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 Monroe Energy LLC; Lucknow- |  
 Highspire Terminals, LLC; | Docket No.:  
 Sheetz, INC, and PBF | C-2025-3053018  
 Holding Company LLC, |  
 v. |  
 Laurel Pipe Line Company, |  
 L.P., |  
 |  
 In-Person Evidentiary |  
Hearing

Pages 580 - 778

Judge's Chambers  
 State Office Building  
 801 Market Street  
 4th Floor  
 Hearing Room #4125  
 Philadelphia, PA 19107

Friday, September 12, 2025  
 Commencing at 9:00 a.m.

INDEX TO EXHIBITS

Docket No. C-2025-3053018

Hearing Date: September 12, 2025

<u>NUMBER</u>	<u>FOR IDENTIFICATION</u>	<u>IN EVIDENCE</u>
Monroe Energy Exhibit JRM-9	--	594
Morris' Data Analysis - <b>CONFIDENTIAL</b>		
Monroe Energy Exhibit JRM-10	--	594

Document - **CONFIDENTIAL**

Monroe Energy Exhibit JRM-11            --            594

Document - **CONFIDENTIAL**

Monroe Energy Exhibit JRM-12            --            594

Document - **CONFIDENTIAL**

Laurel Exhibit Hearing-1                693            693

Emery Response to Interrogatory 67

Laurel Exhibit Statement 3-R            707            710

Rebuttal Testimony of Michael J. Webb

Laurel Exhibit Statement 4-R            628            631

Rebuttal Testimony of Glenn E. Emery

Laurel Exhibit GEE-1                    629            631

Emery Curriculum Vitae

Laurel Exhibit GEE-2                    629            631

Response to Interrogatories

Laurel Exhibit GEE-3                    629            631

Response to Interrogatories

Laurel Exhibit GEE-4                    629            631

Response to Interrogatories

Laurel Exhibit GEE-4	629	631
Response to Interrogatories		
Laurel Exhibit GEE-5	629	631
Response to Interrogatories		
Laurel Exhibit GEE-6	629	631
Transmix Generation Figures		
Laurel Exhibit MJW-1	708	710
Webb Curriculum Vitae		
Laurel Exhibit MJW-2	708	710
Response to Interrogatories		
Laurel Exhibit MJW-3	708	710
Response to Interrogatories		
Laurel Exhibit MJW-4	708	710
Executive Summary - <b>CONFIDENTIAL</b>		
Laurel Exhibit MJW-5	708	710
Supply Study - <b>CONFIDENTIAL</b>		
Laurel Exhibit MJW-6	708	710
Operating Capacity Figures		
Laurel Exhibit MJW-7	708	710

Refined Product Consumption Figures

Laurel Exhibit MJW-8 708 710

Tables

Laurel Exhibit MJW-9 709 710

County Consumption Table

Laurel Exhibit MJW-10 709 710

FERC ICA Oil Tariff

Laurel Exhibit MJW-11 709 710

Pricing Data - **CONFIDENTIAL**

Laurel Exhibit MJW-12 709 710

Macroeconomic Effects of Oil Shocks Paper

Series

Laurel Exhibit MJW-13 709 710

Analysis of Weekly Retail Gasoline Prices

Laurel Exhibit MJW-14 709 710

Response to Interrogatories

Laurel Exhibit MJW-15 709 710

Response to Interrogatories

Laurel Exhibit MJW-16 709 710

Response to Interrogatories

Laurel Exhibit MJW-17	709	710
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Transit Time Analysis - **CONFIDENTIAL**

Complainant Exhibit C-30	747	750
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Response to Interrogatories

Complainant Exhibit C-31	747	750
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Response to Interrogatories

Complainant Exhibit C-32	747	750
--------------------------	-----	-----

Response to Interrogatories

Complainant Exhibit C-33	748	750
--------------------------	-----	-----

Response to Interrogatories

Complainant Exhibit C-34	749	750
--------------------------	-----	-----

Response to Interrogatories

Complainant Exhibit C-35	749	750
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Response to Interrogatories

Complainant Exhibit C-36	749	750
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Response to Interrogatories

Complainant Exhibit C-37	749	750
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Response to Interrogatories

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire	:	
Terminals, LLC, Sheetz, Inc. and PBF	:	
Holding Company, LLC,	:	Docket No. C-2025-3053018
	:	
Complainants,	:	
	:	
v.	:	
	:	
Laurel Pipe Line Company, L.P.	:	
	:	
Respondent.	:	

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**MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY, LLC INTERROGATORIES TO  
LAUREL PIPE LINE COMPANY, L.P.  
SET V**

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67. Provide Mr. Emery’s definitions of “virtual moves” and “virtual barrels” as those terms are used in his Rebuttal Testimony.

**RESPONSE:**

Virtual barrels are the volumes associated to virtual moves. Virtual moves are where the physical movements of volumes in the pipeline system to satisfy nominations are different from the origin and destination pair associated to such nominations. The use of virtual moves can still involve the physical movement of volumes through the pipeline system to satisfy nominations, however they provide the ability to optimize such physical movements. An example would be if Shipper A nominates 10,000 bbls of CBOB from Booth to Coraopolis and Shipper B nominates 10,000 bbls of CBOB from Toledo to Eldorado. Laurel and Buckeye can optimize system flows by physically moving the 10,000 bbls of CBOB tendered by Shipper A to Eldorado where it is ticketed to Shipper B’s account in satisfaction of their nomination and physically move the 10,000 bbls of CBOB tendered by Shipper B to Coraopolis where it is ticketed to Shipper A’s account in satisfaction of their nomination.

**SPONSOR(S):**

**Glenn Emery, Principal, Minesgrad Consulting LLC**

**Date: September 8, 2025**

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**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**Docket No. C-2025-3053018**

**LAUREL PIPE LINE COMPANY, L.P.**

**Statement No. 3-R**

**Rebuttal Testimony of Dr. Michael J. Webb**

**Topics: Rebuttal to Complainants' Analytical Framework, Rebuttal to Dr. Morris's Testimony, Rebuttal to Complainants' Claims of Harm**

**Dated: August 29, 2025**

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

**TABLE OF CONTENTS**

I. Introduction..... 1

II. Framework To Analyze Laurel’s Proposal and the Benefits of Laurel’s Proposal ..... 7

    A. Analytical Framework ..... 7

    B. The Bi-directional Service Extension Differs Fundamentally from the Prior Full-Reversal Proposal..... 12

    C. The Shipper’s Ignore Key Documents Provided in Discovery..... 18

    D. The Benefits of Bi-Directional Service..... 26

        1. Bi-Directional Service Increases Capacity Available to Meet Pennsylvania Supply Needs..... 26

        2. Diversity of Supply ..... 33

    E. Conclusion ..... 37

III. Dr. Morris’s Testimony is Largely Irrelevant And At Times Misleading..... 38

    A. Gasoline and Diesel Price Formation ..... 42

    B. Dr. Morris’s Crude Supply Analysis Is Flawed..... 46

    C. Claims that Westbound Supply Is Increasing Are Misleading ..... 51

IV. Dr. Morris’s Discussion of Harm Is Irrelevant and Speculative..... 54

    A. Introduction..... 54

    B. Dr. Morris’s Analysis of Efficiency is Incomplete..... 56

    C. Dr. Morris’s Trucking Arguments Are Flawed ..... 60

    D. Dr. Morris’s Analysis of Consumer Impact Lacks Foundation..... 66

    E. Dr. Morris’s Discussion of Operational Issues is Speculative and Irrelevant ..... 76

    F. Dr. Morris Discussion of Harm to Shippers Is Speculative and Inconsistent with Economic Theory..... 78

    G. Dr. Morris’s Discussion of Harm to Refineries is Anticompetitive ..... 81

    H. Dr. Morris’s Analytical Framework Ignores Economic Theory and Principles of Sound Public Policy ..... 83

V. The Complainants Fail to Show that Existing Bi-Directional Service Has Caused Material Operational Issues on the Laurel pipeline..... 86

    A. The Shipper Witnesses Have Not Alleged Any Failure to Provide Reasonable Service . 88

    B. The Shipper Witnesses Have Not Quantified Their Alleged Harm..... 90

    C. Correlation Does Not Equal Causation..... 94

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

D. Analysis of Transit Time .....	96
E. Analysis of Inventory Issues .....	98
F. Conclusions from Empirical Analysis .....	99
VI. Conclusion .....	102

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 **I. INTRODUCTION**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Michael J. Webb. I am Vice President of Regulatory Economics  
4 Group, LLC. My office is at 11180 Sunrise Valley Drive, Suite 320, Reston,  
5 Virginia 20191.

6 **Q. Please describe your education and professional background.**

7 A. I hold an M.A. and a Ph.D. in Economics from George Mason University. I also  
8 hold a B.A. in International Studies and Economics from American University. I  
9 am an adjunct professor at George Mason University, where I have taught courses  
10 in law and economics, the economics of energy, and the economics of regulation at  
11 both undergraduate and graduate levels. In my twenty-five years of experience  
12 with the oil pipeline industry, I have consulted on behalf of numerous oil pipeline  
13 companies on rate regulation and antitrust matters. I have filed testimony at the  
14 Pennsylvania Public Utility Commission (“PaPUC” or the “Commission”), the  
15 Federal Energy Regulatory Commission (“FERC”), the National Energy Board  
16 (Canada) and the Canadian Energy Regulator, the California Public Utilities  
17 Commission, the Regulatory Commission of Alaska, the Kansas Corporation  
18 Commission, the Wyoming Public Service Commission, the Virginia State  
19 Corporation Commission, the Louisiana Public Service Commission, the Texas  
20 Railroad Commission, the American Arbitration Association, the Court of  
21 Chancery of Delaware and the 269<sup>th</sup> Judicial District Court in Harris County, Texas.  
22 Additionally, I have presented white papers before the Federal Trade Commission  
23 addressing pipeline competition. I have also supported the testimony of other

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 witnesses before federal and state regulatory agencies, federal and state courts, and  
2 an International Arbitration Panel. My curriculum vitae is attached to this  
3 testimony as Laurel Exhibit No. MJW-01.

4 **Q. On whose behalf are you submitting your testimony?**

5 A. I am presenting testimony on behalf of Laurel Pipe Line Company, L.P. (“Laurel”  
6 or the “Company”). Laurel is an affiliate of Buckeye Pipe Line Company L.P.  
7 (“Buckeye”).

8 **Q. What is the purpose of your testimony in this proceeding?**

9 A. Counsel for Laurel has asked me to review the written direct testimony of Dr. John  
10 R. Morris (Complainants Exhibit JRM-1, including Exhibits JRM-2 through JRM-  
11 8), filed on behalf of Monroe Energy, LLC (“Monroe”), Lucknow-Highspire  
12 Terminals, LLC (“LHT”), Sheetz Inc. (“Sheetz”) and PBF Holding Company LLC  
13 (“PBF”), collectively the “Complainants,” the testimony of Mr. Joshua Jadlocki  
14 filed on behalf of Sheetz (Complainants Exhibit JDJ-1, including Exhibits JDJ-2  
15 through JDJ-9), Mr. Kyle Summers on behalf of Monroe (Complainants Exhibit  
16 KFS-1, including Exhibit KFS-2), and Ms. Shauna Huzicko on behalf of LHT  
17 (Complainants Exhibit SH-1, including Exhibits SH-2 through SH-4). Mr. Glenn  
18 Emery, also testifying on behalf of Laurel, responds to the testimony of Mr. Thomas  
19 Meisner (Complainants Exhibit TM-1, including TM-2 through TM-5). I refer to  
20 these witnesses collectively as the “Shipper Witnesses” or the “Complainant  
21 Witnesses.” My rebuttal testimony responds to the claims and concerns raised by  
22 the Complainant Witnesses regarding Buckeye’s proposal to initiate new west-to-  
23 east interstate service over the segment of the Laurel pipeline system located

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 between Eldorado, PA and Sinking Spring, PA (*i.e.*, Lines 720 and 724) while  
2 Laurel maintains existing east-to-west intrastate service over this same segment of  
3 the system (*i.e.*, the “Bi-directional Service Extension”). In addition, my testimony  
4 addresses the Complainant Witnesses’ concerns regarding Buckeye’s current  
5 provision of west-to-east interstate service over the segment of the pipeline system  
6 located between Coraopolis, PA and Eldorado, PA (*i.e.*, Line 718) and Laurel’s  
7 current provision of east-to-west intrastate service the over this same segment of  
8 the system (*i.e.*, the “Existing Bi-directional Service”).

9 Based on my review of the written testimony and exhibits provided, I  
10 conclude that the Shipper Witnesses’ claims that the Bi-directional Service  
11 Extension is an abandonment of service, that it materially harms westbound  
12 shippers, or that it is more broadly inconsistent with the public interest, are without  
13 merit and incorrect. As I will discuss throughout my testimony, I believe the Bi-  
14 Directional Service Extension will confer substantial benefits on the citizens of the  
15 Commonwealth of Pennsylvania by expanding the availability of petroleum  
16 product supply from *both* Midwestern and East Coast sources. Furthermore, the  
17 Shipper Witnesses’ claims regarding Existing Bi-directional Service provided over  
18 the Laurel pipeline system are unfounded.

19 **Q. Please describe how your testimony is organized.**

20 A. My testimony is comprised of the following sections:

- 21 • Section I is an introduction of my background and educational experience, the  
22 nature of my testimony, and a summary of the conclusions and  
23 recommendations I advance in this rebuttal testimony.

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

- 1           • In Section II, I provide a framework to analyze the issues associated with the  
2           Bi-Directional Service Extension, the ways the Bi-directional Service  
3           Extension at issue in this proceeding starkly differs from full reversal of a  
4           portion of the Laurel pipeline system that was proposed in 2016 and resulted in  
5           the *2018 Recommended Decision*<sup>1</sup> and the *2018 Final Order*<sup>2</sup> cited and relied  
6           upon by various Complainant Witnesses, key documents ignored by the  
7           Complainant Witnesses, and ways the Bi-Directional Service Extension will  
8           benefit the public.
- 9           • In Section III, I respond to Dr. Morris’s discussion of the changes in the  
10          petroleum market since 2019.
- 11          • In Section IV, I explain that Dr. Morris’s discussion of alleged harms to various  
12          parties is speculative and irrelevant.
- 13          • In Section V, I will conduct a systematic analysis of operational issues that the  
14          Complainant Witnesses suggest have arisen as a result of the Existing Bi-  
15          directional Service provided over Line 718 of the Laurel pipeline system. As I  
16          explain in this portion of my testimony, I conclude the Existing Bi-directional  
17          Service has not caused an abandonment of any service and has not caused any  
18          detectable harm of the type alleged by the shippers.

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<sup>1</sup> *Application of Laurel Pipe Line Company, L.P.*, Docket Nos. A-2016-2575829 and G-2017-2587567 (Recommended Decision dated March 23, 2018) (“*2018 Recommended Decision*”).

<sup>2</sup> *Application of Laurel Pipe Line Company, L.P.*, Docket Nos. A-2016-2575829 and G-2017-2587567 (Opinion and Order entered July 12, 2018) (“*2018 Final Order*”).

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1           • In Section VI, I conclude my rebuttal testimony.

2   **Q. Do you rely on the testimony of other Laurel witnesses?**

3   A. Yes. I rely on the rebuttal testimony of Laurel witness Mr. Thomas Zeth (Laurel  
4   Statement No. 1-R) for my understanding of factual matters related to Laurel’s  
5   operations. I rely on the testimony of Mr. Glenn Emery (Laurel Statement No. 4-  
6   R) for my understanding of pipeline operational issues associated with bi-  
7   directional service.

8   **Q. Please summarize the conclusions you reach and your recommendations with  
9   respect to the actions that the Commission should take in this proceeding.**

10   A. Throughout my rebuttal testimony, I draw the following primary conclusions.

11           • First, the Shipper Witnesses draw a false comparison to the prior full reversal  
12           proceeding, which fundamentally differs from both (a) the Existing Bi-  
13           directional Service provided on Line 718 and (b) the Bi-directional Service  
14           Extension. The Administrative Law Judge (the “ALJ”) laid this out in the 2018  
15           Recommended Decision, i.e., the full reversal involved two steps (abandonment  
16           of intrastate westbound service and then initiation of interstate eastbound  
17           service), which is completely different from a one-step proposal that simply  
18           initiates interstate eastbound service. Therefore, any claims advanced by the  
19           Complainants’ expert or fact witnesses that rely upon the Commission’s prior  
20           findings and conclusions regarding a full reversal, or otherwise attempt to claim  
21           that it is reasonable to assume the same harms they alleged would occur from a  
22           full reversal have resulted or will result from bi-directional service are illogical  
23           and unsupported.

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

- 1           • Second, I conclude that there are a number of significant benefits associated  
2           with Existing Bi-directional Service and the Bi-directional Service Extension  
3           which would be lost if the Commission were to grant the relief sought by the  
4           Complainants.
- 5           • Third, I conclude that Dr. Morris’s testimony is irrelevant and misleading as it  
6           assumes the loss of supply options and sources, as alleged, would occur in the  
7           prior full reversal proceeding. He simply ignores that the Bi-directional Service  
8           Extension adds supply options and sources while maintaining existing options  
9           and sources. Fourth, and relatedly, I conclude that Dr. Morris does not quantify  
10          any of the alleged harms, and his conclusions are speculative and irrelevant to  
11          a scenario where bi-directional service (as opposed to a full reversal) is offered.
- 12          • Finally, I conclude the operational issues alleged by the Complainants have not  
13          actually occurred under Existing Bi-directional Service. The Complainants do  
14          not quantify those issues, or the economic harms of the same, and indeed cannot  
15          because the data shows that changes to transit times and transit time variability  
16          caused by bi-directional service are de minimis.
- 17          • Based upon these conclusions, I believe that the Commission should dismiss  
18          the Complaint because the Complainants have failed to demonstrate that (a) the  
19          Bi-directional Service Extension is an abandonment of service, and (b) the Bi-  
20          directional Service Extension and/or Existing Bi-directional Service constitute  
21          unreasonable service.

1 **II. FRAMEWORK TO ANALYZE LAUREL’S PROPOSAL AND THE BENEFITS OF**  
2 **LAUREL’S PROPOSAL**

3 **A. Analytical Framework**

4 **Q. Do the Complainant Shippers attempt to draw comparisons between the Bi-**  
5 **directional Service Extension at issue in this proceeding and a full-reversal**  
6 **proposal that was previously rejected by the Commission?**

7 A. Yes. Complainant Witness Dr. Morris heavily focuses on the Commission’s prior  
8 analysis in the *2018 Recommended Decision* and the *2018 Final Order*.<sup>3</sup>

9 **Q. Please summarize your review of the Complainant Witnesses’ comparisons to**  
10 **the prior full-reversal proposal.**

11 A. It appears that the Complainants are asking the assigned ALJ and the Commission  
12 to apply the same analytical framework applied in assessing the prior full-reversal  
13 proposal to the instant Bi-Directional Service Extension.

14 **Q. Should the same analytical framework that was used to review Laurel’s prior**  
15 **full-reversal proposal be applied in this proceeding?**

16 A. No. As I discuss in Section II.B, Laurel’s current Bi-Directional Service Extension  
17 differs fundamentally from the proposal to terminate Westbound service to  
18 Pittsburgh. Consequently, the Complainant Witnesses make an inapposite  
19 comparison. Stated differently: the Bi-directional Service Extension involves the  
20 initiation of a new, interstate service while maintaining existing intrastate service  
21 (*i.e.*, the addition of a service); the prior full-reversal required existing intrastate  
22 service to cease (*i.e.*, the removal of a service).

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<sup>3</sup> See, e.g., Complainants Exhibit JRM-1 at 46-47, 55-56, 59-62, 65.

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 **Q. Based upon this fundamental difference, how should the Bi-directional Service**  
2 **Extension be analyzed by the ALJ and the Commission?**

3 A. It must first be recognized that the Bi-directional Service Extension involves the  
4 addition of a new interstate service and does not involve the removal of an existing  
5 intrastate service. Adding a service is the opposite of abandoning a service and  
6 treating the addition of a service as an abandonment makes no logical or regulatory  
7 sense. At most, the addition of the new interstate service **could** result in the  
8 degradation of existing intrastate service, which **could** be considered unreasonable  
9 service, but a possible degradation of service that possibly amounts to unreasonable  
10 service is not an abandonment of service.

11 **Q. Does a determination that the addition of a new service constitutes an**  
12 **abandonment of service make any sense?**

13 A. No, it does not at all. Based on my background analyzing issues related to the rates,  
14 terms, and conditions of services provided by common carrier pipelines, such a  
15 determination would be inapposite. It is my understanding that Pennsylvania public  
16 utilities, like common carrier pipelines, initiate new types of services that fall within  
17 the ambit of their certificates of public convenience and regulatory approvals to  
18 operate. Where that new service is jurisdictional, many times this involves the  
19 filing of new tariff pages reflecting the terms and conditions of service. It does not,  
20 however, require seeking abandonment approval via a certificate of public  
21 convenience. In discovery, Dr. Morris acknowledges that this case does not  
22 constitute an elimination of service.<sup>4</sup> A determination by this Commission that the

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<sup>4</sup> Laurel Exhibit No. MJW-02.

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1 initiation of a new service constitutes an abandonment of service, would fly in the  
2 face of how it has regulated the addition of services in the past. Even further  
3 problems would arise if the Commission made this determination in the current  
4 context, because the new service is interstate service outside of its jurisdiction.  
5 These problems are avoided if the Commission simply recognizes that the Bi-  
6 directional Service Extension involves the initiation of a new service, whereas the  
7 prior full reversal involved the removal of a service.

8 **Q. If the Commission determines that the addition of a new service constitutes an**  
9 **abandonment of service, have the Shipper Witnesses provided information**  
10 **sufficient to support the Commission requiring Laurel to obtain approval to**  
11 **abandon service or otherwise taking action to prevent the Bi-directional**  
12 **Service Extension?**

13 A. No. Even if, however, the addition of new, interstate service were analyzed as an  
14 abandonment of service (and it should not be in my view), the Complainant  
15 Witnesses only focus upon unquantified alleged harms specific to two refineries  
16 interconnected with the Laurel pipeline system and two shippers on that system.  
17 The ALJ and the Commission should not take such a limited view, as ultimately  
18 the focus of this analysis should be the interest of the entire public, not the interest  
19 of a few shippers. While I am not an attorney, it is my understanding that when  
20 examining the public interest, the Commission focuses on overall benefits to the  
21 public. I further understand that those benefits need not be quantified, and the key  
22 is whether there is an overall benefit to the public (*i.e.*, not every market participant  
23 must benefit, and there can be participants who benefit as well as participants who

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 do not). Thus, the benefits of the Bi-directional Service Extension to shippers and  
2 more broadly, consumers and end-users in Pennsylvania, must also be taken into  
3 account.

4 **Q. Are there any elements from the prior full-reversal that are relevant in the**  
5 **instant case?**

6 A. Yes. some of the market context of that case is relevant. In 2018, consumers in  
7 Pittsburgh enjoyed the benefits of receiving refined product produced in both the  
8 Midwest and the East Coast for many years. Specifically, when Midwestern  
9 product was cheaper, more Midwestern product would flow to Pittsburgh, and when  
10 East Coast product was cheaper, more East Coast product would flow to Pittsburgh.  
11 Laurel proposed to terminate this service, meaning that consumers in Pittsburgh  
12 would **only obtain refined product produced in the Midwest**. The Presiding  
13 Judge and the Commission determined that Laurel had not proven with sufficient  
14 certainty that Midwestern refined product would consistently be less expensive.<sup>5</sup>  
15 In the instant case, the Bi-directional Service Extension will mean that consumers  
16 in Central and possibly even Eastern Pennsylvania will benefit from the flexibility  
17 to obtain supply from the lowest cost producer. In this case, the Complainant  
18 Shippers seek to deny the benefit of the flexibility provided from being able to  
19 source products from the Midwest and the East Coast enjoyed by Pittsburgh to the  
20 consumers in these areas of Pennsylvania. To prove that this benefit should be  
21 denied to these consumers, the Complainant Shippers should be required to  
22 demonstrate there is a high probability that East Coast product will nearly always

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<sup>5</sup> 2018 Recommended Decision, at 161-162; 2018 Final Order, at 94.

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 be less expensive than Midwestern product, and that Bi-directional Service  
2 Extension has a high probability of causing serious public harm. They have not  
3 attempted to meet either requirement.

4 **Q. What conclusions do you draw about the testimony of Complainant Witness**  
5 **Dr. Morris?**

6 A. Against this backdrop, it becomes clear that the analysis presented by Complainant  
7 Witness Dr. Morris is irrelevant because it is based on the flawed assumption that  
8 the Bi-directional Service Extension is the same as the prior full-reversal proposal.<sup>6</sup>  
9 In addition, it also becomes clear that even if this analysis was relevant, the flawed  
10 analysis of harms presented by the Complainants fails to account for the substantial  
11 benefits of the Bi-directional Service Extension. Indeed, even after recognizing  
12 that Midwestern products are cheaper than East Coast products around half the time  
13 based on the amount of volumes sourced from each direction,<sup>7</sup> the Complainant  
14 Witnesses argue that consumers in Central Pennsylvania should not obtain the  
15 benefit of pipeline supplies from whichever source happens to be cheaper at a given  
16 time. Thus, even if the harms alleged were correct or theoretically sound (and they  
17 are not), these harms are limited to a discrete number of market participants and are  
18 outweighed by the substantial benefits of the Bi-Directional Service Extension.

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<sup>6</sup> See, e.g., Complainants Exhibit JRM-1 at 46-47, 55-56, 59-62, 65.

<sup>7</sup> Complainants Exhibit JRM-1 at 51.

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1           **B.     The Bi-directional Service Extension Differs Fundamentally from the**  
2           **Prior Full-Reversal Proposal**

3           **Q.     Does another Laurel witness explain the characteristics and operations of the**  
4           **Laurel pipeline system in Pennsylvania?**

5           A.     Yes. Laurel witness TJ Zeth provides this description in his rebuttal testimony  
6           (Laurel Statement No. 1-R), and I rely upon the same.

7           **Q.     Does Mr. Zeth also describe the prior full-reversal proposal and the Bi-**  
8           **directional Service Extension?**

9           A.     Yes, he does.

10          **Q.     Are you familiar with Laurel’s prior proposal to fully reverse a portion of its**  
11          **pipeline system?**

12          A.     Yes. I was an expert witness in the prior proceeding that contemplated a full  
13          reversal of the segment of the Laurel pipeline system located between Coraopolis  
14          and Eldorado (*i.e.*, Line 718) at Docket Nos. A-2016-2575829 and G-2017-  
15          2587567.

16          **Q.     Based upon your knowledge of the prior full-reversal proposal, as well as your**  
17          **knowledge of the Bi-directional Service Extension at issue in this proceeding,**  
18          **is the Bi-directional Service Extension the same as or similar to the prior full**  
19          **reversal proposal?**

20          A.     No. Laurel’s prior proposal to fully reverse Line 718 differs in fundamental ways  
21          from the Bi-directional Service Extension at issue in this case. Specifically, in the  
22          prior full-reversal proceeding, Laurel sought permission from this Commission to  
23          permanently change the direction of refined petroleum products transportation  
24          service between Coraopolis and Eldorado, PA from intrastate east-to-west service

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1 to interstate west-to-east service. In other words, under the prior proposal, shippers  
2 producing refined product at the Philadelphia refineries would not have been able  
3 to transport this product to Coraopolis, PA solely via the Laurel pipeline system.  
4 Due to these fundamental facts, it is my understanding that Laurel (as the applicant  
5 in that case) was required to make a completely different affirmative showing that  
6 the full reversal was in the public interest.

7 In the current proceeding, Laurel is not proposing to cease and will not cease  
8 the provision of existing east-to-west intrastate service. Rather, the Bi-directional  
9 Service Extension maintains east-to-west intrastate service over Lines 720 and 724,  
10 and also involves the addition of new west-to-east interstate service by Buckeye  
11 over those same lines. Moreover, the Complainants are the initiating parties and,  
12 therefore, it is my understanding that they are required to demonstrate the Bi-  
13 directional Service Extension violates the Public Utility Code, a Commission  
14 regulation or a Commission order, based upon my experience in other complaint  
15 proceedings against common carrier rates.

16 **Q. Given these differences, is it accurate to analyze the Bi-directional Service**  
17 **Extension in the same manner as the prior full reversal proposal?**

18 A. No. Unlike in the prior full reversal proposal, there is no concern regarding the loss  
19 of access to East Coast refined petroleum products at any point along the Laurel  
20 pipeline system; such products will continue to be able to be transported to all  
21 points along the Laurel pipeline system as they are today. Given the nature of the  
22 current proposal, concerns about whether refined products from Midwest refineries

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1 are consistently less expensive than refined products from East Coast refiners are  
2 not relevant.

3 **Q. Why are these concerns not relevant given the nature of the current proposal?**

4 A. Under the current proposal, Laurel proposes no change in its Commission regulated  
5 service; Laurel will continue to provide westbound service to every location that  
6 currently receives westbound service. In other words, no location will cease  
7 receiving product produced in Philadelphia. Consequently, when East Coast prices  
8 are lower than prices in the Midwest, one should expect more barrels to flow west  
9 on Laurel. When prices in the Midwest are lower, one should expect more barrels  
10 to flow east on Laurel. In either case, Pennsylvania markets and consumers would  
11 benefit. Moreover, the bi-directional nature of this project means that no party,  
12 including Laurel or the Commission, needs to undertake the difficult task of  
13 projecting prices into the indefinite future. To the extent refined product produced  
14 at Midwestern refineries is less expensive, it will meet more of the needs of  
15 consumers in Western and Central Pennsylvania. To the extent refined product  
16 produced at East Coast refineries is less expensive, it will meet more of the needs  
17 of consumers in Western and Central Pennsylvania. As such, projecting long-term  
18 trends, as was the primary focus of the *2018 Recommended Decision* and *2018*  
19 *Final Order* regarding the prior full-reversal proposal is unnecessary and irrelevant  
20 to the issues involved in the current complaint proceeding.

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1 **Q. Do the Shipper Witnesses recognize or even acknowledge the differences**  
2 **between the prior full reversal at issue in the 2018 Recommended Decision and**  
3 **the 2018 Final Order decision and the current complaint against the Bi-**  
4 **Directional Service Extension?**

5 A. No, not at all. Instead, they go to great lengths to paint the Bi-directional Service  
6 Extension as being the same as the prior full reversal.

7 **Q. Please explain what you mean.**

8 A. This point is most clearly illustrated in the testimony of Dr. Morris. In framing the  
9 analytical technique he will employ in his Section VI, entitled “Potential Loss to  
10 Shippers, Refiners, and Customers” he states that he “plan[s] to follow the  
11 analytical framework established in the 2018 Decision by evaluating the potential  
12 impact of the Broadway Phase 3 project on Pennsylvania consumers, markets from  
13 Sinking Spring to Pittsburgh, eastern refineries, shippers, and other relevant  
14 stakeholders.”<sup>88</sup> He fails to recognize that in the *2018 Recommend Decision* the  
15 administrative law judge and the Commission were faced with a radically different  
16 task: assessing how a *complete reversal* would impact prices given long-term  
17 expectations about economic conditions in the Midwest compared to the East  
18 Coast. Such issues are simply irrelevant in the context of the currently proposed  
19 Bi-directional Service Extension. In the context of the current proposal, consumers  
20 will enjoy benefits of the most competitively priced product from either the  
21 Midwest or the East Coast.

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<sup>88</sup> Complainants Exhibit JRM-1 at 56:17-20.

1 **Q. If the assumptions underlying the Bi-directional Service Extension prove**  
2 **inaccurate, what parties will bear the cost?**

3 A. As Mr. Zeth discusses in his testimony, and I discuss in Section II.C. of my  
4 testimony, part of the commercial justification for the Bi-directional Service  
5 Extension revolves around the fact that refinery capacity in the Midwest has begun  
6 to exceed demand for refined product, particularly in the winter. As a consequence,  
7 Midwestern refiners are seeking new markets, including Western and Central  
8 Pennsylvania. While my review of pricing data and changes in refinery capacity  
9 suggest that Laurel’s projections regarding Midwestern markets are reasonable, it  
10 is possible that their projections about these markets will prove unfounded.

11 For example, if demand in the Midwest suddenly increases, the economic  
12 pressure to move refined product to Pennsylvania will decrease. In this case, the  
13 Midwestern refiners who have entered into long-term commitments to backstop the  
14 project, as well as Buckeye, will suffer harm at least relative to their current  
15 expectations. In other words, they will not earn the profits they currently anticipate  
16 earning. In such a circumstance, it is my opinion that it is unlikely the consumers  
17 of the Commonwealth of Pennsylvania will bear this harm because the East Coast  
18 refineries will be providing supply.

19 If demand in the Midwest is higher than current expectations the price will  
20 be higher than expected meaning that less product will flow on Broadway III into  
21 Central Pennsylvania. In the most extreme case, no product will flow from the  
22 Midwest into Central Pennsylvania and all product will continue to be supplied by

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1 East Coast refineries, presumably because it is less expensive and in this extreme case,  
2 Midwestern product would not be competitive.

3 **Q. If Midwestern product does not flow into Pennsylvania, will consumers be**  
4 **worse off?**

5 A. No. Currently no product from the Midwest flows into Central Pennsylvania via  
6 pipeline further east than Altoona, and if the proposals of the various shipper  
7 witnesses were accepted, none would do so. Therefore, if the assumptions  
8 underlying the project were ultimately wrong and no Midwestern product flows  
9 into Central Pennsylvania, refined petroleum product flows over the Laurel pipeline  
10 system would be exactly the same as they would be if the shipper proposals were  
11 accepted and the Bi-directional Service Extension were rejected; Lines 720 and 724  
12 would simply transport volumes from east-to-west because the shippers nominating  
13 those volumes would have determined to them to be cheaper. For this reason, the  
14 Bi-directional Service Extension will make consumers no worse off than they are  
15 currently, and as I discuss in Section II.C., the Bi-directional Service Extension has  
16 a high probability of conferring substantial benefits on consumers.

17 **Q. Do you believe that the citizens of the Commonwealth of Pennsylvania will**  
18 **benefit from the extension of bi-directional service?**

19 A. Yes. As I discuss in depth in Sections II.D and II.E, the Bi-directional Service  
20 Extension will increase utilization of the Laurel pipeline system and increase the  
21 effective capacity of Lines 720 and 724, as well as increase competition amongst  
22 refined petroleum products suppliers in Pennsylvania.

1           **C.     The Shipper’s Ignore Key Documents Provided in Discovery**

2   **Q.     Do the shippers address actual evidence of the reason Buckeye and its shippers**  
3           **have proposed the Bi-directional Service Extension?**

4   A.     No. Rather than focus on actual evidence, particularly documents turned over in  
5           discovery, the Shipper Witnesses engage in speculation. For example, Dr. Morris  
6           states that “[d]ifferences between the FERC and PUC tariff rates, and the fact that  
7           Buckeye owns affiliated pipelines in the Midwest, create an incentive for Buckeye  
8           to move more petroleum eastward into and through the western end of Laurel  
9           Pipeline.”<sup>9</sup> This statement completely fails to recognize that Buckeye’s interests  
10          and its shippers interest may, and in this case do, converge. This statement also  
11          reflects a basic lack of understanding of the relationship between Laurel and  
12          Buckeye and their customers.

13   **Q.     Why do you say that Buckeye’s interests and those of its shippers may, and in**  
14          **this case do, converge?**

15   A.     In the instant case, Buckeye is spending capital that will generate what it believes  
16          will be an acceptable return on its capital. This project may replace barrels for  
17          which it currently charges a rate ranging from \$0.50-\$1.79 with barrels for which  
18          it charges a higher rate. However, these new movements provide a service that  
19          clearly benefits Midwestern shippers who are willing to commit to use this service.  
20          Furthermore, these new movements will make use of the underutilized Laurel  
21          pipeline. Consistent with what I would expect of a rational economic actor,  
22          Buckeye is making an investment to meet shipper and market demand. The fact

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<sup>9</sup> Complainants Exhibit JRM-1 at 58:12-15.

1 that Buckeye expects to benefit from this investment is not a cause for concern. In  
2 my opinion, it is not even an issue.

3 **Q. Why do you say Dr. Morris’s statement reflects a basic lack of understanding**  
4 **of the relationship between Laurel, Buckeye, and their customers?**

5 A. Dr. Morris’s statement suggests that Laurel and/or Buckeye chooses how and where  
6 to source the product transported on its pipeline. They do not. Their customers  
7 (*i.e.*, the shippers) choose whether and how to ship. Laurel and Buckeye simply  
8 transport refined product based on the instructions of its customers.<sup>10</sup> Moreover,  
9 documents provided to Dr. Morris and his clients in discovery and provided by Dr.  
10 Morris’s clients provide a far more plausible explanation for the expansion  
11 compared to Dr. Morris’s baseless explanation. Dr. Morris ignores both sets of  
12 documents.

13 **Q. What documents were provided by Laurel to the Complainants, and in**  
14 **particular Dr. Morris in discovery?**

15 A. A presentation attached hereto as Laurel Exhibit No. MJW-04 shows **[BEGIN**  
16 **HIGHLY CONFIDENTIAL]** [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] **[END HIGHLY**

20 **CONFIDENTIAL]** As a result, Buckeye’s customers, who dictate the quantity of  
21 product that flows on the pipeline are seeking to supply refined product to new  
22 markets. To have the opportunity to compete in the new market of central

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<sup>10</sup> Laurel Exhibit No. MJW-03.

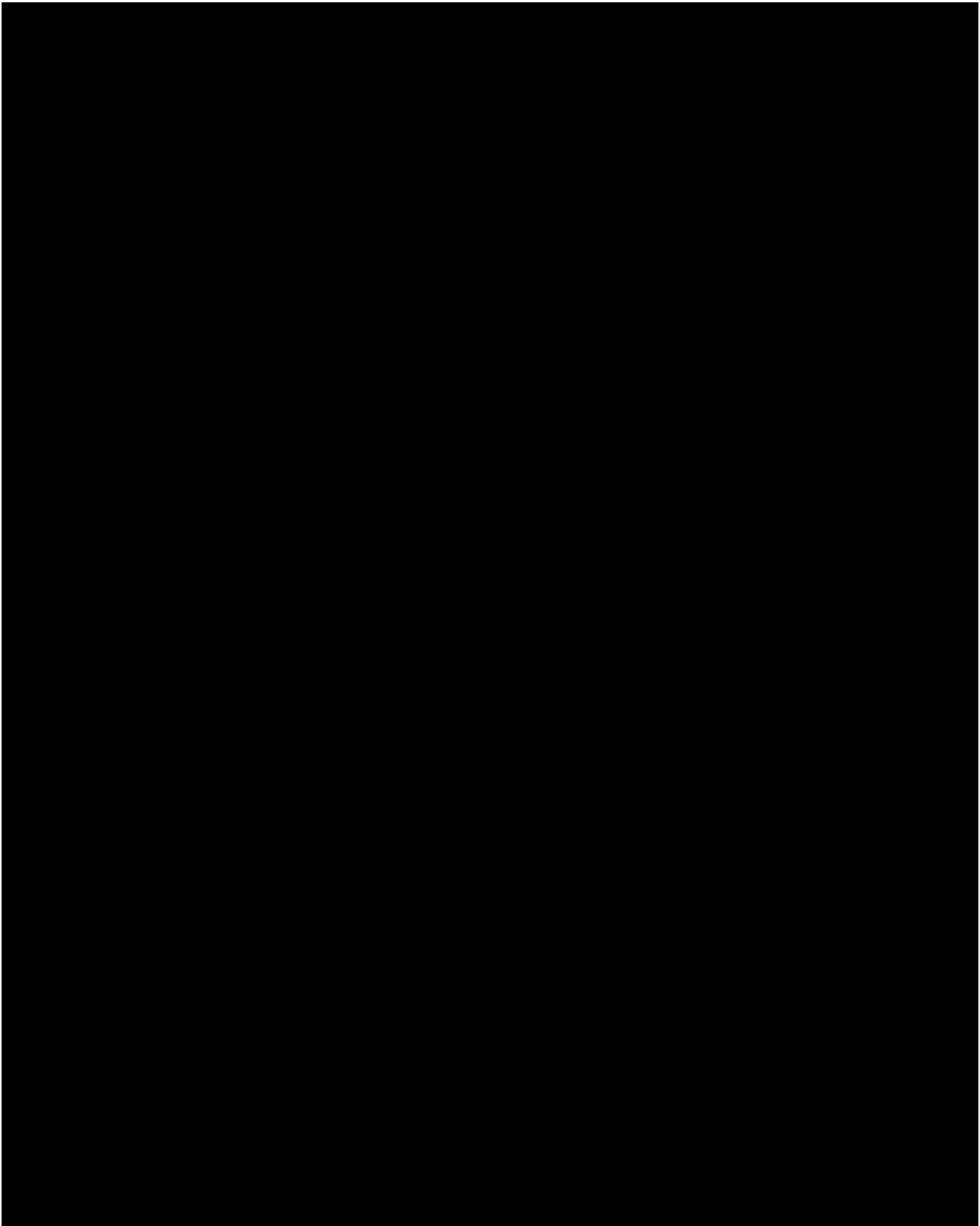
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1 Pennsylvania, these customers are willing to make commitments sufficient to  
2 justify Buckeye’s investment of approx. **[BEGIN HIGHLY CONFIDENTIAL]**  
3 **[REDACTED]** **[END HIGHLY CONFIDENTIAL]** This fact suggests that these  
4 companies, some of whom are the most sophisticated oil companies in the world,  
5 believe they will be able to successfully compete to provide low priced product to  
6 the consumers of Central Pennsylvania.

7 **Q. Are you aware of any documents provided by the Complainants that also**  
8 **undermine the central premise of the testimony of the Complainant**  
9 **Witnesses?**

10 A. Yes. There was highly confidential information provided in discovery. **[BEGIN**  
11 **HIGHLY CONFIDENTIAL]** **[REDACTED]**  
12 **[REDACTED]**  
13 **[REDACTED]**  
14 **[REDACTED]**  
15 **[REDACTED]**  
16 **[REDACTED]**

17 [Remainder of page intentionally left blank]



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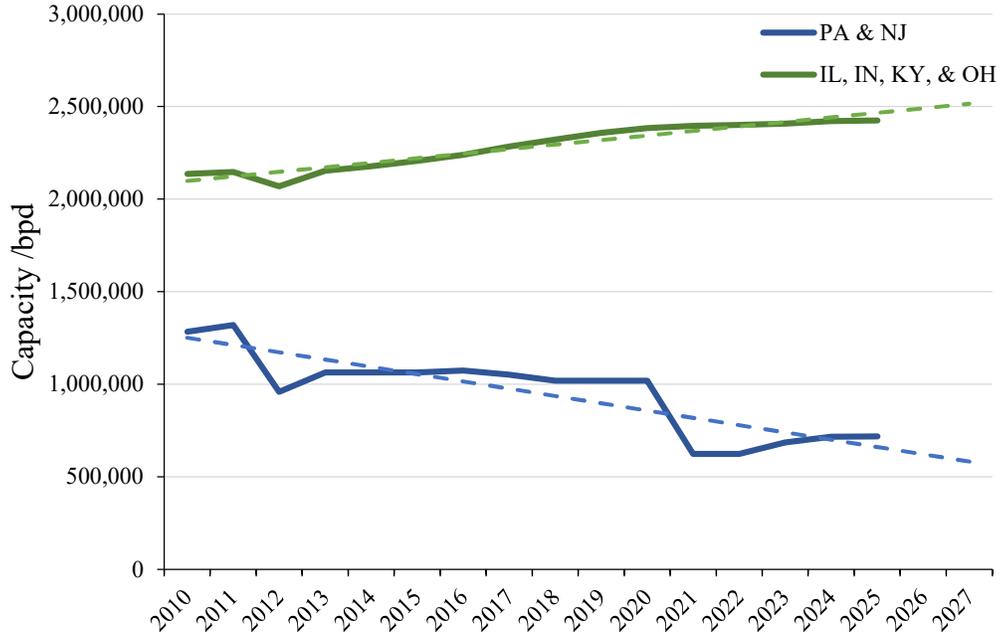
[REDACTED]

8 [END HIGHLY CONFIDENTIAL]

9 **Q. Have you prepared an independent analysis assessing whether the**  
10 **assumptions in these presentations are plausible?**

11 A. Yes. I examined the changes in refinery capacity in the upper Midwest from 2010  
12 to the present as reported by the United States Energy Information Administration  
13 (“EIA”). I summarized this review in Laurel Exhibit No. MJW-06. Next, I  
14 examined the changes in consumption of refined products reported again by the  
15 EIA from 2010 to the present. I summarized this review in Laurel Exhibit No.  
16 MJW-07. As Figure 1 below shows, refinery capacity has increased from 2.1  
17 million bpd to 2.4 million bpd during this time period.

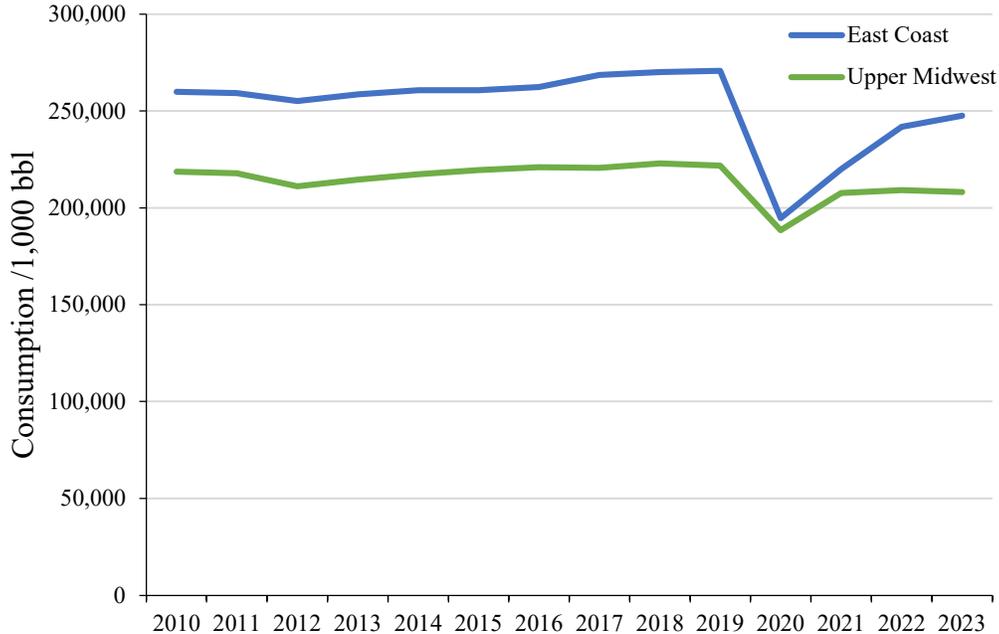
Figure 1: Total Refinery Operating Capacity—East Coast vs. Midwest<sup>11</sup>



1 As shown in Figure 2 below, during this same time period consumption of refined  
 2 product has declined from 218.7 million barrels per year to 208.1 million barrels  
 3 per year. This information is consistent with the assumptions underlying the  
 4 presentation. Specifically, while consumption has declined slightly in both  
 5 locations, refinery production on the East Coast has declined markedly while  
 6 refinery production in the Midwest has increased markedly.

<sup>11</sup> Refinery Capacity Report, EIA, available at <https://www.eia.gov/petroleum/refinerycapacity/> (last accessed August 20, 2025).

**Figure 2: Product Consumption—East Coast vs. Upper Midwest<sup>12</sup>**



1 **Q. Have refineries on the East Coast experienced a similar increase in capacity?**

2 A. No. As shown in Exhibit No. MJW-06, summarizing EIA data, refinery capacity  
 3 on the East Coast has declined from 1.3 million barrels per day to 718.5 thousand  
 4 barrels per day. During this same time period, consumption of refined product on  
 5 the East Coast has declined to a lesser degree, from 259.8 million barrels per day  
 6 to 247.5 million barrels per day.<sup>13</sup> In other words, while refinery capacity in the  
 7 Midwest has increased since 2010, refinery capacity on the East Coast has  
 8 decreased, meaning that East Coast consumers, including those in Pennsylvania,  
 9 have become more dependent on a limited range of import options. This fact is  
 10 consistent with the presentation that the shipper witnesses ignore.

<sup>12</sup> All Consumption Estimates (In Physical Units), EIA, available at: <https://www.eia.gov/state/seds/seds-data-complete.php?sid=US#Consumption> (last accessed August 25, 2025)

<sup>13</sup> Laurel Exhibit No. MJW-07.

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1 **Q. Did your analysis of refineries provide any other useful information?**

2 A. Yes. My analysis of refineries also provided useful information on the complexity  
3 of the refineries in both the Midwest and the East Coast.

4 **Q. What does the complexity of a refinery signify?**

5 A. A refinery can have a number of different processing units. The simplest refinery  
6 would contain a distillation tower that it would use to distill crude oil into various  
7 refined products. A more “complex” refinery contains multiple processing units  
8 that allow the refinery to process various grades of crude oil or convert crude oil  
9 into specific types of products more efficiently than a simple distillation tower. The  
10 most complex, and typically most costly, processing unit is known as a “coker”. A  
11 coker allows a refinery to process extremely heavy oil, which typically sells at a  
12 substantial discount.<sup>14</sup> Therefore, a refinery’s “coker capacity” often represents a  
13 rough measure of the refinery’s complexity. In other words, when a refinery  
14 increases its coker capacity, the refinery is considered more complex because it can  
15 process a wider slate of crude oils efficiently. In Laurel Exhibit No. MJW-08, I  
16 examined the change in coker capacity from 2010 to the present in the Midwest and  
17 the East Coast. As this exhibit illustrates, coker capacity has increased in the  
18 Midwest by 90,718 bpd while it remained flat on the East Coast.<sup>15</sup> This fact  
19 demonstrates that the ability of refineries in the Midwest to efficiently process  
20 heavy discounted grades of crude oil has increased since 2010 while that same  
21 ability on the East Coast has remained flat. This fact provides further support for

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<sup>14</sup> Heavy crude oil contains a greater portion of long-chain hydrocarbons that cause the crude oil to have a higher specific gravity.

<sup>15</sup> The East Coast coker capacity was flat up until 2021 when it went to zero.

1 the belief that Midwestern refiners will have the ability to effectively compete to  
2 supply relatively low-cost products to the citizens of Pennsylvania.

3 **D. The Benefits of Bi-Directional Service**

4 **Q. Are there benefits associated with bi-directional service?**

5 A. Yes. Because the Complainant Witnesses focus their analytical framework on the  
6 potential harm that would arise through a complete reversal, they ignore the fact  
7 that the Bi-directional Service Extension effectively increases the capacity of the  
8 Laurel pipeline and allows this increased capacity to reach more populous areas.  
9 Second, the Bi-directional Service Extension increases the diversity of supply in  
10 Pennsylvania. This diversity of supply creates benefit by (a) creating a more robust  
11 supply chain that will mitigate supply disruptions in Pennsylvania, and (b) increases  
12 competition to supply Pennsylvania consumers. In Subsection A below, I will  
13 discuss the benefits of the increased capacity of the pipeline, and in Subsection B  
14 below I will discuss benefits related to diversity of supply.

15 ***1. Bi-Directional Service Increases Capacity Available to Meet***  
16 ***Pennsylvania Supply Needs***

17 **Q. Why do you say that the Bi-directional Service Extension will increase**  
18 **Laurel's capacity to meet Pennsylvania supply needs?**

19 A. I rely on Mr. Emery's testimony (Laurel Statement No. 4-R), which provides a  
20 detailed discussion of the operational basis for concluding that existing Bi-  
21 directional Service effectively increased the capacity of Line 718 and that the Bi-  
22 directional Service Extension will effectively increase Laurel's capacity on Lines  
23 720 and 724 to meet Pennsylvania supply needs to locations in central and eastern

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1 Pennsylvania. This increased capacity will benefit consumers by providing more  
2 competition and, therefore, lower prices.

3 **Q. How can bi-directional service, which does not involve increasing pumping**  
4 **capacity or pipe diameter, increase pipeline capacity?**

5 A. At a high level, the ability to supply refined product from both directions means  
6 that, from a capacity standpoint, the entire capacity of the pipeline in both directions  
7 could be used. For example, L724 to Mechanicsburg has a capacity of 300,000  
8 barrels per day (“bpd”) and the eastbound segment will have a capacity of 108,000  
9 bpd. Therefore, in theory, Laurel could deliver 408,000 to locations in and around  
10 Mechanicsburg. The L720 to Eldorado has a capacity of 264,000 bpd. Adding the  
11 east bound capacity to this figure means that in theory, Buckeye could deliver  
12 372,000 bpd under the current configuration. Therefore, extending bi-directional  
13 service increases capacity by approximately 10 percent. However, far more  
14 significant, the Bi-directional Service will allow this increased capacity to reach far  
15 more demand than it meets under current conditions.

16 **Q. Why do you say that this increased capacity will reach far more demand than**  
17 **it meets under current conditions?**

18 A. Currently, the expanded capacity associated with Existing Bi-directional Service  
19 reaches Eldorado, Pennsylvania via Line 718, which is a relatively sparsely-  
20 populated area. By contrast, Mechanicsburg and Sinking Spring are located in  
21 more densely-populated areas and are within a reasonable trucking distance of  
22 urban areas including the counties around Philadelphia.

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1 **Q. What is the relevance of Mechanicsburg and Sinking Spring being located**  
2 **within a reasonable trucking distance of urban areas?**

3 A. Unlike natural gas, which must be directly piped to the burner tip of the consumer,  
4 all refined product transported on Laurel must ultimately be trucked from a bulk  
5 terminal (*e.g.*, Mechanicsburg) to a service station where it is sold to the end-use  
6 consumer. While trucks can and sometimes do travel long distances (well over 100  
7 miles) from a bulk terminal, trucks more typically travel 75 to 100 miles. Therefore,  
8 if a terminal is located hundreds of miles from major consumption points, it is  
9 unlikely that terminal will routinely supply these major consumption points.

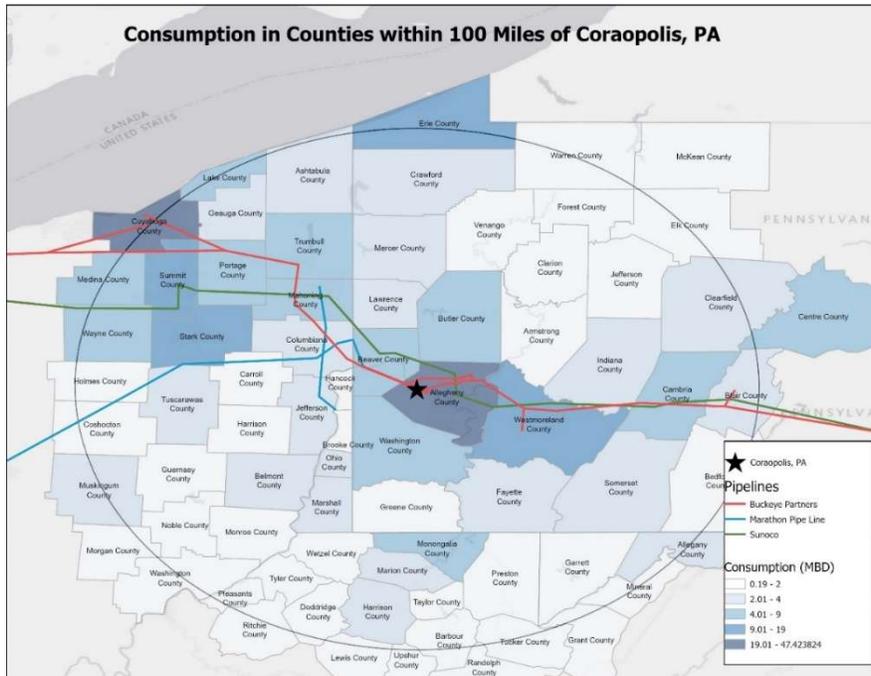
10 **Q. Have you developed information to approximate the consumption within a**  
11 **reasonable trucking distance of the terminals at issue in this proceeding?**

12 A. Yes. Using information developed by the EIA, I have calculated the consumption  
13 of pipelineable petroleum products by county. Laurel Exhibit No. MJW-09 shows  
14 the results of this calculation and contains the relevant workpapers.<sup>16</sup> In Maps 1-4  
15 below, I show the counties that are within 100 miles of Coraopolis, PA, Eldorado,  
16 PA; Mechanicsburg, PA; and Sinking Spring, PA.

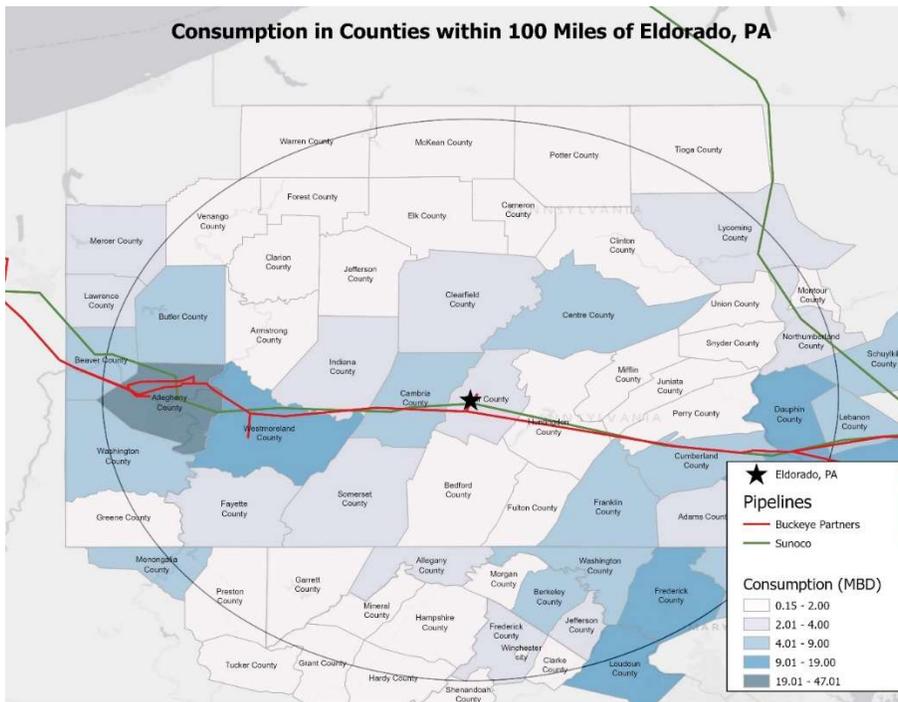
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<sup>16</sup> I have employed this methodology, and it has been accepted by the FERC to estimate pipelineable petroleum product consumption in every market-based rates proceeding in which I was a witness.

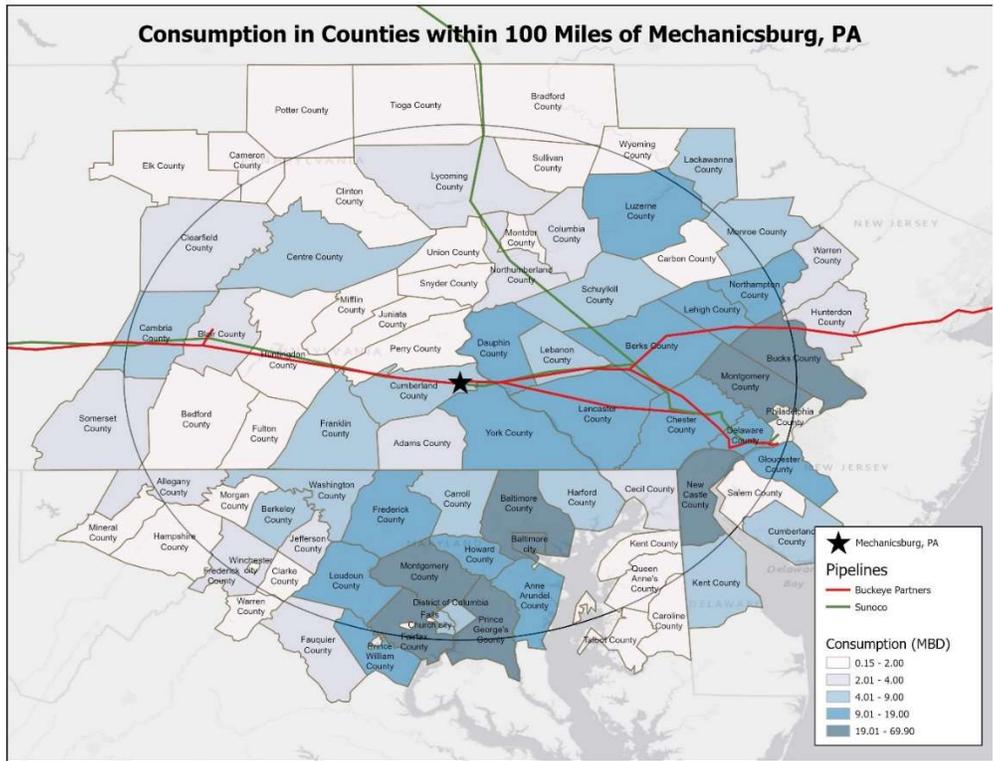
Map 1



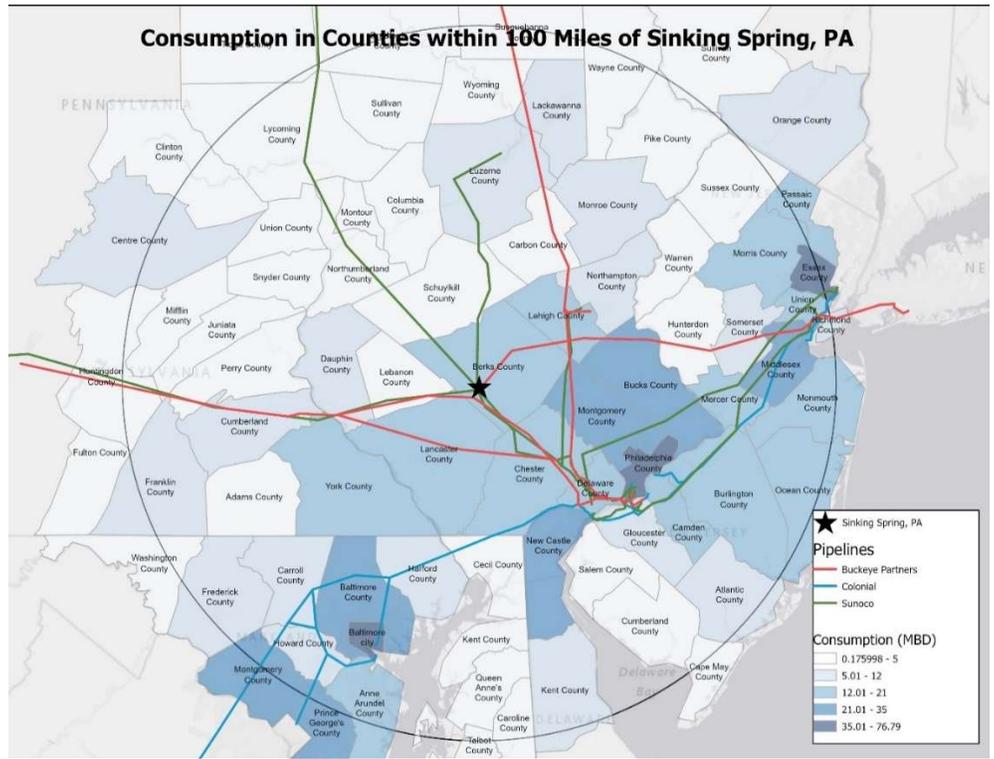
Map 2



Map 3



Map 4



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1 Within 100 miles of Coraopolis, there is approximately 255,300 bpd of  
2 consumption. Within 100 miles of Eldorado, there is approximately 206,000 bpd  
3 of consumption. Within 100 miles of Mechanicsburg, there is approximately  
4 558,300 bpd of consumption. Within 100 miles of Sinking Spring, there is  
5 approximately 700,600bpd of consumption. Consequently, the Bi-directional  
6 Service Extension will allow the expanded capacity to reach a far greater level of  
7 consumption.

8 **Q. Are you suggesting that the Bi-directional Service Extension would allow**  
9 **Laurel to supply 700,000 bpd of consumption?**

10 A. No. Even with the expanded capacity of bi-directional service, Laurel only has the  
11 ability to supply 408,000 bpd of consumption. Moreover, many of the locations  
12 within 100 miles of either terminal are more proximate to other sources of supply.  
13 For example, Philadelphia and the surrounding suburbs are within 100 miles of  
14 Mechanicsburg. I would not expect trucks to travel to this location on a routine  
15 basis because customers are more likely to meet their needs from one of the more  
16 proximate (and likely less expensive) options. However, it is plausible that the  
17 point at which consumers and/or retailers are indifferent between a Mechanicsburg  
18 barrel and a Philadelphia barrel would shift to the East. For example, currently  
19 Lancaster County is roughly half-way between Mechanicsburg and Philadelphia.  
20 If some point in Lancaster County represents the point of indifference, lower priced  
21 product from the Midwest could meet more of the needs to consumers in Lancaster  
22 County which consumes 18,970 bpd or 796,740 gallons per day. In other words,

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1 the Bi-directional Service Extension allows more Midwestern product to be  
2 delivered to terminals proximate to major consumption points.

3 **Q. Are there any other reasons why opening up areas of greater demand will**  
4 **benefit consumers?**

5 A. Yes. This greater capacity also increases competition. This point may be seen in a  
6 couple ways. First, a key element of antitrust and market-based rate analysis  
7 involves assessing capacity. The basic idea is that increased capacity enhances the  
8 competition available in a market. This is particularly true if the capacity is  
9 underutilized, as it is in this case. The second reason opening up areas of greater  
10 demand will benefit consumers may be seen by considering the number of supply  
11 sources able to reach Mechanicsburg and Sinking Spring via Laurel under current  
12 conditions and after the advent of the Bi-directional Service Extension. Currently,  
13 refined product may be supplied by Colonial pipeline, waterborne means, and four  
14 refineries owned by four different companies. After the advent of the Bi-directional  
15 Service Extension, two additional pipelines connected to the United States Gulf  
16 Coast, additional waterborne traffic, and 11 refineries owned by 8 different  
17 companies will be able to access demand in central and eastern Pennsylvania.  
18 Microeconomic theory teaches that this increased competition will put downward  
19 pressure on prices.

1 **Q. Is it necessary for these suppliers to actually supply refined product to**  
2 **Pennsylvania to put downward pressure on prices?**

3 A. No. Contestable market theory teaches that the mere threat of additional supply  
4 can be sufficient to restrain prices.<sup>17</sup> The basic logic of contestable market theory  
5 is that a supplier will not raise prices above the level that will cause a new supplier  
6 to enter the market and capture market share, assuming no barriers to entry.  
7 Consequently, a credible threat of entry typically promotes competitive prices.

8 **Q. Does Dr. Morris consider the possibility that the Bi-directional Service**  
9 **Extension will increase competition and reduce prices?**

10 A. No. Bizarrely, he suggests that allowing numerous additional refineries to have the  
11 ability to supply Central and Eastern Pennsylvania will result in higher prices.  
12 While this possibility might be examined if Laurel were seeking to fully reverse the  
13 line (where supply options would be eliminated), it makes no sense in the context  
14 of the Bi-directional Service Extension (where supply options will be increased).

15 **2. Diversity of Supply**

16 **Q. What is the relevance of a more robust supply chain?**

17 A. As became apparent in a variety of ways during and after the COVID-19 pandemic,  
18 a fragile supply chain can and does result in dramatic price increases during a  
19 supply disruption. In the context of the refined product market, relying on limited  
20 supply sources means that a disruption to one of these supply sources will cause a  
21 dramatic price increase.

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<sup>17</sup> See e.g. Baumol William J. “Contestable Markets: An Uprising in the Theory of Industry Structure” *The American Economic Review*. Vol. 72, No. 1 (Mar, 1982) pp. 1-15.

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1 **Q. How does the Bi-directional Service Extension create a more robust supply**  
2 **chain?**

3 A. Under current conditions, and those the Complainant Witnesses advocate  
4 maintaining indefinitely, consumers in Central Pennsylvania can receive gasoline  
5 produced at one of three refineries on the East Coast, and gasoline imported by  
6 water from overseas and delivered to the Philadelphia area from the Colonial  
7 pipeline. If one of these suppliers suffers a disruption, there will be insufficient  
8 supply to meet the needs of consumers on the East Coast, including those in central  
9 Pennsylvania. This lack of supply will cause substantial price increases.

10 **Q. Are you aware of any recent events that highlight the cost of a fragile supply**  
11 **chain?**

12 A. Yes. In 2021, the Colonial Pipeline was subject to a ransomware attack that  
13 disrupted its operations. Academic research suggests that this event caused prices  
14 on the East Coast to increase by \$0.04/gallon.<sup>18</sup>

15 **Q. How does the Bi-directional Service Extension decrease this fragility?**

16 A. Providing another supply source decreases the vulnerability associated with the  
17 failure of any one supply source. For example, if there were a disruption on  
18 Colonial, the Bi-directional Service Extension would provide a source of supply,  
19 either from the Midwest, or in theory from the Gulf Coast via Enterprise TE  
20 Products pipeline and Explorer pipeline, to supply gasoline into Central  
21 Pennsylvania. Moreover, this volume would be supplied directly to Central

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<sup>18</sup>Tsvetan Tsvetanov and Srishti Slaria, *The effect of the Colonial Pipeline shutdown on gasoline prices*, *Economic Letters*, Volume 209 (2021).

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1 Pennsylvania, meaning that the effects of any supply disruptions on Colonial would  
2 be more muted in Pennsylvania compared to other locations.

