UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Inquiry Regarding the Commission's Policy	**)**	
for Determining Return on Equity	**)**	**Docket No. PL19-4-000**

INITIAL COMMENTS OF MAGELLAN MIDSTREAM PARTNERS, L.P.

Magellan Midstream Partners, L.P. ("Magellan") hereby submits its comments in response to the Commission's Notice of Inquiry in the above-captioned proceeding issued on March 21, 2019 ("NOI").[1] In the NOI, the Commission has requested comments on whether, and if so how, it should modify its long-standing methodology for establishing the return on equity ("ROE") to be used in determining rates charged by public utilities. The Commission has also asked whether any changes it may adopt to its ROE methodology should also apply to the natural gas and oil pipelines it regulates. As explained below, Magellan supports the Commission's modification of its methodology for determining the allowed ROE in rates and, in modifying its methodology, urges the Commission to recognize the significant distinctions between oil pipelines versus natural gas pipelines and electric utilities. Magellan's comments are supported by the declaration of Dr. James H. Vander Weide, an economist and expert in FERC rate regulation and cost of capital and rate of return issues.

Magellan, through its subsidiaries, owns and operates over 11,000 miles of common carrier pipelines. Magellan's refined products pipeline system extends approximately 9,700 miles from the Texas Gulf Coast through 15 states. Shippers may deliver refined products to Magellan at any of 18 directly connected refineries and 11 connected pipeline and terminal

[1] *Inquiry Regarding the Commission's Policy for Determining Return on Equity*, 166 FERC ¶ 61,207 (2019) ("NOI").

origin locations for transport to over 110 destinations connected to Magellan's system. Magellan's crude oil pipeline system extends approximately 2,200 miles through five states. Magellan makes both interstate and intrastate movements at indexed, negotiated and market-based rates. Only a minority of Magellan's rates are established pursuant to the Commission's indexing methodology. Approximately 60% of Magellan's refined products pipeline system's markets are either subject to state regulation or, having been found by the Commission to be competitive markets, are approved for market-based rates.[2] Approximately 40% of Magellan's refined products pipeline system's shipments are under indexed rates. Magellan also provides service on certain of its pipelines pursuant to long-term Transportation Service Agreements ("TSAs") entered into after open seasons that contain negotiated rates for committed shippers. Most of Magellan's crude oil pipeline tariffs are negotiated rates subject to a TSA.[3] These TSAs and committed rates have been approved by the Commission via the declaratory order process. Like market-based rates, these TSA contract rates are not cost-of-service rates.

It is well-established that the oil pipeline industry differs significantly from the natural gas pipeline and electric utility industries, particularly in the degree of competition faced and in the extent of regulatory authority that the Interstate Commerce Act ("ICA") confers compared to the Natural Gas Act ("NGA") and Federal Power Act ("FPA"). Oil pipelines face extensive

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[2] The Commission granted Magellan market-based rate authority in the majority of its refined products pipeline markets in *Williams Pipe Line Co.*, 68 FERC ¶ 61,136 (1994), *reh'g granted*, 71 FERC ¶ 61,291 (1995). The Commission granted Magellan market-based rate authority on Texas and Oklahoma facilities it acquired from Shell Oil Products US ("SOPUS") in 2004, *see Magellan Pipe Line Co.*, 128 FERC ¶ 61,278 (2009), as well as on the Longhorn Pipeline facilities, *see Longhorn Partners Pipeline, L.P.*, 83 FERC ¶ 61,345, *reh'g denied*, 85 FERC ¶ 61,206 (1998), and the El Paso to New Mexico facilities acquired from Plains All American Pipeline, L.P. , *see Chevron Pipe Line Co.*, 95 FERC ¶ 61,111 (2001). The Commission also granted market-based rate authority on the former Chase Pipeline that Magellan acquired from SOPUS, *see Magellan Pipe Line Co.*, 137 FERC ¶ 61,222 (2011); *Magellan Pipe Line Co.*, 132 FERC ¶ 61,016 (2010), as well as the former Plains Rocky Mountain System acquired in 2013, *see Kaneb Pipe Line Operating Partnership, L.P.*, 83 FERC ¶ 61,183 (1998).

[3] *See* Declaration of Dr. James H. Vander Weide ("Vander Weide Decl.") at P 34 (Attachment 1).

competition, which is multimodal in nature. Thus, they are not at all like natural gas pipelines or electric utilities.[4] Recent developments in the oil pipeline industry have increased investment in new and expanded pipeline infrastructure and increased competition from alternative modes of transportation. As a result, there are many more new entrants into the oil pipeline sector of the industry.

The fact that oil pipelines differ greatly from natural gas pipelines and electric utilities, and that oil pipelines face far more competition, is vividly demonstrated by comparing the lesser degree of regulation imposed by the ICA compared to the NGA and the FPA. The Commission has "emphasized that, while the ICA and NGA both apply to the movement of hydrocarbons through underground pipeline systems, the two acts differ considerably in purpose and scope."[5] The Commission has observed that, while the regulation set forth in the NGA is "pervasive," the ICA "is far from extensive in its scope."[6] The Commission also has distinguished the FPA from the ICA on the same grounds, finding that the FPA is a "comprehensive scheme" of regulation that is "more extensive than under the ICA."[7]

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[4] As recognized by the U.S. Department of Justice in its May 1986 Oil Pipeline Deregulation Report, "oil pipelines face significant competition in most markets." Oil Pipeline Deregulation Report of the U.S. Department of Justice at pp. ix-x, May 1986, available at: https://www.ferc.gov/industries/oil/indus-act/handbooks/volume-I/doj-report.pdf. Liquids pipelines face competition not just from other pipelines, but from a variety of alternative modes of transportation such as river barges, ocean-going tankers, trucks, and railroads. *Id.* at pp. ix-x, 17.

[5] *Amoco Pipeline Co.*, 67 FERC ¶ 61,378 at 62,295 (1994) (recognizing the significant differences between the Commission's jurisdiction under the NGA compared to the ICA and refusing to apply NGA rules to oil pipelines).

[6] *Id. See also Seaway Crude Pipeline Co.*, 154 FERC ¶ 61,070 at P 50 (2016). In *Seaway*, the Commission refused to apply its policy on negotiated rates under the NGA to oil pipeline contract rates on the ground that "the ICA is a distinctly different statute from the Natural Gas Act." It distinguished its treatment of rates for firm service not subject to prorationing under the ICA from the requirement under the NGA that a pipeline offer a recourse rate for any service for which the pipeline is authorized to negotiate shipper-specific rates, on the ground that its "policy on natural gas pipeline negotiated rates and terms have a different statutory and regulatory framework from the Commission's policy with respect to committed rate contracts on oil pipelines." *Id*. at PP 50-53.

[7] *Id.* In *Farmers Union Central Exchange, Inc. v. FERC*, 584 F.2d 408, 413 (D.C. Cir. 1978), the U.S. Court of Appeals for the D.C. Circuit also recognized the lesser degree of regulation of oil pipelines under the ICA, holding that oil pipelines "have none of the special obligations imposed upon the vehicular regulatees under the Act [e.g.,

(footnote continued . . .)

This is consistent with the Energy Policy Act of 1992 ("EPAct"), in which Congress expressly required the Commission to adopt a "simplified and generally-applicable ratemaking methodology for oil pipelines," including "streamline[d] procedures . . . relating to oil pipeline rates in order to avoid unnecessary regulatory costs and delays." [8] This is a far different regulatory model than in the NGA or FPA. Consistent with the Congressional mandate in EPAct to "streamline" oil pipeline ratemaking, one of the primary goals of the Commission post-EPAct was to minimize reliance on cost-of-service ratemaking.[9] As the Commission recognized, adjudicating oil pipeline cost of service rate cases is "long, complicated and costly, and require[s] considerable expenditure of participants' time and resources, including that of the Commission."[10] The Commission made clear that its intent in the post-EPAct regulations it promulgated was to provide "several ways of establishing just and reasonable rates" other than cost-of-service ratemaking (*i.e.*, settlement rates, market-based rates and grandfathered rates).[11] By adopting indexing as the generally applicable method for changing oil pipeline rates, the Commission noted its intent to "eliminate the need for much future cost-of-service litigation."[12] Thus, the Commission established indexing as the "ordinary scheme of rate changes," but

(. . . footnote continued)
railroads and motor carriers] concerning acquisitions, mergers, corporate affiliates, uniform cost and revenue accounting, issuance of securities, and corporate or financial reorganizations." On this basis, the Court found "a Congressional intent to allow a freer play of competitive forces among oil pipeline companies than in other common carrier industries and, as such, we should be especially loath uncritically to import public utilities notions into this area without taking note of the degree of regulation and of the nature of the regulated business." *Id.*

8 Energy Policy Act of 1992, §§ 1801(a), 1802(a).

9 *See Revisions to Oil Pipeline Regulations Pursuant to the Energy Policy Act of 1992*, FERC Stats. & Regs. ¶ 30,985 at 30,943 (1993) ("Order No. 561").

10 *See id.*

11 *Id.* at 30,940.

12 *Id.* at 30,941.

permitted exceptions such as cost-of-service ratemaking in "special circumstances."[13] The D.C. Circuit Court of Appeals also has held that under EPAct, cost-of-service rates are to be the exception, not the rule, for oil pipelines.[14] The Commission-designed system of ratemaking under the EPAct is one in which most oil pipelines do not charge cost-of-service based rates and, accordingly, the Commission's ROE methodology will not apply.[15] The Commission has expressly held that cost-of-service considerations are irrelevant to oil pipeline market-based rates.[16] Most recently, in *Seaway Crude Pipeline Co.*, the Commission made clear that oil pipeline TSA committed rates are not cost-of-service rates and, thus, do not need to meet cost-of-service rate standards.[17]

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[13] *See Cost-of-Service Reporting and Filing Requirements for Oil Pipelines*, FERC Stats. & Regs. ¶ 31,006 at 31,165 ("Order No. 571").

[14] *Ass'n of Oil Pipelines v. FERC*, 83 F.3d 1424, 1442 (D.C. Cir. 1996).

[15] In response to Congressional mandate in the Energy Policy Act of 1992 to "streamline" the procedures related to oil pipeline rates, the Commission chose the rate index mechanism as the generally applicable oil pipeline rate-making methodology, providing exceptions for cost-of-service rates, market-based rates, and settlement rates where appropriate. *Revisions to Oil Pipeline Regulations Pursuant to the Energy Policy Act of 1992*, FERC Stats. & Regs., Regulations Preambles, 1991-1996 ¶ 30,985, at 30,940, 30,946-51 (1993). Under indexing, oil pipelines are permitted to increase (or required to decrease) their rates consistent with an annual inflation-based rate cap. *Id.*

[16] *See Magellan Pipeline Co., L.P.*, 134 FERC ¶ 61,117 at PP 12, 15 (2011) ("cost-of-service information is beyond the scope of and irrelevant to the issues set for hearing in this case because the justness and reasonableness of a market-based rate is to be determined on the basis of the Commission's established market power inquiry, not an inquiry into costs"); *see also Market-Based Ratemaking for Oil Pipelines*, 69 FERC ¶ 61,412, 62,499 (1994), stating that in order to obtain market-based rates, the oil pipeline must show that it "lacks significant market power in the relevant markets" without requiring a showing regarding costs or throughput.

[17] *Seaway Crude Pipeline Co.*, 142 FERC ¶ 61,201 at P 50 (2013).

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DISCUSSION

As the NOI recognizes, the U.S. Supreme Court held in *Fed. Power Comm'n v. Hope Natural Gas Co.* ("*Hope*") and *Bluefield Waterworks & Improvement Co. v. Pub. Serv. Comm'n* ("*Bluefield*") that "the return to the equity owner should be commensurate with the return on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital." [18] ("*Hope/Bluefield* Standard") Since the 1980s, the Commission has determined the allowed rate of return on equity ("ROE") for the cost-of-service-regulated rates of electric utilities, natural gas pipelines, and oil pipelines by: (1) selecting an appropriate proxy group of publicly-traded companies in the same industry as the company whose allowed ROE is being determined; (2) applying the Commission's preferred discounted cash flow

[18] *Fed. Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1940); *Bluefield Waterworks & Improvement Co. v. Pub. Serv. Comm'n*, 262 U.S. 679 (1923). *See also* NOI at P 4.

("DCF") cost of equity model to each company in the proxy group; and (3) setting the allowed ROE equal to the median value of the distribution of DCF results for the proxy companies.[19]

More recently, the Commission has expressed concern that "a mechanical application of the midpoint of the DCF-produced zone of reasonableness" would not produce an appropriate ROE that meets the requirements of the *Hope*/*Bluefield* Standard.[20] In the *Coakley* Briefing Order and MISO Briefing Order,[21] the Commission proposed to rely on not only the DCF model but also the CAPM model and Expected Earnings model, all of which produce zones of reasonableness, when determining whether an existing ROE remains just and reasonable. The Commission proposed to give equal weight to and average the zone of reasonableness produced by each model to determine a composite zone of reasonableness.[22] For purposes of establishing a new ROE, the Commission proposed to rely on the DCF, CAPM, Expected Earnings and Risk Premium models to produce four individual ROE estimates, which it would average to produce a single ROE.[23] The Commission established a paper hearing in the *Coakley* and MISO proceedings and directed the participants to submit briefs regarding the proposed new approach for determining ROE.[24]

In the NOI, the Commission is seeking comments on the proposed revisions to its ROE methodology from all electric utility and oil and gas pipeline stakeholders.[25] It identified eight

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19 Vander Weide Decl. at P 4; *see also* NOI at P 4.

