STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

COMMONWEALTH EDISON COMPANY	:	
	:	No. 07-0528
Petition for Approval of Initial Procurement Plan	:	

AFFIDAVIT OF SCOTT G. FISHER

I, Scott G. Fisher, having been duly sworn, do hereby say and depose under oath based on my personal knowledge as follows:

1. I am a Principal with The NorthBridge Group ("NorthBridge"), an economic and strategic consulting firm that serves the electric and natural gas industries.

2. Since joining NorthBridge in 1998, I have advised companies in the electric industry on decisions related to risk management, asset valuation and portfolio management, product pricing, contract negotiations, regulatory affairs, supply procurement, rate design, and overall corporate strategy. Before joining NorthBridge, I was a consultant at Strategic Decisions Group, a management consulting firm serving a variety of industries. I received an A.B. from Dartmouth College, and a B.E. from the Thayer School of Engineering at Dartmouth College with high honors. In addition, I received an M.S. in Engineering-Economic Systems from Stanford University, and an M.B.A. from the Tuck School of Business at Dartmouth College with high honors.

3. The purpose of my affidavit is to respond to claims made and analysis presented by Robert F. McCullough in his affidavit regarding the quantities of forward contracts that should be procured by Commonwealth Edison ("ComEd"). The People of the State of Illinois

("AG") relied upon Mr. McCullough's affidavit to develop its position that the quantities of forward contracts to be procured should be increased above the levels proposed in ComEd's Procurement Plan ("Procurement Plan" or "Plan").[1]

4. As I will explain in this affidavit, Mr. McCullough's analysis and conclusions are fatally flawed, and as a result he provides no evidence that modifying the quantities of forward contracts to be procured from the amounts proposed by ComEd would benefit customers. As a matter of fact, procuring forward contracts in quantities consistent with Mr. McCullough's analysis is likely to expose customers to increased and unnecessary price uncertainty. The major flaws regarding Mr. McCullough's analysis and conclusions include the following:

a) The mathematical approach that Mr. McCullough employs in his analysis to support his recommendation is incorrect. When calculating his recommended forward contract quantities, Mr. McCullough focuses on the variability regarding ComEd's total energy costs, but does not consider the uncertainty regarding the prices that customers would pay under his recommended procurement portfolio. As a result, he erroneously concludes that the quantities of forward contracts to be procured should be significantly higher than the forecasted loads.

b) Mr. McCullough misapplies historical hourly load and price data in his analysis, and therefore he does not appropriately characterize the relevant future load and market price uncertainty.

[1] Objections and Proposed Modifications to Commonwealth Edison's Initial Procurement Plan and Tariff and Request For Rehearing By the People of the State of Illinois, at 3-4.

c) Mr. McCullough's analysis is internally inconsistent with regard to the historical sample periods from which he obtains the load and market price data that he uses in his analysis.

d) Mr. McCullough's measure of risk, which is the standard deviation of outcomes, is not descriptive enough in this case to adequately characterize the risk to which customers are exposed under a given procurement strategy.

e) Aside from all of these flaws, Mr. McCullough's analysis does not pass a test of common sense. Mr. McCullough's analysis indicates that ComEd should procure ahead of time an amount of energy that is between 35% and 60% more than its forecasted load. Yet, based on ComEd's forecasts, which are not challenged by Mr. McCullough, the difference between the load in the scenario in which high customer retention and high usage occurs, and the base case forecasted load, is only 18%.[2] Clearly, procuring forward the quantities of energy indicated by Mr. McCullough's analysis would almost assuredly result in significant quantities of excess energy that would be sold into the volatile spot market, and the volatile net costs associated with these sales would be passed on to customers, adding to the risks regarding customer rates.

5. In this affidavit, I will further explain each of these flaws associated with Mr. McCullough's analysis and conclusions in greater detail. First, I will use a simple illustrative example to show why the mathematical approach that Mr. McCullough employs in his analysis

[2] Page 51 of the Plan indicates that the load in the scenario in which high customer retention and high usage occurs is 53.1 MM MWH for the entire June 2008 – May 2009 period, and that the base case forecasted load for this period is 45.0 MM MWH, resulting in an 18% difference. Similarly, the difference for the summer (June-September) peak period is 25%, and the difference for the summer (June-September) off-peak period is also 25%, yet Mr. McCullough's uncorrected analysis supports forward procurement of energy of a quantity that is 60% more than forecasted load for the summer.

to support his recommendation is incorrect. I will then explain how Mr. McCullough misapplies historical hourly load and price data in his analysis, resulting in an incorrect characterization of the relevant load and market price uncertainty. Then, using Mr. McCullough's own load and price assumptions[3] I will show that if one were to correct for the fatal flaw associated with Mr. McCullough's mathematical approach,[4] then the appropriate forward contract quantities implied by Mr. McCullough's analysis would be much closer to those proposed by ComEd. I will then explain how the historical sample periods from which Mr. McCullough obtains his load and market price data are internally inconsistent, and I will identify the effect that this inconsistency has on his results.[5] I will then explain why Mr. McCullough's measure of risk is not adequately descriptive, and I will present the results of the analysis when other measures of risk are considered.[6] Finally, I will reiterate that the implications of Mr. McCullough's results do not pass a test of common sense.

6. Separately, I will explain that certain other statements made by Mr. McCullough are false. Specifically, I will refute Mr. McCullough's claim based on the results of ComEd's analysis that "…slightly higher hedges would lower costs in all four high cost scenarios and roughly break even in the remaining three cases, thus hinting at the possibility that carrying some length in the resource portfolio could lower the rate risk to which customers are exposed."[7]

[3] As previously noted, these assumptions are flawed because they do not appropriately reflect the relevant load and market price uncertainty.

[4] This is the fatal flaw described through the simple illustrative example.

[5] This effect will be measured using Mr. McCullough's own assumptions regarding load and market price uncertainty, but it should not be forgotten that these assumptions are flawed.

[6] This analysis will be performed using Mr. McCullough's own assumptions regarding load and market price uncertainty, but it should not be forgotten that these assumptions are flawed.

[7] AG Exhibit 1.0, paragraph 7.

Also, I will explain why, contrary to Mr. McCullough's claims, the analysis of risk that ComEd presented in its plan is indeed adequate.

7. ComEd filed its Procurement Plan ("Plan") for the June 2008 – May 2009 period with the Illinois Commerce Commission on October 29, 2007. In the Plan, ComEd proposes purchasing forward block contracts in quantities that, when aggregated with the existing forward block contract with Exelon Generation ("ExGen"), equal forecasted average load levels for each monthly on-peak/off-peak period.

8. The AG filed objections and proposed modifications to the Plan on November 13, 2007. In these objections and proposed modifications, the AG claims that "ComEd's forward position, either physical or financial, should exceed forecasted load during critical peak periods by amounts greater than those proposed by ComEd."[8] In order to support this contention, the AG relies on AG Exhibit 1.0, the Affidavit of Robert F. McCullough.

9. In his affidavit, Mr. McCullough presents the results of analysis that he performed to determine the quantities of forward contracts necessary to minimize risks for customers. Specifically, using historical load and market price data to develop scenarios, Mr. McCullough measured the distribution of costs, expressed in total dollars, given a quantity of forward contracts to be procured. By varying the quantity of forward contracts to be procured and then observing the distribution of costs across his scenarios, Mr. McCullough identified the quantity of forward contracts that minimizes the standard deviation of costs expressed in total dollars.[9]

[8] Objections and Proposed Modifications to Commonwealth Edison's Initial Procurement Plan and Tariff and Request For Rehearing By the People of the State of Illinois, at 3.

