GATHERING SYSTEM ASSESSMENT AND SUPPLY ALTERNATIVES FOR AFFECTED CUSTOMERS

B&V PROJECT NO. 402691

PREPARED FOR

Peoples Gas WV LLC and Equitrans, L.P.

31 MARCH 2020

BLACK & VEATCH

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Acronyms and Glossary

Bcf	Billion Cubic Feet
CAPEX	Capital Expenditure
CGT	Columbia Gas Transmission
CS	Compressor Stations
DETI	Dominion Energy Transmission Inc.
DEWV	Dominion Energy West Virginia
DGP	Dominion Gathering and Processing, Inc.
EIA	Energy Information Administration
FERC	Federal Energy Regulatory Commission
hp	Horsepower
LDCs	Local Distribution Companies
LUF	Lost and Unaccounted For
M&R	Metering and Regulation
MAOP	Maximum Allowed Operating Pressure
Mcf	Thousand Cubic Feet
NPV	Net Present Value
O&M	Operations and Maintenance
OPEX	Operating Expense
PGWV	Peoples Gas WV LLC
PHMSA	Pipeline and Hazardous Materials Safety Administration
psig	Pounds per Square Inch Gauge
ROW	Right-of-Way
SCADA	Supervisory Control and Data Acquisition

1.0 Executive Summary

1.1 INTRODUCTION

Black & Veatch Management Consulting, LLC (Black & Veatch) was engaged by Peoples Gas WV LLC (PGWV) and Equitrans, L.P. (Equitrans) to conduct an independent study (Study) that assesses the short-term and long-term feasibility of providing reliable service to field tap and domestic customers (Affected Customers) from the Equitrans' low-pressure gathering system in West Virginia (Gathering System).[1]

Approximately 1,420 miles of the Gathering System is in West Virginia, with an additional 80 miles of pipelines in Pennsylvania. The Gathering System serves three local distribution companies (LDCs) in West Virginia, including PGWV, with approximately 2,500 PGWV field tap customers and an additional 1,000 PGWV domestic customers behind the delivery meters.

Equitrans conducted an evaluation of its West Virginia/Pennsylvania low-pressure gathering system and determined that the gathering system is no longer part of its core business operations. The Gathering System was built to transport West Virginia conventional gas production to downstream markets, and the system on average is over 70 years old. Because of declining local production, and the age and condition of the Gathering System, Equitrans announced plans to divest the assets in the near future by sale, transfer, or abandonment.[2]

Declining local production has become insufficient to supply LDC demand with increasing frequency. During these times, downstream compression must be shut down to increase system pressure so that LDC demand can be adequately supplied. The compression shutdown and increased system pressure can impact wellhead production and lead to a higher lost and unaccounted for (LUF) factor for the Gathering System. In addition, back feeding from Equitrans transmission facilities has been requested by PGWV during supply outages, winter peaks, or a combination of such disruptive events.

Equitrans proposed to transfer the Gathering System to PGWV for a nominal consideration.[3] PGWV may convert portions of the Gathering System to a distribution system or continue to separately operate portions of the system as a gathering system. Equitrans has preliminarily identified potential interconnects with Equitrans' interstate pipeline transmission system that could deliver interstate natural gas into the Gathering System if acquired by PGWV.

However, it is now incumbent on PGWV to make determinations as to whether the Gathering System will be adequate to continue to provide LDC services in the long run and have sufficient access to supply for the Affected Customers, while recovering the associated operations and maintenance (O&M) costs and gas losses for the gathering system and minimizing the potential rate impact on the PGWV customers.

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[1] Equitrans' transferred by sale a portion of the West Virginia low-pressure gathering system referred to as the Copley South System in November 2019. Neither the Copley South System, or Equitrans' Pennsylvania low-pressure gathering system was included or reviewed as part of the Study.

[2] See Equitrans August 19, 2019, Informational Postings website.

[3] The amount of the nominal consideration has not yet been determined or discussed between Equitrans and PGWV.

Under the proceedings of the proposed acquisition of PGWV by Aqua America, the Public Service Commission of West Virginia (Commission) has ordered Equitrans, Aqua America, and PGWV to file separate petitions to address the continuation of services to the Affected Customers (Case No. 18-1475-G-PC). PGWV and Equitrans commissioned this independent study to assess the short-term and long-term feasibility of continuing service to the PGWV customers on the Gathering System.

1.2 SCOPE AND APPROACH

The Black & Veatch scope of the Study includes the following:

- Evaluate the condition and operation of the Gathering System.
- Assess alternatives to the Affected Customers on the Gathering System, including, at a minimum, the following:
  - Extending or constructing new gas distribution lines to existing distribution or other nearby pipelines.
  - Acquiring, modification, replacement, and conversion of the existing gathering lines.
  - Abandoning some or all the Gathering System and switching customers to an alternative fuel.
- Evaluate the associated costs to Equitrans and PGWV and provide an estimate economic impact on the PGWV customers for each indicative alternative, including Affected Customers.
- Provide support to filing and discussions with Commission, Consumer Advocate of West Virginia, Independent Oil and Gas Association of West Virginia, and expert witness as needed.

The Black & Veatch team, consisting of professionals in the relevant engineering, operations, and analytical disciplines, has reviewed the data provided by PGWV and Equitrans as well as relevant publicly available information. Black & Veatch conducted a series of follow-up discussions with PGWV and Equitrans between July and November. Black & Veatch representatives conducted site visits and on-site meetings on December 10, 2019.

The Study was prepared in accordance with Black & Veatch's Consulting Services Agreement and the scope of work developed jointly with Equitrans and PGWV. The report reflects the knowledge of data, information, and other issues acquired by Black & Veatch during its review.

Certain statements made in this report are forward-looking. The achievement of certain events, results, or performance contained in such forward-looking statements involve known and unknown events different than initially intended. Black & Veatch does not plan to update or revise any forward-looking statements when such events, results, or performance occur.

1.3 SUMMARY FINDINGS

1.3.1 Gathering System Assessment

- Black & Veatch evaluated the Gathering System and believes the condition of the system is adequate to continue providing services.
- Certain portions of the Gathering System's pipelines are very old. The high gas loss factor indicates there is need for abandonment and replacement of certain sections of the Gathering System. Equitrans has done what is required for pipeline integrity and leak repairs by the relevant regulations and good industry practices.
- The regulatory requirements for a gas distribution system will be higher than that of a gathering system. While additional survey frequency and UFG limitations may or may not lead to the identification of additional leaks, there have been a limited number of incidents on the gathering system.
- Equitrans has been actively replacing farm taps that do not meet the current design standards and have been removing receipt points that are no longer delivering gas into the gathering system to reduce LUF.
- The compressor stations (CSs) have been adequately maintained to provide continuing services, though they may be naturally retired with the declining production volumes.
- The historical safety and reliability statistics have been satisfactory. Equitrans has provided adequate O&M functions. The assets appear to comply with all the regulatory requirements.
- There have been low-pressure issues experienced on portions of the Waynesburg and Hastings subsystem during the winter due to inadequate gas supplies. Interconnections with transmission pipelines appear to be needed to access high-pressure supplies.
- Equitran's proposal to transfer the Gathering System to PGWV and provide high-pressure interconnects concentrated in problem areas appears to be reasonable to mitigate the impacts of declining local production and extend the Gathering System supply options for LDC farm tap customers. Further detailed system studies will be needed to verify the interconnection impact.
- The Equitrans operation is relatively efficient, leveraging the large portfolio in the region. If PGWV acquires part or all of the Gathering System, PGWV will need to replicate over time the staff, functions, and experiences to operate the Gathering System. Equitrans has offered to provide assistance during a transition period, and third-party service providers can replicate compression services if necessary.

1.3.2 Supply Alternatives

- Although the region in West Virginia is populated with gas transmission, gathering, and distribution pipelines, there does not appear to be adequate customer density for the majority of the Gathering System to justify the additional cost for alternative supplies.
- With Equitrans' sale of the southern gathering system segment, the number of Affected Customers is estimated to have been reduced to be approximately 1,725 on the Gathering System.
- Black & Veatch has identified four concentrated areas with a total of approximately 1,300 customers, which will require further analysis for potential conversions, including the following:

- Meter 22897 and Meter 24137 that are LDC interconnects on the south end of the Hastings subsystem.
- Eleven (11) locations in Marion County on the Waynesburg subsystem that may be switched over to the Hope Gas Inc. dba Dominion Energy West Virginia (DEWV) systems.
- Six locations in the Monongalia county near the border that may be switched over to the Mountaineer Gas Company.
- Five locations in Taylor County that may be converted to be served from the PGWV distribution systems.

- The indicative cost estimate is approximately $1 to $5 million for each project, with large uncertainties for the project scope and potential costs. Black & Veatch has utilized a $10,000 per customer estimate to perform the financial modeling and rate impact analysis.
- For customer abandonment, Black & Veatch has estimated a range between $8,000-$20,000 per customer based on the cost associated with propane conversion to be recovered by the utility and the increased cost of alternative fuel paid by the abandoned customer's continuing services.

1.3.3 Indicative Customer Impact Analysis

- For PGWV to acquire the Waynesburg subsystem, Black & Veatch has estimated a $9.25 per customer per month average monthly bill increase, or $9.1 million in net present value (NPV) of the total economic cost.
- For Case 1, PGWV acquires the Waynesburg subsystem as discussed in detail below it is assumed that the Gathering System will continue to operate as is, with several of the following changes:
  - Equitrans has agreed to provide interconnect facilities at a limited number of locations.[4]
  - The gathering fee and/or the fuel retainage will need to be increased to cover the operating costs and gas loss of the system.
  - Equitrans continues to provide O&M services through an operating agreement at cost. At this time, Equitrans has indicated that they would not provide long-term O&M services but would be willing to negotiate a Transition Services Agreement to support a potential change in ownership.
- Additional cases were developed to estimate the impact associated with gas loss and unaccounted for. O&M will be provided through PGWV's utility operations, which are likely to result in higher customer bill increases.
- For PGWV to acquire both Waynesburg and Hastings, the average billing impact is slightly higher at $12.15 per customer per month; the NPV cost is about the same at $9.3 million because of higher upfront production volumes.

[4] The locations of the proposed interconnects have yet to be determined by Equitrans and PGWV.

- The cost of acquisition is lower than the total Affected Customers abandonment cost of $15.8 million, assuming $8,000 per customer in abandonment costs, approximately $13.49 per customer per month in the average monthly bill increase. [5]
- The cost for the selected conversion and abandonment case is estimated to be approximately $17 million, assuming $8,000 per customer in abandonment costs, approximately $12.50 per customer per month, with large uncertainties in the scope and cost associated with such conversion projects.
- Based on the preliminary analysis, there is benefit for PGWV to acquire the Gathering System, and defer potential abandonment of the entire system, where it would be able to maintain service to approximately ~12,000 customers[6]. Further analysis will be required to evaluate the economic life of the Gathering System, the cost associated with selected customer conversions and abandonment, and the cost associated with owning, O&M, and retirement of the Gathering System.[7]

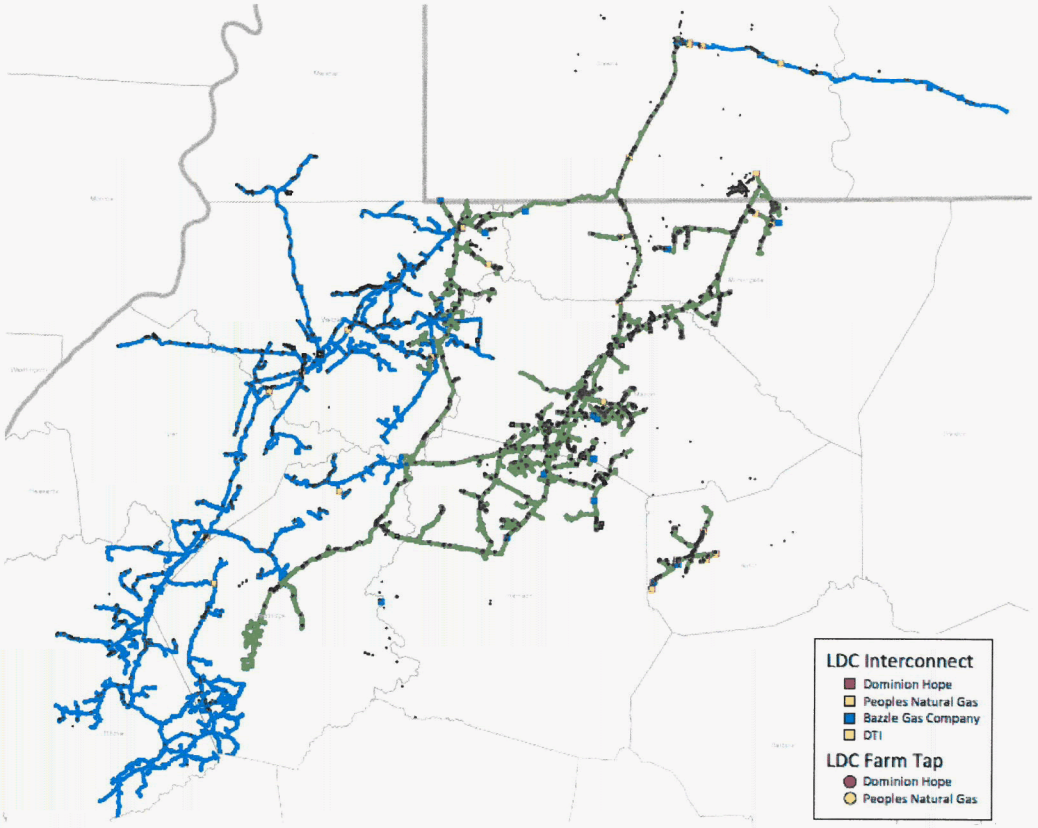
[5] For $20,000/customer, the estimated costs are $39.3 Million, or approximately $33.72 per customer per month.

