



April 20, 2018

Ms. Kavita Kale  
Michigan Public Service Commission  
7109 W. Saginaw Hwy.  
P. O. Box 30221  
Lansing, MI 48909

***Via E-Filing***

RE: MPSC Case No. U-18403

Dear Ms. Kale:

The following is attached for paperless electronic filing:

Direct Testimony of James Wilson on behalf of Michigan Environmental Council  
and Sierra Club

Exhibits MEC-30 through MEC-69

Proof of Service

Sincerely,

Christopher M. Bzdok  
[chris@envlaw.com](mailto:chris@envlaw.com)

xc: Parties to Case No. U-18403  
James Clift, MEC  
Elena Saxonhouse, Sierra Club  
Shannon Fisk, Earthjustice

**STATE OF MICHIGAN**  
**BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION**

In the matter of the Application of  
**DTE ELECTRIC COMPANY** for  
Authority to Implement a Power Supply  
Cost Recovery Plan in its Rate  
Schedules for 2018 Metered  
Jurisdictional Sales of Electricity

Case No. U-18403

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**DIRECT TESTIMONY OF**  
**JAMES F. WILSON**  
**ON BEHALF OF MICHIGAN ENVIRONMENTAL COUNCIL**  
**AND SIERRA CLUB**

**April 20, 2018**

## TABLE OF CONTENTS

|  | <u>Page</u> |
|--|-------------|
| I. INTRODUCTION AND QUALIFICATIONS .....                               | 1           |
| II. SUMMARY AND RECOMMENDATION.....                                    | 5           |
| III. ESTIMATED NET COST OF NEXUS FOR DTE ELECTRIC’S CUSTOMERS .....    | 13          |
| IV. ESTIMATED IMPACT OF NEXUS ON MICHIGAN ENERGY PRICES .....          | 28          |
| V. CRITIQUE OF ICF’S ASSUMPTIONS FOR PIPELINE CAPACITY ADDITIONS ..... | 32          |

**I. INTRODUCTION AND QUALIFICATIONS**

**Q 1: Please state your name, position and business address.**

A: My name is James F. Wilson. I am an economist and independent consultant doing business as Wilson Energy Economics. My business address is 4800 Hampden Lane Suite 200, Bethesda, Maryland 20814.

**Q 2: On whose behalf are you testifying?**

A: I am testifying on behalf of Michigan Environmental Council and Sierra Club.

**Q 3: Please describe your experience and qualifications.**

A: I have over thirty years of consulting experience, primarily in the electric power and natural gas industries. Many of my assignments have pertained to the economic and policy issues arising from the interplay of competition and regulation in these industries, including restructuring policies, market design, market analysis and market power. Other recent engagements have involved resource adequacy and capacity markets, contract litigation and damages, forecasting and market evaluation, pipeline rate cases and evaluating allegations of market manipulation. I also spent five years in Russia in the early 1990s advising on the reform, restructuring, and development of the Russian electricity and natural gas industries for the World Bank and other clients.

I have been involved in a number of cases involving natural gas pipeline and storage rates, and have testified in regard to market-based rates for natural gas storage and pipeline services.

I have submitted affidavits and presented testimony in proceedings of the Federal Energy Regulatory Commission ("FERC"), state regulatory agencies, and U.S. district court. I hold a B.A. in Mathematics from Oberlin College and an M.S. in Engineering-Economic

1 Systems from Stanford University. My curriculum vitae, summarizing my experience and  
2 listing past testimony, is attached as Exhibit MEC-30<sup>1</sup>.

3 **Q 4: Have you previously testified in a proceeding of the Michigan Public Service**  
4 **Commission (“Commission”, “MPSC”)?**

5 A: Yes. I testified in Case No. U-17920 in 2016 (“2016 Testimony”), and in Case No. U-  
6 18143 in 2017 (“2017 Testimony”), in both instances on behalf of Michigan Environmental  
7 Council and Sierra Club.

8 **Q 5: What is the scope and purpose of your testimony in this case?**

9 A: In this case DTE Electric Company (“DTE Electric”) has requested Commission approval  
10 to recover, through its 2018 Power Supply Cost Recovery (“PSCR”) factor, expenses  
11 associated with execution of a Precedent Agreement and a Rate Agreement with NEXUS  
12 Gas Transmission (“NEXUS”). I reviewed the application, supporting testimony, and  
13 discovery (for this case, and for cases U-17920 and U-18143), evaluated the commitment  
14 to NEXUS and its cost to DTE Electric’s customers, and provide a recommendation with  
15 respect to the request for cost recovery.

16 **Q 6: What exhibits are you sponsoring?**

17 A: I am sponsoring exhibits MEC-30 through MEC-69.

- 18 • MEC-30: James Wilson CV
- 19 • MEC-31: U-18403 MECSCDE-2.3
- 20 • MEC-32: Table 1: Summary of Estimates of Net Benefit (Cost) of the NEXUS
- 21 Commitment to DTE Electric’s Customers

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<sup>1</sup> Ex MEC-30 (James Wilson CV).

- 1 • MEC-33: U-18143: MECSCDE-1.46S Attachment
- 2 • MEC-34: U-18403 MECSCDE-1.32
- 3 • MEC-35: U-18403 MECSCDE-1.30a
- 4 • MEC-36: Figure 1: Basis from Dominion S. to MichCon (annual averages; \$/Dth)
- 5 • MEC-37: Table 2: Updated NEXUS Cost Savings Estimate (based on Pratt Exhibit A-17)
- 6 • MEC-38: U-18403 MECSCDE-2.22a
- 7 • MEC-39: U-18403 MECSCDE-1.70a
- 8 • MEC-40: U-18403 MECSCDE-2.22b
- 9 • MEC-41: Figure 2: Kensington to MichCon Basis and NEXUS Cost (\$/Dth)
- 10 • MEC-42: Reserved
- 11 • MEC-43: U-17920 ANRDE-1.11
- 12 • MEC-44: U-18403 MECSCDE-1.20b
- 13 • MEC-45: U-18403 MECSCDE-1.18a
- 14 • MEC-46: U-18403 MECSCDE-1.20a
- 15 • MEC-47: U-17920 ANRDE-2.4b
- 16 • MEC-48: U-18403 MECSCDE-2.17bi
- 17 • MEC-49: U-17920 MECSCDE-5.8
- 18 • MEC-50: U-18403 MECSCDE-1.62b
- 19 • MEC-51: U-18403 MECSCDE-1.62a
- 20 • MEC-52: U-18403 MECSCDE-1.63
- 21 • MEC-53: U-17920 MECSCDE-1.12a
- 22 • MEC-54: U-18403 MECSCDE-2.17c

- 1       • MEC-55: U-18403 MECSCDE-1.64
- 2       • MEC-56: U-18403 MECSCDE-1.66
- 3       • MEC-57: U-18403 AGDE-1.16 Narrative + Attachment
- 4       • MEC-58: U-18403 MECSCDE-2.17e
- 5       • MEC-59: Reserved
- 6       • MEC-60: U-18403 MECSCDE-1.76a
- 7       • MEC-61: U-18403 MECSCDE-2.16
- 8       • MEC-62: U-18143 MECSCDE-4.11b
- 9       • MEC-63: U-18143 MECSCDE-4.13a-b
- 10      • MEC-64: U-18403 MECSCDE-1.76c
- 11      • MEC-65: U-18143 MECSCDE-5.3b
- 12      • MEC-66: U-18143 MECSCDE-5.5a
- 13      • MEC-67: U-18143 MECSCDE-4.11a
- 14      • MEC-68: U-18143 MECSCDE-5.4a
- 15      • MEC-69: U-17920 MECSCDE-4.1a

1 **II. SUMMARY AND RECOMMENDATION**

2 **Q 7: Please describe the NEXUS Gas Transmission project that is at issue in this case.**

3 A: NEXUS is expected to provide 1.5 million dekatherms per day (“Dth/d”) of natural gas  
4 transportation service from eastern Ohio, accessing supplies from the Marcellus and Utica  
5 shale formations, to markets in Ohio, Michigan, and Ontario, Canada, terminating at the  
6 Dawn Hub in Ontario; some NEXUS supplies will also move south from Ohio. NEXUS  
7 is being developed by NEXUS Gas Transmission, LLC, which is owned 50% by DTE  
8 Electric’s affiliate, DTE Gas Storage & Pipeline (wholly owned by DTE Energy), and 50%  
9 by an affiliate of Spectra Energy Partners, LP, which is 75% owned by Enbridge Inc.<sup>2</sup>

10 **Q 8: Please summarize DTE Electric’s commitment with respect to NEXUS.**

11 A: In 2014 DTE Electric entered into a Precedent Agreement with NEXUS which, as  
12 amended, provides for 30,000 Dth/d of firm natural gas transportation service for twenty  
13 years, and an optional, additional 45,000 Dth/d for fifteen years, to begin on the later of  
14 May 1, 2020 or when DTE Electric places new gas-fired electric generation facilities in  
15 service.<sup>3</sup> The Precedent Agreement contemplates a Rate Agreement, which was entered  
16 into on September 14, 2016, and which specifies a reservation rate of \$0.695 per Dth per  
17 Day and a shrinkage adjustment (fuel charge) of 1.32%.<sup>4</sup>

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<sup>2</sup> NEXUS Gas Transmission, LLC, Abbreviated Application for Certificates of Public Convenience and Necessity and Related Authorizations, FERC Docket No. CP16-22, November 20, 2015 (“NEXUS Application”); and Enbridge, Inc., *About Us*, available at <https://www.enbridge.com/About-Us/Our-Company.aspx>.

<sup>3</sup> Exhibits A-28 through A-37.

<sup>4</sup> Exhibit A-29, Rate Agreement dated September 14, 2016, p. 6.

**Q 9: When is the NEXUS pipeline expected to begin service?**

A: NEXUS has recently announced that it expects to commence service late in the third quarter of 2018.<sup>5</sup>

**Q 10: What is DTE Electric's rationale for requesting Commission approval for recovery of the NEXUS costs?**

A: The Application states as follows (p. 6):

“Although DTE Electric is not seeking Commission approval of the NEXUS Agreements, the Company is requesting Commission approval to recover the transportation related expense that is associated with DTE Electric's execution of both the Precedent Agreement and Rate Agreement with NEXUS Gas Transmission since such expense is reasonable, prudent and justified in light of the April 16, 2016 implementation of the MATS requirements, the need for DTE Electric to retire aging coal-fired electric generators and the need to facilitate sufficient, economic natural gas supply options for new natural gas-fired electric generation in Michigan.”

**Q 11: Does DTE Electric have specific plans to bring new gas-fired generation online during this PSCR plan forecast window (2018-2022)?**

A: Only near the very end of that forecast window, in 2022.<sup>6</sup>

**Q 12: Does DTE Electric claim the NEXUS contract will benefit its customers?**

A: Yes. Company witness Ryan C. Pratt claims there are benefits to DTE Electric's customers of holding the NEXUS capacity (pp. 9-10), citing to the testimony of Company witness Michael D. Sloan and a long-term natural gas market simulation performed by ICF

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<sup>5</sup> Ex MEC-31( Case No. U-18403, DTE Electric response to data request MECSCDE-2.3). [Discovery responses are cited by case number and discovery number throughout this testimony. For example: \(U-18403 MECSCDE-2.3\).](#)

<sup>6</sup> Response to data request MECSCDE-1.40 Attachment (showing first CCGT gas burn in June 2022).

1 Resources in 2015 (“ICF 2015 Study”)<sup>7</sup> that Mr. Sloan sponsors. Witness Pratt notes the  
2 ICF 2015 Study’s calculation that the NEXUS commitment would save DTE Electric’s  
3 customers \$79 million in natural gas costs in nominal terms, because the delivered cost of  
4 natural gas via NEXUS was forecast by ICF to be cheaper on average than MichCon  
5 Citygate (“MichCon”) natural gas purchases over the twenty years of the proposed  
6 commitment. Witness Pratt also updated this calculation using a more recent ICF forecast  
7 and other changes, which resulted in \$67 million in savings from 2018 to 2038.<sup>8</sup>

8 However, Witness Pratt also provided updated calculations for the PSCR period using  
9 prices from natural gas forward markets (pp. 10-11, Exhibit A-18). These calculations  
10 showed NEXUS imposing a net cost on customers over the PSCR period.

11 **Q 13: Please comment on DTE Electric’s evaluation of the commitment to the NEXUS**  
12 **capacity.**

13 A: DTE Electric relies upon the ICF 2015 Study. But that study, in addition to being outdated,  
14 incorporated flawed assumptions about future pipeline capacity expansions. As a general  
15 matter, the difference in the price of natural gas between a supply region and a market area  
16 will decrease as more pipeline capacity is constructed to move gas out of the supply region.  
17 Capacity constraints cause prices in the supply region to be depressed, and the construction  
18 of more “takeaway” capacity allows prices in the supply region to approach price levels in  
19 the broader market. ICF assumes there will be a chronic shortage of pipeline capacity out  
20 of the Marcellus and Utica basins, causing sharply depressed prices there, relative to prices

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<sup>7</sup> ICF Resources, LLC, *Impact of the NEXUS Pipeline on Michigan Energy Markets*, submitted to DTE Electric November 2015 (DTE Electric Exhibit A-27; “ICF 2015 Study”), supported by the direct testimony of Michael D. Sloan.

<sup>8</sup> Pratt Testimony pp. 9-10.

1 across the rest of the country, through 2037. This chronic shortage of capacity projected  
2 by ICF sustains unusually high price differentials (also called basis differentials) through  
3 the life of the NEXUS agreement, making the NEXUS capacity look far more attractive  
4 for DTE customers than it would if more rational assumptions were used.

5 When natural gas production is growing in a new supply region, the growing production  
6 can get ahead of the development of pipeline capacity to deliver the production out of the  
7 supply region and to markets. This can cause constraints on the pipeline system and  
8 depressed prices in the production region. While prices are depressed in the production  
9 region, the basis differentials from the supply region to various market areas can grow  
10 large. The depressed prices motivate producers to support expansion of the pipeline system  
11 and perhaps to slow their production plans. As the growth in production moderates and  
12 the expansion of the pipeline system catches up, prices in the supply region recover, and  
13 the basis differentials moderate. This pattern (growth in production, depressed supply  
14 region prices, pipeline expansions, and moderating basis differentials) has occurred again  
15 and again; for example, in the Rockies supply region about a decade ago. However,  
16 contrary to this observed pattern, the ICF 2015 Study projects large basis differentials from  
17 eastern Ohio to Michigan will persist through 2037.

18 In addition, more recent ICF forecasts that DTE relies on continue to reflect this flawed  
19 assumption, which has already been disproven out in the real world. In response to the  
20 low basin prices, producers operating in the Marcellus/Utica region have slowed the growth  
21 in production and continued to support construction of new pipeline capacity to deliver  
22 their supplies to various markets, and this has moderated the price differentials.

**Q 14: Have you prepared an updated estimate of the net cost of the NEXUS capacity for DTE Electric's customers?**

A: Yes. I further updated Witness Pratt's analysis, based on recent forward prices, as described in more detail in a later section of my testimony. The results of my analysis are summarized Table 1 (Exhibit MEC-32). While Witness Pratt's analysis had shown that NEXUS would impose a net cost over the PSCR period, this net cost grows as the price difference between natural gas at the NEXUS pipeline's receipt and delivery points continues to moderate. My update shows that NEXUS is expected to impose a net cost on DTE Electric's customers in 2018 (four months), over the PSCR period, and over the life of the contract. As shown later in my testimony, the commodity cost savings from purchases through NEXUS offset only a third of the NEXUS cost in 2018, only a fourth of the cost during the PSCR period, and less than half of the cost over the life of the contract, according to my estimate.

**Table 1:<sup>9</sup> Summary of Estimates of the Net Benefit (Cost)  
of the NEXUS Commitment to DTE Electric's Customers**

|   | ICF 2015 Study | Pratt Update | Wilson Update |
|---|----------------|--------------|---------------|
| <b>2018 (four months):</b>  | n.a            | -\$1.5       | -\$1.6        |
| <b>2018-2022:</b>   | n.a            | -\$22.2      | -\$31.4       |
| <b>Over 20-year agreement</b>   | \$72           | \$67.4       | -\$181.0      |
| Notes: The Pratt Update used forward prices from August 2017 for the 2018 and 2018-2022 estimates (Exhibit A-18), and ICF prices from Q3 2017 for the twenty-year analysis (Exhibit A-17); the Wilson Update uses forward prices from April 13, 2018. |                |              |               |

<sup>9</sup> Ex MEC-32 (Summary of Estimates of Net Benefit (Cost) of the NEXUS Commitment to DTE Electric's Customers).

1  
2 **Q 15: Your estimate for the PSCR period shows a greater cost to DTE Electric's customers**  
3 **than Mr. Pratt's estimate, despite both estimates relying on forward prices. What**  
4 **explains this difference?**

5 A: Mr. Pratt used forward prices from August 10, 2017 (despite DTE Electric not filing its  
6 application until September 28, 2017). As of early August, there was still uncertainty about  
7 whether various large, controversial pipeline projects serving the Marcellus/Utica region,  
8 including NEXUS, Mountain Valley, and Atlantic Coast, would be approved by FERC and  
9 would advance to construction. NEXUS was approved on August 25, 2017, and Mountain  
10 Valley and Atlantic Coast were approved on October 13, 2017.<sup>10</sup> The price differences  
11 between the Marcellus/Utica production region and surrounding areas moderated as a result  
12 of the anticipated capacity of these projects, and also increased confidence that other future  
13 pipeline projects would receive timely FERC approval.

14 **Q 16: DTE Electric also suggests the NEXUS capacity will provide benefits to Michigan**  
15 **energy consumers by lowering Michigan natural gas prices (Pratt Testimony, pp. 9-**  
16 **10). Is this a reason to approve the requested cost recovery?**

17 A: No. This claim is based on the same flawed and outdated ICF 2015 Study. The forecast  
18 of Michigan price suppression due to NEXUS is flawed, and in any case, it is not  
19 appropriate to consider such benefits in evaluating the request for cost recovery:

- 20 1. First, these alleged benefits are not relevant to DTE Electric's request for cost recovery,  
21 because they do not depend in any way on DTE Electric's commitment to NEXUS,  
22 which in any case is only two percent of the NEXUS capacity (30,000 Dth/d out of  
23 1,500,000 Dth/d total capacity).

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<sup>10</sup> See FERC, *Approved Major Pipeline Projects (2009 to Present)*, available at  
<https://www.ferc.gov/industries/gas/indus-act/pipelines/approved-projects.asp>.

1       2. Second, the estimated price impact is based on the same flawed and outdated ICF study,  
2       and is greatly overstated. Any such impact of NEXUS capacity is likely to be short  
3       term and offset by other changes to natural gas infrastructure and electric power  
4       generating capacity.

5       3. But perhaps more important, as a matter of public policy, such price suppression  
6       impacts should not be considered in deciding a case such as this one. Subsidizing  
7       incremental, uneconomic capacity to gain price suppression benefits is essentially an  
8       exercise of “buyer market power,” and distorts markets in the short term. Over the long  
9       term, such actions may actually increase the cost to consumers, by increasing the  
10      perceived regulatory risk associated with infrastructure development serving Michigan.  
11      Once a government entity with the power to act to suppress prices has done so, potential  
12      investors in additional infrastructure will fear that such actions may occur again, with  
13      a negative impact on the economics of any projects they might undertake in the same  
14      jurisdiction.

15      If the NEXUS commitment benefited DTE Electric’s customers, the request for cost  
16      recovery could be evaluated on that basis, and there would be no need to consider such  
17      additional market impacts. Because the NEXUS commitment will result in a net cost to  
18      DTE Electric’s customers, approving cost recovery based on such alleged broader benefits  
19      to Michigan consumers would amount to having DTE Electric’s customers subsidize the  
20      NEXUS project in order to provide benefits to other parties, which would be contrary to  
21      the sound and widely accepted regulatory principle that cost responsibility should follow  
22      cost causation. Accordingly, I recommend that the Commission decide this case based on

1 the direct costs and benefits of the NEXUS contract for DTE Electric's customers, and not  
2 consider the other alleged benefits of NEXUS.

3 **Q 17: Please summarize your evaluation of DTE Electric's commitment to the NEXUS**  
4 **capacity.**

5 A: While DTE Electric may need incremental firm natural gas transportation capacity at some  
6 time years in the future, it does not need it at this time or during at least four years of the  
7 five-year PSCR plan forecast window. DTE Electric's current plans to build new  
8 combined cycle units, if approved and implemented as planned, would result in new  
9 capacity in mid-2022 at the earliest.

10 Because the market has worked, and will continue to work, to balance production and the  
11 pipeline capacity to move it to markets, the gas purchase cost savings resulting from  
12 NEXUS will be much smaller than DTE Electric has suggested based on the ICF 2015  
13 Study or Witness Pratt's update. Accordingly, the NEXUS capacity's cost is very likely  
14 to substantially exceed its value over the PSCR period and over the term of the contract.

15 **Q 18: What do you recommend with respect to DTE Electric's request for approval of**  
16 **recovery of the cost of its NEXUS commitment through the PSCR?**

17 A: I recommend the Commission deny the request for approval of cost recovery, as the  
18 NEXUS capacity will impose a cost that likely will greatly exceed its value, contrary to the  
19 interests of DTE Electric's customers.

20 **Q 19: Would it have been more appropriate for a different DTE Energy subsidiary, rather**  
21 **than DTE Electric, to enter into such a contract?**

22 A: Yes. It would have been more appropriate for an unregulated DTE Energy company, such  
23 as DTE Energy Trading, to contract for NEXUS. Through discovery, Company witness  
24 Ryan C. Pratt reveals that originally, it was expected that DTE Energy Trading, rather than

1 DTE Electric, would join DTE Gas in contracting for NEXUS capacity.<sup>11</sup> DTE Energy  
2 Trading, as an energy marketing affiliate, would have been at risk for the value of the  
3 capacity; in position to profit from it if valuable, or to lose money if the capacity is not  
4 valuable. DTE Electric's request in this case, if approved by the Commission, would  
5 instead impose that risk on DTE Electric's captive ratepayers.

6 **Q 20: How is the remainder of your testimony organized?**

7 A: The next section provides the details of my updated estimate of the net cost of the NEXUS  
8 commitment to DTE Electric's customers. Section IV discusses ICF's estimate of the  
9 impact of NEXUS on Michigan energy costs and the policy considerations raised by this  
10 information. Section V provides additional discussion of the flawed assumptions in the  
11 ICF 2015 Study and later natural gas market simulations.

12  
13 **III. ESTIMATED NET COST OF NEXUS FOR DTE ELECTRIC'S CUSTOMERS**

14 **Q 21: Please explain how DTE Electric's estimate of the benefit of the NEXUS capacity for**  
15 **its customers was prepared.**

16 A: The approach was described in the ICF 2015 Study at pp. 58-61. The estimates were  
17 calculated as the gas cost savings from purchases through NEXUS, net of the cost of the  
18 capacity.

19 In the ICF 2015 Study, the cost of the NEXUS capacity to DTE Electric's customers was  
20 the estimated reservation charge of \$0.695/Dth, plus fuel at 1.9% of the cost of natural gas.  
21 The gas cost savings were simply the difference in simulated natural gas prices at MichCon  
22 CityGates and Kensington, Ohio (representing the NEXUS receipt point), over the twenty-

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<sup>11</sup> See Response to data request U-18403:MECSCDE 1.25a.

1 year term of the NEXUS contract at 100% load factor. The analysis in the ICF 2015 Study  
2 is based on the ICF Base Case from August 2015.

3 According to the ICF 2015 Study, the NEXUS capacity would save DTE Electric's  
4 customers \$79 million over 2017-2037 in nominal terms (\$22 million in present value).<sup>12</sup>

5 However, even under this estimate, the cumulative impact was a net cost, not benefit,  
6 through 2030.<sup>13</sup>

7 **Q 22: Have there been fundamental changes in the natural gas markets since mid-2015**  
8 **when the forecasts underlying the ICF 2015 Study were prepared?**

9 A: Yes, there have. Mr. Sloan testifies (pp. 13-17) that there have been several fundamental  
10 changes since that time, noting changes regarding pipelines serving the Marcellus/Utica  
11 region; changes regarding pipelines serving Michigan and the Midwest; additional growth  
12 in Marcellus/Utica production; growth trends in exports through LNG and to Mexico; and  
13 updated forecasts of natural gas for electricity generation.

14 **Q 23: Mr. Sloan acknowledges there have been significant changes in the natural gas**  
15 **markets; has he updated the analysis documented in the ICF 2015 Study?**

16 A: No, he has not. Mr. Sloan states (p. 18) that DTE Electric did not request ICF to update  
17 the analysis.

18 **Q 24: Given the many changes, why did DTE Electric not have ICF update its 2015 study?**

19 A: Mr. Pratt testified (p. 10) that DTE Electric had determined that it is "not prudent to incur  
20 additional costs to repeat the existing analysis." However, DTE Electric had not even

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<sup>12</sup> Pratt Direct Testimony p. 9; Ex A-27, ICF 2015 Study p. 60.

<sup>13</sup> Ex MEC-33, (U-18403 MECSCDE-1.46S, Cost Savings Calcs.xlsx).

1       inquired as to the cost of such an update.<sup>14</sup> Mr. Pratt further stated, with regard to the ICF  
2       2015 Study's estimated impacts on Michigan energy prices, that "DTE Electric determined  
3       that the forecasted savings were unlikely to change materially based on changes in  
4       assumptions since the Exhibit was originally created in 2016 [sic]."<sup>15</sup>

5       **Q 25: Please provide an update with regard to price expectations for the Marcellus/Utica**  
6       **region and the price differentials to Michigan.**

7       A: Slowing growth in production, and new pipeline capacity, have resulted in a better balance  
8       between production and the ability to deliver the supplies out of the production area. This  
9       has led to lower forward price differentials between the Marcellus/Utica region  
10      (represented by the Dominion South price point) and Michigan (represented by the  
11      MichCon price point), as shown in Figure 1.<sup>16</sup>

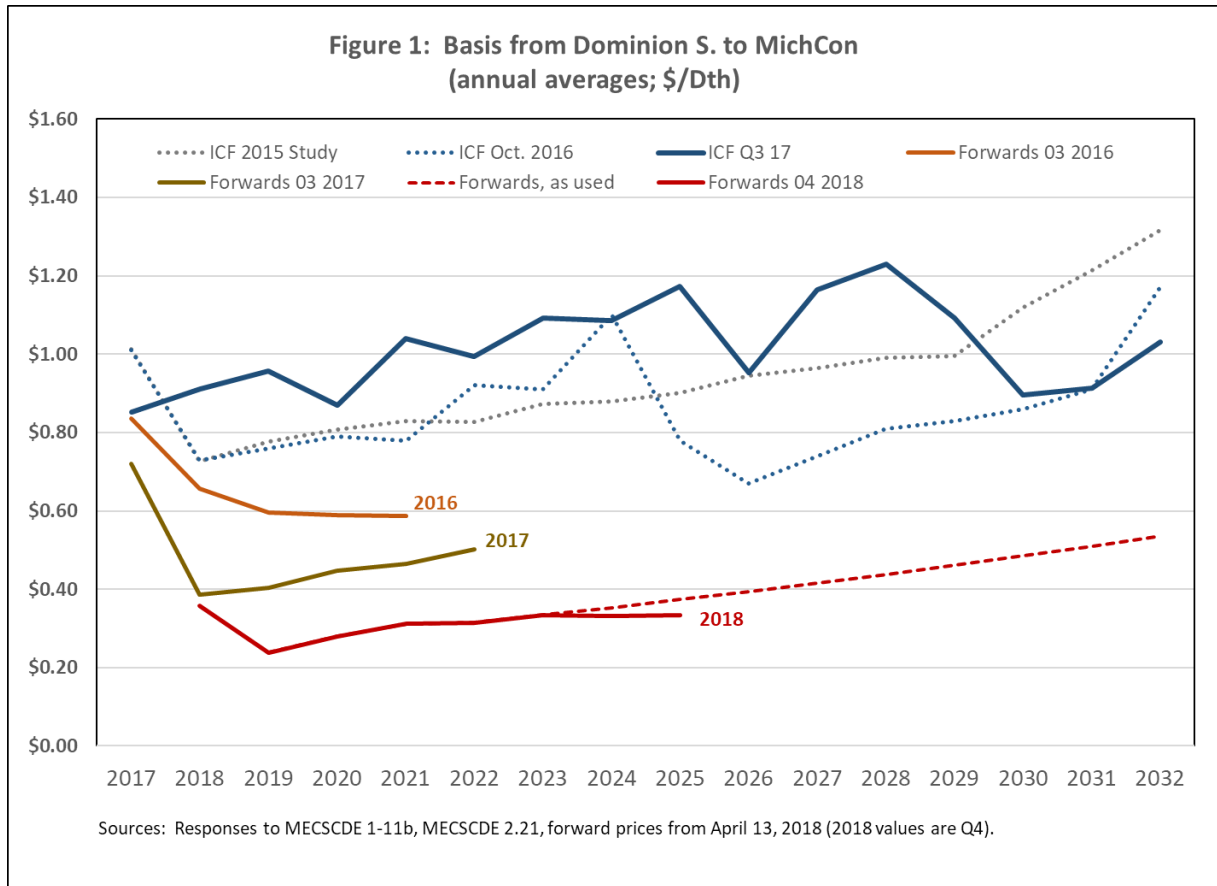
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<sup>14</sup> Ex MEC-34 ((U-18403:MECSCDE-1.32).

<sup>15</sup> Ex MEC-35 (U-18403:MECSCDE-1.30a), p. 1 of 2.

<sup>16</sup> Ex MEC-36 (Basis from Dominion S. to MichCon (annual averages; \$/Dth))

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Current forward prices reflect expectations that the basis out of the Marcellus/Utica region will continue to decline as new pipeline capacity, including NEXUS, come on line over the coming year and further relieve delivery constraints. After 2019, the basis is expected to rise at a moderate rate as production continues to grow.

8

9

**Q 26: How do the current price expectations compare to the predictions in the ICF forecasts?**

10

A: The ICF 2015 Study predicted much higher basis differentials, as also shown in Figure 1.

11

While the ICF 2015 Study anticipated some normalization in the basis, current forward

12

prices show that this occurred much sooner, and to a much greater extent, than the ICF

1       2015 Study predicted. The more recent ICF forecast used in Mr. Pratt's update remains  
2       much higher than forward prices, as was an earlier ICF forecast cited in my 2017  
3       Testimony.

4       By contrast, the price expectations reflected in forward prices have declined year to year,  
5       as producers have achieved a better balance between their expansion of production and the  
6       additional takeaway capacity they have sponsored. Figure 1 also shows the forward prices  
7       from March 2016 that I relied upon in my 2016 Testimony, and from March 2017 that I  
8       relied upon in my 2017 Testimony.

9       Overall, recent years have demonstrated that the market works – low prices in the  
10      Marcellus/Utica region resulted in a moderation of the growth in production, while the  
11      region's long-term potential continues to attract new pipeline proposals.

12      Market participants will continue to seek additional ways to bring the new gas supplies to  
13      markets. Large and small projects, to move the gas south, east, north, and/or west,  
14      including both expansions of existing pipelines and also new pipelines, will continue to be  
15      identified and proposed. Contrary to the assumptions used in the ICF forecasts, the natural  
16      gas markets are very dynamic, and will continue to provide incremental transportation  
17      capacity where it has value. Furthermore, FERC, with new commissioners appointed by  
18      the current administration, has initiated a process to review its policies and processes for  
19      reviewing pipeline certificate applications, with a stated goal of improving the "efficiency

1 and effectiveness” of the permitting process.<sup>17</sup> This effort could result in reduced barriers  
2 to pipeline expansions. Relatively large basis differentials over relatively short paths, as  
3 result from the list of expansions ICF staff choose to use in their forecasts, are not  
4 sustainable.

5 **Q 27: Turning now to Witness Pratt’s updated analysis of the benefit of the NEXUS**  
6 **capacity for DTE Electric’s customers, please describe how he prepared his estimate.**

7 A: Witness Pratt made the following changes to the analysis from the ICF 2015 Study, as  
8 described in the Pratt Testimony at p. 9 and in Exhibit A-17:

- 9 1. The Kensington to MichCon basis was from the ICF Natural Gas Strategic from third  
10 quarter 2017.
- 11 2. The time horizon was revised to September 2018 through August 2038.
- 12 3. The fuel rate was updated from 1.9% to 1.32%.

13 **Q 28: What was the estimated impact of the NEXUS agreement on DTE Electric’s**  
14 **customers, based on Witness Pratt’s updated analysis?**

15 A: According to this estimate, the NEXUS capacity would save DTE Electric’s customers \$67  
16 million dollars (in nominal terms) over the time horizon to August 2038. Pratt Testimony  
17 p.10 and Exhibit A-17.

18 **Q 29: Did Witness Pratt also estimate the impact of the NEXUS agreement over the five-**  
19 **year PSCR forecast period?**

20 A: Yes. Witness Pratt used forward prices from August 10, 2017 for these nearer-term  
21 estimates (p. 11 and Exhibit A-18). He estimated that the NEXUS contract would impose

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<sup>17</sup> 163 FERC ¶ 61,042, *Certification of New Interstate Natural Gas Facilities: NOTICE OF INQUIRY* (Issued April 19, 2018) Docket No. PL18-1-000, available at <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14893673>

1 a net cost on DTE Electric's customers over the near term; by \$1.5 million in 2018, and by  
2 \$22 million over the five-year PSCR period. These results were shown in Table 1 above.

3 **Q 30: Please describe the assumptions used in your updated analysis.**

4 A: I started with Witness Pratt's analysis and assumptions from his Exhibit A-17. The only  
5 change I made was to use more recent forward prices, from April 13, 2018. I used forward  
6 prices for Dominion South and MichCon from Intercontinental Exchange, Inc. ("ICE")  
7 through 2023, and for the years past 2023, the Dominion South and MichCon prices were  
8 escalated based on the rates of growth reflected in the forward prices over 2020 to 2023.  
9 Otherwise, my analysis adopts all of Witness Pratt's other assumptions (Kensington price  
10 formula, transportation and fuel rates, contract quantities).

