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September 1, 2017

-VIA ELECTRONIC FILING -

Ms. Carlotta S. Stauffer
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Re: Docket No. 20170057-EI - Analysis of IOUs' Hedging Practices

Dear Ms. Stauffer:

Florida Power & Light Company ("FPL") attaches for filing in the above docket the following documents:

1. Rebuttal testimony and exhibit of Dr. Detlef Hallermann on behalf of FPL, Duke Energy Florida, LLC and Tampa Electric Company

2. Rebuttal testimony and exhibits of FPL witness Gerard J. Yupp

3. Rebuttal testimony of FPL witness Renae B. Deaton

If there are any questions regarding this transmittal, please contact me at (561) 304-5795.

Sincerely,

s/ Maria J. Moncada
Maria J. Moncada

Enclosures
cc: Counsel for Parties of Record (w/encl.)

CERTIFICATE OF SERVICE
Docket No. 20170057-EI

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by electronic service on this 1st day of September 2017 to the following:

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

REBUTTAL TESTIMONY OF DETLEF HALLERMANN

DOCKET NO. 20170057-EI

SEPTEMBER 1, 2017

Q. Please state your name and business address.

A. My name is Detlef Hallermann. My business address is Mailstop 4218, Department of Finance Mays Business School, Texas A&M University, College Station, TX 77843.

Q. By whom are you employed and what is your position?

A. I am employed by Texas A&M as a Clinical Professor and Director of the Reliant Energy Securities & Commodities Trading Center, in the Finance Department of the Mays Business School. I am also the Director of the Trading, Risk & Investments Program (TRIP) and the Petroleum Ventures Program (PVP). While the PVP has an advisory board comprised of exploration and production (E&P) entrepreneurs and bankers, the TRIP advisory board is comprised of more than 25 companies that are active participants in the energy trading and investment space. As a result, I have direct access to professionals at all levels of numerous energy trading organizations.

Q. On whose behalf are you testifying?

A. I am submitting this testimony on behalf of three Florida investor-owned utilities (IOU): Duke Energy Florida, LLC, Florida Power & Light Company and Tampa Electric Company.

Q. Please summarize your educational background and professional experience.

A. I have a Bachelor's of Science Degree in Petroleum Engineering from Texas A&M. I hold a Master's degree in Business Administration from the University of Denver with a specialization in Finance. I hold a Master's and a Doctorate degree from the Colorado School of Mines in Mineral Economics.

Prior to starting my Ph.D. I worked in the energy sector as a production engineer and I analyzed oil and gas property acquisitions. After completing my Ph.D., I joined Reliant Energy as a Quantitative Analyst and later managed a group of twelve Ph.D. professionals to analyze problems and build models across all aspects of the deregulated long-term transactions, trading and risk management function. I left Reliant Energy to join Capstone Consulting where I worked on several projects including valuing a twenty-five year oil fixed price swap and credit risk. My largest engagement was implementing a principle components based Monte Carlo VaR model for E.On in Munich, Germany. Returning to the United States, I worked for Kiodex (an energy commodity trading risk management software company) in their consumer solutions & product development area. I focused on specifying and developing new capabilities in the software platform to satisfy customer needs. In the last few years, I have again built a physical Monte Carlo crude trading risk model for a Houston based energy marketing firm. I have also taken a partial sabbatical in the past five years. During that sabbatical, I partnered with Joe Byers at Martin Midstream to focus on addressing best practices for a physical energy trading/hedging firm in proving the accuracy and appropriateness of their VaR model according to the guidance

provided in the Basel II Accords, a set of international banking regulations put forth by the Basel Committee on bank regulations.