[6] For this analysis, it is assumed that PGWV will acquire the ownership of the Gathering System and will operate the Gathering System as a separate entity other than its utility operations. PGWV will continue to provide distribution services to the Affected Customers under its current utility operations.

[7] This conclusion has not included any costs related to acquiring any portions of the Gathering System and operating them as part of the PGVW utility operations. The potential additional costs are analyzed in case 6 and case 7 as detailed in Section 6: Customer Impact Analysis.

2.0 Gathering System Assessment

2.1 GATHERING SYSTEM OVERVIEW



Source: Equitrans

Figure 2-1 Equitrans West Virginia Gathering System Overview Map

The Gathering System includes the Waynesburg and Hastings subsystems in Monongalia, Marion, Taylor, Harrison, Wetzel, Tyler, Ritchie, and Doddridge counties of West Virginia. The southern segment of the Gathering System has been acquired by another entity and is therefore excluded from this analysis.

Table 2-1 summarizes the key attributes of the Gathering System.

Because of the sale and exclusion of the southern segment, the number is reduced to be approximately 1,725 affected customers based on the metered volumes and average consumption level per customer.

Table 2-1 Gathering System Summary

SUBSYSTEM	PIPELINES	COMPRESSION	2018 GATHERING PRODUCTION	2018 TOTAL LDC/DOMESTIC LOAD	2018 PGWV LDC/DOMESTIC LOAD
Waynesburg (Northern)	445 miles 1"-24"	5 stations 5,675 hp	~500 locations, 2,104,247 Mcf	~120 locations * 345,106 Mcf	~72 locations * 200,076 Mcf
Hastings (Western)	482 miles 1"-20"	4 stations 1,340 hp	~650 locations, 3,371,264 Mcf	~131 locations * 127,805 Mcf	~72 locations * 25,727 Mcf

Mcf - thousand cubic feet

* LDC and domestic locations reflect aggregated meter counts.

As of 2018, there are still significant local production volumes on the Gathering System. The total production volumes of approximately 2.1 million Mcf and 3.4 million Mcf on Waynesburg and Hastings, respectively, are higher than the corresponding local demand of approximately 345,000 Mcf and 128,000 Mcf, respectively. The local demand includes domestic customers (farm tap) that are directly connected to the Gathering System and customers behind the LDC city-gates. Overall, the PGWV load requirement is only a small portion of the total system volumes, approximately 10 percent of the Waynesburg system, and less than 2 percent of the Hastings system, respectively.

There is a wide range of pipeline sizes, from 1" in diameter to handle the small volumes, to 20 inches to 24 inches in diameter for the trunk lines. Several CSs are still required, with total active installed horsepower (hp) of 5,675 hp for Waynesburg, and 1,340 hp for Hastings, respectively. Gas generally flows from south to north. In addition to the key delivery points at Waynesburg and Hastings, respectively, there are interconnects to Dominion Energy Transmission Inc. (DETI), Equitrans' transmission pipelines, and other LDC interconnects.

2.2 PIPELINES

2.2.1 Pipeline Size and Materials

As shown in Table 2-2, most of the Gathering System pipeline material is steel. Most of the Gathering System has a maximum allowed operating pressure (MAOP) between 60 to 70 pounds per square inch gauge (psig), or lower, except for a few trunk lines. The average inlet pressure for the production is approximately 12 psig. The average delivery pressures for the domestic and LDC load on the Waynesburg system is approximately 18 psig. Because of the relatively high delivery pressures, there are occasional pressure issues to receive gas from production, particularly in winter peak months.

The average delivery pressures for the domestic and LDC load on the Hastings system is approximately 10.5 psig. There does not appear to be pressure problems for the gas production.

Table 2-2 Pipeline Materials Summary by Diameter

Material	Unknown	<= 2"	2" - 4"	4" - 6"	6" - 8"	10"	12"	16"	20"	24"	Total
Plastic	-	22	29	11	4	1	1	-	-	-	68
Steel	0	40	67	78	38	60	77	16	-	0	376
Unknown	0	0	0	0	-	-	-	-	-	-	0
Total Waynesburg	**1**	**62**	**96**	**89**	**42**	**61**	**78**	**16**	**-**	**0**	**445**
Plastic	0	12	27	15	4	1	1	0	0	-	60
Steel	0	34	86	138	44	41	52	19	0	-	414
Unknown	6	0	0	0	0	0	0	0	0	-	7
Total Hastings	**7**	**46**	**114**	**153**	**48**	**42**	**53**	**19**	**0**	**-**	**482**
Grand Total	**8**	**109**	**210**	**242**	**90**	**102**	**132**	**35**	**0**	**0**	**927**

2.2.2 Pipeline Vintages

Table 2-3 summarizes the pipeline mileages by decade of installation for Waynesburg and Hastings, respectively. The vintage pipelines, particularly for those installed prior to the 1960s, are generally susceptible to antiquated material and installation standards. They may need to be replaced as needed for asset integrity and safety reasons.

Table 2-3 Pipeline Mileage Summary by Decade of Installation

DECADE OF INSTALLATION	WAYNESBURG	HASTINGS	TOTAL
Pre-1960 or unknown	309	373	682
1960	18	17	35
1970	18	9	27
1980	61	47	108
1990	14	25	39
2000	19	1	20
2010	7	9	16
Total	**445**	**482**	**927**

2.2.3 Integrity Management Program

Approximately 23.0 miles of pipelines are classified as high consequence area gathering and production pipelines, subject to Pipeline and Hazardous Materials Safety Administration (PHMSA) jurisdiction. Table 2-4 summarizes pressure testing and alternative methods that are used to establish the MAOP of the jurisdiction pipelines.

Table 2-4 Jurisdictional Pipelines and Pressure Compliance Methods

COMPLIANCE METHOD	NUMBER OF SEGMENTS	MILES
Pressure Test	20	7.3
Grandfathered	10	2.7
Reduce MAOP	29	12.5
Special Permit	5	0.4
Total	**64**	**23.0**

Based on the determination criteria, the jurisdictional pipelines are segmented throughout the Gathering System.

Cathodic protection systems have been installed for the jurisdiction pipelines and all the CSs, with annual rectifier inspections. Corrosion coupons are inspected at the selected CSs and pipeline locations. There are no installations to allow for pipeline inspection gadgets on the system.

2.3 COMPRESSOR STATIONS

Table 2-5 summarizes the CSs of the Gathering System.

The in-service dates for the compressor units have not been provided. They were believed to be in the same vintage as the average age of the pipeline systems. The CSs only run intermittently as needed. In general, there is a reducing need for compressions with the declining production.

On December 10, 2019, Black & Veatch representatives conducted site visits to the Waynesburg, Underwood, and Hundred stations. Only one unit at Waynesburg was running on the date of the visit. The inactive unit at Underwood has not operated for a long time, but it has not been decommissioned yet. One unit at Hundred is on warm standby, and typically only one unit is required. None of the other compressor units were running on the date of the visit.

It is observed that all the active units are in good operable conditions as needed. Equitrans has performed all the preventive maintenance and overhaul services in-house to keep the units in good condition. There have been electrical, control, dehydration, and other ancillary upgrades on the Waynesburg and Hundred stations to make them operable. All the stations are monitored remotely through the SCADA system at the Equitrans control center in Canonsburg, Pennsylvania. None of the stations are staffed; however, the field operators are located nearby to provide the on-call services within the required response time.

Table 2-5 Compressor Stations Summary

SUBSYSTEM	STATION	UNIT ID	STATUS	MAX HP	DRIVER	COMPRESSOR
WAYNESBURG	HUNDRED	HUN-UNIT-2100	Active	412	WAUKESHA	JOY
	HUNDRED	HUN-UNIT-2200	Active	525	WAUKESHA	JOY
	SMITHBURG	SMB-UNIT-2100	Active	318	WAUKESHA	JOY
	UNDERWOOD	UND-UNIT-2100	Pending Review	600	BALDOR	GARDNER-DENVER
	UNDERWOOD	UND-UNIT-2200	Inactive	300		
	MT MORRIS	MTM-UNIT-2100	Active	80	AJAX	AJAX
	MT MORRIS	MTM-UNIT-2200	Active	140	AJAX	AJAX
	WAYNESBURG	WAY-UNIT-2100	Active	1,800	COOPER BESSEMER	COOPER BESSEMER
	WAYNESBURG	WAY-UNIT-2200	Active	1,800	COOPER BESSEMER	COOPER BESSEMER
	Total Active	**NA**	**NA**	**5,675**	**NA**	**NA**
HASTINGS		CEN-UNIT-2100	Decommissioned	600	SUPERIOR	SUPERIOR
	AUBURN	AUB-UNIT-2100	Decommissioned	135	WAUKESHA	JOY
	HASTINGS	HAS-UNIT-2100	Active	400	AJAX	AJAX
	HASTINGS	HAS-UNIT-2200	Active	360	AJAX	AJAX
	LEESON	LEE-UNIT-2100	Active	140	AJAX	AJAX
	PIERCE	PRC-UNIT-2100	Active	140	AJAX	AJAX
	TOLL GATE	TOL-UNIT-2100	Active	300	AJAX	AJAX
	Total Active	**NA**	**NA**	**1,340**	**NA**	**NA**

2.4 OTHER ASSETS

Other assets include pipeline fittings, meters, taps, interconnections, and other related facilities that are typical for the gathering and transportation pipelines.

Regulators, overpressure protection, and other city-gate facilities will need to be added to convert the Gathering System to a distribution system.

2.5 SYSTEM FLOWS

The Gathering System aggregates production and generally flows from south to north as follows:

- The Waynesburg subsystem starts from the Smithburg CS, moves through looped lines of the Hundred CS and Underwood CS, and delivers to Equitrans at Waynesburg CS for approximately 2,000 to 4,500 Mcf/d. The Mt. Morris CS is not active. The Hundred CS also has the ability to divert volumes onto the Hastings subsystem. Equitrans has mostly relied on the DETI compression capacity at Hastings, and it has mostly operated the Gathering System in an integrated fashion.
- The Hastings subsystem starts from the Pierce CS and the Leeson CS (Auburn is not active), moves through the Tollgate CS, and delivers to DETI through the Hastings CS for approximately 3,000 to 5,000 Mcf/d. The DETI extraction plant is not operating.

2.6 SYSTEM CONDITIONS

Based on the coupon readings, the corrosion speed is relatively stable. The quality of the gas is acceptable, with low CO_2 and H_2S content. The field gas is typically saturated with water at the operating pressure and temperatures.

Table 2-6 summarizes the historical number of repaired leaks for the respective systems.

Table 2-6 Pipeline Leaks Repaired [1]

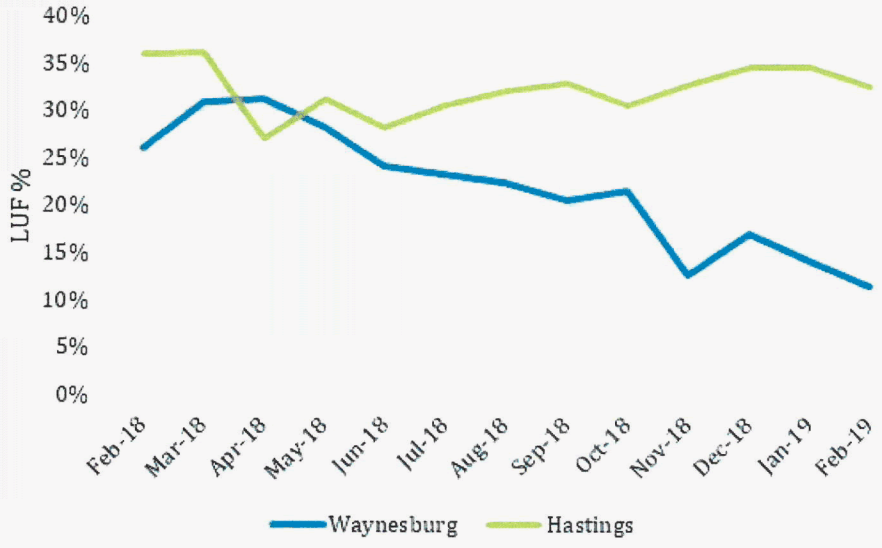
SUBSYSTEM	YEAR	JURISDICTIONAL[2] GRADE 3	NON-JURISDICATIONAL[2] GRADE 1	GRADE 2	GRADE 3[3]	TOTAL
Waynesburg	2016	0	0	3	62	65
	2017	0	4	4	98	106
	2018	1	1	1	83	86
	2019[4]	0		1	23	24
Hastings	2016	0	0	3	52	55
	2017	0	14	19	124	157
	2018	0	8	14	59	81
	2019[4]	0	3	8	18	29

[1] Equitrans will provided updated data to PGWV after its FERC Form 2 data is filed in April 2020.
[2] Federal Energy Regulatory Commission (FERC) jurisdictional or non-jurisdictional gathering and production pipelines.
[3] Includes grade 3 or unrated leaks.
[4] Through May 8, 2019.