3 **Q. Have consumers of Pennsylvania benefited from the Existing Bi-directional**  
4 **Service in western Pennsylvania?**

5 A. Yes. As I will discuss in depth below, more than half the time volume in the  
6 Pittsburgh and El Dorado (or Altoona) markets have been supplied by the Midwest.  
7 Since it is reasonable to presume that suppliers in these locations were acting in  
8 their economic interest, and seeking to minimize costs, it is reasonable to presume  
9 that they purchased these volumes because they were less expensive. Had the  
10 Existing Bi-Directional Service not been available, the consumers of Western  
11 Pennsylvania would not have enjoyed these benefits.

12 **Q. Is it reasonable to believe that having access to multiple supply sources will**  
13 **increase competition in a manner that benefits consumers in central**  
14 **Pennsylvania?**

15 A. Yes. First, a well-accepted principle of economics holds that increasing the number  
16 of competitors results in a more competitive market, all-else equal.<sup>19</sup> For example,  
17 under the assumptions of Cournot competition, the price and quantity will approach  
18 the theoretical ideal of perfect competition as the number of competitors increases.  
19 For this reason, antitrust agencies typically place significant weight on the number  
20 of competitors before and after a merger. Specifically, a merger that decreases the  
21 number of competitors below a threshold such that prices are expected to increase

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<sup>19</sup> Viscuisi W. Kip *et al. Economics of Regulation and Antitrust* 4 ed. MIT Press (Cambridge) 2005 155-162.

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1 will typically be enjoined. Focusing on the specific facts of this case, allowing  
2 consumers in Central Pennsylvania to have access to refined product in the  
3 Midwest, while continuing to have access to refined product produced on the East  
4 Coast will place downward pressure on prices.

5 **Q. Why do you make this statement?**

6 A. As I discuss in depth in Section IV.B, where I respond to Dr. Morris's discussion  
7 of changes in market dynamics and specifically market efficiency, a number of  
8 highly sophisticated refineries operate in the Midwest. These refineries have access  
9 to price-advantaged crude oil and will have access to increasing quantities of price-  
10 advantaged crude oil. By contrast, the refineries on the East Coast are substantially  
11 less sophisticated and do not have access to price-advantaged crude oil that their  
12 Midwestern competitors do. Therefore, it is plausible, and indeed in my opinion  
13 likely, that Midwestern refiners will be able to supply refined product to central  
14 Pennsylvania at a lower price than their East Coast competitors. However, even if  
15 they do not actually supply lower priced refined product to central Pennsylvania,  
16 the additional competition will reduce the ability to East Coast suppliers to raise  
17 prices. Specifically, economic theory (and basic logic) teaches that rational  
18 companies will not raise their prices above the competitive level if doing so will  
19 cause them to lose business to a competitor. This is a basic reason why additional  
20 competitors act to discipline prices.

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1 **Q. Do you believe that consumers in Western Pennsylvania have benefited as a**  
2 **result of having access to multiple supply sources?**

3 A. Yes. For example, on June 21, 2019, an explosion occurred at the largest refinery  
4 on the East Coast, owned by Philadelphia Energy Solutions (“PES”), resulting in  
5 the refinery’s permanent closure. Shortly after this event Laurel began bidirectional  
6 service to El Dorado, increasing the supply of product to this location. Some of the  
7 demand served by this increased supply was likely supplied by the PES refinery  
8 prior to the shutdown. Had Existing Bi-Directional Service not been initiated  
9 consumers previously served by the PES refinery would have been forced to pay  
10 higher prices to meet their supply needs.

11 **E. Conclusion**

12 **Q. If the Commission were to determine that Laurel needed to obtain a certificate,**  
13 **or a modification to its existing certificate, do you believe that there is**  
14 **sufficient evidence to support a conclusion that such a modification would be**  
15 **in the public interest?**

16 A. Yes. The benefits of the Bi-directional Service Extension are obvious. Consumers  
17 in a much broader area of Pennsylvania will have access to refined product sourced  
18 from whatever supply is cheaper, and they will have the benefit of diversity of  
19 supply. Moreover, while the Complainant Witnesses allege various harms, they  
20 have not actually shown that any of these harms have occurred, which I discuss in  
21 detail in the remaining sections of my testimony. Consequently, the public interest  
22 clearly supports allowing the Extension of Bi-Directional Service to proceed. It

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1 will generate substantial public benefits and the Complainants have failed to  
2 demonstrate harms offsetting those benefits will result.

3 **III. DR. MORRIS’S TESTIMONY IS LARGELY IRRELEVANT AND AT TIMES**  
4 **MISLEADING**

5 **Q. Have you reviewed the testimony of Dr. Morris?**

6 A. Yes. In this section of my testimony, I discuss my review of Sections III-V of Dr.  
7 Morris’s testimony (Complainants Exhibit JRM-1), which discusses supposed  
8 changes to the petroleum market that have occurred since 2018 as well as his  
9 misleading representations of westbound throughput patterns. In the next section  
10 of my testimony, I address Dr. Morris’s claims in Section VI of his testimony  
11 (Complainants Exhibit JRM-1) that the Bi-directional Service Extension will harm  
12 consumers.

13 **Q. Does Dr. Morris’s testimony contain any over-arching flaws?**

14 A. Yes. Throughout his testimony, Dr. Morris seeks to demonstrate that Laurel’s  
15 proposal will result in higher prices to Pennsylvania consumers. This suggestion is  
16 patently illogical. The Bi-directional Service Extension would cause the number  
17 of suppliers with the ability to supply refined product to Pennsylvania consumers  
18 to increase. The most basic microeconomic theory teaches that increased  
19 competition leads to reduced prices all else equal.<sup>20</sup> While Dr. Morris does not, and  
20 cannot, challenge this basic concept, he presents numerous analyses that seek to  
21 obscure this fact. These analyses are irrelevant and for this reason Dr. Morris’s

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<sup>20</sup> See Varian Hal R. *Intermediate Microeconomics: A Modern Approach* 4 ed. W.W Norton (New York) 1996 at 5-18 and 317-331. See also Viscusi W. Kip *et al. Economics of Regulation and Antitrust* 4 ed. MIT Press (Cambridge) 2005 155-162.

1 testimony should be disregarded as irrelevant. I would also note that the [BEGIN  
2 HIGHLY CONFIDENTIAL] [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] [END HIGHLY  
7 CONFIDENTIAL] directly contradicting Dr. Morris’s testimony. Furthermore,  
8 increasing bi-directional service will increase supply options, which again benefits  
9 consumers, a fact that Dr. Morris conveniently ignores.

10 **Q. Aside from being irrelevant, are there other flaws in Dr. Morris’s testimony?**  
11 A. Yes. In several cases he presents data in a way that is misleading. For example,  
12 Figure 5 in Complainants Exhibit JRM-1 purports to show that imports into PADD  
13 I (*i.e.*, the East Coast) have stabilized in recent years.<sup>21</sup> However, this figure  
14 combines imports of both refined petroleum products, which are transported on the  
15 Laurel pipeline, and crude oil, which is not transported on Laurel pipeline. Figures  
16 3 and 4, below, reflect refined product and crude oil separately.

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<sup>21</sup> PADD is an acronym for Petroleum Administrative Defense District. The United States is divided into five PADDs, with PADD I encompassing the East Coast and PADD II encompassing the Midwest.

Figure 3

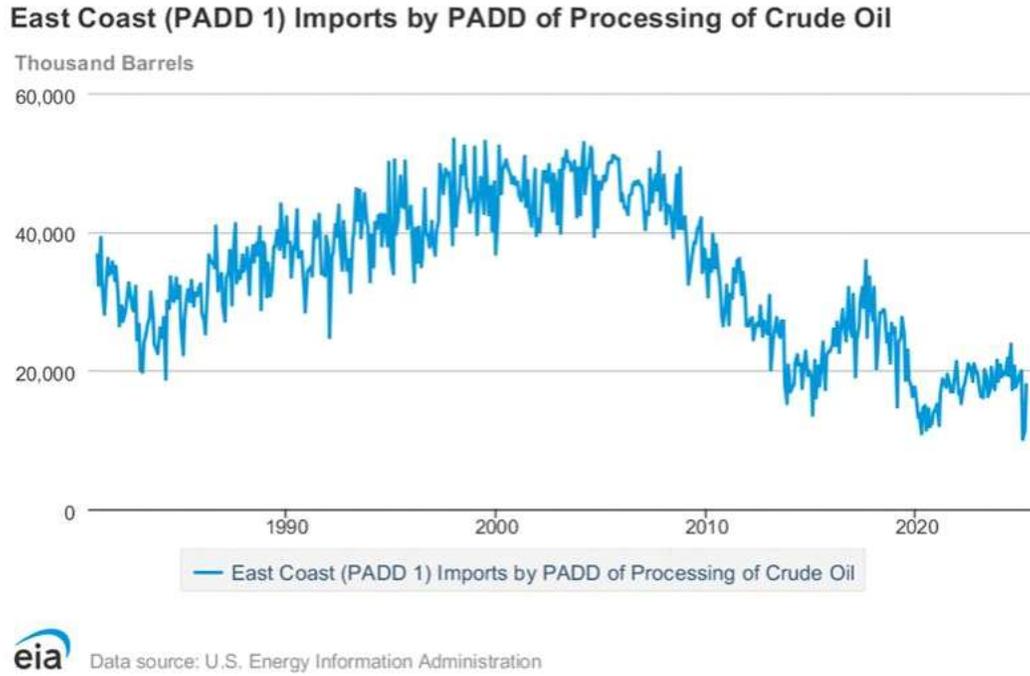
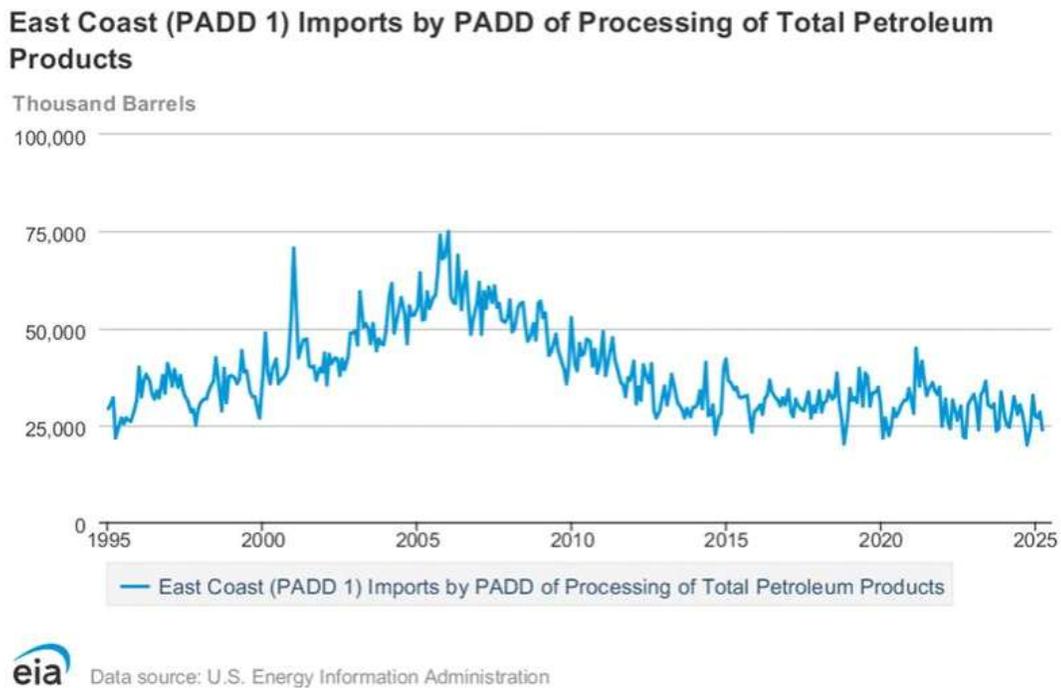


Figure 4



1 In contrast to Dr. Morris’s combined figure, once refined petroleum products and  
2 crude oil imports are properly segregated, these figures show that crude oil imports

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1 have been persistently declining for years, while refined product imports have  
2 remained stable for years. This is relevant because the continued decline in crude  
3 oil imports in PADD I is consistent with the belief of Buckeye and the Midwestern  
4 shippers that production of refined product on the East Coast has been declining  
5 and will continue to decline. Dr. Morris is only able to generate the appearance of  
6 recent stabilization by combining crude and refined product imports. He uses this  
7 false appearance of recent stabilization to suggest that the Bi-directional Service  
8 Extension is unnecessary.

9 **Q. How have you organized this next section of your response to Dr. Morris?**

10 A. In this section of my testimony, I respond to Dr. Morris's discussion of changes in  
11 the petroleum market.<sup>22</sup> His discussion contains basic errors and presents material  
12 in a misleading way. To facilitate an understanding of why his presentation is  
13 misleading, in Subsection A, I discuss how gasoline prices emerge.<sup>23</sup> In Subsection  
14 B, I explain why the crude oil supply changes presented by Dr. Morris are irrelevant  
15 and presented in a misleading manner.<sup>24</sup> In Subsection C, I explain why his analysis  
16 of westbound movements and suggestion that westbound movements are increasing  
17 is flawed and misleading.<sup>25</sup>

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<sup>22</sup> Complainant Exhibit JRM-1 at 24:1-45:15.

<sup>23</sup> Complainant Exhibit JRM-1 at 24:1-45:15.

<sup>24</sup> Complainant Exhibit JRM-1 at 24:1-45:15.

<sup>25</sup> Complainant Exhibit JRM-1 at at 46:1-56:6

1       **A.     Gasoline and Diesel Price Formation**

2       **Q.     In Section III of his testimony does Dr. Morris examine the economic basis of**  
3       **the price of gasoline and diesel?**

4       A.     No. Nearly all of his discussion of the changes that have occurred in the petroleum  
5       market revolve around changes in the crude petroleum market. This discussion is  
6       irrelevant because Dr. Morris makes no connection between changes to the crude  
7       petroleum market and the refined petroleum product that Laurel actually transports.  
8       It is possible that Dr. Morris is trying to claim that because increases in crude oil  
9       production in areas that typically supply the Midwest refineries have stabilized, the  
10      price advantage that Midwestern refineries had in the past will decrease, meaning  
11      that Midwestern refined product will have less of a price advantage. If Dr. Morris  
12      is making this argument, he is employing overly simplified assumptions regarding  
13      the mechanisms by which gasoline and diesel prices are formed.

14     **Q.     Why do you say he is employing overly simplified assumptions regarding**  
15     **gasoline and diesel price formation?**

16     A.     Dr. Morris seems to assume that the price of gasoline and diesel fuel is simply a  
17     function of the price of the crude oil used to refine it. While it is true that the price  
18     of crude oil is a major factor in determining the price, focusing the entire analysis  
19     on this factor, as Dr. Morris does, is an error. To understand this error in depth, it  
20     is useful to begin with the basic principles of price formation.

21     **Q.     What are the basic principles of price formation?**

22     A.     As a general matter, the price in a competitive market is determined by the marginal  
23     cost of the marginal supplier. In practical terms, this means that the price will be

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1 set by the marginal cost of the most expensive supplier who is still able to supply a  
2 given market. In some cases, economic forces will drive all costs close together.  
3 In other cases, differences in cost will mean that more efficient suppliers will earn  
4 higher profits, particularly from an accounting perspective.<sup>26</sup>

5 **Q. Could you provide an example?**

6 A. Yes. Suppose that the demand for gasoline in a given location is 100,000 gallons  
7 per day. Imagine that four suppliers, A, B, C, and D each have the ability to supply  
8 40,000 gallons per day. Next, imagine that A's cost to supply gasoline is  
9 \$2.50/gallon, B's cost to supply gasoline is \$2.75/gallon, C's cost to supply  
10 gasoline is \$3.00/gallon, and D's cost to supply gasoline is \$3.25/gallon. In this  
11 example, A and B would supply 40,000 gallons and C would supply 20,000  
12 gallons.<sup>27</sup> Since these three suppliers have sufficient supply to supply the market,  
13 supplier D would not supply any volume. In this example, supplier C is the  
14 marginal supplier.

15 **Q. What price would prevail in this example?**

16 A. In this case, supplier C is the marginal supplier. Supplier C's marginal cost is \$3.00  
17 so the market clearing price in this example would be \$3.00 per gallon. In this case,  
18 the costs of the less expensive, or inframarginal suppliers, are not relevant to

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<sup>26</sup> From an economic perspective, the foregone revenue that a more efficient producer lost by not leasing or in some way receiving compensation for their more efficient abilities represents an economic cost that should be used to reduce economic profit. For example, if the price of corn is set by the farmer with the least productive land, a farmer with more productive land could have leased their land to this farmer. In theory, revenue of this lease would generate additional profits equal to those earned by the more efficient farmer could have earned, thereby eliminating his economic profits. Since the terms of the hypothetical mean that the farmer does not earn profits associated with this lease, they are foregone and represent an opportunity cost, but not an accounting cost.

<sup>27</sup> Since Supplier C is the marginal supplier, they will not supply the entire amount of which they are capable of supplying.

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1 determining the price of gasoline. These inframarginal suppliers will sell gasoline  
2 and earn additional profits relative to the profits of supplier C. Indeed, the  
3 possibility of earning these extra profits are a reason why firms invest in cost-saving  
4 technology.

5 **Q. Would Supplier D have an incentive to sell gasoline for a price of \$3.00 or less**  
6 **in order to participate in the market?**

7 A. No. By assumption, it costs supplier D \$3.25 to produce a gallon of gasoline.  
8 Therefore, selling gasoline for a price of \$3.00 or less per gallon would cause  
9 supplier D to lose money.

10 **Q. What could cause different suppliers to have different marginal costs in**  
11 **supplying gasoline to a specific location?**

12 A. There are many reasons why different suppliers might have different cost  
13 structures. First, and consistent with Dr. Morris’s testimony, crude oil produced in  
14 different basins sometimes sells for a different price.<sup>28</sup> Therefore, a refinery located  
15 near a basin where crude oil sells at a lower price will have a lower cost of  
16 production compared to other refiners. However, there are many reasons beyond  
17 the one issue raised by Dr. Morris. For example, heavier more “sour” crude tends  
18 to sell for a discount.<sup>29</sup> Therefore, if supplier A and B in our example have the  
19 ability to process this discounted crude oil, their marginal cost would be lower than

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<sup>28</sup> See e.g. Complainant Exhibit JRM-1 at 44:1-3.

<sup>29</sup> The heaviness of crude oil describes its viscosity. Viscosity is a function of the number of long-chain hydrocarbons in the crude oil. These long-chain hydrocarbons require more sophisticated refining equipment to process. Sour crude contains relatively more hydrogen-sulfide compared to sweet crude. Processing sour crude can result in sulfuric acid which can damage refineries without the proper equipment to handle it. As a result, heavy sour crude can only be processed at relatively sophisticated refineries compared to light sweet crude which can be processed at most, if not all, refineries. Thus, heavy sour crude sells at a discount compared to light sweet crude.

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 other suppliers, such as C, who are using more expensive crude oil. Another reason  
2 product might have different prices involves the location at which it is delivered.  
3 For example, if Suppliers A and B were transporting product a relatively short  
4 distance to the point of consumption while Supplier C is transporting product a  
5 longer distance the marginal cost of Supplier C may be higher. In focusing his  
6 analysis on changes to crude oil prices, Dr. Morris ignores these other factors. By  
7 ignoring these other factors, Dr. Morris fails to recognize the benefits that the  
8 expansion of bi-directional service would create.

9 **Q. Why do you say Dr. Morris fails to recognize the benefits that bi-directional**  
10 **service would create?**

11 A. Because he focuses his analysis on supposed changes to the crude oil market, he  
12 fails to recognize other ways in which the Bi-directional Service Extension could  
13 lead to lower prices for consumers. To illustrate by continuing the example above,  
14 if the Bi-directional Service Extension allowed additional suppliers into the market,  
15 and if these suppliers could supply at least 20,000 gallons of gasoline per day at a  
16 price of less than \$3.00 per gallon, the price to consumers would fall. Because Dr.  
17 Morris ignores the way prices are actually set, focusing instead solely on the crude  
18 oil market, his testimony fails to recognize this reality, and attempts to create the  
19 impression that bi-directional service will not bring benefit to consumers in  
20 Pennsylvania. Moreover, his testimony regarding changes to the crude oil market  
21 contains basic errors of fact and presents information in a misleading fashion.

1           **B.     Dr. Morris’s Crude Supply Analysis Is Flawed**

2   **Q.     Setting aside its incompleteness, does Dr. Morris’s analysis of changes in the**  
3           **crude oil market provide useful information for this Commission?**

4   A.     No. For example, he spends several pages suggesting that the stabilization of  
5           deliveries of Canadian crude oil is inconsistent with Laurel’s claims of “growing  
6           demand for eastward shipments of petroleum products.”<sup>30</sup> He makes a similar claim  
7           when he notes production from the Bakken has declined since 2019.<sup>31</sup> He uses this  
8           and other facts to support his claims that Midwestern refined product will not have  
9           the price advantage it has historically enjoyed.<sup>32</sup> However, several elements of Dr.  
10          Morris’s analysis are flawed and reflect a lack of understanding of the crude oil  
11          market.

12   **Q.     What is the first flaw in Dr. Morris’s analysis?**

13   A.     He suggests that because increases in Canadian crude imports to the Midwest have  
14          been flat in 2024 and 2025 it will remain flat going forward. However, he overlooks  
15          two facts that suggest low priced Canadian crude will increase in the Midwest.  
16          First, the owner of the primary pipeline transporting Canadian crude oil to the  
17          Midwest, Enbridge, stated on a May 9, 2025 earnings call, “Our Mainline delivered  
18          record first-quarter volumes of almost 3.2 million barrels per day.”<sup>33</sup> The Enbridge  
19          Mainline delivers crude oil to the Midwest. Enbridge has also stated that that it is

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<sup>30</sup> Complainants Exhibit No. JRM-1 at 35:4-8.

<sup>31</sup> Complainants Exhibit No. JRM-1 at 38:1-7.

<sup>32</sup> Complainants Exhibit No. JRM-1 at 44:4-45:5.

<sup>33</sup> Quoted in <https://www.enbridge.com/stories/2025/june/enbridge-liquids-pipelines-record-volumes-growth-expansion-plans> (accessed on August 8, 2025).

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1 executing incremental and quick to market initiatives including “[a]bout 300,000  
2 barrels per day of visible expansion capacity ... on our Mainline system...”<sup>34</sup> In  
3 other words, the primary pipeline company supplying Canadian crude oil to the  
4 Midwest is making investments to expand delivery of this relatively inexpensive  
5 crude oil to the refineries producing the refined petroleum products that will move  
6 into Central Pennsylvania via Existing Bi-directional Service and the Bi-directional  
7 Service Extension, a fact that Dr. Morris ignores. Dr. Morris also ignores the fact  
8 that the Canadian government projects that crude oil production will continue to  
9 increase.<sup>35</sup> This oil will likely flow at least in part on the Enbridge Mainline and  
10 will continue to provide low priced oil to Midwestern refiners seeking to move  
11 refined product on Laurel.

12 **Q. Is Dr. Morris correct that with the commencement of service on the Trans**  
13 **Mountain pipeline, the Canadian crude market has become more integrated**  
14 **into the world crude oil market?**<sup>36</sup>

15 A. Yes. However, he misinterprets the significance. Specifically, Trans Mountain  
16 allows more Canadian crude oil to flow west for shipment overseas. This crude oil  
17 will command something closer to a world or Brent price compared to the typically  
18 discounted Canadian prices. However, basic economic theory demonstrates that  
19 the higher price for oil sold on the Canadian West Coast is unlikely to materially  
20 raise the price of oil sold in Canada or in the Midwest.

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<sup>34</sup> *Id.*

<sup>35</sup> *Exploring Canada’s Energy Future*, Canada Energy Regulator, <https://apps2.cer-rec.gc.ca/energy-future/>  
(last accessed August 19, 2025)

<sup>36</sup> Complainant Exhibit JRM-1 at 34:2-7.

1 **Q. Why will higher prices on the Canadian West Coast have little impact on the**  
2 **price of oil sold in Canada or the Midwest?**

3 A. As discussed above, price is set by the marginal cost of the marginal supplier. In  
4 this context, the selling price in Canada will be set by the lowest “netback” that still  
5 clears the market. A netback represents the price at which oil is sold after  
6 accounting for the cost to transport it to the point of sale. For example, if oil in  
7 Vancouver sells for \$80/barrel and it costs \$10/barrel to transport it from Alberta  
8 to Vancouver the netback in Alberta where the oil is produced would be \$70.  
9 Because Trans Mountain only has expanded capacity for approximately 900,000  
10 bpd of the over 4 million barrels produced in Western Canada it is unlikely that the  
11 world price will become the marginal netback that sets the price of Canadian  
12 barrels. Typically, the price of oil in Canada is set by the netback obtained by  
13 transporting crude to the United States by rail, which is usually the most expensive  
14 transportation mode used to clear the production fields.<sup>37</sup> Canadian oil continues to  
15 trade at a significant discount to crude oil at other locations. Since a substantial  
16 quantity of crude oil is still being transported out of Canada by rail it is reasonable  
17 to conclude that crude by rail continues to represent the marginal supply and to set  
18 the price.<sup>38</sup>

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<sup>37</sup> See reports of the Canadian Energy Regulator at <https://www.rec-cer.gc.ca/en/data-analysis/energy-markets/market-snapshots/2024/market-snapshot-annual-crude-by-rail-volumes-continued-to-decline-in-2023-despite-monthly-increases-in-second-half-of-the-year.html?=&wbdisable=true> (last accessed August 20, 2025).

<sup>38</sup> See <https://www.cer-rec.gc.ca/en/data-analysis/energy-commodities/crude-oil-petroleum-products/statistics/canadian-crude-oil-exports-rail-monthly-data.html> (last accessed August 8, 2025).

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 **Q. Is Dr. Morris correct that there has been a significant increase in crude oil**  
2 **production in the Permian Basin?**

3 A. Yes. However, his conclusion that “refineries can use low-cost Texas oil” which  
4 can be refined into products then “[v]ia the Colonial pipeline ... can be shipped to  
5 Philadelphia” is erroneous.<sup>39</sup>

6 **Q. Why is his conclusion erroneous?**

7 A. His conclusion is erroneous for at least two reasons. First, the refineries connected  
8 to Colonial are all located on the United States Gulf Coast and many can be supplied  
9 by water. This fact means that a barrel produced in West Texas and transported to  
10 the Gulf Coast will trade at a world price, which is typically well above the price at  
11 which crude oil located in the Midwest sells. Dr. Morris’s suggestion that increases  
12 in oil production in Texas will result in low-cost oil supplying refineries connected  
13 to Colonial reflects a basic ignorance of economics and the oil market. If a refinery  
14 in Houston demanded a discount for oil produced in West Texas, the producer of  
15 that oil would simply load the oil on a ship and transport it overseas to receive the  
16 higher world price. Second, even if Texas oil were somehow selling at a discount,  
17 the Colonial pipeline has been full for many years.<sup>40</sup> Therefore, additional cheaper  
18 barrels produced with hypothetically low-cost Texas oil cannot come to  
19 Philadelphia.

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<sup>39</sup> Complainant Exhibit JRM-1 at 40:17-20.

<sup>40</sup> *Colonial Line Space Moves Positive Amid Allocation*, Argus, October 25, 2021, available at <https://www.argusmedia.com/en/news-and-insights/latest-market-news/2263837-colonial-line-space-moves-positive-amid-allocation> (last accessed August 25, 2025); *Fitch Affirms Colonial Enterprises Inc. at ‘A-’: Outlook Stable*, FitchRatings, May 17, 2024, available at <https://www.fitchratings.com/research/corporate-finance/fitch-affirms-colonial-enterprises-inc-at-a-outlook-stable-17-05-2024> (last accessed August 25, 2025).

1 **Q. Do you agree with Dr. Morris’s conclusion that Midwestern crude oil prices**  
2 **are closely connected to global crude oil prices?**<sup>41</sup>

3 A. No. His own Figure 13 demonstrates that this statement is false.<sup>42</sup> Specifically, it  
4 shows that in every year since the Broadway 2 expansion, Midwestern crude oil has  
5 traded at a significant discount to global crude oil. Specifically, his chart shows that  
6 West Texas Intermediate or “WTI” which represents a standard Midwestern crude  
7 oil barrel traded at a discount of \$2-\$5 compared to a Brent barrel or standard global  
8 barrel. North Dakota barrels traded at a discount ranging from \$6 to over \$10  
9 compared to Brent. A discount of this magnitude clearly shows that Midwestern  
10 crude oil prices are not connected to global crude oil prices.

11 **Q. Do you agree with Dr. Morris’s conclusion on page 45 of his testimony that the**  
12 **stated rationale for the Bi-directional Service Extension is not supported by**  
13 **changes in the North American petroleum market?**

14 A. No. Canadian oil production is projected to increase, and Midwestern crude oil  
15 continues to trade at a material discount to global oil prices. Moreover, the fact that  
16 Midwestern refiners are willing to enter into commitments to support the capital  
17 necessary to effectuate the advent of the Bi-directional Service Extension  
18 demonstrates that they believe there will be sufficient demand to justify this project.  
19 However, as I discuss in Section II, if Buckeye and these refiners are incorrect in  
20 their assessment, they will bear the cost. In other words, if Dr. Morris is correct  
21 that the Bi-directional Service Extension is not supported by the current (or future)

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<sup>41</sup> Complainant Exhibit JRM-1 at 42:12-44:2.

<sup>42</sup> Complainant Exhibit JRM-1 at 44:1-2.

1 state of the North American petroleum market, then neither Laurel’s intrastate  
2 shippers nor the consumers of Pennsylvania will suffer any harm.

3 **C. Claims that Westbound Supply Is Increasing Are Misleading**

4 **Q. Does this fact have any relevance with regard to the next two sections of Dr.**  
5 **Morris’s testimony?**

6 A. Yes. In the next two sections of his testimony, Dr. Morris discusses westbound  
7 shipments on Laurel and his claim that shippers intend to continue to make use of  
8 Laurel to ship west for years to come. Even if Dr. Morris’s conclusions were  
9 correct, they would be completely irrelevant. The Bi-directional Service Extension  
10 involves the initiation of additional west-to-east interstate service over additional  
11 segments of the Laurel pipeline system, while maintaining existing east-to-west  
12 intrastate service over those same segments. The Bi-directional Service Extension  
13 does not fully reverse service or cause east-to-west intrastate service to cease. Thus,  
14 shippers will have the ability to ship barrels west in the future, and the Bi-  
15 directional Service Extension makes no changes to Laurel’s obligations to provide  
16 intrastate east-to-west service. However, I also do think it is important to note that  
17 in supporting his conclusions, Dr. Morris uses this data to make a strawman  
18 argument and he presents data in a misleading way.

19 **Q. Why do you say Dr. Morris makes a strawman argument?**

20 A. In Section IV of his testimony, Dr. Morris shows various presentations of the total  
21 shipments of Petroleum Products to the Pittsburgh and Altoona markets in Figures

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1 14-17.<sup>43</sup> He asserts that this shows that eastern shipments continue to constitute a  
2 significant fraction of the total shipped to these markets. While this is true, these  
3 same figures also show that **more than half** of the product shipped to these markets  
4 comes from the west rather than the east. Rather than acknowledge this fact, Dr.  
5 Morris states that “[i]f western petroleum products were more economic, then  
6 100% of the supplies to Altoona would come from the west.”<sup>44</sup> If Laurel were  
7 seeking to reverse the line, I would agree that noting barrels continue to come from  
8 the East would be relevant. However, the Bi-directional Service Extension does  
9 not eliminate the ability of shippers to reach these markets via pipeline from the  
10 East. Thus, Dr. Morris is simply presenting a strawman argument that is irrelevant  
11 to the Bi-directional Service Extension. More importantly, he fails to recognize  
12 what the data does show.

13 **Q. Why do you say he fails to recognize what the data does show?**

14 A. As noted, he fails to recognize that the data he relies upon shows that more than 50  
15 percent of the time, shippers preferred to source barrels from the west. Presumably  
16 they had this preference because it was more economical to source barrels 50  
17 percent of the time. As such, consumers in Western Pennsylvania benefited from  
18 this more economical sourcing 50 percent of the time, meaning, it would be  
19 reasonable to extend this benefit to consumers in Central and Eastern Pennsylvania.  
20 However, Dr. Morris proposes to deny consumers this benefit because barrels

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<sup>43</sup> Complainant Exhibit JRM-1 at 47:2-51:1.

<sup>44</sup> Complainants Exhibit No. JRM-1 at 51:6-8.

1 sourced from the west are not preferred 100 percent of the time. His conclusion is  
2 illogical and harms consumers.

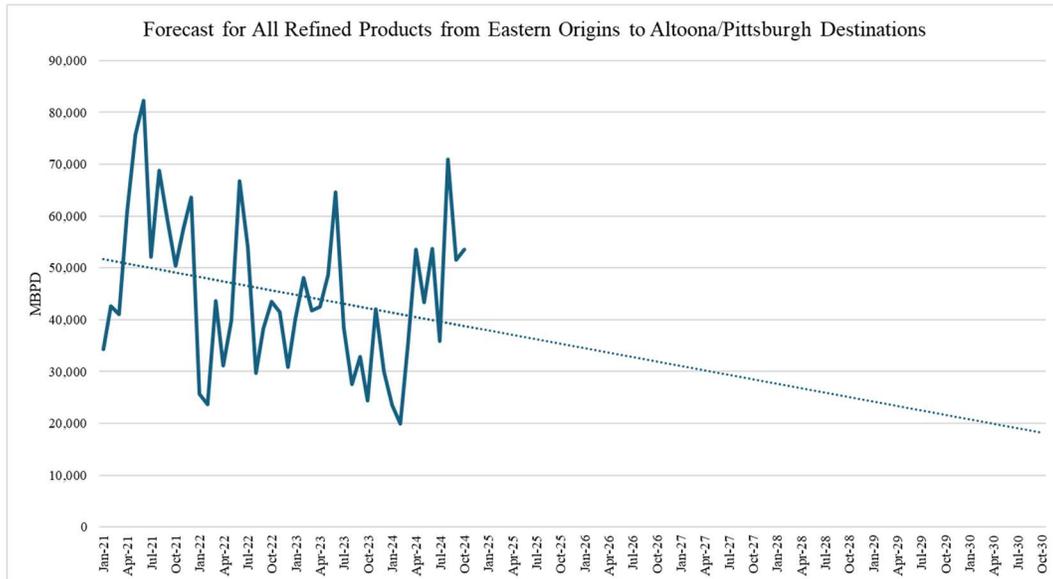
3 **Q. Why do you say Dr. Morris presents the data in a misleading way?**

4 A. Figure 18 in Dr. Morris’s testimony claims to show gasoline volumes from Eastern  
5 origins to Altoona and Pittsburgh have increased since 2019 and are projected to  
6 continue to increase. This presentation is misleading because it focuses only on  
7 gasoline. However, Laurel moves both gasoline and distillate. In my opinion,  
8 presenting only gasoline is misleading.

9 **Q. Have you replicated Figure 18 in a way that addresses this flaw?**

10 A. Yes. In Figure 5 below, I relied on the same data as Dr. Morris, but reflected all  
11 products rather than limit the presentation to gasoline. I also began the analysis in  
12 January 2021 to eliminate any impact of the COVID-19 pandemic.

**Figure 5<sup>45</sup>**



<sup>45</sup> Data obtained from LAU00000271.

1 **Q. What conclusions do you draw from this analysis?**

2 A. If the volume trends of the past five years hold, more and more demand in Western  
3 Pennsylvania will be met by Midwestern refineries. In my opinion, there is a  
4 material probability that all demand will be met by Midwestern refineries. For this  
5 reason, it is reasonable to extend the benefits these consumers are already receiving  
6 to consumers in central and eastern Pennsylvania. Furthermore, even if demand for  
7 barrels produced on the East Coast holds steady or slightly increases as the shippers  
8 and consumers will continue to benefit from additional supply sources.

9 **IV. DR. MORRIS’S DISCUSSION OF HARM IS IRRELEVANT AND SPECULATIVE**

10 **A. Introduction**

11 **Q. Do you agree with Dr. Morris’s analysis of potential harm to shippers, refiners,  
12 and customers contained in Section VI of his testimony?**

13 A. No. Dr. Morris’s analysis rests on several flawed assumptions. First, most of Dr.  
14 Morris’s analysis assumes that product from the Midwest will be more expensive  
15 than product from the East Coast, and that this will cause consumers in  
16 Pennsylvania to pay higher prices. As discussed above, this assumption ignores the  
17 fact that Laurel is not proposing a full reversal, but is only proposing to extend bi-  
18 directional service, is inconsistent with economic theory and is inconsistent  
19 **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]

20 **[REDACTED]** **[END HIGHLY CONFIDENTIAL]**. Second, as I will discuss  
21 in the next subsection, Dr. Morris employs an incomplete definition of economic  
22 efficiency that causes him to ignore the benefits that this project will bring to

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1 consumers. Finally, as I will discuss in Subsection C, Dr. Morris employs a pricing  
2 model that is inconsistent with reality.

3 **Q. Do you address the specific harms that Dr. Morris alleges Laurel’s proposal**  
4 **will cause to various parties in the Commonwealth of Pennsylvania?**

5 A. Yes. In Subsection D, I explain why Dr. Morris’s analysis of consumer impact  
6 lacks foundation. In Subsection E, I explain why Dr. Morris’s discussion of  
7 operational issues is speculative and irrelevant. In Subsection F, I explain why Dr.  
8 Morris’s discussion of harm to shippers is speculative and inconsistent with  
9 economic theory. In Subsection G, I explain that Dr. Morris’s discussion of harm  
10 that he alleges refineries will endure if adopted would actually promote an  
11 anticompetitive outcome. Finally, in Subsection H, I explain that Dr. Morris’s  
12 analytical framework ignores economic theory and principles of sound public  
13 policy. For all of these reasons, I recommend the Commission reject Dr. Morris’s  
14 conclusions that the Bi-directional Service Extension will result in harm to the  
15 public interest in Pennsylvania. As I discuss in Section VI of my testimony, I  
16 believe the evidence strongly supports the conclusion that the Bi-directional  
17 Service Extension will benefit the public interest in Pennsylvania.

1           **B.     Dr. Morris’s Analysis of Efficiency is Incomplete**

2   **Q.     How does Dr. Morris define economic efficiency in the context of this case?**

3   A.     He states, “[t]he economically efficient use of the pipeline system by shippers  
4           minimizes the combined cost of supply and transportation.”<sup>46</sup> This definition  
5           appropriately captures some aspects of economic efficiency but is incomplete.

6   **Q.     How is this definition incomplete?**

7   A.     Economic efficiency is typically defined as maximizing the total resources  
8           available to society for the lowest total expenditure of resources. Therefore,  
9           minimizing the combined cost of supply and transportation is one aspect of  
10          economic efficiency. However, economic efficiency involves more than simply  
11          minimizing supply and transportation costs. For example, as I will demonstrate  
12          below, the Laurel pipeline currently has substantial excess capacity. Finding ways  
13          to use this excess capacity increases economic efficiency by increasing the use of  
14          resources, in this case existing pipeline capacity, for little, if any, cost. In addition,  
15          as I discussed above, having multiple supply sources decreases the risk that  
16          consumers will incur substantial costs during a cost disruption. In essence, the Bi-  
17          directional Service Extension acts as an insurance policy. For the same reason that  
18          driving a car without insurance may minimize immediately identifiable costs, it is  
19          likely inefficient because such behavior ignores the probabilistic cost of an  
20          accident. When accounting for the cost of an accident times the probability of an  
21          accident occurring, having car insurance is likely cost effective. For the same  
22          reason, Dr. Morris’s focus on minimizing supply and transportation costs ignores

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<sup>46</sup> Complainant Exhibit JRM-1 at 57:10-11.

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1 other costs and benefits that would arise in a more complete definition of economic  
2 efficiency.

3 **Q. Is there significant unused capacity on Laurel?**

4 A. Yes, there is substantial excess capacity. There are three line segments between  
5 Sinking Spring and Pittsburgh: Lines segments 724 (serving the area between  
6 Sinking Spring and Mechanicsburg), 720 (serving the area between Mechanicsburg  
7 and Eldorado), and 718 (serving the area between Eldorado and Coraopolis).  
8 According to Mr. Zeth: L724 has a capacity of 300,000 bpd; L720 has a capacity  
9 of 264,000 bpd; and L718 has a capacity of 180,000 bpd.<sup>47</sup> To calculate excess  
10 capacity deliveries on each line segment compared to the capacity as shown in  
11 Figures 6-8, below. Since L718 can receive volumes from either the east or the  
12 west, I combined deliveries in either direction. I would also note that since this  
13 analysis only focuses on physical movements (*i.e.*, it ignores swaps) it is  
14 conservative in the sense that it understates available capacity.

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<sup>47</sup> I would note that pipeline capacity is an approximate figure as it depends on precise conditions including the product composition. This figure represents the capacity used for allocation purposes.

Figure 6: Line 724 Volumes and Capacity

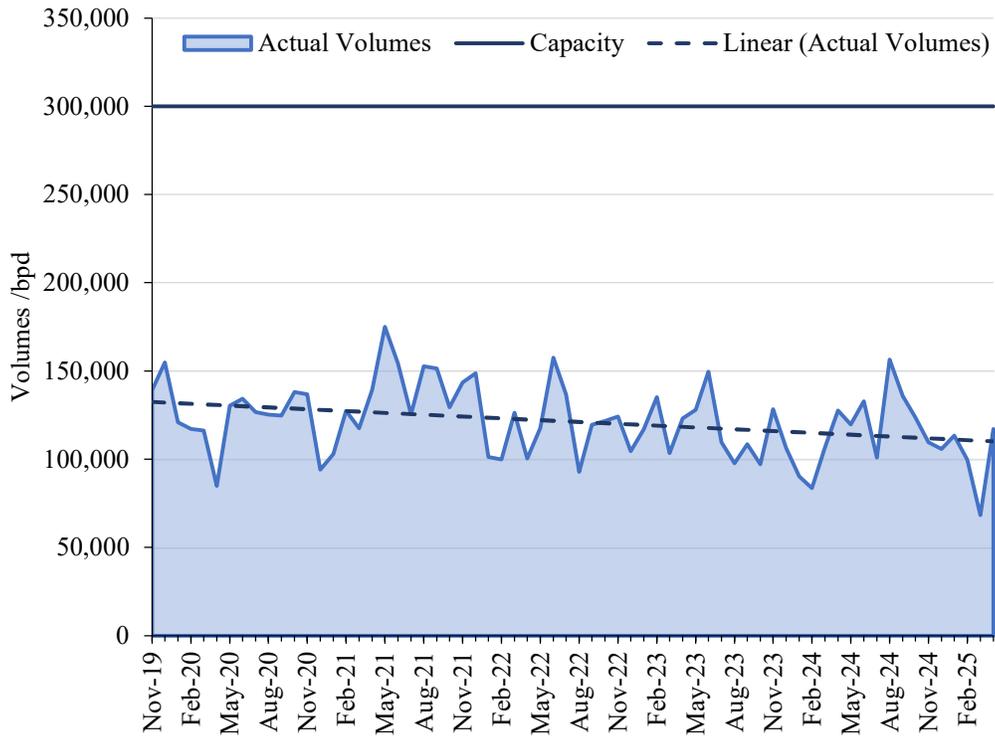


Figure 7: Line 720 Volumes and Capacity

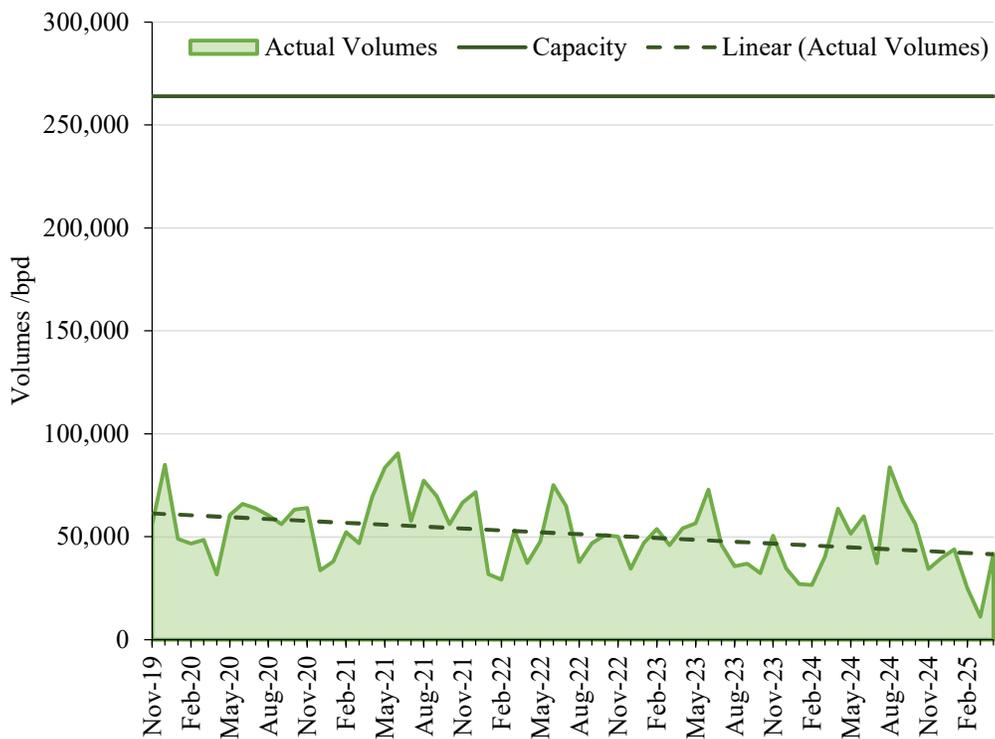
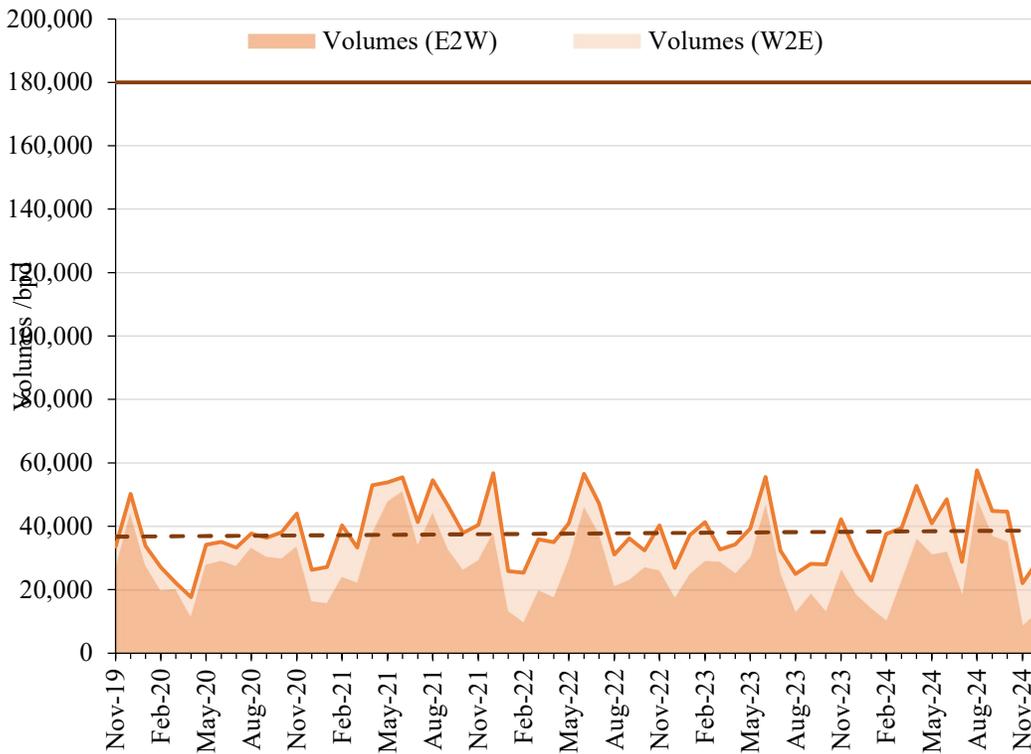


Figure 8: Line 718 Volumes and Capacity



- 1 **Q. What conclusions do you draw from these figures?**
- 2 A. All three charts demonstrate that there is substantial unused capacity on the
- 3 segments of the pipeline that are the subject of the Bi-directional Service Extension.
- 4 In general, each pipeline segment is only running at about 1/3<sup>rd</sup> of its available
- 5 capacity. Even in the peak periods, the pipeline is running at about half of its
- 6 available capacity. Furthermore, throughput on L724 and L720 have continued to
- 7 decline.<sup>48</sup> From the perspective of economics, this means that the unused capacity
- 8 is currently being wasted, a clearly inefficient outcome. These charts show that if
- 9 demand for pipeline service increased, such that there was an economic incentive
- 10 to move volumes from both the east and the west, there would be plenty of space

<sup>48</sup> Since L718 is already operating in bi-directional service, I did not include a trendline on that figure.

1 to do so. Because of his unduly narrow definition of economic efficiency, Dr.  
2 Morris ignores this reality.

3 **C. Dr. Morris’s Trucking Arguments Are Flawed**

4 **Q. Do you agree with Dr. Morris’s argument that operational issues can raise**  
5 **costs by requiring product to be shipped by truck?**

6 A. No. In making this argument Dr. Morris states that “if a delivery cannot be made  
7 by pipeline a shipper may need to turn to more expensive shipping methods, such  
8 as moving petroleum products by truck.”<sup>49</sup> He goes on to argue that alternative  
9 locations such as Macungie and Baltimore at 79-93 miles from Harrisburg. His  
10 argument is flawed for several reasons. First, he ignores the fact that every barrel  
11 of refined product transported on Laurel must ultimately be transported to the final  
12 consumer by truck. As such, the suggestion that barrels currently transported on  
13 the pipeline will now have to be transported by truck is misleading. Second, Dr.  
14 Morris ignores the Sunoco pipeline that largely parallels Laurel and makes  
15 deliveries to a number of locations in Pennsylvania. I have attached the Sunoco  
16 tariff as Laurel Exhibit No. MJW-10 to my testimony as well as a table showing  
17 the distance from Sunoco delivery points to the four Laurel delivery points.

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<sup>49</sup> Complainants Exhibit JRM-1 at 70:5-7.

**Table 1**

**Distances from Sunoco Delivery Points to Laurel Delivery Points in Pennsylvania**  
(miles)

Sunoco Delivery Points		Laurel Delivery Points				
Terminal	County	Coraopolis Allegheny Cnty	Eldorado Blair Cnty	Mechanicsburg Cumberland Cnty	Sinking Spring / Montello Berks Cnty	Delmont Westmoreland Cnty
Blawnox	Allegheny	22	88	186	249	23
Pittsburgh	Allegheny	17	88	186	246	23
Delmont	Westmoreland	38	67	165	218	0
Sinking Spring / Montello	Berks	251	162	53	0	218

1 As this table shows there are Sunoco delivery points that are closer to Laurel  
 2 delivery points than the Macungie and Baltimore delivery locations that Dr. Morris  
 3 identifies. Indeed Montello and Sinking Spring are the same location. Finally, I  
 4 would note that while Sunoco does not currently make deliveries in the Altoona,  
 5 PA or Harrisburg areas, the pipeline runs through this area, meaning that it could  
 6 make connections to Sunoco owned terminals in this location with relative ease.  
 7 Dr. Morris ignores all of these possibilities when he suggests that disruptions of  
 8 Laurel could raise costs.

9 **Q. How does Dr. Morris reach his conclusion that gasoline sourced from the**  
 10 **Midwest will be more expensive than gasoline sourced from the East Coast?**

11 A. Dr. Morris develops a delivered cost model.<sup>50</sup> Specifically, he begins with  
 12 wholesale gasoline prices for the 12-month period from May 2024 to April 2025 at  
 13 Chicago, and New York, and Philadelphia.<sup>51</sup> He then calculates the cost to  
 14 transport gasoline to various points on Laurel either under current operational  
 15 conditions or the cost after the advent of bi-directional service. He concludes that  
 16 the delivered cost for Eldorado and Sinking Spring for Chicago origin barrels has

<sup>50</sup> Complainants Exhibit JRM-1 at 61-62.

<sup>51</sup> Complainant Exhibit JRM-1 at 62, Table 3.

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1           been and thus will be higher than New York and Philadelphia barrels.<sup>52</sup> However,  
2           Dr. Morris’s model is flawed.

3   **Q.    Why do you say that Dr. Morris’s model is flawed?**

4    A.    I make this statement for two reasons. First, Dr. Morris calculates his model based  
5           on annual averages. This calculation is illogical. Prices of refined product change  
6           on a daily basis and shippers do not nominate volumes on an annual basis; they  
7           nominate volumes on a monthly basis and regularly update their nominations  
8           during the applicable period. Because shippers nominate volumes on a monthly  
9           basis, I believe calculating a delivered price on a monthly basis is the longest time  
10          period that would be appropriate. Second, he calculates his Midwestern price based  
11          on a Chicago price and then adds to this figure the cost to transport the gasoline all  
12          the way from Chicago. This assumption is illogical because it ignores the fact that  
13          there are numerous refineries between Chicago and Pittsburgh for whom  
14          transportation costs would be lower. By using a Chicago plus transportation price  
15          to estimate the delivered cost of a Midwestern barrel, Dr. Morris biases his analysis  
16          such that Midwestern barrels appear to be uncompetitive. I would note that the

17        **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]

18        [REDACTED] **[END**

19        **HIGHLY CONFIDENTIAL]**

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<sup>52</sup> Complainant Exhibit JRM-1 at 61:16-20

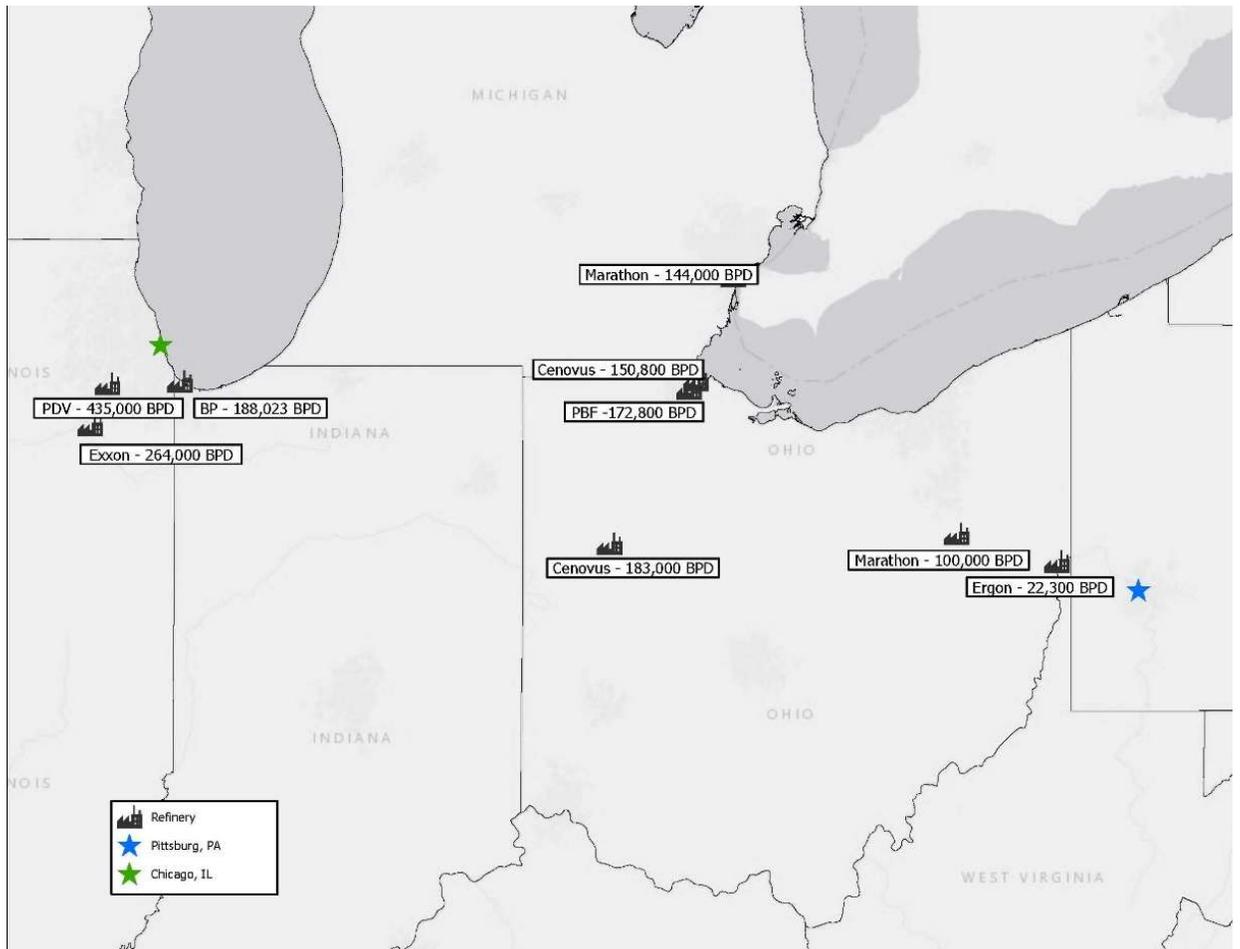
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1 **Q. Have you developed a way to present to the Commission all of the refineries**  
2 **that Dr. Morris ignores?**

3 A. Yes. Map 5 shows all of the refineries in the upper Midwest along with their  
4 respective capacity. As this map shows, there are three refineries in the Chicago  
5 area with a total capacity of 887,023 bpd. However, there are 6 refineries east of  
6 Chicago with a total capacity of 772,900 bpd. By using a Chicago price, Dr. Morris  
7 is implicitly assuming Chicago refiners will ship gasoline past all of these refineries  
8 to make deliveries in Pittsburgh, Eldorado and Sinking Spring. This assumption  
9 makes no sense. It is more logical to assume that first the refineries in Ohio will  
10 ship barrels to Pennsylvania. If these refineries have insufficient production to meet  
11 demand in Pennsylvania and Ohio, then volumes from refineries further west will  
12 meet demand.

13 [Remainder of page intentionally left blank]

Map 5<sup>53</sup>



1 **Q. Have you prepared an analysis that makes more logical assumptions?**

2 A. Yes. I have prepared a couple of analyses. First, I employed precisely the same  
 3 calculation that Dr. Morris did, as shown in Laurel Exhibit No. MJW-11, but I  
 4 conducted it on a monthly basis. Next, I counted the number of months that a  
 5 Chicago price would have been lower than a New York price for the period from  
 6 January 2021 to the present.<sup>54</sup> As shown in Laurel Exhibit No. MJW-11, the  
 7 Chicago price was lower in 37 of the 52 months for deliveries to Coraopolis, 23 of

<sup>53</sup> EIA 2025 Refinery Capacity Report, Released Jun 20, 2025, available at: [eia.gov/petroleum/refinerycapacity](https://eia.gov/petroleum/refinerycapacity).

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1 the 52 months for deliveries to Eldorado, and 20 for the 52 months for deliveries  
2 to Sinking Springs. In other words, consumers in Coraopolis have benefited from  
3 access to less expensive Midwestern supply more than half the time and in Eld  
4 Dorado slightly less than half the time. If the Bi-directional Service Extension had  
5 been in place during this period, consumers in central and even eastern  
6 Pennsylvania would have benefited from access to less expensive supply slightly  
7 more than a third of the time. By focusing on a long-term average, which has no  
8 relationship to how transactions actually occur, Dr. Morris obscures this fact and  
9 creates the false impression that the Bi-directional Service Extension will result in  
10 higher prices to the consumers of Pennsylvania. **When Midwestern barrels have**  
11 **a price advantage, consumers will benefit. When East Coast barrels have a**  
12 **price advantage, consumers will benefit.** The Bi-directional Service Extension  
13 creates a situation whereby, regardless of the price of Midwestern and East Coast  
14 barrels, consumers will benefit from access to the lowest price source. As such an  
15 accurate review of Dr. Morris's data shows that prices in the Midwest have been  
16 lower than East Coast prices a substantial fraction of the time, even after accounting  
17 for the higher transportation costs to deliver these barrels to Pennsylvania.

1           **D.     Dr. Morris’s Analysis of Consumer Impact Lacks Foundation**

2   **Q.     How does Dr. Morris suggest that the Bi-directional Service Extension on**  
3           **Laurel Pipeline will impact consumers?**

4   A.     He claims that the Bi-directional Service Extension could lead to less efficient flow  
5           patterns thus potentially leading to higher prices for consumers in Pennsylvania.<sup>55</sup>  
6           To support his position, he references the findings of the *2018 Recommended*  
7           *Decision* and *2018 Final Order* which found that delivered prices into the  
8           Pittsburgh market are generally more affordable coming from East Coast markets  
9           than from the Midwest alternatives.<sup>56</sup> He also states that Laurel Pipeline has  
10          provided no evidence that the facts have changed since those findings were made  
11          in the *2018 Recommended Decision*.<sup>57</sup>

12 **Q.     Do you agree with Dr. Morris’s position?**

13 A.     No.

14 **Q.     Why not?**

15 A.     I disagree for several reasons. As an initial matter, and as explained in Section II.A,  
16          the *2018 Recommended Decision* and *2018 Final Order* findings related to the  
17          impacts of a full reversal on prices are irrelevant to the Bi-directional Service  
18          Extension. Setting this point aside, and as I discussed in the prior two subsections,  
19          his discussion of economic efficiency is incomplete, and his delivered cost analysis  
20          is flawed.

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<sup>55</sup> Complainant Exhibit JRM-1 at 61:20-64:2.

<sup>56</sup> Complainant Exhibit JRM-1 at 59:3-9.

<sup>57</sup> Complainant Exhibit JRM-1 at 60:1-4.

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1           Beyond these threshold issues, Dr. Morris’s basis for concluding that  
2 consumers will be harmed by the Bi-directional Service Extension contains several  
3 additional errors. First, while Dr. Morris states that a \$0.01 increase in the price of  
4 gasoline will cause citizens of Western Pennsylvania to pay \$16 million in higher  
5 prices, he fails to show that Existing Bi-directional Service has increased or that the  
6 Bi-directional Service Extension will increase prices because neither bi-directional  
7 service will prevent access to currently available sources of refined product. In fact,  
8 it seems highly unlikely that supply from additional competitors would cause prices  
9 to rise. Second, to support his claim that increased prices will lead to broader  
10 economic harm, he relies on an academic paper that does not actually make the  
11 point he claims it makes. Third, he claims that Midwest prices are more volatile  
12 than the East Coast but fails to consider how volatility can benefit consumers.  
13 Fourth, he claims that consumers will not have access to low-Reid Vapor Pressure  
14 (“RVP”) gasoline but provides no evidence to support this claim, and it is  
15 contradicted by the facts. Finally, he suggests that consumers will be harmed by  
16 reduced access to capacity for products from the East Coast but provides no  
17 evidence that this has occurred or even discusses the relevance of losing capacity  
18 on a half full pipeline.

19 **Q. What are the issues with his claim that a \$0.01 increase in prices would hurt**  
20 **Pennsylvanian consumers?**

21 A. First, he does nothing to show evidence that the Bi-directional Service Extension  
22 will increase prices as all. He simply assumes that it will without any analysis to  
23 support his conclusion.

1 **Q. Please explain how the academic paper cited by Dr. Morris fails to support his**  
2 **quantification.**

3 A. The 2007 NBER Working Paper he sites to does not make the definitive statement  
4 he suggests.<sup>58</sup> Dr. Morris states that “[a]ccording to Blanchard and Gali, a 10%  
5 increase in crude oil prices reduced GDP by 0.25% in the US.”<sup>59</sup> This claim  
6 misconstrues the working paper’s purpose and finding. His reliance on this paper  
7 is also inappropriate for this case.

8 **Q. What was the purpose of the 2007 NBER Working Paper?**

9 A. The 2007 NBER Working Paper was meant to study the differences in the  
10 macroeconomic shocks of oil prices in the 1970s and 2000s. The authors were  
11 attempting to determine why the economic effects of oil prices seem to be less  
12 impactful in more recent years. To this end, they reviewed other potential  
13 circumstances that may have influenced the impact on the US economy such as  
14 other commodity prices or monetary policies. They were not intending to estimate  
15 the impact of future oil shocks.

16 **Q. Is Dr. Morris’s claim that a 10% increase in crude oil prices reduced GDP by**  
17 **0.25% supported by the 2007 NBER Working Paper?**

18 A. No.<sup>60</sup> While it is true that the paper presents a graph that suggests that post-1984  
19 oil shocks may have impacted the United States economy by around 0.25%, it does  
20 not support the premise that this will always be the case. In fact, the paper itself is  
21 based around the idea that the impact of oil prices on GDP had decreased between

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<sup>58</sup> In his testimony, Dr. Morris incorrectly indicates that this paper was published in 2017.

<sup>59</sup> Complainant Exhibit JRM-1 at 64:11-12

<sup>60</sup> To ensure a complete record, I have attached this paper as Laurel Exhibit No. MJW-12.

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1 the 1970s and 2000s. Given that this paper was published before the United States  
2 Shale Boom, it is very possible that a similar study done today would produce  
3 different results. Additionally, in the conclusion of the paper the authors  
4 acknowledge that the models used in their analysis are primitive, stating

5 Despite the length of the paper, we are conscious, however, of the  
6 limitations of our arguments. Some of the evidence, for example, the  
7 IRF evidence for Japan, does not fit our story. The model we have  
8 developed is too primitive in many dimensions, and its quantitative  
9 implications must be taken with caution. The development of a  
10 richer model, at least with respect to the specification of production,  
11 and of real wage rigidities, and its estimation, seem the natural next  
12 steps to check the conclusions reached above. The different  
13 implications of the various candidate hypotheses for the shape of  
14 impulse response functions in response to changes in the price of oil  
15 makes us hopeful that structural estimation can succeed in  
16 identifying their respective importance.<sup>61</sup>

17 In my opinion, Dr. Morris is remiss for not acknowledging this statement and  
18 simply applying a figure from this model as a major element of his analysis without  
19 even attempting to explain how it is appropriate or how this study is relevant to the  
20 Pennsylvania oil products market is appropriate

21 **Q. Why do you say application of this study to the Pennsylvania products market**  
22 **is inappropriate?**

23 A. The paper Dr. Morris cites is a study of the impact of *crude oil* priced on the GDP  
24 of the *entire* United States. First, crude oil prices and refined petroleum products  
25 prices are not the same thing and the impact of those prices on the economy will  
26 not be exactly the same. Second, the economic makeup and circumstances of a  
27 large country like the United States is not the same as that of a single state. The

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<sup>61</sup> Exhibit No. MJW-12 at Page 66-67.

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1 impact of oil prices may hit certain states harder than others and may even have a  
2 positive impact for those states that produce a large quantity of crude oil.  
3 Furthermore, Dr. Morris ignores the statement by the authors of the paper he cites  
4 cautioning against extrapolating the conclusions from this paper to broader contexts.  
5 Consequently, I conclude that it is inappropriate to take a study related to the GDP  
6 of the entire US and crude oil prices and apply it in the context of a single state and  
7 refined product.

8 **Q. What does Dr. Morris say regarding price volatility?**

9 A. He again references the findings in the *2018 Recommended Decision* which stated  
10 that prices paid in Chicago, Indianapolis, and Cleveland were more volatile than  
11 prices in Pittsburgh and Philadelphia.<sup>62</sup> He goes on to say that if the Bi-directional  
12 Service Extension is approved and consumers in Pittsburgh and Central  
13 Pennsylvania are “forced to rely more on the Midwest supply” the retail prices will  
14 be influenced by those more volatile Midwest prices. However, this conclusion is  
15 predicated on the assumption that Pennsylvania consumer will be “forced” to rely  
16 on more volatile Midwest prices and that price volatility necessarily means  
17 consumer harm.

18 **Q. Will Pennsylvanian consumers be forced to rely on more volatile Midwest**  
19 **prices?**

20 A. No. That is yet another point made by Dr. Morris that may have been true with  
21 respect to the full reversal analyzed in the *2018 Recommended Decision* and the  
22 *2018 Final Order*, but it is completely unrelated to the Bi-directional Service

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<sup>62</sup> Complainant Exhibit JRM-1 at 65:6-12.

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1 Extension challenged by the Complainants in this proceeding. The Bi-directional  
2 Service Extension clearly contemplates the continuation of east-to-west intrastate  
3 service, but makes available to shippers additional west-to-east interstate service.  
4 Thus, it presents shippers with additional choices but does not “force” any shipper  
5 to use the new west-to-east interstate service. Therefore, it does not follow that  
6 Pennsylvanian consumers will be forced to rely on Midwest products. The Bi-  
7 directional Service Extension will allow shippers additional, new options regarding  
8 where to source their product before moving it into the market. It is reasonable to  
9 assume that shippers and retailers in Pennsylvania will seek the cheapest products  
10 available to them and consumers will benefit.

11 **Q. Do you agree with Dr. Morris that increasing the quantity of Midwestern**  
12 **gasoline, which exhibits greater volatility will harm consumers in**  
13 **Pennsylvania?**

14 A. No. In his testimony, Dr. Morris notes that the 2018 Decision found price levels to  
15 be more volatile in the Midwest compared to the East Coast.<sup>63</sup> He goes on to assert  
16 that stable predictable prices are preferred and support “informed decision making  
17 and [promote] broader economic well-being.”<sup>64</sup> There are several flaws in Dr.  
18 Morris’s analysis. First, consistent with much of his testimony, he does not bother  
19 to assess whether prices in the Midwest are actually more volatile than prices in the  
20 East Coast. Of more relevance, he does not assess whether the difference in  
21 volatility would benefit or harm consumers.

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<sup>63</sup> Complainants Exhibit JRM-1 at 65:3-12.

<sup>64</sup> Complainant Exhibit JRM-1 at 66:11-67:2.