From 2003 to approximately 2006, I worked with Rice University and Duke Energy to create and teach a 24 day curriculum regarding Middle Office best practices. Topics included but were not limited to VaR and options. During this time, I received an appointment to Texas A&M University to teach Finance and act as Director for the Reliant Energy Securities & Commodities Trading Center. As part of my responsibilities, I have created the Trading, Risk & Investments Program (TRIP) which includes an advisory board of 25-30 companies actively involved in commodities investment and trading. I also direct the Petroleum Ventures Program (PVP) which includes an advisory board of 20-25 exploration and production related professionals. Through my responsibilities for both programs, I am in a unique position to have unfettered access to a significant number of energy trading industry professionals from the analyst level to the chief officer suite.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to address inaccurate statements and expressed concerns about the hedging proposal submitted by Michael A. Gettings on behalf of the Florida Public Service Commission. They include:

1. Concerns with General Model Justification including the use of VaR as a trade execution tool.
2. Concerns with specific calculations and behaviors in the Gettings Risk Responsive Model.

3. Concerns with the Gettings Risk Responsive approach to describing options and their place in hedging.

Q. Are you sponsoring any exhibits for this proceeding?

A. Yes, I am sponsoring the following exhibit:

DH-1: Glossary of Terms

General Model Justification:

Q. Do you believe that fuel hedging can be an effective and appropriately implemented by IOUs using Mr. Gettings' Risk Responsive Model?

A. No. I disagree with the approach proposed by Mr. Gettings starting on Page 10, line 21 of his testimony. Specifically, I disagree that an IOU should use VaR as a programmable metric for executing trades and that the IOU should run a two-tail VaR, specifically a "Cost VaR" and a "MtM VaR". In addition, I strongly disagree that an IOU should attempt to respond to anticipated future risk in managing its hedging program. Appropriate behaviors for responding to risk include avoiding the risk, keeping the risk, transferring the risk and mitigating the risk. Appropriate hedging is a form of risk mitigation. Trying to respond to a risk once it becomes significant is the exact opposite of the approach an IOU should consider.

Q. Why is responding to VaR on traded positions inappropriate for IOUs?

A. Mr. Gettings is correct that VaR was developed by investment banks in the early 1990s as a method for determining the risk in the portfolio under "normal market conditions." However, investment banks were focused on liquid assets (stocks, bonds) that they had no reason to retain for extended periods of time. One could

argue that an investment bank is equally likely to liquidate the entire investment portfolio or double it based on appropriate market conditions. This is an appropriate behavior for a speculator.

IOUs are not speculators and cannot double or sell out of their entire natural gas portfolio at will. They are hedge-only market participants because they need to purchase the underlying commodity to run their generation units. Hedging tools utilized by IOUs exist to benefit the customers who ultimately pay the fuel expense.

I stated earlier that VaR is a risk metric that assesses the uncertainty in the mark-to-market (MtM) value of a portfolio. VaR estimates a dollar amount of risk exposure in a portfolio within a statistical confidence interval over a specified horizon under normal market conditions. A person running a VaR may state "I am 95% confident our losses should be no greater than $10 million over the next ten (10) days." However, it is very important to understand that VaR is not intended to predict future market direction, expected portfolio losses or changes in future market behavior. It is not appropriate to use VaR to calculate risk exposure and trigger trades for an entity (i.e., the IOUs) that trades solely to mitigate price volatility for a future physical commodity purchase. Doing so changes the IOU from a hedging utility to a speculator, trying to predict the future market moves using an inappropriate model to execute trades.

Q. What are the weaknesses to VaR as a risk management tool or a stand-alone trade execution tool?

A. VaR, in the end, is still only a statistical tool. There are many weaknesses to using VaR as a management tool which are even more severe when it is used as a stand-alone trading tool. They include:

1. It does not address relevant market information. In fact, it ignores all market information (relevant or otherwise).
2. It is not an indicator of future market direction or movements.
3. It works only in conditions in which the market is acting under "normal market conditions." It does not work in extreme market conditions that can be prevalent when supply/demand imbalances occur. Stress testing is a better tool for these more extreme conditions.
4. It is uncommon and inaccurate for VaR calculations to be performed at confidence intervals past 95%. Statistical values past 95% do not converge well and typically require the use of Extreme Value Theory (EVT) to generate convergence to an accurate number.

