1 **Q.   Mr. Coyne states (page 43) that "*numerous empirical studies have provided evidence**
2 ***that an individual company Beta is more likely than not to move toward the market***
3 ***average of 1.0 over time.*" Please provide citations to these numerous studies,**
4 **references to any graduate textbooks in finance that discuss such procedures, and**
5 **any published work based specifically on public utilities. Please indicate if Mr.**
6 **Coyne is aware of any published research that shows that utility betas do not adjust**
7 **toward 1.0 and provide the relevant citations.**
8
9 A.   In his study, Dr. Blume found that all Betas, both low and high, revert towards the market
10 mean of 1.0 over time. Dr. Blume specifically studied four groups of Betas, ranging from
11 a very low Beta group (averaging 0.50, similar to the utility industry) to a very high Beta
12 group. Dr. Blume found that his adjustment best predicted future Betas for each of the
13 four risk groups over the next seven years. Dr. Blume found that a low Beta portfolio
14 that averaged 0.50 migrated towards the grand mean of all Betas of 1.0 approximately in
15 accordance with the Blume formula. The study makes obvious that Betas migrate
16 towards 1.0 and do indeed exceed their long-term unadjusted averages. Given that the
17 purpose of estimating the CAPM relying on these Beta estimates is to estimate the
18 forward-looking cost of capital, it is important to reflect a forward view of Beta and its
19 tendency to migrate towards the market mean over time.[1]
20
21 Mr. Coyne agrees with the adjustment methodology employed by the premier Beta
22 providers (i.e., Value Line, Bloomberg, Merrill Lynch) that the appropriate Beta
23 adjustment (especially for utility stocks) is toward the market mean of 1.0. Further,
24 Concentric is not aware of a single U.S. state or federal regulatory jurisdiction that takes
25 exception with the use of this adjustment methodology. Concentric has only encountered
26 this discussion around Beta adjustment methodology in Canadian regulatory proceedings
27 where intervenors, such as Dr. Booth, have challenged the widely accepted findings of
28 the Blume study.
29
30 In Mr. Coyne's experience, the Value Line and Bloomberg methodologies are widely
31 accepted and utilized by financial analysts, investors, corporations, and broadly accepted
32 by U.S. regulatory commissions. The Brattle Group summarized this widely-adopted
33 methodology in its report for the BCUC:
34
35 *Beta estimates are provided by many data services for Canadian,*
36 *American and other traded companies. The most common methodology to*
37 *estimate Betas is to use the most recent five years of weekly or monthly*
38 *return data. These Betas may then be adjusted towards one as adjustment*

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[1]   Commonly referred to as the "Blume Adjustment" for papers written by Marshall Blume documenting evidence
of autoregressive properties of Beta towards the market average of 1.0. See Marshall E. Blume, *On the
Assessment of Risk, The Journal of Finance, Vol. XXVI, No. 1* (March 1971) and Marshall E. Blume, *Betas and
Their Regression Tendencies, The Journal of Finance, Vol. XXX, No. 3* (June 1975), where Blume found that
there was strong evidence that Beta regressed toward the market mean, and that tendency was strongest in the
case of the lowest risk portfolios.