[9] Like any analysis, the results are dependent upon the underlying assumptions, which in this case pertain to load and market price.

Mr. McCullough claims that the standard deviation of the costs expressed in total dollars is a useful measure of the risk to which customers are exposed.[10]

10. In his analysis, instead of defining the quantities of forward contracts in terms of megawatts, Mr. McCullough defines the quantities using a measure known as the "hedge ratio." The hedge ratio refers to the megawatt quantity of forward contracts procured divided by the forecasted average megawatt load during the relevant delivery period. So, a hedge ratio with a value greater than 100% indicates that the quantity of forward contracts procured is greater than the forecasted average load, and a hedge ratio with a value less than 100% indicates that the quantity of forward contracts procured is less than the forecasted average load.

11. Mr. McCullough's analysis indicates that, in general, a hedge ratio of about 135% results in the lowest standard deviation of costs expressed in total dollars.[11] Furthermore, Mr. McCullough's analysis indicates that for the months of June through September, a hedge ratio of about 160% results in the lowest standard deviation of costs expressed in total dollars.[12] In other words, Mr. McCullough claims that procuring forward contracts in quantities that are 35% higher than forecasted average loads in general, and 60% higher than forecasted average loads in the summer, will minimize risks for customers.

12. Mr. McCullough then states that he cannot determine why his results differ so markedly from those of ComEd.[13]

[10] AG Exhibit 1.0, paragraph 13.

[11] AG Exhibit 1.0, paragraph 16.

[12] AG Exhibit 1.0, paragraph 17.

[13] AG Exhibit 1.0, paragraph 18.

13. There are several reasons why Mr. McCullough's results differ markedly from those of ComEd, but the most significant reason is the fatal flaw in Mr. McCullough's analysis: the mathematical approach that Mr. McCullough employs to solve for the appropriate hedge ratios is incorrect. Even if Mr. McCullough's underlying load and market price assumptions were accepted,[14] he did not solve for the hedge ratios that minimize the uncertainty associated with the prices that ComEd's customers would pay, and as a result he erroneously concludes that the forward quantities to be procured should be significantly higher than the forecasted loads. Instead of solving for the hedge ratio that minimizes the uncertainty associated with the prices that ComEd's customers would pay, Mr. McCullough solved for the hedge ratio that minimizes the distribution (which he measured as the standard deviation) of costs expressed in total dollars. However, Mr. McCullough fails to recognize that procurement of forward contracts in quantities reflective of these hedge ratios produces significant uncertainty regarding the prices that ComEd's customers will pay, and ultimately it is this price uncertainty that should be considered. Uncertainty regarding customer prices is appropriately reduced by implementing hedge ratios with a value much closer to 100%, as ComEd recommends in its Plan.

14. A simple illustrative example provides greater insight into the fatal flaw in Mr. McCullough's analysis. Suppose that the forecasted load for a given period is 1.0 million MWH, and suppose that, due to usage and customer switching uncertainty, the actual load could be 0.85 million MWH, 1.0 million MWH, or 1.15 million MWH, each with equal likelihood. Also, suppose that the forward price for this period is $70/MWH, and suppose that the actual average spot price could be $50/MWH, $70/MWH, or $90/MWH, each with equal likelihood. Due to the

[14] Nothing in my affidavit should be interpreted as an endorsement of any of the underlying assumptions in Mr. McCullough's analysis.

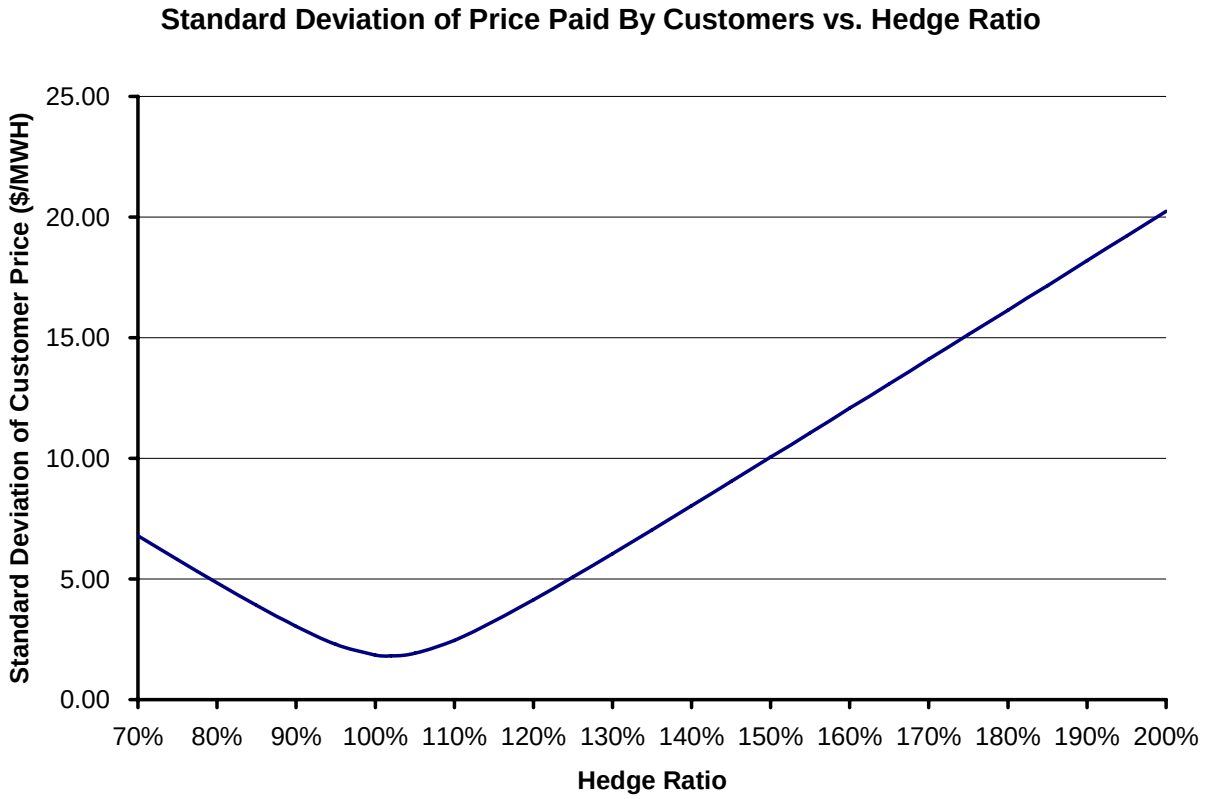
positive correlation between prices and loads, assume that the low price outcome of $50/MWH corresponds to the low load outcome of 0.85 million MWH, the base price outcome of $70/MWH corresponds to the base load outcome of 1.0 million MWH, and the high price outcome of $90/MWH corresponds to the high load outcome of 1.15 million MWH. Finally, suppose that due to the hourly price and load correlation within the delivery period, the load-weighted average spot price is 5% higher than the straight average spot price. The table below shows these scenarios, as well as the costs expressed in total dollars and the costs expressed in dollars per MWH (i.e., the customer prices, assuming that no financial hedges are established for customers).[15]

	Scenario #1	Scenario #2	Scenario #3	Standard Deviation
Load (MM MWH) [a]	0.85	1.00	1.15	
Average Spot Price ($/MWH) [b]	50.00	70.00	90.00	
Load-Weighting Gross-Up [c]	5%	5%	5%	
Total Cost ($MM) [d]=[a]*[b]*(1+[c])	44.63	73.50	108.68	32.08
Price Paid By Customers ($/MWH) [e]=[d]/[a]	52.50	73.50	94.50	21.00

15. Next, suppose that we would like to purchase forward contracts to hedge the financial risks associated with the energy needed to serve the load. The forward price is $70 (the probability-weighted-average spot price).