Q. What is your opinion of layering in programmatic hedges over time as a trade execution tool?

A. It is a well-established approach used by both producers and consumers that are sensitive to variability in their hedging program results. It is similar to dollar-cost averaging investment approaches. Dollar-cost averaging approaches to purchasing stocks are shown to be an effective way to ensure price of entry is appropriate across a longer-time horizon for a passive investor. A dollar-cost

averaging or time-programmed approach to executing hedges is an appropriate strategy for an IOU trying to insure an appropriate price when hedging.

To perform an anecdotal review of E&P independent firms hedging practices, I asked for the observations of five industry professionals who cater to this market. I asked whether the E&P independent firms have commonly adopted a time-based programmatic layering approach to hedging. The response was that time-based swap and option-based hedge strategies were common. It has been shown to work well for both consumers and producers.

Q. Is VaR commonly used to initiate trade execution, as Mr. Gettings proposes?

A. The short answer is no. Initially, I was intrigued by this idea. In technical trading there are examples of trading around volatility such as Bollinger Bands. With Bollinger Bands, a decrease in volatility usually triggers a trade when volatility decreases, so I was intrigued with the idea of trading when volatility increases and using VaR as the trigger mechanism.

I performed a short search of the Market Technician Association (MTA) and Global Association of Risk Professional (GARP) literature and found nothing that would indicate this is a common practice. I reached out to ten energy industry market contacts in the energy trading risk management (ETRM) space and each person expressed surprise and concern by the approach. This suggests that this is not a commonly used methodology.

Q. Are there other non-trading uses for which VaR is appropriate?

A. Yes. It can be applied productively in evaluating credit risk, speculative trading performance measurements, and decision support on new transactions and assistance on risk-adjusted return on capital (RAROC) calculations. But that is not what Mr. Gettings is proposing. His Risk Responsive Model uses VaR for a purpose to which it is ill suited.

Q. Do you have any additional comments regarding VaR philosophy?

A. I believe Philippe Jorion[1] described VaR best when he stated that the greatest benefit of VaR "lies in the imposition of a structured methodology for critically thinking about risk….Thus, the process of getting to VaR may be as important to the user as the number itself." VaR is a wonderful tool to measure and create a discussion of risk.

However, I explained earlier that VaR has significant weaknesses that prohibit it from being used as a market predictor. I suspect this explains why I could not find a single industry professional who agreed that using VaR as a programmable trade execution tool was a valid idea.

<u>Specific Concerns with Risk Responsive Models:</u>

Q. If one were to use VaR as a trade execution tool in spite of the theoretical objections that you have just described, do you have concerns with how Mr. Gettings uses it in his model?

[1] Jorion, Philippe, Value at Risk, 2nd Edition

A. Yes. VaR is very complex, but the Gettings Risk Responsive model is a very simplistic model compared to industry standards. Any results from this model can only be used for anecdotal purposes and should not be considered accurate for analysis purposes.

Q. Can you provide concrete examples of your concerns?

A. I can. I have had limited time to review the model from Mr. Gettings' testimony. However even my initial review of the model identified many concerns. The list below addresses just one of many parameters: volatility. My concerns are as follows:

1. Mr. Gettings uses a forty (40) day observation period to calculate the model volatility of the prompt month with uniform weights to the observations. There are 21-22 trading days in a month. Thus, when calculating historic volatility, Mr. Gettings gives equal weight to price movements two months ago as to what happened yesterday.

   As a result, his model is always chasing the market. For example, if in April the model were to trigger a change in hedging levels, the volatility parameter used to calculate the trigger would be influenced by winter price movements that occurred in February, which reflects high winter prices. Conversely, VaR triggers in November and December would be influenced by less volatile October price movements. The October price movements would grossly underestimate the true volatility at that time.

2. The Gettings Risk Responsive Model is biased to trigger trades when volatility is higher. The Gettings Risk Responsive Model "chases

volatility". Figure 1 provides a comparison of volatility and percentage change in prices using daily price data from 2000 to 2016. One can see on the left that there is a positive relationship between upward price movements and increases in market volatility. On the right, one can see that there is a positive correlation between increases in volatility and percentage changes in absolute price movements. Therefore, his model would require the IOU to hedge more in rising price periods when prices are moving aggressively upward.

