**STATE OF ILLINOIS**

**ILLINOIS COMMERCE COMMISSION**

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| Northern Illinois Gas Company<br>d/b/a Nicor Gas Company | )<br>) | |
| | ) | Docket No. 21-0098 |
| Proposed general increase in gas rates. | ) | |

Surrebuttal Testimony of

**DR. BENTE VILLADSEN**

Principal, The Brattle Group

On behalf of Northern Illinois Gas Company
d/b/a Nicor Gas Company

July 16, 2021

Nicor Gas Ex. 44.0

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## I. INTRODUCTION AND SUMMARY

**Q. What is your name, occupation, and business address?**

A. My name is Bente Villadsen. I am a Principal of The Brattle Group. My business address is One Beacon Street, Suite 2600, Boston, Massachusetts, 02108.

**Q. Are you the same Bente Villadsen who filed Direct Testimony and Rebuttal Testimony in this matter?**

A. Yes.

### A. SUMMARY OF PURPOSE AND CONCLUSIONS

**Q. What is the purpose of your Surrebuttal testimony?**

A. I analyze and respond to portions of the Corrected Rebuttal Testimony of Ms. Rochelle Phipps ("Phipps Rebuttal") filed on behalf of the Illinois Commerce Commission Staff ("ICC Staff" or "Staff") and the Rebuttal Testimony of Mr. Christopher Walters ("Walters Rebuttal") filed on behalf of the Illinois Industiral Energy Consumers and Citizens Utility Board (together, "IIEC-CUB").

**Q. Is there anything in Ms. Phipps or Mr. Walters' Rebuttal Testimonies that caused you to change your recommended return on equity for Nicor Gas?**

A. No. Having reviewed the rebuttal testimonies of Ms. Phipps and Mr. Walters and relevant workpapers as well as recent changes to economic and financial conditions, I continue to find that my original recommendations for a return on equity ("ROE") of 10.25 percent

(10.35% including flotation costs) at a requested 54.537%[1] equity capital structure is reasonable.

**Q. Please summarize your testimony**

A. Having reviewed the Rebuttal Testimonies of Ms. Phipps and Mr. Walters, I summarize my findings below:

(1) Ms. Phipps' and my recommendations differ primarily in the use of leverage adjustments, and the methodologies we each employ, and the unadjusted results of those methodologies, are very similar.

(2) Ms. Phipps performs a Principal Component Analysis ("PCA") to evaluate the operational and financial risks of Nicor Gas relative to Staff's and my proxy groups. Ms. Phipps implementation and interpretation of the PCA results suffer several shortcomings. For example, Ms. Phipps uses data from non-gas and non-water utilities in her analysis; data measured over different time-periods and frequencies; and misinterprets the factor scores. Even then, Ms. Phipps ignores the results of that PCA analysis to conclude that Nicor Gas and the proxy samples are "very similar in risk."[2] It shows otherwise.

(3) Ms. Phipps argues that because credit rating agencies evaluate financial risk based on book value capital structures, it is inappropriate to use market value capital structures to consider the impacts of financial risk on the cost of equity. This argument conflates the risks faced by debt and equity investors. Standard finance

[1] I note that following the filing of my Direct Testimony, in Rebuttal Testimony Nicor Gas accepted Staff's recommendation and revised its proposed ratemaking capital structure from 54.549% equity to 54. 4597% (Nicor Gas' Revised Response to Staff Data Request SK 1.01, Exhibit 1). I consider this edit when finding that my original recommended ROE of 10.25% remains reasonable.

[2] Phipps Rebuttal Testimony, p. 2.

practice is to use market values to make financial leverage adjustments and Ms. Phipps appears to agree that markets matter for cost of equity determination. She states, "it is appropriate and necessary to use a market-based cost of common equity for regulatory rate settings."[3] I agree with the principle and it should be applied with full force to financial risk adjustments to equity returns.

