

Before the
New York State Public Service Commission

In the Matter of

Consolidated Edison Company of New York, Inc.

Case 25-S-0741

March 2026

Prepared Direct Testimony of:

New York City ROE Panel
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On Behalf of:
The City of New York

I.	INTRODUCTION	3
II.	PURPOSE OF THE TESTIMONY	5
III.	SUMMARY OF RECOMMENDATIONS	9
IV.	COE METHODOLOGY	14
	A. Overview.....	14
	B. Discounted Cash Flow Model.....	18
	C. Capital Asset Pricing Model	27
	1) Risk-Free Rate	29
	2) Beta	31
	3) Market Risk Premium	40
V.	COE OF OVERALL MARKET	43
VI.	EVALUATION OF CON EDISON'S RATE OF RETURN TESTIMONY	48
	1) DCF Methodology	49
	2) CAPM Methodology.....	53
	3) Bond Yield Plus Risk Premium Analysis	59
	4) Weighted Average Results.....	61
VII.	COST OF CAPITAL RESEARCH	62
	1) DCF Methodology	65
	2) Relationship of Utility Dividend Growth to Economic Conditions	66
	3) Economic Forecasts	73
	4) Impact on ROE	78
	5) CAPM Methodology.....	79
	6) Market Risk Premium	80
	7) Betas.....	83
VIII.	CONCLUSION.....	88

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 **A.** Mr. Rothschild: My name is Aaron L. Rothschild. My business address is 15 Lake
4 Road, Ridgefield, CT.

5 Dr. Vilgalys: My name is Max Vilgalys. My business address is 255 Greenwich
6 Street, New York, NY 10007.

7 **Q. ON WHOSE BEHALF ARE YOU PROVIDING THIS TESTIMONY?**

8 **A.** We are testifying on behalf of the City of New York, or City.

9 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

10 **A.** Mr. Rothschild: I am President of Rothschild Financial Consulting, or RFC.

11 Dr. Vilgalys: I am a Supervising Analyst for the New York City Mayor's Office
12 of Management and Budget, or OMB.

13 **Q. PLEASE STATE YOUR EDUCATIONAL ACHIEVEMENTS.**

14 **A.** Mr. Rothschild: I have a B.A. degree in mathematics from Clark University (1994)
15 and an M.B.A. from Vanderbilt University (1996).

16 Dr. Vilgalys: I graduated from Stanford University in 2017 with a Bachelor's of
17 Science degree in electrical engineering. I graduated from the Massachusetts
18 Institute of Technology in 2022 with a Doctorate of Philosophy in Social and
19 Engineering Systems.

1 **Q. PLEASE DESCRIBE YOUR BUSINESS EXPERIENCE.**

2 **A.** Mr. Rothschild: I performed financial analysis in the telecom industry in the United
3 States and Asia Pacific from 1996 to 2001, investment banking consulting in New
4 York, complex systems science research regarding the power sector at an
5 independent research institute, and I have prepared rate of return testimonies since
6 2002. See Exhibit__(NYCRP-1), Appendix G for my resume.

7 Dr. Vilgalys: I have been in my current position at OMB since 2023. Prior to this
8 position, I worked as an economist for Eastern Research Group, where I conducted
9 financial and statistical analyses for clients such as the U.S. Environmental
10 Protection Agency and the California Air Resources Board. I also completed
11 doctoral research focused on statistical methodologies and machine learning to
12 measure climate change economic damages, and I have taught statistical
13 methodologies and urban studies at MIT and New York University.

14 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE STATE OF NEW**
15 **YORK PUBLIC SERVICE COMMISSION, OR OTHER STATE**
16 **COMMISSIONS? IF SO, WHICH COMMISSIONS?**

17 **A.** Mr. Rothschild: My expert witness experience includes testifying in over 100 cost
18 of capital proceedings before the following state commissions: California,
19 Colorado, Connecticut, Delaware, District of Columbia, Florida, New Jersey,
20 Maryland, North Dakota, Pennsylvania, Tennessee, and Vermont. See

1 Exhibit__(NYCRP-1), Appendix H for the list of proceedings that I have submitted
2 testimony in.

3 Dr. Vilgalys: Yes. I offered direct testimony in Consolidated Edison Company of
4 New York, Inc's., or Con Edison's, electric and gas rate proceedings, Cases 25-E-
5 0072 and 25-G-0073.

6 **II. PURPOSE OF THE TESTIMONY**

7 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY ?**

8 **A.** The purpose of our testimony is to address the cost of capital for Con Edison or the
9 Company, which includes the following three components:

10 1. **Cost of Equity, or COE:** The return investors require to provide equity capital
11 to a utility with Con Edison's specific risk profile.

12 2. **Cost of Debt:** The prevailing market interest rates and terms associated with
13 the Company's debt obligations.

14 3. **Capital Structure:** The relative proportions of equity and debt used to fund
15 the Company's operations.

16 Based on our analysis of these cost of capital components, we recommend an
17 allowed rate of return, or ROR, for ratemaking purposes, including an appropriate
18 return on equity, or ROE, cost of debt, and capital structure. Please see
19 Exhibit__(NYCRP-1), Appendix A for a more detailed definition and discussion of
20 these specific components.

1 **Q. IS CON EDISON'S REQUESTED CAPITAL STRUCTURE**
2 **REASONABLE?**

3 **A.** Yes. Although the 48.00% common equity ratio requested by Con Edison exceeds
4 the 43.9% average observed in our proxy group, we find the Company's proposal
5 to be reasonable for ratemaking purposes. This capital structure provides a
6 sufficient equity cushion to support a solid credit profile and ensures the financial
7 integrity necessary for Con Edison to attract capital on reasonable terms, even as it
8 slightly exceeds the peer group average.

9 **Q. HOW ARE YOU FRAMING YOUR ANALYSIS TO THE COMMISSION?**

10 **A.** The purpose of our testimony is to provide the Commission with a more reasonable
11 analysis of the Cost of Capital than that provided by Con Edison. While we define
12 this fundamentally as the return investors require in exchange for providing funds
13 to a utility with Con Edison's specific risk profile, our analysis also provides the
14 Commission with a broader market context to ensure a principled decision. Our
15 approach is grounded in the following framework:

16 • **The Commission as the Surrogate for Competition:** Because Con
17 Edison operates as a regulated monopoly, the natural price-
18 disciplining pressures of a competitive market are absent. In this
19 vacuum, the Commission must act as a surrogate for the market.
20 This is a significant and often difficult responsibility. It requires the
21 Commission to ensure that the "price" of capital charged to

1 ratepayers reflects its actual market cost—neither providing an
2 unearned monopoly premium nor depriving the utility of the capital
3 it needs to provide essential services.

- 4 • **Acknowledging the Weight of the Decision:** It is understandable
5 to feel a sense of caution when setting rates for services as essential
6 as those provided by Con Edison. There is often a temptation to "err
7 on the side of caution" by authorizing a higher ROE to ensure system
8 stability. However, as former Commission Chair Alferd Kahn
9 reminds us in *The Economics of Regulation: Principles and*
10 *Institutions*, the essence of regulation is the replacement of
11 competition. If the authorized return is disconnected from the actual
12 COE, the result is an involuntary subsidy from ratepayers to
13 shareholders—an outcome that undermines the very purpose of
14 regulation.
- 15 • **Providing an Informed Path Toward Market Alignment:** In this
16 testimony we strive to provide reasonable, market-based
17 information so the Commission can make an informed decision that
18 balances utility health with ratepayer protection.

19 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

20 **A.** First, we provide a summary of our recommendations and an overview of COE
21 concepts. Second, we provide an explanation of the various models we used in our

1 COE calculations. Third, we provide a COE analysis for the overall market as a
 2 ceiling for the appropriate ROE for Con Edison. Fourth, we provide an evaluation
 3 of Con Edison's rate of return testimony. Fifth, we provide cost of capital research
 4 performed that we believe the Commission should be aware of. Lastly, we provide
 5 our conclusion.

6 **Q. ARE YOU SPONSORING ANY EXHIBITS WITH YOUR TESTIMONY?**

7 **A.** Yes. We offer the following exhibits:

8	Exhibit__(NYCRP-1)	Appendices
9	Exhibit__(NYCRP-2)	Tables and Charts
10	Exhibit__(NYCRP-3)	RFC Overall Cost of Capital Calculations
11	Exhibit__(NYCRP-4)	RFC Proxy Group COE Summary Calculations
12	Exhibit__(NYCRP-5)	RFC Proxy Group DCF Calculations
13	Exhibit__(NYCRP-6)	RFC Proxy Group CAPM Calculations
14	Exhibit__(NYCRP-7)	RFC Proxy Group Other Calculations
15	Exhibit__(NYCRP-8)	CBOE VIX Index and SKEW Index White Papers
16	Exhibit__(NYCRP-9)	"What Happened With Silicon Valley Bank?,"
17		Wall Street Journal, March 14, 2023
18	Exhibit__(NYCRP-10)	Damodaran Online
19	Exhibit__(NYCRP-11)	Horizon Survey
20	Exhibit__(NYCRP-12)	Excerpts from Academic Studies and Reports
21	Exhibit__(NYCRP-13)	Fama French Annual Utility Dividends
22	Exhibit__(NYCRP-14)	Annual FRED data
23	Exhibit__(NYCRP-15)	Dividend Regression Results
24	Exhibit__(NYCRP-16)	Long-Term Dividend Growth Rates
25	Exhibit__(NYCRP-17)	DCF with Nowak Forecasts
26	Exhibit__(NYCRP-18)	Historical Beta Plots
27	Exhibit__(NYCRP-19)	Beta Tracking Errors
28	Exhibit__(NYCRP-20)	Discovery Responses

1 **III. SUMMARY OF RECOMMENDATIONS**

2 **Q. PLEASE PROVIDE A SUMMARY OF YOUR RECOMMENDATIONS.**

3 **A.** We recommend that the Commission reject Mr. Nowak's recommended ROE of
4 9.90% because it significantly exceeds Con Edison's actual COE as indicated by
5 current market data. Instead, we recommend that the Commission calculate Con
6 Edison's rates based on the following:

- 7 • An overall cost of capital of 6.40%;
- 8 • An ROE of 8.04%;
- 9 • A capital structure containing 48.00% common equity and 52.00%
- 10 long-term debt; and
- 11 • A long-term debt cost rate of 4.89%.

12 A summary of our cost of capital recommendations for Con Edison's steam
13 operations is presented in Exhibit__(NYCRP-3).

14 **Q. ARE YOU RECOMMENDING A SPECIFIC ROE OF 8.04% OR AN ROE**
15 **RANGE OF 7.91% TO 8.29%?**

16 **A.** We recommend a specific ROE of 8.04%. While our analysis identifies a
17 reasonable range of 7.91% to 8.29%, we believe the 8.04% point is the most
18 appropriate for Con Edison.

1 **Q. HOW DID YOU DETERMINE THAT A 8.04% ROE WAS APPROPRIATE**
2 **FOR CON EDISON?**

3 **A.** To arrive at our recommendation, we estimated the COE for a proxy group (“RFC
4 Proxy Group”) comprised of the same 30 publicly traded electric and gas utility
5 holding companies used by Mr. Nowak, using data available through February 28,
6 2026. Our 8.04% recommendation is based on a weighted average of the following
7 COE model results: two-thirds Discounted Cash Flow, or DCF, and one-third
8 Capital Asset Pricing Model, or CAPM.

9 1. **Discounted Cash Flow, or DCF Analysis:** We utilized five distinct DCF
10 methods to ensure a robust result. These include:

- 11 • **Two versions of a Multi-Stage DCF:** (1) a 200-yr 2-stage DCF
12 using Value Line projections in the first four years and our version
13 of a sustainable growth rate for the remainder; and (2) a 200-yr 2-
14 stage DCF using Value Line projections in the first four years and
15 our option-implied growth rate for the remainder.
- 16 • **Single-Stage Sustainable Growth DCF:** This method relies on the
17 long-term fundamentals of the proxy group companies.
- 18 • **Option-Implied Growth DCF:** This forward-looking method
19 utilizes market data from stock options to derive growth
20 expectations.
- 21 • **Non-Constant Growth DCF:** This method utilizes Value Line’s
22 integrated 2026–2029 forecast period to maintain internal financial

1 consistency across synchronized projections for dividends, book
2 values, and retention ratios.

3 Our DCF methodology aligns with the Commission's methodology by
4 prioritizing forward-looking, market-based data over historical results to capture
5 the actual returns required to attract capital. By utilizing a proxy group of utility
6 companies and incorporating sustainable growth from both internal and external
7 sources, our approach adheres to fundamental finance theory regarding the risk-
8 return relationship and reflects the comprehensive market indicators the
9 Commission expects in a rigorous COE analysis.

10 **2. Capital Asset Pricing Model, or CAPM Analysis:** Our CAPM approach is
11 strictly market-based and forward-looking, utilizing current stock option prices
12 as a valuable check on the reasonableness of our DCF results. Additionally,
13 our methodology aligns with the Commission's methodology by utilizing
14 forward-looking betas derived from current market data. Unlike traditional
15 CAPM approaches, such as Mr. Nowak's, which rely on historical data that
16 may no longer reflect current investor expectations, our approach ensures that
17 the risk-return relationship is grounded in the same real-time market signals
18 that influence actual capital allocation decisions today.

19 Exhibit__(NYCRP-4) illustrates the results of these COE models in our
20 analysis.

21 To ensure the robustness and real-world applicability of our findings, we
22 validated these COE model results against the long-term capital market

1 expectations of a broad cross-section of the financial community. As we explore in
2 greater detail later in this testimony, this validation includes data from:

- 3 • Major financial institutions such as J.P. Morgan and Charles Schwab; and
- 4 • Institutional investors, specifically the capital market assumptions of 41
5 major investment firms and institutional asset managers, including Bank of
6 New York Mellon, BlackRock, and Goldman Sachs Asset Management.

7 As shown in Table 1 in Exhibit__(NYCRP-2), the return expectations from
8 this broad cross-section of market participants range between 5.9% and 8.5%.

9 The fact that market participants, who are responsible for deploying
10 hundreds of billions of dollars in capital, expect returns well below our
11 recommendation of 8.04% provides a high degree of confidence and confirms that
12 a 8.04% ROE is more than sufficient for Con Edison to attract equity capital.