20 NOI at P 18.

21 *See Martha Coakley v. Bangor Hydro-Elec. Co.*, 165 FERC ¶ 61,030 (2018) ("*Coakley* Briefing Order"); *Ass'n of Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, 165 FERC ¶ 61,118 (2018) ("MISO Briefing Order").

22 *Coakley* Briefing Order, 165 FERC ¶ 61,030 at P 31; MISO Briefing Order, 165 FERC ¶ 61,118 at P 20.

23 *Coakley* Briefing Order, 165 FERC ¶ 61,030 at P 36; MISO Briefing Order, 165 FERC ¶ 61,118 at P 38.

24 NOI at P 27.

25 *Id.* at P 28.

"general topics" on which it is requesting comments. In these comments, Magellan responds to Commission questions in six of the eight categories, including: (1) the role and objectives of the Commission's base ROE policy; (2) ROEs for different Commission-regulated industries; (3) performance of the DCF model; (4) proxy groups; (5) financial model choices; and (6) model mechanics and implementation.

I. Role and Objectives of the Commission's Base ROE Policy

In the NOI, the Commission seeks comments on the role of base ROE in investment decisions and what objectives should guide its approach to its policy apart from the *Hope/Bluefield* Standard. In particular, the Commission seeks comments on the approach to determining ROE described in the *Coakley* and MISO Briefing Orders. The NOI also seeks comments on what it refers to as a "vintage approach" to its ROE policy, in which the ROE is fixed for life at the time each asset was completed.[26]

Magellan agrees that use of several financial models, as opposed to using only the DCF model, would result in ROEs that are more likely to satisfy the *Hope/Bluefield* Standard. As Dr. James Vander Weide explains, the Commission's use of the ROE methodology described in the *Coakley* and MISO Briefing Orders should improve the quality of the ROE determinations in FERC rate proceedings because that approach proposes considering cost of equity model results from multiple models, such as CAPM, Risk Premium, and Expected Earnings, in addition to information from the DCF model. Given the inherent uncertainties in estimating the cost of

[26] *Id.* at P 31.

equity, Magellan urges the Commission to consider information provided by several cost of equity models rather than relying on a single method.[27]

Magellan opposes the adoption of any type of "vintage approach" in which the ROE simply reflects the cost of capital at the time of the investment, with ROE fixed for the life of the asset at the time that each asset was completed.[28] There is no practical way to implement a "vintage approach" that would allow investors an opportunity to earn their current required market return on the value of their investment. The ROE should reflect the contemporaneous ROE required by investors because investors will only invest in publicly-traded electric utilities, natural gas pipelines, or oil pipelines if they expect to earn a return on their investment that is commensurate with returns they currently expect to earn on other investments of similar risk. If the Commission were to set the ROE to reflect the cost of equity at the time the regulated company made each investment in plant and equipment, a "vintage approach," investors would likely earn a return on their equity investment in a regulated company that is either higher or lower than the return they currently expect to earn on other investments of the same risk. This is due to the fact that the allowed return on an investment in a regulated company's rate base may not be the same on all vintages of rate base assets.[29] A "vintage approach" would not be

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[27] *See* Vander Weide Decl. at P 24. In the NOI, the Commission also asks how using the ROE methodology described in the *Coakley* and MISO Briefing Orders may affect the ability of investors to forecast the ROE that would result from a litigated proceeding and the ability of participants to propose, contest, and settle base ROEs as compared to using only the DCF methodology. NOI at P 31. While the Commission's ROE methodology proposed in the *Coakley* and MISO Briefing Orders may improve the quality of ROE determinations, it is difficult to determine at this time whether that methodology would affect an investor's ability to predict the ROE that could result from a litigated Commission proceeding and the ability of participants to propose, contest, and settle base ROEs as compared to using only the DCF methodology. Because all cost of equity methods require estimates of quantities that are not easily measured, investors will be unable to forecast the ROE the Commission might establish until they observe the results from a number of proceedings using the new methodologies. Vander Weide Decl. at P 26.

[28] NOI at P 31.

[29] Vander Weide Decl. at PP 28, 30.

consistent with the *Hope/Bluefield* Standard because it would not provide an opportunity for investors to earn their current required market return on the value of their investment because the company's average return on all vintages of rate base investment could be either more or less than the company's current cost of equity capital. Furthermore, a "vintage approach" would be both cumbersome and costly to administer because it would require a company to maintain separate books on each vintage of investment and require the Commission to determine an allowed ROE for each vintage.[30] Coupling a "vintage approach" with an "annual national default ROE," as the NOI suggests, would only increase the cost of implementing the "vintage approach" without addressing the basic flaw that the "vintage approach" would not allow investors an opportunity to earn a fair return on the current market value of their investment in the regulated company.[31]

II. ROEs for Different Commission-Regulated Industries

In Opinion No. 531, the Commission found that the same two-step DCF methodology should be used to determine an ROE for all its regulated industries, including public utilities, as well as natural gas and oil pipelines.[32] The NOI asks whether, if the Commission departs from its sole use of a two-step DCF methodology, any new ROE methodology that it adopts similarly should be used to determine acceptable ROEs for all of its regulated industries.[33]

Any new approach to determining allowed ROEs, as applied to oil pipelines, should only be used to determine the allowed ROE for those oil pipeline rates that are set on a cost-of-service

[30] Vander Weide Decl. at PP 28, 30. It would be particularly difficult to establish the ROE for rates on expansion capacity using a vintage approach. The majority of new rates that Magellan files are in connection with an expansion or extension of an existing asset.

[31] *Id.* at P 32.

[32] NOI at P 32.

[33] *Id.* at P 32.

basis. As discussed above, oil pipelines are very different from natural gas pipelines and electric utilities and face significantly more competition. Accordingly, under the EPAct, most oil pipelines rates are not cost-of service rates, but are established on a non-cost-of-service basis, such as indexed rates, negotiated or settlement rates, and market-based rates.[34] Any new approach to determining allowed ROEs should not be used for or applied to these non-cost-of-service rates. The Commission should clarify in its final order in this proceeding that any changes in its ROE methodology for an oil pipeline would apply only to setting the ROE for an oil pipeline's cost-of-service-regulated rates.

Magellan does not agree that the potential concerns the Commission identifies in the NOI present reasons not to adopt a new methodology incorporating the DCF, CAPM, Expected Earnings and Risk Premium models for oil and natural gas pipelines, provided the relative strengths and weaknesses of each model are recognized and accounted for. The one concern the Commission identified in the NOI is that the Risk Premium model relies to a large extent on ROEs established in settlements involving electric utility formula rates approved by the Commission. These ROEs are then used to develop a risk premium study. By contrast, many natural gas and oil pipelines often enter into "black box" rate case settlements that do not specify an agreed-upon ROE. The Commission asks whether the Risk Premium model could be used for oil and natural gas pipelines since these black box settlements do not result in an agreed-upon ROE.[35] Although oil pipeline settlements are frequently "black-box," the Commission has also approved allowed ROEs for oil pipelines in each year beginning in 1984 in various opinions.

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[34] Vander Weide Decl. at P 40. Another difference between oil pipelines and electric utilities is that it has generally been more difficult to identify a relatively large group of comparable risk companies for oil pipelines than for utilities. *Id.*

[35] NOI at P 34.

These allowed ROEs have been based on application of the Commission's DCF methodology alone to a small group of market-traded companies.[36] Thus, it may be possible to implement a Risk Premium analysis using these approved ROEs. However, as Dr. Vander Weide explains, the Commission should be wary of basing a Risk Premium approach on allowed ROEs derived from applying the DCF methodology because, as the Commission has recognized, the DCF methodology may at times produce results that understate a reasonable estimate of the cost of equity. Accordingly, the Commission should consider Risk Premium evidence reflecting either earned returns or cost of equity estimates for a large proxy group of comparable risk companies, where comparability is measured by risk measures such as beta or Value Line equity ratings.[37]

Another concern the Commission raised in the NOI is whether, given the tendency of the Expected Earnings model to produce more high-end outliers than the other methodologies, there would be a sufficient number of natural gas and oil pipeline proxy group members to implement the Expected Earnings model for gas and oil pipelines.[38] As Dr. Vander Weide explains, there may be a sufficient number of natural gas and oil pipeline companies to implement the Expected Earnings methodology using data published in Value Line's reports for the companies in the MLP Pipeline and Oil and Gas Distribution industries. However, many of the companies in these two Value Line industry groups either do not provide oil pipeline services or receive a small percentage of revenues from oil pipeline services, and other companies in these industry groups have a relatively short operating history. Thus, the choice of an appropriate proxy group for oil pipeline rate-regulated services, for example, would require a trade-off between choosing

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[36] Vander Weide Decl. at P 36. *See, e.g., Seaway Crude Pipeline Co.*, 154 FERC ¶ 61,070 at PP 194-200 (2016); *SFPP, L.P.*, 134 FERC ¶ 61,121 at PP 193-209, *order on reh'g*, 137 FERC ¶ 61,220 at PP 250-59 (2011); *Enbridge Pipelines* (*Toledo), Inc.*, 130 FERC ¶ 61,270 at PP 28-29 (2010).

[37] Vander Weide Decl. at P 36.

[38] NOI at P 32.

a small group of companies that are primarily in the oil pipeline business, or choosing a larger group of companies with more diverse business activities. In either case, the application of the Expected Earnings method to oil pipeline proxy groups may produce an unreasonable cost of equity estimate for an oil pipeline's rate-regulated service. Accordingly, the Expected Earnings method should only be used along with other cost of equity methods such as the DCF, CAPM, and Risk Premium.[39]

III. Performance of the DCF Model

Magellan supports the use of several financial models, as opposed to using only the DCF model, to determine ROEs, in part based on the flaws in the DCF model. As Dr. Vander Weide discusses, the DCF model does not perform well over a wide range of interest rate conditions because it does not take into account the relationship between the DCF model result and changes in interest rates. There is considerable evidence that the DCF risk premium (the difference between the DCF result and interest rates) is higher when interest rates are lower and lower when interest rates are higher. An advantage of risk premium cost of equity methods is that they provide information on the relationship between the estimated cost of equity and the level of interest rates.[40] The DCF model assumes that the cost of equity depends only on the dividend yield and earnings growth rate and does not depend on the level of interest rates or the level of a company's risk as measured by beta or other risk variables. The DCF model assumption that the DCF result is unrelated to the level of interest rates does "not work well in low or high interest rate environments."[41] Studies comparing DCF cost of equity estimates and concurrent interest rates have shown that the risk premium implied by DCF model results increases when interest

[39] Vander Weide Decl. at P 38.

[40] *Id.* at P 42.

[41] *See* NOI at P 33.

rates are low and decreases when interest rates are high.[42] Another deficit in the DCF methodology, which the NOI recognizes, is its assumption that price-to-earnings ratios remain constant.[43] Evidence that historical price-to-earnings ratios are statistically related to interest rates, which have varied considerably over the last 10 to 20 years, may explain why the Commission's DCF model has been producing unreasonably low cost of equity estimates in recent years.[44] For all of these reasons, the Commission should no longer rely exclusively on the DCF model to determine ROEs.

IV. Proxy Groups

Magellan urges the Commission to modify its requirements for proxy group composition. It has become, and will continue to be, increasingly difficult to construct proxy groups of sufficient size for natural gas and oil pipeline companies given the increased amount of merger and acquisition activity involving master limited partnerships ("MLPs") and the multiple recent conversions of MLPs to C-corporations.[45] For oil pipelines in particular, it has been and continues to be difficult to construct proxy groups of sufficient size to reliably estimate the ROE because there have been and are only a small number of market-traded companies that meet the historical Commission screening criteria for inclusion in an oil pipeline proxy group. Indeed, the choice of proxy companies for estimating the cost of equity for oil pipelines necessarily involves a trade-off between choosing a small group of companies that meet the Commission's screening

42 Vander Weide Decl. at P 44.

43 NOI at P 33.

44 Vander Weide Decl. at P 46.

45 *See* NOI at P 64.

criteria or choosing a larger group of companies in a somewhat more diverse group of businesses.[46]

The Commission should not continue to restrict proxy groups to companies with corresponding regulated businesses. Financial theory and the *Hope/Bluefield* Standard require that proxy groups for regulated utilities and natural gas and oil pipelines be comparable in risk to the regulated utility or pipeline whose rates are being determined.[47] As Dr. Vander Weide discusses, there is no reason to require that all of the proxy group companies be in exactly the same business as long as the evidence indicates that the proxy group companies are similar in risk to the target regulated company.[48] When there is a sufficient number of publicly traded companies in the same business as the electric utility, natural gas, or oil pipeline company whose rates are at issue, it may be reasonable to limit the proxy group to companies in the same regulated businesses. However, when, as now, there is an insufficient number of publicly traded companies in the same business, the Commission should select proxy companies that are comparable in risk but not necessarily in the same business as the company whose rates are at issue, including non-energy companies.[49] The non-energy companies that have comparable risk to electric utilities and natural gas and oil pipelines, and thus would be appropriate to include in the proxy group, should be examined and selected by the Commission on a case-by-case basis. However, in the application of the CAPM, for example, it is safe to say that comparable non-

[46] Vander Weide Decl. at P 82.