(4) Ms. Phipps asserts that the Empirical CAPM ("ECAPM") and adjusted betas accomplish the same adjustment to the securities market line ("SML") and should not be performed together. This interpretation is misguided and ignores findings in academic literature that the two are in fact distinct adjustments to the CAPM. Both should be made.

(5) Mr. Walters raises concerns about my interpretation of the average, median, and midpoint of his CAPM estimates. However, his recommended ROE is based on similar averaging methodologies and his rebuttal testimony does not resolve the inconsistencies in his CAPM recommendation. Mr. Walters also does not address any of the shortcoming of his CAPM implementation identified in my rebuttal testimony.

(6) Mr. Walters continues to rely on the results from his multi-stage DCF model, despite the results being abnormally low. Neither Ms. Phipps nor I consider the multi-stage DCF in our cost of equity estimation. (I note that Nicor Gas witness Mr. Quackenbush also comments on Mr. Walter's multi-stage DCF model).

(7) Mr. Walters' cost of equity estimate is unduly biased downward by his reliance on betas lower than those that Value Line reports. There are reasons why the current

[3] Phipps Rebuttal Testimony, p. 9.

betas are higher than a year or two ago and those reasons should be reflected in the cost of equity. Waiving them away simply denies reality.

**Q. Is it your intention to specifically refute every comment in the testimonies of Ms. Phipps or Mr. Walters with which you disagree or find inaccurate?**

A. No. I will address the most critical issues and will, in general, not address comments that have already been fully addressed in my prior testimonies. The fact that I do not expressly reply to a particular comment or criticism does not mean that I agree with it.

## II. MS. PHIPPS' PRINCIPAL COMPONENT ANALYSIS

**Q. Please describe Ms. Phipps Principal Component Analysis and how it is used by Staff witness Phipps.**

A. Ms. Phipps uses a PCA analysis to estimate the financial and operating risks of Nicor Gas relative to Staff's gas proxy sample and my gas and water proxy groups. PCA is a statistical technique aimed at reducing a large group of uncorrelated variables to a smaller set of "factors" that explain the variability in the underlying data. Factors are constructed from a subset of the variables and each variable is weighted based on a correlation coefficient. Each factor then receives a score indicating how much of the variability in the underlying data is explained by that factor.

Ms. Phipps included twelve financial and operating variables in her analysis: (1) common equity to capitalization; (2) cash flow to capitalization; (3) cash flow to debt; (4) fixed asset turnover; (5) free cash flow to capitalization; (6) fund flow interest coverage; (7) gross utility additions to net utility plant; (8) net cash flows to gross utility additions; (9) operating profit margin; (10) operating revenue stability; (11) earnings before interest

and taxes stability; and (12) earnings stability.[4] Ms. Phipps used data for Nicor Gas and each of the companies in Staff and my proxy groups. However, for unclear reasons, Ms. Phipps inconsistently used data from 2016 to 2020 for the last three variables and data from 2018 to 2020 for all other ratios.[5] The PCA analysis reduced the data to four factors which Ms. Phipps labeled: Financial Risk; Construction Risk; Earnings Stability; and Capital Intensity.[6]

The results of Ms. Phipps' PCA analysis indicate that the Construction Risk and Capital Intensity factors for Nicor Gas are negative and larger in magnitude than Staff's gas sample and my gas and water proxy samples. In contrast, the Earnings Stability and Financial Risk factors for Nicor Gas are positive and larger in magnitude than each of the proxy samples. Ms. Phipps reasons that higher capital intensity could signal higher operating leverage and therefore less stable earnings. However, Ms. Phipps concludes that Nicor Gas' capital intensity instead insulates it from competition and therefore faces less competitive risk relative to the gas sample.[7] Ms. Phipps fails to explain how a regulated gas distribution utility, such as Nicor Gas, with an operating license to exclusively provide natural gas service in a service territory, faces less competitive risk than other regulated gas utilities who also have exclusive operating licenses. Ultimately, Ms. Phipps also concludes that these effects offset each other because Nicor Gas has a one notch higher credit rating from S&P and Moody's than the gas sample.[8]

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4 Phipps Rebuttal Testimony pp. 2-3.

