STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF INDIANA-AMERICAN WATER COMPANY, INC. FOR (1) AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR WATER AND SEWER UTILITY SERVICE, (2) APPROVAL OF NEW SCHEDULES OF RATES AND CHARGES APPLICABLE THERETO, (3) AUTHORITY TO ESTABLISH AND IMPLEMENT SYSTEM DEVELOPMENT CHARGES, (4) AUTHORITY TO ESTABLISH AND IMPLEMENT CERTAIN CONNECTION FEES AND POLICIES AND NEW RULES AND REGULATIONS APPLICABLE THERETO, AND (5) AUTHORITY TO IMPLEMENT A REVENUE STABILITY MECHANISM	)	**CAUSE NO. 44450**

TESTIMONY OF

EDWARD R. KAUFMAN – PUBLIC'S EXHIBIT NO. 8

ON BEHALF OF THE

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

MAY 2, 2014

Respectfully submitted,

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CERTIFICATE OF SERVICE

This is to certify that a copy of the foregoing ***OUCC Testimony of Edward R. Kaufman: Public's Exhibit No. 8*** has been served upon the following counsel of record in the captioned proceeding by electronic service on May 2, 2014.

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TESTIMONY OF EDWARD R. KAUFMAN, CRRA
CAUSE NO. 44450
INDIANA-AMERICAN WATER COMPANY, INC.

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TESTIMONY OF EDWARD R. KAUFMAN, CRRA
CAUSE NO. 44450
INDIANA-AMERICAN WATER COMPANY, INC.

I. INTRODUCTION

1 **Q: Please state your name and business address.**
2 A: My name is Edward R. Kaufman, and my business address is 115 West
3 Washington Street, Suite 1500 South, Indianapolis, Indiana 46204.

4 **Q: By whom are you employed and in what capacity?**
5 A: I am employed by the Indiana Office of Utility Consumer Counselor (OUCC) as a
6 Chief Technical Advisor with the Water-Wastewater Division.

7 **Q: Please describe your educational background and experience.**
8 A: I graduated from Bentley College in Waltham, Massachusetts with a Bachelors
9 degree in Economics/Finance and an Associates degree in Accounting. Before
10 attending graduate school, I worked as an escheatable property accountant at State
11 Street Bank and Trust Company in Boston, Massachusetts. I was awarded a
12 graduate fellowship to attend Purdue University where I earned a Masters of
13 Science degree in Management with a concentration in finance.

14 I was hired as a Utility Analyst in the Economics and Finance Division of
15 the OUCC in October 1990. My primary areas of responsibility have been in
16 utility finance, utility cost of capital, and regulatory policy. I was promoted to
17 Principal Utility Analyst in August 1993 and to Assistant Chief of Economics and
18 Finance in July 1994. As part of an agency wide reorganization in July 1999, my
19 position was reclassified as Lead Financial Analyst within the Rates/Water/Sewer
20 Division. In October, 2005 I was promoted to Assistant Director of the

1 Water/Wastewater Division. In October 2012, I was promoted to Chief Technical
2 Advisor. I have participated in numerous conferences and seminars regarding
3 utility regulation and financial issues. I was awarded the professional designation
4 of Certified Rate of Return Analyst (CRRA) by the Society of Utility and
5 Regulatory Financial Analysts (SURFA). This designation is awarded based
6 upon experience and the successful completion of a written examination. In April
7 2012, I was elected to SURFA's Board of Directors.

8 **Q: What is the purpose of your testimony?**
9 A: The purpose of my testimony is to recommend and support the OUCC's proposed
10 8.6% cost of equity for Indiana-American Water Company, Inc. (Petitioner or
11 Indiana-American). I recommend an 8.6% cost of equity for Petitioner, based on
12 the financial conditions at the time I filed my testimony.

13 **Q: Please address other aspects of your testimony.**
14 A: First, to further support the reasonableness of my proposed cost of equity, I
15 respond to Ms. Ahern's methodologies. Petitioner proposes a cost of equity of
16 10.80% (which includes a "Business Risk Adjustment" of 20 basis points, a
17 "Credit Risk Adjustment" of 26 basis points and a "Management Efficiency
18 Adjustment" of 20 basis points). Schedule ERK 5 is a flowchart of Ms. Ahern's
19 various models their sub-components.

20 Second I respond to Petitioner's proposal to include in its forecasted
21 revenues the effect of its estimated (declining) base average residential and
22 commercial customer usage. Petitioner's forecasted test year consumption
23 assumes annual declining residential consumption of 2.94% and commercial

declining consumption of 1.28%. Petitioner's witness Gregory Roach provides regression analysis to support Petitioner's declining consumption. My testimony responds to Mr. Roach's regression analysis and explains why his proposal overstates the anticipated decline in consumption. The OUCC's analysis supports residential declining consumption of 1.19% and adjusts (reduces) Pro Forma present rate revenues by $1,257,407. The OUCC also adjusts (reduces) commercial present rate Pro Forma revenues by $692,300.

Q: Have you previously testified before the Indiana Utility Regulatory Commission (Commission)?

A: Yes. I have testified before the Commission in a number of different cases and issues. I have testified in water, wastewater, natural gas, telecommunication and electric utility cases. While my primary areas of responsibility have been in cost of equity, utility financing, fair value, utility valuation and regulatory policy, I have also provided testimony on trackers, guaranteed performance contracts, declining consumption adjustments, and other issues.

Q: Please describe the review and analysis you conducted in order to prepare your testimony.

A: I reviewed the Petition, testimony, and exhibits filed by Petitioner in this Cause. I participated in producing discovery and reviewed Petitioner's responses. My preparations included a review of numerous financial articles that discuss anticipated market returns. I reviewed the Commission's Final Order in Petitioner's last rate case, Cause No. 44022. As part of my preparations, I and other OUCC employees met with Indiana-American/American Water Company

1 personnel to discuss issues in this Cause. I attended numerous meetings with
2 OUCC staff to discuss and evaluate issues in this Cause.

3 **Q: Do you have any schedules or attachments?**
4 A: Yes, a list of my schedules and attachments are located in Appendix A.

5 **Q: Were all of the schedules prepared by you or under your supervision?**
6 A: Yes.

7 **Q: Please summarize your cost of equity testimony.**
8 A: My estimate of Petitioner's cost of equity is 8.6%. I use both a Discounted Cash
9 Flow (DCF) and a Capital Asset Pricing Model (CAPM) analysis to estimate
10 Petitioner's cost of equity. My DCF model produces a range of estimates from
11 8.36% to 9.54% and my CAPM analysis produces a range of estimates from
12 7.17% to 7.47%. A cost of common equity of 8.6% results in a weighted cost of
13 capital of 6.119% (OUCC Schedule 9, sponsored by witness Margaret Stull).

14 **Q: How does your proposed cost of equity differ from Petitioner's proposed cost**
15 **of equity?**
16 A: My estimate of Indiana-American's cost of equity is 220 basis points less than
17 Petitioner's witness Ms. Ahern's estimated cost of equity. Ms. Ahern's use of a
18 Predictive Risk Premium Model (PRPM™) model and her use of a Non-Price
19 regulated proxy group cause significant upward pressure on her proposed cost of
20 equity. Ms. Ahern also makes three adjustments to her proxy group's estimated
21 cost of equity, which increases her estimate of Petitioner's cost of equity by 66
22 basis points. None of these adjustments is necessary or appropriate.

23 As explained in greater detail in my discussion of Ms. Ahern's analysis, if
24 her PRPM™ and her analysis based on a proxy group of Non-Price regulated
25 companies were excluded, her remaining models, <u>prior to her company specific</u>

adjustments, produce estimated costs of equity of 8.30% DCF, 9.11% Risk Premium and 8.71% CAPM. If one averaged these three figures (Ms. Ahern gives less weight to her DCF analysis and does not simply average the results of her models) it would result in an estimated cost of 8.71% (only 11 basis points above my estimated cost of equity). Thus, some of the more traditional disagreements regarding estimated cost of equity presented in prior cases, such as estimated growth rates in the DCF model or the arithmetic/geometric mean debate (while still meaningful) are not the key drivers that explain differences in our estimated costs of equity.

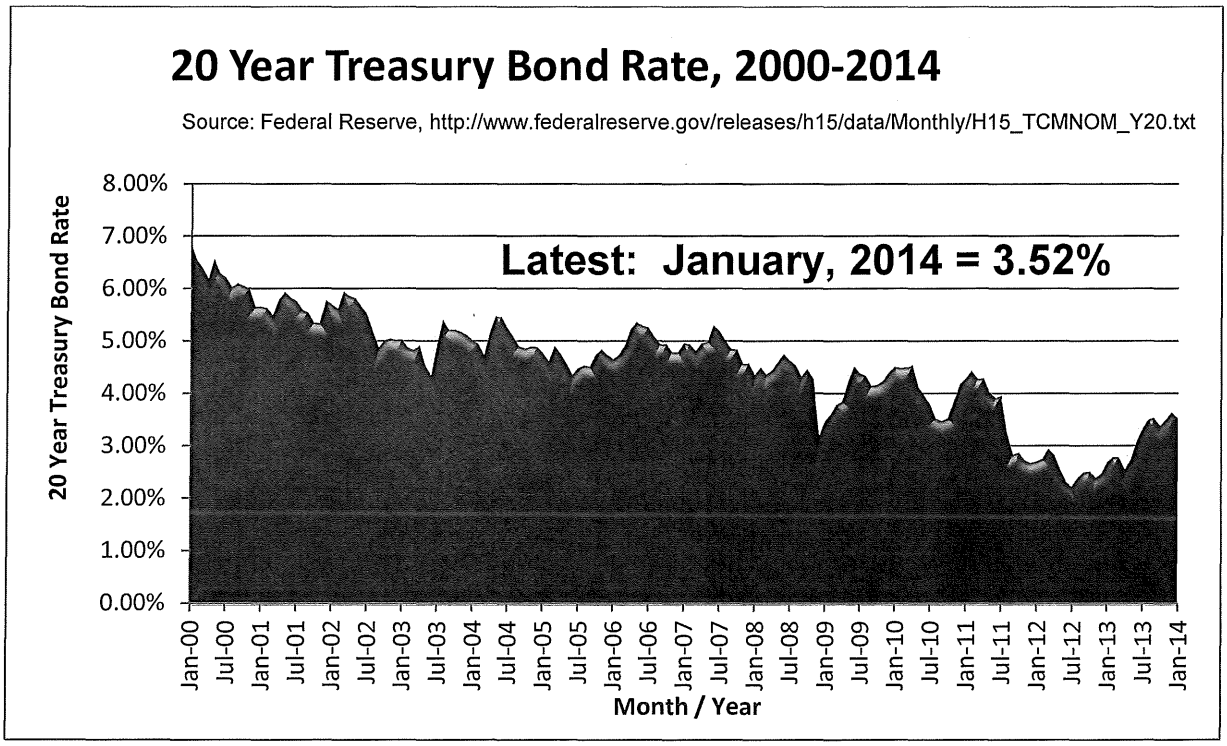
II. INTEREST RATES AND INFLATION

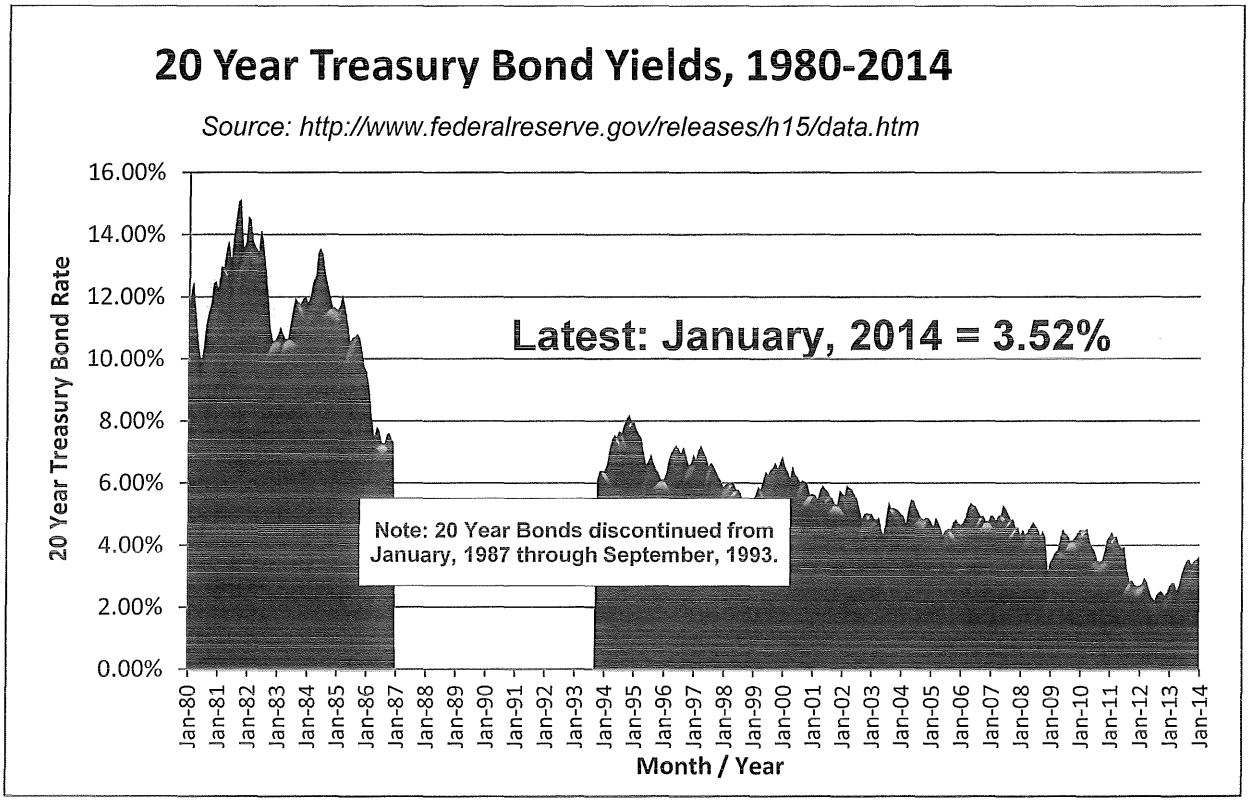
Q: How do current inflation and interest rates influence your estimated cost of equity?