[47] *Id.* at PP 48, 50.

[48] *Id.* at P 58.

[49] *Id.* at P 48. However, even in that situation, it may make sense to use a proxy group of comparable risk unregulated companies. *Id.*

energy companies should have approximately the same average beta as the target regulated company.[50]

For the same reason -- that financial theory and the *Hope/Bluefield* Standard only require that proxy groups members be of comparable risk -- a company should not be required to derive a certain percentage of its revenues from the applicable regulated business, nor should it be required to have the same corporate or similar corporate structure as the company whose rates are at issue, in order for that company to be included in the proxy group. Furthermore, it would be unreasonable to require that proxy natural gas and oil pipeline companies receive a certain percentage of revenues from regulated services because: (1) there are relatively few market-traded oil pipelines that receive a majority of revenues from oil pipeline services; and (2) the revenues of oil pipeline companies generally reflect market-based rates, negotiated rates, or indexed rates, rather than just cost-of-service rates.[51] The proxy group of oil pipelines with a high percentage of revenues from regulated oil pipeline services is small at present, and will be even smaller in the future once the announced acquisition of Buckeye Pipeline Partners, L.P. has been completed.[52]

The Commission also should modify its policy on excluding from the proxy group companies with merger activity during the six-month study period that is significant enough to distort study inputs.[53] As Dr. Vander Weide explains, the rationale for excluding a company from a proxy group is that merger activity may distort the inputs in the cost of equity equation.[54]

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50 *Id.* at P 60.

51 *Id.* at P 50.

52 *Id.* at P 52.

53 *See* NOI at P 58.

54 Vander Weide Decl. at P 76.

In general, the Commission should exclude the target company of a merger because merger activity generally has a significant impact on the *target* company's stock price, but little or no impact on the *acquiring* company's stock price.[55] With regard to the acquiring company, the Commission should only exclude it from a proxy group if there is clear evidence that the potential acquisition has distorted cost of equity model inputs for the acquiring company.[56]

The Commission's approach to proxy group selection should be broadly similar for each financial model, but the specific data requirements in each model may require that different companies be used as proxy companies in different models. For example, the DCF model requires an estimate of investors' earnings growth expectations for each company, and the CAPM requires a beta estimate for each company.[57] There is no guarantee that all proxy companies that have available beta estimates also have available growth estimates, and vice versa. In applying each cost of equity method, the Commission should seek to have the largest possible proxy group to estimate each model result, even if the results for different models are based on different, but appropriate, proxy company groups.[58]

With respect to outlier tests,[59] the Commission should first consider the number of available companies for a proxy group. The appropriate high-end and low-end outlier tests should depend in part on this number. In the case of oil pipelines, it may be unreasonable to remove outlier results because the removal of outlier results may reduce the number of proxy

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55 *Id.* at P 76.

56 *Id.* at PP 78, 108.

57 *Id.* at P 56.

58 *Id.*

59 *See* NOI at P 34.

companies to an unacceptable level.[60] Dr. Vander Weide discusses the fact that, from a statistical point of view, the low-end outlier test should be based on a value relative to a measure of central tendency such as the mean or median cost of equity result. From a practical point of view, the low-end outlier test should also reflect a premium over the cost of a company's debt but vary inversely with the level of interest rates. It should reflect a higher premium over the cost of debt when interest rates are low than when interest rates are high. Thus, the Commission should consider both points of view when assessing low-end outlier results.[61] The Commission should vary its approach to outliers among different financial models because the application of a given outlier test to specific model results may result in an insufficient number of companies remaining in the proxy group, and, thus, an unreliable cost of equity estimate. For example, if there were only five reasonable companies in a DCF proxy group, and two results are outliers, a median value will reflect only the results for three companies. In many cases, a median result from a three-company proxy group would not be a reliable estimate of the cost of equity.[62]

Magellan also urges the Commission to modify the credit rating screen to include all investment-grade utilities with sufficient data to estimate the cost of equity in the proxy group, which would increase the number of companies in the proxy group used to estimate the cost of equity. [63] As to use of credit ratings in ROE determinations, Dr. Vander Weide explains that for companies with investment-grade credit ratings, there is generally no statistically significant relationship between the estimated costs of equity and the companies' credit ratings.[64]

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60 Vander Weide Decl. at PP 64, 108.

61 *Id.* at P 66.

62 *Id.* at PP 68, 108.

63 *See* NOI at P 54; Vander Weide Decl. at P 72.

64 *See* NOI at P 56; Vander Weide Decl. at P 74.

The Commission's use of credit ratings in ROE determinations should have little or no impact on a regulated company's incentive to issue more debt because total regulated revenues depend on both the allowed return on equity and the allowed capital structure.[65] Because the additional revenues resulting from any increase in the allowed return on equity associated with higher debt in the capital structure would be largely offset by the reduced revenues resulting from the inclusion of a higher percentage of debt in the allowed capital structure, the company would have no incentive to attempt to influence an allowed return on equity by changing its capital structure.[66]

Certain circumstances or factors may warrant an adjustment from the midpoint/median to other points within the zone of reasonableness, such as a lower or upper midpoint/median.[67] In particular, as Dr. Vander Weide discusses, an adjustment to the zone of reasonableness is warranted if the investment in the assets required to provide the regulated service is significantly more or less risky than the average risk of the publicly-traded proxy companies. If such an adjustment were not made, the regulated rates would not satisfy the *Hope*/*Bluefield* Standard that the assets required to produce the service should be allowed a return that is commensurate with returns investors can earn on other investments of comparable risk.[68]

V. Financial Model Choice

The Commission should not consider state utility commission allowed ROEs in oil pipeline rate cases.[69] State ROEs are not comparable to Commission ROEs, as Dr. Vander

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65 Vander Weide Decl. at P 70.

66 *Id*.

67 *See* NOI at P 62.

68 Vander Weide Decl. at PP 54, 80.

69 *See* NOI at P 35.

Weide discusses. Allowed ROEs vary by state because most state ROEs are determined by each state utility commission's assessment of the evidence presented in each case rather than by an ROE formula, and state commissions assess the evidence in different ways.[70] Because state commissions generally do not use formula-determined ROEs and rarely explain precisely how they arrive at their ROE decisions, it is difficult to meaningfully compare state ROEs to Commission ROEs without examining specific proceedings in detail.[71] Furthermore, oil pipelines typically face more competition than the regulated utilities whose rates are being determined in state proceedings.[72]

VI. Model Mechanics and Implementation

A. General Issues/Issues that Affect Multiple Models

1. Use of IBES Data

Magellan supports the Commission's continued use of IBES growth estimate data. Ideally, the Commission should use a long-term EPS growth estimate that reflects the financial community's average, or consensus, estimate of long-term EPS growth, as Dr. Vander Weide discusses.[73] Historically, the IBES growth estimate has been a good proxy for investors' EPS growth expectations because it reflected the average growth estimate of a reasonably large number of financial analysts who contribute to the IBES database and, as such provides consensus data.[74] Research in the financial community has verified that the IBES data are generally a good proxy for investors' earnings per share growth expectations.[75] As the original

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70 Vander Weide Decl. at P 86.

71 *Id.* at P 88.

72 *Id.* at P 84.

73 *Id.* at P 97.

74 *Id.*

75 *Id.* at PP 93, 95.

provider of consensus forecast information beginning in 1976, the IBES data have been widely studied and have set the standard for other providers.[76]

The forecasts provided by other providers of consensus long-term growth estimates, such as Bloomberg, S&P Capital IQ, FactSet, and Zacks, should be generally similar to those provided by IBES because there is overlap in the analysts that contribute to the consensus forecast data. However, there is a high cost associated with subscribing to services such as Bloomberg, S&P Capital IQ, and FactSet, whereas the IBES growth estimates are freely available on the Yahoo Finance website, and the Zacks consensus long-term EPS growth forecasts are also available freely on the Zacks website.[77] The Value Line Investment Survey also provides its own long-term growth estimates, but the Value Line estimates differ from the consensus estimates in two ways. First, the estimates are those only of Value Line, not an average estimate based on polling of other analysts. Second, the Value Line estimates are specifically derived by comparing the average historical EPS for the past three years to Value Line's estimates of future EPS over the next three-to-five years.[78]

2. Model Risk

Model risk affects all ROE methodologies. Because all ROE methods reflect estimates of unknown parameters, such as growth rates, relative risk, forecasted interest rates, and required risk premiums, all methods are affected by model risk. Model risk is a major reason why it is

[76] *Id.* at P 95. It is not necessary for the Commission to have information on the number and identity of analysts contributing to the estimate if it is not available. *Id.* at P 99.

[77] *Id.* at P 95.

[78] *Id.* at P 93.

better to review the results of several cost of equity methods rather than relying entirely on a formulaic application of a single method of estimating the cost of equity.[79]

3. Use of Data at the Parent/Holding Company Level

Cost of equity must be estimated using data from publicly-traded entities.[80] As the NOI points out, the Commission adjudicates rate cases at the operating company level, for which there is no public data like stock prices, growth rates, and betas.[81] This can result in a disparity that impacts the accuracy of the results of the financial models used.[82] The DCF model is not the only cost of equity model that incorporates data at the parent/holding company level. The CAPM incorporates betas that are only available at the holding company level, while the Risk Premium incorporates risk premiums based on historical or forward-looking risk premiums developed from market data that are typically only available at the holding company level. The Expected Earnings method incorporates the expected earnings on book equity from data that are only available at the holding company level.[83]

As Dr. Vander Weide discusses, any disparity between the parent company and the subsidiary will have little impact on the estimated cost of equity when the parent company has approximately the same risk as the subsidiary. In contrast, if the parent company is either more risky or less risky than the subsidiary, any disparity between the parent company and the subsidiary could have a significant impact on the estimate of the subsidiary's cost of equity. For

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79 *Id.* at P 101.

80 *Id.* at P 103.

81 NOI at P 85.

82 Vander Weide Decl. at P 103.

83 *Id.* at P 104.

example, a holding company may be less risky than its subsidiaries because it is more diversified than a subsidiary on a stand-alone basis.[84]

While it may not be possible to eliminate entirely the uncertainty associated with applying estimates obtained from holding company data to operating subsidiaries that may experience different risks, the Commission can best mitigate the uncertainty arising from reliance on holding company data by selecting the best available proxy group of comparable risk companies.[85]

4. The Efficient Market Hypothesis

The Commission must rely on financial models such as the DCF and CAPM to estimate the cost of equity. All financial models that can be used to estimate the cost of equity essentially rely on the efficient market hypothesis, not only the DCF and CAPM models. Thus, in this respect, reliance on the efficient market hypothesis is unavoidable. To best mitigate the effect of market inefficiencies on model results, the Commission should rely on multiple cost of equity models, including the DCF, CAPM, Expected Earnings and Risk Premium models. [86]

B. Model-Specific Questions

1. DCF

The NOI asks whether the Commission should consider using a multi-stage growth model.[87] As Dr. Vander Weide discusses, the Commission's current DCF model is essentially a two-stage model, where the first stage growth receives a weight of two-thirds, and the second stage of growth receives a weight of one third. Rather than a multi-stage DCF model, the

84 *Id.* at P 103.

85 *Id.* at P 103.

86 *Id.* at P 106.

87 NOI at P 38.

Commission should consider moving to a true constant growth DCF model that gives all weight to the analysts' long-term EPS growth forecasts. However, a two-stage model giving two-thirds weight to the IBES forecast of long-term EPS growth and one-third weight to the forecasted long-term GDP growth may be appropriate in circumstances where the use of a single-stage growth rate based on forecasted EPS growth produces outlier results.[88] However, reducing the long-term growth forecast by half for MLPs is an arbitrary requirement for which there is no sound justification. Should the Commission use any long-term growth model that gives weight to GDP, the Commission should reverse its practice of reducing long-term growth forecast for MLPs.

The NOI further asks whether, when using the DCF model, the Commission should continue to use a dividend DCF model rather than a free cash flow DCF model.[89] Magellan urges the Commission to use a dividend DCF model because stock prices reflect the present value of the stream of cash flows investors expect to receive from their investment in the company's stock, and investors expect to receive their cash flows in the form of dividends. A company is not required to, and generally does not distribute all "free cash flow" to investors.[90]

The NOI also asks whether the Commission should use terminal stock value in place of long-term growth projections in DCF calculations.[91] Terminal stock value is not generally used in DCF calculations because terminal value is more difficult to estimate than long-term growth. Furthermore, according to the assumptions of the DCF model, terminal stock value should

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88 Vander Weide Decl. at P 122. Dr. Vander Weide discusses the DCF model in detail in his Declaration. *Id*. at PP 9-15.