Most leaks are on the non-jurisdictional pipelines. The repaired leak ratio is relatively low compared to the national and West Virginia leak ratio of approximately 0.8 to 1.2 leaks/mile/year for the gas distribution systems. Most of the pipelines are in Class 1 locations, corresponding to Grade 3. The leaks have been repaired in a timely fashion according to the respective grades,

including clamps, insert plastic, replacement of pipelines, repair/replacement of fittings, or abandonment.

Figure 2-2 shows the historical LUF for the subsystems, as calculated by Black & Veatch based on the data supplied by Equitrans.



Source Data: Equitrans

Figure 2-2 Gathering System Historical Lost and Unaccounted for Percentages

The LUF appears very high and may be seasonal, depending on the volume throughput and operating pressure of the Gathering System. It is noted that the LUF for the Waynesburg subsystem declined significantly from 2018 to 2019, however, the high level of LUF could indicate that the system may potentially have more leak repairs, meter errors, back-feeding into production wells, or gas theft, which may require further analysis. It is also noted that the LUF factors are significantly higher than the retainage factor in the gathering tariff. This could lead to continued operating losses for the Gathering System.

Table 2-7 summarizes the historical events and abnormal operations by root causes.

The systems appear to have been operated adequately. The level of incidents is relatively moderate compared to similar assets. The subsequent incident response, investigation, and mitigations appear to have been managed adequately.

Table 2-7 Historical Events and Abnormal Operations*

PRIMARY ROOT CAUSE	2017	2018
Earth Movement (Slip/Slide)	1	2
Excavation Damage	1	
External Corrosion	2	
Inadequate Procedure	1	
Lightning Strike	1	
Malfunction of Transmitter		6
No One Calls	2	1
Operator Error	1	
Other Outside Force		1
Station Outage	2	
System Operation	4	
Unclassified		5
Total	**15**	**15**

*Equitrans will provided updated data to PGWV after its FERC Form 2 data is filed in April 2020.

2.7 O&M PRACTICE

The Gathering System is part of the broad Equitrans, L.P., operations in southwestern Pennsylvania and central and northern West Virginia that also include 950 miles of FERC-regulated interstate natural gas transmission pipelines, 41 billion cubic feet (Bcf) of working gas storage capacity, and 41 CSs for a total of approximately 120,000 hp. Equitrans' total throughput capacity was approximately 4.4 Bcf/day at the end of 2018.

Equitrans runs an integrated operation for all of its assets in the region. It is estimated that there are approximately 90 field operations personnel in West Virginia, including a regional manager, field supervisor, operating technicians, mechanics, compressor services, instrumentation and electrical technicians, measurement technicians, and corrosion specialists. Other functions are provided through the corporate shared services, such as engineering and construction, integrity management, SCADA control room operations, etc.

Table 2-8 shows the 2019 O&M budget for the relevant Equitrans subdistricts for the Gathering System.

Table 2-8 Equitrans 2019 O&M Budget for Gathering System*

COST CATEGORY	LOGANSPORT**	WEST UNION***
Labor and Employee-related Expense	$625,819	$158,908
Materials and Supplies	$137,878	$260,010
Safety and Environmental	$24,200	$15,500
Right-of-Way (ROW) and One Call	$18,000	$13,141
Utilities, Telecom, and Field Communications	$196,146	$54,458
Repairs and Maintenance	$113,219	$93,741
Facilities	$26,050	$8,465
Total	**$1,141,312**	**$604,223**

*Equitrans will provided updated data to PGWV after its FERC Form 2 data is filed in April 2020.
**Logansport includes Hastings, Hundred, and Underwood stations.
***West Union includes Leeson, Pierce, Smithburg, Tollgate, and West Union stations.

The O&M budget by operating subdistrict does not match the subsystem. Nonetheless, the overall budget suggests a relatively efficient operations based on shared personal and corporate services with the large Equitrans portfolio.

Table 2-9 shows the historical maintenance capital expenditure (CAPEX) for the Gathering System in the previous 3 years.

Table 2-9 Gathering System Historical Maintenance CAPEX*

MAINTENANCE CATEGORY	2016	2017	2018
Compressor Overha[redacted]	$152,219	$209,813	$214,635
Measurement Upgrades	$26,634	$78,799	
Operating Improvements	$122,434	$77,890	$23,807
Pipeline Relocations	$(73,203)	$76,555	
Pipeline Segment Renewals	$787,930	$1,367,451	$1,176,064
Safety Related	$11,484	$-	$69,787
ROW Slips and Slides Remediation			
Total	**$1,027,497**	**$1,810,508**	**$1,484,294**

*Equitrans will provided updated data to PGWV after its FERC Form 2 data is filed in April 2020.

The total maintenance CAPEX average approximately $1.5 million per year, including major overhauls, repairs, upgrades, and pipeline remediations. Equitrans has not conducted major

pipeline replacement programs. From the selected few relatively small jobs for pipeline renewals, the projects appear to have been well managed with adequate project planning, construction, inspection, and test records.

2.8 SUMMARY OBSERVATIONS

Some of the pipelines are very old and may need to be replaced. The CSs have been adequately maintained to provide continuing services, though they may be naturally retired with the declining production volumes.

Due primarily to the high LUF factors, it does not appear to be economical to continue operating the Gathering System under the current rate and ownership structure. Increasing revenues from the customers are required to make the Gathering System economical, either through a combination of higher retainage factors and/or investment returns in upgrade and replacement projects. Otherwise, system abandonment may be the only outcome.

The regulatory requirement for the Gathering System is different that of a distribution system in terms of safety and pipeline integrity management programs. Equitrans has conducted adequate activities to be compliant with all the relevant safety and pipeline integrity management requirements.

Equitrans appears to have provided adequate O&M function for the continuing operation of the Gathering System as is. The operation is relatively efficient, leveraging the large Equitrans portfolio in the region. However, there is higher safety requirement for a gas distribution system. In addition, PGWV has a relatively small operation in the area. It can be envisioned that the O&M costs will be significantly higher if the Gathering System is converted into a distribution system. A pipeline replacement may be needed to reduce the high LUF factor on the Gathering System.

There are only declining legacy production volumes on the system with no new well production wells at existing receipt points and no new receipt points tap requests. The Hastings subsystem appears to have adequate local production to support the PGWV local demand for the foreseeable future. However, Equitrans has experienced recent supply shortages as reported by DEWV customers during the winter. The Waynesburg subsystem appears to need pressure enhancement to continue reliable gas distribution services. Local production may still be able to provide intermittent supplies during the transition period, before it fails to completely meet the pressure cutoff threshold.

3.0 Supply Alternatives Evaluation

3.1 OVERVIEW OF THE REGIONAL PIPELINE SYSTEMS

The major transmission pipelines in the region includes the following:

- Dominion Energy Transmission Inc. (DETI).
- Columbia Gas Transmission (CGT, owned by TC Energy).
- Equitrans, L.P.

Because of the pressure differences, domestic and farm tap customers are not directly connected to the high-pressure transmission pipelines. City-gate stations are required with metering and regulation (M&R) facilities, and a large number of customers in a relatively concentrated area is needed to justify the sharing of the common infrastructure costs.

Other connecting options include the expansion/extension of the regional LDC systems, including the following:

- Hope Gas Inc., dba Dominion Energy West Virginia (DEWV).
- Mountaineer Gas Company.
- Cardinal Natural Gas Northern Division – Blacksville (owned by Utility Pipeline Ltd.).
- Cardinal Natural Gas Northern Division – Lumberport (owned by Utility Pipeline Ltd.).

Similar to the Equitrans Gathering System, Dominion Gathering and Processing, Inc. (DGP) is the other legacy gathering system that also serves a large number of LDC and farm tap customers. On April 29, 2019, DEWV filed an application to acquire select facilities from its affiliate DGP as part of regulated gas utility business (Case No. 19-0549-G-PC-ACN).

Figure 3-1 shows the regional pipeline map overlaid with the LDC services territories, as provided in the Energy Velocity Suite, a software provided by ABB.

Because of the fine granularity of the gathering and distribution systems, Energy Velocity does not track pipelines less than 8 inches in diameter. It has only shown the general services areas as indication for potential coverages.

Black & Veatch has referenced the pipeline maps provided by PGWV for potential alternatives, as well as maps based on public sources that are provided in Appendix A.

It should be noted that the Black & Veatch study is only based on the high-level review of the proximity of the adjacent pipelines. It does not represent detailed assessment of the connectivity or system expansion requirements.

Source Data: Energy Velocity, ABB

Figure 3-1 Regional Pipelines and Local Distribution Company Services Territories

3.2 SEGMENTATION OF THE SYSTEMS

PGWV is a relatively small operator with approximately 413 miles of distribution pipelines, and 14,744 services in 2018.[8] Only the segments in Taylor County can be converted and integrated with its existing PGWV systems if the Equitrans Gathering System is abandoned.

The east segments of the Waynesburg subsystem appear to overlap with the Goshen Road service areas of DEWV. Selected conversions to be served by the DEWV series may be feasible. There are other concentrated pockets that may be served by Mountaineer or UPL along the border between Pennsylvania and West Virginia. There do not appear to be supply alternatives for the isolated farm taps.

The pipelines in the Wetzel, Tyler, Doddridge, and Ritchie counties, including all the pipelines on the Hastings subsystem and the west segments of the Waynesburg system, appear to overlap with DGP systems referred to as "pods." There do not appear to be viable LDC alternatives if the Equitrans Gathering System is abandoned. It may be possible to reconfigure the regional systems to be connected with the DETI, DEWV, and DGP systems.

3.3 SUPPLY ALTERNATIVES

Table 3-1 summarizes the evaluation of the pipeline alternatives by proximity of the meter locations to the adjacent pipelines. PGWV provided data for customers and consumptions behind the LDC interconnect. For the farm taps, the aggregated meters (as provided by Equitrans) are used. The number of customers affected is estimated assuming an annual average usage of 70 Mcf per customer.

[8] PHMSA Gas Distribution Annual Report, 2018.

Table 3-1 Alternative Pipelines Evaluation Summary[9]

SUBSYSTEM	ALTERNATIVE PIPELINE	ESTIMATED NUMBER OF CUSTOMERS AFFECTED		
		ABANDON	CONVERT TO ALT. DISTRIBUTION	TOTAL
Hastings	DETI/DGP	260	552	812
Waynesburg	DEWV	38	412	450
	Mountaineer	6	268	274
	PGWV	16	89	106
	None/Unidentified	327	0	327
Total		**648**	**1,321**	**1,968**

There does not appear to be adequate customer density for the majority of the Gathering System, except a few concentrated areas that may need further investigation as follows:

- Meter 22897 and Meter 24137 that are LDC interconnects on the south end of the Hastings subsystem.
- Eleven (11) locations in Marion County on the Waynesburg subsystem that may be switched over to the DEWV systems.
- Six locations in Monongalia County near the border that may be switched over to Mountaineer.
- Five locations in Taylor County that may be converted to be served from the PGWV distribution systems.

The detailed assessment by the Equitrans meter points are shown in Appendix B. It is noted that Equitrans use aggregate meter locations that may be more opportunistic for the potential conversions. The actual locations may be more dispersed and costly for the conversion.

For the potential conversions, Black & Veatch assumes that the existing pipelines and facilities will remain to be utilized, and additional pipelines and facilities will be constructed as necessary to supply the selected group of customers. No pressure enhancement or pipeline replacement is considered under this scenario.

There are generally adequate gas supplies in the region. However, many of the adjacent pipelines are of similar vintages as the Equitrans pipelines. Furthermore, there is a relatively large variance

9 Peoples provided customer data totaling 3,248 during the August 2018-July 2019 period, of which 986 customers did not consume gas during that period. Black & Veatch excluded these 986 customers from the customer impact analysis, as they may be free gas customers or have another supply alternative in addition to being connected to these pipelines. Our high-level review of the location of these customers indicates that they are spread across the different grouping in our Table 3-1. It does not appear that these non-use customers impact significantly any subsystem and alternative group. At this time, PGWV believes that they are still obligated to abandon these non-use customers and additional research will be required to determine any alternative sources of supply.