5 Ibid., p. 3.

6 Ibid., p. 4.

7 Id.

8 Ibid. pp. 5-6.

**Q. What is your reaction to Ms. Phipps Principal Component Analysis?**

A. Ms. Phipps' interpretation of the PCA is problematic. Ms. Phipps interprets the factor scores to mean that Nicor Gas has higher operational risks (Construction Risk and Capital Intensity) but lower financial and earning stability risk than the proxy samples. However, the factor scores only indicate the extent to which each of the factors contributes to explaining the variability of the underlying data for Nicor Gas or the proxy samples, as explained in the following quote from a statistics textbook:

> "PCA looks to find a low-dimensional representation of the observations that explain a good fraction of the variance..."[9]

Comparing the relative magnitude across samples only indicates that a factor may be better or worse at explaing the variability of the sample's/company's ratios. A higher or lower score is not indicative of, let alone proof of, greater variability or greater resulting risk. Even then, it is difficult to hypothesize about the factor scores because Ms. Phipps' constructs her factors based on financial and operating data from 173 gas, electric, water, pipeline, and merchant generator companies.[10] It is unlikely that correlation coefficient comprising each factor would be consistent if only gas or water utilities were analyze by themselves. It is simply not clear which financial or operating ratios are driving the results and whether there are exogenous factors that may affect the results.

**Q. What concerns do you have with Ms. Phipps' implementation of her Principal Component Analysis?**

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[9] James, Gareth et al., "An Introduction to Statistical Learning with Applications in R", Springer, p. 385. https://static1.squarespace.com/static/5ff2adbe3fe4fe33db902812/t/6062a083acbfe82c7195b27d/1617076404560/ISLR%2BSeventh%2BPrinting.pdf

[10] Phipps Confidential Exhibit 21-0098 Distance Output Corrected FINAL

A. Apart from the choice to use a PCA, the implementation of the PCA also clouds any interpretation of the results. First, the PCA only reflects the variability of the twelve financial and operations ratios considered in the analysis – it is possible that there are other metrics that better reflect the variability of the underlying data for the gas or water proxy samples or Nicor Gas.[11] Ms. Phipps does not provide a detailed explanation for the choice or exclusion of ratios in her analysis. For example, gas and water utilities are capital intensive industires given the need to replace aging pipe infrastructure. However, merchant generators (like Vistra Corp. or Exelon Generation Co)[12] face much different capital needs.

Ms. Phipps uses the one notch difference in S&P and Moody's credit scores to assert that the higher operational risk factor scores and the lower financial risk cancel out. However, she does not include any of S&P or Moody's core ratios/key metrics in the PCA.[13] Using S&P and Moody's credit rating to draw conclusions about the PCA results is problematic – they are using two different sets of financial metrics. Even then, on June 2, 2021, S&P Global Ratings noted Nicor Gas' financial measures have weakened and they revised the company's financial risk profile downward from signficant to intermediate.[14] Lastly, credit rating reports are informative about the risks facing companies but it is important to note that credit ratings reflect risks for debt-based investments.

The Commission should also be concerned about the underlying data used in the PCA analysis. For example, the correlation coefficients in Ms. Phipps' PCA factors are

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[11] Curiously, Ms. Phipps finds that the second closest in distance gas LDC is Chesapeake, which she rejected as a proxy company. Source: Phipps Confidential Exhibit 21-0098 Distance Output Corrected FINAL, p. 5.

[12] Phipps Confidential Exhibit 21-0098 Distance Output Corrected FINAL

[13] S&P's core ratios are FFO to Debt and debt to EBITDA. Moody's key metrics are CFO pre-WC + Interest/Interest, CFO pre-WC/Debt, CFO pre-WC-Dividends/Debt, and debt to capitalization.