89 NOI at P 38.

90 Vander Weide Decl. at P 114.

91 NOI at P 38.

simply reflect the present value of all expected dividends beyond the "terminal period." Thus, there is nothing to be gained by attempting to estimate the DCF cost of equity using terminal values.[92]

Although investment analysts' projections of growth generally do not extend beyond five years, they are frequently the best available evidence of investors' long-term growth expectations. As Dr. Vander Weide explains, a forecast estimate of GDP growth is generally not an appropriate proxy for the growth term in the DCF model because studies indicate that the analysts' growth rates are more highly correlated with stock prices than other estimates of long-term growth. This evidence provides strong support for the conclusion that investors use analysts' growth rates in making stock buy and sell decisions, and thus the analysts' growth rates should generally be used to estimate the growth component of the DCF model.[93] The Commission currently calculates the growth component of the DCF model by giving a two-thirds weight to the IBES forecast of long-term EPS growth and a one-third weight to a forecast of long-term GDP growth.[94] However, studies indicate that stock prices are more highly correlated with IBES analysts' growth rates than with other growth forecasts. Accordingly, Magellan urges the Commission to give no weight to forecasted long term GDP growth as long as the cost of equity is not an outlier. In addition, in estimating the distribution yield, as noted above, to be consistent with the basic assumptions of the annual DCF model, the Commission should specify

[92] Vander Weide Decl. at P 116.

[93] *Id.* at P 118.

[94] *Id.* at P 120.

the calculation of the distribution yield by multiplying the current indicated annual distribution by one plus the growth rate, not one plus one-half the growth rate. [95]

As Dr. Vander Weide discusses, the primary strengths of the Commission's DCF model are that it is based on the logically reasonable assumption that a company's stock price is equal to the present value of the cash flows investors expect to receive from their investment in the company's stock, and it is relatively easy to implement.[96] Its primary weaknesses are several. First, it requires an estimate of investors' expectations of long-term future earnings and dividend growth that is inherently uncertain. Second, it may produce an unreasonable estimate of the cost of equity when stock prices are detached from a reasonable assessment of future growth, for example, in markets which are experiencing "irrational exuberance." Third, to be consistent with the basic assumptions of the annual DCF model, it should specify the calculation of the distribution yield by multiplying the current indicated annual distribution by one plus the growth rate, not one plus one-half the growth rate. Fourth, it incorrectly assumes that companies in the proxy groups pay dividends annually, whereas the companies in the proxy groups pay dividends quarterly. Fifth, it fails to reflect the additional risk of investing in illiquid assets such as new electric generation and transmission facilities and gas and oil pipelines as compared to investing in liquid assets, such as investments in market-traded stocks. Thus, if the Commission wants to encourage investment in long-lived property, plant, and equipment that cannot be easily sold if actual demand turns out to be less than forecasted demand, the Commission should allow a

[95] *Id.* at P 120.

[96] *Id.* at P 14.

premium above the market cost of equity to compensate for the additional risk of investing in illiquid assets.[97]

2. CAPM

In the Commission's application of the CAPM method, a forecast estimate of long-term GDP growth is currently given a one-third weight, as in the Commission's two-step DCF method. Magellan urges the Commission to use only the IBES estimate of long-term growth for each company when applying the DCF model to each company in the market index because the DCF model requires the growth forecasts of investors. Studies indicate that stock prices reflect the analysts' consensus growth forecasts and are the best estimate of future growth for use in the DCF model.[98] As Dr. Vander Weide explains, CAPM's assumptions do not break down if both utility stocks and the broader market become riskier over time on an absolute basis, but the relative increase in risk in utility stocks rises more slowly.[99] Beta is a measure of a security's risk relative to the broader market. Because there is no evidence that investors expect utilities in the future to become less risky relative to the market, there is no reason to dismiss the CAPM model results for utilities because they might in the future become less risky relative to the market.[100] Only data sources for the beta value that are properly adjusted for the tendency of beta estimates to trend to the overall mean beta estimate of 1.0 over time, such as the beta estimates published by Value Line, should be used to estimate the CAPM cost of equity.[101] The Commission should employ more sophisticated versions of the CAPM model that consider more

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97 *Id.* at P 15. *See also* Section III above.

98 Vander Weide Decl. at P 126. Dr. Vander Weide discusses the CAPM model in his Declaration. *Id*. at PP 16-18.

99 *See* NOI at P 30; Vander Weide Decl. at P 128.

100 *Id.* at P 128.

101 *Id.* at P 130.

variables instead of only beta, which take into account additional factors such as the impact of company size as measured by market capitalization.[102]

The primary strengths of the CAPM model are that it is based on a logically sound economic analysis of the relationship between risk and return in capital markets, and it includes an explicit estimate of risk.[103] Its weaknesses include the facts that estimates of beta and the required market risk premium are highly uncertain, and it does not automatically include the impact of other risk factors such as size or value. In addition, it does not reflect the additional risk of investments in illiquid assets such as new electric generation and transmission facilities and gas and oil pipeline facilities.[104]

3. Expected Earnings

The inclusion of companies in the proxy group for the Expected Earnings model should be predicated on the Expected Earnings analysis being forward-looking.[105] The Commission should use forecasted future returns on equity to estimate the cost of equity in an Expected Earnings analysis because the regulated company can only attract capital if investors expect to earn a future return on equity that is commensurate with returns they expect to earn on other investments of the same risk.[106] Dr. Vander Weide explains that there are no circularity concerns with using estimates of future returns on equity because: (1) a company may not earn its forecasted return on equity; and (2) the Expected Earnings method uses the average expected

[102] *Id.* at P 132.

[103] *Id.* at P 17.

[104] *Id.* at P 18.

[105] *Id.* at P 134. Dr. Vander Weide describes the Expected Earnings model in detail in his Declaration. *Id*. at PP 19-20.

[106] *Id.* at P 134.

rate of return for the proxy group, not an expected rate of return for one company, as an estimate of the cost of equity.[107]

A primary strength of the Expected Earnings model is that it provides information for a consistent comparison of the required return on book equity to the earned return on book equity, that is, it compares a required book return to an earned book return. Its primary weaknesses are the facts that expected accounting returns are not necessarily equal to expected or required market returns, and proxy companies' expected accounting returns on book equity can vary widely. Thus, the Expected Earnings model, if used alone, will not necessarily satisfy the *Hope/Bluefield* Standard.[108]

4. Risk Premium

A Risk Premium analysis should include an ex ante, or forward-looking, risk premium estimate because the required return on equity reflects investors' future required return. However, as Dr. Vander Weide discusses, a properly implemented historical risk premium analysis may also inform investors' future expectations.[109] If capital market conditions are anomalous, such anomalous conditions will affect all cost of equity model results, including the results of a Risk Premium analysis. Rather than excluding the results of a particular cost of equity model, the Commission should recognize that the impact of anomalous conditions on model inputs and results is significantly decreased by consideration of the results of all four cost of equity models, rather than only the DCF model.[110] While the Risk Premium analysis produces a single cost of equity estimate rather than a zone of reasonableness, the Risk Premium

[107] *Id.* at P 136.

[108] *Id.* at P 20.

[109] *Id.* at P 140. Dr. Vander Weide describes the Risk Premium in his Declaration. *Id.* at PP 21-22.

[110] *Id.* at P 142.

cost of equity estimate can be used along with other cost of equity model results to arrive at an average result from the application of all models. The average result of the Risk Premium analysis can be increased or decreased to reflect the above-average risk or below-average risk of the utility or pipeline.[111] A Risk Premium analysis may be useful for determining whether a company is earning its required rate of return on equity because it provides additional information on the market-required rate of return on equity.[112]

The primary strength of the Risk Premium model is that it correctly reflects the strong inverse relationship between the level of interest rates and the cost of equity. Its primary weaknesses are that data required to implement the model may not be available and it may be difficult to accurately measure the required risk premium from available data.

[111] *Id.* at PP 144, 146.

[112] *Id.* at P 148.

CONCLUSION

For the foregoing reasons, Magellan urges the Commission to modify its methodology for determining the allowed ROE in cost-of-service rates to consider rely on multiple financial models in addition to the DCF model. Reliance on multiple models will best ensure the establishment of just and reasonable ROEs that meet the *Hope/Bluefield* Standard.

Respectfully submitted,

/s/ Lorrie M. Marcil

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June 26, 2019

ATTACHMENT 1

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Inquiry Regarding the Commission's Policy for Determining Return on Equity	§ § §	Docket No. PL19-4-000

DECLARATION OF JAMES H. VANDER WEIDE ON BEHALF OF MAGELLAN MIDSTREAM PARTNERS, L.P.

I. INTRODUCTION AND QUALIFICATIONS

I, James H. Vander Weide, declare as follows:

1. My name is James H. Vander Weide. I am President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to business clients. My business address is 3606 Stoneybrook Drive, Durham, North Carolina 27705. I am providing this declaration on behalf of Magellan Midstream Partners, L.P. (Magellan) in response to the March 21, 2019, Notice of Inquiry (NOI) issued by the Federal Energy Regulatory Commission (FERC or Commission) in Docket No. PL19-4.

2. I received a Bachelor's Degree in Economics from Cornell University and a Ph.D. in Finance from Northwestern University. After joining the faculty of the Fuqua School of Business at Duke University (Duke), I was named Assistant Professor, Associate Professor, and then Professor. I have published research in the areas of finance and economics, taught courses in these fields at Duke for more than thirty-five years, and taught in numerous executive programs at Duke. I am now retired from my teaching duties at Duke.

3. As an expert on financial and economic theory and practice, I have participated in more than five hundred regulatory and legal proceedings before the FERC, the National Energy Board (Canada), the public service commissions of forty-five states and four Canadian provinces, the U.S. Congress, the Canadian Radio-Television and Telecommunications Commission, the

Federal Communications Commission, the National Telecommunications and Information Administration, the insurance commissions of five states, the Iowa State Board of Tax Review, and the North Carolina Property Tax Commission. In addition, I have prepared expert testimony in proceedings before the U.S. Tax Court; the U.S. District Court for the District of Nebraska; the U.S. District Court for the District of New Hampshire; the U.S. District Court for the District of Northern Illinois; the U.S. District Court for the Eastern District of North Carolina; the Montana Second Judicial District Court, Silver Bow County; the U.S. District Court for the Northern District of California; the Superior Court, North Carolina; the U.S. Bankruptcy Court for the Southern District of West Virginia; the U. S. District Court for the Eastern District of Michigan; and the Supreme Court of the State of New York. My resume is attached to this declaration as Attachment 1A.

II. BACKGROUND AND PURPOSE

4. The Commission has traditionally determined the allowed rate of return on equity (ROE) for the cost-of-service-regulated operations of electric utilities, natural gas pipelines, and oil pipelines by: (1) selecting an appropriate proxy group of publicly-traded companies in the same industry as the company whose allowed ROE is being determined; (2) applying the Commission's preferred discounted cash flow (DCF) cost of equity model to each company in the proxy group; and (3) setting the allowed ROE equal to a measure of central tendency, such as the mean, the median, or the midpoint value of the distribution of DCF results for the proxy companies.

5. On March 21, 2019, the Commission issued a Notice of Inquiry (NOI) which seeks comments regarding whether: (1) "the Commission should "modify its policies concerning the determination of the return on equity (ROE) to be used in designing jurisdictional rates charged by public utilities;" and (2) "any changes to its policies concerning public utility ROEs should be

applied to interstate natural gas and oil pipelines."[1] The Commission's request for comments follows the decision of the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) in *Emera Maine v. FERC*[2] to reverse and vacate the Commission's ROE decision in Opinion No. 531.[3]

6. The purpose of my declaration is to respond to many of the specific questions posed in the NOI regarding the determination of the allowed ROE. However, before I respond to these questions, I provide a brief overview of the four cost of equity models addressed in the NOI and I briefly discuss strengths and weaknesses of each model. From this overview, I conclude that the Commission should examine the results of several cost of equity models to determine the allowed ROE for rate-regulated services.

7. After discussing the cost of equity models, I then respond to seven of the eight categories of ROE issues presented in the NOI, including: (1) the role and objectives of the Commission's base ROE policy; (2) ROEs for different Commission-regulated industries; (3) performance of the DCF model; (4) proxy groups; (5) financial model choices; (6) mismatch between market-based ROE determinations and book value rate base; and (7) model mechanics and implementation. For ease of reference, I first provide a direct quotation of the questions in the NOI, and I then provide my responses to those questions.

III. OVERVIEW OF THE NOI'S FOUR COST OF EQUITY MODELS

8. The NOI seeks information on how the Commission can reasonably use results of the DCF, CAPM, Expected Earnings, and Risk Premium cost of equity methods to determine the

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1 NOI at P 1.

2 854 F.3d 9 (D.C. Cir. 2017) (*Emera Maine*).

3 *Coakley, Mass. Attorney Gen. v. Bangor Hydro-Elec. Co.*, Opinion No. 531, 147 FERC ¶ 61,234, *order on paper hearing*, 149 FERC ¶ 61,032 (2014), *order on reh'g*, 150 FERC ¶ 61,165 (2015).

allowed ROE for the cost-of-service regulated services of electric utilities, gas pipelines, and oil pipelines. To provide a context for my responses to the questions raised in the NOI, I briefly discuss the fundamental assumptions, data requirements, and strengths and weaknesses of the four cost of equity methodologies discussed in the NOI. Each model has both strengths and weaknesses. Thus, it is appropriate for the Commission to consider the results of multiple methods to arrive at its estimate of the required return on equity for regulated services.