13 **Q. ARE YOU AWARE OF THE GENERAL FINANCE PRACTICES THE**
14 **COMMISSION USES FOR SETTING THE COST OF CAPITAL IN RATE**
15 **CASES?**

16 **A.** Yes. We have reviewed the details from the Generic Finance Proceeding, Case 91-
17 M-0509, Proceeding on Motion of the Commission to Consider Financial
18 Regulatory Policies for New York State Utilities, Recommended Decision issued
19 July 19, 1994, as well as Orders issued by the Commission adopting that approach,
20 such as Case 07-E-0523, Proceeding on Motion of the Commission as to the Rates,
21 Charges, Rules and Regulations of Consolidated Edison Company of New York,

1 Inc. for Electric Service, Order Establishing Rates for Electric Service, issued
2 March 25, 2008.

3 **Q. DOES YOUR TESTIMONY CONFORM TO THE APPROACH SET**
4 **FORTH IN THE GENERIC FINANCE PROCEEDING?**

5 **A.** Yes. Our testimony applies the DCF and CAPM methodologies on a proxy group
6 of utility companies to determine cost of capital, weighted as recommended in the
7 Generic Finance Methodology.

8 **Q. DO THE LONG-TERM CAPITAL MARKET EXPECTATIONS OF THE**
9 **FINANCIAL COMMUNITY HIGHLIGHT WHY YOU AND MR.**
10 **NOWAK'S ROE RECOMMENDATIONS ARE SO DIFFERENT?**

11 **A.** Yes. One of the primary drivers of the discrepancy between our ROE
12 recommendations is Mr. Nowak's reliance on inflated market-wide benchmarks,
13 specifically a Bank of America Merrill Lynch, or BofA, report citing 10.87%, and
14 his even higher overall market return expectation of 13.97% based on his DCF
15 analysis using unsustainable growth rates. These figures introduce a significant
16 upward bias into his CAPM results because they are based on optimistic "sell-side"
17 growth rate forecasts with no attempt to ensure such growth is sustainable.

18 By utilizing these reports, which BofA itself notes may be subject to
19 conflicts of interest, Mr. Nowak bases his model on a subjective and qualitative
20 narrative rather than objective economic reality. The use of these figures skews his
21 entire analysis, resulting in a proposed COE, for a relatively low risk regulated

1 utility company, that is hundreds of basis points higher than the equity return
2 expectations of the major banks and institutional asset managers mentioned above
3 for overall market.

4 Grounding the analysis in observable market data ensures that our
5 recommendation reflects the actual economic environment. Specifically, our
6 CAPM analysis utilizes an overall market return component of 8.80% to 8.96%
7 derived directly from capital market data, including publicly traded stock and stock
8 option prices.

9 IV. COE METHODOLOGY

10 A. Overview

11 **Q. PLEASE PROVIDE AN OVERVIEW OF YOUR COE METHODOLOGY.**

12 **A.** Our recommendations are consistent with our understanding of the following legal
13 standards set by the United States Supreme Court for a fair rate of return: “[t]he
14 return to the equity owner should be commensurate with returns on investments in
15 other enterprises having corresponding risks” and “sufficient to... support its credit
16 and... raise the money necessary for the proper discharge of its public duties.”
17 *Bluefield Waterworks and Improvement Company v. Public Service Commission of*
18 *West Virginia*, 262 U.S. 679 (1923) (“Bluefield”), and *Federal Power Commission*
19 *v. Hope Natural Gas Company*, 320 U.S. 591 (1944) (“Hope”). We are not
20 attorneys and are not providing legal opinions. Our recommendations fulfill our

1 understanding of the Hope and Bluefield requirements that a utility should be able
2 to raise capital on reasonable terms.

3 In this proceeding, we have performed a COE analysis on the same risk-
4 comparable proxy group used by Mr. Nowak. We implement both DCF and CAPM
5 methodologies, in keeping with the Generic Finance Methodology. We update key
6 assumptions in both DCF and CAPM methodologies to arrive at a more reasonable
7 COE.

8 To demonstrate that our recommended ROE is sufficient to attract capital,
9 we also provide research on the cost of capital for utilities and the COE for the
10 overall market. To determine a reasonable utility-specific cost of capital, we
11 examined historical data on utility stock performance as it relates to key
12 assumptions in the CAPM and DCF methodologies. These results show that our
13 recommended ROE exceeds the results from our research into utility-specific cost
14 of capital, providing evidence that our recommended rate is reasonable to attract
15 investment. Our analysis of the overall market COE serves as a ceiling for ROE.
16 The broader market is generally considered to have a higher risk profile than a
17 regulated utility, and thus a higher COE. If the authorized ROE is sufficient to
18 attract capital in the broader, higher-risk market, it is indisputably sufficient for a
19 lower-risk regulated utility. We demonstrate that the recommended ROE is similar
20 to the COE in the broader market, illustrating that the recommended ROE is
21 sufficient to attract investment for a lower-risk investment such as utility equity.
22 This additional evidence provides the Commission with the highest level of

1 assurance that the *Bluefield* requirement of ensuring financial integrity and capital
2 attraction is not only met, but exceeded.

3 **Q. PLEASE SUMMARIZE HOW YOU DETERMINED YOUR 8.04% COE**
4 **RECOMMENDATION FOR CON EDISON.**

5 **A.** To arrive at our recommendation, we applied multiple variations of the DCF and
6 CAPM methodologies to a proxy group of 30 publicly traded electric and gas
7 utilities companies – the RFC Proxy Group – using data available through February
8 28, 2026. We use a proxy group to calculate Con Edison’s COE because Con
9 Edison does not have publicly traded stock data specific to itself. While Con
10 Edison’s parent Consolidated Edison, Inc. has publicly traded stocks, it owns
11 several utility companies in different states. Therefore, Consolidated Edison, Inc.
12 is not a direct proxy for Con Edison.

13 Additionally, using a proxy group provides more reliable results because it
14 is less likely to be skewed by specific circumstances or anomalies faced by any
15 individual company during the time when a snapshot of the COE is taken. The
16 RFC Proxy Group consists of exactly the same companies included in Mr. Nowak’s
17 proxy group for his COE analysis which can be found in Figure 7 on page 26 of his
18 pre-filed direct testimony. As discussed below, we utilized capital market data and
19 cross-referenced the model results of leading financial institutions as an additional
20 check on the reasonableness of our model results.

1 More specifically, we applied five variations of the DCF and four variations
2 of the CAPM methodologies to the RFC Proxy Group. Each of the methodologies
3 was applied in two ways: (1) using the most recent spot data, and (2) using weighted
4 average data for the last three months. Thus our modeling yielded a total of ten
5 DCF results and eight CAPM results for the RFC Proxy Group, which are
6 summarized in Exhibit__(NYCRP-4).

7 As shown in Exhibit__(NYCRP-4), the results of our DCF models range
8 between 6.63% and 8.95%, with a median of 8.05%. The results of our CAPM
9 analysis range between 5.89% and 6.97%, with a median of 6.47%. We have given
10 two-thirds weight to the DCF results and one-third weight to the CAPM results to
11 arrive at our overall ROE recommendation. Even though it could be argued that
12 one should center on the median, or 50th percentile, of each range, thus eliminating
13 the highest and lowest results equally, we have focused on the considerably higher
14 70th to 100th percentile range of our model results, with a central 85th percentile, to
15 be extremely conservative. Applying the 2/3 DCF, 1/3 CAPM weighing to the 85th
16 percentile of DCF results, or 8.61%, and of CAPM results, or 6.91%, we arrive at
17 our ROE recommendation of 8.04%. Applying the same methodology at the 70th
18 and 100th percentiles, we obtain a broader recommended range of 7.91% to 8.29%.

1 **Q. WHAT PROXY GROUPS DID YOU USE TO CALCULATE CON**
2 **EDISON’S COE?**

3 **A.** Our comparable proxy group, shown in Table 2 in Exhibit__(NYCRP-2) and
4 referred to as the RFC Proxy Group, consists of the 30 publicly traded electric and
5 gas utility companies covered by Value Line. Mr. Nowak’s proxy group contains
6 the same 30 companies.

7 We chose to use the same proxy group as Mr. Nowak because we believe it
8 contains companies that are relatively comparable in risk to Con Edison. However,
9 model results based on this proxy group should be viewed as a conservative
10 estimate of Con Edison’s COE because these companies have some unregulated
11 operations which are riskier than the regulated steam business.

12 **B. Discounted Cash Flow Model**

13 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR DCF MODELS.**

14 **A.** We used different variations of both the constant growth and the non-constant
15 growth forms of the DCF method. For the constant growth form, we used one
16 variation which determines growth based on the sustainable retention growth
17 procedure and another that uses option-implied growth. The results of our constant
18 growth DCF model are set forth in Exhibit__(NYCRP-5) at page 1. They range
19 between 8.57% and 8.60% when using a sustainable growth rate and between
20 6.63% and 6.95% when using an option-implied growth rate. For the non-constant
21 growth form, we used one variation that applies specific Value Line’s integrated

1 2026–2029 forecast period–selected to ensure internal financial consistency across
2 synchronized projections for dividends and book values–with a terminal value
3 based on a constant market-to-book ratio. We also used two variations of a 200-
4 year 2-stage approach using Value Line projections in the first stage and using
5 sustainable growth rate and option-implied growth rate for the second stage. The
6 results of our non-constant growth DCF methodology are set forth in
7 Exhibit__(NYCRP-5) at pages 3 and 4. They indicate a COE of between 7.86%
8 and 8.25% for the RFC Proxy Group. The results of our 200-year 2-stage DCF
9 models are set forth in Exhibit__(NYCRP-5) at pages 6, 7, 8, and 9. They range
10 between 8.62% and 8.95% when using a sustainable growth rate, and between
11 7.10% and 7.12% when using an option-implied growth rate.

12 **Q. WHAT IS THE DISCOUNTED CASH FLOW METHODOLOGY?**

13 **A.** The DCF methodology is an approach to determine the COE which recognizes that
14 investors purchase common stock to receive future cash payments. These payments
15 come from: (1) current and future dividends, and (2) proceeds from selling stock.
16 A rational investor will buy stock to receive dividends and ultimately to sell the
17 stock to another investor at a gain. The price the new owner is willing to pay for
18 stock is related to that buyer’s expectation of future flow of dividends and the future
19 expected selling price. The value of the stock is the discounted value of all future
20 dividends until the stock is sold plus the value of proceeds from the sale of the
21 stock.

1 **Q. YOU STATE YOU USED THE CONSTANT GROWTH FORM OF THE**
2 **DCF METHODOLOGY. WHAT IS THE CONSTANT GROWTH FORM**
3 **OF THE DCF METHODOLOGY?**

4 **A.** The constant growth form of the DCF methodology is a form of the DCF
5 methodology that can be used in determining the COE when investors can
6 reasonably expect that the growth of retained earnings and dividends will be
7 constant.

8 Retained earnings are funds that a company keeps in its treasury, so that
9 they are available for future needs, such as capital expenditures, debt payments, and
10 new investments. These retained earnings show investors whether the company is
11 growing, which, in turn, is a measure of the future indicator of dividends and the
12 value of a company's stock.

13 **Q. PLEASE DESCRIBE HOW THE CONSTANT GROWTH MODEL**
14 **WORKS.**

15 **A.** Relying on Myron J. Gordon, Cost of Capital to a Public Utility, p. 32-33, published
16 by MSU Public Utility Studies in 1974, the constant growth model is described by
17 the equation $k = D/P + g$, where: .

18 K is the COE;
19 D is the dividend;
20 P is the market price of stock at time of the analysis
21 g is the growth rate, where $g = br + sv$;
22 b is the earnings retention rate;
23 r is return on common equity investment, referred to "book equity;"
24 v is the fraction of funds raised by the sale of stock that increases the book
25 value of the existing shareholders' common equity; and

1 s is the rate of continuous new stock financing

2

3 The constant growth model is therefore correctly recognized to be:

4

5 $K = D/P + (br + sv)$

6

The COE demanded by investors is the sum of two factors. The first factor

7

is the dividend yield. The second factor is growth of dividends and stock price. The

8

logical relationship among these factors is as follows: the dividend yield is

9

calculated based on current dividend payments while growth indicates what

10

dividends and stock price will be in the future.

11

Q. WHAT OTHER FACTORS IMPACT HOW ONE USES THE CONSTANT

12

GROWTH FORM OF THE DCF METHODOLOGY?

13

A. Sufficient care must be taken to be sure that the growth rate “g” is representative of

14

the constant sustainable growth. To obtain an accurate constant growth DCF result,

15

the mathematical relationship between earnings, dividends, book value and stock

16

price must be respected.

17

The basic difference between the use of an analyst’s earnings per share

18

growth rate in the constant growth DCF formula and using the “br” approach is that

19

the “br” form, if properly applied, eliminates the mathematical error caused by an

20

inconsistency between the expectations for earnings per share growth and dividends

21

per share growth. Because it eliminates that error, the results of a properly applied

22

“br” approach will be superior to the answer obtained from other approaches to the

23

constant growth form of the DCF methodology. This is not to say that even a

1 properly applied “br” approach will be perfect. The self-correcting nature of a
2 properly applied “br” to forecasted differences in earnings per share and dividends
3 per share growth rates help to mitigate the resultant error but should not be viewed
4 as the perfect way to quantify the impact of expected non-constant growth rates.

5 **Q. HOW HAVE YOU IMPLEMENTED THE CONSTANT GROWTH FORM**
6 **OF THE DCF METHODOLOGY IN THIS CASE?**

7 **A.** We have applied the constant growth form of the DCF methodology by staying true
8 to the mathematically derived “ $k=D/P + (br + sv)$ ” form of the DCF methodology.
9 We have also taken care to fully allocate all future expected earnings to either future
10 cash flow in the form of dividends (“D”) or to retained earnings (the retention rate,
11 “b”). This extra accuracy is obtained only when the retention rate “b” is derived
12 from the values used for “D” and “r,” rather than independently.

13 **Q. HOW DID YOU DETERMINE THE VALUES FOR DIVIDEND (D) AND**
14 **PRICE (\$P\$)?**

15 **A.** For the Dividend (D), we used the expected dividend over the next year. This was
16 estimated by increasing the current quarterly dividend by half of the annual growth
17 rate, a precise approximation of a full year’s escalation. For example, assume a
18 company paid a dividend of \$0.50 in the first quarter a year ago, and has a dividend
19 growth rate of 4% per year. This dividend growth rate equals $(1.04)^{1/4}-$
20 $1=0.00985\%$ per quarter. Thus, the dividend is \$0.5049 in the second quarter,
21 \$0.5099 in the third quarter, and \$0.5149 in the fourth quarter. If that 4% per annum

1 growth continues into the following year, then the dividend would be \$0.5199 in
2 the first quarter, \$0.5251 in the second quarter, \$0.5303 in the third quarter, and
3 \$0.5355 in the fourth quarter. Thus, the total dividends for the following year equal
4 \$2.111, or $0.5199 + 0.5251 + 0.5303 + 0.5355$. We computed the dividend yield by
5 taking the current quarter, or the \$0.5149 in the fourth quarter in this example, and
6 multiplying it by 4 to get an annual rate of \$2.06. We then escalated this \$2.06 by
7 half the 4% growth rate, which means it is increased by 2%. $\$2.06 \times 1.02 = \2.101 ,
8 which is within one cent of the \$2.111 obtained in the example.

