

REBUTTAL TESTIMONY

OF

MICHAEL McNALLY

FINANCE DEPARTMENT

FINANCIAL ANALYSIS DIVISION

ILLINOIS COMMERCE COMMISSION

CONSUMERS ILLINOIS WATER COMPANY  
PROPOSED GENERAL INCREASE IN WATER RATES

DOCKET No. 00-0337, -0338, -0339 CONSOLIDATED

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## Witness Identification

2 Q. Please state your name and business address.

3 A. My name is Michael McNally. My business address is 527 East Capitol Avenue,  
4 Springfield, IL 62701.

5 Q. Are you the same Michael McNally who previously testified in this proceeding?

6 A. Yes, I am.

7 Q. Please state the purpose of your rebuttal testimony in this proceeding.

8 A. The purpose of my rebuttal testimony is to respond to the rebuttal testimony of  
9 Consumers Illinois Water Company ("CIWC" or "Company") witnesses Frank X.  
10 Simpson (Company Exhibit 6.0R) and Pauline M. Ahern (Company Exhibit 7.0R).

11

## Response to Mr. Simpson

12 Q. Please comment on Mr. Simpson's assertions that CIWC's capital structure should  
13 be adjusted to reflect "the \$3,000,000 equity infusion listed in the Company's  
14 response to Data Request MGM 3.07."<sup>1</sup>

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<sup>1</sup> Company Exhibit 6.0R, page 3.

15 A. As stated in my response to Company data request 9, the balance of common  
16 equity in my direct testimony (ICC Staff Exhibit 7.00, Schedule 7.01) was taken  
17 directly from CIWC Schedule D-1, from the Company's initial filing. The balance of  
18 common equity shown on the Company's Amended Exhibit 1.5 (as provided in  
19 response to MGM 3.07) differs, with no explanation, from the balance provided in  
20 the Company's initial filing. Furthermore, Staff is unaware of any prior authorization  
21 for CIWC to issue \$3,000,000 in common equity or any petition before the  
22 Commission seeking such authorization. Nevertheless, I have adjusted my  
23 proposed capital structure and overall cost of capital recommendation to reflect the  
24 effects of the proposed \$3,000,000 equity issuance, as shown on ICC Staff Exhibit  
25 14.00, Schedule 14.01. I recommend, however, that if the proposed \$3,000,000  
26 equity issuance has not received authorization by the briefing stage of this  
27 proceeding, the proposed \$3,000,000 equity issuance should be eliminated from  
28 the capital structure in the final Order.

29 **Response to Ms. Ahern**

30 Q. Please evaluate Ms. Ahern's rebuttal testimony.

31 A. Ms. Ahern's rebuttal contained nothing to change my opinion of CIWC's cost of  
32 common equity. In my judgment, the investor required rate of return on common  
33 equity for CIWC ranges from 9.9% to 10.4% with a midpoint of 10.15%.

34

### General Misconceptions

35 Q. Ms. Ahern claims several times that you acknowledged that companies with A-rated  
36 bonds are less risky than CIWC.<sup>2</sup> Does she correctly present your position?

37 A. No. The statement to which Ms. Ahern refers was taken from a paragraph  
38 regarding the cost of common equity of CIWC. That statement reads, “Along with  
39 DCF and risk premium analyses, I have considered the observable 8.13% rate of  
40 return the market currently requires on less risky A-rated utility long-term debt.”<sup>3</sup> The  
41 statement clearly compares the risk of CIWC’s equity with the risk of A-rated debt.  
42 Of course, investing in the equity of CIWC is riskier than investing in the debt of an  
43 A-rated company. My analysis does not indicate that the equity of CIWC is riskier  
44 than the equity of companies with A-rated debt.

45 Q. In response to the statement at page 10, lines 195-198 of your direct testimony, Ms.  
46 Ahern claims that “a comprehensive analysis of CIWC’s risks vis-a-vis the  
47 companies upon whose market data both I and Mr. McNally rely is mandatory...”<sup>4</sup>  
48 Please comment.

49 A. I agree with Ms. Ahern that it is appropriate to analyze the risk of CIWC and the  
50 companies in my proxy groups in order to assess their comparability. That is why I  
51 used a principal components risk analysis.<sup>5</sup> However, the sentence from my direct

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<sup>2</sup> Company Exhibit 7.0R, pages 9, 10, and 28.

<sup>3</sup> ICC Staff Exhibit 7.00, page 23.

<sup>4</sup> Company Exhibit 7.0R, page 4.

<sup>5</sup> ICC Staff Exhibit 7.00, pages 9-10 and 25.

52 testimony that Ms. Ahern criticizes is not about the development of samples  
53 comparable in risk to CIWC. Rather, I was describing the discounted cash flow  
54 (“DCF”) analysis, which does not require a risk analysis to implement. As shown in  
55 my direct testimony, the DCF model contains no direct measure of risk.<sup>6</sup>

56 Q. Please respond to Ms. Ahern’s assertions that the article by Litzenberger, et al  
57 (“Litzenberger”) cited in your direct testimony used both adjusted and unadjusted  
58 betas, contrary to your claim that it used only raw betas, and that that study does not  
59 support your claim that a beta adjustment is a solution to the discrepancy between  
60 the theoretically predicted and empirically observed relationship between risk and  
61 return.<sup>7</sup>

62 A. Ms. Ahern has misinterpreted that article. Litzenberger sets forth the empirical  
63 evidence that risk premiums are not proportional to “NYSE” betas<sup>8</sup> as the Capital  
64 Asset Pricing Model (“CAPM”) predicts, but linear, with a positive intercept. This is  
65 Litzenberger’s mathematically precise way of stating that the observed security  
66 market line, which maps the relationship between beta and return, is flatter than  
67 theory predicts. Litzenberger proceeds to discuss various ways of altering the  
68 CAPM itself or beta to bring the resulting predicted return more in line with actual  
69 results. That Litzenberger never combines adjusted betas with alternative versions  
70 of the CAPM is significant. Next, Litzenberger describes how the unadjusted (i.e.,

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<sup>6</sup> ICC Staff Exhibit 7.00, page 11.

<sup>7</sup> Company Exhibit 7.0R, pages 21-22.

<sup>8</sup> Litzenberger often refers to raw beta as a NYSE beta. Litzenberger, Ramaswamy and Sosin, “On the CAPM Approach to the Estimation of A Public Utility’s Cost of Equity Capital,” *Journal of Finance*, May 1980, page 369.

71 raw, or historical) betas may be used to predict risk premiums.<sup>9</sup> This procedure  
72 involves adjusting historical (i.e., raw) betas using the following equation:

73 
$$b_{adjusted} = w \times b_{historical} + (1 - w) \times 1$$

74 The above adjustment, which I have applied to my raw (i.e., historical) beta  
75 estimates,<sup>10</sup> is known as the global adjustment approach. Litzenberger observes  
76 that if  $w$  were constant, then the cost of equity estimates using the resulting adjusted  
77 betas would be identical to those using unadjusted betas in an empirically-derived  
78 CAPM.<sup>11</sup>

79 Q. Ms. Ahern states that “the CAPM underestimates the common equity cost rate...  
80 because it does not capture unsystematic, non-diversifiable, company-specific risk,”  
81 while “company specific, unsystematic, non-market, risk is fully captured in the  
82 RPM” without overestimating the cost of capital.<sup>12</sup> She also states that you  
83 incorrectly assume that investors only seek compensation for market risk.<sup>13</sup> Is Ms.  
84 Ahern correct?

85 A. No. Ms. Ahern incorrectly claims that all risk, systematic and unsystematic, should  
86 be compensated in this proceeding. That claim is contrary to portfolio theory, which  
87 posits that risk can be reduced without sacrificing returns through portfolio

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<sup>9</sup> Litzenberger, Ramaswamy and Sosin, “On the CAPM Approach to the Estimation of A Public Utility’s Cost of Equity Capital,” *Journal of Finance*, May 1980, page 376.

