

**Direct Testimony**  
**of**  
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Finance Department  
Financial Analysis Division  
Illinois Commerce Commission

Proposed General Increase Rates for Delivery Service  
North Shore Gas Company and The Peoples Gas Light and Coke Company

Docket Nos. 14-0224 and 14-0225  
(Consolidated)

July 2, 2014

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**Witness Identification**

**Q. Please state your name and business address.**

A. My name is Janis Freetly. My business address is 527 East Capitol Avenue, Springfield, Illinois 62701.

**Q. What is your current position with the Illinois Commerce Commission (“Commission”)?**

A. I am currently employed as a Senior Financial Analyst in the Finance Department of the Financial Analysis Division.

**Q. Please describe your qualifications and background.**

A. In May of 1995, I earned a Bachelor of Business degree from Western Illinois University. I received a Master of Business Administration degree, with a concentration in Finance, from Western Illinois University in May of 1998. I have been employed by the Commission in my present position since September of 1998. I was promoted to Senior Financial Analyst on August 31, 2001.

**Q. What is the purpose of your testimony in this proceeding?**

A. The purpose of my testimony and the accompanying schedules is to present my analysis of a fair rate of return on rate base, including the cost of common equity, for North Shore Gas Company (“North Shore” or “NS”) and The Peoples Gas Light and Coke Company (“Peoples Gas” or “PGL”) (collectively, the “Companies”). In addition, I will respond to the direct testimony of Lisa J. Gast (NS and PGL Exhibit 2.0.) and Paul R. Moul (NS and PGL Exhibit 3.0.).

22 **Cost of Capital**

23 **Q. Please summarize your conclusions.**

24 A. I recommend an overall cost of capital of 6.32% for North Shore and 6.55% for  
25 Peoples Gas. Those estimates incorporate my recommended cost of common  
26 equity of 9.06% for both companies. The overall costs of capital for the  
27 Companies are shown on Schedule 3.01.

28 **Q. Why must one determine an overall cost of capital for a public utility?**

29 A. Under the traditional regulatory model, ratepayer and shareholder interests are  
30 balanced when the Commission authorizes a rate of return on rate base equal to  
31 the public utility's overall cost of capital, as long as that overall cost of capital is  
32 not unnecessarily expensive. If the authorized rate of return on rate base  
33 exceeds the overall cost of capital, then ratepayers bear the burden of excessive  
34 prices. Conversely, if the authorized rate of return on rate base is lower than the  
35 overall cost of capital, the financial strength of the utility could deteriorate, making  
36 it difficult for the utility to raise capital at a reasonable cost. Ultimately, the  
37 utility's inability to raise sufficient capital would impair service quality. Therefore,  
38 ratepayer interests are served best when the authorized rate of return on rate  
39 base equals the utility's overall cost of capital.

40 In authorizing a rate of return on rate base equal to the overall cost of capital, all  
41 costs of service are assumed reasonable and accurately measured, including the  
42 costs and balances of the components of the capital structure. If unreasonable  
43 costs continue to be incurred, or if any reasonable cost of service component is

44 measured inaccurately, then the allowed rate of return on rate base will not  
45 balance ratepayer and investor interests.

46 **Q. Please define the overall cost of capital for a public utility.**

47 A. The overall cost of capital for a public utility equals the sum of the costs of the  
48 components of the capital structure (i.e., debt, preferred stock, and common  
49 equity) after weighing each by its proportion to total capital.

50 **Capital Structure**

51 **Q. What capital structure did the Companies propose for setting rates?**

52 A. North Shore proposes using a forecasted average 2015 capital structure that  
53 contains 8.97% short-term debt, 40.62% long-term debt, and 50.41% common  
54 equity. Peoples Gas proposes using a forecasted average 2015 capital structure  
55 that contains 4.81% short-term debt, 44.88% long-term debt, and 50.31%  
56 common equity. (NS Schedule D-1; PGL Schedule D-1.)

57 **Q. Are the Companies' proposed forecasted average 2015 capital structures  
58 reasonable for setting rates for North Shore and Peoples Gas?**

59 A. Yes. Given current investor perceptions of the Companies' operating risk seen  
60 through the filter of the credit rating agencies, the proposed capital structures  
61 presented in NS Schedule D-1 and PGL Schedule D-1 reasonably balance the  
62 cost advantage of tax deductible interest expense that comes from employing  
63 debt as a source of capital against the financial strength needed to raise capital

64 under most capital market conditions that comes from employing common equity  
65 as a source of capital.

66 **Cost of Short-term Debt**

67 **Q. Do you agree with the cost of short-term debt proposed by each of the**  
68 **Companies?**

69 A. No. Ms. Gast relied on forecasted commercial paper rates to estimate the cost of  
70 short-term debt for each of the Companies. However, the Companies' interest  
71 rate forecasts have not been accurate. For example, in its 2011 rate cases, the  
72 Companies forecasted that the 30-day A-2/P-2 commercial paper rate would  
73 average 1.95% in 2012.<sup>1</sup> In contrast, the 30-day A-2/P-2 commercial paper rate  
74 averaged 0.46% that year,<sup>2</sup> which changed little from the January 2011 rate of  
75 0.38%. In its 2012 rate cases, the Companies forecasted that the 30-day A-2/P-  
76 2 commercial paper rate would average 0.79% in 2013.<sup>3</sup> In contrast, the 30-day  
77 A-2/P-2 commercial paper rate averaged 0.30% that year,<sup>4</sup> even lower than the  
78 March 2012 rate of 0.45%.<sup>5</sup> Hence, the best indicator of a future interest rate is  
79 the most recent interest rate, which I have used to estimate the short-term  
80 interest rate on the planned 2014 and 2015 issuances of short-term debt. Ms.  
81 Gast's proposal to base the cost of new short-term debt issues on interest rate  
82 forecasts should be rejected.

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<sup>1</sup> Docket Nos. 11-0280/11-0281 Consol., PGL WPD-2(2).

<sup>2</sup> <http://www.federalreserve.gov/releases/cp/rates.htm>

<sup>3</sup> Docket Nos. 12-0511/12-0512 Consol., PGL WPD-2(2).

<sup>4</sup> <http://www.federalreserve.gov/releases/cp/rates.htm>

<sup>5</sup> Docket Nos. 12-0511/12-0512 Consol., PGL WPD-2(2).

83 **Q. What is the cost of short-term debt for each Company?**

84 A. The cost of short-term debt is 0.85% for North Shore and 0.66% for Peoples  
85 Gas. North Shore's 2015 short-term debt projection consists of intercompany  
86 loans from Peoples Gas and Integrys Energy Group, Inc. ("Integrys Energy  
87 Group"), the rate on which is based on comparable commercial paper rates. (NS  
88 Schedule D-2 and WPD-2.) Peoples Gas' 2015 short-term debt projection  
89 consists of commercial paper and intercompany loans from North Shore and  
90 Integrys Energy Group, the rate on both of which is the commercial paper rate at  
91 the time of borrowing. (PGL Schedule D-2 and WPD-2.) To estimate North  
92 Shore's and Peoples Gas' cost of short-term debt, first, I converted the June 12,  
93 2014, 0.24% discount rate on 30-day, A2/P2 nonfinancial commercial paper into  
94 an annual yield of 0.24% using the following formula:<sup>6</sup>

$$Annual\ yield = \left( \frac{discount\ rate \times \left( \frac{days\ to\ maturity}{360} \right)}{1 - discount\ rate \times \left( \frac{days\ to\ maturity}{360} \right)} \right) \times \left( \frac{365}{days\ to\ maturity} \right)$$

95  
96 Then, I added the annual percentage cost of bank commitment fees to the  
97 annual commercial paper yield. North Shore has approximately \$108,000 in  
98 fees. I divided that amount by the average 2015 balance of short-term debt  
99 projected to be outstanding, \$17,615,000, to derive the cost of commitment fees  
100 in percentage terms. Adding the resulting 61 basis points to the 0.24%  
101 commercial paper yield produces a cost of short-term debt for North Shore of

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<sup>6</sup> Federal Reserve Board, *Commercial Paper Rates and Outstanding Summary*, [www.federalreserve.gov/release/cp/](http://www.federalreserve.gov/release/cp/), June 13, 2014.

102 0.85% (0.24% + 0.61% = 0.85%). Peoples Gas has approximately \$396,000 in  
103 fees. I divided that amount by the average 2015 balance of short-term debt  
104 projected to be outstanding, \$95,233,000, to derive the cost of commitment fees  
105 in percentage terms. Adding the resulting 42 basis points to the 0.24%  
106 commercial paper yield produces a cost of short-term debt for Peoples Gas of  
107 0.66% (0.24% + 0.42% = 0.66%).

### 108 **Cost of Long-term Debt**

109 **Q. What is North Shore's embedded cost of long-term debt?**

110 A. As shown on NS Ex. 2.3, North Shore's embedded cost of long-term debt for  
111 average 2015 equals 4.13%. (NS Ex. 2.0, 7.)

112 **Q. What is Peoples Gas's embedded cost of long-term debt?**

113 A. As shown on Schedule 3.02P, Peoples Gas's embedded cost of long-term debt  
114 for average 2015 equals 4.36%.

115 **Q. What adjustments did you make to the embedded cost of long-term debt  
116 presented by Peoples Gas?**

117 A. I adjusted the interest rates on the new 2014 and 2015 series to reflect the most  
118 recent yields on A-rated municipal and corporate bonds. For the new tax-exempt  
119 issues, The Vanguard Group ("Vanguard") indicates that the current yields on 15-  
120 year and 20-year A-rated municipal bonds are 3.42% and 3.76%, respectively.<sup>7</sup> I  
121 adjusted the Vanguard bond yields on A-rated municipal bonds for the difference

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<sup>7</sup> Vanguard – Bond yields, <https://personal.vanguard.com/us/FundsBondsMarketSummaryTable>, June 11, 2014.

122 in years to maturity on the proposed new issues. Since the new bonds will have  
123 terms to maturity between 15 and 20 years, I calculated the average incremental  
124 yield for each year by dividing the difference between the 3.76% yield on the 20-  
125 year bonds and the 3.42% yield on the 15-year bonds, or 0.34%, by the  
126 difference in years ( $20-15 = 5$ ) to estimate the 0.07% additional yield required for  
127 each year after year 15. For the planned July 1, 2014 issuance, I used an  
128 interest rate of 3.49% to reflect a sixteen-year term to maturity ( $3.42\% + 0.07\%$ )  
129 instead of the 5.05% forecasted interest rate that Peoples Gas proposed. For  
130 the planned August 1, 2015 issuance, I used an interest rate of 3.62% to reflect  
131 an eighteen-year term to maturity ( $3.42\% + (0.07\% \times 3)$ ) instead of the 5.85%  
132 forecasted interest rate that Peoples Gas proposed.