9 We obtained the stock price –“P”– used in our DCF analysis from the
10 closing prices of the stocks on February 28, 2026. We also obtained an average
11 stock price for the 12 months ending February 28, 2026 by averaging the high and
12 low stock prices for the year.

13 **Q. HOW DID YOU DETERMINE THE VALUE FOR THE EXPECTED**
14 **RETURN ON EQUITY (\$R\$)?**

15 **A.** The value for –“r”–represents the average ROE investors expect the companies to
16 maintain. We reconciled three primary indicators: (1) Value Line’s forecasted ROE
17 for the 2028–2030 period (centered on 2029), (2) The ROE required to achieve
18 Zacks consensus forecast (a prominent research platform that aggregates earnings
19 estimates from independent investment analysts), and (3) the actual returns on
20 equity earned by the RFC Proxy Group which averaged 10.06% in 2023, 9.96% in
21 2024, and 10.41% in 2025.

1 Based on this combination of Zacks' consensus forecasts, recent historical
2 returns, and Value Line projections, we utilized a 10.70% value for 'r' in the DCF
3 growth computation.

4 **Q. HOW DID YOU QUANTIFY GROWTH FROM THE SALE OF NEW**
5 **COMMON STOCK (SV)?**

6 **A.** In addition to growing through the retention of earnings, utility companies also
7 grow by selling new common stock. We quantified the growth caused by the sale
8 of new common stock by multiplying the amount that the actual market-to-book
9 ratio exceeds 1.0 by the compound annual growth rate of stock that Value Line
10 forecasts. The results of that computation are shown on line 4 of
11 Exhibit__(NYCRP-5) at page 1.

12 **Q. WHAT COE IS INDICATED BY THE CONSTANT GROWTH FORM OF**
13 **THE DCF MODEL THAT YOU RELY ON FOR YOUR**
14 **RECOMMENDATION?**

15 **A.** The constant growth form of the DCF model indicates a COE range of 8.57% and
16 8.60% for the RFC Proxy Group (see Exhibit__(NYCRP-5) at page 1).

17 These results should be viewed as conservatively high because they rely, in
18 part, on analysts' growth forecasts, which have historically been notoriously
19 overstated. However, our model enhances reliability by utilizing sustainable growth
20 rates rather than raw EPS growth forecasts. By calculating growth based on retained

1 earnings and projected returns, we avoid the upward bias often found in short-term
2 (5-year) analyst projections that cannot realistically be sustained indefinitely.

3 **Q. PLEASE EXPLAIN HOW YOU IMPLEMENTED THE NON-CONSTANT**
4 **GROWTH FORM OF THE DCF METHODOLOGY.**

5 **A.** The non-constant growth form of the DCF methodology determines the return on
6 investment expected by investors based on an estimate of each separate annual cash
7 flow the investor expects to receive. For the purpose of this computation, we have
8 incorporated Value Line's detailed annual forecasts to arrive at the specific non-
9 constant growth expectations that an investor who trusts Value Line would expect.
10 This implementation is shown on Exhibit__(NYCRP-5), pages 3 and 4. In the first
11 stage, cash flow entry is the cash outflow an investor would experience when
12 buying a share of stock at the market price. The subsequent years of cash flow are
13 equal to the dividends per share that Value Line forecasts. For the intermediate
14 years of the forecast period in which Value Line does not provide a specific
15 dividend, the annual dividends were obtained by estimating that dividend growth
16 would persist at a compound annual rate. The cash flow at the end of the forecast
17 period consists of both last year's dividend forecast by Value Line, and proceeds
18 from the sale of the stock. The stock price used to determine the proceeds from
19 selling the stock was obtained by estimating that the stock price would grow at the
20 same rate at which Value Line forecasts book value to grow.

1 **Q. WHY DID YOU USE BOOK VALUE GROWTH TO PROVIDE THE**
2 **ESTIMATE OF THE FUTURE STOCK PRICE?**

3 **A.** For any given earned return on book equity, earnings are directly proportional to
4 the book value. Furthermore, book value growth is the net result after the company
5 produces earnings, pays a dividend and also, perhaps, either sells new common
6 stock at market price or repurchases its own common stock at market price.

7 The compound annual return an investor would achieve as a result of
8 making this investment was obtained by calculating the Internal Rate of Return, or
9 IRR. The IRR is the rate of return that an investment is expected to generate. The
10 cost of capital is the minimum return an investment needs to make for it to be
11 worthwhile. Our non-constant growth DCF model produced an average indicated
12 COE of 7.86% based on the year-end stock price, and 8.25% based on average
13 prices for the year ending February 28, 2026 for the RFC Proxy Group as shown
14 on Exhibit__(NYCRP-5), pages 3 and 4.

15 **Q. PLEASE EXPLAIN HOW YOU IMPLEMENTED YOUR 200-YEAR 2-**
16 **STAGE DCF MODELS.**

17 **A.** We used two versions of our 200-year 2-stage DCF model. Both versions use Value
18 Line projections for dividends per share over the 2026 to 2029 forecast period for
19 the first stage. For the second stage, one version uses our calculation of the average
20 sustainable growth rate for the RFC Proxy Group while the other version uses the
21 average option-implied growth rate for the RFC Proxy Group. We calculated each

1 of these growth rates on a spot basis, or 5.54% sustainable growth and 3.51%
2 option-implied growth, and on a weighted average basis, or 5.17% sustainable
3 growth and 3.49% option-implied growth, using the most recently available data as
4 of February 28, 2026, thus yielding a total of four results for these two models.

5 **Q. WHAT COE DOES YOUR 200-YEAR 2-STAGE DCF MODELS**
6 **INDICATE?**

7 **A.** Our 200-year 2-stage DCF models indicate a COE of between 8.62% and 8.95%
8 when using a sustainable growth rate and between 7.10% and 7.12% when using
9 an option-implied growth rate (see Exhibit__(NYCRP-5), pages 6 through 9).

10 **C. Capital Asset Pricing Model**

11 **Q. PLEASE DESCRIBE THE CAPM METHODOLOGY.**

12 **A.** The CAPM methodology relates return to risk; specifically, it relates the expected
13 return on an investment in a security to the risk of investing in that security. The
14 riskier the investment, the greater the expected return, or the COE, investors require
15 to make that investment.

16 Investors in a firm's equity face two types of risks: (1) firm-specific risk
17 and (2) market risk, which financial analysts refer to as systematic risk. Firm-
18 specific risk refers to risks unique to the firm, such as management performance
19 and losing market share to a competitor. Investors can reduce firm-specific risk by
20 purchasing stocks as part of a diverse portfolio of companies and they construct the

1 portfolio to cause the firm-specific risk of individual companies to balance out.
2 Market-related risk refers to potential impacts from the overall market, such as a
3 recession or interest rate changes. This risk cannot be removed by diversification,
4 so the investor must bear it no matter what. Because the investor has no option but
5 to bear market risk, the investor's COE will reflect that risk.

6 The price of a stock with a beta of 1 tends to move with the market. If the
7 market increases by 1%, the stock is also expected to increase by about 1%, and
8 vice versa. The price of a stock with a beta greater than 1 tends to be more volatile
9 than the market. For example, a stock with a beta of 1.5 will on average be 50%
10 more volatile than the market. If the market rises by 1%, the price of a stock with a
11 beta of 1.5 is expected to rise by 1.5%, and if the market falls by 1%, the stock price
12 is expected to decrease by 1.5%. The price of a stock with a beta less than 1 tends
13 to be less volatile than the market.

14 The CAPM methodology predicts that for a given equity security, the COE
15 has a linear relationship to how sensitive the stock's returns are to movements in
16 the overall market, such as the S&P 500. A security's market sensitivity is measured
17 by its beta. As shown in Chart 1 in Exhibit__(NYCRP-2), the higher the beta of a
18 stock, the higher the company's COE—the return required by the investor to invest
19 in the stock.

20 Here is the standard CAPM formula:

$$21 \quad K = R_f + \beta_i * (R_m - R_f)$$

22 Where:

1 K is the COE;
2 Rf is the risk-free interest rate;
3 Rm is the expected return on the overall market;
4 $[R_m - R_f]$ is the premium investors expect to earn above the risk-
5 free rate for investing in the overall market, known as the
6 “equity risk premium” or “market risk premium;” and
7 β_i (Beta) is a specific asset’s share of non-diversifiable, or
8 systematic, risk.

9 **Q. PLEASE EXPLAIN HOW YOU IMPLEMENTED THE CAPM**
10 **METHODOLOGY.**

11 **A.** First, we determined appropriate values or ranges for each of the three model
12 inputs: (a) Risk-Free Rate, (b) Beta, and (c) Equity Risk Premium. Second, we
13 used the equation above to calculate the COE implied by the model. Below is an
14 explanation of how we calculated the three model inputs and summarize the CAPM
15 COE numbers resulting from those inputs. Exhibit__(NYCRP-6), pages 1 and 5
16 show the results of our CAPM analysis.

17 **1) Risk-Free Rate**

18 **Q. WHAT RISK-FREE RATE DID YOU USE IN YOUR CAPM ANALYSIS?**

19 **A.** We utilized risk-free rates based on both short-term (3-month) and long-term (30-
20 year) U.S. Treasury yields. While it is commonplace in utility proceedings to rely
21 exclusively on long-term yields, financial theory suggests that the CAPM ideally
22 calls for a short-term interest rate. As noted in Principles of Corporate Finance:
23 “The CAPM... calls for a short-term interest rate.” (Richard Brealey, Stewart
24 Myers, & Franklin Allen, Principles of Corporate Finance, p. 228, McGraw-Hill
25 Irwin, 12th ed. 2017).

1 We chose to incorporate both maturities because short-term Treasury bills
2 have a beta near zero, making them a truer proxy for a "risk-free" asset. In contrast,
3 long-term Treasury bonds are exposed to interest rate risk and market fluctuations
4 and must be used with caution. However, acknowledging that investors with longer
5 horizons may consider long-term yields as an opportunity cost, we included both to
6 ensure a balanced and robust analysis.

7 As outlined in Exhibit__(NYCRP-6), page 2, our spot and weighted average
8 short-term risk-free rates are 3.67% and 3.67%, respectively. Our spot and weighted
9 average long-term risk-free rates are 4.64% and 4.77%, respectively.

10 **Q. WHAT IS YOUR RESPONSE TO THE CLAIM THAT THE CAPM**
11 **SHOULD BE IMPLEMENTED EXCLUSIVELY WITH LONG-TERM**
12 **RATES OR INTEREST RATE FORECASTS?**

13 **A.** As discussed in Exhibit__(NYCRP-1), Appendix E to our testimony, using only
14 long-term rates can overstate the COE because those bonds include a risk premium
15 that violates the "risk-free" assumption of the CAPM. Furthermore, we do not use
16 interest rate forecasts because they are often unreliable and do not necessarily
17 reflect the actual expectations embedded in current market yields. By using
18 contemporaneous market data for both maturities, the model remains grounded in
19 actual investor behavior rather than speculation.

1 **2) Beta**2 **Q. WHAT BETA DID YOU USE IN YOUR CAPM ANALYSIS?**

3 **A.** Since the COE should be based on investor expectations, we chose to use two betas.
4 Our “forward beta” is based on forward-looking investor expectations of non-
5 diversifiable risk. Our “historical blended beta” is based on historical return data
6 over 6-month, 2-year, and 5-year periods.

7 Most published betas are based exclusively on historical return data. For
8 example, Value Line publishes a 5-year historical beta for each of the companies it
9 covers. However, it is also possible to calculate betas based on investors’
10 expectations of the probability distribution of future returns. This probability
11 distribution of future returns expected by investors can be calculated based on the
12 market prices of stock options.

13 **Q. WHAT IS A STOCK OPTION?**

14 **A.** A stock option is the right to buy or sell a stock at a specific price for a specified
15 amount of time. A call option is the right to buy a stock at a specified exercise or
16 strike price on or before a maturity date. A put option is the right to sell a stock at
17 a specified exercise or strike price on or before a maturity date. By way of example
18 solely for illustrative purposes, a call option to purchase 100 shares of Apple
19 Computer stock for \$230 on January 17, 2020, allows the owner the option, but not
20 the obligation, to buy Apple stock for \$230 on that date. At the end of July 2019,
21 Apple stock was trading at about \$215 per share. In this example, one may ask why

1 someone would pay for the right to buy a stock higher than the current price?
2 However, in this example, investors who purchased those call options thought there
3 was a chance Apple stock would be trading higher than \$230 on January 17, 2020,
4 and those options gave those investors the right to buy Apple stock for \$230 and
5 profit by selling it at the market price on that date if it were higher. The price of
6 Apple's stock was \$317.98 at the close of trading on January 17, 2020. Therefore,
7 the investor who purchased this call option for \$635 on July 31, 2019, earned a
8 profit of \$8,163 (\$31,798 from selling at \$317.98 market price - \$23,000 cost to
9 purchase at \$230 - \$635 [6.35×100]) that expired on January 17, 2020. On the
10 other hand, the investor who purchased an Apple put option with the same
11 expiration date and strike price on July 31, 2019, would have lost the price of the
12 option (\$2,248) and gained nothing on the expiration date because the right to sell
13 Apple stock for \$230 when the price is over \$300 is worthless.

14 The market prices of put options and call options provide information
15 regarding the probability distribution of future stock prices expected by investors.
16 Using established techniques, we are able to use price data for stock options of the
17 RFC Proxy Group companies and the S&P 500 Index to determine investors' return
18 expectations, including the relationship between the return expectations for
19 individual RFC Proxy Group companies and those for the overall market, as
20 represented by the S&P 500. This covariance between the expected returns for our
21 RFC Proxy Group and for the S&P 500 indicates what investors expect betas will

1 be in the future. We refer to betas based on option price calculations as “option-
2 implied betas.”

3 **Q. PLEASE EXPLAIN HOW YOU CALCULATED THE BETAS USED IN**
4 **YOUR CAPM ANALYSIS.**

5 **A.** As discussed below, we have chosen to use both historical and option-implied betas
6 in our CAPM analysis. We chose to use option-implied betas in our CAPM analysis
7 because, among other reasons, studies have found that betas calculated based on
8 investor expectations provide information regarding future perceived risks and
9 expectations. See Bo-Young Chang, Peter Christoffersen, Kris Jacobs & Gregory
10 Vainberg, Option-Implied Measures of Equity Risk, Review of Finance, Vol. 16,
11 Issue 2, pp. 385-428 (April 2012) available at
12 <https://academic.oup.com/rof/article/16/2/385/1584560>.

13 Older beta coefficients in Chart 2 are provided to show historical trends
14 from data provided in our workpapers. Specifically, our CAPM analysis relies on
15 two types of beta coefficients. The first type is a Historical Blended Beta consisting
16 of a weighted average of 50% six-month historical beta, 30% two-year historical
17 beta, and 20% five-year historical beta. The second type is a six-month forward-
18 looking option-implied beta calculated as described further on in this testimony.