A. DCF Model

9. The DCF model is based on the assumption that investors value an asset because they expect to receive a sequence of cash flows from owning the asset. Thus, investors value an investment in a bond because they expect to receive a sequence of semi-annual coupon payments over the life of the bond and a terminal payment equal to the bond's face value at the time the bond matures. Likewise, investors value an investment in a firm's stock because they expect to receive a sequence of dividend payments and, perhaps, expect to sell the stock at a higher price sometime in the future.

10. A second fundamental principle of the DCF method is that investors value a dollar received in the future less than a dollar received today. A future dollar is valued less than a current dollar because investors could invest a current dollar in an interest earning account and increase their wealth. This principle is called the time value of money.

11. Applying the two fundamental DCF principles noted above to an investment in a stock leads to the conclusion that investors value their investment in the stock on the basis of the present value of the stock's future cash flows. Thus, the price of the stock should be equal to:

Equation 1

$$P_s=D_1/(1+k)+D_2/(1+k)^2+\cdots+(D_n+P_n)/(1+k)^n$$

where:

P_s	=	Current price of the firm's stock;
$D_1, D_2...D_n$	=	Expected annual dividends per share on the firm's stock;
P_n	=	Price per share of stock at the time the investor expects to sell the stock; and
k	=	Return the investor expects to earn on alternative investments of the same risk, i.e., the investor's required rate of return.

12. Equation 1 is frequently called the annual discounted cash flow model of stock valuation. Assuming that dividends grow at a constant annual rate, *g*, this equation can be solved for *k*, the cost of equity. The resulting cost of equity equation is $k = D_1/P_s + g$, where *k* is the cost of equity, D_1 is the expected next period annual dividend, P_s is the current price of the stock, and *g* is the constant annual growth rate in earnings, dividends, and book value per share. The term D_1/P_s is called the expected dividend yield component of the annual DCF model, and the term g is called the expected growth component of the annual DCF model.

13. As discussed above, the annual DCF model suggests that the cost of equity can be estimated by calculating the sum of the expected dividend/distribution yield and the expected growth rate. The Commission has traditionally estimated the distribution yield component of its annual DCF model by: (1) dividing each proxy company's current annualized distribution by the average of its high and low stock prices in each month of a six-month period; and (2) multiplying the average distribution yield by the factor ($1 + 0.5\ g$), where *g* is the expected growth rate. Specifically, the expected growth rate in the Commission's model is calculated by: (1) obtaining data on the I/B/E/S long-term growth estimate for each proxy company; (2) obtaining data on long-term GDP growth forecasts from the Energy Information Administration, the Social Security

Administration, and Global Insight; (3) multiplying the average long-term GDP growth forecast from these sources by one-half for master limited partnership (MLP) proxy companies; and (4) calculating a weighted average of the I/B/E/S and GDP growth forecasts, with the I/B/E/S growth forecast having a weight of two-thirds and the long-term GDP growth forecast a weight of one-third.

14. The major strengths of the Commission's DCF model are that it is based on the logically reasonable assumption that a company's stock price is equal to the present value of the cash flows investors expect to receive from their investment in the company's stock, and it is relatively easy to implement.

15. There are several weaknesses of the Commission's DCF model. First, it requires an estimate of investors' expectations of long-term future earnings and dividend growth that is inherently uncertain. Second, it may produce an unreasonable estimate of the cost of equity when stock prices are detached from a reasonable assessment of future growth, for example, in markets which are experiencing "irrational exuberance." Third, to be consistent with the basic assumptions of the annual DCF model, it should specify the calculation of the distribution yield by multiplying the current indicated annual distribution by one plus the growth rate, not one plus one-half the growth rate. Fourth, it incorrectly assumes that companies in the proxy groups pay dividends annually, whereas the companies in the proxy groups pay dividends quarterly. Fifth, it fails to reflect the additional risk of investing in illiquid assets such as new electric generation and transmission facilities and gas and oil pipelines as compared to investing in liquid assets, such as investments in market-traded stocks. Thus, if the Commission wants to encourage investment in long-lived property, plant, and equipment that cannot be easily sold if actual demand turns out to be less than forecasted demand, the Commission should allow a premium above the market cost

of equity to compensate for the additional risk of investing in illiquid assets such as electric transmission and gas and oil pipeline facilities.

B. Capital Asset Pricing Model

16. The CAPM is an equilibrium model of the security markets in which the expected or required return on a given security is equal to the risk-free rate of interest, plus the company equity "beta," times the market risk premium:

Cost of equity = Risk-free rate + (Equity beta x Market risk premium)

The risk-free rate in this equation is the expected rate of return on a risk-free government security, the equity beta is a measure of the company's risk relative to the market as a whole, and the market risk premium is the premium investors require to invest in the market basket of all securities compared to the risk-free security.

17. Strengths of the CAPM are that: (1) it is based on a logically sound economic analysis of the relationship between risk and return in capital markets; and (2) it includes an explicit estimate of risk.

18. Weaknesses of the CAPM are: (1) estimates of beta and the required market risk premium are highly uncertain; (2) it does not automatically include the impact of other risk factors such as size or value; and (3) it does not reflect the additional risk of investments in illiquid assets such as new electric generation and transmission facilities and gas and oil pipeline facilities.

C. Expected Earnings Method

19. The Expected Earnings Method, sometimes referred to as the Comparable Earnings Method, estimates the required rate of return on equity by calculating the expected accounting rate of return on book equity for a group of comparable risk companies. The U.S. Supreme Court states in the *Hope Natural Gas* case that the "return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks." [*Federal Power Comm'n*

v. Hope Natural Gas Co., 320 U.S. 591, 603 (1944).] The expected earnings approach implements the *Hope* standard by calculating the expected accounting rate of return on book equity for a group of comparable-risk companies.

20. A primary strength of the Expected Earnings Method is that it provides information for a consistent comparison of the required return on book equity to the earned return on book equity, that is, it compares a required book return to an earned book return. Primary weaknesses of the Expected Earnings Method are that: (1) expected accounting returns are not necessarily equal to expected or required market returns; and (2) proxy companies' expected accounting returns on book equity can vary widely. Thus, the Expected Earnings Method will not necessarily satisfy the U.S. Supreme Court's capital attraction standard.

D. Risk Premium Method

21. The risk premium method is based on the principle that investors expect to earn a return on an equity investment that reflects a "premium" above the interest rate they expect to earn on an investment in bonds. This equity risk premium compensates equity investors for the additional risk they bear in making equity investments versus bond investments. The risk premium approach can be implemented using virtually any debt instrument. However, the risk premium approach does require that the debt instrument used to estimate the risk premium be the same as the debt instrument used to calculate the interest rate component of the risk premium approach. There are several methods to implement the Risk Premium Method, including an *ex ante*, an *ex post*, and an allowed return Risk Premium Method.

22. A primary strength of the Risk Premium Method is that it correctly reflects the strong inverse relationship between the level of interest rates and the cost of equity. Primary weaknesses of the Risk Premium Method are: (1) data required to implement the method may not

be available; and (2) it may be difficult to accurately measure the required risk premium from available data.

IV. ROLE AND OBJECTIVES OF THE COMMISSION'S BASE ROE POLICY

23. Question A1. To what extent would the ROE methodology described in the *Coakley* and MISO Briefing Orders[4] impact the predictability of ROE determinations and the costs for market participants of making or intervening in such proceedings?

24. Response to A1. The Commission's use of the ROE methodology described in the *Coakley* and MISO Briefing Orders should improve the quality of the ROE determinations in FERC rate proceedings because the new approach proposes considering cost of equity model results from multiple models, such as CAPM, Risk Premium, and Expected Earnings, in addition to information from the DCF model. The Commission has in the past relied entirely on the results of the DCF method to determine the allowed ROEs for the FERC-regulated operations, rather than also considering the results of alternative cost of equity methodologies. Given the inherent uncertainties in estimating the cost of equity, it is preferable to consider information provided by several cost of equity models rather than relying on a single method.

25. Question A2. How would using the ROE methodology described in the *Coakley* and MISO Briefing Orders affect an investor's ability to forecast the ROE the Commission would establish in a litigated proceeding and the ability of participants to propose, contest, and settle base ROEs as compared to using only the DCF methodology?

26. Response A2. Although the ROE method described in *Coakley* and the MISO Briefing Orders should improve the quality of ROE determinations, it is difficult to determine at

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[4] *See Martha Coakley v. Bangor Hydro-Elec. Co.*, 165 FERC ¶ 61,030 (2018) (*Coakley* Briefing Order); *Ass'n of Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, 165 FERC ¶ 61,118 (2018) (MISO Briefing Order).

this time whether it would affect an investor's ability "to forecast the ROE the Commission would establish in a litigated proceeding and the ability of participants to propose, contest, and settle base ROEs as compared to using only the DCF methodology." Because all cost of equity methods require estimates of quantities that are not easily measured, investors will be unable to forecast the ROE the Commission might establish until they observe the results from a number of proceedings using the new methodologies.

27. Question A4. Should the ROE reflect the cost of capital at the time of the investment or be subject to adjustment to reflect the contemporary ROE required by investors?

28. Response A4. The ROE should reflect the contemporaneous ROE required by investors because investors will only invest in publicly-traded electric utilities, natural gas pipelines, or oil pipelines if they expect to earn a return on their investment that is commensurate with returns they currently expect to earn on other investments of similar risk. If the Commission were to set the ROE to reflect the cost of equity at the time the regulated company made each investment in plant and equipment, which is commonly called a "vintage approach," investors would likely earn a return on their equity investment in a regulated enterprise that is either higher or lower than the return they currently expect to earn on other investments of the same risk because the allowed return on an investment in a regulated company's rate base would not be the same on all vintages of rate base assets. In short, the "vintage approach" fails to meet the *Hope* and *Bluefield* standard that the equity investor must have an opportunity to earn a return that is commensurate with returns they expect to earn on other investments of comparable risk. Furthermore, a "vintage approach" would be both cumbersome and costly to administer because it would require a company to maintain separate books on each vintage of investment and require the Commission to determine an allowed ROE for each vintage.

29. Question A4.a. Should the Commission consider a "vintage approach," with ROE fixed for the life of the asset at the time that each asset was completed?

30. Response A4.a. No. As discussed in response to A4, a "vintage approach" would generally not provide an opportunity for investors to earn their current required market return on the value of their investment in the company's equity because the company's average return on all vintages of rate base investment could be either more or less than the company's current cost of equity capital, and it would be difficult and expensive to administer.

31. Question A4.b. Would such a "vintage approach" need to be coupled with an annual national default ROE for investments made in that year, so as to minimize the need for numerous annual litigated ROE proceedings for each public utility that made an investment during that year? What procedure should be used to determine such a default ROE?

32. Response A4.b. As discussed above, there is no way to implement a "vintage approach" that would allow investors an opportunity to earn their current required market return on the value of their investment. Thus, a "vintage approach" cannot meet the *Hope* and *Bluefield* standard that investors must have an opportunity to earn a return on their investment that is commensurate with returns they can earn on other investments of comparable risk. In addition, a "vintage approach" would be burdensome and costly to implement. Coupling a "vintage approach" with an "annual national default ROE" would only increase the cost of implementing the "vintage approach" without addressing the basic flaw that the "vintage approach" does not allow investors an opportunity to earn a fair return on the current market value of their investment in the regulated company.

V. ROEs FOR DIFFERENT COMMISSION-REGULATED INDUSTRIES

33. Question B1. In Opinion No. 531, the Commission found that the same DCF methodology should be used to determine an ROE for all its regulated industries, including public utilities, as well as gas and oil pipelines. If the Commission departs from our sole use of a two-step DCF methodology for public utilities, should the new method or methods also be used to determine natural gas and oil pipeline ROEs?

34. Response B1. Although the Commission's proposed new ROE methodology could be used to determine the allowed ROE for electric utilities, it should only be used to determine the allowed ROE for those oil pipeline services that are cost-of-service rates, and not for indexed rates, market-based rates, negotiated rates, and/or settlement rates. Many oil pipelines receive a high percentage of revenues from rates that are not cost-of-service rates. For example, Magellan notes in its 2018 Form 10-K:

> The rates on approximately 40% of the shipments on our refined products pipeline system are regulated by the FERC primarily through an index methodology, which for the five-year period beginning July 1, 2016 is set at the annual change in the producer price index for finished goods ("PPI-FG") plus 1.23%. As an alternative to cost-of-service or index-based rates, interstate liquids pipeline companies may establish rates by obtaining authority to charge market-based rates in competitive markets or by negotiation with unaffiliated shippers. Approximately 60% of our refined products pipeline system's markets are either subject to regulations by the states in which we operate or are approved for market-based rates by the FERC, and in both cases these rates can generally be adjusted at our discretion based on market factors. Most of the tariffs on our crude oil pipelines are established by negotiated rates that generally provide for annual adjustments in line with changes in the FERC index, subject to certain modifications. [Magellan 2018 Form 10-K at 11]

The Commission should clarify in its final order in this proceeding that any changes in its ROE methodology for an oil pipeline would apply only to setting the ROE for an oil pipeline's cost-of-service-regulated services.