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 **Q. Have you conducted an analysis of the actual prices?**

2 A. Yes. As shown in Laurel Exhibit No. MJW-13, I calculated the standard deviation  
3 in prices in PADD I and PADD II as published by the EIA for the period 2021 to  
4 2025. As shown in Laurel Exhibit No. MJW-13, the difference in standard  
5 deviation of the prices in the Midwest and the East Coast has ranged from -1.38  
6 cents per gallon to a high of +5.91 cents per gallon.<sup>65</sup> While this difference is slight,  
7 it is consistent with Dr. Morris’s testimony that volatility in the Midwest is higher  
8 than on the East Coast. However, the data does not support Dr. Morris’s conclusion  
9 that Midwestern pricing patterns in Pennsylvania would harm consumers.

10 **Q. Why do you say that data does not support Dr. Morris’s conclusion?**

11 A. I make this statement for several reasons. First, the average price of gasoline in the  
12 Midwest from 2021 to the present was 6.3 cents per gallon lower compared to the  
13 East Coast. If cheaper Midwestern prices were to prevail in Pennsylvania,  
14 consumers would benefit. Second, in 190 of the 243 weeks Midwestern product  
15 was less expensive than East Coast product. Finally, in four of the five years I  
16 analyzed the Midwestern prices had a negative “skew”. A negative skew means  
17 that the variance (or volatility) in price measured by the standard deviation was  
18 more influenced by prices below the mean than above the mean. In other words,  
19 while it is true that the Midwestern prices are more volatile, this volatility is more  
20 likely to be associated with lower prices which clearly benefit consumers.

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<sup>65</sup> In this case, I subtracted the Midwestern standard deviation from the East Coast standard deviation meaning that a negative number signifies that the Midwestern standard deviation is greater than the East Coast.

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 **Q. What does Dr. Morris say with regard to reduced access to low-RVP gasoline?**

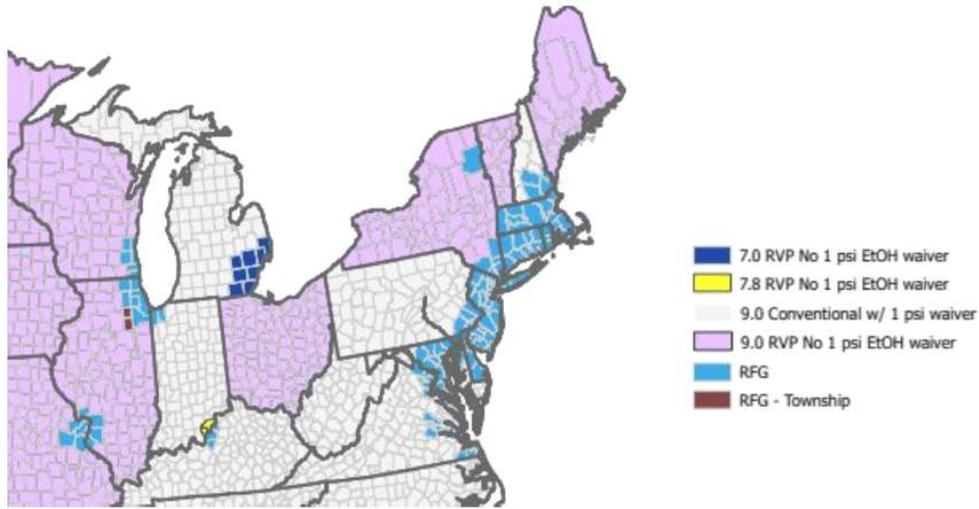
2 A. He states that “neither Buckeye nor Laurel has established how or whether Midwest  
3 refineries can efficiently and economically produce sufficient volumes of low-RVP  
4 gasoline to supply the entirety of the Pittsburgh and Central Pennsylvania market  
5 demand for low-RVP gasoline during summer months.”<sup>66</sup> However, he once again  
6 provides no support for this claim. As I have stated throughout this testimony, both  
7 Existing Bi-directional Service and the proposed Bi-directional Service Extension  
8 allow gasoline to be sourced from both the Midwest and East Coast. As both  
9 sources are available, it is not necessary that the Midwest be able to supply all of  
10 the gasoline demand in Central Pennsylvania, whether low-RVP or not.  
11 Additionally, Dr. Morris’s claims that the Midwest does not or cannot produce the  
12 low-RVP required in Pittsburgh in the summer are simply incorrect. As the map  
13 below demonstrates, most of the Midwest requires the same 9.0 RVP in the summer  
14 that is required in Pittsburgh.

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<sup>66</sup> Complainant Exhibit JRM-1 at 61:16-20.

Map 6<sup>67</sup>

U.S. Gasoline RVP Requirements for summer 2025 (May 1-Sep. 15 at terminal and June 1 to Sep. 15 at retail)\*



1 **Q. Did parts of Pennsylvania historically require more unique blends of gasoline?**

2 A. Yes. Prior to June 5, 2019, counties in the Pittsburgh area were required to sell 7.8  
3 RVP gasoline in the summertime. However, the EPA modified this rule in 2019.<sup>68</sup>  
4 It is possible that Dr. Morris was ignorant of this change when he filed his  
5 testimony.

6 **Q. How does Dr. Morris suggest a reduction in capacity from the east will harm  
7 consumers in Pennsylvania?**

8 A. He claims that Broadway Phase 3 will necessarily reduce east-to-west capacity and  
9 therefore consumers in Pennsylvania will be harmed since they will lose access to  
10 capacity that is used for west-to-east service.<sup>69</sup> He goes on to state that supplies

<sup>67</sup> API U.S. Gasoline Requirements 2025, available at: [api.org/-/media/files/policy/fuels-and-renewables/us-fuel-requirements/us-gasoline-requirements-2025.pdf](https://api.org/-/media/files/policy/fuels-and-renewables/us-fuel-requirements/us-gasoline-requirements-2025.pdf)

<sup>68</sup> <https://www.epa.gov/gasoline-standards/state-fuels> (last accessed August 10, 2025).

<sup>69</sup> Complainant Exhibit JRM-1 at 68:7-69:15.

1 from the Midwest being shipped to New York instead of Pennsylvania is an  
2 “unambiguous loss” to consumers in Pennsylvania.<sup>70</sup>

3 **Q. Is there any support for this claim?**

4 A. No. Initially, it is worth pointing out the Existing Bi-directional Service between  
5 Pittsburgh and Altoona has been offered since the 2019 Settlement. In that time,  
6 there is no evidence that consumers have lost access to eastern sources of petroleum  
7 products or otherwise have been harmed. Additionally, Laurel has been operating  
8 below capacity for both eastbound and westbound movements as shown in Figures  
9 6-8 above. For that reason, there is no reason to believe that the utilized westbound  
10 capacity will be impacted at all.

11 In other words, there is enough capacity that all barrels wanting to go west  
12 can go west and all barrels wanting to go east can go east. There is no reason to  
13 expect that to change once the Bi-directional Service Extension commences. Even  
14 if this were not the case, Laurel has an obligation to make 120,000 bpd of  
15 westbound capacity available through the end of 2026, and no party has claimed  
16 Laurel does not intend to satisfy this obligation or has failed to do so. Furthermore,  
17 I understand from Mr. Zeth’s rebuttal testimony (Laurel Statement No. 1-R) that  
18 Laurel is willing to extend this assurance. Dr. Morris’s claims that barrels flowing  
19 from the Midwest to Upstate New York could raise prices to consumers in  
20 Pennsylvania is inconsistent with his premise that Midwest barrels are more  
21 expensive. It also suggests that he believes this Commission can and should impede  
22 interstate commerce.

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<sup>70</sup> Complainant Exhibit JRM-1 at 69:14-15.

1           **E. Dr. Morris’s Discussion of Operational Issues is Speculative and**  
2           **Irrelevant**

3           **Q. What does Dr. Morris say about operational issues on Laurel Pipeline?**

4           A. He states that, per Complainants’ fact witnesses, there have been operational issues  
5           in the last five years.<sup>71</sup> He does not actually identify the issues or even provide  
6           citations to the Complainant Shipper’s testimony. Presumably, the operational  
7           issues he had in mind involve alleged increases in transit time and transit time  
8           variance.

9           **Q. Does Dr. Morris provide any analysis or quantification of these alleged**  
10           **operational issues?**

11          A. No. He does no independent verification of this claim and does not provide  
12          evidence that any operational issues that have occurred in the last five years are a  
13          result of Existing Bi-directional Service. As such, this statement runs afoul of the  
14          basic principle that correlation does not equal causation, which I discuss below.  
15          Moreover, as I discuss in Section V, below, basic statistical analysis shows that  
16          Existing Bi-directional Service has caused little, if any, increase in transit time.  
17          However, even if taken at face value, none of these claimed service degradations  
18          amount to anything approaching an abandonment of east-to-west intrastate service.

19          **Q. Does Dr. Morris suggest that alleged operational issues could impact**  
20          **consumers?**

21          A. Yes. He asserts that operational issues may raise costs because shippers “may need  
22          to turn to more expensive shipping methods, such as moving petroleum products

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<sup>71</sup> Complainant Exhibit JRM-1 at 69:18-70:19.

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1 by truck.”<sup>72</sup> He then goes on to note that alternative supply locations to Laurel  
2 terminals are located a considerable distance away. I would first note that Dr.  
3 Morris does not actually state that one of these operational issues has actually  
4 caused shippers to transport product from one of these more remote locations.  
5 Finally, Dr. Morris ignores the fact that bi-directional service will decrease the  
6 probability of terminal outages that would require trucking from more remote  
7 locations by allowing terminals to be supplied in both directions. As such, Dr.  
8 Morris’s discussion of operational issues is both speculative and incomplete.

9 **Q. Are there further reasons to conclude that Dr. Morris’s claims are irrelevant?**

10 A. Yes. He fails to recognize that occasional operational disruptions occur for all  
11 pipelines for a wide variety of reasons. Because he does not conduct a rigorous  
12 statistical analysis, he does not attempt to distinguish between normal operational  
13 disruptions and operational disruptions caused by bi-directional service. He further  
14 claims that operational disruptions can lead to increased transportations costs since  
15 transportation by truck is generally more expensive than by pipeline. Furthermore,  
16 despite Sheetz witness Joshua Jadlocki’s claim in his testimony<sup>73</sup> that pipeline  
17 outages cause Midwestern refiners to increase their prices, Mr. Jadlocki admitted  
18 in discovery that “he has no direct examples of a Midwest refiner attributing a price  
19 increase to an outage.”<sup>74</sup> Because Dr. Morris conducts no actual analysis of the  
20 operational disruptions, I recommend ignoring this portion of his testimony.

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<sup>72</sup> Complainant Exhibit JRM-1 at JRM-1 at 70:5-7.

<sup>73</sup> Complainant Exhibit JDJ-1 at 4:21-5:9.

<sup>74</sup>Laurel Exhibit No. MJW-14

1           **F.     Dr. Morris Discussion of Harm to Shippers Is Speculative and**  
2           **Inconsistent with Economic Theory**

3   **Q.     What does Dr. Morris say is the potential loss to shippers because of this bi-**  
4           **directional service?**

5   A.     Dr. Morris suggests, again with no analysis to support his claims, that bi-directional  
6           service increases shipment times and thus shipper costs.<sup>75</sup> He also claims these  
7           increased transit times limit shippers' ability to react quickly to favorable market  
8           conditions.<sup>76</sup> He also claims that the proposed discounts offered by Laurel Pipeline  
9           to eastbound shippers will cause economic harm to eastern shippers.<sup>77</sup>

10 **Q.     Does Dr. Morris present any evidence to support his claims that longer transit**  
11 **times increase costs for shippers?**

12 A.     No. As I discuss in Section V, analysis of actual data shows this is not an issue.

13 **Q.     What does Dr. Morris say about the discounts Buckeye Pipeline is offering to**  
14 **eastbound shippers?**

15 A.     He seems to suggest that such discounts are anticompetitive since they will  
16           incentivize shippers to move products east on Laurel towards New York instead of  
17           Pennsylvania.<sup>78</sup>

18 **Q.     Is there any merit to his argument regarding discounts?**

19 A.     No. As an initial matter, Dr. Morris is essentially requesting that the Commission  
20           weigh-in on the reasonableness of rates, terms, and conditions of interstate service

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<sup>75</sup> Complainants Exhibit JRM-1 at 71:8-12.

<sup>76</sup> Complainant Exhibit JRM-1 at 71:14-15.

<sup>77</sup> Complainant Exhibit JRM-1 at 72:3-73:17.

<sup>78</sup> Complainants Exhibit JRM-1 at 72-73.

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1 provided by Buckeye, none of which are subject to the Commission’s jurisdiction.  
2 For this reason alone, Dr. Morris’s discussion of the discount rates offered by  
3 Buckeye to interstate shippers for interstate service should be completely  
4 disregarded.

5 Furthermore, Dr. Morris also ignores the fact that these discounts are being  
6 offered to interstate shippers who make commitments that allow new infrastructure  
7 to be built to facilitate additional interstate service. This is consistent with long-  
8 standing industry practice and is meant to encourage investment into interstate  
9 infrastructure which is a costly and potentially risky investment if a pipeline does  
10 not have some level of guarantee that interstate shippers will utilize the interstate  
11 service.

12 Moreover, the fact that shippers paying a rate in the **[BEGIN HIGHLY**  
13 **CONFIDENTIAL]** [REDACTED]  
14 [REDACTED] **[END**  
15 **HIGHLY CONFIDENTIAL]** shippers on Laurel paying a rate of \$0.50 for  
16 intrastate service should receive a similar discount for intrastate service. To do so  
17 would essentially mean that Laurel would be required to provide intrastate service  
18 to certain intrastate shippers for free or even potentially pay them to make intrastate  
19 shipments on the pipeline, because there is a different rate offered for a different  
20 interstate service. This notion is absurd.

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1 **Q. Are discounts by interstate common carriers consistent with standard**  
2 **industry practice?**

3 A. Yes. Interstate common carriers may need to extend similar discounts to particular  
4 classes of interstate shippers to achieve desirable public policy goals, such as  
5 increasing the utilization of underutilized assets. In this case, the interstate Midwest  
6 shippers (i) made interstate volume commitments; and (ii) are requesting interstate  
7 shipments from a different direction; (iii) are shipping over much greater distances  
8 to a new market; and (iv) are using largely different pipeline facilities to reach the  
9 market. These factors, among others, make the eastern intrastate and interstate  
10 shippers not “similarly situated.” The discounts are being used to incent  
11 incremental interstate barrels on to underutilized pipeline segments, a traditional  
12 use of discounts by common carriers and utilities; in contrast, both the intrastate  
13 and interstate eastern shippers are proposing to receive the same discounts for  
14 moving barrels that they already are moving on the system without the need for  
15 incremental investments and upgrades to the system to complete these movements,  
16 which is traditionally not a basis for receiving a discount. The purpose of discounts  
17 by a common carrier is to maximize use of the pipeline facilities by attracting  
18 marginal barrels whose shippers would still be contributing to fixed costs of the  
19 system; the purpose is not, as the Complainants appear to believe, to equalize the  
20 competitive pricing of competitors from different origin markets to the same  
21 destination market.

1 **Q. Are discounts generally anticompetitive?**

2 A. No. There is extensive economic literature as well as regulatory precedent, of  
3 which Dr. Morris is apparently unaware, that teaches that the type of discounts that  
4 Buckeye is offering are typically pro-competitive.<sup>79</sup> The one exception involves  
5 discounts that are predatory, which is defined as charging a price below variable  
6 cost for a sustained period of time. Ironically, Dr. Morris’s suggestion that Laurel  
7 should offer discounts of [BEGIN HIGHLY CONFIDENTIAL] [REDACTED]  
8 [END HIGHLY CONFIDENTIAL] for intrastate shipments made under Laurel’s  
9 PaPUC Tariff might be anti-competitive since such prices would be below the cost  
10 of pumping volumes, meaning the discounted prices proposed for intrastate service  
11 would actually meet the definition of predatory prices. Since Dr. Morris’s entire  
12 analysis of discounts is nonsensical, his suggestion that consumers in Central  
13 Pennsylvania are harmed because they are not receiving these discounts is equally  
14 nonsensical.

15 **G. Dr. Morris’s Discussion of Harm to Refineries is Anticompetitive**

16 **Q. Please summarize Dr. Morris’s claims regarding losses to refiners.**

17 A. Mr. Morris claims that because Western and Central Pennsylvania are important  
18 markets for Delaware River refiners and the Bi-directional Service Extension

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<sup>79</sup> Murphy, Kevin M.; Snyder, Edward A.; Topel, Robert H. (2013). *Competitive Discounts and Antitrust Policy*, Working Paper, No. 250, The University of Chicago, George J. Stigler Center for the Study of the Economy and the State, Chicago, IL

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1 would force these refiners to enter different markets, and potentially result in a loss  
2 in profits.<sup>80</sup>

3 **Q. Do you agree with Dr. Morris’s claims that refiners may lose profits?**

4 A. Yes. As a theoretical matter, increased competition may decrease the profits of  
5 East Coast refiners. I would first note that neither Dr. Morris nor any witness for  
6 the Complainant Shippers have presented any quantification never mind a sound  
7 economic analysis showing that East Coast refiners will lose profits or the degree  
8 to which they will lose profits. Moreover, to the extent more efficient Midwestern  
9 refineries are able to supply western and central Pennsylvania more cheaply than  
10 Eastern refineries, these eastern refineries will likely lose market share and profits.  
11 However, Dr. Morris’s suggestion that such an outcome is undesirable is yet again  
12 an example of Dr. Morris making anti-competitive claims that, if adopted, would  
13 insulate Eastern refineries from additional competition and deprive shippers and  
14 Pennsylvania consumers of the benefits of additional supply sources. If  
15 Midwestern refiners are able to lay refined products into Western and Central  
16 Pennsylvania more competitively than East Coast refiners, they will capture  
17 business from these refiners. If they cannot, the East Coast refiners will maintain  
18 their current business and the line will continue to flow as it has historically.  
19 Suggesting that the Bi-directional Service Extension should not occur so that East  
20 Coast refiners can maintain their current profit margins, by charging relatively high  
21 prices to consumers in Western and Central Pennsylvania, is anti-competitive and  
22 contradictory to Dr. Morris’s claims that the Bi-directional Service Extension will

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<sup>80</sup> Complainant Exhibit JRM-1 at 74.

1 harm consumers. Allowing competition between the refiners or different regions  
2 will help ensure that consumers in Pennsylvania are not overpaying for products.

3 **Q. Are you aware of any information prepared by Dr. Morris’s clients that**  
4 **contradicts his suggestion that Pennsylvania refineries would be required to**  
5 **shut down or lay off workers?**

6 A. Yes. **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]  
[REDACTED] **[END HIGHLY CONFIDENTIAL]**

16 **H. Dr. Morris’s Analytical Framework Ignores Economic Theory and**  
17 **Principles of Sound Public Policy**

18 **Q. Are there any other issues with the analysis Dr. Morris presents in his**  
19 **testimony?**

20 A. Yes. Throughout his testimony, Dr. Morris focuses on minimizing the delivered  
21 cost. As I noted in subsection (b), this focus represents an unduly narrow view of  
22 economic efficiency. However, he ignores the fact that sound public policy  
23 requires consideration of factors beyond economic efficiency. For example,

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1 economic theory teaches that one should minimize the incentives for “rent seeking.”  
2 Dr. Morris does not consider the possibility that his clients may be engaging in rent  
3 seeking. He also ignores the importance of diversity of supply.

4 **Q. What is rent seeking?**

5 A. Rent seeking represents the concept that firms may use regulation or other  
6 governmental means to obtain advantages they otherwise cannot in a competitive  
7 market. Dr. Morris’s discussion of a potential decrease in profits for refiners  
8 provides an excellent example of rent-seeking. Bi-directional service would mean  
9 more competition for refiners and Dr. Morris suggests that this would somehow be  
10 unfair so this Commission should prevent that competition from occurring by way  
11 of regulation.

12 **Q. Why is rent seeking undesirable?**

13 A. Rent seeking is undesirable for a couple of reasons. First, resources devoted to rent  
14 seeking are pure waste. These resources could have been devoted to some  
15 productive process rather than seeking regulatory advantage. Second, if rent  
16 seeking becomes prevalent, firms will begin devoting resources to this activity  
17 rather than seeking to operate more efficiently or compete effectively. For this  
18 reason, regulators should be conscious of the possibility of rent seeking and reduce  
19 the incentives to engage in this activity.

20

1 [BEGIN HIGHLY CONFIDENTIAL]

[REDACTED]

[END HIGHLY CONFIDENTIAL]

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1 **V. THE COMPLAINANTS FAIL TO SHOW THAT EXISTING BI-DIRECTIONAL SERVICE**  
2 **HAS CAUSED MATERIAL OPERATIONAL ISSUES ON THE LAUREL PIPELINE**

3 **Q. Does the testimony of the Shipper Witnesses support the conclusion that the**  
4 **advent of bi-directional service to Eldorado, PA in 2019 caused operational**  
5 **issues on Laurel?**

6 A. No. The Shipper Witnesses present a number of anecdotes regarding various  
7 undesirable events that have occurred since the advent of bi-directional service.<sup>81</sup>  
8 However, the shippers do not even allege, let alone prove, that Laurel has failed to  
9 meet its common carriage obligations or provide the service it holds itself out to  
10 provide under its Tariff.

11 As a threshold matter, I am advised by counsel that the shippers have an  
12 obligation to demonstrate that Laurel is seeking to abandon service. None of their  
13 testimony even alleges the complete and permanent cessation of service has  
14 occurred or will occur due to bi-directional operations; indeed, no witness except  
15 Mr. Summers even references the words “abandon” or “abandonment” (and Mr.  
16 Summers does so in a context not related to bi-directional operations), let alone  
17 claims that Existing Bi-directional Service is an abandonment of service or that the  
18 Bi-directional Service Extension will be an abandonment of service. They only  
19 contend that a degradation or diminution of existing intrastate service has occurred.  
20 However, they fail to support even these claims.

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<sup>81</sup> See Complainants Exhibit KFS-1, at 4-5 (alleging transit times are both too long and too short, and too variable); Complainants Exhibit SH-1, at 4-5 (alleging transit times have increased, deliveries have been late, and scheduling change issues); Complainants Exhibit JDJ-1, at 6 (alleging increasing transit times); and Complainants Exhibit TM-1, at 13 and 17 (raising concerns regarding transit times and scheduling complications due to bi-directional service).

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1           Furthermore, with one minor exception, none of the shippers have even  
2 attempted to quantify the harm that this supposed degradation in service caused in  
3 a manner that would allow the Commission to compare it to the real and obvious  
4 benefits of bi-directional service. Even if one were to set these failures aside and  
5 assume that the undesirable events were of sufficient magnitude to warrant  
6 Commission consideration, no witness provides a systematic way to assess whether  
7 these bad events were caused by bi-directional service or whether they  
8 coincidentally happened after bi-directional service commenced. No witness,  
9 including surprisingly, Dr. Morris, even attempts to establish causality. I would  
10 also note that Mr. Emery discusses the obligations a common carrier has and the  
11 fact that Laurel’s actions have not deprived the shippers of any benefit to which  
12 they are entitled. As such, they have not been harmed in the sense of receiving a  
13 quality of service inconsistent with standard industry practice.

14 **Q. How have you organized this section of your testimony?**

15 A. In this section of my testimony, I first explain that the shipper witnesses have not  
16 actually alleged Laurel has done anything other than provide the service to which  
17 they are entitled. Second, I will explain that the shippers have failed to quantify  
18 the harm allegedly caused by Laurel’s supposedly degraded service. Next, I will  
19 describe how one establishes causality, and then apply these techniques to assess  
20 whether bi-directional service caused an increase in transit time or caused in  
21 increase in variability of deliveries.

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1       **A.     The Shipper Witnesses Have Not Alleged Any Failure to Provide**  
2       **Reasonable Service**

3       **Q.     What obligations does Laurel have as a common carrier and public utility**  
4       **regulated by the Commission?**

5       A.     Of relevance to this case, Laurel has an obligation to provide reasonable service  
6       pursuant to the terms and conditions set forth in its Commission-approved tariff. In  
7       addition, Laurel has an obligation to provide service that is not unduly  
8       discriminatory. In practical terms, this means that Laurel has an obligation to  
9       accept all barrels tendered to it by a qualified shipper and deliver barrels back to  
10      that shipper in accordance with the rules and regulations tariff and the shipper  
11      manual, while charging a just and reasonable rate as specified in its tariff. None of  
12      the Shipper Witnesses have alleged that Laurel has done anything other than this.  
13      Instead, all shippers have received the volumes they nominated and have been  
14      charged the rates published in Laurel’s PA-PUC Tariff

15      **Q.     Has Laurel voluntarily subjected itself to additional obligations beyond those**  
16      **of a common carrier?**

17      A.     As part of the 2019 Settlement<sup>82</sup> of the prior case, Laurel agreed to guarantee east-  
18      to-west shippers that the available physical capacity of Line 718 would be no less  
19      than 120,000 bpd until December 31, 2026. This guarantee of capacity is also  
20      reflected in Laurel’s existing Commission-approved Tariff. In addition, the 2019

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<sup>82</sup> *Giant Eagle, Inc. et al. v. Laurel Pipe Line Company, L.P.*, Docket No. C-2018-3003365, Joint Petition for Approval of Settlement dated July 31, 2019, *approved without modification* by Order entered Aug. 29, 2019 (the “2019 Settlement”).

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 Settlement provided shippers with a mechanism to complain about degradations in  
2 service such as increased transit time.<sup>83</sup>

3 **Q. Have the Complainant Witnesses alleged they were deprived of the right to**  
4 **move the quantity of refined product to which they were entitled under the**  
5 **2019 Settlement?**

6 A. No. The Complainant Witnesses have not and indeed cannot allege they were  
7 deprived of these additional rights. Since the implementation of the Existing  
8 Bidirectional Service, the shippers have been able to ship all of the volume from  
9 the east that they have desired to ship since the commencement of the settlement.

10 **Q. Did any of the Complainants employ the additional mechanism to complain**  
11 **about degradation of service?**

12 A. No. In the testimony of several shipper witnesses they assert that they failed to use  
13 this mechanism because they were focused on other matters.<sup>84</sup> Even if this  
14 statement is true, it suggests that the cost associated with allegedly adverse events  
15 such as increases in transit time that have occurred since the advent of bi-directional  
16 service were relatively minor. The time to prepare an email noting dissatisfaction  
17 would be minimal, and undertaking additional engagement with Laurel/Buckeye  
18 would not require substantial additional time and/or resources in my view. If  
19 increases in transit time were imposing significant cost on the shippers, presumably  
20 they could incur the cost to write an email to document this through the complaint

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<sup>83</sup> 2019 Settlement ¶¶ 33-35.

<sup>84</sup> See e.g., Complainants Exhibit JDJ-1 at 11:13-12:3; Complainants Exhibit SH-1: at 10:1-7.

1 mechanism. The fact that they have not suggests that at most the cost is minor, an  
2 issue I will address in depth in the next section.

3 **B. The Shipper Witnesses Have Not Quantified Their Alleged Harm**

4 **Q. Have the Complainant Witnesses quantified the harm they believe they have**  
5 **incurred as a result of the advent of bi-directional service?**

6 A. With one minor exception they have not. While the Complainant Witnesses have  
7 alleged a variety of harms, generally they have not attempted to quantify these  
8 harms. This failure is significant because it deprives the Commission of the ability  
9 to balance the supposed harms of bi-directional service with the substantial benefit  
10 of allowing more competition into Central and Eastern Pennsylvania. As I noted  
11 above, the fact that none of the shippers availed themselves of their right under the  
12 settlement suggests that the cost they have incurred was relatively small, if there  
13 was any cost at all. Furthermore, the analysis I conduct later in this section leads  
14 me to conclude that if bi-directional service has caused any harm, it has been *de*  
15 *minimis* and undetectable. Again, despite having the opportunity, and indeed the  
16 legal obligation to demonstrate and quantify the harm they have incurred, the  
17 Complainant Witnesses have not even attempted to make such a showing.

18 **Q. What is the minor exception to this statement you noted above?**

19 A. Sheetz claims that since the advent of Existing Bi-directional Service, it has been  
20 forced to maintain greater levels of inventory than it maintained previously. There  
21 are several flaws with this claim. First, the mere fact that Sheetz maintains higher  
22 inventory does not show the actual cost it has incurred. For example, Sheetz made  
23 no attempt to quantify the inventory carrying cost it is incurring to allow the

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1 Commission to compare that cost to the benefit that will accrue to consumers  
2 through greater competition. Second, the mere fact that after the advent of Existing  
3 Bi-directional Service, Sheetz began maintaining greater inventory levels does not  
4 prove that Existing Bi-directional Service caused Sheetz to incur these greater costs  
5 or that the Bi-directional Service Extension will result in additional costs. As I  
6 discuss in depth in the next section, correlation does not equal causation. A key  
7 flaw throughout the Shipper Witnesses' testimony is that they fail to recognize this  
8 fact, instead suggesting that the fact that some adverse event happened after the  
9 advent of bi-directional service necessarily means that bi-directional service caused  
10 this bad event. Moreover, information provided in discovery suggests that the  
11 higher inventory levels are only tenuously related to the advent of Existing Bi-  
12 directional Service.

13 **Q. Why do you say that information provided in discovery suggests that**  
14 **inventory levels are only tenuously related to the advent of bi-directional**  
15 **service?**

16 A. In discovery, Laurel sought information about management presentations in which  
17 Sheetz management assessed the impact of bi-directional service, along with other  
18 economic conditions. As shown in Laurel Exhibit No. MJW-15, Sheetz admitted it  
19 had no such presentation. The non-existence of these presentations is telling. If  
20 increased transit times had caused Sheetz to alter its inventory strategy, I would  
21 expect a slide or two in a management presentation. The fact that not even a single  
22 slide exists suggests transit time is not actually a meaningful issue for Sheetz.

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1 **Q. Did Laurel seek similar information from other Complainant Witnesses?**

2 A. Yes. I have attached the relevant request and responses as Laurel Exhibit No.  
3 MJW-16. As these responses showed, the Complainants had no such information  
4 or did not rely upon any such information to prepare their testimony. This response,  
5 or lack of response is telling. If the advent of Existing Bi-directional Service had  
6 caused a serious degradation in service, one would expect the Complainant  
7 Witnesses or the management of the businesses to have prepared at least some  
8 amount of analysis assessing the impact of Existing Bi-directional Service on their  
9 operations, and one would certainly expect them to have relied upon and included  
10 this analysis to support their claims.

11 **Q. What conclusion do you draw from the fact that no such analysis appears to**  
12 **exist?**

13 A. I conclude that the harm, if any, that might have occurred as a result of the advent  
14 of Existing Bi-directional Service would have been minor. This fact in turn implies  
15 that the Complainant Witnesses are seeking to prevent the citizens of the  
16 Commonwealth of Pennsylvania from enjoying the substantial benefits of increased  
17 competition that will occur with the Bi-directional Service Extension in order to  
18 avoid what is at most a minor inconvenience for themselves. In fact, as I discussed  
19 in depth in Section IV.H., I believe the Complainant Witnesses oppose the Bi-  
20 Directional Service Extension in order to maintain competitive advantages that  
21 allow them to charge higher prices to consumers in Pennsylvania.

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1 **Q. If the Bi-directional Service Extension is implemented, are shippers without**  
2 **remedy if it does cause them to incur substantial and provable harm?**

3 A. No. It is my understanding that, if the extension of bi-directional service caused  
4 substantial and provable harm, and the shippers proved that this harm was the result  
5 of unlawful actions by Buckeye under FERC regulations and law or by Laurel under  
6 the Pennsylvania Public Utility Code, they could seek an appropriate administrative  
7 or judicial remedy. As such, their rights are, and continue to be, protected.

8 By contrast, if this Commission were to attempt to prevent the Bi-  
9 directional Service Extension from going into service despite the fact that little if  
10 any harm to the shippers has been shown, and consumers pay higher prices than  
11 they otherwise would, the consumers would have no remedy. For this reason, I  
12 believe the Commission should give no weight to the Complainants' claims  
13 because they have failed to show that they have actually incurred harm and that this  
14 harm has been caused by the advent of Existing Bi-directional Service and the harm  
15 is likely to continue with the Bi-directional Service Extension. Even if the  
16 Complainant Witnesses had shown some amount of harm had occurred after the  
17 advent of Existing Bi-directional Service, this showing would be insufficient to  
18 meet their burden without also showing a direct causal relationship with bi-  
19 directional service. Showing that one event occurred after another does not show  
20 that the two events are causally linked.

1           **C.     Correlation Does Not Equal Causation**

2   **Q.     Why is it insufficient to simply note that negative operational events occurred**  
3           **after bi-directional service commenced?**

4   A.     A fundamental tenant of any empirical analysis is that correlation does not equal  
5           causation. In other words, the mere fact that two events happen in a related fashion  
6           is insufficient to conclude that one caused the other. An example, often used by  
7           professors to make this point involves the consumption of ice cream and shark  
8           attacks.<sup>85</sup> Every year the consumption of ice cream increases at the same time that  
9           shark attacks increase. A naïve observer might conclude that ice cream  
10          consumption causes an increase in shark attacks. Of course, the far more plausible  
11          explanation is that ice cream consumption and swimming near sharks both increase  
12          in the summer meaning that while the events are correlated, increased ice cream  
13          consumption does not *cause* an increase in shark attacks.

14 **Q.     Are there accepted ways to determine that one event causes another?**

15 A.     Yes. One must control all other variables so that any difference in outcomes must  
16          be the result of the variable of interest. Furthermore, one must ensure that any  
17          differences in outcome are statistically significant. In the physical sciences, this  
18          outcome is typically achieved through a controlled experiment repeated a sufficient  
19          number of times to ensure a statistically significant result. While one generally  
20          cannot perform a controlled experiment in a social science such as economics, the  
21          same basic concepts apply. Specifically, one should isolate the variable of interest

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<sup>85</sup> While I am aware of this example being used in a pedagogical context, I have not examined whether an actual correlation between ice cream and shark attacks exists. However, this plausible correlation illustrates the theoretical point well.

1 using a well specified regression equation containing all relevant variables to avoid  
2 confusing correlation with causation. One should also ensure the analysis contains  
3 a sufficiently large number of observations to ensure that the results are statistically  
4 significant. In order to keep my testimony succinct, I have prepared a technical  
5 memo to explain this technique.

6 **Q. Do you employ these techniques in the empirical analysis you present in your**  
7 **testimony?**

8 A. Yes. In contrast to the Complainant Witnesses, I have developed a detailed  
9 empirical analysis to assess whether the advent of bi-directional service caused  
10 material increases in (a) transit time and (b) variability of delivery. In developing  
11 this analysis, I employed the techniques I describe in the Technical Appendix. As  
12 I discuss in the next two subsections, I conclude that that the advent of bi-directional  
13 service caused little if any increases in transit time. With regard to the variance in  
14 deliveries, my statistical analysis shows that there is no detectable increase in the  
15 variance in deliveries caused by the advent of bi-directional service. Specifically,  
16 I analyze changes in transit time and transit time variance before and after the  
17 advent of bi-directional service while controlling for other relevant factors. I also  
18 analyze the change in inventory before and after the advent of bi-directional service  
19 again controlling for other relevant factors.

1           **D.     Analysis of Transit Time**

2   **Q.     Have you prepared a statistically robust analysis of the degree to which the**  
3           **advent of bi-directional service caused an increase in Transit-Time?**

4   A.     Yes. I have prepared a series of regression analyses controlling for relevant  
5           variables that examine whether the advent of bi-directional service caused an  
6           increased in transit time to the four major locations on Laurel, namely Sinking  
7           Spring, Mechanicsburg West, Eldorado, and Coraopolis.<sup>86</sup> I based these analyses  
8           on ticketing data provided by Laurel in discovery and that covering the period from  
9           January 1, 2014 to June 30, 2025. In Technical Appendix A, I describe the way I  
10          processed the data and provide an in-depth discussion of the statistical analysis I  
11          conducted that should allow interested parties to reproduce and validate my  
12          analysis.

13   **Q.     Did any of the shipper witnesses prepare a statistical analysis?**

14   A.     No. As I have noted above, none of the shipper witnesses, including Dr. Morris,  
15          who has the educational background to prepare such an analysis, have presented  
16          any type of statistical analysis to establish whether bi-directional service caused an  
17          increase in transit time. A regression analysis is the standard technique to prove  
18          correlation and rule out causality. As such, their failure to provide this critical  
19          information to the Commission represents a significant evidentiary failure.

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<sup>86</sup> Each of these locations had at least 6,000 delivery tickets to use as datapoints. The underlying analysis contained in Laurel Exhibit No. MJW-17 shows other locations. The results at these other locations are similar.

1 **Q. If the advent of bi-directional service had caused the type of transit time**  
 2 **increases the shippers are alleging, what type of results would you expect a**  
 3 **statistically robust regression analysis to show?**

4 A. I would expect the point estimate for the bi-directional variable in my regression  
 5 equation to be large and statistically significant. Specifically, the shipper witnesses  
 6 imply that the increases in transit time have rendered Laurel almost unusable. If  
 7 bi-directional service had caused transit times to increase so dramatically as to  
 8 dramatically degrade the quality of service, the magnitude of the increase would  
 9 need to be substantial.

10 **Q. Do you observe this result when you prepare your regression equations?**

11 A. No. I have reported the results of my regression equations using the STATA  
 12 statistical software in Laurel Exhibit No. MJW-17. I summarize point estimates for  
 13 the bi-directional variable in Table 2 below.<sup>87</sup> Table 2 shows that the bi-directional  
 14 variable is negative for all destinations except for Coraopolis.<sup>88</sup>

**Table 2**

<u>Effect of Broadway II on Transit Time (days)</u>		
<u>Destination</u>	<u>n</u>	<u>Volume Controls</u>
Sinking Spring (SN)	18,524	-0.515***
Mechanicsburg West (MT)	11,159	-0.088
Eldorado (DG)	13,739	-0.886***
Coraopolis (CP/CO)	6,914	1.334**

<sup>87</sup> The triple star indicates that a result is statistically significant at the 99 percent level. The double star indicates that the result is statistically significant at the 95 percent level. A lack of stars indicates a result is not statistically significant.

<sup>88</sup> As a robustness check, I also ran the regression without volume controls. This regression is not properly specified because volume and transit time are clearly correlated, meaning that leaving them out of the equation will result in a biased equation. However, observing how the point estimates change with the addition of appropriate controls provides assurance that the actual equation, *i.e.* the one I report in my testimony is properly specified. In this case, the positive point estimates for the bi-directional variable declined in all cases, and for three of the four destinations became negative. This result is consistent with the fact that volume declines cause transit time increases.

1 **Q. What do you conclude from these results?**

2 A. I draw several conclusions from these results. I would conclude that in some  
3 Existing Bi-directional Service may have caused a slight decrease in transit time or  
4 is statistically insignificant.<sup>89</sup> I would conclude that one cannot determine whether  
5 the advent of bi-directional service caused any increase or decrease in transit time  
6 at several locations. At a maximum, I would conclude that the advent of bi-  
7 directional service corresponds with an approximately 32-hour increase in transit  
8 time to Coraopolis. Since the transit time to Coraopolis averaged 10.9 days, this  
9 implies a 12 percent increase in transit time. This result is directly contrary to the  
10 suggestion of the Complainant Witnesses who suggest that the advent of bi-  
11 directional service caused a large increase in transit time.

12 **E. Analysis of Inventory Issues**

13 **Q. What other operational issues do the Complainant Witnesses raise?**

14 A. The Complainant Witnesses also suggest that the advent of bi-directional service  
15 increased the variance in transit time. Using the same data set provided to me by  
16 Laurel, I analyzed the variance to the four major locations discussed in subsection  
17 d. I defined the variance as the absolute deviation from the mean (for a given route  
18 and month). If the Complainant Witnesses' claims were valid, I would expect to  
19 observe a large increase in the variance of transit time caused by the advent of bi-  
20 directional service. In other words, I would expect the point estimate of the bi-  
21 directional variable to be large and statistically significant.

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<sup>89</sup> In my analysis, the transit time is expressed in days. Therefore, a point estimate of -0.04167 implies a one hour decrease in transit time.

1 **Q. What did you observe?**

2 A. My analysis did not support the conclusion that Existing Bi-directional Service  
 3 caused an increase in transit time variance as shown in Laurel Exhibit No. MJW-  
 4 17, which contains my STATA code for these analyses and summarized in Table  
 5 3. The point estimates are generally small, in some cases negative, and generally  
 6 were statistically insignificant.

**Table 3**

<b>Effect of Broadway II on Absolute Deviation in Transit Time (days)</b>		
<b>Destination</b>	<b>n</b>	<b>Volume Controls</b>
<b>Sinking Spring (SN)</b>	18,524	-0.338**
<b>Mechanicsburg West (MT)</b>	11,159	0.077
<b>Eldorado (DG)</b>	13,739	0.050
<b>Coraopolis (CP/CO)</b>	6,914	0.430

7 **Q. What do you conclude from these results?**

8 A. I conclude that Existing Bi-directional Service did not cause an operationally  
 9 significant increase in transit times, nor did it cause an operationally significant  
 10 increase in the variability of transit times, refuting the allegations of the  
 11 Complainant Witnesses.

12

13 **F. Conclusions from Empirical Analysis**

14 **Q. What conclusions do you draw from your empirical analysis?**

15 A. I conclude that the advent of Existing Bi-directional Service caused little, if any,  
 16 detectable increase in the adverse events the shipper witnesses identified. This fact  
 17 undermines the fundamental premise of the Complainants’ argument namely that  
 18 the Bi-directional Service Extension should be prohibited. Specifically, the  
 19 Complainant Witnesses have claimed that since Existing Bi-directional Service

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1 commenced, both transit time and the variance of transit time have increased. They  
2 imply, but do not conduct the analysis to show, that the advent of Existing Bi-  
3 directional Service caused this increase. They further suggest that the Bi-directional  
4 Service Extension will exacerbate these problems and further harm the consumers  
5 of Pennsylvania. My analysis shows that there is no support for the conclusion that  
6 Existing Bi-directional Service caused an increase in the variance of transit time  
7 and that the degree of transit time increase caused by the advent of Existing Bi-  
8 directional Service is trivial. Because a robust analysis shows that there is no  
9 evidence that Existing Bi-directional Service has caused the operational issues the  
10 Complainants allege it has caused, their claim that consumers have been harmed or  
11 will be further harmed by the Bi-directional Service Extension lacks merit. As Mr.  
12 Emery discusses in his testimony (Laurel Statement No. 4-R), increases in transit  
13 time are typically not considered major issues of service quality.

14 **Q. Is it possible that the small increases in transit time that your analysis shows**  
15 **have been caused by the advent of Existing Bi-directional Service have harmed**  
16 **consumers?**

17 A. No. Increased transit time would only impact consumers in two very limited  
18 circumstances. First, if increased transit caused terminals to experience outages  
19 such that service stations could not obtain product from their preferred suppliers,  
20 consumer prices *could* increase. However, as Mr. Emery discusses in his testimony  
21 (Laurel Statement No. 4-R), the Complainants have not provided any evidence this  
22 has occurred. Second, if transit times increased dramatically, and caused the  
23 shippers to incur higher inventory costs, there are certain circumstances where such

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1 costs *could* pass through to consumers. However, as my analysis shows, the  
2 increase in transit time is trivially small. As such, any added inventory costs caused  
3 by bi-directional service would be equally small.

4 **Q. Is there any evidence that Existing Bi-directional Service has caused**  
5 **operational disruptions of the type and magnitude alleged by the shipper**  
6 **witnesses?**

7 A. No. In my opinion, the evidence shows that Existing Bi-directional Service has  
8 caused disruptions of trivial magnitude, if it has caused any disruptions at all. As  
9 such, the shipper witnesses are asking the Commission to deprive the consumers of  
10 Pennsylvania of the benefits of greater competition for no discernible public  
11 benefit. However, I would note that by reducing competition, these complainants  
12 may enjoy a private benefit at the expense of Pennsylvania consumers.

13 **Q. Assuming *arguendo* that the Complainant Witnesses had shown that increases**  
14 **in transit time were caused by the advent of Existing Bi-directional Service,**  
15 **would this showing mean that Laurel had partially abandoned existing**  
16 **intrastate service?**

17 A. No. As I noted above, abandonment of service means the complete and permanent  
18 cessation of service. Taking longer to deliver product does not begin to meet this  
19 definition. Moreover, as I discussed above, if the shippers showed that Existing  
20 Bi-directional Service were responsible for such a severe degradation of service  
21 that their legitimate rights were harmed they would have remedies, likely in civil  
22 court.

1 **VI. CONCLUSION**

2 **Q. What conclusion do you draw from all of the analysis you present in your**  
3 **testimony?**

4 A. Utilizing the analytical framework I presented in Section II.A., I conclude that that  
5 the Commission should deny the Complaint. The Complainant Witnesses all seek  
6 to apply principles and concepts from the *2018 Commission Decision* that involved  
7 fundamentally different facts. However, adding a new, interstate service and  
8 providing shippers, and therefore consumers, with more supply options cannot be  
9 equated with a permanent and complete cessation of service. Moreover, even if the  
10 Commission concludes that it needs to assess the Bi-directional Service Extension  
11 in the context of the public interest, it must first account for the very real and very  
12 significant benefits of both Existing Bi-directional Service and the Bi-directional  
13 Service Extension and weigh these benefits against the irrelevant, speculative, and  
14 completely unsupported allegations of harm advanced by the Complainant  
15 Witnesses. In weighing these considerations, the benefits clearly outweigh the  
16 harms and, in my opinion, demonstrate that the Bi-directional Service Extension is  
17 in the public interest.

18 **Q. Does this conclude your rebuttal testimony?**

19 A. Yes, it does.

## Appendix A: Statistical Analysis

1. In this appendix, I discuss three issues. First, I explain at a conceptual level how one applies statistical techniques to determine causation. Second, I explain how I took data I obtained from Laurel and isolated so that I could apply appropriate statistical techniques to this data. Finally, I describe the statistical equations I applied to assess whether the advent of bi-directional service caused the issues the shippers allege.

### **A. Statistical Concepts**

2. To determine if one variable causes another one must isolate the variable of interest. There are several techniques available to isolate variables of interest. The simplest technique involves using an ordinary least squared or OLS regression equation. If the equation is properly specified such that it meets the “Gauss-Markov” conditions, the OLS regression coefficients will describe the degree to which the variable of interest causes a change in the other variable. While all of the Gauss-Markov conditions are relevant from a technical standpoint, the condition relevant for my testimony, is the zero conditional mean requirement.<sup>1</sup> In plain English, this requirement means that all of the explanatory variables are included in the equation.
3. A classic example used by professors involves estimating the effect of education on wages. A simple two variable or bi-variate regression would show Wages as the dependent variable

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<sup>1</sup> For completeness, the Gauss-Markov conditions are the equation must 1) be linear in parameters, 2) Have an expected value of the error term, given any values of the independent variables, of zero (“zero conditional mean), 3) exhibit homoscedasticity, 4) have no perfect multicollinearity.

or Y variable, and Education as the independent, explanatory or X variable, as shown in Equation 1 below.

$$(1) \text{ Wages} = \beta_0 + \beta_1 \text{Education} + \mu$$

4. If the value of  $\beta_1$ , the education coefficient, were 5,000. One could then conduct a hypothesis test to assess whether this result was statistically significant. If the result was statistically significant, and the Gauss-Markov conditions were met, one could conclude that every year of education caused wages to increase by \$5,000.
5. However, in this case, the Gauss-Markov conditions would not be met. Specifically, the zero conditional mean requirement is almost certainly not met in this example. There are many factors that correlate both to education and to wages. For example, the children of wealthy parents typically receive more education, and are able to leverage their parents' connections to earn higher wages. By ignoring the variable of parents' wealth, equation (1) is biased because it attributes all of the differences in wages to education, when in fact there are other variables that also impact wages. In technical terms, this flaw pervades the entirety of the testimony of the shipper witnesses. They simply identify bad events (their dependent variables) note that they happened after bi-directional service commenced and attribute all of the cause to the commencement of bi-directional service.
6. There are several techniques that one may employ to use regression equations that meet the zero conditional mean requirement. The simplest involves adding additional explanatory or independent variables. For example, Equation (2) below includes both an education variable and a parent's income variable.

$$(2) \text{ Wages} = \beta_0 + \beta_1 \text{Education} + \beta_2 \text{Parents Income} + \mu$$

7. If the value of  $\beta_1$  were \$2000, one could interpret this result as implying that controlling for parents' income, every year of education increased wages by \$2,000. Again, however, this would only be a valid interpretation if the only variable that correlates with education and wages is parents' income. Obviously, there are many variables that correlate with education and wages meaning a properly specified equation would need to include many variables. For this reason, many empirical analyses involve equations with numerous variables. However, employing an equation with many variables can create further issues and, in some cases, may not generate valid results.
8. In cases with a limited number of observations, adding variables to the equation can make it more difficult to generate statistically significant results.<sup>2</sup> Therefore, wantonly adding variables comes with a cost. Furthermore, if variables are highly correlated, multicollinearity may become an issue. In broad terms, when variables have a high degree of multicollinearity, the estimates may be "unstable" meaning one should be cautious about the inferences drawn from an equation with a high degree of multicollinearity. This possibility is a further reason why adding every conceivable variable does not represent sound empirical practice.
9. In some cases, a variable may not exist to address the zero conditional mean issue. Again, the wages and education question raises this issue. It is plausible to assume that people with a high degree ten of "drive" or a strong "work ethic" will do well in school, and thus obtain more education, and do well in the workplace. As such, drive and work ethic are correlated with both wages and education. However, it is difficult to imagine how one could quantify a

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<sup>2</sup> This is not an issue in the empirical analysis I am conducting in this case because there are tens of thousands of observations.

drive or work ethic variable. Therefore, even if one added 50 variables to equation (2), it would be subject to the criticism that it was still biased because it did not include an impossible to include variable.

10. Surprisingly, there is a solution to this problem. In the past few decades, a new literature has emerged that is broadly described as state and time fixed effects. The basic idea is that one looks for some difference that is otherwise unaffected by the unobserved (or unobservable) variables and using this difference to assess the issue in question. For example, imagine that in 2020, the Commonwealth of Pennsylvania passed a law making community college free. Presumably this would make higher education more accessible. If one observed that the wages of people born from 2000 to 2005 (*i.e.* the first kids able to take advantage of this change) were on average 10 percent higher than the wages of people born from 1995 to 1999, it might be reasonable to conclude that an extra two years of education caused an increase in wages of 10%. In this case, the zero conditional mean condition issue associated with drive and work ethic is not an issue because people who came of age just before the policy likely have the same drive and work ethic as people born just after the policy change.

## **B. Processing Laurel Data**

11. In this case, the shippers have alleged that bi-directional service has caused an increase in transit time and an increase in transit volatility. However, they present no empirical analysis to assess this question. To provide this empirical analysis I developed a comprehensive database of receipt and delivery data. I then processed the data to convert it into a format that would allow me to conduct a rigorous statistical analysis consistent with the principles outlined in Section A of this Appendix.

12. To create this database of receipt and delivery tickets for the Laurel system, from January 2014 to June 2025, I used four sources (1) “HC LAU00000199.xlsb”, (2) “HC LAU-II-11.xlsm”, (3) “Receipt\_Delivery data Jan 2014-June 2025.xlsb”, and (4) “Volume Summary FERC vs PUC.xlsb”. After collecting these receipts and delivery tickets from these sources together, I then removed any duplicates, as indicated by the “Ticket Number” field, which is a unique identifier for each ticket. The results are shown in the worksheets “Receipts” and “Deliveries” of the file “Ticketing Data 1 – Combined Sources.xlsx”.
13. For later use in the regression analysis, I then summed the monthly deliveries for each Origin (Receipt) – Destination (Delivery) pair. For example, “BH-CP” indicated a movement from Booth to Coraopolis. I also classified each movement as eastbound (“Eb”), westbound (“Wb”), transfer (“Trans”), along with the two-letter destination code. (“Wb\_CP” indicates westbound movements into Coraopolis). I also included westbound movements on the Indianola spur (“ND\_CP”) and eastbound movements on the Indianola Spur (“CP\_ND”). In these classifications, I used the designations “CP” to refer to all instances for Coraopolis, which is occasionally represented by “CO” in the data. The results of this are shown in the worksheet “Delivery Summary 1” of the file “Ticketing Data 1 – Combined Sources.xlsx”.
14. I then further collated the monthly volumes by these 23 movement categories (11 westbound, 7 eastbound, 2 spur movements, and 3 transfers). With the exception of the transfer volumes, these delivery summaries are used in the regression analysis as volume controls which I describe in my testimony. The results of this are shown in the worksheet “Delivery Summary 2” of the file “Ticketing Data 1 – Combined Sources.xlsx”.

15. In order to prepare the ticketing data for matching between the receipts and deliveries, I began by trimming tickets which I knew would not be of use in the calculation of transit time. First, I removed all tickets with a “Net Barrels” field less than or equal to zero. I then removed tickets with a “Nomination Id” field equal to zero. I then removed all delivery tickets which represented transfers (where “Location” was equal to “Origin Tanker Location”). Finally, I removed all tickets for transmix (“Product Type” equal to “TSX”), which could stay in the pipeline for long durations as line fill. The results of this trimming are shown in the worksheets “Receipts” and “Deliveries” in the file “Ticketing Data 2 – Ticket Trimming.xlsx”.
16. In order to calculate transit time, I needed to match the tickets for receipts and deliveries. To do this, I created a new field called “Combo ID” in both the receipts and delivery tables. It combined four existing fields as “Batch Number”—“Nomination Id”—“Origin Tanker Location”—“Origin Tanker”. Because transit time is calculated as “Finish Date-Time” for delivery minus the “Finish Date-Time” for receipts, I added a “Max Delivery Time” for each receipt ticket. This was calculated as the maximum “Finish Date-Time” for deliveries with the same “Combo ID” as the receipt ticket. I then added a “Max Transit Time” for each receipt ticket, which subtracted the “Finish Date-Time” from the “Max Delivery Time”. If this transit time was zero, negative, or if there were no delivery tickets which matched the “Combo ID” of the receipt ticket, I removed the receipt ticket.
17. Similarly, I added a “Min Receipt Time” for each delivery ticket This was calculated as the minimum “Finish Date-Time” for receipts with the same “Combo\_ID” as the delivery ticket. I then added a “Max Transit Time” for each delivery ticket, which subtracted the “Min Receipt Time” from the “Finish Date-Time”. If this transit time was zero, negative, or if

there were no receipt tickets which matched the “Combo ID” of the delivery ticket, I removed the delivery ticket. The results of this trimming and matching are in the “Receipts” and “Deliveries” worksheets in “Ticketing Data 3 – Matching.xlsx”.

18. To prepare the data for export (and to shrink the file size), I removed all extraneous fields from the receipt tickets, leaving only “Ticket Number”, “Source(s)”, “Combo ID”, and “Finish Date-Time”. All other fields mentioned below are sourced from the deliveries, which are the units used to generate each transit time datapoint. I also removed all extraneous fields from the delivery tickets, leaving, in addition to the fields left in the receipts, the destination code (“Location”), the destination name (“Location Name”), the origin code (“Origin Tanker Location”), “Batch Product”, “Ticket Type”, and “Net Barrels”. These truncated datasets are shown in the worksheets “Receipt Tickets” and “Delivery Tickets”, respectively, in the file “Ticketing Data 4 – Index & Export.xlsx”.

19. To prepare the data to be exported to Stata--the statistical package I use to run analyses-- certain categorical data fields (which denote which category a datapoint belongs to) must be converted to an integer index. I combined the fields “Origin Tanker Location” and “Origin Tanker Location Name” into a single field, “Origin”, with a corresponding “Orig\_ID”. For example, delivery tickets with an “Origin Tanker Location” listed as “CP” and an “Origin Tanker Location Name” listed as “Coraopolis” now have an “Origin” listed as “Coraopolis (CP/CO)”, with an “Orig\_ID” of 48. Similarly, I combined the fields “Location” and “Location Name” into a single field, “Destination”, with a corresponding “Dest\_ID”. For example, delivery tickets with a “Location Name” of “HIGHSPIRE – EAST”, “HIGHSPIRE – LAUREL”, or “HIGHSPIRE – PAULSBORO”, all of which have a “Location” listed as “HS”, now have a “Destination” listed as “Highspire (HS)”, with a “Dest\_ID” of 41. Then,

each “Origin”-“Destination” pair was given a unique “Route\_ID”, and categorized by a direction: either “Westbound”, “Eastbound (Old)” (indicating routes active prior to the opening of Broadway II), “Eastbound (New)” (indicating routes active after the opening of Broadway II), “Other (CP to ND)”, or “Other (ND to CP)”. The “Batch Product” of each delivery ticket was already characterized by an integer (corresponding to spec code in the Buckeye rules and regulations) and was thus kept as the “Prod\_ID”. Finally, the “Ticket Type” for each delivery, which was listed as either “METER CUSTODY DELIVERY TICKET” or “MEMO DELIVERY TICKET (NET TICKET)” was also converted to an integer index. The details of each ID are shown in the worksheet “Indexes” in the file “Ticketing Data 4 – Index & Export.xlsx”.

20. To prepare the final export dataset for Stata, I created a table which combined both the ID and the actual value for each field and for each delivery ticket, along with the minimum receipt time (corresponding to the maximum transit time for each delivery). This table then calculated the transit time (“Transit\_Time” in days), as well as the absolute deviation of the transit time (“AbsDev” in days). The absolute deviation is the absolute value of the difference between the transit time for a ticket and the average transit time for all tickets for that route, delivered in that month. The export table also contains time variables which depend on the delivery month, including “CalMonth\_ID”, which gives the month number 1-12 to account for seasonality, “Month\_ID”, which is not regressed, but which acts as a lookup index for the 138 months in the dataset, “Bw2”, which is the key indicator variable denoting whether or not Broadway II was operational at the time of the delivery, “Pre\_Trend”, which calculates the years prior to the opening of Broadway II, “Post\_Trend”, which calculates the years after the opening of Broadway II, and the monthly delivered

volume summaries (“Vols\_”), which were calculated from all the delivery tickets in “Ticketing Data 1 – Combined Sources.xlsx”, which I described above. The table of this final compilation of data is shown in the worksheet “Export Data”, in the file “Ticketing Data 4 – Index & Export.xlsx”.

### C. Running Statistical Analyses in STATA

21. Once this data was uploaded to Stata, I entered the following command:

```
. by Destination, sort: regress Transit_Time  
    Bw2 Pre_Trend Post_Trend i.CalMonth_ID i.Orig_ID i.Prod_ID TicketType_ID Delivery_Vol Vols_*  
    if Destination!="Pittsburgh (PG)" & Direction=="Westbound" & Delivery_Vol>=2500, robust
```

22. This command calculates a linear regression of “Transit\_Time” (defined as delivery time minus the minimum receipt time) on the following independent variables:

- “Bw2” is an indicator variable. It equals 0 for delivery times before—and 1 for delivery times after—the operation of Broadway II (October 2019). This is the key coefficient for this analysis.
- “Pre\_Trend” represents the number of years a delivery ticket (categorized by the delivery month) is completed prior to Broadway II. For example, it equals -1.5 in April 2018, and zero starting in October 2019.
- “Post-Trend” represents the number of years a delivery ticket (categorized by the delivery month) is completed after Broadway II. For example, it equals 2.25 in January 2022, and zero through October 2019. The purpose of “Pre\_Trend” and “Post\_Trend” is to isolate the immediate marginal effect of the Broadway II operation.

- “i.CalMonth\_ID” represents an array of eleven indicator variables, denoting which calendar month a delivery ticket was completed in.<sup>3</sup> For example, if a ticket was delivered in June 2025, the variable “6.CalMonth\_ID” equals 1, while the remaining variables equal zero.
- “i.Orig\_ID” represents an array of nine indicator variables, denoting which of the ten origin location a delivery came from: Sewaren, Port Reading, Linden, Macungie, Paulsboro, Malvern, Eagle Point, Girard Point, Chelsea, or Booth.
- “i.Prod\_ID” represents an array of 31 indicator variables, denoting which of the 32 product spec codes a delivery ticket was matched to.
- “TicketType\_ID” is a single indicator variable equal to zero for “METER CUSTODY DELIVERY TICKET” and one for “MEMO DELIVERY TICKET (NET TICKET)”.
- “Delivery\_Vol” indicates the size, in barrels, of each delivery ticket.
- “Vols\_\*” represents the set of 20 monthly delivery volumes by destination-direction. For example, “Vols\_Wb\_SN” represents the westbound deliveries to Sinking Spring during the month of the delivery ticket.

23. This regression is limited to westbound deliveries greater than 2,500 bbl (the minimum volume requirement in the rules and regulation) to each destination (excluding Pittsburgh, which receives barrels infrequently), with robust errors (to account for possible homoskedasticity).

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<sup>3</sup> The ID variables with more than two possible categories (“i.CalMonth\_ID”, “i.Orig\_ID”, and “i.Prod\_ID”) always contain one less variable than the number of possible categories to avoid the “dummy variable trap”, which occurs when all categories of the categorical variable are used in the model. This would then violate the prohibition against perfect multicollinearity.

24. To run a similar analysis on the volatility of transit times, I run two more regressions sets, but instead of regressing on “Transit\_Time”, I used “AbsDev”.

```
. by Destination, sort: regress AbsDev  
    Bw2 Pre_Trend Post_Trend i.CalMonth_ID i.Orig_ID i.Prod_ID TicketType_ID Delivery_Vol Vols_*  
    if Destination!="Pittsburgh (PG)" & Direction=="Westbound" & Delivery_Vol>=2500, robust
```

25. The complete results for all of these regression sets are shown in Exhibit No. MJW-17. The results which are quoted in my testimony are the coefficients for “Bw2”, which shows the effect of the Broadway II operation on transit time, and on volatility of transit time, for the four major destinations, with volume controls (highlighted in the exhibit).

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**Docket No. C-2025-3053018**

**LAUREL PIPE LINE COMPANY, L.P.**

**Statement No. 4-R**

**Rebuttal Testimony of Glenn E. Emery**

**Topics: Rebuttal Regarding Benefits of Bi-directional Operations, Rebuttal Regarding Operational Issues of Scheduling, Rebuttal Regarding Common Carrier Obligation and Shipper Harm, and Rebuttal Regarding The Direct Testimony of Thomas Miesner.**

**Dated: August 29, 2025**

TABLE OF CONTENTS

**LAUREL PIPE LINE COMPANY, L.P.** ..... 0

**Statement No. 4-R** ..... 0

I. Introduction ..... 1

II. Shippers Ignore the Benefits of Laurel’s Bi-Directional Service and Focus on a Single Variable ..... 4

    A. Benefits of Laurel’s Bi-Directional Service ..... 4

    B. Shipper Witnesses Focus on a Single Variable ..... 8

III. Operational Issues Of Scheduling ..... 12

IV. Issues Presented BY Shippers Reflect Neither Carrier Responsibilities Nor Actual Harm to Shippers ..... 20

    A. Common Carriage Obligations ..... 20

    B. Shippers Have Not Shown Any Actual Harm ..... 25

V. Mr. Miesner’s testimony Theme of complex and difficult Bi-directional Operations is misleading at best ..... 27

VI. Mr. Miesner’s Testimony is Speculation and Not Indicative of Actual Laurel Operations  
34

VII. Addressing Other Issues with Mr. Miesner’s Testimony ..... 41

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1 **I. INTRODUCTION**

2 A. My name is Glenn Emery. I am the principal of Minesgrad Consulting LLC. My  
3 business address is 44 Oakland Hills, Boerne, Texas.

4 **Q. Please describe your education and professional experience.**

5 A. I have a Bachelor of Science in Chemical and Petroleum Refining Engineering from  
6 the Colorado School of Mines. I have worked in the midstream energy industry for  
7 over 40 years. My career has been primarily focused on the refined products and  
8 crude oil midstream sectors, and has been comprised of many diverse roles,  
9 including product movement scheduling, pipeline hydraulics and mainline power  
10 optimization, SCADA control center supervision, field operations management,  
11 safety and environmental, business/commercial development, project  
12 implementation, mergers and acquisitions, and profit and loss (“P&L”)  
13 responsibility for business units. Prior to forming my consulting business, I worked  
14 for Energy Transfer LP from 2012 to 2024 in the role of Vice President –  
15 Commercial Operations/Business Development, responsible for the commercial  
16 operations and optimization of a crude oil pipelines and terminals network,  
17 including the 2,000-mile Bakken pipeline system from North Dakota to the Gulf  
18 Coast, as well as representing the company as a board member of their refined  
19 product and crude oil trucking subsidiary. During my time at Energy Transfer, as  
20 well as when I worked at my prior companies, I held shipper meetings as well as  
21 frequently met with shippers separately during which they informed me of their  
22 market views and operating practices they wanted us to consider implementing,  
23 often based upon the best practices they had seen employed at other pipelines.  
24 Before my time at Energy Transfer, I worked for NuStar Energy from 2006 to 2012

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1 with commercial responsibility for their mid-continent refined products pipeline  
2 and terminals business units. Prior to that time, from 1985 until 2006, I worked for  
3 Williams/Magellan where I had various roles in operations, commercial, and  
4 business unit P&L responsibilities. During my time at Williams, the company  
5 operated several bi-directional lines. Early in my career I was a scheduling analyst  
6 and back-up scheduler, meaning that I had to understand how to schedule the entire  
7 pipeline system including a bi-directional line from Minneapolis, MN to Duluth,  
8 MN. My early roles also included overseeing the operations control center  
9 responsible for implementing the pipeline system schedules. A current version of  
10 my CV is attached as Laurel Exhibit No. GEE-01.

11 **Q. On whose behalf are you submitting your testimony?**

12 A. I am presenting testimony on behalf of Laurel Pipe Line Company, L.P. (“Laurel”  
13 or the “Company”). Laurel is an affiliate of Buckeye Pipe Line Company L.P.  
14 (“Buckeye”).

15 **Q. Have you previously testified before the Pennsylvania Public Utility  
16 Commission (“PaPUC” or the “Commission”)?**

17 A. No.

18 **Q. What is the purpose of your testimony in this proceeding?**

19 A. Counsel for Laurel has asked me to review the testimony of Mr. Thomas O.  
20 Miesner, filed on behalf of Monroe Energy, LLC (“Monroe”), Lucknow-Highspire  
21 Terminals, LLC (“LHT”), Sheetz Inc. (“Sheetz”) and PBF Holding Company  
22 LLC), collectively the “Complainants”; the testimony of Mr. Joshua Jadlocki, filed  
23 on behalf of Sheetz; the testimony of Mr. Kyle Summers, filed on behalf of Monroe;

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1 and the testimony of Ms. Shauna Huzicko, filed on behalf of LHT. I refer to these  
2 witnesses collectively as the “Shipper Witnesses” or the “Complainant Witnesses.”  
3 Based on my review, I conclude that the arguments made by the Shipper Witnesses  
4 are without merit, and their suggestion that Laurel’s extension of bi-directional  
5 service to Sinking Springs will cause operational issues is incorrect and lacks  
6 foundation.

7 **Q. Do you rely on the testimony of other witnesses?**

8 A. Yes. Dr. Michael Webb, also providing rebuttal testimony on behalf of Laurel,  
9 responds to the testimony of Dr. Morris and addresses issues related to economic  
10 theory (Laurel Statement No. 3-R). I also rely on the rebuttal testimony of Mr.  
11 Thomas Zeth for my understanding of specific operational details of Laurel (Laurel  
12 Statement No. 1-R).

13 **Q. How have you organized your testimony?**

14 A. In Section II, I explain the substantial benefits associated with Laurel’s current and  
15 expanded bi-directional operations and that shipper witnesses focus and rely on a  
16 single variable of causation while ignoring all of the other relevant facts.. In  
17 Section III, I explain the industry consistent Laurel pipeline nomination and  
18 scheduling processes and the various daily issues addressed by schedulers of single  
19 directional pipelines and bi-directional pipelines. In Section IV, I explain that the  
20 issues presented by the Shipper Witnesses do not reflect carrier responsibilities nor  
21 the actual impact of increases in transit time to the shippers. In Sections V-VII, I  
22 respond to issues raised by Mr. Miesner. Specifically, in Section V, I explain that  
23 Mr. Miesner’s claim that bi-directional operations are complex and difficult is

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1 misleading at best. In Section VI, I explain that Mr. Miesner’s testimony is based  
2 largely on speculation and is disconnected of Laurel’s actual operations. Finally,  
3 in Section VII, I address a number of specific and misleading claims made by Mr.  
4 Miesner.

5 **II. SHIPPERS IGNORE THE BENEFITS OF LAUREL’S BI-DIRECTIONAL SERVICE AND**  
6 **FOCUS ON A SINGLE VARIABLE**

7 **Q. What topics do you address in this section of your testimony?**

8 A. In this section of my testimony, I address two primary topics. First, I explain how  
9 expanded bi-directional service will create additional operational efficiency. I  
10 understand that Dr. Webb relies on this information to support his conclusion that  
11 expanded bi-directional service will benefit consumers in the Commonwealth of  
12 Pennsylvania. Second, I explain how the complainants focus on a single variable  
13 as the culprit in their story ignoring the many other variables that exist including  
14 ones caused by them.