19 **Q. WHY DO YOU USE PERIODS OF SIX MONTHS, TWO YEARS, AND**
20 **FIVE YEARS FOR YOUR HISTORICAL BETA CALCULATIONS, AS**

1 **OPPOSED TO RELYING EXCLUSIVELY ON THE FIVE-YEAR PERIOD**
2 **USED BY VALUE LINE?**

3 **A.** Using shorter periods for the return regression analysis portion of the historical beta
4 calculation allows us to see if the correlation between the returns of each of the
5 companies in our RFC Proxy Group and those of the S&P 500 Index have changed
6 in the last two years or six months. Using a five-year period exclusively tends to
7 make recent changes in the correlation more difficult to identify because of the
8 weight of five years of data. Typical investors' valuation strategies include looking
9 at shorter-term historical periods, which is why data providers such as Bloomberg
10 often publish shorter-term betas along with long-term betas.

11 **Q.** **WOULD YOU AGREE THAT CHANGES IN MARKET DYNAMICS WILL**
12 **HAVE A LARGER EFFECT ON SIX-MONTH HISTORICAL BETAS**
13 **THAN THEY WILL ON TWO-YEAR OR FIVE-YEAR HISTORICAL**
14 **BETAS?**

15 **A.** Yes. As with other historical metrics based on a given time period, say, average
16 stock prices, the longer the time horizon under consideration, the more data points
17 are considered, and the smaller the effect of any one given change in the data set.

18 **Q.** **IS THIS LARGER EFFECT ON SIX-MONTH HISTORICAL BETAS**
19 **FROM CHANGES IN MARKET DYNAMICS A GOOD OR A BAD THING?**

20 **A.** The answer depends on what the beta will be used for. We contend that in any
21 attempt to forecast the beta coefficient of a company for any near-term forward-

1 looking analysis such as the cost of capital calculations in this proceeding, more
2 recent historical data should be given more relevance than data from five or 10
3 years ago. The weight of 10 years of data makes a beta coefficient react extremely
4 slowly to market developments. Even pronounced permanent market changes can
5 take more than six months to have a detectable effect on a 10-year beta.

6 As with using spot values and averages of historical market data, we believe
7 the right answer is not to use either six-month historical betas or historical betas
8 with longer horizons, but to consider both. For this reason, we have created our
9 historical blended betas, which take into consideration six-month, two-year, and
10 five-year historical betas.

11 **Q. DO YOU THINK IT IS A GOOD IDEA TO RELY ON SIX-MONTH**
12 **HISTORICAL BETAS DESPITE MARKET DEVELOPMENTS IN THE**
13 **PAST YEAR THAT SOME WOULD CALL “MARKET DISLOCATIONS?”**

14 **A.** Financial markets are constantly in flux due to the influence of countless factors.
15 So-called “market dislocations,” are just some of the numerous factors that are
16 constantly affecting markets. To attempt to separate any one specific factor from
17 “real” underlying market dynamics would be an exercise in futility.

18 Furthermore, predicting the duration and impact of any single influencing
19 factor on financial markets is extremely challenging, if not impossible. In 2008,
20 when interest rates plummeted to unprecedented lows, numerous analysts deemed
21 this a temporary anomaly. Contrary to expectations, rates not only persisted at low

1 levels for more than ten years but dropped even further in response to the COVID-
2 19 pandemic, which significantly affected the global economy and financial
3 markets.

4 So, yes, we think it is a good idea to use six-month historical betas to
5 measure recent and current market dynamics regardless of recent developments.
6 We use them as part of our historical blended betas in conjunction with longer-term
7 historical betas and forward-looking, option-implied betas to achieve the most
8 reasonable result.

9 **Q. GIVEN THE SHORTER PERIOD COVERED BY SIX-MONTH**
10 **HISTORICAL BETAS, CAN THEY STILL BE CONSIDERED**
11 **STATISTICALLY SIGNIFICANT?**

12 **A.** A six-month historical beta based on weekly returns, calculated weekly, is
13 calculated using 26 closing price points for a company and for its corresponding
14 market index, in this case the S&P 500 Index. This translates into 25 pairs of return
15 data that are then used in the regression analysis. This is most certainly enough data
16 to achieve statistical significance as addressed further below.

17 **Q. HOW MANY DATA POINT PAIRS ARE USED IN THE CALCULATION**
18 **OF YOUR SIX-MONTH HISTORICAL BETA COEFFICIENTS?**

19 **A.** As stated above, the recent improvement in our calculation of historical betas of
20 using returns on every day of the week as opposed to using only one day of the
21 week, as Value Line does, has the added benefit of providing significantly more

1 data pairs to be used in the regression analysis used to calculate beta. For six-month
2 historical betas, instead of relying on 25 return pairs when using returns on only
3 one day of the week, the regression is performed on 117 return pairs when using
4 every day of the week that markets are open.

5 **Q. PLEASE EXPLAIN HOW YOU CALCULATED OPTION-IMPLIED**
6 **BETAS.**

7 **A.** Calculating option-implied betas of a company requires (1) obtaining stock option
8 data for that company and a market index, (2) filtering the stock option data, (3)
9 calculating the option-implied volatility for the company and for the index, (4)
10 calculating the option-implied skewness for the company and for the index, and (5)
11 calculating option-implied betas for the company based on implied volatility and
12 skewness for the company and for the index. There are various ways one could
13 choose to perform the steps above, but we chose to filter stock option data and
14 calculate option-implied volatility and skewness following exactly the same
15 methodology used by the Chicago Board of Options Exchange, or CBOE, in the
16 calculation of their widely-used Volatility Index, or VIX, and SKEW Index,
17 respectively. See Exhibit__(NYCRP-8).

18 We start our process with publicly available trading information for all the
19 options for a given company or index for a complete trading day. We then filter the
20 option data as described by the CBOE using the following guidelines:

- 1 1. Use the mid-quote or average of bid and ask, known as a mark, as
- 2 the option price.
- 3 2. Use only out-of-the-money call and put options.
- 4 • Determine the “moneyness” threshold where absolute
- 5 difference between call and put prices is smallest, using the
- 6 CBOE “Forward Index Price” formula.
- 7 • Include “at-the-money” call and put options and use average
- 8 of call and put prices as the price for the “blended” option.
- 9 3. Exclude all zero bids.
- 10 4. Exclude remaining, more out-of-the-money, options when two
- 11 sequential zero bids are found.

12 We then apply the series of formulas clearly described in both of the

13 CBOE’s white papers to the remaining options to calculate Option-Implied

14 Volatility and Option-Implied Skewness. In the words of the CBOE, each of its

15 two indices is “an amalgam of the information reflected in the prices betas using

16 the following formula developed by Christoffersen, Chang, Jacobs and Vainberg

17 (2011). See Bo-Young Chang, Peter Christoffersen, Kris Jacobs & Gregory

18 Vainberg, Option-Implied Measures of Equity Risk, Review of Finance Volume

19 16, Issue 2, pp. 385-428 (April 2012) at

20 <https://academic.oup.com/rof/article/16/2/385/1584560>).

$$\beta_i = \left(\frac{SKEW_i}{SKEW_m} \right)^{1/3} \left(\frac{VAR_i}{VAR_m} \right)^{1/2}$$

1 Where:

2 β_i is the optionminus the implied beta of the security;
3 SKEW_i is the skewness of the security;
4 SKEW_m is the skewness of the S&P 500
5 VAR_i is the variance of the security;
6 VAR_m is the variance of the S&P 500.
7

8 **Q. WOULD IT NOT BE BETTER TO USE A LONGER FORECASTING**
9 **HORIZON THAN SIX MONTHS TO CALCULATE YOUR OPTION-**
10 **IMPLIED BETAS?**

11 **A.** While a longer horizon can be useful, our chosen methodology is not limited by
12 theory, but rather by the availability of liquid market data. The authors of Option-
13 Implied Measures of Equity Risk explain that while their primary study focused on
14 180-day forecasts, they emphasize that their methodology is naturally flexible; it
15 allows for the calculation of a full range of beta values (a term structure) for any
16 given company, provided that there is sufficient and available options data for those
17 longer periods.

18 For many applications, including cost of capital, one could argue that the
19 longer the time horizon for the option-implied betas, the better. However, the
20 limitation on the forecasting horizon is always set by the longest expiration period
21 of the options currently traded in the market. Some companies trade options with
22 expiration periods up to two or three years into the future. As evidenced by the
23 exhaustive option data in our working papers, the maximum expiration period for
24 the options of the companies in our RFC Proxy Group is approximately eight

1 months. None of the 30 companies ever trade options with expiration periods of
2 more than eight months. New options are issued roughly every three months for all
3 of these companies, so the maximum expiration period on any given trading day is
4 somewhere between five and eight months. For consistency across companies in
5 our proxy group and across dates within the three-month period on which our
6 analysis is focused, specifically December 2025 through February 2026, we chose
7 to use six months for the time horizon of our option-implied betas. If the maximum
8 expiration period for the options of a given company on a given day is less than six
9 months, we use the maximum expiration period as an approximation for the target
10 six-month horizon.

11 **3) Market Risk Premium**

12 **Q. PLEASE EXPLAIN HOW YOU CALCULATED THE EQUITY RISK**
13 **PREMIUM USED IN YOUR CAPM ANALYSIS.**

14 **A.** Traditionally, the risk premium used in CAPM calculations is derived from
15 historical returns and/or equity analyst projections. Using historical returns is
16 historically accurate but does not take into account investors' expectations for
17 future market risks and returns. Using equity analyst projections is not appropriate
18 since the projections may not reflect current investor expectations. A superior
19 approach to calculate the equity risk premium is to use a market-based approach
20 that is based on option-implied return expectations, which is the approach we have
21 used.

1 Our equity risk premium is the expected return on the S&P 500 minus the
2 risk-free rate. We calculate an expected return on the S&P 500 by using stock
3 options traded on this index. To begin, we use exactly the same methodology used
4 by the CBOE to filter stock option data and calculate option-implied volatility and
5 skewness. The volatility and skewness calculated in this way describe a probability
6 distribution representing the possible trajectories for the S&P 500 implied by the
7 options market. The resulting skewed probability distribution can be closely
8 approximated by a log-normal distribution using established statistical formulas,
9 which then make it straightforward to calculate the expected growth for the S&P
10 500 for any given cumulative probability. A cumulative probability of 50%
11 represents the median of the probability distribution, or the aggregate market
12 expectation. This equilibrium point reflects the collective view of all market
13 participants and is how we arrive at our calculation of expected market growth.

14 Once the option-implied growth rate of the S&P 500 has been calculated as
15 described above, we add the dividend yield and subtract the risk-free rate to arrive
16 at the market risk premium, as laid out in Exhibit__(NYCRP-6), pages 4 and 6. In
17 line with our spot and weighted average CAPM models, we use both spot values as
18 of February 28, 2026 and weighted averages over the three months ending on that
19 date for option-implied growth, dividend yields, and short- and long-term risk-free
20 rates in these calculations to arrive at a total of four estimated values for the market
21 risk premium. The market risk premiums we use in our weighted average CAPM
22 analysis with short- and long-term risk-free rates are 5.13% and 4.04%,

1 respectively. The market risk premiums we use in our spot CAPM analysis with
2 short- and long-term risk-free rates are 5.29% and 4.32%, respectively.

3 **Q. DID YOU TAKE INTO CONSIDERATION THE DIFFERENCE IN**
4 **VOLATILITIES ACROSS EXPIRATION PERIODS IN THE OPTIONS**
5 **TRADED ON THE S&P 500?**

6 **A.** Yes. The volatility implied by the options market changes over time as investors'
7 perception of risk changes. For example, during a crisis, implied volatility generally
8 increases as investors expect that stock market prices have a greater chance of large
9 swings compared to times when there is no crisis. As discussed earlier, investors
10 also often have different volatility expectations over different time periods. For
11 example, on any given day, investors might expect volatility to be relatively high
12 over the next 30 days and to decrease over the next year or longer. The same holds
13 true for skewness, even though it is less intuitive to understand changes in skewness
14 than in volatility. Because of these changes across option expiration periods, we
15 take a weighted average of the entire term structure of the option-implied volatility
16 and skewness, interpolating where necessary, and giving the most weight to the
17 option expiration period of 12 months. For the S&P 500, data we used goes out to
18 71 months.

1

V. COE OF OVERALL MARKET

2 **Q. HOW DOES YOUR COE CALCULATION FOR THE OVERALL**
3 **MARKET RELATE TO YOUR 8.04% ROE RECOMMENDATION?**

4 **A.** Our COE for the overall market serves as a critical ceiling for the appropriate ROE
5 for Con Edison. It is grounded in a fundamental economic boundary: a low-risk,
6 regulated monopoly utility cannot logically require a higher return than the riskier
7 overall stock market.

8 Using forward-looking options data, we calculated the COE for the S&P
9 500 to be between 7.43% and 9.14%, with a midpoint of 8.29%. We provide this
10 analysis to offer the Commission direct insight into what current capital markets
11 are indicating regarding the COE for the market as a whole. These calculations
12 should not be interpreted as the COE applicable to Con Edison or any utility
13 company.

14 Furthermore, while we apply a DCF analysis, we utilize shorter-term
15 horizons than the Commission's standard 200-year time frame. These shorter
16 periods, which are under five years, are a necessity in this case due to the limitations
17 of stock option data, as there are no stock options with investment horizons that
18 consistently exceed five years. This result demonstrates that setting Con Edison's
19 COE above 8.29% is economically unsound as it exceeds the average COE for the
20 overall market COE.

1 **Q. HOW DID YOU CALCULATE THE COE FOR THE OVERALL**
2 **MARKET?**

3 **A.** We calculated the COE for the S&P 500 by using a DCF model. We used the prices
4 of stock options traded on the S&P 500 to derive an option-implied growth rate.
5 Please see Exhibit__(NYCRP-1), Appendix C for a definition of stock options and
6 a detailed explanation of why we use them. Please see Exhibit__(NYCRP-1),
7 Appendix D for a discussion of how we calculated the option-implied growth rates.

8 **Q. WHAT OPTION-IMPLIED GROWTH RATES DID YOU CALCULATE?**

9 **A.** We calculated investors' growth expectations over three different investment time
10 horizons—one year, three years, and five years—based on stock option prices.
11 Because stock options are traded with various expiration dates, they allow us to
12 analyze the term structure of the COE. This concept recognizes that the return
13 investors require can vary depending on the time horizon of the investment.

14 The resulting option-implied growth rates can be summarized as follows:

15 1-Year Horizon: 7.67% to 8.00%

16 3-Year Horizon: 7.55% to 7.82%

17 5-Year Horizon: 6.28% and 6.97%

18 To move from the “term structure” of growth to the term structure of the
19 COE, we added the dividend yield of the S&P 500, which was approximately
20 1.15% for the three-month period upon which the analysis was based. This results
21 in the COE for the overall market.