35. Question B2. The Risk Premium methodology approved in Opinion Nos. 531 and 551 relied to a large extent on ROEs set forth in numerous settlements involving public utility formula rates approved by the Commission over the preceding 15 or 20 years. Natural gas and oil pipelines have stated rates and settlements of their rate cases are typically "black box" settlements that do not specify an agreed-upon ROE. How could the Risk Premium methodology be implemented in natural gas or oil pipeline rate cases where there is no history of ROE settlements from which to develop a risk premium study of the type used in Opinion Nos. 531 and 551?

36. Response B2. Although oil pipeline settlements are frequently black-box settlements that do not specify an agreed-upon ROE, the Commission has also approved allowed ROEs for oil pipelines in each year beginning in 1984 in various opinions. These allowed ROEs have been based on the application of the FERC's DCF method alone to a small group of market-traded pipeline companies; and thus, it may be possible to implement a risk premium analysis using these allowed ROEs. However, the Commission should be wary of basing a Risk Premium approach on allowed ROEs derived from applying the DCF method alone because, as the Commission found in *Emera Maine* proceedings, the DCF method may at times produce results that understate a reasonable estimate of the cost of equity. Thus, the Commission should consider risk premium evidence reflecting either earned returns or cost of equity estimates for a large proxy group of comparable risk companies, where comparability is measured by risk measures such as beta or Value Line equity risk ratings.

37. Question B3. Given the tendency of the Expected Earnings methodology to produce more high-end outliers than the other methodologies, would there be a sufficient number of natural gas and oil pipeline proxy members to implement the Expected Earnings methodology for gas and oil pipelines?

38. Response B3. There may be a sufficient number of natural gas and oil pipeline companies to implement the Expected Earnings methodology using data published in Value Line's reports for the companies in the MLP Pipeline and Oil and Gas Distribution industries. However, many of the companies in these two Value Line industry groups either do not provide oil pipeline services or receive a small percentage of revenues from oil pipeline services, and other companies in these industry groups have a relatively short operating history. Thus, the choice of an appropriate proxy group for oil pipeline rate-regulated services, for example, would require a trade-off between choosing a small group of companies that are primarily in the oil pipeline business, or choosing a larger group of companies with more diverse business activities. In either case, the application of the Expected Earnings method to oil pipeline proxy groups may produce an unreasonable cost of equity estimate for an oil pipeline's rate-regulated service. Thus, the Expected Earnings method only should be used along with other cost of equity methods such as the DCF, CAPM, and Risk Premium.

39. Question B4. What, if any, differences between public utilities on the one hand and natural gas and oil pipelines on the other would justify using different methodologies to determine their ROEs? [5]

40. Response B4. A major difference between public utilities and oil pipelines is that rates for public utilities are generally determined through rate of return regulation, whereas a high percentage of rates for oil pipeline services are non-cost-of-service rates, as discussed above. For non-cost-of-service rates, there is no need for the Commission to determine an allowed ROE for

[5] *See Trailblazer Pipeline Co. LLC*, 166 FERC ¶ 61,141, at P 48 (2019) (setting for hearing the issue of whether it would be appropriate to apply alternatives to the DCF for natural gas pipelines and whether appropriate data that would support those alternatives are available).

oil pipelines. A second difference is that it has generally been more difficult to identify a relatively large proxy group of comparable risk companies for oil pipelines than for public utilities.

VI. PERFORMANCE OF THE DCF MODEL

41. Question C3. How does the DCF methodology perform over a wide range of interest rate conditions?

42. Response C3. The DCF methodology does not perform well over a wide range of interest rate conditions because it does not take into account the relationship between the DCF model result and changes in interest rates. There is considerable evidence that the DCF risk premium (the difference between the DCF result and interest rates) is higher when interest rates are lower and lower when interest rates are higher. An advantage of risk premium cost of equity methods is that they provide information on the relationship between the estimated cost of equity and the level of interest rates.

43. Question C3.a. What specific assumptions of the DCF model, if any, do not work well in low or high interest rate environments?

44. Response C3.a. The DCF model assumes that the cost of equity depends only on the dividend yield and earnings growth rate and does not depend on the level of interest rates or the level of a company's risk as measured by beta or other risk variables. The DCF model assumption that the DCF result is unrelated to the level of interest rates does "not work well in low or high interest rate environments." Studies comparing DCF cost of equity estimates and concurrent interest rates have shown that the risk premium implied by DCF model results increases when interest rates are low and decreases when interest rates are high.

45. Question C3.b. Is there evidence that the volatility of price-to-earnings ratios over the last 10 to 20 years, assumed to be constant in the DCF methodology, has been driven by

the wide swings in interest rates over this period? If so, would the constant P/E assumption impact the award of reasonable ROEs?

46. Response C3.b.: Although I have not conducted a study of the volatility of price-to-earnings ratios over the last 10 to 20 years, I agree that evidence that historical P/E ratios are statistically related to interest rates may explain why the Commission's DCF model has been producing unreasonably low cost of equity estimates in recent years.

VII. PROXY GROUPS

47. Question D1. Should proxy groups for electric utilities, as well as natural gas and oil pipelines, consist only of companies with corresponding regulated businesses?

48. Response D1. No. Financial theory and the *Hope* and *Bluefield* legal standards require that proxy groups for regulated utilities and natural gas and oil pipelines be comparable in risk to the regulated utility or pipeline whose rates are being determined. However, it requires considerable judgment to implement the legal standard of risk comparability. When there are a sufficient number of companies in the same business as the regulated utility, natural gas, or oil pipeline company, it is generally reasonable to implement the financial and legal principles of comparability by identifying companies that have similar regulated businesses as the company whose rates are being investigated, although it may also be informative to implement these standards using a proxy group of comparable-risk unregulated companies. If there are an insufficient number of publicly-traded companies in the same business as the target company, it would be reasonable to implement the financial and legal principles of comparability by choosing proxy companies that are comparable in risk but are not necessarily in the same business as the target company.

49. Question D1.a. For companies with a combination of regulated and unregulated businesses, should a company be required to derive a certain percentage of its revenues from the applicable regulated business in order for that company to be included in the proxy group that is used to determine an ROE for a company in that regulated business?

50. Response D1.a.,b. No. As discussed in response to D1, financial theory and the *Hope* and *Bluefield* standards only require that proxy groups for regulated utilities and natural gas and oil pipelines be comparable in risk to the target company. Furthermore, it would be unreasonable to require proxy natural gas and oil companies to receive a certain percentage of revenues from regulated services because: (1) there are relatively few market-traded oil pipelines that receive a majority of revenues from oil pipeline services; and (2) the revenues of oil pipeline companies generally reflect market-based rates, negotiated rates, or indexed rates, rather than just cost-of-service rates.

51. Question D1.b. Are the corresponding proxy groups sufficiently large given the continued consolidation in the industries?

52. Response D1.b. No. The proxy group of oil pipelines with a high percentage of revenues from regulated oil pipeline services is small at present, and will be even smaller in the future once the announced acquisition of Buckeye Pipeline Partners, L.P. has been completed.

53. Question D2. Should risk be considered both in the proxy group selection and in the placement within the zone of reasonableness?

54. Response D2. With regard to cost-of-service oil pipeline rates, risk should generally be reflected both in proxy group selection and, as necessary, also be reflected in the placement of the allowed ROE in the zone of reasonableness. For example, in cases where the regulated company is clearly more or less risky than the available group of proxy companies, risk

should also be considered in the placement of the allowed ROE within the zone of reasonableness. For those oil pipeline rates that are non-cost-of-service rates, there is no need to estimate an allowed ROE because pipelines operating in competitive markets charge market-based rates.

55. Question D2.a. Should the Commission's approach to proxy group selection change depending on which financial models it considers when determining the just and reasonable ROE and, if so, how?

56. Response D2.a. Although the Commission's approach to proxy group selection should be broadly similar for each model, the specific data requirements in each model may dictate that different companies be used as proxy companies in different models. For example, the DCF model requires an estimate of investors' earnings growth expectations for each company; and the CAPM requires a beta estimate for each company. There is no guarantee that all proxy companies that have available beta estimates also have available growth estimates, and vice versa. In applying each cost of equity method, the Commission should seek to have the largest possible proxy group to estimate each model result, even if the results for different models are based on different, but appropriate, proxy company groups.

57. Question D3. Should the Commission consider non-energy companies when selecting proxy groups?

58. Response D3. Yes. The fair rate of return standard requires that proxy companies have similar risk to the target regulated company. As long as the evidence indicates that proxy companies are similar in risk to the target regulated company, there is no reason to require that a proxy company be in exactly the same business.

59. Question D3.a. What non-energy industries or securities have comparable risk to public utilities and natural gas and oil pipelines, if any?

60. Response D3.a. The risk comparability of companies in non-energy industries should be examined on a case-by-case basis. However, in the application of the CAPM, for example, it is safe to say that comparable non-energy companies should have approximately the same average beta as the target regulated company.

61. Question D3.b. Do certain non-energy industries or securities feature fewer outliers?

62. Response D3.b. I am not aware of evidence that certain non-energy industries or securities feature fewer outliers.

63. Question D4. What, if any, are appropriate high- and low-end outlier tests?

64. Response D4. Appropriate high-end and low-end outlier tests depend in part on the number of available companies for a proxy group. In the case of oil pipelines, for example, it may be unreasonable to remove outlier results because the removal of outlier results may reduce the number of proxy companies to an unacceptable level.

65. Question D4.a. The Commission currently excludes from the proxy group companies whose ROE fails to exceed the average 10-year bond yield by approximately 100 basis points. Should the low-end outlier test continue to be based on a fixed value relative to the costs of debt or (a) should it be based on its value relative to the median (i.e., less than 50 percent of the median); or (b) still reflect the cost of debt but vary based on interest rates?

66. Response D4.a. From a statistical point of view, the low-end outlier test should be based on a value relative to a measure of central tendency such as the mean or median cost of equity result. From a practical point of view, the low-end outlier test should also reflect a premium over the cost of a company's debt but vary inversely with the level of interest rates. That is, it should reflect a higher premium over the cost of debt when interest rates are low than when interest

rates are high. Thus, the Commission should consider both points of view when assessing low-end outlier results.

67. Question D4.b. How, if at all, should the Commission's approach to outliers vary among different financial models?

68. Response D4.b. The Commission's approach to outliers may vary among different financial models because the application of a given outlier test to specific model results may result in an insufficient number of companies remaining in the proxy group, and, thus, an unreliable cost of equity estimate. For example, if there were only five reasonable companies in a DCF proxy group, and two results are outliers, a median value will reflect only the results for three companies. In many cases, a median result from a three-company proxy group would not be a reliable estimate of the cost of equity.

69. Question D5. How, if at all, does the Commission's use of credit ratings in ROE determinations incentivize public utilities to behave in certain ways, such as issuing more debt, and does this affect public utilities' credit ratings?

70. Response D5. The Commission's use of credit ratings in ROE determinations should have little or no impact on the regulated company's incentive to issue more debt because total regulated revenues depend on both the allowed return on equity and the allowed capital structure. Because the additional revenues resulting from any increase in the allowed return on equity associated with higher debt in the capital structure would be largely offset by the reduced revenues resulting from the inclusion of a higher percentage of debt in the allowed capital structure, the company would have no incentive to attempt to influence an allowed return on equity by changing its capital structure.

71. Question D6. What would be the impact of the Commission modifying the credit rating screen to include all investment-grade utilities in the proxy group?

72. Response D6. Modifying the credit rating screen to include all investment-grade utilities with sufficient data to estimate the cost of equity in the proxy group would have the beneficial impact of increasing the number of companies in the proxy group used to estimate the cost of equity.

73. Question D7. To what extent do credit ratings correspond to the ROE required by investors?

74. Response D7. For companies with investment-grade credit ratings, there is generally no statistically significant relationship between the estimated costs of equity and the companies' credit ratings.

75. Question D8. The Commission excludes from the proxy group companies with merger activity during the six-month study period that is significant enough to distort study inputs. Should the Commission continue using our existing merger screen?

76. Response D8. No. The rationale for excluding a company from a proxy group is that merger activity may distort the inputs in the cost of equity equation. In general, the Commission should exclude only the target company of a merger because merger activity generally has a significant impact on the *target* company's stock price, but little or no impact on the *acquiring* company's stock price. With regard to the acquiring company, the Commission should only exclude the acquiring company from a proxy group if there is clear evidence that the potential acquisition has distorted cost of equity model inputs for the acquiring company.

77. Question D8.a. If so, should the Commission revise its standards for what conduct constitutes merger and acquisition activity?

78. Response D8.a. Yes. The Commission should exclude the *target* company of a merger but only remove the acquiring company if there is clear evidence that the potential acquisition has distorted cost of equity model inputs for the acquiring company.

79. Question D9. What circumstances or factors, if any, warrant an adjustment from the midpoint/median to other points within the zone of reasonableness (e.g., lower or upper midpoint/median)?

80. Response D9. An adjustment to the zone of reasonableness is warranted if the investment in the assets required to provide the regulated service is significantly more or less risky than the average risk of the publicly-traded proxy companies. If such an adjustment were not made, the regulated rates would not satisfy the *Hope* and *Bluefield* standard that the assets required to produce the service should be allowed a return that is commensurate with returns investors can earn on other investments of comparable risk.

81. Question D11. Can the Commission continue to construct proxy groups of sufficient size for natural gas and oil pipeline companies using the DCF methodology, or in general for the alternative methodologies, particularly considering the increased amount of merger and acquisition activity involving master limited partnerships (MLPs) and the multiple recent conversions of MLPs to C-corporations?

