.3
5. Verify that the Company has included \$237,245 in its Contract Commitment Cost Recovery Rider (CCCR) for the avoided capacity assignment when the city of Cincinnati moved to a third-party supplier. Also examine Duke's efforts to modify its tariff to address the potential for suppliers to avoid the assignment of capacity.	6.1.9
6. Review the Company's evaluation of its ability to meet its firm customers' balancing requirements at reduced storage levels, taking into consideration the possibility that the propane facilities may not be available.	6.4
7. Examine the Company's assessment of adopting daily balancing tolerances for interruptible transportation services and whether this would impact its ability to manage storage and/or reduce its storage entitlements. Also examine Duke's investigation of changing the rates charged for interruptible monthly balancing service to provide a larger contribution towards the recovery of storage demand charges.	6.2.2