133 For the planned 30-year bond issuances, Peoples Gas used forecasted interest  
134 rates of 5.50% for the planned October 1, 2014 issuance and 6.40% for the  
135 planned October 1, 2015 issuance. I used the current yield on 30-year A-rated  
136 corporate bonds of 4.66%.

137 As explained previously, the best indicator of a future interest rate is the most  
138 recent interest rate, which I have used to estimate the interest rate on the  
139 planned 2014 and 2015 issuances of long-term debt. Ms. Gast's proposal to  
140 base the cost of new long-term debt issues on interest rate forecasts should be  
141 rejected.

142 **Cost of Common Equity**

143 **Q. What is your estimate of the Company's cost of common equity?**

144 A. My analysis indicates that the cost of common equity for North Shore and  
145 Peoples Gas is 9.06%.

146 **Q. How did you measure the investor-required rates of return on common  
147 equity for the Companies?**

148 A. To estimate the cost of common equity for North Shore and Peoples Gas, I  
149 began with the data that Mr. Moul used in his DCF and CAPM analyses, but  
150 corrected the most significant flaws in those analyses. I applied both models to  
151 Mr. Moul's sample, which I hereafter refer to as the "Delivery Group."

152 **Discounted Cash Flow ("DCF") Analysis**

153 **Q. Please describe the general concept of the DCF analysis.**

154 A. For a utility to attract common equity capital, it must provide a rate of return on  
155 common equity sufficient to meet investor requirements. DCF analysis  
156 establishes a rate of return directly from investor requirements. Implementation  
157 of a DCF analysis does not require a direct measurement of a utility's operating  
158 and financial risks since the market price of a utility's stock already embodies the  
159 market consensus of those risks.

160 According to DCF theory, a security price equals the present value of the cash  
161 flow investors expect it to generate. Specifically, the market value of common

162 stock equals the cumulative value of the expected stream of future dividends  
163 after each dividend is discounted by the investor-required rate of return.

164 **Q. How did you utilize Mr. Moul's data in your DCF analysis?**

165 A. I used Mr. Moul's Delivery Group to conduct my DCF analysis. I also used Mr.  
166 Moul's growth rate estimates to derive the 4.77% average growth rate for the  
167 Delivery Group. (NS and PGL Ex. 3.8.) Instead of relying on the 6-month  
168 average dividend yield that Mr. Moul used for the Delivery Group, I used the  
169 closing stock prices as of October 31, 2013, and the last four dividend payments  
170 for each company in the Delivery Group.

171 **Q. How did you derive the 4.77% growth rate that you used in your DCF  
172 analysis?**

173 A. To derive the 4.77% growth rate, I used the average of the growth rates from  
174 I/B/E/S First Call, Zacks, Morningstar, and Value Line, as presented by Mr. Moul  
175 on NS and PGL Ex. 3.8. In order to give equal weight to each growth rate  
176 source, I first calculated the average Value Line growth projection by averaging  
177 the five Value Line growth rates presented by Mr. Moul. I then computed the  
178 average of the growth rates from I/B/E/S First Call, Zacks, Morningstar, and the  
179 average Value Line growth projection.

180 **Q. Why did you measure the stock price on October 31, 2013?**

181 A. A current stock price reflects all information that is available and relevant to the  
182 market; thus, it represents the market's assessment of the common stock's

183 current value. I measured each company's current stock price with its closing  
184 market price from October 31, 2013, because it was the end of the measurement  
185 period for the dividend yield calculated by Mr. Moul. This allows for a more direct  
186 comparison to Mr. Moul's DCF results. The stock prices for the companies in the  
187 Delivery Group appear on Schedule 3.03.

188 Since stock prices reflect the market's concurrent expectation of the cash flows  
189 the securities will produce and the rate at which those cash flows are discounted,  
190 an observed change in the market price does not necessarily indicate a change  
191 in the required rate of return on common equity. Rather, a price change may  
192 reflect investors' re-evaluation of the expected dividend growth rate. In addition,  
193 stock prices change with the approach of dividend payment dates.

194 Consequently, when estimating the required return on common equity with the  
195 DCF model, one should measure the expected dividend yield and the  
196 corresponding expected growth rate concurrently. Using a historical stock price  
197 along with current growth expectations, as Mr. Moul has done, or combining an  
198 updated stock price with past growth expectations would likely produce an  
199 inaccurate estimate of the market-required rate of return on common equity.

200 **Q. How did you estimate the expected future quarterly dividends?**

201 A. Most utilities declare and pay the same dividend per share for four consecutive  
202 quarters before adjusting the rate. Consequently, I assumed the current  
203 declared dividend rate will remain in effect for a minimum of four quarters and  
204 then adjust during the same quarter it changed during the preceding year; if the

205 utility did not change its dividend during the last year, I assumed the rate would  
206 change during the next quarter. The average expected growth rate was applied  
207 to the current declared dividend rate to estimate the expected dividend rate. For  
208 the Delivery Group, Schedule 3.03 presents the quarterly dividends for the prior  
209 year and Schedule 3.04 presents the expected quarterly dividends for the coming  
210 year.

211 **Q. Based on your DCF analysis, what is the estimated required rate of return**  
212 **on common equity for the Delivery Group?**

213 A. My DCF analysis estimates a required rate of return on common equity of 8.84%  
214 for the Delivery Group, as shown on Schedule 3.05. The DCF estimates for the  
215 Delivery Group are derived from the growth rates presented on NS and PGL Ex.  
216 3.8, the stock price and dividend payment dates presented on Schedule 3.03,  
217 and the expected quarterly dividends presented on Schedule 3.04.

218 **Capital Asset Pricing Model**

219 **Q. Please describe the CAPM.**

220 A. The Capital Asset Pricing Model ("CAPM") is a one-factor risk premium model  
221 that mathematically depicts the relationship between risk and return as:

222 
$$R_j = R_f + \beta_j \times (R_m - R_f)$$

where  $R_j$   $\equiv$  the required rate of return for security  $j$ ;

$R_f$   $\equiv$  the risk-free rate;

$R_m$   $\equiv$  the expected rate of return for the market portfolio; and

$\beta_j$   $\equiv$  the measure of market risk for security  $j$ .

223 In the CAPM, the risk factor is market risk, which is defined as risk that cannot be  
224 eliminated through portfolio diversification. To implement the CAPM, one must  
225 estimate the risk-free rate of return, the expected rate of return on the market  
226 portfolio, and a security or portfolio-specific measure of market risk.

227 The CAPM is based on the theory that the market-required rate of return for a  
228 given risk-bearing security equals the risk-free rate of return<sup>8</sup> plus a risk premium  
229 that investors expect in exchange for assuming the risk associated with that  
230 security. Mathematically, a risk premium equals the difference between the  
231 expected rate of return on a risk factor and the risk-free rate. If the risk of a  
232 security is measured relative to a portfolio, then multiplying that relative measure  
233 of risk and the portfolio's risk premium produces a security-specific risk premium  
234 for that risk factor.

235 The CAPM methodology is consistent with the theory that investors are risk-  
236 averse. That is, investors require higher returns to accept greater exposure to  
237 risk. Thus, if investors had an opportunity to purchase one of two securities with  
238 equal expected returns, they would purchase the security with less risk.  
239 Conversely, if investors had an opportunity to purchase one of two securities with  
240 equal risk, they would purchase the security with the higher expected return. In

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<sup>8</sup> The risk-free rate of return is the rate of return on an investment with zero risk. This represents the absolute minimum return an investor demands as compensation for deferring consumption.

241 equilibrium, two securities with equal quantities of risk have equal required rates  
242 of return.

243 **Q. How did you estimate the risk-free rate of return?**

244 A. I examined the suitability of the yields on four-week U.S. Treasury bills and thirty-  
245 year U.S. Treasury bonds as estimates of the risk-free rate of return.

246 **Q. Why did you examine the yields on U.S. Treasury bills and bonds as**  
247 **measures of the risk-free rate?**

248 A. The proxy for the nominal risk-free rate should contain no risk premium and  
249 reflect similar inflation and real risk-free rate expectations to the security being  
250 analyzed through the risk premium methodology.<sup>9</sup> The yields of fixed income  
251 securities include premiums for default and interest rate risk. Default risk  
252 pertains to the possibility of default on principal or interest payments. Securities  
253 of the United States Treasury are virtually free of default risk by virtue of the  
254 federal government's fiscal and monetary authority. Interest rate risk pertains to  
255 the effect of unexpected interest rate fluctuations on the value of securities.

256 Since common equity theoretically has an infinite life, its market-required rate of  
257 return reflects the inflation and real risk-free rates anticipated to prevail over the  
258 long run. U.S. Treasury bonds, the longest term treasury securities, are issued  
259 with terms to maturity of thirty years;<sup>10</sup> U.S. Treasury notes are issued with terms

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<sup>9</sup> Real risk-free rate and inflation expectations comprise the non-risk portion of a security's rate of return.

<sup>10</sup> In February 9, 2006, the U.S. Department of Treasury resumed the issuance of 30-year U.S. Treasury Bonds.

260 to maturity ranging from two to ten years; U.S. Treasury bills are issued with  
261 terms to maturity ranging from four weeks to fifty-two weeks. Therefore, U.S.  
262 Treasury bonds are more likely to incorporate within their yields the inflation and  
263 real risk-free rate expectations that drive, in part, the prices of common stocks  
264 than either U.S. Treasury notes or Treasury bills.

265 However, due to relatively long terms to maturity, U.S. Treasury bond yields also  
266 contain an interest rate risk premium that diminishes their usefulness as  
267 measures of the risk-free rate. U.S. Treasury bill yields contain a smaller  
268 premium for interest rate risk. Thus, in terms of interest rate risk, U.S. Treasury  
269 bill yields more accurately measure the risk-free rate.

270 **Q. Given that the inflation and real risk-free rate expectations reflected in the**  
271 **yields on U.S. Treasury bonds and the prices of common stocks are**  
272 **similar, does it necessarily follow that the inflation and real risk-free rate**  
273 **expectations that are reflected in the yields on U.S. Treasury bills and the**  
274 **prices of common stocks are dissimilar?**

275 A. No. To the contrary, short and long-term inflation and real risk-free rate  
276 expectations, including those that are reflected in the yields on U.S. Treasury  
277 bills, U.S. Treasury bonds, and the prices of common stocks, should be equal  
278 over time. Any other assumption implausibly implies that the real risk-free rate  
279 and inflation is expected to systematically and continuously rise or fall.  
280 Although expectations for short and long-term real risk-free rates and inflation  
281 should equal over time, in finite time periods, short- and long-term expectations

282 may differ. Short-term interest rates tend to be more volatile than long-term  
283 interest rates.<sup>11</sup> Consequently, over time U.S. Treasury bill yields are less biased  
284 (i.e., more accurate) but less reliable (i.e., more volatile) estimators of the long-  
285 term risk-free rate than U.S. Treasury bond yields. In comparison, U.S. Treasury  
286 bond yields are more biased (i.e., less accurate) but more reliable (i.e., less  
287 volatile) estimators of the long-term risk-free rate. Therefore, an estimator of the  
288 long-term nominal risk-free rate should not be chosen mechanistically. Rather,  
289 the similarity in current short- and long-term nominal risk-free rates should be  
290 evaluated. If those risk-free rates are similar, then U.S. Treasury bill yields  
291 should be used to measure the long-term nominal risk-free rate. If not, some  
292 other proxy or combination of proxies should be used.