A: Anticipated inflation influences interest rates and interest rates influence the cost of equity. Inflation rates are still at historically low levels and forecasted inflation is also expected to remain low. According to the Survey of Professional Forecasters, inflation is expected to average 2.3% over the next 10 years (2014-2023).[1] The Congressional Budget Office's (CBO) The Budget and Economic Outlook: Fiscal Years 2014 - 2024 forecasts increases in the GDP price index of 1.4% for 2013, and 1.5% to 2.0% for 2014-2024 (Attachment ERK-2).

The two charts below show the yields on 20-Year Constant Maturity U.S. Treasury bonds for January 2000 – January 2014 and January 1980 – January 2014. These charts illustrate the dramatic decline in interest rates.

1. Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters (February 14, 2014) (Attachment ERK-1)


20 Year Treasury Bond Rate, 2000-2014
Source: Federal Reserve, http://www.federalreserve.gov/releases/h15/data/Monthly/H15_TCMNOM_Y20.txt
Latest: January, 2014 = 3.52%
20 Year Treasury Bond Rate
8.00%
7.00%
6.00%
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
Jan-00 Jul-00 Jan-01 Jul-01 Jan-02 Jul-02 Jan-03 Jul-03 Jan-04 Jul-04 Jan-05 Jul-05 Jan-06 Jul-06 Jan-07 Jul-07 Jan-08 Jul-08 Jan-09 Jul-09 Jan-10 Jul-10 Jan-11 Jul-11 Jan-12 Jul-12 Jan-13 Jul-13 Jan-14
Month / Year


20 Year Treasury Bond Yields, 1980-2014
Source: http://www.federalreserve.gov/releases/h15/data.htm
Latest: January, 2014 = 3.52%
Note: 20 Year Bonds discontinued from January, 1987 through September, 1993.
20 Year Treasury Bond Rate
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
Jan-80 Jan-81 Jan-82 Jan-83 Jan-84 Jan-85 Jan-86 Jan-87 Jan-88 Jan-89 Jan-90 Jan-91 Jan-92 Jan-93 Jan-94 Jan-95 Jan-96 Jan-97 Jan-98 Jan-99 Jan-00 Jan-01 Jan-02 Jan-03 Jan-04 Jan-05 Jan-06 Jan-07 Jan-08 Jan-09 Jan-10 Jan-11 Jan-12 Jan-13 Jan-14
Month / Year

Despite recent increase in bond yields, interest rates aren't just lower than they have been over the last 30 years, they are still at historically low levels. For the past several years I have testified before the Commission how the low-interest environment should lead to a lower authorized cost of equity. But as low as interest rates have been, since September 2007 [monthly] 20-year U.S. Treasury yields have not been above 5.0%, and have not exceeded 5.5% since July 2002. Current interest rates are still well below the levels experienced during most of the past 10 years.

According to the March 14, 2014 edition of Value Line's Selections & Opinions, 30-year U.S. Treasury bonds yielded 3.67%, and 10-year U.S. Treasury bonds yielded 2.73%. The yield on 25/30 year "BBB" utility bonds was 4.79% and the yield on 25/30 year "A" utility bonds was 4.61% (Attachment ERK-3). Lower interest rates translate directly into a lower cost of equity. Despite recent increases in interest rates, long-term capital costs, like interest rates, are as low or are lower today than they have been during most of the last 50 years. Petitioner's authorized cost of equity should reflect the historically low interest rates.

III. PROXY GROUP

Q: Can you apply the DCF model and CAPM directly to Indiana-American Water Company?

A: No. These models can only be applied to companies whose stock is publicly traded. Because Petitioner's stock is not publicly traded, its cost of equity must be estimated through the use of a proxy group. The results generated from a

proxy group may need to be adjusted to account for risk differences between the proxy group and the company.

Q: Have you used the same proxy group of water utility companies that Ms. Ahern uses in her testimony?

A: Not quite. Other than Artesian Resources Corporation, both of us use the same proxy group. While AUS Utility Reports covers Artesian Resources, they are not currently covered by Value Line's Standard Universe. The report generated by Value Line for companies in its Standard Universe is more complete and includes information that I use in my DCF analysis. Because Value Line does not provide the same detail of coverage for Artesian Resources, I do not include them in my water company proxy group.[2] However, this difference in proxy groups is not a criticism of Ms. Ahern's water proxy group, but merely a stylistic difference.

Q: In past water cases you have used two proxy groups. Why aren't you doing so here?

A: Value Line has recently added several water companies to its Standard Universe and provides full coverage on a sufficiently large number of water companies. Because of Value Line's expanded coverage, I no longer have the data limitations that led me to use two proxy groups.

IV. DISCOUNTED CASH FLOW (DCF) ANALYSIS

A. Introduction to DCF Model

Q: Please describe the Discounted Cash Flow model.

A: The DCF model is typically used by investors to determine the appropriate price to pay for a security. This model assumes that the price of a security should be

[2] Value Line's January 17, 2014 report for Artesian Resources, did not provide a 5-year estimated growth in earnings per share, and showed and estimated beta of 0.55 (lower than my proxy group's average beta 0.694).

determined by its expected cash flows discounted by the company's cost of equity. On a one year horizon, the price of a stock (P_0) is equal to the anticipated dividends paid during the year (D_1) plus the anticipated price of the stock at the end of the year (P_1) divided by one plus the company's cost of equity (k). In turn, this year's year-end price (P_1) is determined by next year's anticipated dividends (D_2) and next year's anticipated year-end price (P_2) divided by one plus the company's cost of equity (k).

$$P_0 = \frac{(D_1 + P_1)}{(1 + k)} \quad \text{and} \quad P_1 = \frac{(D_2 + P_2)}{(1 + k)}$$

Because investors may plan to hold securities for many periods, the DCF equation can be restated for an infinite or unknown number of periods as follows:

$$P_0 = D_1/(k\text{-}g)$$

(Where the price of a security (P_0) equals the anticipated dividends paid over the current period (D_1) divided by the company's cost of equity (k) minus the expected growth rate of dividends (g)).

The company's cost of equity must be greater than its expected dividend growth rate for this model to be valid. By rearranging the model, the familiar DCF formula used in regulatory proceedings can be obtained:

$$k = (D_1/P_0) + g$$

(Where the cost of equity (k) equals the forward dividend yield (D_1/P_0) plus the expected growth rate in dividends per share (g). To estimate the cost of equity (k), the forward yield (D_1/P_0) and the expected growth rate in dividends (g) must be estimated).

B. Dividend yield

1 **Q: How did you calculate the forward yields (D_1/P_0) in your analysis?**

2 A: To calculate a forward yield (D_1/P_0), the current yield (D_0/P_0) must be calculated
3 first. AUS Utility Reports calculates current yields for large publicly held utilities
4 each month. A company's current yield equals its current annual dividends (D_0)
5 divided by its current stock price (P_0). The current annual dividend is calculated
6 by multiplying the company's most recent quarterly dividend by four. In this
7 testimony, I have used three and six month average current yields.

8 **Q: How do you convert current yields (D_0/P_0) into forward yields (D_1/P_0)?**

9 A: I use the following equation to convert a current yield to a forward yield: (D_1/P_0)
10 = (D_0/P_0) * (1 + .5g). For example, if Company X had a current dividend yield
11 of 6.0% and an expected growth rate of 4.0%, I would multiply the 6.0% current
12 dividend yield by 1 plus 2.0% or 1.02, (2.0% is one half of the 4.0% expected
13 growth rate). This results in a forward dividend yield of 6.12% or an increase of
14 12 basis points over the current dividend yield. Ms. Ahern also uses the one-half-
15 year's growth methodology (page 22, line 14).

16 **Q: Has the Commission supported the use of the one-half-year's growth**
17 **methodology to convert current yields to forward yields?**

18 A: Yes. Although there is no universally accepted methodology, the one-half-times
19 growth methodology to convert current yields to forward yields has been
20 regularly accepted by this Commission and was affirmed in its order in Cause No.
21 40103, Indiana-American Water Company, Inc. order dated May 30, 1996. On
22 page 40 of its order, this Commission stated as follows:

23 We are well aware of the advantages and limitations of the various
24 approaches used by each of the witnesses. For example, the half-

year method used by the OUCC for calculating the forward dividend yield is the most frequently used approach in this jurisdiction, and it is rarely a point of contention in DCF analysis. We believe that it fairly represents the dividend payments expected and received by investors, while the full year method employed by Petitioner overstates the dividend yield.

Q: What dividend yields do you use in your DCF analyses?

A: I used a three-month average dividend yield of 2.88% (before adjusting to a forward yield). I used a six-month average dividend yield of 2.91% (before adjusting to a forward yield). Schedule ERK 2, pages 1 and 2 contains the average dividend yields for my proxy group.

C. Dividend growth rate

Q: How did you estimate the long run dividend growth component (g) of the DCF model?

A: The DCF model assumes investors expect earnings per share (EPS), dividends per share (DPS), and book value per share (BVPS) to all grow at the constant long run growth rate (g). When the data is available, to estimate (g), I use both historical and forecasted growth rates of EPS, DPS, and BVPS. I use Value Line as my primary source of growth rates. I also completed a secondary DCF model which relies on forecasted growth in EPS from Yahoo (Thomson Financial Network), Morningstar, and Value Line.

Q: What is your estimated long run dividend growth component (g) of the DCF model using Value Line growth rates in EPS, BVPS and DPS?

A: My estimate of growth is 5.40%. To estimate growth for the Value Line data, I average the forecasted and historical growth rates of EPS, DPS, and BVPS. Because Value Line publishes two historical growth rates (both 5 and 10 year) and only one forecasted growth rate (5 years), giving equal weight to all three

estimates of growth affords 67% weight to historical growth and only 33% to forecasted growth. Averaging the two historical growth rates and then averaging that result with the forecasted growth rate gives both historical growth and forecasted growth the same weight.

Q: Did you complete a second estimate of growth relying on forecasted growth in EPS?

A: Yes.

Q: What is your estimated growth rate (g) for the DCF focusing on forecasted growth in earnings per share?

A: To estimate growth (g) I averaged Value Line, Yahoo.com (Thomas Financial network) and Morningstar forecasted growth in EPS. This results in an estimated growth rate of 6.54%.

Q: To estimate the dividend growth (g) for your DCF analysis did you include negative growth rates, zero growth rates or growth rates of less than 1.0%?

A: No. I excluded zero and negative growth figures to estimate (g) in my DCF analysis. In Cause No. 40103, an Indiana-American case, the Commission stated as follows:

> In all cases, however, the Commission expects the parties to exercise sound judgment when deciding which inputs to include as part of their analysis. In this case, the inclusion of negative growth rates for certain earnings and book value per share data by the OUCC biased the derivation of its growth rates downward. On the other hand, the Petitioner's sole reliance on Value Line's 10-year dividend growth rate data had the opposite effect.

In re Indiana-American Water Company, Inc., .Cause No. 40103 (Ind. Util. Regulatory Comm'n May 30, 1996), p. 40 - 41 (emphasis in original).

Q: Why haven't you eliminated low (positive) growth rates from your DCF analysis?

A: Low growth rates are not ignored by investors. While investors may not expect low growth rates to occur (especially in perpetuity), if a company has experienced

low historical growth rates or is forecasted to experience low growth rates, those low growth rates are considered by investors and are relevant to investors when they estimate a company's future growth rate. The purpose in estimating a growth rate in the DCF model is to infer the investor's long-term (perpetual) forecast in growth of the company/industry. Relevant factors are not ignored. Moreover, one should consistently use or reject, both high positive growth rates and low positive growth rates. My analysis uses several double digit growth rates and it is consistent to also consider low positive growth rates. While growth rates as high as 14.0% or as low as 1.0% by themselves may not reflect investor expectations, neither should be ignored (or alternatively both should be disregarded).

D. 2-Stage DCF Model

Q: Can short to intermediate-term forecasts lead to unreasonably high estimated growth rates (g) in a DCF analysis?

A: Yes. First, intermediate term forecasts are not long-term forecasts and should not mechanically be incorporated into a DCF analysis. The growth rate used in a DCF analysis must be one that is sustainable for many years. Thus, even if intermediate term forecasts are accurate, they may not be a reliable forecast of a company's long-term sustainable growth. Second, there are well documented findings that intermediate-term forecasted growth rates in EPS (forecasted by analysts) tend to be optimistic.

Q: Are you aware of any financial articles that support your position that intermediate-term forecasted growth rates tend to be optimistic?

A: Yes. I include these sources in Appendix B attached to my testimony.

Q: If one wants to emphasize intermediate-term forecasts in EPS, to estimate cost of equity, what additional steps can be taken?

A: One could employ a 2-stage DCF model. A 2-stage DCF model can use current forecasted growth rates in the near term (over the forecasted period), while still using a sustainable growth rate over the long-term. A National Regulatory Research Institute (NRRI) article (Discussed in Appendix B), explains long-term sustainable growth for the utility industry cannot exceed the long-term sustainable growth rate in the US economy. It is reasonable to use a forecasted growth rate of the U.S. economy (as measured by growth in GDP) as a long-term sustainable growth rate.