15 **A. Benefits of Laurel’s Bi-Directional Service**

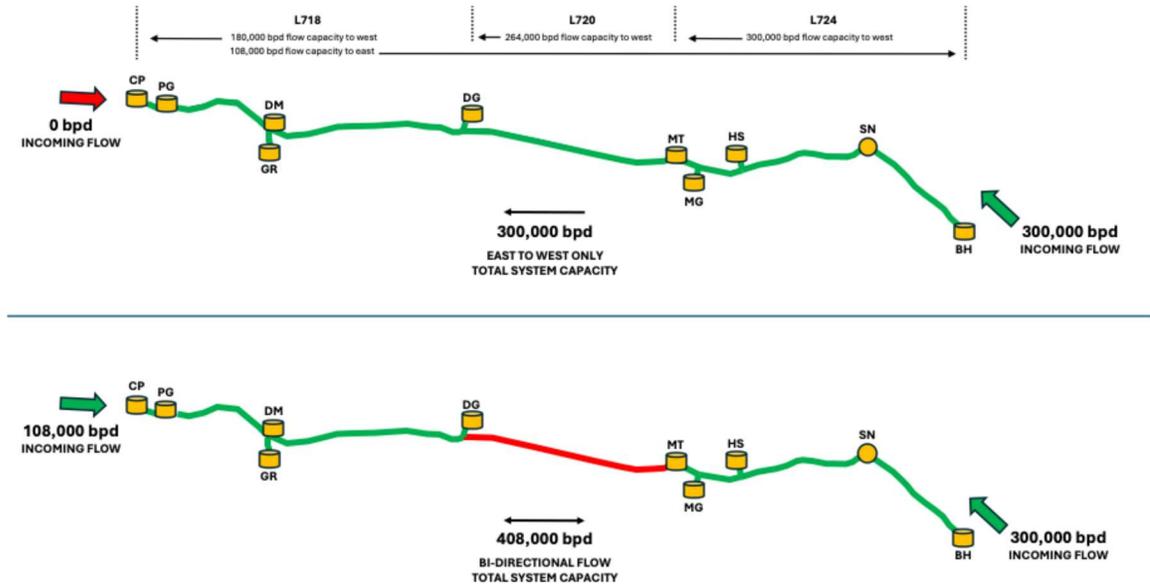
16 **Q. What are the benefits of bi-directional service on Laurel’s pipeline system for**  
17 **shippers and the public?**

18 A. Bi-directional service increases the flexibility and liquidity of the Laurel pipeline  
19 system by enabling demand to be met from additional origins and allowing multiple  
20 destinations to be supplied from both east and west. The resulting benefits to the  
21 shippers and the public include: greater supply reliability through access to  
22 additional origins; increased competition for market supply to help ensure the best  
23 available price for shippers and consumers; expanded overall capacity of the

1 pipeline system; and more optimal utilization of the pipeline asset, which enables  
 2 more efficient and enhanced transportation services.

3 **Q. Does bi-directional service create benefit from an operation standpoint?**

4 A. Yes. Existing bi-directional service effectively increases the physical capacity of  
 5 Laurel and expanded bi-directional service increases the effective capacity of the  
 6 system more. To understand this, it important to recognize that the three segments  
 7 at issue in the current proceeding have the following capacities: L724 from Booth  
 8 thru Sinking Spring to Mechanicsburg has a capacity of 300,000 bpd; L720 from  
 9 Mechanicsburg to Eldorado has a capacity of 264,000 bpd; and L718 segment from  
 10 Eldorado to Coraopolis has a capacity of 180,000 bpd. In addition, the capacity of  
 11 the other pipeline flowing through Sinking Spring, L714 is 144,000 bpd.



12 When Laurel was a single direction pipeline, this configuration meant that if there  
 13 was 200,000 bpd of demand at Mechanicsburg, 100,000 bpd of system capacity  
 14 remained to meet demand from Eldorado to Coraopolis. If nominations to El  
 15 Dorado and points west exceeded the remaining capacity, the pipeline would go  
 16

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1 into allocation and Laurel would be required to apportion space in accordance with  
2 its allocation policy, meaning some demand would not be satisfied. By contrast, if  
3 the pipeline were bi-directional all the way to Sinking Spring, including the L718  
4 capacity from Coraopolis to Eldorado of 108,000 bpd, the pipeline would have the  
5 effective physical capacity to transport up to 408,000 bpd reducing the need for  
6 allocation of the system. In this way, bi-directional service enhances the overall  
7 capacity by providing more flexibility in meeting demand.

8 **Q. What is the capacity if the pipeline operates in an expanded bi-directional**  
9 **manner and utilizes virtual barrels?**

10 A. The effective capacity of the Laurel system could be in excess of the 408,000 bpd  
11 physical capacity with bi-directional service, depending upon the ultimate balance  
12 of volumes being nominated from both the east and west.

13 **Q. Does it matter that locations such as Eldorado are fairly remote and relatively**  
14 **far from major consumption points?**

15 A. Not necessarily. It is important to recognize that unlike gas pipelines, which are  
16 typically connected directly to the burner tip of the customers, all product flowing  
17 on Laurel must be delivered to a bulk terminal where it is loaded onto a tanker truck  
18 for delivery to a service station. In my experience, if wholesalers or marketers are  
19 able to obtain competitively priced product from a relatively remote terminal, they  
20 will do so. In other words, they consider the cost of product plus the cost of trucking  
21 the product to a service station in making their supply decisions. If a remote  
22 terminal has competitively priced product, wholesalers and marketers will purchase  
23 such product and truck it a longer distance to expand their market reach. I

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1 understand that Dr. Webb has analyzed consumption within 100 miles of the  
2 relevant terminals. In my opinion, this is a reasonable way to consider potential  
3 demand at these terminals and would be an analysis I would have conducted when  
4 I had commercial responsibility for terminals.

5 **Q. Are there other ways that bi-directional service creates operational benefits**  
6 **for Laurel?**

7 Yes. It increases the flexibility and liquidity of the system. In other words, both  
8 shippers and the pipeline have more ability to meet demand from additional origins  
9 providing the ability to supply multiple locations from both east and west  
10 directions. This fact undermines a key premise of the Shipper Witnesses'  
11 testimony, namely that because bi-directional service to Eldorado has caused  
12 issues, an assertion with which I disagree, extending bi-directional service to more  
13 locations will cause greater issues. In my opinion, the opposite is more likely. By  
14 having more locations and more ways to engage in swapping barrels or meeting  
15 demand in other ways, the operations on the system may be enhanced. Indeed,  
16 several of the lines I scheduled at Williams, later Magellan, were bi-directional with  
17 multiple origin points and delivery points. These multiple origins and deliveries  
18 allowed us to meet demand in ways that would not have been possible if the lines  
19 were only flowing in a single direction. Therefore, I believe that adding  
20 destinations to the westbound service will enhance the liquidity of the system as a  
21 whole and have an overall benefit to consumers by increasing competition in these  
22 markets.

1        **B.      Shipper Witnesses Focus on a Single Variable**

2        **Q.      Why do you say that Shipper Witnesses ignore the benefits and focus on a**  
3        **single variable?**

4        A.      A theme found throughout their testimony is that bi-directional service has caused  
5        a substantial degradation in the quality of the service provided by Laurel.  
6        However, they do not acknowledge the potential benefits of bi-directional service  
7        in their testimony. The Shipper Witnesses identify several adverse events that have  
8        occurred since Laurel became bi-directional and conclude that bi-directional  
9        service caused these adverse events.<sup>1</sup> In particular, they claim that transit time has  
10       increased and become more variable since bi-directional service was implemented.  
11       Dr. Webb explains in his rebuttal testimony (Laurel Statement No. 3-R) why their  
12       approach is incorrect from a methodological standpoint, noting that correlation  
13       does not equal causation. In this Section of my testimony, I identify issues that  
14       Shipper Witnesses have ignored, which are not unique to Laurel but occur across  
15       many common carrier pipelines and can potentially contribute to increased transit  
16       times or greater variability.

17       **Q.      What is the first factor influencing transit time ignored by the Shipper**  
18       **Witnesses?**

19       A.      The most obvious factor is declining volume. As Dr. Webb shows in his rebuttal  
20       testimony (Laurel Statement No. 3-R), volume moving from east to west has been

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<sup>1</sup> See, e.g., Complainants Exhibit JDJ-1, at 3-5, 6-8, 9-10; Complainants Exhibit KFS-1, at 4-7, Complainants Exhibit SH-1, at 4-7.

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1 declining for years. Transit time is a direct function of the total quantity of volume  
2 tendered.

3 **Q. Is the carrier in sole control of transit times through the pipeline system?**

4 A. No. Pipelines operate by displacement.<sup>2</sup> In other words, a liquids pipeline does not  
5 function in a manner analogous to a pneumatic bank tube where pressurized air  
6 moves a container. Instead, a liquids pipeline is always full of liquid, whereby the  
7 entire linefill is in essence the “container” to be delivered. To get liquid out at one  
8 end (*e.g.* Pittsburgh) shippers must put an equivalent amount of liquid into the  
9 pipeline at some other point (*e.g.* Booth). In broad terms, if shippers are constantly  
10 tendering the full capacity of the pipeline and constantly removing the full capacity,  
11 the pipeline will be operating at full capacity and transit time will in theory be  
12 minimized. By contrast, if shippers are only tendering half the capacity of the  
13 pipeline, transit time will be longer because sufficient volumes are not being  
14 constantly tendered to keep the pipeline flowing at full capacity.

15 **Q. Is Laurel operating at capacity?**

16 A. No. In his rebuttal testimony, Dr. Webb prepared figures reflecting both deliveries  
17 and capacity on the three line segments at issue in this proceeding, L724 between  
18 Sinking Springs, PA and Mechanicsburg, PA; L720 between Mechanicsburg, PA  
19 and El Dorado, PA; and L718 between El Dorado, PA and Coraopolis, PA. As Dr.  
20 Webb’s figures show, all three line segments have operated well below capacity  
21 since the end of the COVID-19 pandemic in 2021. Moreover, the two line segments

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<sup>2</sup> Complainant witness Mr. Miesner concedes this point. Complainants Exhibit TM-1, at 7 (“...line fills and diameters...have a direct impact on capacity and transit times.”).

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1 that have not been converted to bi-directionals service, L724 and L720, have  
2 experienced declining volumes, meaning available and unused system capacity has  
3 increased since 2021.

4 **Q. What conclusion do you draw from this fact?**

5 A. I conclude that the declining throughput explains at least in part any increasing  
6 transit time. As a matter of basic pipeline operations, a line that is operating with  
7 increasing unused capacity will experience increasing transit time. Therefore, the  
8 suggestion by the Shipper Witnesses that the advent of bi-directional service has  
9 been the sole cause of any increased transit time is simply inconsistent with the  
10 operational facts of the pipeline.

11 **Q. Are there other reasons ignored by the Shipper Witnesses that could cause  
12 transit time to increase?**

13 A. Yes, there are a number of other factors. For example, shippers may change their  
14 nominations either prior to or during the month. These nomination changes could  
15 force the pipeline schedulers to redo their schedules, resulting in increased transit  
16 times to some or all delivery points. The Shipper Witnesses fail to acknowledge  
17 the possibility or actual occurrence of schedule impacts due to nomination changes  
18 by shippers.

19 **Q. What is the next reason transit times might increase?**

20 A. The timing and availability of supply from connecting sources. These issues could  
21 involve either planned or unplanned refinery turnarounds or unplanned outages at  
22 other facilities. These outages can interrupt or slow delivery timing as well as  
23 reduce nominated tender quantities. The Shipper Witnesses do not acknowledge

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1 this possibility or assess whether these events, in combination with other events,  
2 have caused increased transit time.

3 **Q. What is the next reason why transit times might increase?**

4 A. At times, meeting customers' needs in a fair and equitable manner, consistent with  
5 the pipeline's common carriage obligations, requires rearranging the schedule in a  
6 way that may increase the transit time for some batches. As an example, a scheduler  
7 may have their original schedule with a sequence established for deliveries to  
8 several different terminals. However, the scheduler receives a call from the last  
9 scheduled terminal location informing of some unplanned work that will make that  
10 terminal unavailable to receive per the original schedule. The scheduler, in  
11 coordination with the other terminal locations, then changes the sequence of batch  
12 deliveries to work around the issue and schedule what would have been the last  
13 delivery to an earlier delivery time. This schedule change would also change one  
14 or more deliveries for other terminals which also would increase their associated  
15 transit times from the original schedule. Again, the Shipper Witnesses do not  
16 acknowledge this possibility. Moreover, I have confirmed that each of the  
17 aforementioned events have and do occur on Laurel and cause transit time  
18 increases.

19 **Q. Are these issues more difficult to address on a bi-directional pipeline relative**  
20 **to a single directional pipeline?**

21 A. Not necessarily. While it is true that scheduling a bi-directional pipeline has some  
22 different variables versus scheduling a single directional pipeline, this difference  
23 does not necessarily lead to higher transit times. For example, if the bi-directional

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1 service leads to greater volumes, bi-directional service may decrease transit times.  
2 In fact, at the limit when demand from the origins on each end of a bi-directional  
3 pipeline balances, the pipeline may be able to eliminate transportation to the  
4 endpoints all together effectively reducing the associated transit time to zero.  
5 Therefore, the suggestion by various witnesses, and in particular Mr. Miesner,<sup>3</sup> that  
6 bi-directional service is inherently more complex and leads to greater transit times  
7 across the system is without foundation.

8 **III. OPERATIONAL ISSUES OF SCHEDULING**

9 **Q. How is a pipeline scheduled?**

10 A. In broad terms, the pipeline states in its rules and regulations tariff that shippers  
11 must nominate the amount, date, origin, and destination of product they would like  
12 shipped. In refined products pipelines, different types of product are assembled  
13 into batches and then scheduled to be lifted from an origin at a specific point in  
14 time and delivered to a destination at another point in time based upon the schedule  
15 of the incoming streams. Most refined product pipelines schedule and operate on a  
16 cycle basis. In the case of Laurel, the cycle is 10 days. Laurel typically lifts  
17 gasolines starting on the 2's and distillates starting on the 7's (*i.e.* days of the month  
18 ending in 2 or 7), meaning that normally there will be one gasoline batch sequence  
19 and one distillate batch sequence in each cycle. However, the exact gasoline and  
20 distillate batch sequencing will always be based upon the relative quantities of each  
21 grade/category of products in each cycle.

22 **Q. What type of products do refined products pipelines typically ship?**

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<sup>3</sup> Complainants Exhibit TM-1, at 4-5.

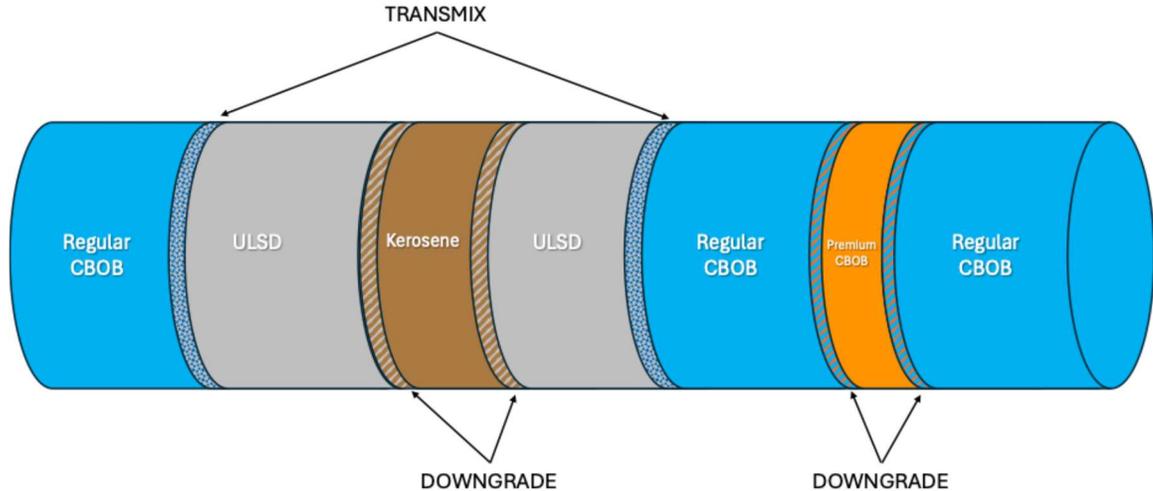
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1 A. Refined product pipelines typically ship two broad categories of products: gasoline  
2 and distillate. Within the gasoline category there are different formulations  
3 depending on whether the location requires conventional gasoline or reformulated  
4 with the conventional grades typically known as conventional blendstock for  
5 oxygenated blending (“CBOB”) and reformulated blendstock for oxygenated  
6 blendstock (“RBOB”). Both CBOB and RBOB are produced at regular grades (87  
7 octane) and premium grades (91-93 octane). Midgrade (89 octane) is a mixture of  
8 regular and premium grades that is blended either at a terminal or more likely at the  
9 retail gas station today. Distillates consist of various types of diesel fuel, with ultra-  
10 low sulfur diesel, kerosene and home heating oil being the primary distillates.  
11 These different grades of product are arranged in batch sequences to minimize  
12 transmix and premium product downgrades within each product category.

13 **Q. What do you mean when you say different grades of product are arranged in**  
14 **batch sequences to minimize transmix and premium product downgrades.**

15 A. First, it is important to recognize that the interface between a gasoline batch and a  
16 distillate batch creates a non-merchantable off-spec product known as transmix.  
17 This mixture of gasoline and distillate normally is reprocessed to create a  
18 merchantable product, but may also be blended off at a terminal at very low  
19 percentages if appropriate products are available with actual test results allowing  
20 for such blending while maintaining product specifications.

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1  
2 As this image illustrates, more expensive premium gasoline is typically surrounded  
3 by regular gasoline, and kerosene is routinely surrounded by ULSD.<sup>4</sup> In this way,  
4 the more valuable product such as premium gasoline is not mixed into transmix  
5 volumes but instead, the interface between the premium gasoline and the regular  
6 gasoline is typically downgraded into the regular gasoline batch.

7 **Q. What role do schedulers play in arranging these batches?**

8 A. Once all of the nominations are received per the tariff rules and regulations, the  
9 schedulers will develop a tentative schedule based upon any defined shipping  
10 cycles with approximate timing informing shippers when they need to have their  
11 volume ready to be tendered at their nominated origin and the approximate timing  
12 for volume deliveries to their nominated terminals. This initial schedule is only the  
13 beginning of the process to manage the monthly shipments and deliveries and adapt  
14 to the inevitable changes that routinely occur while also optimizing system  
15 operations to meet the needs of the variety of interested parties. In the case of

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<sup>4</sup> I would note Laurel typically does not ship jet fuel.

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1 Laurel, the pipeline is working to meet the needs of 19 intrastate shippers as well  
2 as the needs of the additional interstate shippers, all of whom must receive service  
3 in a non-discriminatory manner. As I discussed in Section V below, scheduling a  
4 single direction pipeline can be challenging and scheduling a bi-direction pipeline  
5 can also be challenging but carriers have successfully met these challenges for  
6 many years.

7 **Q. What are issues that can arise in scheduling a single direction pipeline?**

8 A. The original volume nominated rarely matches the actual volume tendered with  
9 precision. For example, if Company X nominates 25,000 barrels of 87 Octane  
10 CBOB, it may only tender 24,500. Adding all of these differences over a large  
11 number of shippers can result in material volume differences between the  
12 preliminary schedule and the actual schedule. It is my understanding that Laurel's  
13 schedule does not become firm until approximately 24 hours prior to the lifting time  
14 and/or delivery time. In other words, shippers are given a preliminary schedule that  
15 is updated as the actual lifting day approaches but is always subject to change,  
16 particularly when shippers modify the volume, origin, or destination of their  
17 nominations after the initial nomination date, and even after the volume has entered  
18 the pipeline. This scheduling practice by Laurel is consistent with my experience  
19 at other carriers.

20 **Q. Do you agree with Shipper Witnesses who suggest that the uncertainty in**  
21 **Laurel's schedule is unreasonable?**

**PUBLIC VERSION – NON-PUBLIC MATERIAL REDACTED**

1 A. No. The Shipper Witnesses suggest that Laurel is somehow remiss in not providing  
2 service at certain and specified times.<sup>5</sup> In other words, they suggest that Laurel  
3 somehow has an obligation to tell shippers thirty days out that it will lift product at  
4 a specific time and deliver product at another specific time. No refined products  
5 pipeline for which I have worked or with which I am familiar could possibly meet  
6 this expectation.

7 **Q. What are other reasons why scheduling a single direction pipeline can be**  
8 **challenging with uncertainties even when only looking a few days forward?**

9 A. Scheduling a single direction pipeline involves balancing many variables. These  
10 include carrier issues, such as unplanned and planned downtime, weather, and  
11 regulatory constraints on operations, as well as and perhaps more significantly,  
12 shipper actions and issues, such as changing nominations, supply availability  
13 timing, market demand fluctuations, and destination receipt constraints. All of these  
14 factors must be managed while still meeting customer needs in a fair and equitable  
15 manner. Given the number of variables involved and potential for more than one  
16 variable to be changing at the same time and causing impacts, uncertainty in  
17 scheduling is inherent to the process.

18 **Q. Could you provide an example of how a single direction pipeline meets the**  
19 **demand of its customers?**

20 A. Yes. Imagine that there is 100,000 bpd of refined product, consisting of 70,000 bpd  
21 of gasoline and 30,000 bpd of distillate that shippers want to ship combined from

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<sup>5</sup> See, e.g., Complainants Exhibit JDJ- 1, at 8-9; Complainants Exhibit KFS- 1, at 4-7; Complainants Exhibit JDJ- 1, at 4-5.

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1 Linden and Philadelphia to the consumption points along Laurel, namely, Sinking  
2 Springs, Mechanicsburg, El Dorado and Coraopolis.<sup>6</sup> Assume that demand for  
3 gasoline in Sinking Springs and Mechanicsburg is 25,000 bpd and demand for  
4 diesel fuel in each location is 10,000 bpd. Further assume that demand for gasoline  
5 in El Dorado and Coraopolis is 10,000 bpd and demand for distillate is 5,000 bpd  
6 in both locations. Over the ten day cycle, these assumptions mean that Laurel would  
7 need to deliver 700,000 barrels of gasoline to the various locations and that it would  
8 need to deliver 300,000 barrels of distillate. This means that there would be 250,000  
9 barrels of gasoline and 100,000 of distillate delivered at the two eastern locations  
10 in a cycle and 100,000 barrels of gasoline and 50,000 barrels of distillate would be  
11 delivered at the two western locations. Laurel typically lifts gasolines starting on  
12 the 2's and distillates starting on the 7's (*i.e.* days of the month ending in 2 or 7)  
13 meaning that normally there will be one gasoline batches sequence and one  
14 distillate batches sequence in each cycle. However, the exact gasoline and distillate  
15 batch sequencing will always be based upon the relative quantities of each  
16 grade/category of products in each cycle. Therefore, in simplified form for this  
17 example, 700,000 barrels of gasoline would flow to the four locations in the first  
18 part of the cycle, then 250,000 barrels of distillate in the last part of the cycle.  
19 Because of the inherent challenges of scheduling the actual amounts flowing during  
20 each part of the cycle would potentially be different from this example. However,

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<sup>6</sup> I recognize that there are additional delivery points along Laurel. However, for the purpose of this illustration I focus on these three.

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1 at a fundamental level, the point of scheduling a single direction pipeline involves  
2 meeting the nominations (*i.e.* market demand) at the origins and the destinations.

3 **Q. Does a bi-directional pipeline rely on different principles?**

4 A. No. The pipeline still needs to meet demand at the origins and the destinations.  
5 However, in the case of a bi-directional pipeline, it is meeting demand at multiple  
6 origins at both ends of the pipeline system. As Dr. Webb discusses in depth in his  
7 rebuttal testimony (Laurel Statement No. 3-R), having multiple origins increases  
8 the competitive pressure and will likely reduce prices.

9 **Q. How would meeting demand from multiple origins and multiple destinations**  
10 **work?**

11 A. First, assume that demand at each of the destinations remained constant. In other  
12 words, the two more eastern destinations still have demand for 25,000 bpd of  
13 gasoline and 10,000 bpd of distillate and the two more western destinations still  
14 have demand for 10,000 bpd of gasoline and 5,000 bpd. However, the first question  
15 would be whether this demand would be met from the East, the West, or a  
16 combination of the two. If refined product produced on the East Coast had a large  
17 price advantage after including transportation costs relative to product produced in  
18 the Midwest, I would expect demand would be met from the East and the pipeline  
19 would flow in the same manner as in the previous example. By contrast, if refined  
20 produced in the Midwest had a substantial price advantage after including  
21 transportation costs relative to product produced on the East Coast, I would expect  
22 the pipeline to meet market demand essentially in the same manner as the prior  
23 example, except in reverse. If circumstances were more balanced, or if some

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1 Midwestern refineries were able to competitively price and some East Coast  
2 refineries were able to competitively price, then I would expect some type of virtual  
3 and/or bi-directional movement to occur.

4 **Q. Could you provide an example?**

5 A. Yes. Imagine that prices were such that Midwestern refiners nominated 350,000  
6 bpd of gasoline and 150,000 bpd of distillate to move east to the four locations and  
7 East Coast refiners nominated the same amounts west. In this case, Laurel would  
8 optimize system flows and meet this demand first through virtual moves, which  
9 “short-haul”<sup>7</sup> the system, and then by moving a small number of barrels on longer  
10 hauls to balance out the system. As a general matter, Mr. Miesner’s suggestion that  
11 one needs to constantly yo-yo the line is inconsistent with how I have operated bi-  
12 directional pipelines. In general, operating a bi-directional pipeline involves virtual  
13 moves as discussed above which helps to reduce the barrel-miles of flow on the  
14 systems.

15 **Q. Are there circumstances where it might be necessary to move barrels from one**  
16 **end of the line and then back again?**

17 A. In theory there are. For example, if shippers from the west only wanted to ship  
18 distillate east and shippers from the east only wanted to ship gasoline west, such  
19 that virtual moves were not possible, it might be necessary to push distillate all the  
20 way east and then push gasoline all the way west. However, in my opinion,  
21 instances when this occurs would be extremely rare.

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<sup>7</sup> The term “short-haul” for a pipeline system means transporting volumes to the nearest destinations available from the origin(s).

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1 **IV. ISSUES PRESENTED BY SHIPPERS REFLECT NEITHER CARRIER**  
2 **RESPONSIBILITIES NOR ACTUAL HARM TO SHIPPERS**

3 **Q. What is the next topic you would like to address?**

4 A. I would like to address a couple of broad issues underlying the testimony of the  
5 shipper witnesses. First, they suggest that Laurel has service obligations which are  
6 simply not consistent with the responsibilities of a common carrier pipeline.  
7 Second, they suggest that the alleged degradation in quality of service has resulted  
8 in harm that has not actually occurred. As discussed below, when asked to provide  
9 documents showing outages, shortages, or other operational impacts, the shippers  
10 admitted they had no such records.

11 **A. Common Carriage Obligations**

12 **Q. What obligations does a common carrier such as Laurel have to its shippers?**

13 A. A common carrier has certain principal obligations. These include, but are not  
14 limited to, publishing a tariff that sets forth its rates and terms of service, charging  
15 just and reasonable rates, and ensuring that its terms of service are reasonable,  
16 nondiscriminatory, and consistently applied.

17 **Q. Do the Shipper Witnesses recognize these obligations?**

18 A. No. They suggest that Laurel has an obligation to minimize transit times and  
19 provide at times that are convenient to the shippers.<sup>8</sup> Indeed, Ms. Huzicko suggests  
20 that Laurel should be punished financially by this Commission if its transit times  
21 fall below the 2016 to 2019 average.<sup>9</sup> This proposal is unreasonable and does not

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<sup>8</sup> See, e.g., Complainants Exhibit JRM-1, at 58; Complainants Exhibit SH-1, at 10-11; Complainants Exhibit KFS-1, at 10-12.

<sup>9</sup> Complainants Exhibit SH-1, at 10-11.

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1 reflect industry practice, standards or expectations. I would agree that as a business  
2 owner, Laurel has an economic incentive to provide timely and convenient service  
3 to its customers, but providing service at minimal transit times is simply not an  
4 aspect of common carriage service. For the reasons discussed above, there are  
5 reasons why Laurel may not be able to prevent transit times from increasing. I  
6 would also note that while regulators do review claims of inequitable treatment, I  
7 am unaware of a regulator either at the federal or state level mandating transit times  
8 on an oil pipeline.

9 **Q. Why do you say that the proposal to punish Laurel if it does not ensure transit**  
10 **times are below the 2016-2019 average is unreasonable?**

11 A. This proposal is unreasonable for at least four reasons. First, Laurel has never  
12 offered to provide service at a given transit time in its tariff, and it provides even in  
13 its informal Shipper Information Notebook merely “estimates” that vary widely.  
14 Therefore, this proposal would impose an additional obligation beyond those for  
15 which Laurel holds itself out to provide. Second, the proposal is completely one-  
16 sided. Ms. Huzicko does not suggest that Laurel receive some type of bonus if  
17 transit times are below the 2016 average. She also does not propose that shippers  
18 be required to commit a sufficient number of barrels to reduce transit times. Third,  
19 it ignores the fact that transit time is not solely in the control of the carrier. And  
20 finally, this proposal completely ignores the fact that the shippers are tendering  
21 significantly less product to Laurel today than they were in the 2016 to 2019 period.  
22 As such, it is physically impossible to achieve the same average transit time that  
23 was achieved from 2016 to 2019, regardless of the initiation of bidirectional

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1 service. Therefore, this proposal should be viewed as unjust and a way to deprive  
2 Laurel of the right to charge a compensatory rate.

3 **Q. Does Dr. Morris make any statements that ignore Laurel’s and Buckeye’s**  
4 **status as common carriers?**

5 A. Yes. In Complainants Exhibit JRM-1 at 58:8:17, he claims that differences  
6 between FERC and PaPUC tariff rates, along with Buckeye’s ownership of  
7 affiliated pipelines in the Midwest, create “an incentive for Buckeye to move more  
8 products eastward.” This argument reveals a basic ignorance of how regulated  
9 common carrier pipelines work. Common carrier pipelines such as Laurel and  
10 Buckeye have rates that are regulated by regulators to ensure that they are just and  
11 reasonable while balancing the needs for consumers and carriers. Each rate  
12 established is for a specific origin to destination service so, as one would expect,  
13 transportation services rates for longer distances are routinely higher than for  
14 shorter distances. This means any common carrier pipeline operator has an  
15 incentive to maximize longer haul volumes over shorter haul volumes from a  
16 revenue standpoint, so long as it operates within the confines of their approved tariff  
17 structures. Dr. Morris also goes on to say that the eastward movement of petroleum  
18 products is an “inefficient flow pattern” that “can result in higher transportation  
19 costs and, ultimately, higher prices for consumers in Pennsylvania.” These  
20 statements by Dr. Morris completely ignore his first statement that “economically  
21 efficient operation of the pipeline system is achieved when each location is supplied  
22 from the lowest-cost source, accounting for transportation costs” and the continued  
23 existence of on-going east to west supply and transportation services. In other

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1 words, east to west supply and transportation services will continue to exist and  
2 compete against any supposed higher cost west to east volumes, ultimately  
3 protecting consumers from higher prices. The shippers ultimately decide what  
4 products to transport, as well as the origins and destinations of such products, within  
5 the approved tariff structures of the carriers, which can include incentives for  
6 shippers to reach new markets with longer hauls.

7 **Q. Does Dr. Morris make any other illogical statements?**

8 A. Yes. In Complainants Exhibit JRM-1 at 23:10-17, he states “Buckeye has a  
9 financial incentive to prioritize shipments from Midwestern refineries over those  
10 from Philadelphia-area sources.” While it is true that the rate on interstate  
11 shipments is higher than the rate on intrastate shipments, as a common carrier,  
12 Buckeye and Laurel have rates reviewed and approved by the PaPUC or FERC and  
13 must provide service to all shippers on a non-discriminatory basis. To the extent  
14 that nominations exceed available capacity, the pipeline is required by law to  
15 allocate space in a non-discriminatory manner. As Mr. Zeth has stated in his  
16 testimony, Laurel takes their obligation to provide non-discriminatory service very  
17 seriously.

18 **Q. Did Laurel seek information in discovery about instances in which Dr. Morris**  
19 **believes Buckeye has prioritized service from Midwestern refineries?**

20 A. Yes. In response to discovery response 7 attached hereto as Laurel Exhibit No.  
21 GEE-02, Dr. Morris stated that he “believes that all shipments from the west that  
22 are at discounted rates are examples of ‘prioritized’ and ‘favored’ shipments from  
23 Midwestern refineries over those from Monroe.” This perspective makes no sense.

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1 While it is true that Buckeye offers a rate discount, approved by FERC, to shippers  
2 willing to make a commitment, the overall FERC rate, even after the discount,  
3 exceeds the rate Monroe pays by [BEGIN HIGHLY CONFIDENTIAL] ██████████  
4 ██████████ [END HIGHLY CONFIDENTIAL] The notion that Buckeye is  
5 somehow prioritizing shipments from the Midwest by offering discounts on a far  
6 higher base rate is not correct. Moreover, the shippers receiving this discount have  
7 made a commitment which imposes a cost on them, in return for Buckeye investing  
8 substantial capital costs to permit the transportation to occur. This circumstance  
9 contracts sharply with Monroe which has a far lower tariff rate, uses existing  
10 facilities and has no obligation to ship on Laurel. From a pipeline perspective, the  
11 Midwest contract shippers and Monroe are not “similarly situated” and do not  
12 receive the same rate incentives.

13 **Q. Are discounts in return for volume commitments common in the liquids**  
14 **pipeline industry?**

15 A. Yes. All of the pipelines for which I worked over my 40-year career offered  
16 discounts in return for volume commitments. We never considered such discounts  
17 prioritizing one group of shippers but rather an offering of similar non-  
18 discriminatory services to similarly situated shippers. Indeed, we often offered  
19 discounts to attract additional volumes that would benefit the overall system by  
20 achieving efficiencies and, among other positive effects, reduce transit times.  
21 Therefore, Dr. Morris’s suggestion that discounts represent some type of untoward  
22 preference is inconsistent with standard pipeline industry practice which I  
23 understand Dr. Webb discusses in more detail in his testimony.

1           **B.     Shippers Have Not Shown Any Actual Harm**

2           **Q.     Why do you say the shippers have not shown any actual harm?**

3           A.     Throughout their testimony, the Shipper Witnesses note that transit time and transit  
4           variability have increased.<sup>10</sup> For the reasons I discuss in Section II, and that Dr.  
5           Webb discusses in his rebuttal testimony (Laurel Statement No. 3-R), it is unclear  
6           whether any of this increase in transit time was caused solely by the advent of bi-  
7           directional service. However, even assuming *arguendo* that the increase in transit  
8           time was caused solely by bi-directional service, the shipper witnesses have not  
9           shown that this increase in transit time has resulted in any actual impact to their  
10          operations in a way that factually harmed consumers.

11          **Q.     What type of impact would be relevant to consumers?**

12          A.     Consumers could be impacted if changes in transit time or transit variability had  
13          caused terminals to run out of product, ultimately disrupting supplies at the retail  
14          level. However, no Shipper Witness actually presents any evidence that changes  
15          in transit time or transit variability have caused terminals and/or retailers to run out  
16          of product.

17          **Q.     Did Laurel seek information from Monroe on it they had experienced any  
18          terminal outages since the advent of bi-directional service?**

19          A.     Yes. Laurel specifically asked Monroe to identify and provide documents showing  
20          whether they had experienced any terminal outages, product shortages, or higher  
21          prices since the advent of bi-directional service. As shown in Exhibit GEE-03

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<sup>10</sup> See, e.g., Complainants Exhibit JDJ-1, at 3, 6-8; Complainants Exhibit KFS-1, at 4-7; Complainants Exhibit SH-1, at 4-5.

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1 [Monroe Response to Set III, Q 4-7 and 9], Monroe admitted that it does not  
2 maintain such records and that Mr. Summers’ testimony was based solely on his  
3 observations.

4 **Q. Did Laurel seek information from Sheetz on the number, causes and any**  
5 **associated impacts as a result of historical pipeline outages (i.e. downtime)?**

6 A. As shown in Exhibit GEE-04 [Sheetz Response to Set III, No. 1], when Sheetz was  
7 asked to identify all of the outages that its witness is aware of, it noted that it relies  
8 on information from Laurel regarding outages. However, I am not aware of a  
9 significant number of outages occurring on Laurel during years prior to 2025.  
10 Moreover, the fact that Mr. Jadlocki focuses on outages occurring in 2025 (which  
11 Laurel witness Mr. Segraves explains involved, among other things, planned  
12 maintenance and upgrades necessary to prepare for the extension (Laurel Statement  
13 No. 2-R), I would note that it appears the Complainants’ focus on outages is based  
14 solely on planned maintenance outages that will not recur with the extension.  
15 Indeed, the outages discussed by Mr. Segraves in rebuttal to Mr. Jadlocki are  
16 completed and, therefore, cannot be considered to establish any type of expectation  
17 or projection of future outages due to the extension.

18 **Q. Do the Shipper Witnesses make other claims about the harm caused by**  
19 **changes in transit time?**

20 A. Yes. They make general claims regarding the difficulty of obtaining volume and  
21 the difficulty of meeting their supply obligations.<sup>11</sup> Again, they provide no

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<sup>11</sup> See, e.g., Complainants Exhibit JDJ-1, at 8-10; Complainants Exhibit KFS-1, at 6. 12; Complainants Exhibit SH-1, at 5.

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1 quantification of this difficulty nor direct correlation to solely being from  
2 implementation of bi-directional service. I would acknowledge that at times,  
3 scheduling a terminal (or a pipeline) can be more challenging depending upon the  
4 day but companies have skilled and trained employees specifically in their positions  
5 to manage the day-to-day challenges of scheduling.

6 **V. MR. MIESNER’S TESTIMONY THEME OF COMPLEX AND DIFFICULT BI-**  
7 **DIRECTIONAL OPERATIONS IS MISLEADING AT BEST**

8 **Q. In his Direct Testimony, Mr. Miesner expresses his concerns over the difficulty**  
9 **and complexity of operating a bidirectional pipeline.<sup>12</sup> Do you agree with his**  
10 **characterization?**

11 A. No. Mr. Miesner builds his testimony around a recurring theme that bi-directional  
12 service is inherently “complex” and “difficult” to operate. While these terms may  
13 sound alarming, they are misleading in this context. Many of the functions he labels  
14 as complex have been core elements of refined products pipeline operations for  
15 decades, in both one-directional and bi-directional systems. These functions are  
16 well understood, supported by established systems and protocols, and are managed  
17 routinely by experienced operators.

18 **Q. What are examples of the functions that he labels as “complex” and**  
19 **“difficult”?**

20 A. In his testimony, Mr. Miesner points to activities such as scheduling batches in each  
21 direction, coordinating nominations from multiple shippers, sequencing deliveries  
22 to various terminals, managing product interfaces between batches, and accounting

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<sup>12</sup> See Complainants Exhibit TM-1, at 37-49.

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1 for volumes moved in each direction. He acknowledges that some of these functions  
2 are also part of one-directional pipeline operations,<sup>13</sup> but contends that they become  
3 significantly more complex in a bi-directional environment.<sup>14</sup> In practice, however,  
4 these are routine procedures of refined product pipeline operations, and it will not  
5 be the first time that a bi-directional pipeline has addressed these issues. Laurel’s  
6 own operations show no evidence that the bi-directional service has made it  
7 unmanageable or materially more burdensome on any of its segments.

8 **Q. Let’s go over each of the activities that Mr. Miesner characterizes as “difficult”**  
9 **and “complex”, starting with scheduling batches. Do you agree that the**  
10 **implementation of bi-directional service creates unmanageable operational**  
11 **problems with respect to batch scheduling?**

12 A. No. In his testimony, Mr. Miesner states that “bi-directional lines are more difficult  
13 to schedule and operate than one-directional pipelines,” and attributes this to having  
14 “more decision points.”<sup>15</sup> This is a general statement unsupported by specific  
15 operational data from Laurel. While additional decision points may exist, they are  
16 simply a part of the scheduling process, not an operational barrier. Established  
17 systems such as PLS, which is utilized by Laurel, provide operators with scheduling  
18 tools to sequence and adjust batches efficiently. Laurel has successfully scheduled  
19 bi-directional flows for more than five years without the systemic failures his  
20 testimony implies.

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<sup>13</sup> Complainants Exhibit TM-1, at 35.

<sup>14</sup> Complainants Exhibit TM-1, at 38.

<sup>15</sup> Complainants Exhibit TM-1, at 38.

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1 **Q. Does coordinating nominations from multiple shippers become materially**  
2 **more difficult in a bi-directional pipeline?**

3 A. While coordinating nominations in both directions may involve additional steps, it  
4 is neither a new nor uniquely difficult task. Common carrier refined product  
5 pipelines must accept, reconcile, and schedule nominations usually from multiple  
6 shippers and multiple origins to multiple destinations each month, whether in a bi-  
7 directional or one-directional pipeline. Laurel performs these steps as part of its  
8 monthly nominations process, supported by their established systems and  
9 experienced staff, and has done so effectively under bi-directional service for more  
10 than five years. Mr. Miesner has failed to provide evidence that Laurel proved  
11 incapable of managing shipper nominations since it implemented a bi-directional  
12 service, nor does he prove that expanding bi-directional operation will create these  
13 issues.

14 **Q. Does bi-directional service make sequencing deliveries more complex?**

15 A. Not in a way that exceeds the capabilities of an experienced pipeline operator.  
16 Sequencing uses the same basic planning principles for bi-directional and one-  
17 directional pipelines with the added benefit of virtual movements. Specifically, it  
18 is a matter of aligning deliveries with tank capacity, delivery windows, and shipper  
19 needs. Again, Laurel has been sequencing deliveries for a bi-directional pipeline  
20 for more than five years under its settlement operations, and Mr. Miesner provides  
21 no evidence that this resulted in systemic problems.

22 **Q. How does Mr. Miesner try to make the case that bi-directional function will**  
23 **cause delivery issues on Laurel?**

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1 A. Mr. Miesner, using Figure 5 as his example pipeline system, implies that it is  
2 difficult or impossible for segments to be operated independently from each other  
3 or for terminals to receive multiple streams, suggesting this would be a particular  
4 problem under bi-directional service and would require many additional facilities  
5 to accomplish.<sup>16</sup> However, while his example has no similarities to the  
6 configuration of Laurel, Mr. Miesner could have imagined his example with simply  
7 the isolation valves necessary that would have allowed the segments A to B and D  
8 to E to have operated simultaneously in either direction on each segment but rather  
9 chose to make his example sound extremely difficult without major investment. In  
10 addition, the limitation to have only one source at a time delivering into a single  
11 lateral delivery pipeline into a terminal is typical across the refined product pipeline  
12 industry with the scheduling of the lateral managed through standard sequencing  
13 and scheduling practices. Operators align delivery windows with terminal capacity  
14 and product requirement regardless of flow direction on the mainline segments. Mr.  
15 Miesner does not provide any Laurel specific facts about pipeline segment  
16 capabilities, nor does his implied concern about terminal deliveries present an  
17 unmanageable problem.

18 **Q. Does Mr. Miesner make the case that bi-directional service can increase issues**  
19 **with interface management, causing an increase in mixing of product?**

20 A. Yes. Mr. Miesner claims that reversing flow on Laurel would create a suboptimal  
21 configuration.<sup>17</sup> He states that such conditions “may” cause more mixing at the

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<sup>16</sup> Complainants Exhibit TM-1, at 42-43.

<sup>17</sup> Complainants Exhibit TM-1, at 15-17.

1 interface between products, leading to increased contamination and more product  
2 being downgraded.<sup>18</sup> Later in his testimony, he also states that lower flow rates  
3 from bi-directional operation will likely result in more mixing and contamination.<sup>19</sup>

4 **Q. Does Mr. Miesner make the case that Laurel now has a suboptimal design**  
5 **because it was originally designed and operated as a one-directional system?**

6 A. While Mr. Miesner does not state that Laurel has a suboptimal design, his testimony  
7 is structured to imply and allow the reader to infer such a conclusion. In addition,  
8 Mr. Miesner never defines what an optimal design of Laurel was, is or could be for  
9 either one-directional or bi-directional service nor does he provide any factual data  
10 or analysis to show that Laurel is not flowing within a range of velocities to  
11 minimize mixing at the interfaces. All this being said, the fact that Laurel has been  
12 transporting products for more than six decades I would be surprised if anyone  
13 knows what the pipeline designers based their decisions on when the system was  
14 originally constructed. However, based upon my review of the current operations  
15 of Laurel, I believe they are operating the system as optimally as possible,  
16 especially when factoring in business economics.

17 **Q. Do you believe that expanding bi-directional service would create a suboptimal**  
18 **pipeline design?**

19 A. No. Of the five design factors Mr. Miesner identifies,<sup>20</sup> only a flow rate related to  
20 the west to east direction of flow capability would be added under the expanded bi-  
21 directional service but that does not change the current system design for flowing

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<sup>18</sup> Complainants Exhibit TM-1, at 16.

<sup>19</sup> Complainants Exhibit TM-1, at TM-1 at 52.

<sup>20</sup> Complainants Exhibit TM-1, at 15.

1 east to west. The other factors would remain the same. A change such as expanded  
2 bi-directional service does not automatically render a system “suboptimal”,  
3 particularly when those parameters are actively managed through operational  
4 controls, scheduling, and sequencing. The design Laurel uses today has proven  
5 capable of accommodating changes in flow direction and volume without creating  
6 systemic issues and would only be an expansion of existing services available to  
7 the shippers.

8 **Q. Do you agree that interface management, whether caused by suboptimal**  
9 **design or other factors, is another difficult and complex task that will cause**  
10 **systemic issues with the implementation of an expanded bi-directional service**  
11 **on Laurel?**

12 A. No. Interface management is an established function in refined product pipelines,  
13 involving the prediction, detection, and segregation of mixing zones between  
14 batches, e.g., a batch of home heating fuel mixing with a batch of gasoline where  
15 the two batches meet. These steps are performed using the same operational  
16 controls regardless of flow direction. Laurel has applied these methods successfully  
17 in its bi-directional service for more than five years, and its experience does not  
18 show the widespread interface issues Mr. Miesner suggests nor does he show any  
19 facts solely caused by the bi-directional flow. In addition, while Mr. Miesner  
20 theorizes that decreased flow rates can cause increased mixing, he cites no specific  
21 evidence demonstrating that the expanded bi-directional service will materially  
22 slow down flow rates, nor does he attempt to prove that such implied slower flow  
23 rates materially increase product mixing. As a result, his claims on the increased

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1 complexity and difficulty of interface management are speculation not based on  
2 Laurel’s actual operational data.

3 **Q. If there is increased transmix with expanded bi-directional service, do**  
4 **shippers suffer an economic loss?**

5 A. No. On Laurel, shippers are compensated for any barrels lost to transmix, with  
6 Buckeye taking ownership of and responsibility for the transmix product. Shippers  
7 pay a small, fixed Pipeline Loss Allowance (“PLAA”) fee on all barrels to account  
8 for interface handling, but this fee has not changed in many years. As a result, even  
9 if there were an increase in mixing, shippers would not bear a significant economic  
10 loss related to those additional transmix volumes.

11 **Q. Finally, you stated that Mr. Miesner lists accounting for volumes as another**  
12 **complex and difficult feat in a bi-directional pipeline.<sup>21</sup> Do you agree that**  
13 **expanded bi-directional service on Laurel will create significant accounting**  
14 **difficulties?**

15 A. No. Accounting for volumes is another routine function of operations for both bi-  
16 directional and one-directional pipelines. This process is supported by long-  
17 standing measurement, accounting, reporting, and reconciliation processes and  
18 systems designed to ensure accuracy, regulatory compliance and customer service.  
19 These processes are part of the normal course of business for any common carrier  
20 pipeline and are not inherently made unmanageable by bi-directional flow. Again,  
21 Mr. Miesner has not shown evidence that Laurel has not correctly accounted for  
22 volumes at any point during the more than five years of bi-directional service.

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<sup>21</sup> Complainants Exhibit TM-1, at 45-49.

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1 **Q. What about Mr. Miesner’s point that handling virtual barrels causes**  
2 **particular challenges in accounting for volumes in a bi-directional pipeline?**

3 A. Mr. Miesner states that using virtual barrels has disadvantages to shippers including  
4 “increased complexity of accounting and inventory control”<sup>22</sup> Again, this is a  
5 general statement that fails to establish any benchmark to qualify his claim. He  
6 offers no operational examples, data, or other evidence demonstrating that this  
7 would create systemic issues in Laurel’s accounting system. In reality, virtual barrel  
8 transactions are common in the industry and are handled using the same accounting  
9 and measurement systems as physical deliveries. Virtual barrel transactions are not  
10 unique to bi-directional pipelines and have long been managed successfully on  
11 Laurel and its operating pipeline affiliates, which are managed by the same  
12 schedulers and accounting groups. Laurel’s experience shows that tracking virtual  
13 barrels is fully manageable with established procedures and does not pose the  
14 heightened risk or difficulty suggested in Mr. Miesner’s testimony for the carrier  
15 or shippers. His argument on virtual barrels, like many others in his testimony, is  
16 speculative and relies on vague assertions rather than concrete operational  
17 evidence.

18 **VI. MR. MIESNER’S TESTIMONY IS SPECULATION AND NOT INDICATIVE OF ACTUAL**  
19 **LAUREL OPERATIONS**

20 **Q. In your opinion, does Mr. Miesner’s testimony accurately reflect Laurel’s**  
21 **operational experience?**

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<sup>22</sup> Complainants Exhibit TM-1, at 52.

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1 A. No. Much of Mr. Miesner’s testimony is based on his general industry knowledge  
2 and prior experience, rather than specific data or examples from Laurel’s  
3 operations. While professional background can be valuable, his statements in this  
4 case speculate about potential problems without citing actual instances on Laurel  
5 that demonstrate those problems exist or are bound to exist with the expansion of  
6 bi-directional service. All the scenarios Mr. Miesner cites suffer from the same  
7 flaw. They are presented as if they illustrate inevitable challenges that expanded bi-  
8 directional service will bring, yet none are supported by Laurel-specific data,  
9 documented incidents, or any factual link to Laurel’s actual performance under bi-  
10 directional service.

11 **Q. Can you provide examples of how his testimony relies on speculation?**

12 A. As discussed in Section V above, he often mentions theoretical complications and  
13 increased “decision points” when discussing common pipeline functions such as  
14 scheduling, nominations, interface management, and accounting. However, he does  
15 not provide Laurel-specific evidence that these issues have or will occur. Instead,  
16 he speaks in general terms about how these functions **could** be more complex in a  
17 bi-directional system, without showing that they are a material issue for Laurel after  
18 more than five years of bi-directional service.

19 **Q. You mentioned that the examples he uses are not representative of Laurel’s**  
20 **operational performance. Could you explain?**

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1 A. The examples he uses are either hypothetical scenarios or drawn from other pipeline  
2 systems,<sup>23</sup> without establishing their direct relevance to Laurel.<sup>24</sup> By focusing  
3 exclusively on potential negatives and omitting any positive or neutral examples  
4 from Laurel or comparable pipelines, his testimony presents a one-sided view that  
5 does not reflect the real operating conditions of Laurel’s bi-directional service.

6 **Q. Can you provide specific examples where Mr. Miesner invokes criticism that**  
7 **is purely hypothetical, and not based on the actual operations of Laurel?**

8 A. As discussed in Section V, many of Mr. Miesner’s arguments rely on the fact that  
9 the core pipeline functions would be made “complex” with expanded bi-directional  
10 service. For example, in his discussion of how bi-directional pipelines schedule  
11 their batches, he states that because there are more input points, scheduling is more  
12 complex.<sup>25</sup> He then describes various hypothetical situations to illustrate why this  
13 could be challenging, specifically highlighting scenarios where shippers could  
14 nominate in a way that creates bottlenecks. However, these are generic illustrations  
15 of possible issues, not evidence drawn from Laurel’s operational history. In  
16 Laurel’s case, their ongoing bi-directional operations have not been bottlenecked,  
17 and its nomination and schedule procedures have proven to address the potential  
18 conflicts he describes. Nowhere in his discussion does he cite data, incidents, or  
19 operational records showing that Laurel has encountered these specific problems,  
20 or that such conditions would necessarily arise if Laurel were to expand bi-

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<sup>23</sup> See, e.g., Complainants Exhibit TM-1, at 47, 49-51, 53-55.

<sup>24</sup> He even admits that he has not seen or relied upon examples of how Laurel schedules bi-directional operations. Complainants Exhibit TM-1, at 55.

<sup>25</sup> Complainants Exhibit TM-1, at 44.

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1 directional service. His arguments rely exclusively on speculative scenarios rather  
2 than concrete, Laurel-specific facts.

3 **Q. Are there any other examples of this?**

4 A. Yes. Mr. Miesner describes potential problems that shippers could face due to the  
5 use of virtual barrels. He mentions general difficulties that could arise, citing  
6 “increased complexity of accounting and inventory control”, as well as an increase  
7 in “mixing, contamination, and product downgrades.”<sup>26</sup> He also mentions that  
8 virtual barrels will increase the volatility of transit times, which could force  
9 shippers to add more safety stock.<sup>27</sup> To demonstrate this, he again gives a  
10 hypothetical scenario where virtual barrels cause such immense issues that  
11 deliveries to a destination do not begin for 56.2 days, and enter at the extremely  
12 low flow rate of 125 barrels per hour.<sup>28</sup> Of course, this example is not drawn from  
13 any Laurel operational data, nor does he present evidence that such delays or flow  
14 rates are likely to occur if bi-directional service were expanded. Instead, his  
15 numbers reflect a constructed worst-case scenario that magnifies the potential  
16 problem without showing how realistic it is in Laurel’s context. By relying solely  
17 on such an extreme, theoretical situation, without linking it to the pipeline’s actual  
18 physical capabilities/constraints, scheduling history, or customer behavior, Mr.  
19 Miesner’s testimony provides no concrete basis to conclude that virtual barrels  
20 would produce operational outcomes of this magnitude.

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<sup>26</sup> Complainants Exhibit TM-1, at 52.

<sup>27</sup> Complainants Exhibit TM-1, at 52

<sup>28</sup> Complainants Exhibit TM-1, at 52.

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1 **Q. Are there circumstances where bi-directional service could improve transit**  
2 **time?**

3 A. Yes. The pipeline can operate more efficiently when the nominations going from  
4 eastern origins to western destinations, such as El Dorado and Coraopolis, match  
5 up, partially or in total, to the nominations going from western origins to eastern  
6 destinations such as Mechanicsburg and Sinking Spring. To the extent that it does,  
7 it will not be necessary to transport the matching volumes between El Dorado and  
8 Mechanicsburg and most of the demand can be met through swaps and shifting  
9 barrels from Coraopolis to El Dorado or Sinking Spring to Mechanicsburg. In this  
10 circumstance bi-directional service will improve transit time relative to the  
11 circumstance that would occur with a single direction line. Mr. Miesner completely  
12 ignores this possibility. He provides no testimony about which possibility is more  
13 likely. In my opinion, a circumstance where bi-directional service improves  
14 operational efficiency is more likely than Mr. Miesner’s extreme scenarios.

15 **Q. Is there any evidence in the record of the actual relationship between bi-**  
16 **directional service and transit time?**

17 A. Yes. In his rebuttal testimony (Laurel Statement No. 3-R), Dr. Webb conducts a  
18 rigorous statistical analysis that shows the advent of bi-directional service has little  
19 if any impact on transit time.

20 **Q. Are there any other hypothetical scenarios that Mr. Miesner’s testimony**  
21 **discusses that you feel do not line up with reality?**

22 A. Yes. In one example, Mr. Miesner attempts to demonstrate that a particular  
23 operating scenario would be “difficult if not impossible” to run on a bi-directional

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1 pipeline.<sup>29</sup> However, the scenario is constructed so that there are no volumes  
2 originating from the opposite direction to move toward the delivery point. Under  
3 those conditions, of course the pipeline would be difficult or impossible to run bi-  
4 directionally. The absence of counterflow volumes eliminates the mechanism that  
5 allows for operation in both directions. This example does not reflect a realistic  
6 operating condition for Laurel and does not provide any meaningful insight into the  
7 actual feasibility of bi-directional service. Moreover, neither Laurel nor any other  
8 pipeline operating in a bi-directional manner guarantees that it will flow in a bi-  
9 directional manner at all times. If counterflow is not available, the pipeline will  
10 simply operate as a single direction pipeline. Thus, Mr. Miesner's example is  
11 irrelevant, and appears contrived to make bi-directional service appear undesirable.

12 **Q. How would you characterize Laurel's real-world performance under bi-**  
13 **directional service?**

14 A. Laurel has operated with partial bi-directional service for more than five years  
15 without the widespread scheduling, nomination, interface, or accounting failures  
16 that Mr. Miesner predicts. They have established an effective combination of  
17 protocol, systems, and staff to effectively manage the operational requirements of  
18 bi-directional service, and there is no history to suggest that the expansion of this  
19 service would create the systemic issues he describes. As I note above, every  
20 scenario Mr. Miesner presents suffers from the same flaw. Each is a speculative,  
21 worst-case scenario unsupported by Laurel's own experience. Laurel's actual  
22 performance in implementing bi-directional service demonstrates that such

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<sup>29</sup> Complainants Exhibit TM-1, at 30-34.

1 scenarios are not only unproven but also inconsistent with how the pipeline has  
2 operated in practice.

3 **Q. Are there any other examples where Mr. Miesner makes a speculative claim**  
4 **without proper evidence to back it up?**

5 A. Yes. In addition to his hypothetical scenarios about theoretical pipeline  
6 performance, Mr. Miesner also makes unsubstantiated claims about how he thinks  
7 the pipeline will operate under expanded bi-directional service. Specifically, he  
8 states “in my opinion, it is most likely [Lines 724 and 720] would be capable of  
9 operating in both directions but would primarily operate west to east most of the  
10 year.”<sup>30</sup> As shown in Exhibit GEE-05 [Complainants’ Responses to Laurel Set II,  
11 No. 42], when Mr. Miesner was asked to provide the basis for his conclusion, he  
12 noted it was based on his general impressions and professional experience, rather  
13 than on concrete evidence drawn from Laurel’s operations. Using this speculative  
14 claim, he then makes the argument that this “presents many challenges for eastern  
15 produced products.”<sup>31</sup> This is yet another example of Mr. Miesner using baseless  
16 claims to help build his argument that expanded bi-directional service would cause  
17 harm to the shippers.

18 **Q. Do you agree with Mr. Miesner that the pipeline would operate primarily west**  
19 **to east for most of the year?**

20 A. No. The direction of flow would be determined by market conditions such as  
21 relative prices, supply availability, and demand patterns. In practice, the flow

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<sup>30</sup> Complainants Exhibit TM-1, at 14.

<sup>31</sup> Complainants Exhibit TM-1, at 14.

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1 patterns are likely to change over time as these market factors shift. Mr. Miesner's  
2 assertion that he can predict a fixed flow state overlooks these variables entirely.  
3 As with his other scenarios, this is a speculative claim lacking the necessary  
4 supporting analysis, and it should be given little weight in evaluating the impacts  
5 of expanding Laurel's bi-directional service. Moreover, as Dr. Webb explains the  
6 direction of flow will be determined by the relative prices of product at each origin.  
7 If Mr. Miesner is correct that product will typically flow from west to east, he is  
8 assuming that Midwestern product will be less expensive, meaning consumers in  
9 Pennsylvania will generally benefit from this lower priced product.

10 **VII. ADDRESSING OTHER ISSUES WITH MR. MIESNER'S TESTIMONY**

11 **Q. Are there any other issues with Mr. Miesner's testimony that you would like**  
12 **to address?**

13 A. Yes. There are several additional aspects of Mr. Miesner's testimony that I take  
14 issue with. Specifically, I have criticisms in regard to his specific discussions on  
15 push stock, safety stock, interface mixing, virtual barrels, and the nominating and  
16 scheduling process.

17 **Q. Let's begin with your issues regarding push stock. How does Mr. Miesner**  
18 **describe push stock in his testimony?**

19 A. Mr. Miesner states that under bi-directional operation, a dedicated tank holds a  
20 volume equal to line fill, which is pumped in one direction to push a cycle into its  
21 delivery point, then displaced back into the tank by the next cycle from the opposite

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1 direction.<sup>32</sup> He presents this as a straightforward arrangement with certain  
2 advantages and disadvantages.

3 **Q. Do you agree that this reflects typical industry practice?**

4 A. No. His framing more resembles a simple line purge and tank operation normally  
5 found at terminals, where push stock is simply moved from a tank into a pipe  
6 segment and then pushed back out into the same tank without operational  
7 discretion. In practice on a pipeline like Laurel, however, operators have  
8 established processes to implement based upon various system conditions whereby  
9 a line segment may only be reversed for a portion of the overall segment linefill  
10 with deliveries to multiple locations during the process when reversed again. They  
11 make decisions based on real-time monitoring and coordination across all terminal  
12 delivery operations. There is not a rigid procedure like Mr. Miesner's testimony  
13 describes. Laurel's practices demonstrate this flexibility and have been effective  
14 since bi-directional service has been implemented.

15 **Q. You also stated that you disagree with Mr. Miesner's discussion on safety  
16 stock. Can you explain?**

17 A. Mr. Miesner describes safety stock as extra inventory kept at terminals to protect  
18 against running out of product if demand increases before the next cycle.<sup>33</sup> While  
19 this is one possible reason to hold safety stock, the amount and purpose are not  
20 uniform across companies. Safety stock decisions vary based on factors such as  
21 seasonal quality changes, anticipated market conditions for supply and demand, a

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<sup>32</sup> Complainants Exhibit TM-1, at 40-41.

<sup>33</sup> Complainants Exhibit TM-1, at TM-1 at 19.

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1 company's business philosophy and end-of-year tax considerations. These drivers  
2 change over time, making safety stock levels dynamic and company-specific, not  
3 just a function of whether a pipeline operates in one or both directions. Safety stock  
4 is not a fixed operational requirement that can be predicted in the way Mr. Miesner  
5 suggests.

6 **Q. What criticisms do you have with Mr. Miesner's discussion on interface**  
7 **mixing?**

8 A. Mr. Miesner presents interface mixing under bi-directional service as an inevitable  
9 and significant operational problem.<sup>34</sup> His testimony overlooks Laurel's actual  
10 experience, which has not seen a large increase in transmix generated since 2019,  
11 as shown in material provided in discovery and attached as Laurel Exhibit GEE-06.  
12 He also assumes that any increase in mixing is inherently harmful to shippers,  
13 without acknowledging that carriers actively manage sequencing and product  
14 compatibility to limit operational issues and, in the case of Laurel and Buckeye,  
15 have tariff provisions in place that limit any economic impact to shippers for  
16 transmix generation. As discussed above in Section IV, even if additional mixing  
17 occurred, shippers would not bear a significant loss because Laurel's Pipeline Loss  
18 Allowance has remained unchanged since 2015, and shippers are paid back for  
19 product that was lost as transmix. His testimony offers no data that demonstrates  
20 how expanding bi-directional service would materially increase mixing and cause  
21 the harm he predicts.

22 **Q. Do you agree with Mr. Miesner's discussion of virtual barrels?**

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<sup>34</sup> See Complainants Exhibit TM-1, at 12, 17, and 52.

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1 No. As discussed in Section VI, Mr. Miesner presents virtual barrels as a heightened  
2 risk in bi-directional pipelines due to “increased complexity of accounting and  
3 inventory control.”<sup>35</sup> However, he does not provide any specific evidence that these  
4 risks have materialized since Laurel began its partial bi-directional service. He also  
5 fails to recognize that virtual/swap barrels have historically occurred, and continue  
6 to occur, in both single-directional and bi-directional pipelines, where they are a  
7 routine aspect of optimizing pipeline operations. Virtual barrels can benefit  
8 shippers by increasing the effective capacity and decreasing the average transit  
9 times of the bi-directional pipeline system while also being more efficient by  
10 reducing the system barrel-miles in the process. While Mr. Miesner lists several  
11 supposed disadvantages and uses an extreme hypothetical to illustrate them, his  
12 example is based on flawed assumptions that do not reflect Laurel’s actual  
13 operations.<sup>36</sup> In practice, shippers receive product based on what they put into the  
14 system, whether via virtual movements or physical movements. Mr. Miesner states  
15 that Laurel flowing from west to east will increase transit times due to lower flow  
16 rates caused by the larger diameter lines.<sup>37</sup> This is a misleading claim, and he  
17 misrepresents how volumes actually flow through the system. When virtual barrels  
18 are considered, it is entirely possible for transit times to remain stable or even  
19 decrease despite the larger diameter lines. Mr. Miesner also states in his testimony  
20 related to virtual barrels that “the shipper pays for services that were never

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<sup>35</sup> Complainants Exhibit TM-1, at 52.

<sup>36</sup> Complainants Exhibit TM-1, at 52-53.

<sup>37</sup> Complainants Exhibit TM-1, at TM-1 at 17.

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1 rendered.” which is absolutely not true.<sup>38</sup> The fact that the shipper tendered a  
2 fungible product grade at their nominated origin and received the same fungible  
3 product grade back at their nominated destination and the carrier, per Item No. 40  
4 of the PaPUC No. 83 Tariff, “is under no obligation to deliver the identical  
5 Commodities received” means the services obligations of the carrier were  
6 absolutely rendered.

7 **Q. What criticisms do you have of Mr. Miesner’s discussion of the nomination**  
8 **process?**

9 A. His testimony portrays the monthly nomination process as if shippers submit one  
10 fixed plan that the pipeline then follows with little adjustment, making bi-  
11 directional service inherently more vulnerable to conflicts.<sup>39</sup> In reality, nominations  
12 are a preliminary planning tool. Shippers frequently over-nominate for a variety of  
13 reasons, such as to secure space in case of unexpected demand, account for supply  
14 uncertainty, or manage their inventory strategy. They then adjust these nominated  
15 volumes as the month progresses.

16 **Q. Does Mr. Miesner’s testimony accurately reflect how pipeline scheduling**  
17 **works?**

18 A. Pipeline operators do not create a detailed, day-by-day schedule for the entire  
19 month. They plan in short increments, often 5 to 10 days at a time, and update those  
20 schedules daily in coordination with operations control. From what I’ve learned  
21 about Laurel, it schedules in a manner similar to this, but at times produces a

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<sup>38</sup> Complainants Exhibit TM-1, at 53.

<sup>39</sup> See Complainants Exhibit TM-1, at 25 and 29.

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1 schedule that extends a few days beyond the standard 10-day period. However, the  
2 Laurel schedules, just like all pipelines, are always subject to change and become  
3 increasingly uncertain the further out they extend into the future. This rolling  
4 process for scheduling allows operators to respond to changing nominations,  
5 market conditions, terminal constraints, and supply disruptions, which significantly  
6 reduces the risk of the rigid conflicts Mr. Miesner describes.

7 **Q. Are there any other criticisms you would like to address in Mr. Miesner’s**  
8 **testimony?**

9 A. Mr. Miesner makes a statement that his analysis is “conservative” and may  
10 understate the potential issues with bi-directional service.<sup>40</sup> However, that is not  
11 really possible given that many of his examples are already based on worst-case,  
12 unrealistic assumptions that exaggerate risks rather than understate them, as  
13 discussed in Section V.

14 **Q. Why do you believe his claim of being “conservative” is inaccurate?**

15 Laurel’s actual operating history since 2019 contradicts it. The issues that he  
16 forecasts have not materialized under existing bi-directional operations of Line 718.  
17 Laurel has not experienced unmanageable scheduling conflicts, excessive transmix  
18 generation, or accounting breakdowns. If anything, Mr. Miesner omits key  
19 operational tools and practices that pipelines use every day to avoid these problems.  
20 His testimony overstates, not understates, the risk.

21 **Q. Does this conclude your rebuttal testimony at this time?**

22 A. Yes, it does.

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<sup>40</sup> Complainants Exhibit TM-1, at 61.

LAUREL EXHIBIT GEE-01

# GLENN E. EMERY

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Progressively responsible management career including P&L and operating leadership of business units with multimillion-dollar budgets in U.S. and international locations. Proven abilities in strategic planning, business development, corporate representation for legal and regulatory matters, process optimization, operations management, and project implementation with U.S. and international businesses. Culturally sensitive and internationally traveled leader. Excellent communication skills and experience in the everyday interactions, supervision, and training of personnel.

## AREAS OF EXPERTISE

STRATEGIC PLANNING AND BUSINESS DEVELOPMENT  
MULTI-SITE OPERATIONS MANAGEMENT  
PROJECT IMPLEMENTATION/MANAGEMENT  
CUSTOMER RELATIONS  
INTERNATIONAL BUSINESS RELATIONS

ECONOMIC AND FINANCIAL ANALYSIS  
NEGOTIATIONS AND DEAL CLOSING  
PERFORMANCE IMPROVEMENT  
BUDGETING AND EXPENSE CONTROL  
MEDIA AND GOVERNMENT RELATIONS

## PROFESSIONAL EXPERIENCE

**MINESGRAD CONSULTING LLC** – Boerne, Texas

2024 to present

### PRINCIPAL & FOUNDING MEMBER

- Providing consulting services for the midstream energy industry in regulatory, operational, technical and commercial business matters.

**ENERGY TRANSFER LP** – San Antonio, Texas

2012 to 2024

### VICE PRESIDENT, COMMERCIAL OPERATIONS (2012 to 2024)

- Responsible for the commercial operations and optimization of a crude oil pipelines and terminals network including the 2,000-mile Bakken pipeline system from North Dakota to the Gulf Coast.
- Company representative for litigation and local, state and federal permits filings for assets including the Bakken pipeline system and market-based rates filings to FERC for all crude oil pipelines. Duties include the support analysis, development and submission of written legal briefs and testimony, testifying in person at governmental hearings and judicial proceedings, and acting as a public relations representative.
- Commercial development leader for new crude oil and liquids logistics services to complement existing natural gas and natural gas liquids assets and provide customers with a full slate of services in the production areas throughout the U.S.
- Responsibilities include identifying and developing business opportunities through the installation of new facilities, offering of new services to new and existing customers, analyzing potential acquisitions, divestitures or asset trades, and/or determining more effective utilization of idle or underutilized assets.
- Team leader or key member in the development and successful closing of over \$5 billion of new projects including the Bakken and Bayou Bridge pipeline systems.