[14] S&P Global Ratings, "Nicor Gas Co. Rating Affirmed; Outlook Negative," June 2, 2021.

constructed based on a sample of 173 electric, natural gas, and water utilities and natural gas pipeline companies in the S&P Utility Compustat database.[15] It is unclear by how much the inclusion of non-gas and non-water utilities affects the factor construction, but clearly it introduces unnecessary bias into an analysis that Ms. Phipps uses to interpret the relative risk of the gas and water utilities proxy companies. It is unclear whether the analysis included both the parent and subsidiary (e.g., American States Water Co. and Golden State Water Co.).[16] Also, if my understanding of Ms. Phipps' analysis is correct, she used all 173 companies to construct the correlation coefficient for each factor. If so, it is unclear how the reliance on what appears to be a duplicate (Ameren Corp., AEE)[17] or the use of both parent and subsidiaries (e.g., Ameren Corp, Ameren Illinois, and Union Electric)[18] impact the results.

In addition, Ms. Phipps uses data from different time periods - 2016 to 2020 for three of the financial ratios and data from 2018 to 2020 for the remaining ratios. Relying on annual financial data from 2018 to 2020 is also problematic because one-third of the data introduces significant variability from the impact of COVID-19 pandemic.[19] Lastly, Ms. Phipps uses a mix of quarterly and annual data in her analysis.[20] This creates

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[15] Phipps Confidential Exhibit 21-0098 Distance Output Corrected FINAL and Confidential Response to Nicor Gas's Fourth Set of Data Request to Staff, NG Staff 4.01 and 4.02.

[16] Phipps Confidential Exhibit 21-0098 Distance Output Corrected FINAL, p. 5 (line 30) and p. 6 (line 54). I understand from the Confidential Response to that Ms. Phipps did not use non-gas and non-water companies when averaging the principal components for the samples.

[17] Lines 69 and 70 on p. 6 of the workpaper labelled "CONFIDENTIAL 21-0098 Distance Output Corrected Final."

[18] Lines 65, 67, 69 and 70 on p. 6 of the workpaper labelled "CONFIDENTIAL 21-0098 Distance Output Corrected Final."

[19] For example, see impacts of the Pandemic discussed in Atmos Energy 2020 10-K, p. 28; NiSource Inc. 10-K, p. 37; Chesapeake Utilities 10-K, p. 25.

[20] Response to Nicor Gas's Fourth Set of Data Request to Staff, NG Staff 4.02

significant data consistency issues that could skew how the factors are developed and the factor scores themselves.

**Q. Please summarize your conclusions about the Principal Component Analysis.**

A. While I agree with Ms. Phipps that Nicor Gas faces higher operational risks relative to the proxy groups,[21] I have concerns with the analysis used by Ms. Phipps to reach that conclusion. There are numerous implementation and interpretation issues with the analysis. I disagree with Ms. Phipps that a one notch difference in credit ratings is sufficient evidence to conclude that Nicor Gas faces similar risks as that of Staff's and my proxy samples, especially if S&P and Moody's key metrics are not included in the PCA analysis. The PCA analysis does not, in sum, change my prior conclusions about Nicor Gas' risk profile.

## III. FINANCIAL LEVERAGE ADJUSTMENTS

**Q. Please summarize Ms. Phipps' rebuttal arguments regarding financial leverage adjustments.**

A. Ms. Phipps argues that there are numerous ways to measure financial risk, including analyses undertaken by credit rating agencies to evaluate financial risk for debt investors that rely on book values. However, Ms. Phipps then makes the argument that "it is appropriate and necessary to use a market-based cost of common equity for regulatory setings."[22] She goes on to explain,

> "The application of the market-based return to the book value of common equity simply takes the return investors demand to earn from a dollar invested in the common equity of a company, given the amount of risk in

[21] Villadsen Direct Testimony, p. 66.