293 **Q. What are the current yields on four-week U.S. Treasury bills and thirty-year**  
294 **U.S. Treasury bonds?**

295 A. Four-week U.S. Treasury bills are currently yielding 0.03%. Thirty-year U.S.  
296 Treasury bonds are currently yielding 3.66%. Both estimates are derived from  
297 quotes for October 31, 2013.<sup>12</sup> Schedule 3.06 presents the published quotes  
298 and effective yields.

299 **Q. Of the U.S. Treasury bill and bond yields, which is currently a better proxy**  
300 **for the long-term risk-free rate?**

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789. <sup>11</sup> Fabozzi and Fabozzi, ed., *The Handbook of Fixed Income Securities*, Fourth Edition, Irwin, p.

<sup>12</sup> The Federal Reserve Board, *Selected Interest Rates (Daily) – H.15*, [www.federalreserve.gov](http://www.federalreserve.gov).

301 A. In terms of the gross domestic product (“GDP”) price index, the Energy  
302 Information Administration (“EIA”) forecasts the annual inflation rate will average  
303 1.7% during the 2013-2040 period.<sup>13</sup> In comparison, Global Insight forecasts that  
304 annual GDP price inflation will average 1.8% during the 2013-2043 period.<sup>14</sup> In  
305 terms of the Consumer Price Index (“CPI”), the *Survey of Professional*  
306 *Forecasters* (“*Survey*”) forecasts that inflation rate will average 2.2% during the  
307 next ten years.<sup>15</sup> Although EIA, Global Insight and the *Survey* do not forecast the  
308 real risk-free rate, they do forecast real GDP growth, which is a proxy for the real  
309 risk-free rate. EIA forecasts real GDP growth will average 2.6% during the 2013-  
310 2040 period.<sup>16</sup> Global Insight forecasts real GDP growth will average 2.5%  
311 during the 2013-2043 period.<sup>17</sup> The *Survey* forecasts real GDP growth will  
312 average 2.6% during the next ten years.<sup>18</sup> Those forecasts imply a long-term,  
313 nominal risk-free rate between 4.3% and 4.8%.<sup>19</sup> Therefore, EIA, Global Insight,  
314 and *Survey* forecasts of inflation and real GDP growth expectations suggest that,

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<sup>13</sup> Energy Information Administration, *Annual Energy Outlook 2013*, Table A20. Macroeconomic Indicators, [www.eia.doe.gov/oiaf/aeo/](http://www.eia.doe.gov/oiaf/aeo/), July 2012.

<sup>14</sup> Global Insight, *The U.S. Economy: The 30-Year Focus, Third Quarter 2013*, Table 1: Summary of the U.S. Economy.

<sup>15</sup> Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, Third Quarter 2013, [www.phil.frb.org/files/spf/survq403.html](http://www.phil.frb.org/files/spf/survq403.html), August 16, 2013. The *Survey* aggregates the forecasts of approximately fifty forecasters.

<sup>16</sup> Energy Information Administration, *Annual Energy Outlook 2013*, Table A20. Macroeconomic Indicators, [www.eia.doe.gov/oiaf/aeo/](http://www.eia.doe.gov/oiaf/aeo/), December 2012.

<sup>17</sup> Global Insight, *The U.S. Economy: The 30-Year Focus, Third Quarter 2013*, Table 1: Summary of the U.S. Economy.

<sup>18</sup> Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, First Quarter 2013, [www.phil.frb.org/files/spf/survq403.html](http://www.phil.frb.org/files/spf/survq403.html), February 15, 2013.

<sup>19</sup> Nominal interest rates are calculated as follows:

$$r = (1 + R) \times (1 + i) - 1.$$

where  $r$  ≡ nominal interest rate;  
 $R$  ≡ real interest rate; and  
 $i$  ≡ inflation rate.

315 currently, the U.S. Treasury bond yield of 3.66% more closely approximates the  
316 long-term risk-free rate. It should be noted, however, that the U.S. Treasury  
317 bond yield is an upwardly biased estimator of the long-term risk-free rate due to  
318 the inclusion of an interest rate risk premium associated with its relatively long  
319 term to maturity.

320 **Q. How was the expected rate of return on the market portfolio estimated?**

321 A. The expected rate of return on the market was estimated by conducting a DCF  
322 analysis on the firms composing the S&P 500 Index ("S&P 500") as of  
323 September 30, 2013. That analysis used dividend information and closing  
324 market prices reported by Zacks Research Wizard and in the October 2013  
325 edition of *S&P Security Owner's Stock Guide*. October 1, 2013, growth rate  
326 estimates were also obtained primarily from Zacks and secondarily from  
327 Reuters.<sup>20</sup> Firms not paying a dividend as of September 30, 2013, or for which  
328 neither Zacks nor Reuters growth rates were available were eliminated from the  
329 analysis. The resulting company-specific estimates of the expected rate of return  
330 on common equity were then weighted using market value data from Zacks  
331 Research Wizard. The estimated weighted average expected rate of return for  
332 the remaining 413 firms, composing 86.86% of the market capitalization of the  
333 S&P 500, equals 12.43%.

334 **Q. How did you measure market risk on a security-specific basis?**

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<sup>20</sup> Growth rates were obtained from Reuters only if unavailable from Zacks.

335 A. Beta measures risk in a portfolio context. When multiplied by the market risk  
336 premium, a security's beta produces a market risk premium specific to that  
337 security. To estimate the beta of the Delivery Group, I supplemented Mr. Moul's  
338 Value Line betas with the Zacks betas and betas calculated using a regression  
339 analysis that the Commission has routinely adopted for the CAPM.

340 Value Line estimates beta for a security with the following model using an  
341 ordinary least-squares technique:<sup>21</sup>

342 
$$R_{j,t} = a_j + \beta_j \times R_{m,t} + e_{j,t}$$

where  $R_{j,t}$   $\equiv$  the return on security  $j$  in period  $t$ ,

$R_{m,t}$   $\equiv$  the return on the market portfolio in period  $t$ ,

$a_j$   $\equiv$  the intercept term for security  $j$ ;

$\beta_j$   $\equiv$  beta, the measure of market risk for security  $j$ ; and

$e_{j,t}$   $\equiv$  the residual term in period  $t$  for security  $j$ .

343 A beta can be calculated for firms with market-traded common stock. Value Line  
344 calculates its betas in two steps. First, the returns of each company are  
345 regressed against the returns of the New York Stock Exchange Composite Index  
346 ("NYSE Index") to estimate a raw beta. The Value Line regression employs 259  
347 weekly observations of stock return data. Then, an adjusted beta is estimated  
348 through the following equation:

349 
$$\beta_{adjusted} = 0.35 + 0.67 \times \beta_{raw}.$$

---

<sup>21</sup> Statman, Meir, "Betas Compared: Merrill Lynch vs. Value Line", *The Journal of Portfolio Management*, Winter 1981.

350 The regression analysis applies an ordinary least-squares technique to the  
351 following model to estimate beta for a security or portfolio of securities:

352 
$$R_{j,t} - R_{f,t} = a_j + \beta_j \times (R_{m,t} - R_{f,t}) + e_{j,t}$$

where  $R_{j,t}$   $\equiv$  the return on security  $j$  in period  $t$ ,

$R_{f,t}$   $\equiv$  the risk-free rate of return in period  $t$ ,

$R_{m,t}$   $\equiv$  the return on the market portfolio in period  $t$ ,

$a_j$   $\equiv$  the intercept term for security  $j$ ;

$\beta_j$   $\equiv$  beta, the measure of market risk for security  $j$ ; and

$e_{j,t}$   $\equiv$  the residual term in period  $t$  for security  $j$ .

353 The regression analysis beta estimates for the Delivery Group were calculated in  
354 three steps. First, the U.S. Treasury bill return is subtracted from both the  
355 average percentage change in the sample's stock prices and the percentage  
356 change in the NYSE Index to estimate each portfolio's return in excess of the  
357 risk-free rate. Second, the excess returns of the Delivery Group were regressed  
358 against the excess returns of the NYSE Index to estimate a raw beta. The  
359 regression analysis employs sixty monthly observations of stock and U.S.  
360 Treasury bill return data. Third, the beta is adjusted through the following  
361 equation:

362 
$$\beta_{adjusted} = 0.33743 + 0.66257 \times \beta_{raw}$$

363 Like Staff's regression beta, Zacks employs 60 monthly observations in its beta  
364 estimation. However, Zacks betas regress stock returns against the S&P 500  
365 Index rather than the NYSE Index. Further, the beta estimates Zacks publishes  
366 are not adjusted (i.e., raw). Thus, I adjusted them using the same formula used  
367 to adjust the regression beta.

368 **Q. Why do you use an adjusted beta estimate?**

369 A. Some empirical tests of the CAPM suggest that the linear relationship between  
370 risk, as measured by raw beta, and return is flatter than the CAPM predicts. That  
371 is, securities with raw betas less than one tend to realize higher returns than the  
372 CAPM predicts. Conversely, securities with raw betas greater than one tend to  
373 realize lower returns than the CAPM predicts. Adjusting the raw beta estimate  
374 towards the market mean value of 1.0 results in a linear relationship between the  
375 beta estimate and realized return that more closely conforms to the CAPM  
376 prediction.<sup>22</sup> Securities with betas less than one are adjusted upwards, thereby  
377 increasing the predicted required rate of return towards observed realized rates  
378 of return. Conversely, securities with betas greater than one are adjusted  
379 downwards, thereby decreasing the predicted required rate of return towards  
380 observed realized rates of return.

381 **Q. What is the beta estimate for the Delivery Group?**

382 A. The Value Line, Zacks, and regression beta estimates for the Delivery Group  
383 average 0.69, 0.60, and 0.59, respectively, as shown in Table 1 below.

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<sup>22</sup> Litzenberger, Ramaswamy and Sosin, "On the CAPM Approach to the Estimation of a Public Utility's Cost of Equity Capital," *Journal of Finance*, May 1980, pp. 375-376.