11 **Q 31: Please summarize the results of your analysis.**

12 A: The details of the calculations are shown in Table 2 (Exhibit MEC-37); and were  
13 summarized in Table 1.

14 NEXUS is expected to impose a substantial net cost on customers: \$1.6 million in 2018  
15 (four months); \$31.4 million over the PSCR period; and \$181 million over the 20-year term  
16 of the contract (all values in nominal terms).<sup>18</sup>

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<sup>18</sup> Ex MEC -37 (Updated NEXUS Cost Savings Estimate (based on Pratt Exhibit A-17).

| Table 2: Updated NEXUS Cost Savings Estimate (based on Pratt Exhibit A-17) |   |                                       |  |  |  |  |                              |               |                    |                                    |                                  |  |                                      |                           |
|--|---|---------------------------------------|--|--|--|--|------------------------------|---------------|--------------------|------------------------------------|----------------------------------|--|--------------------------------------|---------------------------|
| Line   | Year  | Dom South Price <sup>1</sup> (\$/Dth) | Kensington Price <sup>1</sup> (\$/Dth) | MichCon Citygate Price <sup>1</sup> (\$/Dth) | MichCon - Kensington Basis <sup>1</sup> (\$/Dth) | Average Daily NEXUS Transportation Capacity <sup>2</sup> (Dth/d) | Transportation Rate (\$/Dth) | Fuel Rate (%) | Fuel Cost (\$/Dth) | Total Transportation Cost (\$/Dth) | NEXUS Unit Cost Savings (\$/Dth) | NEXUS Total Transportation Cost (\$MM) | NEXUS Total Commodity Savings (\$MM) | NEXUS Cost Savings (\$MM) |
| No.  |   |                                       |  |  |  |  |                              |               |                    |                                    |                                  |  |                                      |                           |
| 1  | 2018  | \$2.19                                | \$2.31                                 | \$2.58                                       | \$0.27   | 10,000   | \$0.695                      | 1.32%         | \$0.03             | \$0.73                             | (\$0.45)                         | \$2.6                                  | \$1.0                                | (\$1.6)                   |
| 2  | 2019  | \$2.21                                | \$2.33                                 | \$2.45                                       | \$0.12   | 30,000   | \$0.695                      | 1.32%         | \$0.03             | \$0.73                             | (\$0.61)                         | \$7.9                                  | \$1.3                                | (\$6.7)                   |
| 3  | 2020  | \$2.18                                | \$2.30                                 | \$2.46                                       | \$0.16   | 30,000   | \$0.695                      | 1.32%         | \$0.03             | \$0.73                             | (\$0.57)                         | \$7.9                                  | \$1.7                                | (\$6.2)                   |
| 4  | 2021  | \$2.19                                | \$2.31                                 | \$2.50                                       | \$0.19   | 30,000   | \$0.695                      | 1.32%         | \$0.03             | \$0.73                             | (\$0.54)                         | \$7.9                                  | \$2.1                                | (\$5.9)                   |
| 5  | 2022  | \$2.25                                | \$2.37                                 | \$2.56                                       | \$0.19   | 56,250   | \$0.695                      | 1.32%         | \$0.03             | \$0.73                             | (\$0.53)                         | \$14.9                                 | \$3.9                                | (\$11.0)                  |
| 6  | 2023  | \$2.31                                | \$2.43                                 | \$2.64                                       | \$0.21   | 75,000   | \$0.695                      | 1.32%         | \$0.03             | \$0.73                             | (\$0.52)                         | \$19.9                                 | \$5.8                                | (\$14.1)                  |
| 7  | 2024  | \$2.35                                | \$2.47                                 | \$2.70                                       | \$0.23   | 75,000   | \$0.695                      | 1.32%         | \$0.03             | \$0.73                             | (\$0.50)                         | \$19.9                                 | \$6.3                                | (\$13.6)                  |
| 8  | 2025  | \$2.40                                | \$2.52                                 | \$2.77                                       | \$0.25   | 75,000   | \$0.695                      | 1.32%         | \$0.03             | \$0.73                             | (\$0.48)                         | \$19.9                                 | \$6.8                                | (\$13.1)                  |
| 9  | 2026  | \$2.44                                | \$2.57                                 | \$2.84                                       | \$0.27   | 75,000   | \$0.695                      | 1.32%         | \$0.03             | \$0.73                             | (\$0.46)                         | \$20.0                                 | \$7.4                                | (\$12.6)                  |
| 10   | 2027  | \$2.49                                | \$2.61                                 | \$2.91                                       | \$0.29   | 75,000   | \$0.695                      | 1.32%         | \$0.03             | \$0.73                             | (\$0.44)                         | \$20.0                                 | \$8.0                                | (\$12.0)                  |
| 11   | 2028  | \$2.54                                | \$2.66                                 | \$2.98                                       | \$0.31   | 75,000   | \$0.695                      | 1.32%         | \$0.04             | \$0.73                             | (\$0.42)                         | \$20.0                                 | \$8.6                                | (\$11.4)                  |
| 12   | 2029  | \$2.59                                | \$2.71                                 | \$3.05                                       | \$0.33   | 75,000   | \$0.695                      | 1.32%         | \$0.04             | \$0.73                             | (\$0.40)                         | \$20.0                                 | \$9.2                                | (\$10.8)                  |
| 13   | 2030  | \$2.64                                | \$2.76                                 | \$3.12                                       | \$0.36   | 75,000   | \$0.695                      | 1.32%         | \$0.04             | \$0.73                             | (\$0.37)                         | \$20.0                                 | \$9.8                                | (\$10.2)                  |
| 14   | 2031  | \$2.69                                | \$2.81                                 | \$3.20                                       | \$0.38   | 75,000   | \$0.695                      | 1.32%         | \$0.04             | \$0.73                             | (\$0.35)                         | \$20.0                                 | \$10.5                               | (\$9.6)                   |
| 15   | 2032  | \$2.74                                | \$2.87                                 | \$3.27                                       | \$0.41   | 75,000   | \$0.695                      | 1.32%         | \$0.04             | \$0.73                             | (\$0.33)                         | \$20.1                                 | \$11.1                               | (\$8.9)                   |
| 16   | 2033  | \$2.79                                | \$2.92                                 | \$3.35                                       | \$0.43   | 75,000   | \$0.695                      | 1.32%         | \$0.04             | \$0.73                             | (\$0.30)                         | \$20.1                                 | \$11.9                               | (\$8.2)                   |
| 17   | 2034  | \$2.84                                | \$2.97                                 | \$3.43                                       | \$0.46   | 75,000   | \$0.695                      | 1.32%         | \$0.04             | \$0.73                             | (\$0.27)                         | \$20.1                                 | \$12.6                               | (\$7.5)                   |
| 18   | 2035  | \$2.90                                | \$3.03                                 | \$3.52                                       | \$0.49   | 75,000   | \$0.695                      | 1.32%         | \$0.04             | \$0.73                             | (\$0.25)                         | \$20.1                                 | \$13.3                               | (\$6.8)                   |
| 19   | 2036  | \$2.96                                | \$3.09                                 | \$3.60                                       | \$0.52   | 75,000   | \$0.695                      | 1.32%         | \$0.04             | \$0.74                             | (\$0.22)                         | \$20.1                                 | \$14.1                               | (\$6.0)                   |
| 20   | 2037  | \$3.01                                | \$3.14                                 | \$3.69                                       | \$0.55   | 48,750   | \$0.695                      | 1.32%         | \$0.04             | \$0.74                             | (\$0.19)                         | \$13.1                                 | \$9.7                                | (\$3.4)                   |
| 21   | 2038  | \$3.07                                | \$3.20                                 | \$3.78                                       | \$0.58   | 20,000   | \$0.695                      | 1.32%         | \$0.04             | \$0.74                             | (\$0.16)                         | \$5.4                                  | \$4.2                                | (\$1.2)                   |
| 22   |   |                                       |  |  |  |  |                              |               |                    |                                    |                                  |  |                                      |                           |
| 23   | TOTAL   |                                       |  |  |  |  |                              |               |                    |                                    |                                  | \$340.1                                | \$159.2                              | (\$181.0)                 |
| 24   | 2018-2022   |                                       |  |  |  |  |                              |               |                    |                                    |                                  | \$41.4                                 | \$10.0                               | (\$31.4)                  |
| 25   |   |                                       |  |  |  |  |                              |               |                    |                                    |                                  |  |                                      |                           |
| 26   | 1 - Dom South and MichCon Prices based on forward prices. Kensington = Dom South + 1% Fuel + \$0.10/Dth |                                       |  |  |  |  |                              |               |                    |                                    |                                  |  |                                      |                           |
| 27   | 2 - Assumes NEXUS in-service date of 9/1/2018 and CCGT in-service date of 6/1/2022                      |                                       |  |  |  |  |                              |               |                    |                                    |                                  |  |                                      |                           |
|  | 3 - Forward prices extended beyond 2023 using the rates over the 2020-23 period.                        |                                       |  |  |  |  |                              |               |                    |                                    |                                  |  |                                      |                           |

Looked at another way, the commodity cost savings from purchases through NEXUS over the PSCR period are expected to be \$10 million, or less than a quarter of the \$41.4 million cost of NEXUS during that period. Over the term of the contract, the commodity cost savings are expected to be \$159 million, less than half of the \$340 million cost of NEXUS.

**Q 32: Please explain why you chose to escalate the forward prices in this manner for your longer-term analysis.**

A: Forward prices show the basis declining in 2019, due to new pipeline capacity becoming available (NEXUS, among other pipelines), and then recovering a bit over the next few years (Figure 1 above). I used these forward prices through 2023, and then escalated the Dominion South and MichCon prices based on the rates of escalation reflected in those prices over 2020 to 2023. This resulted in basis growing at a healthy 5.3%/year rate over

1       2020 to 2038. This rate of escalation is a conservative assumption; most growing  
2       production regions see basis differentials decline or stagnate as the region matures and  
3       pipeline takeaway capacity catches up with production volumes.

4       I note that the more recent ICF forecast used by Witness Pratt (from Q3 2017; shown above  
5       in Figure 1), has the basis differential growing at a much slower rate over 2020 to 2038  
6       (1.1%/year), but from a much higher base value.

7       **Q 33: Mr. Sloan criticizes the use of forward prices in such analyses, stating (p. 22) that**  
8       **forward prices are “based on a market consensus, rather than a fundamental analysis**  
9       **of the market.” Do forward prices not reflect fundamental analysis of the market?**

10      A: No; forward prices definitely reflect fundamental analysis of the market. Market  
11      participants perform fundamental analysis, including the type of modeling performed by  
12      ICF, and also consider forecasts prepared by third parties. Mr. Sloan acknowledges that  
13      “[m]any futures market participants use fundamentals analysis to help them in their  
14      strategic planning.”<sup>19</sup>

15      Forward prices reflect a market consensus that is based upon, among other things, various  
16      fundamental analyses performed by market participants who will ultimately be at risk for  
17      the choices they make. By contrast, the ICF forecast is a single forecast by one company  
18      that is not at risk for the results, and whose staff have previously testified regarding  
19      particular outcomes of their forecasting.

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<sup>19</sup> Ex MEC-38 (U-18403:MECSCDE-2.22a).

1 **Q 34: Mr. Sloan also asserts that the futures price “is a reflection of risk tolerance and**  
2 **business requirements of the market participants, rather than a forecast.”<sup>20</sup> Does this**  
3 **mean the futures price does not reflect market participants’ forecasts and views of**  
4 **the market?**

5 A: No. Mr. Sloan was unable to provide any explanation for how considerations of risk and  
6 business requirements might cause futures prices to deviate (higher or lower) from market  
7 participants’ forecasts and views of the market.<sup>21</sup>

8 **Q 35: Mr. Sloan also testifies (p. 22) that the current forward curve may “overweight” or**  
9 **“underweight” various short-term phenomena. Does he provide any evidence for**  
10 **these assertions?**

11 A: No. These statements apparently only indicate that ICF’s forecast is a different view.  
12 Were market participants to collectively overweight or underweight certain phenomena,  
13 this would create a profit opportunity for other, more rational market participants, who  
14 would arbitrage away the irrational differentials.

15 **Q 36: Please comment on these two approaches to estimating the net cost – using ICF**  
16 **forecasts, or forward prices.**

17 A: The more recent ICF forecast still has very substantial basis between Kensington (the  
18 NEXUS receipt point) and MichCon in the near term (as shown in Figure 2),<sup>22</sup> and  
19 throughout the horizon. Such a large basis differential for such a short haul, with many  
20 existing pipelines and potential future expansions in the vicinity of both the origin and the  
21 destination, is not sustainable. Large basis occurs when a production region is new and  
22 rapidly expanding, but the basis moderates as production and takeaway capacity achieve  
23 balance, as has now occurred with the Marcellus/Utica region.

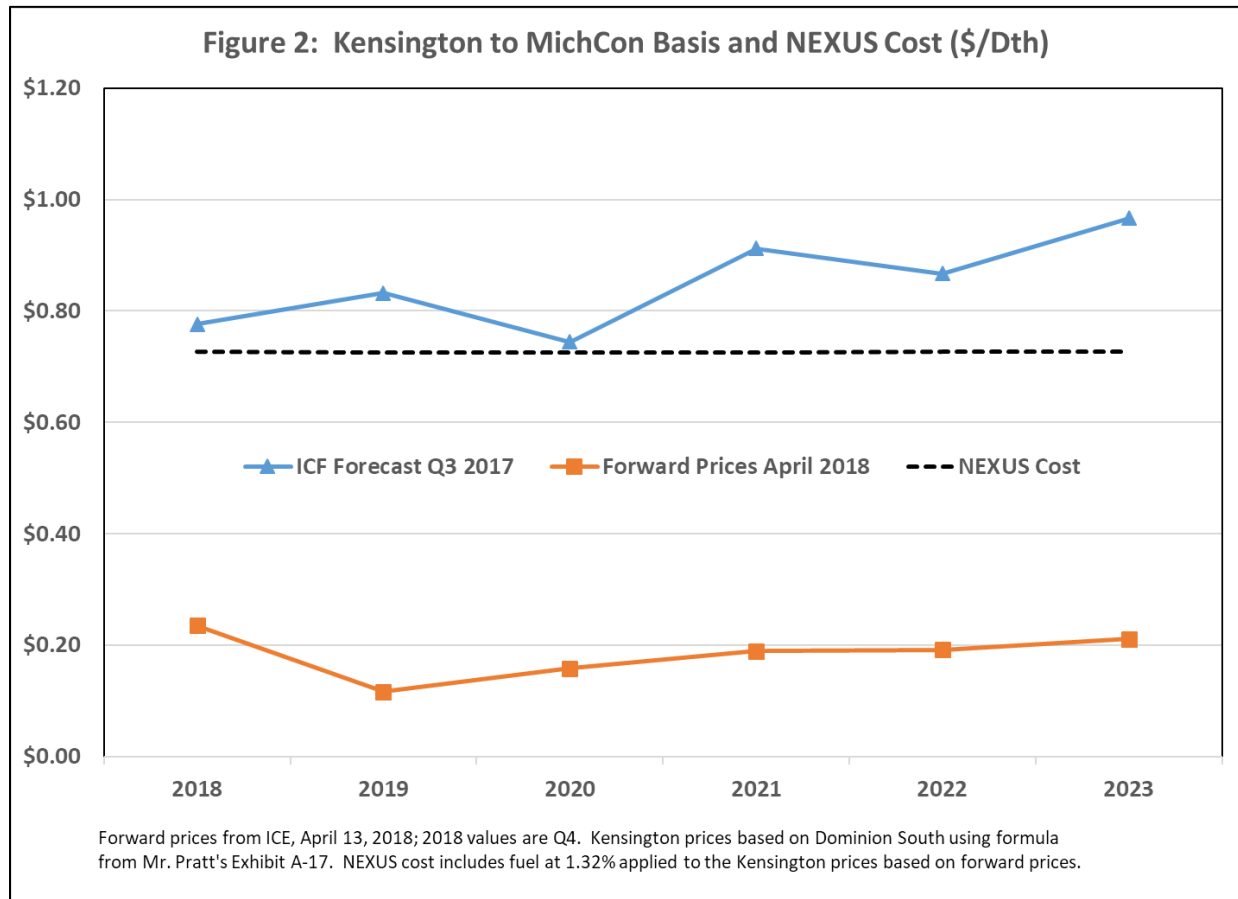
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<sup>20</sup> Ex MEC-39 (U-18403:MECSCDE-1.70a).

<sup>21</sup> Ex MEC-40 (U-18403:MECSCDE-2.22b).

<sup>22</sup> Ex MEC-41 (Kensington to MichCon Basis and NEXUS Cost (\$/Dth))

1



2 The ICF price forecast continues to reflect such a large basis as a result of ICF staff's  
3 choices to not include further pipeline additions in the model – choices that are not  
4 documented or guided by any objective methodology (as discussed further later in my  
5 testimony). ICF's choices in this regard produce a projection that keeps the Kensington to  
6 MichCon basis differential above the cost of the NEXUS capacity, as shown in the figure.

7 By contrast, my analysis based on current forward prices is well-grounded in price  
8 expectations reflecting the consensus of market participants. I believe this scenario is much  
9 more realistic, and also more consistent with the established patterns of natural gas pipeline  
10 network development and resulting price differentials.

1 **Q 37: Please comment on the uncertainty and potential risk around the various estimates**  
2 **of basis from the Marcellus/Utica region to Michigan.**

3 A: The uncertainty and risk around these basis estimates are asymmetric, with more risk that  
4 the basis will be lower than that it will be higher. This is because low basis over a natural  
5 gas transmission path is a common and stable situation; it generally does not lead market  
6 participants to take any actions that would change it, other than to expand use of the path.  
7 By contrast, *high* basis over a path (as reflected in the higher, ICF forecast-based estimates  
8 of basis and the associated benefits of NEXUS to DTE Electric's customers) is inherently  
9 unstable. High basis over a path creates incentives for market participants to seek alternate  
10 paths for their deliveries, and/or to support expanded capacity over the path, and/or to  
11 support increases in takeaway capacity from the origin point, and/or to support increased  
12 deliverability to the destination point. Accordingly, high basis over a path is generally not  
13 sustainable over a long period.

14 **Q 38: Please summarize your evaluation of the potential cost of NEXUS capacity to DTE**  
15 **Electric's customers.**

16 A: The NEXUS commitment is very likely to be costly for DTE Electric's customers, in 2018,  
17 over the five-year PSCR period, and over the course of the contract to 2038. The cost of  
18 this capacity is likely to greatly exceed its market value as reflected in Kensington –  
19 MichCon price differentials throughout the period of the commitment.

20 **Q 39: How do your current cost estimates compare to your estimates from your testimony**  
21 **in 2016 and 2017?**

22 A: My updated cost estimate is a bit higher than the earlier estimates. In my 2016 Testimony  
23 (March, 2016), the estimated net cost was \$157 million in nominal terms over the course  
24 of the commitment; that value was about the same in my 2017 Testimony (March 2017).

1 **Q 40: The Commission's Code of Conduct applicable to DTE Electric,<sup>23</sup> Section III.C, states**  
2 **in part that services provided by an affiliate to an electric utility offering regulated**  
3 **service in Michigan shall be compensated at "the lower of market price or 10% over**  
4 **fully allocated embedded cost." What would you consider to be the "market price"**  
5 **for the service that would be provided by the NEXUS capacity?**

6 A: I would consider the market price for the NEXUS transportation service to be the average  
7 future natural gas price difference between MichCon Citygate and Kensington. This is  
8 consistent with the approach to calculating the cost or benefit of NEXUS to DTE Electric's  
9 customers reflected in my estimates and in DTE Electric's estimates (both Mr. Sloan's and  
10 Mr. Pratt's estimates). DTE Electric states that it is purchasing gas supplies at MichCon  
11 Citygate at present, and their estimate of the benefits of NEXUS are based on comparisons  
12 of Kensington prices to this price point.

13 **Q 41: Have you compared the NEXUS commitment to other alternatives available to DTE**  
14 **Electric for meeting potential long-term natural gas supply needs?**

15 A: The results shown above in Tables 1 and 2 are, essentially, comparisons of the cost of  
16 NEXUS to contracting strategies based on spot purchases and forward markets. I have not  
17 otherwise evaluated long-term transportation alternatives. If the NEXUS contract resulted  
18 in net benefits to DTE Electric's customers, the question would arise as to whether other  
19 available long-term alternatives (other pipeline routes, deals with marketers, etc.) could be  
20 even more beneficial. Because the NEXUS contract does not result in net benefits to DTE  
21 Electric's customers, and the capacity is not needed at this time or anytime soon, there is  
22 no need to compare it to other specific long-term alternatives.

23 **Q 42: To the extent DTE Electric seeks to firm its gas supply, what alternatives are available**  
24 **in the near term?**

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<sup>23</sup> *In the Matter of a Code of Conduct for Consumers Energy Company and the Detroit Edison Company*, Case No. U-12134, Order on Rehearing, October 29, 2001, Exhibit A (Code of Conduct).

1 A: DTE Electric would have many options for firming the gas supply for its plants, including  
2 storage and firm interstate pipeline capacity from a nearby liquid trading point. An  
3 arrangement with a marketer holding a portfolio of natural gas transportation and storage  
4 assets, to obtain a flexible service tailored to DTE Electric's specific natural gas supply  
5 needs, is another option.

6 **Q 43: How would the cost of these alternatives likely compare to the NEXUS capacity?**

7 A: Such alternatives for supplying DTE Electric's gas-fired generation would be more flexible  
8 and likely much less expensive than holding 365-day firm capacity all the way back to the  
9 Marcellus/Utica region on NEXUS.

10 **Q 44: Has DTE Electric evaluated these other approaches to supplying its plants?**

11 A: No. DTE Electric has stated that its fuel supply objectives "are best met by a new  
12 greenfield pipeline from the Appalachian basin."<sup>24</sup> However, DTE Electric acknowledges  
13 that it did not conduct a Request for Proposals,<sup>25</sup> and has not evaluated any of the  
14 alternatives that exist, such as firm service from closer liquid trading points.<sup>26</sup> Nor has Mr.  
15 Sloan of ICF evaluated alternative routes for accessing the Appalachian basin.<sup>27</sup>

16 **Q 45: Is it necessary for DTE Electric to hold firm transportation capacity all the way from**  
17 **the Marcellus/Utica region to benefit from the economical supplies increasingly**  
18 **available there?**

19 A: No. Utilities and end users will benefit from these economical supplies most by holding  
20 firm capacity only from closer, liquid trading points (such as MichCon in Michigan,

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<sup>24</sup> Ex MEC-43, (U-17920: ANRDE 1.11); Witness Pratt supports the same statement in this proceeding (Ex MEC-44 (U-18403:MECSCDE-1.20b)).

<sup>25</sup> Ex MEC-45, (U-18403 MECSCDE-1.18a).

<sup>26</sup> Ex MEC-46 (U-18403 MECSCDE-1.20a).

<sup>27</sup> Ex MEC-47, (U-17920: ANRDE 2.4b).

1 Lebanon or Defiance in Ohio, or Dawn, Ontario). Producers have strong incentives to bear  
2 the cost of the transportation to get their supplies out of the supply region. The  
3 Marcellus/Utica supplies will push west through Ohio and on to Chicago, south to  
4 additional markets and export points, and east and north, including through New York into  
5 Ontario. This “supply-push” will moderate natural gas prices in the Midwest, including  
6 Michigan. It is certainly not necessary, and likely not economical, for Michigan utilities  
7 and end users to acquire capacity right from the basin in order to benefit from the impact  
8 of these new supplies on natural gas markets.

9 Michigan receives natural gas supplies from the Gulf of Mexico and mid-continent supply  
10 areas, Alberta, and the Rockies; and now the Marcellus/Utica supplies will also push  
11 toward and past Michigan, making for an enviable situation with multiple competing  
12 supply sources. Consumers benefit from maintaining the flexibility to acquire supplies  
13 from the least expensive sources at any time.

14 In addition, Michigan is in great shape with regard to firm deliverability, because it is the  
15 richest state in the nation with respect to natural gas storage. According to data from the  
16 U.S. Energy Information Administration (“EIA”), Michigan has more natural gas storage  
17 working capacity than any other state.<sup>28</sup> Michigan also has the most storage capacity  
18 relative to annual natural gas demand of any state. In addition to the abundant Michigan  
19 storage, there is substantial additional interconnected storage capacity just a few miles  
20 away at Dawn, Ontario. As such, any gas-fired electric generators in Michigan would have

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<sup>28</sup> U. S. Energy Information Agency, *Underground Natural Gas Storage Capacity*, available at [https://www.eia.gov/dnav/ng/ng\\_stor\\_cap\\_a\\_epg0\\_sacw0\\_mmcfc\\_a.htm](https://www.eia.gov/dnav/ng/ng_stor_cap_a_epg0_sacw0_mmcfc_a.htm).

1 a range of options for acquiring sufficiently reliable gas supply, including storage, firm  
2 short-haul transportation, and spot purchases, perhaps as bundled by marketers.

3  
4 **IV. ESTIMATED IMPACT OF NEXUS ON MICHIGAN ENERGY PRICES**

5 **Q 46: Does DTE Electric suggest additional reasons why the Commission should approve**  
6 **its request for NEXUS cost recovery?**

7 A: Yes. Citing to the ICF 2015 Study, Witness Pratt suggests (p. 9) that the NEXUS capacity  
8 will lower MichCon Citygate prices by \$0.21/Dth on average over 2017 to 2037, resulting  
9 in savings to Michigan natural gas and electricity consumers, and lower long-run PSCR  
10 costs for DTE Electric's customers due to the lower commodity prices.

11 **Q 47: How was this impact estimate developed?**

12 A: ICF compared the simulated prices at MichCon under the scenario with NEXUS to the  
13 simulated prices under a model scenario without NEXUS; both model scenarios held the  
14 Rover pipeline and all other pipelines fixed. The simulated reduction in MichCon prices  
15 resulting from the addition of the NEXUS pipeline in this way was used to calculate savings  
16 to Michigan energy consumers.

17 There are two components to the claimed savings. The first component is the estimated  
18 reduction in natural gas expenditures by Michigan residential, commercial and industrial  
19 consumers due to the estimated suppression of MichCon CityGate natural gas prices. The  
20 second component is the reduction in electricity costs in Michigan due to the lower  
21 MichCon CityGate natural gas costs. The ICF 2015 Study estimates the two components  
22 together at \$1.3 billion net present value.<sup>29</sup>

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<sup>29</sup> ICF 2015 Study (Exhibit A-27) p. 60.

1 **Q 48: Please comment on the two components of this estimate.**

2 A: The estimated suppression of the MichCon CityGate price reflects a key flaw in ICF's  
3 modeling that is discussed in more detail in the final section of my testimony – ICF's  
4 analysis ignores the fact that markets will react and adjust to the presence or absence of  
5 NEXUS. In particular, according to the ICF analysis, whether or not NEXUS is built, the  
6 total amount of other pipeline capacity out of the Marcellus/Utica area, and into and out of  
7 Michigan, will be unchanged over the next twenty years: the exact same expansions will  
8 occur, with the same capacity and on the same dates, whether or not NEXUS is built.<sup>30</sup>  
9 This is of course unrealistic; instead, other plans to build additional takeaway capacity out  
10 of the Marcellus/Utica region, to increase or decrease capacity into Michigan, or to re-  
11 deploy capacity that has served Michigan to serve other regions downstream, would be  
12 adjusted in response to the presence or absence of NEXUS (or any other pipeline capacity,  
13 for that matter) and its immediate impact on prices. These various adjustments will greatly  
14 mitigate the impact of NEXUS on prices, rendering that impact short-lived.

15 The electricity cost component is also flawed and greatly overstated. First, the estimate is  
16 based upon the estimated impact on MichCon natural gas prices, which, as explained  
17 above, is overstated. In addition, the electric power modeling exhibits a similar flaw to the  
18 one identified in the natural gas modeling: the ICF simulation assumes no change at all in  
19 generating capacity as a result of the incremental gas-fired generation, over twenty years.<sup>31</sup>  
20 Specifically, according to the ICF analysis, in 2030 there would be 153 MW more gas-

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<sup>30</sup> Ex MEC-48 (U-18403:MECSCDE-2.17bi).

<sup>31</sup> Ex MEC-49, (U-17920:MECSCDE-5.8).

1 fired capacity in Michigan if NEXUS is built than if it is not; but the total amount of all  
2 other types of capacity (coal, nuclear, renewable, other) would be unchanged.

3 This again is not how markets work and is totally unrealistic. If expanded access to natural  
4 gas results in additional gas-fired generation, this would increase reserve margins and  
5 depress energy prices, and the market would respond with earlier coal retirements,  
6 relatively less new renewable capacity, or other adjustments to the reduced need for  
7 capacity. Ignoring these adjustments results in greatly overstating the potential impact of  
8 NEXUS on electricity prices and costs.

9 **Q 49: Please summarize your conclusions regarding DTE Electric's estimates of the impact**  
10 **of NEXUS on Michigan natural gas and electricity costs.**

11 A: The estimated benefits are far into the future, and are inflated by ICF staff's choice to  
12 ignore how the natural gas and electricity markets would absorb and respond to the  
13 incremental pipeline capacity. If NEXUS is built, other incremental pipeline capacity into  
14 Michigan may be delayed, or flows may increase from Michigan on to Ontario, New York  
15 and New England. If NEXUS leads to incremental natural gas generation, some coal  
16 retirements will occur sooner, and other types of new generation may be delayed. The  
17 benefits are therefore doubtful, and highly speculative.

18 **Q 50: While you question whether NEXUS will have such an impact on Michigan prices,**  
19 **should the Commission consider the potential benefits to a broader group of energy**  
20 **consumers due to such a price impact, in deciding whether to approve DTE Electric's**  
21 **request?**

22 A: No, the Commission should not consider such impacts. The request for cost recovery from  
23 DTE Electric's customers should be decided based on the net benefit or cost of the NEXUS  
24 capacity to DTE Electric's customers. Broader impacts on other energy consumers should  
25 at best be a secondary consideration.

1 To approve recovery of what I estimate to be the substantial net cost of the NEXUS  
2 commitment from DTE Electric's customers, in an attempt to create these alleged benefits  
3 to other consumers, would amount to a subsidy of the NEXUS capacity at the expense of  
4 DTE Electric's customers. Subsidizing NEXUS to produce these alleged benefits would  
5 in effect be an exercise of "buyer market power": the Commission would exercise its  
6 authority to cause more pipeline capacity to come into the market than the market would  
7 otherwise support, in an attempt to create benefits for consumers by suppressing prices.  
8 That would be bad policy and may actually raise the cost to Michigan consumers over the  
9 longer term.

10 **Q 51: Please explain why subsidizing NEXUS could raise the cost to Michigan consumers**  
11 **over the longer term.**

12 A: Subsidizing the construction of capacity that otherwise would not be built could lead to  
13 some price suppression in the short term, which can benefit consumers in the short term.  
14 The impact and duration would likely be small, as the market would absorb the additional  
15 capacity by increasing demand and/or reducing or delaying construction of other  
16 incremental capacity.

17 In addition, the price suppression would harm other sellers of natural gas, natural gas  
18 transportation, and electricity in and around Michigan who may not be able to fully recover  
19 the lost revenues resulting from the price suppression from their customers. The  
20 Commission's action would give pause to companies considering future investments in  
21 natural gas or electricity assets in or around Michigan, as they will be concerned that should  
22 they invest, the Commission might in the future again take administrative, out-of-market  
23 actions to encourage excess supply and suppress prices. Investors will be somewhat less

1 likely to invest in Michigan assets in the future due to such regulatory uncertainty. While  
2 their analyses may suggest that future market prices should support expansions of natural  
3 gas and electricity infrastructure, they will be concerned that future Commission actions  
4 may again cause unexpected price suppression and below-market prices.

5 Put another way, investors will add a “risk premium” to the revenues and profits they would  
6 need to anticipate receiving in order to invest in Michigan. Such risk premiums would  
7 ultimately result in higher costs to Michigan consumers. Accordingly, subsidizing NEXUS  
8 is a scheme that might generate short-term benefits, but be costly to Michigan energy  
9 consumers over the longer term.

10  
11 **V. CRITIQUE OF ICF’S ASSUMPTIONS FOR PIPELINE CAPACITY ADDITIONS**

12 **Q 52: What is the topic of this section of your testimony?**

13 A: This section explains the critical flaws in the assumptions used in the ICF 2015 Study (and  
14 in more recent ICF forecasts) that DTE Electric relies upon for its claimed benefits of the  
15 NEXUS pipeline.

16 **Q 53: First, please explain how ICF simulated natural gas markets and prices to estimate**  
17 **the benefits of the NEXUS pipeline.**

18 A: Using its Gas Market Model (“GMM”), ICF simulated natural gas markets and prices to  
19 2037 under four “scenarios” differing based upon whether the Rover and NEXUS pipelines  
20 are built. The estimated benefits are based upon the simulated natural gas prices and price  
21 differences to 2037. The prices and price differences reflect many assumptions about  
22 natural gas supply and demand, but a key driver is the representation of how the pipeline  
23 network develops over time.

1 **Q 54: Please explain why the assumptions about the development of pipeline capacity are**  
2 **key.**

3 A: In any natural gas market simulation, it is necessary to represent how the pipeline network  
4 will change over time as both demand and supply at various locations change over time.  
5 To the extent the pipeline network expands in response to changing sources of supply and  
6 locational price differences, there would eventually be only moderate, cost-based price  
7 differences between locations. And scenarios that differ only with regard to one or two  
8 pipelines built in the early part of the time period would show very similar results after a  
9 few years have passed and the market has had time to absorb the capacity.

10 **Q 55: How were pipeline expansions determined in ICF's modeling?**

11 A: In this exercise, all pipeline expansions were determined by ICF staff, through an "iterative  
12 review", and input manually into the GMM model.<sup>32</sup>

13 **Q 56: Why did ICF determine the pipeline expansions in this manner?**

14 A: According to ICF, their GMM model, unlike other gas market models, does not have the  
15 capability to allow the model to determine pipeline expansions endogenously.<sup>33</sup>

16 **Q 57: In determining pipeline expansions manually, did ICF staff identify reasonable**  
17 **assumptions about how the pipeline network would expand over time?**

18 A: No. There were two key flaws in how this was done. First, ICF staff applied criteria that  
19 resulted in greatly understating how the pipeline network would expand over time, and, as  
20 a result, greatly overstating the impact of any one assumed pipeline expansion, such as

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<sup>32</sup> Ex MEC-50, (U-18403:MECSCDE-1.62b).

<sup>33</sup> Ex MEC-51, (U-18403:MECSCDE-1.62a).

1 NEXUS. Second, ICF staff simply assumed all the same other pipeline expansions would  
2 occur whether or not NEXUS is built.

3 **Q 58: What criteria did ICF staff apply to determine the pipeline expansions?**

4 A: ICF described its approach in response to a request to identify the specific objective criteria  
5 ICF applied in performing the exogenous determinations.<sup>34</sup> ICF staff first addressed all  
6 known projects that are already announced, generally assuming that the ones already filed  
7 with FERC will be constructed.<sup>35</sup> However, all such known projects to expand capacity  
8 out of the Marcellus/Utica region are scheduled to be online by November of 2018, while  
9 the modeling horizon extended to 2037. Because substantial further growth in production  
10 in the Marcellus/Utica region is expected, the assumptions about later, as yet not identified,  
11 “generic” expansions were critical.

12 ICF defined additional, generic expansions only if there was market growth in excess of  
13 available pipeline capacity – the concept that a local distribution company might use to  
14 decide whether to finance a pipeline expansion. The approach to the generic projects  
15 (“Step 3”, following Steps 1 and 2 that address all currently announced projects) was  
16 described in the response to the data request as follows:

17 Step 3: Following Steps 1 and 2, if there is still **regional market growth in excess**  
18 **of available pipeline capacity** (including both existing pipeline capacity and those  
19 projects added in Steps 1 and 2), ICF then adds generic pipeline capacity (“generic”  
20 meaning not associated with any announced project) **between the market area**  
21 **and the nearest supply area** with sufficient production growth to meet the  
22 projected incremental demand, based on the economic opportunity of building

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<sup>34</sup> Ex MEC-52, (U-18403:MECSCDE-1.63).

<sup>35</sup> *Id.*, subpart 1.163h, pp. 10-11.

1 additional capacity indicated by the GMM basis results from the iterative model  
2 runs. [emphasis added]  
3

4 In other words:

- 5 1. ICF defined generic expansions only if there was market growth. So they included  
6 only “demand pull”, but not “supply push” projects such as those that are needed, and  
7 now occurring with producer financing, to increase takeaway capacity out of the  
8 Marcellus/Utica region.
- 9 2. Furthermore, this response makes it clear that ICF considered only quantities (market  
10 growth compared to pipeline capacity), not prices, price differences, expansion costs,  
11 and profitability, in determining the generic expansions.
- 12 3. Finally, ICF considered only new generic projects between identified demand areas  
13 back to supply regions, not generic projects from demand areas to closer liquid trading  
14 points, or from supply regions to nearby liquid trading points.

15 **Q 59: What generic future pipeline expansions out of the Marcellus/Utica basin did ICF**  
16 **staff identify?**

17 A: ICF staff defined only four generic expansions, providing only 2,850 MMcfd of takeaway  
18 capacity, in the 2025 to 2028 time frame.<sup>36</sup>

19 Thus, from 2019 through 2037, while Marcellus/Utica production grows an additional 13  
20 Bcf/d (according to ICF’s forecast), takeaway capacity grows 2.85 Bcf/d under the  
21 assumptions adopted by ICF staff.

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<sup>36</sup> Ex MEC-53,(U-17920:MECSCDE-1.12a).

1 **Q 60: Why did ICF staff define so little additional takeaway capacity out of the**  
2 **Marcellus/Utica region?**

3 A: ICF explained as follows:<sup>37</sup>

4 “... Beyond the one additional east-oriented generic expansion (referred to as  
5 “Millennium Generic”), additional generic expansions to the east, northeast, west,  
6 and northwest were not required because the included planned expansions to the  
7 east, northeast, west, and northwest (as listed in the table included in the response  
8 to U-17920:MECSC/DE-1.12a) were **sufficient to meet market demand growth**  
9 **and reliability concerns.**” [emphasis added]

10  
11 That is, basis differentials between the Marcellus/Utica region and nearby liquid trading  
12 points (the measures that producers would be considering, to decide whether to financially  
13 support additional expansions, and the measures that a model that determined pipeline  
14 expansions endogenously would use), were not considered by ICF staff in defining the  
15 generic projects.

16 **Q 61: Did ICF staff evaluate additional generic projects, to determine whether additional**  
17 **expansions would be economic?**

18 A: No. ICF staff did not even evaluate any additional generic projects, beyond what they  
19 included in the model.<sup>38</sup>

20 **Q 62: Does ICF staff change the generic project assumptions, when they update their**  
21 **Natural Gas Strategic forecast on a quarterly basis?**

22 A: Yes, ICF can change these assumptions, sometimes substantially. For example, through  
23 discovery ICF provided its lists of pipeline projects as of January 2018 and February  
24 2018.<sup>39</sup> On one of these lists, the total generic pipeline capacity to the south out of the

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<sup>37</sup> Ex MEC-54, (U-18403 MECSCDE-2.17c), p. 3 of 3; see also Exhibit MEC-55, (U-18403 MECSCDE-1.64).

<sup>38</sup> Ex MEC-52 (U-18403 MECSCDE 1.63), subpart 1.63ci, p. 3 of 12.

<sup>39</sup> Ex MEC-56 ((U-18403 MECSCDE-1.66), subpart b, p. 5 of 15; Ex MEC-57 (U-18403 AGDE-1-16 Narrative + Attachment).

1 Marcellus/Utica region rises to 3 bcf/d in 2029, and to 4.5 bcf/d during 2035 to 2037. In  
2 the other response, such capacity rises much more substantially; to 7.25 bcf/d in 2031, and  
3 to 8 bcf/d in 2034 and thereafter. This large change perhaps illustrates the rather arbitrary  
4 nature of these determinations.