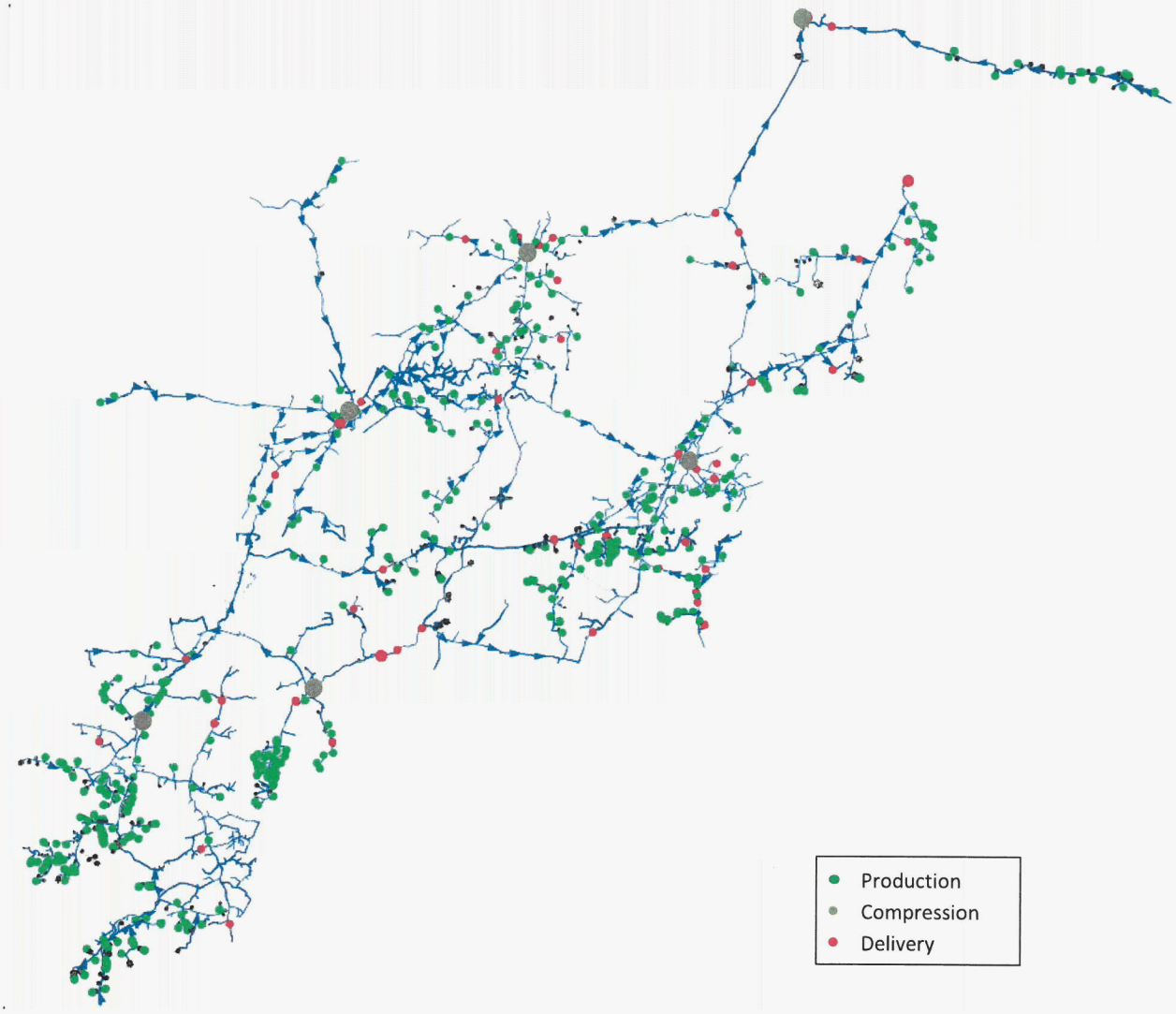
in the pipeline construction costs in West Virginia. The scope and associated costs for such conversion projects may also vary significantly. Detailed asset conditions and system impact studies will be required for further analysis of the potential conversions.

The indicative cost estimate is approximately $1 to $5 million for each project. For financial modeling and rate impact analysis, Black & Veatch has applied $10,000 per customer to generate the indicative results.

4.0 Gas System Modeling

4.1 HYDRAULIC MODELING REVIEW

Figure 4-1 shows the hydraulic modeling of the system map and major nodes on the system using the NextGen software based on the data provided by Equitrans.



Source Data: Equitrans

Figure 4-1 Hydraulic Model Map

Black & Veatch has been able to replicate the system flows based on the data provided. Black & Veatch believes that the model reasonably reflects the behavior of the Gathering System. Table 4-1 summarizes the hydraulic modeling of volume scenarios for peak (January 2019) and non-peak (April 2019).

Table 4-1 Hydraulic Modeling Volume Summary

ITEM	JAN 2019 MCF/D	APR 2019 MCF/D
Waynesburg Delivery	6,214	5,524
Hastings Delivery	5,138	5,484
Miscellaneous Demand	1,856	1,641
Total Outlet	13,208	12,649
Total Inlet	13,538	12,936
Calculated Fuel	330	287

Local demand is a relatively small portion of the system. The difference between peak and non-peak local demand scenarios is relatively small. The hydraulic model is designed to function as a Gathering System and maximize the throughput volumes. It uses a sophisticated approach that the production wells are modeled as the storage nodes. There appears to be adequate production under both scenarios.

However, the modeled pressures at the production nodes appear to be higher than the recorded historical averages for the respective locations. There is a concern that the local production may not be able to supply gas to the system at these elevated pressures. Further model calibration and evaluation will be needed to understand the production capabilities, potential system constraints, and impact on the PGWV customers.

4.2 GATHERING SYSTEM IMPROVEMENT SCENARIOS

For PGWV to provide natural gas distribution services to the Affected Customers using the Gathering System, it appears that relatively moderate upgrades will be needed to address the pressure issues on the Waynesburg subsystem.

Equitrans has proposed potential city-gate additions near the Smithburg and Underwood locations. No pipeline reversals appear to be necessary.

The local demand is relatively small, well within the typical delivery capacity for a transmission interconnect. With the potential elevated pressures from the transmission supplies, it may negatively impact some of the local regional production, which is not what the interconnects are intended to do.

The Hastings subsystem does not appear to require an upgrade immediately. There appears to be multiple opportunities to interconnect with Equitrans at the Wetzel location, including Sunrise and Ohio Valley Connector. There are also multiple points of potential intersection with DETI at

Logansport, West Union, and further South in the Ritchie County. It is possible to connect with the DEWV and DGP systems, which will require further detailed analysis.

4.3 CONVERSION ALTERNATIVES

The conversion alternatives are for very small and localized demand. They are within the typical capabilities of the local pipelines.

5.0 Indicative Customer Cost Impact Analysis

5.1 METHODLOGY OVERVIEW

Based on the asset conditions assessment and customers' demand requirement analysis as discussed above, Black & Veatch has assumed a base case acquisition that PGWV will only acquire the Waynesburg System. It appears that a moderate level of CAPEX investment in city-gate M&R stations will be needed to improve the operating pressure of the system.

For operating expense (OPEX) assumptions, Black & Veatch considers that the Gathering System is adequate to provide continuing services as is. There is likely to be higher OPEX to convert the Gathering System into a distribution system because of higher regulatory requirements. Furthermore, there is a lack of staff and operational functions for PGWV to provide O&M services for the Gathering System.

In addition to the CAPEX and OPEX required to continue operating the Gathering System, a higher fuel retainage will be required to recover the cost associated with owning the Gathering System. Such adjustment will need to be implemented through bilateral contract negotiations with producers and customers in conjunction with regulatory proceedings before the Commission.

The determination of alternative supply pipelines or abandonment has been addressed in Section 3.0. The detailed CAPEX and OPEX input assumptions are discussed in the sections below. The rate modeling and resulted $/customer rate impacts are provided in Section 6.0.

Finally, sensitivities scenarios to the key inputs and assumptions are performed to provide an indicative range of potential outcomes.

5.2 ACQUISITION CASE

For the acquisition case, CAPEX includes the following:

- Upfront acquisition cost assumed at zero.[10]
- System upgrade cost at $600,000 for the two M&R stations on the Waynesburg subsystem.

Operating cost is assumed to be approximately $1.2 million per year for the Waynesburg subsystem based on the Equitrans 2019 budget, escalating at 2 percent per year. An additional $0.6 million per year is included if the Hastings subsystem is also considered for the acquisition.

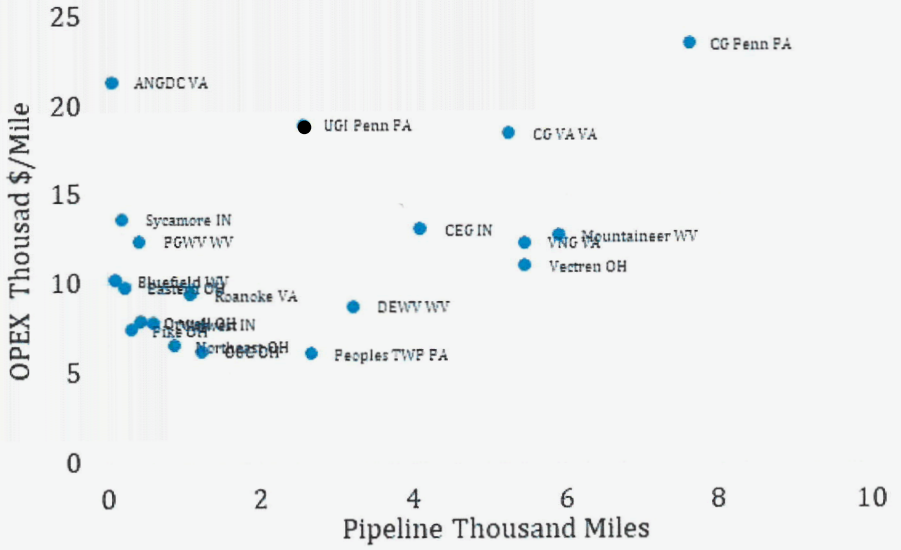
Based on the historical costs, maintenance cost is estimated to be approximately $750,000 per year for Waynesburg subsystem, and approximately $1.5 million per year for both subsystems.

Considering the current staffing level and organization functions of PGWV, the OPEX estimated is based on continuing operations by Equitrans as a gathering system through a Transition Services Agreement.

[10] As stated in Equitrans Direct Testimony of John M. Quinn, Equitrans would request nominal consideration for the transfer the Gathering System to PGWV. The amount of the nominal consideration has not yet been determined or discussed between Equitrans and PGWV. For purposes of this analysis, the acquisition cost is assumed at zero.

It should be noted that the O&M costs for gas distribution system operations are likely to be higher than the Gathering System. Black & Veatch has developed an alternative case with an estimated O&M costs of approximately $4.5 million per year, based on an average cost of $10,000 per mile for the regional LDC benchmark.

Figure 5-1 shows the OPEX $/mile statistics for the regional gas distribution companies based on the 2018 OPEX as collected through SNL Financial.



Source Data: SNL Financial

Figure 5-1 OPEX $/Mile for the Regional Gas Distribution Companies

The selected companies include LDCs in Indiana, Ohio, Pennsylvania, Virginia, and West Virginia as they are reported to the respective states. The median OPEX for the selected group is approximately $10,000 per mile. For the three companies in West Virginia, PGWV and Mountaineer are slightly higher than the median, and DEWV is slightly lower than the median.

5.3 ABANDONMENT AND CONVERSION CAPEX

The abandonment cost is based on converting customers to propane services when there are no pipeline supply alternatives. The cost for propane services cost incorporates equipment conversion cost estimates by the vendors, and ongoing services fees, as summarized in Table 5-1.

Table 5-1 Abandonment and Propane Services Cost Summary

COST COMPONENTS	ESTIMATE $/CUSTOMER	DESCRIPTION OF METHODOLOGIES
Equipment Conversion	$6,000	Household appliance/equipment conversion for furnace, hot water tank, and services lines based on vendor estimate.
Annual Services Fees	$2,000	Estimated present value of annual services charge of approximately $200/customer, including tank leasing, fuel delivery, and the other ongoing services.

COST COMPONENTS	ESTIMATE $/CUSTOMER	DESCRIPTION OF METHODOLOGIES
Total	**$8,000**	

The cost for propane services conversion varies with the size of the customer, equipment appliances, specifications, and site layouts. For simplicity, Black & Veatch has assumed a one-time abandonment cost of $8,000 per customer to represent the cost associated with propane conversions. Black & Veatch notes that conversion estimates can range from $8,000 - $20,000 per customer, as supported by information provided to the Commission in the pending case of DEP's transfer of affiliated gathering lines to DEWV.