Q: Explain the mechanics of how you employed a two-stage DCF model.

A: A 2-stage DCF model is similar to the more traditional single stage DCF model except that it uses two growth rates (g) instead of a single growth rate. Because two growth rates are used, the equation is more complex than the traditional single stage DCF model $P_0 = D_1 / (k - g)$. Instead the equation for the 2-stage DCF model is stated as follows:

$$P_0 = \frac{DPS_0(1+g_1)\left(1-\frac{(1+g_1)^n}{(1+k)^n}\right)}{k-g_1} + \frac{DPS_0(1+g_1)^n(1+g_2)}{(k-g_2)(1+k)^n}$$

Where: DPS_0 = expected dividends per share in year *0*
k = required rate of return (cost of equity) during forecast period
P_0 = price of stock at year 0
g_1 = growth rate during the first stage
g_2 = growth rate during the second stage
n = length of the first stage (in years)

Unlike the single stage DCF model, due to its complexity the 2-stage DCF model, this equation cannot simply be re-arranged to solve for (k) the cost of equity [k = (D_1/P_0) + g.]. Instead, one must assume or pick a "target" price (P_0) and, through "successive iterations," determine (with given growth rates and a dividend yield) what cost of equity (k) produces your assumed "target" price. In layman's terms, successive iterations means inserting different costs of equity into the equation until it produces the assumed "target" price.

Hypothetically, assuming a price of $10.00 per share, annual dividends of $0.40 per share (a dividend yield of 4.0%), a growth rate of 6.0% during the first stage, the first stage of growth lasts 5 years, and a long run growth rate of 5.0% during the second stage, the rate of return necessary to produce a price of $10.00 per share is 9.39%. Mechanically, this is done by plugging in different rates of return (costs of equity or "k") into the above equation until you find the cost of equity (k) that produces a price of $10.00 per share. Alternatively, the "goal-seek" function in Excel can be used to determine what cost of equity produces a price of $10.00 share.

Q: Did you complete a 2-stage DCF analysis?

A: Yes.

Q: What inputs did you use to complete your 2-stage DCF analysis?

A: First I used an intermediate growth rate of 6.54% (Average of Value Line, Yahoo and Morningstar forecasted growth in EPS) and a dividend yield of 3.00%. I assumed the first stage of my 2-stage DCF analysis would last 5 years and I used a long-term growth rate of 5.0%. These inputs produce an 8.37% cost of equity.

Q: Why did you use a long-term growth rate of 5.0%?

A: I believe that 5.0% is reasonable estimate of the long-term growth rate of GDP.

Q: Do you have data to support your proposed long-term growth rate of GDP of 5.0%?

A: Yes. The Social Security Administration (Table VI.F6 Selected Economic Variables Calendar Years 2012 - 2090) forecasts annual Gross Domestic Product. Based on data from that report, the average annual increase in GDP for the next 32 years (2014 – 2045) is 4.79%.[3] Because the second stage of my 2-stage DCF analysis would not start until 2017, I have also calculated annual growth in GDP for 2017 – 2045 (4.49%).

Next, the February 2014 publication of the U.S. Congressional Budget Office forecasts nominal GDP growth rates of 4.3% - 5.3% (2015-2019) and 4.1% - 4.2% (2020-2024). The First Quarter Survey of Professional Forecasters, Federal Reserve Bank of Philadelphia Release (February 14, 2014) forecasts long-term real GDP growth of 2.60% and long-term inflation of 2.30%. These inputs produce a forecasted growth rate in nominal GDP of approximately 4.96%. Finally, the long-range forecasts from the Blue-Chip Financial Forecasts, dated

[3] Table VI.F6 provides forecasted GDP annually through 2022 and then every five years from 2025 – 2090.

1 December 1, 2013, forecasts an average growth rate in real GDP of 2.4% for
2 2020-2024, and a GDP Chained Price Index of 2.1% for 2020-2024. These
3 figures produce an annual growth rate in nominal GDP of approximately 4.5%.

4 **Q: Isn't it unnecessary to complete a 2-Stage DCF analysis in a mature industry**
5 **such as the water industry?**

6 A: Dealing with a mature industry does not by itself negate the benefits of
7 completing a 2-Stage DCF model. A 2-Stage DCF can still provide meaningful
8 insight to estimate Petitioner's cost of equity, especially when the overall U.S.
9 economy is in a recovery period or experiencing intermediate term expectations
10 different from long-term expectations. Even mature industries can include
11 companies where it is appropriate to use a 2-Stage DCF model. For example,
12 according to Yahoo the 3-5 year expected growth rate for SJW Corporation is
13 14.0%. It is unrealistic to assume that investors expect SJW's earnings to
14 increase at 14.0% per year in perpetuity. Despite being in a mature industry, it is
15 appropriate to apply a 2-Stage DCF model to companies such as SJW that have
16 intermediate term forecasted growth rates that far exceed the anticipated growth
17 rate of the U.S. economy.

18 Moreover, Ms. Ahern also performs a DCF analysis on a group of Non-
19 Price regulated companies. The companies in her Non-Price regulated proxy
20 group may or may not be in a mature industry. For example, several of the
21 companies in Ms. Ahern's Non-Price regulated proxy group of companies have an
22 average projected EPS growth rate that exceeds 10.00%. Such high intermediate-
23 term projected growth rates are precisely the type of situation where a 2-Stage
24 DCF analysis is applicable.

E. DCF model conclusions

1 **Q: What do you conclude from your DCF study?**

2 A: The results of my DCF analysis are depicted on Schedule ERK-2 and range from
3 8.36% to 9.54%. I give more weight to my analysis that uses both historical and
4 forecasted growth rates in EPS, DPS, and BVPS, because it is based on a broader
5 review of growth rates and because it is most consistent with prior Commission
6 decisions on how to estimate a growth rate in a DCF analysis. As discussed
7 above, analysts' forecasts of intermediate term growth rates in EPS may be
8 optimistic and should not be used by themselves to estimate long-term growth (g)
9 in a DCF analysis.

V. CAPITAL ASSET PRICING MODEL (CAPM) ANALYSIS

A. Introduction to CAPM

10 **Q: Please describe your CAPM analysis.**

11 A: The Capital Asset Pricing Model, or CAPM, is a form of risk premium analysis
12 used to estimate the cost of capital. The CAPM is based on the premise that
13 investors require a higher return for assuming additional risk. Total risk is
14 divisible into two categories: systematic risk and unsystematic risk. Systematic
15 risk is risk that affects the entire market, including inflation, monetary policy,
16 fiscal policy, or politics. Unsystematic risk is risk unique to the company, and
17 may include strikes, management errors, merger activity, or individual financing
18 policy.

19 Investors can eliminate unsystematic risk through diversification. Because
20 returns of individual securities of a portfolio do not usually move in the same

direction at the same time, the total risk of a portfolio is less than the risk of the individual securities that make up the portfolio. Because investors can eliminate unsystematic risk through diversification, the market does not compensate investors for assuming unsystematic risk. Conversely, systematic risk, sometimes referred to as market risk, cannot be eliminated through diversification. However, because investments will move with different relationships to the market, investors can form a portfolio to assume the amount of market risk they wish. An investor's required return depends on the market risk that the investor assumes.

Q: How is systematic (market) risk measured?

A: Beta is the measurement of an investment's relationship to the market. More specifically, beta measures an asset's price volatility compared to the market. By definition, the market has a beta of one. The market refers to the returns on all assets. Because it is very difficult to measure the return on all assets, analysts typically rely on a market index, such as the Standard & Poor's 500 Index, as a proxy for the market. Assets more volatile than the market will have a beta greater than one and, thus, they are considered riskier than the market. Similarly, assets that are less volatile will have a beta less than one, and thus, are considered less risky than the market.

1 The CAPM formula can be stated as follows:

2 $K = Rf_c + B*(Rm-Rf)$ where,

3 K = Cost of Equity

4 Rf_c = Current Risk Free Rate of Return

5 B = Beta

6 Rm-Rf = Expected Market Equity Risk Premium

7 Rm = Market Equity Return

8 Rf = Risk Free Rate of Return

9 The return on an asset (K) equals the risk-free rate of return (Rf_c) plus its beta (B)
10 multiplied by the market equity risk premium (Rm - Rf). The market equity risk
11 premium equals the market equity return minus the risk-free rate of return.

12 **Q: What is your opinion of the CAPM?**

13 A: The CAPM is typically more controversial and less reliable than the DCF model.
14 Different applications of CAPM may result in vastly different cost of equity
15 estimates. For example, the source of beta can influence the results of a CAPM
16 analysis. If a market risk premium of 5.0% is used, a difference in beta of only
17 0.10 changes the results of a CAPM analysis by 50 basis points. (Ms. Ahern uses
18 a market risk premium of 7.41% (Ms. Ahern: Schedule 7, page 1); a difference in
19 beta of 0.10 would change the results of her CAPM analysis by 74 basis points.

20 The method used to estimate the market risk premium can also be
21 particularly controversial. An historical risk premium can be calculated, but a
22 decision has to be made between using a geometric mean or an arithmetic mean
23 calculation. This decision is important because the use of the arithmetic mean can
24 produce results that are approximately 160 basis points higher than the geometric
25 mean. I believe the geometric mean calculation is preferable over the arithmetic

mean calculation because the geometric mean calculation more accurately measures the change in wealth over multiple periods. Selecting the appropriate time period to calculate a historical risk premium is not only controversial, it also dramatically affects the results. When relying on a historical risk premium, the longest historical period for which accurate historical data exists should be used to estimate a risk premium.

A *forecasted* risk premium can also be estimated. In past cases, I have testified that there is growing evidence that historical data typically overstates the risk premium and a forecasted risk premium should also be relied upon. In those cases I provided evidence to support my opinion on this issue. However, because of the current economic environment and low U.S. Treasury rates, (Attachment ERK-3) a historical risk premium may (at this time) not overstate the risk premium.

B. Geometric vs. Arithmetic mean

Q: In your CAPM analysis did you use a geometric mean risk premium or an arithmetic mean risk premium?

A: When relying on historical returns, I consider the geometric mean a better representation of expected returns than the arithmetic mean. However, both calculations can provide meaningful insight to estimate a market risk premium for a CAPM analysis. My CAPM analysis considers both geometric and arithmetic mean risk premiums. I also perform a second CAPM analysis that uses a forecasted market risk premium.

Q: Utility analysts often cite Roger Ibbotson's SBBI year book(s) to support their view that the arithmetic mean calculation should be used exclusively to estimate cost of equity. In the past, has Roger Ibbotson's SBBI year book supported the use of both the geometric and arithmetic mean risk premium to employ a CAPM analysis?

A: Yes. On page 59 of the 1982 Edition of Stocks, Bonds, Bills and Inflation: The Past and the Future Ibbotson supported the use of a geometric mean as well as an arithmetic mean:

> The arithmetic mean historical return on a component is used in making one-year forecasts, since the arithmetic mean accurately represents the average performance over a one-year period. Over a long forecast period, however, the geometric mean historical return represents average performance over the whole period (stated on an annual basis). Therefore, we input the arithmetic mean for a one year forecast, the geometric mean for the twenty year forecast and intermediate values for two, three, four, five and ten year forecasts. (Emphasis added)

While current editions of Dr. Ibbotson's Stocks, Bonds, Bills and Inflation yearbook supports the use of only the arithmetic mean, the reason for Ibbotson's change is not transparent. It is my understanding that beginning in the 1986 Edition of its SBBI Yearbook, Ibbotson advocated the use of the arithmetic mean. Moreover, as I explain later in my testimony, Dr. Ibbotson has expressed concern about using historical data to estimate a market risk premium.

Q: Are you aware of any financial texts that support the use of a geometric mean calculation in a CAPM analysis?

A: Yes. I include these sources in Appendix C attached to my testimony.

Q: How has this Commission ruled on the issue of arithmetic mean premiums versus geometric mean risk premiums?

A: For more than 20 years this Commission has consistently given weight to both the arithmetic mean risk premium and the geometric mean risk premium. See p. 12

of the Peoples Gas and Power Company Order in Cause No. 39315 Order dated October 21, 1992:

> As in the Indiana Cities case, [Cause No. 39166, July 8, 1992] we find there is merit in using both the arithmetic and geometric means and that neither result should be relied upon to the exclusion of the other.

This Commission reaffirmed its position in Indiana-American Water Company, Cause No. 40103, Order dated May 30, 1996, page 41:

> The debate over the proposed use of the arithmetic and geometric means is one we consider resolved. As we stated in Indianapolis Water Company, Cause No. 39713-39843, each method has its strengths and weaknesses, and neither is so clearly appropriate as to exclude consideration of the other. (Emphasis added)

The Commission yet again reaffirmed its position in Indiana-American Water Company, Cause No. 43860, Order dated April 30, 2010. On page 48 of that Order this Commission stated as follows:

> Neither the arithmetic risk premium nor the geometric mean risk premium should be excluded in favor of the other, and nothing has caused us to change our opinion regarding the appropriate application of both arithmetic and geometric mean risk premiums. Therefore, the Commission will continue to give both the geometric and arithmetic mean risk premiums substantial weight.

Q: When calculating a market risk premium, do you use total returns or income returns?

A: Unlike Ms. Ahern, I use total returns.

Q: Explain why.