<sup>10</sup> For my adjustment,  $w = 0.66257$ , as adopted from Merrill Lynch.

<sup>11</sup> Litzenberger, Ramaswamy and Sosin, “On the CAPM Approach to the Estimation of A Public Utility’s Cost of Equity Capital,” *Journal of Finance*, May 1980, pages 376, 380.

<sup>12</sup> Company Exhibit 7.0R, pages 25-26.

<sup>13</sup> Company Exhibit 7.0R, pages 35-36.

88 diversification. That is a fundamental principle of finance, one for which Harry  
89 Markowitz a won Nobel prize and upon which a great deal of modern finance is built.  
90 According to portfolio theory, investors are only compensated for risk that cannot  
91 be eliminated through diversification (i.e., systematic risk). In the competitive  
92 financial market place, investors holding diversified portfolios will perceive less risk  
93 in a security than those investors who do not hold diversified portfolios.  
94 Consequently, diversified investors will place a greater value on securities than non-  
95 diversified investors; and the market clearing prices will reflect systematic risk only.  
96 Thus, unsystematic risk is not compensated. The Commission should not reward  
97 an investor for the additional risk he incurs by not diversifying, when he could easily  
98 eliminate that additional risk.

99 Q. Is Ms. Ahern correct when she repeatedly asserts that analysts such as you and she  
100 should attempt to emulate investor behavior?<sup>14</sup>

101 A. Ms. Ahern is incorrect on two levels. First, even if Ms. Ahern's assertion were valid,  
102 and it is not, it implies that investor behavior is discrete, unvarying, and knowable. If  
103 true, Ms Ahern had an obligation to demonstrate that her conception of investor  
104 behavior is valid. She did not. Obviously, investor behavior has none of those traits,  
105 making attempts to emulate it unproductive. Second, investors endeavor to  
106 determine appropriate prices to pay for securities given their required rates of  
107 return. In contrast, my task is to estimate the investor required rate of return those  
108 observable market prices imply. Different investors surely use different valuation  
109 methodologies, if any at all. For example, an investor may buy a security simply

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<sup>14</sup> Company Exhibit 7.0R, pages 6, 14, 16, 18, 19, 21, 26, and 27.

110 because he believes it is underpriced, without performing any fundamental analysis.  
111 Whether or not an investor applies a formal valuation methodology, one can still  
112 determine that investor's required rate of return from the price he is willing to pay  
113 through the application of financial market models.

114 Q. Ms. Ahern relies on the argument that "absent evidence to the contrary..."<sup>15</sup> her  
115 assumptions should be accepted by the Commission. Do you agree with Ms. Ahern?

116 A. No. Ms. Ahern's methodologies are inconsistent with financial theory. Obviously  
117 CIWC bears all burdens of proof in this proceeding, but particularly in this instance  
118 Ms. Ahern must convincingly demonstrate that her deviations from financial theory  
119 are supported with observable fact rather than the conjecture and supposition on  
120 which she relies.

121 **Historical Data**

122 Q. Do you agree with Ms. Ahern's criticism of spot market data and defense of  
123 historical data?

124 A. No. This issue was previously discussed in great detail on pages 13 and 26-29 of  
125 my direct testimony. To summarize, the market value of common stock equals the  
126 cumulative value of the expected stream of future dividends after each is discounted  
127 by the investor required rate of return. Every day new information becomes  
128 available and investors rethink their projections of future cash flows and the risk level

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<sup>15</sup> Company Exhibit 7.0R, pages 14, 17, 18, and 28.

129 of a company. Thus, only a current stock price will reflect all information, both  
130 historical and current, that is available and relevant to the market.

131 Ms. Ahern acknowledges that DCF theory indicates that spot market prices be used  
132 in a DCF analysis, but defends her use of average historical stock prices claiming it  
133 “normalizes the effects of any market aberrations or volatility and dramatic  
134 company-specific events upon stock prices.”<sup>16</sup> As explained in my direct testimony,  
135 the use of historical data has many shortcomings. Conversely, the only shortcoming  
136 of spot prices Ms. Ahern cites, volatility, can be mitigated through the use of  
137 samples, a technique which both Ms. Ahern and I already implement. Thus, not only  
138 is the use of historical data *inappropriate*, but the use of samples renders it  
139 *unnecessary* as well.

140 Q. Ms. Ahern states that “rate of return analysts...are attempting to emulate investor  
141 behavior” and “absent empirical evidence to the contrary, it is reasonable to  
142 assume that investors utilize historical data in arriving at their expectations and  
143 required returns,”<sup>17</sup> thus suggesting that historical data should be used. Do you  
144 agree with Ms. Ahern?

145 A. No. First, as explained previously, it is not the rate of return analysts’ role to  
146 “emulate investor behavior,” a task that would be impossible, but rather to estimate  
147 the investors’ required rate of return through an analysis of the prices that investors  
148 pay. Second, I do not dispute that investors base their expectations, in part, upon

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<sup>16</sup> Company Exhibit 7.0R, pages 16-17.

<sup>17</sup> Company Exhibit 7.0R, page 14.

149 historical data. Rather, I dispute the propriety of using historical data as a direct  
150 estimate of those expectations. Ms. Ahern has failed to demonstrate that investors  
151 use the same data she used, in the same manner she used it, a demonstration that  
152 her call to “emulate investors” necessitates. Finally, even if one were to incorrectly  
153 accept historical data as accurate estimators of investor expectations, their use  
154 remains problematic. Since the true historical mean is unobservable, and no  
155 universally-accepted sample historical measurement period exists, analysts cannot  
156 know if the data they select is truly representative of the data investors use.

157 Q. Ms. Ahern claims that “the average, specifically the arithmetic mean, is the best  
158 estimate of the next expected value of randomly generated data”<sup>18</sup> and that “using  
159 the arithmetic mean of randomly generated data, such as long-term historical stock  
160 market returns or risk premia, is...entirely appropriate for cost of capital  
161 determination.”<sup>19</sup> Do you agree with this claim?

162 A. No. Ms. Ahern’s use of the phrase “average mean” wrongly implies an equivalence  
163 of the sample mean she uses with the single, true population mean. Unfortunately,  
164 due to the large variance of market prices, one would need so long a time period to  
165 accurately measure the true mean that the mean most likely would have changed in  
166 the interim. Nobel prize winner Merton Miller stated:

167 “as Fischer Black always reminded us, estimating variances is orders  
168 of magnitude easier than estimating the means or expected returns  
169 that are central to the models of Markowitz, Sharpe, or Modigliani-  
170 Miller. The precision of an estimate of the variance can be

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<sup>18</sup> Company Exhibit 7.0R, page 15.

<sup>19</sup> Company Exhibit 7.0R, page 16.

171 improved...by cutting time into smaller and smaller units – from weeks  
172 to days to hours to minutes. For means, however, the precision of  
173 estimate can be enhanced only by lengthening the sample period,  
174 giving rise to the well-known dilemma that by the time a high degree  
175 of precision in estimating the mean from past data has been  
176 achieved, the mean itself as almost surely shifted.<sup>20</sup>

177 Furthermore, Ms. Ahern concedes that “[Mr. McNally] is correct when he states that  
178 security return movements approximate a random walk.”<sup>21</sup> According to an  
179 econometrics textbook, “a random walk is an example of a nonstationary time  
180 series.”<sup>22</sup> A time series is nonstationary if its mean and variance change. Hence,  
181 securities prices and returns do not have the stable mean that the use of historical  
182 data requires. Moreover, the best estimate of the next expected value in a random  
183 walk is, in fact, the last observed value,<sup>23</sup> rather than the historical average.