Based on the statistics published by Energy Information Administration (EIA),[11] there has been growing natural gas production in West Virginia during the last decade. There have also been active long-haul transmission pipeline development activities in West Virginia to match the growing production.[12] In Black & Veatch's opinion, there are adequate supplies and transportation capacities for the alternative gas supplies.

The major constraining factors are the distance and geotechnical challenges to connect to the adjacent systems. A large number of customers are required to reduce the average cost to the individual customers. Therefore, it will be economically challenging to connect the individual farm tap customers.

As discussed in Section 3.0, for the alternative supply evaluation, Black & Veatch has assumed an average cost of $10,000 per customer based on an indicative project size of $1 to $5 million. It is assumed that the existing pipelines will be utilized.

5.4 SENSITIVITIES AND SCENARIOS

Black & Veatch has performed five acquisition scenarios, plus two sensitivity cases, with potential higher costs, as summarized below:

1. Case 1 – PGWV acquires only the Waynesburg subsystem.
2. Case 2 – PGWV acquires both Waynesburg and Hastings subsystems.
3. Case 3 – Abandonment of all the Affected Customers.
4. Case 4 – Selected conversion of concentrated customers and abandonment of the others.
5. Case 5 – PGWV acquires the Waynesburg subsystem, without increasing the fuel retainage percentage.
6. Case 6 – PGWV acquires the Waynesburg subsystem, with higher O&M cost based on the utility benchmarks.
7. Case 7 – Case 1 with Pipeline Replacement Program.

[11] Natural Gas Gross Withdrawals and Production, EIA, https://www.eia.gov/dnav/ng/ng_prod_sum_a_EPG0_VGM_mmcf_a.htm

[12] Pipeline Construction Map in West Virginia, WVDEP, https://tagis.dep.wv.gov/majorpipelines/

Table 5-2 shows the specific inputs and assumptions for each of the scenarios.

Table 5-2 Scenario Inputs and Assumptions

SCENARIO	CASE 1	2	3	4	5	6	7
Number of Customers	12,748	12,748	10,779	12,099	12,748	12,748	12,748
Waynesburg Initial Production (Mcf)	2,104,247	2,104,247	-	-	2,104,247	2,104,247	2,104,247
Hastings Initial Production (Mcf)	-	3,371,264	-	-	-	-	
Fuel (%)	3.2	2.7	-	-	3.2	3.2	3.2
LUF (%)	21.8	26.8	-	-	21.8	21.8	21.8
Additional Retainage (%)	15.5	20.0	-	-	0.0	15.5	15.5
Base Annual OPEX ($)	1,200,000	1,800,000	-	-	1,200,000	4,450,000	1,200,000
Base Annual Maintenance CAPEX ($)	750,000	1,500,000	-		750,000	750,000	750,000
Annual Pipeline Replacement Costs							18,690,000
Upgrade Cost ($)	600,000	1,200,000	-	13,207,529	600,000	600,000	600,000
Abandonment Cost ($)	-	-	15,755,794	5,189,771	-	-	

Case 1 assumes acquisition of only the Waynesburg subsystem, and the incremental costs will be allocated to PGWV's current 12,748 residential and commercial customers. Natural gas production, fuel use, and LUF are based on the historical levels. An additional retainage of 15.5 percent is required to recover gas lost on the system, up from the current 9.5 percent in the gathering tariff, which is assumed to be collected by existing producers. OPEX and ongoing maintenance CAPEX are based on the historical level, escalating at 2 percent per year. A $600,000 in upfront CAPEX is included to reflect the cost associated with the two M&R stations.

For acquisitions of both subsystems, corresponding changes are made based on historical data, including production volume, fuel, LUF, retainage, OPEX, and CAPEX.

For the abandonment cases, corresponding changes are made regarding the customer count, abandonment (propane) costs, and system conversion costs based on the analysis as discussed in Section 3.0 and Section 5.0.

For Case 5, the additional retainage is assumed to be zero. All the other inputs are the same as under the Base Case.

For Case 6, the O&M cost is revised to approximately $4.5 million per year based on the utility benchmark of approximately $10,000 per mile of pipelines. All the other inputs are the same as under the Base Case.

Case 7 is based on Case 1 and includes an annual pipeline replacement program of approximately 18 miles (4.2 percent per year), a cost of $1 MM per mile.

5.5 CASE 1 – INDICATIVE CUSTOMER IMPACT ANALYSIS

Table 5-3 shows the indicative customer impact analysis for Case 1, including revenues, O&M costs, rate of return, depreciation and amortization, and cost allocation to the individual customers, without distinction of the individual customer classes.

Table 5-3 Case 1 Customer Impact Model

Index		1	2	3	4	5	6	7	8	9	10
Year	Case	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price index	1	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Waynesbug		2,104,247	1,977,992	1,859,313	1,747,754	1,642,889	1,544,315	1,451,656	1,364,557	1,282,684	1,205,723
Hastings		-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		**2,104,247**	**1,977,992**	**1,859,313**	**1,747,754**	**1,642,889**	**1,544,315**	**1,451,656**	**1,364,557**	**1,282,684**	**1,205,723**
Gathering Fee		$1,265,494	$1,189,564	$1,118,191	$1,051,099	$988,033	$928,751	$873,026	$820,645	$771,406	$725,122
LDC Revenue		$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326
Retainage		$1,052,124	$1,008,776	$967,214	$927,365	$889,158	$852,524	$817,400	$783,724	$751,434	$720,475
Fuel		($134,672)	($129,123)	($123,803)	($118,703)	($113,812)	($109,123)	($104,627)	($100,317)	($96,184)	($92,221)
Loss and Unaccounted-For		($917,452)	($879,653)	($843,411)	($808,662)	($775,346)	($743,401)	($712,773)	($683,407)	($655,251)	($628,254)
Operating Costs		($1,200,000)	($1,224,000)	($1,248,480)	($1,273,450)	($1,298,919)	($1,324,897)	($1,351,395)	($1,378,423)	($1,405,991)	($1,434,111)
Total (Net) Gathering System Costs		**$185,820**	**$85,890**	**($9,964)**	**($102,025)**	**($190,560)**	**($275,820)**	**($358,043)**	**($437,452)**	**($514,260)**	**($588,664)**
Rate of Return		$87,938	$153,034	$216,169	$277,343	$336,557	$393,809	$449,102	$502,433	$553,804	$603,214
Depreciation		$27,857	$49,286	$70,714	$92,143	$113,571	$135,000	$156,429	$177,857	$199,286	$220,714
Amortization - Abandonment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Indicative Costs		**($70,025)**	**$116,429**	**$296,847**	**$471,511**	**$640,688**	**$804,629**	**$963,573**	**$1,117,743**	**$1,267,349**	**$1,412,592**
Number of Customers		12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748
Bill Increase ($/customer-year)		($5)	$9	$23	$37	$50	$63	$76	$88	$99	$111

Index		11	12	13	14	15	16	17	18	19	20
Year	Case	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Price index	1	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Waynesbug		1,133,379	1,065,376	1,001,454	941,367	884,885	831,792	781,884	734,971	690,873	649,420
Hastings		-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		**1,133,379**	**1,065,376**	**1,001,454**	**941,367**	**884,885**	**831,792**	**781,884**	**734,971**	**690,873**	**649,420**
Gathering Fee		$681,614	$640,717	$602,274	$566,138	$532,170	$500,239	$470,225	$442,012	$415,491	$390,561
LDC Revenue		$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326
Retainage		$690,791	$662,331	$635,043	$608,879	$583,793	$559,741	$536,680	$514,568	$493,368	$473,041
Fuel		($88,421)	($84,778)	($81,285)	($77,937)	($74,726)	($71,647)	($68,695)	($65,865)	($63,151)	($60,549)
Loss and Unaccounted-For		($602,370)	($577,553)	($553,757)	($530,943)	($509,068)	($488,094)	($467,985)	($448,704)	($430,217)	($412,492)
Operating Costs		($1,462,793)	($1,492,049)	($1,521,890)	($1,552,328)	($1,583,375)	($1,615,042)	($1,647,343)	($1,680,290)	($1,713,895)	($1,748,173)
Total (Net) Gathering System Costs		**($660,853)**	**($731,006)**	**($799,290)**	**($865,864)**	**($930,879)**	**($994,477)**	**($1,056,792)**	**($1,117,952)**	**($1,178,079)**	**($1,237,286)**
Rate of Return		$650,663	$696,152	$739,679	$781,247	$820,853	$858,499	$894,184	$927,908	$959,672	$989,474
Depreciation		$242,143	$263,571	$285,000	$306,429	$327,857	$349,286	$370,714	$392,143	$413,571	$435,000
Amortization - Abandonment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Indicative Costs		**$1,553,659**	**$1,690,729**	**$1,823,970**	**$1,953,540**	**$2,079,589**	**$2,202,261**	**$2,321,690**	**$2,438,003**	**$2,551,322**	**$2,661,761**
Number of Customers		12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748
Bill Increase ($/customer-year)		$122	$133	$143	$153	$163	$173	$182	$191	$200	$209

For this analysis, a generic production decline of 6 percent per year was assumed for the typical mature conventional production. Other studies may be needed to reflect the impact from the pressure enhancement, increasing operating costs, and potential early termination of the production fields.

Although there appears to be adequate production volumes to supply the local demand, the gathering fees and LDC revenues are not sufficient to cover the O&M costs. The net operating loss of $0.0 to $1.2 million per year will need to be recovered through additional customer charges.

For the revenue calculations, Black & Veatch has assumed the current gathering charge of $0.55/Mcf with a $0.05/Mcf surcharge for deliveries to the Waynesburg station. Considering the low gas prices, it will be difficult to raise the gathering fees without impacting the production volumes.

The customer impact analysis utilizes a rate of return at 9.15 percent per year, and depreciation at approximately 2.85 percent per year. The overall customer billing impact increases from ($5) per year in Year 1 to $209 per year in Year 20, averaging approximately $111 per year.

Customer impact analysis for Cases 2-7 can be found in the Appendix C.

5.6 SUMMARY CUSTOMER IMPACT RESULTS

Table 5-4 summarizes the customer impacts results for the alternative sensitivity cases.

Table 5-4 Summary Results for Customer Impact Cases

SCENARIO	CASE 1	2	3	4	5	6	7
Incremental Bill ($/customer/month)	$9.25	$12.15	$13.49	$12.50	$12.19	$35.06	$134.63
NPV of Customer Impact ($MM)	$9.1	$9.3	$15.8	$17.3	$13.7	$42.8	$137.7

It should be noted that Case 1 implicitly assumes that the Hastings system will continue to operate as is. For PGWV to acquire both Waynesburg and Hastings; (Case 2), the average billing impact is slightly higher at $12.15 per customer per month.

When compared against Case 1 or 2, the cost of acquisition is lower than the total abandonment (Case 3) cost of $13.49 million, or approximately $15.8 per customer per month in the average monthly bill increase.

For Case 5, the cost associated with gas loss appears to be relatively moderate at approximately $12.19 per customer per month. The O&M cost increases assuming the utility benchmark appears to be prohibitive.

Based on the production levels, selected system conversion and abandonment may come sooner than the end of the forecast horizon of 20 years. Other potential analysis may include the following:

- Production decline considering pressure levels, well history, and production economics.

- ☐ Asset retirement obligations for costs associated with the Gathering System abandonment.
- ☐ The selections and costs associated with selected customer conversions.

6.0 Conclusions and Recommendations

Black & Veatch considers that the Gathering System is adequate to provide continuing gathering services as is. However, system abandonment appears to be inevitable because of the combination of several factors:

- Lack of drilling, declining production, and low natural gas prices.
- Small customer demand dispersed throughout the systems.
- Relatively high cost for pipeline construction and replacement in West Virginia.

The cost is very high for customer abandonment and switching to propane services. From the rate impact perspective, it is beneficial to the customers of PGWV to continue gas services to the Affected Customers. There is still a large amount of local production on the Gathering System that can generally support its operations for a long time.

Based on the customer impact analysis, it is better for PGWV to acquire the Gathering System and continue operations[13] than to initiate immediate abandonment. Only a moderate level of capital investment will be needed to interconnect with the transmission pipelines and provide the pressure support as needed. [14] Equitrans' offer to provide pipeline interconnects allows the system to provide extended service to existing farm tap customers and allow PGWV to replace pipeline over an extended period.

Based on the review of the production, demand, and regional pipelines, it appears that DEWV is in a better position than PGWV to acquire the Hastings subsystem. Furthermore, the Gathering System will need to continue operations with the following changes:

- Equitrans to provide the interconnection facilities at the identified locations.
- The gathering fee and/or the fuel retainage will need to be increased to cover the operating costs and gas loss of the systems.
- Equitrans is likely to be a more efficient operator than PGWV. Equitrans is willing to negotiate with PGWV to provide O&M services through a Transition Service Agreement for a limited period. PGWV currently does not have the staff, functions, and experiences in West Virginia to operate the Gathering System, and the utility O&M cost can be comparable to the current O&M costs. Cost sharing among other LDCs on the system has not been evaluated under this study, and it may be an area of further investigation.