Figure 2 provides a comparison of percentage changes in prices by season based on daily prices from 2000 to 2017. Based on Figure 2, this should happen in the winter when prices are both highest and most volatile. However because of Point 1, there is substantial lag in the Gettings Risk Responsive Model volatility parameters. Thus, the model triggers changes in hedging after the market has moved. While the logic of the model is presumably that the hedges would be placed in favorable market conditions, the reality is the hedge triggers in the Gettings Risk Responsive Model would happen during the higher volatility and higher price periods, which is much sooner and more expensive than the model predicts.

Figure 1: Comparison of 10 Day Price Standard Deviations versus Percentage Price Change (percentage price changes to the left and absolute value percentage price changes to the right)

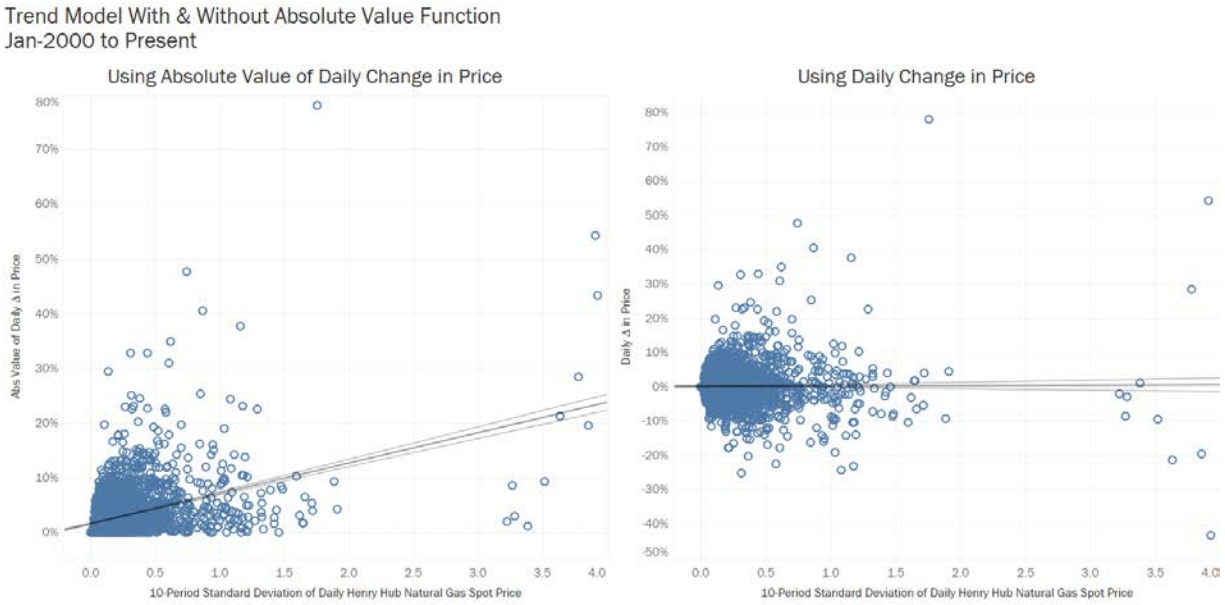
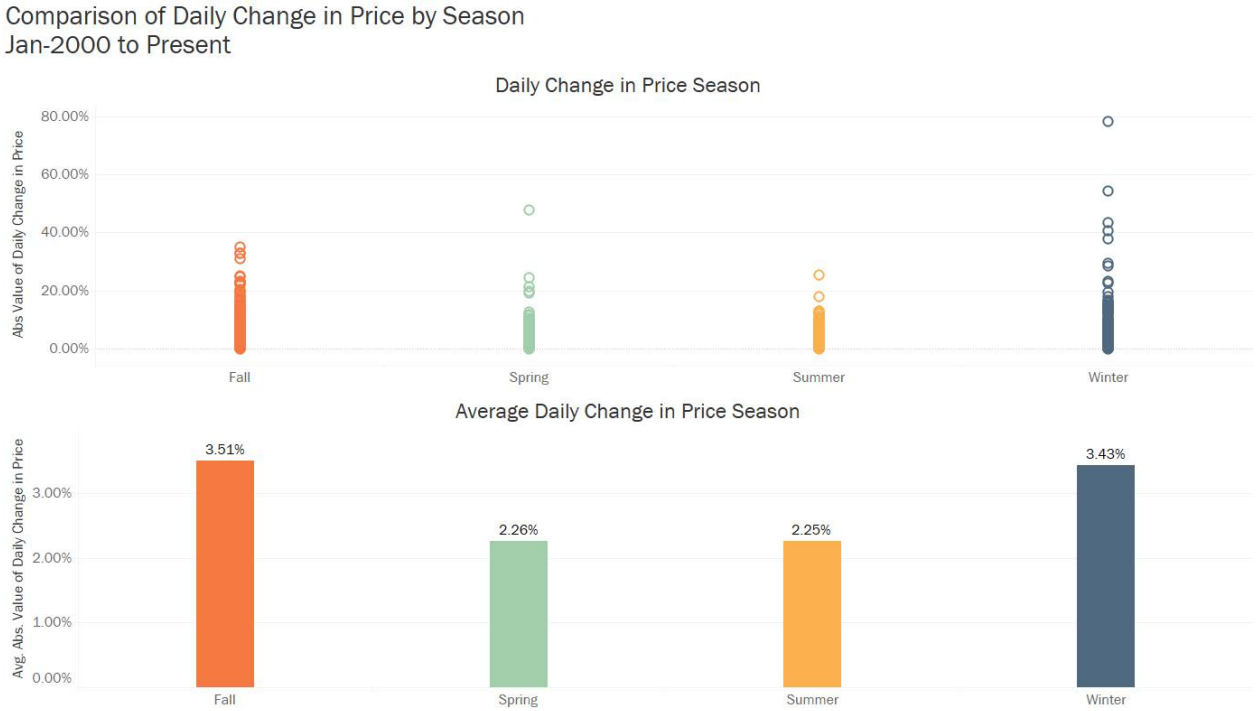