184 Q. Ms. Ahern claims that she did not “select” the 1928-1999 time period to develop her  
185 equity risk premium. Rather, she claims that 1928-1999 is the default time period,  
186 because that “represents all the years for which data were available.”<sup>24</sup> Do you  
187 agree?

188 A. No. The 1928-1999 data is all the data Ms. Ahern chose to find. In fact, Clifford  
189 Asness uses data from as far back as the 1871.<sup>25</sup> Moreover, in ICC Docket 00-  
190 0340, Illinois-American Water Company witness Paul Moul used the 1926-1999,

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<sup>20</sup> Emphasis added, Miller, Merton H., “The History of Finance: An eyewitness account,” *The Journal of Portfolio Management*, Summer 1999, page 100.

<sup>21</sup> Company Exhibit 7.0R, page 15.

<sup>22</sup> Gujarati, Damodar, N., *Basic Econometrics*, McGraw-Hill, 1995, page 718.

<sup>23</sup> Foster, George, *Financial Statement Analysis*, Prentice-Hall, Inc., 1978, page 83.

<sup>24</sup> Company Exhibit 7.0R, page 27.

<sup>25</sup> Asness, Clifford S., Stocks Versus Bonds: Explaining the Equity Risk Premium, *Financial Analysts Journal*, March/April 2000, page 96.

191 1974-1999, and 1979-1999 time periods. The fact that users of historical data  
192 cannot agree on a definitive time period demonstrates that one does not exist.  
193 Thus, any time period chosen is arbitrary and subject to manipulation. Ms. Ahern  
194 has failed to demonstrate that the measurement period she chose is appropriate.

195 **Size Premium**

196 Q. Ms. Ahern continues to argue that a size-based premium is warranted. Do you  
197 agree?

198 A. No. As discussed at length on pages 44-51 of my direct testimony, the existence of  
199 size-based premiums is highly questionable at best. For utilities, a size-based  
200 premium is clearly inappropriate. Ms. Ahern's rebuttal testimony provides no  
201 evidence to change my opinion. In defense of her size-based premium, Ms. Ahern  
202 erroneously implies that empirical evidence of a size premium is more important  
203 than a theoretical basis.<sup>26</sup> However, theory explains why a pattern exists. If there is  
204 a systematic reason for an observed outcome, it can be expected to continue into  
205 the future. In contrast, without theoretical underpinnings, empirical evidence cannot  
206 be presumed, much less proved, to continue into the future. One of the main  
207 problems with the size premium is that it seems to be period-specific. From 1926  
208 to 1999, small stocks did outperform large stocks, on average. However, small  
209 stocks did not consistently and systematically outperform large stocks. During the  
210 period 1963 to 1983, small stock returns dominated large stock returns, but outside  
211 that time period, small stocks only performed as well as, if not worse than, large

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<sup>26</sup> Company Exhibit 7.0R, page 33.

212 stocks. Such data, in addition to the “crossover effect” found by Fernholz, explained  
213 on pages 47-48 of my direct testimony, do not indicate that the size effect is  
214 anything more than a statistical anomaly.

215 Ms. Ahern also incorrectly claims that factors such as lack of liquidity and higher  
216 transactions costs increase the riskiness of small firms. Those factors increase the  
217 cost to investors; they do not increase the riskiness of a firm.

218 Finally, Ms. Ahern argues that just because a study does not specifically refer to  
219 utilities does not mean that the study does not apply to utilities, because “financial  
220 theory is applicable across the broad spectrum of firms and not limited to any  
221 particular industry or industries.”<sup>27</sup> But Ms. Ahern has not demonstrated that a size  
222 premium has any theoretical basis. That is precisely the problem, and precisely why  
223 Ms. Ahern mistakenly argues that empirical data is more important than theory.  
224 Regardless, the fact that studies on size-based premiums do not specifically  
225 address utilities does matter. The average return on a sample of industries does  
226 not necessarily apply to each industry in the sample. For example, if data were  
227 found that warranted size-based premiums of 2% for the steel industry, 1% for the  
228 airline industry, and 0% for the utility industry, the average size-based premium  
229 would be 1%. Clearly, it cannot be said that the 1% average size-based premium  
230 applies to the utility industry. The only evidence Ms. Ahern has presented which  
231 relates specifically to the utility industry is an excerpt from Ibbotson Associates  
232 (“Ibbotson”) Valuation Edition - 2000 Yearbook. Ms. Ahern claims that table 5-11,  
233 on page 136-137 of that publication, verifies that a size premium does apply to

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<sup>27</sup> Emphasis added, Company Exhibit 7.0R, page 33.

234 utilities, and thus to CIWC. Unfortunately, that study encounters the same problem  
235 as the other studies she cited. Page 134 of the Ibbotson publication states that for  
236 that study, “[i]ndustries are defined at the two-digit SIC (Standard Industrial  
237 Classification) code level.” Ms. Ahern states that “the two digit SIC code for utilities  
238 is 49.”<sup>28</sup> Thus, what Ms. Ahern would refer to as the “utility” industry, was broadly  
239 defined to include such entities as steam and air-conditioning supply companies  
240 and irrigation system companies in addition to regulated utilities. In contrast, when  
241 referring to utilities in my direct testimony, I meant specifically regulated utilities. As  
242 indicated on page 47 of my direct testimony, regulated utilities differ from other non-  
243 regulated industrial companies (even those assigned a SIC code of 49) in that the  
244 cost of obtaining information regarding smaller utilities in general, and CIWC in  
245 particular, is unlikely to be as high as that of unregulated companies that are similar  
246 in size; hence, the application of a size-based premium to a utility is highly  
247 questionable. The Ibbotson study does not prove otherwise. In contrast, the Wong  
248 article cited on page 50 of my direct testimony, applies directly to regulated utilities.  
249 Also, unlike the Wong article, the statistical significance of the results of the  
250 Ibbotson study, which Ibbotson does not present, are questionable, particularly in  
251 light of the large standard deviations of returns in SIC code 49. Finally, even if the  
252 results shown in the Ibbotson study can be appropriately applied to regulated  
253 utilities, which they cannot, it is still quite possible that the results of that study are  
254 simply a statistical anomaly, as explained above. In fact, the “crossover effect”  
255 would likely be even more pronounced in the Ibbotson study because companies  
256 were only broken down into two groups, small and large.

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<sup>28</sup> Company Exhibit 7.0R, page 34.

257 Q. Ms. Ahern claims that you were incorrect when you stated that, if allowed, any size-  
258 based risk premium should be based upon the size of CIWC's parent, Philadelphia  
259 Suburban Corporation ("PSC"). Do you agree with Ms. Ahern?

260 A. No. As indicated above, and in my direct testimony, factors such as lack of liquidity  
261 and higher transactions costs increase the cost to investors; they do not increase  
262 the riskiness of a firm. Since the equity of CIWC is obtained indirectly from the  
263 investor through PSC, a much larger organization, the added costs allegedly  
264 associated with smaller companies are not incurred. PSC can pass through equity  
265 capital to CIWC without incurring the costs that market-traded companies  
266 comparable in size to CIWC are alleged to incur. The fact that potential lenders are  
267 interested in the ability of CIWC alone to service any additional debt is irrelevant,  
268 since CIWC is the sole obligor. In contrast, CIWC has only one equity investor,  
269 PSC, which incurs costs to raise equity commensurate with PSC's liquidity, not  
270 CIWC's liquidity.

271 Q. Ms. Ahern argues that reductions in costs resulting from efficiencies will be reflected  
272 in the operating expenses component of the revenue requirement; hence,  
273 ratepayers will not be denied the benefits associated with the combined entity's  
274 stronger financial profile.<sup>29</sup> Do you agree?