Additional studies will be required to understand the production decline, the impact from transmission supplies, and the economic life of the Gathering System.

Additional studies will be required to identify and evaluate selected conversions of the concentrated customer segments. Abandonment of most of the Gathering System may become inevitable.

Based on this analysis, there is benefit for PGWV to acquire the Gathering System and defer potential abandonment of the entire system. Further analysis will be required to evaluate the

[13] It is assumed that PGWV will continue to operate the Gathering System as a separate gathering entity.
[14] This conclusion has not included any costs related to acquiring any portions of the Gathering System and operating them as part of the PGVW utility operations.

economic life of the Gathering System, the cost associated with selected customer conversions and abandonment, and the cost associated with owning, O&M, and retirement of the Gathering System.

Appendix A. References for the Regional Pipeline Maps

Dominion Energy Transmission, Inc. System Map:
https://dekaflow.dominionenergy.com/jsp/systemMap.jsp?&company=dti

Dominion Energy West Virginia Operating Areas:
http://www.pipelinesafetyinfo.com/user/file/West%20Virginia/Dominion_Energy_WV.pdf

Dominion Gathering and Processing POD Maps:
https://dekaflow.dominionenergy.com/jsp/info_post.jsp?&company=dgp

Equitrans Pipeline System Tariff Map:
https://customers.eqm-midstreampartners.com/~/media/Sites/Midstream%20Customers/IPWS-Equitrans/Maps/Pipeline%20System%20Tariff%20Map.ashx

Equitrans Gathering System Maps – Equitrans LP Gathering Overview, Aggregate 1 – Copley, Aggregate 2 – West Union, Aggregate 3 – Waynesburg Taylor County, Aggregate 4 – H1 H10, Aggregate 5 – Smithburg:
https://customers.eqm-midstreampartners.com/IPWS-Gathering/Maps

Mountaineer Gas Company Operating Areas:
http://www.pipelinesafetyinfo.com/user/file/West%20Virginia/Mountaineer_Gas_Company.pdf

National Pipeline Mapping System – State: West Virginia; Counties: Monongalia, Marion, Taylor, Harrison, Wetzel, Tyler, Doddridge, Ritchie:
https://pvnpms.phmsa.dot.gov/PublicViewer/

Appendix B. Supply Alternative by Meter Locations

Subsystem	Meter Numbe	Meter Function	Meter Name	2018 Volume Mcf	Estimated Custome	Alternative	Adjacent Pipeline
Waynesburg	17058	INTERCONNEC	#2 ROHANNA	4,439	63	NA	
Waynesburg	17065	INTERCONNEC	MUDDY CREEK M73 TO D8	12	0	NA	
Waynesburg	17067	INTERCONNEC	ELM DRIVE M73 TO D153	21,381	305	NA	
Waynesburg	17072	INTERCONNEC	INDUSTRIAL ROAD	5,089	73	NA	
Waynesburg	17075	INTERCONNEC	CREES M73 TO D19	3,677	53	NA	
Waynesburg	17079	INTERCONNEC	#29 KIWI	4,787	68	NA	
Waynesburg	17084	INTERCONNEC	#33 GREENE	3,690	53	NA	
Waynesburg	17087	INTERCONNEC	SMITH CREEK M19 TO D39	71	1	NA	
Waynesburg	22834	INTERCONNEC	WHITE FRONT/911 D696	573	1	Abandon	PGWV
Waynesburg	22839	INTERCONNEC	MOORESVILLE/916 D767	-	-	NA	
Waynesburg	22843	INTERCONNEC	D657	779	11	Abandon	PGWV
Waynesburg	22844	INTERCONNEC	SARDIS/957 D7	752	13	Conversion	DEWV
Waynesburg	22849	INTERCONNEC	D681	1,002	16	Conversion	PGWV
Waynesburg	22862	INTERCONNEC	LAKERIDGE/907 RF 133	1,629	18	Conversion	DEWV
Waynesburg	22867	INTERCONNEC	RF 138	2,485	35	Conversion	DEWV
Waynesburg	22870	INTERCONNEC	193	637	11	Conversion	PGWV
Waynesburg	22871	INTERCONNEC	RT 50 & 250/983 RF 199	329	4	Abandon	PGWV
Waynesburg	24285	INTERCONNEC	B890 TO D7	399	7	Abandon	None/unidentified
Waynesburg	24288	INTERCONNEC	G1 TO D28	648	8	Abandon	None/unidentified
Waynesburg	24314	INTERCONNEC	B37 TO D24	695	13	Abandon	None/unidentified
Waynesburg	24341	INTERCONNEC	G125 TO D31	532	10	Abandon	None/unidentified
Waynesburg	24402	INTERCONNEC	TAYLOR COUNTY FIELD	2,414	31	Conversion	PGWV
Waynesburg	24565	INTERCONNEC	JAKES RUN (D-LINE #19)	577	7	Abandon	None/unidentified
Waynesburg	24566	INTERCONNEC	ROCK (D-LINE #22)	179	4	Abandon	None/unidentified
Waynesburg	24567	INTERCONNEC	DAVY JONES (D-LINE #14)	263	5	Abandon	DEWV
Waynesburg	24569	INTERCONNEC	CUSTODY	47	2	Abandon	Mountaineer
Waynesburg	24570	INTERCONNEC	MACDALE (D-LINE #2)	35	1	Abandon	Blacksville
Waynesburg	24574	INTERCONNEC	(D-LINE #37)	172	4	Abandon	Mountaineer
Waynesburg	24575	INTERCONNEC	(D-LINE #20)	100	2	Abandon	None/unidentified
Waynesburg	24579	INTERCONNEC	B447 TO D25	989	13	Abandon	None/unidentified
Waynesburg	24580	INTERCONNEC	G124 TO D18	227	7	Abandon	DEWV
Waynesburg	5100077	INTERCONNEC	INTERCONNECT	-	-	NA	
Waynesburg	M5207114	INTERCONNEC	MT MORRIS CS TO PNG	43,814	626	NA	
Waynesburg	Z10433	DOMESTIC	DOMESTICS ZONE Z10433	528	8	NA	
Waynesburg	Z10544	DOMESTIC	DOMESTICS ZONE Z10544	335	5	NA	
Waynesburg	Z11546	DOMESTIC	DOMESTIC ZONE	709	10	NA	
Waynesburg	Z11608	DOMESTIC	DOMESTICS ZONE Z11608	747	11	NA	
Waynesburg	Z17004	DOMESTIC	DOMESTICS ZONE Z17004	3,082	44	NA	
Waynesburg	Z23132	DOMESTIC	CUNNINGHAM FARM	336	5	Abandon	DEWV
Waynesburg	Z23507	DOMESTIC	CORDER	514	7	Conversion	PGWV
Waynesburg	Z23534	DOMESTIC	DOMESTICS ZONE Z23534	1,687	24	Conversion	PGWV
Waynesburg	Z23577	DOMESTIC	DOMESTICS ZONE Z23577	4,412	63	Abandon	None/unidentified
Waynesburg	Z23578	DOMESTIC	DOMESTICS ZONE Z23578	4,831	69	Abandon	None/unidentified
Waynesburg	Z23579	DOMESTIC	DOMESTICS ZONE Z23579	550	8	Abandon	None/unidentified

Subsystem	Meter Number	Meter Function	Meter Name	2018 Volume Mcf	Estimated Customers	Alternative	Adjacent Pipeline
Waynesburg	Z23580	DOMESTIC	DOMESTICS ZONE Z23580	1,171	17	Abandon	None/unidentified
Waynesburg	Z23581	DOMESTIC	DOMESTICS ZONE Z23581	50	1	Abandon	None/unidentified
Waynesburg	Z23582	DOMESTIC	DOMESTICS ZONE Z23582	174	2	Abandon	None/unidentified
Waynesburg	Z23583	DOMESTIC	DOMESTICS ZONE Z23583	1,496	21	Abandon	None/unidentified
Waynesburg	Z23584	DOMESTIC	DOMESTICS ZONE Z23584	216	3	Abandon	None/unidentified
Waynesburg	Z23586	DOMESTIC	DOMESTICS ZONE Z23586	988	14	Abandon	None/unidentified
Waynesburg	Z23587	DOMESTIC	DOMESTICS ZONE Z23587	232	3	Abandon	None/unidentified
Waynesburg	Z23589	DOMESTIC	DOMESTICS ZONE Z23589	1,653	24	Conversion	DEWV
Waynesburg	Z23593	DOMESTIC	DOMESTICS ZONE Z23593	2,435	35	Conversion	Mountaineer
Waynesburg	Z23594	DOMESTIC	DOMESTICS ZONE Z23594	6,269	90	Conversion	Mountaineer
Waynesburg	Z23595	DOMESTIC	DOMESTICS ZONE Z23595	2,941	42	Conversion	Mountaineer
Waynesburg	Z23675	DOMESTIC	DOMESTICS ZONE Z23675	767	11	Abandon	DEWV
Waynesburg	Z24257	DOMESTIC	F-567 DOMESTICS	709	10	Abandon	DEWV
Waynesburg	Z24518	DOMESTIC	DOMESTICS ZONE Z24518	2,311	33	Abandon	None/unidentified
Waynesburg	Z24519	DOMESTIC	DOMESTICS ZONE Z24519	255	4	Abandon	None/unidentified
Waynesburg	Z24520	DOMESTIC	DOMESTICS ZONE Z24520	1,548	22	Abandon	None/unidentified
Waynesburg	Z24522	DOMESTIC	DOMESTICS ZONE Z24522	5,515	79	Conversion	DEWV
Waynesburg	Z24523	DOMESTIC	DOMESTICS ZONE Z24523	1,073	15	Conversion	DEWV
Waynesburg	Z24524	DOMESTIC	DOMESTICS ZONE Z24524	1,790	26	Conversion	DEWV
Waynesburg	Z24525	DOMESTIC	DOMESTICS ZONE Z24525	1,872	27	Conversion	DEWV
Waynesburg	Z24526	DOMESTIC	DOMESTICS ZONE Z24526	1,608	23	Conversion	DEWV
Waynesburg	Z24528	DOMESTIC	DOMESTICS ZONE Z24528	1,452	21	Conversion	DEWV
Waynesburg	Z24529	DOMESTIC	DOMESTICS ZONE Z24529	9,241	132	Conversion	DEWV
Waynesburg	Z24534	DOMESTIC	DOMESTICS ZONE Z24534	194	3	Abandon	None/unidentified
Waynesburg	Z24536	DOMESTIC	DOMESTICS ZONE Z24536	2,557	37	Conversion	Mountaineer
Waynesburg	Z24537	DOMESTIC	DOMESTICS ZONE Z24537	4,526	65	Conversion	Mountaineer
Hastings	22864	INTERCONNEC	SUNNYSIDE/981 RF 195	519	9	Abandon	DETI/DGP
Hastings	22897	INTERCONNEC	556 FLD	11,872	122	Conversion	DETI/DGP
Hastings	23463	INTERCONNEC	WILBUR EXCHANGE	-	2	Abandon	DETI/DGP
Hastings	24137	INTERCONNEC	CENTRAL STATION F1002	36,977	430	Conversion	DETI/DGP
Hastings	24289	INTERCONNEC	M36 TO D9	368	4	Abandon	DETI/DGP
Hastings	24568	INTERCONNEC	(D-LINE #1)	144	3	Abandon	DETI/DGP
Hastings	24571	INTERCONNEC	(D-LINE #27)	224	2	Abandon	DETI/DGP
Hastings	528233D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528234D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528235D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528236D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528238D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528239D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528240D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528241D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528243D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528245D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528246D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	

Subsystem	Meter Numbe	Meter Function	Meter Name	2018 Volume Mcf	Estimated Custome	Alternative	Adjacent Pipeline
Hastings	528247D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528248D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528249D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528250D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528252D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528253D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528254D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528255D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528257D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528258D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528259D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528260D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528261D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528262D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528264D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528266D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528268D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528269D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528272D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528273D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528274D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528275D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528276D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528277D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528278D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528279D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528280D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528282D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528283D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528284D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528285D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528286D	DOMESTIC	0	-	-	NA	
Hastings	528287D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528289D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528290D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	528292D	DOMESTIC	DOMESTIC METER (BILLED)	-	-	NA	
Hastings	Z22948	DOMESTIC	CAIN WEST	847	12	Abandon	DETI/DGP
Hastings	Z22950	DOMESTIC	CENTRAL BOOSTER	69	1	Abandon	DETI/DGP
Hastings	Z23588	DOMESTIC	DOMESTICS ZONE Z23588	1,825	26	Abandon	DETI/DGP
Hastings	Z23621	DOMESTIC	CAIN NORTH	1,492	21	Abandon	DETI/DGP
Hastings	Z23622	DOMESTIC	CAMP MISTAKE(SHIRLEY EQUITY)	1,757	25	Abandon	DETI/DGP
Hastings	Z23623	DOMESTIC	BEAR RUN	112	2	Abandon	DETI/DGP
Hastings	Z23694	DOMESTIC	DOMESTICS ZONE Z23694	2,550	36	Abandon	DETI/DGP