**Table 1**

<u>Company</u>	Value Line Estimate	Zacks Estimate*	Regression Estimate
AGL Resources	0.75	0.62	0.64
Atmos Energy	0.70	0.68	0.64
Consolidated Edison	0.60	0.45	0.46
Laclede Group	0.60	0.44	0.47
New Jersey Resources	0.70	0.51	0.54
Northeast Utilities	0.75	0.62	0.55
Northwest Natural Gas	0.60	0.55	0.54
PEPCO Holdings	0.75	0.62	0.57
Piedmont Natural Gas	0.70	0.60	0.62
South Jersey Industries	0.65	0.57	0.55
Southwest Gas	0.75	0.82	0.75
UIL Holdings	0.75	0.80	0.77
WGL Holdings	0.65	0.52	0.51
Average	<u>0.69</u>	<u>0.60</u>	<u>0.59</u>

\* after adjustment

384 Since both the Zacks beta estimate (0.60) and the regression beta estimate  
385 (0.59) are calculated using monthly returns rather than weekly returns (as Value  
386 Line uses), I averaged those results to avoid over-weighting the monthly return-  
387 based betas. I then averaged that result with the Value Line beta (0.69), which  
388 produces a beta for the Delivery Group of 0.64.

389 **Q. What required rate of return on common equity does the risk premium**  
390 **model estimate for the Delivery Group?**

391 A. Inputting the risk-free rate, market return, and beta estimates discussed above,  
392 the CAPM estimates a required rate of return on common equity of 9.27% for the  
393 Delivery Group. The computation of that estimate appears on Schedule 3.06.

394 **Cost of Common Equity Recommendation**

395 **Q. Based on your entire analysis, what is your estimate of the required rate of**  
396 **return on the common equity for the Companies?**

397 A. A thorough analysis of the required rate of return on common equity requires  
398 both the application of financial models and the analyst's informed judgment. An  
399 estimate of the required rate of return on common equity based solely on  
400 judgment is inappropriate. Nevertheless, because techniques to measure the  
401 required rate of return on common equity necessarily employ proxies for investor  
402 expectations, judgment remains necessary to evaluate the results of such  
403 analyses. Along with DCF and risk premium analyses, I have considered the  
404 observable 4.30% rate of return the market currently requires on less risky A-  
405 rated utility long-term debt.<sup>23</sup> Based on my analysis, in my judgment, the  
406 investor-required rate of return on common equity for both North Shore and  
407 Peoples Gas equals 9.06%.

408 **Q. Please summarize how you estimated the investor-required rate of return**  
409 **on common equity for the natural gas distribution operations of the**  
410 **Companies.**

411 A. I estimated the investor required rate of return on common equity for the Delivery  
412 Group of 9.06%, which is a simple average of its DCF-derived results (8.84%)  
413 and risk-premium-derived results (9.27%). The models from which the company  
414 estimate was derived are correctly specified and thus contain no source of bias.

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<sup>23</sup> Value Line Investment Survey, *Selection & Opinion*, June 13, 2014, p. 4805,  
<http://www.valueline.com>.

415 Moreover, excepting the use of the U.S. Treasury bond yields as proxies for the  
416 long-term risk-free rate, I am unaware of bias in my proxy for investor  
417 expectations. In addition, measurement error has been minimized through the  
418 use of a sample, since estimates for a sample as a whole are subject to less  
419 measurement error than individual company estimates.

420 **Q. Did you compare the financial risk of the Delivery Group to North Shore**  
421 **and Peoples Gas?**

422 A. Yes. I compared the values for the four ratios that Moody's focuses on to assess  
423 the financial strength of gas and electric utilities: (1) funds from operations  
424 ("FFO") to interest coverage; (2) FFO to total debt; (3) retained cash flow ("RCF")  
425 to total debt coverage; and (4) debt to capitalization.<sup>24</sup> Each ratio was calculated  
426 as a 3-year average from 2010 through 2012. As can be seen by the Moody's  
427 Financial Guideline ratios at the top of Table 2, the higher the ratio for the FFO to  
428 interest coverage, FFO to total debt, and RCF to total debt coverage, the lower  
429 the financial risk. In contrast, the higher the debt to capitalization ratio, the higher  
430 the financial risk.

431 As shown in Table 2, in comparison to North Shore, the Delivery Group's 3-year  
432 average FFO to interest and FFO to total debt ratios are lower than North  
433 Shore's, indicating that North Shore has less risk than the Delivery Group with  
434 regard to FFO to interest and FFO to total debt coverage. The Delivery Group's  
435 3-year average RCF to total debt coverage is slightly higher than North Shore's,

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<sup>24</sup> Moody's Investors Service, *Rating Methodology: Regulated Electric and Gas Utilities*,  
December 23, 2013.

436 indicating that North Shore has slightly more risk than the Delivery Group with  
437 regard to RCF to total debt coverage. The Delivery Group’s 3-year average debt  
438 to capitalization is higher than that North Shore’s, indicating that North Shore has  
439 less risk than the Delivery Group with regard to debt to capitalization. Taken  
440 together, this ratio comparison indicates that North Shore has less financial risk  
441 than the Delivery Group.

442 Also shown in Table 2, in comparison to Peoples Gas, the Delivery Group’s 3-  
443 year average FFO to interest, FFO to total debt, and RCF to total debt ratios are  
444 lower than Peoples Gas’s, indicating that Peoples Gas has less risk than the  
445 Delivery Group with regard to FFO to interest, FFO to total debt, and RCF to total  
446 debt coverage. The Delivery Group’s 3-year average debt to capitalization is  
447 higher than Peoples Gas’s, indicating that Peoples Gas has less risk than the  
448 Delivery Group with regard to debt to capitalization. Taken together, this ratio  
449 comparison indicates that Peoples Gas has less financial risk than the Delivery  
450 Group.

451 **Table 2 –Ratio Analysis**

	Aaa	Aa	A	Baa	Ba
<b>Moody’s Financial Guideline Ratios</b>					
FFO/IC	> 8.0x	6.0-8.0x	4.5-6.0x	2.7-4.5x	1.5-2.7x
FFO/Debt	> 40%	30-40%	22-30%	13-22%	5-13%
RCF/Debt	> 35%	25-35%	17-25%	9-17%	0-9%
Debt/Capitalization	< 25%	25-35%	35-45%	45-55%	55-65%
<b>Delivery Group</b>					
FFO/IC		6.1x			
FFO/Debt			24.7%		

	Aaa	Aa	A	Baa	Ba
RCF/Debt Debt/Capitalization			18.4%	51.6%	
<b>North Shore Gas</b> FFOIC FFO/Debt RCF/Debt Debt/Capitalization		6.8x	28.7% 18.1% 36.1%		
<b>Peoples Gas</b> FFOIC FFO/Debt RCF/Debt Debt/Capitalization	9.0x	34.0% 25.6%		47.0%	

452 **Q. Does your recommended cost of common equity reflect the effect of**  
453 **revenue decoupling from Rider VBA?**

454 A. Yes. As explained by Mr. Moul, all of the companies in the Delivery Group have  
455 some form of a revenue stabilization mechanism. (NS Ex. 3.0, 6-7.) Hence, my  
456 cost of common equity estimates already reflects the risk reduction associated  
457 with a revenue decoupling mechanism like Rider VBA.

458 **Q. Does your recommended cost of common equity reflect the effect on risk**  
459 **of the Companies' uncollectibles rider?**

460 A. Yes. As explained by Mr. Moul, the majority of the companies in the Delivery  
461 Group have similar mechanisms in place. (NS Ex. 3.0, 7.) Hence, my cost of  
462 common equity estimates already reflects the risk reduction associated with an  
463 uncollectibles rider.

464 **Rate of Return on Rate Base**

465 **Q. What is your recommended rate of return on rate base for North Shore and**  
466 **Peoples Gas?**

467 A. I recommend a rate of return on rate base of 6.32% for North Shore and 6.55%  
468 for Peoples Gas, as shown on Schedule 3.01. Those estimates incorporate my  
469 recommended cost of common equity of 9.06%.

470 **Response to Mr. Moul**

471 **Q. What cost of common equity did Mr. Moul recommend for the Companies?**

472 A. Mr. Moul recommended a 10.25% cost of common equity for the Companies.  
473 (NS Ex. 3.0, 6.)

474 **Q. How did Mr. Moul estimate NS and PGL's cost of common equity?**

475 A. Mr. Moul relied on three models to measure the cost of common equity for the  
476 Companies: Discounted Cash Flow ("DCF"), Risk Premium ("RP") and Capital  
477 Asset Pricing Model ("CAPM"). He applied those models using average data for  
478 his Delivery Group sample and derived the following estimates:

<b>Model</b>	<b>Sample Estimate</b>
DCF	9.71%
RP	11.50%
CAPM	9.62%
Average	10.28%

479 From this average, Mr. Moul opined that a 10.25% return on equity was  
480 reasonable for this case. Mr. Moul also conducted a Comparable Earnings

481 analysis, which indicated a 10.30% cost of common equity, which he claims  
482 confirms the reasonableness of his recommendation. (NS Ex. 3.0, 6 and NS Ex.  
483 3.2.)

484 **Q. Please evaluate Mr. Moul's analysis of the Companies' cost of common**  
485 **equity.**

486 A. Mr. Moul's analysis contains several flaws that lead him to over-estimate the  
487 Companies' cost of common equity. The most significant flaws in his analysis of  
488 the Companies' cost of common equity are the following:

- 489 1. His recommendation includes the results of an inappropriate risk  
490 premium model.
- 491 2. The growth rate used in his DCF analysis was inappropriately high.
- 492 3. He included an unwarranted leverage adjustment in deriving his  
493 DCF and CAPM estimates of the cost of common equity.

494 **Risk Premium Model**

495 **Q. Please describe Mr. Moul's risk premium model.**

496 A. Mr. Moul began with a projected yield of 5.25% on A-rated public utility bonds,  
497 based on 4.25% Blue Chip forecasts of 30-year Treasury rates plus a yield  
498 spread of 1.00% on A-rated public utility bonds and long-term Treasury bonds  
499 derived from historical data. Next, he developed an equity risk premium of  
500 6.25%, which represents the historical spread between the returns on large  
501 common stocks and the yields on long-term government bonds. He then added

502 the 6.25% equity risk premium to the 5.25% A-rated bond yield, which results in  
503 his 11.50% estimate of cost of common equity. (NS Ex. 3.0, 26-28.)

504 **Q. Please describe the shortcomings of Ms. Moul's risk premium model.**

505 A. Mr. Moul's equity risk premium estimate is derived from historical data, which is  
506 inappropriate. Use of non-current data wrongly implies that market risk  
507 premiums revert to a mean that is observable, despite the fact that security  
508 returns approximate a random walk. Therefore the selection of a measurement  
509 period will necessarily be arbitrary, and that arbitrarily selected measurement  
510 period will dictate the magnitude of the resulting risk premium. Thus, this  
511 approach would only produce the "correct" risk premium by chance.