**GLENN E. EMERY**

- Led the commercial project implementation, start-up/commissioning and expansion of the Bakken and Bayou Bridge pipeline systems.
- Board member of wholly owned trucking subsidiary hauling refined products and crude oil production liquids with operations in numerous basins including the Permian and Bakken.

**NUSTAR ENERGY, L.P.** – San Antonio, Texas

2006 to 2012

**DIRECTOR, MARKETING & BUSINESS DEVELOPMENT** (2008 to 2012)  
**SENIOR MANAGER, MARKETING & BUSINESS DEVELOPMENT** (2006 to 2008)

- Responsible for the commercial management and strategic planning for the domestic pipeline and terminals business unit which included 5,605 miles of products pipelines, 812 miles of crude pipelines, 2,000 miles of ammonia pipelines, and 40 terminals.
- Prepared presentations and made specific recommendations to senior management along with leading negotiations with outside parties.
- Developed and gained approval for a strategic pipeline construction project to debottleneck the East System Kansas southern origins.
- Identified the opportunities, gained approvals to establish gasoline blending operations within the pipeline and terminal network and managed the newly implemented blending programs.
- Developed and implemented lease storage programs for refined products and biofuels that added incremental revenue with minimal capital required.
- Responsible for the management and implementation of all business policies and procedures for the open stock and transit time methodologies of service.

**MAGELLAN MIDSTREAM PARTNERS, L.P.** – Tulsa, Oklahoma

2003 to 2006

**MANAGER, SPECIALTY MARKETING** (2003 to 2006)

- Major responsibilities included management of joint venture interests and commercial development of new business opportunities including grassroots developments, acquisitions and joint ventures.
- Prepared presentations and made specific recommendations to senior management along with leading negotiations with outside parties.
- Served as the liaison between Magellan Midstream Partners, joint venture management and key customers.
- Managed all revenue issues by monitoring contracts, T&D's, and tariff agreements.

**WILLIAMS INTERNATIONAL COMPANY** – Lithuania

2000 to 2003

Investment in the Lithuanian State energy company AB Mazeikiu Nafta included a 33% ownership interest and management control of a business involving a 250,000 bpd refinery complex, multiple cross-country pipelines and a Baltic Sea import/export terminal. Member of senior management team responsible for “westernizing” the business and management practices to “re-invent” the company as a strong competitor in the international marketplace.

**DEPUTY GENERAL DIRECTOR, LOGISTICS, ECONOMICS & PLANNING** (2002 - 2003)  
**DIRECTOR, PIPELINE & TERMINAL OPERATIONS** (2000 to 2002)

- Full accountability for modernization, strategic planning, business development, and operations/maintenance optimization programs.

**GLENN E. EMERY**

- Established and implemented a risk management plan (Chairman of Risk Management Committee) to identify the risks involved in commodity-related operations, establish policies and procedures to manage these risks, and monitor the execution of the plan including performance and compliance.
- Responsible for all business ventures/investments such as a truck terminal business, 29 station retail gasoline network (Chairman of the Board), Transportation and Logistics departments, Refinery Optimization department, Customs department, and Claims department.
- Led the major reorganizations of the business units including union and non-union employees.
- Implemented a “zero-base” budgeting process and comprehensive System Integrity program to reduce operational risks and increase fiscal controls.
- Established and maintained strong business relations with Russian, CIS country, Baltic state and western European companies including the negotiation of new contracts that increased revenues by more than 350%.
- Acted as one of the key media relations representatives, government negotiators and shareholder representatives for the Company.

**WILLIAMS ENERGY SERVICES – Tulsa, Oklahoma**

1993 to 2000

- Various management positions responsible for leading and supporting efforts focused on identifying, evaluating, and executing various petroleum-related business opportunities including grassroots developments, acquisitions, joint ventures and cross-silo projects.
- Led development efforts on projects ranging from \$5 million to \$600 million. Made specific recommendations to senior management and actively participated in negotiations with outside parties.
- Team Leader of the commercial due diligence effort for the \$3 billion MAPCO acquisition.
- Primary business development and marketing representative for fractionation services and refined petroleum tank bottom material reclamation services.
- Managed various pipeline and terminal facilities including butane truck unloading and storage facilities which were part of the system-wide gasoline blending program.

**WILLIAMS PIPE LINE COMPANY – Tulsa, Oklahoma**

1985 to 1993

- Various positions of increasing responsibility and experience including roles in product movements and business analysis, field operations, scheduling, operations control, and safety departments.

**EDUCATION**

Colorado School of Mines, Golden CO  
 Degree, Bachelor of Science, Chemical and Petroleum Refining Engineering  
 Graduated May 1985

**PROFESSIONAL TRAINING**

Capital Investment & Acquisitions, Financial Analysis, Negotiations Skills, Supervisory and EEO Training and numerous other safety, environmental, operations, engineering and technical areas.

References available upon request.

LAUREL EXHIBIT GEE-02

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire :  
Terminals, LLC, Sheetz, Inc. and PBF :  
Holding Company LLC :  
 : Docket No. C-2025-3053018  
Complainants, :  
 :  
v. :  
 :  
Laurel Pipe Line Company, L.P. :  
 :  
Respondent. :

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**RESPONSES OF  
MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY LLC  
TO INTERROGATORIES, REQUESTS  
FOR PRODUCTION OF DOCUMENTS AND REQUESTS FOR ADMISSION  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

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**RESPONSES OF  
MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY LLC  
TO INTERROGATORIES, REQUESTS  
FOR PRODUCTION OF DOCUMENTS AND REQUESTS FOR ADMISSION  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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7. Reference Exhibit JRM-1, 23:12-17. Please identify by month, year and cycle number all instances of which Mr. Morris is aware where Buckeye has “prioritized” or “favored” shipments from Midwestern refineries over those from Monroe. Provide all Documents relied upon by Mr. Morris to respond to this discovery request.

**RESPONSE:**

See Exhibit JRM-4. Dr. Morris believes that all shipments from the west that are at discounted rates are examples of “prioritized” and “favored” shipments from Midwestern refineries over those from Monroe.

**Provided By:** John Morris

**Date:** August 11, 2025

LAUREL EXHIBIT GEE-03

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire :  
Terminals, LLC, Sheetz, Inc. and PBF :  
Holding Company LLC :  
: Docket No. C-2025-3053018  
Complainants, :  
: :  
v. :  
: :  
Laurel Pipe Line Company, L.P. :  
: :  
Respondent. :

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**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET III**

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**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET III**

**DOCKET NO. C-2025-3053018**

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4. Please reference Exhibit KFS-1, 6:8-9. Identify every instance that Monroe ran out of product at a terminal connected to the Laurel pipeline system from 2019-present.

**RESPONSE:** Monroe does not make or retain such records in the regular course of business.

Refer to Attachments provided in Responses to Set I, Nos. 24, 25(d) 26(d), 29.

**Provided By: Kyle F. Summers**

**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET III**

**DOCKET NO. C-2025-3053018**

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5. Please reference Exhibit KFS-1, 6:8-9. Identify every instance that a customer was “upset” or “threatened to leave” Monroe due to Monroe running out of product at a terminal connected to the Laurel pipeline system from 2019-present. Provide all communications associated with each identified instance.

**RESPONSE:** Monroe does not make or retain such records in the regular course of business.

Refer to Attachments provided in Responses to Set I, Nos. 24, 25(d) 26(d), 29.

**Provided By: Kyle F Summers**

**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET III**

**DOCKET NO. C-2025-3053018**

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6. Please reference Exhibit KFS-1, 11:5-6. Provide all Documents prepared by or on behalf of Monroe that reference product shortages due to operational issues on the Laurel pipeline system.

**RESPONSE:** Monroe does not make or retain such records in the regular course of business.

Refer to Attachments provided in Responses to Set I, Nos. 24, 25(d) 26(d), 29.

**Provided By: Kyle F. Summers**

**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET III**

**DOCKET NO. C-2025-3053018**

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7. Please reference Exhibit KFS-1, 11:5-6. Provide all Documents prepared by or on behalf of Monroe that reference higher prices due to operational issues on the Laurel pipeline system.

**RESPONSE:** Mr. Summer's comments were based on observation and operation. There are no documents that are retained that reflect this.

**Provided By: Kyle F. Summers**

**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET III**

**DOCKET NO. C-2025-3053018**

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9. Please reference Exhibit KFS-1, 12:5-7. Provide all Documents prepared by or on behalf of Monroe that reference Monroe no longer being able to reliably provide products to its customers due to transit time increases on Laurel.

**RESPONSE:** Monroe does not make or retain such records in the regular course of business.

Refer to Attachments provided in Responses to Set I, Nos. 24, 25(d) 26(d), 29.

**Provided By: Kyle F. Summers**

LAUREL EXHIBIT GEE-04

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire :  
Terminals, LLC, Sheetz, Inc. and PBF :  
Holding Company LLC :  
: Docket No. C-2025-3053018  
Complainants, :  
: :  
v. :  
: :  
Laurel Pipe Line Company, L.P. :  
: :  
Respondent. :

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**RESPONSES OF  
SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
BY LAUREL PIPE LINE COMPANY, L.P., SET III**

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**RESPONSES OF SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET III**

**DOCKET NO. C-2025-3053018**

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**NOTE: All responses are based on information that has been reviewed as of the date of the response. We reserve all rights to supplement the response if and as additional information becomes available.**

1. Please reference Exhibit JDJ-1, 3:15-16. Identify all pipeline outages on the Laurel pipeline system that Mr. Jadlocki is aware of from 2019-present. For each identified outage, provide the basis, duration, and line segment impacted.

**RESPONSE:**

Sheetz has submitted an objection to this question. No answer to be provided.

**Provided By:**

Adeolu Bakare, Counsel for Sheetz, Inc.  
Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 11, 2025

**UPDATED RESPONSE:**

Sheetz relies on the T-4 updates received from Laurel and any related clarifications from Laurel personnel for outage information and is aware of only the outages and related basis, duration, and impacted line segments represented by Laurel in such updates. Sheetz has received all T-4 updates issued by Laurel from 2019 to date.

**Provided By:**

Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 28, 2025

LAUREL EXHIBIT GEE-05

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire :  
Terminals, LLC, Sheetz, Inc. and PBF :  
Holding Company LLC :  
: Docket No. C-2025-3053018  
Complainants, :  
: :  
v. :  
: :  
Laurel Pipe Line Company, L.P. :  
: :  
Respondent. :

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**RESPONSES OF  
MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY LLC  
TO INTERROGATORIES, REQUESTS  
FOR PRODUCTION OF DOCUMENTS AND REQUESTS FOR ADMISSION  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

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**RESPONSES OF  
MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY LLC  
TO INTERROGATORIES, REQUESTS  
FOR PRODUCTION OF DOCUMENTS AND REQUESTS FOR ADMISSION  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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42. Please reference Exhibit TM-1, 14:5-6. Fully explain the basis for Mr. Miesner's conclusion that "it is most likely these lines would be capable of operating in both directions, but would primarily operate west to east most of the year." Provide all Documents relied upon by Mr. Miesner to reach this conclusion.

**RESPONSE:**

Mr. Miesner's opinion that the lines would be capable of operating in both directions is based on his understanding that the extensive work Laurel has done over the past years to make them capable of operating in either direction was effective and that they are, indeed, capable of operating in either direction.

Mr. Miesner's opinion that the lines would primarily operate west to east most of the year is based on his understanding that yo-yoing the lines each cycle would be extremely difficult to accomplish on a regular basis. This has led him to believe Laurel would attempt to operate them primarily in one direction. His belief that this direction would be west to east is based on Laurel's publicly stated desire to reverse these lines to operation them west to east on a full-time basis. This belief is supported by the scheduling instructions contained on LAU00000638.

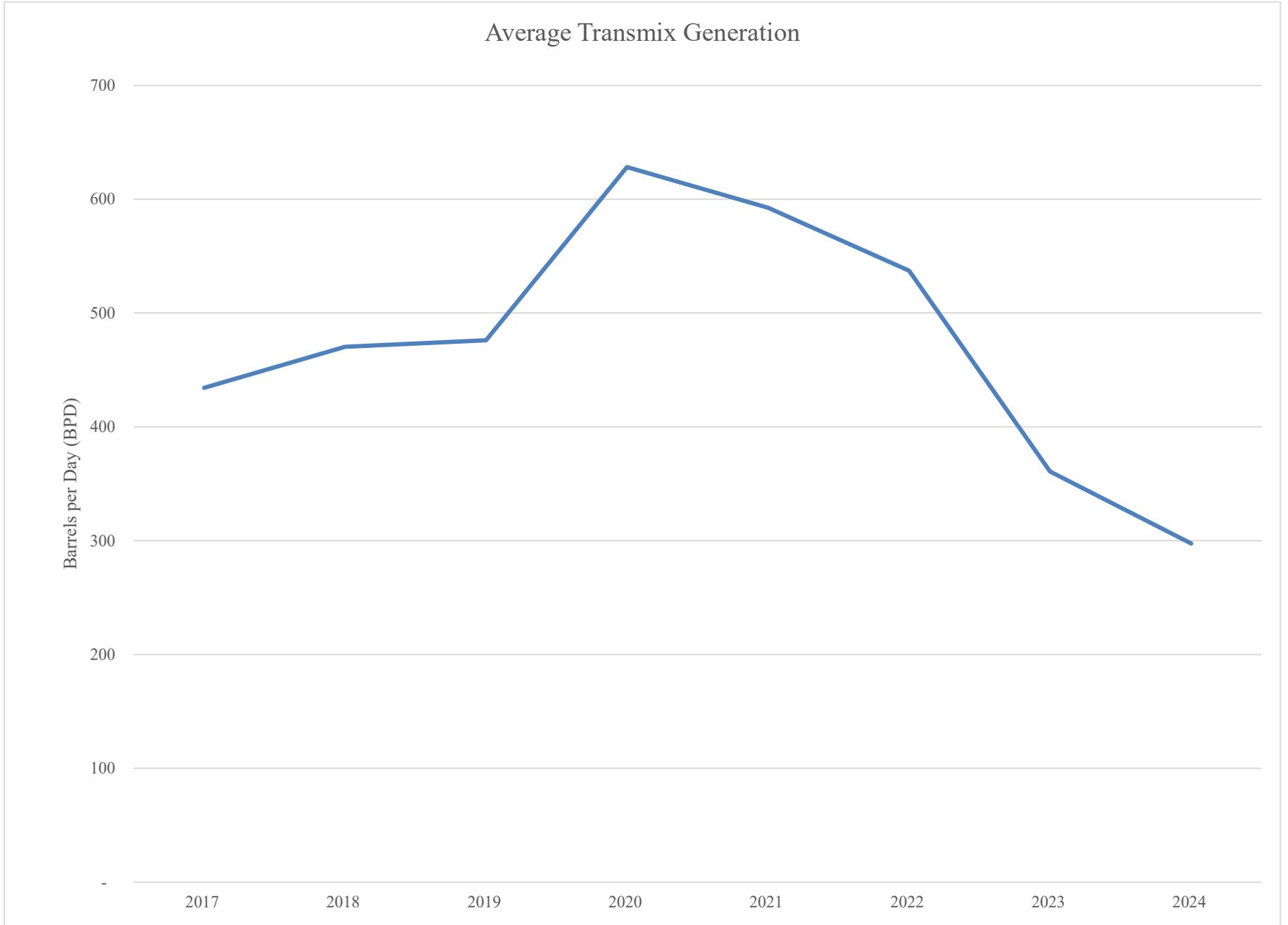
**Provided By:** Thomas Miesner

**Date:** August 11, 2025

LAUREL EXHIBIT GEE-06

BPD Year	Monthly Transmix Generation												ANNUAL AVG
	Month 1	2	3	4	5	6	7	8	9	10	11	12	
2017	195	437	885	315	376	395	456	454	355	605	306	431	434
2018	308	528	446	551	622	403	580	513	495	374	580	243	470
2019	500	1,032	468	498	240	30	411	208	453	589	658	624	476
2020	752	834	663	555	1,118	430	363	605	502	822	645	249	628
2021	486	384	379	1,210	802	516	380	482	288	1,127	498	559	593
2022	175	857	596	455	945	1,259	555	325	255	5	166	851	537
2023	413	631	215	0	415	672	152	202	194	1,202	168	65	361
2024	148	350	256	73	2	776	373	327	237	434	-	-	298

NOTE: Figure 4 incorrectly calculated the average using Nov/Dec which data was not available at time of creation



**LAUREL EXHIBIT MJW-01**



## MICHAEL J. WEBB

### *Vice President*

Dr. Webb has more than twenty-five years of energy industry experience. Dr. Webb has extensive experience in all aspects of pipeline rate regulation at the Federal and State levels, as well as international levels. He has filed expert testimony in numerous cases involving the calculation of cost-based rates. He has also prepared several applications for authority to charge market-based rates on interstate oil pipelines. He has filed testimony addressing issues of natural gas pipeline ratemaking and has been qualified as an expert in principles of natural gas rate making. He has prepared whitepapers and met with FTC Staff to gain approval for mergers on behalf of oil companies. Dr. Webb holds a PhD in economics from George Mason University in Fairfax, Virginia and has published in the journals *Public Choice* and *Natural Gas & Electricity*. His academic interests include applied microeconomics, industrial organization, and auction theory. He has taught courses in Law and Economics, the Economics of Regulation, and the Economics of Energy at the graduate and undergraduate level for sixteen years.

### **Relevant Experience**

#### **Testimony**

- |               |   |
|---------------|---|
| July 29, 2025 | Filed a Revised Declaration on behalf of San Pablo Bay Pipeline Company LLC in support of modified retroactive recovery calculations.   |
| July 18, 2025 | Filed a Declaration on behalf of San Pablo Bay Pipeline Company LLC updating a cost of service and achieved return figures in support of an amended 44.8 percent rate increase at the California Public Utilities Commission. |
| July 17, 2025 | Filed a Declaration on behalf of San Pablo Bay Pipeline Company LLC in support of retroactive recovery calculations.  |
| July 11, 2025 | Submitted Supplemental Cross-Answering Testimony before the FERC on behalf of Colonial Pipeline Company under OR22-5-001, addressing issues related to retroactive damages and economic theory.                               |
| June 30, 2025 | Filed a Verified Statement on behalf of Crimson California Pipeline L.P. in support of a 10 percent rate increase at the California Public Utilities Commission.  |



- June 17-18, 2025 Presented oral testimony and cross examination on behalf of SFPP, L.P. at the California Public Utilities Commission Docket No. A.21-01-015 addressing issues related to risk, return on equity cost-of-debt and capital structure, cost-allocation and the jurisdictional status of terminal operations.
- May 29, 2025 Filed Answering Testimony on behalf of Colonial Pipeline at FERC responding to testimony of ATMI in Docket No. No. OR22-5-001 addressing issues related to damages and economic theory.
- May 19, 2025 Submitted Rebuttal Testimony on behalf of Colonial Pipeline at FERC in Docket No. IS25-268-000 addressing issues of price formation.
- April 25, 2025 Submitted Supplemental Rebuttal Testimony on behalf of SFPP, L.P. before the California Public Utilities Commission in Docket No. A.21-01-015 addressing issues related to risk, return on equity cost-of-debt and capital structure, cost-allocation and the jurisdictional status of terminal operations.
- Jan. 29, 2025 Filed a Verified Statement on behalf of San Pablo Bay in support of a 10 percent rate increase at the California Public Utilities Commission.
- Dec. 20, 2024 Submitted an Affidavit at FERC in Support of the Reply Comments of the Designated Carriers in RM25-2-000 discussing the impact of oil pipeline rates on consumer prices.
- Nov. 26, 2024 Submitted an Affidavit at FERC in Support of the Comments of the Designated Carriers in RM25-2-000 discussing issues related to the FERC's Income Tax Policy and statistical issues.
- Oct. 23, 2024 Submitted Supplemental Declaration on behalf of Crimson California Pipeline L. P. in support of a rate increase for its Southern California Pipeline at the California Public Utilities Commission.
- Oct. 7, 2024 Submitted Supplemental Direct Testimony on behalf of SFPP, L.P. before the California Public Utilities Commission in Docket No. A.21-01-015 addressing issues related to risk, return on equity cost-of-debt and capital structure and cost-allocation.



- Jul. 26, 2024 Filed Cross-Answering Testimony on behalf of Colonial Pipeline at FERC responding to the testimony of FERC Trial Staff in Docket No. OR22-5-001
- June 28, 2024 Submitted Verified Statement on behalf of Crimson California Pipeline L. P. in support of a rate increase for its Southern California Pipeline at the California Public Utilities Commission.
- Feb 28, 2024 Oral Rebuttal Testimony and cross examination on behalf of the Board of Supervisors of Loudon County before the Virginia State Corporation Commission in Docket No. PUR-2023-00089 addressing regulatory issues associated with setting tolls for the privately owned Dulles Greenway.
- Feb 8, 12, 2024 Oral cross examination at the California Public Utilities Commission on behalf of KLM and San Pablo Bay Pipeline in Docket No. A.22-7-015 et. al. discussing principles of cost-based ratemaking, and supporting the pipeline's rate increase.
- Feb. 5, 2024 Submitted Rebuttal Testimony and Affidavit on behalf of Phillips 66 Pipeline LLC addressing issues related to cost-of-service calculations including return on equity, capital structure, and the application of the FERC's Opinion No. 154-B methodology in Docket Nos. IS21-747-000 and IS23-92-000 at the FERC.
- Jan 25, 2024 Filed a Verified Statement on behalf of San Pablo Bay in support of a 10 percent rate increase at the California Public Utilities Commission.
- Jan. 12, 2024 Filed Direct Testimony on behalf of the Board of Supervisors of Loudon County before the Virginia State Corporation Commission in Docket No. PUR-2023-00089 addressing regulatory issues associated with setting tolls for the privately owned Dulles Greenway.
- Dec. 29, 2023 Filed Rebuttal Testimony at the California Public Utilities Commission on behalf of KLM and San Pablo Bay Pipeline in Docket No. A.22-7-015 et. al. discussing principles of cost-based ratemaking, and supporting the pipeline's rate increase.
- Nov. 7, 2023 Filed a Verified Statement in support of emergency rate relief at the California Public Utilities Commission in Docket No. A.22-7-015 et al.



- Sept. 8, 2023 Filed Direct Testimony on behalf of KLM and San Pablo Bay Pipeline in Docket No. A.22-7-015 et. al. discussing principles of cost-based ratemaking, and supporting the pipeline's rate increase at the California Public Utilities Commission. .
- Jul. 19-20, 2023 Oral testimony and cross examination on behalf of Crimson California Pipeline L.P. in Docket Nos. A-22-06-017 and A-22-03-013 discussing principles of cost-based ratemaking, and supporting the pipeline's rate increase.
- Jun. 29, 2023 Submitted Verified Statement on behalf of Crimson California Pipeline L. P. in support of a 10 percent rate increase for its Southern California Pipeline at the California Public Utilities Commission.
- May 15, 2023 Submitted Supplemental Rebuttal Testimony on behalf of Crimson California Pipeline L.P. in Docket Nos. A-22-06-017 and A-22-03-013 discussing principles of cost-based ratemaking, and supporting the pipeline's rate increase.
- Mar. 17, 2023 Submitted Direct Testimony on behalf of Crimson California Pipeline L.P. in Docket No. A22-07-015 discussing cost-based ratemaking principles and supporting the rate increase of the KLM pipeline.
- Mar. 10, 2023 Submitted Direct Testimony and Affidavit on behalf of Phillips 66 Pipeline LLC addressing issues related to cost-of-service calculations including return on equity, capital structure, and the application of the FERC's Opinion No. 154-B methodology in Docket Nos. IS21-747-000 and IS23-92-000 at the FERC.
- Mar. 3, 2023 Submitted Verified Statement on behalf of Crimson Company California Pipeline, L.P. regarding its KLM System before the California Public Utilities Commission in addressing the cost of service, cost of capital and achieved return supporting the applicant's rate increase.
- Jan. 27, 2023 Submitted Verified Statement on behalf of San Pablo Bay Pipeline Company before the California Public Utilities Commission in addressing the cost of service, cost of capital and achieved return supporting the applicant's rate increase.



- Jan. 3, 2023 Submitted and Affidavit on behalf of Phillips 66 Pipeline LLC addressing issues related to cost-of-service calculations including return on equity, capital structure, and the application of the FERC's Opinion No. 154-B methodology in Docket No. IS23-92-000.
- Dec. 23, 2022 Submitted Rebuttal Testimony on behalf of Crimson California Pipeline L.P. in Docket Nos. A-22-06-017 and A-22-03-013 discussing principles of cost-based ratemaking, and supporting the pipeline's rate increase.
- Sept. 13, 2022 Submitted Direct Testimony on behalf of Crimson California Pipeline L.P. in Docket No. A-22-06-017 discussing principles of cost-based ratemaking, and supporting the pipeline's rate increase.
- Aug. 24, 2022 Submitted Verified Statement on behalf of Crimson California Pipeline L.P. in Docket No. A-20-06-010 responding to questions raised by ALJ and supporting the pipeline's rate increase.
- Aug. 6, 2022 Submitted Testimony on behalf of Crimson California Pipeline L.P. in Docket No. A-22-03-013 regarding surcharge to implement AB-864 safety measures.
- Jul. 29, 2022 Submitted Declaration on behalf of San Pablo Bay Pipeline Company and KLM Pipeline Company before the California Public Utilities Commission in addressing the cost of service, cost of capital and achieved return supporting the applicant's rate increase.
- Jun. 30, 2022 Submitted Declaration on behalf of Southern California Pipeline System before the California Public Utilities Commission in addressing the cost of service, cost of capital and achieved return supporting the applicant's rate increase.
- Nov. 19, 2021 Submitted Rebuttal Testimony on behalf of SFPP, L.P. before the California Public Utilities Commission in Docket No. A.21-01-015 addressing issues related to risk, return on equity cost-of-debt and capital structure and cost-allocation.
- Oct. 1, 2021 Submitted Direct Testimony on behalf of SFPP, L.P. before the California Public Utilities Commission in Docket No. A.21-01-015 addressing issues related to risk, return on equity cost-of-debt and capital structure.



- Sep. 20, 2021 Submitted an Affidavit on behalf of Phillips 66 Pipeline LLC addressing issues related to cost-of-service calculations including return on equity, capital structure and the application of the FERC's Opinion No. 154-B methodology.
- Jun. 30, 2021 Submitted Declaration on behalf of KLM Pipeline System before the California Public Utilities Commission in addressing the cost of service, cost of capital and achieved return supporting the applicant's rate increase.
- Jun. 30, 2021 Submitted Declaration on behalf of Southern California Pipeline System before the California Public Utilities Commission in addressing the cost of service, cost of capital and achieved return supporting the applicant's rate increase.
- Jun. 10, 2021 Direct Testimony and Cross Examination on behalf of Cenovus Energy, Inc. before the Canada Energy Regulator ("CER") in Docket for S.C. 2019, c 28, s. 10 regarding the Application of Enbridge Inc. requesting approval of tolling structure involving contract tolls on its Mainline.
- May 28, 2021 Submitted Declaration on behalf of San Pablo Bay Pipeline Company before the California Public Utilities Commission in addressing the cost of service, cost of capital and achieved return supporting the applicant's rate increase.
- Feb. 21-22, 2021 Direct Testimony and Cross Examination on behalf of Bandera Master Fund LP et al in the Court of Chancery of the State of Delaware Docket No. 2018-0372-JTL addressing issues related to issues of FERC ratemaking.
- Dec. 7, 2020 Submitted Evidence at the request of Cenovus Energy, Inc. before the Canada Energy Regulator ("CER") in Docket for S.C. 2019, c 28, s. 10 regarding the Application of Enbridge Inc. requesting approval of tolling structure involving contract tolls on its Mainline. The Evidence recommended a methodology to employ to assess whether the tolls would be just and reasonable and consistent with the public interest.
- Nov. 10, 2020 Submitted Affidavit on behalf of SFPP, L.P. at the Federal Energy Regulatory Commission responding to issues rates by FERC Trial Staff and Complainants in Docket No. OR16-6-000 addressing issues related to adjustments to the calculation of the Return on Equity.



- Oct. 26, 2020 Oral Testimony on behalf of Colonial Pipeline Company in Docket No. OR18-7-002 addressing the proper methodology to employ in allocating cost between jurisdictional and non-jurisdictional services and issues related to depreciation.
- Oct. 19, 2020 Submitted Affidavit on behalf of SFPP, L.P. at the Federal Energy Regulatory Commission in Docket No. OR16-6-000 addressing issues related to adjustments to the calculation of the Return on Equity.
- Oct. 16, 2020 Submitted Rebuttal Expert Report on behalf of Bandera Master Fund LP et al in the Court of Chancery of the State of Delaware Docket No. 2018-0372-JTL addressing issues related to issues of FERC ratemaking.
- Sept. 11, 2020 Submitted Expert Report on behalf of Bandera Master Fund LP et al in the Court of Chancery of the State of Delaware Docket No. 2018-0372-JTL addressing issues related to issues of FERC ratemaking.
- Sept. 11, 2020 Submitted Affidavit on behalf of The Designated Carriers in Docket No. AD20-10-000 responding to issues raised by certain shipper comments regarding the appropriate factors to employ in calculating the Index the FERC applies to adjust oil pipeline rates.
- Aug. 17, 2020 Submitted Affidavit on behalf of The Designated Carriers in Docket No. AD20-10-000 regarding the appropriate factors to employ in calculating the Index the FERC applies to adjust oil pipeline rates.
- Aug. 13-14, 2020 Provided oral sur-rebuttal testimony and subject to cross examination on behalf of the Board of Supervisors of Loudon County in Docket No. PUR-2019-00218 addressing regulatory issues associated with setting tolls for the privately owned Dulles Greenway.
- Jul. 10, 2020 Submitted Direct Testimony on behalf of Williams MLP Operating LLC and Mockingbird Midstream Gas Services, LLC before the Railroad Commission of Texas in Docket No. GUD-10606 addressing regulatory economics issues associated with price discrimination.



- Jun. 26, 2020 Submitted Direct Testimony on behalf of the Board of Supervisors of Loudon County before the State Corporation Commission in Docket No. PUR-2019-00218 addressing regulatory issues associated with setting tolls for the privately owned Dulles Greenway.
- May 12-18, 2020 Oral testimony and cross examination on behalf of MPLX Ozark Pipe Line, LLC in Docket No. OR19-14-000 addressing issues related to product and destination markets and HHI calculations.
- Apr. 8, 2020 Filed Rebuttal Testimony on behalf of MPLX Ozark Pipe Line, LLC in Docket No. OR19-14-000 addressing issues related to product and destination markets and HHI calculations.
- Feb. 20, 2020 Filed Cross-Answering Testimony on behalf of Colonial Pipeline Company in Docket No. OR18-7-002 addressing the proper methodology to employ in allocating cost between jurisdictional and non-jurisdictional services and the economic life to use in depreciation calculations.
- Nov. 20, 2019 Filed Answering Testimony on behalf of Colonial Pipeline Company in Docket No. OR18-7-002 addressing the proper methodology to employ in allocating cost between jurisdictional and non-jurisdictional services.
- Sep 13, 2019 Filed Supplemental Direct Testimony on behalf of MPLX Ozark Pipe Line, LLC addressing issues related to product and destination markets and HHI calculations in Docket No. OR19-14-000.
- Aug. 13, 2019 Filed an affidavit on behalf of Buckeye Pipeline Company, L.P. regarding the calculation of a substantial change in economic circumstances under the Energy Policy Act of 1992, in Docket No. OR19-26-000.
- Jul. 5, 2019 Filed an affidavit on behalf of Buckeye Pipeline Company, L.P. regarding the justness and reasonableness of rates it charges to transport jet fuel to the New York City Airports, in Docket No. OR19-26-000.
- Jun. 26, 2019 Filed an affidavit on behalf of the Association of Oil Pipe Lines discussing issues related to the calculation of the cost of capital in Docket No. PL19-4-000.
- Jun. 19, 2019 Filed an affidavit on behalf of SFPP, L.P. discussing methodology employed to calculate cost of capital used in SFPP's Page 700 in Docket No. IS19-508-000.



- Mar. 27, 2019 Filed an affidavit on behalf of MPLX Ozark Pipe Line, LLC addressing issues related to product and destination markets and HHI calculations in Docket No. OR19-14-000.
- Mar. 20-21, 2019 Oral testimony and cross examination on behalf of White Cliffs Pipeline. LLC at the Federal Energy Regulatory Commission in Docket No. OR18-9-000 addressing issues related to market power.
- Jan. 22, 2019 Filed Rebuttal testimony on behalf of White Cliffs Pipeline. LLC at the Federal Energy Regulatory Commission in Docket No. OR18-9-000 addressing issues related to market power.
- Dec. 21, 2018 Filed Direct testimony on behalf of MPLX Ozark Pipe Line, LLC addressing issues related to product and destination markets and HHI calculations in Docket No. OR19-14-000.
- Sept. 10, 2018 Filed an affidavit on behalf of SFPP, L.P addressing issues related to rates deemed just and reasonable by the Energy Policy Act of 1992 in Docket No. OR11-13-000 et al.
- Aug. 7, 2018 Filed affidavit on behalf of SFPP, L.P. in support of motion to reopen the record with regard to issues related to the impact of the Commission's Policy Statement on Income Tax Allowance in Docket No. IS08-390-000 et al.
- Jul. 30, 2018 Filed Supplemental Direct Testimony on behalf of White Cliffs Pipeline, L.L.C. containing a market power analysis in support of White Cliffs' application for authorization to charge market-based rates in Docket No. OR18-9-000
- Jul. 11, 2018 Filed affidavit on behalf of SFPP, L.P. explaining the basis for eliminating ADIT for a MLP that is not entitled to a tax allowance in Docket Nos. IS08-390-000 et al.
- Jun. 14, 2018 Filed Prepared Supplement Direct Testimony on behalf of West Texas LPG Pipeline Limited Partnership ("WTXP") addressing issues related to market power analyses in support of WTXP's application for authorization to charge market-based rates in Docket No. OR17-19-000.
- May 2, 2018 Filed Prepared Supplemental Direct Testimony on behalf of Wood River Pipe Lines LLC that contains a market power analyses in support of Wood River's application for authorization to charge market-based rates in Docket No. OR17-11-000.



- Apr. 9, 2018 Filed affidavit in support of the answer of Buckeye Pipeline Company, L.P. to the protest of various shippers to the tariff filing on Buckeye's Eastern Products System in Docket No. IS18-229-000.
- Apr. 9, 2018 Filed affidavit in support of the answer of Buckeye Pipeline Company, L.P. to the protest of various shippers to the tariff filing on Buckeye's Midwest Products System in Docket No. IS18-230-000.
- Mar. 22, 2018 Filed affidavit in support of the answer of White Cliffs Pipeline, L.L.C. to Protest of the Liquids Shippers Group to application of White Cliffs Pipeline, LLC's request for market-based ratemaking authority.
- Dec. 22, 2017 Filed affidavit in support of the request for rehearing of Plains Marketing, L.P. discussing pricing dynamics in the crude petroleum market.
- Dec. 21, 2017 Prepared Direct Testimony on behalf of White Cliffs Pipeline, L.L.C. in support of application for Market-Based Ratemaking Authority at the Federal Energy Regulatory Commission in Docket No. OR18-8-000.
- Nov. 7, 2017 Cross Examination on behalf of Laurel Pipe Line Company, L.P. at the Pennsylvania Public Utilities Commission in Docket No. A-2016-2575829 supporting Laurel's request to make operational changes to its pipeline service.
- Nov. 1, 2017 Filed Supplemental Rejoinder testimony on behalf of Laurel Pipe Line Company, L.P. at the Pennsylvania Public Utilities Commission in Docket No. A-2016-2575829 supporting Laurel's request to make operational changes to its pipeline service.
- Oct. 6, 2017 Filed Rejoinder testimony on behalf of Laurel Pipe Line Company, L.P. at the Pennsylvania Public Utilities Commission in Docket No. A-2016-2575829 supporting Laurel's request to make operational changes to its pipeline service.
- Aug. 31, 2017 Filed Rebuttal testimony on behalf of Laurel Pipe Line Company, L.P. at the Pennsylvania Public Utilities Commission in Docket No. A-2016-2575829 supporting Laurel's request to make operational changes to its pipeline service.



- Aug. 28, 2017 Filed Rebuttal Expert Witness Statement in Suburban Heating Oil Partners, LLC v. Buckeye Terminals LLC before the American Arbitration Association Case No. 01-16-0003-4900 involving the calculation of damages for alleged breach of contract.
- Aug. 7, 2017 Filed affidavit on behalf of Wood River Pipe Line, LLC responding to Protest of the application for Market-Based Ratemaking Authority at the Federal Energy Regulatory Commission in Docket No. OR17-11-000.
- Jul. 20, 2017 Cross Examination in Suburban Heating Oil Partners, LLC v. Buckeye Terminals LLC before the American Arbitration Association Case No. 01-16-0003-4900 involving the calculation of damages for alleged breach of contract.
- Jun. 26, 2017 Filed Rebuttal Expert Witness Statement in Suburban Heating Oil Partners, LLC v. Buckeye Terminals LLC before the American Arbitration Association Case No. 01-16-0003-4900 involving the calculation of damages for alleged breach of contract.
- Jun. 19, 2017 Filed Expert Witness Statement in Suburban Heating Oil Partners, LLC v. Buckeye Terminals LLC before the American Arbitration Association Case No. 01-16-0003-4900 involving the calculation of damages for alleged breach of contract.
- Jun. 1, 2017 Filed a Verified Statement at the CPUC on behalf of Crimson California Pipeline L.P. supporting its request for a rate increase for its KLM Pipeline System.
- May 5, 2017 Filed Direct testimony on behalf of Wood River Pipe Line, LLC in support of application for Market-Based Ratemaking Authority at the Federal Energy Regulatory Commission in Docket No. OR17-11-000.
- Mar. 8, 2017 Oral testimony and cross examination of Crimson Pipeline, L.P. at the California Public Utilities Commission in Docket No. A.16-03-009 addressing issues related to cost of capital, risk and the use of the cost-of-service methodology in assessing whether rates are just and reasonable.
- Feb. 7, 2017 Filed Direct testimony on behalf of Laurel Pipe Line Company, L.P. at the Pennsylvania Public Utilities Commission in Docket No. A-2016-2575829 supporting Laurel's request to make operational changes to its pipeline service.



- Feb. 3, 2017 Filed 2nd Supplemental Rebuttal Testimony on behalf of West Texas LPG Pipeline Limited Partnership at the Railroad Commission of Texas in GUD No. 10455 regarding the calculation of cost-based rates in the presence of competition.
- Feb. 2, 2017 Oral testimony and cross examination in on behalf of SFPP, L.P. at the Federal Energy Regulatory Commission in Docket No. OR16-6-000 addressing issues related to cost of capital, risk, and billing determinants used to set cost-based rates for SFPP.
- Jan. 16, 2017 Filed Rebuttal Testimony on behalf of Crimson Pipeline, L.P. at the California Public Utilities Commission in Docket No. A.16-03-009 addressing issues related to cost of capital, risk and the use of the cost-of-service methodology in assessing whether rates are just and reasonable.
- Oct. 28, 2016 Filed Prepared Answering Testimony in response to Commission Trial Staff on behalf of SFPP, L.P. at the Federal Energy Regulatory Commission in Docket No. OR16-6-000 addressing issues related to the cost of capital.
- Oct. 21, 2016 Filed Supplemental Rebuttal Testimony on behalf of West Texas LPG Pipeline Limited Partnership at the Railroad Commission of Texas in GUD No. 10455 regarding the calculation of cost-based rates in the presence of competition.
- Oct. 18, 2016 Filed Prepared Answering Testimony in response to Commission Trial Staff on behalf of SFPP, L.P. at the Federal Energy Regulatory Commission in Docket No. OR16-6-000 addressing issues related to test period volumes and market evaluation.
- Sep. 19, 2016 Filed Affidavit on behalf of Enterprise TE Products Pipeline Company, LLC in Docket No. OR16-23-000, addressing issues related to cost-of-service and cost-allocation.
- Sep. 16, 2016 Filed Rebuttal Testimony on behalf of West Texas LPG Pipeline Limited Partnership at the Railroad Commission of Texas in GUD No. 10455 regarding economic theory underpinning the analysis of market rates.
- Aug. 17, 2016 Filed Direct Testimony on behalf of Crimson Pipeline, L.P. at the California Public Utilities Commission in Docket No. A.16-03-009 addressing issues related to cost of capital, risk and the use of the cost-of-service methodology in assessing whether rates are just and reasonable.



- Aug. 12, 2016 Filed Answering Testimony on behalf of SFPP, L.P. at the Federal Energy Regulatory Commission in Docket No. OR16-6-000 addressing issues related to cost of capital, risk, and billing determinants used to set cost-based rates for SFPP.
- Aug. 1, 2016 Filed Direct Testimony in support of the application for market-based ratemaking authority of Buckeye Linden Pipe Line Company LLC.
- Jul. 25, 2016 Provided Verified Statement on behalf of Crimson Pipeline, L.P. at the California public Utilities Commission in Docket No. A.16-03-009 addressing issues raised by shippers in response to request for emergency rate relief
- Jun. 15, 2016 Provided Verified Statement on behalf of Crimson Pipeline, L.P. at the California public Utilities Commission in Docket No. A.16-03-009 regarding the need for emergency rate relief.
- Mar. 11, 2016 Provided Testimony on behalf of Crimson Pipeline, L.P. at the California Public Utilities Commission in Docket No. A.16-03-009 regarding achieved return and cost of capital
- Oct. 8, 2015 Presented Oral Testimony on behalf of Buckeye Pipe Line Company, L.P. at FERC in Docket No. OR14-4-000 responding to testimony regarding the competitive status of certain markets served by the carrier
- Jul. 1, 2015 Provided Testimony on behalf of Newfield Production Company at the 269th District Court in Case No. 201534624 regarding FERC process and principles related to committed rates
- Jun. 26, 2015 Filed Prepared Answering Testimony on behalf of Buckeye Pipe Line Company, L.P. at FERC in Docket No. OR14-4-000 responding to testimony regarding the competitive status of certain markets served by the carrier
- May 15, 2015 Filed Prepared Rebuttal Testimony on behalf of Zydeco Pipeline Company LLC at FERC in Docket No. IS14-607-000 et al responding to overhead cost allocation, rate design and cost of capital related issues
- Mar. 24-27, 2015 Presented Oral Testimony at FERC on behalf of Buckeye Pipe Line Company, L.P. in Docket No. OR12-28-001 regarding economic principles of cost allocation and evaluation of allocation methodology



- Jan. 20, 2015 Filed Prepared Answering Testimony at FERC on behalf of Buckeye Pipe Line Company, L.P. in Docket Nos. OR14-4-000 et al. regarding analyses underlying a market power determination
- Dec. 19, 2014 Filed Prepared Answering Testimony Responding to Commission Trial Staff at FERC on behalf of Buckeye Pipe Line Company, L.P. in Docket No. OR12-28-001 regarding economic principles of cost allocation and evaluation of allocation methodology
- Dec. 15, 2014 Filed Direct Testimony at FERC on behalf of Zydeco Pipeline Company LLC in Docket No. IS14-607-000 et al discussing regarding cost allocation and cost of capital issues
- Oct. 7, 2014 Filed Prepared Answering Testimony on behalf of Buckeye Pipe Line Company, L.P. at FERC in Docket No. OR12-28-001 regarding economic principles of cost allocation and evaluation of allocation methodology
- Aug. 7, 2014 Filed Rebuttal Written Evidence at the Canadian National Energy Board on behalf of Shell Trading Canada on matters regarding apportionment methodologies in Hearing Order RHW-001-2013
- Jul. 27, 2014 Filed Affidavit on behalf of SFPP, L.P. in Docket No. OR14-35 regarding the efficiency of the FERC's indexing methodology
- Jun. 4, 2014 Filed Direct Testimony at FERC on behalf of Shell Pipeline Company, L.P. in Docket No. IS14-104-000 et al. discussing regarding cost allocation and cost of capital issues
- Apr. 25, 2014 Filed Direct Written Evidence at the Canadian National Energy Board on behalf of Shell Trading Canada on matters regarding apportionment methodologies in Hearing Order RHW-001-2013
- Nov. 12-14, 2013 Presented oral testimony, cross examination before the Virginia State Corporation Commission regarding cost-of-service and rate design issues for a private toll road in PUE-2013-00011
- Nov. 4, 2013 Filed Affidavit at FERC on behalf of Buckeye Pipeline Company, L.P. in Docket No. OR14-4 in support of its motion to dismiss
- Oct. 15, 2013 Filed Rebuttal testimony at the Virginia State Corporation Commission regarding cost-of-service regulation and ratemaking issues in Case No. PUE-2013-00011
- Sept. 23, 2013 Filed prepared testimony at the Regulatory Commission of Alaska on behalf of BP Pipelines (Alaska) Inc. calculating a cost-based rate and providing theoretical support in Docket No. TL143-311



- Apr. 30, 2013 Submitted Joint Expert Report to the Virginia State Corporation Commission regarding cost-of-service regulation and ratemaking issues in Case No. PUE-2013-00011
- Apr. 29, 2013 Presented oral testimony and cross examination at the California Public Utilities Commission on behalf of SFPP, L.P. discussing theoretical principles of cost allocation with regard to Application No. 09-05-014
- Dec. 12, 2012 Filed Rebuttal Testimony at FERC on behalf of Enterprise TE Products Pipeline Company LLC in Docket No. IS12-203-000 on matters relating to rate design and cost-of-capital
- Nov. 5, 2012 Filed Direct Testimony at the California Public Utilities Commission on behalf of SFPP, L.P. discussing theoretical principles of cost allocation with regard to Application No. 09-05-014
- Oct. 10, 2012 Filed Verified Statement at FERC on behalf of Buckeye Pipeline Company, L.P. in Docket No. OR12-28-000 regarding the justness and reasonableness of the pipeline's rates
- Jul. 18, 2012 Filed Affidavit at FERC on behalf of Association of Oil Pipe Lines in Docket No. OR12-4-000 on issues related to assessing competition in the context of applications for market-based ratemaking authority
- Jul. 16, 2012 Filed Reply Verified Statement at FERC on behalf of Buckeye Pipeline Company, L.P. in Docket No. IS12-185-000
- Jul. 9, 2012 Filed Prepared Direct Testimony at FERC on behalf of Enterprise TE Products Pipeline Company LLC in Docket No. IS12-203-000 on matters relating to rate design and cost-of-capital
- May 15, 2012 Filed Verified Statement at FERC on behalf of Buckeye Pipeline Company, L.P. in Docket No. IS12-185-000 addressing issues related to ratemaking in the context of the company's ratemaking program
- Apr. 18-20, 2012 Presented oral testimony and responded to questions of Commissioners at the Public Service Commission of the State of Wyoming on behalf of Belle Fourche Pipeline Company in Docket no. 50000-61-PR-11 on issues related to cost-of-service and cost-of-capital



- Feb. 1, 2012 Filed Supplement Direct Testimony at the Public Service Commission of the State of Wyoming on behalf of Belle Fourche Pipeline Company in Docket No. 50000-61-PR-11 on issues related to cost-of-service and cost of capital
- Jan. 10-11, 2012 Presented Oral Testimony and cross examination at the FERC on behalf of Enbridge Pipelines (Southern Lights) LLC in Docket Nos. IS10-399-000 et al. on issues related to cost-of-service and rate design
- Jan. 9, 2012 Filed Supplemental Direct Testimony at FERC on behalf of SFPP, L.P. in Docket No. IS11-444-001 revising calculations to accord with Commission's new cost-of service ruling
- Jan. 6, 2012 Filed Rebuttal Testimony before the State Corporation Commission of the State of Kansas on behalf of Mid-America Pipeline Company, LLC in Docket No. 12-MDAP-068-RTS on issues related to cost-of-service and rate design
- Dec. 13, 2011 Filed Direct Testimony at FERC on behalf of SFPP, L.P. in Docket No. IS11-444-001 regarding the proposed indexation of pipeline rates and the economic principles of the Commission's indexing methodology
- Nov. 1, 2011 Filled Rebuttal Testimony at the Federal Regulatory Commission on behalf of Enbridge Pipelines (Southern Lights) LLC in Docket Nos. IS10-399-000 et al. on issues related to cost-of-service and rate design
- Oct. 25, 2011 Filed Affidavit on behalf of Mid-America Pipeline Company, LLC before the State Corporation Commission of the State of Kansas in Docket No. 12-MDAP-068-RTS in support of a Motion to Compel
- Oct. 14, 2011 Filed Direct Testimony before the Public Service Commission of the State of Wyoming on behalf of Belle Fourche Pipeline Company in Docket No. 50000-61-PR-11 on issues related to cost-of-service and cost-of-capital
- Aug. 19, 2011 Filed Direct Testimony before the State Corporation Commission of the State of Kansas on behalf of Mid-America Pipeline Company, LLC in Docket No. 12-MDAP-068-RTS on issues related to cost-of-service and rate design



- Jun. 7, 2011 Filed Direct Testimony at FERC on behalf of Enbridge Pipelines (Southern Lights) LLC in Docket Nos. IS10-399-000, et al. on issues related to cost-of-service and rate design
- Jul. 2, 2010 Presented oral cross examination of behalf of SFPP, L.P. addressing issues associated with cost allocation and volume projections in Docket No. IS09-437
- May 14, 2010 Filed Rebuttal Testimony on behalf of SFPP, L.P. addressing issues associated with cost allocation, and volume projections in Docket No. IS09-437
- May 10-11, 2010 Presented oral cross examination behalf of San Pablo Bay Pipeline Company, LLC at the California Public Utility Commission supporting its Application for market based rates in Docket No. A.08-09-024
- Apr. 15, 2010 Filed Direct Testimony on behalf of Kuparuk Transportation Company on cost of service issues before the Regulatory Commission of Alaska
- Feb. 23-24, 2010 Presented oral Testimony on behalf of SFPP, L.P. at the California Public Utilities Commission addressing issues associated with competition, sound regulatory policy, and macro-economic conditions in Docket No. 09-05-014
- Feb. 8, 2010 Filed Rebuttal Testimony on behalf of San Pablo Bay Pipeline Company LLC in Docket No. A-08-09-024 addressing issues related to competitive analysis of its markets
- Jan. 25, 2009 Filed Rebuttal Testimony on behalf of SFPP, L.P. at the California Public Utilities Commission addressing issues associated with competition, sound regulatory policy and macro-economic conditions in Docket No. A. 09-05-014
- Dec. 29, 2009 Filed Verified Statement on behalf of San Pablo Bay Pipeline, LLC supporting Motion to Compel in Docket No. A 08-09-024
- Dec. 11, 2009 Filed Direct Testimony on behalf of SFPP, L.P. addressing issues associated with cost-allocation, and volume projections in Docket No. IS09-437
- Sept. 21, 2009 Filed Affidavit supporting SFPP, L.P.'s Petition for Rehearing in Docket No. IS09-437
- Jun. 26, 2009 Presented Oral Sur-rebuttal testimony on behalf of SFPP, L.P. addressing issues associated with volume projections and economic conditions



- Jun. 18-19, 2009 Presented Oral Testimony on behalf of SFPP, L.P. at FERC in Docket No. IS08-390-002 addressing issues discussed in prepared Direct and Rebuttal Testimony
- Mar. 27, 2009 Filed Rebuttal Testimony at FERC discussing cost-allocation, depreciation, and the economic conditions associated with demand for refined petroleum products in SFPP's destination market
- Jan. 13, 2009 Filed Sworn Declaration on behalf of San Pablo Bay Pipeline, LLC supporting its Response to Tesoro's Motion for Summary Adjudication in Docket No. A.08-09-024
- Dec. 2-4, 2008 Presented Oral Testimony on behalf of SFPP, L.P. at FERC addressing theoretical issues related to allocation of cost and the economic life of the pipeline
- Oct. 16, 2008 Filed Direct Testimony at FERC on behalf of SFPP, L.P. in Docket No. IS08-390-002 discussing theoretical principles of cost allocation
- Sept. 30, 2008 Filed Direct Testimony on behalf of San Pablo Bay Pipeline Company LLC at the California Public Utilities Commission in Docket No. A.08-09-024 supporting its market based rates and examining the competition in origin and destination markets using conventional measures of market concentration and competition
- Sept. 9, 2008 Filed Answering Testimony at FERC on behalf of SFPP, L.P. in Docket No. OR03-5-000, discussing theoretical issues associated with cost-allocation and the economic life of the pipeline
- Jul. 6, 2007 Filed Affidavit at FERC in support of a motion for rehearing of Frontier Pipeline Company in Docket No. OR01-2-000 and OR01-4-000 discussing calculation of refunds owed by Frontier.

### **Rate Regulation Issues**

- Led the project team in developing data and preparing cost-of-service calculation in cost-based rate cases. Assisted multiple witnesses in drafting testimony regarding FERC requirements for cost-based ratemaking.
- Prepared cost-of-service filings, consistent with FERC regulations in 18 CFR § 346.2 on behalf of numerous oil pipelines.
- Assisted counsel in preparing cross examination regarding cost-based ratemaking and regulatory theory.
- Assisted multiple witnesses in drafting testimony presenting Stand-Alone Cost theory to the FERC.



### **Contract and Investor Disputes**

- Provided expert testimony on behalf of an investor class before the Court of Chancery of the State of Delaware that was favorably cited by the Court in finding liability and damages to the investor class in excess of \$800 million.
- Developed complex economic models to demonstrate that a lease between a joint venture operator and an affiliate had been conducted at arms-length and did not represent self-dealing, resulting in a favorable settlement for the client.
- Led a multi-witness project team opposing a claim of damages in a liquids terminal dispute, resulting in a finding of no damages for the client.



### **Antitrust Matters**

- Prepared a whitepaper for the Federal Trade Commission analyzing the competitive impact of a pipeline acquisition in the Eastern Pennsylvania area.
- Developed a computer-based model to analyze the competitive impact of an oil pipeline acquisition in the mid-continent region. Prepared a detailed whitepaper explaining the theory behind the analysis and the results of the analysis. Met with FTC Staff to discuss the results of the analysis.
- Analyzed the competitive impact of a refinery acquisition in the northeastern United States. Constructed a computer-based simulation based on publicly available data and an analysis of how the acquisition would impact the market. Prepared multiple whitepapers reporting results of the analysis. Met with FTC Staff to discuss the results of the analysis.

### **Market-Based Rate Filings**

- Assisted in the preparation of an application for market-based ratemaking authority and associated exhibits consistent with 18 CFR § 348 on behalf of Sunoco Pipeline, LP's market-based rate filing.
- Assisted in the preparation of expert testimony and exhibits filed in Shell Pipe Line Company LP in market-power case.
- Participated in the development of applications for market-based ratemaking authority on behalf of Chase Pipeline Company, Inc. West Shore Pipeline Company, Inc, and Marathon-Ashland Pipe Line LLC.

### **Acquisition Due Diligence**

- Participated in a project team analyzing the regulatory risk that a private equity fund faced if it acquired a controlling interest in liquids.
- Participated in a project team analyzing the regulatory risk that a pipeline company considering a conversion in ownership structure from a corporation to a master limited partnership could face if its rates were contested by its shippers.



## Involvement in Prior Regulatory Matters

### FERC Matters

OR03-5-001	Complaint against the rates of SFPP's North Line and Oregon Line
IS05-216-000	Protest against the rates of Mid-America Pipeline
IS05-82-000, IS06-01-000	Protest and Complaint against TAPS CARRIERS rates
OR05-7-000	Sunoco Logistics Partners, L.C. Market Based Rate filing
OR96-2-000	Protest and complaint against SFPP's Sepulveda pipeline system
OR05-1-000	Petition for Declaratory Order Filed by Enbridge's Spearhead pipeline
OR01-2-000	Calculating reparations owed by Frontier to Big West and Chevron
OR02-10-000	Shell Pipe Line Company, LP application for market-based ratemaking authority
IS02-384-000	Protest and Complaint against Platte Pipe Line Company and Express Pipeline Company, LLC
OR96-2-000	Complaint against SFPP's rates
OR01-06-000	Application of West Shore Pipe Line Company for market-based ratemaking authority
OR01-03-000, OR01-05-000	Complaint against the rates of Anschutz Ranch East Pipeline Inc.
OR01-02-000, OR01-04-000	Complaint against the rates of Frontier Pipeline Company
OR01-1-000	Application of Chase Transportation Company for market-based ratemaking authority
OR00-1-000	Application of Marathon-Ashland Pipe Line, LLC for market-based ratemaking authority

**State Matters**

- PUR-2019-00218 Application of Toll Road Investors Partnership II, L.P. for Authorization for an Increase in the Maximum Level of Tolls at the Commonwealth of Virginia State Corporation Commission
- P-03-4 Protest and complaint at the Regulatory Commission of Alaska against the rates of the TAPS Carriers
- TO-01147 Protest against Olympic Pipe Line Company, Inc's rate increase at the Washington Utilities and Telecommunications Commission
- P97-4 and P97-7 Protest and complaint at the Regulatory Commission of Alaska against the rates of the TAPS Carriers
- TX 1999-00532 Challenge to Arizona tax court's determination that SFPP's property should be valued at other than original cost

**Other Entities**

- Docket No. 42084 Analyzing the return of Valero's ammonia pipeline
- Civ No. 96-Z-2451 Challenge to the rates charged by a CO<sub>2</sub> Pipeline in Federal District Court
- Case No. 70 198 00294-99 Challenge to a pro-rationing policy of Amoco Oil Company filed before the American Arbitration Association



## **Publications and Presentations**

“Allocating Pipeline Capacity and Priority Service” Presented at the 2018 Annual Business Conference of the Association of Oil Pipe Lines

“State Regulation” Presented at the 2019 and 2018 Annual Business Conference of the Association of Oil Pipe Lines

“Market-Based Rates” Presented at the 2017, 2016, 2015, 2014, 2013, and 2012 Annual Business Conference of the Association of Oil Pipe Lines

“Allocating Pipeline Capacity: Navigating Shipper Issues in Priority Service and Proration Policies” Presented at the 2018 Annual Business Conference of the Association of Oil Pipelines

“Introduction to FERC Ratemaking” Presented at the 2022-2011 Annual Business Conference of the Association of Oil Pipe Lines

“Cost of Service Concepts” Presented at the 2022, 2021, 2019 2016, 2015 Annual Business Conference of the Association of Oil Pipe Lines

“Pipeline Update” Presented at the November 2014 Mexican Energy Infrastructure Symposium

Webb, M.J and Williams, J.C “Price Regulation Allowing NGL Pipelines to Adjust to Current Conditions” Natural Gas & Electricity (August 2013) 17-22

Presentation at EUCI regarding all aspects of ratemaking for the liquid pipeline industry, December 2012

“Regulatory Basics for Oil Pipelines” Presented at the 2015, 2013, 2012, 2011, 2010, and 2009 Annual Business Conference of the Association of Oil Pipe Lines

“Ratemaking: Beyond the Basics” Presented at the 2011, 2010, 2009, and 2008 Annual Business Conference of the Association of Oil Pipe Lines

“New Developments in Pipeline Expansions: Executing the Deal” Presented at the 2011 Annual Business Conference of the Association of Oil Pipe Lines

“FERC 101” Presented at the 2008 and 2007 Annual Business Conference of the Association of Oil Pipe Lines

The Political Economy of the Israel Palestine Conflict: An Evolutionary Game Theory Approach: Doctoral Dissertation

Rowley, C.K and M. J. Webb “Israel and Palestine: the slow road to peace or the fast track to mutual annihilation” Public Choice (July 2007) 132: 7-26

“The Antitrust Review of Oil Pipe Line Mergers at the FTC” Presented that the 2007 Annual Business Conference of the Association of Oil Pipe Lines



“Surviving a Rate Case” Presented at the 2006 Annual Business Conference of the Association of Oil Pipe Lines

### **Previous Relevant Employment**

<i>Association of Oil Pipe Lines (1997-1998)</i>	<i>Intern</i> Prepared statistical analysis of pipe line failures from publicly available sources. Assisted Executive Director in employing economic theory to address industry concerns.
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### **Education**

<i>George Mason University</i>	PhD, Economics MA, Economics
<i>American University</i>	BA, Economics and International Studies ( <i>Magna Cum Laude</i> )

# LAUREL EXHIBIT MJW-02

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire	:	
Terminals, LLC, Sheetz, Inc. and PBF	:	
Holding Company LLC	:	
	:	Docket No. C-2025-3053018
Complainants,	:	
	:	
v.	:	
	:	
Laurel Pipe Line Company, L.P.	:	
	:	
Respondent.	:	

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**RESPONSES OF  
MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY LLC  
TO INTERROGATORIES, REQUESTS  
FOR PRODUCTION OF DOCUMENTS AND REQUESTS FOR ADMISSION  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

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**RESPONSES OF  
MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY LLC  
TO INTERROGATORIES, REQUESTS  
FOR PRODUCTION OF DOCUMENTS AND REQUESTS FOR ADMISSION  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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3. Reference Exhibit JRM-1, 15:8-9. Identify and describe all differences of which Mr. Morris is aware between the full reversal at issue in Docket No. A-2016-2575829 and the existing bidirectional service provided over the segment of the Laurel pipeline system between Eldorado and Coraopolis.

**RESPONSE:**

Dr. Morris is not an engineer to describe “all differences” between the two sets of services. From an economic perspective, the issue in Docket No. A-2016-2575829 involved the elimination of service between Eldorado and Coraopolis compared to the current reduction in service between Eldorado and Coraopolis.

**Provided By:** John Morris

**Date:** August 11, 2025

**RESPONSES OF  
MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY LLC  
TO INTERROGATORIES, REQUESTS  
FOR PRODUCTION OF DOCUMENTS AND REQUESTS FOR ADMISSION  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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4. Reference Exhibit JRM-1, 15:8-9. Identify and describe all differences of which Mr. Morris is aware between the full reversal at issue in Docket No. A-2016-2575829 and the proposal to extend bidirectional service provided over the segment of the Laurel pipeline system between Altoona and Sinking Spring that is at issue in this proceeding.

**RESPONSE:**

Dr. Morris is not an engineer to describe “all differences” between the two sets of services. From an economic perspective, the issue in Docket No. A-2016-2575829 involved the elimination of service between Eldorado and Coraopolis compared to the Buckeye’s desired reduction in service between New York and Philadelphia and Eldorado and potentially points further west.

**Provided By:** John Morris

**Date:** August 11, 2025

# LAUREL EXHIBIT MJW-03

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire	:	
Terminals, LLC, Sheetz, Inc. and PBF	:	
Holding Company LLC	:	
	:	Docket No. C-2025-3053018
Complainants,	:	
	:	
v.	:	
	:	
Laurel Pipe Line Company, L.P.	:	
	:	
Respondent.	:	

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**RESPONSES OF  
MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY LLC  
TO INTERROGATORIES, REQUESTS  
FOR PRODUCTION OF DOCUMENTS AND REQUESTS FOR ADMISSION  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

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**RESPONSES OF  
MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY LLC  
TO INTERROGATORIES, REQUESTS  
FOR PRODUCTION OF DOCUMENTS AND REQUESTS FOR ADMISSION  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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18. Reference Exhibit JRM-1, 57:8-11. Does Mr. Morris agree that shippers, not the pipeline operator, nominate volumes to transport over a pipeline system?

**RESPONSE:**

It is Dr. Morris's understanding that shippers nominate volumes to be shipped and that pipeline companies schedule the volumes to be shipped.

