

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

**Northern Natural Gas Company**                    )

**Docket Nos. RP19-1353-000  
RP19-59-000  
(Consolidated)**

**PREPARED REBUTTAL TESTIMONY  
OF  
BENTE VILLADSEN**

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**SUMMARY OF PREPARED REBUTTAL TESTIMONY  
OF  
BENTE VILLADSEN**

Dr. Bente Villadsen provides rebuttal testimony on behalf of Northern Natural Gas Company ("Northern") regarding return on equity ("ROE") and capital structure. In response to testimony recommending an ROE of 11.02 percent (Commission Trial Staff), 11.02 percent (Indicated Shippers), and 11.34 percent (Michigan Public Service Commission), Dr. Villadsen recommends an ROE of 12.99 percent.

Dr. Villadsen's ROE is based on the six-month period ending January 31, 2020, which is the same period used by Trial Staff and the Michigan Public Service Commission. As Dr. Villadsen explains, this is the most recent data available that provides reasonable results prior to the current anomalous market conditions.

Dr. Villadsen updates her sample of proxy companies based on recent market data and business segment analysis. To determine ROE, Dr. Villadsen examines a sample of five companies that own natural gas pipelines and applies both the Commission's Discounted Cash Flow ("DCF") method and the Capital Asset Pricing Model ("CAPM"). Dr. Villadsen's recommended ROE is an equally-weighted average of the median results from the DCF and CAPM models, which were implemented to be consistent with the Commission's recent Opinion No. 569.

Dr. Villadsen highlights the problems associated with the other witnesses' reliance on one model (in this case, the DCF model). Moreover, the *IBES* growth rate data, which represents a critical input into the DCF model, are in many cases based on the estimate of a single analyst, with some of the estimates being extremely stale. For example, Trial Staff Witness Green and Indicated Shipper Witness Crowe recommend an ROE that relies on a single *IBES* growth estimate for one of their sample companies that is three and a half years old. Specifically, the ROE for National

Fuel Gas at 11.02 percent—the data point used by Mr. Green and Ms. Crowe as their recommended ROE—relies upon a single broker estimate dated August 15, 2016. As a result, the recommended ROE of both the Commission Trial Staff and the Indicated Shippers is not representative of the current cost of capital for natural gas pipeline companies.

Dr. Villadsen further addresses the limitations in the growth rate data by supplementing the *IBES* data with *Value Line* data. Dr. Villadsen explains that it is especially important in the natural gas pipeline context to use both *IBES* and *Value Line* data, because there are a limited number of *IBES* analysts that cover each natural gas pipeline (in contrast to the electric context, in which Opinion No. 569 was decided, where there are significantly more *IBES* analysts covering each electric company). The resultant ROE (13.81 percent) indicates that Dr. Villadsen's recommended ROE using *IBES* growth rates only is conservatively low.

Dr. Villadsen also responds to Trial Staff Witness Green's proposal to use an ROE for Northern below the median of the sample, based on his claim that Northern is less risky than the average of the sample members. Dr. Villadsen shows that, based on the Trial Staff's own cited data, rather than slightly lower risk, Northern has somewhat *higher* business risk than the companies in the sample. Dr. Villadsen also refers to the Rebuttal Testimony of Northern Witness Dr. Paul Carpenter in Exhibit No. NNG-00264, which similarly shows that Northern has higher business risk than the median of her sample. Further, Dr. Villadsen demonstrates that Northern's financial risk is comparable to the companies in the sample. Consequently, there is no reason to place Northern below the median ROE of the sample as Trial Staff suggests.

Finally, Dr. Villadsen proposes to use Northern's actual capital structure of 62.15 percent equity as of December 31, 2019, consistent with Dr. Villadsen's understanding of the Commission's preference for using end of test period capital structure data. There does not appear

to be any disagreement over using an end of test period capital structure. Certain of the witnesses propose adjustments to Northern's equity ratio to remove loans to Northern's parent and to remove Accumulated Other Comprehensive Income. Those proposed adjustments to Northern's equity ratio are addressed by Northern Witness Joseph Lillo.

**GLOSSARY**

BMX Group	Black Hills Service Company, LLC, MidAmerican Energy Company, and certain wholly-owned utility operating company subsidiaries of Xcel Energy Inc. (Northern States Power Company, a Minnesota corporation, Northern States Power Company, a Wisconsin corporation, and Southwestern Public Service Company)
Brattle	The Brattle Group
CAPM	Capital Asset Pricing Model
CenterPoint	CenterPoint Energy Minnesota Gas
DCF	Discounted Cash Flow
ENBL	Enable Midstream Partners
EQM	EQM Midstream
FERC or the Commission	Federal Energy Regulatory Commission
IS	Indicated Shippers
LNG	liquefied natural gas
MLP	Master Limited Partnership
MPSC	Michigan Public Service Commission
MRGTF	Midwest Region Gas Task Force Association
NMDG	Northern Municipal Distributors Group
NMDG/MRGTF	NMDG and MRGTF
Northern	Northern Natural Gas Company
ROE	return on equity

**PREPARED REBUTTAL TESTIMONY  
OF  
BENTE VILLADSEN**

1 **I. INTRODUCTION AND SUMMARY**

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

3 A. My name is Bente Villadsen. I am a Principal at The Brattle Group's ("Brattle") Boston  
4 office located at One Beacon St., Suite 2600, Boston, MA 02108, USA.

5 **Q. On whose behalf are you submitting testimony?**

6 A. I am submitting testimony on behalf of Northern Natural Gas Company ("Northern").

7 **Q. Are you the same Bente Villadsen, who submitted Direct Testimony in this matter?**

8 A. Yes, I am.

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

10 A. I have been asked by Northern to address the appropriate rate of return on equity ("ROE")  
11 and capital structure for Northern in response to the Direct and Answering Testimony of  
12 Commission Trial Staff Witness Douglas M. Green ("Green Testimony"), the Direct  
13 Testimony of Indicated Shippers Witness Elizabeth H. Crowe ("Crowe Testimony"), and

1 the Answering Testimony of Michigan Public Service Commission Witnesses Bonnie  
2 Janssen ("Janssen Testimony") and Kirk D. Megginson ("Megginson Testimony").<sup>1</sup>

3 **Q. How is your testimony organized?**

4 A. I first respond to the other witnesses regarding the appropriate ROE for Northern. Second,  
5 I provide an overview of my calculations, which explains the reasons for my conclusions  
6 that:

- 7 1. The ROE should be based on data from the six-month period ending  
8 January 31, 2020;<sup>2</sup>
- 9 2. The ROE should be based on an average of the results of the Commission's  
10 traditional Discounted Cash Flow ("DCF") methodology and the Capital Asset  
11 Pricing Model ("CAPM") consistent with recent Commission guidance in Opinion  
12 No. 569;<sup>3</sup>

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<sup>1</sup> CenterPoint Witness Kenneth Sosnick stated that he had "not fully analyzed" the capital structure and ROE issues in this case, and that the historical inputs included in his cost of service from the FERC Form No. 501-G were "simply ... for representative purposes." Exhibit No. CER-0001 at 23-24. In my opinion, as discussed below, the Commission should use an appropriate capital structure such as Northern's actual capital structure as of December 31, 2019, and should authorize an ROE for Northern consistent with current market expectations (assuming they are not anomalous), not simply import amounts from the FERC Form No. 501-G or the most recent prior Commission decision, neither of which relate to investor expectations or the current period. In any event, since Mr. Sosnick did not submit an independent analysis of these issues, I do not respond further to his testimony here. BMX Group Witness Catherine Palazzari and Northern Municipal Distributors Group and the Midwest Region Gas Task Force Association ("NMDG/MRGTF") Witness Charles Loy similarly did not analyze current ROE data but based their cost of service analyses on a 10.55 percent ROE from a prior Commission approved natural gas ROE. Ms. Palazzari makes clear that she did not calculate a current ROE, but used the prior Commission approved ROE to derive an "illustrative cost of service." Exhibit No. BMX-00048 at 21, 39. Mr. Loy similarly claimed to use the historical ROE as a "placeholder." Exhibit No. NM-0041 at 16. As Ms. Palazzari and Mr. Loy did not submit independent analyses of current ROE data, I do not respond further to their testimony regarding ROE for the same reasons as discussed above. As discussed below, Ms. Palazzari and Mr. Loy proposed certain adjustments to Northern's capital structure, which issues are addressed in the Rebuttal Testimony of Northern Witness Joseph Lillo, Exhibit No. NNG-00173.

<sup>2</sup> Certain data inputs into the ROE models consider data over the prior six months. For example, risk-free interest rates and dividend yields.

<sup>3</sup> *Association of Businesses Advocating Tariff Equity v. Midcontinent Independent System Operator, Inc.*, 169 FERC ¶ 61,129 (2019) ("Opinion No. 569").





1 by the COVID-19 pandemic. Consistent with the Commission's recent decision in Opinion  
2 No. 569, my calculation is based on an average of the results of the DCF and CAPM models.  
3 The method for calculating the DCF and CAPM and theory underlying those approaches  
4 are discussed in my Direct Testimony.<sup>5</sup> Hence, my rebuttal testimony only discusses the  
5 implementation of the models, which follows the Commission's Opinion No. 569.

6 **Q. How did you determine the appropriate ROE for Northern?**

7 A. First, I selected a sample of comparable companies that reflect the current business risk  
8 characteristics of Northern. As discussed further below, I began with the Core Sample of  
9 seven companies that I originally proposed in my Direct Testimony. Those companies are  
10 Enable Midstream Partners, Enbridge Inc., EQM Midstream, Kinder Morgan, Inc., TC  
11 Pipelines LP, TC Energy Corp., and The Williams Companies. In the period since my Direct  
12 Testimony was filed, the *IBES* growth rates for Enable and EQM have become negative, so  
13 I excluded them from the sample used to calculate my proposed ROE. As in my Direct  
14 Testimony, I also assessed the reasonableness of my results with reference to an Expanded  
15 Sample, which includes Energy Transfer LP, Enterprise Products, Magellan Midstream,  
16 ONEOK, and Plains All American Pipeline, although based on current data I eliminated  
17 Energy Transfer as an outlier for reasons discussed further below. For each company, I  
18 apply the Commission's DCF and CAPM models.

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<sup>5</sup> See Direct Testimony of Northern Witness Bente Villadsen, Exhibit No. NNG-00053 at 24-37. In my Direct Testimony I proposed an ROE based on the DCF methodology and assessed the reasonableness of the DCF results using my calculation of the CAPM and the Expected Earnings approaches, along with the Risk Premium method calculated by Northern Witness Jay Nigh. Since Opinion No. 569 used an ROE based on the average of the DCF and CAPM, I follow that approach here and no longer assess the reasonableness of my results using the Expected Earnings Method and Risk Premium approach.

1           In the DCF calculation underlying my primary ROE proposal of 12.99 percent, I  
2           relied solely on growth estimates provided by *IBES*, because the Commission expressed a  
3           preference for using *IBES* data in Opinion No. 569.<sup>6</sup> However, I also present an alternative  
4           calculation of the DCF using growth rates from both *IBES* and *Value Line*, in which each  
5           independent analyst's projection is weighted equally. In other words, if three analysts  
6           contribute to *IBES*, then the *IBES* growth rate is weighted by  $\frac{3}{4}$  and the *Value Line* forecast  
7           by  $\frac{1}{4}$ . As discussed below and in my Direct Testimony, I believe it is preferable to use both  
8           sources of growth data in calculating the DCF methodology in order to obtain the growth  
9           rate estimates of as many independent analysts as possible. This is especially important in  
10          the natural gas context, where there are a limited number of *IBES* analysts that cover each  
11          natural gas pipeline (in contrast to the electric context, in which Opinion No. 569 was  
12          decided, where there are significantly more *IBES* analysts covering each electric company).  
13          Further, *Value Line* updates its growth rates each quarter, whereas there is no specific  
14          schedule for updating *IBES* growth rates, some of which are out of date and therefore cannot  
15          be relied upon to reflect current market conditions. Thus, I believe the Commission should  
16          revisit its decision regarding the use of *Value Line* in the natural gas pipeline context and  
17          consider my alternative calculation of ROE, which results in a DCF-based ROE of  
18          13.73 percent.<sup>7</sup> Combining the DCF results that include *Value Line* data with the CAPM  
19          results in an overall ROE of 13.92 percent.<sup>8</sup> Both these results indicate that my  
20          recommended ROE of 12.99 percent is conservatively low.

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<sup>6</sup> Opinion No. 569 at P 133.

<sup>7</sup> *Value Line* did not publish a growth estimate for TC Pipelines in its most recent growth rate update (as of 01/30/2019). Thus, for TC Pipelines I rely entirely on the *IBES* growth estimate for the weighted average growth rate.

<sup>8</sup> See Figure 3.

1           Finally, I consider my ROE results in the context of Northern's risk characteristics  
2 when compared with those of the Core Sample and Expanded Sample in response to FERC  
3 Staff Witness Green's proposal to use an ROE for Northern that is below the median of the  
4 sample. I also rely on the business risk testimony and evidence presented in the Rebuttal  
5 Testimony of Northern Witness Dr. Paul Carpenter, Exhibit No. NNG-00264. I conclude  
6 that Northern's business and financial risks are comparable to those of the sample and that  
7 the ROE should therefore be based on the median of the DCF and CAPM results without  
8 any adjustment.