512 Although his risk premium is intended to estimate an *investor-required return* for  
513 the Companies, it is based on the average spread between *earned returns* and  
514 interest rates. However, investor-required returns and earned returns are not the  
515 same. That is, by adding the historical average earned return premium to a  
516 forecasted interest rate, he created an earned return estimate rather than an  
517 investor-required return estimate. Since his risk premium does not model  
518 investor-required return on common equity, it could only produce the "correct"  
519 investor-required return on common equity by chance.

520 Mr. Moul used the returns for large company stocks to develop his equity risk  
521 premium estimate. The large company stock returns were taken from the 2013  
522 Classic Yearbook for Stocks, Bonds, Bills and Inflation published by Ibbotson

523 Associates. (NS Ex. 3.0, 28.) The large company stock returns reported by  
524 Ibbotson are for the S&P500, which largely composes non-rate regulated  
525 industrial companies. Because the S&P500 is riskier than utilities generally, it is  
526 not a suitable proxy for regulated gas utilities.

527 In addition, rather than utilizing the current A-rated utility yield of 4.54%<sup>25</sup> as the  
528 base yield to which his risk premium is added, he relied on a 5.25% forecast of  
529 A-rated utility bond yields. This substitution inappropriately inflates his RP results  
530 by 0.71%. To begin with, the use of forecasted interest rates is unnecessary  
531 because current interest rates already reflect investors' current expectations for  
532 the future. Thus, there is no need to employ forecasts. Moreover, as difficult as  
533 it is to estimate investors' *current* required rates of return on common equity, the  
534 employment of forecasted interest rates essentially attempts to predict investors'  
535 *future* required rates of return, which compounds the difficulty.

536 **Growth Rate**

537 **Q. Mr. Moul used a growth rate of 5.25% in his DCF analysis, based on a range**  
538 **of growth rates of 4.70% to 5.58%. Is a growth rate of 5.25% appropriate?**

539 A. No. Mr. Moul presented the five-year projected growth rates for his sample  
540 companies on NS Ex. 3.8. However, instead of considering all of the available  
541 growth rate data, Mr. Moul's estimate excluded the growth rates from I/B/E/S  
542 First Call and Zacks and ignored all of the Value Line data except for the

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<sup>25</sup> The Value Line Investment Survey, *Selection & Opinion*, February 7, 2014, p. 505. A-rated bond yield is for 10-30-13.

543 expected growth in earnings per share. As discussed earlier, if Mr. Moul would  
544 have taken the simple average of the growth rate estimates from I/B/E/S First  
545 Call, Zacks, Morningstar and the average Value Line growth projection, the  
546 average growth rate for his sample would be 4.77% instead of 5.25%.

547 **Q. What would Mr. Moul's DCF results for his sample be if he used a more**  
548 **appropriate growth rate estimate?**

549 A. Using Mr. Moul's estimated 4.00% dividend yield for his sample would result in a  
550 DCF estimate of 8.77%. This is derived by adding the average 4.77% growth  
551 rate estimate that incorporates all of the Value Line growth rate estimates to his  
552 4.00% dividend yield estimate. This estimate does not include Mr. Moul's  
553 proposed leverage adjustment.

554 **Leverage Adjustment**

555 **Q. Mr. Moul argues that if the results of the DCF, which are based on the**  
556 **market price of the companies analyzed, are used to compute the weighted**  
557 **average cost of capital based on a book value capital structure used for**  
558 **ratesetting purposes, the utility will not recover its risk-adjusted capital**  
559 **cost because market value capital structures generally reflect less risk than**  
560 **book value capital structures. (NS Ex. 3.0, 21.) Do you agree?**

561 A. No. Mr. Moul's argument suggests that when a company's book value exceeds  
562 its market value, the risk of a company increases if the capital structure is  
563 measured with book values of capital rather than market values of capital. Such

564 a notion is without merit. The intrinsic risk level of a given company does not  
565 change simply because the manner in which it is measured has changed. Such  
566 an assertion is akin to claiming that the ambient temperature changes when the  
567 measurement scale is switched from Fahrenheit to Celsius. Mr. Moul has  
568 confused the measurement tool with the object to be measured. Specifically,  
569 capital structure ratios are merely indicators of financial risk; they are not sources  
570 of financial risk. Financial risk arises from fixed, contractually required debt  
571 service payments; changing capital structure ratios from a market value basis to  
572 a book value basis does not affect a company's debt service requirements; thus,  
573 it does not change the company's risk.

574 As noted in a corporate finance textbook by Brealey, Myers and Allen, there are  
575 a variety of ways to define leverage and there is no law stating how it should be  
576 defined.<sup>26</sup> In any case, it is not appropriate to compare book value capital  
577 structures with market value capital structures any more than it would be  
578 appropriate to compare alternative measures of financial risk. Consequently,  
579 when assessing the relative financial risk of Peoples Gas and North Shore to the  
580 Delivery Group, I compared the Companies' FFO interest coverage ratio to the  
581 Delivery Groups' FFO interest coverage. I did not compare the Companies' FFO  
582 interest coverage ratio to the Delivery Group's RCF to total debt ratio.

583 Further, the ratio analysis that I discussed earlier indicates that both North Shore  
584 and Peoples Gas have less financial risk than the Delivery Group. Hence, an

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<sup>26</sup> Brealey, Myers and Allen, *Principles of Corporate Finance*, Ninth edition, McGraw-Hill/Irwin, p. 794.

585 upward adjustment to the cost of common equity for the Delivery Group is  
586 unwarranted.

587 **Q. Does Mr. Moul also propose a leverage adjustment for his CAPM analysis?**

588 A. Yes. Mr. Moul also argued that the Value Line betas cannot be used directly in  
589 the CAPM because they are derived based on market value. Hence, he  
590 unlevered and relevered the Value Line beta estimates for each of the  
591 Companies in the sample for the book value common equity ratios using the  
592 Hamada formula. (NS Ex. 3.0, 29.) However, for the same reasons described  
593 above, his leverage adjustment is simply wrong because it relies on a  
594 comparison of two different measures of financial leverage: book value capital  
595 structures and market value capital structures.

596 **Q. What would Mr. Moul's cost of common equity estimates be if the leverage  
597 adjustments were eliminated?**

598 A. Mr. Moul's leverage adjustment inappropriately inflated the DCF result for the  
599 Delivery Group by 46 basis points. Removing the leverage adjustment would  
600 decrease his DCF results to 9.25%. As discussed earlier, use of a more  
601 appropriate growth rate would decrease Mr. Moul's DCF estimate further to  
602 8.77%.

603 By adjusting the average Value Line beta estimate for his Delivery Group (0.69)  
604 up to 0.75 to reflect the book value leverage of those companies, Mr. Moul

605 inappropriately inflated the CAPM result for the sample by 43 basis points.

606 Correcting that flaw would decrease his CAPM results to 9.19%.

607 Taken together, eliminating the inappropriate leverage adjustments to his DCF  
608 and CAPM estimates would produce a cost of common equity of 9.22%  $[(9.25\%$   
609  $+ 9.19\%)/2]$ . Incorporating a more appropriate growth rate estimate in Mr. Moul's  
610 DCF analysis, produces a cost of common equity of 8.98%  $[(8.77\% + 9.19\%)/2]$ .  
611 These corrected costs of equity estimates are significantly lower than the 10.25%  
612 he recommends for both Companies.

613 **Q. Does this conclude your prepared direct testimony?**

614 A. Yes, it does.

### Weighted Average Cost of Capital

#### North Shore Gas Company

	<u>Amount</u>	<u>Percent of Total Capital</u>	<u>Cost</u>	<u>Weighted Cost</u>
Long-term Debt	\$79,784,000	40.62%	4.13%	1.68%
Short-term Debt	\$17,615,000	8.97%	0.85%	0.08%
Common Equity	<u>\$99,003,000</u>	<u>50.41%</u>	9.06%	<u>4.57%</u>
Total Capital	\$196,402,000	100.00%		
<b>Weighted Average Cost of Capital</b>				<b>6.32%</b>

#### The Peoples Gas Light and Coke Company

	<u>Amount</u>	<u>Percent of Total Capital</u>	<u>Cost</u>	<u>Weighted Cost</u>
Long-term Debt	\$889,589,000	44.88%	4.36%	1.96%
Short-term Debt	\$95,233,000	4.81%	0.66%	0.03%
Common Equity	<u>\$997,105,000</u>	<u>50.31%</u>	9.06%	<u>4.56%</u>
Total Capital	\$1,981,927,000	100.00%		
<b>Weighted Average Cost of Capital</b>				<b>6.55%</b>