**Provided By:** John Morris

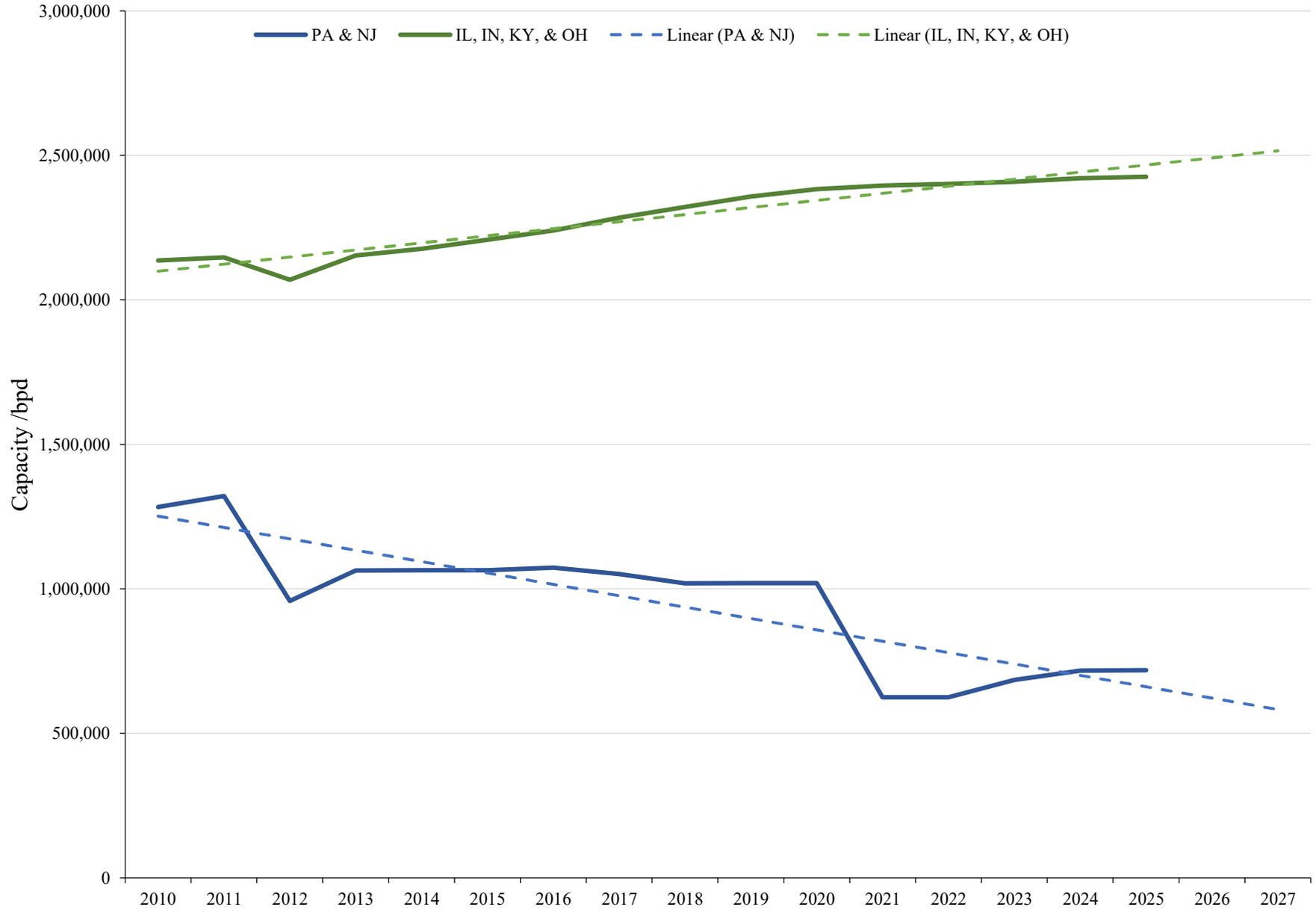
**Date:** August 11, 2025

LAUREL EXHIBIT MJW-04  
(No Public Version Available)

LAUREL EXHIBIT MJW-05  
(No Public Version Available)

# LAUREL EXHIBIT MJW-06

Total Refinery Operating Capacity: East Coast vs. Midwest

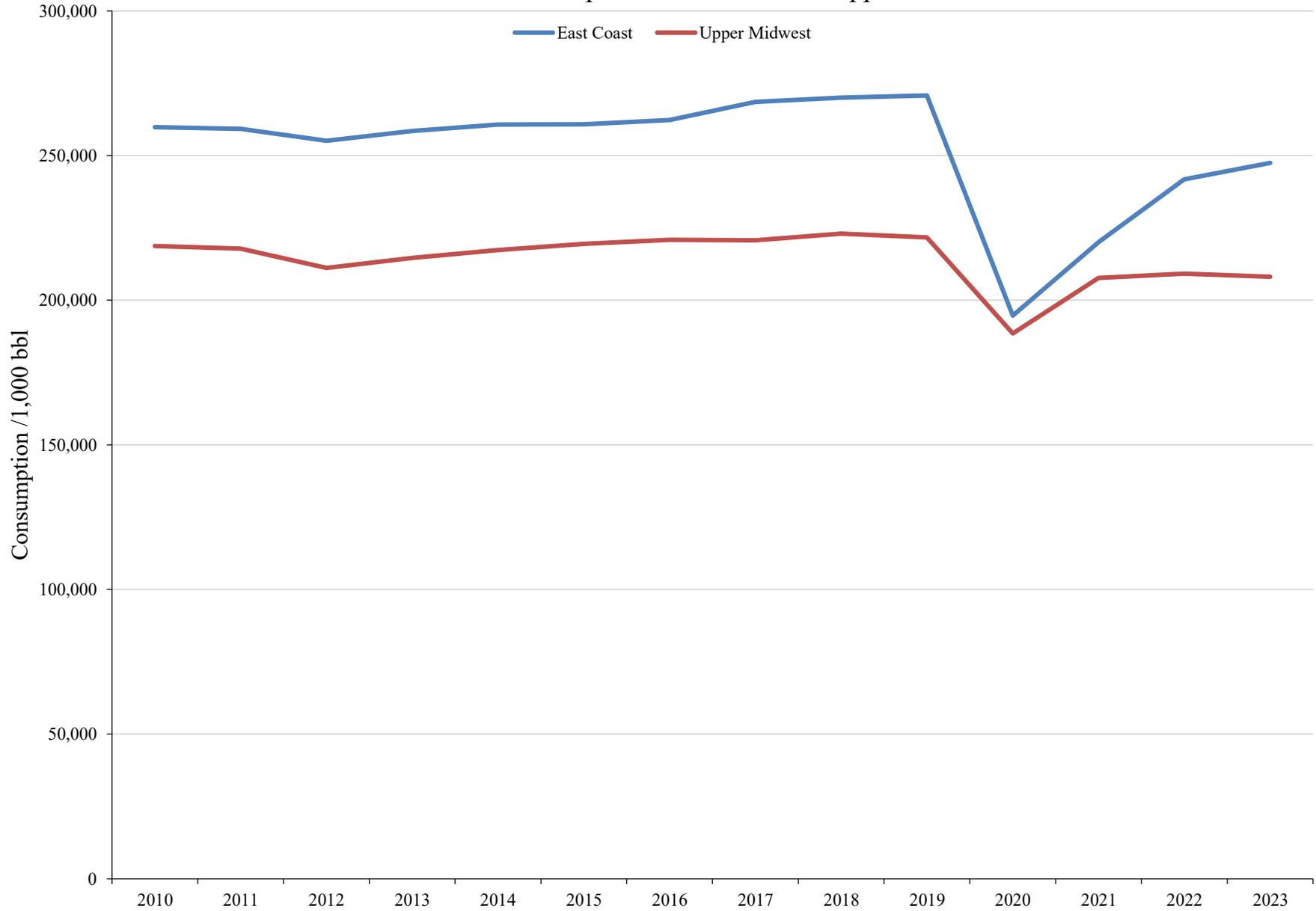


Year	<u>Total Operating Capacity</u>	
	<u>PA &amp; NJ</u>	<u>IL, IN, KY, &amp; OH</u>
2010	1,283,000	2,136,300
2011	1,321,000	2,147,000
2012	958,000	2,069,600
2013	1,063,000	2,153,700
2014	1,064,000	2,176,745
2015	1,064,000	2,207,640
2016	1,073,000	2,239,640
2017	1,051,000	2,284,740
2018	1,019,000	2,321,465
2019	1,019,500	2,357,965
2020	1,019,500	2,383,465
2021	624,500	2,395,665
2022	624,500	2,400,965
2023	684,500	2,408,705
2024	716,500	2,421,314
2025	718,500	2,426,123
2026		
2027		

Source: EIA's Refinery Capacity Reports 2010 - 2025,  
<https://www.eia.gov/petroleum/refinerycapacity/>

# LAUREL EXHIBIT MJW-07

### Refined Products Consumption: East Coast and Upper Midwest



**Upper Midwest vs. East Coast Refined Product Consumption (Thousand Barrels)**

Upper Midwest includes Ohio, Illinois, Indiana, and Kentucky

East Coast includes Maryland, Delaware, Pennsylvania, New York, Rhode Island, Connecticut, Massachusetts, New Hampshire, Vermont, and Maine

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>East Coast</b>	259,804	259,193	255,149	258,507	260,687	260,769	262,276	268,519	270,024	270,776	194,735	220,020	241,758	247,471
<b>Upper Midwest</b>	218,691	217,813	211,161	214,598	217,342	219,434	220,871	220,680	223,055	221,690	188,508	207,718	209,169	208,131

# LAUREL EXHIBIT MJW-08

## Delayed Coking Capacity

<b>COMPANY NAME</b>	<b>CORPORATION</b>	<b>State</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
BP PRODUCTS NORTH AMERICA INC	BP PLC	IN	34,500	31,600	31,000	34,000	96,000	96,000	90,000	87,400
LIMA REFINING COMPANY	CENOVUS MARKETING (USA) INC	OH	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000
EXXONMOBIL REFINING & SUPPLY CO	EXXON MOBIL CORP	IL	56,500	56,500	56,500	56,500	56,500	56,500	56,500	56,500
MARATHON PETROLEUM CO LP	MARATHON PETROLEUM CORP	IL	-	-	-	-	27,600	27,600	28,500	28,500
PAULSBORO REFINING CO LLC	PBF ENERGY CO LLC	NJ	-	25,300	26,500	26,500	26,500	26,500	26,500	26,500
PDV MIDWEST REFINING LLC	PDV AMERICA INC	IL	38,530	38,530	38,530	38,530	35,550	36,360	36,360	36,630
WRB REFINING LP	WRB REFINING LP	IL	-	-	74,700	75,000	75,000	75,000	75,000	75,000
BP-HUSKY REFINING LLC	BP HUSKY REFINING LLC	OH	29,700	30,200	28,400	24,500	33,250	33,250	32,300	32,300
MARATHON PETROLEUM CO LLC	MARATHON PETROLEUM CORP	IL	27,600	27,600	27,600	27,600	-	-	-	-
WRB REFINING LLC	WRB REFINING LLC	IL	16,200	16,200	-	-	-	-	-	-
VALERO REFINING CO NEW JERSEY	VALERO ENERGY CORP	NJ	25,300	-	-	-	-	-	-	-
			<b>PADD 1B Total:</b>	25,300	25,300	26,500	26,500	26,500	26,500	26,500
			<b>PADD 2 Subset<sup>1</sup> Total:</b>	225,030	222,630	278,730	278,130	345,900	346,710	340,660
			<b>Grand Total:</b>	250,330	247,930	305,230	304,630	372,400	373,210	367,160

<sup>1</sup> Includes IN, IL, & OH

**Source:** EIA's Refinery Capacity Reports 2010–2025,  
[eia.gov/petroleum/refinerycapacity/](http://eia.gov/petroleum/refinerycapacity/)

**Delayed Coking Capacity**

<b>COMPANY NAME</b>	<b>CORPORATION</b>	<b>State</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
BP PRODUCTS NORTH AMERICA INC	BP PLC	IN	90,000	95,000	95,500	95,500	95,500	95,500	95,500	95,500
LIMA REFINING COMPANY	CENOVUS MARKETING (USA) INC	OH	20,700	20,700	20,700	20,700	20,700	20,700	19,500	22,150
EXXONMOBIL REFINING & SUPPLY CO	EXXON MOBIL CORP	IL	56,500	56,500	56,500	56,500	56,500	56,500	56,500	56,500
MARATHON PETROLEUM CO LP	MARATHON PETROLEUM CORP	IL	29,000	29,000	29,000	29,000	29,000	29,500	29,500	29,500
PAULSBORO REFINING CO LLC	PBF ENERGY CO LLC	NJ	26,500	26,500	26,500	-	-	-	-	-
PDV MIDWEST REFINING LLC	PDV AMERICA INC	IL	36,630	36,630	37,035	37,035	37,098	37,098	37,098	37,098
WRB REFINING LP	WRB REFINING LP	IL	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000
BP-HUSKY REFINING LLC	BP HUSKY REFINING LLC	OH	32,500	32,500	32,000	31,700	31,900	30,170	-	-
MARATHON PETROLEUM CO LLC	MARATHON PETROLEUM CORP	IL	-	-	-	-	-	-	-	-
WRB REFINING LLC	WRB REFINING LLC	IL	-	-	-	-	-	-	-	-
VALERO REFINING CO NEW JERSEY	VALERO ENERGY CORP	NJ	-	-	-	-	-	-	-	-
	<b>PADD 1B Total:</b>		26,500	26,500	26,500	-	-	-	-	-
	<b>PADD 2 Subset<sup>1</sup> Total:</b>		340,330	345,330	345,735	345,435	345,698	344,468	313,098	315,748
	<b>Grand Total:</b>		366,830	371,830	372,235	345,435	345,698	344,468	313,098	315,748

<sup>1</sup> Includes IN, IL, & OH

**Source:** EIA's Refinery Capacity Reports 2010–2025, [eia.gov/petroleum/refinerycapacity/](http://eia.gov/petroleum/refinerycapacity/)

# LAUREL EXHIBIT MJW-09

**Consumption of Refined Petroleum Products  
For Pennsylvania and Surrounding States Allocated to Counties**

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
DE	Kent County	Kent County, DE	10001	RPP	6.63
DE	New Castle County	New Castle County, DE	10003	RPP	25.74
DE	Sussex County	Sussex County, DE	10005	RPP	9.42
MD	Allegany County	Allegany County, MD	24001	RPP	2.00
MD	Anne Arundel County	Anne Arundel County, MD	24003	RPP	18.63
MD	Baltimore city	Baltimore city, MD	24510	RPP	35.71
MD	Baltimore County	Baltimore County, MD	24005	RPP	25.59
MD	Calvert County	Calvert County, MD	24009	RPP	2.72
MD	Caroline County	Caroline County, MD	24011	RPP	1.00
MD	Carroll County	Carroll County, MD	24013	RPP	5.25
MD	Cecil County	Cecil County, MD	24015	RPP	3.25
MD	Charles County	Charles County, MD	24017	RPP	5.00
MD	Dorchester County	Dorchester County, MD	24019	RPP	1.01
MD	Frederick County	Frederick County, MD	24021	RPP	9.01
MD	Garrett County	Garrett County, MD	24023	RPP	0.85
MD	Harford County	Harford County, MD	24025	RPP	7.85
MD	Howard County	Howard County, MD	24027	RPP	10.31
MD	Kent County	Kent County, MD	24029	RPP	0.59
MD	Montgomery County	Montgomery County, MD	24031	RPP	32.03
MD	Prince George's County	Prince George's County, MD	24033	RPP	28.27
MD	Queen Anne's County	Queen Anne's County, MD	24035	RPP	1.58
MD	Somerset County	Somerset County, MD	24039	RPP	0.74
MD	St. Mary's County	St. Mary's County, MD	24037	RPP	3.37
MD	Talbot County	Talbot County, MD	24041	RPP	1.14
MD	Washington County	Washington County, MD	24043	RPP	4.85
MD	Wicomico County	Wicomico County, MD	24045	RPP	3.23
MD	Worcester County	Worcester County, MD	24047	RPP	1.60
NJ	Atlantic County	Atlantic County, NJ	34001	RPP	9.41
NJ	Bergen County	Bergen County, NJ	34003	RPP	29.73
NJ	Burlington County	Burlington County, NJ	34005	RPP	14.28
NJ	Camden County	Camden County, NJ	34007	RPP	15.81
NJ	Cape May County	Cape May County, NJ	34009	RPP	2.72
NJ	Cumberland County	Cumberland County, NJ	34011	RPP	4.80
NJ	Essex County	Essex County, NJ	34013	RPP	76.79
NJ	Gloucester County	Gloucester County, NJ	34015	RPP	9.26
NJ	Hudson County	Hudson County, NJ	34017	RPP	21.48
NJ	Hunterdon County	Hunterdon County, NJ	34019	RPP	3.87
NJ	Mercer County	Mercer County, NJ	34021	RPP	12.40
NJ	Middlesex County	Middlesex County, NJ	34023	RPP	27.13

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
NJ	Monmouth County	Monmouth County, NJ	34025	RPP	19.05
NJ	Morris County	Morris County, NJ	34027	RPP	16.01
NJ	Ocean County	Ocean County, NJ	34029	RPP	19.27
NJ	Passaic County	Passaic County, NJ	34031	RPP	15.68
NJ	Salem County	Salem County, NJ	34033	RPP	1.91
NJ	Somerset County	Somerset County, NJ	34035	RPP	11.03
NJ	Sussex County	Sussex County, NJ	34037	RPP	4.30
NJ	Union County	Union County, NJ	34039	RPP	17.71
NJ	Warren County	Warren County, NJ	34041	RPP	3.32
NY	Albany County	Albany County, NY	36001	RPP	13.10
NY	Allegany County	Allegany County, NY	36003	RPP	1.11
NY	Bronx County	Bronx County, NY	36005	RPP	32.04
NY	Broome County	Broome County, NY	36007	RPP	4.89
NY	Cattaraugus County	Cattaraugus County, NY	36009	RPP	1.81
NY	Cayuga County	Cayuga County, NY	36011	RPP	1.78
NY	Chautauqua County	Chautauqua County, NY	36013	RPP	3.10
NY	Chemung County	Chemung County, NY	36015	RPP	2.03
NY	Chenango County	Chenango County, NY	36017	RPP	1.14
NY	Clinton County	Clinton County, NY	36019	RPP	2.23
NY	Columbia County	Columbia County, NY	36021	RPP	1.43
NY	Cortland County	Cortland County, NY	36023	RPP	1.12
NY	Delaware County	Delaware County, NY	36025	RPP	1.11
NY	Dutchess County	Dutchess County, NY	36027	RPP	7.21
NY	Erie County	Erie County, NY	36029	RPP	32.54
NY	Essex County	Essex County, NY	36031	RPP	0.87
NY	Franklin County	Franklin County, NY	36033	RPP	1.67
NY	Fulton County	Fulton County, NY	36035	RPP	1.24
NY	Genesee County	Genesee County, NY	36037	RPP	1.44
NY	Greene County	Greene County, NY	36039	RPP	1.10
NY	Hamilton County	Hamilton County, NY	36041	RPP	0.12
NY	Herkimer County	Herkimer County, NY	36043	RPP	1.41
NY	Jefferson County	Jefferson County, NY	36045	RPP	2.74
NY	Kings County	Kings County, NY	36047	RPP	61.70
NY	Lewis County	Lewis County, NY	36049	RPP	0.63
NY	Livingston County	Livingston County, NY	36051	RPP	1.45
NY	Madison County	Madison County, NY	36053	RPP	1.62
NY	Monroe County	Monroe County, NY	36055	RPP	24.02
NY	Montgomery County	Montgomery County, NY	36057	RPP	1.24
NY	Nassau County	Nassau County, NY	36059	RPP	33.86
NY	New York County	New York County, NY	36061	RPP	145.69
NY	Niagara County	Niagara County, NY	36063	RPP	5.32

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
NY	Oneida County	Oneida County, NY	36065	RPP	5.68
NY	Onondaga County	Onondaga County, NY	36067	RPP	17.22
NY	Ontario County	Ontario County, NY	36069	RPP	2.86
NY	Orange County	Orange County, NY	36071	RPP	10.76
NY	Orleans County	Orleans County, NY	36073	RPP	0.95
NY	Oswego County	Oswego County, NY	36075	RPP	2.78
NY	Otsego County	Otsego County, NY	36077	RPP	1.44
NY	Putnam County	Putnam County, NY	36079	RPP	2.30
NY	Queens County	Queens County, NY	36081	RPP	54.48
NY	Rensselaer County	Rensselaer County, NY	36083	RPP	3.87
NY	Richmond County	Richmond County, NY	36085	RPP	11.55
NY	Rockland County	Rockland County, NY	36087	RPP	8.45
NY	Saratoga County	Saratoga County, NY	36091	RPP	5.84
NY	Schenectady County	Schenectady County, NY	36093	RPP	3.90
NY	Schoharie County	Schoharie County, NY	36095	RPP	0.69
NY	Schuyler County	Schuyler County, NY	36097	RPP	0.41
NY	Seneca County	Seneca County, NY	36099	RPP	0.81
NY	St. Lawrence County	St. Lawrence County, NY	36089	RPP	2.53
NY	Steuben County	Steuben County, NY	36101	RPP	2.24
NY	Suffolk County	Suffolk County, NY	36103	RPP	41.10
NY	Sullivan County	Sullivan County, NY	36105	RPP	1.90
NY	Tioga County	Tioga County, NY	36107	RPP	1.16
NY	Tompkins County	Tompkins County, NY	36109	RPP	2.63
NY	Ulster County	Ulster County, NY	36111	RPP	4.34
NY	Warren County	Warren County, NY	36113	RPP	1.67
NY	Washington County	Washington County, NY	36115	RPP	1.45
NY	Wayne County	Wayne County, NY	36117	RPP	2.22
NY	Westchester County	Westchester County, NY	36119	RPP	27.87
NY	Wyoming County	Wyoming County, NY	36121	RPP	0.95
NY	Yates County	Yates County, NY	36123	RPP	0.58
OH	Adams County	Adams County, OH	39001	RPP	0.89
OH	Allen County	Allen County, OH	39003	RPP	3.46
OH	Ashland County	Ashland County, OH	39005	RPP	1.76
OH	Ashtabula County	Ashtabula County, OH	39007	RPP	3.26
OH	Athens County	Athens County, OH	39009	RPP	2.01
OH	Auglaize County	Auglaize County, OH	39011	RPP	1.72
OH	Belmont County	Belmont County, OH	39013	RPP	2.13
OH	Brown County	Brown County, OH	39015	RPP	1.40
OH	Butler County	Butler County, OH	39017	RPP	13.57
OH	Carroll County	Carroll County, OH	39019	RPP	0.86
OH	Champaign County	Champaign County, OH	39021	RPP	1.30

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
OH	Clark County	Clark County, OH	39023	RPP	4.51
OH	Clermont County	Clermont County, OH	39025	RPP	7.00
OH	Clinton County	Clinton County, OH	39027	RPP	2.93
OH	Columbiana County	Columbiana County, OH	39029	RPP	3.35
OH	Coshocton County	Coshocton County, OH	39031	RPP	1.22
OH	Crawford County	Crawford County, OH	39033	RPP	1.39
OH	Cuyahoga County	Cuyahoga County, OH	39035	RPP	47.42
OH	Darke County	Darke County, OH	39037	RPP	1.76
OH	Defiance County	Defiance County, OH	39039	RPP	1.30
OH	Delaware County	Delaware County, OH	39041	RPP	7.85
OH	Erie County	Erie County, OH	39043	RPP	2.50
OH	Fairfield County	Fairfield County, OH	39045	RPP	5.51
OH	Fayette County	Fayette County, OH	39047	RPP	0.95
OH	Franklin County	Franklin County, OH	39049	RPP	49.51
OH	Fulton County	Fulton County, OH	39051	RPP	1.54
OH	Gallia County	Gallia County, OH	39053	RPP	1.34
OH	Geauga County	Geauga County, OH	39055	RPP	3.29
OH	Greene County	Greene County, OH	39057	RPP	5.64
OH	Guernsey County	Guernsey County, OH	39059	RPP	1.28
OH	Hamilton County	Hamilton County, OH	39061	RPP	41.64
OH	Hancock County	Hancock County, OH	39063	RPP	2.65
OH	Hardin County	Hardin County, OH	39065	RPP	0.99
OH	Harrison County	Harrison County, OH	39067	RPP	0.46
OH	Henry County	Henry County, OH	39069	RPP	0.93
OH	Highland County	Highland County, OH	39071	RPP	1.43
OH	Hocking County	Hocking County, OH	39073	RPP	0.88
OH	Holmes County	Holmes County, OH	39075	RPP	1.69
OH	Huron County	Huron County, OH	39077	RPP	2.06
OH	Jackson County	Jackson County, OH	39079	RPP	1.09
OH	Jefferson County	Jefferson County, OH	39081	RPP	2.32
OH	Knox County	Knox County, OH	39083	RPP	2.11
OH	Lake County	Lake County, OH	39085	RPP	8.15
OH	Lawrence County	Lawrence County, OH	39087	RPP	1.79
OH	Licking County	Licking County, OH	39089	RPP	6.21
OH	Logan County	Logan County, OH	39091	RPP	1.57
OH	Lorain County	Lorain County, OH	39093	RPP	10.73
OH	Lucas County	Lucas County, OH	39095	RPP	14.67
OH	Madison County	Madison County, OH	39097	RPP	1.57
OH	Mahoning County	Mahoning County, OH	39099	RPP	7.57
OH	Marion County	Marion County, OH	39101	RPP	2.20
OH	Medina County	Medina County, OH	39103	RPP	6.22

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
OH	Meigs County	Meigs County, OH	39105	RPP	0.68
OH	Mercer County	Mercer County, OH	39107	RPP	1.49
OH	Miami County	Miami County, OH	39109	RPP	3.91
OH	Monroe County	Monroe County, OH	39111	RPP	0.41
OH	Montgomery County	Montgomery County, OH	39113	RPP	18.98
OH	Morgan County	Morgan County, OH	39115	RPP	0.44
OH	Morrow County	Morrow County, OH	39117	RPP	1.14
OH	Muskingum County	Muskingum County, OH	39119	RPP	2.83
OH	Noble County	Noble County, OH	39121	RPP	0.45
OH	Ottawa County	Ottawa County, OH	39123	RPP	1.31
OH	Paulding County	Paulding County, OH	39125	RPP	0.62
OH	Perry County	Perry County, OH	39127	RPP	1.14
OH	Pickaway County	Pickaway County, OH	39129	RPP	2.00
OH	Pike County	Pike County, OH	39131	RPP	0.88
OH	Portage County	Portage County, OH	39133	RPP	5.53
OH	Preble County	Preble County, OH	39135	RPP	1.38
OH	Putnam County	Putnam County, OH	39137	RPP	1.19
OH	Richland County	Richland County, OH	39139	RPP	4.21
OH	Ross County	Ross County, OH	39141	RPP	2.64
OH	Sandusky County	Sandusky County, OH	39143	RPP	2.07
OH	Scioto County	Scioto County, OH	39145	RPP	2.32
OH	Seneca County	Seneca County, OH	39147	RPP	1.87
OH	Shelby County	Shelby County, OH	39149	RPP	1.84
OH	Stark County	Stark County, OH	39151	RPP	12.83
OH	Summit County	Summit County, OH	39153	RPP	18.70
OH	Trumbull County	Trumbull County, OH	39155	RPP	6.97
OH	Tuscarawas County	Tuscarawas County, OH	39157	RPP	3.23
OH	Union County	Union County, OH	39159	RPP	2.44
OH	Van Wert County	Van Wert County, OH	39161	RPP	1.00
OH	Vinton County	Vinton County, OH	39163	RPP	0.40
OH	Warren County	Warren County, OH	39165	RPP	8.56
OH	Washington County	Washington County, OH	39167	RPP	1.97
OH	Wayne County	Wayne County, OH	39169	RPP	4.09
OH	Williams County	Williams County, OH	39171	RPP	1.37
OH	Wood County	Wood County, OH	39173	RPP	4.70
OH	Wyandot County	Wyandot County, OH	39175	RPP	0.76
PA	Adams County	Adams County, PA	42001	RPP	3.48
PA	Allegheny County	Allegheny County, PA	42003	RPP	47.01
PA	Armstrong County	Armstrong County, PA	42005	RPP	1.98
PA	Beaver County	Beaver County, PA	42007	RPP	5.24
PA	Bedford County	Bedford County, PA	42009	RPP	1.53

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
PA	Berks County	Berks County, PA	42011	RPP	14.59
PA	Blair County	Blair County, PA	42013	RPP	3.90
PA	Bradford County	Bradford County, PA	42015	RPP	1.93
PA	Bucks County	Bucks County, PA	42017	RPP	21.03
PA	Butler County	Butler County, PA	42019	RPP	6.59
PA	Cambria County	Cambria County, PA	42021	RPP	4.12
PA	Cameron County	Cameron County, PA	42023	RPP	0.15
PA	Carbon County	Carbon County, PA	42025	RPP	1.99
PA	Centre County	Centre County, PA	42027	RPP	5.17
PA	Chester County	Chester County, PA	42029	RPP	17.86
PA	Clarion County	Clarion County, PA	42031	RPP	1.19
PA	Clearfield County	Clearfield County, PA	42033	RPP	2.45
PA	Clinton County	Clinton County, PA	42035	RPP	1.25
PA	Columbia County	Columbia County, PA	42037	RPP	2.11
PA	Crawford County	Crawford County, PA	42039	RPP	2.76
PA	Cumberland County	Cumberland County, PA	42041	RPP	8.81
PA	Dauphin County	Dauphin County, PA	42043	RPP	10.85
PA	Delaware County	Delaware County, PA	42045	RPP	18.39
PA	Elk County	Elk County, PA	42047	RPP	1.17
PA	Erie County	Erie County, PA	42049	RPP	9.15
PA	Fayette County	Fayette County, PA	42051	RPP	3.85
PA	Forest County	Forest County, PA	42053	RPP	0.20
PA	Franklin County	Franklin County, PA	42055	RPP	5.15
PA	Fulton County	Fulton County, PA	42057	RPP	0.51
PA	Greene County	Greene County, PA	42059	RPP	1.13
PA	Huntingdon County	Huntingdon County, PA	42061	RPP	1.33
PA	Indiana County	Indiana County, PA	42063	RPP	2.63
PA	Jefferson County	Jefferson County, PA	42065	RPP	1.43
PA	Juniata County	Juniata County, PA	42067	RPP	0.78
PA	Lackawanna County	Lackawanna County, PA	42069	RPP	7.01
PA	Lancaster County	Lancaster County, PA	42071	RPP	18.97
PA	Lawrence County	Lawrence County, PA	42073	RPP	2.65
PA	Lebanon County	Lebanon County, PA	42075	RPP	4.77
PA	Lehigh County	Lehigh County, PA	42077	RPP	12.77
PA	Luzerne County	Luzerne County, PA	42079	RPP	11.53
PA	Lycoming County	Lycoming County, PA	42081	RPP	3.69
PA	McKean County	Mc Kean County, PA	42083	RPP	1.28
PA	Mercer County	Mercer County, PA	42085	RPP	3.81
PA	Mifflin County	Mifflin County, PA	42087	RPP	1.51
PA	Monroe County	Monroe County, PA	42089	RPP	5.16
PA	Montgomery County	Montgomery County, PA	42091	RPP	29.47

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
PA	Montour County	Montour County, PA	42093	RPP	0.61
PA	Northampton County	Northampton County, PA	42095	RPP	10.44
PA	Northumberland County	Northumberland County, PA	42097	RPP	2.85
PA	Perry County	Perry County, PA	42099	RPP	1.40
PA	Philadelphia County	Philadelphia County, PA	42101	RPP	69.96
PA	Pike County	Pike County, PA	42103	RPP	1.86
PA	Potter County	Potter County, PA	42105	RPP	0.50
PA	Schuylkill County	Schuylkill County, PA	42107	RPP	4.72
PA	Snyder County	Snyder County, PA	42109	RPP	1.31
PA	Somerset County	Somerset County, PA	42111	RPP	2.28
PA	Sullivan County	Sullivan County, PA	42113	RPP	0.18
PA	Susquehanna County	Susquehanna County, PA	42115	RPP	1.20
PA	Tioga County	Tioga County, PA	42117	RPP	1.30
PA	Union County	Union County, PA	42119	RPP	1.31
PA	Venango County	Venango County, PA	42121	RPP	1.59
PA	Warren County	Warren County, PA	42123	RPP	1.22
PA	Washington County	Washington County, PA	42125	RPP	6.91
PA	Wayne County	Wayne County, PA	42127	RPP	1.56
PA	Westmoreland County	Westmoreland County, PA	42129	RPP	11.66
PA	Wyoming County	Wyoming County, PA	42131	RPP	0.84
PA	York County	York County, PA	42133	RPP	15.74
VA	Accomack County	Accomack County, VA	51001	RPP	1.42
VA	Albemarle County	Albemarle County, VA	51003	RPP	5.02
VA	Alexandria city	Alexandria city, VA	51510	RPP	5.85
VA	Alleghany County	Alleghany County, VA	51005	RPP	0.53
VA	Amelia County	Amelia County, VA	51007	RPP	0.50
VA	Amherst County	Amherst County, VA	51009	RPP	1.15
VA	Appomattox County	Appomattox County, VA	51011	RPP	0.60
VA	Arlington County	Arlington County, VA	51013	RPP	8.86
VA	Augusta County	Augusta County, VA	51015	RPP	2.96
VA	Bath County	Bath County, VA	51017	RPP	0.15
VA	Bedford city	Bedford city, VA	51515	RPP	0.00
VA	Bedford County	Bedford County, VA	51019	RPP	3.01
VA	Bland County	Bland County, VA	51021	RPP	0.23
VA	Botetourt County	Botetourt County, VA	51023	RPP	1.31
VA	Bristol city	Bristol city, VA	51520	RPP	0.62
VA	Brunswick County	Brunswick County, VA	51025	RPP	0.57
VA	Buchanan County	Buchanan County, VA	51027	RPP	0.75
VA	Buckingham County	Buckingham County, VA	51029	RPP	0.62
VA	Buena Vista city	Buena Vista city, VA	51530	RPP	0.25
VA	Campbell County	Campbell County, VA	51031	RPP	2.10

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
VA	Caroline County	Caroline County, VA	51033	RPP	1.30
VA	Carroll County	Carroll County, VA	51035	RPP	1.06
VA	Charles City County	Charles City County, VA	51036	RPP	0.25
VA	Charlotte County	Charlotte County, VA	51037	RPP	0.42
VA	Charlottesville city	Charlottesville city, VA	51540	RPP	1.69
VA	Chesapeake city	Chesapeake city, VA	51550	RPP	9.37
VA	Chesterfield County	Chesterfield County, VA	51041	RPP	14.29
VA	Clarke County	Clarke County, VA	51043	RPP	0.57
VA	Clifton Forge city	Clifton Forge city, VA	51560	RPP	0.00
VA	Colonial Heights city	Colonial Heights city, VA	51570	RPP	0.68
VA	Covington city	Covington city, VA	51580	RPP	0.25
VA	Craig County	Craig County, VA	51045	RPP	0.17
VA	Culpeper County	Culpeper County, VA	51047	RPP	2.04
VA	Cumberland County	Cumberland County, VA	51049	RPP	0.36
VA	Danville city	Danville city, VA	51590	RPP	1.65
VA	Dickenson County	Dickenson County, VA	51051	RPP	0.48
VA	Dinwiddie County	Dinwiddie County, VA	51053	RPP	1.03
VA	Emporia city	Emporia city, VA	51595	RPP	0.22
VA	Essex County	Essex County, VA	51057	RPP	0.39
VA	Fairfax city	Fairfax city, VA	51600	RPP	1.01
VA	Fairfax County	Fairfax County, VA	51059	RPP	42.92
VA	Falls Church city	Falls Church city, VA	51610	RPP	0.56
VA	Fauquier County	Fauquier County, VA	51061	RPP	2.82
VA	Floyd County	Floyd County, VA	51063	RPP	0.57
VA	Fluvanna County	Fluvanna County, VA	51065	RPP	1.02
VA	Franklin city	Franklin city, VA	51620	RPP	0.31
VA	Franklin County	Franklin County, VA	51067	RPP	2.12
VA	Frederick County	Frederick County, VA	51069	RPP	3.69
VA	Fredericksburg city	Fredericksburg city, VA	51630	RPP	1.11
VA	Galax city	Galax city, VA	51640	RPP	0.27
VA	Giles County	Giles County, VA	51071	RPP	0.61
VA	Gloucester County	Gloucester County, VA	51073	RPP	1.42
VA	Goochland County	Goochland County, VA	51075	RPP	1.06
VA	Grayson County	Grayson County, VA	51077	RPP	0.55
VA	Greene County	Greene County, VA	51079	RPP	0.77
VA	Greensville County	Greensville County, VA	51081	RPP	0.41
VA	Halifax County	Halifax County, VA	51083	RPP	1.26
VA	Hampton city	Hampton city, VA	51650	RPP	4.96
VA	Hanover County	Hanover County, VA	51085	RPP	4.31
VA	Harrisonburg city	Harrisonburg city, VA	51660	RPP	1.97
VA	Henrico County	Henrico County, VA	51087	RPP	12.58

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
VA	Henry County	Henry County, VA	51089	RPP	1.86
VA	Highland County	Highland County, VA	51091	RPP	0.08
VA	Hopewell city	Hopewell city, VA	51670	RPP	0.87
VA	Isle of Wight County	Isle of Wight County, VA	51093	RPP	1.51
VA	James City County	James City County, VA	51095	RPP	3.03
VA	King and Queen County	King and Queen County, VA	51097	RPP	0.25
VA	King George County	King George County, VA	51099	RPP	1.02
VA	King William County	King William County, VA	51101	RPP	0.69
VA	Lancaster County	Lancaster County, VA	51103	RPP	0.40
VA	Lee County	Lee County, VA	51105	RPP	0.77
VA	Lexington city	Lexington city, VA	51678	RPP	0.28
VA	Loudoun County	Loudoun County, VA	51107	RPP	16.32
VA	Louisa County	Louisa County, VA	51109	RPP	1.54
VA	Lunenburg County	Lunenburg County, VA	51111	RPP	0.43
VA	Lynchburg city	Lynchburg city, VA	51680	RPP	3.34
VA	Madison County	Madison County, VA	51113	RPP	0.51
VA	Manassas city	Manassas city, VA	51683	RPP	1.61
VA	Manassas Park city	Manassas Park city, VA	51685	RPP	0.59
VA	Martinsville city	Martinsville city, VA	51690	RPP	0.54
VA	Mathews County	Mathews County, VA	51115	RPP	0.30
VA	Mecklenburg County	Mecklenburg County, VA	51117	RPP	1.11
VA	Middlesex County	Middlesex County, VA	51119	RPP	0.39
VA	Montgomery County	Montgomery County, VA	51121	RPP	3.73
VA	Nelson County	Nelson County, VA	51125	RPP	0.54
VA	New Kent County	New Kent County, VA	51127	RPP	0.96
VA	Newport News city	Newport News city, VA	51700	RPP	8.03
VA	Norfolk city	Norfolk city, VA	51710	RPP	13.78
VA	Northampton County	Northampton County, VA	51131	RPP	0.44
VA	Northumberland County	Northumberland County, VA	51133	RPP	0.45
VA	Norton city	Norton city, VA	51720	RPP	0.18
VA	Nottoway County	Nottoway County, VA	51135	RPP	0.56
VA	Orange County	Orange County, VA	51137	RPP	1.44
VA	Page County	Page County, VA	51139	RPP	0.85
VA	Patrick County	Patrick County, VA	51141	RPP	0.64
VA	Petersburg city	Petersburg city, VA	51730	RPP	1.25
VA	Pittsylvania County	Pittsylvania County, VA	51143	RPP	2.14
VA	Poquoson city	Poquoson city, VA	51735	RPP	0.45
VA	Portsmouth city	Portsmouth city, VA	51740	RPP	4.07
VA	Powhatan County	Powhatan County, VA	51145	RPP	1.15
VA	Prince Edward County	Prince Edward County, VA	51147	RPP	0.80
VA	Prince George County	Prince George County, VA	51149	RPP	1.57

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
VA	Prince William County	Prince William County, VA	51153	RPP	17.89
VA	Pulaski County	Pulaski County, VA	51155	RPP	1.34
VA	Radford city	Radford city, VA	51750	RPP	0.64
VA	Rappahannock County	Rappahannock County, VA	51157	RPP	42.79
VA	Richmond city	Richmond city, VA	51760	RPP	14.78
VA	Richmond County	Richmond County, VA	51159	RPP	0.35
VA	Roanoke city	Roanoke city, VA	51770	RPP	4.61
VA	Roanoke County	Roanoke County, VA	51161	RPP	3.58
VA	Rockbridge County	Rockbridge County, VA	51163	RPP	0.82
VA	Rockingham County	Rockingham County, VA	51165	RPP	3.46
VA	Russell County	Russell County, VA	51167	RPP	0.93
VA	Salem city	Salem city, VA	51775	RPP	1.03
VA	Scott County	Scott County, VA	51169	RPP	0.79
VA	Shenandoah County	Shenandoah County, VA	51171	RPP	1.71
VA	Smyth County	Smyth County, VA	51173	RPP	1.11
VA	Southampton County	Southampton County, VA	51175	RPP	0.64
VA	Spotsylvania County	Spotsylvania County, VA	51177	RPP	5.43
VA	Stafford County	Stafford County, VA	51179	RPP	6.01
VA	Staunton city	Staunton city, VA	51790	RPP	0.97
VA	Suffolk city	Suffolk city, VA	51800	RPP	3.75
VA	Surry County	Surry County, VA	51181	RPP	0.36
VA	Sussex County	Sussex County, VA	51183	RPP	0.39
VA	Tazewell County	Tazewell County, VA	51185	RPP	1.43
VA	Virginia Beach city	Virginia Beach city, VA	51810	RPP	16.58
VA	Warren County	Warren County, VA	51187	RPP	1.55
VA	Washington County	Washington County, VA	51191	RPP	2.02
VA	Waynesboro city	Waynesboro city, VA	51820	RPP	0.88
VA	Westmoreland County	Westmoreland County, VA	51193	RPP	0.69
VA	Williamsburg city	Williamsburg city, VA	51830	RPP	0.58
VA	Winchester city	Winchester city, VA	51840	RPP	1.07
VA	Wise County	Wise County, VA	51195	RPP	1.27
VA	Wythe County	Wythe County, VA	51197	RPP	1.07
VA	York County	York County, VA	51199	RPP	2.55
WV	Barbour County	Barbour County, WV	54001	RPP	0.77
WV	Berkeley County	Berkeley County, WV	54003	RPP	6.60
WV	Boone County	Boone County, WV	54005	RPP	1.23
WV	Braxton County	Braxton County, WV	54007	RPP	0.57
WV	Brooke County	Brooke County, WV	54009	RPP	1.06
WV	Cabell County	Cabell County, WV	54011	RPP	4.73
WV	Calhoun County	Calhoun County, WV	54013	RPP	0.27
WV	Clay County	Clay County, WV	54015	RPP	0.34

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
WV	Doddridge County	Doddridge County, WV	54017	RPP	0.37
WV	Fayette County	Fayette County, WV	54019	RPP	1.84
WV	Gilmer County	Gilmer County, WV	54021	RPP	0.35
WV	Grant County	Grant County, WV	54023	RPP	0.73
WV	Greenbrier County	Greenbrier County, WV	54025	RPP	1.69
WV	Hampshire County	Hampshire County, WV	54027	RPP	1.06
WV	Hancock County	Hancock County, WV	54029	RPP	1.45
WV	Hardy County	Hardy County, WV	54031	RPP	1.16
WV	Harrison County	Harrison County, WV	54033	RPP	3.28
WV	Jackson County	Jackson County, WV	54035	RPP	1.40
WV	Jefferson County	Jefferson County, WV	54037	RPP	2.80
WV	Kanawha County	Kanawha County, WV	54039	RPP	8.70
WV	Lewis County	Lewis County, WV	54041	RPP	0.80
WV	Lincoln County	Lincoln County, WV	54043	RPP	0.86
WV	Logan County	Logan County, WV	54045	RPP	1.71
WV	Marion County	Marion County, WV	54049	RPP	2.76
WV	Marshall County	Marshall County, WV	54051	RPP	2.19
WV	Mason County	Mason County, WV	54053	RPP	1.30
WV	McDowell County	McDowell County, WV	54047	RPP	0.81
WV	Mercer County	Mercer County, WV	54055	RPP	2.92
WV	Mineral County	Mineral County, WV	54057	RPP	1.36
WV	Mingo County	Mingo County, WV	54059	RPP	1.09
WV	Monongalia County	Monongalia County, WV	54061	RPP	5.67
WV	Monroe County	Monroe County, WV	54063	RPP	0.58
WV	Morgan County	Morgan County, WV	54065	RPP	0.81
WV	Nicholas County	Nicholas County, WV	54067	RPP	1.20
WV	Ohio County	Ohio County, WV	54069	RPP	2.08
WV	Pendleton County	Pendleton County, WV	54071	RPP	0.28
WV	Pleasants County	Pleasants County, WV	54073	RPP	0.39
WV	Pocahontas County	Pocahontas County, WV	54075	RPP	0.39
WV	Preston County	Preston County, WV	54077	RPP	1.58
WV	Putnam County	Putnam County, WV	54079	RPP	3.37
WV	Raleigh County	Raleigh County, WV	54081	RPP	3.69
WV	Randolph County	Randolph County, WV	54083	RPP	1.42
WV	Ritchie County	Ritchie County, WV	54085	RPP	0.66
WV	Roane County	Roane County, WV	54087	RPP	0.63
WV	Summers County	Summers County, WV	54089	RPP	0.51
WV	Taylor County	Taylor County, WV	54091	RPP	0.74
WV	Tucker County	Tucker County, WV	54093	RPP	0.34
WV	Tyler County	Tyler County, WV	54095	RPP	0.39
WV	Upshur County	Upshur County, WV	54097	RPP	1.20

ST	Cnty Name	Cnty Desc	FIPS	Energy Type	Total County Consumption (KBPD)
WV	Wayne County	Wayne County, WV	54099	RPP	1.74
WV	Webster County	Webster County, WV	54101	RPP	0.37
WV	Wetzel County	Wetzel County, WV	54103	RPP	0.69
WV	Wirt County	Wirt County, WV	54105	RPP	0.22
WV	Wood County	Wood County, WV	54107	RPP	4.15
WV	Wyoming County	Wyoming County, WV	54109	RPP	0.93

Source:

Energy Information Administration, State Energy Data System, 2023 Consumption, Released: June 27, 2025.

Available at: [www.eia.gov/state/seds/seds-data-complete.php?sid=US](http://www.eia.gov/state/seds/seds-data-complete.php?sid=US)

# LAUREL EXHIBIT MJW-10

**F.E.R.C. I.C.A. OIL TARIFF**

**F.E.R.C. No. 216.16.0**  
(Cancels F.E.R.C. No. 216.15.0)

**SUNOCO PIPELINE L.P.**

JOINT PIPELINE TARIFF  
WITH  
INLAND CORPORATION  
APPLYING ON  
PETROLEUM PRODUCTS  
FROM  
POINTS IN OHIO  
TO  
POINTS IN  
PENNSYLVANIA & NEW YORK

Filed in compliance with 18 C.F.R. §342.3(a) (Rate Changes).

Governed, except as otherwise provided herein, by the rules and regulations published in Sunoco Pipeline L.P.'s F.E.R.C. Tariff No. 189.4.0, supplements thereto and successive issues thereof.

**[C] Request for Special Permission**

~~Issued on four days' notice under authority of 18 C.F.R. §341.14. This tariff publication is conditionally accepted subject to refund pending a 30-day review period.~~

The provisions published herein will, if effective, not result in an effect on the quality of the human environment.

**ISSUED: MAY 23, 2025**

**EFFECTIVE: JULY 1, 2025**

Issued by:  
RB Herscher,  
EVP – NGL & Refined Products  
International Business Development  
Energy Transfer Operations GP LLC,  
the General Partner of  
Sunoco Pipeline L.P.  
3807 West Chester Pike  
Newtown Square, PA 19073

Compiled by:  
Diane A. Daniels  
on behalf of  
Sunoco Pipeline L.P.  
1300 Main Street  
Houston, TX 77002  
(713) 989-7425  
tariffs@energytransfer.com

**SUNOCO PIPELINE L.P.**

**F.E.R.C. No. 216.16.0**

**TABLE OF RATES**

Origin	Destination	Rate in cents per barrel of 42 U.S. Gallons	
		Committed Rate	Uncommitted Rate
Toledo, Lucas County, OH or Lima, Allen County, OH	Blawnox, Allegheny County, PA	[I] 325.69	[I] 412.54
	Pittsburgh, Allegheny County, PA	[I] 325.69	[I] 412.54
	Delmont, Westmoreland County, PA	[I] 325.69	[I] 412.54
	Montello, Berks County, PA	--	[I] 441.42 (a)
	Kingston, Luzerne County, PA	--	[I] 493.86 (a)
	Northumberland, Northumberland County, PA	--	[I] 488.05 (a)
	Williamsport, Lycoming County, PA	--	[I] 499.70 (a)
	Big Flats, Chemung County, NY	--	[I] 569.65 (a)
	Rochester, Monroe County, NY	--	[I] 610.45 (a)
	Buffalo, Erie County, NY	--	[I] 610.45 (a)

(a) Service originating from Lima or Toledo to Montello, Kingston, Northumberland, Williamsport, Big Flats, Rochester, and Buffalo will be available only as operational circumstances permit and capacity is available. Such service will be capped at approximately 15,000 barrels per day of capacity.

**Routing:** Inland Corporation from either Toledo, Lucas County or Lima, Allen County, Ohio to Sunoco Pipeline L.P. at Fostoria Station, Hancock County, Ohio, then via Sunoco Pipeline L.P. to final destination.

**Explanation of Reference Marks**

- [C] Canceled
- [I] Increased

LAUREL EXHIBIT MJW-11  
(No Public Version Available)

# LAUREL EXHIBIT MJW-12

NBER WORKING PAPER SERIES

THE MACROECONOMIC EFFECTS OF OIL SHOCKS: WHY ARE THE 2000S  
SO DIFFERENT FROM THE 1970S?

Olivier J. Blanchard  
Jordi Gali

Working Paper 13368  
<http://www.nber.org/papers/w13368>

NATIONAL BUREAU OF ECONOMIC RESEARCH  
1050 Massachusetts Avenue  
Cambridge, MA 02138  
September 2007

We are grateful for helpful comments and suggestions to Julio Rotemberg, John Parsons, Lutz Kilian, José de Gregorio, Gauti Eggertson and participants at NBER ME Meeting, the NBER Conference on "International Dimensions of Monetary Policy", and seminars at CREI-UPF. We thank Davide Debortoli for excellent research assistance, and the NSF and the Banque de France Foundation for financial assistance. The views expressed herein are those of the author(s) and do not necessarily reflect the views of the National Bureau of Economic Research.

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The Macroeconomic Effects of Oil Shocks. Why are the 2000s So Different from the 1970s?

Olivier J. Blanchard and Jordi Gali

NBER Working Paper No. 13368

September 2007, Revised November 2007

JEL No. E20,E32,E52

### **ABSTRACT**

We characterize the macroeconomic performance of a set of industrialized economies in the aftermath of the oil price shocks of the 1970s and of the last decade, focusing on the differences across episodes. We examine four different hypotheses for the mild effects on inflation and economic activity of the recent increase in the price of oil: (a) good luck (i.e. lack of concurrent adverse shocks), (b) smaller share of oil in production, (c) more flexible labor markets, and (d) improvements in monetary policy. We conclude that all four have played an important role.

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## Introduction

Since the 1970s, and at least until recently, macroeconomists have viewed changes in the price of oil as an important source of economic fluctuations, as well as a paradigm of a global shock, likely to affect many economies simultaneously. Such a perception is largely due to the two episodes of low growth, high unemployment, and high inflation that characterized most industrialized economies in the mid and late 1970s. Conventional accounts of those episodes of stagflation blame them on the large increases in the price of oil triggered by the Yom Kippur war in 1973, and the Iranian revolution of 1979, respectively.<sup>1</sup>

The events of the past decade, however, seem to call into question the relevance of oil price changes as a significant source of economic fluctuations. The reason: Since the late 1990s, the global economy has experienced two oil shocks of sign and magnitude comparable to those of the 1970s but, in contrast with the latter episodes, GDP growth and inflation have remained relatively stable in much of the industrialized world.

Our goal in this paper is to shed light on the nature of the apparent changes in the macroeconomic effects of oil shocks, as well as on some of its possible causes. Disentangling the factors behind those changes is obviously key to assessing the extent to which the episodes of stagflation of the 1970s can reoccur in response to future oils shocks and, if so, to understanding the role that monetary policy can play in order to mitigate their adverse effects.

One plausible hypothesis is that the effects of the increase in the price of oil proper have been similar across episodes, but have coincided in time with large shocks of a very different nature (e.g. large rises in other commodity prices in the 1970s, high productivity growth and world demand in the 2000s). That coincidence could significantly distort any assessment of the

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1. Most undergraduate textbooks make an unambiguous connection between the two oil price hikes of 1973-1974 and 1979-1980 and the period of stagflation that ensued. See e.g. Mankiw (2007, p. 274).

impact of oil shocks based on a simple observation of the movements in aggregate variables around each episode.

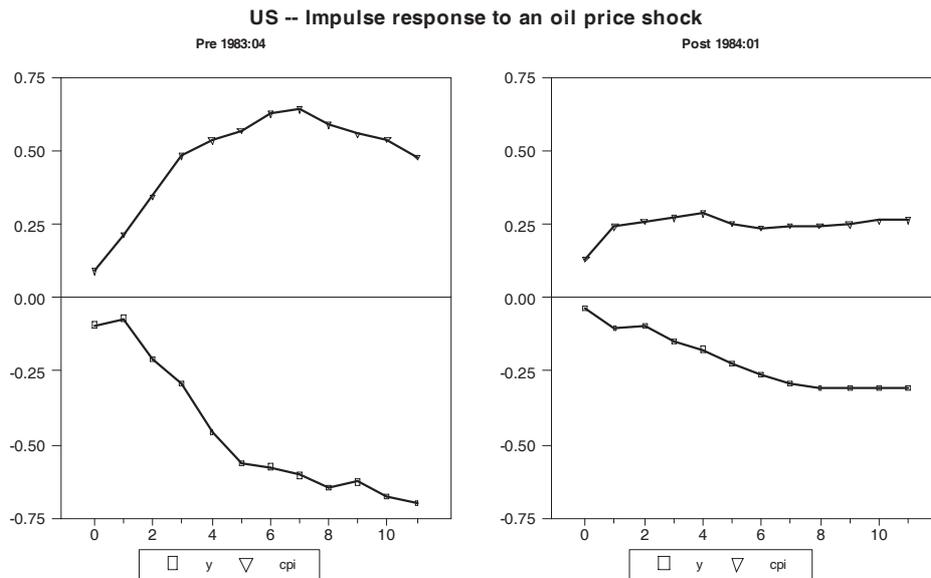
In order to evaluate this hypothesis one must isolate the component of macroeconomic fluctuations associated with exogenous changes in the price of oil. To do so, we identify and estimate the effects of an oil price shock using structural VAR techniques. We report and compare estimates for different sample periods and discuss how they have changed over time. We follow two alternative approaches. The first one is based on a large VAR, and allows for a break in the sample in the mid 1980s. The second approach is based on rolling bivariate VARs, including the price of oil and one other variable at a time. The latter approach allows for a gradual change in the estimated effects of oil price shocks, without imposing a discrete break in a single period.

Two conclusions clearly emerge from this analysis: First, there were indeed other adverse shocks at work in the 1970s; the price of oil explains only part of the stagflation episodes of the 1970s. Second, and importantly, the effects of a given change in the price of oil have changed substantially over time. Our estimates point to much larger effects of oil price shocks on inflation and activity in the early part of the sample, i.e. the one that includes the two oil shock episodes of the 1970s.

Our basic empirical findings are summarized graphically in Figure 1 (we postpone a description of the underlying assumptions to Section 3). The left-hand graph shows the responses of U.S. (log) GDP and the (log) CPI to a 10 percent increase in the price of oil, estimated using pre-1984 data. The right-hand graph displays the corresponding responses, based on post-1984 data. As the Figure makes clear, the response of both variables has become more muted in the more recent period. As we show below, that pattern can also be observed for other variables (prices and quantities) and many (though not all) other countries considered. In sum, the evidence suggests that economies face an improved trade-off in the more recent period, in the

face of oil price shocks of a similar magnitude.

Figure 1



We then focus on the potential explanations for these changes over time. We consider three hypotheses, not mutually exclusive:

First, real wage rigidities may have decreased over time. The presence of real wage rigidities generates a tradeoff between stabilization of inflation and stabilization of the output gap. As a result, and in response to an adverse supply shock and for a given money rule, inflation will generally rise more and output will decline more, the slower real wages adjust. A trend towards more flexible labor markets, including more flexible wages, could thus explain the smaller impact of the more recent oil shocks.

Second, changes in the way monetary policy is conducted may be responsi-

ble for the differential response of the economy to the oil shocks. In particular, the stronger commitment by central banks to maintaining a low and stable rate of inflation, reflected in the widespread adoption of more or less explicit inflation targeting strategies, may have led to an improvement in the policy tradeoff that make it possible to have a smaller impact of a given oil price increase on both inflation and output simultaneously.

Third, the share of oil in the economy may have declined sufficiently since the 1970s to account for the decrease in the effects of its price changes. Under that hypothesis, changes in the price of oil have increasingly turned into a sideshow, with no significant macroeconomic effects (not unlike fluctuations in the price of caviar).

To assess the merits of the different hypotheses we proceed in two steps. First, we develop a simple version of the new-Keynesian model where (imported) oil is both consumed by households and used as a production input by firms. The model allows us to examine how the economy's response to an exogenous change in the price of oil is affected by the degree of real wage rigidities, the nature and credibility of monetary policy, and the share of oil in production and consumption. We then look for more direct evidence pointing to the relevance and quantitative importance of each of those hypotheses. We conclude that all three are likely to have played an important role in explaining the different effects of oil prices during the 1970s and during the last decade.

The paper is organized as follows. Section 1 gives a short summary of how our paper fits in the literature. Section 2 presents basic facts. Section 3 presents results from multivariate VARs. Section 4 presents results from rolling bivariate VARs. Section 5 presents the model. Section 6 uses the model to analyze the role of real rigidities, credibility in monetary policy, and the oil share. Section 7 concludes.

## 1 Relation to the Literature

Our paper is related to many strands of research.

The first strand is concerned with the effects of oil price shocks on the economy. The seminal work in that literature is Bruno and Sachs (1985), who were the first to analyze in depth the effects of oil prices of the 1970s on output and inflation in the major industrialized countries. They explored many of the themes of our paper, the role of other shocks, the role of monetary policy, and the role of wage setting.

On the empirical side, Hamilton showed in a series of contributions (see, in particular, Hamilton (1983, 1996)) that most of U.S. recessions were preceded by increases in the price of oil, suggesting an essential role for oil price increases as one of the main cause of recessions. The stability of this relation has been challenged by a number of authors, in particular Hooker (1996). Our findings that the effects of the price of oil have changed over time is consistent with the mixed findings of this line of research.

On the theoretical side, a number of papers have assessed the ability of standard models to account for the size and nature of the observed effects of oil price shocks. Thus, Rotemberg and Woodford (1997) argued that it was difficult to explain the sheer size of these effects in the 1970s. They argued that something else was going on, namely an endogenous increase in the markup of firms, leading to a larger decrease in output. Finn (2000) showed that effects of the relevant size could be generated in a perfectly competitive RBC model, by allowing for variable capital utilization. Neither mechanism would seem to account for the depth of the effects of the 1970s and not in the 2000s. The latter observation motivates our focus on the role of real wage rigidities, and the decline in these rigidities over time, an explanation we find more convincing than changes in either the behavior of markups or capacity utilization over time. In following this line, we build on our earlier work on the implications of real wage rigidities and their interaction with

nominal price stickiness (Blanchard and Gali 2007).

A second strand of research related to the present paper deals with the possible changes over time in the effects of oil shocks. Of course, that strand is in turn related to the literature on the “Great Moderation,” a term used to refer to the decrease in output fluctuations over the last 30 years (e.g., Blanchard and Simon (2001), Stock and Watson (2003)). The latter literature has tried to assess to what extent the declines in volatility have been due to “good luck” (i.e. smaller shocks) or changes in the economy’s structure (including policy changes). In that context, some authors have argued that the stagflations of the 1970s were largely due to factors other than oil. Most prominently, Barsky and Kilian (2002) argue that they may have been partly caused by exogenous changes in monetary policy, which coincided in time with the rise in oil prices. Bernanke, Gertler, and Watson (1997) argue that much of the decline in output and employment was due to the rise in interest rates, resulting from the Fed’s endogenous response to the higher inflation induced by the oil shocks.

While our evidence suggests that oil price shocks can only account for a fraction of the fluctuations of the 1970s, our findings that the dynamic effects of oil shocks have decreased considerably over time, combined with the observation that the oil shocks themselves have been no smaller, is consistent with the hypothesis of structural change.

We know of four papers which specifically focus, as we do, on the changing impact of oil shocks. Hooker (2002) analyzes empirically the changing weight of oil prices as an explanatory variable in a traditional Phillips curve specification for the U.S. economy. He finds that pass-through from oil to prices has become negligible since the early eighties, but cannot find evidence for a significant role of the decline in energy intensity, the deregulation of energy industries, or changes in monetary policy as a factor

behind that lower pass-through. De Gregorio, Landerretche, and Neilson (2007) provide a variety of estimates of the degree of pass-through from oil prices to inflation, and its changes over time, for a large set of countries. In addition to estimates of Phillips curves along the lines of Hooker (2002), they also provide evidence based on rolling VARs, as we do in the present paper, though they use a different specification, and focus exclusively on the effects on inflation. Their paper also examines a number of potential explanations, including a change in the response of the exchange rate (in the case of non-U.S. countries), and the virtuous effects of being in a low inflation environment. In two recent papers, developed independently, Herrera and Pesavento (2007), and Edelstein and Kilian (2007), also document the decrease in the effects of oil shocks on a number of aggregate variables using a VAR approach. Herrera and Pesavento, following the approach of Bernanke, Gertler and Watson (1997), explore the role of changes in response of monetary policy to oil shocks in accounting for the more muted effects of those shocks in the recent period. Their answer is largely negative: Their findings point to a more stabilizing role of monetary policy in the 1970s relative to the recent period. Edelstein and Kilian focus on changes in the composition of U.S. automobile production, and the declining importance of the U.S. automobile sector. Given that the decline in the effects of the price of oil appears to be present in a large number of OECD countries, this explanation appears perhaps too U.S. specific.

## 2 Basic Facts

Figure 2 displays the evolution of the price of oil since 1970. More specifically, it shows the quarterly average price of a barrel of West Texas Intermediate, measured in U.S. dollars.<sup>2</sup> The figure shows how a long spell

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2. The description of the stylized facts discussed below is not altered significantly if one uses alternative oil price measures, such as the PPI index for crude oil (used e.g. by

of stability came to an end in 1973, triggering a new era characterized by large and persistent fluctuations in the price of oil, punctuated with occasional sharp run-ups and spikes, and ending with the prolonged rise of the past few years. The shaded areas in the figure correspond to the four large oil shock episodes discussed below.

Figure 2. Oil Price (\$ per barrel)

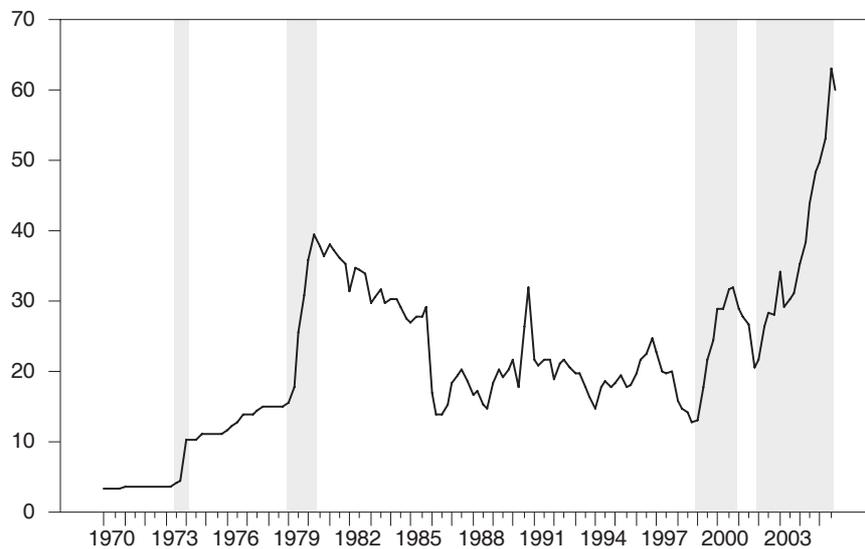


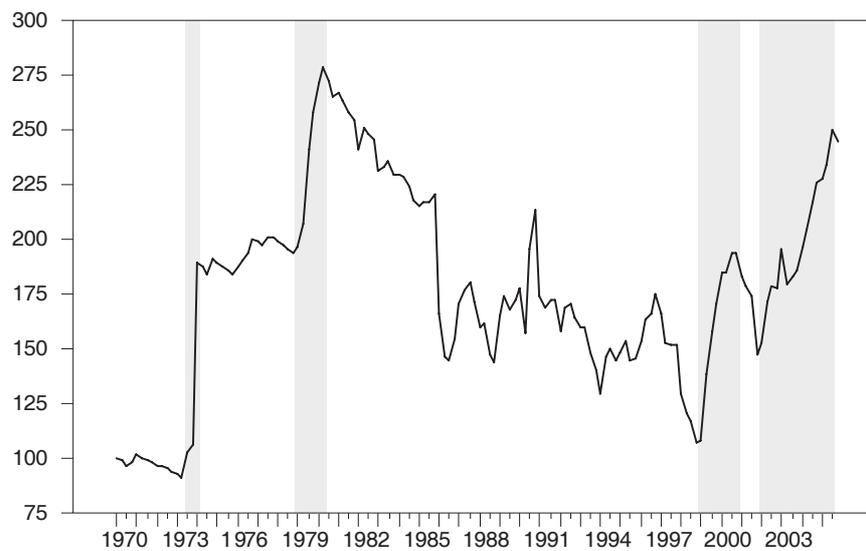
Figure 3 displays the same variable, now normalized by the U.S. GDP deflator, and measured in natural logarithms (multiplied by 100, so that its variations can be interpreted as percent changes). This transformation gives us a better sense of the magnitude of the changes in the real price

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Hamilton (1983) and Rotemberg and Woodford (1996)) or the price of imported crude oil (e.g. Kilian (2006)).

of oil. As the figure makes clear, such changes have often been very large, and concentrated over relatively short periods of time.

Figure 3. Log Real Oil Price (1970=100)



It is useful to start with descriptive statistics associated with the large oil shocks visible in the previous figures. We define a large oil shock as an episode involving a cumulative change in the (log) price of oil above 50 percent, sustained for more than four quarters. This gives us four episodes, starting in 1973, 1979, 1999, and 2002 respectively. Exact dates for each run-up are given in Table 1 (given our definition, the largest price changes need not coincide with the starting date, and, indeed, they don't). For convenience we refer to those episodes as O1, O2, O3 and O4, respectively. Note that our criterion leaves out the price rise of 1990 (triggered by the

Gulf War), due to its quick reversal. We also note that O3 is somewhat different, since it is preceded by a significant price decline.

Table 1 lists, for each episode, (i) the run-up period, (ii) the date at which the cumulative log change attained the 50 percent threshold (which we use as a benchmark date below), and (iii) the percent change from trough to peak (measured by the cumulative log change), both in nominal and real terms. The duration of the episodes ranges from 3 quarters (O1) to 15 quarters (O4). Interestingly, the size of the associated nominal price rise is similar across episodes, around 100 percent. A similar characterization emerges when we use the cumulative change in the real price of oil (with the price normalized by the GDP deflator), except for O2 where the rise is somewhat smaller because of the high rate of inflation during that episode. In short, the four episodes involve oil shocks of a similar magnitude. In particular, the numbers do not seem to justify a characterization of the two recent shocks as being milder in size than the shocks of the 1970s.

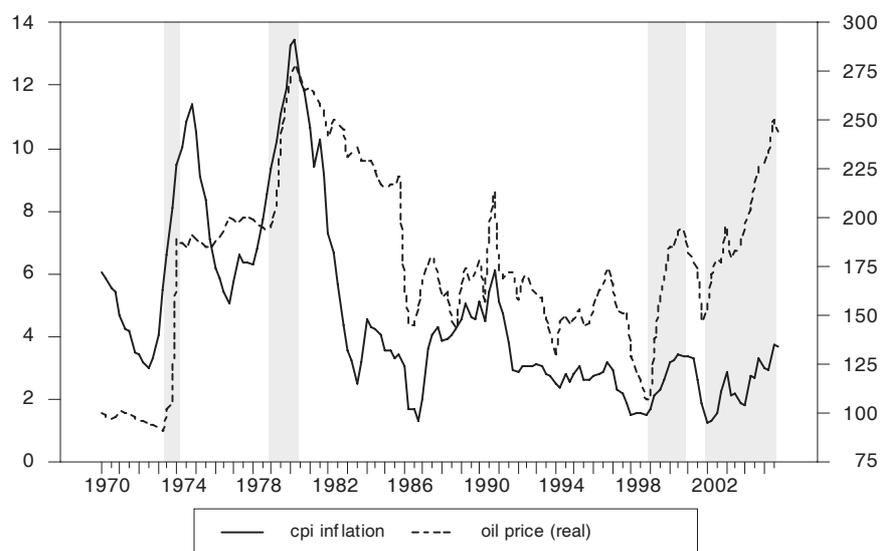
**Table 1. Postwar Oil Shock Episodes**

	run-up period	50% rise date	max log change (\$)	max log change (real)
O1	1973:3-1974:1	1974:1	104 %	96 %
O2	1979:I-1980:2	1979:3	98 %	85 %
O3	1999:1-2000:4	1999:3	91 %	87 %
O4	2002:1-2005:3	2003:1	113 %	104 %

In spite of their relatively similar magnitude, these four oil shock episodes have been associated with very different macroeconomic performances. Fig-

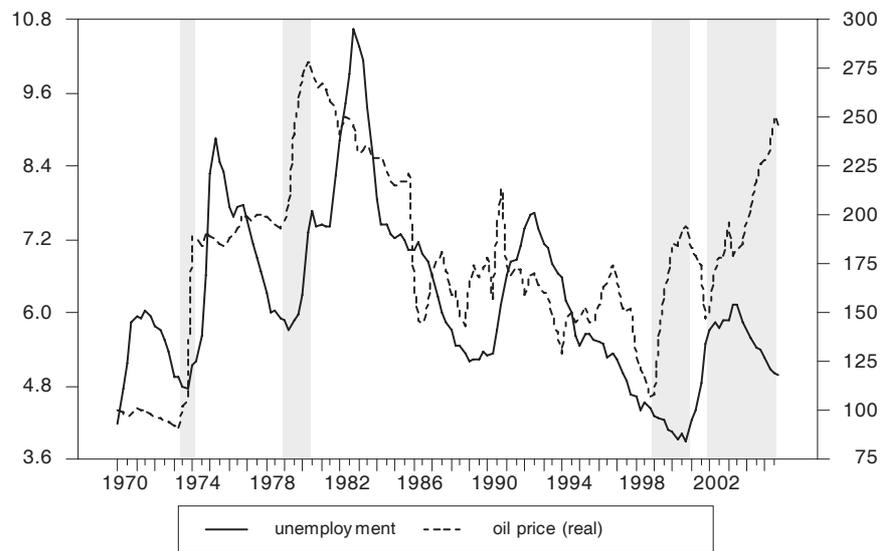
ures 4 and 5, which show respectively the evolution of (annual) CPI inflation and the unemployment rate in the U.S. over the period 1970:1-2005:4, provide a visual illustration.

Figure 4. Oil Shocks and CPI Inflation



Each figure shows, in addition to the variable displayed, the (log) real price of oil and the four shaded areas representing our four oil shock episodes. Note that the timing of O1 and O2 coincide with a sharp increase in inflation, and mark the beginning of a large rise in the unemployment rate. In each case, both inflation and unemployment reached a peak a few quarters after the peak in oil prices (up to a level of 11.3% and 13.4%, respectively, in the case of inflation, 8.8% and 10.6% for the unemployment rate). The

Figure 5. Oil Shocks and Unemployment



pattern of both variables during the more recent oil shock episodes is very different. First, while CPI inflation shows a slight upward trend during both O3 and O4, the magnitude of the changes involved is much smaller than that observed for O1 and O2, with the associated rises in inflation hardly standing out relative to the moderate size of fluctuations shown by that variable since the mid-1980s. Second, the variation in the unemployment rate during and after O3 and O4 is much smaller in size than that observed in O1 and O2. The timing is also very different: While O1 and O2 lead to a sharp rise in unemployment, the latter variable keeps declining during the length of the O3 episode, with its rebound preceding O4. Furthermore, after a persistent (though relatively small) increase, unemployment starts declining in the midst of O4, i.e. while the price of oil is still on the rise.

Tables 2 and 3 provide related evidence for each of the G7 countries as well as for three aggregates (the G7, the euro-12, and the OECD countries).<sup>3</sup> More specifically, Table 2 displays, for each country and episode, the average rate of inflation over the 8 quarters following each episode's benchmark date (at which the 50% threshold oil price rise is reached) *minus* the average rate of inflation over the 8 quarters immediately preceding each run-up. Note that the increase in inflation associated with O1 is typically larger than the one for O2. The most striking evidence, however, relates to O3 and O4, which are typically associated with a change in inflation in their aftermath of a much smaller size than that following O1 and O2.<sup>4</sup> The last two columns, which average the inflation change for O1-O2 and O3-O4, makes the same point in a more dramatic way.

**Table 2. Oil Shock Episodes: Change in Inflation**

	<i>O1</i>	<i>O2</i>	<i>O3</i>	<i>O4</i>	<i>AVG (1,2)</i>	<i>AVG (3,4)</i>
<i>Canada</i>	4.7	1.8	2.2	0.5	3.3	1.4
<i>Germany</i>	0.1	2.6	1.1	-0.2	1.4	0.4
<i>France</i>	5.4	3.1	1.3	0.5	4.2	0.9
<i>U.K.</i>	10.2	4.3	0.0	0.5	7.3	0.3
<i>Italy</i>	7.7	5.6	1.0	-0.1	6.6	0.4
<i>Japan</i>	7.9	1.0	-1.7	0.9	4.4	-0.4
<i>U.S.</i>	4.9	4.0	1.7	-0.2	4.5	0.7
<i>G7</i>	4.8	1.9	0.3	0.0	3.3	0.2
<i>Euro12</i>	4.3	2.7	1.3	-0.5	3.5	0.4
<i>OECD</i>	4.9	1.8	0.1	-0.5	3.4	-0.2

3. We use quarterly data from OECD's Economic Outlook Database. For the purpose of this exercise, inflation is the annualized quarter-to-quarter rate of change in the CPI.

4. Even for Canada and Germany, the largest change in inflation occurs in either O1 or O2.

The evidence on output across episodes is shown in Table 3, which reports for each country and episode (or averages of two episodes in the case of the last two columns) the cumulative GDP gain or loss over the 8 quarters following each episode's benchmark date, relative to a trend given by the cumulative GDP growth rate over the 8 quarters preceding each episode. The pattern closely resembles that shown for inflation: O1 and O2 are generally associated with GDP losses that are much larger than those corresponding to O3 and O4 (with the latter involving some small GDP gains in some cases). When averages are taken over pairs of episodes the pattern becomes uniform, pointing once again to much larger output losses during and after the oil shocks of the 1970s.