9           **1. DCF Results**

10   **Q.    What are your results from your implementation of the Commission's DCF model?**

11   **A.    The results obtained by implementing the DCF model are displayed in Figure 1 below.**

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**Figure 1**  
**DCF Results using *IBES* and Combined Growth Rates**

Company	Dividend Yield	GDP Growth	Company Growth Rates		Cost of Equity Estimates	
			IBES Consensus	Weighted Average	IBES Consensus	Weighted Average (ROE)
[1]	[2]	[3]	[4]	[5]	[6]	[7]
Enable Midstream Part.	12.2%	2.1%	-4.5%	9.9%	9.6%	20.0%
<b>Enbridge Inc.</b>	<b>6.1%</b>	<b>4.2%</b>	<b>6.2%</b>	<b>6.1%</b>	<b>11.8%</b>	<b>11.7%</b>
EQM Midstream Part.	16.1%	2.1%	-2.1%	0.7%	15.2%	17.3%
<b>Kinder Morgan Inc.</b>	<b>4.9%</b>	<b>4.2%</b>	<b>8.1%</b>	<b>13.5%</b>	<b>11.9%</b>	<b>15.6%</b> *
<b>TC PipeLines LP</b>	<b>6.5%</b>	<b>2.1%</b>	<b>9.3%</b>	<b>9.3%</b>	<b>13.7%</b>	<b>13.7%</b> *
<b>TC Energy Corp.</b>	<b>4.4%</b>	<b>4.2%</b>	<b>3.6%</b>	<b>6.1%</b>	<b>8.3%</b>	<b>10.0%</b> *
<b>Williams Cos.</b>	<b>6.5%</b>	<b>4.2%</b>	<b>9.8%</b>	<b>12.8%</b>	<b>14.7%</b>	<b>16.9%</b> *
Energy Transfer LP	9.5%	2.1%	16.5%	13.9%	22.0%	20.1%
Enterprise Products	6.4%	2.1%	8.0%	7.9%	12.7%	12.7%
Magellan Midstream	6.4%	2.1%	3.3%	7.8%	9.4%	12.5%
ONEOK Inc.	5.0%	4.2%	15.7%	15.1%	17.3%	16.9%
Plains All Amer. Pipe.	7.4%	2.1%	6.2%	3.3%	12.5%	10.5%
National Fuel Gas	3.8%	4.2%	8.5%	12.0%	11.0%	13.4%
Dominion Energy	4.6%	4.2%	4.5%	14.0%	9.1%	15.6%
<b>Core Sample</b>				Average	12.09%	13.60%
				<b>Median</b>	<b>11.87%</b>	<b>13.73%</b>
				Range	8.3% - 14.7%	10.0% - 16.9%
<b>Expanded Sample</b>		(Includes Core Sample)		Average	12.47%	13.39%
				<b>Median</b>	<b>12.49%</b>	<b>12.65%</b>
				Range	8.3% - 17.3%	10.0% - 16.9%
<b>Staff Proposed Sample*</b>				Average	11.93%	13.93%
				<b>Median</b>	<b>11.87%</b>	<b>13.73%</b>
				Range	8.3% - 14.7%	10.0% - 16.9%

Sources and Notes:

\*Staff Proposed Sample includes Kinder Morgan, TC Pipelines, TC Energy Corp, Williams Cos, and National Fuel Gas.

[2]: 6-month average dividend yield though 1/31/2020.

[3]: Nominal GDP estimate calculated as average of EIA, SSA, and Blue Chip Economic Indicators forecasts. Halved for MLPs per Commission precedent.

[5]: Calculated by giving ValueLine estimate weight of 1 and IBES estimate weight based on the number of analysts estimates included.

[6]: Cost of Equity result of FERC DCF methodology using [4] as the company growth rate.

[7]: Cost of Equity result of FERC DCF methodology using [5] as the company growth rate.

3 **Q. What are the key results?**

4 A. The DCF-based model produces a median ROE of 11.87 percent for the Core Sample, which  
5 is supported by the results from the Expanded Sample, which are moderately higher. Note  
6 that the results from Enable Midstream and EQM Midstream are removed from the Core

1 Sample because their current growth rates are negative, and Energy Transfer was excluded  
2 from the Expanded Sample as it failed the (high-end) outlier test.

3 I further note that the median of my DCF results is the same as that of Staff Witness  
4 Green, since the difference in our proposed samples does not affect the median.<sup>9</sup> Instead,  
5 the reasons for the difference between my recommended ROE and that of Mr. Green are  
6 that Mr. Green (1) proposes to use an ROE below the median based on his contention that  
7 Northern is less risky than the sample, and (2) relies solely on the DCF instead of following  
8 Opinion No. 569, which prescribed an ROE based on the average ROE from the DCF model  
9 and the CAPM model.

## 10 **2. CAPM Results**

11 **Q. What are your results from your implementation of the Commission's CAPM model?**

12 A. The results obtained by implementing the CAPM model are displayed in Figure 2 below.  
13 In line with the DCF model, the results from Enable Midstream and EQM Midstream are  
14 removed from the Core Sample because their current *IBES* growth rates are negative.<sup>10</sup>

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<sup>9</sup> The median is the same for my sample and Mr. Green's sample as the company at the median (Kinder Morgan Inc.) is the same in both samples.

<sup>10</sup> While a negative growth rate in the DCF model does not directly affect the CAPM model, a negative growth indicates that the cost of capital estimates for Enable Midstream and EQM Midstream are not representative of the cost of capital. *See Seaway Crude Pipeline Co.*, 154 FERC ¶ 61,070 at P 196 (2016); Opinion No. 569 at P 267. According to Opinion No. 569, very low growth rates are "highly unsustainable and non-representative" (Opinion No. 569 at P 267). Additionally, EQM Midstream was downgraded to below investment grade by all major rating agencies as of February 2020. For comparative purposes, I also show the ROE results including Enable Midstream and EQM Midstream (labeled "ENBL" and "EQM" respectively in Figure 2). In line with the DCF model, Energy Transfer was excluded from the Expanded Sample.

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**Figure 2**  
**Results from the CAPM Model**

Company	Unadjusted Cost of Equity Estimate				Size Premium Adjustment		Size Adjusted Cost of Equity
	Risk Free Rate	Market Risk Premium	ValueLine Beta	Unadjusted Cost of Equity	Market Cap (\$ millions)	Size Adjustment	
	[1]	[2]	[3]	[4] = [1] + [2] x [3]	[5]	[6]	[7] = [4] + [6]
Enable Midstream Part.	2.2%	9.0%	1.15	12.6%	\$4,243	1.1%	13.69%
<b>Enbridge Inc.</b>	<b>2.2%</b>	<b>9.0%</b>	<b>1.00</b>	<b>11.2%</b>	<b>\$109,936</b>	<b>-0.3%</b>	<b>10.96%</b>
EQM Midstream Part.	2.2%	9.0%	1.15	12.6%	\$4,731	0.8%	13.38%
<b>Kinder Morgan Inc.</b>	<b>2.2%</b>	<b>9.0%</b>	<b>1.35</b>	<b>14.4%</b>	<b>\$48,514</b>	<b>-0.3%</b>	<b>14.11%</b>
<b>TC PipeLines LP</b>	<b>2.2%</b>	<b>9.0%</b>	<b>1.20</b>	<b>13.0%</b>	<b>\$2,946</b>	<b>1.1%</b>	<b>14.14%</b>
<b>TC Energy Corp.</b>	<b>2.2%</b>	<b>9.0%</b>	<b>1.05</b>	<b>11.7%</b>	<b>\$50,655</b>	<b>-0.3%</b>	<b>11.41%</b>
<b>Williams Cos.</b>	<b>2.2%</b>	<b>9.0%</b>	<b>1.90</b>	<b>19.3%</b>	<b>\$25,779</b>	<b>0.5%</b>	<b>19.84%</b>
Energy Transfer LP	2.2%	9.0%	2.05	20.7%	\$33,573	-0.3%	20.41%
Enterprise Products	2.2%	9.0%	1.25	13.5%	\$58,079	-0.3%	13.21%
Magellan Midstream	2.2%	9.0%	1.05	11.7%	\$14,138	0.5%	12.19%
ONEOK Inc.	2.2%	9.0%	1.50	15.7%	\$31,175	-0.3%	15.46%
Plains All Amer. Pipe.	2.2%	9.0%	1.45	15.3%	\$12,369	0.7%	16.02%
National Fuel Gas	2.2%	9.0%	0.95	10.8%	\$3,624	1.1%	11.89%
Dominion Energy	2.2%	9.0%	0.55	7.2%	\$71,173	-0.3%	6.91%
<b>Core Sample</b>		Average	1.30	13.94%			14.10%
		<b>Median</b>	<b>1.20</b>	<b>13.04%</b>			<b>14.11%</b>
		Range	1.00 - 1.90	11.2% - 19.3%			11.0% - 19.8%
<b>Core Including EQM and ENBL</b>		Average	1.26	13.56%			13.94%
		<b>Median</b>	<b>1.15</b>	<b>12.59%</b>			<b>13.69%</b>
		Range	1.00 - 1.90	11.2% - 19.3%			11.0% - 19.8%
<b>Expanded Sample</b>	(Includes Core Sample)	Average	1.31	13.99%			14.15%
		<b>Median</b>	<b>1.25</b>	<b>13.49%</b>			<b>14.11%</b>
		Range	1.00 - 1.90	11.2% - 19.3%			11.0% - 19.8%
<b>Staff Proposed Sample*</b>		Average	1.29	13.85%			14.28%
		<b>Median</b>	<b>1.20</b>	<b>13.04%</b>			<b>14.11%</b>
		Range	0.95 - 1.90	10.8% - 19.3%			11.4% - 19.8%

Sources and Notes:

\*Staff Proposed Sample includes Kinder Morgan, TC Pipelines, TC Energy Corp, Williams Cos, and National Fuel Gas.

[1]: 6-month average of 30-year U.S. Treasury Constant Maturity Rate series up to 1/31/2020, St. Louis Federal Reserve Economic Data.

[2]: MRP Calculation consistent with Opinion 569.

[3], [5]: Valueline Investment Analyzer as of 1/30/2020.

[6]: Duff & Phelps Cost of Capital Navigator as of 12/31/2019.

3 **Q. What are the key results from the CAPM model?**

4 A. The CAPM-based model produces a median ROE estimate of 14.11 percent for the Core  
5 Sample. The median ROE for the Expanded Sample is the same as the Core Sample at  
6 14.11 percent.<sup>11</sup> The average of the ROE from my sample is slightly below the average ROE  
7 for Mr. Green's sample. This reflects the slightly higher ROE of National Fuel Gas

<sup>11</sup> The median is the same in the Expanded Sample and the Core Sample as the company at the median (Kinder Morgan Inc.) is the same in both samples.

1 (11.89 percent), which is included in Mr. Green's sample, relative to Enbridge  
2 (10.96 percent), which is included in my sample. As with the DCF model, the difference in  
3 ROE's between National Fuel Gas and Enbridge is insufficient to impact the median, which  
4 is the same in both Mr. Green's sample and my sample (although, as noted, Mr. Green does  
5 not use the CAPM to calculate his proposed ROE).<sup>12</sup>

6 **Q. How do you use the DCF and CAPM results to derive an estimate of the appropriate**  
7 **ROE for Northern?**

8 A. Under the Commission's established approach, the estimates for the proxy companies are  
9 used to establish a range of reasonableness, and the corresponding median is set as the  
10 benchmark estimate of the cost of equity for companies of average business risk. The  
11 Commission's decision in *Enbridge* provides a summary of this approach:

12 Once the rates of return for the proxy companies are determined, thereby  
13 establishing a range of reasonable returns, the Commission must determine  
14 where to set the pipeline's return in that range based upon how the pipeline's  
15 risk compares with that of other pipelines. The Commission begins its risk  
16 analysis with the assumption that pipelines generally fall within a broad  
17 range of average risk, absent highly unusual circumstances that indicate and  
18 [sic] anomalously high or low risk as compared to other pipelines. As a  
19 result, the Commission has generally placed pipelines at the middle of the  
20 range, using the median of the proxy group returns to calculate the middle.<sup>13</sup>

21 Opinion No. 569 similarly determined that, for companies of average risk relative to  
22 the proxy sample, ROE for average-risk utilities is set at the median of the zone of  
23 reasonableness.<sup>14</sup> The average of the median for the DCF (using *IBES* estimates only) and  
24 CAPM methods is 12.99 percent for the Core Sample. Figure 3 summarizes the results.

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<sup>12</sup> In keeping with the DCF model, Energy Transfer was excluded from the CAPM calculations. Including Energy Transfer would *increase* the average ROE.

<sup>13</sup> *Enbridge Pipelines (KPC)*, 100 FERC ¶ 61,260 at P 216 (2002).

<sup>14</sup> Opinion No. 569 at P 398.



**Figure 3**  
**Summary of Results**

	DCF		CAPM	Composite	Composite (with Weighted Growth)
	IBES Growth Rates	Weighted Growth Rates			
	[1]	[2]	[3]	[4]	[5]
<b>Core Sample</b>					
Median	11.87%	13.73%	14.11%	<b>12.99%</b>	13.92%
Reasonable Range	8.3% - 14.7%	10.0% - 16.9%	11.0% - 19.8%	9.7% - 17.3%	10.5% - 18.4%
<b>Expanded Sample</b>					
Median	12.49%	12.65%	14.11%	13.30%	13.38%
Reasonable Range	8.3% - 17.3%	10.0% - 16.9%	11.0% - 19.8%	9.7% - 18.6%	10.5% - 18.4%

Sources and Notes:

[2] Weighted Growth Rates are based on IBES and Value Line data. Value Line estimates treated as an additional data point.

[4]: Composite is an average of [1] and [3].

[5]: Composite is an average of [2] and [3].

**Q. What conclusions do you draw from these results?**

A. First, based on the analysis summarised in Figure 3, I find that an ROE of 12.99 percent is reasonable. The recommended ROE is supported by the results from the Expanded Sample. The alternative calculation of ROE, which includes the *Value Line* estimates, results in a DCF-based ROE of 13.73 percent. Combining the DCF results that include *Value Line* data with the CAPM results in an overall ROE of 13.92 percent. Both these results indicate that my recommended ROE of 12.99 percent is conservatively low. Further, the evidence of Dr. Carpenter in Exhibit No. NNG-00264 shows that Northern is of slightly higher business risk than the median of the Core Sample, further indicating that a reliance on the median may be conservatively low.

I recommend that Northern be allowed an opportunity to earn an ROE of 12.99 percent on its Commission-regulated natural gas pipeline assets and find it to be a reasonable, albeit conservative, estimate.

1           **B.     Use of Data as of January 31, 2020 to Calculate ROE Due to Market Volatility**

2   **Q.     FERC Staff Witness Green and Indicated Shippers Witness Crowe base their ROE**  
3       **analysis on data for the period ending January 31, 2020.<sup>15</sup> Michigan Public Service**  
4       **Commission Witness Megginson uses data for the period ending January 1, 2020.<sup>16</sup>**

5       **How do you respond?**

6   **A.**    In my opinion, it is appropriate to rely on the more recent data through January 31, 2020,  
7       consistent with the approach taken by Mr. Green and Ms. Crowe. It is my understanding  
8       that the Commission's general policy is to use the most recent data available for calculating  
9       the ROE unless the post-test period data is anomalous. In my opinion, the data through  
10      January 2020 provides reasonable results, but the data for the periods ending February 2020  
11      and March 2020 are affected by extreme volatility and turmoil in the market and cannot be  
12      relied upon to produce results that are representative of normal ongoing market conditions  
13      or Northern's cost of equity capital. Figure 4 shows stock price movements for companies  
14      in the Core Sample over the last 6 months and illustrates the impact of the COVID-19  
15      pandemic on a key input to the relied upon models.