1   *for sampling reversion that was first identified by Professor Marshall*
2   *Blume (1971, 1975).*[2]
3
4   Dr. Fernandez has conducted a series of surveys on the use of Betas by finance
5   professors. His survey, most recently updated in 2019, was sent via email to
6   approximately 8,000 finance and economics professors with email addresses "obtained
7   from previous correspondence, papers, and webs of the universities." The survey sought
8   to understand whether professors use Beta to calculate the required return on equity, and
9   "how the number was justified." Dr. Fernandez published the most recent update to his
10   series of Beta surveys in May 2019. The Fernandez survey and analysis indicates that at
11   a minimum, historic calculated Betas should be adjusted to the market mean of 1.0 to
12   better reflect actual returns, because he found that the market return Beta of 1.0 provided
13   the highest correlation to actual returns.
14
15   *Historical betas are not meaningful to calculate the required return on*
16   *equity. First, because they change dramatically from one day to the next;*
17   *second, because very often we cannot say with confidence that the*
18   *calculated beta of a company is smaller or bigger than the beta of another;*
19   *third, because historical betas do not make much sense in many cases:*
20   *high-risk companies very often have smaller historical betas than low-risk*
21   *companies; fourth, because historical betas depend very much on which*
22   *index, on which data frequency and on which time interval we use to*
23   *calculate them; fifth, because beta = 1 works better than calculated betas.*[3]
24
25   The Corporate Finance Institute, which provides on-line training for finance
26   professionals, and is the provider of the Commercial Banking & Credit Analyst
27   certification program, explains this issue in this manner:
28
29   *Why Adjust Betas Towards One?*
30   *Research suggests that, over time, there is a general tendency for betas of*
31   *all companies to converge towards one. Intuitively, it should not be*
32   *surprising. Because most companies tend to grow in size, become more*
33   *diversified, and own more assets, over time, their beta values fluctuate*
34   *less, resulting in beta mean reversion.*[4]
35
36   In addition to Dr. Blume's research, other academic theorists have also provided support
37   for adjusting utility Betas toward the market mean of 1.0. For example, in his book, *New*
38   *Regulatory Finance*, Dr. Roger Morin also supports the use of adjusted Betas as follows:

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[2]   The Brattle Group, *Survey of Cost of Capital Practices in Canada*, Prepared for the British Columbia Utilities
      Commission, May 31, 2012, at 15-28.
[3]   Betas used by Professors: a survey with 2,500 answers, Pablo Fernandez, Professor of Finance, IESE Business
      School, University of Navarra, Madrid, Spain. e-mail: fernandezpa@iese.edu, May 28, 2019.
[4]   https://corporatefinanceinstitute.com/resources/knowledge/trading-investing/adjusted-beta/

1   *The tendency of true betas to not only vary over time but to move back*
2   *toward average levels is not surprising. A company whose operations*
3   *make the risk of its stock divergent from other companies is more likely to*
4   *move back toward the average than away from it. Such changes in beta*
5   *values are due to real economic phenomena, not simply to an artifact of*
6   *overly simple statistical procedures.*

8   *Because of this observed regressive tendency, a company's raw*
9   *unadjusted beta is not the appropriate measure of market risk to use.*
10   *Current stock prices reflect expected risk, that is, expected beta, rather*
11   *than historical risk or historical beta. Historical betas, whether raw or*
12   *adjusted, are only surrogates for expected beta. The best of the two*
13   *surrogates is adjusted beta.*[5]

15   Moreover, Dr. Morin observes that in addition to compensating for the negatively biased
16   error terms for low Betas, "raw" Beta tends to underestimate the risk of utilities due to
17   the inability to recognize interest rate risk in the calculation of Beta for interest-rate
18   sensitive firms. Dr. Morin explains:

20   *There is additional economic justification for the use of adjusted betas in*
21   *the case of regulated utilities. Adjusted betas compensate for the tendency*
22   *of regulated utilities to be extra interest-sensitive relative to industrials.*
23   *In the same way that bond holders get compensated for inflation through*
24   *an inflation premium in the interest rate, utility shareholders receive*
25   *compensation for inflation through an inflation premium in the allowed*
26   *rate of return. Thus, utility company returns are sensitive to fluctuations*
27   *in interest rates. This is because the market index typically used in*
28   *estimating betas is a stocks-only index, such as the S&P 500. A focus on*
29   *stocks alone distorts the betas of regulated companies. The true risk of*
30   *regulated utilities relative to other companies is understated because*
31   *when interest rates change, the stocks of regulated utilities react in the*
32   *same way as bonds do. A nominal interest rate on the face value of a*
33   *bond offers the same pattern of future cash flows as a nominal return on a*
34   *book value rate base. Empirical studies of utility returns confirm that*
35   *betas are higher when calculated in a way that captures interest rate*
36   *sensitivity. The use of adjusted betas compensates for the interest*
37   *sensitivity of regulated companies.* [6]

[5]   Roger A. Morin, Ph. D., *New Regulatory Finance*, Public Utilities Reports, Inc., (2006) at 73.
[6]   *Ibid.*, at 74.