The Peoples Gas Light and Coke Company

Embedded Cost of Long-Term Debt

Net Proceeds Method  
Test Year Ending December 31, 2015

Line No.	Debt Issue Type, Coupon Rate [A]	Date Issued [B]	Maturity Date [C]	Date Reacquired [D]	Principal Amount at Issuance [E]	New and Retired		Thirteen Month Average		Carrying Value [I]=[F-G+H]	Coupon Interest Expense [J]=[A*F]	Amortization of Debt Discount or (Premium) (4) [K]	Amortization of Debt Expense (4) [L]	Total Expense [M]=[J+K+L]	Line No.		
						Time Weighted Face Amount Outstanding [F]	Unamortized Discount or (Premium) [G]	Unamortized Debt Expense (Gain) [H]									
<b>Test Year Ending December 31, 2015 (1)</b>																	
1	First and Refunding Mortgage Bonds:														1		
2	Series QQ	4.875%	(2)	11/25/03	11/01/38	-	\$ 75,000,000	\$ 75,000,000	\$ -	\$ 1,325,000	\$ 73,675,000	\$ 3,656,000	\$ -	\$ 57,000	\$ 3,713,000	2	
3	Series RR	4.30%	(2)	06/01/05	06/01/35	-	50,000,000	50,000,000	-	690,000	49,310,000	2,150,000	-	35,000	2,185,000	3	
4	Series TT	8.00%		11/03/08	11/01/18	-	5,000,000	5,000,000	-	21,000	4,979,000	400,000	-	6,000	406,000	4	
5	Series UU	4.63%		09/30/09	09/01/19	-	75,000,000	75,000,000	-	324,000	74,676,000	3,473,000	-	78,000	3,551,000	5	
6	Series WW	2.625%	(2)	10/05/10	02/01/33	08/01/15	50,000,000	29,167,000	-	304,000	28,863,000	766,000	-	16,000	782,000	6	
7	Series XX	2.21%		11/01/11	11/01/16	-	50,000,000	50,000,000	-	149,000	49,851,000	1,105,000	-	112,000	1,217,000	7	
8	Series YY	3.98%		12/04/12	12/01/42	-	100,000,000	100,000,000	-	893,000	99,107,000	3,980,000	-	33,000	4,013,000	8	
9	Series ZZ	4.00%		04/18/13	02/01/33	-	50,000,000	50,000,000	-	695,000	49,305,000	2,000,000	-	40,000	2,040,000	9	
10	Series AAA	3.96%		08/01/13	08/01/43	-	220,000,000	220,000,000	-	1,674,000	218,326,000	8,712,000	-	60,000	8,772,000	10	
11	New Series	3.49%	(2)	07/01/14	03/01/30	-	50,000,000	50,000,000	-	866,000	49,134,000	1,745,000	-	59,000	1,804,000	11	
12	New Series	4.66%		10/01/14	10/01/44	-	150,000,000	150,000,000	-	1,423,000	148,577,000	6,990,000	-	49,000	7,039,000	12	
13	New Series	3.62%	(2)	08/01/15	02/01/33	-	50,000,000	20,833,000	-	342,000	20,491,000	754,000	-	22,000	776,000	13	
14	New Series	4.66%		10/01/15	10/01/45	-	150,000,000	37,500,000	-	303,000	37,197,000	1,748,000	-	12,000	1,760,000	14	
15	Future Issuance Fee	n/a		n/a	n/a	n/a	n/a	n/a	-	-	-	n/a	n/a	n/a	15		
16	Sub-Total						1,075,000,000	912,500,000	-	9,009,000	903,491,000	37,479,000	-	579,000	38,058,000	16	
17	Less: Amortization of Losses on Reacquired Bonds														17		
18	Series X	6.875%	(2)	03/01/85	02/01/33	03/14/03	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	18	
19	Series KK	5.000%	(2)	02/06/03	02/01/33	04/18/13	-	-	-	2,581,000	(7)	(2,581,000)	-	147,000	(7)	147,000	19
20	Series Y	7.50%	(2)	03/01/85	02/01/33	04/03/00	-	-	-	-	-	-	-	-	-	20	
21	Series GG	Variable Rate	(2)	03/01/00	02/01/33	03/27/03	-	-	-	-	-	-	-	-	-	21	
22	Series LL	3.75%	(2)	02/20/03	02/01/33	10/04/10	-	-	-	-	-	-	-	-	-	22	
23	Series WW	2.625%	(2)	10/05/10	02/01/33	08/01/15	-	-	-	2,349,000	(8)	(2,349,000)	-	135,000	(8)	135,000	23
24	Series Z	7.50%	(2)	03/01/85	03/01/15	04/03/00	-	-	-	-	-	-	-	-	-	24	
25	Series HH	4.75%	(2)	03/01/00	03/01/30	08/18/10	-	-	-	-	-	-	-	-	-	25	
26	Series VV	4.75%	(2)	03/01/00	03/01/30	08/18/10	-	-	-	2,005,000	(9)	(2,005,000)	-	137,000	(7)(9)	137,000	26
27	Series AA	10.25%	(2)	03/01/85	06/01/35	08/01/95	-	-	-	-	-	-	-	-	-	27	
28	Series FF	6.10%	(2)	06/01/95	06/01/35	06/02/05	-	-	-	2,020,000	(10)	(2,020,000)	-	101,000	(10)	101,000	28
29	Series BB	8.10%	(2)	05/01/90	10/01/37	05/01/00	-	-	-	-	-	-	-	-	-	29	
30	Series II	Variable Rate	(2)	03/01/00	10/01/37	11/12/03	-	-	-	-	-	-	-	-	-	30	
31	Series JJ 36%	Variable Rate	(2)	03/01/00	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	31	
32	Series OO	Variable Rate	(2)	10/09/03	10/01/37	08/18/11	-	-	-	1,879,000	(11)	(1,879,000)	-	84,000	(11)	84,000	32
33	Series BB	8.10%	(2)	05/01/90	10/01/37	05/01/00	-	-	-	-	-	-	-	-	-	33	
34	Series JJ 64%	Variable Rate	(2)	03/01/00	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	34	
35	Series EE	Variable Rate	(2)	12/01/93	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	35	
36	Series PP	Variable Rate	(2)	10/09/03	10/01/37	04/17/08	-	-	-	1,440,000	(12)	(1,440,000)	-	65,000	(12)	65,000	36
37	Series DD	5.75%	(2)	12/01/93	11/01/38	12/01/03	-	-	-	1,628,000	-	(1,628,000)	-	70,000	70,000	37	
38	Sub-Total						-	-	-	13,902,000	(13,902,000)	-	-	739,000	739,000	38	
39	Total						\$ 1,075,000,000	\$ 912,500,000	\$ -	\$ 22,911,000	\$ 889,589,000	\$ 37,479,000	\$ -	\$ 1,318,000	\$ 38,797,000	39	
40	Embedded Cost of Long-Term Debt (M / I)														4.36% (13) 40		

Notes: (1) Based on zero months of actual data and 12 months of forecasted data.  
(2) Tax-exempt bonds.  
(3) Total costs amortized based on life of the debt.  
(4) Annualized amounts were created using the 12/31/11 amortization amounts multiplied by 12 months.  
(5) Amount based on life of the debt.  
(6) Fee paid for Docket 12-0285 not yet applied to a bond issuance.  
(7) Refinancing Series combined (X and KK). Lines 18 and 19.  
(8) Refinancing Series combined (Y, GG, LL, and WW). Lines 20 through 23.  
(9) Refinancing Series combined (Z, HH, and VV). Lines 24 through 26.  
(10) Refinancing Series combined (AA and FF). Lines 27 and 28.  
(11) Refinancing Series combined (BB, JJ 36% and OO). Lines 29 through 32.  
(12) Refinancing Series combined (BB, JJ 64%, EE, and PP). Lines 33 through 36.  
(13) Proposed embedded cost of debt requested in this filing.

The Peoples Gas Light and Coke Company

Embedded Cost of Long-Term Debt

Net Proceeds Method  
Forecasted Year Ending December 31, 2014

Line No.	Debt Issue Type, Coupon Rate [A]	Date Issued [B]	Maturity Date [C]	Date Reacquired [D]	Principal Amount at Issuance [E]	New and Retired		Thirteen Month Average		Carrying Value [I]=[F-G+H]	Coupon Interest Expense [J]=[A*F]	Amortization of Debt Discount or (Premium) (4) [K]	Amortization of Debt Expense (4) [L]	Total Expense [M]=[J+K+L]	Line No.		
						Time Weighted Face Amount Outstanding [F]	Unamortized Discount or (Premium) [G]	Unamortized Debt Expense (Gain) [H]									
<b>Forecasted Year Ending December 31, 2014 (1)</b>																	
1	First and Refunding Mortgage Bonds:																
2	Series QQ	4.875%	(2)	11/25/03	11/01/38	-	\$ 75,000,000	\$ 75,000,000	\$ -	\$ 1,382,000	\$ 73,618,000	\$ 3,656,000	\$ -	\$ 57,000	\$ 3,713,000	1	
3	Series RR	4.30%	(2)	06/01/05	06/01/35	-	50,000,000	50,000,000	-	725,000	49,275,000	2,150,000	-	35,000	2,185,000	2	
4	Series TT	8.00%		11/03/08	11/01/18	-	5,000,000	5,000,000	-	28,000	4,972,000	400,000	-	6,000	406,000	3	
5	Series UU	4.63%	(2)	09/30/09	09/01/19	-	75,000,000	75,000,000	-	402,000	74,598,000	3,473,000	-	78,000	3,551,000	4	
6	Series VV	2.125%	(2)	08/18/10	03/01/30	07/01/14	50,000,000	25,000,000	-	319,000	24,681,000	531,000	-	19,000	550,000	5	
7	Series WW	2.625%	(2)	10/05/10	02/01/33	-	50,000,000	50,000,000	-	509,000	49,491,000	1,313,000	-	27,000	1,340,000	6	
8	Series XX	2.21%		11/01/11	11/01/16	-	50,000,000	50,000,000	-	261,000	49,739,000	1,105,000	-	112,000	1,217,000	7	
9	Series YY	3.98%		12/04/12	12/01/42	-	100,000,000	100,000,000	-	926,000	99,074,000	3,980,000	-	33,000	4,013,000	8	
10	Series ZZ	4.00%		04/18/13	02/01/33	-	50,000,000	50,000,000	-	734,000	49,266,000	2,000,000	-	40,000	2,040,000	9	
11	Series AAA	3.96%		08/01/13	08/01/43	-	220,000,000	220,000,000	-	1,733,000	218,267,000	8,712,000	-	60,000	8,772,000	10	
12	New Series	3.49%	(2)	07/01/14	03/01/30	-	50,000,000	25,000,000	-	417,000	24,583,000	873,000	-	29,000	902,000	11	
13	New Series	4.66%		10/01/14	10/01/44	-	150,000,000	37,500,000	-	303,000	37,197,000	1,748,000	-	12,000	1,760,000	12	
14	Future Issuance Fee	n/a		n/a	n/a	n/a	n/a	n/a	95,000	(6)	(95,000)	n/a	n/a	n/a	n/a	13	
15	Sub-Total						925,000,000	762,500,000	-	7,834,000	754,666,000	29,941,000	-	508,000	30,449,000	14	
16	Less: Amortization of Losses on Reacquired Bonds															15	
17	Series X	6.875%	(2)	03/01/85	02/01/33	03/14/03	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	16	
18	Series KK	5.000%	(2)	02/06/03	02/01/33	04/18/13	-	-	-	2,728,000	(7)	(2,728,000)	-	147,000	(7)	147,000	17
19	Series Y	7.50%	(2)	03/01/85	02/01/33	04/03/00	-	-	-	-	-	-	-	-	-	18	
20	Series GG	Variable Rate	(2)	03/01/00	02/01/33	03/27/03	-	-	-	-	-	-	-	-	-	19	
21	Series LL	3.75%	(2)	02/20/03	02/01/33	10/04/10	-	-	-	2,295,000	(8)	(2,295,000)	-	123,000	(8)	123,000	20
22	Series Z	7.50%	(2)	03/01/85	03/01/15	04/03/00	-	-	-	-	-	-	-	-	-	21	
23	Series HH	4.75%	(2)	03/01/00	03/01/30	08/18/10	-	-	-	-	-	-	-	-	-	22	
24	Series VV	4.75%	(2)	03/01/00	03/01/30	08/18/10	-	-	-	1,823,000	(9)	(1,823,000)	-	118,000	(7)(9)	118,000	23
25	Series AA	10.25%	(2)	03/01/85	06/01/35	08/01/95	-	-	-	-	-	-	-	-	-	24	
26	Series FF	6.10%	(2)	06/01/95	06/01/35	06/02/05	-	-	-	2,121,000	(10)	(2,121,000)	-	101,000	(10)	101,000	25
27	Series BB	8.10%	(2)	05/01/90	10/01/37	05/01/00	-	-	-	-	-	-	-	-	-	26	
28	Series II	Variable Rate	(2)	03/01/00	10/01/37	11/12/03	-	-	-	-	-	-	-	-	-	27	
29	Series JJ 36%	Variable Rate	(2)	03/01/00	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	28	
30	Series OO	Variable Rate	(2)	10/09/03	10/01/37	08/18/11	-	-	-	1,963,000	(11)	(1,963,000)	-	84,000	(11)	84,000	29
31	Series BB	8.10%	(2)	05/01/90	10/01/37	05/01/00	-	-	-	-	-	-	-	-	-	30	
32	Series JJ 64%	Variable Rate	(2)	03/01/00	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	31	
33	Series EE	Variable Rate	(2)	12/01/93	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	32	
34	Series PP	Variable Rate	(2)	10/09/03	10/01/37	04/17/08	-	-	-	1,505,000	(12)	(1,505,000)	-	65,000	(12)	65,000	33
35	Series DD	5.75%	(2)	12/01/93	11/01/38	12/01/03	-	-	-	1,698,000	(12)	(1,698,000)	-	70,000	(12)	70,000	34
36	Sub-Total						-	-	-	14,133,000	(14,133,000)	-	-	708,000	708,000	35	
37	Total						\$ 925,000,000	\$ 762,500,000	\$ -	\$ 21,967,000	\$ 740,533,000	\$ 29,941,000	\$ -	\$ 1,216,000	\$ 31,157,000	36	
38	Embedded Cost of Long-Term Debt (M / I)														4.21%	37	