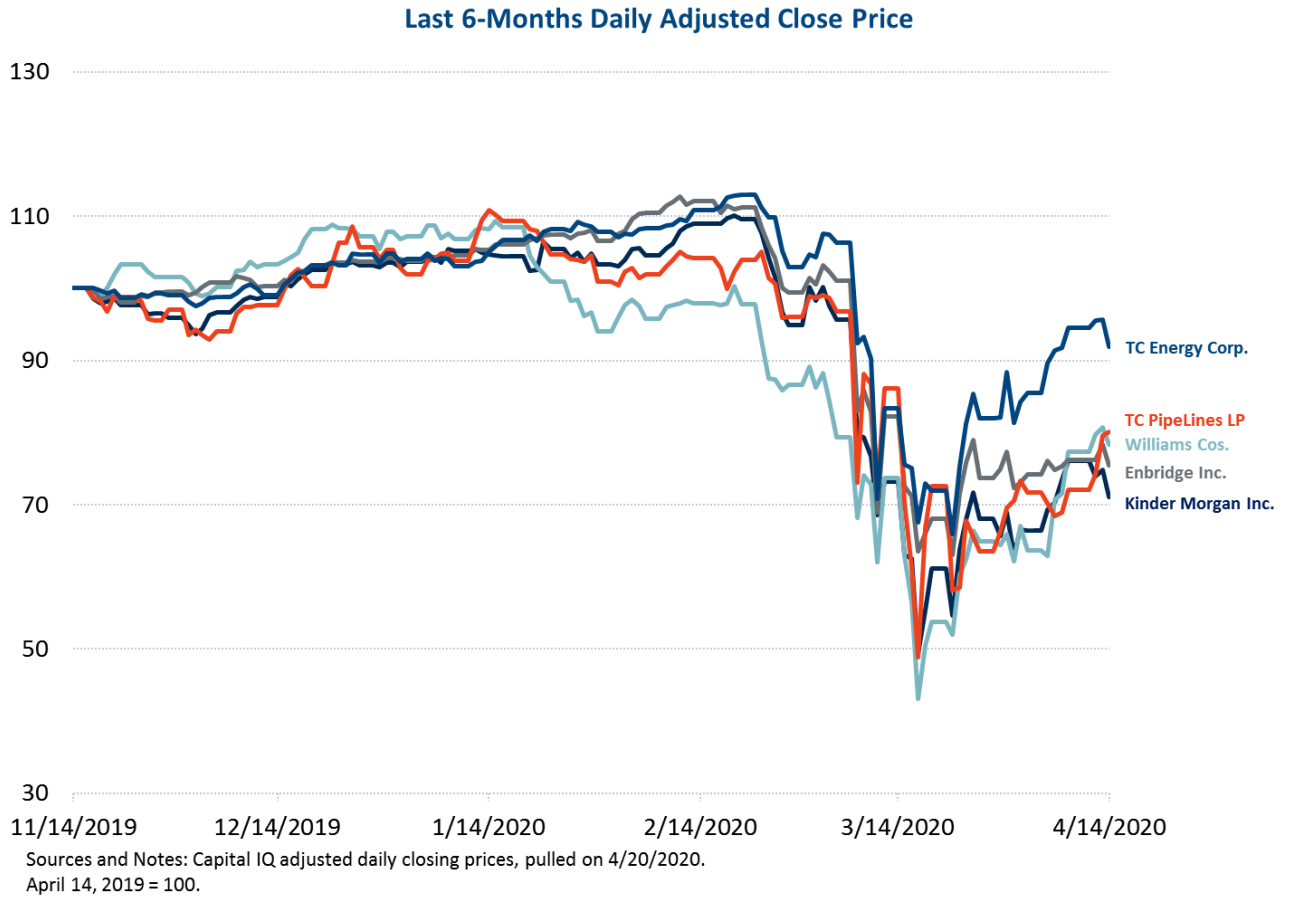
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<sup>15</sup> See Exhibit No. S-0002 at Schedule 3; Exhibit No. IS-0015 at 4.

<sup>16</sup> See Exhibit No. MPC-0013 at 13.

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**Figure 4**  
**Adjusted Closing Stock Prices (Indexed), Core Sample Companies**



3 As shown in Figure 4, stock prices for the companies in the Core Sample have been  
4 highly volatile over the past 6 months. This has implications for the cost of equity.

5 **Q. Please explain these implications for the cost of equity.**

6 A. The implications from the extreme volatility are twofold. First, the Commission's models,  
7 in particular the DCF model, are ill-equipped to deal with very sudden short-term  
8 movements in the input variables. The DCF model relies upon dividend yield data that is  
9 backward-looking over 6 months, whereas the expected growth data is forward-looking (and  
10 may reflect significant lags, as I have already discussed). This creates a potential mismatch

1 between data inputs during volatile periods, increasing the likelihood of producing an ROE  
2 that is not representative of the cost of capital for investors. Further, during a period of  
3 extreme volatility we are likely to see additional companies with negative growth rates,  
4 making it difficult to form a robust proxy sample for the Commission's DCF model. Indeed,  
5 this was observed during the recent period of volatility.<sup>17</sup> Second, the cost of equity for  
6 investors observed during the period of market turmoil may not reflect the longer-term cost  
7 of equity.

8 **Q. Has such market volatility influenced decisions by the Commission in the past?**

9 A. Yes. The Commission chose to ignore market data during the 2008-2009 financial crisis,  
10 instead relying on data from earlier time periods.<sup>18</sup> Figure 5 shows current volatility in the  
11 U.S. stock market relative to the last 15 years.

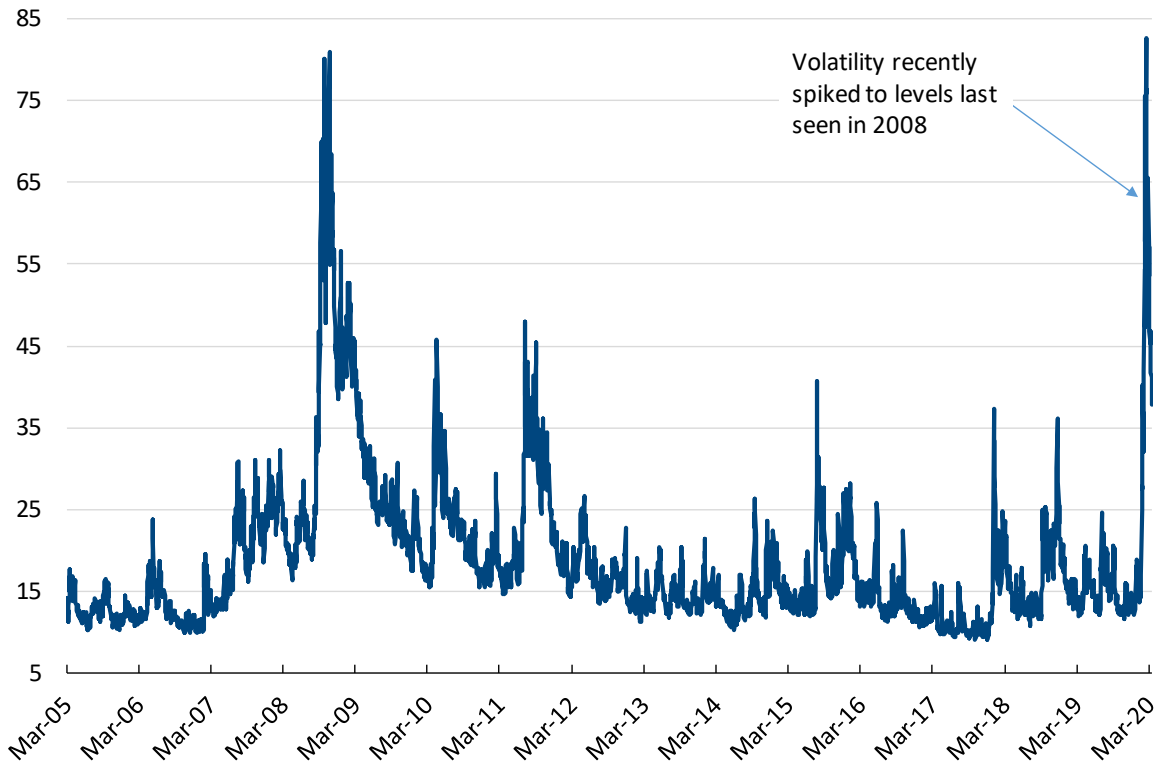
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<sup>17</sup> For example, as of March 31, 2020, only three of the five companies in my sample used to calculate ROE at January 31, 2020 had positive IBES growth rates (Source: Thomson Reuters).

<sup>18</sup> *SFPP, L.P.*, 162 FERC ¶ 61,228 at P 37 (2018) ("Opinion No. 511-C").

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**Figure 5**  
**Volatility in U.S. Equity Market, Last 15 Years**



Source: Federal Reserve Economic Data, CBOE Volatility Index. Accessed 4/14/2020.

3 As shown in Figure 5, volatility has recently spiked to levels last seen during the 2008-2009  
4 financial crisis. As shown in Figure 5, volatility changes time. The question is whether  
5 increases in volatility reflect fundamental shifts in systematic risk.

6 **Q. How much of the recent volatility reflects a reassessment of systematic risk?**

7 A. It is difficult to interpret how much of the recent market volatility reflects a reassessment of  
8 systematic risk. Some of the recent volatility may have been driven by the short-term  
9 liquidity needs of investors. Systematic liquidity risk has been shown to vary over time and

1 be particularly apparent during periods of extreme market volatility.<sup>19</sup> It is also clear that,  
2 given the widespread disruption in global markets, much of the recent volatility may reflect  
3 increases in systematic risk. In the short-term at least, corporate profit will be lower due to  
4 a lower economic activity, increases in unemployment and forced business closures due to  
5 COVID-19, potentially exacerbated by relatively high levels of corporate leverage.<sup>20</sup> In the  
6 energy sector, the recent oil price volatility is likely to hurt companies in the energy sector,  
7 including gas transmission companies. Finally, there is a risk of higher inflation, due to  
8 expansive monetary and fiscal policy. All these factors may impact the assessment of  
9 longer-term fundamentals, and are likely to increase the cost of capital. Nevertheless, for  
10 the reasons explained above, it would appear prudent and more theoretically sound to base  
11 the ROE in this case on the period immediately preceding the recent market turmoil.<sup>21</sup>

12 **C. Application of Opinion No. 569 and Use of CAPM**

13 **Q. Before addressing the other witnesses' approach to applying Opinion No. 569, could**  
14 **you please explain what Opinion No. 569 is and why it is significant?**

15 **A.** Opinion No. 569, which was issued November 21, 2019, after multi-year litigation,  
16 represents the Commission's most recent guidance regarding the appropriate approach to  
17 determining ROE. While Opinion No. 569 arose in the electric transmission context, there  
18 have not been any Commission decisions on litigated natural gas pipeline cases since the

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<sup>19</sup> The academic literature has documented the time-varying nature of liquidity risk, including the impact of liquidity risk during market downturns. For example, see John Anthony, Paul Docherty, Doowon Lee and Abul Shamsuddin, *Liquidity commonality in the secondary corporate loan market*, Economics Letters, 2017, vol. 161, 10-14 (at 12).

<sup>20</sup> The recent relatively high level of corporate leverage is well documented. For a recent news article, see Matt Wirz and Nick Timiraos, *The Next Coronavirus Financial Crisis: Record Piles of Risky Corporate Debt*, Wall Street Journal, March 19, 2020.

<sup>21</sup> Further, at the end of March 2020, only three of the companies in the Core Sample have positive growth rates (source: IBES).

1 issuance of Opinion No. 569, so it is unclear whether and to what extent the Commission  
2 will apply its holdings in Opinion No. 569 in the natural gas context. Nevertheless, I believe  
3 it is prudent to apply Opinion No. 569 in this case for reasons discussed further below.

4 **Q. Did your previous testimony in this docket incorporate the relevant findings of**  
5 **Opinion No. 569?**

6 A. No, my Direct Testimony was filed on July 1, 2019, prior to the issuance of  
7 Opinion No. 569. Instead, my Direct Testimony was based on then-existing Commission  
8 guidance, including the NETO Briefing Order.<sup>22</sup>

9 **Q. What are the key differences between Opinion No. 569 and the NETO Briefing Order**  
10 **with respect to ROE?**

11 A. There are several key differences. First, Opinion No. 569 prescribed that ROE is calculated  
12 using both the DCF model and the CAPM model. The CAPM model and the DCF model  
13 were given equal weight in the formulation of ROE.<sup>23</sup> The Commission rejected the  
14 Expected Earnings and Risk Premium methods, which were proposed in the NETO Briefing  
15 Order.

16 Second, whereas the NETO Briefing Order prescribed the use of a composite  
17 long-term and short-term growth rate for growing the dividend yield in the DCF model,  
18 Opinion No. 569 prescribed the use of short-term analyst estimates only. According to  
19 Opinion No. 569:

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<sup>22</sup> *Coakley Mass. Attorney General v. Bangor Hydro-Elec. Co., order on remand*, 165 FERC ¶ 61,030 (2018) ("NETO Briefing Order").

<sup>23</sup> Opinion No. 569 at P 425.

1 Because this first dividend is necessarily paid within the time period covered  
 2 by the *IBES* short-term growth projection, that rate is the more appropriate  
 3 growth rate for calculating the (1+.5g) adjustment to the dividend yield.<sup>24</sup>

4 Given this order by the Commission, and in line with identical adjustments by Mr.  
 5 Green and Mr. Megginson,<sup>25</sup> I adjust the DCF formula so that the first growth rate (*i.e.*, the  
 6  $g$  in (1+1/2  $g$ )) reflects the *IBES* growth rates. The amended DCF formula is as follows:

$$7 \quad k = \frac{D_0 \times \left(1 + \frac{1}{2} g_1\right)}{P} + g_2$$

8 Where  $g_1$  is the *IBES* growth rate and  $g_2$  is the composite growth rate.<sup>26</sup>

9 Third, with respect to the CAPM model, Opinion No. 569 modified the  
 10 determination of the market risk premium in the CAPM. Specifically, Opinion No. 569  
 11 required the use of a filter to eliminate from the sample any S&P 500 companies with growth  
 12 rates below zero percent or greater than 20 percent.<sup>27</sup>

13 Finally, the Commission modified the low-end outlier test. Under the  
 14 Opinion No. 569 test, 20 percent of the market risk premium (as calculated for the CAPM  
 15 model) is added to a generic Baa corporate bond yield to determine the lower bound.<sup>28</sup> The  
 16 Commission rejected the approach used in the NETO Briefing Order, wherein low-end

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<sup>24</sup> Opinion No. 569 at PP 19, 98.

<sup>25</sup> Exhibit No. S-0001, Appendix B, at 3; Exhibit No. MPC-0016. The Crowe Testimony did not follow Opinion No. 569 and Ms. Crowe did not adjust the growth rate (Exhibit No. IS-0010).

<sup>26</sup> For master limited partnerships, the *Proxy Group Policy Statement* prescribes the use of 1/2 of the GDP growth rate forecast instead of the full amount as the long-term growth rate. See *Composition of Proxy Groups for Determining Gas and Oil Pipeline Return on Equity*, Policy Statement, 123 FERC ¶ 61,048 (2008) ("*Proxy Group Policy Statement*").

<sup>27</sup> Opinion No. 569 at P 19.