**Table 3. Oil Shock Episodes: Cumulative GDP Change**

	<i>O1</i>	<i>O2</i>	<i>O3</i>	<i>O4</i>	<i>AVG (1,2)</i>	<i>AVG (3,4)</i>
<i>Canada</i>	-8.3	-1.0	-1.5	3.2	-4.6	0.8
<i>Germany</i>	-9.6	-3.5	1.3	-2.5	-6.6	-0.6
<i>France</i>	-7.6	-4.4	0.6	1.2	-6.0	0.9
<i>U.K.</i>	-16.4	-9.2	0.4	2.5	-12.8	1.4
<i>Italy</i>	-8.6	0.4	3.0	-2.0	-4.1	0.5
<i>Japan</i>	-16.1	-4.4	7.6	3.3	-10.3	5.4
<i>U.S.</i>	-13.3	-11.8	-3.7	7.1	-12.5	1.7
<i>G7</i>	-12.6	-7.7	-0.2	3.9	-10.2	1.8
<i>Euro12</i>	-9.1	-2.9	1.0	-0.4	-6.0	0.3
<i>OECD</i>	-11.2	-6.5	0.1	4.1	-8.9	2.1

The evidence presented above is consistent with the hypothesis that the macroeconomic effects of oil price shocks have become smaller over time, being currently almost negligible (at least in comparison with their effects in the 1970s). But it is also consistent with the hypothesis that other (non-oil) shocks have coincided in time with the major oil shocks, either

reinforcing the adverse effects of the latter in the 1970s, or dampening them during the more recent episodes. In order to sort out those possibilities we turn next to a more structured analysis of the co-movements between oil prices and other variables.

### **3 Estimating the Effects of Oil Price Shocks using Structural VARs**

In this section we provide more structural evidence on the macroeconomic effects of oil price shocks, and changes over time in the nature and size of those effects. We provide evidence for the United States, France, Germany, the United Kingdom, Italy, and Japan, using a 6-variable VAR. In the next section we turn to a more detailed analysis of the U.S. evidence, using a battery of rolling bivariate VARs.

Our baseline VAR makes use of data on the nominal price of oil (in dollars), three inflation measures (CPI, GDP deflator, and wages) and two quantities (GDP and employment). By using a multivariate specification, we allow for a variety of shocks in addition to the oil shock that is our focus of interest. We identify oil shocks by assuming that unexpected variations in the nominal price of oil are exogenous relative to the contemporaneous values of the remaining macroeconomic variables included in the VAR. In other words, we take the oil shock to correspond to the reduced form innovation to the (log) nominal oil price, measured in U.S. dollars.

This identification assumption will clearly be incorrect if economic developments in the country under consideration affect the world price of oil contemporaneously. This may be either because the economy under consideration is large, or because developments in the country are correlated with world developments. For example, Rotemberg and Woodford (1996), who rely on the same identification assumption as we do when studying

the effects of oil shocks on the U.S. economy, restrict their sample period to end in 1980 on the grounds that variations in the price of oil may have a significant endogenous component after that date. We have therefore explored an alternative assumption, namely, letting the price of oil react contemporaneously to current developments in the two quantity variables (output, and employment), while assuming that quantity variables do not react contemporaneously to the price of oil. Because the contemporaneous correlations between quarterly quantity and oil price innovations are small, the results are nearly identical, and we do not report them in the text.

Another approach would be to use, either in addition or in substitution to the oil price, a more exogenous variable to proxy for oil shocks. This is the approach followed by Kilian (2007), who constructs and uses a proxy for unexpected movements in global oil production. What matters, however, to any given country is not the level of global oil production, but the price at which firms and households can purchase oil, which in turn depends also on world demand for oil. Thus, if the price of oil rises as a result of, say, higher Chinese demand, this is just like an exogenous oil supply shock for the remaining countries. This is indeed why we are fairly confident in our identification approach: The large residuals in our oil price series are clearly associated either with identifiable episodes of large supply disruptions or, in the more recent past, with increases in emerging countries' demand. These observations largely drive our estimates and our impulse response functions.

For each of the six countries, we estimate a VAR containing six variables: the dollar price of oil (expressed in log differences), CPI inflation, GDP deflator inflation, wage inflation, and the log changes in GDP and employment.<sup>5</sup> We use the dollar price of oil rather than the real price of oil, to

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5. For the United States we use non-farm business hours instead of employment, and the wage refers to non-farm business compensation per hour. For simplicity we use the term employment to refer to both hours (in the case of the United States) and employment proper (for the remaining countries).

avoid dividing by an endogenous variable, the GDP deflator. For the same reason we do not convert the price of oil into domestic currency for non-US countries. For the United States, the data are taken from the USECON database, and cover the sample period 1960:1-2005:4. For the remaining countries, the data are drawn from OECD's Economic Outlook database, with the sample period being 1970:1-2005:4. Our three inflation measures are quarter-to-quarter, expressed in annualized terms. Each equation in our VAR includes four lags of the six variables above, a constant term and a quadratic trend fitted measure of productivity growth.

Some of the oil price changes, and by implication, some of the residuals in the price of oil equation, are extremely large. The change in the price of oil for 1974:1, for example, is equal to eight times its standard deviation over the sample. Such large changes are likely to lead to small sample bias when estimating the oil price equation: The best OLS fit is achieved by reducing the size of these particular residuals, thus by spuriously linking these very large realizations to movements in current or past values of the other variables in the regression. This in turn overstates the endogenous component of the price of oil, and understates the size of the true residuals. We deal with this issue by estimating the oil price equation using a sample which excludes all oil price changes larger than three standard deviations. (These large changes in oil prices are clearly essential in giving us precise estimates of the effects of oil prices on other variables. Thus, we use the complete sample when estimating the other equations.)

### **3.1 Impulse Responses**

Figures 6a-6f display the estimated impulse response functions (IRFs) for the different variables of interest to an oil price shock where, as discussed above, the latter is identified as the innovation in the oil price equation. Estimates are reported for two different sample periods: 1970:1-1983:4 (1960:1-1983:1 for the United States) and 1984:1-2005:4. The break date

chosen corresponds roughly to the beginning of the Great Moderation in the United States, as identified by several authors (e.g. McConnell and Pérez-Quirós (2000)). Note that each subperiod contains two of the four large oil shock episodes identified in the previous section.

One-standard-deviation confidence intervals, obtained using a Monte Carlo procedure, are shown on both sides of the point estimates. The estimated responses of GDP and employment are accumulated and shown in levels. The size of the shock is normalized so that it raises the price of oil by 10 percent on impact. This roughly corresponds to the estimated standard deviations of oil price innovations for the two subsamples, which are very similar.<sup>6</sup> In all cases, the real price of oil shows a near-random walk response (not shown here), i.e. it jumps on impact, and then stays around a new plateau.

The estimates for the United States, shown in Figure 6a, fit pretty well the conventional wisdom about the effects of a rise in oil prices. (Figure 1, presented in the introduction, corresponds to Figure 6a, with the results for the CPI shown in levels rather than rates of change.) For the pre-1984 period, CPI inflation shifts up immediately, and remains positive for a protracted period. The response of GDP inflation and wage inflation is similar, though more gradual. Output and employment decline persistently, albeit with a lag. Most relevant for our purposes, the responses of the same variables in the post-1984 period are considerably more muted, thus suggesting a weaker impact of oil price shocks on the economy. The only exception to this pattern is given by CPI inflation, whose response on impact is very similar across periods (though its persistence is smaller in the second period). This may not be surprising since part of the increase in oil prices is reflected mechanically in the oil component of the CPI.

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6. The estimated standard deviation of oil price innovations is 9.4 percent in the pre-1984 period, 12.4 percent in the post-84 period.

The estimates for France and the United Kingdom show a pattern very similar to that of the United States. In the case of France, the contrast between the early and the late periods is particularly strong, both in terms of the size and the persistence of the effects, and for both prices and quantities. In the case of the United Kingdom, the response of inflation variables is almost non-existent in the latter period though, in contrast with France, there is some evidence of a decline in output and employment (albeit smaller than in the first sample period).

Some of the estimated responses for Germany and Italy fit conventional wisdom less well. The inflation measures in Germany hardly change in response to the rise in oil prices in either period, though the impact on output and employment is more adverse in the pre-1984 period. This is consistent with a stronger anti-inflationary stance of the Bundesbank, relative to other central banks. The slight increase in employment and output in the post-1984 period goes against conventional wisdom. In the case of Italy, there is barely any employment response in the pre-1984 period. Still, for both countries the sign of most of the responses accord with conventional wisdom, and the responses are smaller in the post-1984 period.

The story is different for Japan. The sign of many of the responses to the rise in oil prices is often at odds with standard priors. Also, the uncertainty of the estimates is much larger, as reflected in the wider bands. The effect on inflation is weak and does not have a clear sign in either period. There is a (slight) rise in output in both periods, and of employment in the post-1984 period.

In short, except for Japan (and to some extent, for Germany), most of the responses fit conventional wisdom rather well: An increase in the price of oil leads to more wage and price inflation, and to a decrease in employment and output for some time. In all cases, however, the effects on both inflation and activity are considerably weaker in the second subsample than in the first.

Figure 6a

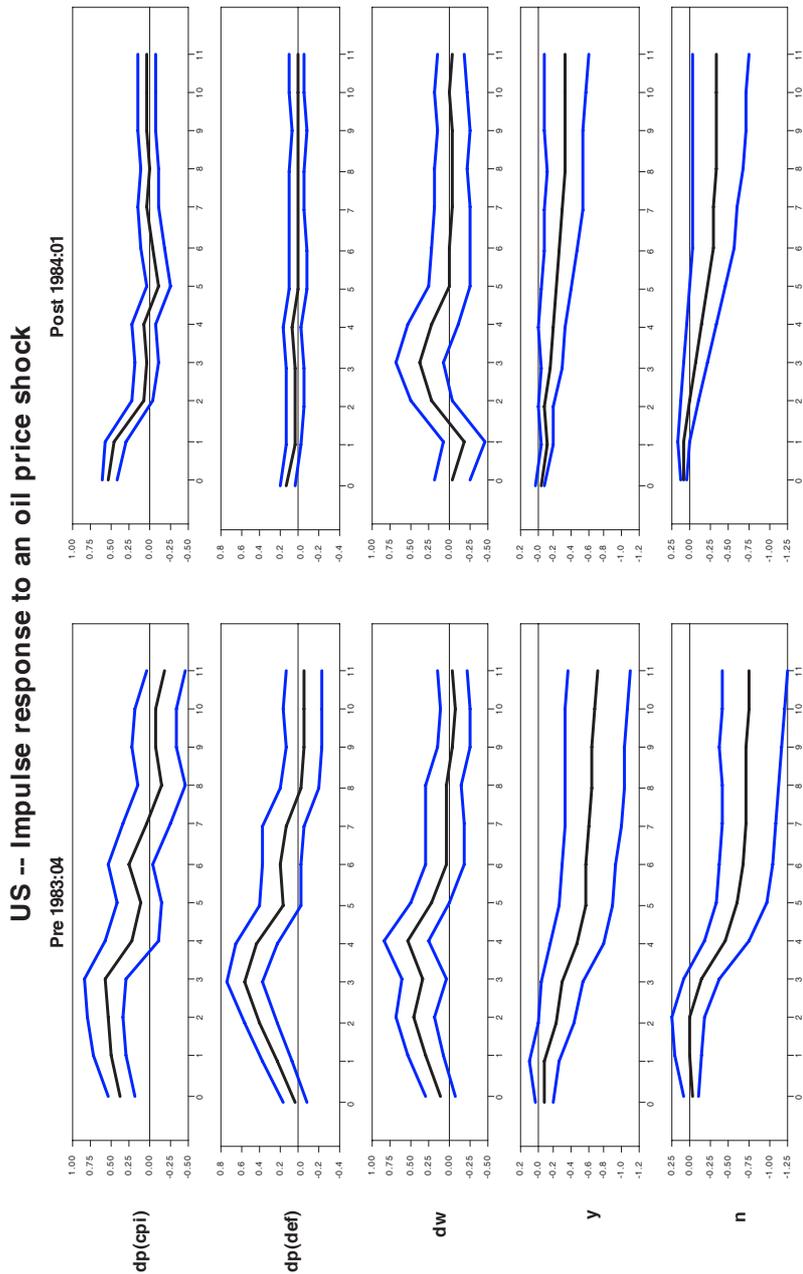


Figure 6b

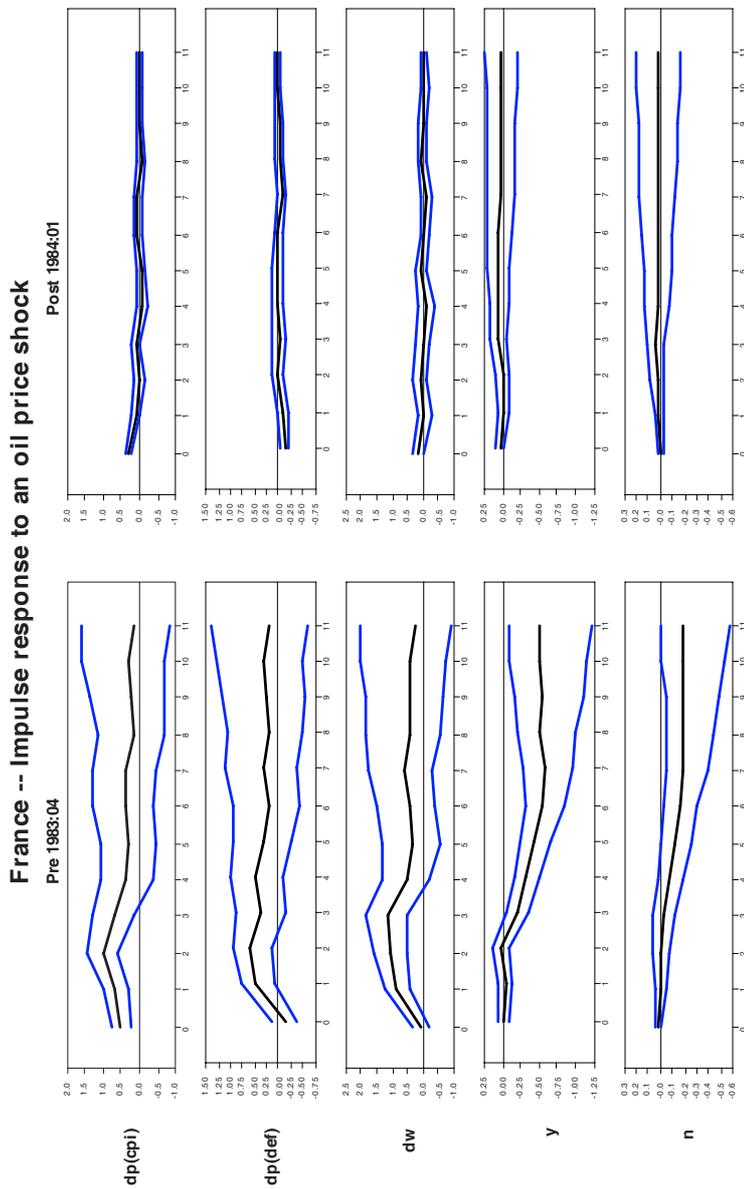


Figure 6c

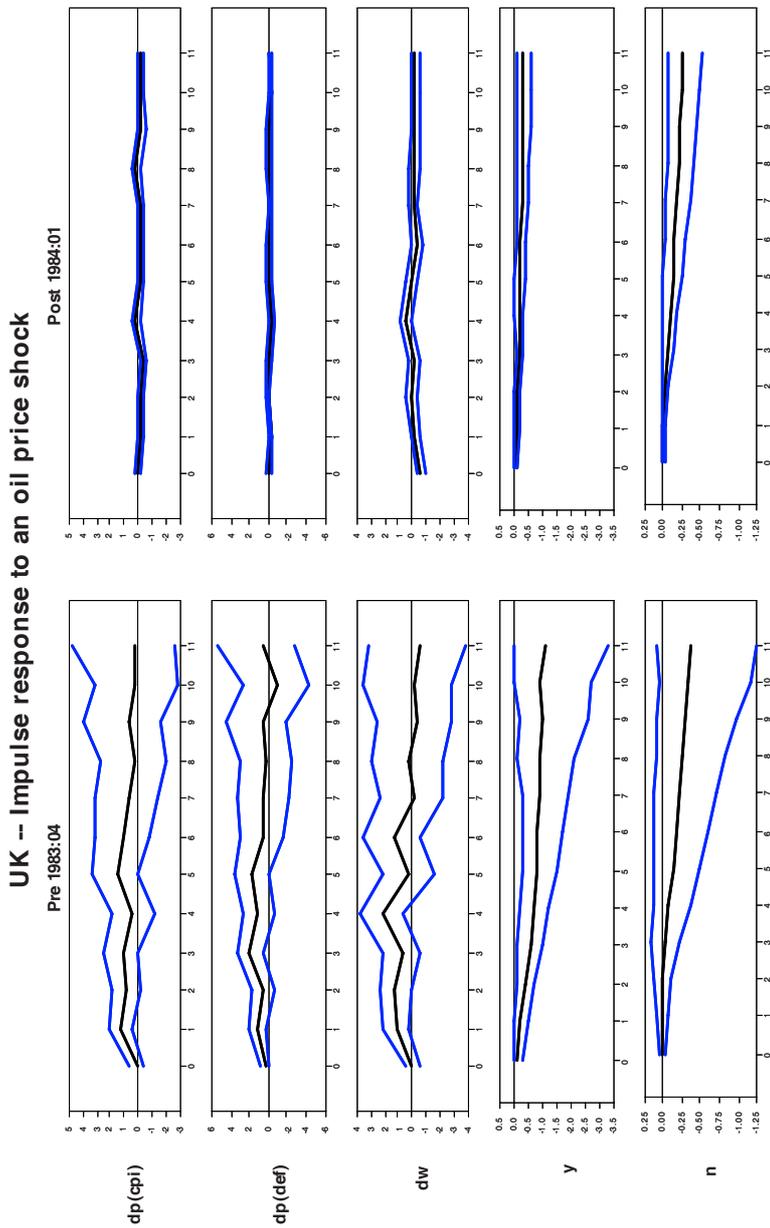


Figure 6d

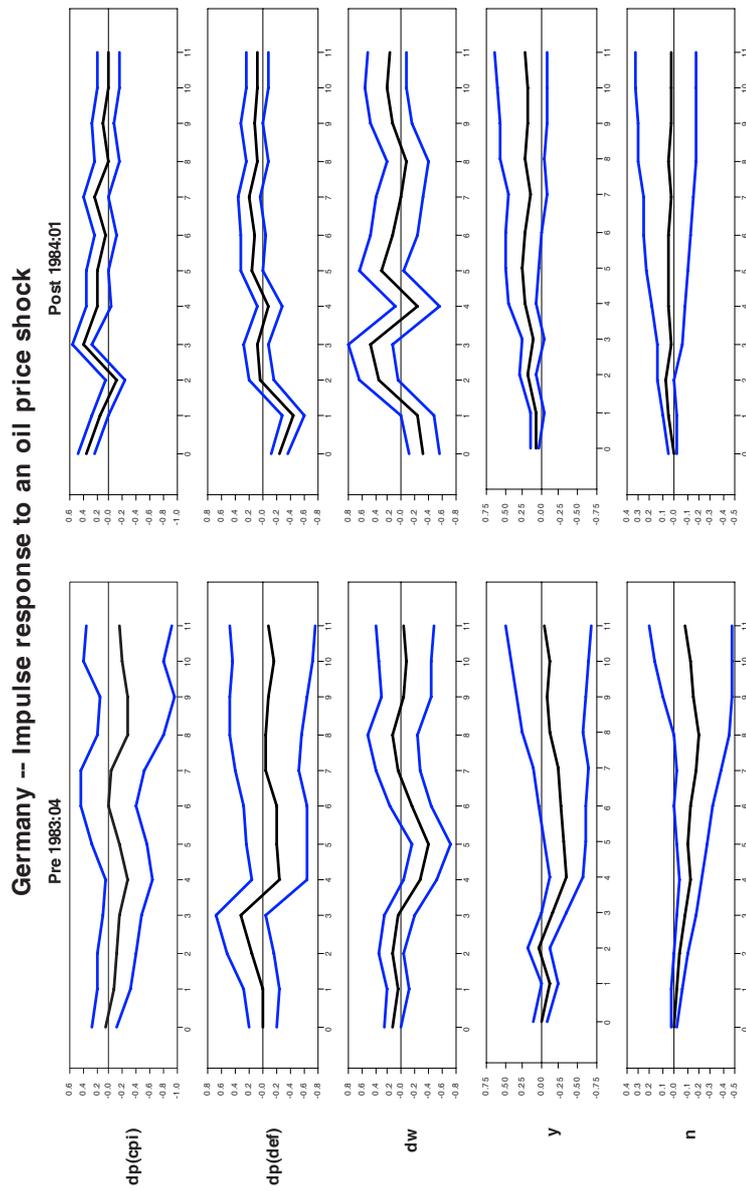


Figure 6e

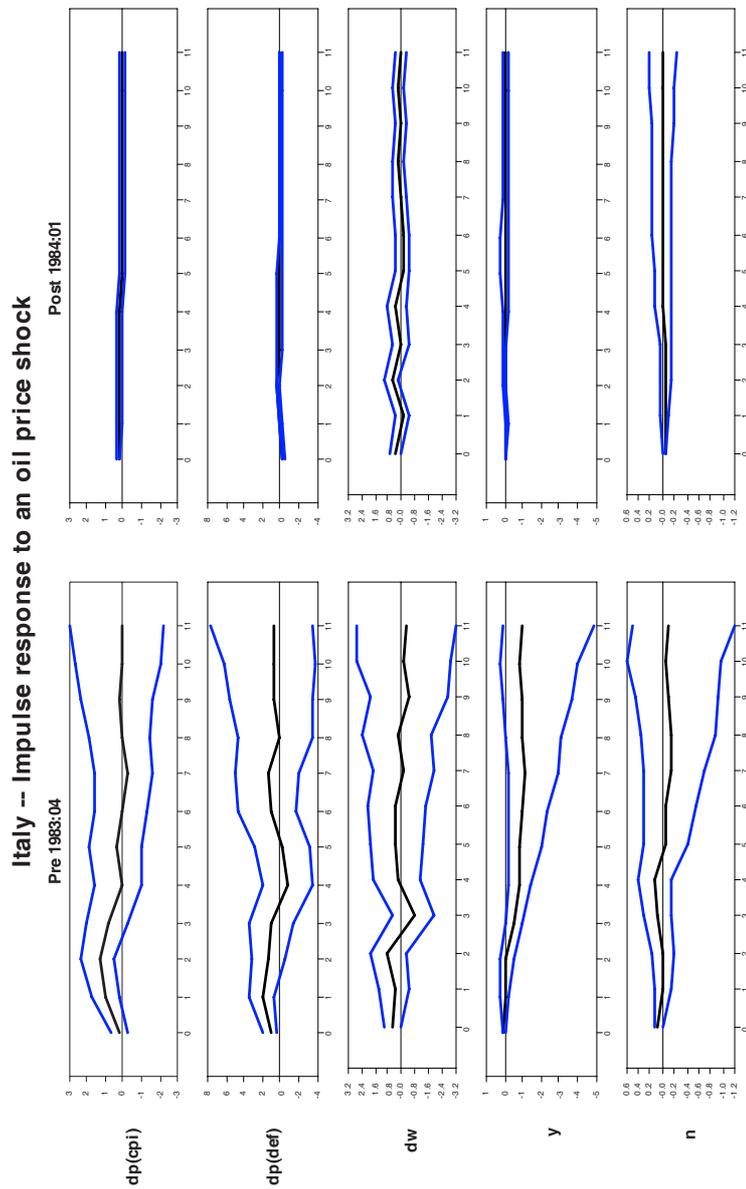
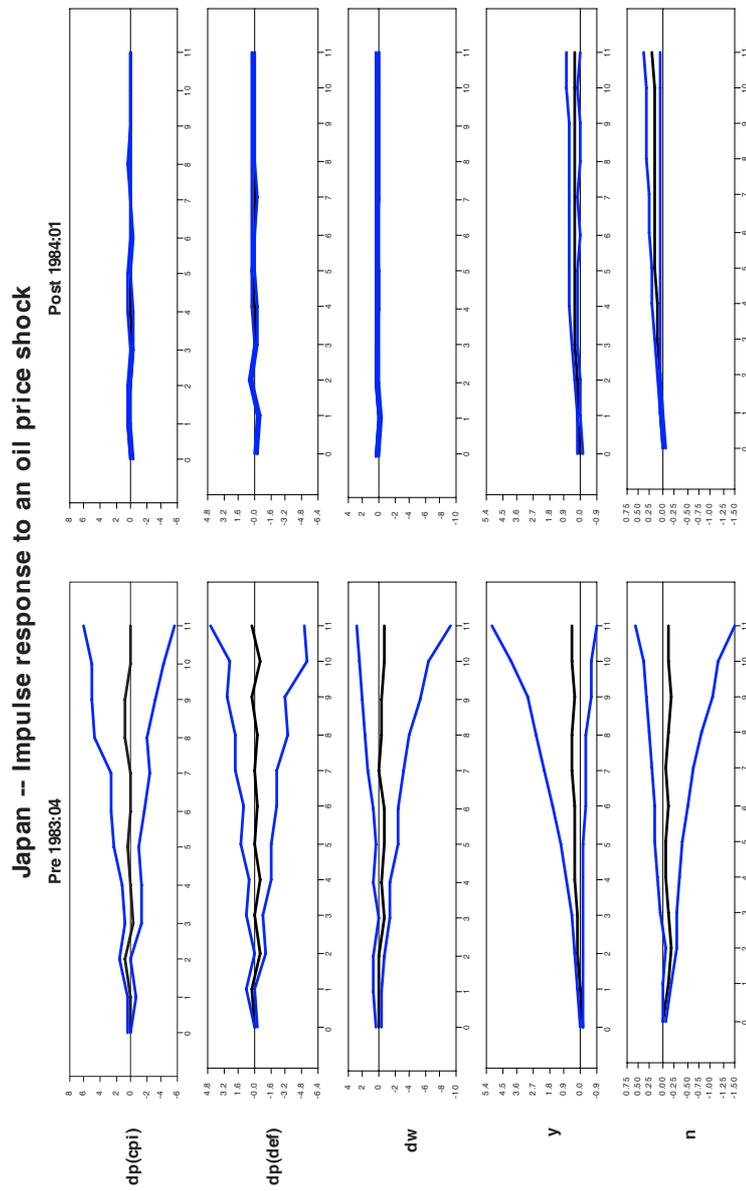


Figure 6f



### 3.2 Variance and Historical Decompositions

How important are oil shocks in accounting for the observed fluctuations in inflation, output and employment in the U.S. economy?

Table 4 and Figure 7 answer this question by using the decomposition associated with the estimated six-variable VAR, with data starting in 1960. For each variable and sample period, they compare the actual time series with the component of the series that results from putting all shocks, except the identified oil price shocks, equal to zero. Series for GDP and employment are accumulated, so the resulting series are in log-levels. All series are then HP-filtered so that the series can be interpreted as deviations from a slowly moving trend. Table 4 provides statistics for the role of oil shocks as a source of fluctuations, including its percent contribution to the volatility of each variable (including the real price of oil, measured relative to the GDP deflator), both in absolute and relative terms. Figure 7 plots the series over time.

The estimated standard deviations of the oil-driven component of the different variables (“conditional standard deviations”), given in the first three columns of Table 4, show that the volatility of fluctuations caused by oil shocks has diminished considerably for all variables, except for the real price of oil itself. In fact, the standard deviation of the exogenous component of the latter variable is about 30 percent larger in the second sample period. This can be explained to a large extent by the limited variation in the real price of oil before the 1973 crisis, and despite the two large spikes in that year and during 1979-80.

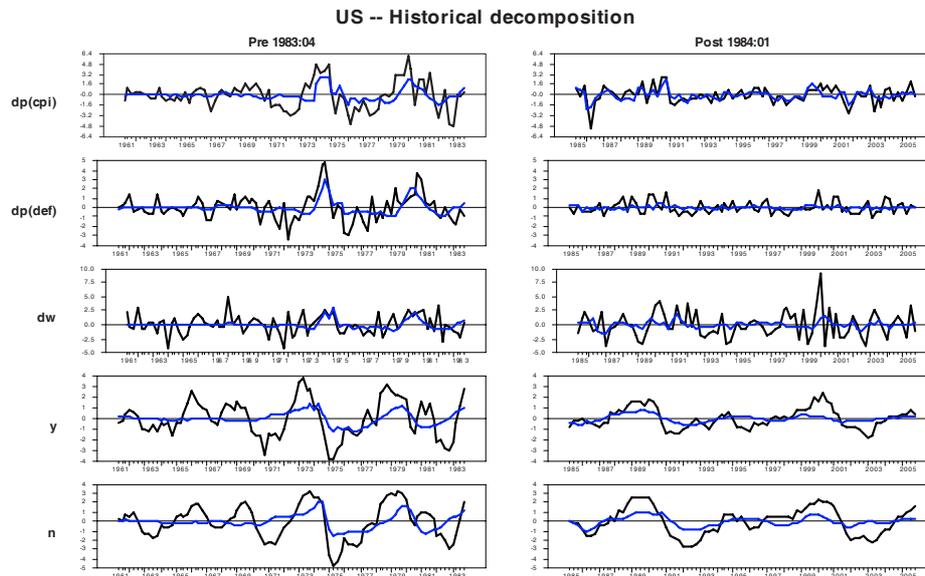
**TABLE 4: The Contribution of Oil Shocks to Economic Fluctuations, 1960-2005**

	Conditional Standard Deviation			$\frac{\text{Conditional SD}}{\text{Unconditional SD}}$	
	60:1-83:4	84:1-05:4	Ratio	60:1-83:4	84:1-05:4
Oil Price (Real)	12.8	16.4	1.28	0.81	0.92
CPI Inflation	0.86	0.73	0.84	0.41	0.61
GDP Inflation	0.69	0.15	0.21	0.48	0.24
Wage Inflation	0.67	0.59	0.88	0.40	0.25
GDP	0.58	0.33	0.56	0.34	0.35
Hours	0.75	0.51	0.68	0.41	0.35

This evidence reinforces our earlier IRFs-based findings of a more muted response of all variables to an oil shock of a given size. Thus, the change in the way the economy has responded to oil shocks has contributed to the dampening of economic fluctuations since the mid-1980s, the phenomenon known as the Great Moderation. Interestingly, our estimates suggest that this has been possible in spite of the slightly larger volatility of oil prices themselves.

The next two columns of Table 4 give the relative contribution of oil shocks to movements in the various variables, measured as the ratio of the conditional to the unconditional standard deviation. The estimates suggest that the relative contribution of oil shocks to fluctuations in quantity variables

Figure 7. The Role of Oil Price Shocks

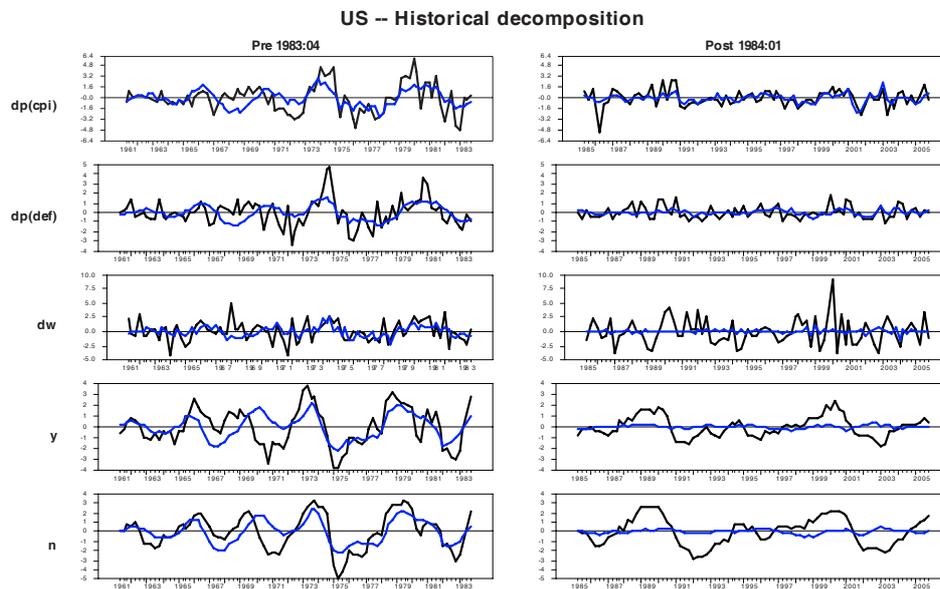


(GDP and employment) has remained roughly unchanged over time, at around 1/3. In the case of wage inflation and GDP deflator inflation, the contribution of oil shocks has declined to 1/4 in both cases, from a level close to 1/2. In contrast, the contribution of oil shocks to CPI inflation has increased in the recent period. Note that this is consistent with a relatively stable core CPI, with oil price changes being passed through to the energy component of the CPI, and accounting for, according to our estimates, as much as sixty percent of the fluctuations in overall CPI inflation.

Figure 7 allows us to focus on the contribution of oil prices to the 1973-1974 and 1979-1981 episodes. It shows the substantial but non-exclusive role of exogenous oil shocks during each of the two episodes. In particular, while for our three inflation variables the oil price shocks seem to have accounted for the bulk of the increases in 1973-1975 and 1979-1981, no

more than a half of the observed decline in employment and output during those episodes can be attributed to the oil shocks themselves. Thus, our findings suggest that other shocks played an important role in triggering those episodes.

Figure 8. The Role of Shocks to Crude Materials Prices



Within our 6-variable VAR, our partial identification approach does not allow us to determine what those additional underlying shocks may have been. Yet, when we replace the price of oil by the broader PPI index for crude materials in our six-variable VAR, the estimates of GDP and employment driven by exogenous shocks to that broader price index track more closely the movements of the actual time series themselves in the pre-1984 period, including the two large oil shock episodes contained in that period, as shown in Figure 8. In particular those shocks account for

more than half the fluctuations in all variables over the pre-1984 period. On the other hand, such broader supply shocks play a very limited role in accounting for the fluctuations in output and employment in the post-1984 period (though a more important one in accounting for variations in CPI inflation, in a way consistent with earlier evidence).

#### 4 U.S. Evidence Based on Rolling Bivariate Regressions

So far, we have analyzed the macroeconomic effects of oil price shocks and their change over time under the maintained assumption of a discrete break sometime around the mid-1980s. While the findings reported above are largely robust to changes in the specific date of the break, some of the potential explanations (discussed below) for the change in the effects of oil price shocks are more likely to have been associated with a more gradual variation over time. This leads us to adopt a more flexible approach, and estimate rolling IRFs to oil price shocks, based on a simple dynamic equation linking a variable of interest to its own lags and the current and lagged values of the change in the (log) oil price. We do this using a moving window of 40 quarters, with the first moving window centered in 1970.

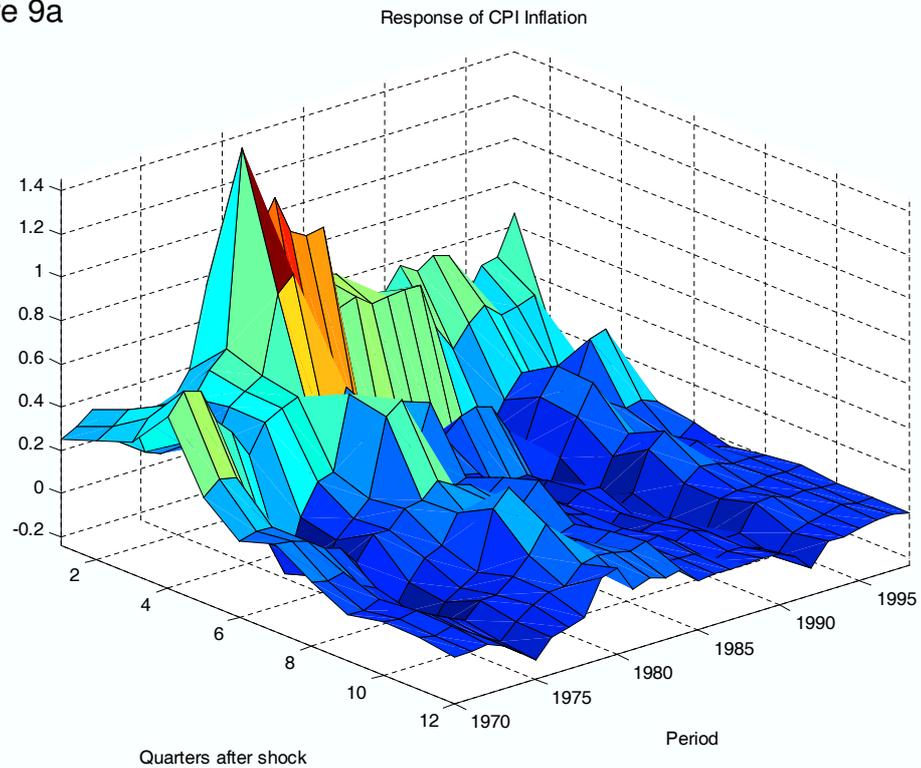
More specifically, letting  $y_t$  and  $p_t^o$  denote the variable of interest and the price of oil, respectively, we use OLS to estimate the regression:

$$y_t = \alpha + \sum_{j=1}^4 \beta_j y_{t-j} + \sum_{j=0}^4 \gamma_j \Delta p_{t-j}^o + u_t$$

and use the resulting estimates to obtain the implied dynamic response of  $y_t$  (or a transformation thereof) to a permanent 10 percent (log) change in the price of oil, thus implicitly assuming in the simulation that  $\Delta p_t^o$  is an i.i.d. process (which is roughly consistent with the random walk-like response of the price of oil obtained using our multivariate model).

Relative to the multivariate model analyzed in the previous section, correct identification of oil price shocks is obviously more doubtful in the present bivariate model, given the lower dimension specification of the economy's dynamics. This shortcoming must be traded-off with the possibility of estimating the VAR with much shorter samples and, hence, being able to obtain our rolling IRFs. In order to check the consistency with our earlier results, we first computed the average IRFs across moving windows within each of the subperiods considered earlier (pre-1984 and post-1984), and found the estimated IRFs (not shown) to be very similar to the ones obtained earlier. In particular, both the inflation variables, as well as output and employment, show a more muted response in the more recent period. Figures 9a-9e display the rolling IRFs for our three inflation measures, output, and employment. Several features stand out:

Figure 9a



CPI inflation appears quite sensitive to the oil shock over the entire sample period, but particularly so in the late 1970s, when inflation is estimated to rise more than 1 percentage point two/three quarters after a 10 percent rise in the oil price. The response becomes steadily more muted over time and, perhaps as important, less persistent, especially in the more recent period (in a way consistent with our earlier evidence based on the 6-variable VAR). The evolution over time in the response of GDP deflator inflation to an oil price shock is similar to that that of CPI inflation, but shows a more dramatic contrast, with the response at the end of our sample being almost negligible. The response of wage inflation is rather muted all along,

Figure 9b

Response of GDP Deflator Inflation

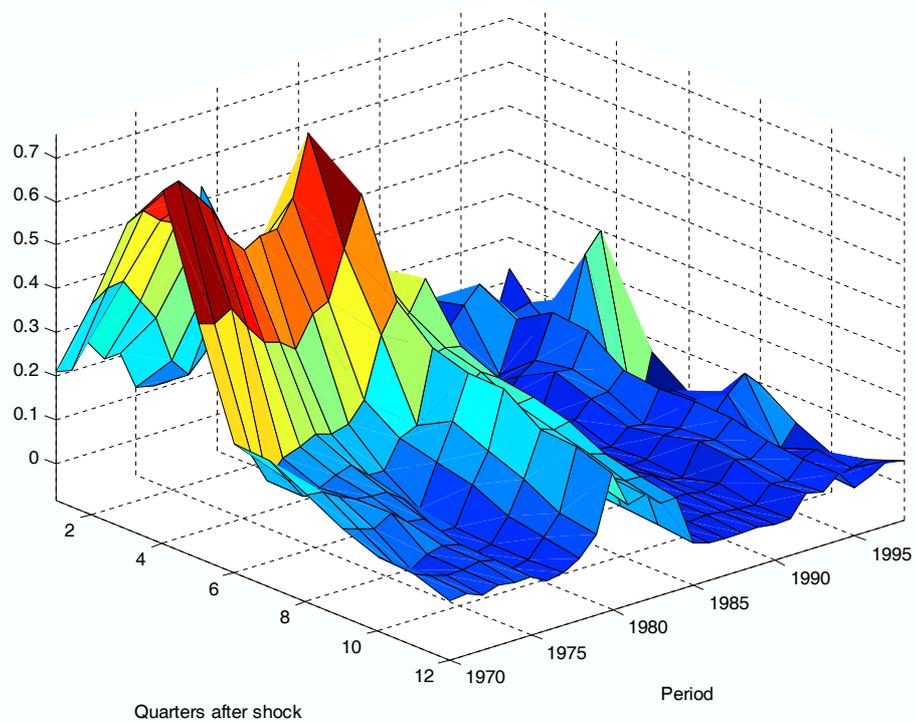


Figure 9c

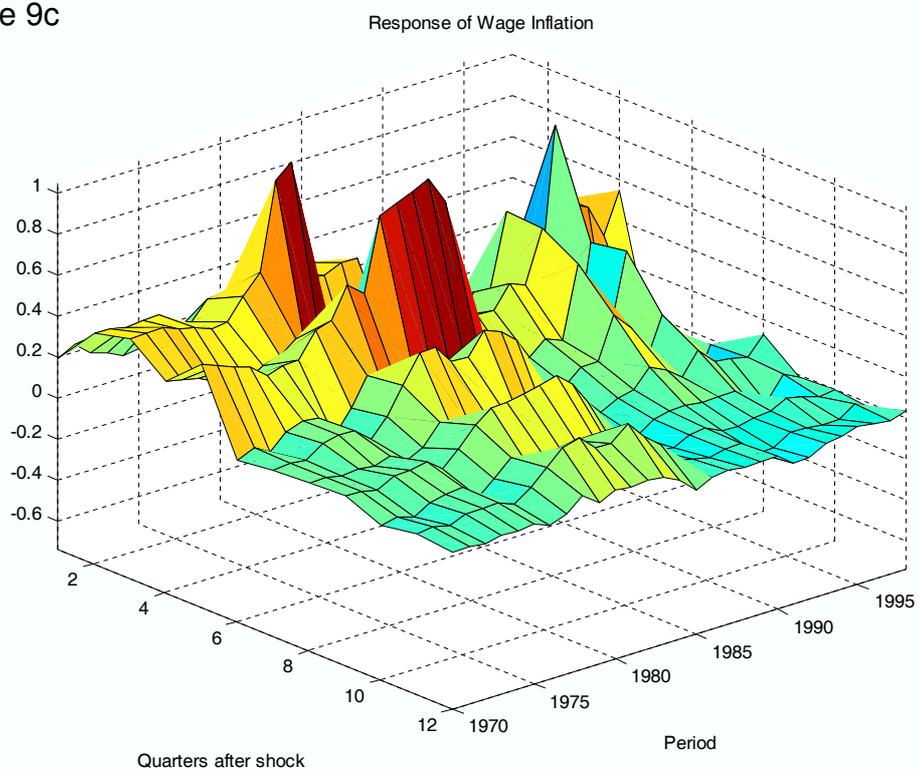


Figure 9d

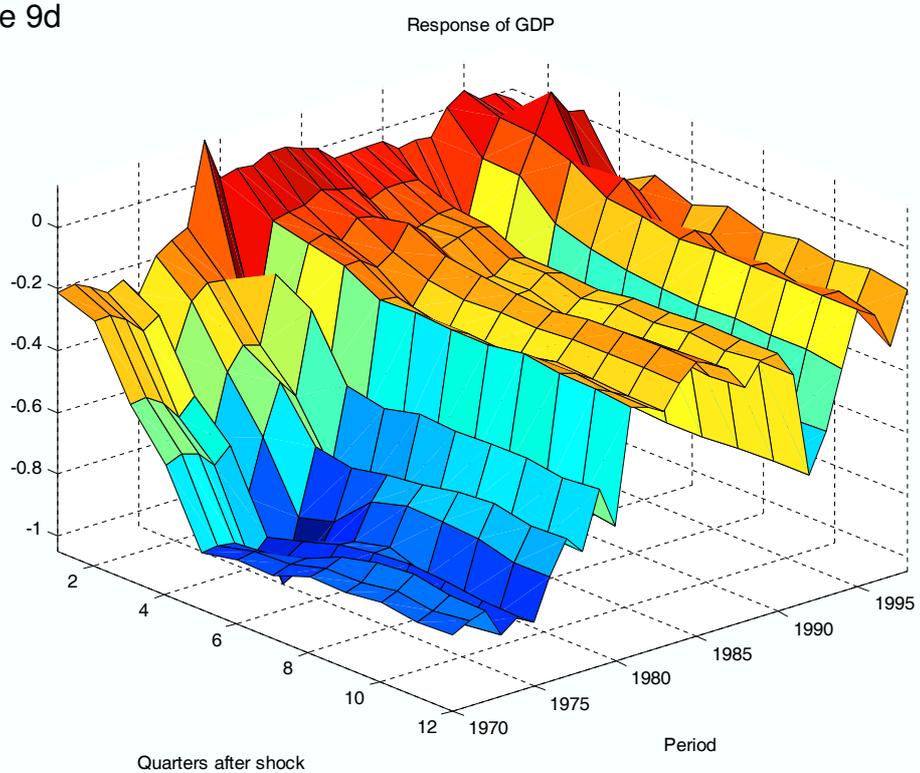
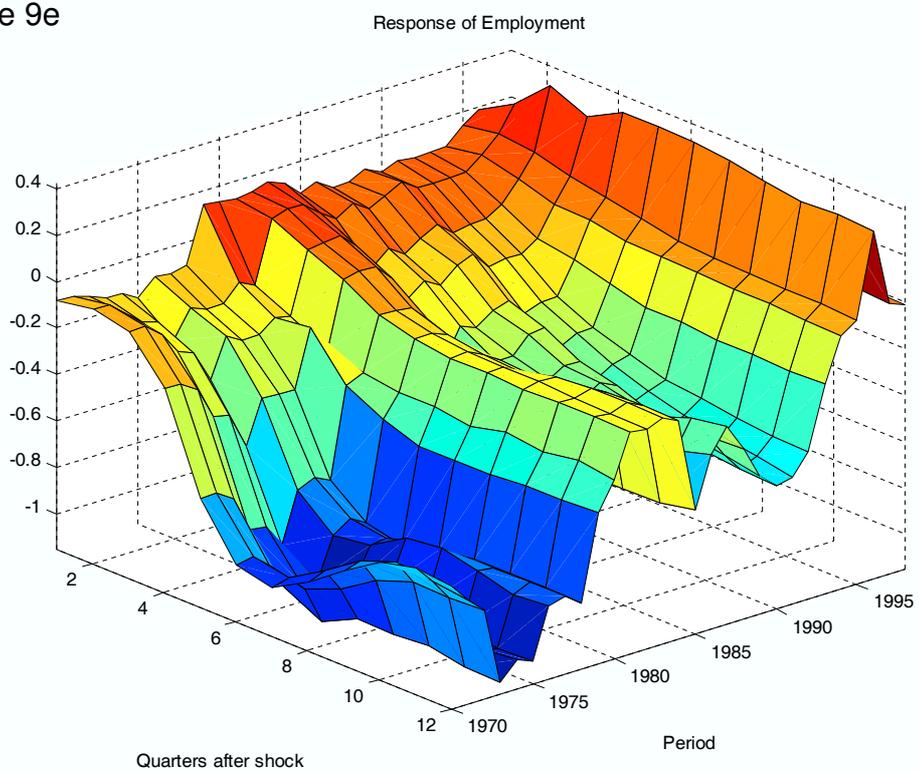


Figure 9e



except for its large persistent increases in the late 1970s and early 80s, and a similar spike in the 1990s.

The most dramatic changes are in the responses of output and employment (Figures 9d-e). In the early part of the sample output is estimated to decline as much as 1 percent two years after the 10 percent change in the price of oil. The estimated response, however, becomes weaker over time, with the point estimates of that response becoming slightly positive for the most recent period. A similar pattern can be observed for employment.

The previous evidence thus reinforces the picture that emerged from the earlier evidence, one which strongly suggests a vanishing effect of oil shocks on macroeconomic variables, both real and nominal. In the next section we try to uncover some of the reasons why.

## **5 Modeling the Macroeconomic Effects of Oil Price Shocks: A Simple Framework**

We now develop a simple model of the macroeconomic effects of oil price shocks. Our focus is on explaining the different response of the economy to oil price shocks in the 1970s and the 2000s. With this in mind, we focus on three potential changes in the economy:

First, the behavior of wages. To us, this looks a priori like the most plausible candidate. The 1970s were times of strong unions, and high wage indexation. In the 2000s, unions are much weaker, and wage indexation has practically disappeared.

Second, the role of monetary policy. Faced with a new type of shock, the central banks of the 1970s did not know at first how to react, policy mistakes were made, and central bank credibility was low. In the 2000s, supply shocks are no longer new, monetary policy is clearly set, and credibility is much higher.

Third, and trivially, the quantitative importance of oil in the economy. Increases in the price of oil have led to substitution away from oil, and a decrease in the relevant shares of oil in consumption and in production. The question is whether this decrease can account for much of the difference in the effects of oil prices in the 1970s and the 2000s.<sup>7</sup>

We start from the standard new-Keynesian model and introduce two modifications. First, we introduce oil both as an input in consumption and as an input in production. We assume the country is an oil importer, and that the real price of oil (in terms of domestic goods) follows an exogenous process. Second, we allow for real wage rigidities, along the lines of our earlier work (Blanchard and Gali 2007). We present only log-linearized relations in the text, leaving the full derivation to Appendix 1. Lower case letters denote logarithms of the original variables, and for notational simplicity, we ignore all constants.

### 5.1 The Role of Oil

Oil is used both by firms in production and by consumers in consumption:

Production is given by

$$q_t = a_t + \alpha_n n_t + \alpha_m m_t$$

where  $q_t$  is (gross) domestic output;  $a_t$  is an exogenous technology parameter;  $n_t$  is labor;  $m_t$  is the quantity of imported oil used in production;

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7. Some observers have suggested another factor, an increase in hedging against oil price shocks by oil users. What is known about hedging by airlines suggests, however that, while hedging is more prevalent than in the 1970s, its extent remains limited, with few hedges going beyond a year. See for example Carter, Rogers, and Simkins (2006a, 2006b).

and  $\alpha_n + \alpha_m \leq 1$ .<sup>8</sup>

Consumption is given by

$$c_t \equiv (1 - \chi) c_{q,t} + \chi c_{m,t}$$

where  $c_t$  is consumption;  $c_{q,t}$  is the consumption of domestically produced goods (gross output); and  $c_{m,t}$  is the consumption of imported oil.

In this environment, it is important to distinguish between two prices, the price of domestic output  $p_{q,t}$ , and the price of consumption  $p_{c,t}$ . Let  $p_{m,t}$  be the price of oil, and  $s_t \equiv p_{m,t} - p_{q,t}$  be the real price of oil. From the definition of consumption, the relation between the consumption price and the domestic output price is given by

$$p_{c,t} = p_{q,t} + \chi s_t \tag{1}$$

Increases in the real price of oil lead to an increase in the consumption price relative to the domestic output price.

## 5.2 Households

The behavior of households is characterized by two equations. The first is an intertemporal condition for consumption:

$$c_t = E_t\{c_{t+1}\} - (i_t - E_t\{\pi_{c,t+1}\}) \tag{2}$$

where  $i_t$  is the nominal interest rate, and  $\pi_{c,t} \equiv p_{c,t} - p_{c,t-1}$  is CPI inflation.

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8. We use a Cobb–Douglas specification for convenience. It has the counterfactual implication that the share of oil in output remains constant. So, in our framework, when looking at changes in the share over time, we must attribute it to a change in the parameter  $\alpha_m$ . For our purposes, this appears innocuous.

The second condition characterizes labor supply. If the labor market was perfectly competitive, labor supply would be implicitly given by

$$w_t - p_{c,t} = c_t + \phi n_t$$

where  $w_t$  is the nominal wage, and  $n_t$  is employment. This is the condition that the consumption wage must equal the marginal rate of substitution between consumption and leisure;  $\phi$  is the inverse of the Frisch elasticity of labor supply.

We formalize real wage rigidities by modifying the previous equation to read

$$w_t - p_{c,t} = (1 - \gamma) (c_t + \phi n_t) \quad (3)$$

where we interpret the parameter  $\gamma \in [0, 1]$  as an index of the degree of real wage rigidities. While clearly ad-hoc, equation (3) is meant to capture in a parsimonious way the notion that real wages may not respond to labor market conditions as much as implied by the model with perfectly competitive markets. We have explored the implications of a dynamic version of equation (3), in which the wage adjusts over time to the marginal rate of substitution. This alternative is more attractive conceptually, and gives richer dynamics. However, it is also analytically more complex, and we have decided to present results using the simpler version above.

### 5.3 Firms

Given the production function, cost minimization implies that the firms' demand for oil is given by  $m_t = -\mu_t^p - s_t + q_t$ , where  $\mu_t^p$  is the price markup. Using this expression to eliminate  $m_t$  in the production function gives a reduced-form production function

$$q_t = \frac{1}{1 - \alpha_m} (a_t + \alpha_n n_t - \alpha_m s_t - \alpha_m \mu_t^p) \quad (4)$$

Output is a decreasing function of the real price of oil, given employment and technology.

Combining the cost minimization conditions for oil and for labor with the aggregate production function yields the following factor price frontier:

$$(1 - \alpha_m) (w_t - p_{c,t}) + (\alpha_m + (1 - \alpha_m)\chi) s_t + (1 - \alpha_n - \alpha_m) n_t - a_t + \mu_t^p = 0 \quad (5)$$

Given productivity, an increase in the real price of oil must lead to one or more of the following adjustments: (i) a lower consumption wage, (ii) lower employment, (iii) a lower markup. Under our assumed functional forms, it can be shown that with flexible prices and wages, the entire burden of the adjustment in response to an increase in  $s_t$  falls on the consumption wage, with employment and the markup remaining unchanged. But, as we discuss next, things are different when we allow the markup to vary (as a result of sticky prices), and wages to respond less than their competitive labor markets counterpart.

Firms are assumed to set prices à la Calvo (1983), an assumption which yields the following log-linearized equation for domestic output price inflation (domestic inflation for short)

$$\pi_{q,t} = \beta E_t\{\pi_{q,t+1}\} - \lambda_p \mu_t^p \quad (6)$$

where  $\lambda_p \equiv [(1 - \theta)(1 - \beta\theta)/\theta][(\alpha_m + \alpha_n)/(1 + (1 - \alpha_m + \alpha_n)(\epsilon - 1))]$ , where  $\theta$  denotes the fraction of firms that leave prices unchanged,  $\beta$  is the discount factor of households, and  $\epsilon$  is the elasticity of substitution between domestic goods in consumption.

Note that this specification assumes a constant desired markup of firms. By doing so, we rule out a mechanism examined by Rotemberg and Woodford (1996) who argue that, to explain the size of the decline in output observed

in response to oil shocks, one must assume countercyclical markups. We do so not because we believe the mechanism is irrelevant, but because we do not think that variations in the degree of countercyclicality of markups are likely to be one of the main factors behind the differences between the 1970s and the 2000s.

#### 5.4 Equilibrium

The real wage consistent with household choices (cum real wage rigidities) is given by equation (3), and depends on consumption and employment.

The real wage consistent with the firms' factor price frontier is given by equation (5) and depends on the real price of oil, the markup, and employment.

Together, these two relations imply that the markup is a function of consumption, employment, and the real price of oil. Solving for consumption by using the condition that trade be balanced gives:

$$c_t = q_t - \chi s_t + \eta \mu_t^p \quad (7)$$

where  $\eta \equiv \alpha_m / (\mathcal{M}^p - \alpha_m)$ , with  $\mathcal{M}^p$  denoting the steady state gross markup (now in levels). Combining this equation with the reduced form production function gives consumption as a function of employment, productivity, the real price of oil, and the markup

$$c_t = \frac{1}{1 - \alpha_m} a_t + \frac{\alpha_n}{1 - \alpha_m} n_t - \left( \chi + \frac{\alpha_m}{1 - \alpha_m} \right) s_t + \left( \eta - \frac{\alpha_m}{1 - \alpha_m} \right) \mu_t^p$$

If the steady state markup is not too large, the last term is small and can safely be ignored. Replacing the expression for consumption in equation (3) for the consumption wage, and then replacing the consumption wage in the factor price frontier gives an expression for the markup

$$\mu_t^p = -\Gamma_n n_t - \Gamma_s s_t + \Gamma_a a_t \quad (8)$$

where

$$\begin{aligned} \Gamma_n &\equiv \frac{(1 - \alpha_n - \alpha_m)\gamma + (1 - \alpha_m)(1 - \gamma)(1 + \phi)}{1 - (1 - \gamma)(\alpha_m - (1 - \alpha_m)\eta)} \geq 0 \\ \Gamma_a &\equiv \frac{\gamma}{1 - (1 - \gamma)(\alpha_m - (1 - \alpha_m)\eta)} \geq 0 \\ \Gamma_s &\equiv \frac{\gamma (\alpha_m + (1 - \alpha_m)\chi)}{1 - (1 - \gamma)(\alpha_m - (1 - \alpha_m)\eta)} \geq 0 \end{aligned}$$

Using this expression for the markup in equation (6) gives the following characterization of domestic inflation

$$\pi_{q,t} = \beta E_t\{\pi_{q,t+1}\} + \lambda_p \Gamma_n n_t + \lambda_p \Gamma_s s_t - \lambda_p \Gamma_a a_t \quad (9)$$

Under our assumptions, the first best level of employment can be shown to be invariant to the real price of oil: Substitution and income effects cancel.<sup>9</sup> If  $\gamma = 0$ , i.e. if there are no real wage rigidities, then  $\Gamma_a$  and  $\Gamma_s$  are both equal to zero, and domestic inflation only depends on employment. Together, these two propositions imply that stabilizing domestic inflation is equivalent to stabilizing the distance of employment from first best—a result we have called elsewhere the “divine coincidence.”

Positive values of  $\gamma$  lead instead to positive values of  $\Gamma_a$  and  $\Gamma_s$ . The higher  $\gamma$ , or the higher  $(\alpha_m + (1 - \alpha_m)\chi)$ —an expression which depends on the shares of oil in production and in consumption—the worse the trade-off between stabilization of employment and stabilization of domestic inflation in response to oil price shocks.

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9. To see this, we can just determine equilibrium employment under perfect competition in both goods and labor markets, corresponding to the assumptions  $\mu_t = 0$  for all  $t$  and  $\gamma = 0$ , respectively.

### 5.5 Implications for GDP and the GDP Deflator

Note that the characterization of the equilibrium did not require introducing either value added or the value added deflator. But these are needed to compare the implications of the model to the data.

The value added deflator  $p_{y,t}$  is implicitly defined by  $p_{q,t} = (1 - \alpha_m) p_{y,t} + \alpha_m p_{m,t}$ . Rearranging terms gives

$$p_{y,t} = p_{q,t} - \frac{\alpha_m}{1 - \alpha_m} s_t \quad (10)$$

thus implying a negative effect of the real price of oil on the value added deflator, given domestic output prices.

The definition of value added, combined with the demand for oil, yields the following relation between value added and output:

$$y_t = q_t + \frac{\alpha_m}{1 - \alpha_m} s_t + \eta \mu_t^p \quad (11)$$

This in turn implies the following relation between value added and consumption:

$$y_t = c_t + \left( \frac{\alpha_m}{1 - \alpha_m} + \chi \right) s_t \quad (12)$$

An increase in the price of oil decreases consumption given value added both because (imported) oil is used as an input in production, and used as an input in consumption.

Under the same approximation as above, i.e.  $\left( \eta - \frac{\alpha_m}{1 - \alpha_m} \right) \mu_t^p \simeq 0$ , equations (4) and (11) imply the following relation between value added and employment:

$$y_t = \frac{1}{1 - \alpha_m} (a_t + \alpha_n n_t) \quad (13)$$

Note that, under this approximation, the relation between value added and employment does not depend on the real price of oil.

## 5.6 Quantifying the Effects of Oil Price Shocks

Equations (1), (2), (9), (12), and (13), describe the equilibrium dynamics of prices and quantities, given exogenous processes for technology and the real price of oil, and a description of how the interest rate is determined (i.e. an interest rate rule). We now use these conditions to characterize the economy's response to an oil price shock.

Assume that  $a_t = 0$  for all  $t$  (i.e abstract from technology shocks). It follows from (13) and the discussion above that the efficient level of value added is constant (and normalized to zero) in this case. Assume further that the real price of oil follows an AR(1) process

$$s_t = \rho_s s_{t-1} + \varepsilon_t \quad (14)$$

We can then summarize the equilibrium dynamics of value added and domestic inflation through the system:

$$\pi_{q,t} = \beta E_t\{\pi_{q,t+1}\} + \kappa y_t + \lambda_p \Gamma_s s_t \quad (15)$$

$$y_t = E_t\{y_{t+1}\} - (i_t - E_t\{\pi_{q,t+1}\}) + \frac{\alpha_m(1 - \rho_s)}{1 - \alpha_m} s_t \quad (16)$$

where  $\kappa \equiv \lambda_p \Gamma_n (1 - \alpha_m) / \alpha_n$ .

These two equations must be complemented with a description of monetary policy. Assume an interest rate rule of the form

$$i_t = \phi_\pi \pi_{q,t} \quad (17)$$

where  $\phi_\pi > 1$ . Note that in our model  $\pi_{q,t}$  corresponds to core CPI inflation, a variable that many central banks appear to focus on as the basis for their interest rate decisions.

We can then solve for the equilibrium analytically, using the method of undetermined coefficients. This yields the following expressions for domestic inflation and output:

$$\pi_{q,t} = \Psi_{\pi} s_t$$

$$y_t = \Psi_y s_t$$

where

$$\Psi_{\pi} = \frac{(1 - \rho_s) \left( \frac{\kappa \alpha_m}{1 - \alpha_m} + \lambda_p \Gamma_s \right)}{(1 - \rho_s)(1 - \beta \rho_s) + (\phi_{\pi} - \rho_s) \kappa}$$

and

$$\Psi_y = \frac{\frac{\alpha_m}{1 - \alpha_m} (1 - \rho_s)(1 - \beta \rho_s) - (\phi_{\pi} - \rho_s) \lambda_p \Gamma_s}{(1 - \rho_s)(1 - \beta \rho_s) + (\phi_{\pi} - \rho_s) \kappa}$$

Domestic inflation and GDP follow AR(1) processes with the same first order coefficient as the real price of oil. Their innovations are proportional to the innovation in the real price of oil, with the coefficient of proportionality depending on the parameters of the model.

Expressions for CPI inflation and employment can be obtained using (1) and (13), respectively:

$$\pi_{c,t} = \Psi_{\pi} s_t + \chi \Delta s_t$$

$$n_t = \Psi_y \frac{1 - \alpha_m}{\alpha_n} s_t$$

With these equations, we can turn to the discussion of the potential role of the three factors we identified earlier, real wage rigidities, monetary policy, and the quantitative importance of oil in the economy, in explaining the differences between the 1970s and the 2000s. In all cases we use the evidence we presented earlier for the United States as a benchmark.

## 6 Three Hypotheses on the Changing Effects of Oil Price Shocks

In order to assess quantitatively the potential for oil price shocks to generate significant macroeconomic fluctuations, we first need to calibrate our model. We assume the following parameter values:

The time unit is a quarter. We set the discount factor  $\beta$  equal to 0.99. We set the Calvo parameter,  $\theta$ , to 0.75. We choose the elasticity of output with respect to labor,  $\alpha_n$ , equal to 0.7. We assume  $\phi = 1$ , thus implying a unitary Frisch labor supply elasticity.

As discussed in previous sections, changes in the volatility of the real price of oil are unlikely to lie behind the changes in the size of the effects of oil shocks. Thus, for simplicity, we assume an unchanged process for the real price of oil. Based on the conditional standard deviation of the price of oil for the period 1984:1-2005:4, we assume  $var(s_t) = (0.16)^2$ . We set  $\rho_s = 0.97$ .<sup>10</sup> Also, and unless otherwise noted, we set the shares of oil in production and consumption ( $\alpha_m$  and  $\chi$ ) to equal 0.012 and 0.017, respectively, which correspond to their values in 1997.

Most of the parameters above are kept constant across all the simulations presented below. The exceptions, as well as our treatment of the remaining parameters, varies depending on the hypothesis being considered in each case.

### 6.1 Changes in Real Wage Rigidities

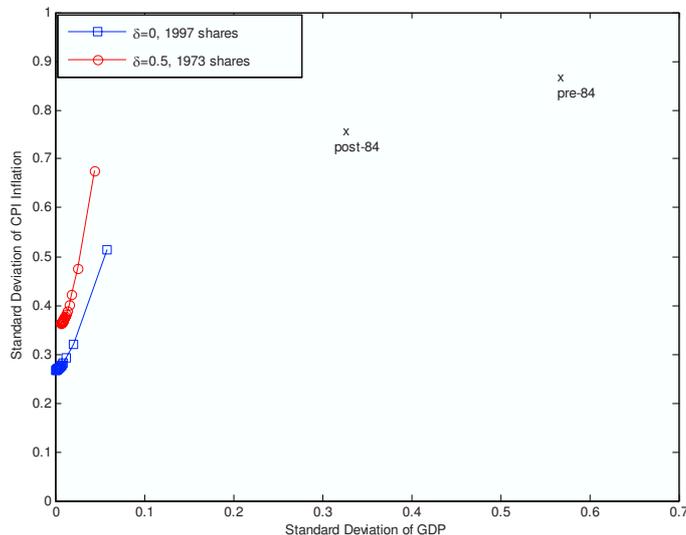
In the framework above, the presence of some rigidity in the adjustment of real wages to economic conditions is a necessary ingredient in order

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10. The price of oil would be better characterized as non-stationary. But we would then have to extend our formalization of real wage rigidities to allow the wage to eventually converge to the marginal rate of substitution. Thus, we assume the value of  $\rho$  to be high, but less than one.

to generate significant fluctuations in measures of inflation and economic activity. Figure 10 illustrates this point by showing the range of volatilities of CPI inflation (annualized, and expressed in percent) and GDP implied by our calibrated model under the assumption of perfectly competitive labor markets ( $\gamma = 0$ ), and under two alternative calibrations. The first calibration assumes a relatively favorable environment, with the two shares of oil at their “low” values prevailing in 1997, and no credibility gap in monetary policy, ( $\delta = 0$ ; the discussion of credibility and the definition of  $\delta$  will be given below). The second calibration assumes a less favorable environment, with the shares of oil at their “high” values prevailing in 1973, and the presence of a credibility gap in monetary policy ( $\delta = 0.5$ ). For each calibration, the figure plots the standard deviations of CPI inflation and value added, as the coefficient on inflation in the Taylor rule,  $\phi_\pi$ , varies from 1 to 5, a range of values that covers the empirically plausible set (conditional on having a unique equilibrium). The exercise yields two conclusions.

Figure 10. Volatility Ranges under Flexible Wages



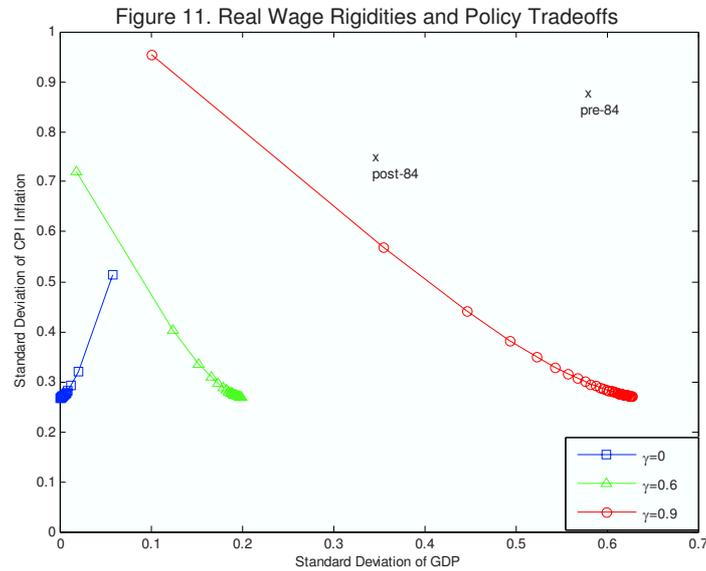
First, the slope of the relation between the standard deviation of GDP and the standard deviation of CPI inflation is positive. This should not be surprising: In the absence of real wage rigidities, there is no tradeoff between inflation and value added stabilization. Hence, a policy that seeks to stabilize domestic inflation more aggressively, also stabilizes value added. In fact, one can reduce the volatility of both variables by choosing  $\phi_\pi$  to be arbitrarily large (this is what we called the “divine coincidence” in an earlier paper). Under the assumed rule, on the other hand, CPI inflation faces a lower bound to its volatility, since it is affected directly by any change in the price of oil, in proportion to the share of oil in the consumption basket.

Second, the model has a clear counterfactual implication. While lower values of  $\phi_\pi$  yield positive standard deviations for both GDP and CPI inflation, they also imply a positive correlation between GDP and CPI inflation in response to price of oil shocks. Low values of  $\phi_\pi$  imply a positive response of both GDP and CPI inflation to an increase in the price of oil, an implication obviously at odds with the data.

Figure 11 shows that the introduction of real wage rigidities alters that picture substantially. It plots three loci, corresponding to three different values of the real wage rigidity parameter:  $\gamma = 0.0$ ,  $\gamma = 0.6$ , and  $\gamma = 0.9$ . In the three cases, we assume an otherwise favorable environment, with the 1997 oil shares, and full credibility of monetary policy. As before, each locus is obtained by varying  $\phi_\pi$  from 1 to 5. Several results are worth pointing out:

First, the tradeoff generated by the presence of real wage rigidities is apparent in the negative relationship between inflation volatility on the one hand and GDP volatility on the other.