Figure 2: Percentage Comparison of Price Volatility by Seasons



Mr. Gettings' simulation assumes a prompt month volatility across all twenty-four (24) futures contracts. In reality, each contract has a different volatility. Winter month contracts are typically more volatile than shoulder month contracts (Figure 2). In addition, contracts are typically less volatile further from maturity and most volatile in last month or two before maturity. Each contract has a different volatility in its trading. Mr. Gettings' simulation ignores this difference and assigns a single volatility (based on prompt month prices) for the results of his simulation. This creates significant errors in the VaR calculation.

Q. Can Mr. Gettings' misuse of VaR result in significant errors in hedging decisions?

A. Yes. Here is an example of this. The equation for a parametric VaR (Gettings' Risk Responsive Model is a variation of this model) is:

$$\text{VaR} = -1 \times \text{Volatility} \times \sqrt{Days/252} \times \text{Position Adjusted Volume} \times \text{Price} \times \text{Standard Deviations}$$

One of the key parameters in calculating a Parametric VaR is that every position is rolled into that "Position Adjusted Volume" parameter. One does this by first adjusting each option by a delta adjustment (not relevant in the Gettings Risk Response Model). Second (and very important to our conversation), the monthly positions are "rolled forward" to the prompt month using a second adjustment. The second adjustment results in what is known as a Front-Month Equivalent (FME) position. Effectively, the positions for forward months are adjusted by correlations to the front month.

The FME is calculated using the following equation:

$$FME = \left(\rho \frac{\sigma_{Spot}}{\sigma_{Forward}} \right) (Q_T)$$

Where:

ρ: The correlation coefficient between the spot price and the forward price.

σ_{Spot}: The standard deviation of the spot price movements.

$\sigma_{Forward}$: The standard deviation of the forward (futures) price movements.