<sup>28</sup> Opinion No. 569 at PP 387-388.



1 outliers are identified based on a minimum spread of 100 basis points between the ROE  
2 estimate and the yield on BBB-rated utility debt.<sup>29</sup>

3 In my analysis, I adopt all the changes prescribed by the Commission in  
4 Opinion No. 569.

5 **Q. Does the Megginson Testimony adopt the methodology in Opinion No. 569?**

6 A. No. While Mr. Megginson incorporates the key relevant changes prescribed by  
7 Opinion No. 569 that I have described with respect to the calculation of the DCF, he does  
8 not calculate an ROE using the CAPM due to "technical limitations."<sup>30</sup> From the Megginson  
9 Testimony:

10 *Question:* Did you consider conducting a CAPM analysis in light of Opinion  
11 No. 569?

12 *Answer:* Yes. I considered conducting a CAPM analysis as part of my overall  
13 ROE analysis in light of the Commission's determination in Opinion No.  
14 569 to give equal weight to the DCF and the CAPM models. However the  
15 methodology prescribed by the Commission in that order for a CAPM  
16 analysis called for using a forward-looking approach to estimate the  
17 expected market return by conducting a DCF analysis on the dividend paying  
18 companies in the S&P 500 as "a representative market index." My staff and  
19 I attempted to set up a functioning and data-adjustable spreadsheet of the  
20 S&P 500 to conduct a forward-looking DCF analysis of the market in light  
21 of the Commission's direction in Opinion No. 569. However, our system  
22 could not accommodate the volume of data required to completely populate  
23 a working spreadsheet of the S&P 500. As a result, I was unable to perform  
24 a CAPM analysis using the methodology favored by the Commission in  
25 Opinion No. 569. My ROE analysis is therefore limited to the two-step DCF  
26 methodology that has historically been used in natural gas rate cases.<sup>31</sup>

27 Thus, if not for the "technical limitations" it appears Mr. Megginson favored  
28 presenting the CAPM results. Responding to a data request, Mr. Megginson states that "I

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<sup>29</sup> *Id.*

<sup>30</sup> Exhibit No. MPC-0013 at i.

<sup>31</sup> Exhibit No. MPC-0013 at 17 (emphasis added).

1 do believe that using both the DCF and the CAPM to set an ROE recommendation for  
2 Northern is reasonable"<sup>32</sup> and "I believe that the addition of the CAPM approach is a  
3 reasonable addition to the DCF model as it provides a separate and distinct assessment of  
4 the cost of equity for Northern."<sup>33</sup>

5 **Q. Does the Crowe Testimony adopt the methodology in Opinion No. 569?**

6 A. No. Ms. Crowe does not appear to have adopted any of the changes in Opinion No. 569.

7 **Q. Does Ms. Crowe explain why she did not apply Opinion No. 569?**

8 A. No. She does not address the issue.

9 **Q. Does Staff Witness Green adopt the methodology in Opinion No. 569?**

10 A. No, Mr. Green adopts some of the methodology changes in Opinion No. 569, however Mr.  
11 Green elects not to adopt certain key changes. Specifically, Mr. Green did not submit a  
12 CAPM analysis and did not average the results from the DCF and CAPM models to  
13 calculate the ROE.

14 **Q. As you noted above, Opinion No. 569 arose in the electric context. Why did you decide  
15 to follow Opinion No. 569 here and use both the CAPM and DCF to calculate your  
16 proposed ROE?**

17 A. While Opinion No. 569 arose in the electric context, there have not been any Commission  
18 decisions on litigated natural gas pipeline cases since the issuance of Opinion No. 569, so it  
19 is unclear whether and to what extent the Commission will apply the methodology from

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<sup>32</sup> Michigan Public Service Commission Responses to Northern Natural Gas Company's Third Set of Data Requests, March 11, 2020, at 11. Attached as Exhibit No. NNG-00263 in Appendix B.

<sup>33</sup> *Id.* at 14.

1 Opinion No. 569 in the natural gas pipeline context. Nevertheless, I believe it is appropriate  
2 to apply Opinion No. 569 in this case, because the Commission's reasoning for using  
3 multiple methods including the DCF and CAPM is generally persuasive and I do not discern  
4 any difference between the electric transmission and natural gas pipeline contexts that  
5 would require a fundamentally different approach with respect to the specific issues noted  
6 above.

7 Moreover, specifically with respect to using both the CAPM and the DCF  
8 approaches to calculate ROE, there is additional Commission guidance suggesting that the  
9 use of CAPM in addition to DCF would be appropriate in the natural gas pipeline context.  
10 For example, on March 21, 2019, the Commission issued a Notice of Inquiry seeking  
11 comment on "whether any changes to [the Commission's] policies concerning public utility  
12 ROEs should be applied to interstate natural gas and oil pipelines."<sup>34</sup> Although the Notice  
13 of Inquiry pre-dated Opinion No. 569 and the Commission has not issued any further  
14 guidance in the Notice of Inquiry docket, the Notice of Inquiry indicates that the  
15 Commission is open to applying its electric utility ROE policies in the natural gas pipeline  
16 context. Moreover, the Commission explained in the Notice of Inquiry that "investors use  
17 other financial models in addition to the DCF model to evaluate investments,"<sup>35</sup> including  
18 the CAPM,<sup>36</sup> and that "relying on multiple financial models makes it more likely that the  
19 Commission's decision will accurately reflect how investors make their investment  
20 decisions."<sup>37</sup> In my opinion, the Commission's observations regarding the financial models

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<sup>34</sup> *Inquiry Regarding the Commission's Policy for Determining Return on Equity*, 166 FERC ¶ 61,207 at P 1 (2019).

<sup>35</sup> *Id.* at P 13.

<sup>36</sup> *Id.* at PP 14-16.

<sup>37</sup> *Id.* at P 24.

1 used by investors apply to all investors, not just investors in electric utilities. Moreover, the  
2 Commission's reasoning in Opinion No. 569 that combining estimates from both the CAPM  
3 and DCF models is more accurate than relying on a single model is, in my opinion, also  
4 applicable in the natural gas pipeline context.

5 **Q. FERC Staff Witness Green states that he did not include the CAPM in his ROE**  
6 **analysis, because, he claims, the Commission has not "expressed concerns with the**  
7 **results of its ... DCF method in natural gas pipeline proceedings."<sup>38</sup> Do you agree?**

8 A. No. I agree that there have not been any Commission decisions involving litigated natural  
9 gas pipeline cases since the issuance of Opinion No. 569, so the Commission has not had  
10 an opportunity to rule on this issue. But it is not correct to say that the Commission has not  
11 "expressed concerns" with continuing to rely solely on the DCF. Indeed, as explained above,  
12 the Notice of Inquiry specifically recognized that investors do not rely solely on the DCF  
13 and that using more than one model will make it more likely that the ROE results reflect  
14 how investors make their investment decisions.

15 **Q. Mr. Green states that he did not use the CAPM in part because Opinion No. 569**  
16 **rejected the use of the Expected Earnings and Risk Premium methods.<sup>39</sup> In your view,**  
17 **does that argument justify Mr. Green's decision not to use CAPM?**

18 A. No. In my opinion, it is not appropriate to rely on Opinion No. 569 to support excluding the  
19 Expected Earnings and Risk Premium methods, while failing to follow Opinion No. 569  
20 with respect to CAPM. Indeed, Mr. Green apparently considers Opinion No. 569 persuasive

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<sup>38</sup> Exhibit No. S-0001 at 16.

<sup>39</sup> Exhibit No. S-0001 at 16 and 119.

1 with respect to all of its other holdings, which he adopts (including the method for  
2 calculating the DCF growth rates, the sole reliance on *IBES*, and the use of specific tests for  
3 removing outliers from the sample).<sup>40</sup> Thus, his testimony is internally inconsistent when it  
4 comes to the application of Opinion No. 569, and fails to justify why he did not use the  
5 average of the DCF and CAPM to calculate the ROE here.

6 **Q. Mr. Green states that he did not use CAPM, because you did not use CAPM to develop**  
7 **the primary ROE recommendation in your Direct Testimony.<sup>41</sup> Does that argument**  
8 **provide a valid basis for not using both CAPM and DCF to establish the ROE here?**

9 A. No. As noted, Opinion No. 569 was issued after I filed my Direct Testimony. In my Direct  
10 Testimony I presented the results from the CAPM and used the model to assess the  
11 reasonableness of my DCF results. However, I did not use it to calculate the primary ROE  
12 proposal in my Direct Testimony in order to be consistent with my understanding of  
13 Commission policy regarding natural gas pipelines at that time. Now that the Commission  
14 has issued Opinion No. 569 endorsing the use of both the DCF and CAPM, I have updated  
15 my approach to conform to current Commission guidance.

16 **Q. Mr. Green made two criticisms of your ROE calculations presented in your Direct**  
17 **Testimony. Specifically, he claims that (i) you applied an incorrect outlier test in the**  
18 **CAPM model, and (ii) you applied outdated size-based adjustments to the CAPM**  
19 **estimates.<sup>42</sup> How do you respond?**

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<sup>40</sup> *Id.* at 37-38, 72.

<sup>41</sup> *Id.* at 119.

<sup>42</sup> *Id.* at 122.

1 A. The outlier test that Mr. Green identifies was prescribed in Opinion No. 569. As  
2 Opinion No. 569 was issued after my Direct Testimony, I could not have applied this test in  
3 my Direct Testimony. However, now having the guidance of Opinion No. 569, in my market  
4 risk premium analysis computed for purposes of the CAPM, I have calculated my  
5 market-weighted growth rate for the dividend paying companies in the S&P 500 by  
6 excluding those companies whose growth rate is below zero or above 20 percent.  
7 Accordingly, Mr. Green's criticism of my methodology should be rejected, particularly in  
8 light of the fact that he did not undertake to compute a CAPM calculation as dictated by  
9 Opinion No. 569.

10 With respect to the sized-based adjustments, my Direct Testimony relied upon data  
11 in the NETO Briefing Order. My updated ROE estimates reflect the latest available  
12 size-based adjustments reported by Duff & Phelps.<sup>43</sup>

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<sup>43</sup> The NETO Briefing Order referenced data from the New England Transmission Owner's witness, Dr. Avera, who relied on Duff & Phelps for this calculation. *See* Duff & Phelps, *2017 Valuation Handbook*, U.S. Guide to Cost of Capital, 7-10 and 7-11. For the purposes of calculating size-based adjustments in this testimony, I have updated these estimates from the Duff and Phelps *Cost of Capital Navigator* as of December 31, 2019.

1           **D.     Whether to Include *Value Line* in Addition to *IBES***

2   **Q.     In your Direct Testimony, your primary ROE proposal was based on a DCF**  
3       **calculation that relied exclusively on *IBES* growth data, but you also included an**  
4       **alternative DCF analysis that incorporated both *Value Line* and *IBES* growth data.<sup>44</sup>**  
5       **FERC Staff Witness Green took issue with your alternative analysis, in part, because**  
6       **the Commission declined to use *Value Line* in Opinion No. 569.<sup>45</sup> How do you respond?**

7   **A.**    As discussed above, my primary ROE proposal is based on a consistent application of  
8       Opinion No. 569, and therefore relies solely on *IBES* data to calculate the DCF model.  
9       However, Opinion No. 569 leaves open the possibility that other sources of data may be  
10      appropriate if there are "compelling reasons."<sup>46</sup> Moreover, Opinion No. 569 was based on  
11      the Commission's finding that the record in that case indicated that "*IBES* is more stable and  
12      robust because *IBES* represents the views of multiple analysts and is updated more  
13      frequently."<sup>47</sup> By contrast, the natural gas pipeline companies in the sample here have  
14      limited numbers of *IBES* estimates, some of which are very stale. Therefore, there is a  
15      compelling reason to consider the *Value Line* estimates in calculating the DCF. While I have  
16      calculated the DCF consistent with Opinion No. 569 in my primary proposal, I urge the  
17      Commission to also consider a different approach in the context of natural gas pipelines. If  
18      the Commission deems a departure from Opinion No. 569 appropriate in the natural gas  
19      context on this issue, I propose that it adopt my alternative ROE proposal given the  
20      compelling evidence in this case.

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<sup>44</sup> Direct Testimony of Northern Witness Bente Villadsen, Exhibit No. NNG-00053 at 30-31, 45.

<sup>45</sup> Exhibit No. S-0001 at 105.

<sup>46</sup> Opinion No. 569 at P 133.

<sup>47</sup> *Id.*

1 **Q. In Opinion No. 569, the Commission favored *IBES* estimates over *Value Line* estimates**  
 2 **as they "represent the views of multiple analysts."<sup>48</sup> Do the *IBES* growth forecasts for**  
 3 **gas pipeline companies represent the views of multiple analysts?**

4 A. No, the *IBES* estimates for gas pipeline companies typically reflect the views of a single  
 5 analyst. Figure 6 compares the number of *IBES* estimates per company in my sample with  
 6 the companies analyzed in the NETO Briefing Order.

7 **Figure 6**

8 **The Number of *IBES* Estimates per Company**

Company	Number of Companies	Total Number of <i>IBES</i> Estimates	Median Number of <i>IBES</i> Estimates	Average Number of <i>IBES</i> Estimates	Percent of Villadsen Core Sample
<b><u>Villadsen</u></b>					
Core Sample	7	11	1.0	1.6	N/A
Expanded Sample	12	17	1.0	1.4	90%
<b><u>NETO Briefing Order Companies</u></b>					
Appendix A	42	115	2.5	2.7	174%
Appendix B	43	127	3.0	3.0	188%

Note:

Core Sample and Expanded Sample recorded on 1/31/2020.

"Percent of Villadsen Core Sample" is the "Average Number of *IBES* Estimates" relative to the Core Sample.

NETO Briefing Order, Appendix A. Recorded on 6/30/2015.

NETO Briefing Order, Appendix B. Recorded on 12/31/2015.

9 As shown in Figure 6, in contrast with the electric companies analyzed in the NETO  
 10 Briefing Order,<sup>49</sup> the *IBES* growth forecasts for gas pipeline companies are typically  
 11 provided by a single analyst (*i.e.*, median of 1.0 per company). On average, the electric

<sup>48</sup> *Id.*

<sup>49</sup> The NETO Briefing Order analyzed two different samples at two different time periods. The samples were presented in Appendix A and Appendix B of the NETO Briefing Order.



1 companies analyzed by the Commission in Opinion No. 569 had almost twice as many  
2 estimates per company than the gas pipeline companies I consider in my sample. The  
3 problems with having too few growth estimates are compounded when the sample size is  
4 small. This scenario increases the risk that any one broker can unduly influence the ROE  
5 results.