A: Investors who buy long-term bonds (both risk free and utility bonds) do not earn just income returns, but total returns. Thus, a determination of the risk premium should be based on total returns for both equity and debt investments when estimating a risk premium. In Indiana-American Water Company Inc.'s, Cause

No. 42520 this Commission agreed with the testimony of Intervenor witness Michael Gorman, that total returns and not income returns should be used to estimate an historical risk premium. Page 59 of the final order states as follows:

> Another area of disagreement in the CAPM analysis is whether the model should use total returns or income returns. We find Mr. Gorman's analysis in this area to be the most persuasive. The income return on Treasury bonds, is simply the average of Treasury bond yield quotes over the historical period, and this yield quote does not measure the actual return investors earn by making investments in Treasury bonds. Investors simply cannot invest only in Treasury bond income returns. Rather, investors must take the risk of variations in bond prices before they invest in treasury bonds. Therefore the actual return experienced by investors in Treasury securities is measured by total return, not simply the income return.

C. Forecasted risk premium

Q: In addition to using historical data to estimate a risk premium, do you also utilize forecasted information?

A: Yes. I believe that both historical data and forecasted information should be used to estimate a risk premium in a CAPM analysis.

Q: Is there evidence that historical data overstates the risk premium?

A: Yes. Recent articles that cite Roger Ibbotson's opinion on the use of forecasted market risk premiums further persuaded me to include a forecasted risk premium in my CAPM analysis.

Q: Please discuss why you develop a forecasted risk premium in addition to a risk premium based on historical data?

A: Both historical and forecasted equity risk premiums provide relevant insight to estimate cost of equity and there is growing evidence that risk premiums based on historical data overstate expected returns. When historical equity returns are generated from increasing valuations, it increases the historical earned return but decreases the prospective return. On page 16 from Global Economics Paper No.

120, Thoughts on Social Security Reform by Goldman Sachs (January 18, 2005) the article notes this relationship:

> Moreover, even abstracting from the issue of risk, the historical returns on bonds and equities substantially overstate what investors could expect on a forward looking basis. This is because the rise in bond and equity prices in recent decades has boosted historical returns, but it has also resulted in high bond and equity valuations that imply lower prospective returns in the future.

And:

> Why is the expected rate of return for equities so low relative to historical returns? In evaluating the high rate of returns on equities historically, it is important to distinguish between returns generated by rising dividends and earnings versus the returns generated by higher valuations (i.e. a rise in price/earnings multiples). A good portion of the high rate of return earned by equities over the past century has been due to a rise in equity market valuation. When equity valuations are rising, equity returns are usually high. However, the increase in equity valuation **reduces**, rather than raises prospective equity return by reducing the dividend return on equities. (Emphasis added)

Although not a perfect apples-to-apples comparison, it might be easier to explain how increasing historical returns can lead to declining forecasted returns by looking at a hypothetical bond. Assume a hypothetical bond is a risk-free bond issued at a hypothetical current market rate of 7.0% for 20 years. Now assume that the bond is sold after five years, but the required return on a current risk-free bond of 15 years (equal to the remaining life on our original bond) has declined to 5.0%. Due to the decline in interest rates, when the bond is sold the original bond holder will be able to sell her bond at a premium and will earn a return well in excess of her original required return of 7.0%.

Yet because the current required return on a 15 year risk free bond is 5.0%, it is improper to use the original investor's actual earned return (which

exceeds 7.0%) to estimate future required returns for bondholders. Rather, due to the decline in required return the historical earned return indicates a higher return during a period of decreasing required returns. Because returns are stated for bonds it is easier to visualize how changes in valuations can cause a divergence between historical returns and prospective returns. However, the same concept can apply to stocks as well as bonds. For example CNNMoney.com's article: 9% Forever? (December 26, 2005) by Justin Fox discusses and quotes Eugene Fama as follows (See Attachment ERK-4):

> A harder to dismiss critique came from Mr. Efficient Markets himself, Ibbotson's dissertation advisor Eugene Fama. In a series of papers written with Dartmouth's Kenneth French, Fama has argued that the capital asset pricing model, or at least its 1970's corollary that the risk premium, is constant doesn't match the facts. "My own view is that the risk premium has gone down over time basically because we have convinced people that it's there." Fama says. Ibbotson's stock market forecasting model is thus a victim of its own success.
>
> **Ibbotson agrees** that Fama has a point, and that he can no longer bank on the historical equity premium to predict the future. (Emphasis added)

Importantly, even Dr. Ibbotson has now expressed concerns about using historical data to estimate the risk premium. At the time of this article Dr. Ibbotson had forecasted a long-run equity-return forecast of 9.27% compared to an annual return on stocks from 1925 to the [then] present day of 10.31%.

Q: Are there other articles or texts that support the view that historical data overstates the market risk premium?

A: Yes. There are several. I include these articles in Appendix D attached to my testimony. The articles included in Appendix D support my opinion that the expected risk premium is typically below the historical averages. The number

and variety of articles demonstrates that this opinion has become mainstream. Even Dr. Ibbotson, one of the most respected providers of historical data typically used to estimate an historical risk premium, no longer supports a risk premium that relies exclusively on historical data. Based on the articles above, it is appropriate to consider the results of a CAPM analysis that relies on a forecasted risk premium instead of one that relies exclusively on historical data to estimate cost of equity

Q: What forecasted market risk premium have you used in your CAPM analysis?

A: The articles cited above and in my Appendix D provide a range of forecasted market risk premiums from a low of 1.5% to a high of 5.25%. Based on these sources and the historically low interest rates, my CAPM analysis uses a forecasted risk premium of 5.00%.

D. Risk-free rate of return

Q: Is the risk free rate of return also controversial?

A: It can be. Aside from the market risk premium controversy, financial analysts do not agree on the determination of the risk-free rate. Theoretically, the risk-free rate is the rate of return on a completely risk-free asset. In practice, analysts typically use yields on United States Treasury Securities as a proxy for the risk-free rate. An analyst could use the yield on 91-day Treasury Bills as a proxy for the theoretical risk-free rate of return. However, the volatility of 91-day Treasury Bill rates has led many analysts to use longer term Treasury instruments as an estimate of the risk-free rate.

1 **Q: How did you estimate the risk-free rate?**

2 A: I reviewed short, intermediate and long-term risk-free rates. I used one year
3 Treasury securities as an estimate of short-term yields, the average of five year
4 and ten year Treasury securities as an estimate of intermediate-term yields, and
5 30-year Treasury securities as an estimate of long-term yields. Although I
6 reviewed short term, intermediate term and long-term interest rates, I give the vast
7 majority of my emphasis to long-term interest rates, some emphasis to
8 intermediate term interest rates and no emphasis to the results generated from the
9 use of short term interest rates.

E. Current vs. Forecasted Interest Rates

10 **Q: Do you use current or forecasted risk-free interest rates in your CAPM**
11 **analysis?**

12 A: I use current risk-free rates. When an investor is purchasing debt, they cannot
13 purchase debt that will yield a forecasted interest rate. Next, when long-term debt
14 is purchased, the purchaser is making a forecast. The purchaser anticipates long-
15 term factors such as inflation over the life of the debt and uses those factors to
16 determine the appropriate purchase price and subsequent yield of the investment.
17 The purchase price produces a yield that the investor is willing to accept over the
18 life of the debt. Thus, the current yield on long-term debt is already a forward
19 looking yield over the investment horizon.

20 Next, forecasting an increase to bond yields includes an unstated, yet
21 crucial corollary – the bond's price will decrease. The only way for a bond's
22 yield to increase is for the bond price to decrease. For example, assume a 30-year
23 bond was purchased for $1,000 with a 5.0% interest rate. If the yield on that bond

is forecasted to increase from 5% to 6% at the beginning of year 3, the forecaster is simultaneously forecasting that the price of that bond will decrease by approximately $134 to $864 (Schedule ERK-4). Potential bond investors that accept the forecasted increase in yield will not pay $1,000 today for a bond they forecast will be worth $864 two years from now. Instead, investors would decrease the current purchase price and the spread between the forecasted yield and current yield will decrease. When the bond is actually bought, investors are affirming the current yield over the life of the bond. Thus any current yield reflects a purchase price that incorporates any forecasted increase in future yields.

I think that there is a tendency amongst some analysts to take a "conservative" approach and assume when interest rates are low, the same interest rates are more likely to increase in the future. Each quarter Value Line's Forecast of the US Economy from Selection & Opinion forecasts Long-Term Treasury bond rates. The forecast includes the current year and the next four years. I reviewed the forecast from the May/June edition of Value Line's Selection & Opinion for each year going back to 1999 (Attachment ERK-21). With the exception of 2000, each year forecasts that the yield on 30-year US Treasury bonds to increase. This consistent tendency to estimate an increasing yield is another reason I question the validity of using forecasted interest rates to estimate cost of equity.

The best indication of what investors think interest rates will do is how they vote with current dollars. The current purchase price is a statement with real dollars as to what the investor believes will happen over her or her investment

horizon. My concerns about using a forecasted interest rate also apply to risk premium models.

Q: Why isn't combining current interest rates with forecasted market risk premiums problematic?

A: As I described in my previous answer, today's current purchase price is a forecast and is the best forecast depicting investor expectations. A purchaser of a current bond is presumably knowledgeable of forecasted bond yields and factors those forecasts into the current purchase price.

Q: On August 5, 2011, Standard & Poor's downgraded US debt from AAA+ to AA+. Is it still reasonable to use US Treasuries as a proxy for the risk-free rate of return in a CAPM analysis?

A: Yes. At this time, US Treasuries are the best proxy for the risk-free rate. Moreover, the yield on US Treasury securities has actually declined following the downgrade.

Q: In your CAPM analysis, did you use spot interest rates or average interest rates?

A: My analysis uses 3-month and 6-month average yields. I believe it is more appropriate to use an average yield calculated over a reasonable period of time, than to rely on spot data. This Commission's determination of Petitioner's authorized cost of equity should not vary on every twist and turn in the market. However, to reflect current market conditions one must also be careful not to use data that is too old or too stale. At this time, using 3-month and 6-month average yields strikes a reasonable balance of using current data while not relying on data that has become stale. However, I would not oppose the use of spot interest rates in a CAPM analysis at this time.

F. Beta

1 **Q: What source did you review to estimate beta?**

2 A: Like Ms. Ahern, I relied on Value Line as my source of beta. While there are
3 other sources of beta and it would be reasonable to review other sources, Value
4 Line remains a popular and widely used source of beta. Based on Value Line my
5 water proxy group produces an average beta of 0.694.

G. Conclusions on CAPM analysis

6 **Q: Please review the results of your CAPM analyses.**

7 A: The results of my CAPM analyses are depicted on Schedule ERK-3. The cost of
8 equity based on my CAPM analysis using an historical risk premium ranges from
9 7.45% to 7.47%. The results of my analysis using a forecasted risk premium
10 range from 7.17 to 7.19%.

11 To estimate cost of equity, using an historical risk premium, I calculated
12 both a geometric mean risk premium and an arithmetic mean risk premium. I
13 then averaged the risk premiums and combined the risk premiums with the risk-
14 free interest rates described above. I used both three- and six-month average
15 interest rates (obtained from Value Line's Selection & Opinion) to estimate risk
16 free rates. To estimate cost of equity with a forecasted risk premium, I combined
17 a risk premium of 5.0% (as described above) with long-term risk free rates.
18 Finally, given the degree of controversy surrounding the application of the
19 CAPM, I have more confidence in the results of my DCF analysis.

Q: In the Commission's final order from Petitioner's last rate case it expressed concerns about the CAPM producing unusually low results (page 35). Do you share those concerns in this case?

A: Yes. My CAPM analysis is producing estimated costs of equity in the low to mid 7.0 percent range. My recommended cost of equity for Petitioner will take into account that a combination of factors (including historically low interest rates) are leading to a CAPM analysis that produces unusually low results.

VI. OUCC'S ESTIMATED COST OF EQUITY

Q: Please explain your estimation of your proxy groups' cost of equity.

A: My DCF analysis ranges from 8.36% to 9.54% and my CAPM analysis ranges from 7.17% to 7.47%. Because my DCF analysis, based on all estimators of growth, and my CAPM analysis, based on historical risk premiums, appear to be more consistent with past Commission orders, it is appropriate to give those models additional weight. This produces an overall range of 7.45% to 8.39% with a midpoint of 7.92%. I believe the cost of equity for the water industry at this time is somewhat above the high end of my overall range. Moreover, Petitioner is similar in risk to the overall water industry and it is not necessary to adjust Petitioner's estimated cost of equity to account for differences between Petitioner and the overall water industry. Based on all of the above I recommend an 8.6% cost of equity.

Q: In prior Indiana-American rate cases has the Commission commented on company specific risk adjustments?

A: Yes. On page 35 in its final order in Cause No. 44022, the Commission stated as follows:

> Similarly to his analysis in Cause No. 43680, Mr. Moul's analysis here suffers from the use of an unusually high growth rate (7.00%) and a high market premium (6.86%). In addition, Mr. Moul's analyses used leverage adjustments, flotation cost adjustments, and small company adjustments. In Cause No. 43680, we found that these adjustments were inappropriate, and we reiterate that finding here. (Emphasis added)

In each of Indiana American's last two rate cases, this Commission found company specific adjustments inappropriate. I agree with the Commission's decision not to adjust Petitioner's cost of equity for company specific risks. I will explain my specific concerns regarding Ms. Ahern's proposed adjustments in the portion of my testimony that evaluates her testimony.

Q: In Cause No. 44022 the Commission asserted that an 8.50% cost of equity was too low to be reasonable. Has anything changed since the last rate case that now makes an 8.60% cost of equity reasonable?