1 **Q. WHAT ARE THE RESULTS OF YOUR DCF COE ANALYSIS?**

2 **A.** The results of our DCF models applied to the S&P 500 range between 7.43% and
3 9.14%. To properly interpret these results, it is critical to understand that they vary
4 across two distinct dimensions: the investment horizon, or the time period over
5 which the return is measured, and the date of analysis, which in this case comprises
6 the market conditions averaged over the three-month period December 2025
7 through February 2026.

8 **Q. PLEASE EXPLAIN HOW THE COE RESULTS VARY ACROSS THESE**
9 **DIMENSIONS.**

10 **A.** As shown in Chart 3 in Exhibit__(NYCRP-2), our analysis reveals a dynamic term
11 structure where COE expectations shift depending on how far into the future we
12 look.

13 The resulting option-implied COE can be summarized as follows:

14 1-Year Horizon: 8.82% to 9.14%

15 3-Year Horizon: 8.70% to 8.96%

16 5-Year Horizon: 7.43% to 8.14%

17 Generally speaking, there is a declining trend as one goes out from short-
18 term to longer-term horizons.

1 **Q. WHY DIDN'T YOU CALCULATE THE COE BEYOND THE FIVE-YEAR**
2 **TIME FRAME?**

3 **A.** It is not possible to calculate an option-implied COE beyond the five-year horizon
4 because a consistent market for such options does not exist. Publicly traded index
5 options occasionally trade out to six years for a brief period, but are only available
6 consistently out to about five years.

7 **Q. WHAT CONCLUSION DO YOU DRAW FROM THIS DECLINING**
8 **TREND?**

9 **A.** The data indicates that while short-term market expectations have risen in recent
10 months, longer-term expectations remain anchored at lower levels.

11 This is significant because, for utility ratemaking purposes, the longer
12 horizons are arguably the most relevant. While rates are set periodically, the cost
13 of equity (COE) represents the return required to attract capital for long-lived
14 assets. Because the primary investors in this sector, such as pension funds, match
15 their investments to long-term liabilities, they price these securities based on a
16 multi-decade horizon rather than shorter investment horizons.

17 As shown in Chart 3 in Exhibit__(NYCRP-2), as we extend the timeline out
18 to five years, the COE indicated by our stock option analysis is consistent with the
19 longer-term forecasts of major financial institutions. Specifically, even the highest
20 COE results in Chart 3 decline from 9.14% at the 1-year horizon to 8.14% at the 5-
21 year horizon, trending directly toward the 10-to-20-year forecasts from firms like

1 J.P. Morgan (6.7%) and the Horizon Actuarial Survey (approximately 7.0%), which
2 can be found in Exhibit__(NYCRP-11). As discussed above, the Horizon survey is
3 a significant industry benchmark that aggregates the capital market assumptions of
4 41 different investment advisory firms, including the Bank of New York Mellon,
5 BlackRock, and Goldman Sachs.

6 While this market-wide COE analysis does not directly dictate our specific
7 ROE recommendation, it provides a critical benchmark for reasonableness.
8 Specifically, it confirms that our recommended ROE of 8.04% is consistent with,
9 and provides a modest, appropriate risk premium above, a broad cross-section of
10 long-term institutional forecasts for the broader equity market.

11 While this market-wide COE analysis does not directly dictate our specific
12 ROE recommendation, it provides a critical benchmark for reasonableness.
13 Specifically, it confirms that our recommended ROE of 8.04% is consistent with,
14 and provides a modest, appropriate risk premium above, a broad cross-section of
15 long-term institutional forecasts for the broader equity market. Table 1 in
16 Exhibit__(NYCRP-2) shows the equity return expectations/COE for the S&P 500
17 over longer investment horizons are mostly around 7%.

VI. EVALUATION OF CON EDISON'S RATE OF RETURN**TESTIMONY**

Q. PLEASE SUMMARIZE THE TESTIMONY OF MR. NOWAK.

A. Mr. Nowak's recommendation for the Company's ROE is built upon a multi-stage DCF model and two forms of the CAPM model. While he presents results using the Commission's two-thirds DCF and one-third CAPM weighting, he also introduces an alternative equal-weighting (50/50) approach. Furthermore, he provides a Bond Yield Plus Risk Premium analysis as a secondary reasonableness check.

In his testimony, Mr. Nowak makes several adjustments to the Commission's accepted methodology:

- Departing from a simpler two-stage model, Mr. Nowak employs a three-stage DCF methodology. He justifies this divergence from the Commission's methodology by arguing it more accurately captures the transition from short-term growth to long-term sustainable growth.
- Instead of utilizing dividend growth, Mr. Nowak relies on earnings per share, or EPS, growth rate forecasts. He contends that EPS is a more direct indicator of a company's fundamental value and a primary driver of investor expectations.

- 1 • A significant component of Mr. Nowak's CAPM result is his
2 inclusion of an additional market risk premium. By using analyst
3 growth forecasts to derive a higher market risk premium, Mr.
4 Nowak pushes the CAPM results upward significantly.
- 5 • While acknowledging the Commission's methodology for the 2/3
6 DCF and 1/3 CAPM weighting, Mr. Nowak presents equal-
7 weighted results to reflect what he describes as the increased
8 importance of the CAPM methodology.

9 Mr. Nowak attempts to root his analysis in the Commission's Generic
10 Financing Proceeding standards while simultaneously introducing "modernizing"
11 adjustments that push his results significantly above capital market data and the
12 broad cross-section of long-term institutional forecasts discussed above.

13 **1) DCF Methodology**

14 **Q. PLEASE DESCRIBE MR. NOWAK'S IMPLEMENTATION OF THE DCF**
15 **METHODOLOGY.**

16 **A.** Mr. Nowak employs a multi-stage DCF model to determine the COE, basing the
17 current market price on the present value of all expected future dividends. Based
18 on his specific inputs and a three-month average stock price, his analysis produces
19 a range of 9.24% to 9.74%, with a mean ROE estimate of 9.49%.

20 As we just noted, his application introduces several key departures from the
21 Commission's methodology. Unlike the Commission's two-stage methodology,

1 Mr. Nowak utilizes a three-stage structure: (1) Stage 1, covering years one through
2 five with a fixed growth rate averaging 5.87%; (2) Stage 2, covering years six
3 through ten where growth steps down annually from 5.79% to 5.53%; and (3) Stage
4 3, covering years eleven on with a sustainable growth period at a rate of 5.44%.

5 Next Mr. Nowak relies on EPS growth rate forecasts for short-term growth,
6 rather than the dividend per share, or DPS, growth rates used in the Commission's
7 methodology.

8 Mr. Nowak explicitly rejects the Commission's "sustainable growth rate"
9 approach of a retention ratio multiplied by ROE plus a transition factor in favor of
10 macroeconomic growth projections. Lastly, in his third stage, Mr. Nowak
11 mechanically uses gross domestic product, or GDP, growth rate projections as a
12 proxy for long-term corporate growth.

13 **Q. WHAT IS YOUR RESPONSE TO THE DCF METHODOLOGY AND**
14 **INPUTS PROPOSED BY MR. NOWAK?**

15 **A.** Mr. Nowak's DCF methodology is fundamentally flawed and produces an inflated
16 result that is disconnected from capital market realities. His reliance on biased
17 analyst EPS forecasts and his mechanical use of GDP growth rates are particularly
18 problematic.

19 First, by prioritizing EPS forecasts over dividends, Mr. Nowak incorporates
20 "sell-side" analyst growth forecasts that are notoriously optimistic and biased
21 upward. Using these forecasts as a primary driver of the DCF model results in a

1 COE estimate that fails to represent a realistic expectation of long-term sustainable
2 growth for a regulated utility.

3 Second, Mr. Nowak's assumption that long-term utility dividend growth
4 will equal nominal GDP growth is contradicted by nearly a century of historical
5 data. As shown in Section VII. Cost of Capital Research, historical growth for
6 utilities of approximately 2.8% is considerably slower than nominal GDP growth
7 of approximately 6.1%. Utilities are mature, regulated entities with limited
8 innovation and customer expansion potential; they simply do not grow at the same
9 rate as the broader economy. In fact, our regression analysis in Section VII of this
10 testimony demonstrates that nominal GDP is the least reliable indicator for
11 predicting utility dividend growth. Nominal GDP has a Mean Absolute Percentage
12 Error, or MAPE, of over 89%—more than four times the error of more appropriate
13 indicators such as the consumer price index, or CPI.

14 Furthermore, Mr. Nowak's ROE recommendation of 9.49% contradicts
15 current capital market data. As discussed earlier, the COE for the overall market is
16 currently between approximately 7.5% and just over 9.0% over the one to five year
17 investment horizons and likely less over longer time frames. It is logically
18 inconsistent for a low-risk, regulated utility to have a COE that exceeds the required
19 return of the broader market.

1 **Q. WHAT IS THE PRIMARY DRIVER OF THIS DISCREPANCY BETWEEN**
2 **YOUR RECOMMENDATIONS AND THOSE OF MR. NOWAK?**

3 **A.** The discrepancy boils down to a single issue, the current COE for the overall
4 market. The COE for the overall market is a critical "anchor" in both our analyses.
5 If this anchor is set too high, the recommendation drifts away from economic
6 reality. Mr. Nowak uses market-wide benchmarks—specifically a 10.87% figure
7 from a BofA report and a 13.97% figure derived from a "forward-looking" DCF of
8 the S&P 500—that are vastly higher than the data used by the rest of the financial
9 world. Our recommendation is anchored in the market reality that the COE for the
10 broader, riskier market currently sits between 7.5% and 9.0%.

11 **Q. WHY ARE MR. NOWAK’S OVERALL MARKET FIGURES SO MUCH**
12 **HIGHER THAN YOURS?**

13 **A.** This is due to his reliance on "sell-side" analyst reports. To reach a market COE
14 exceeding 13%, one must accept the optimistic growth forecasts produced by equity
15 analysts whose professional role is to generate interest in the stocks they cover.

16 **BEGIN CONFIDENTIAL INFORMATION<** [REDACTED]

17 [REDACTED]
18 [REDACTED]
19 [REDACTED]
20 [REDACTED]

1 [REDACTED] >END

2 **CONFIDENTIAL INFORMATION**

3 **Q. HOW DOES THIS DISCREPANCY IN MARKET-WIDE DATA IMPACT**
4 **THE FINAL ROE RECOMMENDATION?**

5 **A.** It creates a "domino effect." By starting with an inflated COE for the overall market,
6 Mr. Nowak's entire analysis is skewed. If Mr. Nowak's projections were correct, it
7 would mean that sophisticated institutional investors and pension funds, who
8 manage trillions of dollars and project a market COE nearly half of what he
9 proposes, are fundamentally wrong.

10 Chart 4 in Exhibit__ (NYCRP-2) shows that Mr. Nowak's market return
11 expectations of (up to 13.97% are nearly twice the levels forecasted by J.P. Morgan
12 (6.7%) and Horizon Actuarial Services (7.0%). These mainstream benchmarks
13 suggest a market reality far below Mr. Nowak's figures. His 9.90% ROE
14 recommendation is hundreds of basis points above the ROE derived from use of
15 the mainstream benchmarks, an unjustifiable spread given the relatively low risk of
16 Con Edison.

17 **2) CAPM Methodology**

18 **Q. PLEASE DESCRIBE MR. NOWAK'S CAPM METHODOLOGY.**

19 **A.** On page 38 of his pre-filed direct testimony, Mr. Nowak explains that the CAPM
20 methodology "estimates the COE for a given security as a function of a risk-free
21 return plus a risk premium (to compensate investors for the non-diversifiable or

1 ‘systematic’ risk of that security).” He says that this method is defined by the
2 following four components:

3 $K_e = r_f + \beta (r_m - r_f)$

4 where:

5 K_e is the required market ROE;
6 β is the Beta coefficient of an individual security;
7 r_f is the risk-free rate of return; and
8 r_m is the required return on the market as a whole.

9 He also uses the zero-beta CAPM, which is defined as:

10 $K_e = r_f + 0.75\beta (r_m - r_f) + 0.25 (r_m - r_f)$

11 **Q. WHAT RISK-FREE RATE DOES MR. NOWAK USE IN HIS CAPM**
12 **ANALYSIS?**

13 **A.** He uses the following three risk-free rates: (1) current three-month average yield
14 on 30-year Treasury bonds of 4.75%, (2) the projected Q1 2026 through Q1 2027
15 yield 30-year Treasury bonds of 4.58%, and (3) the projected yield between 2027
16 and 2031 for 30-year Treasury bonds of 4.40%.

17 **Q. WHAT BETA COEFFICIENT DOES MR. NOWAK USE IN HIS CAPM**
18 **ANALYSIS?**

19 **A.** As discussed on page 42 of his pre-filed direct testimony, Mr. Nowak uses the
20 following two beta coefficients: (1) Bloomberg 10-year weekly return relative to
21 the S&P 500, and (2) Value Line five-year historical weekly return relative to the
22 New York Stock Exchange Composite Index.

1 **Q. WHAT RISK PREMIUM DOES MR. NOWAK USE IN HIS CAPM**
2 **ANALYSIS?**

3 **A.** Mr. Nowak discusses on pages 26 and 42 of his pre-filed direct testimony that he
4 uses a “forward-looking” market risk premium in his CAPM analysis using an
5 “average of: (1) the forward-looking required market return for the S&P 500 as
6 calculated using a DCF model for all companies in the index; and (2) the estimated
7 forward-looking market return for the S&P 500 as provided by BofA.” Mr.
8 Nowak’s approach to calculating the forward-looking required market return for
9 the S&P 500 with the DCF model does not exclude high-growth companies.
10 Because this method includes all companies regardless of growth rate, it produces
11 a higher risk premium estimate than is appropriate for Con Edison.

12 Using a market return of 13.97%, and risk free rates between 4.40% and
13 4.75%, Mr. Nowak calculates market risk premiums between 9.22% and 9.57%.
14 Using the BofA estimate forward looking market return of 10.87% and risk-free
15 rates between 4.40% and 4.75%, Mr. Nowak calculates market risk premiums
16 between 6.12% and 6.47%.

17 **Q. DOES MR. NOWAK USE AN APPROPRIATE RISK-FREE RATE IN HIS**
18 **CAPM ANALYSIS?**

19 **A.** In principle, no. When selecting a security to estimate the risk-free rate, it is
20 important to choose one with a beta coefficient as close to zero as possible because,
21 by definition, the risk-free rate in the CAPM analysis should have no correlation

1 with market movements. This is where the 30-year Treasury bond yield falls short,
2 as it has an established non-zero beta, meaning it does not behave as a truly risk-
3 free asset. In contrast, the three-month Treasury bill yield has a considerably lower
4 beta, making it a superior choice for estimating the risk-free rate.