82. Response D11. It has been and continues to be difficult to construct proxy groups of sufficient size to reliably estimate the ROE for oil pipeline companies because there have been and are only a small number of market-traded companies that meet the historical FERC screening criteria for inclusion in a proxy oil pipeline group. Indeed, the choice of proxy companies for estimating the cost of equity for oil pipelines necessarily involves a trade-off between choosing a

small group of companies that meet the FERC's screening criteria or choosing a larger group of companies in a somewhat more diverse group of businesses.

VIII. FINANCIAL MODEL CHOICE

83. Question E9. How, if at all, should the Commission consider state ROEs?

84. Response E9. State utility commission allowed ROEs should generally not be considered in oil pipeline proceedings before the FERC because oil pipelines typically face more competition than the regulated utilities whose rates are being determined in state proceedings. As discussed above, many oil pipeline rates are exempt from rate of return regulation because the rates are not cost-of-service rates.

85. Question E9.a. How and why do state ROEs vary by state?

86. Response E9.a. Allowed ROEs vary by state because most state ROEs are determined by each state utility commission's assessment of the evidence presented in each case rather than by an ROE formula, and state commissions assess the evidence in different ways.

87. Question E9.b. How are certain state ROEs more or less comparable to Commission ROEs?

88. Response E9.b. Because state commissions generally do not use formula-determined ROEs and rarely explain precisely how they arrive at their ROE decisions, it is difficult to meaningfully compare state ROEs to Commission ROEs without examining specific proceedings in detail.

IX. MISMATCH BETWEEN MARKET-BASED ROE DETERMINATIONS AND BOOK-VALUE RATE BASE

89. Question F. The DCF and CAPM models determine a percentage ROE based on market prices of the proxy companies. That percentage ROE is then applied to the book value of

the rate base to calculate the monetary ROE included in a utility's cost of service. For the last three decades, the market-to-book ratios of the companies that the Commission uses in proxy groups have generally been substantially in excess of one. The Commission seeks comment on the mismatch between market-based ROE determinations and book-value rate base and whether this mismatch is a problem, and how the Commission should address this issue.

90. Response F. The mismatch between market-based ROE determinations and book-value rate base is a problem because the investor will generally not be able to earn the required market rate of return on equity if the market required rate of return on equity is applied to a lower book value rate base. The Commission can address this issue by setting the allowed ROE to a level that produces a weighted average cost of capital that permits the investor to earn the required rate of return on the market value of their investment. Such an adjustment at this time would generally require an upward adjustment to the measured cost of equity.

X. MODEL MECHANICS AND IMPLEMENTATION

91. The Commission seeks comment on the mechanics and implementation of the DCF, CAPM, Expected Earnings, and Risk Premium models. Specifically, the Commission seeks comment on general issues that affect multiple models, such as the underlying data that the models rely on, and also seeks comment on the mechanics specific to each of the four respective models.

A. General issues/issues that affect multiple models

92. Question H.1.1. Are IBES data a good proxy for "investor consensus?"

93. Response H.1.1. Generally, yes. Research in the financial community has verified that the I/B/E/S data on analysts' EPS growth forecasts are generally a good proxy for investors' earnings per share growth expectations. The Commission may recognize that other services, such as Bloomberg, S&P Capital IQ, FactSet, and Zacks, also provide consensus long-term EPS growth

estimates. The Value Line Investment Survey also provides its own long-term growth estimates; however, the Value Line estimates differ from the consensus estimates in two ways. First, the estimates are those only of Value Line, not an average estimate based on polling of other analysts; and second, the Value Line estimates are specifically derived by comparing the average historical EPS for the past three years to Value Line's estimates of future EPS over the next three-to five years.

94. Question H.1.1.a. If not, are there better alternatives, such as Bloomberg, Zacks, S&P Capital, Morningstar, and Value Line?

95. Response H.1.1.a. As the original provider of consensus forecast information beginning in 1976, the I/B/E/S data have been widely studied and have set the standard for other providers. However, the forecasts provided by other providers of consensus long-term growth estimates should be generally similar to those provided by I/B/E/S because there is overlap in the analysts that contribute to the consensus forecast data. In addition, there is a high cost associated with subscribing to services such as Bloomberg, S&P Capital IQ, and FactSet, whereas the I/B/E/S growth estimates are freely available on the Yahoo Finance website, and the Zacks consensus long-term EPS growth forecasts are also available freely on the Zacks' website.

96. Question H.1.1.b. Should the Commission combine data from multiple sources?

97. Response H.1.1.b. Ideally, the Commission should use a long-term EPS growth estimate that reflects the financial community's average, or consensus, estimate of long-term EPS growth. Historically, the I/B/E/S growth estimate has been a good proxy for investors' EPS growth expectations because it reflected the average growth estimate of a reasonably large number of financial analysts who contribute to the I/B/E/S database.

98. Question H1.1.c. What weight, if any, should be given to an estimate if the number and identity of analysts contributing to the estimate is not available?

99. Response H1.1.c. In arriving at a DCF estimate of the cost of equity, the Commission should use the best available evidence of investors' growth expectations, even if information on the number and identity of analysts contributing to the estimate is not available.

100. Question H.1.2. To what extent does model risk affect all ROE methodologies?

101. Response H.1.2. Because all ROE methods reflect estimates of unknown parameters, such as growth rates, relative risk, forecasted interest rates, and required risk premiums, all methods are affected by model risk. Model risk is a major reason why it is better to review the results of several cost of equity methods rather than relying entirely on a formulaic application of a single method of estimating the cost of equity.

102. Question H.1.3. The DCF model incorporates data at the parent/holding company level (e.g., stock price). The Commission adjudicates cases at the operating company level, for which there is no public data like stock prices, growth rates, and betas. What impact does this disparity have on the results of the DCF and other models?

103. Response H.1.3. The analyst can only estimate the cost of equity using data from publicly-traded entities. Any "disparity" between the parent company and the subsidiary will have little impact on the estimated cost of equity when the parent company has approximately the same risk as the subsidiary. If the parent company is either more risky or less risky than the subsidiary, any disparity between the parent company and the subsidiary could have a significant impact on the estimate of the subsidiary's cost of equity. The uncertainty arising from reliance on holding company data can only be addressed by selecting the best available proxy group of comparable

risk companies. However, it may not be possible to eliminate entirely the uncertainty associated with applying estimates obtained from holding company data to operating subsidiaries that may experience different risks than the holding company. On the other hand, the Commission should also be aware that a holding company may be less risky than its subsidiaries because it is more diversified than a subsidiary on a stand-alone basis.

104. Further, the Commission should recognize that the DCF model is not the only cost of equity model that incorporates data at the parent/holding company level. The CAPM incorporates betas that are only available at the holding company level. The Risk Premium incorporates risk premiums based on historical or forward-looking risk premiums developed from market data that are only available at the holding company level. The Expected Earnings method incorporates the expected earnings on book equity from data that are only available at the holding company level.

105. Question H.1.4. Should the Commission continue to rely on the efficient market hypothesis, which underlies the DCF and CAPM models? Why or why not?

106. Response H.1.4. The Commission must rely on models such as the DCF and CAPM to estimate the cost of equity, and all market models essentially rely on the efficient market hypothesis. The best way to mitigate the effect of market inefficiencies on market model results is to rely on multiple cost of equity models.

107. Question H.1.4.a. If yes, should the Commission continue to employ outlier screens, M&A screens, etc., for the DCF and CAPM models since these models need to incorporate all relevant information?

108. Response H.1.4.a. The Commission should continue to use outlier screens in assessing model results, but it is difficult to define specific screens in all circumstances. The

Commission should use judgment in applying screens to form proxy company groups in order to maintain proxy groups of reasonable size. With regard to merger screens, the Commission should eliminate a company that is the subject of a merger offer that has not been completed but should not in every case eliminate the company making the offer.

109. Question H.1.5. Should growth rates be based on Value Line, IBES, or alternative estimates?

110. Response H.1.5. See H.1.1, H1.1.a, H1.1.b.

111. Question H.1.6. Should the same growth rate sources be used across models, if more than one model is used to determine the ROE?

112. Response H.1.6. An estimate of long-term EPS growth is only an input in the DCF model and a DCF-based risk premium model. In those cases, the Commission should use the same growth rates.

B. Model-Specific Questions: DCF

113. Question H.2.a.1. Should the Commission continue to use a dividend DCF model or should the Commission use a different DCF model, for example, one based on free cash flow?

114. Response H.2.a.1. The Commission should continue to use a dividend DCF model rather than a free cash flow DCF model because stock prices reflect the present value of the stream of cash flows investors expect to receive from their investment in the company's stock, and investors expect to receive their cash flows in the form of dividends. A company is not required to distribute, and generally does not distribute "free cash flow" to investors.

115. Question H.2.a.2. Could terminal stock value be used in place of long-term growth projections? If so, how should terminal stock value be determined?

116. Response H.2.a.2. No. Terminal stock value is not generally used in DCF calculations because terminal value is more difficult to estimate than long-term growth. Furthermore, according to the assumptions of the DCF model, terminal stock value should simply reflect the present value of all expected dividends beyond the "terminal period." Thus, there is nothing to be gained by attempting to estimate the DCF cost of equity using terminal values.

117. Question H.2.a.3. Do investment analysts project earnings/dividends growth beyond five years, and if not, why not, and is GDP an appropriate proxy for long-term growth?

118. Response H.2.a.3. Although investment analysts' projections of growth generally do not extend beyond five years, they are frequently the best available evidence of investors' long-term growth expectations. A forecast estimate of GDP growth is not an appropriate proxy for the growth term in the DCF model because studies indicate that the analysts' growth rates are more highly correlated with stock prices than other estimates of long-term growth. This evidence provides strong support for the conclusion that investors use analysts' growth rates in making stock buy and sell decisions, and thus the analysts' growth rates should generally be used to estimate the growth component of the DCF model.

119. Question H.2.a.4. How should the Commission weight short-term and long-term earnings/dividend growth projections?

120. Response H.2.a.4. The Commission currently calculates the growth component of the DCF model by giving a two-thirds weight to the I/B/E/S forecast of long-term EPS growth and a one-third weight to a forecast of long-term GDP growth. My studies indicate that stock prices are more highly correlated with I/B/E/S analysts' growth rates than with other growth forecasts. Therefore, the Commission should consider giving no weight to forecasted long-term GDP growth. Further, in estimating the distribution yield, as noted above, to be consistent with the basic

assumptions of the annual DCF model, the Commission should specify the calculation of the distribution yield by multiplying the current indicated annual distribution by one plus the growth rate, not one plus one-half the growth rate.

121. Question H.2.a.5. The Commission uses a constant growth DCF model. Should the Commission consider using a multi-stage DCF model? If so, how would the Commission determine the length of each stage of a proxy company's growth?

122. Response H.2.a.5. As noted in response to H.2.a.4, the Commission's current DCF model is essentially a two-stage model, where the first stage growth receives a weight of two-thirds, and the second stage of growth receives a weight of one third. Rather than a multi-stage DCF model, the Commission should consider moving to a true constant growth DCF model that gives no weight to forecasted long-term GDP growth. A two-stage model giving two-thirds weight to the I/B/E/S forecast of long-term EPS growth and one-third weight to the forecasted long-term GDP growth may be appropriate in circumstances where the use of a single-stage growth rate based on forecasted EPS growth produces outlier results.

123. Question H.2.a.6. Are six months of average high/low historical monthly stock prices an appropriate measure for the current stock price "P"?

124. Response H.2.a.6. The Commission should use a three-month average stock price because a three-month average stock price is more likely to reflect investors' current valuation of earnings growth.

C. Model Specific Questions: CAPM

125. Question H.2.b.1. If the market risk premium is determined by applying the DCF methodology to a representative market index, should a long-term growth rate be used, as in the Commission's two-step DCF methodology?

126. Response H.2.b.1. Although a forecast estimate of long-term GDP growth is currently given a one-third weight in the Commission's two-step DCF method, it would be more reasonable to use only the I/B/E/S estimate of long-term growth for each company when applying the DCF model to each company in the market index because the DCF model requires the growth forecasts of investors; and studies indicate that stock prices reflect the analysts' consensus growth forecasts and are the best estimate of future growth for use in the DCF model.

127. Question H.2.b.2. Beta is a measure of a security's risk relative to the broader market, such as the S&P 500, not of its absolute risk. Do CAPM's assumptions break down if both utility stocks and the broader market become riskier over time on an absolute basis, but the relative increase in risk in utility stocks rises more slowly?

128. Response H.2.b.2. No. Beta is a measure of a security's risk relative to the broader market. Because there is no evidence that investors expect utilities in the future to become less risky relative to the market, there is no reason to simply dismiss CAPM model results for utilities because they "might" in the future become less risky relative to the market.

129. Question H.2.b.3. What are appropriate data sources for the beta value?

130. Response H.2.b.3. Only beta estimates that are properly adjusted for the tendency of beta estimates to trend to the overall mean beta estimate of 1.0 over time, such as the beta estimates published by Value Line, should be used to estimate the CAPM cost of equity.