275 A. No. While it is true that operating efficiencies are reflected in the operating  
276 expenses component of the revenue requirement, capital market efficiencies are  
277 not. Thus, if efficiencies are gained, but are not reflected in the cost of capital, the

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<sup>29</sup> Company Exhibit 7.0R, page 32.

278 ratepayers will be denied the benefits associated with the combined entity's  
279 stronger financial profile. As indicated on page 45 of my direct testimony, being a  
280 part of a much larger organization could enhance the ability of CIWC to access the  
281 market on reasonable terms. In fact, Consumers Water Company and PSC agreed  
282 to precisely that when they stated, in their joint application for approval to merge,  
283 that "the combined entity will have a stronger financial profile," which "should  
284 enhance the ability of PSC and Consumers Illinois to access the capital markets on  
285 reasonable terms."<sup>30</sup>

286 **Allegation of Exclusive Reliance on the DCF Model**

287 Q. Please respond to Ms. Ahern's allegation that your entire analysis relies exclusively  
288 on the DCF, since the market return used in your Risk Premium model was derived  
289 through a DCF calculation.<sup>31</sup>

290 A. Once again, Ms. Ahern is mistaken. First, the market return (" $R_M$ ") used in my risk  
291 premium model comprises over 350 different companies not used in my DCF  
292 analysis. Thus, the samples are independent. Second, my risk premium model  
293 uses a DCF calculation only to derive  $R_M$ , one of its four inputs. Third, her criticism  
294 is disingenuous since in addition to using an historical market return, Ms. Ahern's  
295 Risk Premium and Capital Asset Pricing models also use DCF-derived market  
296 returns.<sup>32</sup>

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<sup>30</sup> ICC Docket 98-0602, Verified Application of Joint Applicants, pages 6-7.

<sup>31</sup> Company Exhibit 7.0R, page 3.

<sup>32</sup> Company Exhibit 7, pp. 36 and 42.

297 Since  $R_M$  is forward-looking, it can only be estimated through a DCF calculation  
298 without resorting to untimely historical data. Thus, if the Commission judges that the  
299 DCF-derived  $R_M$  should not be applied within the risk premium model, then I would  
300 have to substitute into my model a  $R_M$  derived from an historical risk premium.  
301 According to Ms. Ahern's direct testimony, the Ibbotson historical risk premium is  
302 8.1%,<sup>33</sup> which added to the 5.81% U.S. Treasury bond yield would result in an  $R_M$   
303 estimate of 13.91%. Thus, my risk premium analysis using the historical  $R_M$  would  
304 produce a cost of equity estimate of 9.46% for my Water sample and 9.21% for my  
305 Comparable sample, far below the 10.50% and 10.19% estimates I obtained with  
306 my methodology.

307 Q. Ms. Ahern states that the Efficient Market Hypothesis ("EMH"), the foundation of  
308 modern investment theory, presumes that "investors are aware of all publicly-  
309 available information, including...various cost of common equity methodologies."  
310 Thus, she concludes that the EMH mandates "that no single common equity cost  
311 rate model should be relied upon in determining a cost rate of common equity..."  
312 and that your "exclusive reliance upon the DCF model is at odds with the very  
313 foundation, i.e., the EMH, upon which the DCF is predicated."<sup>34</sup> Is her conclusion  
314 correct?

315 A. No. The semi-strong form of the EMH states that "security prices should reflect all  
316 information that is publicly available at any point in time" and that "the expected  
317 returns implicit in the current price of the security should reflect its risk."<sup>35,36</sup> However,

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<sup>33</sup> Company Exhibit 7, p 42.

<sup>34</sup> Company Exhibit 7.0R, page 3.

<sup>35</sup> Reilly, Frank K. and Keith C. Brown, Investment Analysis and Portfolio Management, Fifth Edition, p.

318 the EMH does not make any claims regarding security pricing methodologies. That  
319 is, the EMH is concerned with the information available to investors, not how they  
320 use it. While analysts should use more than one valid common equity cost rate  
321 model in order to avoid the potential misestimates possible with any single model,  
322 the EMH does not dictate that they do so. Thus, even if my entire analysis were  
323 reliant exclusively on the DCF, which it is not, it would not be at odds with the EMH.

324 **Market Value vs. Book Value**

325 Q. Ms. Ahern claims that the  $R_M$  used in your Risk Premium model is grossly  
326 understated because the market value of the S&P500 was much higher than its  
327 book value and consequently the results of your risk premium analysis are  
328 understated.<sup>37</sup> Is she correct?

329 A. No. The fact that the market-to-book ratio of the S&P 500 Index was 496.4% at  
330 year end 1999 does not indicate that the required rate of return has increased. In  
331 fact, if it indicates anything about required rates of return, it is that they have fallen,  
332 which is supported by Federal Reserve Board Chairman Alan Greenspan's  
333 statement, "That equity premiums have generally declined during the past decade is  
334 not in dispute."<sup>38</sup> Ms. Ahern seems to confuse required returns on market equity with  
335 expected returns on book equity. The market value of an investment is an estimate

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210, 1997.

<sup>36</sup> Although evidence from tests of the semi-strong form of the EMH is mixed, I will assume, for the sake of argument, that the semi-strong form holds.

<sup>37</sup> Company Exhibit 7.0R, pages 5-6.

<sup>38</sup> Speech by Alan Greenspan before a conference sponsored by the Office of the Comptroller of the

336 of future earnings discounted at the required rate of return. The required rate of  
337 return is based on investors' time value of money and the assessed risk of the  
338 investment. If the required rate of return rises, all else held constant, the price of an  
339 investment will fall. Similarly, if the price of an investment has risen, all else  
340 constant, the investor required rate of return must have fallen. The market price of a  
341 common stock does not achieve equilibrium until the expected rate of return on the  
342 common stock equals the investor required rate of return.

343 It is interesting that Ms. Ahern should claim that the  $R_M$  I used in my Risk Premium  
344 analysis is grossly understated due to a DCF bias, since my  $R_M$  of 16.24% is higher  
345 than the implied 14.4% estimate of  $R_M$  using her historic, non-DCF, estimated risk  
346 premium of 8.1%.<sup>39</sup> Moreover, my  $R_M$  is still higher than her 16.2% average  $R_M$ ,  
347 which includes her highly questionable prospective  $R_M$  estimate of 18.0%, (18.0%  
348 prospective and 14.4% historical, average 16.2%). Therefore her claim of a  
349 downward DCF bias is unfounded.

350 Q. Ms. Ahern suggests that the recent rise in stock price growth indicates that investors  
351 expect an increase in prices beyond that reflected in earnings growth. Do you  
352 agree?

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Currency, Washington, D.C., October 14, 1999.

<sup>39</sup> Company Exhibit 7, page 42. 14.4% is the sum of the historic risk premium, which Ms. Ahern states as 8.1%, and the current risk-free rate, which Ms. Ahern states as 6.3%.

353 A. No. Price appreciation in excess of earnings growth does not create wealth.  
354 Rather, it is a transfer of wealth. A company creates wealth through the earnings it  
355 generates. The price an investor is willing to pay for a claim to expected earnings  
356 does not change the amount of underlying wealth. If a prospective investor is willing  
357 to pay a current shareholder more than the book value he initially paid for a security,  
358 that only transfers the claim on the wealth generated by the company from the new  
359 investor to the original stockholder. What is gained by the original shareholder in  
360 terms of price appreciation, is given up by the new investor.