5 **Q 63: Does ICF staff document their analyses that result in adding, or not adding, pipeline**  
6 **capacity to their model?**

7 A: Apparently not. In response to a request for a detailed explanation of how the exogenous  
8 reviews are documented, with examples, the response was an objection, and no  
9 explanation.<sup>40</sup> The response also referred to another part of the discovery question, that  
10 provided an explanation of how the determinations are made, but was silent as to any  
11 documentation.

12 **Q 64: Do the large price differentials between Kensington and MichCon in ICF's simulation**  
13 **reflect only constraints out of the Marcellus/Utica region, or also constraints into**  
14 **Michigan?**

15 A: In discovery responses, ICF claimed that the high basis differentials in the ICF 2015 Study  
16 reflected both constraints out of the Marcellus/Utica region and also constraints into  
17 Michigan.<sup>41</sup>

18 **Q 65: Is it important to understand the geographic pattern of these constraints, in order to**  
19 **understand and evaluate the ICF simulation?**

20 A: Yes, this is critical. Additional price points help to define the constrained area, and to  
21 understand which pipeline paths ICF staff have assumed would not expand, despite basis  
22 differentials.

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<sup>40</sup> Ex MEC58 (U-18403 MECSCDE 2.17e) (referring to the response to part c). See Ex MEC-54 (U-18403 MECSCDE-2.17c).

<sup>41</sup> Ex MEC-60, (U-18403-MECSCDE-1.76a).

1 For example, if the geographic extent of the Marcellus/Utica constrained area includes New  
2 England, that would reflect an assumption that pipeline capacity into New England would  
3 be expanded to relieve the constraints that exist today. If instead, the constrained area  
4 excludes New England, that would reflect an assumption that such expansions will not  
5 occur and the constraints and price differentials would persist. Based on that  
6 understanding, it could be further explored why the capacity to New England expanded (or  
7 failed to expand).

8 Similarly, whether or not the constrained area includes southeastern states such as North  
9 Carolina would indicate whether pipeline capacity in a southward direction expanded in  
10 response to prices, or not. Then the reasons why these pipelines did (or did not) expand  
11 could be further explored.

12 **Q 66: Did DTE Electric provide price data for additional locations, to identify the**  
13 **geographic extent of the constraints?**

14 A: No, requests for additional price data were refused.<sup>42</sup> While the GMM models over 100  
15 price points,<sup>43</sup> only ten points were provided.<sup>44</sup>

16 **Q 67: What was DTE Electric's rationale for not providing additional price details?**

17 A: Referring to the ten locations for which price data was provided, in the 2017 PSCR Case  
18 No. U-18143, Witness Sloan asserted, "The price data provided in the response to  
19 MECSCDE-2.21 does represent all relevant price points in and around the Marcellus region

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<sup>42</sup> Ex MEC-61 (U-18403:MECSCDE-2.16).

<sup>43</sup> Ex MEC-62 (U-18143:MECSCDE-4.11b)

<sup>44</sup> The response to U-18403:MECSCDE 1.46 attachment provided prices for the following points: MichCon, Henry Hub, AECO, "Mid-continent" (an aggregate), Chicago, Lebanon, Defiance, Dominion South, Kensington, and Dawn. See Ex MEC-33 (U-18403 MECSCDE-1.46S Attachment).

1 and Michigan represented in the GMM as used for the forecasting documented in Exhibit  
2 A-27 in this proceeding.”<sup>45</sup> In this case, in response to the same question, Mr. Sloan  
3 responded that the additional locational price data is proprietary and did not provide it.<sup>46</sup>  
4 In Case No. U-1843, Mr. Sloan further took the position that only points that “are along  
5 the path between Marcellus/Utica and Michigan, as well as the prices at major markets that  
6 impact prices in Michigan” are relevant.<sup>47</sup>

7 **Q 68: Do you agree that only these prices are relevant?**

8 A: No. As I explained above, to understand the prices and constraints that ICF is forecasting,  
9 it is necessary to understand the geographic extent of the constrained out of  
10 Marcellus/Utica, and into Michigan. In particular, no price points to the east, south, or  
11 southwest of the Marcellus/Utica region were provided.

12 **Q 69: Did Witness Sloan clarify the geographic extent of the constrained region around the**  
13 **Marcellus/Utica, in ICF’s simulation?**

14 A: Yes. In further discovery in the prior PSCR proceeding, he revealed that according to the  
15 ICF 2015 Study, the geographic extent of the constrained Marcellus/Utica area was limited  
16 to just southwest Pennsylvania and eastern Ohio (the Dominion South and Kensington  
17 points).<sup>48</sup> This means that in the simulation, ICF staff assumed market participants would  
18 not expand capacity between these points and central PA/Leidy (Node 118), Northeast  
19 PA/Southcentral NY (Node 117), western NY (Node 5), eastern PA (Node 79), West

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<sup>45</sup> Ex MEC-63, (U-18143-MECSCDE-4.13a-b), pp. 2, 4 of 4.

<sup>46</sup> Ex MEC-64 (U-18403 MECSCDE-1.76c).

<sup>47</sup> Ex MEC-65, (U-18143-MECSCDE-5.3b).

<sup>48</sup> Ex MEC-66, (U-18143:MECSCDE-5.5a).

1 Virginia (Node 80), or MD/DC/Northern VA (Node 19), not to mention more distant  
2 points, such as the southeast, New Jersey or New England.<sup>49</sup>

3 **Q 70: Did Witness Sloan clarify the geographic extent of the constraints into Michigan in**  
4 **ICF's simulation?**

5 A: Yes. In further discovery he revealed that the geographic extent of the constrained region  
6 around Michigan in the simulation included only MichCon; Dawn, Ontario; and Defiance  
7 and Lebanon in Ohio.<sup>50</sup> This means that in the simulation, there were constraints between  
8 these points and southwest Michigan (Node 98), Indiana (Node 14), Chicago (Node 14),  
9 West Virginia (Node 18) and Parkway, Ontario, along with all other points.

10 **Q 71: Is it reasonable to expect these constrained areas to persist over the long term, as**  
11 **assumed in the ICF 2015 Study?**

12 A: No. Both of these constrained areas have many interconnections that could and would be  
13 expanded over time, if the basis differential is substantial.

14 **Q 72: In particular, is it reasonable to expect such large price differentials between**  
15 **Defiance, Ohio or Lebanon Ohio, and Kensington Ohio, across the state, over the long**  
16 **term, as shown in the exhibit?**

17 A: No. Both Defiance and Lebanon are about 200 miles from Kensington. The Lebanon area  
18 is connected to the Marcellus/Utica region by multiple pipelines, including Rockies  
19 Express, Texas Eastern and Dominion. Substantial price differentials over these paths  
20 would be unsustainable and would attract additional pipeline expansions providing  
21 capacity out of Kensington and/or into Defiance or Lebanon. There are multiple pipelines  
22 that could provide such expansions.

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<sup>49</sup> Exs MEC-67, 62 (U-18143:MECSCDE 4.11a, 4.11b) (GMM network map and price nodes).

<sup>50</sup> Ex MEC-68, (U-18143:MECSCDE-5.4a).

1 **Q 73: What did ICF staff assume about pipeline capacity expansions, under the scenario**  
2 **where NEXUS is not built?**

3 A: This reveals the second critical flaw in the ICF analysis. ICF staff simply assumed that the  
4 amount of additional capacity out of the Marcellus/Utica region over the next twenty years  
5 would not depend on whether or not NEXUS (or Rover) is built. The exact same other  
6 takeaway capacity (including both the identified projects, and generic future projects) were  
7 included under all four scenarios of whether Rover and NEXUS are built. ICF confirmed  
8 that under all four scenarios (with and without the Rover and NEXUS pipelines), all other  
9 pipeline expansions are exactly the same in terms of their on-line dates and capacities.<sup>51</sup>

10 **Q 74: Please comment on ICF's assumption that the same pipeline expansions would occur,**  
11 **on the same dates and with the same sizes, over 2017 to 2037, whether or not Rover**  
12 **or NEXUS is built.**

13 A: This is, of course, contrary to economic logic, and to how markets work. When production  
14 is growing in a supply area it causes constraints on the available pipelines to take the new  
15 supplies out of the area; this we have already seen. The constraints cause basis from the  
16 supply basin to adjacent liquid trading points to widen, leading producers to seek additional  
17 takeaway capacity, and to support construction of new or expanded capacity. This too we  
18 are already seeing. However, as some expansion projects move forward, this reduces  
19 market participants' expectations with regard to capacity needs future basis, and makes  
20 other expansions less urgent. As a result, other, competing expansions may be delayed,  
21 downsized or cancelled. This market dynamic continues over time, with the most  
22 economical expansions that find the strongest market support moving forward at any time.

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<sup>51</sup> Ex MEC-69 (U-17920:MECSCDE-4.1a).

1 Under ICF's assumption, if Rover and NEXUS are built and come online in 2017 (a total  
2 of 4.75 Bcf/d of capacity), the total amount of takeaway capacity from the Marcellus/Utica  
3 region in 2037 will be exactly 4.75 Bcf/d greater than if neither pipeline is built. The idea  
4 that over twenty years the exact same set of other expansions would be constructed out of  
5 the Marcellus/Utica region, with the exact same capacities and on-line dates, whether or  
6 not Rover and NEXUS are built, and without regard to the impact on basis differentials, is  
7 totally unrealistic and contrary to how markets work.

8 **Q 75: How did Mr. Sloan justify assuming that all other pipeline expansions would be**  
9 **unchanged, under scenarios with and without NEXUS?**

10 A: Mr. Sloan justified this assumption as follows:<sup>52</sup>

11 "As the purpose of the sensitivity cases was to measure the impacts of Rover and  
12 NEXUS, it would not be logical to subject the sensitivity cases to a review of  
13 pipeline expansions."  
14

15 In this explanation, Mr. Sloan has confused impacts within his model with impacts in the  
16 real world. While perhaps the modelers might be curious what the impact on their model  
17 might be of removing a pipeline while holding everything else the same, in the real world  
18 no such experiment can possibly occur. If NEXUS is not built, this will lead some of the  
19 other projects out of Marcellus/Utica, or into Michigan, to be adjusted. There is simply no  
20 logical basis for assuming such adjustments would not occur.

21 **Q 76: Does Mr. Sloan acknowledge that, if NEXUS is not built, other capacity would likely**  
22 **have been built instead?**

23 A: Yes he does. In the same discovery response, he continued as follows:

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<sup>52</sup> Ex MEC-48 (U-18403:MECSCDE-2.17bi).

1 “Given the positive economics of the two pipelines, removing one or both of the  
2 pipelines from a scenario would increase the economics of adding pipeline  
3 capacity, and create the incentive to add pipeline capacity. Given the options  
4 available at the time of the analysis, the likely addition of capacity would have been  
5 Rover and NEXUS, or similar pipelines.”  
6

7 **Q 77: What is the impact of this ICF assumption on the estimated value of the NEXUS**  
8 **capacity?**

9 A: This failure to represent how markets would react to any capacity additions (or to their  
10 absence) results in greatly overstating the impact and value of those capacity additions that  
11 are allowed in the model, such as NEXUS. For example, comparing the scenarios with  
12 and without NEXUS (both including the Rover pipeline), ICF’s modeling suggests that if  
13 NEXUS is built, twenty years later the basis differential from Kensington to MichCon will  
14 be over \$.60/Dth lower than it would be without NEXUS.

15 **Q 78: Please summarize your critique of the ICF analysis DTE Electric relies upon for its**  
16 **claims regarding benefits of the NEXUS capacity.**

17 A: The two key flaws in the analysis, which drive the results, have to do with the failure to  
18 reasonably identify pipeline expansions that would occur in response to widening basis  
19 differentials over time. These flawed assumptions, which were determined in a non-  
20 transparent manner by ICF staff, allow substantial price differentials to persist, greatly  
21 exaggerating the impact and value of NEXUS.

22 The ICF base case reflects unsustainably large basis differentials between Kensington and  
23 MichCon, especially after 2030, which exaggerates the estimated benefit to DTE Electric’s  
24 customers of holding NEXUS capacity. And the scenarios without NEXUS assumed no  
25 adjustment of other pipeline capacity over twenty years to the resulting higher basis  
26 differential, a totally unrealistic assumption that exaggerates the impact of NEXUS on  
27 Michigan natural gas prices and on basis differentials.

1     **Q 79: Does this complete your testimony?**

2           A: Yes it does.

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**SUMMARY**

James F. Wilson is an economist with over 30 years of consulting experience, primarily in the electric power and natural gas industries. Many of his assignments have pertained to the economic and policy issues arising from the interplay of competition and regulation in these industries, including restructuring policies, market design, market analysis and market power. Other recent engagements have involved resource adequacy and capacity markets, contract litigation and damages, forecasting and market evaluation, pipeline rate cases and evaluating allegations of market manipulation. Mr. Wilson has been involved in electricity restructuring and wholesale market design for over twenty years in California, PJM, New England, Russia and other regions. He also spent five years in Russia in the early 1990s advising on the reform, restructuring and development of the Russian electricity and natural gas industries.

Mr. Wilson has submitted affidavits and testified in Federal Energy Regulatory Commission and state regulatory proceedings. His papers have appeared in the *Energy Journal*, *Electricity Journal*, *Public Utilities Fortnightly* and other publications, and he often presents at industry conferences.

Prior to founding Wilson Energy Economics, Mr. Wilson was a Principal at LECG, LLC. He has also worked for ICF Resources, Decision Focus Inc., and as an independent consultant.

**EDUCATION**

MS, Engineering-Economic Systems, Stanford University, 1982  
BA, Mathematics, Oberlin College, 1977

**RECENT ENGAGEMENTS**

- Evaluated the potential impact of an electricity generation operating reserve demand curve on a wholesale electricity market with a capacity construct.
- Developed wholesale capacity market enhancements to accommodate seasonal resources and resource adequacy requirements.
- Evaluation of wholesale electricity market design enhancements to accommodate state initiatives to promote state environmental and other policy objectives.
- Evaluation of proposals for natural gas distribution system expansions.
- Various consulting assignments on wholesale electric capacity market design issues in PJM, New England, the Midwest, Texas, and California.
- Cost-benefit analysis of a new natural gas pipeline.
- Evaluation of the impacts of demand response on electric generation capacity mix and emissions.
- Panelist on a FERC technical conference on capacity markets.
- Affidavit on the potential for market power over natural gas storage.
- Executive briefing on wind integration and linkages to short-term and longer-term resource adequacy approaches.

- Affidavit on the impact of a centralized capacity market on the potential benefits of participation in a Regional Transmission Organization (RTO).
- Participated in a panel teleseminar on resource adequacy policy and modeling.
- Affidavit on opt-out rules for centralized capacity markets.
- Affidavits on minimum offer price rules for RTO centralized capacity markets.
- Evaluated electric utility avoided cost in a tax dispute.
- Advised on pricing approaches for RTO backstop short-term capacity procurement.
- Affidavit evaluating the potential impact on reliability of demand response products limited in the number or duration of calls.
- Evaluated changing patterns of natural gas production and pipeline flows, developed approaches for pipeline tolls and cost recovery.
- Evaluated an electricity peak load forecasting methodology and forecast; evaluated regional transmission needs for resource adequacy.
- Participated on a panel teleseminar on natural gas price forecasting.
- Affidavit evaluating a shortage pricing mechanism and recommending changes.
- Testimony in support of proposed changes to a forward capacity market mechanism.
- Reviewed and critiqued an analysis of the economic impacts of restrictions on oil and gas development.
- Advised on the development of metrics for evaluating the performance of Regional Transmission Organizations and their markets.
- Prepared affidavit on the efficiency benefits of excess capacity sales in readjustment auctions for installed capacity.
- Prepared affidavit on the potential impacts of long lead time and multiple uncertainties on clearing prices in an auction for standard offer electric generation service.

## **EARLIER PROFESSIONAL EXPERIENCE**

LECG, LCC, Washington, DC 1998–2009.

### Principal

- Reviewed and commented on an analysis of the target installed capacity reserve margin for the Mid Atlantic region; recommended improvements to the analysis and assumptions.
- Evaluated an electric generating capacity mechanism and the price levels to support adequate capacity; recommended changes to improve efficiency.
- Analyzed and critiqued the methodology and assumptions used in preparation of a long run electricity peak load forecast.
- Evaluated results of an electric generating capacity incentive mechanism and critiqued the mechanism's design; prepared a detailed report. Evaluated the impacts of the mechanism's flaws on prices and costs and prepared testimony in support of a formal complaint.
- Analyzed impacts and potential damages of natural gas migration from a storage field.
- Evaluated allegations of manipulation of natural gas prices and assessed the potential impacts of natural gas trading strategies.
- Prepared affidavit evaluating a pipeline's application for market-based rates for interruptible transportation and the potential for market power.
- Prepared testimony on natural gas industry contracting practices and damages in a contract dispute.
- Prepared affidavits on design issues for an electric generating capacity mechanism for an eastern US regional transmission organization; participated in extensive settlement discussions.
- Prepared testimony on the appropriateness of zonal rates for a natural gas pipeline.
- Evaluated market power issues raised by a possible gas-electric merger.
- Prepared testimony on whether rates for a pipeline extension should be rolled-in or incremental under Federal Energy Regulatory Commission ("FERC") policy.

- Prepared an expert report on damages in a natural gas contract dispute.
- Prepared testimony regarding the incentive impacts of a ratemaking method for natural gas pipelines.
- Prepared testimony evaluating natural gas procurement incentive mechanisms.
- Analyzed the need for and value of additional natural gas storage in the southwestern US.
- Evaluated market issues in the restructured Russian electric power market, including the need to introduce financial transmission rights, and policies for evaluating mergers.
- Affidavit on market conditions in western US natural gas markets and the potential for a new merchant gas storage facility to exercise market power.
- Testimony on the advantages of a system of firm, tradable natural gas transmission and storage rights, and the performance of a market structure based on such policies.
- Testimony on the potential benefits of new independent natural gas storage and policies for providing transmission access to storage users.
- Testimony on the causes of California natural gas price increases during 2000-2001 and the possible exercise of market power to raise natural gas prices at the California border.
- Advised a major US utility with regard to the Federal Energy Regulatory Commission's proposed Standard Market Design and its potential impacts on the company.
- Reviewed and critiqued draft legislation and detailed market rules for reforming the Russian electricity industry, for a major investor in the sector.
- Analyzed the causes of high prices in California wholesale electric markets during 2000 and developed recommendations, including alternatives for price mitigation. Testimony on price mitigation measures.
- Summarized and critiqued wholesale and retail restructuring and competition policies for electric power and natural gas in select US states, for a Pacific Rim government contemplating energy reforms.
- Presented testimony regarding divestiture of hydroelectric generation assets, potential market power issues, and mitigation approaches to the California Public Utilities Commission.
- Reviewed the reasonableness of an electric utility's wholesale power purchases and sales in a restructured power market during a period of high prices.
- Presented an expert report on failure to perform and liquidated damages in a natural gas contract dispute.
- Presented a workshop on Market Monitoring to a group of electric utilities in the process of forming an RTO.
- Authored a report on the screening approaches used by market monitors for assessing exercise of market power, material impacts of conduct, and workable competition.
- Developed recommendations for mitigating locational market power, as part of a package of congestion management reforms.
- Provided analysis in support of a transmission owner involved in a contract dispute with generators providing services related to local grid reliability.
- Authored a report on the role of regional transmission organizations in market monitoring.
- Prepared market power analyses in support of electric generators' applications to FERC for market-based rates for energy and ancillary services.
- Analyzed western electricity markets and the potential market power of a large producer under various asset acquisition or divestiture strategies.
- Testified before a state commission regarding the potential benefits of retail electric competition and issues that must be addressed to implement it.
- Prepared a market power analysis in support of an acquisition of generating capacity in the New England market.
- Advised a California utility regarding reform strategies for the California natural gas industry, addressing market power issues and policy options for providing system balancing services.

ICF RESOURCES, INC., Fairfax, VA, 1997–1998.

Project Manager

- Reviewed, critiqued and submitted testimony on a New Jersey electric utility's restructuring proposal, as part of a management audit for the state regulatory commission.
- Assisted a group of US utilities in developing a proposal to form a regional Independent System Operator (ISO).
- Researched and reported on the emergence of Independent System Operators and their role in reliability, for the Department of Energy.
- Provided analytical support to the Secretary of Energy's Task Force on Electric System Reliability on various topics, including ISOs. Wrote white papers on the potential role of markets in ensuring reliability.
- Recommended near-term strategies for addressing the potential stranded costs of non-utility generator contracts for an eastern utility; analyzed and evaluated the potential benefits of various contract modifications, including buyout and buydown options; designed a reverse auction approach to stimulating competition in the renegotiation process.
- Designed an auction process for divestiture of a Northeastern electric utility's generation assets and entitlements (power purchase agreements).
- Participated in several projects involving analysis of regional power markets and valuation of existing or proposed generation assets.

IRIS MARKET ENVIRONMENT PROJECT, 1994–1996.

Project Director, Moscow, Russia

Established and led a policy analysis group advising the Russian Federal Energy Commission and Ministry of Economy on economic policies for the electric power, natural gas, oil pipeline, telecommunications, and rail transport industries (*the Program on Natural Monopolies*, a project of the IRIS Center of the University of Maryland Department of Economics, funded by USAID):

- Advised on industry reforms and the establishment of federal regulatory institutions.
- Advised the Russian Federal Energy Commission on electricity restructuring, development of a competitive wholesale market for electric power, tariff improvements, and other issues of electric power and natural gas industry reform.
- Developed policy conditions for the IMF's \$10 billion Extended Funding Facility.
- Performed industry diagnostic analyses with detailed policy recommendations for electric power (1994), natural gas, rail transport and telecommunications (1995), oil transport (1996).

Independent Consultant stationed in Moscow, Russia, 1991–1996

Projects for the WORLD BANK, 1992-1996:

- Bank Strategy for the Russian Electricity Sector. Developed a policy paper outlining current industry problems and necessary policies, and recommending World Bank strategy.
- Russian Electric Power Industry Restructuring. Participated in work to develop recommendations to the Russian Government on electric power industry restructuring.
- Russian Electric Power Sector Update. Led project to review developments in sector restructuring, regulation, demand, supply, tariffs, and investment.
- Russian Coal Industry Restructuring. Analyzed Russian and export coal markets and developed forecasts of future demand for Russian coal.
- World Bank/IEA Electricity Options Study for the G-7. Analyzed mid- and long-term electric power demand and efficiency prospects and developed forecasts.
- Russian Energy Pricing and Taxation. Developed recommendations for liberalizing energy markets, eliminating subsidies and restructuring tariffs for all energy resources.

Other consulting assignments in Russia, 1991–1994:

- Advised on projects pertaining to Russian energy policy and the transition to a market economy in the energy industries, for the Institute for Energy Research of the Russian Academy of Sciences.
- Presented seminars on the structure, economics, planning, and regulation of the energy and electric power industries in the US, for various Russian clients.

DECISION FOCUS INC., Mountain View, CA, 1983–1992

Senior Associate, 1985-1992.

- For the Electric Power Research Institute, led projects to develop decision-analytic methodologies and models for evaluating long term fuel and electric power contracting and procurement strategies. Applied the methodologies and models in numerous case studies, and presented several workshops and training sessions on the approaches.
- Analyzed long-term and short-term natural gas supply decisions for a large California gas distribution company following gas industry unbundling and restructuring.
- Analyzed long term coal and rail alternatives for a midwest electric utility.
- Evaluated bulk power purchase alternatives and strategies for a New Jersey electric utility.
- Performed a financial and economic analysis of a proposed hydroelectric project.
- For a natural gas pipeline company serving the Northeastern US, forecasted long-term natural gas supply and transportation volumes. Developed a forecasting system for staff use.
- Analyzed potential benefits of diversification of suppliers for a natural gas pipeline company.
- Evaluated uranium contracting strategies for an electric utility.
- Analyzed telecommunications services markets under deregulation, developed and implemented a pricing strategy model. Evaluated potential responses of residential and business customers to changes in the client's and competitors' telecommunications services and prices.
- Analyzed coal contract terms and supplier diversification strategies for an eastern electric utility.
- Analyzed oil and natural gas contracting strategies for an electric utility.

## TESTIMONY AND AFFIDAVITS

Virginia Electric and Power Company's Integrated Resource Plan filing, Virginia State Corporation Commission Case No. PUE-2017-00051, Direct Testimony on behalf of Environmental Respondents, August 11, 2017; testimony at hearings September 26, 2017.

Ohio House of Representatives Public Utilities Committee hearing on House Bill 178 (Zero Emission Nuclear Resource legislation), Opponent Testimony on Behalf of Natural Resources Defense Council, May 15, 2017.

In the Matter of the Application of Atlantic Coast Pipeline, Federal Energy Regulatory Commission Docket No. CP15-554, Evaluating Market Need for the Atlantic Coast Pipeline, Attachment 2 to the comments of Shenandoah Valley Network *et al*, April 6, 2017.

In the Matter of the Application of DTE Electric Company for Authority to Implement a Power Supply Cost Recovery Plan in its Rate Schedules for 2017 Metered Jurisdictional Sales of Electricity, Michigan Public Service Commission Case No. U-18143, Direct Testimony on behalf of Michigan Environmental Council and the Sierra Club, March 22, 2017.

In the Matter of the Petition of Washington Gas Light Company for Approval of Revised Tariff Provisions to Facilitate Access to Natural Gas in the Company's Maryland Franchise Area That Are Currently Without Natural Gas Service, Maryland Public Service Commission Case No. 9433, Direct Testimony on Behalf of the Mid-Atlantic Propane Gas Association and the Mid-Atlantic Petroleum Distributors Association, Inc., March 1, 2017; testimony at hearings, May 1, 2017.

In the Matter of Integrated Resource Plans and Related 2016 REPS Compliance Plans, North Carolina Utilities Commission Docket No. E-11 Sub 147, Review and Evaluation of the Peak Load Forecasts and Reserve Margin Determinations for the Duke Energy Carolinas and Duke Energy Progress 2016 Integrated Resource Plans, Attachments A and B to the comments of the Natural

Resources Defense Council, Southern Alliance for Clean Energy, and the Sierra Club, February 17, 2017.

In the Matter of the Tariff Revisions Designated TA285-4 filed by ENSTAR Natural Gas Company, a Division of SEMCO Energy, Inc., Regulatory Commission of Alaska Case No. U-16-066, Testimony on Behalf of Matanuska Electric Association, Inc., February 7, 2017, testimony at hearings, June 21, 2017.

PJM Interconnection, L.L.C., FERC Docket No. ER17-367 (seasonal capacity), Prepared Testimony on Behalf of Advanced Energy Management Alliance, Environmental Law & Policy Center, Natural Resources Defense Council, Rockland Electric Company and Sierra Club, December 8, 2016; Declaration in support of Protest of Response to Deficiency Letter, February 13, 2017.

Natural Resources Defense Council, Sierra Club, and Union of Concerned Scientists v. Federal Energy Regulatory Commission, U.S. District Court of Appeals for the D.C. Circuit Case No. 16-1236 (Capacity Performance), Declaration, September 23, 2016.

Mountaineer Gas Company Infrastructure Replacement and Expansion Program Filing for 2016, West Virginia Public Service Commission Case No. 15-1256-G-390P, and Mountaineer Gas Company Infrastructure Replacement and Expansion Program Filing for 2017, West Virginia Public Service Commission Case No. 16-0922-G-390P, Direct Testimony on behalf of the West Virginia Propane Gas Association, September 9, 2016.

Application of Chesapeake Utilities Corporation for a General Increase in its Natural Gas Rates and for Approval of Certain Other Changes to its Natural Gas Tariff, Delaware P.S.C. Docket No. 15-1734, Direct Testimony on behalf of the Delaware Association Of Alternative Energy Providers, Inc., August 24, 2016.

Virginia Electric and Power Company's Integrated Resource Plan filing, Virginia State Corporation Commission Case No. PUE-2016-00049, Direct Testimony on behalf of Environmental Respondents, August 17, 2016; testimony at hearings October 5, 2016.

In the Matter of the Application of DTE Electric Company for Authority to Implement a Power Supply Cost Recovery Plan in its Rate Schedules for 2016 Metered Jurisdictional Sales of Electricity, Michigan Public Service Commission Case No. U-17920, Direct Testimony on behalf of Michigan Environmental Council and the Sierra Club, March 14, 2016.

In the Matter of the Application Seeking Approval of Ohio Power Company's Proposal to Enter into an Affiliate Power Purchase Agreement for Inclusion in the Power Purchase Agreement Rider, Public Utilities Commission of Ohio Case No. 14-1693-EL-RDR: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, September 11, 2015; deposition, September 30, 2015; supplemental deposition, October 16, 2015; testimony at hearings, October 21, 2015; supplemental testimony December 28, 2015; second supplemental deposition, December 30, 2015; testimony at hearings January 8, 2016.

Indicated Market Participants v. PJM Interconnection, L.L.C., FERC Docket No. EL15-88 (Capacity Performance transition auctions), Affidavit on behalf of the Joint Consumer Representatives and Interested State Commissions, August 17, 2015.

ISO New England Inc. and New England Power Pool Participants Committee, FERC Docket No. ER15-2208 (Winter Reliability Program), Testimony on Behalf of the New England States Committee on Electricity, August 5, 2015.

Joint Consumer Representatives v. PJM Interconnection, L.L.C., FERC Docket No. EL15-83 (load forecast for capacity auctions), Affidavit in Support of the Motion to Intervene and Comments of the Public Power Association of New Jersey, July 20, 2015.

In the Matter of the Tariff Revisions Filed by ENSTAR Natural Gas Company, a Division of SEMCO Energy, Inc., Regulatory Commission of Alaska Case No. U-14-111, Testimony on Behalf of Matanuska Electric Association, Inc., May 13, 2015.

In the Matter of the Application of Ohio Edison Company et al for Authority to Provide for a Standard Service Offer Pursuant to R.C. 4928.143 in the Form of an Electric Security Plan, Public Utilities Commission of Ohio Case No. 14-1297-EL-SSO: Direct Testimony on Behalf of the Office of the

Ohio Consumers' Counsel and Northeast Ohio Public Energy Council, December 22, 2014; deposition, February 10, 2015; supplemental testimony May 11, 2015; second deposition May 26, 2015; testimony at hearings, October 2, 2015; second supplemental testimony December 30, 2015; third deposition January 8, 2016; testimony at hearings January 19, 2016; rehearing direct testimony June 22, 2016; fourth deposition July 5, 2016; testimony at hearings July 14, 2016.

PJM Interconnection, L.L.C., FERC Docket No. ER14-2940 (RPM Triennial Review), Affidavit in Support of the Protest of the PJM Load Group, October 16, 2014.

In the Matter of the Application of Duke Energy Ohio for Authority to Establish a Standard Service Offer in the Form of an Electric Security Plan, Public Utilities Commission of Ohio Case No. 14-841-EL-SSO: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, September 26, 2014; deposition, October 6, 2014; testimony at hearings, November 5, 2014.

In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer in the Form of an Electric Security Plan, Public Utilities Commission of Ohio Case No. 13-2385-EL-SSO: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, May 6, 2014; deposition, May 29, 2014; testimony at hearings, June 16, 2014.

PJM Interconnection, L.L.C., FERC Docket No. ER14-504 (clearing of Demand Response in RPM), Affidavit in Support of the Protest of the Joint Consumer Advocates and Public Interest Organizations, December 20, 2013.

New England Power Generators Association, Inc. v. ISO New England Inc., FERC Docket No. EL14-7 (administrative capacity pricing), Testimony in Support of the Protest of the New England States Committee on Electricity, November 27, 2013.

Midwest Independent Transmission System Operator, Inc., FERC Docket No. ER11-4081 (minimum offer price rule), Affidavit In Support of Brief of the Midwest TDUs, October 11, 2013.

ANR Storage Company, FERC Docket No. RP12-479 (storage market-based rates), Prepared Answering Testimony on behalf of the Joint Intervenor Group, April 2, 2013; Prepared Cross-answering Testimony, May 15, 2013; testimony at hearings, September 4, 2013.

In the Matter of the Application of The Dayton Power and Light Company for Approval of its Market Rate Offer, Public Utilities Commission of Ohio Case No. 12-426-EL-SSO: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, March 5, 2013; deposition, March 11, 2013.

PJM Interconnection, L.L.C., FERC Docket No. ER13-535 (minimum offer price rule), Affidavit in Support of the Protest and Comments of the Joint Consumer Advocates, December 28, 2012.

In the Matter of the Application of Ohio Edison Company, et al for Authority to Provide for a Standard Service Offer in the Form of an Electric Security Plan, Public Utilities Commission of Ohio Case No. 12-1230-EL-SSO: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, May 21, 2012; deposition, May 30, 2012; testimony at hearings, June 5, 2012.

PJM Interconnection, L.L.C., FERC Docket No. ER12-513 (changes to RPM), Affidavit in Support of Protest of the Joint Consumer Advocates and Demand Response Supporters, December 22, 2011.

People of the State of Illinois *ex rel.* Leon A. Greenblatt, III v Commonwealth Edison Company, Circuit Court of Cook County, Illinois, deposition, September 22, 2011; interrogatory, Feb. 22, 2011.

In the Matter of the Application of Union Electric Company for Authority to Continue the Transfer of Functional Control of Its Transmission System to the Midwest Independent Transmission System Operator, Inc., Missouri PSC Case No. EO-2011-0128, Testimony in hearings, February 9, 2012; Rebuttal Testimony and Response to Commission Questions On Behalf Of The Missouri Joint Municipal Electric Utility Commission, September 14, 2011.

PJM Interconnection, L.L.C., and PJM Power Providers Group v. PJM Interconnection, L.L.C., FERC Docket Nos. ER11-2875 and EL11-20 (minimum offer price rule), Affidavit in Support of Protest of New Jersey Division of Rate Counsel, March 4, 2011, and Affidavit in Support of Request for Rehearing and for Expedited Consideration of New Jersey Division of Rate Counsel, May 12, 2011.

PJM Interconnection, L.L.C., FERC Docket No. ER11-2288 (demand response "saturation"), Affidavit in Support of Protest and Comments of the Joint Consumer Advocates, December 23, 2010.

North American Electric Reliability Corporation, FERC Docket No. RM10-10, Comments on Proposed Reliability Standard BAL-502-RFC-02: Planning Resource Adequacy Analysis, Assessment and Documentation, December 23, 2010.

In the Matter of the Reliability Pricing Model and the 2013/2014 Delivery Year Base Residual Auction Results, Maryland Public Service Commission Administrative Docket PC 22, Comments and Responses to Questions On Behalf of Southern Maryland Electric Cooperative, October 15, 2010.

PJM Interconnection, L.L.C., FERC Docket No. ER09-1063-004 (PJM compliance filing on pricing during operating reserve shortages): Affidavit In Support of Comments and Protest of the Pennsylvania Public Utility Commission, July 30, 2010.

ISO New England, Inc. and New England Power Pool, FERC Docket No. ER10-787 (minimum offer price rules): Direct Testimony On Behalf Of The Connecticut Department of Public Utility Control, March 30, 2010; Direct Testimony in Support of First Brief of the Joint Filing Supporters, July 1, 2010; Supplemental Testimony in Support of Second Brief of the Joint Filing Supporters, September 1, 2010.

PJM Interconnection, L.L.C., FERC Docket No. ER09-412-006 (RPM incremental auctions): Affidavit In Support of Protest of Indicated Consumer Interests, January 19, 2010.

In the Matter of the Application of Ohio Edison Company, et al for Approval of a Market Rate Offer to Conduct a Competitive Bidding Process for Standard Service Offer Electric Generation Supply, Public Utilities Commission of Ohio Case No. 09-906-EL-SSO: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, December 7, 2009; deposition, December 10, 2009, testimony at hearings, December 22, 2009.

Application of PATH Allegheny Virginia Transmission Corporation for Certificates of Public Convenience and Necessity to Construct Facilities: 765 kV Transmission Line through Loudon, Frederick and Clarke Counties, Virginia State Corporation Commission Case No. PUE-2009-00043: Direct Testimony on Behalf of Commission Staff, December 8, 2009.

PJM Interconnection, L.L.C., FERC Docket No. ER09-412-000: Affidavit On Proposed Changes to the Reliability Pricing Model On Behalf Of RPM Load Group, January 9, 2009; Reply Affidavit, January 26, 2009.

PJM Interconnection, L.L.C., FERC Docket No. ER09-412-000: Affidavit In Support of the Protest Regarding Load Forecast To Be Used in May 2009 RPM Auction, January 9, 2009.

Maryland Public Service Commission et al v. PJM Interconnection, L.L.C., FERC Docket No. EL08-67-000: Affidavit in Support Complaint of the RPM Buyers, May 30, 2008; Supplemental Affidavit, July 28, 2008.

PJM Interconnection, L.L.C., FERC Docket No. ER08-516: Affidavit On PJM's Proposed Change to RPM Parameters on Behalf of RPM Buyers, March 6, 2008.