[22] Phipps Rebuttal Testimony, p. 9.

the common equity of that company and the current price of risk, and applies it to the amount of common equity dollars invested in the rate base of Nicor Gas."[23]

**Q. How should the Commission react to this testimony and its relation to the need to account for financial leverage?**

A. I agree with Ms. Phipps that it is appropriate and necessary to consider the market value capital structures when estimating a company's cost of equity. However, the methodologies employed by Moody's and S&P to estimate financial risk is a misguided comparison. As Ms. Phipps states, the credit rating agencies are concerned with the ability of a company to make the contractually required *debt* service payments.[24] The book value of debt is the appropriate metric for that purpose because it reflects the contractual debt-service obligation of the company to the debt holder. The credit rating agencies are not evaluating the required return by debt investors to invest in a company. In contrast, equity investors are not purchasing a right to contractually defined stream of payments, they are purchasing a portion of the market value of the enterprise, along with the bundle of risks associated with it. Ms. Phipps acknowledges this distinction when discussing equity capital, "the market price always reflects the investor required return, regardless of the book value at which it was recorded by the company when the stock was first issued."[25]

For these reasons, and those I have explained in my prior testimony, the Commission should adjust for differences in financial leverage, using market value capital structures, to reflect the equity investor required return to invest in a company.

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[23] Id.

[24] Ibid., p. 6

[25] Ibid., p. 9.

## IV. ECAPM AND ADJUSTED BETAS

**Q. Please summarize Ms. Phipps' rebuttal arguments regarding ECAPM and Adjusted Betas.**

A. Ms. Phipps argues that using ECAPM and adjusted betas simultaneously is a duplicative correction to the Securities Market Line. Her arguments are based on a flawed interpretation of the methodology and findings from Litzenberger et al. [26] Namely, that the authors did not simultaneously perform both adjustments and find that *if* the beta adjustment factor (ω) is constant that the CAPM results would be constant under both adjustments.

**Q. How do you respond?**

A. It is true that Litzenberger used raw betas in their analysis, but for good reason. As stated in my Rebuttal Testimony,[27] the authors were able to measure the betas and realized returns over the same *historic* period. Therefore, the raw betas accurately captures the systematic risk that impacted the historical returns that they measured. This is different than using betas to determine the cost of equity for *future* periods. In fact, on page 375, Litzenberger acknowledges the Blume adjustment is used to make *historic* betas better predictors of *future* betas.[28]

Ms. Phipps also errs when she says Litzenberger concludes that the cost of equity estimates measured using adjusted betas or ECAPM are identical. Litzenberg states that the estimates would become identical if the adjustment factor (ω) were constant over time.

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[26] Robert Litzenberger, Krishna Ramaswamy and Howard Sosin, "On the CAPM Approach to the Estimation of a Public Utility's Cost of Equity Capital," *Journal of Finance*, vol. 35, 1979.

[27] Villadsen Rebuttal Testimony, pp. 38-39

[28] Litzenberger et al, p. 375.

However, Litzenberger does not conclude that ω is constant over time. Ms Phipps also offers no evidence that ω is constant over time. In fact, she provides evidence that financial firms use different estimates: Merill Lynch uses an adjustment factor of ω = 0.66257 and Value Line uses ω = 0.67.[29]

Other academics also agree that beta adjustments and ECAPM are two distinct adjustments and not inconsistent with each other. For example, Morin states:

> "Fundamentally, the ECAPM is not an adjustment, increase or decrease in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formula recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprises two separate features of asset pricing. Even if a company's betas is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if ECAPM is used, the return for low-beta securities is understated if the betas are understated."[30]

For all these reasons, the Commission should rightly conclude that the ECAPM and beta adjustments are not duplicative.

## V. RESPONSE TO MR. WALTERS REBUTTAL TESTIMONY

**Q. What does Mr. Walters say about your analysis of his CAPM results?**

A. Mr. Walters' disagrees with my conclusions that the average, median, and midpoint CAPM estimates are above his ROE recommendation and he departed from the methodology used to derive his DCF recommendation.[31] His concern is that I relied on the median of the

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[29] Phipps Rebuttal Testimony, p. 19.

[30] Roger Morin, "New Regulatory Finance," 2006, p. 191.