361 Q. Please respond to Ms. Ahern's assertion that there is a "tendency of the DCF model  
362 to mis-specify investor's required return rate when the market value of common  
363 stock differs significantly from its book value."<sup>40</sup>

364 A. To address this issue, one must first explore why the market value of utility common  
365 equity exceeds book value, which Ms. Ahern has failed to do. There are two  
366 possible explanations for how utility stock prices have come to exceed their  
367 respective book values: (1) the investor-required rate of return has fallen or (2)  
368 expectations of future earnings have risen. The investor-required rate of return on  
369 an investment in a utility would fall if either the price of risk (i.e., the risk premium)  
370 has fallen or if investors' perceived level of risk in that utility has fallen. Either way, if  
371 a utility's stock price grows to exceed its book value due to a decline in investors'

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<sup>40</sup> Company Exhibit 7.0R, page 5.

372 required rate of return for that utility, then it obviously follows that the Commission  
373 should authorize a lower rate of return.

374 An increase in investors' expectations of future returns could also cause a rise in  
375 market values over book values. Such an increase in expectations may be due to  
376 positive deviations (e.g., higher than projected sales) from the test year amounts  
377 upon which the company's rates are set. Clearly, the Commission should not  
378 approve higher rates today based on such deviations from past rate case  
379 estimates. Increased expectations of future returns may also be a function of  
380 earned returns from sources other than the revenue requirements formula  
381 component, the product of rate base and rate of return (" $R_{Other}$ "). Earnings from  
382 these sources could allow a utility to earn returns beyond the level needed to meet  
383 investors' required rate of return. The danger in allowing a utility to earn a rate of  
384 return on equity rate base in excess of the market required rate of return on common  
385 equity becomes apparent when those other sources ( $R_{Other}$ ) of value are  
386 recognized. The result is a never ending upward spiral as each successive  
387 increase in market value would lead to another increase in the allowed rate of return,  
388 which in turn, would lead to a further increase in market value.

389  $R_{Other}$  can come from a number of sources. First, many utilities have unregulated  
390 sources of income that would contribute to earnings beyond the level needed to  
391 meet the required rate of return. Obviously, the Commission should not allow  
392 regulated utilities higher rates of return due to stock price increases caused by such  
393 unregulated operations. Second, the normalization of deferred income taxes and  
394 income tax credits might also contribute to the divergence between utility market  
395 and book equity values since that practice compensates utilities for taxes they do

396 not yet owe. Finally, investors do not value utilities on the basis of accounting  
397 earnings, but on economic earnings and cash flow. In utility revenue requirements,  
398 part of cash flow comes from operating income (i.e., rate base  $\times$  rate of return). The  
399 larger share of the remainder comes from operating expenses in the form of  
400 depreciation and deferred taxes. The Commission should not further increase  
401 allowed rates of return when benefits that utilities receive from other aspects of the  
402 rate setting process such as tax normalization rules and cash flow from sources  
403 such as depreciation and deferred taxes increase stock prices above book value.  
404 To do otherwise would compensate utilities twice for the same sources of cash flow.

#### 405 **Risk Premium Analyses**

406 Q. Ms. Ahern claims that it is not necessary for investors to compute their own betas,  
407 as they are readily available from Value Line or Merrill Lynch. Please comment.

408 A. First, as explained earlier, it is not the duty of the analysts in this proceeding to  
409 emulate investors, but rather to discern investors' required rate of return based on  
410 observable market prices. Regardless, I am not aware of any financial theory which  
411 posits that it is inappropriate for an investor (or analyst) to calculate his own betas.  
412 Second, the methodology I used to estimate beta is based on that of Merrill Lynch.  
413 Third, Value Line does not publish betas for all of the companies included in my  
414 samples, whereas Staff's methodology directly measures the sample beta,  
415 incorporating all companies in my samples. Fourth, Value Line does not provide  
416 the regression statistics that are necessary for evaluating the validity of its beta  
417 estimates.

418 Q. Ms. Ahern criticizes your beta calculation methodology as being inconsistent with  
419 that of Value Line and Merrill Lynch because you used excess price returns in your  
420 regression while Value Line and Merrill Lynch regress total price returns.<sup>41</sup> Please  
421 comment.

422 A. Ms. Ahern is wrong. The use of “excess”<sup>42</sup> returns is the theoretically correct  
423 approach to measuring beta. Nevertheless, beta is often estimated from total price  
424 appreciation because that approach produces essentially the same results as using  
425 excess returns. Specifically, using excess returns, the raw betas for my water  
426 sample and comparable sample were 0.17 and 0.13, respectively, while the  
427 corresponding adjusted betas were 0.45 and 0.42, respectively. Using total price  
428 appreciation, the raw betas for my water sample and comparable sample were 0.17  
429 and 0.12, respectively, while the adjusted betas for my water sample and  
430 comparable sample were 0.45 and 0.42, respectively.

431 Q. Ms. Ahern implies that adding Value Line’s median total market appreciation and  
432 median dividend yield for her estimate of total market return is appropriate.<sup>43</sup> Do  
433 you agree?

434 A. No. That combination is inappropriate for the reasons outlined on pages 33-34 of  
435 my direct testimony. In defense of her estimate, Ms. Ahern again argues that rate of  
436 return analysts are to emulate investor behavior and states that “information

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<sup>41</sup> Company Exhibit 7.0R, page 6.

<sup>42</sup> For the purpose of this discussion, “excess” returns refers to the portion of total returns in excess of the risk-free rate.

<sup>43</sup> Company Exhibit 7.0R, page 19-21.

437 provided by Value Line is investor influencing and should not be rejected by any rate  
438 of return analyst.”<sup>44</sup> Ms. Ahern implies that investors wrongly combine Value Line’s  
439 estimate of median price appreciation and median dividend yield as she does.  
440 First, to my knowledge, Value Line never suggests that its median total market price  
441 appreciation and dividend yield should be combined to form a market return  
442 estimate. Second, Ms. Ahern has failed to demonstrate that investors do, in fact,  
443 use Value Line data in the same flawed manner she employs.

444 Ms. Ahern also claims that the use of medians provides a better estimate of the  
445 central tendency of the securities in the market portfolio. First, she argues that “the  
446 median compensates for the effect that extremely high or low expected price  
447 appreciation and number of shares outstanding have on either the simple or  
448 weighted arithmetic mean.” While that may be true, with a sample of almost 1,700  
449 stocks, it is highly unlikely that a few outliers would distort the arithmetic mean. Next,  
450 Ms. Ahern claims that “[i]t is entirely, conceivable that there are a sufficient number  
451 of stocks yielding the median dividend yield that by adding those non-dividend  
452 paying stocks to the data series, the median would still be the same.” According to  
453 Harold Levine, Director of Statistical Services at Value Line, of the 1,636 stocks  
454 currently under review by Value Line, 979 pay dividends, which leaves 657 non-  
455 dividend paying stocks.<sup>45</sup> Therefore, in order for Ms. Ahern’s “entirely conceivable”  
456 scenario to actually occur, the dividend yield of at least 329 of the 979 dividend  
457 paying companies would have to equal the median value. While that may be  
458 conceivable, it is very, very unlikely. Perhaps more importantly, the fact that it is

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<sup>44</sup> Company Exhibit 7.0R, page 19.

<sup>45</sup> The telephone conversation with Mr. Levine occurred on October 17, 2000.

459 even possible that 657 observations with a value of zero could be added to a  
460 sample without the median changing, demonstrates that the median, at least in this  
461 instance, is a very poor measure of central tendency.

462 Q. Ms. Ahern argues that while you “correctly, and commendably, adjusted [your]  
463 calculated raw betas, [you] did so for the wrong reason”<sup>46</sup> since a beta adjustment  
464 does not correct for the observed flatness in the linear relationship between risk and  
465 return. Do you agree?