Notes: (1) Based on zero months of actual data and 12 months of forecasted data.  
(2) Tax-exempt bonds.  
(3) Total costs amortized based on life of the debt.  
(4) Annualized amounts were created using the 12/31/11 amortization amounts multiplied by 12 months.  
(5) Amount based on life of the debt.  
(6) Fee paid for Docket 12-0285 not yet applied to a bond issuance.  
(7) Refinancing Series combined (X and KK). Lines 17 and 18.  
(8) Refinancing Series combined (Y, GG, and LL). Lines 19 through 21.  
(9) Refinancing Series combined (Z, HH, and VV). Lines 22 through 24.  
(10) Refinancing Series combined (AA and FF). Lines 25 and 26.  
(11) Refinancing Series combined (BB, II, JJ 36% and OO). Lines 27 through 30.  
(12) Refinancing Series combined (BB, JJ 64%, EE, and PP). Lines 31 through 34.

The Peoples Gas Light and Coke Company

Embedded Cost of Long-Term Debt

Net Proceeds Method  
Forecasted Year Ending December 31, 2013

Line No.	Debt Issue Type	Coupon Rate	Date Issued	Maturity Date	Date Reacquired	Principal Amount at Issuance	New and Retired Time Weighted Face Amount Outstanding	Thirteen Month Average Unamortized Discount or (Premium)	Unamortized Debt Expense (Gain)	Carrying Value	Coupon Interest Expense	Amortization of Debt Discount or (Premium) (5)	Amortization of Debt Expense (5)	Total Expense	Line No.			
	[A]		[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]=[F-G-H]	[J]=[A*F]	[K]	[L]	[M]=[J+K+L]				
<b>Forecasted Year Ending December 31, 2013 (1)</b>																		
1	First and Refunding Mortgage Bonds:																	
2	Series KK	5.00%	(2)	02/06/03	02/01/33	04/18/13	\$ 50,000,000	\$ 12,500,000	\$ 134,000	\$ 393,000	(4)	\$ 11,973,000	\$ 625,000	\$ 23,000	\$ 32,000	(7)	\$ 680,000	2
3	Series NN-2	4.625%	(2)	04/29/03	05/01/13	05/01/13	75,000,000	18,750,000	-	8,000	(6)	18,742,000	867,000	-	38,000	(7)	905,000	3
4	Series QQ	4.875%	(2)	11/25/03	11/01/38	-	75,000,000	75,000,000	-	1,439,000	-	73,561,000	3,656,000	-	57,000	-	3,713,000	4
5	Series RR	4.30%	(2)	06/01/05	06/01/35	-	50,000,000	50,000,000	-	759,000	-	49,241,000	2,150,000	-	35,000	-	2,185,000	5
6	Series SS	7.00%	(2)	11/03/08	11/01/13	-	45,000,000	37,500,000	-	40,000	-	37,460,000	2,625,000	-	96,000	(7)	2,721,000	6
7	Series TT	8.00%	(2)	11/03/08	11/01/18	-	5,000,000	5,000,000	-	34,000	-	4,966,000	400,000	-	6,000	-	406,000	7
8	Series UU	4.63%	(2)	09/30/09	09/01/19	-	75,000,000	75,000,000	-	479,000	-	74,521,000	3,473,000	-	78,000	-	3,551,000	8
9	Series VV	2.125%	(2)	08/18/10	03/01/30	-	50,000,000	50,000,000	-	617,000	-	49,383,000	1,063,000	-	37,000	-	1,100,000	9
10	Series WW	2.625%	(2)	10/05/10	02/01/33	-	50,000,000	50,000,000	-	536,000	-	49,464,000	1,313,000	-	27,000	-	1,340,000	10
11	Series XX	2.21%	(2)	11/01/11	11/01/16	-	50,000,000	50,000,000	-	373,000	-	49,627,000	1,105,000	-	112,000	-	1,217,000	11
12	Series YY	3.98%	(2)	12/04/12	12/01/42	-	100,000,000	100,000,000	-	958,000	-	99,042,000	3,980,000	-	33,000	-	4,013,000	12
13	Series ZZ	4.00%	(2)	04/18/13	02/01/33	-	50,000,000	37,500,000	-	534,000	-	36,966,000	1,500,000	-	27,000	(7)	1,527,000	13
14	Series AAA	3.96%	(2)	08/01/13	08/01/43	-	220,000,000	91,667,000	-	664,000	(3)	91,003,000	3,630,000	-	25,000	(7)	3,655,000	14
15	Future Issuance Fee	n/a		n/a	n/a	n/a	n/a	n/a	120,000	(8)	(120,000)	n/a	n/a	n/a	n/a		n/a	15
16	Sub-Total						895,000,000	652,917,000	134,000	6,954,000		645,829,000	26,387,000	23,000	603,000		27,013,000	16
17	Less: Amortization of Losses on Reacquired Bonds																	
18	Series X	6.875%	(2)	03/01/85	02/01/33	03/14/03	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	18
19	Series KK	5.00%	(2)	02/06/03	02/01/33	04/18/13	-	-	-	2,358,000	(9)	(2,358,000)	-	-	125,000	(9)	125,000	19
20	Series Y	7.50%	(2)	03/01/85	02/01/33	04/03/00	-	-	-	-	-	-	-	-	-	-	-	20
21	Series GG	Variable Rate	(2)	03/01/00	02/01/33	03/27/03	-	-	-	-	-	-	-	-	-	-	-	21
22	Series LL	3.75%	(2)	02/20/03	02/01/33	10/04/10	-	-	-	2,419,000	(10)	(2,419,000)	-	-	123,000	(10)	123,000	22
23	Series Z	7.50%	(2)	03/01/85	03/01/15	04/03/00	-	-	-	-	-	-	-	-	-	-	-	23
24	Series HH	4.75%	(2)	03/01/00	03/01/30	08/18/10	-	-	-	1,661,000	(11)	(1,661,000)	-	-	100,000	(11)	100,000	24
25	Series AA	10.25%	(2)	03/01/85	06/01/35	08/01/95	-	-	-	-	-	-	-	-	-	-	-	25
26	Series FF	6.10%	(2)	06/01/95	06/01/35	06/02/05	-	-	-	2,223,000	(12)	(2,223,000)	-	-	101,000	(12)	101,000	26
27	Series BB	8.10%	(2)	05/01/90	10/01/37	05/01/00	-	-	-	-	-	-	-	-	-	-	-	27
28	Series II	Variable Rate	(2)	03/01/00	10/01/37	11/12/03	-	-	-	-	-	-	-	-	-	-	-	28
29	Series JJ 36%	Variable Rate	(2)	03/01/00	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	-	-	29
30	Series OO	Variable Rate	(2)	10/09/03	10/01/37	08/18/11	-	-	-	2,048,000	(13)	(2,048,000)	-	-	84,000	(13)	84,000	30
31	Series BB	8.10%	(2)	05/01/90	10/01/37	05/01/00	-	-	-	-	-	-	-	-	-	-	-	31
32	Series JJ 64%	Variable Rate	(2)	03/01/00	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	-	-	32
33	Series EE	Variable Rate	(2)	12/01/93	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	-	-	33
34	Series PP	Variable Rate	(2)	10/09/03	10/01/37	04/17/08	-	-	-	1,570,000	(14)	(1,570,000)	-	-	65,000	(14)	65,000	34
35	Series DD	5.75%	(2)	12/01/93	11/01/38	12/01/03	-	-	-	1,768,000	-	(1,768,000)	-	-	70,000	-	70,000	35
36	Sub-Total						-	-	-	14,047,000		(14,047,000)	-	-	668,000		668,000	36
37	Total						\$ 895,000,000	\$ 652,917,000	\$ 134,000	\$ 21,001,000		\$ 631,782,000	\$ 26,387,000	\$ 23,000	\$ 1,271,000		\$ 27,681,000	37
38	Embedded Cost of Long-Term Debt (M / I)														4.38%	38		

Notes: (1) Based on six months of actual data and six months of forecasted data.  
(2) Tax-exempt bonds.  
(3) Total costs amortized based on life of the debt.  
(4) Includes \$17,000 Ambac fee.  
(5) Annualized amounts were created using the 12/31/11 amortization amounts multiplied by 12 months.  
(6) Includes \$4,000 for the unamortized debt expense related to an interest rate swap on these bonds.  
(7) Amount based on life of the debt.  
(8) Fee paid for Docket 12-0285 not yet applied to a bond issuance.  
(9) Refinancing Series combined (X and KK). Lines 18 and 19.  
(10) Refinancing Series combined (Y, GG, and LL). Lines 20 through 22.  
(11) Refinancing Series combined (Z and HH). Lines 23 and 24.  
(12) Refinancing Series combined (AA and FF). Lines 25 and 26.  
(13) Refinancing Series combined (BB, JJ 36% and OO). Lines 27 through 30.  
(14) Refinancing Series combined (BB, JJ 64%, EE, and PP). Lines 31 through 34.