16. The following graph shows the relationship between the standard deviation of customer price outcomes and the hedge ratio:

[15] The values for the "customer prices" in this example are illustrative. They do not incorporate certain aspects of customer rates (e.g., capacity costs, ancillary services costs, translation mechanisms, line loss gross-ups, etc.). However, this does not affect the conclusions that can be drawn from this example.

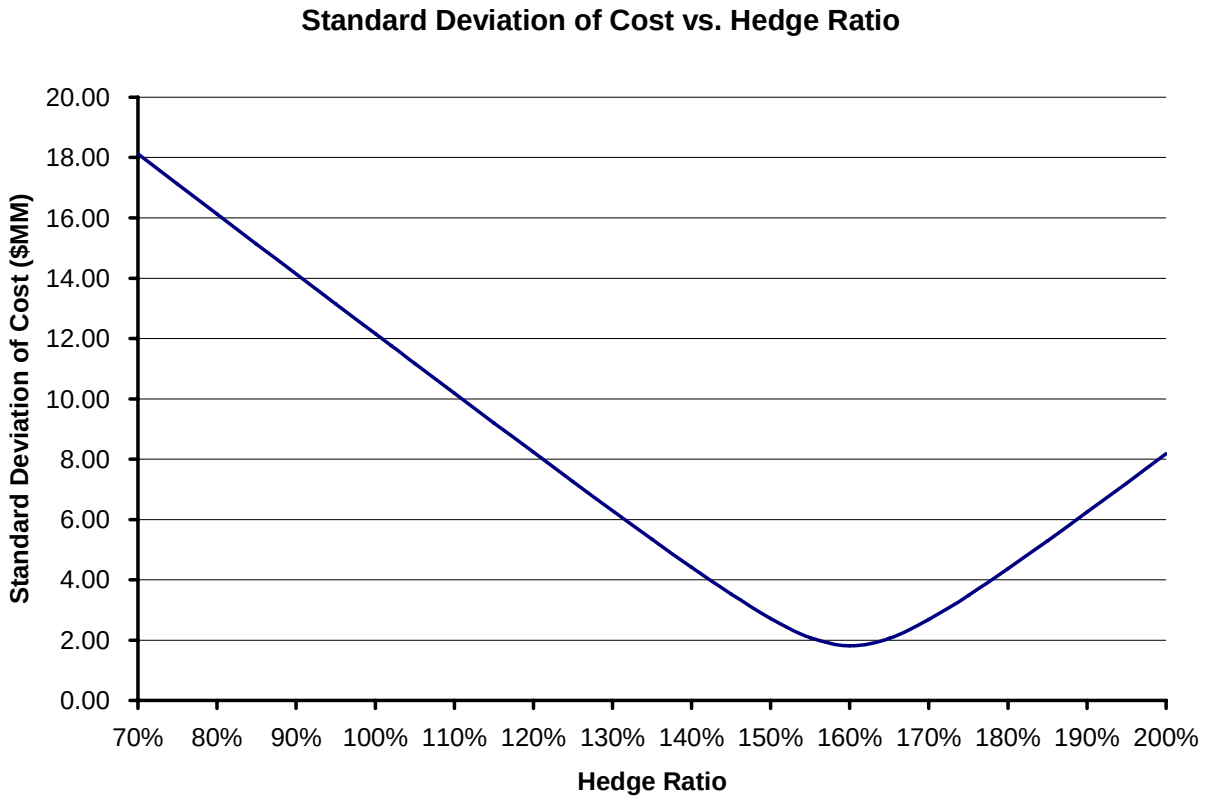


17. As the graph shows, the hedge ratio required to minimize the standard deviation of customer price outcomes is 102%. (ComEd proposed a hedge ratio of 100% in its Plan.) If a hedge ratio of 102% were implemented by procuring a quantity of forward contracts that is 2% higher than forecasted load levels, then the results would be as follows:

	Scenario #1	Scenario #2	Scenario #3	Standard Deviation
Load (MM MWH)	0.85	1.00	1.15	
Average Spot Price ($/MWH)	50.00	70.00	90.00	
Load-Weighting Gross-Up	5%	5%	5%	
Unhedged Cost ($MM) [a]	44.63	73.50	108.68	
Forward Price ($/MWH)	70.00	70.00	70.00	
Average Spot Price ($/MWH)	50.00	70.00	90.00	
Contract Cost/(Benefit) ($/MWH)	20.00	0.00	(20.00)	
Contract Quantity (MM MWH)	1.02	1.02	1.02	
Contract Cost/(Benefit) ($MM) [b]	20.40	0.00	(20.40)	
Total Cost ($MM) [c]=[a]+[b]	65.03	73.50	88.28	11.77
Load (MM MWH) [d]	0.85	1.00	1.15	
Price Paid By Customers ($/MWH) [e]=[c]/[d]	76.50	73.50	76.76	1.81

18. As the table shows, the standard deviation of outcomes with regard to customer price is $1.81/MWH.

19. Alternatively, suppose that Mr. McCullough's approach is used to determine the appropriate hedge ratio. In other words, suppose that forward contracts are procured in an aggregate quantity such that the standard deviation of the cost expressed in total dollars is minimized. The following graph shows the relationship between the standard deviation of costs expressed in total dollars and the hedge ratio:



20. As the graph shows, the hedge ratio required to minimize the standard deviation of costs expressed in total dollars is 160%. (Mr. McCullough calculated hedge ratios between 135% and 160% in his affidavit.) If a hedge ratio of 160% were implemented by procuring a

quantity of forward contracts that is 60% higher than forecasted load levels, then the results would be as follows:

	Scenario #1	Scenario #2	Scenario #3	Standard Deviation
Load (MM MWH)	0.85	1.00	1.15	
Average Spot Price ($/MWH)	50.00	70.00	90.00	
Load-Weighting Gross-Up	5%	5%	5%	
Unhedged Cost ($MM) [a]	44.63	73.50	108.68	
Forward Price ($/MWH)	70.00	70.00	70.00	
Average Spot Price ($/MWH)	50.00	70.00	90.00	
Contract Cost/(Benefit) ($/MWH)	20.00	0.00	(20.00)	
Contract Quantity (MM MWH)	1.60	1.60	1.60	
Contract Cost/(Benefit) ($MM) [b]	32.00	0.00	(32.00)	
Total Cost ($MM) [c]=[a]+[b]	76.63	73.50	76.68	1.82
Load (MM MWH) [d]	0.85	1.00	1.15	
Price Paid By Customers ($/MWH) [e]=[c]/[d]	90.15	73.50	66.67	12.07

21. As the table shows, the standard deviation of outcomes with regard to customer prices would be $12.07/MWH. This is significantly higher than $1.81/MWH, the standard deviation given a hedge ratio of 102%. Furthermore, customer prices would be highest when market prices for energy are lowest (a rate of $90.15/MWH when the average spot price is $50.00/MWH) and customer prices would be lowest when market prices for energy are highest (a rate of $66.67/MWH when the average spot price is $90.00/MWH).