466 A. No. Ms. Ahern's claim is based on the misguided notion that an adjustment to beta  
467 and an adjustment to the CAPM model are discrete, unrelated adjustments. Her only  
468 support for this claim comes from Dr. Roger Morin, who incorrectly argues that the  
469 difference between an adjustment to beta and an adjustment to the CAPM model is  
470 that the Empirical Capital Pricing Model (“ECAPM”) is a required return (Y-axis)  
471 adjustment and the beta adjustment is a risk (X-axis) adjustment.<sup>47</sup> However, the  
472 mathematical effect of either adjustment is identical. As such, any adjustment to  
473 beta along the X-axis results in a corresponding change to the return along the Y-  
474 axis. Thus, the beta adjustment does correct for the observed flatness in the linear  
475 relationship between risk and return.

476 The Security Market Line (“SML”) shows the linear relationship between the  
477 required rate of return on a security ( $R_j$ , on the Y-axis) and beta (on the X-axis).

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<sup>46</sup> Company Exhibit 7.0R, page 8.

<sup>47</sup> Company Exhibit 7.0R, Schedule 4, page 4.

478 Theoretically, the intercept of the SML is the risk-free rate,  $R_f$ , and the slope is the  
479 market risk premium ( $R_M - R_f$ ).

480 Ms. Ahern's ECAPM adjusts the CAPM as follows:

481 
$$R_j = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \mathbf{b}_j \times (R_m - R_f)$$

482 This adjustment results in a higher intercept (i.e.,  $R_f + 0.25 \times (R_m - R_f)$ ) and a flatter  
483 slope (i.e.,  $0.75 \times (R_m - R_f)$ ). The Value Line beta adjustment also flattens the slope  
484 of the SML, only moreso.<sup>48</sup>

485 
$$R_j = R_f + (0.35 + 0.67 \times \mathbf{b}_j) \times (R_m - R_f)$$

486 The CAPM equation above, incorporating the Value Line beta adjustment,  
487 increases the intercept of the SML from  $R_f$  to  $R_f + 0.35 \times (R_m - R_f)$  and reduces the  
488 slope from  $R_m - R_f$  to  $0.67 \times (R_m - R_f)$ . Presumably, that is why it was correct and  
489 commendable for me to make the adjustment I made. However, a second  
490 adjustment is neither necessary nor warranted. I do not dispute the necessity of  
491 either the ECAPM type or beta adjustment in isolation. I only dispute the  
492 appropriateness of using the two in conjunction with one another.

493 Q. Ms. Ahern denies that her beta adjusted Risk Premium model is a CAPM  
494 derivation. Is she correct??

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<sup>48</sup> The Merrill Lynch beta adjustment I employ,  $\mathbf{b}_{adjusted} = 0.33743 + 0.66257 \times \mathbf{b}_j$ , is very similar to the Value Line adjustment of  $\mathbf{b}_{adjusted} = 0.35 + 0.67 \times \mathbf{b}_j$ .

495 A. No. Ms. Ahern claims that her risk premium model (“RPM”) is distinct from the  
496 CAPM and both are recognized by the “financial literature.” The “financial literature”  
497 does recognize risk premium analysis, but not as Ms. Ahern has implemented it. As  
498 shown in my direct testimony,<sup>49</sup> Ms. Ahern’s RPM analysis is an average of two  
499 distinct models. The first model can be reduced to the following equation:

500 
$$R_j = R_{A2} + b_j \times (R_m - R_{Aa/Aaa})$$

501 In comparison, the CAPM is expressed as:

502 
$$R_j = R_f + b_j \times (R_M - R_f)$$

503 These two models are exactly the same, except that Ms. Ahern’s model substitutes  
504 for the risk-free rate the yield on A2 rated debt in one place and a mixture of yields  
505 on Aa- and Aaa-rated debt in another. Thus, the first of the two models averaged in  
506 Ms. Ahern’s RPM analysis, is, in fact, a CAPM derivation, in which Ms. Ahern  
507 improperly applies a market risk beta to a non-market risk premium and  
508 inappropriately incorporates two different long-term corporate bond yields as  
509 substitutes for the risk-free rate.

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<sup>49</sup> ICC Staff Exhibit 7.00, pages 37-38.

510 Q. Ms. Ahern claims that your “algebraic manipulations” needlessly complicate her  
511 RPM and demonstrate your misunderstanding of the model.<sup>50</sup> Do you agree with her  
512 characterization?

513 A. No. The logic of mathematics cannot be manipulated. My “algebraic  
514 manipulations” simply describe Ms. Ahern’s methodology, step by step, exactly as  
515 she implemented it. Ms. Ahern claims that what I defined as  $R_{A2}$  is actually equal to  
516 6.8%. She is incorrect.  $R_{A2}$ , as indicated on page 37 of my direct testimony,  
517 represents Ms. Ahern’s estimated prospective yield on bonds rated A2 by Moody’s,  
518 which Ms. Ahern acknowledges equals 8.3%,<sup>51</sup> just as I explained in my direct  
519 testimony. The  $R_{Other}$  referred to on pages 40-41 of my direct testimony, which is  
520 used to derive the market equity risk premium, represents a general case, for which  
521  $R_{Aa/Aaa}$  is substituted in Ms. Ahern’s model.<sup>52</sup> This  $R_{Aa/Aaa}$ , as it applies to Ms.  
522 Ahern’s model, is equal to the average of Ms. Ahern’s estimates of the historical  
523 return on long-term high grade (i.e., Aaa/Aa) bonds of 5.9% and the prospective  
524 yield on Aaa-rated corporate bonds of 7.7%, which, Ms. Ahern acknowledges  
525 equals 6.8%,<sup>53</sup> just as I explained in my direct testimony. My “algebraic  
526 manipulation” of her model simply breaks her complex model into its parts and  
527 demonstrates that when  $R_{A2} \neq R_{Other}$ , as is the case in Ms. Ahern’s model (8.3%  $\neq$   
528 6.8%), then the model will not produce identical returns for two securities with  
529 identical risk, which violates a fundamental financial principle. Those same  
530 mathematics also demonstrate that whenever  $R_{A2}$  is greater than  $R_{Other}$ , as is the

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<sup>50</sup> Company Exhibit 7.0R. page 26.

<sup>51</sup> Company Exhibit 7.0R. page 26.

<sup>52</sup> ICC Staff Exhibit 7.00, Schedule 7.10.

<sup>53</sup> Company Exhibit 7.0R. page 26.

531 case in Ms. Ahern's model (8.3% > 6.8%), then the model will systematically  
532 overestimate the cost of equity for companies with a beta less than one, which  
533 includes every company in Ms. Ahern's proxy groups.

534 **Ms. Ahern's DCF Analysis**

535 Q. In response to your criticism of her DCF estimate stemming from missing Value  
536 Line earning per share ("EPS") estimates, Ms. Ahern argues that it is reasonable to  
537 assume that the values of the missing data were equal to the average of the  
538 available data.<sup>54</sup> Do you agree with her assumption?

539 A. No. First, Ms. Ahern erroneously claims that there is no evidence to suggest that the  
540 missing estimates would be any lower than the average of the other estimates. As  
541 explained in my direct testimony, a comparison of the Value Line Data with the  
542 IBES Projected Five Year EPS Growth Rates for the companies in her samples  
543 reveals that the companies with missing estimates have among the lowest IBES  
544 projected EPS growth rates. While that is not conclusive proof that Value Line  
545 would also project lower growth for the companies with missing estimates than the  
546 average of the other Value Line estimates, it is very persuasive evidence. Of  
547 course, we will never know, which is why the missing Value Line growth rates should  
548 not be assumed to equal the average of the existing Value Line growth rates.

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<sup>54</sup> Company Exhibit 7.0R, page 17.