PJM Interconnection, L.L.C., Reliability Pricing Model Compliance Filing, FERC Docket Nos. ER05-1410 and EL05-148: Affidavit Addressing RPM Compliance Filing Issues on Behalf of the Public Power Association of New Jersey, October 15, 2007.

TXU Energy Retail Company LP v. Leprino Foods Company, Inc., US District Court for the Northern District of California, Case No. C01-20289: Testimony at trial, November 15-29, 2006; Deposition, April 7, 2006; Expert Report on Behalf of Leprino Foods Company, March 10, 2006.

Gas Transmission Northwest Corporation, Federal Energy Regulation Commission Docket No. RP06-407: Reply Affidavit, October 26, 2006; Affidavit on Behalf of the Canadian Association of Petroleum Producers, October 18, 2006.

PJM Interconnection, L.L.C., Reliability Pricing Model, FERC Docket Nos. ER05-1410 and EL05-148: Supplemental Affidavit on Technical Conference Issues, June 22, 2006; Supplemental Affidavit Addressing Paper Hearing Topics, June 2, 2006; Affidavit on Behalf of the Public Power Association of New Jersey, October 19, 2005.

Maritimes & Northeast Pipeline, L.L.C., FERC Docket No. RP04-360-000: Prepared Cross Answering Testimony, March 11, 2005; Prepared Direct and Answering Testimony on Behalf of Firm Shipper Group, February 11, 2005.

Dynegy Marketing and Trade v. Multiut Corporation, US District Court of the Northern District of Illinois, Case. No. 02 C 7446: Deposition, September 1, 2005; Expert Report in response to Defendant's counterclaims, March 21, 2005; Expert Report on damages, October 15, 2004.

Application of Pacific Gas and Electric Company, California Public Utilities Commission proceeding A.04-03-021: Prepared Testimony, Policy for Throughput-Based Backbone Rates, on behalf of Pacific Gas and Electric Company, May 21, 2004.

Gas Market Activities, California Public Utilities Commission Order Instituting Investigation I.02-11-040: Testimony at hearings, July, 2004; Prepared Testimony, Comparison of Incentives Under Gas Procurement Incentive Mechanisms, on behalf of Pacific Gas and Electric Company, December 10, 2003.

Application of Red Lake Gas Storage, L.P., FERC Docket No. CP02-420, Affidavit in support of application for market-based rates for a proposed merchant gas storage facility, March 3, 2003.

Application of Pacific Gas and Electric Company, California Public Utilities Commission proceeding A.01-10-011: Testimony at hearings, April 1-2, 2003; Rebuttal Testimony, March 24, 2003; Prepared Testimony, Performance of the Gas Accord Market Structure, on behalf of Pacific Gas and Electric Company, January 13, 2003.

Application of Wild Goose Storage, Inc., California Public Utilities Commission proceeding A.01-06-029: Testimony at hearings, November, 2001; Prepared testimony regarding policies for backbone expansion and tolls, and potential ratepayer benefits of new storage, on behalf of Pacific Gas and Electric Company, October 24, 2001.

Public Utilities Commission of the State of California v. El Paso Natural Gas Co., FERC Docket No. RP00-241: Testimony at hearings, May-June, 2001; Prepared Testimony on behalf of Pacific Gas and Electric Company, May 8, 2001.

Application of Pacific Gas and Electric Company, California Public Utilities Commission proceeding A.99-09-053: Prepared testimony regarding market power consequences of divestiture of hydroelectric assets, December 5, 2000.

San Diego Gas & Electric Company, *et al*, FERC Docket No. EL00-95: Prepared testimony regarding proposed price mitigation measures on behalf of Pacific Gas and Electric Co., November 22, 2000.

Application of Harbor Cogeneration Company, FERC Docket No. ER99-1248: Affidavit in support of application for market-based rates for energy, capacity and ancillary services, December 1998.

Application of and Complaint of Residential Electric, Incorporated vs. Public Service Company of New Mexico, New Mexico Public Utility Commission Case Nos. 2867 and 2868: Testimony at hearings, November, 1998; Direct Testimony on behalf of Public Service Company of New Mexico on retail access issues, November, 1998.

Management audit of Public Service Electric and Gas' restructuring proposal for the New Jersey Board of Public Utilities: Prepared testimony on reliability and basic generation service, March 1998.

## **PUBLISHED ARTICLES**

*Forward Capacity Market CONEfusion*, Electricity Journal Vol. 23 Issue 9, November 2010.

*Reconsidering Resource Adequacy (Part 2): Capacity Planning for the Smart Grid*, Public Utilities Fortnightly, May 2010.

*Reconsidering Resource Adequacy (Part 1): Has the One-Day-in-Ten-Years Criterion Outlived Its Usefulness?* Public Utilities Fortnightly, April 2010.

*A Hard Look at Incentive Mechanisms for Natural Gas Procurement*, with K. Costello, National Regulatory Research Institute Report No. 06-15, November 2006.

*Natural Gas Procurement: A Hard Look at Incentive Mechanisms*, with K. Costello, Public Utilities Fortnightly, February 2006, p. 42.

*After the Gas Bubble: An Economic Evaluation of the Recent National Petroleum Council Study*, with K. Costello and H. Huntington, Energy Journal Vol. 26 No. 2 (2005).

*High Natural Gas Prices in California 2000-2001: Causes and Lessons*, Journal of Industry, Competition and Trade, vol. 2:1/2, November 2002.

*Restructuring the Electric Power Industry: Past Problems, Future Directions*, Natural Resources and Environment, ABA Section of Environment, Energy and Resources, Volume 16 No. 4, Spring, 2002.

*Scarcity, Market Power, Price Spikes, and Price Caps*, Electricity Journal, November, 2000.

*The New York ISO's Market Power Screens, Thresholds, and Mitigation: Why It Is Not A Model For Other Market Monitors*, Electricity Journal, August/September 2000.

*ISOs: A Grid-by-Grid Comparison*, Public Utilities Fortnightly, January 1, 1998.

*Economic Policy in the Natural Monopoly Industries in Russia: History and Prospects* (with V. Capelik), Voprosi Ekonomiki, November 1995.

*Meeting Russia's Electric Power Needs: Uncertainty, Risk and Economic Reform*, Financial and Business News, April 1993.

*Russian Energy Policy through the Eyes of an American Economist*, Energeticheskoye Stroitelstvo, December 1992, p 2.

*Fuel Contracting Under Uncertainty*, with R. B. Fancher and H. A. Mueller, IEEE Transactions on Power Systems, February, 1986, p. 26-33.

## **OTHER ARTICLES, REPORTS AND PRESENTATIONS**

*Comments for Seasonal Capacity Technical Conference*, Federal Energy Regulatory Commission Docket Nos. EL17-32 and EL17-36, April 11, 2018.

*Panel: Demand Response*, Organization of PJM States Spring Strategy Meeting, April 9, 2018.

*Panel: Energy Price Formation*, Organization of PJM States Spring Strategy Meeting, April 9, 2018.

*Panel: Regional Reliability Standards: Requirements or Replaceable Relics?* Harvard Electricity Policy Group Ninetieth Plenary Session, March 22, 2018.

*Panel: Transitioning to 100% Capacity Performance: Implications to Wind, Solar, Hydro and DR;* moderator; Infocast's Mid-Atlantic Power Market Summit, October 24, 2017.

*Panel: PJM Market Design Proposals Addressing State Public Policy Initiatives;* Organization of PJM States, Inc. Annual Meeting, Arlington, VA, October 3, 2017.

*Post Technical Conference Comments*, State Policies and Wholesale Markets Operated by ISO New England Inc., New York Independent System Operator, Inc., and PJM Interconnection, L.L.C., FERC Docket No. AD17-11, June 22, 2017.

*Panel: How Can PJM Integrate Seasonal Resources into its Capacity Market?* Organization of PJM States, Inc. Annual Meeting, Columbus Ohio, October 19, 2016.

*IMAPP "Two-Tier" FCM Pricing Proposals: Description and Critique*, prepared for the New England States Committee on Electricity, October 2016.

*"Missing Money" Revisited: Evolution of PJM's RPM Capacity Construct*, report prepared for American Public Power Association, September 2016.

*Panel: PJM Grid 20/20: Focus on Public Policy Goals and Market Efficiency*, August 18, 2016.

*Panel: What is the PJM Load Forecast*, Organization of PJM States, Inc. Annual Meeting, October 12, 2015.

*PJM's "Capacity Performance" Tariff Changes: Estimated Impact on the Cost of Capacity*, prepared for the American Public Power Association, October, 2015.

*Panel: Capacity Performance (and Incentive) Reform*, EUCI Conference on Capacity Markets: Gauging Their Real Impact on Resource Development & Reliability, August 15, 2015.

*Panel on Load Forecasting*, Organization of PJM States Spring Strategy Meeting, April 13, 2015.

*Panelist for Session 2: Balancing Bulk Power System and Distribution System Reliability in the Eastern Interconnection*, Meeting of the Eastern Interconnection States' Planning Council, December 11, 2014.

*Panel: Impact of PJM Capacity Performance Proposal on Demand Response*, Mid-Atlantic Distributed Resources Initiative (MADRI) Working Group Meeting #36, December 9, 2014.

*Panel: Applying the Lessons Learned from Extreme Weather Events – What Changes Are Needed In PJM Markets and Obligations?* Infocast PJM Market Summit, October 28, 2014.

*Panel on RPM: What Changes Are Proposed This Year?* Organization of PJM States, Inc. 10<sup>th</sup> Annual Meeting, Chicago Illinois, October 13-14, 2014.

*Panel on centralized capacity market design going forward*, Centralized Capacity Markets in Regional Transmission Organizations and Independent System Operators, Docket No. AD13-7, September 25, 2013; post-conference comments, January 8, 2014.

*Economics of Planning for Resource Adequacy*, NARUC Summer Meetings, Denver, Colorado, July 21, 2013.

*The Increasing Need for Flexible Resources: Considerations for Forward Procurement*, EUCI Conference on Fast and Flexi-Ramp Resources, Chicago, Illinois, April 23-24, 2013.

*Panel on RPM Issues: Long Term Vision and Recommendations for Now*, Organization of PJM States, Inc. Spring Strategy Meeting, April 3, 2013.

*Comments On: The Economic Ramifications of Resource Adequacy Whitepaper*, peer review of whitepaper prepared for EISPC and NARUC, March 24, 2013.

*Resource Adequacy: Criteria, Constructs, Emerging Issues*, Coal Finance 2013, Institute for Policy Integrity, NYU School of Law, March 19, 2013.

*Panel Discussion – Alternative Models and Best Practices in Other Regions*, Long-Term Resource Adequacy Summit, California Public Utilities Commission and California ISO, San Francisco, California, February 26, 2013.

*Fundamental Capacity Market Design Choices: How Far Forward? How Locational?* EUCI Capacity Markets Conference, October 3, 2012.

*One Day in Ten Years? Economics of Resource Adequacy*, Mid-America Regulatory Conference Annual Meeting, June 12, 2012.

*Reliability and Economics: Separate Realities?* Harvard Electricity Policy Group Sixty-Fifth Plenary Session, December 1, 2011.

*National Regulatory Research Institute Teleseminar: The Economics of Resource Adequacy Planning: Should Reserve Margins Be About More Than Keeping the Lights On?*, panelist, September 15, 2011.

*Improving RTO-Operated Wholesale Electricity Markets: Recommendations for Market Reforms*, American Public Power Association Symposium, panelist, January 13, 2011.

*Shortage Pricing Issues*, panelist, Organization of PJM States, Inc. Sixth Annual Meeting, October 8, 2010.

*National Regulatory Research Institute Teleseminar: Forecasting Natural Gas Prices*, panelist, July 28, 2010.

*Comments on the NARUC-Initiated Report: Analysis of the Social, Economic and Environmental Effects of Maintaining Oil and Gas Exploration Moratoria On and Beneath Federal Lands* (February 15, 2010) submitted to NARUC on June 22, 2010.

*Forward Capacity Market CONEfusion*, Advanced Workshop in Regulation and Competition, 29<sup>th</sup> Annual Eastern Conference of the Center for Research in Regulated Industries, Rutgers University, May 21, 2010.

*One Day in Ten Years? Resource Adequacy for the Smart Grid*, revised draft November 2009.

*Approaches to Local Resource Adequacy*, presented at Electric Utility Consultants' Smart Capacity Markets Conference, November 9, 2009.

*One Day in Ten Years? Resource Adequacy for the Smarter Grid*, Advanced Workshop in Regulation and Competition, 28<sup>th</sup> Annual Eastern Conference of the Center for Research in Regulated Industries, Rutgers University, May 15, 2009.

*Resource Adequacy in Restructured Electricity Markets: Initial Results of PJM's Reliability Pricing Model (RPM)*, Advanced Workshop in Regulation and Competition, 27<sup>th</sup> Annual Eastern Conference of the Center for Research in Regulated Industries, Rutgers University, May 15, 2008.

*Statement at Federal Energy Regulatory Commission technical conference, Capacity Markets in Regions with Organized Electric Markets*, Docket No. AD08-4-000, May 7, 2008.

*Raising the Stakes on Capacity Incentives: PJM's Reliability Pricing Model (RPM)*, presentation at the University of California Energy Institute's 13<sup>th</sup> Annual POWER Research Conference, Berkeley, California, March 21, 2008.

*Raising the Stakes on Capacity Incentives: PJM's Reliability Pricing Model (RPM)*, report prepared for the American Public Power Association, March 14, 2008.

*Comments on GTN's Request for Market-Based Rates for Interruptible Transportation*, presentation at technical conference in Federal Energy Regulatory Commission Docket No. RP06-407, September 26-27, 2006 on behalf of Canadian Association of Petroleum Producers.

*Comments on Policies to Encourage Natural Gas Infrastructure, and Supplemental Comments on Market-Based Rates Policy For New Natural Gas Storage*, State of the Natural Gas Industry Conference, Federal Energy Regulatory Commission Docket No. AD05-14, October 12, 26, 2005.

*After the Gas Bubble: A Critique of the Modeling and Policy Evaluation Contained in the National Petroleum Council's 2003 Natural Gas Study*, with K. Costello and H. Huntington, presented at the 24th Annual North American Conference of the USAEE/IAEE, July 2004.

*Comments on the Pipeline Capacity Reserve Concept*, State of the Natural Gas Industry Conference, Federal Energy Regulatory Commission Docket No. PL04-17, October 21, 2004.

*Southwest Natural Gas Market and the Need for Storage*, Federal Energy Regulatory Commission's Southwestern Gas Storage Technical Conference, docket AD03-11, August 2003.

*Assessing Market Power in Power Markets: the "Pivotal Supplier" Approach and Variants*, presented at Electric Utility Consultants' Ancillary Services Conference, November 1, 2001.

*Scarcity and Price Mitigation in Western Power Markets*, presented at Electric Utility Consultants' conference: What To Expect In Western Power Markets This Summer, May 1-2, 2001.

*Market Power: Definition, Detection, Mitigation*, pre-conference workshop, with Scott Harvey, January 24, 2001.

*Market Monitoring in the U.S.: Evolution and Current Issues*, presented at the Association of Power Exchanges' APEx 2000 Conference, October 25, 2000.

*Ancillary Services and Market Power*, presented at the Electric Utility Consultants' Ancillary Services Conference (New Business Opportunities in Competitive Ancillary Services Markets), Sept. 14, 2000.

*Market Monitoring Workshop*, presented to RTO West Market Monitoring Work Group, June 2000.

*Screens and Thresholds Used In Market Monitoring*, presented at the Conference on RTOs and Market Monitoring, Edison Electric Institute and Energy Daily, May 19, 2000.

*The Regional Transmission Organization's Role in Market Monitoring*, report for the Edison Electric Institute attached to their comments on the FERC's NOPR on RTOs, August, 1999.

*The Independent System Operator's Mission and Role in Reliability*, presented at the Electric Utility Consultants' Conference on ISOs and Transmission Pricing, March 1998.

*Independent System Operators and Their Role in Maintaining Reliability in a Restructured Electric Power Industry*, ICF Resources for the U. S. Department of Energy, 1997.

*Rail Transport in the Russian Federation, Diagnostic Analysis and Policy Recommendations*, with V. Capelik and others, IRIS Market Environment Project, 1995.

*Telecommunications in the Russian Federation: Diagnostic Analysis and Policy Recommendations*, with E. Whitlock and V. Capelik, IRIS Market Environment Project, 1995.

*Russian Natural Gas Industry: Diagnostic Analysis and Policy Recommendations*, with I. Sorokin and V. Eskin, IRIS Market Environment Project, 1995.

*Russian Electric Power Industry: Diagnostic Analysis and Policy Recommendations*, with I. Sorokin, IRIS Market Environment Project, 1995.

## **PROFESSIONAL ASSOCIATIONS**

United States Association for Energy Economics

Natural Gas Roundtable

Energy Bar Association

April 2018

**MPSC Case No.:** U-18403  
**Requestor:** MECSC  
**Question No.:** MECSCDE-2.3  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Please refer to Mr. Sloan's testimony on page 14, lines 3-4, stating "the in-service date for the NEXUS pipeline has been delayed by six months to a year." Please identify Mr. Sloan's present expected NEXUS in-service date and provide the basis for his expectation.

**Answer:** Based on information provided on the project sponsor's website<sup>1</sup>, ICF's current expectation for the NEXUS in-service date is late Q3 2018.

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<sup>1</sup> <https://www.enbridge.com/projects-and-infrastructure/projects/nexus-gas-transmission>; accessed March 15, 2018.

| <b>Table 1: Summary of Estimates of the Net Benefit (Cost)<br/>of the NEXUS Commitment to DTE Electric's Customers</b>   |                       |                     |                      |
|--|-----------------------|---------------------|----------------------|
|  | <b>ICF 2015 Study</b> | <b>Pratt Update</b> | <b>Wilson Update</b> |
| <b>2018 (four months):</b>   | <b>n.a</b>            | <b>-\$1.5</b>       | <b>-\$1.6</b>        |
| <b>2018-2022:</b>  | <b>n.a</b>            | <b>-\$22.2</b>      | <b>-\$31.4</b>       |
| <b>Over 20-year agreement</b>  | <b>\$72</b>           | <b>\$67.4</b>       | <b>-\$181.0</b>      |
| <b>Notes: The Pratt Update used forward prices from August 2017 for the 2018 and 2018-2022 estimates (Exhibit A-18), and ICF prices from Q3 2017 for the twenty-year analysis (Exhibit A-17); the Wilson Update uses forward prices from April 13, 2018.</b> |                       |                     |                      |

# **NEXUS Pipeline transportation cost savings**

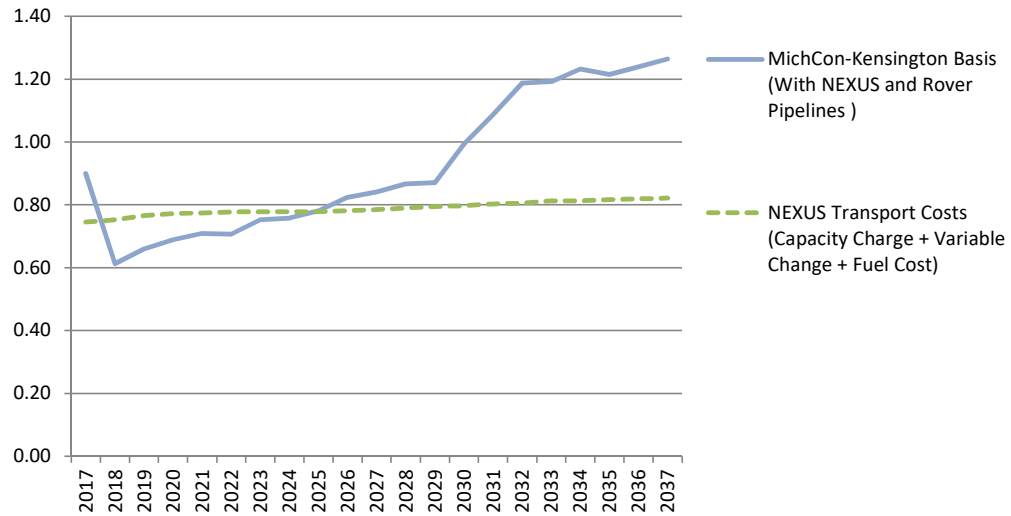
Unless otherwise noted, units are \$/MMBtu

NOTE: In ICF's November 2015 report to DTE, the NEXUS fuel rate was assumed to be 1.9%, based on the informaton available at that time.

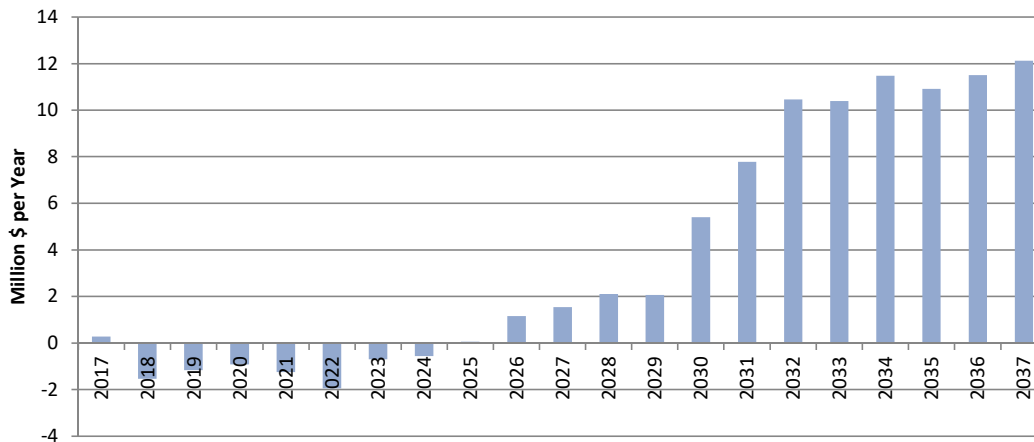
Since then, NEXUS has revised the fuel rate to 1.5%. The calculations below use ICF's original calculations based on the 1.9% fuel rate estimate.

|  | Capacity Charge | Variable Charge | Kensington Gas Price (With NEXUS and Rover Pipelines ) | Fuel Cost at 1.9% | NEXUS Transport Costs (Capacity Charge + Variable Change + Fuel Cost) | NEXUS capacity contracted by DTE Electric (MMBtu/day) | MichCon- Kensington Basis (With NEXUS and Rover Pipelines ) | NEXUS Transport Cost Savings per MMBtu (MichCon - Kensington Basis minus NEXUS Transport Cost), positive value indicates savings | NEXUS Transport Cost Savings per Year (NEXUS Transport Savings * Contracted Volume), Millions of Dollars |
|--|-----------------|-----------------|--|-------------------|---|---|---|--|--|
| 2017   | \$0.695         | \$ 0.0012       | 2.58   | \$ 0.049          | \$0.75  | 5000  | 0.90  | \$0.15   | \$0.28   |
| 2018   | \$0.695         | \$ 0.0012       | 2.97   | \$ 0.056          | \$0.75  | 30000   | 0.61  | (\$0.14)   | (\$1.54)   |
| 2019   | \$0.695         | \$ 0.0012       | 3.64   | \$ 0.069          | \$0.77  | 30000   | 0.66  | (\$0.11)   | (\$1.16)   |
| 2020   | \$0.695         | \$ 0.0012       | 3.97   | \$ 0.076          | \$0.77  | 30000   | 0.69  | (\$0.08)   | (\$0.91)   |
| 2021   | \$0.695         | \$ 0.0012       | 4.10   | \$ 0.078          | \$0.77  | 52500   | 0.71  | (\$0.06)   | (\$1.24)   |
| 2022   | \$0.695         | \$ 0.0012       | 4.26   | \$ 0.081          | \$0.78  | 75000   | 0.71  | (\$0.07)   | (\$1.94)   |
| 2023   | \$0.695         | \$ 0.0012       | 4.28   | \$ 0.081          | \$0.78  | 75000   | 0.75  | (\$0.03)   | (\$0.69)   |
| 2024   | \$0.695         | \$ 0.0012       | 4.33   | \$ 0.082          | \$0.78  | 75000   | 0.76  | (\$0.02)   | (\$0.56)   |
| 2025   | \$0.695         | \$ 0.0012       | 4.31   | \$ 0.082          | \$0.78  | 75000   | 0.78  | \$0.00   | \$0.06   |
| 2026   | \$0.695         | \$ 0.0012       | 4.49   | \$ 0.085          | \$0.78  | 75000   | 0.82  | \$0.04   | \$1.16   |
| 2027   | \$0.695         | \$ 0.0012       | 4.68   | \$ 0.089          | \$0.79  | 75000   | 0.84  | \$0.06   | \$1.54   |
| 2028   | \$0.695         | \$ 0.0012       | 4.91   | \$ 0.093          | \$0.79  | 75000   | 0.87  | \$0.08   | \$2.11   |
| 2029   | \$0.695         | \$ 0.0012       | 5.19   | \$ 0.099          | \$0.79  | 75000   | 0.87  | \$0.08   | \$2.07   |
| 2030   | \$0.695         | \$ 0.0012       | 5.31   | \$ 0.101          | \$0.80  | 75000   | 0.99  | \$0.20   | \$5.40   |
| 2031   | \$0.695         | \$ 0.0012       | 5.60   | \$ 0.106          | \$0.80  | 75000   | 1.09  | \$0.28   | \$7.79   |
| 2032   | \$0.695         | \$ 0.0012       | 5.73   | \$ 0.109          | \$0.81  | 75000   | 1.19  | \$0.38   | \$10.46  |
| 2033   | \$0.695         | \$ 0.0012       | 6.11   | \$ 0.116          | \$0.81  | 75000   | 1.19  | \$0.38   | \$10.39  |
| 2034   | \$0.695         | \$ 0.0012       | 6.13   | \$ 0.116          | \$0.81  | 75000   | 1.23  | \$0.42   | \$11.48  |
| 2035   | \$0.695         | \$ 0.0012       | 6.33   | \$ 0.120          | \$0.82  | 75000   | 1.22  | \$0.40   | \$10.92  |
| 2036   | \$0.695         | \$ 0.0012       | 6.46   | \$ 0.123          | \$0.82  | 75000   | 1.24  | \$0.42   | \$11.52  |
| 2037   | \$0.695         | \$ 0.0012       | 6.59   | \$ 0.125          | \$0.82  | 75000   | 1.26  | \$0.44   | \$12.13  |
| Total Savings, 2018-37                                     |                 |                 |  |                   |   |   |   |  | \$78.99  |
| Net Present Value of Savings (using discount rate of 7.1%) |                 |                 |  |                   |   |   |   |  | \$22.39  |

**Exhibit 4-6: Kensington-MichCon Basis versus NEXUS Transport Cost (Nominal \$/MMBtu)**



**Exhibit 4-7: Reduction in DTE Electric Natural Gas Expenditure from Contracting NEXUS Capacity (Nominal \$)**



**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.32a  
**Respondent:** R. C. Pratt  
**Page:** 1 of 1

**Question:** Refer to the direct testimony of Ryan Pratt, page 10, lines 22-23.

- a. Please explain whether DTE requested a price quote to update or repeat the 2015 analysis based on more recent gas price forecasts.

**Answer:** DTE Electric did not request a price quote to update or repeat the 2015 analysis that determined the impact of NEXUS on MichCon prices.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.32b  
**Respondent:** R. C. Pratt  
**Page:** 1 of 1

**Question:** Refer to the direct testimony of Ryan Pratt, page 10, lines 22-23.

- b. Please identify the amount of “additional costs to repeat the existing analysis” and providing all supporting documentation regarding such costs.

**Answer:** Not applicable. See the response to MECSCDE-1.32a.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.32c  
**Respondent:** R. C. Pratt  
**Page:** 1 of 1

**Question:** Refer to the direct testimony of Ryan Pratt, page 10, lines 22-23.

- c. Please explain the difference between updating and repeating the analysis discussed by Mr. Pratt at page 10, lines 14 to 23.

**Answer:** The words “update” and “repeat” were used synonymously in this context.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.32d  
**Respondent:** R. C. Pratt  
**Page:** 1 of 1

**Question:** Refer to the direct testimony of Ryan Pratt, page 10, lines 22-23.

- d. To the extent the cost to “update” the ICF analysis and the cost to “repeat” the ICF analysis are different, please provide the cost to update the analysis, and providing all supporting documentation regarding such costs.

**Answer:** Not applicable. See the response to MECSCDE-1.32c.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.32ei1  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to the direct testimony of Ryan Pratt, page 10, lines 22-23.

- e. Please explain the process for ICF to change (or update or repeat) a GMM forecast of gas prices based on changed pipeline expansion assumptions (i.e., changed in-service date, cancellation of a proposed pipeline expansion project).
- i. Has ICF has created alternative forecasts using the GMM or other models– with and without certain pipeline expansion projects – since November 2015 (other than the Exhibit A-27)?
  - 1. If so, please provide supporting documentation.

**Answer:** To update the GMM forecast, DTEE would have to first purchase the latest version of ICF's Base Case gas market projection. The latest Base Case represents ICF's latest market outlook, and includes software enhancements to the GMM, changes in gas market activity since November 2015, and ICF's current reconnaissance on announced plans for and timing of new pipeline capacity. The latest Base Case would serve as the starting point for any updated analysis. DTEE would then contract ICF to run alternate scenarios, adding or removing pipeline expansion projects from their latest Base Case.

- i. Yes. ICF regularly creates alternative forecasts using the GMM and other models, with and without certain pipeline expansion projects for a wide variety of clients. DTEE has not contracted ICF to create any alternate gas market forecasts that add or remove pipeline expansions using the GMM or any other model since the November 2015 analysis that is represented by Exhibit A-27.
  - i.1. There have been no alternate forecasts provide by ICF to DTEE, so no supporting documentation on such alternative forecasts is available. See response to MECSCDE-1.47a for supporting documentation on publicly available ICF analysis of alternative forecasts.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.32eii  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to the direct testimony of Ryan Pratt, page 10, lines 22-23.

- e. Please explain the process for ICF to change (or update or repeat) a GMM forecast of gas prices based on changed pipeline expansion assumptions (i.e., changed in-service date, cancellation of a proposed pipeline expansion project).
- ii. Please identify the cost for ICF to change assumptions regarding pipeline expansions in the GMM forecast model.

**Answer:** The cost of the updated base case is \$10,000. The total cost of updating the analysis would depend on the number of alternative forecast DTEE requested, the complexity of the alternate forecasts (i.e., the number of variables changed in each alternate case), and the level of effort required to prepare a report on the results. Therefore, it is not possible to quote a total cost without these details.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.32f  
**Respondent:** R. C. Pratt  
**Page:** 1 of 1

**Question:** Refer to the direct testimony of Ryan Pratt, page 10, lines 22-23.

- f. Please explain how and why DTE determined that it would not be “prudent” to repeat or update the analysis, and provide all supporting documents.

**Answer:** See the response to MECSCDE-1.30a.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.30a  
**Respondent:** R. C. Pratt  
**Page:** 1 of 2

**Question:** Refer to the direct testimony of Ryan Pratt, page 9, lines 23-25 and page 10, lines 14-15.

- a. Please explain, and provide all supporting correspondence, reports, emails, and other documentation or materials, related to the statement that “it is not necessary to update the \$271 million PSCR savings due to lower gas prices from sources other than NEXUS at this time.”

**Answer:** There is no supporting correspondence, reports, emails or other documentation or materials related to the statement that “it is not necessary to update the \$271 million PSCR savings due to lower gas prices from sources other than NEXUS at this time.”

The decision to not update the \$271 million PSCR savings calculation shown in Exhibit A-16 is described in my direct testimony, page 10, line 20, through page 11, line 1:

*Running separate models with and without NEXUS is not a part of ICF’s routine Natural Gas Strategic update, and DTE Electric has determined that it is not prudent to incur additional costs to repeat the existing analysis. Furthermore, other assumptions for that analysis, including DTE Electric’s long-term forecast gas requirement and the amount of gas delivered via NEXUS have not changed materially since the ICF Report was published.*

To clarify, DTE Electric determined that the forecasted savings were unlikely to change materially based on changes in assumptions since the Exhibit was originally created in 2016. There are three primary inputs to the calculations shown in Exhibit A-16: (1) the amount of gas to be transported on NEXUS, (2) the forecasted impact of NEXUS on MichCon prices, and (3) DTE Electric’s long-term natural gas requirement.

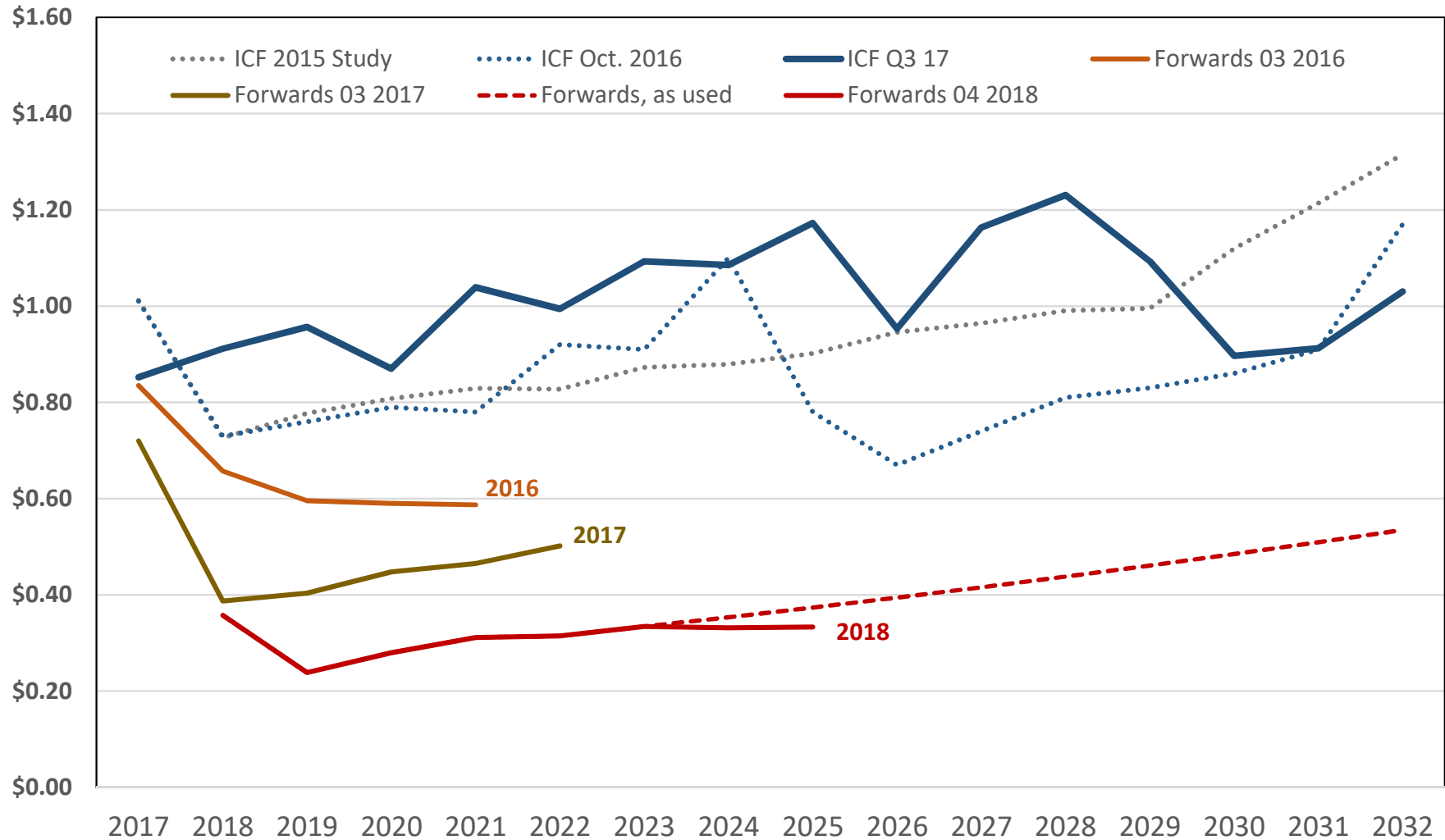
The amount of gas to be transported on NEXUS has not changed materially since the Exhibit was originally created in 2016. Although the timing has shifted somewhat, the same amount of gas is still expected to be transported on NEXUS over the course of the agreement.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.30a  
**Respondent:** R. C. Pratt  
**Page:** 2 of 2

Updating the forecasted impact of NEXUS on MichCon prices would require an additional study by ICF to determine the prices at MichCon with and without NEXUS (i.e., run cases with and without the NEXUS pipeline included). As described in my direct testimony, DTE Electric determined that it is not prudent to incur additional costs to update the existing analysis. The same conditions that led ICF's analysis to show a \$0.21/Dth reduction in MichCon CityGate prices due to the construction of the NEXUS pipeline still exist today. Witness Sloan stated in his direct testimony that "ICF continues to expect there to be a significant and lasting price differential between MichCon CityGate prices and the supply prices at Kensington, OH." If the prices at Kensington are expected to be lower than prices at MichCon CityGate, then adding incremental pipeline capacity from Kensington into Michigan will reduce prices at MichCon CityGate.