5 Additionally, while 30-year U.S. Treasury bonds are generally free from
6 default risk, they are certainly not free from price or interest rate risk. Holding a
7 long-term Treasury bond exposes investors to significant price fluctuations
8 throughout its life; because the capital is locked in for three decades, the market
9 value of a 30-year bond drops severely when interest rates rise.

10 The collapse of Silicon Valley Bank, or SVB, in 2023 underscores this risk.
11 SVB invested heavily in long-term Treasury bonds. As interest rates rose sharply,
12 the market value of SVB's bond portfolio fell by over \$17 billion, leaving SVB
13 with substantial unrealized losses. When depositors attempted to withdraw \$42
14 billion in a single day, SVB lacked the liquidity to meet these demands, in part
15 because it could not hold its Treasury bonds to maturity without realizing those
16 losses. See Exhibit__(NYCRP-9). This contributed to SVB's downfall,
17 demonstrating that long-term Treasury bonds carry significant risk and may not be
18 the best proxy for the risk-free rate in CAPM calculations.

19 As outlined in Exhibit__(NYCRP-6), page 2, our spot and weighted average
20 short-term risk-free rates are 3.67% and 3.67%, respectively. Our spot and weighted
21 average long-term risk-free rates are 4.64% and 4.77%, respectively. These four

1 rates average 4.19%. The risk-free rate component of Mr. Nowak's CAPM analysis
2 ranges between 4.40% and 4.75%.

3 Mr. Nowak's use of interest rate forecasts to determine the risk-free rate is
4 flawed in principle because current market yields on U.S. Treasury bonds already
5 reflect investor expectations. As discussed above, Con Edison's ROE should be
6 based on market data since investors provide the capital. While in this case, his use
7 of forecasts does not artificially inflate his CAPM results, his approach introduces
8 unnecessary subjectivity and could lead to inaccurate COE estimates, either too
9 high or too low, under different capital market conditions. Therefore, his CAPM
10 methodology should not be used to set Con Edison's ROE.

11 **Q. DO MR. NOWAK'S BETA COEFFICIENTS OVERSTATE THE COE?**

12 **A.** Yes. Mr. Nowak's CAPM results are not a reliable indicator of the COE because
13 he uses historical beta coefficients. As set forth in Exhibit ____ (JCN-6), Mr.
14 Nowak's 10-year and five-year historical betas are excessive, averaging 0.76. Over
15 the past three months, our forward-looking option-implied betas have had a
16 weighted average of 0.55. Our six-month, two-year, and five-year historical betas
17 for the RFC Proxy Group have a weighted average of 0.353, 0.474, and 0.645,
18 respectively. See Exhibit ____ (NYCRP-6), page 3.

1 **Q. DO YOU BELIEVE THE EQUITY RISK PREMIUM PORTION OF MR.**
2 **NOWAK’S CAPM ANALYSIS IS REASONABLE?**

3 **A.** No. We believe Mr. Nowak’s market risk premium components between 6.12%
4 and 6.47%, using the BofA report, and 9.22% and 9.57%, using all companies in
5 the S&P 500, are excessive and lead to an inflated CAPM result. As explained in
6 the CAPM section of our testimony, we determined that investors are satisfied with
7 a significantly lower equity risk premium of between 4.04% and 5.29%.

8 This discrepancy is evident even when consulting other respected sources,
9 like Professor Aswath Damodaran from New York University, who finds an equity
10 risk premium using a trailing 12-month, adjusted payout of 4.38% as of March 1,
11 2026. See Exhibit__(NYCRP-10). Professor Damodaran is a professor of finance
12 at New York University and author of numerous textbooks on financial valuation.
13 His published works on financial valuation have been cited tens of thousands of
14 times by academic researchers. His analysis supports the argument that Mr.
15 Nowak’s equity risk premium is excessively high.

16 In summary, Mr. Nowak’s CAPM results are unreasonably high because his
17 equity risk premium component is above current market-based indicators.

1 **Q. WHAT IS THE THEORETICAL BASIS TO SUPPORT MR. NOWAK'S**
2 **USE OF A ZERO-RISK BETA FORM OF THE CAPM METHOD AS WELL**
3 **AS THE STANDARD METHOD?**

4 **A.** The zero-risk beta form is based on the observation that the CAPM methodology
5 tends to underpredict performance of low-beta stocks and overpredict performance
6 of high-beta stocks.

7 **Q. IS THE THEORETICAL BASIS OF THE ZERO RISK BETA FORM OF**
8 **THE CAPM METHOD APPROPRIATE FOR THE UTILITY INDUSTRY?**

9 **A.** No, this is not appropriate for the utility industry because utility companies
10 demonstrate stable long-term growth below the rate of the overall market. Their
11 performance is accurately predicted by unadjusted betas, so the observation
12 proposed to justify the zero-risk beta does not apply in this setting.

13 **3) Bond Yield Plus Risk Premium Analysis**

14 Q. PLEASE DESCRIBE MR. NOWAK'S BOND YIELD PLUS RISK
15 PREMIUM ANALYSIS.

16 **A.** In his risk premium analysis, Mr. Nowak estimates the COE for Con Edison by
17 assessing the historical spread between authorized utility ROEs and long-term
18 government bond yields. His approach follows these key steps:

19 **1. Concept of the Model:**

- The method assumes that investors require a premium above risk-free bond yields to invest in utility equities.

- 1 • This risk premium reflects the additional return investors expect for
2 taking on equity risk relative to bonds.

3 **2. Methodology:**

- 4 • He compares authorized ROEs for electric and gas utilities to
5 historical yields on long-term U.S. Treasury bonds.
- 6 • By analyzing past relationships, he derives an average historical risk
7 premium; that is, the spread between ROEs and bond yields.
- 8 • This spread is then applied to current bond yields to estimate Con
9 Edison's COE.

10 **3. Findings and Conclusion:**

- 11 • Using this approach, on page 46 of his pre-filed direct testimony,
12 Mr. Nowak's risk premium analysis produces a COE estimate of
13 between 10.37% and 10.53% for electric utilities, and 10.31% and
14 10.45% for natural gas utilities.
- 15 • On page 47 of his pre-filed direct testimony, Mr. Nowak asserts that
16 his risk premium results "confirm the reasonableness of the multi-
17 stage DCF and CAPM results."

18 **Q. SHOULD MR. NOWAK'S BOND YIELD PLUS RISK PREMIUM**
19 **ANALYSIS BE CONSIDERED?**

20 **A.** No. The overriding problem with Mr. Nowak's Bond Yield Plus Risk Premium
21 analysis is that it does not address the COE at all. He simply calculates the historical

1 relationship between authorized ROEs and interest rates. Authorized ROEs are
2 applied to book equity. In order to determine investors' return expectations, one
3 must consider the market price investors are willing to pay for the companies with
4 these authorized ROEs. As set forth in line 2a of Exhibit__(NYCRP-5), page 1, the
5 market-to-book ratio of electric and gas utility stocks is about two. Therefore, as
6 explained in Exhibit__(NYCRP-1), Appendix B, with such a high market-to-book
7 ratio, the ROE earned by investors will likely be significantly lower than the return
8 on book equity Mr. Nowak uses in his Bond Yield Plus Risk Premium Analysis.

9 **4) Weighted Average Results**

10 **Q. PLEASE SUMMARIZE HOW MR. NOWAK WEIGHTS THE RESULTS**
11 **OF HIS DCF AND CAPM MODELS.**

12 **A.** Mr. Nowak presents his DCF and CAPM results with both equal weights and with
13 the Generic Finance Proceeding's 2/3 weight on the DCF and 1/3 weight on the
14 CAPM methods. His equally weighted results produce a low of 9.33%, a high of
15 10.50% and a mean of 9.91%. Exhibit_(JCN-6) sets forth his results using the
16 Generic Finance methodology - a low 9.37%, a high of 10.88% and a mean of
17 10.12%. On page 50 of his pre-filed direct testimony, Mr. Nowak states that he
18 believes "it is reasonable to apply equal weight to the DCF and CAPM methods
19 when determining the ROE for Con Edison, and to test the reasonableness of these
20 results with the Risk Premium model."

1 **Q. DO YOU AGREE WITH HOW MR. NOWAK APPROACHED**
2 **WEIGHTING HIS RESULTS?**

3 **A.** No. We do not believe additional weight should be given to the CAPM results. The
4 CAPM is a highly sensitive model where the final outcome can be significantly
5 skewed by the individual researcher's discretion.

6 There are numerous decisions a researcher must make when implementing
7 a CAPM, specifically regarding the choice of beta, the method of beta adjustment,
8 and the calculation of the market risk premium. In this case, the specific choices
9 made by Mr. Nowak illustrate this risk; his inputs deviate from standard financial
10 theory and result in an overstated COE. By maintaining the current weighting of
11 the CAPM, we limit the impact of such researcher decisions on the final ROE
12 recommendation.

13 **VII. COST OF CAPITAL RESEARCH**

14 **Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?**

15 **A.** This section assesses utilities' cost of capital using the historical record of utility
16 stock performance to inform the CAPM and DCF methodologies. This testimony
17 supports our ROE methodology by demonstrating how our proposal relates to an
18 objective analysis of historical data.

1 **Q. PLEASE SUMMARIZE THE RESULTS OF THIS DATA ANALYSIS.**

2 **A.** We find that utilities' cost of capital is significantly lower than asserted in Mr.
3 Nowak's ROE determination or awarded in recent rate cases. Specifically,
4 historical data contradicts three practices in Mr. Nowak's ROE determination. The
5 first problematic practice is Mr. Nowak's assumption that the long-term growth rate
6 of utility dividends used in the DCF model will equal nominal GDP growth.
7 Historical data shows that the utility dividend growth rate is significantly lower,
8 closer to the rate of inflation or real GDP growth. Second, Mr. Nowak uses market
9 risk premiums calculated by aggregating analysts' company-level forecasts of stock
10 performance. The market risk premium should instead be calculated using an
11 economy-wide growth estimate. And third, Mr. Nowak uses weekly beta values
12 adjusted towards one in his CAPM analysis. The historical data shows that this
13 adjustment is not appropriate, and that if any adjustment is considered, it should be
14 used to adjust raw beta values towards the historical utility-sector average rather
15 than towards one.

16 **Q. WHAT ROE WOULD RESULT FROM APPLYING THESE HISTORICAL**
17 **INSIGHTS IN THE CURRENT RATE CASE?**

18 **A.** Applying these criteria to the cost of capital calculations, we calculate an ROE of
19 6.64%, based on a DCF ROE of 6.79% and a CAPM ROE of 6.33%.

1 **Q. WHY ARE THE OBSERVATIONS ON LONG-TERM DISCOUNT RATE,**
2 **MARKET RISK PREMIUM, AND BETA ADJUSTMENT NOT**
3 **REFLECTED IN YOUR RECOMMENDED ROE?**

4 **A.** Our COE calculation method relies on investor expectations, which are informed
5 by historical analysis and integrate other information. The assumptions in our ROE
6 calculation reflect either investor expectations through options-implied values or
7 data sources widely used by investors.

8 **Q. ARE YOU RECOMMENDING THAT THE ROE CALCULATED USING**
9 **THESE METHODS BE ADOPTED IN THIS RATE CASE?**

10 **A.** No. These calculations provide context for our recommended ROE. While
11 historical data demonstrates that the cost of capital is substantially lower than
12 recently awarded ROEs, we recognize that the Commission is unlikely to consider
13 an ROE for Con Edison's steam business that is extreme relative to other authorized
14 ROEs.

15 **Q. HOW SHOULD THIS COST OF CAPITAL RESEARCH BE USED IN THIS**
16 **RATE CASE?**

17 **A.** We recommend that this evidence be taken into account as context for our
18 recommended ROE. While our recommended ROE is lower than Mr. Nowak's
19 ROE or recent Commission-approved ROEs, our recommended ROE is still well
20 above the cost of capital informed by historical analyses. Because our

1 recommended ROE is above the cost of capital for utility investments, Con Edison
2 would be able to attract equity investment at that level.

3 **Q. SHOULD THIS COST OF CAPITAL RESEARCH BE USED IN FUTURE**
4 **RATE CASES?**

5 **A.** Yes. We recommend that the Commission evaluate the claims in this research and
6 apply all relevant findings to its determination of ROE, so that over time the ROEs
7 approved for major investor-owned utilities gradually move towards being in line
8 with the utilities' true cost of capital.

9 **1) DCF Methodology**

10 **Q. WHAT IS THE SIGNIFICANCE OF THE LONG-TERM GROWTH RATE**
11 **IN THE DCF METHODOLOGY?**

12 **A.** The long-term growth rate has a large influence on the DCF ROE calculation.

13 **Q. WHAT ARE THE CHALLENGES IN SELECTING THE LONG-TERM**
14 **GROWTH RATE IN THE DCF METHODOLOGY?**

15 **A.** This growth rate should be a reasonable projection of long-term growth over the
16 next two hundred years. To our knowledge, no unbiased and robust forecasts of
17 utility dividend growth over this time period are available. The ROE analyst
18 therefore must supply their own long-term assumption of the long-term dividend
19 growth.

1 **Q. WHAT APPROACHES CAN AN ANALYST USE TO PROJECT THE**
2 **LONG-TERM DIVIDEND GROWTH RATE?**

3 **A.** An analyst can develop projections either using finance theory or historical data
4 analysis. If using finance theory, the analyst must use current assessments of a
5 utility's financial characteristics to infer a long-term growth rate. If using historical
6 data analysis, the analyst must assume the relationship between utility dividend
7 growth and economic indicators, then apply that assumption to forecast utility
8 dividend growth based on a projection of those economic indicators.

9 **Q. WHAT EVIDENCE CAN BE USED TO TEST THE ASSUMPTIONS IN**
10 **THIS APPROACH?**

11 **A.** Historical data on the relationship between utility dividends and economic
12 indicators can assess whether it is reasonable to assume that long-term utility
13 dividend growth equals long-term nominal GDP growth. And comparison to
14 methodologies and outputs from reliable, long-term U.S. economic forecasts can
15 be used to assess the assertion that long-term nominal GDP growth will equal the
16 historical average growth rate.

17 **2) Relationship of Utility Dividend Growth to Economic Conditions**

18 **Q. IS AN ARGUMENT REASONABLE IN A RATE CASE SOLELY BECAUSE**
19 **IT IS USED IN OTHER RATE CASES?**

20 **A.** No, this leads to circular reasoning where arguments are supported only by their
21 own application in rate cases. An assertion that long-term estimates are commonly

1 used in utility rate cases should not be the sole justification for their use in any rate
2 case.