Subsystem	Meter Numbe	Meter Function	Meter Name	2018 Volume Mcf	Estimated Custome	Alternative	Adjacent Pipeline
Hastings	Z23820	DOMESTIC	DOMESTICS ZONE Z23820	379	5	Abandon	DETI/DGP
Hastings	Z24447	DOMESTIC	DEEP VALLEY TO FURBEE RIDGE DOMESTICS	708	10	Abandon	DETI/DGP
Hastings	Z24510	DOMESTIC	DOMESTICS ZONE Z24510	216	3	Abandon	DETI/DGP
Hastings	Z24511	DOMESTIC	DOMESTICS ZONE Z24511	302	4	Abandon	DETI/DGP
Hastings	Z24512	DOMESTIC	DOMESTICS ZONE Z24512	448	6	Abandon	DETI/DGP
Hastings	Z24513	DOMESTIC	DOMESTICS ZONE Z24513	976	14	Abandon	DETI/DGP
Hastings	Z24514	DOMESTIC	DOMESTICS ZONE Z24514	370	5	Abandon	DETI/DGP
Hastings	Z24515	DOMESTIC	DOMESTICS ZONE Z24515	1,445	21	Abandon	DETI/DGP
Hastings	Z24516	DOMESTIC	DOMESTICS ZONE Z24516	1,025	15	Abandon	DETI/DGP
Hastings	Z24521	DOMESTIC	DOMESTICS ZONE Z24521	2,057	29	Abandon	DETI/DGP
Hastings	Z25234	DOMESTIC	AUBURN	256	4	Abandon	DETI/DGP

Appendix C. Customer Impact Analysis

Case 2

Index		1	2	3	4	5	6	7	8	9	10
Year	Case	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price index	2	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Waynesbug		2,104,247	1,977,992	1,859,313	1,747,754	1,642,889	1,544,315	1,451,656	1,364,557	1,282,684	1,205,723
Hastings		3,371,264	3,168,988	2,978,849	2,800,118	2,632,111	2,474,184	2,325,733	2,186,189	2,055,018	1,931,717
Gathered Volume Dth		**5,475,511**	**5,146,980**	**4,838,162**	**4,547,872**	**4,275,000**	**4,018,500**	**3,777,390**	**3,550,746**	**3,337,701**	**3,137,439**
Gathering Fee		$3,119,689	$2,932,508	$2,756,558	$2,591,164	$2,435,694	$2,289,553	$2,152,179	$2,023,049	$1,901,666	$1,787,566
LDC Revenue		$134,476	$134,476	$134,476	$134,476	$134,476	$134,476	$134,476	$134,476	$134,476	$134,476
Retainage		$3,230,551	$3,097,453	$2,969,838	$2,847,480	$2,730,164	$2,617,681	$2,509,833	$2,406,428	$2,307,283	$2,212,223
Fuel		($295,678)	($283,496)	($271,816)	($260,617)	($249,879)	($239,584)	($229,714)	($220,249)	($211,175)	($202,475)
Loss and Unaccounted-For		($2,934,874)	($2,813,957)	($2,698,022)	($2,586,864)	($2,480,285)	($2,378,097)	($2,280,119)	($2,186,179)	($2,096,108)	($2,009,748)
Operating Costs		($1,800,000)	($1,836,000)	($1,872,720)	($1,910,174)	($1,948,378)	($1,987,345)	($2,027,092)	($2,067,634)	($2,108,987)	($2,151,167)
Total (Net) Gathering System Costs		**$1,454,165**	**$1,230,984**	**$1,018,313**	**$815,465**	**$621,792**	**$436,683**	**$259,563**	**$89,890**	**($72,846)**	**($229,125)**
Rate of Return		$175,876	$306,068	$432,338	$554,686	$673,113	$787,619	$898,203	$1,004,866	$1,107,608	$1,206,428
Depreciation		$55,714	$98,571	$141,429	$184,286	$227,143	$270,000	$312,857	$355,714	$398,571	$441,429
Amortization - Abandonment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Indicative Costs		**($1,222,575)**	**($826,345)**	**($444,547)**	**($76,493)**	**$278,464**	**$620,936**	**$951,498**	**$1,270,690**	**$1,579,025**	**$1,876,981**
Number of Customers		12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748
Bill Increase ($/customer-year)		($96)	($65)	($35)	($6)	$22	$49	$75	$100	$124	$147

Index		11	12	13	14	15	16	17	18	19	20
Year	Case	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Price index	2	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Waynesbug		1,133,379	1,065,376	1,001,454	941,367	884,885	831,792	781,884	734,971	690,873	649,420
Hastings		1,815,814	1,706,865	1,604,453	1,508,186	1,417,695	1,332,633	1,252,675	1,177,515	1,106,864	1,040,452
Gathered Volume Dth		**2,949,193**	**2,772,241**	**2,605,907**	**2,449,553**	**2,302,579**	**2,164,425**	**2,034,559**	**1,912,486**	**1,797,736**	**1,689,872**
Gathering Fee		$1,680,312	$1,579,493	$1,484,724	$1,395,640	$1,311,902	$1,233,188	$1,159,196	$1,089,645	$1,024,266	$962,810
LDC Revenue		$134,476	$134,476	$134,476	$134,476	$134,476	$134,476	$134,476	$134,476	$134,476	$134,476
Retainage		$2,121,079	$2,033,691	$1,949,903	$1,869,567	$1,792,541	$1,718,688	$1,647,878	$1,579,985	$1,514,890	$1,452,477
Fuel		($194,133)	($186,134)	($178,466)	($171,113)	($164,063)	($157,304)	($150,823)	($144,609)	($138,651)	($132,939)
Loss and Unaccounted-For		($1,926,947)	($1,847,556)	($1,771,437)	($1,698,454)	($1,628,478)	($1,561,384)	($1,497,055)	($1,435,377)	($1,376,239)	($1,319,538)
Operating Costs		($2,194,190)	($2,238,074)	($2,282,835)	($2,328,492)	($2,375,062)	($2,422,563)	($2,471,014)	($2,520,435)	($2,570,843)	($2,622,260)
Total (Net) Gathering System Costs		**($379,403)**	**($524,105)**	**($663,636)**	**($798,376)**	**($928,685)**	**($1,054,900)**	**($1,177,342)**	**($1,296,314)**	**($1,412,102)**	**($1,524,975)**
Rate of Return		$1,301,326	$1,392,303	$1,479,359	$1,562,493	$1,641,706	$1,716,998	$1,788,368	$1,855,816	$1,919,343	$1,978,949
Depreciation		$484,286	$527,143	$570,000	$612,857	$655,714	$698,571	$741,429	$784,286	$827,143	$870,000
Amortization - Abandonment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Indicative Costs		**$2,165,014**	**$2,443,551**	**$2,712,995**	**$2,973,727**	**$3,226,105**	**$3,470,469**	**$3,707,138**	**$3,936,416**	**$4,158,588**	**$4,373,924**
Number of Customers		12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748
Bill Increase ($/customer-year)		$170	$192	$213	$233	$253	$272	$291	$309	$326	$343

Case 3

Index		1	2	3	4	5	6	7	8	9	10
Year	Case	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price index	3	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Waynesbug		-	-	-	-	-	-	-	-	-	-
Hastings		-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		-	-	-	-	-	-	-	-	-	-
Gathering Fee		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
LDC Revenue		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Retainage		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fuel		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loss and Unaccounted-For		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Operating Costs		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total (Net) Gathering System Costs		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Rate of Return		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Amortization - Abandonment		$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480
Total Indicative Costs		**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**
Number of Customers		10,779	10,779	10,779	10,779	10,779	10,779	10,779	10,779	10,779	10,779
Bill Increase ($/customer-year)		$162	$162	$162	$162	$162	$162	$162	$162	$162	$162

Index		11	12	13	14	15	16	17	18	19	20
Year	Case	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Price index	3	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Waynesbug		-	-	-	-	-	-	-	-	-	-
Hastings		-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		-	-	-	-	-	-	-	-	-	-
Gathering Fee		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
LDC Revenue		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Retainage		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fuel		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loss and Unaccounted-For		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Operating Costs		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total (Net) Gathering System Costs		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Rate of Return		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Depreciation		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Amortization - Abandonment		$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480	$1,744,480
Total Indicative Costs		**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**	**$1,744,480**
Number of Customers		10,779	10,779	10,779	10,779	10,779	10,779	10,779	10,779	10,779	10,779
Bill Increase ($/customer-year)		$162	$162	$162	$162	$162	$162	$162	$162	$162	$162

Case 4

Index		1	2	3	4	5	6	7	8	9	10
Year	Case	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price index	4	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Waynesbug		-	-	-	-	-	-	-	-	-	-
Hastings		-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		-	-	-	-	-	-	-	-	-	-
Gathering Fee		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
LDC Revenue		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Retainage		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fuel		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loss and Unaccounted-For		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Operating Costs		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total (Net) Gathering System Costs		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Rate of Return		$1,191,225	$1,156,696	$1,122,168	$1,087,640	$1,053,112	$1,018,583	$984,055	$949,527	$914,999	$880,470
Depreciation		$377,358	$377,358	$377,358	$377,358	$377,358	$377,358	$377,358	$377,358	$377,358	$377,358
Amortization - Abandonment		$574,611	$574,611	$574,611	$574,611	$574,611	$574,611	$574,611	$574,611	$574,611	$574,611
Total Indicative Costs		**$2,143,194**	**$2,108,665**	**$2,074,137**	**$2,039,609**	**$2,005,081**	**$1,970,552**	**$1,936,024**	**$1,901,496**	**$1,866,968**	**$1,832,439**
Number of Customers		12,099	12,099	12,099	12,099	12,099	12,099	12,099	12,099	12,099	12,099
Bill Increase ($/customer-year)		$177	$174	$171	$169	$166	$163	$160	$157	$154	$151

Index		11	12	13	14	15	16	17	18	19	20
Year	Case	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Price index	4	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Waynesbug		-	-	-	-	-	-	-	-	-	-
Hastings		-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		-	-	-	-	-	-	-	-	-	-
Gathering Fee		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
LDC Revenue		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Retainage		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fuel		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Loss and Unaccounted-For		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Operating Costs		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total (Net) Gathering System Costs		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Rate of Return		$845,942	$811,414	$776,886	$742,357	$707,829	$673,301	$638,773	$604,244	$569,716	$535,188
Depreciation		$377,358	$377,358	$377,358	$377,358	$377,358	$377,358	$377,358	$377,358	$377,358	$377,358
Amortization - Abandonment		$574,611	$574,611	$574,611	$574,611	$574,611	$574,611	$574,611	$574,611	$574,611	$574,611
Total Indicative Costs		**$1,797,911**	**$1,763,383**	**$1,728,855**	**$1,694,326**	**$1,659,798**	**$1,625,270**	**$1,590,742**	**$1,556,213**	**$1,521,685**	**$1,487,157**
Number of Customers		12,099	12,099	12,099	12,099	12,099	12,099	12,099	12,099	12,099	12,099
Bill Increase ($/customer-year)		$149	$146	$143	$140	$137	$134	$131	$129	$126	$123

Case 5

Index		1	2	3	4	5	6	7	8	9	10	11
Year	Case	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Price index	5	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195	1.219
Waynesbug		2,104,247	1,977,992	1,859,313	1,747,754	1,642,889	1,544,315	1,451,656	1,364,557	1,282,684	1,205,723	1,133,379
Hastings		-	-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		**2,104,247**	**1,977,992**	**1,859,313**	**1,747,754**	**1,642,889**	**1,544,315**	**1,451,656**	**1,364,557**	**1,282,684**	**1,205,723**	**1,133,379**
Gathering Fee		$1,265,494	$1,189,564	$1,118,191	$1,051,099	$988,033	$928,751	$873,026	$820,645	$771,406	$725,122	$681,614
LDC Revenue		$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326
Retainage		$399,807	$383,335	$367,541	$352,399	$337,880	$323,959	$310,612	$297,815	$285,545	$273,781	$262,501
Fuel		($134,672)	($129,123)	($123,803)	($118,703)	($113,812)	($109,123)	($104,627)	($100,317)	($96,184)	($92,221)	($88,421)
Loss and Unaccounted-For		($917,452)	($879,653)	($843,411)	($808,662)	($775,346)	($743,401)	($712,773)	($683,407)	($655,251)	($628,254)	($602,370)
Operating Costs		($1,200,000)	($1,224,000)	($1,248,480)	($1,273,450)	($1,298,919)	($1,324,897)	($1,351,395)	($1,378,423)	($1,405,991)	($1,434,111)	($1,462,793)
Total (Net) Gathering System Costs		**($466,497)**	**($539,551)**	**($609,637)**	**($676,991)**	**($741,837)**	**($804,385)**	**($864,831)**	**($923,361)**	**($980,149)**	**($1,035,358)**	**($1,089,144)**
Rate of Return		$87,938	$153,034	$216,169	$277,343	$336,557	$393,809	$449,102	$502,433	$553,804	$603,214	$650,663
Depreciation		$27,857	$49,286	$70,714	$92,143	$113,571	$135,000	$156,429	$177,857	$199,286	$220,714	$242,143
Amortization - Abandonment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Indicative Costs		**$582,292**	**$741,870**	**$896,520**	**$1,046,477**	**$1,191,965**	**$1,333,195**	**$1,470,361**	**$1,603,651**	**$1,733,238**	**$1,859,286**	**$1,981,950**
Number of Customers		12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748
Bill Increase ($/customer-year)		$46	$58	$70	$82	$94	$105	$115	$126	$136	$146	$155