22. This example shows that Mr. McCullough's approach to calculate the quantity of forward contracts to be procured does not minimize the price uncertainty faced by customers. Furthermore, this example illuminates the undesirable effects that would result from adopting Mr. McCullough's approach. These undesirable effects have been shown to occur in this single example, but given that the inherent fatal flaw associated with Mr. McCullough's approach to calculate the quantity of forward contracts exists regardless of the underlying load and market price assumptions, similar undesirable effects would result under any reasonable load and market

price assumptions. To summarize, the fatal flaw and the undesirable effects associated with Mr. McCullough's approach include the following:

a) Mr. McCullough's approach to determine the forward contract quantities is fatally flawed because the approach is not designed to reduce the uncertainty that ComEd's customers face regarding the prices that they will pay; instead, the approach is designed to minimize the uncertainty associated with the total cost that ComEd will pay for its energy.

b) Given the positive correlation between loads and market prices that Mr. McCullough discusses in his affidavit on numerous occasions, a procurement strategy that involves procuring forward contracts in quantities calculated using Mr. McCullough's approach would result in relatively high prices for customers when market prices are low and relatively low prices for customers when market prices are high. This dynamic does not provide appropriate market price signals to customers, and could jeopardize the development of a healthy competitive retail market.

c) If the quantity of forward contracts to be procured is calculated using Mr. McCullough's approach, and hence reflects an increased hedge ratio, then there is a greater chance that prices paid by customers who remain on utility service will increase significantly if market prices decrease and the number of customers who elect service from competitive retail electric suppliers increases.

d) Clearly, there are significant problems associated with the distribution of possible prices that customers would pay if a procurement strategy that involved procuring forward contracts in quantities calculated using Mr. McCullough's approach were

adopted. Given that an alternate approach that is appropriately designed to reduce the uncertainty regarding the prices that ComEd's customers will pay has significant benefits because it avoids the undesired effects of Mr. McCullough's approach, it is clear that Mr. McCullough's approach does not achieve the goals of the Plan as set forth in the Illinois Power Agency Act (Public Act 95-0481, effective August 28, 2007) (the "Act"). Specifically, the Act states:

> The Commission shall approve the procurement plan if the Commission determines that it will ensure adequate, reliable, affordable, efficient, and environmentally sustainable electric service at the lowest total cost over time, *taking into account any benefits of price stability*.[16] (emphasis added)

While I am not an attorney, it appears to me that the Act clearly requires that the benefits of price stability be taken into account when the Commission decides whether to approve a procurement plan. Approval of Mr. McCullough's recommended forward contract quantities would not provide these benefits.

23. Due to the fatal flaw associated with Mr. McCullough's approach to determine the quantity of forward contracts to be procured, and due to the undesirable effects that would result from implementation of a procurement strategy that involved procuring forward contracts in quantities calculated using Mr. McCullough's approach, the hedge ratios that Mr. McCullough has calculated have no validity. Since the AG relies on Mr. McCullough's analysis to develop its recommendation that ComEd purchase forward contracts in quantities in excess of those proposed by ComEd in the Plan, the AG's recommendation is unsupported.

[16] 220 ILCS 5/16-111.5(j)(ii)

24. To further demonstrate the difference between hedge ratios that result from Mr. McCullough's flawed approach and hedge ratios that result from an alternate approach that is designed to reduce price uncertainty for customers, I applied both approaches to the actual load and market price data and assumptions that Mr. McCullough employed in his analysis.[17]

25. Before I present the results of this analysis, it should be noted that, aside from the fatal flaw that I have already identified, the way that Mr. McCullough treats historical hourly load and price data in his analysis is not appropriate to characterize uncertainty regarding future time periods. This is the second significant flaw in Mr. McCullough's analysis.[18] Mr. McCullough's calculated standard deviations are simply the standard deviations of the hourly costs that ComEd would have paid for its energy assuming that it adopted a forward procurement strategy in the past.[19] In other words, Mr. McCullough simply calculated a value that describes how ComEd's costs would vary from one hour to the next, assuming that ComEd received a bill each hour for its energy. So, even putting aside the fatal flaw that I have already identified (that Mr. McCullough should have focused on customer price uncertainty and not on the variability in ComEd's dollar costs), Mr. McCullough's treatment of the underlying load and market price data is inappropriate because he did not represent the relevant load and price distributions. Mr. McCullough simply calculated a value that describes how ComEd's costs would vary from one hour to the next; however, customer bills are sent monthly (not hourly), and my understanding is

[17] Nothing in my affidavit should be interpreted as an endorsement of any of the underlying assumptions in Mr. McCullough's analysis.

[18] The first, as I have explained, is that Mr. McCullough should have focused on customer price uncertainty and not on the variability in ComEd's dollar costs.

[19] Mr. McCullough also assumed that the average hourly price during a given historical time period was the *a priori* forward price for that time period, that the average hourly load during a given historical time period was the *a priori* forecasted load for that time period, and that one forward product would be purchased for the entire time period sampled.

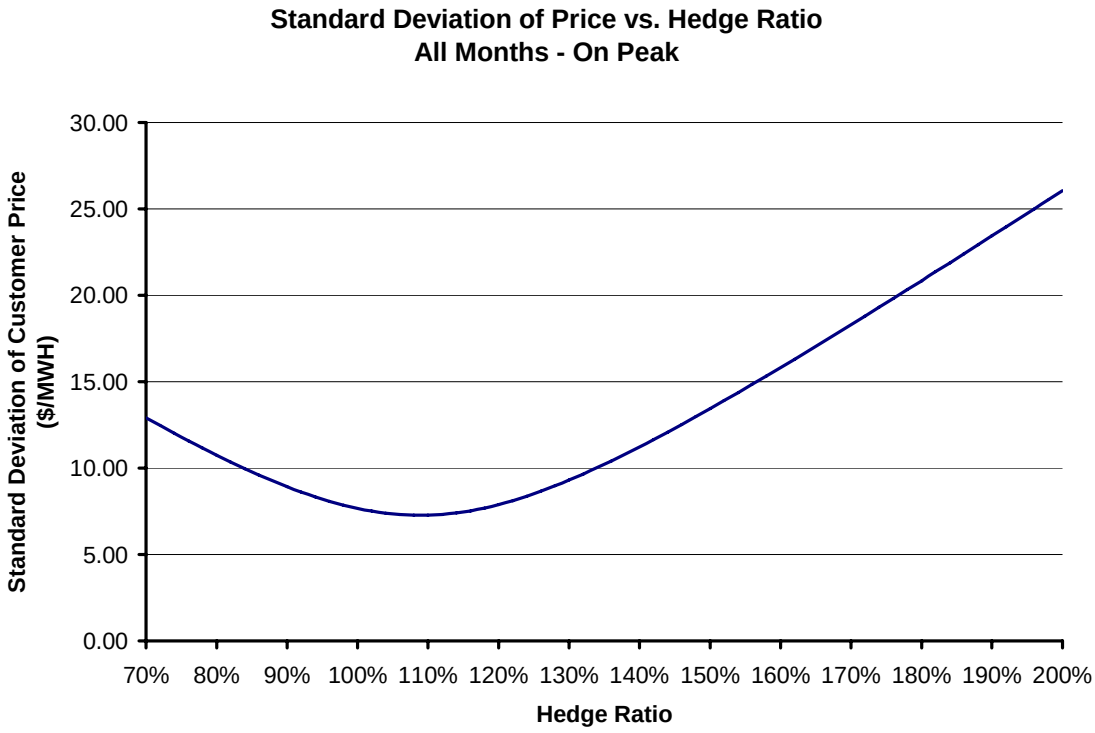
that the customer rate calculations will consider the entire set of forward procurement prices during the June 2008 – May 2009 period and customer rates will distinguish time periods that are longer than hourly. As a result, Mr. McCullough should have characterized the uncertainty regarding average customer prices over longer periods of time in the future, rather than measuring historical load and price movements from one hour to the next. So, Mr. McCullough's analysis incorrectly implies that the hour-by-hour variability of historical hourly loads over the observed historical period approximates the probability distribution for the average load over a longer time period in the future, and it implies that the hour-by-hour variability of historical hourly prices over the observed historical period approximates the probability distribution for the average price over a longer time period in the future. In other words, Mr. McCullough's distributions describe the pattern of hourly loads and prices across a given historical time period, but they do not describe the uncertainty regarding the average load and price for a given future time period. The probability distributions of average loads and prices over future periods are different from the distributions of historical hourly loads and prices for several reasons. First, historical distributions of hourly loads and prices are partially driven by factors, such as expected usage patterns throughout the day, that are not related to uncertainty about future outcomes. Second, historical changes in usage and spot prices from hour to hour across the observed historical time period may not at all be related to the uncertainty about average loads and prices in the future. Third, uncertainty about loads and prices in a given hour is different from uncertainty about average loads and prices across a longer time period. Due to these facts, Mr. McCullough's treatment of the hourly load and price data is inappropriate. Despite this problem with Mr. McCullough's underlying data, I believe that it is important to show that, even if one were to believe that his underlying data and his treatment of that data are