3 **Q. IS IT REASONABLE TO ASSUME THAT UTILITY COMPANIES WILL**
4 **GROW AT THE SAME LONG-RUN RATE AS THE OVERALL**
5 **ECONOMY?**

6 **A.** No. Utility companies demonstrate considerably slower growth than the economy-
7 wide average. Utilities are mature, regulated industries with historically stable
8 performance and limited room for innovation or customer base expansion. It is not
9 reasonable to assume that they will grow at the economy-wide rate.

10 **Q. WHAT EVIDENCE SHOULD BE USED TO INFORM AN ASSUMPTION**
11 **ON THE RELATIONSHIP BETWEEN LONG-TERM UTILITY GROWTH**
12 **AND ECONOMIC INDICATORS?**

13 **A.** The longest possible historical record of utility dividend growth should be used to
14 assess long-term growth assumptions. It is not possible to forecast the future
15 performance of any assumption, particularly over such a long timeframe as over the
16 next two hundred years. Assessing how well different assumptions perform at
17 predicting utility dividend growth in the longest historical record available is the
18 most informative alternative.

1 **Q. HOW SHOULD AN ANALYST ASSESS THE RELATIONSHIP BETWEEN**
2 **LONG-TERM UTILITY DIVIDEND GROWTH AND ECONOMIC**
3 **PERFORMANCE?**

4 **A.** An analyst should use the longest possible historical record of utility dividend
5 growth and study the correlation of these growth rates with economic indicators.

6 **Q. WHAT HISTORICAL DATA SHOULD AN ANALYST USE TO ASSESS**
7 **LONG-TERM UTILITY DIVIDEND GROWTH?**

8 **A.** An analyst should use data from the Center for Research in Security Prices, or
9 CRSP, which has compiled a record of all dividend issuances since 1926. CRSP's
10 research products include consistent identifiers of each company and industry
11 classification according to the North American Industry Classification System. The
12 dividend dataset includes records of whether dividends are regular issuances and
13 formulas to adjust dividend values to account for changes in the amount of stock
14 outstanding. The dividends should be adjusted to filter for regularly issued
15 dividends, annualize sub-annual dividends, and account for changes in amount of
16 stock outstanding.

17 **Q. WHAT PUBLICLY AVAILABLE DATA ARE AVAILABLE TO ASSESS**
18 **LONG-TERM UTILITY DIVIDEND GROWTH?**

19 **A.** The Fama French dataset has processed historical dividend data from CRSP and
20 publishes a value-weighted average for the entire utility sector. Value-weighted
21 average data are useful for determining the utility industry's overall performance.

1 To develop an average dividend growth rate, an analyst should take monthly value-
2 weighted dividend per share for the dividend sector and aggregate them to the
3 annual level. In this rate case, our Exhibit__(NYCRP-13) includes the monthly and
4 annual average dividends per share for this value-weighted index.

5 **Q. WHAT MEASURES OF ECONOMIC CONDITIONS ARE COMPARED**
6 **TO DIVIDEND GROWTH?**

7 **A.** Utility dividends with real GDP, nominal GDP, and CPI should be compared. The
8 CPI is a widely used measure of inflation. All measures are publicly available
9 through the Federal Reserve Bank of St. Louis. Exhibit__(NYCRP-14) shows the
10 annual levels of these data.

11 **Q. HOW CAN THIS DATA BE APPLIED TO INFORM AN ASSUMPTION ON**
12 **HOW LONG-TERM UTILITY DIVIDEND GROWTH COMPARES TO**
13 **ECONOMIC CONDITIONS?**

14 **A.** There are several approaches. One can find an economic indicator correlated with
15 long-term dividend growth by comparing growth rates of economic indicators and
16 assume that dividend growth equals growth of that economic indicator; or one can
17 use regression analysis to find the correlation between annual levels of economic
18 indicators and the utility dividends. In this matter, Mr. Nowak's testimony includes
19 the former approach, assuming that utility dividends grow at the same rate as
20 nominal GDP. We conducted our evaluation using both approaches.

1 **Q. FOR THE APPROACH ASSUMING DIVIDEND GROWTH WILL EQUAL**
2 **GROWTH OF AN ECONOMIC INDICATOR, WHAT DATA WERE**
3 **USED?**

4 **A.** Annual values of CPI, nominal GDP, and real GDP were compared with average
5 utility sector dividends per share.

6 **Q. WHAT ARE THE RESULTS OF THIS COMPARISON?**

7 **A.** Chart 5 in Exhibit__(NYCRP-2) shows the historical growth of each indicator and
8 utility dividends from 1929 through 2025. All values are normalized to their 1929
9 value. The average annual growth rate of utility dividends is 2.8%. This is much
10 closer to the average historical growth rate of real GDP (3.2%) or the CPI (3.1%)
11 than to nominal GDP (6.1%).

12 **Q. FOR THE REGRESSION APPROACH, WHAT DATA WERE USED?**

13 **A.** For the regression approach, we used utility dividend data as the dependent variable
14 and economic indicators as independent or explanatory variables. Those variables
15 are CPI, real GDP, and nominal GDP.

16 **Q. HOW WAS THIS REGRESSION CONDUCTED?**

17 **A.** To assess the correlation between growth rates, we first took the natural logarithm
18 of explanatory variables and dependent variables. We used a publicly available
19 regression package to run ordinary least squares regression, which found the
20 coefficient that results in the least squared error between the logarithm of dependent

1 variables and the predicted variable, which is some constant plus the product of the
2 coefficient and the logarithm of the explanatory variable.

3 **Q. WHY IS IT APPROPRIATE TO CONDUCT THIS REGRESSION USING**
4 **LOGARITHMIC OUTPUT VARIABLES?**

5 **A.** This is appropriate because economic variables exhibit exponential growth and the
6 purpose is to assess the correlation of the multiplicative growth rate of variables.
7 The logarithmic transformation is appropriate to transform the economic measures
8 into a format suitable for linear regression, where variables can be explained as the
9 linear sum of components. To learn the correlation between multiplicative growth
10 rate and economic indicators, it is necessary to apply a logarithmic transformation
11 so that the multiplicative process is modeled as an additive function in linear
12 regression.

13 **Q. HOW SHOULD THE COEFFICIENTS FROM LINEAR REGRESSION BE**
14 **INTERPRETED?**

15 **A.** The coefficient from a logarithmic regression shows the correlation between the
16 logarithm of the explanatory variable and the logarithm of the outcome variable.
17 To translate a growth estimate of the explanatory variable into the expected growth
18 of the outcome variable, one must raise that value to the power of the coefficient
19 relating the two in logarithmic terms.

1 **Q. WHAT ARE THE RESULTS OF THIS LINEAR REGRESSION FOR THE**
2 **CON EDISON STEAM BUSINESS?**

3 **A.** Exhibit__(NYCRP-15) shows the results of these linear regression analyses. These
4 regression results confirm that utility dividend growth is closely correlated with
5 both CPI growth and real GDP growth, but it is substantially lower than nominal
6 GDP growth.

7 **Q. HOW CAN THESE DATA BE USED TO ASSESS WHICH PREDICTIVE**
8 **APPROACH PERFORMS BEST?**

9 **A.** An analyst can assess which assumption yields the least error between predicted
10 and observed dividends per share in the value-weighted utility index over the
11 entirety of the historical dataset. To compare performance of different prediction
12 approaches, the analyst should compare the MAPE. MAPE is calculated by taking
13 the average of the absolute value of the percentage error in predicting values, such
14 as the annual dividend per share. MAPE is used to evaluate performance where a
15 percentage difference is more intuitive than an absolute difference. Table 3 in
16 Exhibit__(NYCRP-2) summarizes the results of this analysis for this rate case.

17 **Q. WHAT DO THE RESULTS OF THIS TEST SHOW?**

18 **A.** Results of this test show that regression-based indicators are significantly better
19 predictors than GDP alone. The highest-performing indicator is nominal GDP
20 raised to the 53% power, which resulted in a 18.7% MAPE. The highest-performing
21 indicator without any transformation is CPI, with a 19.4% MAPE. Nominal GDP

1 performed the worst among any indicator studied, with a 89.8% MAPE. This is
2 over three times the average prediction error of any other metric used.

3 **Q. WHAT DO YOU CONCLUDE BASED ON THIS ANALYSIS?**

4 **A.** The most reliable indicator of utility dividend growth is nominal GDP growth
5 raised to the 53% power. If restricted to using indicators without transformation,
6 the best-performing indicator is CPI. Long-term forecasts of these values should be
7 used to project utility dividend growth. This historical analysis directly contradicts
8 Mr. Nowak's assertion that utility dividends grow at the rate of nominal GDP
9 growth.

10 **3) Economic Forecasts**

11 **Q. WHAT EVIDENCE DID MR. NOWAK PROVIDE TO SUPPORT HIS**
12 **POSITION THAT LONG-TERM REAL GDP GROWTH WILL EQUAL**
13 **THE HISTORICAL RATE?**

14 **A.** Mr. Nowak cites a 2013 report by Morningstar which claims that because long-
15 term real GDP growth has been reasonably stable, it can be used as an estimate of
16 expected long-term future performance.

17 **Q. IS REAL GDP GROWTH REASONABLY STABLE IN THE LONG TERM?**

18 **A.** No. Real GDP growth has been in a decades-long decline after peaking in the 1940s
19 to 1950s. Chart 6 in Exhibit__(NYCRP-2) shows the historical GDP growth rate
20 from 1929 through 2025. To clearly show trends in GDP, the 20-year rolling

1 geometric mean of annual GDP growth is plotted. This figure shows that average
2 GDP growth peaked in the 1950s and has been declining since then.

3 **Q. WHAT FACTORS HAVE DRIVEN THE DECLINE IN GDP GROWTH?**

4 **A.** This decline in GDP growth is driven by a combination of declining national
5 population growth and declining GDP per capita growth. GDP is a product of the
6 number of working people in the economy, itself a product of population and
7 employment rate, and the GDP per capita.

8 **Q. IS POPULATION GROWTH EXPECTED TO REBOUND TO**
9 **HISTORICAL AVERAGE LEVELS, RATHER THAN CONTINUING ITS**
10 **DECLINING TREND?**

11 **A.** No, the national population growth trend is expected to continue its long-term
12 decline. Exhibit__(NYCRP-12), pages 1-10, shows the U.S. Congressional Budget
13 Office's, or CBO's, long-term population forecast prepared in January 2026. This
14 forecast examines how factors including fertility, mortality, and net immigration
15 contribute to long-term population growth, and it concludes that population growth
16 will continue to slow and will decline by mid-century. The U.S. Census Bureau
17 concurs that the U.S. population will peak within the 21st century and decline by
18 2100, due to long-term slowdown in population growth. Exhibit__(NYCRP-12),
19 pages 11-14, describes the U.S. Census's opinion, developed upon analysis of the
20 2020 Decennial Census.

1 **Q. IS GDP PER CAPITA GROWTH EXPECTED TO REBOUND TO**
2 **HISTORICAL AVERAGE LEVELS, RATHER THAN CONTINUING ITS**
3 **DECLINING TREND?**

4 **A.** No, this is part of a demonstrated long-term slowdown. Numerous peer-reviewed
5 academic studies have concluded that national GDP growth is generally expected
6 to slow as countries develop. Exhibit__(NYCRP-12), pages 15-20, shows one study
7 from 2013 on the general trend in national GDP growth, with the observation that
8 GDP per capita growth slows as countries industrialize. The author concludes that
9 U.S. nominal GDP per capita growth has already entered this declining phase, and
10 is likely to remain there. Exhibit__(NYCRP-12), pages 21-26, shows a 2025 study
11 that examines recent GDP growth decline, including due to the COVID pandemic
12 and the 2008 financial crisis. The authors conclude that while shocks from these
13 crises reduced economic growth, there is also a long-term trend in declining
14 productivity growth.

15 **Q. IS THE APPROACH MR. NOWAK CITES REGULARLY APPLIED IN**
16 **ANY FINANCIAL PROJECTIONS, INCLUDING BY MORNINGSTAR?**

17 **A.** We are not aware of any recent or regularly published financial analysis that applies
18 the assumption that long-term GDP growth will equal historical growth. Indeed,
19 Morningstar does not publish long-term economic forecasts. It regularly publishes
20 a U.S. Economic Forecast which includes a short-term GDP forecast. The Q4 2025
21 edition – set forth in Exhibit__(NYCRP-12), pages 27-32, – includes a forecast for

1 U.S. GDP through 2034. This forecast does not state Morningstar's methodology,
2 but the long-term GDP growth projection of 2.3% is lower than the historical
3 average GDP growth of 3.18% that Mr. Nowak cites. To our knowledge, not even
4 Morningstar applies the GDP projection methodology that Mr. Nowak attributes to
5 Morningstar.

6 **Q. IS THE LONG-TERM HISTORICAL REAL GDP GROWTH A VALID**
7 **FORECAST OF FUTURE REAL GDP GROWTH?**

8 **A.** No. As demonstrated above, the assertion that GDP growth is relatively stable is
9 plainly contradicted by the historical record that shows declining GDP growth. The
10 factors contributing to this decades-long trend in GDP slowdown are expected to
11 continue into the foreseeable future.

12 **Q. WHAT RELIABLE LONG-TERM ECONOMIC FORECASTS ARE**
13 **AVAILABLE?**

14 **A.** The U.S. Energy Information Agency, or EIA, and CBO produce long-term
15 forecasts of inflation, GDP growth, and other economic factors.

16 **Q. WHY ARE THESE LONG-TERM ECONOMIC FORECASTS**
17 **REASONABLE?**

18 **A.** These long-term economic forecasts are widely referenced estimates of long-term
19 U.S. economic conditions. The reported values are used to inform essential federal
20 policy questions related to long-term energy and budget planning. Reports are

1 developed by independent agencies and are regularly updated according to robust
2 methodologies. The EIA's long-term forecasts are informed by widely used and
3 well-regarded subscription data from S&P Economic Research, while the CBO
4 develops its forecasts using a custom macroeconomic model.

5 **Q. DO ANY OF THESE METHODOLOGIES PROJECT THAT FUTURE**
6 **REAL GDP GROWTH RATES WILL EQUAL THE HISTORICAL**
7 **AVERAGE?**

8 **A.** No, all methodologies project that GDP growth will decline in the future, following
9 a decades-long trend. Chart 6 in Exhibit__ (NYCRP-2) plots historical real GDP
10 growth and projections from Mr. Nowak, CBO, and EIA. Long-term federal
11 projections show a continuation of the trend in historical GDP while Mr. Nowak's
12 projected real GDP growth shows an increase over recent levels and a constant
13 projected value.

14 **Q. WHY DO YOU BELIEVE THE METHODOLOGIES BY THESE FEDERAL**
15 **ENTITIES ARE MORE APPROPRIATE FOR FORECASTING GDP THAN**
16 **USING THE LONG-TERM HISTORICAL AVERAGE GDP?**

17 **A.** Federal projections are routinely updated and are developed with rigorous
18 methodologies, as appropriate for the real-world implications of their estimates.
19 These are the best available projections for economic growth. On the other hand,
20 the methodology described by Mr. Nowak fails to account for a decades-long trend
21 in GDP growth that is driven by predictable factors.