A: Yes. There are several factors that have changed since Petitioner's last rate case that support a lower cost of equity. In its last rate case Petitioner had an average cost of debt of 6.52%. Petitioner's projected average cost of debt for the 12 months ended November 30, 2014 is 6.08% (a decline of 46 basis points). Also noteworthy is that Petitioner's cost of new debt has dramatically decreased since its last rate case. On May 19, 2011 (The day before Indiana-American filed direct testimony in Cause No. 44022), they (American Water Capital Corp.) issued $27 million in long term debt at 5.90%. According to pages 41-42 of Mr. Roach's testimony, Petitioner, through American Water Capital Corp, anticipates issuing $15 million in November 2014 with an estimated interest rate of 4.08% and $33 million in November 2015 with an estimated interest rate of 4.37%. These

1 anticipated interest rates indicate a significant decline in Petitioner's cost to raise
2 external capital.
3 Additionally, the use of future test year reduces a utility's risk. The ability
4 to project future expenses reduces a utility's volatility and provides it an enhanced
5 ability to earn the authorized return. Even though this benefit is difficult to
6 quantify into a specific risk adjustment/deduction, the benefit of using a future
7 test year should not be ignored by regulators when they determine a utility's
8 authorized cost of equity. Finally, Petitioner has proposed that a larger proportion
9 of its revenues be collected through a fixed charge, reducing the proportion
10 collected volumetrically. To the extent that greater proportion of revenues is
11 collected through a fixed charge that reduces the volatility of revenues. This
12 should also reduce risk and subsequently the cost of equity.
13 **Q: In today's market is an 8.60% cost of equity reasonable?**
14 A: Yes. Lower inflation rates generally translate into lower capital costs. This holds
15 true for both the cost of debt and the cost of equity. Over the last 20 years,
16 inflation has not been greater than 4.1% and has averaged 2.4% (Ibbotson's 2013
17 SBBI Yearbook, pages 280 - 286 Attachment ERK-5).
18 Significantly, this trend is expected to continue for some time. Value
19 Line's Ratings and Reports (March 14, 2014; Attachment ERK-6) forecasts that
20 the Consumer Price Index (CPI) will range between 1.7% - 2.0% over the next
21 five years (2015 – 2019) and that the GDP Deflator will range between 1.6% -
22 1.8%. In its Survey of Professional Forecasters, the Federal Reserve Bank of
23 Philadelphia (February 14, 2014; Attachment ERK-1) forecasts an even longer

period of low inflation rates, estimating that inflation will average 2.0% – 2.3% over the next 10 years (2014 – 2023). The Congressional Budget Office (CBO) (February 2014) projects annual increases in the CPI (All Urban Consumers) of only 1.5% - 2.4% per year for 2013-2024 and forecasts an average increase of only 1.4% to 2.0% per year in the GDP Price Index over the same period (Attachment ERK-2). The December 1, 2013 Blue Chip Financial Forecasts, estimates that that the CPI will average 2.3% for 2015-2024.

These predictions bear directly on this proceeding. A low inflation rate has a significant influence on current capital costs and such effects must be recognized and included in any determination of Petitioner's authorized cost of equity. For any investment the investor's required return includes compensation for anticipated inflation. When anticipated inflation is lower, so is the required cost of equity.

Q: Do you have additional support that your proposed cost of equity is reasonable?

A: Yes. In its First Quarter 2014 Survey, Duke University surveyed the CFOs with each company in the S&P 500 for their estimated average annual return for the S&P 500 over the next ten years. The average result was 6.5% (Attachment ERK-7). The 322 CFOs responding also replied, on average, they believe there is only a 10% chance that the S&P 500's average annual return during the next 10 years will exceed 10.2%.

An article by the Schwab Center for Financial Research titled: Q&A: Estimating Long-term Market Returns: (dated April 11, 2013) forecasts that Large-cap stocks are estimated to return about 6.3 percent per year over the long

run, while mid/small-cap international stocks are estimated to return about 7.8 percent and 6.2 percent, respectively (Attachment ERK-8). The Schwab article uses a 20-year time horizon for their estimates, but noted "calculations using a time horizon between 15-30-year should produce similar results."

An article by Forbes[4] titled 30-Year Market Forecast For Investment Planning, 2014 Edition cites to Portfolio Solutions' analysis. The article forecasts returns for U.S. large-cap stocks of 7.0% (Attachment ERK-9).

An article by J.P. Morgan Asset Management titled: Long-term Capital Market Return Assumptions forecasts expected 10-15 year annualized compounded returns for U.S. Large Cap equities of 7.5% as of September 30, 2013 (Attachment ERK-10).

ING Investment Management published an article titled 2014 Long-Term Capital Market Forecasts (March 4 2014; Attachment ERK 11). In this article, ING forecasts a long-term (ten years) geometric return of 5.6% and an arithmetic return of 6.9% for the S&P 500.

The First Quarter 2014 Survey of Professional Forecasters (The Federal Reserve Bank of Philadelphia) forecasts a 10 year return for the S&P 500 of 6.00% February 14, 2014, (Attachment ERK-1).

An Article by Edward Jones titled: Expectations for Capital Market Returns publishes a long-term equity return of 7% to 9%.[5] (Attachment ERK-12).

[4] January 9, 2014, by Rick Ferri.
[5] Source Edward Jones calculations, October 2013.

The studies above produce a range of forecasted market returns of 5.6% to 9.0%. The return figures discussed above are for the overall market. The water industry (average beta of 0.694) is less risky than the overall market and should have a lower expected rate of return than the market. The OUCC's proposed cost of equity of 8.6% is consistent with the forecasts made by the sources described above.

Q: Do you have any company specific information that supports the reasonableness of your proposed cost of equity?

A: Yes. The OUCC requested the following information from Petitioner.

> For the portion of Petitioner's pension fund(s) that are invested in equities, what rate of return does Indiana-American assume the pension fund(s) will earn. Please explain why that rate of return was used.[6]

Petitioner relied on the analysis of Callan Associates, which assumes that Petitioner's pension plan projected return for the S&P 500 is 8.95%. While Petitioner asserts in its response that the assumptions are not necessarily indicative of current investor return requirements for these indices, they are an independent projection of future market returns and are being used to estimate Petitioner's pension expense (Attachment ERK-13).[7]

Q: Do you have any additional support to illustrate that the water industry is less risky than the market?

A: Yes. According to Ibbotson's SBBI 2013 Valuation Yearbook, by Morningstar, the Industry Premia for the Water Supply industry is -4.92% (Attachment ERK-

[6] OUCC data request 2-9.

[7] OUCC data request question 2-10 asked a similar question regarding Petitioner's OPEB funds. Petitioner provided a similar response.

14). A negative risk premium of this magnitude further demonstrates that the water industry has a lower risk than the overall market.

VII. REVENUE STABILITY MECHANISM

Q: Does your recommended cost of equity assume that Petitioner will be authorized to implant its proposed Revenue Stability Mechanism as part of this cause or in a sub-docket (in the near future)?

A: No. My proposed recommendation ignores any benefit (reduced volatility in revenues or earnings) that Petitioner would potentially derive if its proposed Rate Stability Mechanism is authorized by this Commission. The OUCC will reserve commenting on Petitioner's proposed Revenue Stability Mechanism until the sub-docket. However, it is important to understand that Petitioner's proposed Revenue Stability Mechanism would reduce volatility and could subsequently reduce Petitioner's risk.

VIII. INTRODUCTION TO PAULINE AHERN'S ANALYSIS

Q: Please summarize Ms. Ahern's cost of equity analysis.

A: Ms. Ahern's estimated cost of equity for Petitioner is 10.8%. Prior to adjusting for Indiana American's company specific risks, Ms. Ahern's analysis uses a DCF model (8.30%), a Risk Premium model (11.29%), and a Capital Asset Pricing Model (9.80%). She also applies her models to a proxy group of "Comparable Risk," Non-Price regulated companies (10.50%). Ms. Ahern then adds 66 basis points to the results of each her models (PMA-1, page 3 of 3) to derive her estimated cost of equity: 26 basis points for company specific credit risk, 20 basis points for company specific business risk, and 20 basis points to recognize

management efficiency. Finally, in addition to her adjustments totaling 66 basis points Ms. Ahern asserts (page 53, lines 18-21) as follows:

> Upon reviewing the presentations of various company witnesses and having discussions with them, I believe that the cost containment efforts undertaken and achieved by Indiana-American warrant a premium rate of return on equity at the high end of the zone of reasonableness. (Emphasis added)

Ms. Ahern's proposal for a "premium rate of return on equity at the high end of the zone of reasonableness" produces an estimated cost of equity that is approximately 17 basis points above the average that would otherwise be produced from her studies. Ms. Ahern's Schedule 1, page 2 of 2 summarizes her cost of equity analysis.

Q: Do you have any initial concerns about the presentation of Ms. Ahern's cost of equity?

A: Yes. In Schedule 1, on page 6 and on page 48 of her testimony Ms. Ahern presents a table illustrating the results of her cost of equity models. Each of these tables is titled "Proxy Group of Nine Water Companies." However, the cost of equity estimates Ms. Ahern provides on these tables includes her company specific risk adjustments (totaling 66 basis points) for Indiana-American Water Company. Thus, despite the label, the results listed on these tables are not for the water industry, but are specific for Petitioner. One has to examine her Schedule PMA 1, page 3 of 3, to see her unadjusted industry estimated costs of equity.

Q: Is Ms. Ahern's presentation particularly complex?

A: Yes. Other than her DCF analysis, her remaining models contain multiple subparts that, in my opinion, make her presentation cumbersome to review.

Schedule ERK-5 is a flowchart of Ms. Ahern's various models their sub-components.

IX. PETITIONER'S NEED FOR CAPITAL

Q: In the "Business Risk" section of her testimony (starting on page 7), Ms. Ahern discusses the need for capital for both the water industry and more specifically for Petitioner. Please comment on this portion of Ms. Ahern's testimony.

A: On page 10 lines 13-16, Ms. Ahern states as follows:

> As financing needs have increased over the last decade, the competition for capital from traditional sources has increased, making the need to maintain financial integrity and the ability to attract needed new capital increasingly important.

Ms. Ahern further states on page 12, lines 12-14:

> Indiana-American itself is facing significant capital investment as it projects total net capital expenditures of $330.090 million for 2013 through 2018, representing an increase of approximately 34% over 2012 net utility plant of $991.660 million (net of contributions).

The testimony above depicts large capital needs for Petitioner over the next few years. However, a closer examination provides a better understanding of Petitioner's capital needs and its impact on risk. According to Petitioner's response to OUCC data request question 7-14 (Attachment ERK-15), Petitioner's anticipated capital expenditures are $53.3 million in 2014 and $41.8 million in 2015 or a total of $95.1 million. The OUCC's proposed revenue requirements include annual depreciation of approximately $41.5 million or $83 million over the next two years (OUCC Schedule 6, Adjustment 11, Margaret Stull's testimony). The OUCC has proposed an NOI of approximately $51.1 million (OUCC Schedule 1). Petitioner's anticipated annual interest expense is

1 approximately $21.1 million (GPR-5 Schedule 1 page 8-9). Indiana-American
2 would then have income available to shareholders of $30.0 million. According to
3 their response to OUCC data request question 2-05, Indiana-American has a
4 targeted dividend payout ratio of 75% and retains 25% of its net income. Thus
5 Indiana-American would pay dividends of approximately $22.5 million.
6 According to Petitioner's response to OUCC data request questions 02-006,
7 Petitioner has projected dividends of $23.8 million in 2014 and $22.4 million in
8 2015. (Attachment ERK-15). Petitioner would then retain 25% of $30.0 million
9 or $7.5 million per year or a total of $15.0 million. Thus, over the next two years
10 Petitioner would generate $98.0 million (depreciation and retained return) after
11 dividends, while its capital expenditures are estimated to be $95.1 million. Thus,
12 Petitioner should be able to fund most, if not all, of its anticipated capital
13 expenditures from internally generated funds.

14 **Q: Is there other evidence to support your conclusion that Petitioner's need for**
15 **external capital to fund their anticipated capital expenditures is minimal?**

16 A: Yes. According to Petitioner's response to OUCC data request question 10-3,
17 Indiana-American plans to issue $15 million of long-term debt in 2014 and $33
18 million of long-term debt in 2015. However, according to Petitioner's response to
19 OUCC data request question 20-005, Petitioner also intends to replace $40.0
20 million of debt that matures on September 1, 2015.

21 While debt cannot typically be traced to its specific source, Indiana-
22 American plans to issue $48 million in long-term debt during 2014-2015, but
23 plans to retire $40 million of long-term debt that matures on September 1, 2015.
24 The amount of new debt that Petitioner plans to issue over the next two years is

only $8 million. This is a relatively small amount for a company as large as Indiana-American Water Company, Inc. whose current debt is approximately $350 million.

Petitioner's need (or lack thereof) for external capital is also demonstrated by its anticipated decrease in its long-term debt balance. As of September 30, 2013, Indiana-American had long-term debt of $355,211,093 (GPR-5, Schedule 1, page 1 of 9) and Indiana American's projected long-term debt as of November 30, 2015 is $347,201,213 (a decrease of $8,009,880). So despite its stated need for capital improvements, Petitioner's analysis does not depict a need to issue long-term debt to support its projected capital improvements.

Q: Are there any other sources of funds that Petitioner may have available to fund capital additions?

A: Possibly. According to American Water Works (AWK) 2013 Annual 10K report, "[a]s of December 31, 2013, we had U.S. Federal and State net operating loss ("NOL") carry-forwards of approximately $1,182.1 million[.]" AWK's ability to utilize tax loss carry-forwards to pay for future tax expenses reduces cash payments that AWK (and Indiana-American) will need to make to pay Federal income taxes. To the extent that funds are included in rates for Federal income taxes that are not actually paid to the Federal Government, those funds are available to pay for capital expenditures. According to Petitioner's response to OUCC data request question 76-008 (Attachment ERK-22):

> American Water Works Company, Inc. does not anticipate that it will pay Federal Income Taxes to the Federal Government (Internal Revenue Service) in tax years 2014 & 2015 due to its ability to use its NOL carryforward. It will incur income tax expense, however, as the differences between the amount paid and

> the amount incurred are largely timing differences caused by normalization, as was fully explained in Cause No. 44022. Normalization creates deferred taxes, which are reflected in the capital structure used in this Cause.