The Peoples Gas Light and Coke Company

Embedded Cost of Long-Term Debt

Net Proceeds Method

Historical Year Ended December 31, 2012

Line No.	Debt Issue Type, Coupon Rate	Date Issued	Maturity Date	Date Reacquired	Principal Amount at Issuance	New and Retired Time Weighted Face Amount Outstanding	Thirteen Month Average		Carrying Value	Coupon Interest Expense	Amortization of Debt Discount or (Premium) (5)	Amortization of Debt Expense (5)	Total Expense	Line No.	
							Unamortized Discount or (Premium)	Unamortized Debt Expense (Gain)							
	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]=[F-G-H]	[J]=[A*F]	[K]	[L]	[M]=[J+K+L]		
<b>Historical Year Ended December 31, 2012</b>															
1	First and Refunding Mortgage Bonds:													1	
2	Series KK	5.00%	(1) 02/06/03	02/01/33	-	\$ 50,000,000	\$ 50,000,000	\$ 473,000	\$ 1,373,000	(2) \$ 48,154,000	\$ 2,500,000	\$ 23,000	\$ 103,000	\$ 2,626,000	2
3	Series NN-2	4.625%	04/29/03	05/01/13	-	75,000,000	75,000,000	5,000	126,000	(3) 74,869,000	3,469,000	6,000	113,000	3,588,000	3
4	Series QQ	4.875%	(1) 11/25/03	11/01/38	-	75,000,000	75,000,000	-	1,496,000	73,504,000	3,656,000	-	57,000	3,713,000	4
5	Series RR	4.30%	(1) 06/01/05	06/01/35	-	50,000,000	50,000,000	-	794,000	49,206,000	2,150,000	-	35,000	2,185,000	5
6	Series SS	7.00%	(1) 11/03/08	11/01/13	-	45,000,000	45,000,000	-	154,000	44,846,000	3,150,000	-	115,000	3,265,000	6
7	Series TT	8.00%	11/03/08	11/01/18	-	5,000,000	5,000,000	-	40,000	4,960,000	400,000	-	6,000	406,000	7
8	Series UU	4.63%	09/30/09	09/01/19	-	75,000,000	75,000,000	-	557,000	74,443,000	3,473,000	-	78,000	3,551,000	8
9	Series VV	2.125%	(1) 08/18/10	03/01/30	-	50,000,000	50,000,000	-	654,000	49,346,000	1,063,000	-	37,000	1,100,000	9
10	Series WW	2.625%	(1) 10/05/10	02/01/33	-	50,000,000	50,000,000	-	563,000	49,437,000	1,313,000	-	27,000	1,340,000	10
11	Series XX	2.21%	11/01/11	11/01/16	-	50,000,000	50,000,000	-	484,000	49,516,000	1,105,000	-	112,000	1,217,000	11
12	Series YY	3.98%	12/04/12	12/01/42	-	100,000,000	7,500,000	-	215,000	7,285,000	299,000	-	33,000	332,000	12
13	Future Issuance Fee	n/a	n/a	n/a	n/a	n/a	n/a	n/a	35,000	(7) (35,000)	n/a	n/a	n/a	n/a	13
14	Sub-Total					625,000,000	532,500,000	478,000	6,491,000	525,531,000	22,578,000	29,000	716,000	23,323,000	14
15	Less: Amortization of Losses on Reacquired Bonds														15
16	Series X	6.875%	(1) 03/01/85	02/01/33	03/14/03	\$ -	\$ -	\$ -	\$ 1,193,000	\$ (1,193,000)	\$ -	\$ -	\$ 58,000	\$ 58,000	16
17	Series Y	7.50%	(1) 03/01/85	02/01/33	04/03/00	-	-	-	-	-	-	-	-	-	17
18	Series GG	Variable Rate	(1) 03/01/00	02/01/33	03/27/03	-	-	-	-	-	-	-	-	-	18
19	Series LL	3.75%	(1) 02/20/03	02/01/33	10/04/10	-	-	-	2,542,000	(8) (2,542,000)	-	-	123,000	(8) 123,000	19
20	Series Z	7.50%	(1) 03/01/85	03/01/15	04/03/00	-	-	-	-	-	-	-	-	-	20
21	Series HH	4.75%	(1) 03/01/00	03/01/30	08/18/10	-	-	-	1,761,000	(9) (1,761,000)	-	-	100,000	(9) 100,000	21
22	Series AA	10.25%	(1) 03/01/85	06/01/35	08/01/95	-	-	-	-	-	-	-	-	-	22
23	Series FF	6.10%	(1) 06/01/95	06/01/35	06/02/05	-	-	-	2,324,000	(10) (2,324,000)	-	-	101,000	(10) 101,000	23
24	Series BB	8.10%	(1) 05/01/90	10/01/37	05/01/00	-	-	-	-	-	-	-	-	-	24
25	Series II	Variable Rate	(1) 03/01/00	10/01/37	11/12/03	-	-	-	-	-	-	-	-	-	25
26	Series JJ 36%	Variable Rate	(1) 03/01/00	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	26
27	Series OO	Variable Rate	(1) 10/09/03	10/01/37	08/18/11	-	-	-	2,132,000	(11) (2,132,000)	-	-	84,000	(11) 84,000	27
28	Series BB	8.10%	(1) 05/01/90	10/01/37	05/01/00	-	-	-	-	-	-	-	-	-	28
29	Series JJ 64%	Variable Rate	(1) 03/01/00	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	29
30	Series EE	Variable Rate	(1) 12/01/93	10/01/37	10/14/03	-	-	-	-	-	-	-	-	-	30
31	Series PP	Variable Rate	(1) 10/09/03	10/01/37	04/17/08	-	-	-	1,635,000	(12) (1,635,000)	-	-	65,000	(12) 65,000	31
32	Series DD	5.75%	(1) 12/01/93	11/01/38	12/01/03	-	-	-	1,837,000	(1,837,000)	-	-	70,000	70,000	32
33	Sub-Total					-	-	-	13,424,000	(13,424,000)	-	-	601,000	601,000	33
34	Total					\$ 625,000,000	\$ 532,500,000	\$ 478,000	\$ 19,915,000	\$ 512,107,000	\$ 22,578,000	\$ 29,000	\$ 1,317,000	\$ 23,924,000	34

35 Embedded Cost of Long-Term Debt (M / I) 4.67% 35

- Notes: (1) Tax-exempt bonds.  
(2) Includes \$17,000 Ambac fee.  
(3) Includes \$59,000 for the unamortized debt expense related to an interest rate swap on these bonds.  
(4) Total costs amortized based on life of the debt.  
(5) Annualized amounts were created using the 12/31/11 amortization amounts multiplied by 12 months.  
(6) Annualized amount based on life of the debt.  
(7) Fee paid for Docket 12-0285 not yet applied to a bond issuance.  
(8) Refinancing Series combined (Y, GG, and LL). Lines 17 through 19.  
(9) Refinancing Series combined (Z and HH). Lines 20 and 21.  
(10) Refinancing Series combined (AA and FF). Lines 22 and 23.  
(11) Refinancing Series combined (BB, JJ 36% and OO). Lines 24 through 27.  
(12) Refinancing Series combined (BB, JJ 64%, EE, and PP). Lines 28 through 31.

**North Shore Gas Company  
Peoples Gas Light and Coke Company**

**Delivery Group**

**Prices and Dividends**

Company	Current Dividend				Next Dividend Payment Date	10/31/2013	Ex-Dividend Date
	D <sub>0,1</sub>	D <sub>0,2</sub>	D <sub>0,3</sub>	D <sub>0,4</sub>		Stock Price	
AGL Resources	\$ 0.460	\$ 0.470	\$ 0.470	\$ 0.470	12/1/2013	\$ 47.86	11/13/2013
Atmos Energy Corp	0.350	0.350	0.350	0.350	12/9/2013	44.27	11/23/2013
Consolidated Edison	0.605	0.615	0.615	0.615	12/15/2013	58.22	11/11/2013
Laclede Group	0.425	0.425	0.425	0.425	1/3/2014	47.07	12/9/2013
New Jersey Resources	0.400	0.400	0.400	0.420	1/2/2014	46.03	12/11/2013
Northeast Utilities	0.343	0.368	0.368	0.368	12/31/2013	42.89	12/11/2013
Northwest Natural Gas	0.455	0.455	0.455	0.460	2/14/2014	43.43	1/29/2014
PEPCO Holdings	0.270	0.270	0.270	0.270	12/31/2013	19.28	12/8/2013
Piedmont Natural Gas	0.300	0.310	0.310	0.310	1/15/2014	34.14	12/22/2013
South Jersey Industries	0.443	0.443	0.443	0.443	12/27/2013	59.55	12/6/2013
Southwest Gas Corp	0.295	0.295	0.330	0.330	12/2/2013	54.26	11/13/2013
UIL Holdings	0.432	0.432	0.432	0.432	1/2/2014	38.52	12/16/2013
WGL Holdings	0.400	0.420	0.420	0.420	2/1/2014	45.01	1/8/2014

**North Shore Gas Company  
Peoples Gas Light and Coke Company**

**Delivery Group**

**Expected Dividends**

Company	Next Four Dividends			
	D1,1	D1,2	D1,3	D1,4
AGL Resources	\$ 0.470	\$ 0.499	\$ 0.499	\$ 0.499
Atmos Energy Corp	0.370	0.370	0.370	0.370
Consolidated Edison	0.615	0.629	0.629	0.629
Laclede Group	0.442	0.442	0.442	0.442
New Jersey Resources	0.420	0.420	0.420	0.434
Northeast Utilities	0.368	0.395	0.395	0.395
Northwest Natural Gas	0.460	0.460	0.460	0.476
PEPCO Holdings	0.281	0.281	0.281	0.281
Piedmont Natural Gas	0.310	0.324	0.324	0.324
South Jersey Industries	0.470	0.470	0.470	0.470
Southwest Gas Corp	0.330	0.330	0.345	0.345
UIL Holdings	0.459	0.459	0.459	0.459
WGL Holdings	0.420	0.437	0.437	0.437

**North Shore Gas Company  
Peoples Gas Light and Coke Company**

**Delivery Group**

**DCF Cost of Common Equity Estimates**

<u>Company</u>	<u>Estimate</u>
AGL Resources	10.47%
Atmos Energy Corp	9.23%
Consolidated Edison	6.70%
Laclede Group	7.85%
New Jersey Resources	7.22%
Northeast Utilities	11.20%
Northwest Natural Gas	7.88%
PEPCO Holdings	10.20%
Piedmont Natural Gas	8.41%
South Jersey Industries	9.55%
Southwest Gas Corp	7.06%
UIL Holdings	11.19%
<u>WGL Holdings</u>	<u>8.07%</u>
Average	<u><u>8.85%</u></u>

**North Shore Gas Company  
Peoples Gas Light and Coke Company**

**Risk Premium Analysis**

Interest Rates as of October 31, 2013

<u>U.S. Treasury Bills</u>		<u>U.S. Treasury Bonds</u>	
<u>Discount Rate</u>	<u>Effective Yield</u>	<u>Equivalent Yield</u>	<u>Effective Yield</u>
0.03%	0.03%	3.63%	3.66%

**Risk Premium Cost of Equity Estimates\*  
Delivery Group**

<u>Risk-Free Rate</u>		<u>Beta</u>		<u>Risk Premium</u>		<u>Cost of Common Equity</u>
3.66%	+	0.64	*	(12.43% - 3.66%)	=	9.27%

\*Risk-Free Rate Proxy is the U.S. Treasury Bond Yield.