6 **Q. In Opinion No. 569, the Commission also favored *IBES* estimates as they are "updated  
7 more frequently."<sup>50</sup> Are the *IBES* growth forecasts updated frequently?**

8 A. Not always. Sometimes the *IBES* growth estimates are significantly outdated. Figure 7  
9 shows the date of the estimates that underlie the consensus *IBES* estimates for the companies  
10 in my sample, as well as the *IBES* estimates for the additional companies proposed by the  
11 other witnesses.

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<sup>50</sup> Opinion No. 569 at P 133.

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**Figure 7**  
**IBES Growth Estimates**

Company [1]	Date of Estimate [2]	Lag From Estimate (days) [3]
Enable Midstream Part.	12/6/2019	56
Enbridge Inc.(1)	1/31/2020	0
Enbridge Inc. (2)	1/27/2020	4
Enbridge Inc. (3)	12/11/2019	51
Enbridge Inc. (4)	12/3/2019	59
EQM Midstream Part.	1/22/2020	9
Kinder Morgan Inc.	1/14/2020	17
TC PipeLines LP	11/9/2018	448
TC Energy Corp	11/21/2019	71
Williams Cos. (1)	1/21/2020	10
Williams Cos. (2)	1/6/2020	25
Energy Transfer LP	9/17/2019	136
Enterprise Products	1/21/2020	10
ONEOK Inc. (1)	1/21/2020	10
ONEOK Inc. (2)	11/4/2019	88
<b>Companies Proposed by Other Witnesses</b>		
National Fuel Gas	8/15/2016	1264
Dominion Energy	11/4/2019	88

Sources and Notes:

[2]: Pulled from Thomson Reuters using 1/31/2020 date.

[3]: 1/31/2020 - [2].

3 As shown in Figure 7, my sample includes an estimate for TC Pipelines that is over  
4 one year old and an estimate for Energy Transfer that is over four months old.<sup>51</sup> Figure 7

<sup>51</sup> I have not shown the lags for Magellan Midstream and Plains All American Pipeline as it was unclear what estimates Thomson Reuters relied upon to produce the consensus estimate.

1 also shows the estimate for National Fuel Gas is three and a half years old. This is  
2 problematic as the *IBES* estimate for National Fuel Gas underlies the ROE  
3 recommendations provided by Staff Witness Green and Indicated Shipper Witness Crowe.

4 **Q. Can you comment further on why the *Value Line* estimates improve the ROE**  
5 **estimates?**

6 A. As I noted earlier, in a small sample there is greater risk that a single estimate will unduly  
7 influence the results. Incorporating *Value Line* data reduces the influence that any one  
8 estimate can have on the results. The *Value Line* analysts update their reports on a strict  
9 13-week schedule so the forecast will never be older than 13 weeks. The reliability of *Value*  
10 *Line's* quarterly review schedule is a key benefit of using *Value Line* growth forecasts  
11 alongside the *IBES* estimates, given the lags that can occur in the Thomson Reuters *IBES*  
12 consensus growth rates. *Value Line* is a respected source of financial data, as evidenced by  
13 the fact that Opinion No. 569 relied on *Value Line* for the adjusted beta used in the CAPM.<sup>52</sup>  
14 Therefore, I recommend that *Value Line* be used as a source for growth rate information  
15 along with *IBES*, particularly given that the number of analysts providing a forecast to *IBES*  
16 for gas pipelines is low.

17 **Q. Mr. Green argues that you have not provided "support for the contention that**  
18 **investors collectively make [your] specific growth rate calculation in arriving at their**  
19 **growth rate expectations for individuals companies."<sup>53</sup> How do you respond?**

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<sup>52</sup> Opinion No. 569 at P 297.

<sup>53</sup> Exhibit No. S-0001 at 106.

1 A. I do not claim that investors "collectively make [the] specific growth rate calculations" that  
2 I use in my alternative analysis – or my primary analysis. However, *Value Line* and *IBES*  
3 are accepted sources of growth estimates that investors generally rely on and, in my opinion,  
4 the use of *Value Line* in addition to *IBES* growth estimates is likely to provide a more  
5 accurate view of the growth expectations of the market as a whole. As the Commission  
6 explained in Opinion No. 569, "[i]nvestors have varying preferences as to which of the  
7 various methods for determining cost of equity they may use to inform their investment  
8 decisions."<sup>54</sup> And further, "Investors do not necessarily subscribe to any one method, nor  
9 does the stock price reflect the application of any one single method by the price-setting  
10 investor. There is no monopoly as to which method is used by investors."<sup>55</sup> The Commission  
11 relied on this finding to conclude that ROE estimates based on both the DCF and CAPM  
12 "will provide a more reasonable measure of investor expectations, since they are among the  
13 information that investors rely upon when making investment decisions."<sup>56</sup> The same logic  
14 supports use of both *Value Line* and *IBES* data here.

15 **Q. Mr. Green further claims there was an inconsistency between your DCF calculation**  
16 **based on data ending March 31, 2019, and the *Value Line* growth estimates which are**  
17 **calculated "using earnings estimates from year-end 2019 through 2023, a period that**  
18 **ignores the months of April 2019 through December 2019."<sup>57</sup> How do you respond?**

19 A. I disagree with the notion that the *Value Line* data ignores the period from April 2019  
20 through December 2019. The starting point for the *Value Line* data is the estimate for the

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<sup>54</sup> Opinion No. 569 at P 34.

<sup>55</sup> *Id.* (citing Roger A. Morin, *New Regulatory Finance* (Public Utilities Reports, Inc. 2006) (Morin) at 429).

<sup>56</sup> *Id.*

<sup>57</sup> Exhibit No. S-0001 at 106.

1 current fiscal year. The current fiscal year was 2019, which included the months of  
2 April 2019 through December 2019. Regardless, I have updated my ROE proposal based  
3 on more recent data through January 31, 2020.

4 **Q. Finally, Mr. Green contends that three companies in the Core Sample have short-term**  
5 **Value Line growth rates ranging from approximately 19 percent to 22 percent, and**  
6 **that two companies have "weighted average short-term growth rates of 13.3 percent**  
7 **or higher," which he claims the Commission has found to be unsustainable.<sup>58</sup> How do**  
8 **you respond?**

9 A. I disagree with Mr. Green's argument. There is no economic basis to mechanically remove  
10 an observation simply because it is at or above 13.3 percent. Further, information on prior  
11 decisions by the Commission was available to the Commission when it issued  
12 Opinion No. 569, which is the Commission's most recent determination regarding the  
13 approach to eliminating outliers. Similarly, the NETO Briefing Order did not adopt the  
14 13.3 percent filter used by Mr. Green. Mr. Green essentially adds an additional high-end  
15 filter to his sample. I consider it both unnecessary and inappropriate to have two tests for  
16 outliers. Further, the cases Mr. Green cites are from the electric industry, where the  
17 Commission commonly relies on outlier screens as there are many more proxy companies.<sup>59</sup>  
18 I do not know of a natural gas pipeline case where the Commission has imposed a cap of  
19 13.3 percent on the pipeline companies' growth rate.<sup>60</sup> In short, there is no justification for

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<sup>58</sup> Exhibit No. S-0001 at 106-107.

<sup>59</sup> See NETO Briefing Order at PP 50-54. For clarity, I do not agree with the screen in the electric utility context either.

<sup>60</sup> Given Mr. Green's reluctance to rely on the most recent electric order for the methodology for calculating ROE, it is odd to rely on an outdated electric order for the determination of outlier tests.

1 not using *Value Line*, simply because certain of the growth estimates exceed the arbitrary  
2 threshold that Mr. Green has imposed.<sup>61</sup>

3 **E. The Appropriate Sample to Use**

4 **Q. Please summarize how you developed the sample in this case.**

5 A. I selected a group of pipeline companies with substantial FERC-regulated gas pipeline  
6 operations ("Core Sample") as well as a broader sample of companies with FERC-regulated  
7 pipeline assets and a substantial portion of operations subject to rate regulation ("Expanded  
8 Sample"). In general, I favor companies with regulated activities over those with other  
9 business activities because natural gas pipeline service generally is a regulated activity. I  
10 additionally considered the samples proposed in the Green, Crowe, and Janssen testimonies.  
11 The specific companies used in the samples are listed in Figure 8 below. When formulating  
12 my ROE calculations as of January 31, 2020, I used the same Core Sample that I did in my  
13 Direct Testimony, except that Enable Midstream Partners and EQM Midstream Partners  
14 were eliminated from the ROE calculations because their *IBES* growth rates are currently  
15 negative.<sup>62</sup>

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<sup>61</sup> Mr. Green also proposes to eliminate Energy Transfer LP from his sample based on an *IBES* growth rate of more than 13.3 percent. *See* Exhibit No. S-0001 at 41. Energy Transfer LP also fails the outlier test prescribed by Opinion No. 569, so I have eliminated it from my sample. Nevertheless, as a matter of principle, I object to the use of Mr. Green's use of an arbitrary growth rate threshold as a screening mechanism.

<sup>62</sup> The Commission has held that very low growth rates are "highly unsustainable and non-representative." *See* Opinion No. 569 at P 267. EQM Midstream was also downgraded to below investment grade by all major rating agencies as of February 2020.

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**Figure 8**  
**Summary of Samples Considered**

Companies	Villadsen (Core Sample)	Green	Megginson / Janssen	Crowe
[1]	[2]	[3]	[4]	[5]
Enable Midstream Part. <sup>1</sup>	**			
EQM Midstream Part. <sup>1</sup>	**			
Enbridge Inc.	**		**	
<b>Kinder Morgan Inc.</b>	**	**	**	**
TC PipeLines LP	**	**		
<b>TC Energy Corp.</b>	**	**	**	**
<b>Williams Cos.</b>	**	**	**	**
National Fuel Gas		**	**	**
Dominion Energy			**	**
Companies in Sample	7	5	6	5

Sources and Notes:

<sup>1</sup> Enable Midstream Part. and EQM Midstream Part. are excluded from ROE results due to negative growth rates.

\*\* Denotes company included in sample.

[3]: Exhibit No. S-0001. Page 20 of 123.

[4]: Exhibit No. MPC-0013. Page 11 of 17.

[5]: Exhibit No. IS-0008. Page 4 of 26

3           Figure 8 shows that three companies are included by all witnesses: Kinder Morgan,  
4           TC Energy and Williams. Additionally, for the purposes of calculating ROE, I note that  
5           Staff Witness Green uses the same sample as my Core Sample except that he includes  
6           National Fuel Gas, whereas I include Enbridge. Figure 9 below summarizes key  
7           characteristics of the sample companies.

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**Figure 9**  
**Summary Characteristics of the Sample Companies**

Company	Assets		EBITDA	
	Regulated Natural Gas Pipeline Operations	Total Regulated Business Activities	Regulated Natural Gas Pipeline Operations	Total Regulated Business Activities
	[1]	[2]	[3]	[4]
<b>Enable Midstream Part.</b>	<b>35%</b>	<b>35%</b>	<b>29%</b>	<b>29%</b>
<b>Enbridge Inc.</b>	<b>31%</b>	<b>89%</b>	<b>24%</b>	<b>95%</b>
<b>EQM Midstream Partners</b>	<b>20%</b>	<b>20%</b>	<b>91%</b>	<b>91%</b>
<b>Kinder Morgan Inc.</b>	<b>70%</b>	<b>83%</b>	<b>58%</b>	<b>73%</b>
<b>TC PipeLines, LP</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>TC Energy Co.</b>	<b>75%</b>	<b>92%</b>	<b>68%</b>	<b>91%</b>
<b>Williams Cos.</b>	<b>45%</b>	<b>50%</b>	<b>39%</b>	<b>39%</b>
Energy Transfer LP	26%	49%	25%	53%
Enterprise Products	19%	55%	13%	52%
Magellan Midstream	0%	54%	0%	58%
ONEOK Inc.	8%	41%	10%	33%
Plains All American Pipeline, L.P.	0%	60%	0%	53%

Sources and notes: See Carpenter Testimony, Exhibit NNG-00264, Tables 5 and 6 for Assets and EBITDA, respectively. Total Regulated Business Activities calculated as sum of Gas Pipelines & Storage, Oil and Liquids Pipelines, Gas Distribution columns.

- 3 **Q. What conclusions do you draw from the asset and income segmentation of your**  
4 **sample?**
- 5 A. Based on the results in Figure 9, I find that my Core Sample contains the companies that  
6 are most representative of the business risk of Northern. Companies in that sample have at  
7 least 30 percent of assets or EBITDA devoted to natural gas pipeline operations and most  
8 have additional regulated operations.



1 **Q. As you note above, the only difference between your sample for the purposes of**  
2 **calculating ROE and that of Staff Witness Green, is that you include Enbridge, while**  
3 **Mr. Green includes National Fuel Gas. Why did you include Enbridge?**

4 A. In my view, Enbridge should be included in the sample because it has comparable risks to  
5 Northern. Enbridge has multiple U.S. based interstate pipelines subject to FERC  
6 regulation,<sup>63</sup> and has 31 percent of its assets devoted to natural gas transportation with the  
7 remainder of its business substantially regulated. In addition, Enbridge trades on the New  
8 York Stock Exchange and issues debt in the U.S. Finally, Enbridge's regulated Canadian  
9 pipelines are subject to the jurisdiction of the Canadian Energy Regulator (previously the  
10 National Energy Board), which like FERC uses a rate of return / cost of service methodology  
11 to regulate pipelines. Like many U.S. pipelines, a number of Canadian pipelines operate  
12 under settlement agreements. In other words, the regulatory regime has similar  
13 characteristics. I recognize that the Commission has excluded Canadian companies from the  
14 natural gas sample in the past, but, in my view, the fact that Enbridge is headquartered in  
15 Canada should not in itself be a reason to exclude them from the sample here.<sup>64</sup> Moreover,  
16 Mr. Green agrees that Canadian-based TC Energy should be included in the sample (as do  
17 Ms. Janssen and Ms. Crowe). There is no justification for including TC Energy, but  
18 excluding Enbridge simply because it is headquartered in Canada.

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<sup>63</sup> For a list of natural gas pipelines owned, see Rebuttal Testimony of Northern Witness Dr. Paul Carpenter, Exhibit No. NNG-00264, Table 8.

<sup>64</sup> I note that Enbridge generates the majority of its revenue in the U.S. and has more property, plant and equipment in the U.S. than it does in Canada (Enbridge 2019 10k Report at 120).