[31] For his DCF recommendation, Mr. Walters' relied on the average and median results of the model, Walters Rebuttal p. 2.

average results and not the median of the individual results.[32] Mr. Walters goes on to describe how he used the average of the median (9.74%) in developing his CAPM recommendation.[33]

**Q. Does Mr. Walters' response refute your conclusions or validate his approach?**

A. No. Mr. Walters' response does not refute my conclusions or validate his approach. In particular, his CAPM recommendation method remains inconsistent with that of his DCF recommendations, and his rebuttal argument is inconsistent as well. Mr. Walters' criticizes my average, median, and midpoint estimates because I am relying on the median of the average results.[34] However, he then uses the average of the median results (9.74%) to arrive at his ROE recommendation of 9.8%. Mr. Walters' provides the average and median for each of his 12 CAPM estimates in IIECU-CUB Exhibit 4.1 Using this data, I calculate a median of the median results of 9.98% and confirm Mr. Walters' average of the average results of 9.90%. This is consistent with the DCF recommendation where Mr Walters "relied on the average and median results of my models."[35] However, the average of the average results (9.90%) and median of the median results (9.98%) of his CAPM are still above his CAPM recommendation of 9.8%.

And, regardless of the interpretation of the results, Mr. Walters notably did not address the implementation concerns raised in my Rebuttal Testimony.[36]

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32 Ibid., p. 3

33 Id.

34 Id.

35 Ibid. p. 2-.

36 Villadsen Rebuttal Testimony, Section III.

**Q. Is Mr. Walters correct that the multi-stage DCF is a theoretically valid model and that its results should be considered in this proceeding?**

A. The multi-stage DCF can be a theoretically valid model to estimate the cost of equity and I did not say otherwise. But, that does not mean that it should always be used or that Mr. Walterss uses it in a reasonable and appropriate way.

In particular, a multi-stage DCF model is a more complex than the single-stage DCF in that it allows for analyst to change the target company's growth rate over time. The DCF model requires that the forecasted growth rates are based on stable economic conditions to satisfy the constant dividend growth assumption. Growth rates are based on equity analysts estimates and may be slower to reflect market conditions than stock prices and dividend yields.

As described in my Direct Testimony, in my implementation of the multi-stage DCF, I use investment analysts forecast of a company-specific growth rates. I then taper the growth rate to arrive at the constant-growth rate of the U.S. long-term GDP forecast from Blue Chip Economic Indicators.[37]

The results from my multi-stage DCF model for the gas sample is 8.5%.[38] This result is approximately 100 basis points lower than the average (9.58%) or median (9.60%) ROE awarded to gas utilities in 2021,[39] and would not offer a fair return for Nicor Gas.

Consequently, I treated the multi-stage DCF results to be a lower bound and gave more weight to the single-stage DCF results.[40] I note that Ms. Phipps' version of the multi-

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37 Villadsen Direct Testimony, pp. 53-54.

38 The results from Ms. Phipps' multi-stage DCF (NCDCF) was 8.22%.

39 S&P Market Intelligence, Past Rate Cases, accessed July 11, 2021.

40 Villadsen Direct Testimony, p. 55.

stage DCF resulted in similar estimates to my multi-stage DCF; Ms. Phipps did not rely on the multi-stage DCF in determining her ROE recommendation.[41] Mr. Walters' multi-stage DCF estimates are significantly below recently authorized ROEs awarded to natural gas utilities and would not offer a fair return. Similar to the conclusions reached by Ms. Phipps and myself about the multi-stage DCF results, Mr. Walters' multi-stage DCF estimates should not be relied on.

**Q. How do you respond to Mr. Walters arguments that the current *Value Line* betas are too high?**

A. Mr. Walters states that:

> currently published beta estimates from *Value Line* are significantly above historical standards and cannot reasonably be expected to be as high in the future as they are now.[42]

Mr. Walters does not explain why the betas "cannot reasonably be expected to be as high in the future." The Commission should consider four facts about this claim.