As described in the response to MECSCDE-1.31i.ii, DTE Electric's current long-term forecasted natural gas requirement is approximately 10% greater than the long-term forecasted natural gas requirement shown in Exhibit A-16, which would cause the expected customer savings calculated in Exhibit A-16 to increase. Even if the forecasted impact of NEXUS on MichCon Citygate prices were to decrease in an updated analysis, the impact of that change on the expected customer savings would be offset to some extent by the favorable changes in other known factors included in the savings calculation.

**Figure 1: Basis from Dominion S. to MichCon  
 (annual averages; \$/Dth)**



Sources: Responses to MECSCDE 1-11b, MECSCDE 2.21, forward prices from April 13, 2018 (2018 values are Q4).

**Table 2: Updated NEXUS Cost Savings Estimate (based on Pratt Exhibit A-17)**

|      |           | Dom<br>South<br>Price <sup>1</sup><br>(\$/Dth) | Kens-<br>ington<br>Price <sup>1</sup><br>(\$/Dth) | MichCon<br>Citygate<br>Price <sup>1</sup><br>(\$/Dth) | MichCon -<br>Kens-<br>ington<br>Basis <sup>1</sup><br>(\$/Dth) | Average<br>Daily<br>NEXUS<br>Transp-<br>ortation<br>Capacity <sup>2</sup><br>(Dth/d) | Transp-<br>ortation<br>Rate<br>(\$/Dth) | Fuel<br>Rate (%) | Fuel<br>Cost<br>(\$/Dth) | Total<br>Transp-<br>ortation<br>Cost<br>(\$/Dth) | NEXUS<br>Unit Cost<br>Savings<br>(\$/Dth) | NEXUS<br>Total<br>Transp-<br>ortation<br>Cost<br>(\$MM) | NEXUS<br>Total<br>Comm-<br>odity<br>Savings<br>(\$MM) | NEXUS<br>Cost<br>Savings<br>(\$MM) |
|------|-----------|--|---|---|--|--|---|------------------|--------------------------|--|---|---|---|------------------------------------|
| Line | Year      |  |   |   |  |  |   |                  |                          |  |   |   |   |                                    |
| No.  |           |  |   |   |  |  |   |                  |                          |  |   |   |   |                                    |
| 1    | 2018      | \$2.19   | \$2.31  | \$2.58  | \$0.27   | 10,000   | \$0.695                                 | 1.32%            | \$0.03                   | \$0.73   | (\$0.45)                                  | \$2.6   | \$1.0   | (\$1.6)                            |
| 2    | 2019      | \$2.21   | \$2.33  | \$2.45  | \$0.12   | 30,000   | \$0.695                                 | 1.32%            | \$0.03                   | \$0.73   | (\$0.61)                                  | \$7.9   | \$1.3   | (\$6.7)                            |
| 3    | 2020      | \$2.18   | \$2.30  | \$2.46  | \$0.16   | 30,000   | \$0.695                                 | 1.32%            | \$0.03                   | \$0.73   | (\$0.57)                                  | \$7.9   | \$1.7   | (\$6.2)                            |
| 4    | 2021      | \$2.19   | \$2.31  | \$2.50  | \$0.19   | 30,000   | \$0.695                                 | 1.32%            | \$0.03                   | \$0.73   | (\$0.54)                                  | \$7.9   | \$2.1   | (\$5.9)                            |
| 5    | 2022      | \$2.25   | \$2.37  | \$2.56  | \$0.19   | 56,250   | \$0.695                                 | 1.32%            | \$0.03                   | \$0.73   | (\$0.53)                                  | \$14.9  | \$3.9   | (\$11.0)                           |
| 6    | 2023      | \$2.31   | \$2.43  | \$2.64  | \$0.21   | 75,000   | \$0.695                                 | 1.32%            | \$0.03                   | \$0.73   | (\$0.52)                                  | \$19.9  | \$5.8   | (\$14.1)                           |
| 7    | 2024      | \$2.35   | \$2.47  | \$2.70  | \$0.23   | 75,000   | \$0.695                                 | 1.32%            | \$0.03                   | \$0.73   | (\$0.50)                                  | \$19.9  | \$6.3   | (\$13.6)                           |
| 8    | 2025      | \$2.40   | \$2.52  | \$2.77  | \$0.25   | 75,000   | \$0.695                                 | 1.32%            | \$0.03                   | \$0.73   | (\$0.48)                                  | \$19.9  | \$6.8   | (\$13.1)                           |
| 9    | 2026      | \$2.44   | \$2.57  | \$2.84  | \$0.27   | 75,000   | \$0.695                                 | 1.32%            | \$0.03                   | \$0.73   | (\$0.46)                                  | \$20.0  | \$7.4   | (\$12.6)                           |
| 10   | 2027      | \$2.49   | \$2.61  | \$2.91  | \$0.29   | 75,000   | \$0.695                                 | 1.32%            | \$0.03                   | \$0.73   | (\$0.44)                                  | \$20.0  | \$8.0   | (\$12.0)                           |
| 11   | 2028      | \$2.54   | \$2.66  | \$2.98  | \$0.31   | 75,000   | \$0.695                                 | 1.32%            | \$0.04                   | \$0.73   | (\$0.42)                                  | \$20.0  | \$8.6   | (\$11.4)                           |
| 12   | 2029      | \$2.59   | \$2.71  | \$3.05  | \$0.33   | 75,000   | \$0.695                                 | 1.32%            | \$0.04                   | \$0.73   | (\$0.40)                                  | \$20.0  | \$9.2   | (\$10.8)                           |
| 13   | 2030      | \$2.64   | \$2.76  | \$3.12  | \$0.36   | 75,000   | \$0.695                                 | 1.32%            | \$0.04                   | \$0.73   | (\$0.37)                                  | \$20.0  | \$9.8   | (\$10.2)                           |
| 14   | 2031      | \$2.69   | \$2.81  | \$3.20  | \$0.38   | 75,000   | \$0.695                                 | 1.32%            | \$0.04                   | \$0.73   | (\$0.35)                                  | \$20.0  | \$10.5  | (\$9.6)                            |
| 15   | 2032      | \$2.74   | \$2.87  | \$3.27  | \$0.41   | 75,000   | \$0.695                                 | 1.32%            | \$0.04                   | \$0.73   | (\$0.33)                                  | \$20.1  | \$11.1  | (\$8.9)                            |
| 16   | 2033      | \$2.79   | \$2.92  | \$3.35  | \$0.43   | 75,000   | \$0.695                                 | 1.32%            | \$0.04                   | \$0.73   | (\$0.30)                                  | \$20.1  | \$11.9  | (\$8.2)                            |
| 17   | 2034      | \$2.84   | \$2.97  | \$3.43  | \$0.46   | 75,000   | \$0.695                                 | 1.32%            | \$0.04                   | \$0.73   | (\$0.27)                                  | \$20.1  | \$12.6  | (\$7.5)                            |
| 18   | 2035      | \$2.90   | \$3.03  | \$3.52  | \$0.49   | 75,000   | \$0.695                                 | 1.32%            | \$0.04                   | \$0.73   | (\$0.25)                                  | \$20.1  | \$13.3  | (\$6.8)                            |
| 19   | 2036      | \$2.96   | \$3.09  | \$3.60  | \$0.52   | 75,000   | \$0.695                                 | 1.32%            | \$0.04                   | \$0.74   | (\$0.22)                                  | \$20.1  | \$14.1  | (\$6.0)                            |
| 20   | 2037      | \$3.01   | \$3.14  | \$3.69  | \$0.55   | 48,750   | \$0.695                                 | 1.32%            | \$0.04                   | \$0.74   | (\$0.19)                                  | \$13.1  | \$9.7   | (\$3.4)                            |
| 21   | 2038      | \$3.07   | \$3.20  | \$3.78  | \$0.58   | 20,000   | \$0.695                                 | 1.32%            | \$0.04                   | \$0.74   | (\$0.16)                                  | \$5.4   | \$4.2   | (\$1.2)                            |
| 22   |           |  |   |   |  |  |   |                  |                          |  |   |   |   |                                    |
| 23   | TOTAL     |  |   |   |  |  |   |                  |                          |  |   | \$340.1   | \$159.2   | (\$181.0)                          |
| 24   | 2018-2022 |  |   |   |  |  |   |                  |                          |  |   | \$41.4  | \$10.0  | (\$31.4)                           |

25  
26 1 - Dom South and MichCon Prices based on forward prices. Kensington = Dom South + 1% Fuel + \$0.10/Dth  
27 2 - Assumes NEXUS in-service date of 9/1/2018 and CCGT in-service date of 6/1/2022  
3 - Forward prices extended beyond 2023 using the rates over the 2020-23 period.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC  
**Question No.:** MECSCDE-2.22a  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Please refer to the Company's response to MECSCDE 1.70a, which states:

"While the forward strip represents the view of a large number of market participants, it is not a forecast per se, as it does not provide any explicit examination of gas supply and demand dynamics, which are the fundamental drivers of price. Instead, many of the market participants that buy and sell futures, and hence set the futures price, use the futures transactions to hedge future business risk. As a result, the futures price is a reflection of risk tolerance and business requirements of the market participants, rather than a forecast. Futures allow some market participants to lay off risk, and potentially guarantee revenue, or balance known revenues with known costs in order to minimize business risk, while allowing other market participants to assume risk with the expectation of higher returns. In addition, the futures market is liquid only 24-36 months out. Forecasts, like those ICF developed for DTEE, are based on an assessment of market fundamentals, allowing for a more realistic longer term outlook."

- a. Is it ICF's position that market participants who participate in forward markets do not explicitly examine gas supply and demand dynamics (either through their own modeling and forecasting, or using models and forecasts provided by other entities, such as ICF)? If so, provide the basis for that view.

**Answer:** No. Many futures market participants use market fundamentals analysis to help them in their strategic planning. However, as is mentioned in the passage that is quoted in the question, the natural gas futures market is liquid only 24-36 months out. Therefore, most of the fundamentals analysis focuses on the period beyond 36 months, when there is insufficient liquidity in the futures market to use it as a measure of risk.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.70a  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to the direct testimony of Mr. Sloan on page 21, related to the “gas forward curve” for forward strip.

- a. Please explain why and how the forward strip, which reflects “current market consensus,” differs from a forecast of gas prices.

**Answer:** While the forward strip represents the view of a large number of market participants, it is not a forecast per se, as it does not provide any explicit examination of gas supply and demand dynamics, which are the fundamental drivers of price. Instead, many of the market participants that buy and sell futures, and hence set the futures price, use the futures transactions to hedge future business risk. As a result, the futures price is a reflection of risk tolerance and business requirements of the market participants, rather than a forecast. Futures allow some market participants to lay off risk, and potentially guarantee revenue, or balance known revenues with known costs in order to minimize business risk, while allowing other market participants to assume risk with the expectation of higher returns. In addition, the futures market is liquid only 24-36 months out.

Forecasts, like those ICF developed for DTEE, are based on an assessment of market fundamentals, allowing for a more realistic longer term outlook.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC  
**Question No.:** MECSCDE-2.22b  
**Respondent:** M. D. Sloan  
**Page:** 1 of 2

**Question:** 22. Please refer to the Company's response to MECSCDE 1.70a, which states:

"While the forward strip represents the view of a large number of market participants, it is not a forecast per se, as it does not provide any explicit examination of gas supply and demand dynamics, which are the fundamental drivers of price. Instead, many of the market participants that buy and sell futures, and hence set the futures price, use the futures transactions to hedge future business risk. As a result, the futures price is a reflection of risk tolerance and business requirements of the market participants, rather than a forecast. Futures allow some market participants to lay off risk, and potentially guarantee revenue, or balance known revenues with known costs in order to minimize business risk, while allowing other market participants to assume risk with the expectation of higher returns. In addition, the futures market is liquid only 24-36 months out. Forecasts, like those ICF developed for DTEE, are based on an assessment of market fundamentals, allowing for a more realistic longer term outlook."

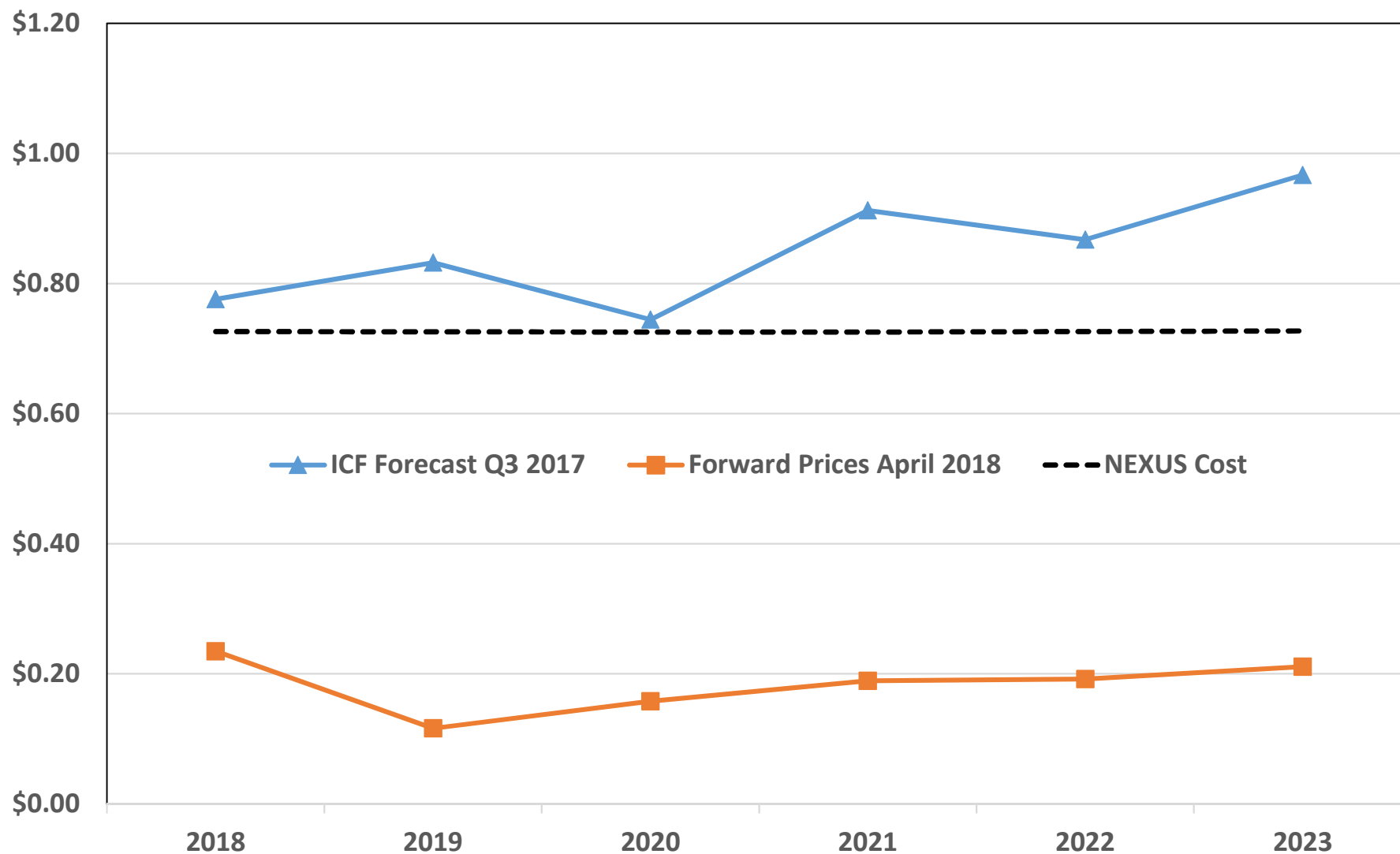
- b. Explain how the fact that some market participants may seek to hedge and lay off risk might result in forward prices that differ from market participants' forecasts of future prices. Will such considerations tend to increase or decrease the prices market participants are willing to pay for a forward contract (the response may be different for participants that are net buyers or net sellers of natural gas). Will such considerations overall tend to raise or lower forward prices relative to forecasts?

**Answer:** Some futures market participants may use fundamentals analysis to assess their short-term (24-36 months out) positions, but we do not know the reasoning behind each market participant's position, and it is impossible to assess how much this analysis impacts gas prices. Gas futures prices are, by definition, the net result of all futures market participants' assessment of the costs and benefits of holding a particular market position for a specific future delivery date. However, motivations and degree of risk-tolerance differ widely among the participants, and the individual analyses performed by these participants may lead to different conclusions about future prices.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC  
**Question No.:** MECSCDE-2.22b  
**Respondent:** M. D. Sloan  
**Page:** 2 of 2

Further, even if a market participant believes there is a significant divergence between their fundamentals-based assessment of forward prices and the futures market, they may not be able to or choose to act on it. For example, for a time period beyond 36 months, there may not be a sufficient number of counter-parties to provide a liquid market for the desired position, therefore the cost of taking such a position would outweigh any benefit.

**Figure 2: Kensington to MichCon Basis and NEXUS Cost (\$/Dth)**



Forward prices from ICE, April 13, 2018; 2018 values are Q4. Kensington prices based on Dominion South using formula from Mr. Pratt's Exhibit A-17. NEXUS cost includes fuel at 1.32% applied to the Kensington prices based on forward prices.

**RESERVED**

**MEC-42**

**MPSC Case No.:** U-17920  
**Respondent:** M. T. Paul  
**Requestor:** ANR-1  
**Question No.:** ANRDE-1.11  
**Page:** 1 of 2

**Question:** Referring to page 14, lines 20-25 of witness Matthew T. Paul's testimony:

Does Mr. Paul believe that DTE Electric's long-term objectives can be met only by a new greenfield pipeline from the Appalachian basin? If so, please explain why.

Does Mr. Paul believe that such long-term objectives cannot be met if (1) Rover and/or NEXUS is constructed and (2) DTE Electric contracts for existing capacity from ANR's or Panhandle's interconnections with other pipelines connected to the Appalachian Basin? If not, please explain why not.

**Answer:** DTE Electric's fuel supply objectives are to provide low cost, reliable fuel supply to our generation assets in anticipation of the fundamental shift from a heavily weighted coal generation fleet to more natural gas-fired electric generation. The cost to supply gas via NEXUS has been shown to be the lowest among all gas supply alternatives (see response to ANR/DE-1.1g). The construction of NEXUS (or other new greenfield pipelines from the Appalachian basin) is also expected to foster additional competition with existing transportation providers and supply basins and further reduce gas supply costs. Additionally, the construction of NEXUS (or other new greenfield pipelines from the Appalachian basin) supports DTE Electric's objectives to provide reliable fuel supply by increasing gas deliverability into Michigan and supporting expected natural gas demand growth.

DTE Electric's fuel supply objectives are best met by a new greenfield pipeline from the Appalachian basin. Those objectives could ultimately be met if DTE Electric contracts for capacity from existing pipelines connected to the Appalachian Basin and if Rover and/or NEXUS are still constructed; however, contracting for capacity from existing pipelines does not directly support new pipeline development or increase the probability that Rover and/or NEXUS are constructed. As described in the supplemental response to MECSC/DE-1.8, the Federal Energy Regulatory Commission (FERC) views agreements for long-term firm capacity as important evidence of market demand. DTE Electric's agreement with NEXUS provides additional value by increasing the likelihood that NEXUS will be constructed.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.20b  
**Respondent:** R. C. Pratt  
**Page:** 1 of 1

**Question:** As an alternative to service from NEXUS:

- b. Please explain why DTE Electric did or did not consider the above alternatives.

**Answer:** DTE Electric did not consider transportation service from the referenced alternatives because DTE Electric relied on the work that DTE Gas had already performed in evaluating natural gas supply from the Utica/Marcellus region. Furthermore, the referenced alternatives did not meet DTE Electric's objective to contract with a greenfield pipeline that would increase deliverability and supply diversity into Michigan.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.18a  
**Respondent:** R. C. Pratt/Legal  
**Page:** 1 of 1

**Question:** Please identify each Request for Proposal and solicitation issued by DTE Electric for gas transportation service from November 2013 to the present.

- a. Please identify the terms of the RFP or solicitation, including the term or period, volume, delivery point(s), rate, and other provisions specified in the RFP(s) or solicitation(s).

**Answer:** DTE Electric objects for the reason that the information requested regarding an ongoing RFP evaluation consists of confidential, commercial information, the disclosure of which would cause DTE Electric and its customers competitive harm. Subject to this objection and without waiver thereof, the Company would answer as follows: DTE Electric solicited bids for firm gas transportation service in January 2018. These documents will be provided pursuant to a protective order.

To the best of my knowledge and belief, there are no other RFPs for gas transportation service from November 2013 to the present.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.20ai  
**Respondent:** R. C. Pratt  
**Page:** 1 of 1

**Question:** As an alternative to service from NEXUS:

a. Did DTE Electric consider obtaining service from the following points:

i. From ANR's Lebanon Lateral through a reversal of flow to ANR's SE line to DTE Electric?

**Answer:** No.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.20aii  
**Respondent:** R. C. Pratt  
**Page:** 1 of 1

**Question:** As an alternative to service from NEXUS:

- a. Did DTE Electric consider obtaining service from the following points:
  - ii. From Texas Eastern at Glen Karn to ANR's SE line to DTE Electric?

**Answer:** No.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.20aiiii  
**Respondent:** R. C. Pratt  
**Page:** 1 of 1

**Question:** As an alternative to service from NEXUS:

- a. Did DTE Electric consider obtaining service from the following points:
  - iii. From REX at Shelbyville to ANR's SE line to DTE Electric?

**Answer:** No.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.20aiv  
**Respondent:** R. C. Pratt  
**Page:** 1 of 1

**Question:** As an alternative to service from NEXUS:

- a. Did DTE Electric consider obtaining service from the following points:
  - iv. From Rover at Westrick to ANR's SE line to DTE Electric?

**Answer:** No.

U-17920 - March 14, 2016  
Exhibit MEC-25  
Direct Testimony of J. Wilson on behalf of  
MEC and the Sierra Club  
Page 1 of 1

**MPSC Case No.:** U-17920  
**Respondent:** M. D. Sloan  
**Requestor:** ANR-2  
**Question No.:** ANRDE-2.4 (b)  
**Page:** 1 of 1

**Question:** Page 14, lines 11-14 of Mr. Sloan's testimony states that contracting for capacity on NEXUS reduces DTE Electric's natural gas supply expenditures because the cost of gas delivered via NEXUS is, on average, lower than the MichCon Citygate price.

(b) Has Mr. Sloan studied or analyzed the reduction in DTE Electric's natural gas supply expenditures that DTE Electric could achieve by contracting for capacity on any pipeline or combination of pipelines other than NEXUS that accesses gas in the Appalachian Basin? If yes, please provide all such studies or analyses.

**Answer:** No.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC  
**Question No.:** MECSCDE-2.17bi  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Please refer to the Company's response to MECSCDE 1.63:

- b. Were the exogenous reviews of pipeline expansions performed for each of the four scenarios of the Rover and NEXUS pipelines?
  - i. If so, identify all the differences in the results of the exogenous reviews between the four scenarios (pipeline expansions for which the in-service date, capacity, or any other characteristic changed).

**Answer:** No. As the purpose of the sensitivity cases was to measure the impacts of Rover and NEXUS, it would not be logical to subject the sensitivity cases to a review of pipeline expansions. Given the positive economics of the two pipelines, removing one or both of the pipelines from a scenario would increase the economics of adding pipeline capacity, and create the incentive to add pipeline capacity. Given the options available at the time of the analysis, the likely addition of capacity would have been Rover and NEXUS, or similar pipelines.

**MPSC Case No.:** U-17920  
**Respondent:** M. F. Scheller  
**Requestor:** MECSCDE-5  
**Question No.:** MECSCDE-5.8  
**Page:** 1 of 3

**Question:** Refer to Exhibit A-25, p. 54:  
("Overall, the resource mix with and without the NEXUS Pipeline is not anticipated to change significantly...": Please provide the resource mix (capacity in MW, generation in GWh), on an annual basis, with and without the NEXUS Pipeline.

**Answer:** The modeling analysis performed utilizes representative "Run Years" to determine capacity market entry and exit, and dispatch decisions. As such, capacity and generation data is available for only the representative years, not annually. Information on the capacity and generation mix for the representative runs years is provided in the table below.

**MPSC Case No.:** U-17920  
**Respondent:** M. F. Scheller  
**Requestor:** MECSCDE-5  
**Question No.:** MECSCDE-5.8  
**Page:** 2 of 3

| Zone 7 Capacity and Generation Mix Key Model Run Years |               |                  |               |                  |
|--|---------------|------------------|---------------|------------------|
|  | Capacity (MW) | Generation (GWh) | Capacity (MW) | Generation (GWh) |
| Resource Type  | Without Nexus | Without Nexus    | With Nexus    | With Nexus       |
| <b>2018</b>  |               |                  |               |                  |
| Coal   | 9,350         | 59,443           | 9,333         | 59,210           |
| Gas/Oil  | 10,804        | 14,692           | 10,804        | 15,414           |
| Nuclear  | 1,907         | 13,852           | 1,907         | 13,852           |
| Renewable  | 3,778         | 7,121            | 3,778         | 7,086            |
| Other  | 446           | 2,173            | 446           | 2,147            |
| <b>Total</b>   | <b>26,285</b> | <b>97,281</b>    | <b>26,268</b> | <b>97,709</b>    |
| <b>2020</b>  |               |                  |               |                  |
| Coal   | 9,350         | 61,702           | 9,333         | 61,606           |
| Gas/Oil  | 10,804        | 12,164           | 10,804        | 13,202           |
| Nuclear  | 1,907         | 15,006           | 1,907         | 15,006           |
| Renewable  | 3,785         | 7,471            | 3,785         | 7,396            |
| Other  | 446           | 2,070            | 446           | 2,065            |
| <b>Total</b>   | <b>26,292</b> | <b>98,413</b>    | <b>26,275</b> | <b>99,275</b>    |
| <b>2023</b>  |               |                  |               |                  |
| Coal   | 7,729         | 45,445           | 7,729         | 45,195           |
| Gas/Oil  | 12,782        | 23,085           | 13,077        | 25,928           |
| Nuclear  | 1,907         | 15,006           | 1,907         | 15,006           |
| Renewable  | 3,785         | 7,101            | 3,785         | 6,541            |
| Other  | 446           | 2,072            | 446           | 2,066            |
| <b>Total</b>   | <b>26,649</b> | <b>92,708</b>    | <b>26,944</b> | <b>94,735</b>    |
| <b>2030</b>  |               |                  |               |                  |
| Coal   | 7,729         | 41,474           | 7,729         | 42,055           |
| Gas/Oil  | 14,382        | 35,071           | 14,525        | 36,324           |
| Nuclear  | 1,907         | 13,852           | 1,907         | 13,852           |
| Renewable  | 3,785         | 6,909            | 3,785         | 6,850            |
| Other  | 446           | 2,172            | 446           | 2,150            |
| <b>Total</b>   | <b>28,249</b> | <b>99,478</b>    | <b>28,392</b> | <b>101,231</b>   |
|  |               |                  |               |                  |

**MPSC Case No.:** U-17920  
**Respondent:** M. F. Scheller  
**Requestor:** MECSCDE-5  
**Question No.:** MECSCDE-5.8  
**Page:** 3 of 3

|                  |               |                |               |                |
|------------------|---------------|----------------|---------------|----------------|
| <b>2037</b>      |               |                |               |                |
| <b>Coal</b>      | 7,729         | 42,158         | 7,729         | 42,606         |
| <b>Gas/Oil</b>   | 16,450        | 50,230         | 16,532        | 50,874         |
| <b>Nuclear</b>   | 1,129         | 8,523          | 1,129         | 8,523          |
| <b>Renewable</b> | 3,785         | 7,304          | 3,785         | 7,308          |
| <b>Other</b>     | 456           | 2,400          | 446           | 2,277          |
| <b>Total</b>     | <b>29,549</b> | <b>110,615</b> | <b>29,621</b> | <b>111,588</b> |

Notes: 1) Gas type includes, combustion turbines (simple and combined), jet engines and other fast start units, an oil/gas steam capacity; Other type includes biomass and landfill gas capacity; Renewable type includes solar, wind, hydro, and pumped storage capacity. 2) Capacity reflects dispatchable capacity rating.  
Source: ICF.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.62b  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-1.14 in Case No. U-17920.

Confirm that the GMM model does not have the ability to endogenously determine capacity additions on a segment when basis across the segment widens or exceeds a threshold?

b. If not, explain why it is realistic to represent basis widening on a segment with no market response to expand capacity.

**Answer:** The GMM's pipeline expansions are determined exogenously. Near-term pipeline capacity expansions are based on a review of planned expansions. Long-term expansions are determined by iterative review of GMM results. After an initial run of the GMM, monthly flow, load factor, and basis results are reviewed in light of expansion costs, market demand growth, and potential reliability concerns to determine if and where additional capacity is needed.

In the scenario that includes Rover and NEXUS capacity, annual average pipeline load factors and MichCon basis increase after 2029. However, demand increases and flow increases are greater in the summer and fall months. Because total demand and pipeline flows during the winter months (when gas demand and pipeline utilization peak) are not increasing by as much as they are in the summer and fall, peak period gas reliability is not being reduced. Winter load factors only increase modestly, which indicates that additional capacity is not needed by Michigan consumers to ensure reliability. So while the post-2029 basis may suggest the potential for additional incremental capacity, the increase in off-peak pipeline load factor does not justify additional capacity.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.62ai  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-1.14 in Case No. U-17920.

Confirm that the GMM model does not have the ability to endogenously determine capacity additions on a segment when basis across the segment widens or exceeds a threshold?

a. If so:

- i. Explain how GMM decides when and how much capacity to add on a segment.

**Answer:** It is confirmed that the GMM model does not endogenously determine pipeline capacity additions.

- i. Not applicable, as it is confirmed that the GMM does not endogenously determine pipeline capacity additions.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.62aii  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-1.14 in Case No. U-17920.

Confirm that the GMM model does not have the ability to endogenously determine capacity additions on a segment when basis across the segment widens or exceeds a threshold?

a. If so:

ii. Explain whether and how this capability was used in this analysis.

**Answer:** Not applicable, as it is confirmed that the GMM does not endogenously determine pipeline capacity additions.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.62aiii  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-1.14 in Case No. U-17920.

Confirm that the GMM model does not have the ability to endogenously determine capacity additions on a segment when basis across the segment widens or exceeds a threshold?

a. If so:

- iii. Provide full details of the pipeline expansions assumed to occur as a result of such market responses.

**Answer:** Not applicable, as it is confirmed that the GMM does not endogenously determine pipeline capacity additions.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63a  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-4.2 in Case No. U-17920. Confirm that GMM's pipeline expansions are determined exogenously based on iterative review of GMM results, including flow, load factor, and basis data, in light of expansion costs, market demand growth, and reliability concerns.

- a. If not confirmed, please explain how GMM's pipeline expansions are determined.

**Answer:** It is confirmed that the GMM's pipeline expansions are determined exogenously based on iterative review of GMM results, including flow, load factor, and basis data, in light of expansion costs, market demand growth, and reliability concerns.

- a. Not applicable, as it is confirmed that that the GMM's pipeline expansions are determined exogenously.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63b  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-4.2 in Case No. U-17920. Confirm that GMM's pipeline expansions are determined exogenously based on iterative review of GMM results, including flow, load factor, and basis data, in light of expansion costs, market demand growth, and reliability concerns.

- b. Identify which of the pipeline projects provided in your response to the previous request were subject to such exogenous iterative review.

**Answer:** Referring to the list of pipeline projects provided in Exhibit A-27, Appendix B, the pipeline projects with a Status other than "In-Service" were subject to exogenous iterative review.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63ci  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-4.2 in Case No. U-17920. Confirm that GMM's pipeline expansions are determined exogenously based on iterative review of GMM results, including flow, load factor, and basis data, in light of expansion costs, market demand growth, and reliability concerns.

- c. Were any additional generic projects, not listed in the response to the previous request, subject to such exogenous iterative review?
  - i. If so, identify the Origin, Destination, Assumed Capacity, and Assumed In Service data for each such additional generic project.

**Answer:** No additional generic projects (beyond those four listed in the response to Exhibit A-27, Appendix B) were subject to exogenous iterative review in any of the four scenarios.

- i. Not applicable, as there were no additional generic projects.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63d  
**Respondent:** M. D. Sloan/Legal  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-4.2 in Case No. U-17920. Confirm that GMM's pipeline expansions are determined exogenously based on iterative review of GMM results, including flow, load factor, and basis data, in light of expansion costs, market demand growth, and reliability concerns.

- d. For each project that was subject to the exogenous iterative review, provide, for each of the four scenarios, the data that was used in the exogenous iterative review (described as "monthly flow, load factor, and basis results").

**Answer:** To the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. Subject to these objections and without waiver thereof, the Company would answer as follows: The four scenarios developed as part of the analysis performed for DTE Electric are based on the Natural Gas Strategic Outlook, which is a forecast product sold by ICF. The Natural Gas Strategic Outlook is proprietary to ICF and has significant commercial value. The Natural Gas Strategic Outlook is available for license from ICF under its standard terms and conditions. The scenarios commissioned by DTE Electric are licensed exclusively to DTE Electric. DTE has given ICF permission to make these scenarios available to any party in this case that subscribes to the Strategic Outlook.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63e  
**Respondent:** M. D. Sloan/Legal  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-4.2 in Case No. U-17920. Confirm that GMM's pipeline expansions are determined exogenously based on iterative review of GMM results, including flow, load factor, and basis data, in light of expansion costs, market demand growth, and reliability concerns.

- e. For each project that was subject to the exogenous iterative review, provide, for each of the four scenarios, the "expansion costs" assumptions that were used in the exogenous iterative review.

**Answer:** To the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. Subject to these objections and without waiver thereof, the Company would answer as follows: The four scenarios developed as part of the analysis performed for DTE Electric are based on the Natural Gas Strategic Outlook, which is a forecast product sold by ICF. The Natural Gas Strategic Outlook is proprietary to ICF and has significant commercial value. The Natural Gas Strategic Outlook is available for license from ICF under its standard terms and conditions. The scenarios commissioned by DTE Electric are licensed exclusively to DTE Electric. DTE has given ICF permission to make these scenarios available to any party in this case that subscribes to the Strategic Outlook.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63f  
**Respondent:** M. D. Sloan  
**Page:** 1 of 3

**Question:** Refer to Mr. Sloan’s response to Request No. MECSCDE-4.2 in Case No. U-17920. Confirm that GMM’s pipeline expansions are determined exogenously based on iterative review of GMM results, including flow, load factor, and basis data, in light of expansion costs, market demand growth, and reliability concerns.

f. For each project that was subject to the exogenous iterative review, provide, for each of the four scenarios, the “market demand growth” assumptions that were used in the exogenous iterative review.

**Answer:** Market demand growth assumptions (Consumption and Exports) by U.S. Census region and Canadian Region are provided in the tables below; units are Bcf per year.