1 **Q. Mr. Green, Ms. Janssen and Ms. Crowe include National Fuel Gas in their proposed**  
2 **samples. Why did you exclude National Fuel Gas?**

3 A. There are two main reasons why I excluded National Fuel Gas from the sample. First,  
4 National Fuel Gas is predominantly an exploration and production company rather than a  
5 natural gas pipeline company, and its risks are different from those of a natural gas pipeline.  
6 For example, *Value Line* characterizes the company as "engaged in the production,  
7 gathering, transportation, distribution, and marketing of natural gas & oil."<sup>65</sup> *Value Line*  
8 further notes the company has "a large position in the Marcellus Shale basin in western NY  
9 & PA and oil reserves in CA."<sup>66</sup> National Fuel Gas reports results from five segments of  
10 which "Pipelines and Storage" account for only 24 percent of reported segment earnings  
11 and 29 percent of segment assets.<sup>67</sup> From the 10-K it is also evident that capital expenditures  
12 are focused on exploration and production with "Pipelines and Storage" accounting for only  
13 18 percent of capital expenditures in 2019.<sup>68</sup> Further, National Fuel Gas is not one of the  
14 112 entities listed by S&P in its report ranking North American midstream companies – the  
15 report on which FERC Staff Witness Green relies for his analysis of Northern's risks relative  
16 to those of the proxy companies. This indicates that S&P does not consider National Fuel  
17 Gas to be a midstream gas company.<sup>69</sup> Indeed S&P states that National Fuel Gas "operates  
18 in the volatile, cyclical, and capital-intensive E&P industry."<sup>70</sup> Thus, the company is not a  
19 regulated natural gas pipeline company.

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<sup>65</sup> *Value Line* Investment Survey, National Fuel Gas, February 28, 2020.

<sup>66</sup> *Id.*

<sup>67</sup> Exhibit No. S-0003 at 27.

<sup>68</sup> National Fuel Gas 2019 10-K at 44. (2019 Pipeline and Storage Capex of \$143 Million / Total 2019 Capex of \$781.2 Million = 18.3 percent)

<sup>69</sup> *Issuer Ranking: North American Midstream Companies, Strongest To Weakest*, S&P Global Ratings, May 2, 2019. S&P has more recently released an updated version of this report dated February 11, 2020.

<sup>70</sup> *National Fuel Gas Co.*, S&P Global Ratings, January 23, 2020.

1           The second reason for excluding National Fuel Gas is that its *IBES* growth estimate  
2 is extremely stale. As I described earlier, the *IBES* growth data for National Fuel Gas is  
3 three and a half years old. Thus, the ROE derived from the *IBES*-based estimate for National  
4 Fuel Gas is unrepresentative of the current cost of equity. Mr. Green states that coverage by  
5 *IBES* is one of the criteria for including a company in the sample.<sup>71</sup> However, it cannot be  
6 said that *IBES* currently covers National Fuel Gas in a meaningful way for purposes of the  
7 ROE analysis, given that the last growth estimate was provided in August 2016.

8           According to Mr. Green, while National Fuel Gas is below the 30 percent threshold  
9 of assets or income, it warrants inclusion in the sample as its higher risk business segments  
10 offset its lower risk segments.<sup>72</sup> Yet, according to the testimony of Dr. Carpenter,

11           This is an unsupported claim, as the risks of the different business segments  
12 do not necessarily "balance out". Business risk is measured along a spectrum,  
13 and while it would make sense to position the business risk of Northern  
14 within a spectrum of different proxy groups containing companies with  
15 natural monopoly characteristics subject to regulated returns, it does not  
16 imply that a single company with different business risk segments will  
17 produce a "balanced" return and business risk profile. In particular, a  
18 company with significant, unregulated E&P operations would have a very  
19 different (and higher) business risk profile than one with regulated  
20 distribution assets. Taking the average of the two, as Mr. Green has done, is  
21 not meaningful.<sup>73</sup>

22           Notwithstanding these criticisms, replacing Enbridge with National Fuel Gas in my  
23 sample does not change the median DCF-based ROE for the Core Sample using *IBES*  
24 estimates.<sup>74</sup> That said, replacing Enbridge with National Fuel Gas exacerbates the problems  
25 with the lack of *IBES* data and the staleness of the data. As noted, the *IBES* forecast for

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<sup>71</sup> Exhibit No. S-0001 at 21.

<sup>72</sup> Exhibit No. S-0001 at 102.

<sup>73</sup> Rebuttal Testimony of Northern Witness Dr. Paul Carpenter, Exhibit No. NNG-00264.

<sup>74</sup> The DCF-based (*IBES* only) ROE is 11.8 percent and 11.0 percent for Enbridge and National Fuel Gas respectively.

1 National Fuel Gas is three and a half years old. While the *IBES* growth estimate for Enbridge  
2 is derived from three independent analysts, National Fuel Gas was covered by only a single  
3 analyst. If Enbridge is replaced with National Fuel Gas, as Mr. Green proposes, four of the  
4 five sample members relied upon for the ROE calculation will have *IBES* growth rates that  
5 are the product of a single analyst estimate.<sup>75</sup> Thus, to the extent the Commission were to  
6 adopt Mr. Green's sample, it would be all the more important to incorporate the *Value Line*  
7 growth estimates in addition to the *IBES* growth estimates as I have proposed.

8 **Q. Michigan Public Service Commission Witness Janssen and Indicated Shippers**  
9 **Witness Crowe include Dominion Energy. Can you explain why you exclude Dominion**  
10 **Energy?**

11 A. I excluded Dominion Energy from the sample, because it is an electric utility, not a natural  
12 gas pipeline. According to Ms. Crowe, "natural gas infrastructure business segment  
13 represented 50% of [Dominion's] net income and 40% of its total assets in 2018."<sup>76</sup>  
14 However, as described in the Carpenter Testimony, Dominion's "natural gas infrastructure"  
15 business segment includes many activities outside of transmission and storage, including  
16 distribution and storage, gathering and processing, LNG terminalling and storage, and  
17 non-regulated retail energy marketing. As described by Dr. Carpenter, Dominion separates  
18 "natural gas infrastructure" into (i) gas transmission and storage; and (2) gas distribution. In  
19 2019, Dominion's gas transmission and storage segment contributed to 20 percent of assets  
20 and 24 percent of earnings.<sup>77</sup> These percentages still overstate the contribution of

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<sup>75</sup> See Figure 7.

<sup>76</sup> Exhibit No. IS-0008 at 5.

<sup>77</sup> Exhibit No. NNG-00264.

1 transmission as the segment contains LNG terminalling and storage, and non-regulated  
2 retail energy marketing operations. Further, Dr. Carpenter demonstrates that Dominion is  
3 primarily an electric utility.<sup>78</sup> For these reasons, I agree with Dr. Carpenter that Dominion  
4 should be excluded from the sample.

5 **Q. Indicated Shippers Witness Crowe and Michigan Public Service Commission Witness**  
6 **Janssen excluded TC PipeLines from their proposed samples.<sup>79</sup> Do you agree with**  
7 **their treatment of TC PipeLines?**

8 A. No. Ms. Crowe acknowledges that TC PipeLines "consists entirely of interstate natural gas  
9 transportation pipelines, which would normally qualify it for inclusion in a sample for a  
10 pipeline like Northern."<sup>80</sup> Nevertheless, she excludes TC PipeLines because (1) it is a master  
11 limited partnership, and (2) she contends it would be redundant to include both TC  
12 PipeLines and its general partner, TC Energy, in the sample.<sup>81</sup> In my view, those reasons do  
13 not justify excluding TC PipeLines from the sample. First, the Commission's *Proxy Group*  
14 *Policy Statement* explicitly permitted the inclusion of master limited partnerships in the  
15 sample for estimating the ROE of Commission-regulated natural gas pipelines.<sup>82</sup> Second,  
16 TC PipeLines' income contributes just 2.35 percent to the income of TC Energy.<sup>83</sup>

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<sup>78</sup> Exhibit No. NNG-00264.

<sup>79</sup> Exhibit No. IS-0015 at 10-11. The list of companies included by Ms. Janssen is listed in Exhibit No. MPC-0012.

<sup>80</sup> Exhibit No. IS-0015 at 9-10.

<sup>81</sup> *Id.*

<sup>82</sup> *Proxy Group Policy Statement* at 42, 49-51.

<sup>83</sup> TC Energy owns 25.5 percent of TC Pipelines (TC Energy 2019 Annual Report p. 27). TC Pipelines had adjusted earnings of \$280 million in 2019 (TC Pipelines 2019 Annual Report, at 483), while TC Energy had earnings of Cnd. \$3,976 million (TC Energy Annual Report, summary). Using an exchange rate of 0.77 (approximating the CAD:USD exchange rate as of 12/31/2019, in line with the 2019 Annual Report balance date), I calculate TC Pipelines contribution to TC Energy's earnings as:  
 $(25.5 \text{ percent} \times 280) / (3,976 \times 0.77) = 2.35 \text{ percent}$  (differences due to rounding).

1           Therefore, the overlap between TC Pipelines and TC Energy is very small and not a reason  
2           for elimination.

3   **Q.    What conclusions do you draw from the discussion regarding samples?**

4    A.    Based on the characteristics of the proposed sample companies, I find that my Core Sample  
5           best reflects the business risk of Northern's assets. By accepting TC Energy into his sample,  
6           Staff Witness Green has accepted the inclusion of a Canadian company. Enbridge, like TC  
7           Energy, owns substantial FERC-regulated gas pipeline assets and consequently are large  
8           operators of natural gas pipelines in the U.S. (subject to FERC jurisdiction). Further, similar  
9           to TC Energy, Enbridge generates more revenue and owns more property, plant and  
10          equipment in the U.S. than in Canada and trades on the New York stock exchange.<sup>84</sup>  
11          Additionally, Enbridge and TC Energy are risk comparable to Northern for the reasons  
12          discussed above and in the Rebuttal Testimony of Dr. Carpenter.<sup>85</sup>

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<sup>84</sup> Enbridge 2019 10-K Report at 120; TC Energy 2019 Annual Report at 130.

<sup>85</sup> Exhibit No. NNG-00264.

1           **B.       Northern's Risk Relative to Sample**

2   **Q.       Staff Witness Green proposes an ROE for Northern that is at the median of the lower**  
3           **half of the range of ROEs for the sample. Mr. Green's rationale is that Northern is**  
4           **"significantly less risky than the average for the proxy group."<sup>86</sup> In your opinion, is it**  
5           **appropriate to reduce Northern's ROE to the median of the lower half of the range of**  
6           **ROEs for the sample as Mr. Green proposes?**

7   **A.**    No. The Commission's established policy is to use the median ROE of the sample based on  
8           the "assumption that gas pipelines generally fall into a broad range of average risk."<sup>87</sup>  
9           Absent "highly unusual circumstances that indicate anomalously high or low risk as  
10          compared to other pipelines," the Commission prescribes the median ROE.<sup>88</sup> The  
11          Commission has explained:

12                   [T]he tools available to the Commission for determining the return on equity  
13                   to be awarded a particular pipeline are blunt. Therefore, the Commission is  
14                   skeptical of its ability to make carefully calibrated adjustments within the  
15                   zone of reasonableness to reflect generally subtle differences in the risk  
16                   among pipelines. Unless a party makes a very persuasive case in support of  
17                   the need for an adjustment and the level of the adjustment proposed, the  
18                   Commission will set the pipelines' return at the median of the range of  
19                   reasonable returns.<sup>89</sup>

20           Mr. Green also references the Commission's decision in *Portland Natural Gas*  
21           *Transmission System*.<sup>90</sup> The ultimate decision in this case states that ROE should only  
22           deviate from the median in "highly unusual circumstances that indicate an anomalously high  
23           or low risk as compared to other pipelines."<sup>91</sup> Yet according to Dr. Carpenter, Northern has

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<sup>86</sup> Exhibit No. S-0001 at 86.

<sup>87</sup> *Kern River Gas Transmission Company*, 117 FERC ¶ 61,077 at P 170 (2006).

<sup>88</sup> *Id.*

<sup>89</sup> *Transcontinental Gas Pipe Line Corp*, 90 FERC ¶ 61,936 (2000).

<sup>90</sup> Exhibit No. S-0001 at 21.

<sup>91</sup> *Portland Natural Gas Transmission System*, 150 FERC ¶ 61,107 at P 189 ("Opinion No. 524-A").

1 *higher* business risk than the sample. The evidence presented by Mr. Green on business risk,  
2 which relies on reporting by credit rating agencies, is misleading and conflates credit risk  
3 with equity risk. I find no evidence that Northern has anomalously low risk compared to the  
4 other proxy companies.

5 **Q. What reasons does Mr. Green provide to support his downward adjustment in ROE?**

6 A. Mr. Green analyzes three categories of risk: financial risk, business risk and overall risk.  
7 Mr. Green argues that Northern has comparable business risk to the sample and lower  
8 financial risk than the sample. Further, Mr. Green asserts that his risk assessment is  
9 supported by credit rating agencies (*i.e.*, S&P's) rankings on overall risk.

10 According to Mr. Green, Northern's level of business risk is "roughly equal to the  
11 average for the proxy group companies."<sup>92</sup> Regarding financial risk, Mr. Green states that  
12 "[b]ased on equity ratios and Financial Risk Profiles, I believe that Northern's financial risk  
13 is significantly lower than that of the proxy group."<sup>93</sup> Mr. Green then proceeds to analyze  
14 overall risk by examining reports and analysis by S&P on the mid-stream gas industry.

15 According to Mr. Green:

16 I conclude that Northern has significantly lower risk than the average for the  
17 proxy group companies. Although its Business Risk Profile is the same as  
18 the average for the proxy group, its Financial Risk Profile is significantly  
19 less risky. Most importantly, its credit ratings and ranking among the  
20 midstream companies, which are overall measures of risk that consider both  
21 business risk and financial risk, indicate that Northern is significantly less  
22 risky than the proxy group company average.<sup>94</sup>

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<sup>92</sup> Exhibit No. S-0001 at 81.

<sup>93</sup> Exhibit No. S-0001 at 82.

<sup>94</sup> Exhibit No. S-0001 at 85-86.



1            Thus, Mr. Green relies on S&P for his analysis of business risk, partially relies on  
2            S&P for his analysis of financial risk, and fully relies on S&P in his assessment of overall  
3            risk. Mr. Green's analysis of overall risk relies on credit ratings by S&P and a report ranking  
4            mid-stream gas companies by measures of credit risk.<sup>95</sup>

5    **Q.    In your view, is Mr. Green's assessment of business risk persuasive?**

6    A.    No. Mr. Green's portrayal of S&P's business risk measures is misleading. According to Mr.  
7            Green:

8            S&P assigns Northern a Business Risk Profile of "Strong," which is equal to  
9            the average rating for the proxy group. Ex. S-0002, Schedule 6. Based on  
10           this risk measure, Northern's level of business risk is roughly equal to the  
11           average for the proxy group companies.<sup>96</sup>

12           Figure 10 shows S&P business risk profiles as shown by Mr. Green. The risk profiles  
13           referenced by Mr. Green were published in a report dated May 2, 2019.<sup>97</sup>

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<sup>95</sup> Exhibit No. S-0001 at 86-87.

<sup>96</sup> Exhibit No. S-0001 at 81 (emphasis added).