Based on Petitioner's response to OUCC data request question 76-008, the funds included in rates ($17.7 million) will not be paid to the Federal Government and, would be available for capital expenditures.

X. NARUC RESOLUTION

Q: On pages 10-12 of her testimony, Ms. Ahern quotes from NARUC Resolution WA-3 Addressing the Gap Between Authorized Versus Actual Returns on Equity in the Regulation of the Water and Wastewater Utilities. Should the Commission provide additional rate relief, such as a premium authorized cost of equity, in response to the NARUC Resolution?

A: No. The NARUC resolution creates an implication that the Water industry is struggling. Yet, current evidence does not support a pervasive "Earnings Gap" for the water/wastewater industry. ERK-Schedule 8 compares the actual returns to the authorized returns for the water, natural gas, combination electric & gas, and electric companies. The water industry does not have a greater earnings gap than other regulated industries covered by AUS. Moreover, if the water/wastewater industry had a pervasive "earnings gap," that should be reflected by a lower average industry Market to Book (M:B) ratio. Yet the water/wastewater industry has a current M:B ratio of 205.5. This M:B ratio is similar, if not higher, than the M:B ratio of other regulated utility sectors.

Also, On April 29, 2014 American Water Works issued a press release announcing that it had increased its quarterly dividends by approximately 11.0%. (Attachment ERK-26). A dividend increase of this magnitude is not consistent

with the implication that American Water is struggling in the current regulatory environment.

Q: The NARUC Resolution also argues that regulation is somehow broken and "no longer addresses the challenges of today and tomorrow." Do you agree with this claim?

A: No. There will always be new challenges and regulation should adapt to those challenges, but I disagree with any suggestion that regulation is broken. Regulated utilities are not guaranteed their authorized cost of equity and as mentioned later in my testimony, Indiana-American actually earned above its authorized return in 2011 and 2012.

XI. MS. AHERN'S DCF ANALYSIS

A. Introduction to Ms. Ahern's DCF analysis

Q: Please summarize your disagreements with Ms. Ahern's DCF analysis.

A: As shown on Schedule PMA-4, page 1, her DCF analysis produces a median estimated cost of equity of 8.30% and an average cost of equity 8.87%. On pages 23-24 of her testimony, Ms. Ahern explains why she relies on a median return (8.30%) for her DCF analysis at this time. Ms. Ahern performs a second DCF analysis that excludes projected EPS growth from Reuters and Zacks. This analysis produces a median cost of equity of 8.42% (12 basis points higher than her initial median estimate) and an averge estimated cost of equity of 9.02% (15 basis points higher than her initial average cost of equity). While Ms. Ahern's DCF model produces an estimated cost of equity that is similar to my analysis, I disagree with her sole reliance on analyst earnings forecasted growth rates because as explained below, analysts' forecasts tend to be optimistic. I believe it

is more appropriate to rely on both historical and forecasted growth rates in EPS, DPS and BVPS.

Q: Explain why you disagree with Ms. Ahern's sole reliance on forecasted growth rates for the DCF analysis.

A: Forecasted EPS estimates are not long-term (perpetual) estimates. The so-called "long-term" estimates of EPS provided by companies that make such estimates are typically for three to five years. Three to five year estimates by themselves do not necessarily represent reasonable long-term estimates. Moreover, analysts' forecasts of EPS tend to be optimistic, overstate long-term growth and should not be used in isolation. Thus, at this time, a DCF analysis based exclusively or primarily on forecasted growth in EPS may overstate cost of equity.

Q: Is a five-year investment horizon associated with analysts' forecasts consistent with the DCF model?

A: No. The mechanics of a single stage DCF model, such as the one Ms. Ahern uses, *requires* the use of a growth rate that is sustainable over the long run. While five-year EPS forecasts can and should be used to estimate the long-term growth sustainable rate (g), the five year forecast in EPS by itself may not be a reliable factor to estimate cost of equity even if one has a short term investment horizon or places a primary emphasis on near term forecasts.

Q: Please explain why the DCF model requires a long-term growth rate.

A: Ms. Ahern's analysis effectively assumes that intermediate term (five year) forecasts are applicable in perpetuity. Even when investors do not intend to hold an investment beyond five years, the model requires a long-term estimate and that requirement cannot be assumed away. The equation used for the DCF model assumes an infinite time frame. Though some investors may have a short-term

perspective on their investments, this does not change the mathematics of the DCF model.

Q: Why can't a five year growth rate be used and assume that the stock will be sold after five years?

A: That assumption can be made. However, the price of the stock will need to be estimated at the end of the fifth year. Implicit in any estimated stock price at the end of the fifth year is growth in EPS, BVPS and DPS that will take place subsequent to the fifth year. So, using a five year time frame in a DCF analysis does not avoid the need to use a growth rate in dividends that recognizes investor expectations beyond the fifth year. Regardless of the investor's investment horizon, the DCF model requires a long-term or perpetual growth rate.

Q: Do you have any support that intermediate term growth estimates from analysts may not reflect long-term investor expectations in a DCF type model?

A: Yes. The Abstract of an Article titled, Do Analyst Conflicts Matter? Evidence from Stock Recommendations by Anup Agrawal and Mark Chen (Journal of Law and Economics, 2008, V 51), includes the following statement:

> However, evidence from the response of stock prices and trading volumes to upgrades and downgrades suggests that the market recognizes analyst conflicts and properly discounts analyst options.

In her rebuttal testimony in Utility Center, Cause No. 43874, Ms. Ahern quoted from this article. On page 21 of its Final Order in Cause No. 43874 (dated April 13, 2011), this Commission responded to Ms. Ahern's reliance on this quote:

> The parties also disagreed over the potential upward bias in analysts' forecasts. In support of her position, Ms. Ahern's rebuttal refers to language from an article by Anup Agrawal and Mark Chen titled: Do Analyst Conflicts Matter?

> Overall, our empirical findings suggest that while analysts do respond to IN [investment bank] and brokerage conflicts by inflating their stock recommendations, the markets discount these recommendations after taking analysts' conflicts into account.

Ahern Rebuttal at 52. While the Agrawal and Chen article states that investors discount analyst recommendations, our review of Ms. Ahern's testimony and exhibits reveals no comparable discount when she includes analysts' recommendations in her cost of equity estimate. Using unadjusted analyst recommendations would increase the probability that Ms. Ahern's DCF results are overstated. (Emphasis added)

Likewise, a review of Ms. Ahern's testimony and exhibits reveals that she does not have a comparable discount when she uses analyst recommendations in her cost of equity estimate. In my opinion, Ms. Ahern's unadjusted use of analyst recommendations similarly increases the probability that her DCF results are overstated. My concern regarding optimistic analyst recommendations also exists, and to greater extent, for Ms. Ahern's DCF model for her Non-Price regulated proxy group of companies.

Q: Can you cite to any additional texts that support your opinion that five-year growth estimates in EPS (by themselves) may not be appropriate to use as a long-term estimate of growth in a DCF analysis?

A: Yes. Please see Appendix F.

Q: So what data should the Commission use to estimate growth (g) in a DCF analysis?

A: Just as this Commission has done in past cases such as Indiana American, Cause No. 43860, it should review and give weight to both historical and forecasted data of growth rates in EPS, DPS and BVPS. If the Commission decides that a 2-Stage DCF analysis provided meaningful insight, they could also give weight to the long-term sustainable economic growth rate of the US economy.

Q: Has the Commission supported the use of dividend per share data and book value per share data in addition to earnings per share data in estimating the growth (g) component of the DCF calculation?

A: Yes. In Gary-Hobart Water Corporation (acquired by Indiana-American Water Corporation), Cause No. 39585, Order dated December 1, 1993, this Commission stated that "in many cases that although we agree historical and projected dividend information are important considerations when estimating future rates of growth for the DCF model, we do not believe that book value and earnings data should be ignored." In the past, the Commission "has consistently sanctioned the use of both historical and forecasted per share data. We continue to believe that both historical and forecasted earnings, dividends and book value per share data are useful when employing the DCF model." *Indiana-American Water Co.*, Cause No. 42029, p. 32 (Ind. Util. Regulatory Comm'n Nov. 6, 2002).

More recently, the Commission stated as follows:

> The Commission expects the parties to exercise sound judgment when deciding which inputs to include as part of their analysis. We have concerns regarding Mr. Moul's sole reliance on analysts' intermediate-term forecasts in his DCF model. The Commission believes that both historical and forecasted earnings and dividends and book value per share data are useful when employing the DCF Model. Although Mr. Gorman agreed with Mr. Moul's forecasted growth rates, Mr. Gorman recommended adjustments that modify Mr. Moul's outcomes to be much more in line with Mr. Kaufman's and Mr. Gorman's results. We agree with Mr. Kaufman that Mr. Moul's reliance on intermediate-term forecasts result in a growth rate that is unrealistically high.
>
> We also agree with Mr. Gorman that the constant growth DCF return used by Mr. Moul for the Water Proxy Group is not reasonable and represents an inflated return for Indiana-American at this time. The constant growth DCF results for the Water Proxy Group are based on growth rates of 7.29% (Mr. Gorman) and 7.5% (Mr. Moul). The Commission finds these growth rates to be

> unsustainable for the long-term, which is required by the constant growth model.

Indiana-American Water Co., Cause No. 43680, p. 47 (Ind. Util. Regulatory Comm'n Apr. 30, 2010).

Q: Is it outdated to say that analysts' forecasts are optimistic?

A: No. I do not believe that is the case. See Appendix B for a further discussion on potential bias in analyst forecasts.

Q: Summarize your comments on Ms. Ahern's estimates of growth (g).

A: The goal in estimating growth (g) in the DCF model is to derive a reasonable long-term or sustainable estimate of growth in dividends. Ms. Ahern's DCF analysis relies heavily on intermediate term forecasts in EPS to estimate the growth in her DCF model. Even if one assumes that there is no upward bias in analyst estimates, the estimates used by Ms. Ahern are still intermediate term (not long-term) forecasts and therefore may not be sustainable over the long-term. Ms. Ahern's optimistic growth rates (g) overstate the results of her DCF analysis.

As part of her analysis, (Schedule 8, page 5) Ms. Ahern completes a similar DCF analysis on a proxy group of 25 Non-Price regulated companies. The concerns I have expressed above particularly apply to her DCF analysis for her Non-Price regulated proxy group. Several of the companies in her Non-Price regulated proxy group have forecasted growth rates in EPS above 10.0%. Such high growth rates drastically exceed the forecasted growth rate of the US economy, are not sustainable and should not be used in isolation in a DCF analysis to estimate cost of equity. Finally, Ms. Ahern's DCF analysis for her Non-Price regulated proxy group of companies produces a cost of equity that is approximately 290 basis points higher than it is for her water proxy group.

B. Other comments on Ms. Ahern's DCF analysis

Q: Starting on page 24 of her testimony, Ms. Ahern argues that: "The DCF model has a tendency to mis-specify the investors' required common equity return rate when the market value of the common stocks differs significantly from its book value." Do you agree?

A: No. While Ms. Ahern does not propose an adjustment to the cost of equity because M:B ratios exceed one, she states that "at this time, the results of the DCF model should be viewed with skepticism and considered an outlier in comparison with the results of the other cost of common equity models when properly applied." Ahern, p. 29. I disagree that the results of the DCF model should be viewed with skepticism or given less weight. Moreover, the results of a DCF model should not be adjusted to compensate for this perceived understatement. Adjusting (increasing) the results of a DCF analysis when M:B ratios exceed 1.0 leads to counter-intuitive results because it would have the effect of rewarding utilities when M:B ratios are above 1.0 and penalizing utilities when M:B ratios are below 1.0. Utilities do not need to be rewarded for having a high M:B ratio through a higher authorized cost of equity and should not be penalized because their M:B ratio is below 1.0.

There are many reasons a utility's M:B ratio might exceed one. For example, cash flow from accelerated depreciation may cause a utility's M:B ratio to increase. If a utility/industry such as AWK had beneficial tax treatment, that could increase the M:B ratio. Earnings from unregulated operations influence the M:B ratio, and if a utility/industry is over-earning, that will increase the M:B ratio. But none of these circumstances justify disregarding or increasing the the results of a DCF model to estimate cost of equity for Petitioner in this Cause.

In most rate jurisdictions, rates of returns are set on book value. Investors know this and take it into account when they determine the price they are willing to pay for a utility's stock. Investors do not need additional compensation because they have bid the price of the stock above its book value. Moreover, rating agencies, such as Standard & Poor's, assess financial risk based on the book value capital structure not the market value capital structure. Financial publications, such as Value Line and AUS Utility Reports, use book values (not the market value) when they calculate long-term debt and common equity ratios.

Moreover, in Petitioner's last rate case, Petitioner's witness Paul Moul made a similar argument.

> If regulators use the results of the DCF (which are based on the market price of the stock of the companies analyzed) to compute the weighted average cost of capital with a book value capital structure used for rate setting purposes, those results will not reflect the higher level of financial risk associated with the book value capital structure.

Testimony of Paul Moul, Cause No. 44022, p. 29.

In that case the Commission rejected Mr. Moul's argument to adjust the results of his DCF analysis because M:B ratios for the water industry exceeded 1.0. The Commission should not change its view on the DCF model simply because M:B ratios exceed 1.0. Moreover, if the use of the DCF model was leading to deficient authorized rates of returns, investors should be less willing to invest in water utilities (such as American Water Works) and their actions should be reflected in lower M:B ratios. This is not case. American Water Works' stock has done quite well over the last several years. According to the chart on page 4 of its March

2014 Institutional Investor Presentation, American Water Works' five year total return is 183.7% (Attachment ERK-16).

Q: Does the CAPM give a better indication of required returns than the DCF model?