549 Second, Ms. Ahern states that “for the majority of companies in both proxy groups  
550 for whom Value Line projected growth in EPS are available, the Value Line growth  
551 rates are higher than the I/B/E/S growth rates.”<sup>55</sup> That statement is irrelevant and  
552 illogical. Ms. Ahern averaged the estimates for both proxy groups by source (i.e.,  
553 IBES EPS forecast or Value Line EPS forecast) and “assumed that the missing  
554 growth rates are equal to the averages for each group.”<sup>56</sup> That is, she assumed that  
555 the missing Value Line estimates equal the average of the available Value Line  
556 estimates. Thus, as indicated above, the critical issue is the relative size of the  
557 individual estimates from a single source, not across sources. Even if the Value  
558 Line EPS estimate for every single company were higher than the corresponding  
559 IBES EPS estimate, the fact that the missing Value Line estimates correspond to  
560 the lowest IBES estimates indicates that they would likely be among the lowest of  
561 the Value Line estimates as well. Therefore, since Ms. Ahern averaged the  
562 estimates for both proxy groups by estimate type, the proxy group averages of  
563 Value Line EPS estimates are likely overstated.

564 Third, Ms. Ahern claims that given my comment that smaller companies tend to have  
565 greater growth potential, it is “entirely possible” that the missing estimates would be  
566 higher than the average of the available estimates. The statement to which Ms.  
567 Ahern refers was in reference to the life-cycle of firms in general, not to utilities that  
568 are well past the growth stage. And although it is still “entirely possible” that the  
569 missing estimates would be higher than the average of the available estimates, the  
570 only evidence available (i.e., the corresponding IBES estimates) indicates that the

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<sup>55</sup> Company Exhibit 7.0R, page 17.

<sup>56</sup> Company Exhibit 7.0R, page 17.

571 opposite is true. Certainly the upper end estimates of her growth rate ranges and,  
572 thus, the midpoint of those ranges are questionable.

573 Finally, Ms. Ahern states that no real conclusions can be drawn regarding the value  
574 of the missing estimates and, since the companies were selected on the basis of  
575 similar risk, it is reasonable to assume that the missing estimates equal the  
576 average for each proxy group. Ms. Ahern erroneously equates risk and growth. The  
577 two concepts are only tangentially related, in that growth is partly a function of  
578 expected return on new investment, which in turn, is partly a function of risk.  
579 However, growth is also a function of dividend policy, which has no direct  
580 relationship to risk. Nevertheless, I agree that no definitive conclusions can be  
581 drawn, which is precisely what reduces Ms. Ahern's supposed average Value Line  
582 EPS growth estimate to the level of conjecture and why it should be disregarded.

583 Q. Do you agree with Ms. Ahern's claim that your statement that the "R" component of  
584 the BR+SV growth method is to be limited to future investment is incorrect?<sup>57</sup>

585 A. No. Ms. Ahern is not necessarily wrong in using the return on all equity to represent  
586 "R", but in doing so, she implicitly makes an assumption that she never proved to be  
587 valid: that the return on new equity investment equals the return on existing equity.  
588 Morin, who Ms. Ahern cites as an authority on this issue, reveals that the growth in  
589 earnings is based on future equity. In Morin's example, new investment is in the  
590 form of earnings reinvested in the company. The return on the original equity base  
591 is not growing at all, staying constant at \$10 each year. In other words, if the

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<sup>57</sup> Company Exhibit 7.0R, page 18.

592 company continued to earn the same return on its existing equity, but had no new  
593 investment (including retained earnings), it could not grow. It is only the return on the  
594 new investment that can be sustained. It has been demonstrated mathematically  
595 that the “R” component of the BR+SV method, as stated in my direct testimony,  
596 should be based upon future investment only.<sup>58</sup>

597 **Ms. Ahern’s Comparable Earnings Model Analysis**

598 Q. Do you agree with Ms. Ahern’s repeated assertion that her comparable earning  
599 model (“CEM”) analysis is market-based because “the selection of non-price  
600 regulated firms of comparable risk is based upon statistics derived from the market  
601 prices paid by investors”?<sup>59</sup>

602 A. No. Whether or not the sample selection method is based upon market prices is  
603 irrelevant, since Ms. Ahern’s CEM results are based upon accounting returns, which  
604 are unresponsive to market forces, rather than market returns. As such, the CEM  
605 fails to measure investor return requirements, which are reflected in securities  
606 prices. In contrast, the EMH, which Ms. Ahern considers “the foundation of modern  
607 investment theory,”<sup>60</sup> relates to securities returns, not accounting returns.

608 Q. In response to your argument that the return estimated by the comparable earnings  
609 analysis can be significantly distorted by accounting practices, Ms. Ahern claims  
610 that “different accounting practices also affect the growth rate component, projected

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<sup>58</sup> ICC Docket No. 95-0031, Direct Testimony of Dr. Charles M. Linke, Exhibit 8, pages 9-23.

<sup>59</sup> Company Exhibit 7.0R, page 29.

<sup>60</sup> Company Exhibit 7.0R, page 3.

611 or historical, of the DCF model” and that “because the criteria used to select the  
612 non-utility companies in my application of the CEM are based upon total risk, i.e.,  
613 the sum of non-diversifiable, market, risk and diversifiable, non-market or company-  
614 specific, risk, all impacts of accounting differences have been obviated.”<sup>61</sup> Please  
615 comment.

616 A. Neither of Ms. Ahern’s comments refute my argument. Ms. Ahern’s first  
617 rationalization does not dispute my claim, but rather, implies that the same problem  
618 occurs in the DCF model, which we both utilize. This implies that accounting  
619 differences should be overlooked. However, the companies in both of my samples  
620 are all regulated utilities and, therefore, are required to employ similar accounting  
621 practices. Hence, my DCF analysis is not affected by differing accounting practices  
622 as Ms. Ahern’s CEM analysis may be.

623 The second rationalization asserts that because her CEM proxy groups were  
624 chosen based upon statistics derived from market prices, her CEM analysis is  
625 market-based. As previously discussed, that is simply not true. The cost of equity  
626 results must be linked to risk and market prices. As Ms. Ahern acknowledges,<sup>62</sup> the  
627 results of her CEM analysis are based upon accounting returns, which are not  
628 directly related to required market returns. Hence, her sample selection  
629 methodology does not obviate the impact of accounting differences.

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<sup>61</sup> Company Exhibit 7.0R, pages 28-29.

<sup>62</sup> Company Exhibit 7, page 44.

630 Q. In response to your criticism her CEM analysis, Ms. Ahern claims that, “using Mr.  
631 McNally’s logic, [American States Water Co. and American Water Works Co.]  
632 should not be part of the same sample group because they are not of similar risk,”<sup>63</sup>  
633 based on the difference in their betas. Please comment.

634 A. Unfortunately, Ms. Ahern was not using my logic. Ms. Ahern’s CEM results are  
635 based upon the average accounting returns of two proxy groups, which are meant to  
636 represent the two samples she uses as surrogates for CIWC. However, the  
637 average betas of Ms. Ahern’s two CEM proxy groups exceed those of the sample  
638 groups they are supposed to represent by 0.10 and 0.11. Even if accounting book  
639 returns were reasonable proxies for investor-required returns, and they are not,  
640 since the risk levels of the CEM proxy groups are higher than those of the sample  
641 groups used as surrogates for CIWC, the book returns of the CEM proxy groups  
642 would overstate the expected book returns of the sample groups used as  
643 surrogates for CIWC.

644 Somehow, Ms. Ahern extrapolated from my observation about the difference in risk  
645 between Ms. Ahern’s CEM proxy groups and the CIWC surrogates that no two  
646 companies whose betas differ by 0.10 or 0.11 should be allowed in the same  
647 sample group. My argument, however, has nothing to do with the range of individual  
648 company betas within the groups. Individual company betas are very unreliable.  
649 Fortunately, beta estimates can be greatly improved through the use of portfolios  
650 (i.e., samples). Therefore, differences in individual company betas are of far less  
651 significance than differences in sample betas.