<sup>97</sup> S&P updated its report detailing business risk profiles on February 11, 2020. There was no change in the business risk profiles from May 2, 2019 to February 11, 2020. S&P Business Risk profiles range from (in order of higher to lower risk): Vulnerable, Weak, Fair, Satisfactory, Strong, Excellent. *See* S&P Global Ratings, *How We Rate Nonfinancial Corporate Entities* (April 10, 2019).

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**Figure 10**  
**S&P Business Risk Profiles**

<b>Northern</b>	<b>Strong</b>
<b><u>Core</u></b>	
<b>Enbridge Inc.</b>	<b>Excellent</b>
<b>Kinder Morgan Inc.</b>	<b>Excellent</b>
<b>TC Pipelines LP</b>	<b>Strong</b>
<b>TC Energy Corp</b>	<b>Excellent</b>
<b>Williams Cos.</b>	<b>Strong</b>
<b><u>Expanded Sample</u></b>	
Energy Transfer LP	Strong
Enterprise Products	Strong
Magellan Midstream	Strong
ONEOK Inc.	Strong
Plains All Amer. Pipe.	Strong
National Fuel Gas [1]	Satisfactory

Sources & Notes:

S&P Business Risk profiles range from (in order of higher to lower risk): Vulnerable, Weak, Fair, Satisfactory, Strong, Excellent.

S&P Global Ratings. Issuer Ranking: North American Midstream Companies, Strongest to Weakest. May 2, 2019.

[1]: National Fuel Gas not listed in North American Midstream Gas report. According to the National Fuel Gas S&P Report, the business risk of National Fuel Gas is "Satisfactory" (S&P Ratings Report, January 23, 2020).

3           As shown in Figure 10, of the five companies selected by Mr. Green, only National  
4 Fuel Gas has a lower S&P business risk profile than Northern. According to S&P, National  
5 Fuel Gas has a "Satisfactory" rating, compared with "Strong" for Northern. By contrast,  
6 Kinder Morgan and TC Energy have "Excellent" ratings. It is therefore inaccurate to  
7 describe the *average* business risk profile as "Strong," as Mr. Green does in the testimony

1 quoted above. Thus, Mr. Green's conclusion that Northern has the same *average* business  
2 risk as the sample is also inaccurate.

3 Further, as I have already explained, National Fuel Gas is not an appropriate proxy  
4 company and should be excluded from the sample. For reasons that I have already  
5 explained, my Core Sample includes Enbridge. According to S&P, Enbridge has an  
6 "Excellent" S&P business risk profile. Thus, in my sample, three of five companies are  
7 assessed by S&P as having lower business risk than Northern (*i.e.*, those ranked  
8 "Excellent"), while two of five are assessed as having the same business risk (*i.e.*, those  
9 ranked "Strong"). Accordingly, when an appropriate sample is used, Northern is further  
10 shown to have somewhat higher business risk than the sample – not the same risk as Mr.  
11 Green alleges.

12 **Q. Are there any other problems with Mr. Green's assessment of business risk?**

13 A. Yes, Mr. Green has relied on a broad summary measure of business risk provided by S&P.  
14 The "business risk profile" is not a precise estimate of business risk for any of the companies  
15 in the sample, nor is it a way of comparing relevant risks among the proxy companies.

16 By contrast, the Rebuttal Testimony of Northern Witness Dr. Paul Carpenter  
17 provides an analysis of the key business risks of Northern relative to the proxy companies.  
18 This includes an analysis of (i) exposure to the market value of capacity; (2) competition  
19 from bypass arrangements; (3) operating risks from the capital expenditures that address  
20 asset modernization; and (4) the decline in value of, and demand for, Northern's storage

1 services. Dr. Carpenter demonstrates that Northern faces higher business risk than the  
2 median of the pipelines in the Core Sample.<sup>98</sup>

3 **Q. As noted, Mr. Green's assessment of Northern's "overall" business risk is based solely**  
4 **on Northern's S&P credit rating.<sup>99</sup> In your opinion, is it appropriate to rely exclusively**  
5 **on credit ratings to assess the risks faced by the equity investor?**

6 A. No. Credit ratings measure the creditworthiness of bonds, notes, and other debt instruments  
7 and are therefore aimed at creditors (*e.g.*, bondholders) – not equity investors. Moreover, in  
8 my view, credit ratings are merely one indication of a company's overall risk profile and  
9 should not be relied on exclusively to provide a complete picture of a company's risk.  
10 Therefore, there is no one-to-one relationship between credit ratings and the cost of equity.  
11 The Commission has recognized that credit ratings, while part of an overall risk analysis,  
12 are only one factor among many. For example, in *Kern River*, the Commission used an ROE  
13 above the median because of the pipeline's overall risk profile. However, the pipeline's  
14 credit rating was "somewhat above the average for a natural gas pipeline."<sup>100</sup> Thus, the  
15 Commission could not have reached its conclusion on the ROE placement using the credit  
16 rating as a primary consideration. Rather, the Commission considered various business risks  
17 including contract coverage, the credit quality of shippers, load factors and nearby pipeline  
18 development.<sup>101</sup>

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<sup>98</sup> Exhibit No. NNG-00264.

<sup>99</sup> Exhibit No. S-0001 at 85-86.

<sup>100</sup> *Kern River*, 117 FERC at PP 176-177.

<sup>101</sup> *Kern River*, 117 FERC at P 177.

1 **Q. Are there any other problems with Mr. Green's use of credit rating data to assess**  
2 **equity risk?**

3 A. Yes, a key driver of Northern's credit rating is the implied credit support of its parent  
4 Berkshire Hathaway Energy Company ("BHE"). Notwithstanding the limitations in credit  
5 rating data that I have already identified, this represents a further limitation in linking credit  
6 risk with equity risk for Northern. Implied credit support from a parent shareholder is  
7 irrelevant to the *equity* risk of Northern, and it is the equity risks of Northern as a stand-alone  
8 entity that is relevant to determining the appropriate ROE in this case. As explained by S&P,  
9 a key driver of the credit rating outlook for Northern is driven by the credit profile of BHE.  
10 Thus, both Northern and BHE are rated "A/Stable" by S&P. According to S&P, a  
11 downgrade in Northern's credit rating could occur "if BHE's core financial measures  
12 continuously underperformed our base-case forecast and remained consistently at less  
13 credit-supportive levels, including adjusted [funds from future operations] to debt of less  
14 than 13%."<sup>102</sup> Similarly, according to S&P, any upgrade is linked to the performance of  
15 BHE.<sup>103</sup> Put simply, part of Northern's credit rating is driven by factors that are not related  
16 to equity risk.

17 **Q Are there any circumstances under which a credit rating may be relevant to the**  
18 **analysis of the risks faced by the equity investor?**

19 A. Yes. Credit rating may be relevant to the issue of equity risks if, for example, a company  
20 has a non-investment grade rating relative to a group of proxy companies with investment  
21 grade ratings (or vice versa). In *Portland Natural Gas Transmission*, the Commission

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<sup>102</sup> Standard and Poor's, credit report on *Northern Natural Gas*, January 10, 2020 (emphasis added).

<sup>103</sup> *Id.*

1 highlighted the significant difference between an investment grade and a non-investment  
2 grade credit rating as a non-investment grade credit rating will make it "more difficult and  
3 costly for such a pipeline to attract and obtain capital."<sup>104</sup> By contrast, distinctions among  
4 various levels of investment grade credit ratings are generally less significant for purposes  
5 of determining the risks faced by the equity holder, because equity is the residual claimant  
6 after bondholders are paid. For example, the historical average five-year default rate of an  
7 A-rated company is 0.48 percent. This increases to 1.36 percent for a BBB company.  
8 However, moving below investment grade substantially increases default risk. For example,  
9 the historical average five-year default rate increases to 6.17 percent for a "BB" bond and  
10 17.09 percent for a "B" bond.<sup>105</sup> Only substantial differences in credit ratings can materially  
11 impact the residual risk for equity holders. In this case, Northern has higher business risk  
12 than the median proxy company and while its credit rating is above the average of the  
13 sample, it is not extreme. Further, as I explained earlier, part of the driver for the higher  
14 rating is implied credit support from BHE.

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<sup>104</sup> Opinion No. 524-A at P 228 (comparing significant increased risks faced by pipelines with a non-investment grade credit rating with the negligible change in risk resulting from a credit downgrade from A+ to A).

<sup>105</sup> S&P Global Ratings, "2018 Annual Global Corporate Default And Rating Transition Study" (April 9, 2019) at 60. Data cited by S&P is from 1981-2018. At the time of preparation of this Rebuttal Testimony, this was the most recent report available from S&P.

- 1 **Q. In discussing Northern's financial risk, Staff Witness Green claims that Northern's**  
2 **financial risk is "lower than the average for the proxy group."<sup>106</sup> In your view, does**  
3 **Northern's capital structure justify an ROE below the median of the sample?**
- 4 A. No. As Northern Witness Joseph Lillo testifies, Northern's equity ratio is 62.15 percent as  
5 of December 31, 2019, which is not unusual for the industry.<sup>107</sup> Importantly, to assess  
6 whether the equity percentage is such that an adjustment to the calculated ROE is merited,  
7 it is the market value capital structure that is important.<sup>108</sup> When financial economists are  
8 assessing the appropriate weighted average cost of capital, they are concerned about the  
9 market value of equity. Similarly, when investors are making investment decisions, they are  
10 concerned about the market value of equity. The book value of equity can also be distorted  
11 by various factors, for example, large impairment charges. This occurred for TC Pipelines,  
12 such that there is now a very large differential between their book value of equity  
13 (28.4 percent of capital) and their market value of equity (60.7 percent of capital).<sup>109</sup> When  
14 investors are considering an investment in TC Pipelines, they are concerned about their  
15 percentage holding of current (market) equity, and their expected dividends and capital gain  
16 relative to market values. Further, the market value capital structure is the relevant  
17 benchmark because the DCF and CAPM cost of equity estimates are derived based on  
18 market stock price and return data that reflects market value leverage and financial risk.

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<sup>106</sup> Exhibit No. S-0001 at 82.

<sup>107</sup> Figure 11 below shows that Northern's equity percentage is within the range of the average / median for the Form 501-G filings as well as within the range of the market-based capital structures for the sample companies.

<sup>108</sup> This is emphasized in, for example, textbooks such as Richard A. Brealey, Stewart C. Myers, and Franklin Allen, 2017, *Principles of Corporate Finance*, 12th edition, McGraw-Hill Irwin, at 467 or Stephen A. Ross, Randolph W. Westerfield, and Jeffrey Jaffe, 2002, *Corporate Finance*, 6th Edition, McGraw-Hill Irwin, at 386; and Mark Grinblatt and Sheridan Titman, 1998, *Financial Markets and Corporate Strategy*, 1st edition, McGraw-Hill Irwin, at 464.

<sup>109</sup> See Figure 11.

1           The capital structure of the Core and Expanded Samples is reported in Figure 11 on  
2           both a book value and a market value basis. The table also summarizes the capital structure  
3           used in the responses of FERC-regulated pipelines to the Commission's Form No. 501-G  
4           filing requirement, instituted in 2018 in response to changes in law and policy related to  
5           income taxes.<sup>110</sup> According to the guidelines for the FERC's Form No. 501-G, natural gas  
6           companies must report the common equity consistent with FERC Form No. 2 / 2A and also  
7           report whether the figure pertains to the "books and records" of the parent company.<sup>111</sup>

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<sup>110</sup> FERC Form No. 501-G in Docket No. RM18-11-000 is a one-time report on the rate effect of the change in federal income tax rates resulting from the 2017 Tax Cuts and Jobs Act. The form required natural gas companies to report data to the FERC regarding their assets, rate base, ROE, capital structure, income taxes and certain regulatory accounts and approaches. *See Interstate and Intrastate Natural Gas Pipelines: Rate Changes Relating to Federal Income Tax Rate*, Order No. 849, 164 FERC ¶ 61,031 (2018) ("Order 849").

<sup>111</sup> *Id.* at P 107.



1  
2

**Figure 11**  
**Capital Structure Summary Data**

Company		Book Value Equity Ratio (%)	Market Value Equity Ratio (%)
		[1]	[2]
<b>Enable Midstream Part.</b>	[a]	<b>61.1%</b>	<b>48.4%</b>
<b>Enbridge Inc.</b>	[b]	<b>48.7%</b>	<b>62.3%</b>
<b>EQM Midstream Part.</b>	[c]	<b>44.2%</b>	<b>47.1%</b>
<b>Kinder Morgan Inc.</b>	[d]	<b>51.0%</b>	<b>59.1%</b>
<b>TC PipeLines LP</b>	[e]	<b>28.4%</b>	<b>60.7%</b>
<b>TC Energy Corp.</b>	[f]	<b>37.4%</b>	<b>58.0%</b>
<b>Williams Cos</b>	[g]	<b>42.4%</b>	<b>55.8%</b>
Energy Transfer LP	[h]	40.1%	47.4%
Enterprise Products	[i]	48.4%	67.6%
Magellan Midstream	[j]	36.0%	74.4%
ONEOK Inc.	[k]	32.5%	70.5%
Plains All Amer. Pipe.	[l]	51.6%	54.2%
National Fuel Gas	[m]	49.7%	63.3%
<b>Core Sample</b>			
Average		47.5%	55.9%
<b>Median</b>		<b>46.5%</b>	<b>58.0%</b>
Range		37.4% - 61.1%	47.1% - 62.3%
<b>Core Sample (Excluding Enable &amp; EQM)</b>			
Average		44.8%	59.2%
<b>Median</b>		<b>45.5%</b>	<b>59.1%</b>
Range		37.4% - 51.0%	55.8% - 62.3%
<b>Expanded Sample</b>			
Average		44.8%	58.8%
<b>Median</b>		<b>44.2%</b>	<b>58.5%</b>
Range		32.5% - 61.1%	47.1% - 74.4%
<b>Form 501-G</b>			
		<b>2017 Actual</b>	<b>Used for 501-G</b>
Average	[n]	63.4%	56.0%
<b>Median</b>	[o]	<b>62.0%</b>	<b>57.0%</b>
Range	[p]	-6.5% - 100.0%	34.0% - 64.4%

Sources and Notes:

\*Core Sample Companies are displayed in bold.

[a] - [m]: Capital IQ. Data accessed 4/14/2020. Preferred Equity allocated evenly between equity and debt portion of capital structure. Market Value of equity as of 1/31/2020.

[1][e]: Excluded from Core and Expanded summary statistics.

[n] - [p]: From the reported capital structure in Form 501-G for natural gas pipeline companies with greater than \$500 million rate base.