A: No. If the DCF is used with a reasonable estimated growth rate of dividends (g) it produces results as reasonable, if not more so, than the CAPM. The CAPM is typically more controversial and less reliable than the DCF model. Eugene Brigham and Louis Gapenski comment on the use of CAPM on page 64 of their text Intermediate Financial Management (2nd Edition):

> Although the CAPM appears to provide neat precise answers to important questions about risk and required rates of return, the answers are really quite fuzzy. **The simple truth is that we do not know precisely how to measure any of the inputs required to implement the CAPM.** These inputs should all be ex ante, yet we have available only ex-post data. Further as we shall see in chapter 4, historical data such as k_M and k_{RF} and beta vary greatly depending on the time period studied and the methods used to estimate them. **Thus, although the CAPM may appear precise, its inputs cannot be estimated with any precision at all**, and hence the estimate of k_i found through the use of CAPM are subject to large errors. (Emphases added.)

XII. MS. AHERN'S RISK PREMIUM ANALYSIS

A. Introduction to Ms. Ahern's Risk Premium analysis

Q: Please discuss Ms. Ahern's Risk Premium model.

A: Ms. Ahern's unadjusted Risk Premium models produce an estimated cost of equity of 11.29% (Ahern Schedule-6). Ms. Ahern uses two risk premium models. First she uses a Predicative Risk Premium Model™ which produces an 11.77% estimated cost of equity (Ahern Schedule 6, page 2). Next, she uses a "Risk Premium Model Using an Adjusted Total Market Approach", which produces a 9.86% estimated cost of equity (Ahern Schedule 6, page 3). Ms. Ahern gives

75% percent of her weight to her PRPM™ and 25% to her Risk Premium Model Using an Adjusted Total Market Approach to derive her 11.29% average. Had Ms. Ahern given equal weight to each of her risk premium methods, it would have produced a 10.81% cost of equity.

B. Predicative Risk Premium Model (PRPM™)

Q: Please describe the premise underlying the Predictive Risk Premium Model™ (PRPM™) used by Ms. Ahern.

A: The PRPM™ is a form of the Risk Premium model. Risk premium models typically assume a generally stable risk premium over time. Thus, a risk premium generated by historical data and applied to current data can be used to estimate cost of equity. However, as discussed in Ms. Ahern's testimony (page 30-32) The PRPM™ is based on the premise that:

> [V]olatility changes over time and is related from one period to the next, especially in financial markets. Engle discovered that the volatility in prices and returns also clusters over time and is therefore highly predictable and can be used to predict future levels of risk and return premiums.

Thus, a PRPM™ attempts to incorporate into its analysis the premise that volatility changes over time.

Ms. Ahern then uses a statistical software package (Eviews©) to calculate projected risk premiums. As discussed by Ms. Ahern, she uses a GARCH coefficient (Generalized Autoregressive Conditional Heteroskedasticity) to estimate a forecasted risk premium. More specifically, Ms. Ahern applies the

PRPM™ to each company in her water proxy group to estimate that company's cost of equity.[8]

Q: How did Ms. Ahern apply the PRPM™ to estimate cost of equity?

A: To estimate cost of equity using a PRPM™, Ms. Ahern estimates the average monthly forecasted variance. In this context, the data used to estimate "variances" is the difference between monthly returns on common shares of each company in her proxy group minus the historical monthly yield on long-term U.S. Treasury securities. Each company's estimated variance starts with the available trading information for that water company through October 2013. Each company's average monthly variance can be seen on Ms. Ahern's, Schedule 6, page 2, line 2. For example, American States Water has an average monthly forecasted variance of 0.39% [rounded] (or .0039). Ms. Ahern multiplied the average monthly variance figure by her estimated GARCH coefficient. She then annualized that monthly figure (raises it to the 12th power and subtracts 1) to obtain an estimated PRPM™ derived risk premium. According to Ms. Ahern, American States Water has a GARCH coefficient of 1.5331. When American States Water's GARCH coefficient of 1.5331 is multiplied by its average monthly forecasted variance of .0039, it equals approximately 0.005979. This figure can be annualized by adding one (1) to it (1.005979) and raising it to the 12th power ((1.005979)^12 = 1.07415). After subtracting one (1) this creates a PRPM™ risk premium of 7.42%. This figure is somewhat lower than the 7.44% risk premium presented in Ms. Ahern's testimony due to rounding errors. Adding her

[8] Later in her testimony Ms. Ahern also uses a PRPM™ to estimate various market risk premiums.

forecasted risk free rate of 4.33% to her estimated risk premium (American States Water) leads to an estimated cost of equity for American States Water of 11.77%.

Q: Please discuss your concerns with the PRPM™.

A: As a tool to estimate cost of equity, the PRPM™ is a very new model. In fact, this is only the second time I have seen this model used by an Indiana utility to estimate cost of equity. *See* Petitioner's responses to OUCC DR 7-2 – Attachment ERK-17. Thus, we do not know the limitations or unintended consequences associated with using this model to estimate a utility's cost of equity. Even without having fully identified all the issues, I already have several concerns with Ms. Ahern's PRPM™ analysis and its results.

First, Ms. Ahern's estimated variances rely exclusively on arithmetic mean calculations. This Commission has consistently expressed its preference that a risk premium in a CAPM analysis should rely on both the arithmetic and geometric mean risk premium. Petitioner's sole reliance on arithmetic means overstates the risk premium. The concerns and directives this Commission has expressed with respect to the CAPM should likewise apply to the PRPM™.

Second, for the income component of her risk premium, Ms. Ahern uses "historical monthly <u>yields</u> on long-term U.S. Treasury securities" (and not total returns). Unless investors hold a bond to maturity, they cannot simply earn income returns and are subject total market returns if they invest in bonds. This Commission has accepted the use of total returns to estimate a risk premium. Because Ms. Ahern's PRPM™ analyses do not use total bond returns, this could also skew her results toward higher estimated risk premiums.

Third, Ms. Ahern's estimated costs of equity are also based on forecasted interest rates and not current interest rates. In her PRPM™ she uses a forecasted risk free rate of 4.33%. As of the close of business on April 11, 2014 the current yield on 30-year U.S. Treasury securities was 3.48%.

Finally, the PRPMTM was developed by AUS Consultants and to the best of my knowledge no other cost of capital consultants use the PRPM™.

Q: Does Ms. Ahern calculate risk premiums based on a PRPM™ throughout her cost of equity analysis?

A: Yes. In addition to directly estimating cost of equity based on the PRPM™ for each company in her water proxy group, Ms. Ahern uses a PRPM™ to estimate a risk premium on five additional occasions (twice in her Risk Premium model, once in her CAPM analysis and twice in her Non-Price regulated company analysis). Schedule ERK-5, page 1, provides a flow chart of Ms. Ahern's cost of equity analysis. The boxes highlighted in red (with dashed lines) rely on a PRPM™ to estimate a risk premium.

Q: Do you have any general comments about the risk premiums Ms. Ahern derives using a PRPM™ analysis?

A: Yes. Ms. Ahern uses a PRPM™ analysis to estimate a risk premium for:

1: Large company common stocks less income returns on long-term U.S. Government bonds of 10.36% [Schedule 7, page 2] ,

2: Large company common stocks less Moody's Aaa and Aa corporate bond yields of 9.26% [Schedule 6, page 8] and

3: S&P Utility Index less yields on Moody's A rated public utility bonds 5.24% [Schedule 6, page 11].

In response to OUCC discovery request question 7-11, Petitioner provided an Excel spreadsheet that estimated risk premiums using the PRPM™ for

successively longer historical time periods for each of these three indexes. For example for Ms. Ahern's tab titled "MKTRP 1926-2013," the first risk premium is based on data from January, 1926 through June 1926 (five data points). The second risk premium is for January 1926 through July 1926 (six data points). The estimated risk premiums then add one month for each estimated premium until the last risk premium, which is for January 1926 through October 2013 (1053 data points). The Excel spreadsheet from Petitioner's response to OUCC discovery request question 7-11 provides similar calculations for all three indexes described above.

Q: How do the risk premiums that Ms. Ahern estimates and uses from her PRPM™ compare to the historical earned risk premiums?

A: The risk premiums that Ms. Ahern estimates from her PRPM™ consistently exceed the historical earned risk premiums. In response to OUCC discovery request question 7-1, Petitioner provided the historical data used to calculate risk premiums. From Petitioner's response, I calculated the actual historical risk premium (arithmetic mean – income returns) for the same successively longer time periods described above. I then prepared a graph (for each index) that compares the actual historical risk premiums with the PRPM™ risk premiums estimated by Petitioner. The results of my analyses are provided in ERK-Schedule 6.[9] These three graphs illustrate that when applied to the market

[9] While Ms. Ahern starts her analysis as early as 1926, the risk premiums produced by her PRPM™ analysis are somewhat erratic during the early years. My graphs exclude her estimated risk premiums prior to 1936. During a conversation with Mr. D'Ascendis from Cause No. 44388 (Twin Lakes) he explained that AUS' GARCH analysis contains 13 missing data points. Only five of these missing data points occur after 1936. During informal discovery, Ms. Ahern confirmed that the break points had not changed. I have not adjusted my graphs to reflect the missing data points.

indexes, the risk premium from Ms. Ahern's PRPM™ analyses consistently estimate a higher risk premium then the historical risk premium over that same time period. Moreover, even the historical risk premiums provided in this graph overstate the risk premium because they rely exclusively on arithmetic mean returns and investors do not earn arithmetic mean returns.

Q: Is your review of Petitioner's analyses described above for the PRPM™ based on averge variances or spot variances?

A: My review is based on average variances. The risk premiums derived by Ms. Ahern to estimate Petitioner's cost of equity are based on average variances. My comparison is based on the risk premiums used by Ms. Ahern.

Q: Should a PRPM™ always produce a higher estimated risk premium than the historical earned risk premium?

A: I do not think so. The theory behind the PRPM™ is that (1) there are periods of greater volatility, (2) these volatile periods take place in clusters and (3) investors require a higher return during these more volatile periods. Robert Engle stated as follows on page 2 in his paper titled: GARCH 101: The Use of ARCH/GARCH Models in Applied Econometrics:

> Even a cursory look at financial data suggests that some time periods are riskier than others; that is the expected magnitude of error terms at some times is greater than others. Moreover, these risky times are not scattered randomly across quarterly or annual data. Instead, there is a degree of autocorrelation in the riskiness of financial returns. Financial analysts, looking at plots of daily returns such as in Figure 1, notice that the amplitude of returns varies over time and described this as "volatility clustering". The ARCH and GARCH models, which stand for autoregressive conditional heterskedasticity and *generalized* autoregressive conditional heterskedasticity, are designed to deal with just this set of issues.

To the extent there are periods of clustering volatility, a PRPM™ should forecast periods of higher returns during periods of higher volatility. However, there should also be clusters of lower volatility and a PRPM™ should forecast lower returns during periods of lower volatility. A PRPM™ should not exhibit a general trend of higher returns across all periods. Because the risk premiums from Ms. Ahern's PRPM™ analyses consistently derive higher risk premiums than the actual historical risk premiums, the results of her PRPM™ analyses appear to be inconsistent with the Dr. Engle's theory described above and they should not be used to estimate Petitioner's cost of equity.

Q: Are there any other aspects of the model as used by Ms. Ahern that cause you concern?

A: Yes. Ms. Ahern's PRPM™ analyses rely on several extremely high variances that occurred during the early 1930s. Ms. Ahern multiplies the average forecasted variance by the estimated GARCH coefficient (which is then annualized) to estimate a risk premium. In her PRPM™ analysis for the market vs. risk free bonds, Ms. Ahern estimates a risk premium of 10.36%, which is based on a GARCH coefficient of 2.847 and an average forecasted variance of 0.29% - January 1926 through October 2013. To provide some perspective, from January 2012 through October 2013, Ms. Ahern's forecasted average variances ranged from 0.12% to 0.25%. However, from October 1931 through March 1934 (30 months) the average forecasted variances ranged from 1.10% to 3.65% (averaged 2.20%). Thus the average forecasted variance during this time period is approximately 7.5 times higher than the average forecasted variance over the life of the analysis (2.20% / 0.29% = 7.58). The estimated risk premium in Ms.

Ahern's analysis is highly sensitive to small changes in the forecasted variance. Holding the GARCH coefficient of 2.847 constant, a 1 basis point change in the forecasted variance from 0.29% to 0.28% (.01% or .0001) will change Ms. Ahern's estimated risk premium by approximately 34 basis points ((1 + (2.819 * .0001))^12 -1 = 0.0034[rounded] or 0.34%). The forecasted variances from Ms. Ahern's other market indexes show similarly extreme forecasted variances during the early 1930s. In my opinion, the high variances from the 1930s unduly influence the results of Petitioner's risk premium analyses.

Q: Shouldn't you consider data from all time periods?

A: Generally, yes. I do not recommend that data from the 1930s be excluded when estimating a risk premium. However, the PRPM™ is a new model and it is reasonable to evaluate and understand how market activity from various time periods influences the model's estimated costs of equity.

Q: If Ms. Ahern did not include the results of her PRPM™ and the five other risk premiums based on a PRPM™, how would that influence the results of her cost of equity analysis?