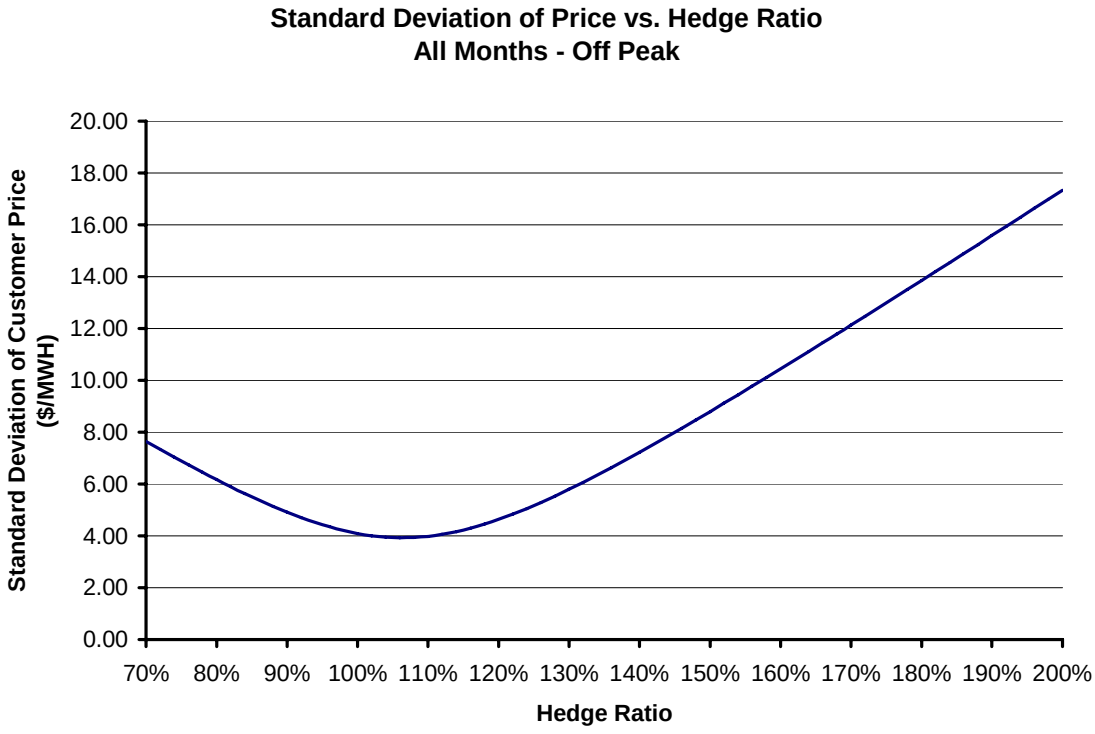
relevant, correcting for the first fatal flaw in Mr. McCullough's analysis that I have previously described[20] still significantly changes his conclusions.

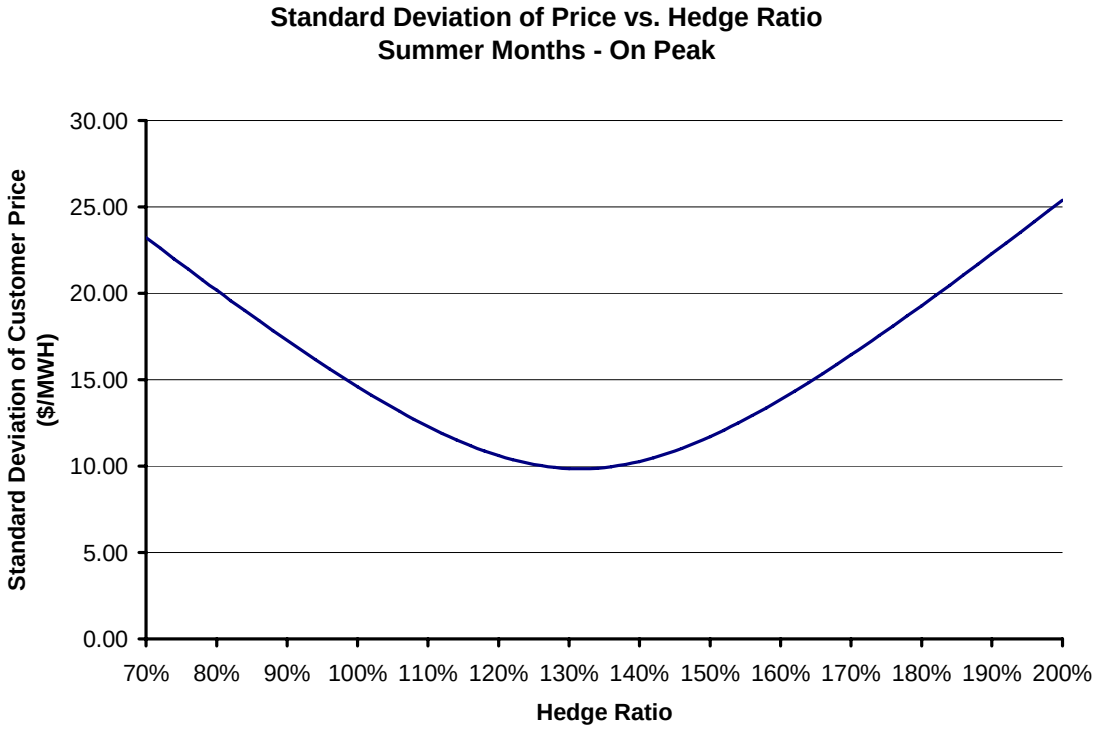
26. When Mr. McCullough's approach (which solves for the hedge ratio that minimizes the standard deviation of costs expressed in total dollars) is applied to the actual load and market price data and assumptions that Mr. McCullough employed in his analysis, the results shown in his affidavit are replicated. As Mr. McCullough states in his affidavit, the hedge ratio which minimizes the standard deviation of costs expressed in total dollars is about 135% across all months, and is about 160% for the summer (June – September) months.