1 Q. WHAT DO YOU CONCLUDE BASED ON THIS COMPARISON?

2 **A.** We find that to project the long-term economic conditions for setting ROE in a
3 utility rate case, an analyst should use long-term forecasts from widely-cited federal
4 sources rather than the historical average.

5 **Q. WHAT IS THE APPROPRIATE LONG-TERM DIVIDEND GROWTH**
6 **FORECAST, BASED ON THIS ANALYSIS?**

7 **A.** The long-term dividend growth rate should use the long-term economic projections
8 from the EIA and CBO, adjusted to the growth correlation between those projected
9 values and a proxy group's historical dividend growth. The data applicable to this
10 rate case are shown in Table 3 in Exhibit__(NYCRP-2). These growth rates are
11 summarized in Table 4 in Exhibit__(NYCRP-2). Annual growth rate projections
12 are shown in Exhibit__(NYCRP-16).

13 4) Impact on ROE

14 **Q. HOW DOES ROE CHANGE AFTER APPLYING THIS LONG-TERM**
15 **GROWTH FORECAST?**

16 **A.** Exhibit__(NYCRP-17) shows the detailed estimates. This change reduces the
17 average DCF ROE calculation by 2.6%. Changing only these factors and nothing
18 else from Mr. Nowak's calculation, his ROE would be reduced from an average of
19 9.49% and median of 9.29% to an average of 6.94% and a median of 6.64%.

1 **Q. DOES THIS CALCULATION CHANGE YOUR ROE**
2 **RECOMMENDATION?**

3 **A.** No. Rather, this calculation provides context for our ROE recommendation by
4 demonstrating that research on long-term utility dividend growth rates supports a
5 DCF calculation below our recommended DCF calculation.

6 **5) CAPM Methodology**

7 **Q. IS IT IMPORTANT THAT THE MARKET RISK PREMIUM AND BETAS**
8 **BE COMPUTED USING THE SAME MARKET?**

9 **A.** Yes, this is crucial to the correct implementation of the CAPM methodology.
10 Applying a beta measure that reflects correlation of equity's expected returns and
11 a different market's expected returns is inappropriate and inconsistent with the
12 assumptions of the CAPM methodology. If market risk premiums are calculated
13 using the S&P 500, the beta values must also be calculated relative to the S&P 500.

14 **Q. PLEASE SUMMARIZE THE RESEARCH YOU HAVE CONDUCTED ON**
15 **COMPONENTS OF THE CAPM METHODOLOGY.**

16 **A.** We have analyzed beta calculation methodologies and precalculated market risk
17 premiums that perform best on the historical record. We find that a market risk
18 premium calculation developed using an economy-wide growth factor results in
19 more reliable forecasts than one developed by aggregating analysts' forecasts of
20 individual stock performance. We find that monthly betas adjusted using the
21 historical average perform best.

6) Market Risk Premium

2 Q. PLEASE DESCRIBE THE MARKET RISK PREMIUM.

3 **A.** The market risk premium, or equity risk premium, is the price of risk in equity
4 markets. This is the expected return investors demand from investing in the market
5 overall, relative to the return from a risk-free asset. In historical data, the market
6 risk premium can be measured as the difference between the return on the overall
7 market and a risk-free rate. It is not possible to measure future market risk
8 premium, and instead a reasonable forecast must be used.

9 Q. WHAT APPROACH DOES MR. NOWAK USE TO ESTIMATE
10 EXPECTED MARKET RETURN?

11 **A.** Mr. Nowak uses two expected market return forecasts and assigns them equal
12 weight. The first is an estimate from BofA, which constructs a DCF estimate for
13 each company and aggregates them to form an implied rate of return for the S&P
14 500. His second approach is to take a weighted average of growth expectations for
15 each company and calculate the expected market return. While Mr. Nowak does
16 not explicitly state his assumptions, his calculations indicate that he applied the
17 Gordon Growth Model which uses the assumption that growth rates continue in
18 perpetuity.

1 **Q. WHAT ARE YOUR CONCERNS WITH ASSUMING THAT PROJECTED**
2 **GROWTH RATES CONTINUE IN PERPETUITY?**

3 **A.**These projected growth rates are plainly unreasonable as perpetual growth rates.

4 **BEGIN CONFIDENTIAL INFORMATION**< [REDACTED]

5 [REDACTED]

6 [REDACTED]

7 [REDACTED] >**END CONFIDENTIAL**

8 **INFORMATION** On average, Mr. Nowak finds a growth rate of 15.83%.
9 Compared to his assumption that long-term GDP growth will be 5.45%, this implies
10 that the S&P 500 will grow 100 times more than the economy over the next 50
11 years and 10,000 times more than the economy over the next 100 years. These
12 assumptions are plainly implausible, as S&P 500 companies comprise a significant
13 portion of U.S. GDP.

14 **Q. ARE THERE ADDITIONAL CONCERNS WITH MR. NOWAK'S**
15 **EXPECTED MARKET RETURN CALCULATION?**

16 **A.**Yes, Mr. Nowak misapplies the reported values from BofA's quantitative forecasts.
17 Mr. Nowak states that he took the average of implied and required rates of return
18 to calculate the market risk premium. However, BofA's methodology states that
19 the required rate of return is itself calculated using the CAPM method, with the
20 implied rate of return used to calculate the market risk premium. Mr. Nowak's use

1 of this report implies a circular calculation where the result of the CAPM method
2 is used as an input for the CAPM method.

3 **Q. WHAT ACADEMIC RESEARCH HAS BEEN CONDUCTED ON THE**
4 **APPROPRIATE MARKET RISK PREMIUM?**

5 **A.** Professor Damodaran publishes annual guidance evaluating different market risk
6 premium methodologies. His research suggests a forward-looking market risk
7 premium technique based on discounted cash flow and earnings with strong
8 predictive performance. A relevant excerpt of the 2026 update of this report is
9 available as Exhibit__(NYCRP-12), pages 33-44. In March 2026, Professor
10 Damodaran calculated a market risk premium of 4.37%. With a risk-free rate based
11 on a 10-year treasury bond yield of 3.95%, this translates to an expected market
12 return of 8.32%. Professor Damodaran regularly updates his research, with annual
13 updates of the methodology assessment and monthly calculations. This market risk
14 premium estimate is publicly available, based on a transparent and rigorous
15 procedure, and has been demonstrated to be an accurate predictor of market risk
16 premium relative to other commonly used estimates.

17 **Q. WHAT IS YOUR CONCLUSION REGARDING THE APPROPRIATE**
18 **MARKET RISK PREMIUM?**

19 **A.** The market risk premium should be calculated without relying on analysts'
20 company-level forecasts of stock performance.

1 7) Betas

2 **Q. BASED ON THE CHARACTERISTICS OF REGULATED UTILITIES,**
3 **WHAT IS REASONABLE TO ASSUME ABOUT BETA?**

4 **A.** Regulated utilities are very stable industries. Therefore, it is reasonable to expect
5 that they will exhibit less risk than the market overall and will have betas lower
6 than one.

7 **Q. WHAT OPTIONS DOES AN ANALYST HAVE REGARDING BETA?**

8 **A.** An analyst has many options when it comes to beta. There are three key parameters
9 we examine: the choice of reference market, the frequency of return period and
10 length of time used to calculate beta, and the choice of adjustment of beta.

11 **Q. WHAT IS MEANT BY A BETA ADJUSTMENT METHOD?**

12 **A.** A beta adjustment method is a technique that adjusts a raw beta value to improve
13 predictions of future correlation of stock returns and market returns. An adjustment
14 to this raw value may result in betas that more accurately predict future
15 performance.

16 **Q. WHAT SHOULD DETERMINE THE FREQUENCY OF RETURN**
17 **PERIOD, LENGTH OF TIME USED TO CALCULATE BETA, AND BETA**
18 **ADJUSTMENT METHOD?**

19 **A.** The dataset should be recent, but it should be sufficiently robust to avoid calculating
20 a noisy signal for the beta value.

1 **Q. HOW CAN HISTORICAL DATA BE USED TO ASSESS BETA**
2 **PERFORMANCE?**

3 **A.** An analyst can calculate how historical betas perform at predicting future returns.
4 Based on the definition of beta, the returns of an equity should equal the beta
5 multiplied by the return of the market index. Using one-year-ahead and three-year-
6 ahead values of the market return, an analyst can project the equity return as the
7 product of beta and market return, then report the accuracy of those predictions.

8 **Q. HAS SIMILAR ACADEMIC WORK EXPLORED THIS TOPIC?**

9 **A.** Yes, academic work has evaluated different methodologies for assessing beta
10 performance including the comparison of different beta adjustment methods.
11 Exhibit__(NYCRP-12), pages 45-49, includes a study that proposes a methodology
12 to assess beta performance at predicting future returns, and assesses whether daily,
13 weekly, or monthly return periods are appropriate for day-ahead, month-ahead, or
14 week-ahead predictions. The authors found that weekly and monthly returns are
15 more informative of longer-forecast values, although they do not restrict their study
16 to utility stocks and they do not assess the longer periods relevant for rate cases:
17 one or more years of future returns. Exhibit__(NYCRP-12), pages 50-57, shows a
18 study that evaluates whether beta adjustment techniques are appropriate for utility
19 rate cases. The authors concluded that commonly used beta adjustment techniques
20 are not appropriate, and that practitioners should instead adjust beta towards the
21 long-term utility-sector average.

1 **Q. HOW DID YOU ASSESS BETA PERFORMANCE?**

2 **A.** We evaluated the annualized tracking error for a range of different beta calculation
3 approaches, including using weekly or monthly returns. We considered raw betas,
4 Bloomberg adjusted betas, and historical average adjusted betas.

5 **Q. PLEASE DESCRIBE THE RAW AND ADJUSTED BETA VALUES.**

6 **A.** Exhibit__(NYCRP-18) shows time series charts of the beta calculations from
7 Bloomberg Professional and Yahoo! Finance data; using either weekly or monthly
8 returns; calculating beta values relative to either the S&P 500 or the New York
9 Stock Exchange index; and using both raw betas and Bloomberg adjusted betas.
10 Solid lines show the average values from all utility companies in the proxy group.
11 The dotted black line shows the running historical average.

12 **Q. WHAT CONCLUSIONS DO YOU DRAW FROM THESE BETA VALUES?**

13 **A.** Average raw beta values for the proxy group are always below 1. Because the
14 utility group average value is always below one, the Value Line and Bloomberg
15 beta adjustments always increase beta. This demonstrates that the assumption
16 behind the Bloomberg and Value Line adjustments - that betas tend towards one -
17 is not justified by the historical data.

18 **Q. WHAT ALTERNATIVE ADJUSTMENTS DID YOU STUDY?**

19 **A.** The theoretical motivation of beta adjustments implies a straightforward beta
20 adjustment: the weighted average of the recent raw beta value and the long-term

1 historical average of betas among the proxy group. Using the same weights as the
 2 Bloomberg Adjustment, this historical average adjustment places 2/3 of the weight
 3 on the raw value and 1/3 of the weight on the long-term historical average. This
 4 yields an adjusted beta value that tends towards the historical average rather than
 5 towards one.

6 **Q. HOW DID YOU ASSESS THE PERFORMANCE OF DIFFERENT BETA**
 7 **CALCULATION APPROACHES?**

8 **A.** We applied the annualized tracking error methodology from Aggrawal et al. to our
 9 data. See Exhibit__(NYCRP-12), pages 45-49. Annualized tracking error shows
 10 the average standard deviation of the residuals; that is, the equity return minus the
 11 predicted return using the beta. A higher value indicates lower performance, as
 12 there is greater dispersion between the true value and the estimated value. The
 13 formula for annualized tracking return is:.

$$14 \quad TE = \sqrt{\lambda \cdot \text{var}(R_E - \beta R_M)}$$

15
 16 where

17 TE is the annualized tracking error;
 18 λ is the number of periods per year, either 52 for weekly return
 19 frequency or 12 for monthly return frequency;
 20 R_E is the equity return over the time period;
 21 β is the beta value; and
 22 R_M is the market return over the time period.

23
 24 We calculated this value for each starting date up to January 1, 2023; for
 25 each equity in the proxy group; for both the New York Stock Exchange and S&P

1 500 market indices; for weekly and monthly return frequencies; for one-year-ahead
2 and three-year-ahead forecasts; using raw beta values from Bloomberg Financial or
3 calculated using Yahoo! Finance data; and using raw beta values, the Bloomberg
4 beta adjustment, and the historical average beta adjustment.

5 **Q. WHAT WERE THE RESULTS OF THIS ASSESSMENT?**

6 **A.** Exhibit NYCRP-19 provides the results of this assessment. Monthly betas provide
7 considerably more accurate predictions on both the one-year and three-year
8 tracking error metrics. The Bloomberg Adjustment decreases performance relative
9 to using raw betas, while the historical average adjustment improves performance.

10 **Q. HOW DO RESULTS OF THIS ANALYSIS DIFFER WHEN USING**
11 **PROPRIETARY OR OPEN-SOURCE DATA?**

12 **A.** The results are strikingly similar – the average annualized tracking error from betas
13 calculated with Yahoo! Finance data was at most 0.03% different from those
14 calculated using Bloomberg Professional beta values.

15 **Q. WHAT CONCLUSIONS DO YOU DRAW FROM THIS ASSESSMENT?**

16 **A.** The historical data record does not support the use of Bloomberg or Value Line
17 beta adjustments for utility stock data. Raw monthly beta values are preferable to
18 adjusted beta values from either source. Betas calculated using monthly stock
19 returns have significantly lower annualized tracking error than those calculated
20 using weekly values, with roughly 10% lower error in the one-year-ahead forecast

1 and 7% lower error in the three-year-ahead forecast. Adjusting beta values towards
2 their long-term historical average reduces tracking error across all specifications.

3 **VIII. CONCLUSION**

4 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS IN THIS CASE.**

5 **A.** The Commission should reject Mr. Nowak's recommended ROE of 9.90% because
6 it significantly exceeds Con Edison's actual COE as indicated by current market
7 data. Instead, we recommend that the Commission set Con Edison's steam rates
8 based on the following::

- 9 • An overall cost of capital of 6.40%;
- 10 • An ROE of 8.04%;
- 11 • A capital structure containing 48.00% common equity and 52.00%
- 12 long-term debt; and
- 13 • A long-term debt cost rate of 4.89%.

14 These recommendations satisfy the Hope and Bluefield standards, they are
15 grounded in current market data, provide Con Edison a reasonable opportunity to
16 attract capital on fair terms, and protect customers from paying too much above the
17 market-based COE.

18 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

19 **A.** Yes.