Second, while the introduction of real wage rigidities raises the volatility of all variables (for any given  $\phi_\pi$ ), the model’s predictions still fall short of



matching the (conditional) standard deviations of CPI inflation and GDP in our two samples, represented by the two crosses.

Finally, and that shortcoming notwithstanding, the figure also makes clear that a moderate reduction in the degree of real wage rigidities (e.g. a shift of  $\gamma$  from 0.9 to 0.6) can account for a substantial improvement in the policy tradeoff and hence on a simultaneous reduction in the volatility of inflation and GDP resulting from oil price shocks (or supply shock, more generally).

To what extent a reduction in the degree of real wage rigidities may have been a factor behind the more muted effects of oil shocks in recent years? We rely again on the bivariate rolling VAR approach used earlier to try to answer this question, by seeking evidence of faster wage adjustment in recent years. In particular, we use this approach to estimate the responses of the real consumption wage, the unemployment rate, and the wage markup, defined as the gap between the (log) consumption wage,  $w_t - p_{c,t}$ , and the

(log) marginal rate of substitution,  $c_t + \phi n_t$ , with  $\phi = 1$ , as in our baseline calibration. In response to a rise in the real price of oil, we would expect this markup to increase in the presence of real wage rigidities, which in turn should be associated with a rise in unemployment.

Figures 12a-c display the relevant IRFs representing, as before, the estimated response of each variable to a permanent 10 percent increase in the dollar price of oil. Figure 12a shows that the consumption wage tends to decline in response to the oil shock. While the response shows some variability over time, it does not show a tendency towards a larger response of the consumption wage over time. Figure 12b shows that unemployment tends to increase in response to the oil shock. It also shows that this response has declined dramatically over time. An interpretation of these two evolutions is that the decrease in real wages, which required a large increase in unemployment in the 1970s, is now achieved with barely any increase in unemployment today. This suggests, in turn, a decrease in real wage rigidities. Another way of making the same point, within the logic of the model, is to look at the evolution of the wage markup. This is done in Figure 12c. An increase in the oil price leads to an increase in the wage markup: That is, the decrease in the consumption wage is smaller than the decrease in the marginal rate of substitution. The effect has become, however, steadily smaller over time, very rapidly so in the more recent period. This suggests that the real consumption wage moves today much more in line with the marginal rate of substitution than it did in the 1970s.<sup>11</sup>

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11. At least from a qualitative point of view, the previous evidence is robust to variations in the calibration of parameter  $\phi$  within a plausible range (which we take to be given by the interval  $[0.5, 5]$ ).

Figure 12a

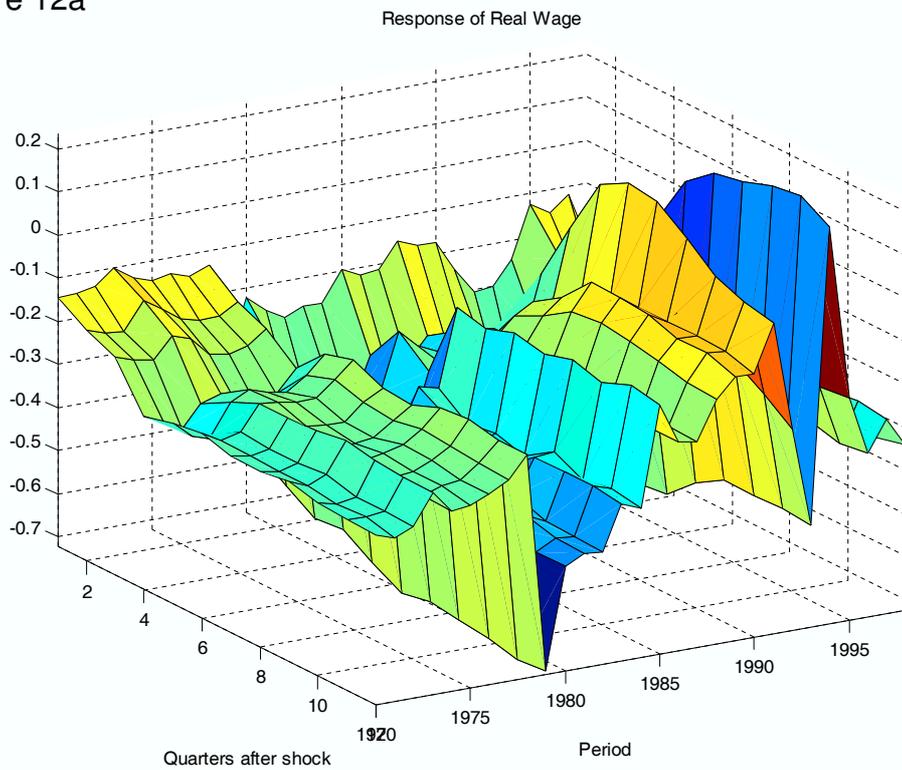


Figure 12b

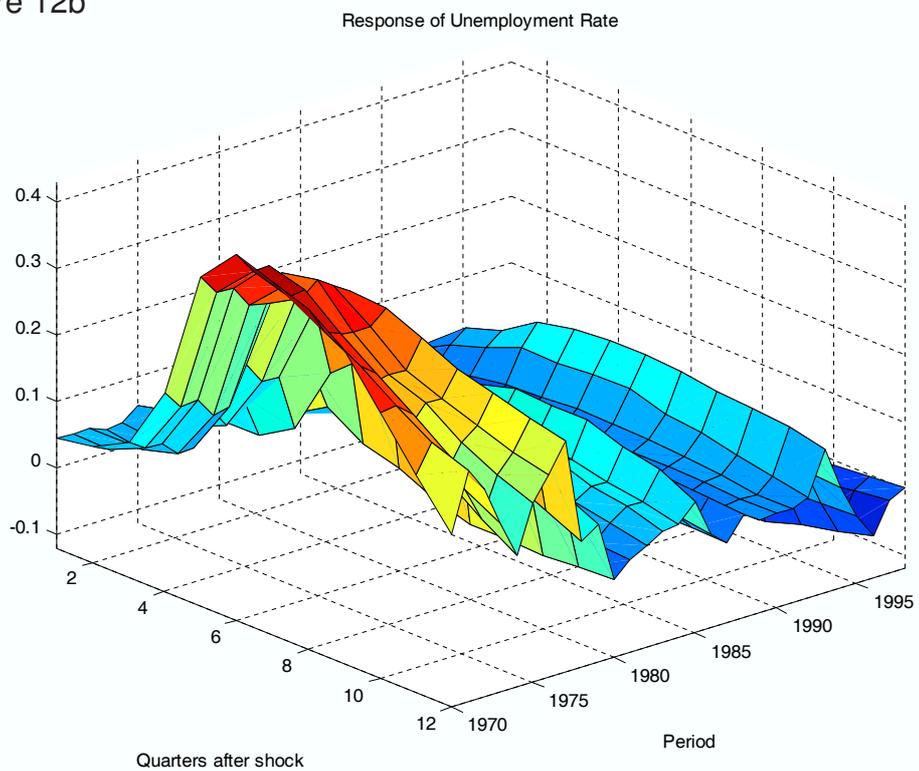
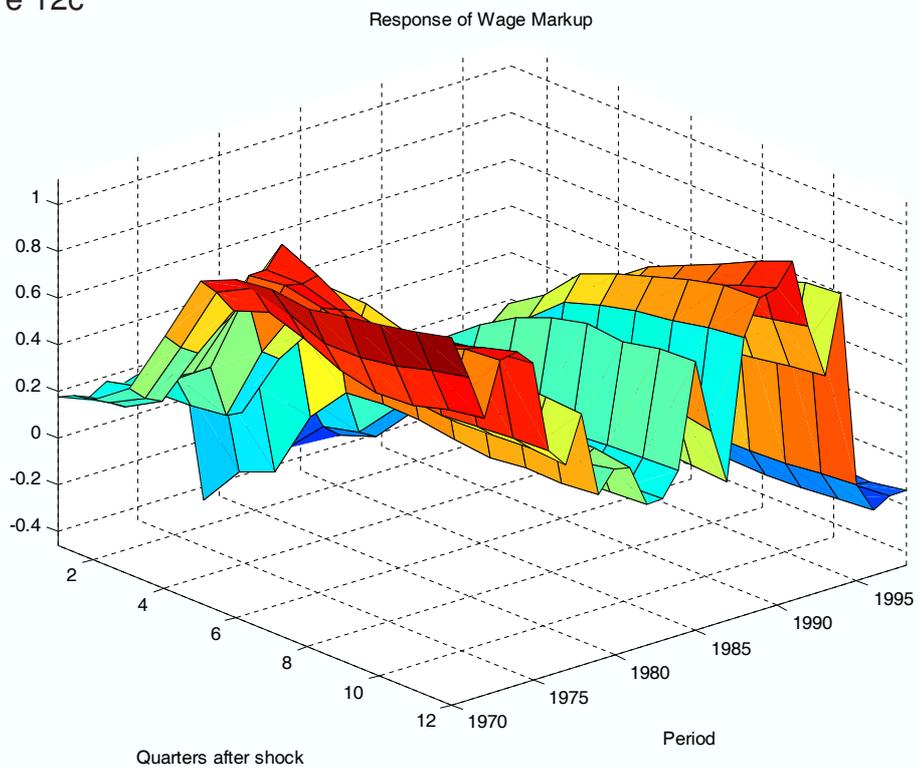


Figure 12c



## 6.2 Changes in Monetary Policy

A number of studies (e.g. Clarida, Galí, and Gertler (2000)) have provided evidence of a stronger interest rate response to variations in inflation over the past two decades, relative to the 1960s and 1970s. It should be clear, however, from the simulations of our model presented above that, other things equal, a stronger anti-inflationary stance should have reduced the volatility of inflation, but increased that of GDP. In other words, that evidence cannot explain—at least by itself—the lower volatility of both inflation and economic activity in response to oil price shocks.

In addition to this change in behavior, captured by the literature on empirical interest rate rules, there is also widespread agreement that central banks' commitment to keeping inflation low and stable has also become more credible over the past two decades, thanks to improved communications, greater transparency, the adoption of more or less explicit quantitative inflation targets and, ultimately, by the force of deeds. In this section we use the framework developed above to study the role that such an improvement in credibility may have had in accounting for the reduced impact of oil shocks.

We model credibility as follows: As in our baseline model we assume that the central bank follows an interest rate rule

$$i_t = \phi_\pi \pi_{q,t}$$

The public, however, is assumed to perceive that interest rate decisions are made according to

$$i_t = \phi_\pi (1 - \delta) \pi_{q,t} + v_t$$

where  $\{v_t\}$  is taken by the public to be an exogenous i.i.d monetary policy shock, and  $\delta \in [0, 1]$  can be interpreted as a measure of the credibility gap. Below we restrict ourselves to calibrations that guarantee a unique

equilibrium, which requires that the condition  $\phi_\pi(1 - \delta) > 1$  be met.<sup>12</sup>

In addition to the above actual and perceived policy rules, the model is exactly as the one developed above, with the dynamics of value added, domestic inflation, and the real price of oil summarized by equations (14)-(16). Solving the model for domestic inflation and value added gives:

$$\begin{aligned}\pi_{q,t} &= a s_t + b v_t \\ y_t &= c s_t + d v_t\end{aligned}$$

where  $a$ ,  $b$ ,  $c$ , and  $d$  are given by:

$$\begin{aligned}a &= \frac{(1 - \rho_s) (\kappa \alpha_m (1 - \alpha_m)^{-1} + \lambda_p \Gamma_s)}{(1 - \rho_s)(1 - \beta \rho_s) + (\phi_\pi(1 - \delta) - \rho_s)\kappa} > 0 \\ b &= - \frac{\kappa}{1 + \phi_\pi(1 - \delta)\kappa} < 0 \\ c &= \frac{\alpha_m(1 - \alpha_m)^{-1}(1 - \rho_s)(1 - \beta \rho_s) - (\phi_\pi(1 - \delta) - \rho_s)\lambda_p \Gamma_s}{(1 - \rho_s)(1 - \beta \rho_s) + (\phi_\pi(1 - \delta) - \rho_s)\kappa} \\ d &= - \frac{1}{1 + \phi_\pi(1 - \delta)\kappa}\end{aligned}$$

Imposing  $v_t = \delta \phi_\pi \pi_{H,t}$  into the solution (so that the central bank actually adheres to its chosen rule) we get

$$\pi_{q,t} = \frac{a}{1 - b\delta\phi_\pi} s_t$$

thus implying that CPI inflation is

$$\pi_{c,t} = \frac{a}{1 - b\delta\phi_\pi} s_t + \chi \Delta s_t$$

---

12. The hypothesis of an indeterminate equilibrium (and, hence, the possibility of sunspot fluctuations) in the first part of the sample could also potentially explain the greater volatility in both inflation and GDP, as emphasized by Clarida et al. (2000). We choose to pursue an alternative line of explanation here, which does not rely on multiplicity of equilibria.

Value added is then given by:

$$\begin{aligned}
 y_t &= c s_t + d\phi_\pi\delta \pi_{q,t} \\
 &= \left( c + \frac{da\phi_\pi\delta}{1 - b\delta\phi_\pi} \right) s_t
 \end{aligned}$$

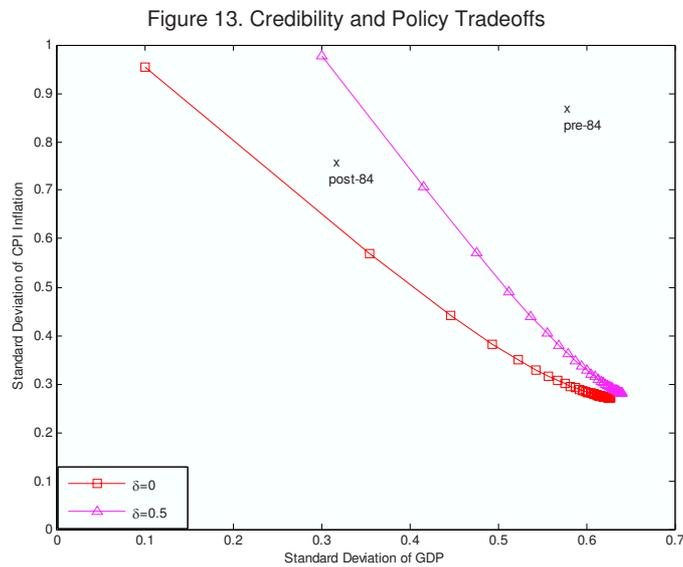


Figure 13 displays the loci of standard deviations of CPI inflation and GDP associated with  $\delta = 0$  and  $\delta = 0.5$ , i.e. corresponding to a full credibility and a low credibility environment respectively. In both cases we restrict  $\phi_\pi$  to values above 2 in order to guarantee a unique equilibrium. We set  $\gamma$  equal to 0.9, and calibrate the oil shares to their 1997 values. Two points are worth noting:

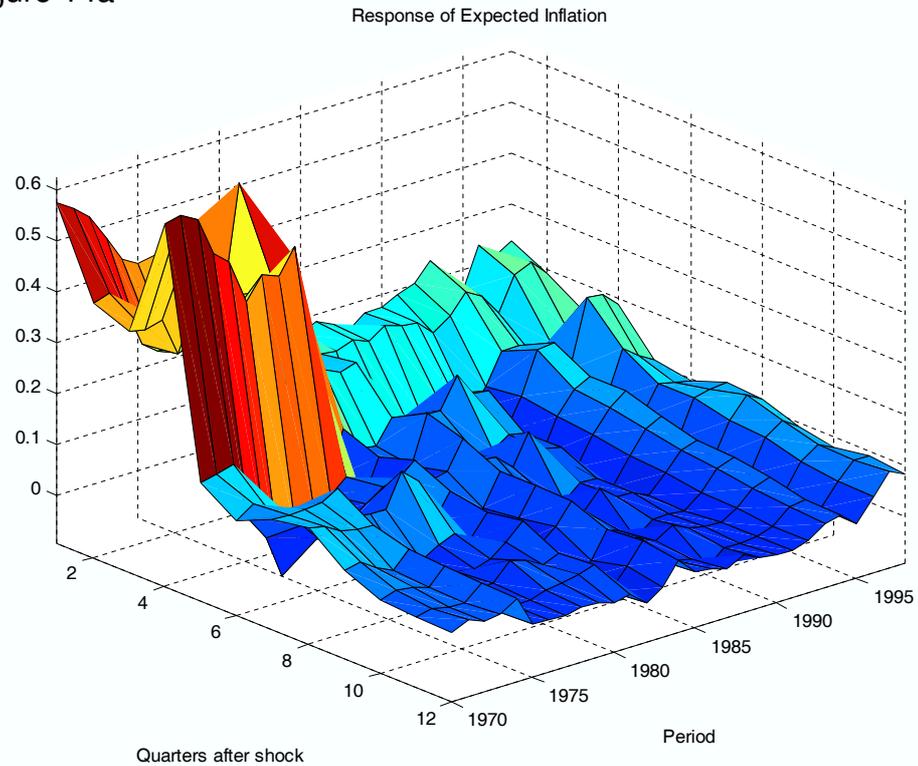
First, allowing for both real wage rigidities and poor credibility, the model's predictions come closer but still fall somewhat short of matching the (conditional) standard deviations of CPI inflation and GDP in our two samples,

represented by the two crosses. Given the primitive nature of the model, this may not be overly worrisome.

Second, credibility gains can improve the tradeoff facing policymakers significantly. The quantitative gains, however, do not seem sufficient to account, by themselves, for the observed decline in macro volatility in the face of oil shocks, documented earlier in the paper. But they show that improved credibility may certainly have contributed to that decline.

Figures 14a-c provides some evidence of the changes in the Fed's response to oil price shocks, as well as an indicator of potential changes in its credibility. The rolling IRFs displayed are based on estimated bivariate VARs with the price of oil and, one at a time, a measure of inflation expectations over the next 12 months from the Michigan Survey, the 3-month Treasury Bill rate, and the real interest rate (measured as the difference between the previous two variables).

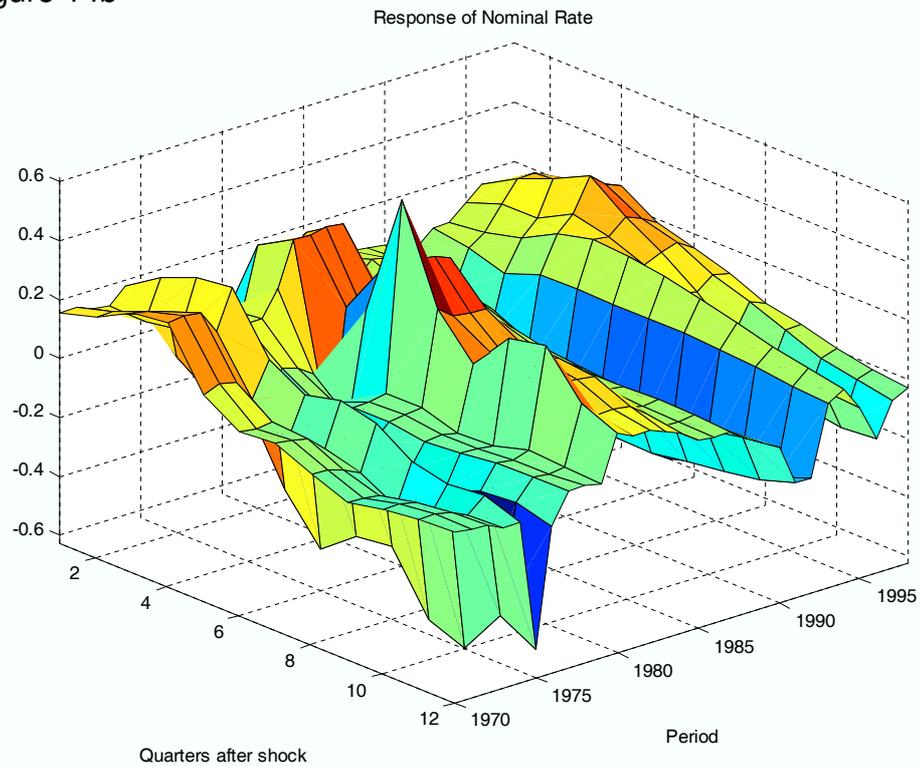
Figure 14a



First, and most noticeable, the response of expected inflation to an oil price shock of the same size (normalized here to 10 percent rise) has shrunk dramatically over time, from a rise of about 50 basis points in the 1970s, to about 20 basis points since the mid-1980s, and has remained remarkably stable after that.

Second, and perhaps surprisingly, the strength of the response of the nominal interest rate has not changed much across sample periods. The shrinking response of expected inflation implies, however, that the response of the real rate to an oil price shock has become stronger over time. In fact,

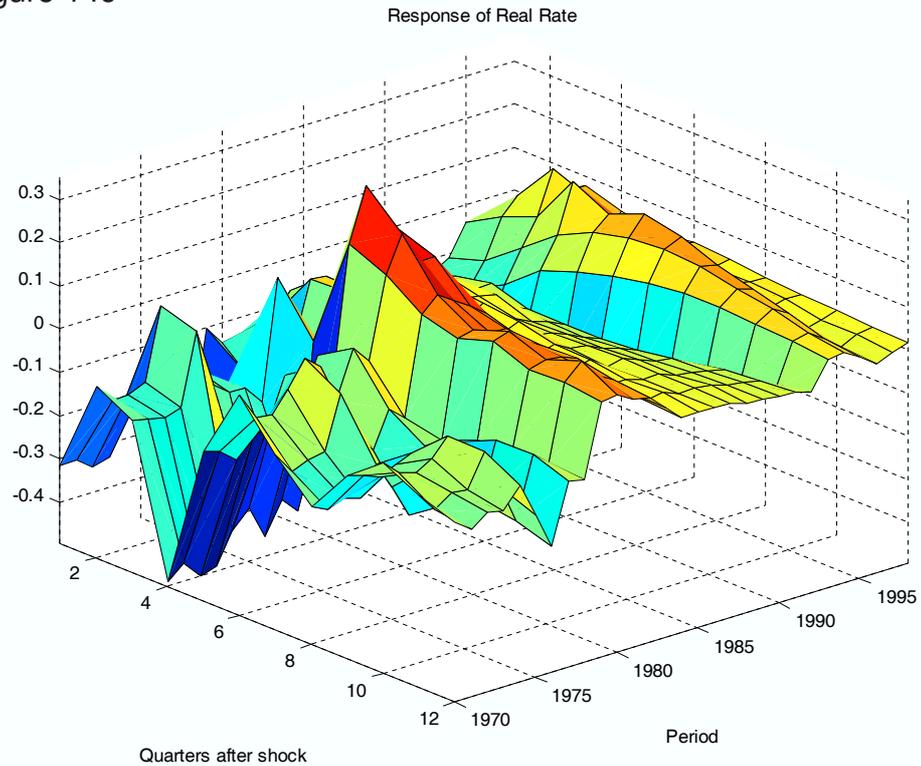
Figure 14b



the real rate appears to decline significantly in response to an oil price shock in the 1970s, an observation consistent with the (unconditional) evidence in Clarida et al. (2000). This decline may have contributed to the large and persistent increase in inflation. It also suggests that had the Fed pursued a stronger anti-inflationary policy (keeping credibility unchanged) the adverse effects on output and inflation would have been even larger.<sup>13</sup>

13. Note that, for the most recent period, the real interest rate shows very little change in response to an oil price shock. There are several explanations for this finding. First, as shown above, several measures of inflation (including expected inflation and GDP deflator inflation) hardly change in response to the oil price rise. If the Fed responds to those measures, the required adjustment in the nominal and real rates will be relatively

Figure 14c



To summarize the lessons from the analysis above: While the weak response of inflation to oil price shocks in recent years is often interpreted as a consequence of a stronger anti-inflation stance by the Fed (a higher  $\phi_\pi$ , in the context of our model), the evidence of a smaller decline in employment and GDP suggests that an enhanced anti-inflation credibility may also have played a role. The sharp decline in the response of inflation expectations to an oil price shock is certainly consistent with this view.

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small. Secondly, the Fed may also adjust rates in response to measures of economic activity. The decline in GDP and employment may thus have induced an interest rate movement in the opposite direction, with the net effect being close to zero.

### 6.3 Declining Oil Shares

A third hypothesis for the improved policy tradeoff is that the share of oil in consumption and in production is smaller today than it was in the 1970s. To examine the possible impact of these changes we simulate two alternative versions of our model, with  $\alpha_m$  and  $\chi$  calibrated using 1973 and 1997 data on the share of oil in production costs and consumption expenditures (see Appendix 2 for details of construction). In light of this evidence we choose  $\alpha_m = 1.5\%$  and  $\chi = 2.3\%$  (1973 data) for the 1970s, and  $\alpha_m = 1.2\%$  and  $\chi = 1.7\%$  (based on data for 1997) for our two calibrations.

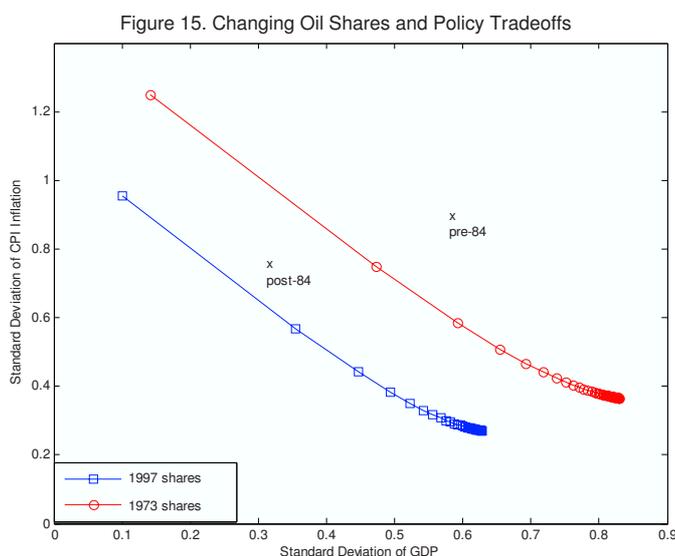
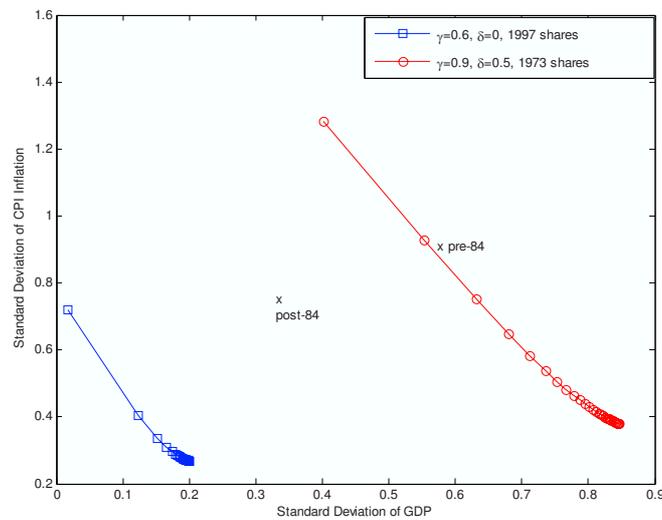


Figure 15 displays CPI inflation and GDP volatility for the two calibrations, keeping the index of real wage rigidities unchanged at  $\gamma = 0.9$  (and  $\delta = 0$ ). The conclusion is similar to those reached for the other two candidate explanations. The reduction in the oil shares in consumption and production cannot account for the full decline in volatility, but it clearly accounts for part of it. (The values of  $\alpha_m$  and  $\chi$  in 1977, thus after the first but before the second oil shock, were 1.8% and 3.6% respectively. This sug-

gests that, other things equal, the second oil shock should have had larger effects than the first. As we saw earlier, the opposite appears to be true.)

The analysis above has examined the effects on CPI inflation and GDP volatility of changes in one parameter at a time. Figure 16 shows the combined effect of a simultaneous change in the three parameters. The first calibration, which is meant to roughly capture the 1970s environment, assumes strong wage rigidities ( $\gamma = 0$ ), limited central bank credibility ( $\delta = 0.5$ ), and the 1973 oil shares. The second calibration assumes mild wage rigidities ( $\gamma = 0.6$ ), full credibility ( $\delta = 0$ ), and the 1997 oil shares. The figure shows that the combination of the three changes in the environment we have focused on can in principle more than account for the improvement in the trade-off observed in the data.

Figure 16. Combined Effects



## 7 Concluding Comments

We have reached five main conclusions:

First, that the effects of oil price shocks must have coincided in time with large shocks of a different nature. Given our partial identification strategy, we have not identified these other shocks. We have given some evidence that increases in other commodity prices were important in the 1970s. We have not identified the other shocks for the 2000s.

Second, that the effects of oil price shocks have changed over time, with steadily smaller effects on prices and wages, as well as on output and employment.

Third, that a first plausible cause for these changes is a decrease in real wage rigidities. Such rigidities are needed to generate the type of large stagflation in response to adverse supply shocks such as those that took place in the 1970s. We have shown that the response of the consumption wage to the marginal rate of substitution, and thus to employment, appears to have increased over time.

Fourth, that a second plausible cause for these changes is the increased credibility of monetary policy. We have offered a simple formalization of lack of credibility and its effect on the volatility frontier. We have shown that the response of expected inflation to oil shocks has substantially decreased over time.

Fifth, that a third plausible cause for these changes is simply the decrease in the share of oil in consumption and in production. The decline is large enough to have quantitatively significant implications.

Despite the length of the paper, we are conscious, however, of the limitations of our arguments. Some of the evidence, for example, the IRF evidence for Japan, does not fit our story. The model we have developed is too primitive in many dimensions, and its quantitative implications must be taken with caution. The development of a richer model, at least with respect to the specification of production, and of real wage rigidities, and its estimation, seem the natural next steps to check the conclusions reached

above. The different implications of the various candidate hypotheses for the shape of impulse response functions in response to changes in the price of oil makes us hopeful that structural estimation can succeed in identifying their respective importance.

## Appendix 1: A New-Keynesian Model for an Oil-Importing Economy

The present appendix describes in more detail the model used in Section 5 and derives the equilibrium conditions underlying the simulations in the main text.

### Households

We assume a continuum of identical infinitely-lived households. Each household seeks to maximize

$$E_0 \sum_{t=0}^{\infty} \beta^t U(C_t, N_t)$$

where

$$C_t \equiv \Theta_{\chi} C_{m,t}^{\chi} C_{q,t}^{1-\chi}$$

and where  $C_{m,t}$  denotes consumption of (imported) oil,  $C_{q,t} \equiv \left( \int_0^1 C_{q,t}(i)^{1-\frac{1}{\epsilon}} di \right)^{\frac{\epsilon}{\epsilon-1}}$  is a CES index of domestic goods,  $N_t$  denotes employment or hours worked, and  $\Theta_{\chi} \equiv \chi^{-\chi}(1-\chi)^{-(1-\chi)}$ .

We assume that period utility is given by

$$U(C_t, N_t) \equiv \log C_t - \frac{N_t^{1+\phi}}{1+\phi}$$

The period budget constraint, conditional on optimal allocation of expenditures among different domestic goods (not derived here) is given by:

$$P_{q,t}C_{q,t} + P_{m,t}C_{m,t} + Q_t^B B_t = W_t N_t + B_{t-1} + \Pi_t$$

where  $P_{q,t} \equiv \left( \int_0^1 P_{q,t}(i)^{1-\epsilon} di \right)^{\frac{1}{1-\epsilon}}$  is a price index for domestic goods,  $P_{m,t}$  is the price of oil (in domestic currency), and  $W_t$  is the nominal wage.  $Q_t^B$  is the price of a one-period nominally riskless domestic bond, paying one

unit of domestic currency.  $B_t$  denotes the quantity of that bond purchased in period  $t$ . For simplicity we assume no access to international financial markets.

The optimal allocation of expenditures between imported and domestically produced good implies

$$P_{q,t}C_{q,t} = (1 - \chi) P_{c,t}C_t$$

$$P_{m,t}C_{m,t} = \chi P_{c,t}C_t$$

where  $P_{c,t} \equiv P_{m,t}^\chi P_{q,t}^{1-\chi}$  is the CPI index. Note that  $\chi$  corresponds, in equilibrium, to the share of oil in consumption. Note also that  $P_{c,t} \equiv P_{q,t} S_t^\chi$ , where  $S_t \equiv \frac{P_{m,t}}{P_{q,t}}$  denotes the real price of oil, expressed in terms of domestically produced goods. Taking logs,

$$p_{c,t} = p_{q,t} + \chi s_t$$

where  $s_t \equiv p_{m,t} - p_{q,t}$  is the log of the real price of oil (measured in terms of domestic goods).

Furthermore, and conditional on an optimal allocation between the two types of goods, we have  $P_{q,t}C_{q,t} + P_{m,t}C_{m,t} = P_{c,t}C_t$ , which can be substituted into the budget constraint. The resulting constraint can then be used to derive the household's remaining optimality conditions. The intertemporal optimality condition is given by:

$$Q_t^B = \beta E_t \left\{ \frac{C_t}{C_{t+1}} \frac{P_{c,t}}{P_{c,t+1}} \right\}$$

Under the assumption of perfect competition in labor markets (to be relaxed below), the household's intratemporal optimality condition is given

by

$$\frac{W_t}{P_{c,t}} = C_t N_t^\phi \equiv MRS_t$$

which is the perfectly competitive labor supply schedule. The log-linearized version of the previous two equations, found in the text, are given by:

$$c_t = E_t\{c_{t+1}\} - (i_t - E_t\{\pi_{c,t+1}\} - \rho) \quad (18)$$

$$w_t - p_{c,t} = c_t + \phi n_t \quad (19)$$

where we use lower-case letters to denote the logarithms of the original variables, and where  $\pi_{c,t} \equiv p_{c,t} - p_{c,t-1}$  represents CPI inflation.

#### *Firms*

Each firm produces a differentiated good indexed by  $i \in [0, 1]$  with a production function

$$Q_t(i) = A_t M_t(i)^{\alpha_m} N_t(i)^{\alpha_n}$$

where  $\alpha_m + \alpha_n \leq 1$ .

Independently of how prices are set, and assuming that firms take the price of both inputs as given, cost minimization implies that firm  $i$ 's nominal marginal cost  $\Psi_t(i)$  is given by:

$$\Psi_t(i) = \frac{W_t}{\alpha_n(Q_t(i)/N_t(i))} = \frac{P_{m,t}}{\alpha_m(Q_t(i)/M_t(i))} \quad (20)$$

Letting  $\mathcal{M}_t^p(i) \equiv P_{q,t}(i)/\Psi_t(i)$  denote firm  $i$ 's gross markup, we have

$$\mathcal{M}_t^p(i) S_t M_t(i) = \alpha_m Q_t(i) \frac{P_{q,t}(i)}{P_{q,t}}$$

Let  $Q_t \equiv \left( \int_0^1 Q_t(i)^{1-\frac{1}{\epsilon}} di \right)^{\frac{\epsilon}{\epsilon-1}}$  denote aggregate gross output. It follows

that

$$M_t = \frac{\alpha_m Q_t}{\mathcal{M}_t^p S_t} \quad (21)$$

where we have used the fact that  $Q_t(i) = (P_{q,t}(i)/P_{q,t})^{-\epsilon} Q_t$  (the demand schedule facing firm  $i$ ), and defined  $\mathcal{M}_t^p$  as the average gross markup, weighted by firms' input shares.

Taking logs and ignoring constants

$$m_t = -\mu_t^p - s_t + q_t$$

where  $\mu_t^p \equiv \log \mathcal{M}_t^p$ . The latter expression can be plugged back into the (log linearized) aggregate production function to yield the reduced form gross output equation

$$q_t = \frac{1}{1 - \alpha_m} (a_t + \alpha_n n_t - \alpha_m s_t - \alpha_m \mu_t^p) \quad (22)$$

### *Consumption and Gross Output*

Note that in an equilibrium with balanced trade (and hence  $B_t = 0$ ) the following relation must hold:

$$\begin{aligned} P_{c,t} C_t &= P_{q,t} Q_t - P_{m,t} M_t \\ &= \left(1 - \frac{\alpha_m}{\mathcal{M}_t^p}\right) P_{q,t} Q_t \end{aligned}$$

where we have used (21) to derive the second equality. Taking logs and using the relations between the different price indexes, we obtain

$$c_t = q_t - \chi s_t + \eta \mu_t^p \quad (23)$$

where  $\eta \equiv \frac{\alpha_m}{\mathcal{M}^p - \alpha_m}$  and  $\mathcal{M}^p$  denotes the steady state markup.

Combining (22) and (23), and invoking the fact that  $\left(\frac{\alpha_m}{\mathcal{M}^p - \alpha_m} - \frac{\alpha_m}{1 - \alpha_m}\right) \mu_t^p \simeq 0$  for plausibly low values of  $\alpha_m$  and the net markup measures  $\mathcal{M}^p - 1$  and  $\mu_t^p$ , we can write

$$c_t = \frac{1}{1 - \alpha_m} a_t + \frac{\alpha_n}{1 - \alpha_m} n_t - \left(\frac{\alpha_m}{1 - \alpha_m} + \chi\right) s_t \quad (24)$$

### *Gross Output, Value Added, and the GDP Deflator*

The GDP deflator  $P_{y,t}$  is implicitly defined by

$$P_{q,t} \equiv (P_{y,t})^{1 - \alpha_m} (P_{m,t})^{\alpha_m}$$

Taking logs and using the definition of the terms of trade  $s_t$

$$p_{y,t} = p_{q,t} - \frac{\alpha_m}{1 - \alpha_m} s_t$$

Value added (or GDP),  $Y_t$ , is then defined by

$$\begin{aligned} P_{y,t} Y_t &\equiv P_{q,t} Q_t - P_{m,t} M_t \\ &= \left(1 - \frac{\alpha_m}{\mathcal{M}_t^p}\right) P_{q,t} Q_t \end{aligned}$$

which can be log linearized to yield

$$\begin{aligned} y_t &= q_t + \frac{\alpha_m}{1 - \alpha_m} s_t + \eta \mu_t^p \\ &= \frac{1}{1 - \alpha_m} (a_t + \alpha_n n_t) \end{aligned}$$

where the last equality uses the approximation invoked above.

Note that combining the above expressions for consumption and value

added we can obtain the following relation between the two

$$c_t = y_t - \left( \frac{\alpha_m}{1 - \alpha_m} + \chi \right) s_t$$

### Price Setting

Here we assume that firms set prices in a staggered fashion, as in Calvo (1983). Each period only a fraction  $1 - \theta$  of firms, selected randomly, reset prices. The remaining firms, with measure  $\theta$ , keep their prices unchanged. The optimal price setting rule for a firm resetting prices in period  $t$  is given by

$$E_t \left\{ \sum_{k=0}^{\infty} \theta^k \Lambda_{t,t+k} Q_{t+k|t} \left( P_t^* - \mathcal{M}^p \Psi_{t+k|t} \right) \right\} = 0 \quad (25)$$

where  $P_t^*$  denotes the price newly set at time  $t$ ,  $Q_{t+k|t}$  and  $\Psi_{t+k|t}$  are respectively the level of output and marginal cost in period  $t+k$  for a firm that last set its price in period  $t$ , and  $\mathcal{M}^p \equiv \epsilon/(\epsilon - 1)$  is the desired gross markup. Note that the latter also corresponds to the gross markup in the zero inflation perfect foresight steady state.

The domestic price level evolves according to the difference equation

$$P_{q,t} = \left[ \theta (P_{q,t-1})^{1-\epsilon} + (1 - \theta) (P_t^*)^{1-\epsilon} \right]^{\frac{1}{1-\epsilon}} \quad (26)$$

Combining the log-linearized version of (25) and (26) around a zero inflation steady state, yields the following equation for domestic inflation,  $\pi_{q,t} \equiv p_{q,t} - p_{q,t-1}$ :

$$\pi_{q,t} = \beta E_t \{ \pi_{q,t+1} \} - \lambda_p \widehat{\mu}_t^p \quad (27)$$

where  $\widehat{\mu}_t^p \equiv \mu_t^p - \mu^p$  denotes the (log) deviation of the average markup from its desired level, and  $\lambda_p \equiv \frac{(1-\theta)(1-\beta\theta)}{\theta} \frac{1-\alpha_k}{1-\alpha_k+\alpha_k\epsilon}$ .

## Appendix 2. Computation of the Oil Share

We think of the U.S. economy as having two sectors, an oil-producing sector and a non-oil producing sector. We define the oil producing sector as the sum of the “oil and gas extraction” sector (NAIC code 211) and the “petroleum and coal” sector (NAIC code 324). (“Petroleum refineries”, a subsector of “petroleum and coal” is available only for benchmark years, the last available one being 1997. It represents 85% of the gross output of the “petroleum and coal” sector.) We define the non-oil producing sector as the rest of the economy.

To compute relevant numbers for 2005, we use data from the IO tables from the BEA site.

In 2005, “oil and gas extraction” output was \$227b, imports were \$223b, for a total of \$450b. Of this total, \$5b was for domestic final uses, \$440b was for intermediates, of which \$259 went to “Petroleum and coal”, and \$181b went to the non-oil sector. Petroleum and coal output was \$402b, imports were \$65b, for a total of \$467b. Of this total, \$167 was for domestic final uses, \$279b for intermediates to the non-oil producing sector.

In 2005, total U.S. value added was \$12,455b. Value added by “oil and gas” was \$12b, value added by “petroleum and coal” was \$12b, so value added in the non oil-producing sector was \$12,431b.

These numbers imply a value for  $\chi$  of  $(181+279)/(12,431+181+279)=3.5\%$ , and an estimate of  $\alpha$  is  $(5+167)/(12,431+181+279)=1.3\%$ .

The shares obviously depend very much on the price of oil. The same computation for the benchmark year of 1997 (which allows us to use “petroleum refining” rather than “petroleum and coal” together) gives 1.7% and 1.2% respectively.

For the years 1973 and 1977, sectors are classified according to industry number codes. We construct the oil-producing sector as the sum of

of “crude petroleum and natural gas” (1977 industry number 8) and “petroleum refining” (1977 industry number 31). The same steps as above yield  $\chi = 2.3\%$  and  $\alpha = 1.5\%$  in 1973, and  $\chi = 3.6\%$  and  $\alpha = 1.8\%$  in 1977.

## REFERENCES

- Barsky, Robert, and Lutz Killian (2002): "Do We Really Know that Oil Caused the Great Stagflation? A Monetary Alternative," *NBER Macroeconomics Annual 2001*, May, 137-183.
- Bernanke, Ben, Mark Gertler, and Mark Watson, (1997): "Systematic Monetary Policy and the Effects of Oil Shocks," *Brookings Papers on Economic Activity*, 1997-1, 91-157.
- Blanchard, Olivier, and John Simon (2001): "The Long and Large Decline in U.S. Output Volatility," *Brookings Papers on Economic Activity*, 2001-1, 135-174.
- Blanchard, Olivier, and Jordi Gali (2007): "Real wage rigidities and the New-Keynesian model," *Journal of Money, Credit, and Banking*, forthcoming.
- Bruno, Michael, and Jeffrey Sachs, (1985): *Economics of Worldwide Stagflation*, Harvard University Press: Cambridge Massachusetts.
- Calvo, Guillermo (1983): "Staggered Contracts in a Utility-Maximizing Framework," *Journal of Monetary Economics*, September, 12, 383-398.
- Carter, David, Daniel Rogers, and Betty Simkins, (2006): "Does Fuel Hedging Make Economic Sense? The Case of the U.S. Airline Industry," *Financial Management*, 35-1, Spring.
- Carter, David, Daniel Rogers, and Betty Simkins, (2006): "Hedging and Value in the U.S. Airline Industry," *Journal of Applied Corporate Finance*, 18-4, 21-33, Fall.
- Castelnuovo, Efrem, Sergio Nicoletti-Altimari, and Diego Rodriguez-Palenzuela (2003): "Definition of Price Stability, Range and Point Inflation Targets: The Anchoring of Long Term Inflation Expectations," in *Background Studies for the ECB's Evaluation of its Monetary Policy Strategy*.

Clarida, Richard, Jordi Gali, and Mark Gertler (2000): "Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory," *Quarterly Journal of Economics*, 115-1, February, 147-180.

De Gregorio, José, Oscar Landerretche, and Christopher Neilson (2007): "Another Passthrough Bites the Dust? Oil Prices and Inflation," mimeo.

Edelstein, Paul, and Lutz Kilian (2007): "Retail Energy Prices and Consumer Expenditures," University of Michigan, mimeo.

Erceg, Christopher, Dale Henderson and Andrew Levin (2000): "Optimal Monetary Policy with Staggered Wage and Price Contracts," *Journal of Monetary Economics*, 46, 281-313.

Finn, Mary G. (2000): "Perfect Competition and the Effects of Energy Price Increases on Economic Activity," *Journal of Money Credit and Banking*, vol. 32, no. 3., 400-416.

Hamilton, James (1983): "Oil and the Macroeconomy since World War II," *Journal of Political Economy*, April 1983, 228-248

Hamilton, James (1996): "This is What Happened to the Oil Price Macroeconomy Relationship," *Journal of Monetary Economics*, vol 38, no2, October, 215-220.

Herrera, Ana María and Elena Pesavento (2007): "Oil Price Shocks, Systematic Monetary Policy, and the Great Moderation," Michigan State University, unpublished manuscript.

Hooker, Mark A. (1996): "What Happened to the Oil Price Macroeconomy Relationship?," *Journal of Monetary Economics*, 38, 195-213.

Hooker, Mark A. (2002): "Are Oil Shocks Inflationary? Asymmetric and Nonlinear Specifications versus Changes in Regime," *Journal of Money, Credit and Banking*, vol. 34, no. 2, 540-561.

Kilian, Lutz (2006): "Not All Oil Price Shocks Are Alike: Disentangling

Demand and Supply Shocks in the Crude Oil Market,” CEPR Discussion Paper 5994.

Kilian, Lutz (2007): “A Comparison of the Effects of Exogenous Oil Supply Shocks on Output and Inflation in the G7 Countries,” *Journal of the European Economic Association*, forthcoming.

Levin, Andrew T., Fabio M. Natalucci, and Jeremy M. Piger (2004): “The Macroeconomic Effects of Inflation Targeting,” *Federal Reserve Bank of St. Louis Review*, vol. 86, no. 4, 51-80.

Mankiw, N. Gregory (2006): *Macroeconomics*, 6th edition, Worth Publishers.

McConnell, Margaret, and Gabriel Perez-Quiros (2000): “Output Fluctuations in the United States; What Has Changed Since the Early 1980s?,” *American Economic Review*, 90-5, December, 1464-1476.

Rotemberg, Julio and Michael Woodford (1996): “Imperfect Competition and the Effects of Energy Price Increases on Economic Activity,” *Journal of Money, Credit and Banking*, vol. 28, no. 4, 549-577.

Stock, James, and Mark Watson (2003): “Has the Business Cycle Changed and Why?,” *Federal Reserve Bank of Kansas City*, 9-56.

# LAUREL EXHIBIT MJW-13

Analysis of Weekly Retail Gasoline Prices (All Grades, All Formulations)						
Year	Standard Deviation (USD/gal)			Skew (USD <sup>3</sup> /gal <sup>3</sup> )		
	East Coast	Midwest	Difference	East Coast	Midwest	Difference
2021	0.301	0.287	-0.014	-0.605	-1.136	-0.531
2022	0.493	0.534	0.042	0.468	0.379	-0.089
2023	0.167	0.226	0.059	0.237	-0.432	-0.669
2024	0.188	0.234	0.046	0.101	-0.162	-0.263
2025	0.035	0.057	0.022	0.552	-0.192	-0.743

Weekly Prices Data, 2021-Present:	243
East Coast > Midwest, 2021-Present:	190

# LAUREL EXHIBIT MJW-14

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire	:	
Terminals, LLC, Sheetz, Inc. and PBF	:	
Holding Company LLC	:	
	:	Docket No. C-2025-3053018
Complainants,	:	
	:	
v.	:	
	:	
Laurel Pipe Line Company, L.P.	:	
	:	
Respondent.	:	

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**RESPONSES OF  
SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
BY LAUREL PIPE LINE COMPANY, L.P., SET II**

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**RESPONSES OF SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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**NOTE: All responses are based on information that has been reviewed as of the date of the response. We reserve all rights to supplement the response if and as additional information becomes available.**

11. With regard to Mr. Jadlocki's statement that a pipeline outage "allows Midwest refiners to immediately increase product costs" as well as his discussion of Gulf Coast and other alternatives in Exhibit JDJ-1 at 4:21-5-9:
- a) Please provide in machine readable form, all prices at which Sheetz has purchased refined product in the Midwest, Gulf Coast and East Coast from 2019 to the present.
  - b) Please identify and describe with specificity all instances where Mr. Jadlocki has personal knowledge of a Midwestern refiner raising prices of refined petroleum products following a pipeline outage.

**RESPONSE:**

- a) Sheetz has submitted an objection to this question. No answer to be provided.
- b) Sheetz is not aware of specific examples applicable to the instances in question.

**Provided By:**

Adeolu Bakare, Counsel for Sheetz, Inc.  
Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 11, 2025

**UPDATED RESPONSE:**

- a) As clarified through discussion with Laurel, the question is understood to request pricing for instances where Midwestern refiners immediately increased product costs as a result of a pipeline outage. Mr. Jadlocki's testimony referenced circumstances that he believes incentivize Midwestern refiners to increase prices. He has no direct examples of a Midwest refiner attributing a price increase to an outage and thus cannot provide pricing for such an occurrence.

**Provided By:**

Adeolu Bakare, Counsel for Sheetz, Inc.  
Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 25, 2025

# LAUREL EXHIBIT MJW-15

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire	:	
Terminals, LLC, Sheetz, Inc. and PBF	:	
Holding Company LLC	:	
	:	Docket No. C-2025-3053018
Complainants,	:	
	:	
v.	:	
	:	
Laurel Pipe Line Company, L.P.	:	
	:	
Respondent.	:	

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**RESPONSES OF  
SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
BY LAUREL PIPE LINE COMPANY, L.P., SET II**

---

**RESPONSES OF SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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14. Please provide all management level presentations from 2019 to the present that discuss issues related to transit time on Laurel.

**RESPONSE:**

Sheetz has no documents responsive to this request.

**Provided By:**

Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 11, 2025

**RESPONSES OF SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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15. Please provide all management level presentations from 2019 to the present that discuss where to source supply to terminals used by Sheetz, Inc.

**RESPONSE:**

Sheetz has no documents responsive to this request.

**Provided By:**

Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 11, 2025

**RESPONSES OF SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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16. Please provide all management level presentations from 2019 to the present that discuss Mid-western refineries.

**RESPONSE:**

Sheetz has no documents responsive to this request.

**Provided By:**

Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 11, 2025

**RESPONSES OF SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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17. Please provide all management level presentations from 2019 to the present that discuss East Coast refineries.

**RESPONSE:**

Sheetz has no documents responsive to this request.

**Provided By:**

Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 11, 2025

**RESPONSES OF SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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18. Please provide all management level presentations from 2019 to the present that discuss supplying refined product to Sheetz from Colonial Pipeline.

**RESPONSE:**

Sheetz has no documents responsive to this request.

**Provided By:**

Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 11, 2025

**RESPONSES OF SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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19. Please provide all management level presentations from 2019 to the present that discuss pro-rationing on Colonial.

**RESPONSE:**

Sheetz has no documents responsive to this request.

**Provided By:**

Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 11, 2025

**RESPONSES OF SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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20. Please provide all management level presentations from 2019 to the present that discuss supplying refined product delivered by waterborne vessel into an East Coast port.

**RESPONSE:**

Sheetz has no documents responsive to this request.

**Provided By:**

Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 11, 2025

**RESPONSES OF SHEETZ, INC.  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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21. Please provide all management level presentations from 2019 to the present that discuss supplying refined product delivered by waterborne on the Ohio River

**RESPONSE:**

Sheetz has no documents responsive to this request.

**Provided By:**

Joshua Jadlocki, Petroleum Products Scheduling Manager, Sheetz, Inc.

**Date:** August 11, 2025

# LAUREL EXHIBIT MJW-16

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire	:	
Terminals, LLC, LHT, Inc. and PBF Holding	:	
Company LLC	:	
	:	Docket No. C-2025-3053018
Complainants,	:	
	:	
v.	:	
	:	
Laurel Pipe Line Company, L.P.	:	
	:	
Respondent.	:	

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**RESPONSES OF  
LUCKNOW-HIGHSPIRE TERMINALS, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
BY LAUREL PIPE LINE COMPANY, L.P., SET II**

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**UPDATED RESPONSES OF  
LUCKNOW-HIGHSPIRE TERMINALS, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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13. Please provide all management level presentations from 2019 to the present that discuss issues related to transit time on Laurel.

**RESPONSE (8/6/25):**

LHT has submitted an objection to this question. No answer to be provided.

**SUPPLEMENTAL RESPONSE (8/14/25):**

LHT has no documents responsive to this request.

**Provided By:**

Shauna Huzicko, Vice President – Trading and Supply, Lucknow-Highspire Terminals, LLC

**UPDATED RESPONSES OF  
LUCKNOW-HIGHSPIRE TERMINALS, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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14. Please provide all management level presentations from 2019 to the present that discuss where to source supply to the LHT terminals.

**RESPONSE (8/6/25):**

LHT has submitted an objection to this question. No answer to be provided.

**SUPPLEMENTAL RESPONSE (8/14/25):**

LHT has no documents responsive to this request.

**Provided By:**

Shauna Huzicko, Vice President – Trading and Supply, Lucknow-Highspire Terminals, LLC

**UPDATED RESPONSES OF  
LUCKNOW-HIGHSPIRE TERMINALS, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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15. Please provide all management level presentations from 2019 to the present that discuss Mid-western refineries.

**RESPONSE (8/6/25):**

LHT has submitted an objection to this question. No answer to be provided.

**SUPPLEMENTAL RESPONSE (8/14/25):**

LHT has no documents responsive to this request.

**Provided By:**

Shauna Huzicko, Vice President – Trading and Supply, Lucknow-Highspire Terminals, LLC

**UPDATED RESPONSES OF  
LUCKNOW-HIGHSPIRE TERMINALS, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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16. Please provide all management level presentations from 2019 to the present that discuss East Coast refineries.

**RESPONSE (8/6/25):**

LHT has submitted an objection to this question. No answer to be provided.

**SUPPLEMENTAL RESPONSE (8/14/25):**

LHT has no documents responsive to this request.

**Provided By:**

Shauna Huzicko, Vice President – Trading and Supply, Lucknow-Highspire Terminals, LLC

**UPDATED RESPONSES OF  
LUCKNOW-HIGHSPIRE TERMINALS, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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17. Please provide all management level presentations from 2019 to the present that discuss supplying refined product from Colonial Pipeline.

**RESPONSE (8/6/25):**

LHT has submitted an objection to this question. No answer to be provided.

**SUPPLEMENTAL RESPONSE (8/14/25):**

LHT has no documents responsive to this request.

**Provided By:**

Shauna Huzicko, Vice President – Trading and Supply, Lucknow-Highspire Terminals, LLC

**UPDATED RESPONSES OF  
LUCKNOW-HIGHSPIRE TERMINALS, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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18. Please provide all management level presentations from 2019 to the present that discuss pro-rationing on Colonial Pipeline.

**RESPONSE (8/6/25):**

LHT has submitted an objection to this question. No answer to be provided.

**SUPPLEMENTAL RESPONSE (8/14/25):**

LHT has no documents responsive to this request.

**Provided By:**

Shauna Huzicko, Vice President – Trading and Supply, Lucknow-Highspire Terminals, LLC

**UPDATED RESPONSES OF  
LUCKNOW-HIGHSPIRE TERMINALS, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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19. Please provide all management level presentations from 2019 to the present that discuss supplying refined product delivered by waterborne vessel into an East Coast port.

**RESPONSE (8/6/25):**

LHT has submitted an objection to this question. No answer to be provided.

**SUPPLEMENTAL RESPONSE (8/14/25):**

LHT has no documents responsive to this request.

**Provided By:**

Shauna Huzicko, Vice President – Trading and Supply, Lucknow-Highspire Terminals, LLC

**UPDATED RESPONSES OF  
LUCKNOW-HIGHSPIRE TERMINALS, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

---

20. Please provide all management level presentations from 2019 to the present that discuss supplying refined product delivered by waterborne on the Ohio River.

**RESPONSE (8/6/25):**

LHT has submitted an objection to this question. No answer to be provided.

**SUPPLEMENTAL RESPONSE (8/14/25):**

LHT has no documents responsive to this request.

**Provided By:**

Shauna Huzicko, Vice President – Trading and Supply, Lucknow-Highspire Terminals, LLC

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire	:	
Terminals, LLC, Sheetz, Inc. and PBF	:	
Holding Company LLC	:	
	:	Docket No. C-2025-3053018
Complainants,	:	
	:	
v.	:	
	:	
Laurel Pipe Line Company, L.P.	:	
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Respondent.	:	

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**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

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**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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4. Please provide all management level presentations from 2019 to the present that discuss issues related to transit time on Laurel.

**RESPONSE:**

Monroe neither owns nor leases any terminals on the Laurel.

**Provided By:** Kyle F. Summer

**Date:** August 6, 2025

**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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5. Please provide all management level presentations from 2019 to the present that discuss where to source supply to terminals used by Monroe.

**OBJECTION:**

The term of this request is excessively burdensome and is unlikely to lead to the discovery of admissible evidence. Whether or not Monroe's management discussed transit times on the Laurel Pipeline is not indicative of any fact at issue in this case. Notwithstanding this objection, we will provide any responsive information from 2023 to the present.

**RESPONSE:**

There are no documents responsive to this request.

**Provided By:** Kyle F. Summer

**Date:** August 6, 2025

**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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6. Please provide all management level presentations from 2019 to the present that discuss Mid-western refineries.

**RESPONSE:**

There are no documents responsive to this request because Monroe's management structure does not require management level decision making for decisions on where to source supply.

**Provided By:** Kyle F. Summer

**Date:** August 6, 2025

**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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9. Please provide all management level presentations from 2019 to the present that discuss pro-rationing on Colonial.

**RESPONSE:**

Mr. Summer's testimony does not address pro-rationing on the Colonial Pipeline.

**Provided By:** Kyle F. Summer

**Date:** August 6, 2025

**RESPONSES OF  
MONROE ENERGY, LLC  
TO INTERROGATORIES AND REQUESTS  
FOR PRODUCTION OF DOCUMENTS  
TO LAUREL PIPE LINE COMPANY, L.P., SET II**

**DOCKET NO. C-2025-3053018**

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10. Please provide all management level presentations from 2019 to the present that discuss supplying refined product delivered by waterborne vessel into an East Coast port.

**RESPONSE:**

There are no documents that are responsive to this request.

**Provided By:** Kyle F. Summer

**Date:** August 6, 2025

LAUREL EXHIBIT MJW-17  
(No Public Version Available)

**CONTAINS HIGHLY CONFIDENTIAL PROTECTED MATERIAL  
BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**



Monroe Energy, LLC, Lucknow-Highspire :  
Terminals, LLC, Sheetz, Inc. and PBF :  
Holding Company, LLC, : Docket No. C-2025-3053018  
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Complainants, :  
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v. :  
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Laurel Pipe Line Company, L.P. :  
:  
Respondent. :

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**MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY, LLC INTERROGATORIES TO  
LAUREL PIPE LINE COMPANY, L.P.  
SET V**

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2. Refer to Laurel St. 3-R at page(s) 14:3-20. Is it Dr. Webb's understanding that under the proposed bi-directional service the pipeline will operate in both directions in each cycle? If not, please explain Dr. Webb's understanding of Laurel's intention with regard to how often the direction of flow is reversed.

**RESPONSE:**

No. It is Dr. Webb's understanding that under the proposed bi-directional service the pipeline will operate in a manner that satisfies the accepted nominations of all shippers. If it is able to satisfy these accepted nominations by moving all product in a single direction it will do so.

Dr. Webb did not address the questions of how specifically deliveries would be scheduled during a month, in the cited testimony he just stated that service from Philadelphia would continue, but understands that service has been and will continue to be available in both directions, as per the relevant tariffs.

**SPONSOR(S):**

**Dr. Michael J. Webb, Vice President, Regulatory Economics Group, LLC**

**Date: September 8, 2025**

**CONTAINS HIGHLY CONFIDENTIAL PROTECTED MATERIAL  
BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**



Monroe Energy, LLC, Lucknow-Highspire :  
Terminals, LLC, Sheetz, Inc. and PBF :  
Holding Company, LLC, : Docket No. C-2025-3053018  
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Complainants, :  
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v. :  
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Laurel Pipe Line Company, L.P. :  
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Respondent. :

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**MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY, LLC INTERROGATORIES TO  
LAUREL PIPE LINE COMPANY, L.P.  
SET V**

---

14. Refer to Laurel St. 3-R at page(s) 32: 18-19 “Microeconomic theory teaches that this increased competition will put downward pressure on prices”:
- a. Is Dr. Webb claiming that Buckeye is exercising market power today?
  - b. Is Dr. Webb claiming that any shipper is exercising market power today?
  - c. Is Dr. Webb claiming that the Laurel pipeline discriminates and excludes shippers from the Laurel pipeline?
  - d. Is Dr. Webb claiming that westbound shipments of petroleum products past Sinking Spring will stop if Broadway III is placed into service?
  - e. Is Dr. Webb claiming that waterborne shipments of crude oil into PADD I will not decrease once Broadway III is placed into service?
  - f. Is Dr. Webb claiming that waterborne shipments of refined petroleum products into PADD I will not decrease if Broadway III is placed into service?

**RESPONSE:**

- a. No.
- b. No.
- c. No.

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**BEFORE THE**  
**PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire	:	
Terminals, LLC, Sheetz, Inc. and PBF	:	
Holding Company, LLC,	:	Docket No. C-2025-3053018
	:	
Complainants,	:	
	:	
v.	:	
	:	
Laurel Pipe Line Company, L.P.	:	
	:	
Respondent.	:	

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**MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY, LLC INTERROGATORIES TO  
LAUREL PIPE LINE COMPANY, L.P.**

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**SET V**

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- d. No.
- e. No.
- f. No.

**SPONSOR(S):**

**Dr. Michael J. Webb, Vice President, Regulatory Economics Group, LLC**

**Date: September 8, 2025**



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BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Monroe Energy, LLC, Lucknow-Highspire :  
Terminals, LLC, Sheetz, Inc. and PBF :  
Holding Company, LLC, : Docket No. C-2025-3053018  
:  
Complainants, :  
:  
v. :  
:  
Laurel Pipe Line Company, L.P. :  
:  
Respondent. :

---

**MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY, LLC INTERROGATORIES TO  
LAUREL PIPE LINE COMPANY, L.P.  
SET V**

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19. Refer to Laurel St. 3-R at page(s) 37:3-10:

- a. Is Dr. Webb claiming that El Dorado would not have been served after the PES explosion but for bidirectional service?
- b. In 2019, what was the marginal source of supply of petroleum products into PADD I?
- c. What is the factual basis for the statement “Had Existing Bi-Directional Service not been initiated consumers previously served by the PES refinery would have been forced to pay higher prices to meet their supply needs.”? Provide all supporting information that Dr. Webb is relying on.

**RESPONSE:**

- a. No.
- b. Dr. Webb has not examined the market in 2019 in depth. Based on prior research and his knowledge of this market, Dr. Webb believes the marginal source of supply would have been either one of the local refineries (i.e. PES, Trainer, Delaware City or Bayway) or marine imports.

*Complainants Exhibit C-32*

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**BEFORE THE**  
**PENNSYLVANIA PUBLIC UTILITY COMMISSION**

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Terminals, LLC, Sheetz, Inc. and PBF	:	
Hold.ing Company, LLC,	:	Docket No. C-2025-3053018
	:	
Complainants,	:	
	:	
v.	:	
	:	
Laurel Pipe Line Company, L.P.	:	
	:	
Respondent.	:	

---

**MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY, LLC INTERROGATORIES TO  
LAUREL PIPE LINE COMPANY, L.P.**

---

**SET V**

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- c. This conclusion is based on the fact that demand curves slope down and price is set by the intersection of supply and demand. As such, when the supply from PES was eliminated, if supply had not been available from the Existing Bi-Directional Service, the new supply and demand equilibrium necessary would have been at a higher price.

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PENNSYLVANIA PUBLIC UTILITY COMMISSION**

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Holding Company, LLC, : Docket No. C-2025-3053018  
:  
Complainants, :  
:  
v. :  
:  
Laurel Pipe Line Company, L.P. :  
:  
Respondent. :

---

**MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY, LLC INTERROGATORIES TO  
LAUREL PIPE LINE COMPANY, L.P.  
SET V**

---

21. Refer to Laurel St. 3-R at page(s) 38:18-19:

- a. In Dr. Webb’s opinion, would it be more accurate to state that “The most basic microeconomic theory teaches that increased competition by sellers leads to reduced prices all else equal?
- b. Is it also accurate that “The most basic microeconomic theory teaches that increased competition by buyers leads to increased prices all else equal.”
- c. Does expanding pipeline capacity from a region lead to increased competition by buyers or shippers to move product from that region?

**RESPONSE:**

- a. No.
- b. As proposed in this question the answer is no. Dr. Webb would acknowledge that in limited circumstances not present in this case, an increase in competition amongst buyers could lead to increased prices all else equal.

*Complainant's Exh C-33*

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**PENNSYLVANIA PUBLIC UTILITY COMMISSION**

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Terminals, LLC, Sheetz, Inc. and PBF	:	
Holding Company, LLC,	:	Docket No. C-2025-3053018
	:	
Complainants,	:	
	:	
v.	:	
	:	
Laurel Pipe Line Company, L.P.	:	
	:	
Respondent.	:	

---

**MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY, LLC INTERROGATORIES TO  
LAUREL PIPE LINE COMPANY, L.P.**

---

**SET V**

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- c. The distinction between buyers and shippers in this question is unclear. Based on the context of the question, it appears to ask if increased capacity to export product from a market would lead to increased competition by shippers (who would be buyers of pipeline services) to move product out of the market. Assuming this is the question, the answer would be “no.” Increased capacity would provide shippers with a greater number of options to export product from that market.

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PENNSYLVANIA PUBLIC UTILITY COMMISSION**



Monroe Energy, LLC, Lucknow-Highspire :  
Terminals, LLC, Sheetz, Inc. and PBF :  
Holding Company, LLC, : Docket No. C-2025-3053018  
:  
Complainants, :  
:  
v. :  
:  
Laurel Pipe Line Company, L.P. :  
:  
Respondent. :

---

**MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY, LLC INTERROGATORIES TO  
LAUREL PIPE LINE COMPANY, L.P.  
SET V**

---

29. Refer to Laurel St. 3-R at page(s) 60:6-61:8:

- a. Is Dr. Webb claiming that the Sunoco pipeline could supply all the refined petroleum products that are consumed in Central Pennsylvania?
- b. Is Dr. Webb claiming that the Sunoco pipeline is a lower-cost alternative to the Laurel pipeline?
- c. If the Sunoco pipeline provides a lower-cost alternative to the Laurel pipeline, why are shippers using the Laurel pipeline today?

**RESPONSE:**

- a. No. Dr. Webb would note that Sunoco appears to be delivering into markets also served by Laurel despite the fact that Laurel has excess capacity. This fact suggests that Sunoco is an active and to some extent successful competitor with Laurel.
- b. No.
- c. N/A.

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*Complainant's Exh. C-34*

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PENNSYLVANIA PUBLIC UTILITY COMMISSION**



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Holding Company, LLC, : Docket No. C-2025-3053018  
: :  
Complainants, :  
: :  
v. :  
: :  
Laurel Pipe Line Company, L.P. :  
: :  
Respondent. :

---

**MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY, LLC INTERROGATORIES TO  
LAUREL PIPE LINE COMPANY, L.P.  
SET V**

---

32. Refer to Laurel St. 3-R at page(s) 72:1-20. Does Dr. Webb's analysis of midwestern prices include transportation costs and if so, to what destination? If not, why not?

**RESPONSE:**

The analysis discussed in the referenced portion of Dr. Webb's testimony does not include transportation costs.

**SPONSOR(S):**

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*Complainants Exh. C-35*

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Holding Company, LLC, : Docket No. C-2025-3053018  
:  
Complainants, :  
:  
v. :  
:  
Laurel Pipe Line Company, L.P. :  
:  
Respondent. :

---

**MONROE ENERGY, LLC, LUCKNOW-HIGHSPIRE TERMINALS, LLC,  
SHEETZ, INC. AND PBF HOLDING COMPANY, LLC INTERROGATORIES TO  
LAUREL PIPE LINE COMPANY, L.P.  
SET V**

---

33. Refer to Laurel St. 3-R at page(s) 72:1:20. Confirm or Deny: Prior to 2021, price volatility in the Midwest at times resulted in Midwest gasoline prices substantially above East Coast prices.

**RESPONSE:**

Dr. Webb has not conducted analysis that would allow him to confirm or deny this proposition as stated.

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:  
Complainants, :  
:  
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Laurel Pipe Line Company, L.P. :  
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LAUREL PIPE LINE COMPANY, L.P.  
SET V**

---

47. Refer to Laurel St. 3-R at page(s) 91:1-93:21. Is it Dr. Webb's testimony that if there is no presentation made to management about a problem that the problem does not exist? Has Dr. Webb ever been employed (other than as a consultant) by any of the Complainants in this case?

**RESPONSE:**

No and No. However, Dr. Webb has provided consulting services to numerous energy companies, including affiliates of the Complainants during his more than 25 years in the industry. As a general matter, management at most companies is made aware of significant issues. Therefore, the lack of management presentations suggests that if transit time is an issue at all, and the complainants have not demonstrated that it is, it is not an issue of sufficient significance to warrant management's attention.

**SPONSOR(S):**

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