First, the question is not whether the betas may decline as some point in the future, but whether the betas are reflective of the current cost of equity that investors require, which inherently is a forward-looking measure. Mr. Walters has not explained why the betas are not reflective of the current expectations. Second, the natural gas industry is facing uncertainty about future demand growth,[43] so it would require substantial analysis and possibly future data to determine, whether the betas reflect the changes to the industry or the COVID-19 effects. If the former, the change can reasonably be expected to be more or less permanent, whereas a COVID-19 effect may disappear after some period of time

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41 Phipps Corrected Direct Testimony, pp. 10-11.

42 Walters Rebuttal p. 4.

43 See Villadsen Direct Testimony pp. 61-63.

(albiet we have yet to see the last of the pandemic). Third, according to Mr. Walters IIEC/CUB Exhibit No. 4.2, the average beta for Mr. Walters sample was 0.80 in Q2, 2015 and as recent as in Q2, 2018, three companies in his sample has betas at 0.80 or above.[44] Hence, the betas are not out of line with historically observed betas. Fourth, if Mr. Walters found the historical average betas appropriate, why does he also not find the historical average growth in the U.S. economy appropriate for his DCF – that would result in a GDP growth of approximately 4.22%[45] instead of the relied upon 4.10%.[46] As a result the average multi-stage DCF estimate would increase to approximately 8.52% (or 10-20 bps).

To summarize, while the betas currently are higher than in recent history, they plausibly reflect the cost of equity investors currently require and the systematic risk of the industry may well have changed. Additionally, the level of the current betas are not out of line with those seen for companies in the recent past.

**Q. Is the Vasicek adjustment preferred to the Blume adjustment?**

A. No. Mr. Walters argues for the use of the Vasicek method, which adjust beta towards its "true" value by an amount determined by the statistical preciseness of the estimate.[47] Mr. Walters uses the market beta as the "true" value. Mr. Walters believes the Vasicek method is superior because the Blume adjustment overstates the beta for a company within an industry with betas typically less than one. First, Mr. Walters reliance on the 1998 article

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[44] IIEC/CUB Exhibit 4.2, Page 1 of 3.

[45] FRED Nominal Gross Domestic Product, accessed July 12, 2021, https://fred.stlouisfed.org/series/GDP#0,; CAGR from 1993 to 2020

[46] Walters Direct, p. 30.

[47] The Vasicek method is a Bayesian approach to measuring beta, so the analyst needs a prior estimate on the plausible value of the parameter. See, O.A. Vasicek, "A Note on Using Cross-Sectional Information in Bayesian Estimation of Security Betas," *Journal of Finance* 28, 1973, pp. 1233-1239.

by Martin Lally, which leads to the impact of the Blume adjustment being overstated. The article cites an average US utillity beta of 0.4 becoming 0.6 using the Blume adjustment based on data from the late 1990's. As of today, some two decades later, the impact is much smaller as the average Value Line gas utility beta is approximately 0.87,[48] so that the the raw (before the Blume adjustment) is 0.81. Thus, rather than being an increase of the magnitude cited in the Lally article (about 50%), it is now only about 8%.[49] Hence, the Lally article materially overstates the impact for today's utility betas.

It also merits note that regulatory commissions (or their staff) in the U.S.,[50] including past filings by the Illinois Commerce Commission staff,[51] frequently use Value Line betas, so the continued reliance on Value Line as a source for betas maintain consistency and eliminates one source of contention.

**Q. Does this conclude your Surrebuttal Testimony?**

A. Yes.

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[48] Villadsen Direct Figure 11, p. 41.

[49] Value Line finds a beta of 0.87 = 0.33 + 0.67× (Raw Beta), so Raw Beta = 0.805, so that the impact of the Blume adjustment is only (0.87 – 0.805)/0.805 = 8%.

[50] This includes, for example, the Federal Energy Regulatory Commission, the NY PSC, the MI PSC, the CA PUC, and the MS PSC.

[51] See, for example, Direct Testimony of Ms. Rochelle Phipps pp. 18-20. See also Ms. Phipps' Direct Testimony in Docket No. 17-0124, pp. 41-43