Index		11	12	13	14	15	16	17	18	19	20
Year	Case	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Price index	5	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Waynesbug		1,133,379	1,065,376	1,001,454	941,367	884,885	831,792	781,884	734,971	690,873	649,420
Hastings		-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		**1,133,379**	**1,065,376**	**1,001,454**	**941,367**	**884,885**	**831,792**	**781,884**	**734,971**	**690,873**	**649,420**
Gathering Fee		$681,614	$640,717	$602,274	$566,138	$532,170	$500,239	$470,225	$442,012	$415,491	$390,561
LDC Revenue		$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326
Retainage		$262,501	$251,686	$241,316	$231,374	$221,841	$212,702	$203,938	$195,536	$187,480	$179,756
Fuel		($88,421)	($84,778)	($81,285)	($77,937)	($74,726)	($71,647)	($68,695)	($65,865)	($63,151)	($60,549)
Loss and Unaccounted-For		($602,370)	($577,553)	($553,757)	($530,943)	($509,068)	($488,094)	($467,985)	($448,704)	($430,217)	($412,492)
Operating Costs		($1,462,793)	($1,492,049)	($1,521,890)	($1,552,328)	($1,583,375)	($1,615,042)	($1,647,343)	($1,680,290)	($1,713,895)	($1,748,173)
Total (Net) Gathering System Costs		**($1,089,144)**	**($1,141,651)**	**($1,193,017)**	**($1,243,369)**	**($1,292,831)**	**($1,341,516)**	**($1,389,533)**	**($1,436,985)**	**($1,483,967)**	**($1,530,572)**
Rate of Return		$650,663	$696,152	$739,679	$781,247	$820,853	$858,499	$894,184	$927,908	$959,672	$989,474
Depreciation		$242,143	$263,571	$285,000	$306,429	$327,857	$349,286	$370,714	$392,143	$413,571	$435,000
Amortization - Abandonment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Indicative Costs		**$1,981,950**	**$2,101,374**	**$2,217,696**	**$2,331,045**	**$2,441,541**	**$2,549,301**	**$2,654,431**	**$2,757,036**	**$2,857,210**	**$2,955,046**
Number of Customers		12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748
Bill Increase ($/customer-year)		$155	$165	$174	$183	$192	$200	$208	$216	$224	$232

Case 6

Index		1	2	3	4	5	6	7	8	9	10
Year	Case	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price index	6	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Waynesbug		2,104,247	1,977,992	1,859,313	1,747,754	1,642,889	1,544,315	1,451,656	1,364,557	1,282,684	1,205,723
Hastings		-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		**2,104,247**	**1,977,992**	**1,859,313**	**1,747,754**	**1,642,889**	**1,544,315**	**1,451,656**	**1,364,557**	**1,282,684**	**1,205,723**
Gathering Fee		$1,265,494	$1,189,564	$1,118,191	$1,051,099	$988,033	$928,751	$873,026	$820,645	$771,406	$725,122
LDC Revenue		$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326
Retainage		$1,052,124	$1,008,776	$967,214	$927,365	$889,158	$852,524	$817,400	$783,724	$751,434	$720,475
Fuel		($134,672)	($129,123)	($123,803)	($118,703)	($113,812)	($109,123)	($104,627)	($100,317)	($96,184)	($92,221)
Loss and Unaccounted-For		($917,452)	($879,653)	($843,411)	($808,662)	($775,346)	($743,401)	($712,773)	($683,407)	($655,251)	($628,254)
Operating Costs		($4,450,000)	($4,539,000)	($4,629,780)	($4,722,376)	($4,816,823)	($4,913,160)	($5,011,423)	($5,111,651)	($5,213,884)	($5,318,162)
Total (Net) Gathering System Costs		**($3,064,180)**	**($3,229,110)**	**($3,391,264)**	**($3,550,951)**	**($3,708,464)**	**($3,864,083)**	**($4,018,071)**	**($4,170,681)**	**($4,322,153)**	**($4,472,715)**
Rate of Return		$87,938	$153,034	$216,169	$277,343	$336,557	$393,809	$449,102	$502,433	$553,804	$603,214
Depreciation		$27,857	$49,286	$70,714	$92,143	$113,571	$135,000	$156,429	$177,857	$199,286	$220,714
Amortization - Abandonment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Indicative Costs		**$3,179,975**	**$3,431,429**	**$3,678,147**	**$3,920,437**	**$4,158,592**	**$4,392,892**	**$4,623,601**	**$4,850,971**	**$5,075,242**	**$5,296,643**
Number of Customers		12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748
Bill Increase ($/customer-year)		$249	$269	$289	$308	$326	$345	$363	$381	$398	$415

Index		11	12	13	14	15	16	17	18	19	20
Year	Case	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Price index	6	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Waynesbug		1,133,379	1,065,376	1,001,454	941,367	884,885	831,792	781,884	734,971	690,873	649,420
Hastings		-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		**1,133,379**	**1,065,376**	**1,001,454**	**941,367**	**884,885**	**831,792**	**781,884**	**734,971**	**690,873**	**649,420**
Gathering Fee		$681,614	$640,717	$602,274	$566,138	$532,170	$500,239	$470,225	$442,012	$415,491	$390,561
LDC Revenue		$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326
Retainage		$690,791	$662,331	$635,043	$608,879	$583,793	$559,741	$536,680	$514,568	$493,368	$473,041
Fuel		($88,421)	($84,778)	($81,285)	($77,937)	($74,726)	($71,647)	($68,695)	($65,865)	($63,151)	($60,549)
Loss and Unaccounted-For		($602,370)	($577,553)	($553,757)	($530,943)	($509,068)	($488,094)	($467,985)	($448,704)	($430,217)	($412,492)
Operating Costs		($5,424,525)	($5,533,016)	($5,643,676)	($5,756,550)	($5,871,680)	($5,989,114)	($6,108,896)	($6,231,074)	($6,355,696)	($6,482,810)
Total (Net) Gathering System Costs		**($4,622,585)**	**($4,771,973)**	**($4,921,076)**	**($5,070,086)**	**($5,219,185)**	**($5,368,549)**	**($5,518,346)**	**($5,668,737)**	**($5,819,879)**	**($5,971,923)**
Rate of Return		$650,663	$696,152	$739,679	$781,247	$820,853	$858,499	$894,184	$927,908	$959,672	$989,474
Depreciation		$242,143	$263,571	$285,000	$306,429	$327,857	$349,286	$370,714	$392,143	$413,571	$435,000
Amortization - Abandonment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Indicative Costs		**$5,515,391**	**$5,731,696**	**$5,945,755**	**$6,157,761**	**$6,367,895**	**$6,576,333**	**$6,783,244**	**$6,988,788**	**$7,193,122**	**$7,396,397**
Number of Customers		12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748
Bill Increase ($/customer-year)		$433	$450	$466	$483	$500	$516	$532	$548	$564	$580

Case 7

Index		1	2	3	4	5	6	7	8	9	10
Year	Case	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Price index	7	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Waynesbug		2,104,247	1,977,992	1,859,313	1,747,754	1,642,889	1,544,315	1,451,656	1,364,557	1,282,684	1,205,723
Hastings		-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		**2,104,247**	**1,977,992**	**1,859,313**	**1,747,754**	**1,642,889**	**1,544,315**	**1,451,656**	**1,364,557**	**1,282,684**	**1,205,723**
Gathering Fee		$1,265,494	$1,189,564	$1,118,191	$1,051,099	$988,033	$928,751	$873,026	$820,645	$771,406	$725,122
LDC Revenue		$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326
Retainage		$1,052,124	$1,008,776	$967,214	$927,365	$889,158	$852,524	$817,400	$783,724	$751,434	$720,475
Fuel		($134,672)	($129,123)	($123,803)	($118,703)	($113,812)	($109,123)	($104,627)	($100,317)	($96,184)	($92,221)
Loss and Unaccounted-For		($917,452)	($879,653)	($843,411)	($808,662)	($775,346)	($743,401)	($712,773)	($683,407)	($655,251)	($628,254)
Operating Costs		($1,200,000)	($1,224,000)	($1,248,480)	($1,273,450)	($1,298,919)	($1,324,897)	($1,351,395)	($1,378,423)	($1,405,991)	($1,434,111)
Total (Net) Gathering System Costs		**$185,820**	**$85,890**	**($9,964)**	**($102,025)**	**($190,560)**	**($275,820)**	**($358,043)**	**($437,452)**	**($514,260)**	**($588,664)**
Rate of Return		$930,790	$2,657,160	$4,332,708	$5,957,434	$7,531,339	$9,054,422	$10,526,683	$11,948,122	$13,318,740	$14,638,536
Depreciation		$294,857	$850,286	$1,405,714	$1,961,143	$2,516,571	$3,072,000	$3,627,429	$4,182,857	$4,738,286	$5,293,714
Amortization - Abandonment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Indicative Costs		**$1,039,828**	**$3,421,556**	**$5,748,386**	**$8,020,602**	**$10,238,470**	**$12,402,242**	**$14,512,154**	**$16,568,432**	**$18,571,285**	**$20,520,914**
Number of Customers		12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748
Bill Increase ($/customer-year)		$82	$268	$451	$629	$803	$973	$1,138	$1,300	$1,457	$1,610

Index		11	12	13	14	15	16	17	18	19	20
Year	Case	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Price index	7	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Waynesbug		1,133,379	1,065,376	1,001,454	941,367	884,885	831,792	781,884	734,971	690,873	649,420
Hastings		-	-	-	-	-	-	-	-	-	-
Gathered Volume Dth		**1,133,379**	**1,065,376**	**1,001,454**	**941,367**	**884,885**	**831,792**	**781,884**	**734,971**	**690,873**	**649,420**
Gathering Fee		$681,614	$640,717	$602,274	$566,138	$532,170	$500,239	$470,225	$442,012	$415,491	$390,561
LDC Revenue		$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326	$120,326
Retainage		$690,791	$662,331	$635,043	$608,879	$583,793	$559,741	$536,680	$514,568	$493,368	$473,041
Fuel		($88,421)	($84,778)	($81,285)	($77,937)	($74,726)	($71,647)	($68,695)	($65,865)	($63,151)	($60,549)
Loss and Unaccounted-For		($602,370)	($577,553)	($553,757)	($530,943)	($509,068)	($488,094)	($467,985)	($448,704)	($430,217)	($412,492)
Operating Costs		($1,462,793)	($1,492,049)	($1,521,890)	($1,552,328)	($1,583,375)	($1,615,042)	($1,647,343)	($1,680,290)	($1,713,895)	($1,748,173)
Total (Net) Gathering System Costs		**($660,853)**	**($731,006)**	**($799,290)**	**($865,864)**	**($930,879)**	**($994,477)**	**($1,056,792)**	**($1,117,952)**	**($1,178,079)**	**($1,237,286)**
Rate of Return		$15,907,510	$17,125,663	$18,292,994	$19,409,503	$20,475,190	$21,490,056	$22,454,100	$23,367,322	$24,229,723	$25,041,302
Depreciation		$5,849,143	$6,404,571	$6,960,000	$7,515,429	$8,070,857	$8,626,286	$9,181,714	$9,737,143	$10,292,571	$10,848,000
Amortization - Abandonment		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Indicative Costs		**$22,417,506**	**$24,261,240**	**$26,052,284**	**$27,790,796**	**$29,476,927**	**$31,110,819**	**$32,692,606**	**$34,222,418**	**$35,700,373**	**$37,126,588**
Number of Customers		12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748	12,748
Bill Increase ($/customer-year)		$1,759	$1,903	$2,044	$2,180	$2,312	$2,440	$2,565	$2,685	$2,800	$2,912

VERIFICATION

COMMONWEALTH OF PENNSYLVANIA,
COUNTY OF ALLEGHANY, To-Wit:

Lynda W. Petrichevich, Senior Director, Process Operations for PNG Companies LLC, the parent company of Peoples Gas WV LLC, being duly sworn, says that the facts and allegations contained in the foregoing Petition are true, except so far as they are therein stated to be on information, and that, so far as they are therein stated to be on information, he believes them to be true.

Lynda Petrichevich

Affiant

Taken, sworn to, and subscribed before me this ____ day of _____ 2020.

My commission expires _____.

_____

Notary Public