Table 5 – Scenario 1 (No Pipeline Added) Demand Growth

| Region               | Variable                   | 2015  | 2020  | 2025  | 2030  | 2035  |
|----------------------|----------------------------|-------|-------|-------|-------|-------|
| New England          | Consumption                | 942   | 1,036 | 1,088 | 1,141 | 1,237 |
| Mid-Atlantic         | Consumption                | 3,687 | 3,906 | 4,381 | 4,556 | 4,826 |
| East North Central   | Consumption                | 4,306 | 4,221 | 4,609 | 4,892 | 4,959 |
| West North Central   | Consumption                | 1,905 | 1,887 | 1,966 | 2,039 | 2,158 |
| South Atlantic       | Consumption                | 3,794 | 4,000 | 4,460 | 4,837 | 5,594 |
| South Atlantic       | LNG Exports                | -     | 366   | 365   | 365   | 365   |
| East South Central   | Consumption                | 1,914 | 1,748 | 1,886 | 2,058 | 2,293 |
| West South Central   | Consumption                | 6,683 | 6,724 | 7,295 | 7,489 | 7,494 |
| West South Central   | LNG Exports                | 77    | 3,778 | 4,233 | 4,233 | 4,233 |
| West South Central   | Pipeline Exports to Mexico | 561   | 1,501 | 1,759 | 1,963 | 2,028 |
| Mountain             | Consumption                | 1,781 | 1,827 | 2,000 | 2,036 | 2,152 |
| Mountain             | LNG Exports                | -     | -     | -     | -     | -     |
| Mountain             | Pipeline Exports to Mexico | 271   | 205   | 298   | 333   | 307   |
| Pacific (contiguous) | Consumption                | 2,905 | 3,080 | 3,219 | 3,386 | 3,570 |
| Pacific (contiguous) | LNG Exports                | -     | -     | -     | -     | -     |
| Pacific (contiguous) | Pipeline Exports to Mexico | 121   | 143   | 145   | 148   | 153   |
| Eastern Canada       | Consumption                | 1,382 | 1,514 | 1,633 | 1,731 | 1,854 |
| Western Canada       | Consumption                | 2,436 | 2,819 | 3,120 | 3,582 | 4,147 |
| Western Canada       | LNG Exports                | -     | -     | 767   | 767   | 767   |

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63f  
**Respondent:** M. D. Sloan  
**Page:** 2 of 3

**Table 6 – Scenario 2 (NEXUS Pipeline added, no Rover) Demand Growth**

| Region               | Variable                   | 2015  | 2020  | 2025  | 2030  | 2035  |
|----------------------|----------------------------|-------|-------|-------|-------|-------|
| New England          | Consumption                | 942   | 1,036 | 1,088 | 1,141 | 1,237 |
| Mid-Atlantic         | Consumption                | 3,687 | 3,906 | 4,381 | 4,556 | 4,826 |
| East North Central   | Consumption                | 4,306 | 4,221 | 4,609 | 4,892 | 4,959 |
| West North Central   | Consumption                | 1,905 | 1,887 | 1,966 | 2,039 | 2,158 |
| South Atlantic       | Consumption                | 3,794 | 4,000 | 4,460 | 4,837 | 5,594 |
| South Atlantic       | LNG Exports                | -     | 366   | 365   | 365   | 365   |
| East South Central   | Consumption                | 1,914 | 1,748 | 1,886 | 2,058 | 2,293 |
| West South Central   | Consumption                | 6,683 | 6,724 | 7,295 | 7,489 | 7,494 |
| West South Central   | LNG Exports                | 77    | 3,778 | 4,233 | 4,233 | 4,233 |
| West South Central   | Pipeline Exports to Mexico | 561   | 1,501 | 1,759 | 1,963 | 2,028 |
| Mountain             | Consumption                | 1,781 | 1,827 | 2,000 | 2,036 | 2,152 |
| Mountain             | LNG Exports                | -     | -     | -     | -     | -     |
| Mountain             | Pipeline Exports to Mexico | 271   | 205   | 298   | 333   | 307   |
| Pacific (contiguous) | Consumption                | 2,905 | 3,080 | 3,219 | 3,386 | 3,570 |
| Pacific (contiguous) | LNG Exports                | -     | -     | -     | -     | -     |
| Pacific (contiguous) | Pipeline Exports to Mexico | 121   | 143   | 145   | 148   | 153   |
| Eastern Canada       | Consumption                | 1,382 | 1,514 | 1,633 | 1,731 | 1,854 |
| Western Canada       | Consumption                | 2,436 | 2,819 | 3,120 | 3,582 | 4,147 |
| Western Canada       | LNG Exports                | -     | -     | 767   | 767   | 767   |

**Table 7 – Scenario 3 (Rover Pipeline added, no NEXUS) Demand Growth**

| Region               | Variable                   | 2015  | 2020  | 2025  | 2030  | 2035  |
|----------------------|----------------------------|-------|-------|-------|-------|-------|
| New England          | Consumption                | 942   | 1,032 | 1,086 | 1,140 | 1,237 |
| Mid-Atlantic         | Consumption                | 3,687 | 3,911 | 4,400 | 4,581 | 4,859 |
| East North Central   | Consumption                | 4,306 | 4,283 | 4,645 | 4,921 | 4,988 |
| West North Central   | Consumption                | 1,905 | 1,902 | 1,965 | 2,036 | 2,155 |
| South Atlantic       | Consumption                | 3,794 | 4,005 | 4,470 | 4,849 | 5,612 |
| South Atlantic       | LNG Exports                | -     | 366   | 365   | 365   | 365   |
| East South Central   | Consumption                | 1,914 | 1,764 | 1,889 | 2,059 | 2,278 |
| West South Central   | Consumption                | 6,683 | 6,790 | 7,270 | 7,479 | 7,507 |
| West South Central   | LNG Exports                | 77    | 3,778 | 4,233 | 4,233 | 4,233 |
| West South Central   | Pipeline Exports to Mexico | 561   | 1,498 | 1,757 | 1,959 | 2,011 |
| Mountain             | Consumption                | 1,781 | 1,849 | 1,997 | 2,031 | 2,142 |
| Mountain             | LNG Exports                | -     | -     | -     | -     | -     |
| Mountain             | Pipeline Exports to Mexico | 271   | 208   | 300   | 338   | 309   |
| Pacific (contiguous) | Consumption                | 2,905 | 3,095 | 3,224 | 3,391 | 3,574 |
| Pacific (contiguous) | LNG Exports                | -     | -     | -     | -     | -     |
| Pacific (contiguous) | Pipeline Exports to Mexico | 121   | 143   | 145   | 148   | 153   |
| Eastern Canada       | Consumption                | 1,382 | 1,517 | 1,642 | 1,747 | 1,867 |
| Western Canada       | Consumption                | 2,436 | 2,815 | 3,105 | 3,570 | 4,127 |
| Western Canada       | LNG Exports                | -     | -     | 767   | 767   | 767   |

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63f  
**Respondent:** M. D. Sloan  
**Page:** 3 of 3

**Table 8 – Scenario 4 (both Rover and NEXUS capacity added) Demand Growth**

| <b>Region</b>        | <b>Variable</b>            | <b>2015</b> | <b>2020</b> | <b>2025</b> | <b>2030</b> | <b>2035</b> |
|----------------------|----------------------------|-------------|-------------|-------------|-------------|-------------|
| New England          | Consumption                | 942         | 1,032       | 1,086       | 1,140       | 1,236       |
| Mid-Atlantic         | Consumption                | 3,687       | 3,911       | 4,404       | 4,591       | 4,868       |
| East North Central   | Consumption                | 4,306       | 4,286       | 4,655       | 4,929       | 4,998       |
| West North Central   | Consumption                | 1,905       | 1,902       | 1,965       | 2,035       | 2,154       |
| South Atlantic       | Consumption                | 3,794       | 4,004       | 4,472       | 4,855       | 5,617       |
| South Atlantic       | LNG Exports                | -           | 366         | 365         | 365         | 365         |
| East South Central   | Consumption                | 1,914       | 1,763       | 1,890       | 2,061       | 2,269       |
| West South Central   | Consumption                | 6,683       | 6,793       | 7,271       | 7,483       | 7,474       |
| West South Central   | LNG Exports                | 77          | 3,778       | 4,233       | 4,233       | 4,233       |
| West South Central   | Pipeline Exports to Mexico | 561         | 1,498       | 1,754       | 1,957       | 1,999       |
| Mountain             | Consumption                | 1,781       | 1,850       | 1,996       | 2,032       | 2,131       |
| Mountain             | LNG Exports                | -           | -           | -           | -           | -           |
| Mountain             | Pipeline Exports to Mexico | 271         | 208         | 303         | 339         | 312         |
| Pacific (contiguous) | Consumption                | 2,905       | 3,096       | 3,226       | 3,393       | 3,575       |
| Pacific (contiguous) | LNG Exports                | -           | -           | -           | -           | -           |
| Pacific (contiguous) | Pipeline Exports to Mexico | 121         | 143         | 145         | 148         | 153         |
| Eastern Canada       | Consumption                | 1,382       | 1,518       | 1,644       | 1,755       | 1,864       |
| Western Canada       | Consumption                | 2,436       | 2,815       | 3,100       | 3,569       | 4,105       |
| Western Canada       | LNG Exports                | -           | -           | 767         | 767         | 767         |

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63g  
**Respondent:** M. D. Sloan/Legal  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-4.2 in Case No. U-17920. Confirm that GMM's pipeline expansions are determined exogenously based on iterative review of GMM results, including flow, load factor, and basis data, in light of expansion costs, market demand growth, and reliability concerns.

- g. For each project that was subject to the exogenous iterative review, provide, for each of the four scenarios, the information pertaining to "potential reliability concerns" that was used in the exogenous iterative review.

**Answer:** To the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. Subject to these objections and without waiver thereof, the Company would answer as follows: The four scenarios developed as part of the analysis performed for DTE Electric are based on the Natural Gas Strategic Outlook, which is a forecast product sold by ICF. The Natural Gas Strategic Outlook is proprietary to ICF and has significant commercial value. The Natural Gas Strategic Outlook is available for license from ICF under its standard terms and conditions. The scenarios commissioned by DTE Electric are licensed exclusively to DTE Electric. DTE has given ICF permission to make these scenarios available to any party in this case that subscribes to the Strategic Outlook. Subject to this objection, and without waiver thereof, the Company would answer as follows:

In context of Question MECSC-1.63g, gas system reliability is represented by the ability to meet the estimated demands of all firm gas customers on a peak demand day. Potential reliability concerns were assessed by estimating increases in regional firm demands on a peak day versus total regional resources (in-bound pipeline capacity and in-region storage withdrawal capacity); if total regional resources are greater than or equal to peak day firm demand, then there is limited potential reliability concern.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63h  
**Respondent:** M. D. Sloan  
**Page:** 1 of 2

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-4.2 in Case No. U-17920. Confirm that GMM's pipeline expansions are determined exogenously based on iterative review of GMM results, including flow, load factor, and basis data, in light of expansion costs, market demand growth, and reliability concerns.

h. Identify the specific objective criteria that were applied, through the exogenous iterative reviews, to determine which pipeline expansions would occur, their In Service Dates, and their Assumed Capacity values. If specific objective criteria were not applied, describe in further detail how these determinations were made.

**Answer:** Referring the "Project Status" column shown in the table of pipeline expansions included in Exhibit A-25, Appendix B, the criteria the exogenous iterative reviews follows:

Step 1: For a project categorized as In-service, Partial In-service, Under Construction, or FERC Approved, the project's Assumed Capacity and Assumed In-service in the GMM is set to match the Planned Capacity and Planned In-service Date.

Step 2: For a project categorized as FERC Application, FERC Filed, or Announced, ICF compared regional market growth to available regional pipeline capacity (including both existing pipeline capacity and those projects added in Step 1) to assess expansion costs, regional market growth, and potential reliability concerns. ICF also reviews announced capacity contracts and current and projected market basis. If these factors support the expansion, then the project categorized as FERC Application, FERC Filed, or Announced, was added to the GMM per the Planned Capacity and Planned In-service Date.

Step 3: Following Steps 1 and 2, if there is still regional market growth in excess of available pipeline capacity (including both existing pipeline capacity and those projects added in Steps 1 and 2), ICF then adds generic pipeline capacity ("generic" meaning not associated with any announced project) between the market area and the nearest supply area with sufficient production growth to meet the projected incremental demand, based on the

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63h  
**Respondent:** M. D. Sloan  
**Page:** 2 of 2

economic opportunity of building additional capacity indicated by the GMM basis results from the iterative model runs.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.63i  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-4.2 in Case No. U-17920. Confirm that GMM's pipeline expansions are determined exogenously based on iterative review of GMM results, including flow, load factor, and basis data, in light of expansion costs, market demand growth, and reliability concerns.

- i. Identify the individual or individuals who performed the exogenous iterative reviews.

**Answer:** All GMM modeling work, including exogenous iterative reviews, was performed by ICF staff, including Frank Brock, Hua Fang, Julio Manik, Srirama Palagummi, Anthony Ciatto and Kevin Greene. The model input assumptions and model results were reviewed by a group of ICF senior staff, led by Kevin Petak and including Michael Sloan, Harry Vidas, and Ananth Chikkatur.

**MPSC Case No.:** U-17920  
**Respondent:** M. D. Sloan  
**Requestor:** MEC-SC-1  
**Question No.:** MECSC/DE-1.12a  
**Page:** 1 of 2

**Question:** The remaining questions refer to Exhibit A-25:

ICF projects that Marcellus/Utica production will reach 42 Bcfd by 2037 (p. 6).

- a. Appendix B lists proposed pipeline expansion projects from the Marcellus/Utica basin. Identify the assumed commercial date, initial capacity, and percent contracted for each of these projects, for each of the four scenarios evaluated.

**Answer:** The table below lists all of the pipeline expansion projects from Appendix B included in each of the four scenarios. Unless otherwise indicated, the listed expansions were included in all four scenarios. The column labeled "Assumed Capacity" indicates the capacity that was assumed in ICF's analysis. The table also includes ICF assumptions for post-2020 generic pipeline capacity additions. The percent contracted for each of these projects is not included in this analysis. The table below is based on the table published in November 2015.

**MPSC Case No.:** U-17920  
**Respondent:** M. D. Sloan  
**Requestor:** MEC-SC-1  
**Question No.:** MECSC/DE-1.12a  
**Page:** 2 of 2

| Natural Gas Pipeline Projects               | Company                           | Product     | Origin                 | Destination                      | Planned Capacity (MMcfd) | Assumed Capacity (MMcfd) | Planned In-Service Date | Assumed In-Service Date | Project Status     |
|---|-----------------------------------|-------------|------------------------|----------------------------------|--------------------------|--------------------------|-------------------------|-------------------------|--------------------|
| Rose Lake Expansion Project                 | Tennessee Gas Pipeline            | Natural Gas | Tioga, PA              | Bradford, PA                     | 230                      | 230                      | Nov-14                  | Nov-14                  | In-Service         |
| Mercer Expansion Project                    | National Fuel                     | Natural Gas | Washington, PA         | Washington, PA                   | 105                      | 105                      | Nov-14                  | Nov-14                  | In-Service         |
| TEAM 2014                                   | Texas Eastern Transmission        | Natural Gas | OH, PA, WV             | PA, NY, NJ                       | 600                      | 600                      | Nov-14                  | Dec-14                  | In-Service         |
| Northeast Connector Expansion               | Williams Transco                  | Natural Gas | York, PA               | Queens, NY                       | 100                      | 100                      | May-15                  | Nov-14                  | In-Service         |
| Rockaway Lateral                            | Williams Transco                  | Natural Gas | Lower New York Bay, NY | Brooklyn NY                      | 647                      | 647                      | May-15                  | Nov-14                  | In-Service         |
| Tygart Valley Pipeline                      | Crestwood Midstream               | Natural Gas | Randolph, WV           | Barbour, WV                      | 200                      | 200                      | Dec-12                  | Dec-12                  | In-Service         |
| Seneca Lateral                              | Rockies Express Pipeline          | Natural Gas | Noble, OH              | Noble, OH                        | 250                      | 250                      | Jun-14                  | Jun-14                  | In-Service         |
| West Side Expansion - Smithfield III        | Columbia Gas Transmission         | Natural Gas | Waynesburg, PA         | Smithfield, WV                   | 444                      | 444                      | Nov-14                  | Nov-14                  | In-Service         |
| Natrium to Market                           | Dominion Transmission             | Natural Gas | Marshall, WV           | Greene, PA                       | 185                      | 185                      | Oct-14                  | Oct-14                  | In-Service         |
| Wright Interconnect Expansion               | Iroquois Gas Transmission         | Natural Gas | Schoharie, NY          | Schoharie, NY                    | 650                      | 650                      | Mar-16                  | Mar-16                  | Under Construction |
| Southeast Mainline Reversal Ph. 1           | ANR Pipeline                      | Natural Gas | Defiance, OH           | Kentucky                         | 1,250                    | 1,250                    | Nov-14                  | Jun-14                  | In-Service         |
| Southeast Mainline Reversal Ph. 2           | ANR Pipeline                      | Natural Gas | Shelbyville, IN        | Eunice, LA                       | 750                      | 600                      | Dec-15                  | Dec-15                  | Under Construction |
| Constitution                                | Williams/Cabot/Piedmont           | Natural Gas | Susquehanna, PA        | Schoharie, NY                    | 650                      | 650                      | Jun-16                  | Nov-16                  | Under Construction |
| Zone-3 East to West Project                 | Rockies Express Pipeline          | Natural Gas | Monroe, OH             | Moultrie, IL                     | 1,800                    | 1,800                    | Sep-15                  | Jun-15                  | In-Service         |
| Virginia Southside Expansion                | Williams Transco                  | Natural Gas | Pittsylvania, VA       | Brunswick, VA                    | 270                      | 270                      | Sep-15                  | Sep-15                  | In-Service         |
| Central Tioga Country                       | Empire Pipeline                   | Natural Gas | Tioga, PA              | Tioga, PA                        | 250                      | 250                      | Nov-16                  | Nov-16                  | Announced          |
| Ohio Pipeline Energy Network (OPEN)         | Texas Eastern Transmission        | Natural Gas | Columbiana, OH         | Monroe, OH                       | 550                      | 550                      | Nov-15                  | Oct-15                  | In-Service         |
| Leidy Southeast                             | Williams Transco                  | Natural Gas | Leidy, PA              | Choctaw, AL                      | 525                      | 525                      | Dec-15                  | Nov-15                  | Partial In-Service |
| Northern Access 2015                        | National Fuel                     | Natural Gas | Cattaraugus, NY        | Cattaraugus, NY                  | 140                      | 140                      | Nov-15                  | Nov-15                  | In-Service         |
| West Side Expansion                         | National Fuel                     | Natural Gas | Washington, PA         | Beaver, PA                       | 175                      | 175                      | Oct-15                  | Oct-15                  | In-Service         |
| Uniontown to CityGas                        | Texas Eastern Transmission        | Natural Gas | Greene, PA             | Grant, IN                        | 425                      | 425                      | Sep-15                  | Nov-15                  | In-Service         |
| Broad Run Flexibility Project               | Tennessee Gas Pipeline            | Natural Gas | Broad Run Lateral, WV  | Broad Run Lateral, WV            | 590                      | 590                      | Nov-15                  | Nov-15                  | In-Service         |
| East Side Expansion                         | Columbia Gas Transmission         | Natural Gas | Chester, PA            | Gloucester, NJ                   | 312                      | 312                      | Oct-15                  | Oct-15                  | In-Service         |
| Lebanon Lateral Reversal                    | ANR Pipeline                      | Natural Gas | Lebanon, OH            | Shelbyville, IN (ANR Mainline)   | 350                      | 350                      | Mar-14                  | Apr-14                  | In-Service         |
| Ohio-Louisiana Access Project               | Texas Eastern Transmission        | Natural Gas | Lebanon, OH            | Louisiana                        | 760                      | 625                      | Jun-16                  | Jun-16                  | FERC Approved      |
| Clarington Project                          | Dominion Transmission             | Natural Gas | Marshall, WV           | Monroe, OH                       | 250                      | 250                      | Nov-16                  | Nov-16                  | FERC Approved      |
| AIM Project                                 | Algonquin Gas Transmission        | Natural Gas | Rockland, NY           | Norfolk, MA                      | 342                      | 342                      | Nov-16                  | Nov-16                  | Under Construction |
| NEXUS Gas Transmission**                    | Spectra Energy                    | Natural Gas | Stark, OH              | IN, MI, Ontario                  | 1,500                    | 1,500                    | Nov-17                  | Nov-17                  | FERC Pre-Filing    |
| Leach Xpress                                | Columbia Gas Transmission         | Natural Gas | Marshall, WV           | Leach, KY                        | 1,500                    | 1,500                    | Nov-17                  | Sep-17                  | FERC Application   |
| Rayne Xpress*                               | Columbia Gas Transmission         | Natural Gas | Leach, KY              | Rayne, LA                        | 621                      | N/A                      | Nov-17                  | N/A                     | FERC Application   |
| Continent to Coast Expansion Project (C2C)* | Portland Natural Gas Transmission | Natural Gas | Coos, NH               | Cumberland, ME                   | 350                      | N/A                      | Nov-16                  | N/A                     | Announced          |
| South to North (SoNo)*                      | Iroquois Gas Transmission         | Natural Gas | Brookfield, CT         | Waddington, NY                   | 650                      | N/A                      | Dec-16                  | N/A                     | Announced          |
| TGP 200 Line Looping*                       | Tennessee Gas Pipeline            | Natural Gas | Wright, NY             | Mendon, MA                       | 1,000                    | N/A                      | Nov-17                  | N/A                     | FERC Pre-Filing    |
| Northern Supply Access                      | Texas Eastern Transmission        | Natural Gas | Lebanon, OH            | Texas (multiple delivery points) | 384                      | 585                      | Apr-17                  | Jun-17                  | FERC Approved      |
| Rover Pipeline Ph. 1**                      | Energy Transfer                   | Natural Gas | PA, WV, OH             | Defiance, OH                     | 2,200                    | 2,200                    | Dec-16                  | Dec-16                  | FERC Application   |
| Rover Pipeline Ph. 2**                      | Energy Transfer                   | Natural Gas | Defiance, OH           | Sarnia, ON                       | 1,050                    | 1,050                    | Jun-17                  | Jun-17                  | FERC Application   |
| ANR East*                                   | ANR Pipeline                      | Natural Gas | Harrison, OH           | Defiance, OH                     | 1,200                    | N/A                      | Nov-18                  | N/A                     | Announced          |
| Atlantic Sunrise                            | Williams Transco                  | Natural Gas | PA                     | AL                               | 1,700                    | 1,700                    | Nov-18                  | Jul-17                  | FERC Application   |
| Broad Run Expansion Project                 | Tennessee Gas Pipeline            | Natural Gas | Broad Run Lateral, WV  | Broad Run Lateral, WV            | 200                      | 200                      | Jul-17                  | Nov-17                  | FERC Application   |
| Gulf Markets Expansion Ph. 1*               | Texas Eastern Transmission        | Natural Gas | Clarington, OH         | Louisiana                        | 350                      | N/A                      | Nov-16                  | N/A                     | FERC Application   |
| Gulf Markets Expansion Ph. 2*               | Texas Eastern Transmission        | Natural Gas | Clarington, OH         | Louisiana                        | 300                      | N/A                      | Aug-17                  | N/A                     | FERC Application   |
| Atlantic Bridge                             | Algonquin Gas Transmission        | Natural Gas | Bergen, NJ             | Maritimes, CAN                   | 150                      | 222                      | Aug-17                  | Nov-17                  | Announced          |
| Northeast Energy Direct (NED)*              | Tennessee Gas Pipeline            | Natural Gas | Wright, NY             | Dracut, MA                       | 2,500                    | N/A                      | Nov-17                  | N/A                     | FERC Application   |
| Millennium Mainline 2017                    | Millennium Pipeline               | Natural Gas | Corning, NY            | Rockland, NY                     | 350                      | 350                      | Nov-17                  | Nov-17                  | Announced          |
| Atlantic Coast Pipeline                     | Dominion, Duke, Piedmont          | Natural Gas | Harrison, WV           | Robeson, NC                      | 1,500                    | 1,500                    | Nov-18                  | Nov-18                  | FERC Filed         |
| Western Marcellus Pipeline Project          | Williams Transco                  | Natural Gas | Marshall, WV           | VA (multiple delivery points)    | 1,000                    | 1,000                    | Nov-18                  | Nov-18                  | Announced          |
| Generic Marcellus Back to Gulf              | Generic                           | Natural Gas | WV                     | Louisiana                        | N/A                      | 1,500                    | N/A                     | Apr-25                  | N/A                |
| Marcellus within PA Generic                 | Generic                           | Natural Gas | Central PA             | Southwestern PA                  | N/A                      | 1,000                    | N/A                     | Apr-25                  | N/A                |
| Millennium Generic                          | Generic                           | Natural Gas | Southern Tier, NY      | Eastern NY                       | N/A                      | 350                      | N/A                     | Nov-27                  | N/A                |
| Marcellus Reversal Generic                  | Generic                           | Natural Gas | Southwest PA           | Kentucky                         | N/A                      | 1,000                    | N/A                     | Apr-28                  | N/A                |

\* ICF did not include these projects in the scenarios.

\*\* The Rover and NEXUS projects were included across the four DTE scenarios as follows: 1) No Pipeline Added (neither Rover nor NEXUS added); 2) With NEXUS Pipeline (NEXUS Pipeline added, no Rover); 3) With Rover Pipeline (Rover Pipeline added, no NEXUS); and 4) With NEXUS and Rover Pipeline (both Rover and NEXUS capacity added).  
Published November 2015.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC  
**Question No.:** MECSCDE-2.17c  
**Respondent:** M. D. Sloan/Legal  
**Page:** 1 of 3

**Question:** Please refer to the Company's response to MECSCDE 1.63:

- c. Explain how the exact size of each pipeline project was determined through the exogenous review. Provide example workpapers for the calculations.

**Answer:** To the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. The four scenarios developed as part of the analysis performed for DTE Electric are based on the Natural Gas Strategic Outlook, which is a forecast product sold by ICF. The Natural Gas Strategic Outlook is proprietary to ICF and has significant commercial value. The Natural Gas Strategic Outlook is available for license from ICF under its standard terms and conditions. The scenarios commissioned by DTE Electric are licensed exclusively to DTE Electric. DTE has given ICF permission to make these scenarios available to any party in this case that subscribes to the Strategic Outlook. Subject to these objections and without waiver thereof, the Company would answer as follows:

ICF's exogenous review process has been described in prior responses (see MECSCDE-1.63a-i, MECSCDE-1.64a-b, and MECSCDE-1.65a-i). As described in our response to MECSCDE-1.65c, first, projects that were at that time In-service, Partial In-service, Under Construction, or FERC Approved were added to the GMM unless there were significant non-economic factors that would make it unlikely a project would proceed. For example, Constitution pipeline was not included in our analysis, even though it had received FERC approval, because it was not able to secure the needed New York State water permits needed for construction. For these projects, the capacities and in-service dates were based on the publicly available information on at the time the analysis was conducted, including FERC filings and company announcements.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC  
**Question No.:** MECSCDE-2.17c  
**Respondent:** M. D. Sloan/Legal  
**Page:** 2 of 3

Next, projects that were categorized as FERC Application, FERC Filed, and Announced were subjected to reviews of both economic and non-economic factors. The factors considered included project costs, regional market growth and potential reliability concerns in downstream markets, and non-economic factors such as state and/or local opposition to the pipeline.

Each project was subject to an assessment of the projects costs versus the projected basis between the upstream and downstream market areas, based on iterative runs of the GMM; that is, running the GMM both with and without the project added. If a project's projected rates (based on full recovery of the project's costs over the economic life of the project) were equal to or less than the projected basis between the project's upstream and downstream markets, the project was included in the GMM. For these projects, the capacities and in-service dates were based on the publicly available information on at the time the analysis was conducted, including FERC filings and company announcements.

Our response to MECSCDE-1.65c also explained that the capacity and start dates for additions that were categorized as Generic ("generic" meaning not associated with any announced project) were based on GMM basis results from iterative model runs. The third step of adding generic projects was necessary since the outlook for proposed projects is relative short (generally spanning on the next 5 to 7 years) compared to the 20-year timespan of the GMM's projection. The economic evaluation of generic projects was similar to that used for the FERC Application, FERC Filed, and Announced projects. ICF first determined markets that appeared to need additional capacity (beyond what had already been added in the first two steps described above). After each iterative run of the GMM, monthly flow, load factor, and basis results are reviewed in light of expansion costs, market demand growth, non-economic barriers to pipeline construction and potential reliability concerns to determine if, where, and when additional generic capacity is needed. The capacity size for generic expansions were based on the iterative review, consistent with reasonable pipeline capacity increments in the region, considering pipeline development costs and economies to scale, demand growth, and basis.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC  
**Question No.:** MECSCDE-2.17c  
**Respondent:** M. D. Sloan/Legal  
**Page:** 3 of 3

ICF's August 2015 CPP Case (which provide the base market growth assumptions for all four DTE Electric GMM cases) indicates that greatest projected regional market growth is in the south; market growth includes both increases in domestic consumption and increases in gas exports (pipeline exports to Mexico and LNG exports). Beyond the one additional east-oriented generic expansion (referred to as "Millennium Generic"), additional generic expansions to the east, northeast, west, and northwest were not required because the included planned expansions were sufficient to meet market demand growth and reliability concerns in those areas, and basis to those markets was not sufficiently high to support additional generic capacity.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.64a  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-6.3 in Case No. U-17920.

- a. Please confirm that additional generic expansions to the east, northeast, west, and northwest were not evaluated based on an analysis that considered basis data and expansion costs.

**Answer:** Confirmed. ICF reviewed the results of the base case pipeline scenario to determine if additional generic expansions might be required to meet market demand growth and reliability concerns in different markets considering basis data and potential expansion costs. Based on this review, ICF determined that no additional generic expansions were needed. Hence, ICF did not conduct an analysis of any additional generic projects beyond the generic projects included in the Base Case.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.64b  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to Mr. Sloan's response to Request No. MECSCDE-6.3 in Case No. U-17920.

- b. If not confirmed please more fully explain why such expansions were not included.

**Answer:** See response to MECSCDE-1.64a.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.66a  
**Respondent:** M. D. Sloan/Legal  
**Page:** 1 of 3

**Question:** Please refer to Exhibit A-27, page 16 (Exhibit 2-5, interregional pipeline flows 2014; Exhibit 2-6, projected interregional pipeline flows, 2037), and also Mr. Sloan's response to Case No. U-18143, MECSCDE-1.11cd (updated interregional pipeline flows for 2015, 2025, and 2035), and also Mr. Sloan's response to Case No. U-17920, MECSCDE-4-5a.

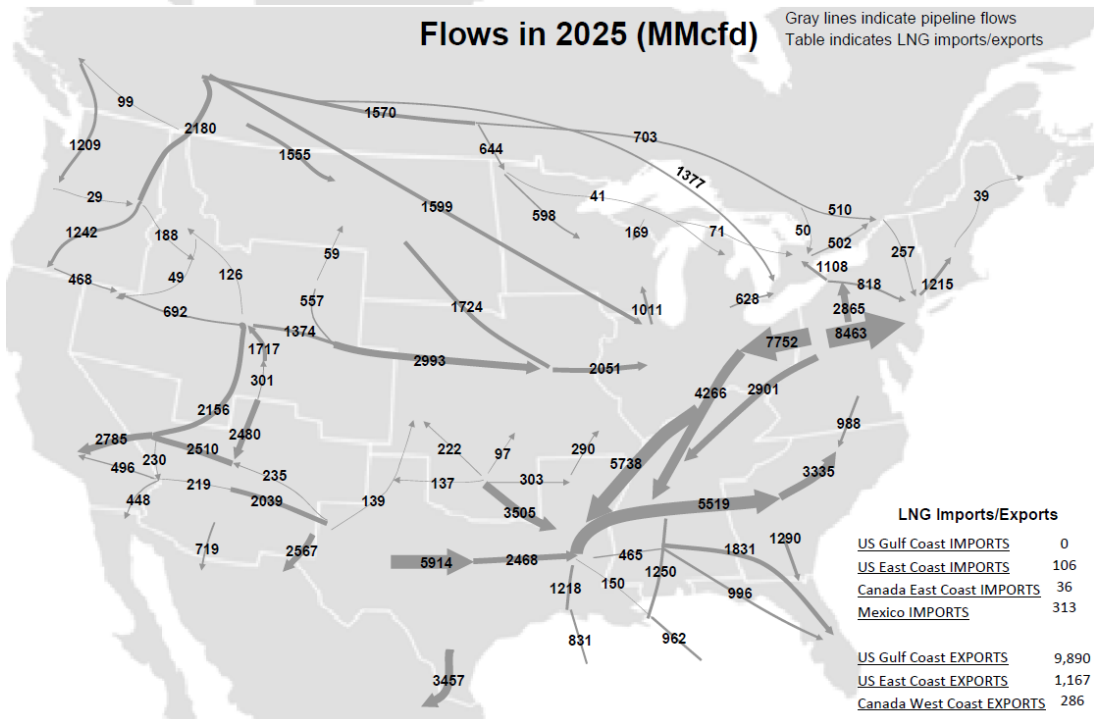
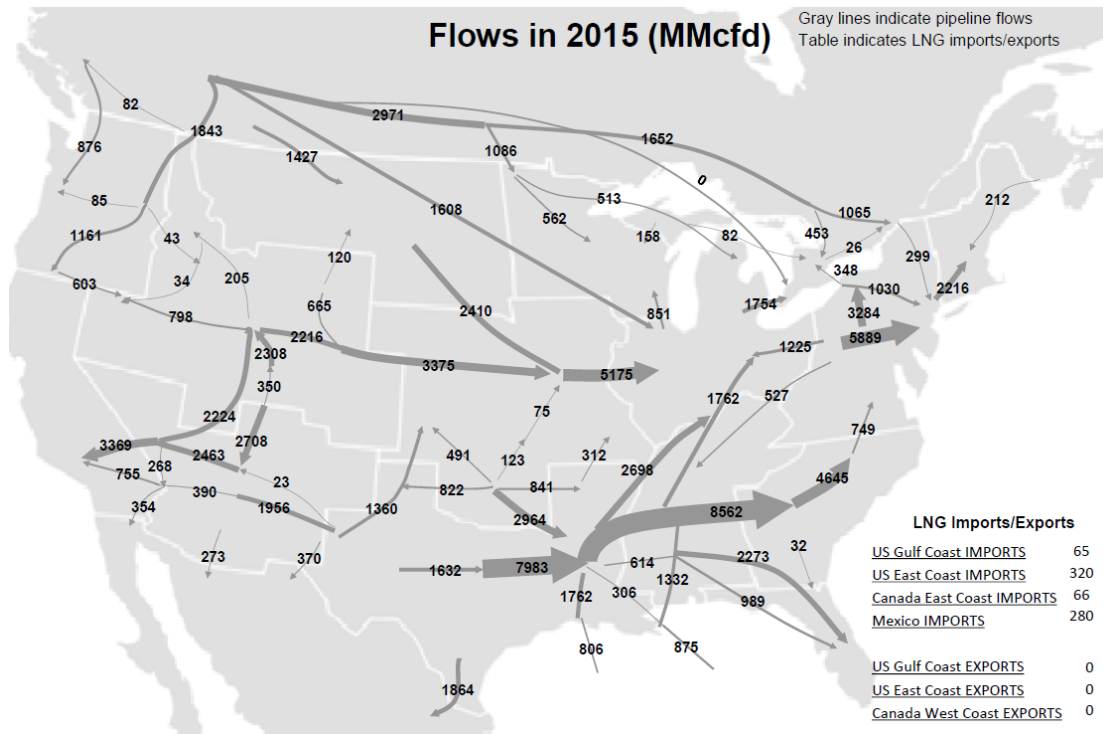
- a. Please provide updated interregional pipeline flow graphs showing the detail relevant to this proceeding (details in and around Michigan and the Marcellus/Utica region).

**Answer:** To the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. Subject to these objections and without waiver thereof, the Company would answer as follows:

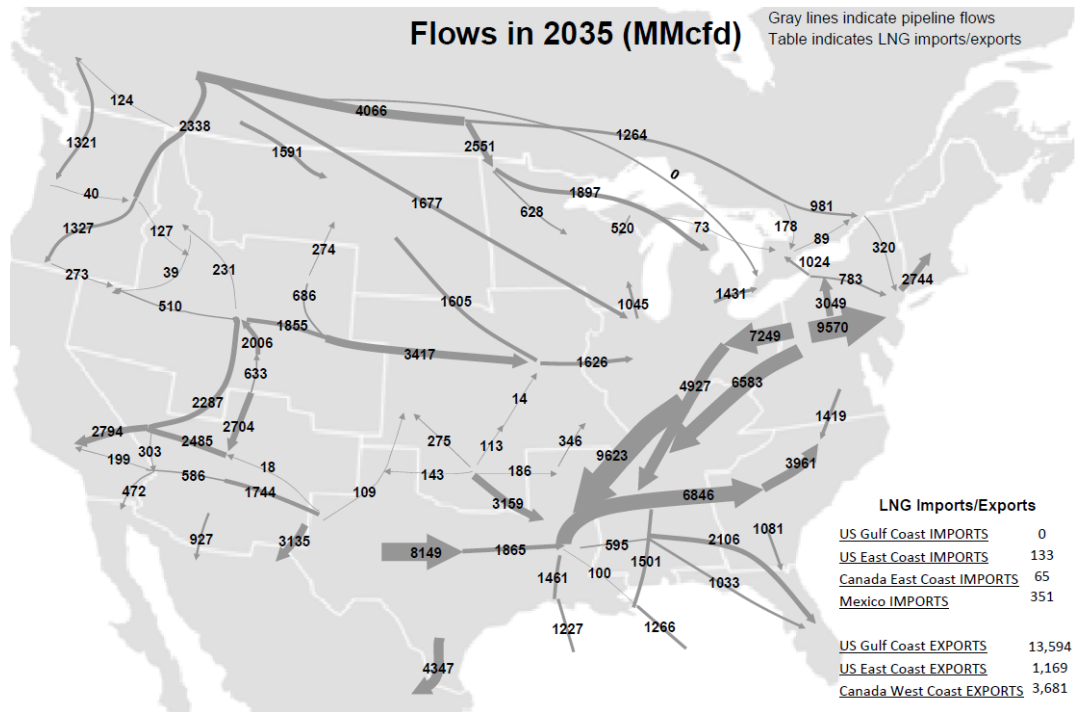
ICF regularly prepares natural gas market forecasts for our clients, including interregional pipeline flows. These forecasts are proprietary and confidential to ICF and to our clients and will not be provided.

ICF also provides a quarterly update to the ICF Natural Gas Strategic Base Case gas market forecast with ICF's projected pipeline expansion projects, including projects from the Marcellus/Utica basin. The full ICF Natural Gas Strategic is a commercial product and is available for purchase from ICF. The figures below shows the projected flows in 2015, 2025 and 2035 on major natural gas transportation corridors from the Q3 2017 forecast.