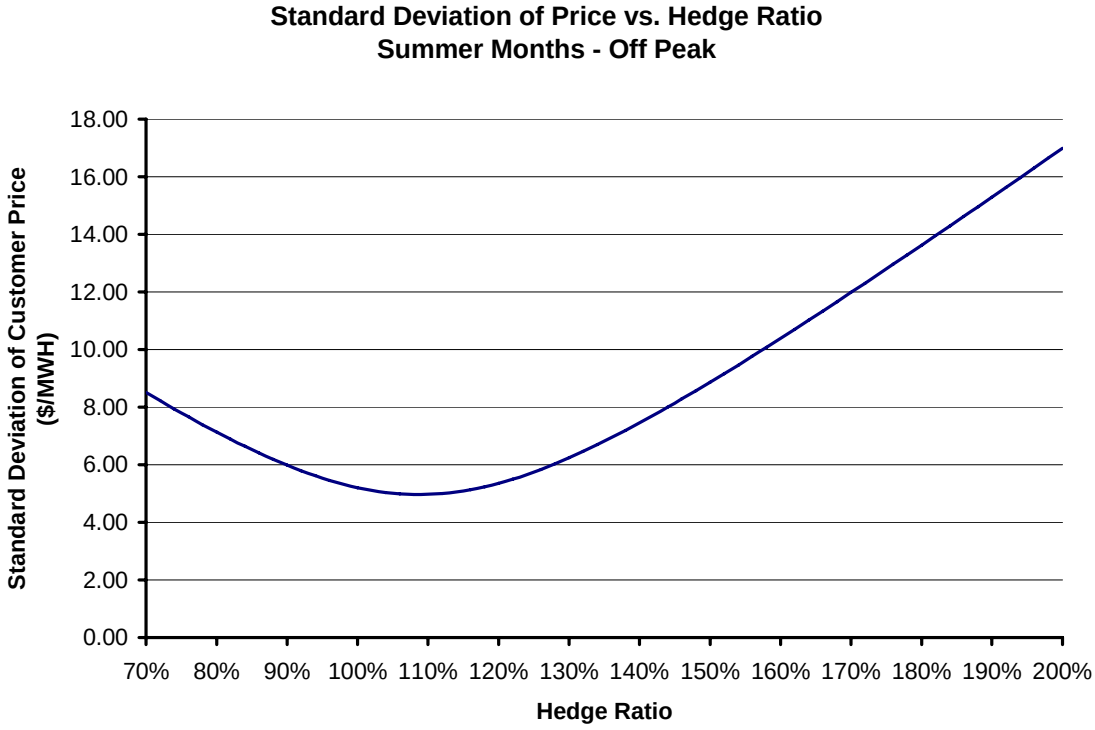
27. However, as I have discussed, the proper objective is to reduce the distribution of possible customer prices. Using the same underlying price and load assumptions, the hedge ratio that results from an approach that minimizes the standard deviation of customer prices is about 108% across all months during the on-peak period, is about 106% across all months during the off-peak period, is about 132% for the summer (June – September) months during the on-peak period, and is about 108% for the summer (June – September) months during the off-peak period. This is shown in the graphs below.

[20] The first fatal flaw, as I have previously explained, is that Mr. McCullough should have focused on customer price uncertainty and not on the variability in ComEd's dollar costs.


Standard Deviation of Price vs. Hedge Ratio
All Months - On Peak
Standard Deviation of Customer Price ($/MWH)
30.00
25.00
20.00
15.00
10.00
5.00
0.00
70% 80% 90% 100% 110% 120% 130% 140% 150% 160% 170% 180% 190% 200%
Hedge Ratio


Standard Deviation of Price vs. Hedge Ratio
All Months - Off Peak
Standard Deviation of Customer Price ($/MWH)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
70% 80% 90% 100% 110% 120% 130% 140% 150% 160% 170% 180% 190% 200%
Hedge Ratio


Standard Deviation of Price vs. Hedge Ratio
Summer Months - On Peak
Standard Deviation of Customer Price ($/MWH)
30.00
25.00
20.00
15.00
10.00
5.00
0.00
70% 80% 90% 100% 110% 120% 130% 140% 150% 160% 170% 180% 190% 200%
Hedge Ratio


Standard Deviation of Price vs. Hedge Ratio
Summer Months - Off Peak
Standard Deviation of Customer Price ($/MWH)
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
70% 80% 90% 100% 110% 120% 130% 140% 150% 160% 170% 180% 190% 200%
Hedge Ratio

28. Without further analysis, and ignoring the fact that Mr. McCullough's treatment of the underlying data is inappropriate as I have described previously, one might conclude that while Mr. McCullough's original analysis significantly overstates the appropriate hedge ratios, it still supports a hedge ratio that is noticeably greater than 100% for the summer on-peak period. This is not true, for two major reasons.

29. First, Mr. McCullough's analysis of hedge ratios for the summer months is inconsistent with his analysis of hedge ratios for the months throughout the year in general. Specifically, when analyzing the hedge ratios across all months in general, Mr. McCullough used historical load and market price data extending back to 2004. However, when analyzing the hedge ratios for the summer months, Mr. McCullough used historical load and market price data only from the summer of 2006. If Mr. McCullough's analysis of the summer period also included his load and price data from the summers of 2004 and 2005, and if Mr. McCullough had solved for the hedge ratio that minimizes the standard deviation of customer prices, a hedge ratio of about 110% (instead of about 132%) would have been calculated for the summer on-peak period. Of course, as I have described previously, neither analysis is correct because Mr. McCullough's standard deviation calculations are related to variability in historical loads and prices from one hour to the next, while they should have been related to the uncertainty regarding average customer prices over longer periods of time in the future.

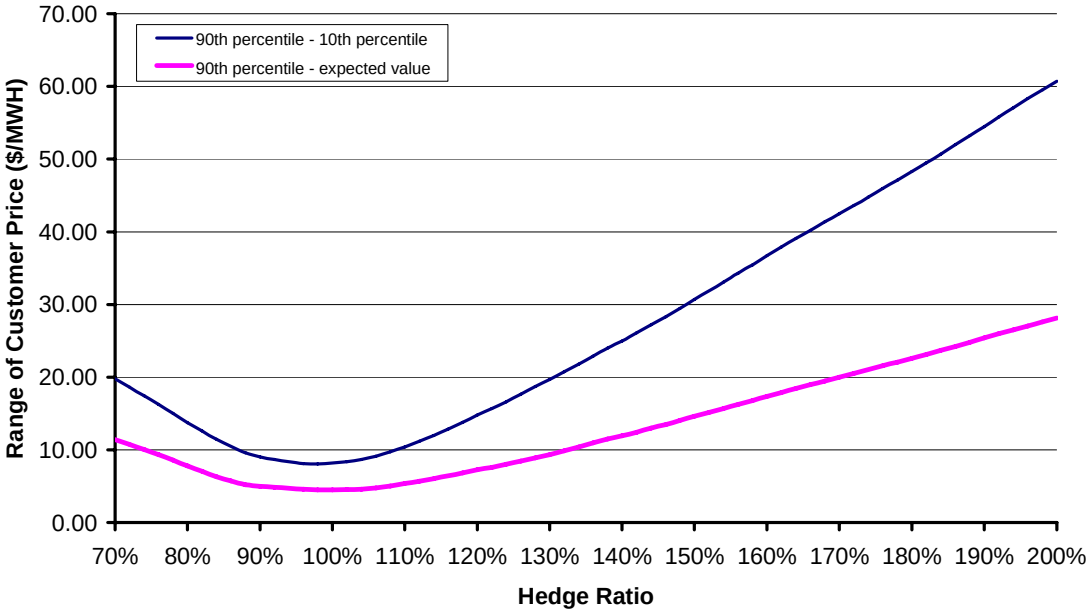
30. Second, putting aside the fact that Mr. McCullough's calculations for the summer period are inconsistent with his calculations for all months in general, and putting aside the fact that Mr. McCullough's treatment of the underlying data is inappropriate because he did not appropriately represent the relevant uncertainty, there is another reason why Mr. McCullough's analysis does not support a hedge ratio that is noticeably greater than 100% for the summer on-

peak period. That is, in this case, Mr. McCullough's measure of risk, which is the standard deviation of outcomes, is not descriptive enough to adequately characterize the risk to which customers are exposed under a given procurement strategy. Standard deviation is a statistical measure that provides a general sense of the size of the distribution of outcomes both low and high, but in this case, for the purpose of assessing the appropriate hedge ratio given Mr. McCullough's underlying load and price assumptions, the standard deviation does not adequately and transparently characterize the size of the distribution of potential outcomes. The uncertainty can be better characterized and understood by calculating the values of multiple parameters that measure the size of the distribution of potential outcomes. Useful and transparent parameters to characterize and understand customer price uncertainty may include the difference between the 90th percentile value and 10th percentile value,[21] and the difference between the 90th percentile value and the expected value.[22] I calculated these values using Mr. McCullough's underlying load and market price data and assumptions, and the results of this analysis are shown in the graphs below:

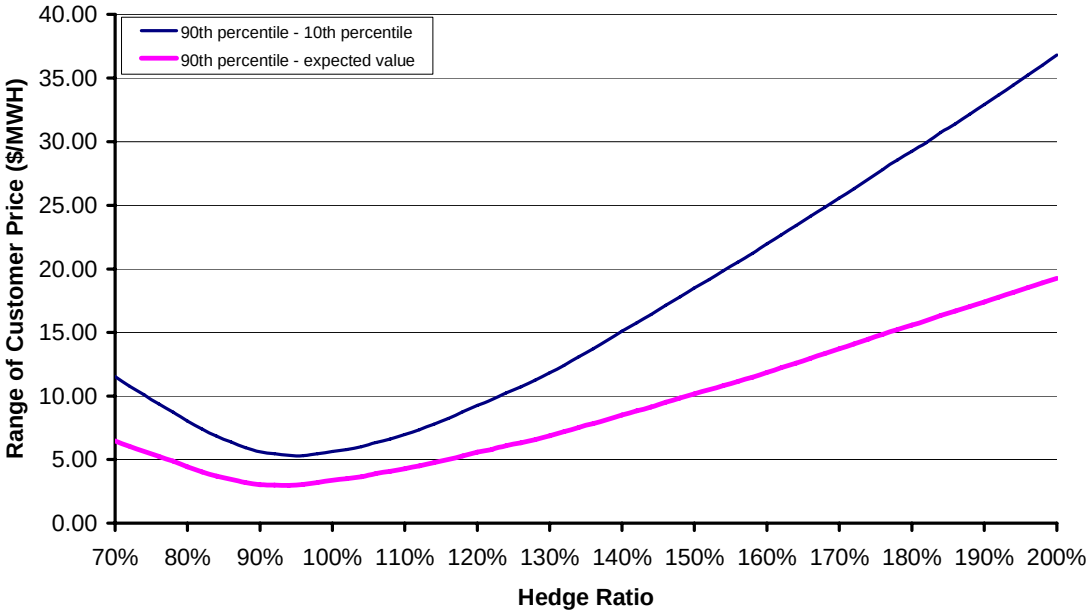
[21] The 90th percentile value refers to the value for which there is only a 10% probability that the actual outcome will be higher than the 90th percentile value. The 10th percentile value refers to the value for which there is only a 10% probability that the actual outcome will be lower than the 10th percentile value. With regard to Mr. McCullough's analysis, my reference to "probability" refers to the frequency of his customer price outcomes.

[22] The expected value is the probability-weighted-average value.

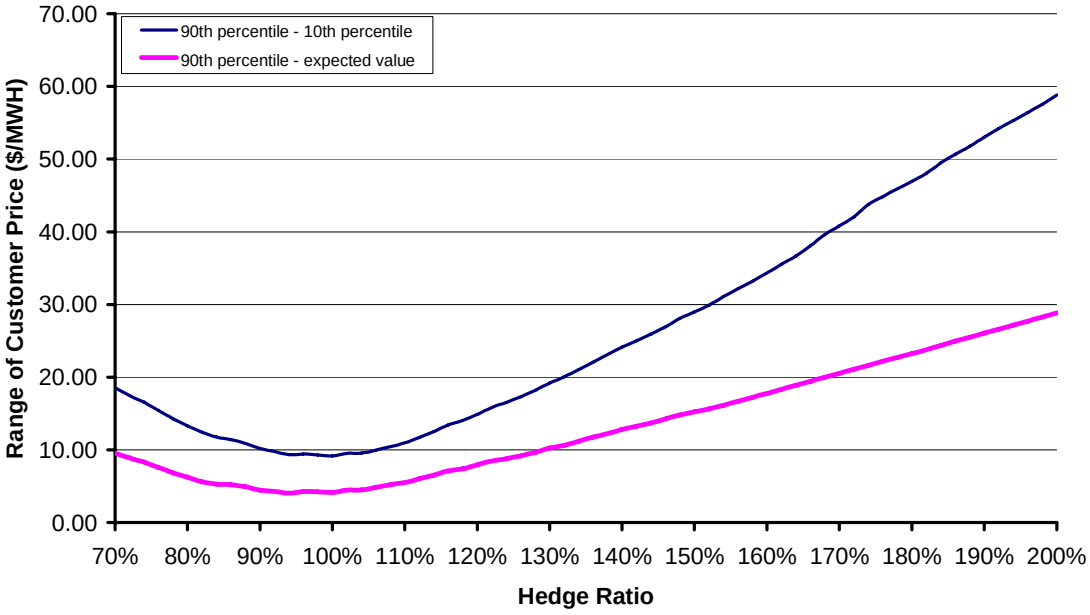
Price Range vs. Hedge Ratio
All Months - On Peak



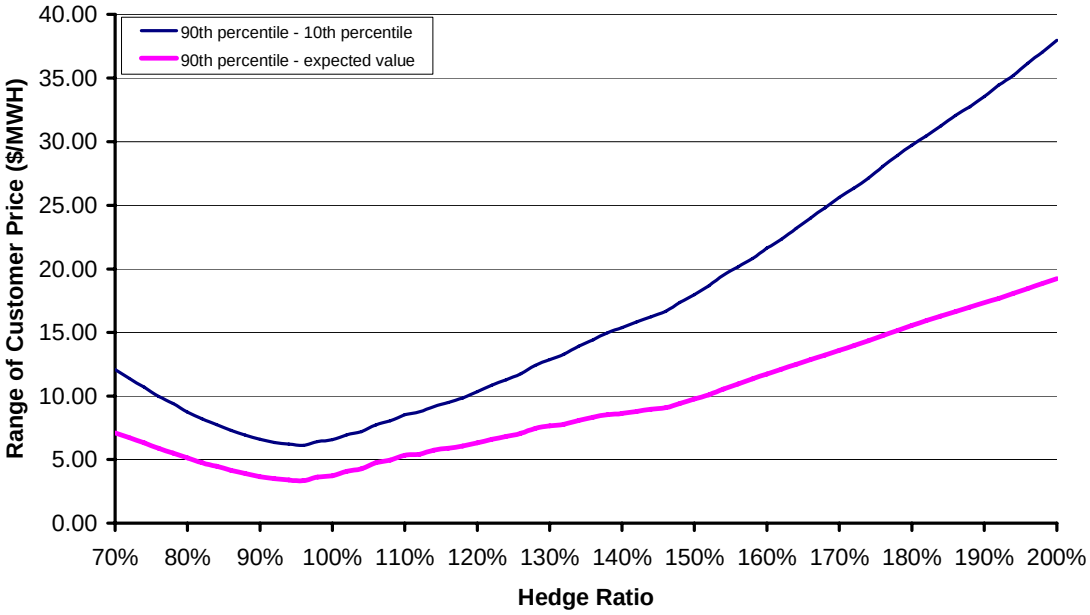
Price Range vs. Hedge Ratio
All Months - Off Peak