Q_T: The quantity to be hedged at some point in the future

Once the forward positions are adjusted to their corrected FME values, the resulting FME values are substantially different – either smaller or larger – than their absolute forward values (smaller or larger). Mr. Gettings does not calculate FME positions. Thus, it can greatly overestimate or underestimate the appropriate quantity to hedge according to the behavior of the market forward curve at that time. I cannot estimate the magnitude of the errors, other than to observe that they are significant (easily more than 10% each individual month). I would not be surprised if the Gettings Risk Responsive Model were to incorrectly estimate the appropriate amount to hedge for that month by 30% and more.

Q. Do you have concerns regarding the data set Mr. Gettings used to test his parameter approach?

A. I do. First, an econometric comparison of 2001-2010 and 2011 forward shows a regime shift in the market. Mr. Gettings does not address any changes to the model as the natural gas market shifts into the lower volatility time period.

Second and most important, proper back-testing requires one to segment the available data into two or more data sets. One data set should be used for model parameter development. The other data set(s) are reserved for testing the model using the parameters established in the parameter establishing data set. If one does not use this approach to establish the model, one tends to fall into the trap of matching parameters to fit the data. Based on the Gettings Risk Responsive Model simulation, I am challenged to determine what data was used for model parameter generation and whether that same data was used to generate simulation results.

Q. Are you comfortable with the output of the model?

A. Unfortunately, I cannot say that I am. Based on the concerns throughout my analysis of the model I am concerned about the validity of the simulation results. I expect the simulator to be a poor estimator of how this approach would actually perform in reality.

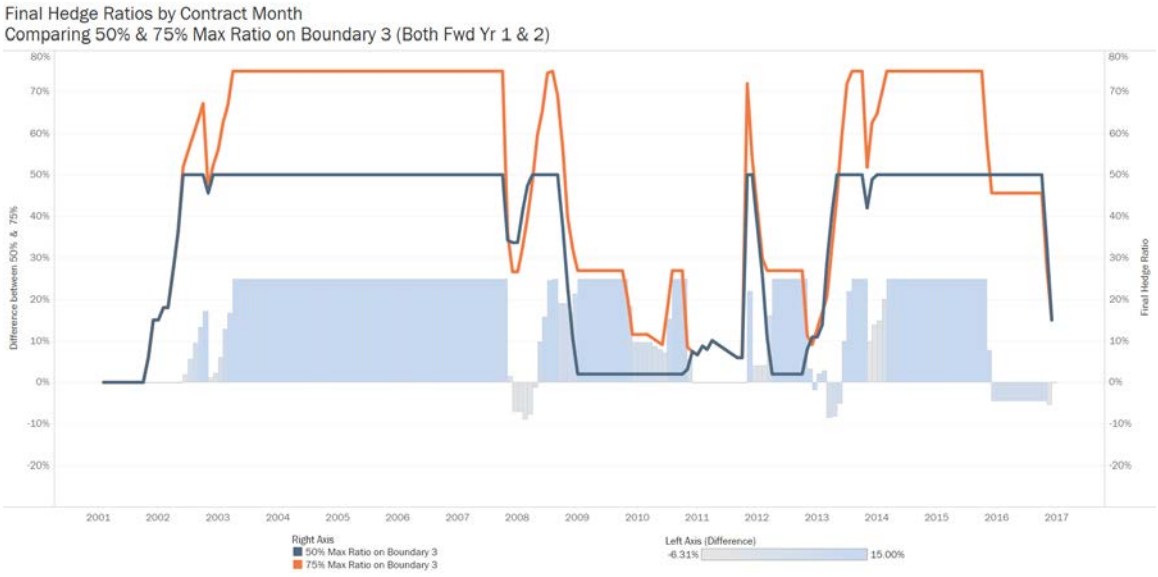
Q. Is there another reason you feel this way?

A. Yes. I was only given a few days to analyze the model before writing my testimony. Therefore, I cannot say I have performed a deep dive into the simulation to determine the parameters that influence the model results most. However, in my first attempt to assess the model, I began changing the maximum hedge boundary condition. I changed the maximum hedge ratio from 50% to 75%. The behavioral changes to the strategy hedge ratio are graphed in Figure 3.