MPSC Case No.: U-18403  
Requestor: MECSC-1  
Question No.: MECSCDE-1.66a  
Respondent: M. D. Sloan/Legal  
Page: 2 of 3



MPSC Case No.: U-18403  
Requestor: MECSC-1  
Question No.: MECSCDE-1.66a  
Respondent: M. D. Sloan/Legal  
Page: 3 of 3



**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.66b  
**Respondent:** M. D. Sloan/Legal  
**Page:** 1 of 2

**Question:** Please refer to Exhibit A-27, page 16 (Exhibit 2-5, interregional pipeline flows 2014; Exhibit 2-6, projected interregional pipeline flows, 2037), and also Mr. Sloan's response to Case No. U-18143, MECSCDE-1.11cd (updated interregional pipeline flows for 2015, 2025, and 2035), and also Mr. Sloan's response to Case No. U-17920, MECSCDE-4-5a.

- b. Please update the response to MECSCDE 1.11c in Case No. U-18143 with the Origin, Destination and Project Status information for all projects, information that was provided in the response to MECSCDE 1.12a in Case No. U-17920.

**Answer:** To the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. Subject to these objections and without waiver thereof, the Company would answer as follows:

ICF regularly prepares natural gas market forecasts, including pipeline expansion projects from the Marcellus/Utica basin. These forecasts are proprietary and confidential to ICF and to our clients and will not be provided.

ICF also provides a quarterly update to the ICF Natural Gas Strategic, including quarterly update to the ICF Base Case gas market forecast with ICF's projected pipeline expansion projects from the Marcellus/Utica basin. The full ICF Natural Gas Strategic Base Case is a commercial product and is available for MEC/SC to purchase from ICF.

The table below shows the pipeline expansion projects from the Marcellus/Utica basin included in the Q3 2017 base case.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.66b  
**Respondent:** M. D. Sloan/Legal  
**Page:** 2 of 2

| Pipeline Name                                   | Company Name                       | Origin                 | Destination               | Capacity (MMcfd) | In-Service Date | Project Status         |
|---|------------------------------------|------------------------|---------------------------|------------------|-----------------|------------------------|
| Ohio Valley Connector                           | Equitrans Pipeline                 | Northern West Virginia | Clarington, OH            | 850              | Oct-16          | In-service             |
| Algonquin Incremental Market                    | Algonquin Gas Transmission         | Rockland, NY           | Norfolk, MA               | 342              | Nov-16          | In-service             |
| Dominion Clarington                             | Dominion Transmission              | Marshall, WV           | Monroe, OH                | 250              | Nov-16          | In-service             |
| Gulf Markets Expansion Ph 1                     | Texas Eastern Transmission         | Green, PA              | Nueces, TX                | 350              | Nov-16          | In-service             |
| Lebanon West II                                 | Dominion Transmission              | Butler County, PA      | Warren County, OH         | 130              | Nov-16          | In-service             |
| Monroe to Cornwell Project                      | Dominion Transmission              | Monroe, OH             | Calvert, WV               | 205              | Nov-16          | In-service             |
| REX Zone 3 Capacity Enhancement                 | Rockies Express Pipeline           | Monroe, OH             | Moultrie, IL              | 800              | Dec-16          | In-service             |
| Sunbury Pipeline                                | UGI Energy                         | Lycoming, PA           | Snyder, PA                | 200              | Feb-17          | In-service             |
| Northern Supply Access                          | Texas Gas                          | Hamilton, OH           | Morehouse, LA             | 284              | Apr-17          | In-service             |
| Sabal Trail Transmission Phase 1                | Florida Power & Light              | Tallahassee, FL        | Orange, FL                | 810              | Jul-17          | In-service             |
| Gulf Markets Expansion Ph 2                     | Texas Eastern Transmission         | Green, PA              | Nueces, TX                | 300              | Aug-17          | In-service             |
| Lebanon Extension Project                       | Texas Eastern                      | Fayette, PA            | Warren, OH                | 100              | Aug-17          | In-service             |
| Leidy South Project                             | Dominion Transmission              | Clinton, PA            | Calvert, MD               | 155              | Oct-17          | In-service             |
| Access South/Adair Southwest                    | Texas Eastern                      | Fayette, PA            | Attala, MS                | 507              | Nov-17          | In-service             |
| Access South/Adair Southwest                    | Texas Eastern                      | Fayette, PA            | Adair, KY                 | 312              | Nov-17          | In-service             |
| Connecticut Expansion                           | Tennessee Pipeline                 | Albany, NY             | Hartford, CT              | 72               | Nov-17          | In-service             |
| Leach Xpress                                    | Columbia Gas                       | Greene, PA             | Boyd, KY                  | 1500             | Nov-17          | In-service             |
| New Market Expansion                            | Dominion Transmission              | Chemung, NY            | Schenectady, NY           | 112              | Nov-17          | In-service             |
| Niagara/Chippawa to Parkway                     | TransCanada                        | Niagara                | Ontario                   | 380              | Nov-17          | Under Construction     |
| Rayne Xpress                                    | Columbia Gulf                      | Rayne, LA              | Leach, KY                 | 621              | Nov-17          | In-service             |
| TGP Susquehanna West Project                    | Tennessee Gas Pipeline             | Bradford, PA           | Tioga, PA                 | 140              | Nov-17          | In-service             |
| ET Rover Pipeline Phase 1                       | Energy Transfer                    | Western Pennsylvania   | Defiance, OH              | 2100             | Dec-17          | In-service             |
| ET Rover Pipeline Phase 2                       | Energy Transfer                    | Defiance, OH           | Sarnia, OH                | 1150             | Dec-17          | Under Construction     |
| Trunkline Backhaul - Loudon Expansion Project   | Trunkline Pipeline LLC             | Elkhart, Indiana       | Premont, Texas            | 735              | Dec-17          | In-service             |
| Vector 2017 Expansion                           | Vector Pipeline                    | Joliet, Illinois       | Dawn, Ontario             | 300              | Dec-17          | Cancelled              |
| Virginia Southside Expansion II                 | Transcontinental Pipeline          | Brunswick County, VA   | Greensville County, VA    | 250              | Dec-17          | In-service             |
| Cove Point Expansion DTI & DCP                  | Dominion Transmission              | Pennsylvania           | Virginia                  | 700              | Jan-18          | Under Construction     |
| CPV Valley Lateral Project                      | Millennium Pipeline                | Orange, NY             | Orange, NY                | 130              | Feb-18          | FERC Application Filed |
| Atlantic Bridge                                 | Algonquin Gas Transmission         | Rockland, NY           | Cumberland, ME            | 133              | Jun-18          | Partial In-service     |
| Atlantic Sunrise                                | Transcontinental Gas P L           | Pennsylvania           | Georgia                   | 1700             | Jun-18          | Partial In-service     |
| Broad Run Expansion Project                     | Tennessee Gas Pipeline             | Kanawha, WV            | Mississippi and Louisiana | 200              | Jun-18          | Under Construction     |
| Millennium Eastern System Upgrade               | Millennium Pipeline                | Delaware, NY           | Rockland, NY              | 200              | Sep-18          | Under Construction     |
| Gulf Coast Southbound Expansion Project Phase 1 | Natural Gas Pipeline of America    | Moultrie, IL           | Nueces, TX                | 460              | Oct-18          | Under Construction     |
| Eastern Panhandle Expansion Project             | Columbia Gas Transmission          | Fulton, PA             | Morgan, WV                | 46               | Nov-18          | FERC Application Filed |
| Gulf Xpress Project                             | Columbia Gulf                      | Boyd, KY               | Acadia, LA                | 875              | Nov-18          | FERC Approved          |
| Mountaineer Xpress Pipeline Phase I             | TransCanada                        | Marshall, WV           | Wayne, WV                 | 2700             | Nov-18          | FERC Approved          |
| Mountaineer Xpress Pipeline Phase II            | TransCanada                        | Marshall, WV           | Cabel, WV                 | 2700             | Nov-18          | FERC Approved          |
| NEXUS   | Spectra                            | Eastern Ohio           | Michigan                  | 1500             | Nov-18          | Under Construction     |
| WB Xpress Project                               | Columbia Gas Transmission          | Randolph, WV           | Fairfax, VA               | 1300             | Nov-18          | Under Construction     |
| Mountain Valley Pipeline                        | EQT-NEXTERA                        | Pennsylvania           | Pittsylvania, VA          | 2000             | Dec-18          | FERC Approved          |
| Panhandle Backhaul Project                      | Panhandle Eastern Pipeline Company | Defiance, OH           | Douglas, IL               | 735              | Dec-18          | Partial In-service     |
| Northeast Supply Enhancement Project            | Transcontinental Pipeline          | Lancaster County, PA   | New York, NY              | 400              | Oct-19          | FERC Application Filed |
| Atlantic Coast Pipeline                         | Dominion-Duke-Piedmont-AGL         | Harrison, WV           | Robeson, NC               | 1500             | Nov-19          | FERC Approved          |
| Dominion Supply Header                          | Dominion Transmission              | West Virginia          | Pennsylvania              | 1500             | Nov-19          | FERC Approved          |
| Penneast Pipeline                               | AGL, NJR & UGI                     | Luzerne, PA            | Mercer, NJ                | 1075             | Nov-19          | FERC Application Filed |
| PNGTS C2C Expansion                             | PNGTS                              | Coos, NH               | Middlesex, MA             | 130              | Nov-19          | In-service             |
| Northern Supply Access                          | Texas Gas                          | Hamilton, OH           | Morehouse, LA             | 100              | Mar-20          | FERC Approved          |
| Southeastern Trail Project                      | Transcontinental Pipeline          | Fairfax, VA            | St. Helena, LA            | 388              | Nov-20          | Announced              |
| Generic Marcellus Backhaul to Gulf              | Generic                            | West Virginia          | Mississippi               | 750              | Apr-22          | N/A                    |
| Marcellus Within PA Generic                     | Generic                            | Pennsylvania           | Pennsylvania              | 1000             | Apr-22          | N/A                    |
| Utica to Lower Midwest                          | Generic                            | Ohio                   | Ohio                      | 1000             | Apr-22          | N/A                    |
| PA to NY Generic                                | Generic                            | Pennsylvania           | New York                  | 350              | Nov-23          | N/A                    |
| PA to NY Generic                                | Generic                            | Pennsylvania           | New York                  | 300              | Nov-24          | N/A                    |
| Utica to Gulf Coast Generic Expansion           | Generic                            | Ohio                   | Louisiana                 | 1000             | Apr-25          | N/A                    |
| PA to NJ Generic                                | Generic                            | Pennsylvania           | New Jersey                | 500              | Nov-25          | N/A                    |
| Marcellus to Gulf Coast Generic                 | Generic                            | Pennsylvania           | Louisiana                 | 1000             | Apr-26          | N/A                    |
| Utica to Gulf Coast Generic                     | Generic                            | Ohio                   | Louisiana                 | 500              | Apr-27          | N/A                    |
| Kern River Generic                              | Generic                            | Wyoming                | Arizona                   | 300              | Jun-27          | N/A                    |
| Marcellus to Gulf Coast Generic                 | Generic                            | Pennsylvania           | Louisiana                 | 1000             | Apr-29          | N/A                    |
| East Coast Southbound Generic                   | Generic                            | Virginia               | North Carolina            | 1000             | Apr-29          | N/A                    |
| Marcellus to Gulf Coast Generic                 | Generic                            | Pennsylvania           | Louisiana                 | 1000             | Apr-30          | N/A                    |
| PA to NJ Generic                                | Generic                            | Pennsylvania           | New Jersey                | 400              | Nov-30          | N/A                    |
| Marcellus to Gulf Coast Generic                 | Generic                            | Pennsylvania           | West Virginia             | 500              | Apr-31          | N/A                    |
| Marcellus to Gulf Coast Generic                 | Generic                            | West Virginia          | Louisiana                 | 500              | Apr-31          | N/A                    |
| Utica to Lower Midwest                          | Generic                            | Ohio                   | Ohio                      | 500              | Apr-32          | N/A                    |
| Utica Westward Expansion                        | Generic                            | Ohio                   | Ohio                      | 500              | Apr-33          | N/A                    |
| Marcellus to Gulf Coast Generic                 | Generic                            | Pennsylvania           | Louisiana                 | 750              | Apr-34          | N/A                    |

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.66c  
**Respondent:** M. D. Sloan/Legal  
**Page:** 1 of 5

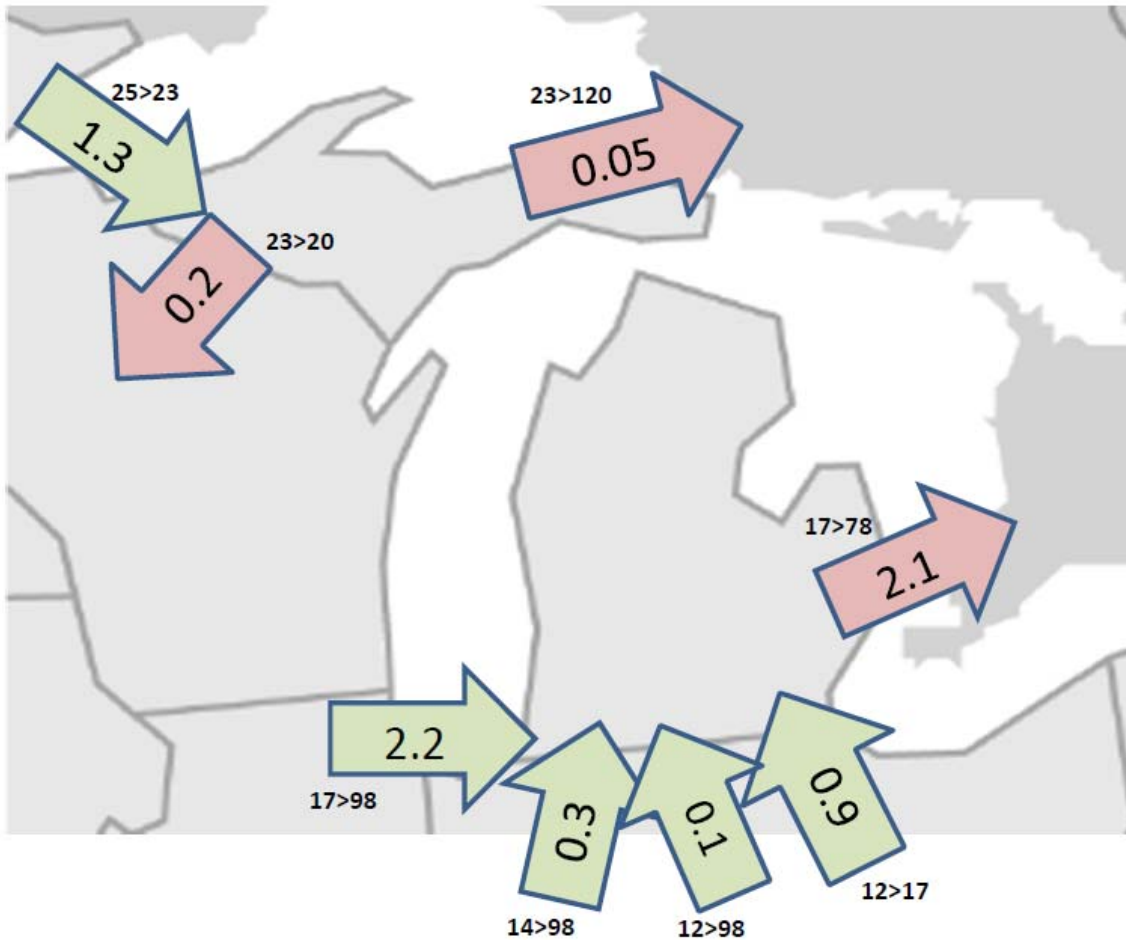
**Question:** Please refer to Exhibit A-27, page 16 (Exhibit 2-5, interregional pipeline flows 2014; Exhibit 2-6, projected interregional pipeline flows, 2037), and also Mr. Sloan's response to Case No. U-18143, MECSCDE-1.11cd (updated interregional pipeline flows for 2015, 2025, and 2035), and also Mr. Sloan's response to Case No. U-17920, MECSCDE-4-5a.

- c. Please provide a diagram of projected interregional pipeline flows, showing flows into and out of Michigan in 2037, for each of the four scenarios.

**Answer:** See the figures below. The data provided in the figures below is limited in scope to the area(s) relevant to ICF's analysis of NEXUS capacity impacts. To the extent this request pertains to other areas not directly relevant to ICF's analysis; To the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. Subject to these objections and without waiver thereof, the Company would answer as follows: The four scenarios developed as part of the analysis performed for DTE Electric are based on the Natural Gas Strategic Outlook, which is a forecast product sold by ICF. The Natural Gas Strategic Outlook is proprietary to ICF and has significant commercial value. The Natural Gas Strategic Outlook is available for license from ICF under its standard terms and conditions. The scenarios commissioned by DTE Electric are licensed exclusively to DTE Electric. DTE has given ICF permission to make these scenarios available to any party in this case that subscribes to the Strategic Outlook.

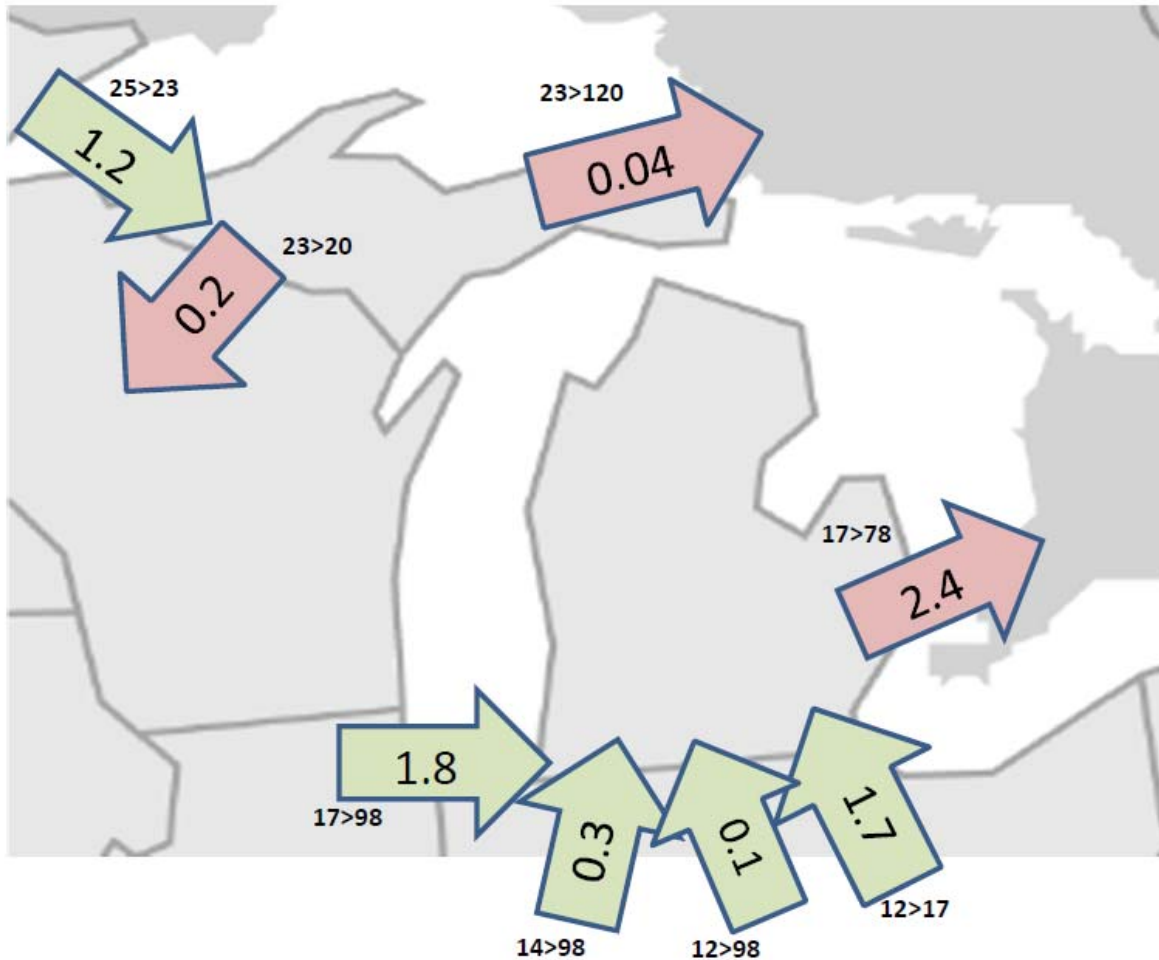
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| <b>MPSC Case No.:</b> | <u>U-18403</u>           |
| <b>Requestor:</b>     | <u>MECSC-1</u>           |
| <b>Question No.:</b>  | <u>MECSCDE-1.66c</u>     |
| <b>Respondent:</b>    | <u>M. D. Sloan/Legal</u> |
| <b>Page:</b>          | <u>2 of 5</u>            |

Figure 2 - Scenario 1: No Pipeline Added (neither Rover nor NEXUS added)



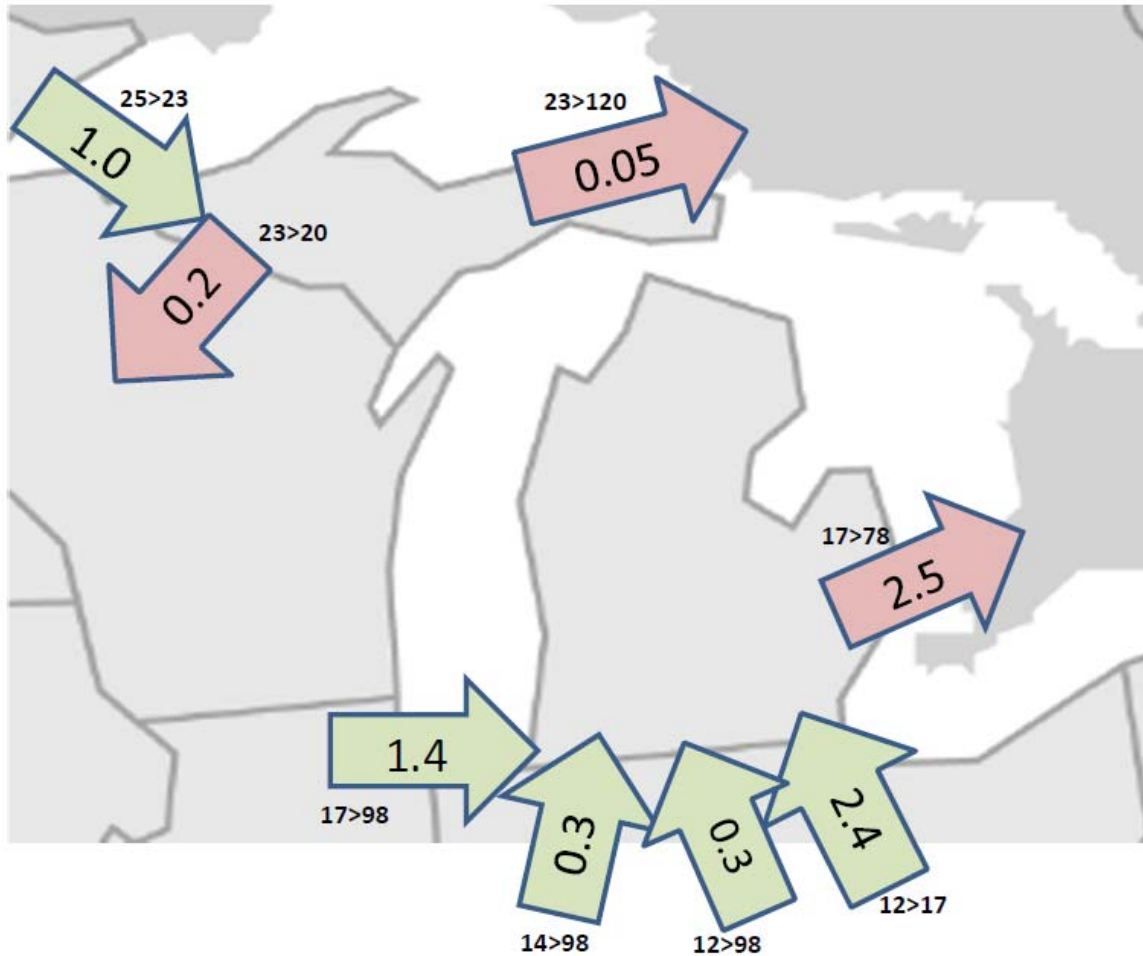
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| <b>MPSC Case No.:</b> | <u>U-18403</u>           |
| <b>Requestor:</b>     | <u>MECSC-1</u>           |
| <b>Question No.:</b>  | <u>MECSCDE-1.66c</u>     |
| <b>Respondent:</b>    | <u>M. D. Sloan/Legal</u> |
| <b>Page:</b>          | <u>3 of 5</u>            |

Figure 3 - Scenario 2: With NEXUS Pipeline (NEXUS Pipeline added, no Rover)



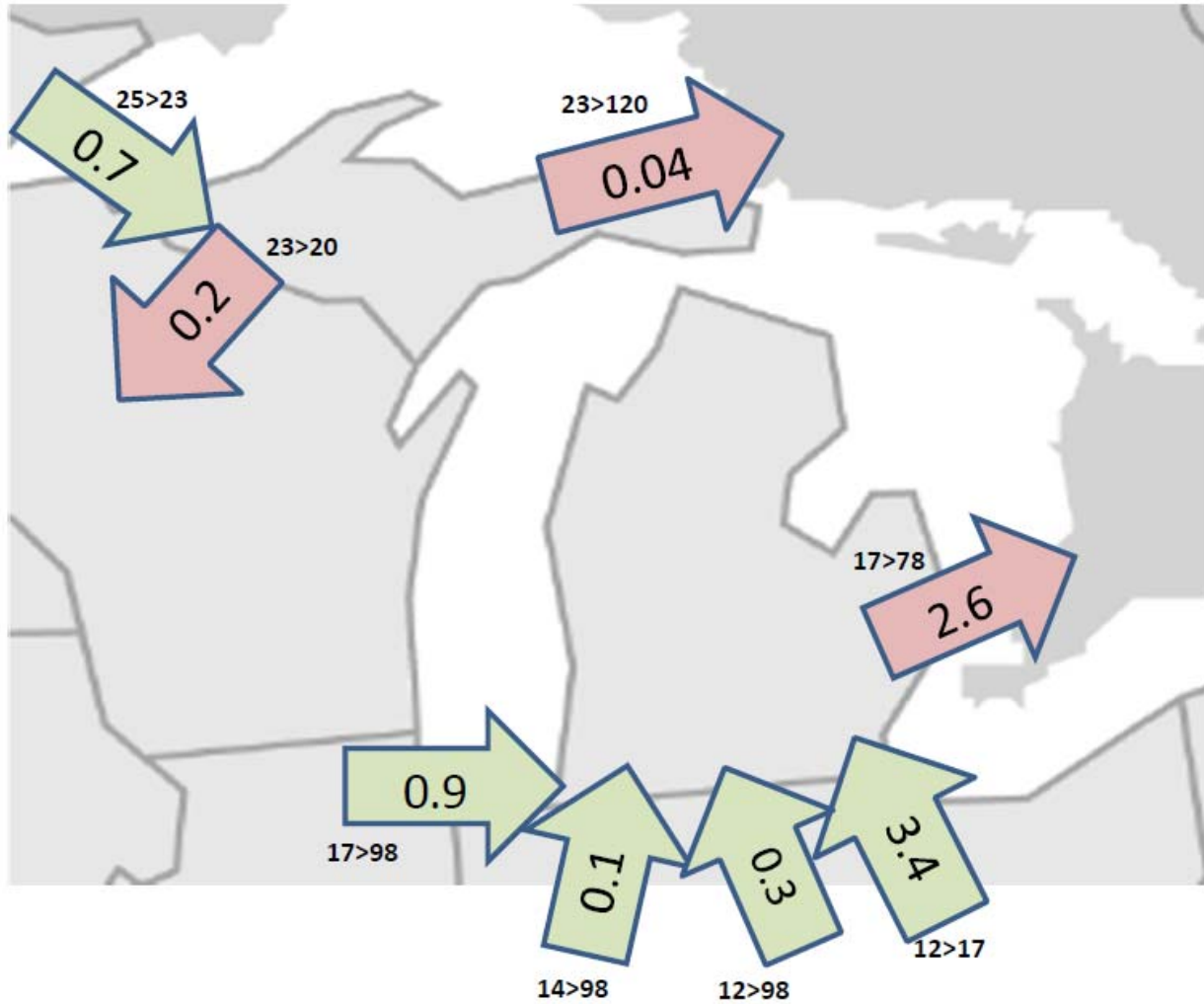
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| <b>MPSC Case No.:</b> | <u>U-18403</u>           |
| <b>Requestor:</b>     | <u>MECSC-1</u>           |
| <b>Question No.:</b>  | <u>MECSCDE-1.66c</u>     |
| <b>Respondent:</b>    | <u>M. D. Sloan/Legal</u> |
| <b>Page:</b>          | <u>4 of 5</u>            |

Figure 4 - Scenario 3: With Rover Pipeline (Rover Pipeline added, no NEXUS)



|                       |                          |
|-----------------------|--------------------------|
| <b>MPSC Case No.:</b> | <u>U-18403</u>           |
| <b>Requestor:</b>     | <u>MECSC-1</u>           |
| <b>Question No.:</b>  | <u>MECSCDE-1.66c</u>     |
| <b>Respondent:</b>    | <u>M. D. Sloan/Legal</u> |
| <b>Page:</b>          | <u>5 of 5</u>            |

Figure 5 - Scenario 4: With NEXUS and Rover Pipeline (both Rover and NEXUS capacity added)



**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.66d  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Please refer to Exhibit A-27, page 16 (Exhibit 2-5, interregional pipeline flows 2014; Exhibit 2-6, projected interregional pipeline flows, 2037), and also Mr. Sloan's response to Case No. U-18143, MECSCDE-1.11cd (updated interregional pipeline flows for 2015, 2025, and 2035), and also Mr. Sloan's response to Case No. U-17920, MECSCDE-4-5a.

- d. Please identify the sources of natural gas consumed in Michigan, at five year intervals, identifying the specific pipelines (or paths) delivering the supplies.

**Answer:** See tables below.

#### Scenario 3: With Rover Pipeline (Rover capacity added, no NEXUS)

Gas supplies flowing into Michigan via each GMM path in 5-year intervals, average annual Bcf/d

| Path      |                            |      |      |      |      |      |
|-----------|----------------------------|------|------|------|------|------|
| FromNode- |                            |      |      |      |      |      |
| ToNode    | Pipelines Included on path | 2015 | 2020 | 2025 | 2030 | 2035 |
| 12-17     | ANR, Panhandle, Rover      | 1.1  | 1.8  | 2.1  | 2.3  | 2.4  |
| 12-98     | ANR                        | 0.2  | 0.3  | 0.3  | 0.3  | 0.3  |
| 14-98     | Trunkline                  | 0.4  | 0.2  | 0.2  | 0.2  | 0.3  |
| 16-98     | ANR and Vector             | 2.2  | 1.6  | 1.5  | 1.5  | 1.4  |
| 25-23     | Great Lakes                | 0.7  | 0.8  | 0.8  | 0.8  | 1.0  |

#### Scenario 4: With NEXUS and Rover Pipeline (both Rover and NEXUS capacity added).

Gas supplies flowing into Michigan via each GMM path in 5-year intervals, average annual Bcf/d

| Path      |                              |      |      |      |      |      |
|-----------|------------------------------|------|------|------|------|------|
| FromNode- |                              |      |      |      |      |      |
| ToNode    | Pipelines Included on path   | 2015 | 2020 | 2025 | 2030 | 2035 |
| 12-17     | ANR, Panhandle, Rover, NEXUS | 1.1  | 2.3  | 3.0  | 3.3  | 3.4  |
| 12-98     | ANR                          | 0.2  | 0.3  | 0.3  | 0.3  | 0.3  |
| 14-98     | Trunkline                    | 0.4  | 0.1  | 0.1  | 0.1  | 0.1  |
| 16-98     | ANR and Vector               | 2.2  | 1.2  | 1.0  | 1.0  | 0.9  |
| 25-23     | Great Lakes                  | 0.7  | 0.8  | 0.6  | 0.5  | 0.7  |

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.66e  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Please refer to Exhibit A-27, page 16 (Exhibit 2-5, interregional pipeline flows 2014; Exhibit 2-6, projected interregional pipeline flows, 2037), and also Mr. Sloan's response to Case No. U-18143, MECSCDE-1.11cd (updated interregional pipeline flows for 2015, 2025, and 2035), and also Mr. Sloan's response to Case No. U-17920, MECSCDE-4-5a.

e. Please also provide the same data with monthly or seasonal or peak/off-peak detail, if available.

**Answer:** The supply source analysis shown in MECSCDE-1.66d is available for annual supplies for the 5-year increments; it is not available monthly or seasonally.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.66fi  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Please refer to Exhibit A-27, page 16 (Exhibit 2-5, interregional pipeline flows 2014; Exhibit 2-6, projected interregional pipeline flows, 2037), and also Mr. Sloan's response to Case No. U-18143, MECSCDE-1.11cd (updated interregional pipeline flows for 2015, 2025, and 2035), and also Mr. Sloan's response to Case No. U-17920, MECSCDE-4-5a.

- f. Please confirm that according to the diagram showing flows in 2025 in the response to U-18143 MECSCDE 1.11d, natural gas can flow from the Marcellus region to Michigan through Ontario from New York, and from the Marcellus region to Michigan from the Chicago area by flowing south through Texas and back, or by even longer routes, but otherwise Marcellus gas cannot reach Michigan according to this diagram.
  - i. If not confirmed, indicate the path shown on the diagram.

**Answer:** Not Confirmed. The flow diagrams shown the response to U-18143 MECSCDE 1.11d are generic, simplified, high-level diagrams designed to show inter-regional patterns of gas flows over time and do not includes all the flow paths into Michigan represented in the GMM. Complete flows into and out of Michigan are shown the detailed diagrams provided in the response to MECSCDE-1.66c.

- i. Not confirmed; the diagrams represent broad regional flows, and flows into the region around Michigan are able to flow into Michigan consistent with detailed diagrams provided in the response to MECSCDE-1.66c.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.66gi  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Please refer to Exhibit A-27, page 16 (Exhibit 2-5, interregional pipeline flows 2014; Exhibit 2-6, projected interregional pipeline flows, 2037), and also Mr. Sloan's response to Case No. U-18143, MECSCDE-1.11cd (updated interregional pipeline flows for 2015, 2025, and 2035), and also Mr. Sloan's response to Case No. U-17920, MECSCDE-4-5a.

- g. Please confirm whether the diagram provided in response to U-18143 MECSCDE 1.11d accurately represents the pipeline network as represented in the GMM, as used for the forecasting documented in Exhibit A-27.
- i. If it does not, please provide diagrams that are accurate to the pipeline network as represented in the GMM as used for the forecasting documented in Exhibit A-27.

**Answer:** See response to MECSCDE-1.66f.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.66h  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Please refer to Exhibit A-27, page 16 (Exhibit 2-5, interregional pipeline flows 2014; Exhibit 2-6, projected interregional pipeline flows, 2037), and also Mr. Sloan's response to Case No. U-18143, MECSCDE-1.11cd (updated interregional pipeline flows for 2015, 2025, and 2035), and also Mr. Sloan's response to Case No. U-17920, MECSCDE-4-5a.

- h. Please reconcile the diagrams provided in Exhibit A-27, Exhibits 2-5 and 2-6 and in U-18143 MECSCDE 1.11d, with the diagrams provided in response to MECSCDE-4.5a from Case No. U-17920 that, among other discrepancies, show gas flowing north from Ohio and Indiana into Michigan.

**Answer:** See response to MECSCDE-1.66f.

**MPSC Case No.:** U-18403  
**Requestor:** Attorney General  
**Question No.:** AGDE-1.16  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Refer to page 13 of Mr. Sloan's direct testimony. Please provide an updated report, as of current date, of pipelines completed, under development and proposed to access Marcellus/Utica gas, as provided in the attachment in response to discovery request U-18143 MECSCDE-2.14b.