A: Petitioner's workpapers included an Excel spreadsheet of Ms. Ahern's schedules. In OUCC Schedule 7, I have modified Ms. Ahern's analysis by removing her PRPM™ and the five other risk premiums that are based on the PRPM™. Doing so reduces the results of her unadjusted RPM model from 11.29% to 9.11%. Similarly, her CAPM results change from 9.80% to 8.71%, and her Non-Price regulated cost of equity analysis changes from 10.50% to 9.81%. Thus, except for her DCF model at 8.30%, Ms. Ahern's introduction and application of the PRPM™ causes a significant increase to the results of her cost of equity analyses. Note that in response to an Office of Public Advocate (OPA) data request in

1 Docket No. 2013-00362 Maine Water Company-Camden & Rockland Division,
2 Ms. Ahern recalculated her indicated ROE excluding the PRPM™ results and
3 derived the same results I provided above (Maine Final Order, page 11, Table 3).

4 **Q: What else about Petitioner's PRPM™ raises concerns with you?**

5 A: The GARCH coefficients are not published by independent sources. AUS
6 estimates its GARCH coefficients. Thus, it is difficult to verify if AUS's
7 calculations are accurate and reasonable. Conversely, there are multiple sources
8 of published betas that can be scrutinized.

9 Next, by definition the market has a beta of 1.0 and inferences can be
10 made about a company's risk based on its beta. The market does not have a
11 similar GARCH coefficient and no such inference can be made with regards to a
12 GARCH coefficient. *See* Petitioner's response to OUCC DR 7-8, Attachment
13 ERK-17.

14 Moreover, the company specific GARCH coefficients by themselves do
15 not provide an investor with information about risk and required return. For
16 example, Ms. Ahern estimates California Water Services has a GARCH of 1.798.
17 But that does not provide investors information about California Water Services'
18 risk. California Water Services has a beta of 0.60 and an investor is able to assess
19 risk based on their beta. Because the GARCH coefficient does not provide
20 similar information it makes the model and its results less transparent. It is also
21 more difficult to question whether an estimated GARCH is credible (may be an
22 outlier) for a specific company or index. Conversely, if the published beta for a
23 water company suddenly increased to 1.5 and did so without explanation, that

1 change can be investigated and a determination can be made whether the beta is
2 representative or not. No similar investigation or determination can be
3 undertaken for GARCH coefficients.

4 **Q: Are you aware of any regulatory jurisdictions that have commented on the**
5 **PRPM™?**

6 A: Yes. On page 11 of its Final Order in Maine Water Company-Camden &
7 Rockland Division, Docket No. 2013-00362 (Order dated March 25, 2014), the
8 Maine Public Service Commission stated as follows:

9 > We are not convinced that we should accept results based on a
10 > newly derived analytical model that has not yet been rigorously
11 > vetted. As acknowledged by Ms. Ahern, the PRPM™ model is one
12 > that was developed by her consulting firm Associated Utility
13 > Services (AUS) and has been used only by AUS cost of equity
14 > consultants since 2012. January 14, 2014 Tr. at 37. To the best of
15 > Ms. Ahern's knowledge, no other utility cost of capital consultants
16 > uses the PRPM™ methodology and no state commission has
17 > adopted it. January 14, 2014 Tr. at 39-40. As stated by Mr. Hill,
18 > the model does not easily lend itself to analysis and independent
19 > verification of accuracy. At this point, we are not prepared to
20 > incorporate the results of the analysis using the PRPM™ inputs
21 > into our determination of an appropriate ROE in this case. This
22 > does not however preclude us from future reliance once the model
23 > is fully vetted by academia and other regulatory bodies.

24 I generally agree with the Maine Commission's finding on the PRPM™
25 methodology, and the PRPM™ should not be used in this case either.

C. Adjusted Total Market Approach

1. Introduction

26 **Q: Please discuss Ms. Ahern's Risk Premium model using an Adjusted Total**
27 **Market Approach.**

28 A: Based on her "Adjusted Total Market Approach," Ms. Ahern estimates a 9.86%
29 cost of equity. Her 9.86% cost of equity is based on a 5.25% "Adjusted

Prospective Bond Yield" and an equity risk premium of 4.61%. Ms. Ahern estimated a risk premium of 4.61% is described on Ahern Schedule 6, page 3. Ms. Ahern uses two approaches (Ahern, Schedule 6, page 7) to estimate her 4.61% risk premium. She estimates a "Beta Adjusted Equity Risk Premium" of 4.52% (Ahern Schedule 6, page 8) and an "Average of Historical and PRPM™ Equity Risk Premium" of 4.70% (Ahern, Schedule 6, page 11).

2. Beta Adjusted Equity Risk Premium

Q: How does Ms. Ahern estimate her "Beta Adjusted Equity Risk Premium" of 4.52%?

A: Ms. Ahern uses three methodologies to derive her "Beta Adjusted Equity Risk Premium." The first is based on data from Ibbotson and produces a 5.60% risk premium. The second is based on a PRPM™ and produces a risk premium of 9.26%. The third is based on data from Value Line's Summary Index and produces a risk premium of 4.53%.

Q: Briefly discuss your concerns with Ms. Ahern's Ibbotson Equity Risk premium of 5.60%.

A: As she describes in footnote (1) on her Schedule 6, page 8, this risk premium is based on the arithmetic mean historical monthly returns on large company common stocks from Ibbotson® SBBI® 2013 Valuation Yearbook - Market Results for Stocks, Bonds, Bills, and Inflation, minus the arithmetic mean monthly yield of Moody's Aaa and Aa corporate bonds from 1926 - 2012. (11.83% - 6.23% = 5.60%). As explained previously in my testimony, the sole reliance on an arithmetic mean calculation overstates an equity risk premium and

has been consistently rejected by this Commission. This risk premium is further overstated because it is based on income returns and not total returns.

Q: Briefly discuss your concerns with Ms. Ahern's Ibbotson risk premium that is based on a PRPM™ and produces a risk premium of 9.26%.

A: Ms. Ahern estimates a risk premium for large company stocks above Aaa bonds of 9.26%. Using Ms. Ahern's "Prospective Yield on Aaa Rated Corporate Bonds" of 5.11% (Ahern Schedule 6, page 3, Line 1), her estimated risk premium would produce an anticipated market return of 14.37%. An anticipated market return of 14.37% far exceeds the average historical return on large company stocks. As noted above, the arithmetic mean return on large company stocks is 11.83%. It is unreasonable to assume an anticipated market return for large company stocks that exceeds the historical arithmetic mean return by 250 basis points. Moreover, the arithmetic mean return on large company stocks is itself overstated, exceeds investor expectations and exceeds the geometric mean return of 9.80% (2012 data) by approximately 200 basis points.

Q: Briefly discuss your concerns with Ms. Ahern's risk premium based on Value Line's Summary Index and produces a risk premium of 4.53%.

A: The Value Line projected "Median Price Appreciation" relied on by Ms. Ahern is not a reliable estimate of market expectations. My concerns with Ms. Ahern's Value Line derived equity risk premium are more thoroughly described below in my discussion of her CAPM analyses.

3. Average of Historical and PRPM™ Equity Risk Premium

Q: How does Ms. Ahern estimate her "Average of Historical and PRPM™ Equity Risk Premium" of 4.70%?

A: Ms. Ahern averages her estimates a historical equity risk premium of 4.16% and an equity risk premium based on a PRPM™ of 5.24%.

Q: Briefly discuss your concerns with Ms. Ahern's her historical risk premium of 4.16%.

A: As noted above, her calculated return for the S&P Utility Index is based entirely on an arithmetic mean calculation and ignores the geometric mean. Ms. Ahern also uses income returns (yields) on Moody's A-Rated Public Utility bonds, and not total returns. Investors in utility bonds earn total returns, not just income returns. A risk premium should use total returns for both indexes and not mix total equity returns with bond income returns. Commission orders from prior Indiana-American rate cases support the use of total returns over income returns to estimate a risk premium, see *infra*.

Q: Briefly discuss your concerns with Ms. Ahern's "Forecasted Equity Risk Premium Based on PRPM™" of 5.24%.

A: My previously stated concerns regarding the PRPM™ - that the estimated risk premium relies exclusively on an arithmetic mean calculation and on income returns - also apply here.

4. General Concerns with Adjusted Total Market Approach

Q: Please discuss concerns that affect Ms. Ahern's Adjusted Total Market Approach risk premium that is not specific to the sub models.

A: Line 1, of of her Schedule 6, page 3 shows that she uses a "Prospective Yield on Aaa Rated Corporate Bonds" of 5.11%. Ms. Ahern's testimony (Schedule 6, page 9) also illustrated that the current yield on Aaa rated bonds was only 4.65%. Ms.

Ahern's use of projected bond yields compared to current bonds yields overstates the results of her Risk Premium analyses. Sub-section E of my testimony (Capital Asset Pricing Model) explains why I believe it is appropriate to use current interest rates and inappropriate to use forecasted interest rates to estimate cost of equity.

XIII. MS. AHERN'S CAPM ANALYSIS

A. Introduction to Ms. Ahern's CAPM analysis

Q: Please summarize your disagreements with Ms. Ahern's CAPM analysis.

A: Ms. Ahern's CAPM analysis produces an unadjusted estimated cost of equity of 9.80% (Ahern Schedule 7, page 1 of 2). Ms. Ahern uses both a traditional CAPM and an Empirical or ECAPM analysis. Ms. Ahern's CAPM analysis relies on an estimated market risk premium of 7.41%. I disagree with Ms. Ahern's estimated risk premium, her use of the Empirical or ECAPM formula, and her use of forecasted interest rates.

B. Market Risk Premium

Q: Please discuss how Ms. Ahern estimated her 7.41% market risk premium (Ahern Schedule 7, page 2 of 2), for her utility proxy group current bond yield model.

A: Ms. Ahern uses three methodologies to estimate a market risk premium. The first methodology relies on Value Line's median price appreciation potential and produces an estimated market risk premium of 5.31%. The second methodology uses AUS's PRPM™ on large company stocks vs. income returns of long-term US Government Securities and produces a risk premium of 10.36%. The third methodology calculates an arithmetic mean from Ibbotson based on total market

returns and income returns on long-term U.S. Treasury Securities and produces a risk premium of 6.55%.

Q: Do you agree with Ms. Ahern's methodologies to estimate a risk premium?

A: No. Each of these methodologies contains flaws and overstates cost of equity.

1. Value Line Methodology

Ms. Ahern's Value Line analysis produces an anticipated market return of 9.64%. This analysis relies on a 3-5 year Median Price Appreciation Potential (MPAP) of 34% and an Estimated Median Dividend Yield of 2.05%. While an anticipated market return of 9.64% is not unreasonable, Value Line's estimated MPAP is quite volatile and is an unreliable measure to forecast either current or long-term market expectations. For example, during the 13 weeks (September 13, 2013 – December 6, 2013) that Ms. Ahern used to calculate her average MPAP, Value Line's MPAPs dropped from 45% to 30%. Using a four year return as Ms. Ahern does, a change in the MPAP of 15% (45% - 30% = 15%) would change the estimated market risk premium by more than 350 basis points ($1.15^{\wedge 0.25}$ - 1 = 3.56%). Absent highly unusual circumstances, the estimated market risk premium should not change that dramatically over such a short period of time. Moreover, Value Line's forecast is an intermediate term forecast and is not intended to be a long term forecast.

Next, Ms. Ahern's use of Value Line's 2.05% Estimated Median Dividend Yield is inappropriate because it includes only yields from dividend paying stocks. Ms. Ahern's testimony does not explain why it is appropriate to use a dividend yield for the market that excludes non-dividend paying stocks, while the

estimated MPAP includes both dividend and non-dividend paying stocks. By excluding non-dividend paying stocks (all with zero yields), the Value Line Median Estimated Dividend Yield is higher than it would be if all of the stocks in the Value Line Universe were included. The Value Median Price Appreciation Potential and the Median Estimated Dividend Yield come from two different groups of stocks. It is inappropriate to combine them to create an estimated market return.

2. PRPM™

Ms. Ahern uses a PRPM™ to estimate a market risk premium of 10.36%. Assuming a projected risk-free rate of 4.33% (Ahern Schedule 7, page 2, note 2) Ms. Ahern's estimated market risk premium of 10.30% would estimate a total market return of 14.69%. A forecasted market return of 14.69% far exceeds historical market returns and is unreasonable, especially considering the low forecasted inflation rates.

Moreover, Ms. Ahern's estimated risk premium uses arithmetic mean monthly market returns. As explained above, this Commission has consistently rejected risk premium estimations based exclusively on an arithmetic mean return calculation. Additionally, her calculation uses "income returns" and not total returns. Using income returns is inappropriate because, investors are subject to total returns.

3. Ibbotson Arithmetic Mean

Ms. Ahern relies on the arithmetic mean total market return of 11.83% less the arithmetic mean of income returns on long-term U.S. Treasury Securities of 5.28% to produce an estimated risk premium of 6.55%. The Commission has consistently rejected risk premiums based solely on an arithmetic mean calculation and as explained above has also rejected the use of income returns.

Q: When mutual funds advertise historical return data regarding a fund's past performance, are they required by the SEC to use a geometric mean calculation?

A: It is my understanding that the U.S. Securities and Exchange Commission (SEC) requires funds to compute and report total returns based upon a standardized formula—so called "SEC Standardized total return." According to form N-1A "Registration Form Used by Open-End Management Investment Companies" Sample Form and Instructions, the following formula is used:

$P(1+T)^n = ERV$, Where:

P = a hypothetical initial payment of $1,000.

T = average annual total return.

n = number of years.

ERV = ending redeemable value of a hypothetical $1,000 payment made at the beginning of the 1-, 5-, or 10-year periods at the end of the 1-, 5-, or 10-year periods (or fractional portion).

This formula is a geometric mean calculation and further supports using both the geometric and arithmetic mean return.