Comparing the 50% base case with the 75% alternate strategy, I am concerned that there are four periods in which the 75% hedged strategy advocates a lower

hedge ratio than the 50% hedge strategy (2008, 2013, & 2016-2017). One would expect the 75% max hedge ratio strategy to always have an equal or higher hedge ratio established than the 50% max hedge ratio strategy throughout the results. In addition, during the 2009-2011 time frame, the hedge ratio behaviors for the 50% and 75% strategies disconnect from each other entirely. These changes in model behavior are concerning.

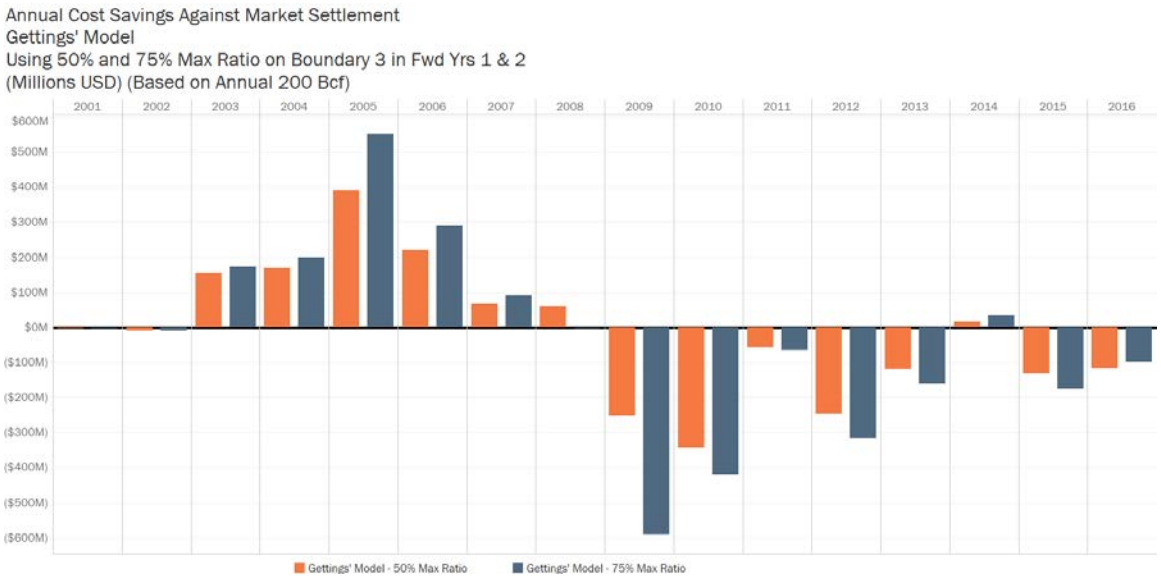
Figure 3: Output Results from increasing max hedge ratio to 75%



I then compared the Gettings Risk Responsive Model annual cost savings to the customer using a 50% maximum hedge ratio and a 75% maximum hedge ratio. The results are presented in Figure 4. During the 2003-2007 period, the model tests well. However, the strategy benefits disappear in 2008 for the maximum 75% hedge ratio. The strategy benefits to the consumer are negative from 2009 to 2013 and 2015 to 2016. Ironically, when one implements the Risk Responsive Model, the more an IOU wishes to hedge (to mitigate risk), the greater the variability of the outcomes to the consumer. Based on behavior characteristics,

the Risk Response Model acts as a programmatic speculative trading tool and not a programmatic hedging trading tool.

Figure 4: Comparative Savings to the Consumer using the Gettings Risk Responsive Model and Maximum Hedge Ratios of 50% and 75%



To summarize, I tested a single parameter and found two concerning characteristics of the Gettings Risk Responsive Model. I expect that further testing would reveal other considerably concerning behaviors.

Q. Are there other issues with the output?

A. Yes, the Florida IOUs will address this specifically, but it appears that when the model executes a hedge, the portfolio move can be significant and substantial. I worry that if these moves were to occur in reality, the amount of portfolio slippage by moving such large numbers of natural gas would provide significant price erosion. Second, there are substantial examples where portfolio churning (large buys followed by large sells within a short period of time) occurs. Mr.