**Answer:** For the updated list of pipeline expansions, please refer to the following file attachment:  
**Attachment U-18403 AGDE-1.16 Pipeline Expansions.xlsx**

| ICF Marcellus/Utica Pipeline Expansions       |                                    |  |                  |                         |                    |  |
|---|------------------------------------|--|------------------|-------------------------|--------------------|--|
| Project Name                                  | Company                            | Route  | Capacity (MMcfd) | Assumed In-Service Date | Status             | Announced In-Service (if different from Assumed) |
| Sunbury Pipeline                              | UGI Energy                         | North to south in central PA to connect Transco with UGI Penn Gas and UGI Central Penn Gas distribution facilities   | 200              | Feb-2017                | In-Service         |  |
| Keys Energy Project                           | Dominion Transmission              | Compression, metering and regulating in VA and MD  | 107              | Mar-2017                | In-Service         |  |
| White Oak Mainline Expansion Project          | Eastern Shore Natural Gas          | Pipeline looping in Chester County, PA and additional compression to serve DE Garrison Energy Center   | 45               | Mar-2017                | In-Service         |  |
| Northern Supply Access                        | Texas Gas                          | Second phase of a reversal of the Texas Gas mainline   | 284              | Apr-2017                | In-Service         |  |
| Summit Utica Gathering Project                | Summit Midstream Partners          | Gathering pipeline and compression in Belmont and Monroe counties in SE Ohio.  | 500              | Apr-2017                | In-Service         |  |
| Lebanon Extension Project                     | Texas Eastern                      | SW Pennsylvania to Warren County, Ohio   | 100              | Aug-2017                | In-Service         |  |
| Atlantic Sunrise Phase 1                      | Williams Transcontinental          | New pipeline and looping to increase capacity from PA heading south on Transco   | 400              | Sep-2017                | In-Service         |  |
| ET Rover Pipeline Phase 1A                    | Energy Transfer                    | Marcellus and Utica shale supplies to markets in the Midwest and Great Lakes regions of the United States and Canada   | 700              | Sep-2017                | In-Service         |  |
| Garden State Expansion Project Phase I        | Williams Transcontinental          | Mercer County, NJ to Burlington County, NJ   | 20               | Sep-2017                | In-Service         |  |
| Panhandle Backhaul Project                    | Panhandle Eastern Pipeline Company | From Rover into Trunkline via interconnect near Defiance, OH and Trunkline in Douglas, IL  | 735              | Sep-2017                | In-Service         |  |
| TGP Susquehanna West Project                  | Tennessee Gas Pipeline             | Bradford County, PA to Tioga County, PA  | 145              | Sep-2017                | In-Service         |  |
| Trunkline Backhaul - Loudon Expansion Project | Trunkline Pipeline LLC             | Transportation of production to the Midwest and Gulf Coast markets, through IL, TN and MS  | 735              | Sep-2017                | In-Service         |  |
| Leidy South Project                           | Dominion Transmission              | From Leidy to Cove Point   | 155              | Oct-2017                | In-Service         |  |
| New York Bay Expansion                        | Williams Transcontinental          | Middlesex County, NJ to Richmond County, NY  | 115              | Oct-2017                | In-Service         |  |
| Collierville Expansion Project                | ANR Pipeline                       | New Compressor station   | 200              | Nov-2017                | In-Service         |  |
| Access South/Adair Southwest                  | Texas Eastern                      | Increased capacity from the Appalachian supply region to markets in the Southeast, through PA, OH, KY and MS   | 507              | Nov-2017                | Partial In-Service |  |
| New Market Expansion                          | Dominion Transmission              | Chemung, Herkimer, Madison, Montgomery, Schenectady, Tompkins counties in NY   | 112              | Nov-2017                | In-Service         |  |
| Rayne Xpress                                  | Columbia Gulf                      | From Columbia Gas Interconnects in Appalachia to Rayne, LA   | 621              | Nov-2017                | In-Service         |  |
| Revolution Pipeline Project                   | Energy Transfer Partners           | Butler County, PA to a new cryogenic gas processing plant and the Rover pipeline   | 440              | Nov-2017                | In-Service         |  |
| Triad Expansion Project                       | Tennessee Gas Pipeline             | TGP 300 Line in Z4 to TGP's existing interconnect with UGI at Uniondale in Susquehanna County, PA  | 180              | Nov-2017                | In-Service         |  |
| ET Rover Pipeline Phase 1B                    | Energy Transfer                    | Marcellus and Utica shale supplies to markets in the Midwest and Great Lakes regions of the United States and Canada   | 1,400            | Dec-2017                | In-Service         |  |
| Vector 2017 Expansion                         | Vector                             | Bidirectional flow in MI between Dawn and Chicago  | 414              | Dec-2017                | In-Service         |  |
| Virginia Southside Expansion II               | Williams Transcontinental          | Expansion of existing VA pipeline  | 250              | Dec-2017                | In-Service         |  |
| Orion Pipeline Project                        | Tennessee Gas Pipeline             | From the interconnect with Williams Field Services Company in Susquehanna County, PA to the existing Columbia Gas Transmission interconnect in Pike County, PA | 135              | Dec-2017                | In-Service         |  |
| Bayway Lateral Project                        | Texas Eastern Transmission         | Linden, NJ to Linden and Elizabeth NJ  | 300              | Dec-2017                | In-Service         |  |
| Cove Point Expansion DTI & DCP                | Dominion Transmission              | Southwest Pennsylvania to Cove Point LNG   | 700              | Jan-2018                | Under Construction |  |
| Leach Xpress                                  | Columbia Gas                       | Marcellus and Utica to Leach, KY interconnect with CGT   | 1,500            | Jan-2018                | In-Service         |  |
| Garden State Expansion Project Phase II       | Williams Transcontinental          | From Transco's Z6 Station 210 in Somerset County, NJ to a new interconnection on Transco's Trenton Woodbury Lateral in Burlington County, NJ                   | 160              | Feb-2018                | In-Service         |  |

|   |                                 |  |  |          |                    |   |
|---|---------------------------------|--|--|----------|--------------------|---|
| ET Rover Pipeline Phase 2                       | Energy Transfer                 | Marcellus and Utica shale supplies to markets in the Midwest, Great Lakes and Gulf Coast regions of the United States and Canada | 1,150                                    | Mar-2018 | Under Construction |   |
| Appalachian Lease Project (TEAL) Phase 1        | Texas Eastern Transmission      | From TETCO Zone M2 Line 73 to the NEXUS Project facilities in Monroe County, OH  | 638                                      | Apr-2018 | Under Construction |   |
| Eastern Shore 2017 Expansion Project            | Eastern Shore Natural Gas       | Lancaster County, PA to Sussex County, DE  | 61                                       | Apr-2018 | Partial In-Service |   |
| Birdsboro Pipeline Project                      | DTE Energy                      | From Texas Eastern pipeline in Berks County, PA to the site of the new Birdsboro generation facility in Birdsboro, PA            | 79                                       | May-2018 | FERC Application   |   |
| Atlantic Bridge                                 | Algonquin Gas Transmission      | From Algonquin's system in Bergen County, NJ to delivery points on the Algonquin and Maritimes systems in CT and MA              | 133                                      | Jun-2018 | Partial In-Service |   |
| Atlantic Sunrise Phase 2                        | Williams Transcontinental       | Reversal of Transco's Mainline from PA to GA and 182.5 miles new pipeline in PA  | 1,300 (450 VA to AL) (800 From PA to VA) | Jun-2018 | Under Construction |   |
| Broad Run Expansion Project                     | Tennessee Gas Pipeline          | From TGP's Broad Run Lateral in Zone 3 starting in Kanawha County, WV to Zone 1 from TN to LA                                    | 200                                      | Jun-2018 | Partial In-Service |   |
| Mountaineer Xpress Pipeline Phase I             | TransCanada                     | Marshall County, WV to Cabel County, WV  | 500                                      | Jun-2018 | Under Construction |   |
| MarkWest-EMG Utica Gathering Project            | MarkWest Energy Partners        | Jefferson County, OH to Belmont County, OH   | 2,000                                    | Aug-2018 | Announced          |   |
| Eastern Market Access Project                   | Dominion Transmission           | Loudoun County, VA to Charles County, MD   | 294                                      | Sep-2018 | FERC Application   |   |
| Millennium Eastern System Upgrade               | Millennium Pipeline             | Delaware County, NY to Rockland County, NY   | 200                                      | Sep-2018 | FERC Application   |   |
| Gulf Coast Southbound Expansion Project Phase 1 | Natural Gas Pipeline of America | Moultrie County, IL to Nueces County, TX   | 460                                      | Oct-2018 | Under Construction |   |
| Appalachian Lease Project (TEAL) Phase 2        | Texas Eastern Transmission      | Belmont County, OH to Monroe County, OH  | 312                                      | Nov-2018 | FERC Application   |   |
| Eastern Panhandle Expansion Project             | Columbia Gas Transmission       | Fulton County, PA to Morgan County, GA   | 46                                       | Nov-2018 | FERC Application   |   |
| Gulf Xpress Project                             | Columbia Gulf                   | From Boyd County, KY to Acadia County, LA  | 875                                      | Nov-2018 | FERC Application   |   |
| Mountaineer Xpress Pipeline Phase II            | TrasCanada                      | Marshall County, WV to Cabel County, WV  | 2,200                                    | Nov-2018 | Under Construction |   |
| NEXUS   | Enbridge                        | Colombiana, OH to Washtenaw, MI  | 1,500                                    | Nov-2018 | Under Construction |   |
| WB Xpress Project                               | Columbia Gas Transmission       | Randolph County, WV to Fairfax County, VA  | 800                                      | Nov-2018 | FERC Application   |   |
| Wisconsin South Expansion Project               | ANR Pipeline                    | From Kendall, IL to Rock, WI   | 231                                      | Nov-2018 | FERC Application   |   |
| Central Virginia Connector Project              | Columbia Gas Transmission       | From Transco in Louisa County, VA to a new delivery point near Richmond, VA  | 45                                       | Dec-2018 | Under Construction |   |
| Mountain Valley Pipeline                        | EQT-NEXTERA                     | From Equitrans Transmission system in Wetzel County, WV to Transco's Zone 5 compressor station 165 in Pittsylvania County, VA    | 600                                      | Dec-2018 | Under Construction |   |
| Greater Philadelphia Expansion Project          | Texas Eastern Transmission      | Chester County, PA to Philadelphia County, PA  | 475                                      | Jun-2019 | Announced          |   |
| Pinelands Pipeline Projects                     | South Jersey Gas                | To the B.L. England Generating Station in Cape May County, NJ  | 53                                       | Jun-2019 | Announced          |   |
| Northeast Supply Enhancement Project            | Williams Transcontinental       | From Transco's Station 195 in PA to the Rockaway Transfer Point in NY  | 400                                      | Oct-2019 | FERC Application   | FERC Application had a start date of Nov-2017 |
| Dominion Supply Header                          | Dominion Transmission           | OH, PA and WV to market areas in VA and NC   | 1,500                                    | Nov-2019 | FERC Approved      |   |
| Gulf Coast Southbound Expansion Project Phase 2 | Natural Gas Pipeline of America | Moultrie County, IL to Nueces County, TX   | 250                                      | Nov-2019 | FERC Application   |   |
| Penneast Pipeline                               | AGL, NJR & UGI                  | Luzerne County, PA to Transco's Trenton-Woodbury interconnection in Mercer County, NJ  | 1,075                                    | Nov-2019 | FERC Application   | FERC Application had a start date of Nov-2017 |
| Rivervale South to Market Project               | Williams Transcontinental       | Bergen County, NJ to Mercer County, NJ   | 184                                      | Nov-2019 | FERC Application   |   |
| Atlantic Coast Pipeline                         | Dominion-Duke-Piedmont-AGL      | From Harrison County, WV to Chesapeake, VA and then to Robeson County, NC  | 1,500                                    | Nov-2019 | FERC Approved      | FERC Application had a start date of Nov-2018 |
| Southeastern Trail Project                      | Williams Transcontinental       | From Fairfax County, VA to St. Helena County, LA   | 388                                      | Nov-2020 | Announced          |   |
| PA to NY Generic                                | n/a (Generic)                   | Northeast PA to Central NY   | 350                                      | Nov-2023 | n/a (Generic)      |   |
| Marcellus to Gulf Coast Generic                 | n/a (Generic)                   | PA to LA   | 1,000                                    | Apr-2025 | n/a (Generic)      |   |
| PA to NJ Generic                                | n/a (Generic)                   | Northeast PA to NJ   | 500                                      | Nov-2025 | n/a (Generic)      |   |
| Utica to Gulf Coast Generic                     | n/a (Generic)                   | East OH to LA  | 1,000                                    | Apr-2026 | n/a (Generic)      |   |

|                                 |               |                              |       |          |               |  |
|---------------------------------|---------------|------------------------------|-------|----------|---------------|--|
| Marcellus to Gulf Coast Generic | n/a (Generic) | PA to LA                     | 1,000 | Apr-2027 | n/a (Generic) |  |
| Marcellus Within PA Generic     | n/a (Generic) | Northeast PA to Southeast PA | 500   | Apr-2027 | n/a (Generic) |  |
| Marcellus to Gulf Coast Generic | n/a (Generic) | PA to LA                     | 1,000 | Apr-2029 | n/a (Generic) |  |
| PA to NJ Generic                | n/a (Generic) | Northeast PA to NJ           | 400   | Nov-2030 | n/a (Generic) |  |
| Utica Westward Generic          | n/a (Generic) | East OH to West OH           | 500   | Apr-2032 | n/a (Generic) |  |
| Marcellus to Gulf Coast Generic | n/a (Generic) | PA to LA                     | 500   | Apr-2033 | n/a (Generic) |  |
| Utica to Midwest Generic        | n/a (Generic) | East to West OH              | 500   | Apr-2033 | n/a (Generic) |  |
| Marcellus to Gulf Coast Generic | n/a (Generic) | PA to LA                     | 1,000 | Apr-2035 | n/a (Generic) |  |

**MPSC Case No.:** U-18403  
**Requestor:** MECSC  
**Question No.:** MECSCDE-2.17e  
**Respondent:** M. D. Sloan/Legal  
**Page:** 1 of 1

**Question:** Please refer to the Company's response to MECSCDE 1.63:

- e. Describe in detail how the results of the exogenous review for each pipeline project was documented. Provide examples of such documentation.

**Answer:** To the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. The four scenarios developed as part of the analysis performed for DTE Electric are based on the Natural Gas Strategic Outlook, which is a forecast product sold by ICF. The Natural Gas Strategic Outlook is proprietary to ICF and has significant commercial value. The Natural Gas Strategic Outlook is available for license from ICF under its standard terms and conditions. The scenarios commissioned by DTE Electric are licensed exclusively to DTE Electric. DTE has given ICF permission to make these scenarios available to any party in this case that subscribes to the Strategic Outlook. Subject to these objections and without waiver thereof, the Company would answer as follows:

See response to MECSCDE-2.17c.

**RESERVED**

**MEC-59**

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.76a  
**Respondent:** M. D. Sloan  
**Page:** 1 of 1

**Question:** Please refer to the ICF Report, Exhibit A-27, and in particular, Exhibit 4-6 on page 64 of the ICF Report. Refer also to Figure 2 on page 19 of Mr. Sloan's testimony. The ICF Report and Figure 2 both demonstrate forecasts of substantial basis differentials between Kensington and MichCon.

- a. Does this substantial basis differential reflect constraints into MichCon (and Michigan), or constraints out of Kensington (and the Marcellus/Utica basin), or both?

**Answer:** The projected basis differentials reflect both constraints into MichCon (and Michigan) and constraints out of the Marcellus/Utica, including Kensington.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC  
**Question No.:** MECSCDE-2.16  
**Respondent:** M. D. Sloan/Legal  
**Page:** 1 of 1

**Question:** Please refer to the Company's response to MECSCDE 1.61c. The request is for monthly prices for each GMM node. The response refers to files that only provide prices for a subset of nodes. Please provide a complete response to the request.

**Answer:** To the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. Subject to these objections and without waiver thereof, the Company would answer as follows:

The four scenarios developed as part of the analysis performed for DTE Electric are based on the Natural Gas Strategic Outlook, which is a forecast product sold by ICF. The Natural Gas Strategic Outlook is proprietary to ICF and has significant commercial value. The Natural Gas Strategic Outlook is available for license from ICF under its standard terms and conditions. The scenarios commissioned by DTE Electric are licensed exclusively to DTE Electric. DTE has given ICF permission to make these scenarios available to any party in this case that subscribes to the Strategic Outlook.

**MPSC Case No.:** U-18143  
**Respondent:** M. D. Sloan  
**Requestor:** MECSC-4  
**Question No.:** MECSCDE-4.11b  
**Page:** 1 of 1

**Question:** Please refer to Exhibit A-27, Appendix A, p. 70 of 75 (GMM Transmission Network).

- b. Please confirm that the nodes represented in this diagram accurately represent the GMM nodes as used in the modeling documented in this exhibit. If not confirmed, provide an updated list of nodes.

**Answer:** Appendix A in Exhibit A-27 was an older description of the GMM that included a dated pipeline network map. The current version of the GMM network map is shown in the response to MECSCDE-4.11a, and a list of GMM nodes is provided in the table below.

|                       |                                    |                                     |                                  |
|-----------------------|------------------------------------|-------------------------------------|----------------------------------|
| 1 New England         | 31 Cheyenne                        | 61 North Louisiana Hub              | 91 Norman Wells                  |
| 2 Everett TRANS       | 32 San Juan Basin                  | 62 Central and West Louisiana Shelf | 92 Southwest VA                  |
| 3 Quebec              | 33 EPNG/TW                         | 63 Southwest Texas                  | 93 Southeast VA                  |
| 4 New York City       | 34 North Wyoming                   | 64 Dallas/Ft Worth                  | 94 North Carolina                |
| 5 Western NY          | 35 South Nevada                    | 65 East TX / Katy                   | 95 South Carolina                |
| 6 Southwest PA        | 36 SOCAL Area                      | 66 S. TX                            | 96 North Florida                 |
| 7 Cove Point TRANS    | 37 Enhanced Oil Recovery Region    | 67 Offshore Texas                   | 97 Arizona                       |
| 8 Georgia             | 38 PGE Area                        | 68 NW TX                            | 98 Southwest Michigan            |
| 9 Elba Is TRANS       | 39 Pacific Offshore                | 69 Garden Banks                     | 99 Northern Michigan             |
| 10 South Florida      | 40 Monchy Imports                  | 70 Green Canyon                     | 100 Malin Interchange            |
| 11 East Ohio          | 41 Montana/North Dakota            | 71 Eastern Gulf                     | 101 Topock Interchange           |
| 12 Maumee/Defiance    | 42 Wild Horse Imports              | 72 North British Columbia           | 102 Ehrenberg Interchange        |
| 13 Lebanon            | 43 Kingsgate Imports               | 73 South British Columbia           | 103 SDG&E Demand                 |
| 14 Indiana            | 44 Huntingdon Imports              | 74 Caroline                         | 104 Eastern New York             |
| 15 South Illinois     | 45 Pacific Northwest               | 75 Empress                          | 105 New Jersey                   |
| 16 North Illinois     | 46 NPC/PGT Hub                     | 76 Saskatchewan                     | 106 Parkway ONT                  |
| 17 Southeast Michigan | 47 North Nevada                    | 77 Manitoba                         | 107 Carthage                     |
| 18 East KY/TN         | 48 Idaho                           | 78 Dawn                             | 108 Southwest Oklahoma           |
| 19 MD/DC/Northern VA  | 49 Eastern Canada Offshore         | 79 Philadelphia                     | 109 Northeast Oklahoma           |
| 20 Wisconsin          | 50 Atlantic Offshore               | 80 West Virginia                    | 110 Southeastern Oklahoma        |
| 21 Northern Missouri  | 51 Reynosa Imp/Exp                 | 81 Eastern Canada Demand            | 111 Northern Arkansas            |
| 22 Minnesota          | 52 Juarez Imp/Exp                  | 82 Alliance Border Crossing         | 112 Southeast Missouri           |
| 23 Crystal Falls      | 53 Naco Imp/Exp                    | 83 Wind River Basin                 | 113 Uinta/Piceance               |
| 24 Ventura            | 54 North Alabama                   | 84 California Mexican Exports       | 114 South MS/AL                  |
| 25 Emerson Imports    | 55 Alabama Offshore                | 85 Whitehorse                       | 115 West KY/TN                   |
| 26 Nebraska           | 56 North Mississippi               | 86 MacKenzie Delta                  | 116 Kosciusko MS                 |
| 27 Great Plains       | 57 East Louisiana Shelf            | 87 South Alaska                     | 117 Northeast PA/Southcentral NY |
| 28 Kansas             | 58 Eastern Louisiana Hub           | 88 Central Alaska                   | 118 Leidy                        |
| 29 East Colorado      | 59 Viosca Knoll/Desoto/Miss Canyon | 89 North Alaska                     | 119 Houston Ship Channel         |
| 30 Opal               | 60 Henry Hub                       | 90 Arctic                           | 120 Western ONT                  |
|                       |                                    |                                     | 121 Maple ONT                    |

**MPSC Case No.:** U-18143  
**Respondent:** M. D. Sloan/Legal  
**Requestor:** MECSC-4  
**Question No.:** MECSCDE-4.13a  
**Page:** 1 of 2

**Question:** Please refer to the response to MECSCDE-2.21.

- a. The response to MECSCDE 2.21a states that the projected basis differentials between Kensington and MichCon reflect both constraints into MichCon (and Michigan) and constraints out of the Marcellus/Utica region, including Kensington. The request MECSCDE 2.21b asked for prices for points in and around MichCon to identify the geographic extent of the constrained region around Michigan, showing where prices are elevated due to the constraints into Michigan and more distant points that are not elevated due to the constraints into Michigan. The response to MECSCDE 2.21b provided prices for only eight additional price points and, therefore, failed to identify the geographic extent of the constrained region around Michigan. For each of the GMM price nodes shown on p. 70 of 75 of Exhibit A-27, please identify whether the node is forecast to be within the alleged constrained region around Michigan, or outside of it. If necessary to make the request unambiguous, consider a price point to be within the constrained region if the annual average price is within \$.30/MMBtu of the annual average MichCon price, and provide the response on an annual basis.

**Answer:** To the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. Subject to these objections and without waiver thereof, the Company would answer as follows: The four scenarios developed as part of the analysis performed for DTE Electric are based on the Natural Gas Strategic Outlook, which is a forecast product sold by ICF. The Natural Gas Strategic Outlook is proprietary to ICF and has significant commercial value. The Natural Gas Strategic Outlook is available for license from ICF under its standard terms and conditions. The scenarios commissioned by DTE Electric are licensed exclusively to DTE Electric. DTE has given ICF permission to make these scenarios available to any party in this case that subscribes to the Strategic Outlook. Subject to this objection, and without waiver thereof, the Company would answer as follows:

**MPSC Case No. :** U-18143  
**Respondent:** M. D. Sloan/Legal  
**Requestor:** MECSC-4  
**Question No.:** MECSCDE-4.13a  
**Page:** 2 of 2

The price data provided in the response to MECSCDE-2.21 does represent all relevant price points in and around the Marcellus region and Michigan represented in the GMM as used for the forecasting documented in Exhibit A-27 in this proceeding. The supposition that a price point is within the constrained region if the annual average price is within \$.30/MMBtu of the annual average MichCon price is false, as a number of distant prices points in other parts of the U.S. may be within \$.30/MMBtu of MichCon for reasons in no way related to constraints along the path between Marcellus/Utica and Michigan.

**MPSC Case No.:** U-18143  
**Respondent:** M. D. Sloan/Legal  
**Requestor:** MECSC-4  
**Question No.:** MECSCDE-4.13b  
**Page:** 1 of 2

**Question:** Please refer to the response to MECSCDE-2.21.

- b. The response to MECSCDE 2.21a states that the projected basis differentials between Kensington and MichCon reflect both constraints into MichCon (and Michigan) and constraints out of the Marcellus/Utica region, including Kensington. The request MECSCDE 2.21c asked for prices for points in and around the Marcellus/Utica region to identify the geographic extent of the constrained region around Marcellus/Utica, showing where prices are depressed due to the constraints out of Marcellus/Utica and more distant points that are not depressed due to the constraints out of Marcellus/Utica. The response to MECSCDE 2.21c provided prices for only eight additional price points and, therefore, failed to identify the geographic extent of the constrained region around Michigan. For each of the GMM price nodes shown on p. 70 of 75 of Exhibit A- 27, please identify whether the node is forecast to be within the alleged constrained region around Marcellus/Utica, or outside of it. If necessary to make the request unambiguous, consider a price point to be within the constrained region if the annual average price is within \$.30/MMBtu of the annual average Kensington price, and provide the response on an annual basis.

**Answer:** To the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. Subject to these objections and without waiver thereof, the Company would answer as follows: The four scenarios developed as part of the analysis performed for DTE Electric are based on the Natural Gas Strategic Outlook, which is a forecast product sold by ICF. The Natural Gas Strategic Outlook is proprietary to ICF and has significant commercial value. The Natural Gas Strategic Outlook is available for license from ICF under its standard terms and conditions. The scenarios commissioned by DTE Electric are licensed exclusively to DTE Electric. DTE has given ICF permission to make these scenarios available to any party in this case that subscribes to the Strategic Outlook. Subject to this objection, and without waiver thereof, the Company would answer as follows:

**MPSC Case No.:** U-18143  
**Respondent:** M. D. Sloan/Legal  
**Requestor:** MECSC-4  
**Question No.:** MECSCDE-4.13b  
**Page:** 2 of 2

The price data provided in the response to MECSCDE-2.21 does represent all relevant price points in and around the Marcellus region and Michigan represented in the GMM as used for the forecasting documented in Exhibit A-27 in this proceeding. The supposition that a price point is within the constrained region if the annual average price is within \$.30/MMBtu of the annual average Kensington price is false, as a number of distant prices points in other parts of the U.S. may be within \$.30/MMBtu of Kensington for reasons in no way related to constraints along the path between Marcellus/Utica and Michigan.

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.76c  
**Respondent:** M. D. Sloan/Legal  
**Page:** 1 of 2

**Question:** Please refer to the ICF Report, Exhibit A-27, and in particular, Exhibit 4-6 on page 64 of the ICF Report. Refer also to Figure 2 on page 19 of Mr. Sloan's testimony. The ICF Report and Figure 2 both demonstrate forecasts of substantial basis differentials between Kensington and MichCon.

- c. If the substantial basis differential also reflects constraints out of the Marcellus/Utica area to some extent, provide the monthly prices over the entire forecast period that show the geographic extent of the constrained region. Specifically, provide prices for all geographic price points in and around Marcellus/Utica that are at all depressed due to these constraints out of the Marcellus/Utica area, and the next ring of price points at more distant geographic points that are not depressed due to the constraints. The response to MECSCDE 2.21b in Case No. U-18143 provided prices for only eight additional price points and, therefore, failed to identify the geographic extent of the constrained region around Michigan. For each of the GMM price nodes considered by ICF for the analysis in Exhibit A-27, please identify whether the node is forecast to be within the alleged constrained region around Michigan, or outside of it. If necessary to make the request unambiguous, consider a price point to be within the constrained region if the annual average price is within \$.30/MMBtu of the annual average MichCon price, and provide the response on an annual basis.

**Answer:** Projected monthly natural gas prices for geographic price points in and around Michigan and in and around Marcellus/Utica are provided in response to MECSCDE-1.46 in file **ATTACHMENT U-18403 MECSCDE-1.46 - Gas Prices for 4 Scenario.xlsx**. These price points represent the geographic extent of the constrained region around Michigan.

Regarding the requests for additional price points, to the extent this particular discovery request is seeking the information from DTE Electric, the Company objects because such request is beyond the scope of discovery provided in MCR 2.302(C) because DTE Electric does not possess it. DTE Electric further objects on the basis that this particular discovery request seeks confidential and proprietary information that is protected by an end-user or license agreement with ICF. Subject to these

**MPSC Case No.:** U-18403  
**Requestor:** MECSC-1  
**Question No.:** MECSCDE-1.76c  
**Respondent:** M. D. Sloan  
**Page:** 2 of 2

objections and without waiver thereof, the Company would answer as follows:

The four scenarios developed as part of the analysis performed for DTE Electric are based on the Natural Gas Strategic Outlook, which is a forecast product sold by ICF. The Natural Gas Strategic Outlook is proprietary to ICF and has significant commercial value. The Natural Gas Strategic Outlook is available for license from ICF under its standard terms and conditions. The scenarios commissioned by DTE Electric are licensed exclusively to DTE Electric. DTE has given ICF permission to make these scenarios available to any party in this case that subscribes to the Strategic Outlook.

**MPSC Case No.:** U-18143  
**Respondent:** M. D. Sloan  
**Requestor:** MECSC-5  
**Question No.:** MECSCDE-5.3b  
**Page:** 1 of 1

**Question:** Please refer to the Company's response to MECSCDE 4.12a ("The price data provided in the response to MECSCDE-2.21 does represent all relevant price points in and around the Marcellus region and Michigan represented in the GMM..."):

- b. With regard to the Response provided ("... all relevant price points..."), please explain what "relevant" means in this response.

**Answer:** By "all relevant price points" we mean the GMM nodes that: a) represent market areas which have least one reported gas price (e.g., a price included in Platts Gas Daily price survey), and b) are along the path between Marcellus/Utica and Michigan, as well as the prices at major markets that impact prices in Michigan.

**MPSC Case No.:** U-18143  
**Respondent:** M. D. Sloan/Legal  
**Requestor:** MECSC-5  
**Question No.:** MECSCDE-5.5a  
**Page:** 1 of 1

**Question:** Please refer to the Company's response to MECSCDE 4.13b, which did not respond to the question.

- a. Please identify which GMM price nodes are forecast to be within the alleged constrained area around Marcellus/Utica, which constrained area was referred to in the response to MECSCDE 2.21.

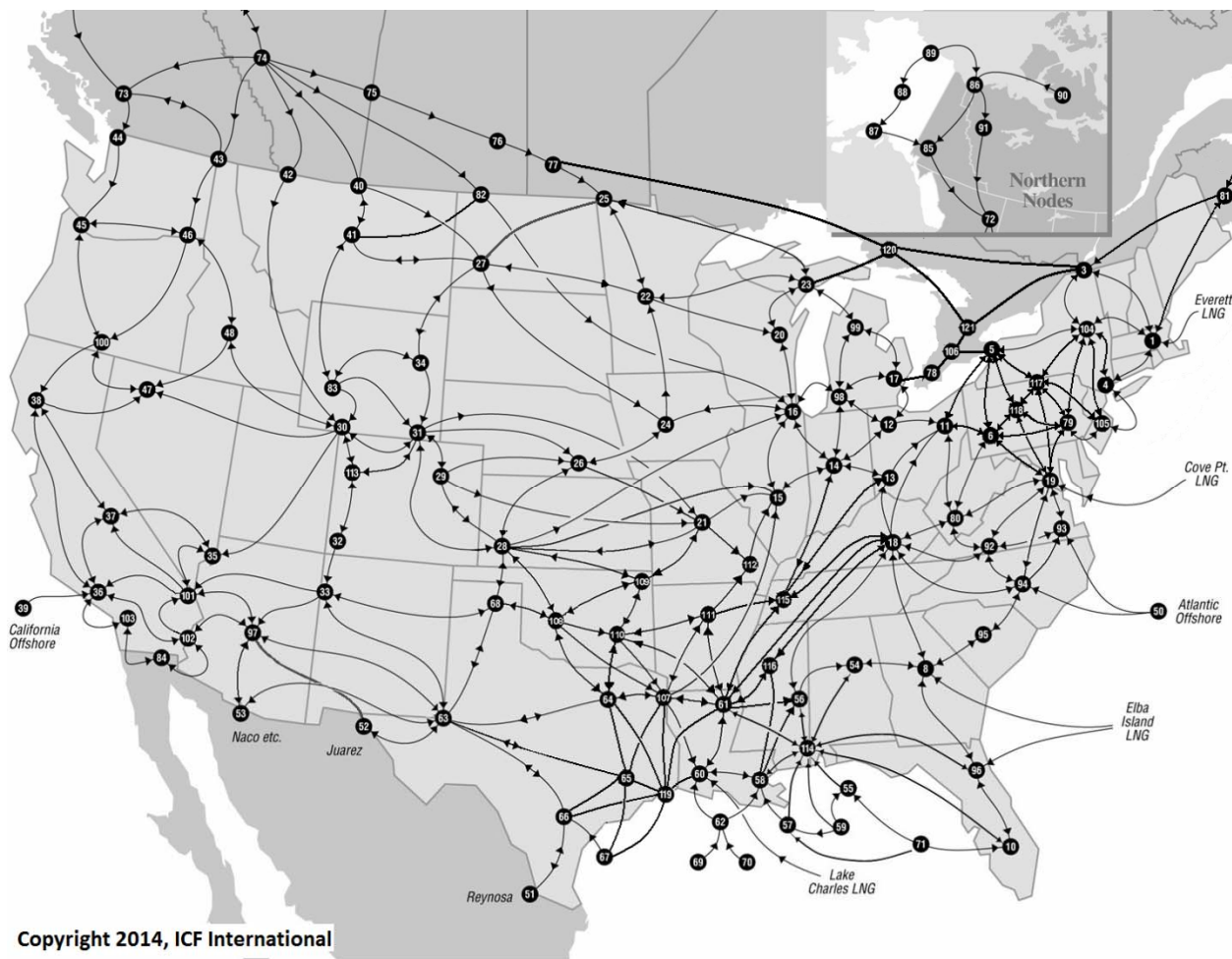
**Answer:** DTE Electric objects to this interrogatory since it is argumentative by erroneously asserting that the Company's response to MECSCDE 4.10a did not respond to the question. DTE further objects to this interrogatory because it is clear that MEC/SC is now using discovery to harass the Company in violation of Commission Rule R 792.10423. Subject to these objections and without waiver thereof, the Company would answer as follows: The GMM price nodes within the constrained area around Marcellus/Utica include: node 6 (Southwest PA, representative of the Dominion South Point price), and node 11 (East OH, representative of the Kensington and Clarington prices).

**MPSC Case No.:** U-18143  
**Respondent:** M. D. Sloan  
**Requestor:** MECSC-4  
**Question No.:** MECSCDE-4.11a  
**Page:** 1 of 1

**Question:** Please refer to Exhibit A-27, Appendix A, p. 70 of 75 (GMM Transmission Network).

- a. Please confirm that this diagram accurately represents the GMM transmission network as used in the modeling documented in this exhibit. If not confirmed, provide an updated diagram.

**Answer:** Appendix A in Exhibit A-27 was an older description of the GMM that included a dated pipeline network map. The current version of the GMM network map is shown below.



**MPSC Case No.:** U-18143  
**Respondent:** M. D. Sloan/Legal  
**Requestor:** MECSC-5  
**Question No.:** MECSCDE-5.4a  
**Page:** 1 of 1

**Question:** Please refer to the Company's response to MECSCDE 4.13a, which did not respond to the question.

- a. Please identify which GMM price nodes are forecast to be within the alleged constrained area around Michigan, which constrained area was referred to in the response to MECSCDE 2.21.

**Answer:** DTE Electric objects to this interrogatory since it is argumentative by erroneously asserting that the Company's response to MECSCDE 4.10a did not respond to the question. DTE further objects to this interrogatory because it is clear that MEC/SC is now using discovery to harass the Company in violation of Commission Rule R 792.10423. Subject to these objections and without waiver thereof, the Company would answer as follows: The GMM price nodes within the constrained area around Michigan include: node 12 (Northwest OH, representative of the Maumee and Defiance prices), node 13 (Southwest OH, representative of the Lebanon price), node 17 (Southeast MI, representative of the MichCon price), and node 78 (Southern ON, representative of the Dawn price).

**MPSC Case No.:** U-17920  
**Respondent:** M. D. Sloan  
**Requestor:** MEC-SC-4  
**Question No.:** MECSCDE-4.1a  
**Page:** 1 of 1

**Question:** The response to MECSC/DE 1.12a provides a table of pipeline expansions, based on Exhibit A-25, Appendix B, and states that except as otherwise indicated, all were included in all four scenarios evaluated in Exhibit A-25.

- a. Please confirm that for all of the expansions listed in the provided table other than the NEXUS and Rover pipelines (28 named projects, four generic projects, seven projects not included in the scenarios), the assumed In Service Dates and Assumed Capacity values were the same under all four scenarios.

**Answer:** ICF confirms that (other than the NEXUS and Rover pipelines) the In Service Dates and Assumed Capacity values for all of the expansions indicated in the provided table were the same under all four scenarios.

STATE OF MICHIGAN

MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application of DTE  
ELECTRIC COMPANY for Authority to  
Implement a Power Supply Recovery Plan on  
its Rate Schedules for 2018 Metered  
Jurisdictional Sales of Electricity

Case N<sup>o</sup>. U-18403

ALJ Suzanne D. Sonneborn

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**PROOF OF SERVICE**

On the date below, an electronic copy of the **Direct Testimony of James Wilson on behalf of Michigan Environmental Council and Sierra Club and Exhibits MEC-30 through MEC-69** was served on the following:

| <b>Name/Party</b>   | <b>E-mail Address</b>  |
|---|--|
| <b>Administrative Law Judge</b><br>Suzanne D. Sonneborn   | <a href="mailto:sonneborns@michigan.gov">sonneborns@michigan.gov</a>   |
| <b>Counsel for DTE Electric Company</b><br>Jon P. Christinidis<br>David S. Maquera                                    | <a href="mailto:mpscfilings@dteenergy.com">mpscfilings@dteenergy.com</a><br><a href="mailto:christinidisj@dteenergy.com">christinidisj@dteenergy.com</a><br><a href="mailto:david.maquera@dteenergy.com">david.maquera@dteenergy.com</a>   |
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The statements above are true to the best of my knowledge, information and belief.

OLSON, BZDOK & HOWARD, P.C.  
Counsel for MEC-SC

Date: April 20, 2018

By: \_\_\_\_\_

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