Price Range vs. Hedge Ratio
Summer Months - On Peak



Price Range vs. Hedge Ratio
Summer Months - Off Peak



31. As the graphs show, these measures of uncertainty regarding the prices that customers will pay are all minimized when the hedge ratio is fairly close to 100%. Specifically, the hedge ratio which minimizes the difference between the 90th percentile value and 10th percentile value is about 98% across all months during the on-peak period, is about 96% across all months during the off-peak period, is about 100% for the summer (June – September) months during the on-peak period, and is about 96% for the summer (June – September) months during the off-peak period. The hedge ratio which minimizes the difference between the 90th percentile value and the expected value is about 98% across all months during the on-peak period, is about 94% across all months during the off-peak period, is about 94% for the summer (June – September) months during the on-peak period, and is about 96% for the summer (June – September) months during the off-peak period.

32. In summary, once the first fatal flaw in Mr. McCullough's analysis is corrected,[23] Mr. McCullough's analysis supports a hedge ratio close to 100%.[24] As a result, Mr. McCullough has presented no analysis that supports a noticeable change in the 100% hedge ratio proposed and supported by ComEd in its Plan.

33. In his affidavit, Mr. McCullough also refers to analysis presented in ComEd's Plan that provides estimates of procurement portfolio costs across seven different market scenarios, given different assumptions regarding the quantities of forward contracts to be procured. Based on the results of ComEd's analysis, Mr. McCullough concludes, "…slightly higher hedges would lower costs in all four high cost scenarios and roughly break even in the

[23] The first fatal flaw, as I have previously explained, is that Mr. McCullough should have focused on customer price uncertainty and not on the variability in ComEd's dollar costs.

[24] As I have already explained, Mr. McCullough's inappropriate treatment of the underlying load and price data is still a significant flaw in his analysis.

remaining three cases, thus hinting at the possibility that carrying some length in the resource portfolio could lower the rate risk to which customers are exposed."[25] Contrary to Mr. McCullough's statement, this analysis does not indicate that a hedge ratio greater than 100% is warranted, for two reasons. First, in the low market price scenarios, the analysis does not indicate that customers break even if the hedge ratio is increased; instead, the analysis indicates that increasing the hedge ratio increases the prices that customers pay in these scenarios. Second, while the analysis indicates that increasing the hedge ratio decreases the prices that customers pay in the high market price scenarios, and while the incremental price decreases in these scenarios are in some cases greater than the incremental price increases in the low market price scenarios, it cannot be concluded that a hedge ratio greater than 100% is suggested, because these scenarios are not meant to each be assigned equal probabilities; instead, these scenarios were developed and described in detail in order to provide an understanding of portfolio cost risk and to show how the portfolio costs would be affected under fairly extreme market conditions.

34. In his affidavit, Mr. McCullough claims that Commonwealth Edison's analysis of risk faced by its customers in its Plan is "…constituted by nothing more than a small collection of seven example circumstances,"[26] is not described in enough detail to allow auditing by interested parties,[27] and is "…inadequate because it fails to provide any reliable objective guidance regarding an appropriate level of hedges to acquire…"[28] Mr. McCullough's

[25] AG Exhibit 1.0, paragraph 7.

[26] AG Exhibit 1.0, paragraph 5.

[27] AG Exhibit 1.0, paragraph 1.

[28] AG Exhibit 1.0, paragraph 7.

characterization of ComEd's risk analysis and his conclusion that the risk analysis is inadequate are both incorrect. Contrary to Mr. McCullough's claims, in its Plan, ComEd justified its proposal to procure a portfolio of the most granular standard wholesale products in quantities reflective of forecasted loads by explaining that this approach minimizes the forecasted net amounts of energy transacted in the volatile spot market, and as a result, reduces customers' exposure to the volatile spot market prices. ComEd then used actual market data to carefully develop and describe seven market scenarios, each of which represents a general course of events reflecting the interplay of many interdependent variables that are related to the risk factors enumerated in the Act. Mr. McCullough's claim that these scenarios are not described in enough detail to allow auditing by interested parties is false; ComEd dedicated ten pages of the Plan to the detailed description of the scenarios,[29] before it even presented the customer prices that would result under the scenarios, and ComEd also provided all interested parties with the data and calculations used to develop the scenarios. The seven scenarios in aggregate were carefully designed to analyze and to communicate insights about the sensitivity to fairly extreme market conditions of the prices that ComEd's customers would pay. Furthermore, alternate procurement portfolios were assessed under these well-developed scenarios. Based on this analysis, ComEd was able to characterize the likely range of customer prices, and to conclude that this range would not be noticeably affected by moderate deviations in the quantities of forward contracts procured.[30] As noted in the Plan, these scenarios provide a good illustration and understanding of portfolio cost risk. While there is truly an infinite number of possible future scenarios, the

[29] Commonwealth Edison Company - Procurement of Supply for Period June 2008 through May 2009, at 43-52.

[30] A modification in line with the results of Mr. McCullough's uncorrected analysis, to procure quantities up to 60% more than forecasted customer load requirements, is not considered to be a moderate deviation and would increase customer price risk as I have explained.

selected scenarios were chosen because they are plausible, internally consistent, and represent fairly extreme market conditions. Other scenarios could have been analyzed, but the scenarios that were analyzed convey the major risks faced by ComEd's customers, so additional scenarios would not have been informative. In summary, ComEd adequately explained why its proposal reduces price risk for customers and analyzed the likely range of customer prices that would result from its proposal and from other procurement strategies.

35. Finally, aside from all of the analysis that I have presented and all of the statements that I have made, I believe that it is important to plainly recognize what Mr. McCullough's analysis implies, and to simply question if this implication makes common sense. Mr. McCullough's analysis indicates that ComEd should procure ahead of time an amount of energy that is between 35% and 60% more than its forecasted load. Yet, based on ComEd's forecasts, which are not challenged by Mr. McCullough, the difference between the load in the scenario in which high customer retention and high usage occurs, and the base case forecasted load, is only 18%.[31] Clearly, procuring forward the quantities of energy indicated by Mr. McCullough's analysis would almost assuredly result in significant quantities of excess energy that would be sold into the volatile spot market, and the volatile net costs associated with these sales would be passed on to customers, adding to the risks regarding customer rates.

36. This completes my affidavit.

SUBSCRIBED and sworn to under the pains and penalties of perjury on this 20th day of November, 2007.

[31] Page 51 of the Plan indicates that the load in the scenario in which high customer retention and high usage occurs is 53.1 MM MWH for the entire June 2008 – May 2009 period, and that the base case forecasted load for this period is 45.0 MM MWH, resulting in an 18% difference. Similarly, the difference for the summer (June-September) peak period is 25%, and the difference for the summer (June-September) off-peak period is also 25%, yet Mr. McCullough's uncorrected analysis supports forward procurement of energy of a quantity that is 60% more than forecasted load for the summer.

Scott G. Fisher

Scott G. Fisher

COMMONWEALTH OF MASSACHUSETTS

MIDDLESEX, ss. November 20, 2007

Then personally appeared the above-named Scott G. Fisher, having been duly sworn, who stated the foregoing to be true based on his personal knowledge, and who acknowledged the foregoing to be his free act and deed, before me,

Notary Public
My Commission Expires: June 21, 2013