131. Question H.2.b.4. Should the Commission employ more sophisticated versions of the CAPM model that consider more variables instead of only beta, such as the Fama-French Model?[6]

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[6] The Fama and French Model is an asset pricing model that takes into consideration that value and small-cap stocks outperform markets on a regular basis. The model initially considered two factors in addition to the CAPM model: the size risk and value risk factors to the market risk factor in CAPM. Later in 2015, two additional factors were added: profitability and investment. *See generally* Eugene F. Fama, *et al.* "Common

132. Response H.2.b.4. The Commission should consider employing more sophisticated versions of the CAPM, which take into account additional factors such as the impact of company size as measured by market capitalization.

D. Model Specific Questions: Expected Earnings

133. Question H.2.c.1. Should the use of utilities in the proxy group for the Expected Earnings model be predicated on the Expected Earnings analysis being forward-looking?

134. Response H.2.c.1. Yes. The Commission should use forecasted future returns on equity to estimate the cost of equity in an Expected Earnings analysis because the regulated company can only attract capital if investors expect to earn a future return on equity that is commensurate with returns they expect to earn on other investments of the same risk.

135. Question H.2.c.2. What, if any, concerns regarding circularity are there with using the Expected Earnings analysis to determine the base ROE, as opposed to using the analysis for corroborative purposes?

136. Response H.2.c.2. There are no circularity concerns with using estimates of future returns on equity because: (1) a company may not earn its forecasted return on equity; and (2) the Expected Earnings method uses the average expected rate of return for the proxy group, not an expected rate of return for one company, as an estimate of the cost of equity.

137. Question H.2.c.2.i. If there are circularity concerns, are there ways to mitigate these concerns for the Expected Earnings analysis? If these concerns exist, are these concerns more significant than those surrounding the DCF methodology, which effectively separates Expected Earnings and ROE into its dividend yield and growth rate subcomponents?

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risk factors in the returns on stocks and bonds," Journal of Financial Economics (1993); Eugene F. Fama, *et al.* "A Five-Factor Asset Pricing Model," Journal of Financial Economics (2015).

138. Response H.2.c.2.i. There are no circularity concerns with the Expected Earnings method. See response to H.2.c.2. above.

E. Model Specific Questions: Risk Premium

139. Question H.2.d.1. Should the analysis be historical or forward-looking?

140. Response H.2.d.1. A Risk Premium analysis should include an ex ante, or forward-looking risk premium estimate, because the required return on equity reflects investors' future required return. However, a properly implemented historical risk premium analysis may also inform investors' future expectations.

141. Question H.2.d.2. Is a Risk Premium analysis compatible with a finding of anomalous capital market conditions? Why or why not?

142. Response H.2.d.2. If capital market conditions are anomalous, these anomalous conditions will likely affect all cost of equity model results, including the results of a Risk Premium analysis. Rather than excluding the results of a particular cost of equity model, the analyst should take into account how anomalous conditions may be affecting model inputs and results for all cost of equity models.

143. Question H.2.d.3. Unlike the financial models discussed above, the Risk Premium analysis produces a single ROE rather than a zone of reasonableness. Does this characteristic require the Commission to use the Risk Premium model differently than the other models?

144. Response H.2.d.3. Although a Risk Premium analysis produces a single cost of equity estimate, the Risk Premium cost of equity estimate can be used along with other cost of equity model results to arrive at an average result from the application of all models.

145. Question H.2.d.3.i. Is there a method by which the Risk Premium ROE could be adjusted upward for an above average utility or downward for a below average risk utility? If not, is it reasonable to consider the results of a Risk Premium analysis when determining the ROE of an above or below average risk utility?

146. Response H.2.d.3.i. Although it is reasonable to consider the results of a Risk Premium analysis, along with the results from other models, when determining the allowed ROE of an above-average risk utility or below-average risk utility, it is also reasonable to increase or decrease the result of the Risk Premium analysis to reflect the above-average risk or below-average risk of the regulated utility.

147. Question H.2.d.3.ii. Is it appropriate to use a Risk Premium analysis when conducting the first prong of the section 206 evaluation?

148. Response H.2.d.3.ii. A Risk Premium analysis may be useful for determining whether a company is earning its required rate of return on equity because it provides additional information on the market-required rate of return on equity.

DECLARATION

State of North Carolina)
) SS
City of Durham)

I, James H. Vander Weide, hereby declare under penalty of perjury of the laws of the United States that the foregoing document is true and correct to the best of my knowledge and belief. *See* 28 U.S.C. § 1746.

Executed on this 26 th day of June, 2019.

James H. Vander Weide

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James H. Vander Weide is President of Financial Strategy Associates, a consulting firm that provides financial and economic consulting services, including cost of capital and valuation studies, to corporate clients. Dr. Vander Weide holds a Ph.D. in Finance from Northwestern University and a Bachelor of Arts in Economics from Cornell University. After receiving his Ph.D. in Finance, Dr. Vander Weide joined the faculty at Duke University, the Fuqua School of Business, and was named Assistant Professor, Associate Professor, Professor, and then Research Professor of Finance and Economics.

As a Professor at Duke University and the Fuqua School of Business, Dr. Vander Weide has published research in the areas of finance and economics and taught courses in corporate finance, investment management, management of financial institutions, statistics, economics, operations research, and the theory of public utility pricing. Dr. Vander Weide has been active in executive education at Duke and Duke Corporate Education, leading executive development seminars on topics including financial analysis, cost of capital, creating shareholder value, mergers and acquisitions, capital budgeting, measuring corporate performance, and valuation. In addition, Dr. Vander Weide designed and served as Program Director for several executive education programs, including the Advanced Management Program, Competitive Strategies in Telecommunications, and the Duke Program for Manager Development for managers from the former Soviet Union. He is now retired from his teaching responsibilities at Duke.

As an expert financial economist and industry expert, Dr. Vander Weide has participated in more than five hundred regulatory and legal proceedings, appearing in United States courts and federal and state or provincial proceedings in the United States and Canada. He has testified as an expert witness on the cost of capital, competition, risk, incentive regulation, forward-looking economic cost, economic pricing guidelines, valuation, and other financial and economic issues. His clients include investor-owned electric, gas, and water utilities, natural gas pipelines, oil pipelines, telecommunications companies, and insurance companies.

Publications

Dr. Vander Weide has written research papers on such topics as portfolio management, capital budgeting, investments, the effect of regulation on the performance of public utilities, and cash management. His articles have been published in *American Economic Review, Journal of Finance, Journal of Financial and Quantitative Analysis, Management Science, Financial Management, Journal of Portfolio Management, International Journal of Industrial Organization, Journal of Bank Research, Journal of Accounting Research, Journal of Cash Management, Atlantic Economic Journal, Journal of Economics and Business,* and *Computers and Operations Research*. He has written a book entitled *Managing Corporate Liquidity: An Introduction to Working Capital Management* published by John Wiley and Sons, Inc.; and he has written a chapter titled "Financial Management in the Short Run" for *The Handbook of Modern Finance*, and a chapter titled "Principles for Lifetime Portfolio Selection: Lessons from Portfolio Theory" for *The Handbook of Portfolio Construction: Contemporary Applications of Markowitz Techniques. The Handbook of Portfolio Construction* is a peer-reviewed collection of research papers by notable scholars on portfolio optimization, published in 2010 in honor of Nobel Prize winner Harry Markowitz.

Professional Consulting Experience

Dr. Vander Weide has provided financial and economic consulting services to firms in the electric, gas, insurance, oil and gas pipeline, telecommunications, and water industries for more than thirty years. He has testified on the cost of capital, competition, risk, incentive regulation, forward-looking economic cost, economic pricing guidelines, valuation, and other financial and economic issues in more than five hundred cases before the Federal Energy Regulatory Commission, the National Energy Board (Canada), the Federal Communications Commission, the Canadian Radio-Television and Telecommunications Commission, the National Telecommunications and Information Administration, the United States Tax Court, the public service commissions of forty-five states, the District of Columbia, and four Canadian provinces, the insurance commissions of five states, the Iowa State Board of Tax Review, and the North Carolina Property Tax Commission. In addition, he has testified as an expert witness in proceedings before numerous federal district courts, including the United States District Court for the District of Nebraska; the United States District Court for the District of New Hampshire; the United States District Court for the District of Northern Illinois; the United States District Court for the Eastern District of North Carolina; the Montana Second Judicial District Court, Silver Bow County; the United States District Court for the Northern District of California; the Superior Court, North Carolina; the United States Bankruptcy Court for the Southern District of West Virginia; the United States District Court for the Eastern District of Michigan; and the Supreme Court of the State of New York. Dr. Vander Weide testified in thirty states on issues relating to the pricing of unbundled network elements and universal service cost studies and consulted with Bell Canada, Deutsche Telekom, and Telefónica on similar issues. Dr. Vander Weide has provided consulting and expert witness testimony to the following companies:

Alcoa Power Generating, Inc.	Nevada Power Company
Alliant Energy and subsidiaries	Newfoundland Power Inc.
Allstate	NICOR
ALLTEL and subsidiaries	North Carolina Natural Gas
AltaLink, L.P.	North Carolina Rate Bureau
Ameren	North Shore Gas
American Water Works	Northern Natural Gas Company
Ameritech	NOVA Gas Transmission Ltd.
AT&T	NYNEX and subsidiaries (Verizon)
Atmos Energy and subsidiaries	Pacific Telesis and subsidiaries
Bell Canada/Nortel	PacifiCorp
BellSouth and subsidiaries	Peoples Energy and its subsidiaries
BP p.l.c.	PG&E
Buckeye Partners, L.P.	Phillips County Cooperative Tel. Co.
Centel and subsidiaries	Pine Drive Cooperative Telephone Co.
Central Illinois Public Service	Plains All American Pipeline, L.P.
Cincinnati Bell (Broadwing)	Progress Energy and subsidiaries
Cisco Systems	PSE&G
Citizens Telephone Company	Public Service Company of North Carolina
Citizens Utilities	Roseville Telephone Company (SureWest)
Concord Telephone Company	SBC Communications (now AT&T new)
Consolidated Edison and subsidiaries	Sempra Energy/San Diego Gas and Electric
Consolidated Natural Gas and subsidiaries	Sherburne Telephone Company
Contel and subsidiaries	Siemens
Deutsche Telekom	South Carolina Electric and Gas
Dominion Resources and subsidiaries	Southern Company and subsidiaries
Duke Energy and subsidiaries	Southern New England Telephone
Empire District Electric and subsidiaries/Liberty Utilities	Spectra Energy
EPCOR Distribution & Transmission Inc.	Sprint/United and subsidiaries
EPCOR Energy Alberta Inc.	Telefónica
FortisAlberta Inc.	Tellabs, Inc.
FortisBC Utilities	Tennessee-American Water Company
GTE and subsidiaries (now Verizon)	The Peoples Gas, Light and Coke Co.
Gulf Insurance Company	The Stentor Companies
Heins Telephone Company	The Travelers Indemnity Company
Hope Natural Gas	Trans Québec & Maritimes Pipeline Inc.
Hope Natural Gas	TransCanada
Iberdrola Renewables	U S West (Qwest)
Interstate Power Company	Union Gas
Iowa Southern	Union Telephone Company
Iowa-American Water Company	United Cities Gas Company
Iowa-Illinois Gas and Electric	United Services Automobile Association (USAA)
JDS Uniphase	United States Telephone Association
Kentucky Power Company	Valor Telecommunications (Windstream)
Kentucky-American Water Company	Verizon (Bell Atlantic) and subsidiaries
Kinder Morgan	Virginia-American Water Company
Lucent Technologies	West Virginia-American Water Company
Maritimes & Northeast Pipeline	Westcoast Energy Inc.
MidAmerican Energy and subsidiaries	Wisconsin Energy Corporation
Minnesota Independent Equal Access Corp.	Woodbury Telephone Company
National Fuel Gas	Xcel Energy

Other Professional Experience

Dr. Vander Weide has conducted in-house seminars and training sessions on topics such as creating shareholder value, financial analysis, competitive strategy, cost of capital, real options, financial strategy, managing growth, mergers and acquisitions, valuation, measuring corporate performance, capital budgeting, cash management, and financial planning. Among the firms for whom he has designed and taught tailored programs and training sessions are ABB Asea Brown Boveri, Accenture, Allstate, Ameritech, AT&T, Bell Atlantic/Verizon, BellSouth, Progress Energy/Carolina Power & Light, Contel, Fisons, GlaxoSmithKline, GTE, Lafarge, MidAmerican Energy, New Century Energies, Norfolk Southern, Pacific Bell Telephone, The Rank Group, Siemens, Southern New England Telephone, TRW, and Wolseley Plc. Dr. Vander Weide has also hosted a nationally prominent conference/workshop on estimating the cost of capital. In 1989, at the request of Mr. Fuqua, Dr. Vander Weide designed the Duke Program for Manager Development for managers from the former Soviet Union, the first in the United States designed exclusively for managers from Russia and the former Soviet republics.

Early in his career, Dr. Vander Weide helped found University Analytics, Inc., one of the fastest growing small firms in the country at that time. As an officer at University Analytics, he designed cash management models, databases, and software used by most major United States banks in consulting with their corporate clients. Having sold his interest in University Analytics, Dr. Vander Weide now concentrates on strategic and financial consulting, academic research, and executive education.

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JAMES H. VANDER WEIDE

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