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<sup>63</sup> Company Exhibit 7.0R, pages 30-31.

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### Cost of Common Equity Range

653 Q. Ms. Ahern claims that your range of common equity cost provides an insufficient risk  
654 premium over and above the cost of public utility debt, as measured several  
655 different ways.<sup>64</sup> Is her claim correct?

656 A. No. My cost of common equity ranges from 9.9% to 10.4%, with a midpoint of  
657 10.15%. At the time my equity analysis was performed, the yield on A-rated public  
658 utility long-term debt was 8.13%. Thus my cost of equity range produces a risk  
659 premium ranging from 1.77% to 2.27%, with a midpoint of 2.02%, which is  
660 reasonable given the general decline in equity risk premiums over the last decade.  
661 Furthermore, my cost of capital recommendation implies a pre-tax interest  
662 coverage ratio of 3.13x to 3.24x, with a midpoint of approximately 3.18x for CIWC.  
663 That is well within the guidelines that Standard & Poor's ("S&P") has established for  
664 an A rating, which is indicative of a company with a strong financial position.  
665 Moreover, the midpoint is also above the mean and median values for A-rated  
666 water utilities of 2.81x and 2.89x, respectively.<sup>65</sup> It is important to note that, despite  
667 Ms. Ahern's claim, S&P does not require that utilities with a business profile of 3  
668 have a pre-tax interest coverage ratio of 2.8 for an A rating.<sup>66</sup> The actual pre-tax  
669 interest coverage ratios of A-rated water utilities' credit ratings makes this evident.  
670 For example, United Waterworks has been assigned an A rating and a business  
671 profile of 3, although its pre-tax interest coverage ratio was only 2.0.<sup>67</sup> <sup>68</sup> E'Town

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<sup>64</sup> Company Exhibit 7.0R, pages 8-9.

<sup>65</sup> Standard & Poor's, *Financial Medians Water Utilities*, <http://www.ratingsdirect.com>, July 7, 2000.

<sup>66</sup> Standard and Poor's assigns business profiles on a scale of 1-10, with 1 being the least risky and 10 being the most risky.

<sup>67</sup> Standard & Poor's, *Utility & Perspectives*, October 23, 2000, page 11.

672 Corp. has been assigned a higher rating of A+ with a riskier business profile of 4,  
673 although its pre-tax interest coverage ratio was only 2.5. Despite Ms. Ahern's claim,  
674 there is no reason to believe that if CIWC were assigned a business profile, it would  
675 be any higher than 3. Most of the water companies assigned business profiles by  
676 S&P have business profiles of 3.<sup>69</sup> Of the companies in my water sample that have  
677 been assigned business profiles by S&P, none has a business profile greater than  
678 3. In fact, CIWC's parent company, PSC, has a superior business profile of 2.

679 Ms. Ahern incorrectly estimated my risk premium by using several different  
680 inappropriate proxies for the cost of A-rated public utility long-term debt. First, she  
681 used the yield on A-rated public utility bonds as of September 15, 2000.<sup>70</sup> My  
682 analysis was conducted as of August 9<sup>th</sup>, not September 15<sup>th</sup>.<sup>71</sup> It is inappropriate to  
683 update a single part of a complex analysis and to mismatch yields from different  
684 times. Second, Ms. Ahern used the yield on Baa-rated public utility bonds because  
685 she claims that I acknowledged that CIWC is riskier than A-rated utilities. As  
686 explained earlier, Ms. Ahern mischaracterized my testimony in which I indicated that  
687 the relevant risk premium for CIWC is a comparison between CIWC's equity and  
688 the yield on A-rated utility debt. Third, Ms. Ahern incorrectly used CIWC's  
689 embedded cost of debt, which reflects interests rates that CIWC locked into as long  
690 ago as 1983, rather than a current rate of interest. CIWC's embedded cost of debt

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<sup>68</sup> Standard & Poor's, *Credit Stats: Water Utilities*, <http://www.ratingsdirect.com>, September 14, 2000.

<sup>69</sup> Standard & Poor's, *Utility & Perspectives*, October 23, 2000, pages 11-13.

<sup>70</sup> Company Exhibit 7.0R, page 8.

<sup>71</sup> The yield on A-rated public utility bonds has, since September 15, 2000, declined to 8.10%. *Moody's Long-Term Corporate Bond Yield Averages*, Moody's Investors Service, [www.moody.com](http://www.moody.com), October 25, 2000.

691 includes the following debt series, which were issued in the past at higher rates than  
692 available today: 10.4% Series M, 9.69% Series N, 9.19% Series P, 12.75% Series  
693 H, and 9.19% Series I. Increasing CIWC's allowed rate of return on equity in order  
694 to increase its interest coverage of embedded cost debt would doubly penalize  
695 CIWC's customers for CIWC's remaining high-cost debt.

696 After incorrectly estimating the risk premium implied by my analysis, Ms. Ahern  
697 inappropriately compared that risk premium to a beta-adjusted risk premium ( $b_j \times$   
698  $(R_m - R_f)$ ) of 4.69%. That is inappropriate because she is comparing the premium  
699 implied by my cost of equity estimate in relation to A-rated public utility debt yields  
700 to the premium implied by my cost of equity estimate in relation to the risk-free rate.

701 An equity risk premium measured relative to risky A-rated public utility debt will  
702 always be smaller than an equity risk premium measured relative to the risk-free  
703 rate.

704 Q. Ms. Ahern claims that your recommendation is inappropriate because it does not  
705 reflect the higher risk of CIWC relative to your proxy groups. Do you agree?

706 A. No. I did not include an adjustment to the cost of equity of my proxy groups because  
707 I do not believe one is necessary. As stated on pages 24-25 of my direct testimony,  
708 my analysis of the risk of CIWC as compared to that of my two proxy groups  
709 indicates that the risk of CIWC is equal to, or slightly less than, the risk of both my  
710 comparable sample and my water sample.

711 My analysis of the risk of CIWC relative to that of my two proxy groups is based on  
712 principal components scores. My principal components analysis distills 12 financial

713 and operating ratios into four risk factors for CIWC and each company in my  
714 samples, as explained on pages 8-9 of my direct testimony. The results are shown  
715 on ICC Staff Exhibit 7.00, Schedule 7.04. Factors 1 through 4 measure financial  
716 risk, construction risk, operating risk, and risk associated with the level of capital  
717 intensity, respectively. For Factors 1, 2, and 3, a higher score indicates less relative  
718 risk. However, the relative risk indicated by Factor 4, capital intensity, must be  
719 analyzed in relation to the corresponding Factor 3 score. High capital intensity can  
720 indicate high barriers to entry for potential competitors, which would reduce risk, or  
721 a high level of operating leverage, which would increase risk. Higher capital  
722 intensity associated with lower operating risk (Factor 3), suggests that the barrier to  
723 entry effect predominates. Conversely, higher capital intensity associated with  
724 higher operating risk, suggests that the operating leverage effect predominates. A  
725 review of the factor scores indicates that: CIWC has less financial risk than my  
726 water sample but slightly more financial risk than my comparable sample; CIWC has  
727 significantly less construction risk than my water sample and slightly less  
728 construction risk than my comparable sample; and CIWC has more operating risk  
729 than my water sample but less operating risk than my comparable sample. Finally,  
730 CIWC has greater risk from capital intensity than my water sample, as its higher  
731 relative capital intensity leads to higher operating risk. In contrast, CIWC has lower  
732 risk from capital intensity than my comparable sample, since the barriers to entry  
733 effect predominates. The table below summarizes the risk implications of each of  
734 the Factor scores of CIWC relative to my water sample and comparable sample.

	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>
CIWC vs. Comparable Sample	More risky	Less risky	Less risky	Less risky
CIWC vs.				