1 **Q. Please explain further your findings with respect to the equity ratios of your Core and**  
2 **Expanded Samples.**

3 A. Northern's capital structure (62.15 percent equity as of December 31, 2019) is comparable  
4 to the market value capital structures of the proxy companies in the Core and Expanded  
5 Samples. Northern's capital structure is very similar to that of Enbridge and TC Pipelines,  
6 is only slightly above the median for the Core Sample, and sits within the range of the Core  
7 and Expanded Samples. Further, as shown, the equity percentage of the Core and Expanded  
8 Samples is consistent with the reporting done in the Form No. 501-G natural gas companies'  
9 regulatory filing.<sup>112</sup> While somewhat dated, the Form No. 501-G filings show a range of  
10 34 percent to 64 percent equity and a median slightly below that of Northern.<sup>113</sup> In sum,  
11 Northern's equity percentage is consistent with that of the Core and Expanded samples as  
12 well as with other pipelines' 501-G filings. Hence, Northern's capital structure is not  
13 unusual, and does not support Mr. Green's conclusion that Northern has significantly lower  
14 financial risk than the sample. Lastly, I note that the Commission in past decisions has  
15 approved similar or higher equity percentages in the past. For example, the orders for *Pacific*

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<sup>112</sup> I exclude TC PipeLines from the summary statistics and consideration of representative book value equity ratios of the sample companies due to its anomalously low value reported for 2018, which was influenced by an asset impairment charge of \$537 million recorded in Q4 2018. *See* TC PipeLines 2018 10-K at 12. I note that while TC PipeLines' market value equity percentage is very close to the median and average for the proxy companies, its reported book value percentage is anomalously low and unrepresentative.

<sup>113</sup> Direct Testimony of Northern Witness Bente Villadsen, Exhibit No. NNG-00053 at 47.

1           *Gas Transmission Company* and *Williams Natural Gas Company* used 68.86 percent and  
2           64.29 percent equity, respectively.<sup>114</sup>

3   **Q.    Are there any other problems with Mr. Green's proposed use of an ROE equal to the**  
4   **median of the lower half of the sample?**

5   A.    Yes, the Commission prefers at least five companies in a sample.<sup>115</sup> Mr. Green's approach  
6   effectively limits his sample to just three companies. It appears highly unlikely that the  
7   Commission envisaged a sample size of just three companies when it prescribed an  
8   adjustment only in "highly unusual circumstances that indicate an anomalously high or low  
9   risk."<sup>116</sup>

10 **Q.    Did Mr. Green provide any examples of where the Commission has ever established**  
11 **an ROE for a natural gas pipeline below the median of a sample?**

12 A.    No.

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<sup>114</sup> *Pacific Gas Transmission Company*, 62 FERC ¶ 61,109 (1993) (finding pipeline's actual equity ratio of 68.86 percent to be "appropriate" and "not atypical"). *Williams Natural Gas Co.*, 84 FERC ¶ 61,080 at 61,355-56 (1998) (finding the pipeline's actual equity ratio of 64.29 percent to be "reasonable compared to equity ratios approved in other cases," as opposed to "equity ratios of 90 percent and above" which the Commission previously found "to be atypical").

<sup>115</sup> In *El Paso Natural Gas Co.*, 145 FERC ¶ 61,040 at P 595 (2013) ("*El Paso*"), FERC stated that it preferred to have at least five sample companies in order to ensure statistical accuracy. This view was qualified in *Kern River*, Opinion No. 486-B, 126 FERC ¶ 61,034 at P 104: "[W]hile the Commission agrees that adding more members to the proxy group results in greater statistical accuracy, this is true only if the additional members are appropriately included in the proxy group as representative firms."

<sup>116</sup> *Kern River Gas Transmission Company*, 117 FERC ¶ 61,077 at P 170 (2006). The Commission has held that "a proxy group should consist of at least four, and preferably at least five members, if representatives can be found." *Kern River Gas Transmission Company*, 126 FERC ¶ 61,034 at P 104 (2011) (finding five-member proxy group sufficient); *see also High Island Offshore System, L.L.C.*, 110 FERC ¶ 61,043 at PP 118, 124 (2005) (approving four-member proxy group prior to the Commission's policy permitting the use of MLPs in natural gas proxy groups); *SFPP, L.P.*, 134 FERC ¶ 61,121 at P 203 (2011) (citing *Kern River* but ultimately using a seven-member proxy group).

1 **Q. Does Michigan Public Service Commission Witness Megginson make an adjustment**  
2 **to his recommended ROE on the basis of differences in risk between Northern and the**  
3 **sample companies?**

4 A. Mr. Megginson does not adjust his recommended ROE, however he claims that his  
5 suggested ROE "may be on the high side of reasonableness" due to Northern "having a  
6 much higher equity layer in its capital structure."<sup>117</sup> Mr. Megginson's testimony with respect  
7 to any business risk-based adjustments to the ROE should be disregarded, as Mr. Megginson  
8 has not conducted any analysis of the business risks of Northern.

9 In a response to a data request, Mr. Megginson's interpretation of the Commission's  
10 findings is misguided. According to Mr. Megginson:

11 Northern's issuer credit rating from S&P is "A" and from Moody's is "A2".  
12 According to Exhibit No. MPC-0008, the proxy group's S&P issuer credit  
13 rating is "BBB+/BBB" and "Baa2/Baa3" from Moody's. Thus, the proxy  
14 group's credit rating is approximately 2-3 notches lower than Northern's  
15 credit rating, suggesting that the proxy group is considered to have higher  
16 risk than that of Northern. The Commission alluded to the fact that higher  
17 equity in the capital structure has a direct impact on the credit rating, which  
18 in turn is a proxy for the utility's risk profile.<sup>118</sup>

19 In the decision cited by Mr. Megginson, the Commission does not "allude" to a direct  
20 link between a credit rating and utility risk, but rather points out that, all else equal, higher  
21 financial risk will lead to a lower credit rating. The context was the Commission's rejection  
22 of a proposal to reduce the allowed return of firms with higher equity percentages. The  
23 Commission was pointing out that its sample selection criteria already ensured that firms

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<sup>117</sup> Exhibit No. MPC-0013 at 17.

<sup>118</sup> Michigan Public Service Commission Responses to Northern Natural Gas Company's Second Set of Data Requests, March 6, 2020, at 5. Attached as Exhibit No. NNG-00263 in Appendix B.

1 are of similar risk are in the sample, such that there was no need to adjust for financial risk.  
2 Further, the Commission stated that directly penalizing firms for higher levels of equity  
3 would be inappropriate as it would "encourage additional debt leveraging of utilities."<sup>119</sup>  
4 Put simply, the citation by Mr. Megginson provides no support for his contention that a  
5 higher credit rating can be used to justify a lower ROE.

6 Further, like Trial Staff Witness Green, Mr. Megginson does not consider the impact  
7 of the implied credit support from BHE on Northern's credit rating. And like Mr. Green,  
8 Mr. Megginson acknowledges that he is "not aware of any Commission order where the  
9 ROE for a natural gas pipeline was set below the proxy group's median ROE based only on  
10 the percentage of equity capitalization."<sup>120</sup>

11 **Q. Does Indicated Shipper Witness Crowe make an adjustment to her recommended**  
12 **ROE based on differences in risk between Northern and the sample companies?**

13 A. No, Ms. Crowe states that:

14 If anything, all these considerations suggest that both Northern's financial  
15 risk and its business risk are lower than the average risk represented in the  
16 proxy group and that Northern should be placed below the median ROE  
17 produced by the DCF analysis. However, given the Commission's reluctance  
18 to use anything other than the median, my analysis suggests that an 11.02%  
19 ROE for Northern is more than sufficient to reflect the risk inherent in its  
20 operations.<sup>121</sup>

21 Ms. Crowe recommends the same ROE as Mr. Green, as the single company located  
22 at the median in both Mr. Green's restricted three company sample and Ms. Crowe's sample

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<sup>119</sup> *Association of Businesses Advocating Tariff Equity v. Midcontinent Independent System Operator, Inc.*, 156 FERC ¶ 61,234 at PP 286-289 (2016).

<sup>120</sup> Michigan Public Service Commission Responses to Northern Natural Gas Company's Second Set of Data Requests, March 6, 2020, at 5. Attached as Exhibit No. NNG-00263 in Appendix B.

<sup>121</sup> Exhibit No. IS-0015 at 13 (emphasis added).

1 is National Fuel Gas.<sup>122</sup> For reasons I have already explained, the single growth estimate  
2 provided by *IBES* for National Fuel Gas is three and a half years old, and not an appropriate  
3 basis for determining a just and reasonable ROE for Northern.

4 **Q. According to Mr. Green, his recommended ROE is justified given (i) movements in**  
5 **interest rates relative to the last natural gas pipeline case decision that he was aware**  
6 **of (El Paso Natural Gas Company, 2013),<sup>123</sup> and (ii) Northern's credit rating relative**  
7 **to El Paso Natural Gas Company (which had a slightly lower ROE in 2013). Do you**  
8 **agree with Mr. Green?**

9 A. No. Mr. Green oversimplifies the analysis. A discussion of the relationship between interest  
10 rates and the required return on equity is incomplete without a discussion of the market risk  
11 premium. While it is true that the return on equity tends to be lower when interest rates are  
12 low (all else equal), decreases in interest rates are generally accompanied by *increases* in  
13 the market risk premium. As illustrated in several texts, the allowed risk premium over the  
14 risk-free rate is inversely related to the risk-free rate. For example, Villadsen et al. (2017)  
15 found that the allowed risk premium increases by approximately 0.44 percent for each  
16 1 percent decline in the risk-free rate.<sup>124</sup> Similarly, Morin finds that the risk premium  
17 increases by 0.52 percent for each 1 percent decline in the risk-free rate over a slightly

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<sup>122</sup> Ms. Crowe also includes Dominion, which lowers median ROE. As Mr. Green only considers the lower half of his sample, the median result is the same for both Ms. Crowe and Mr. Green. And, as discussed above, contrary to Opinion No. 569, Ms. Crowe and Mr. Green only compute ROE utilizing the DCF method so their median is only as per that DCF calculation.

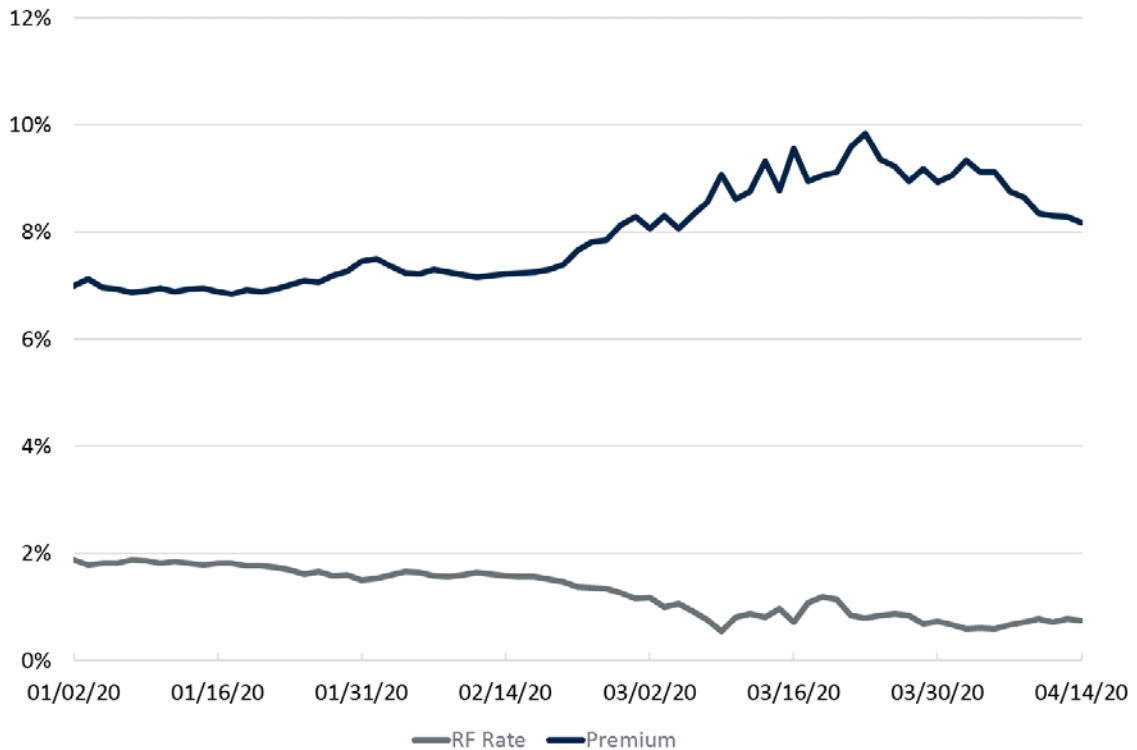
<sup>123</sup> Exhibit No. S-0001 at 88-92.

<sup>124</sup> Bente Villadsen, Michael J. Vilbert, Dan Harris, and A. Lawrence Kolbe, "*Risk and Return for Regulated Industries*," Academic Press, 2017, at 118-119.

1 earlier period.<sup>125</sup> This was explicitly acknowledged by the Commission in the NETO  
2 Briefing Order.<sup>126</sup>

3 In certain periods, the increase in the market risk premium may be more than offset  
4 by the decrease in interest rates. This is particularly evident during periods of elevated  
5 volatility. Figure 12 shows recent movements in market risk premiums and interest rates.

6 **Figure 12**  
7 **Bloomberg Market Risk Premium and Risk-Free Rates in 2020**



Source: Pulled from Bloomberg 4/21/2020. RFR is the USGG10YR Index.

<sup>125</sup> Roger A. Morin, "New Regulatory Finance," Public Utilities Reports, Inc., 2006, at 123-125.

<sup>126</sup> NETO Briefing Order at P 41.





1 and in comparison with the equity ratios of the proxy companies."<sup>127</sup> Northern's actual  
2 capital structure meets each of these criteria. Northern issues its own debt and has its own  
3 separate bond rating.<sup>128</sup>

4 None of the other witnesses takes issue with using the capital structure as of  
5 December 31, 2019. BMX Group Witness Palazzari and NMDG/MRGTF Witness Loy raise  
6 certain issues related loans issued by Northern to its parent and other comprehensive  
7 income. Those issues are addressed by Northern Witness Joseph Lillo.<sup>129</sup>

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

9 A. Yes.

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<sup>127</sup> *Transco*, 84 FERC ¶ 61,084 at 61,414.

<sup>128</sup> See Direct Testimony of Northern Witness Joseph Lillo, Exhibit No. NNG-00038 at 4-5.

<sup>129</sup> See Rebuttal Testimony of Northern Witness Joseph Lillo, Exhibit No. NNG-00173.

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

Northern Natural Gas Company )

**Docket Nos. RP19-1353-000  
RP19-59-000  
(Consolidated)**

**AFFIDAVIT OF BENTE VILLADSEN**

I, Bente Villadsen, state that the information contained in my Prepared Rebuttal Testimony is true and correct to the best of my knowledge and if asked the questions that appear in the text of this Prepared Rebuttal Testimony, I would give the answers that are also set forth therein, and I adopt this Prepared Rebuttal Testimony as my sworn testimony in this proceeding.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 27th day of April, 2020.



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Bente Villadsen