Gettings repeatedly argues the IOUs will need to address market liquidity in their trading. This portfolio churning is completely counter to Mr. Gettings' stated desired approach. Finally, the utilities have shown that there are instances of the model giving both buy and sell signals at the same time. Mr. Gettings states in his testimony that the IOU should hedge in this condition because hedging is a greater priority. However, the fact that the Risk Responsive model can conflict itself gives strong concerns that the Model results are conflicting. Again, this result proves the model is too flawed for policy discussion or implementation.

Q. Overall, what is your conclusion regarding the Gettings Risk Responsive Model?

A. I understand that the Commission's goal is for the IOUs to limit exposure to rising fuel prices while providing greater opportunity to benefit from falling fuel prices than has been recognized in previous programmatic swap-based hedging programs. I cannot assure you that the methodology, inputs or outputs in Mr. Gettings' Risk Responsive Model are sufficiently well developed or tested to provide a reasonable expectation of this result being achieved.

<u>Options Hedging Techniques:</u>

Q. Please briefly describe your experience with the market for options.

A. Prior to joining Texas A&M University, I taught the majority of a twenty-four day Risk Management course through Rice University for Duke Energy that had a heavy orientation towards options. Since I joined the Texas A&M faculty, I have taught a Futures and Options class multiple times per year, and I teach an applications of risk management (middle office) class. One quarter of my

coursework is to teach value-at-risk. However, more than one quarter of the risk management course that I teach is focused on advanced options applications and understanding. Recently, I provided consulting services for a marketing firm to analyze a monthly option to daily option rollover strategy performed with delta-hedging the Greeks. I bring this up, not to impress the utility commission but to emphasize that I have a reasonable background regarding options, their uses and their risks.

Q. Do you agree with Mr. Gettings' assessment of options strategies starting on page 32 of his August 10, 2017 testimony?

A. No, I do not. I find his testimony to be filled with partial truths. To address this approach, I will address each question's response by Mr. Gettings directly.

Q. Mr. Gettings poses five arguments against using OTM call options to hedge. Would you like to respond to his statements?

A. Yes. Mr. Gettings states five concerns regarding the use of OTM call options for a consumer hedging program. I will address each concern individually. They are:

1. Lack of risk responsiveness **(P. 33, lines 5-16)** – I find Mr. Gettings' comments regarding risk responsiveness to be out of place. An IOU should not respond to risk. It should preemptively address a risk and decide whether to avoid, keep or transfer the risk. Responding to a risk indicates a lack of prudent preparation.

   If an IOU hedges a high percentage of its expected natural gas consumption prior to a risk event occurring, it has effectively addressed the risk before the risk exposure can cause damage. This would be an act

of risk mitigation. My father used to tell me the best way to not get hit by a bus was to not play in the street. Similarly, if an IOU does not want to be hit by rising prices, the IOU can and should do so by addressing its exposure before having to deal with the consequences of rising prices. Again, I emphasize it is better to mitigate a risk than it is to respond to a risk when the risk is occurring or after the risk has occurred.

Mr. Gettings expresses concern regarding the expense of purchasing options. However, if a utility can potentially mitigate a significant loss with the purchase of options where the expense/premium is known prior to the execution and can be part of a budget, I see advantages to that approach. I will note that, while beyond the scope of my testimony, it is possible to reduce the cash outlay to purchasing the OTM call options by employing collar strategies. Of course that places limits on the ability of customers to benefit fully from declining prices.

In preparation for this testimony I spoke with five energy marketing groups. The consensus was that when their clients hedge, well over 50% and close to 75% of the transactions were option based-strategies.

In Mr. Gettings' August 10 testimony, he questions how an IOU would respond if it had spent $80 million to hedge a 200 BCF exposure prior to rising natural gas prices using call options. I believe the response would be with a smile. If the price were rising, and the utilities had capped the

customers' exposure with purchased call options, cost of fuel would be limited to the cap strike price instead of the higher market price. The IOU would have effectively addressed a significant risk of higher fuel costs to its customers.

2. Fallacy of insurance analogy **(P. 33, line 17 - P. 34, line 16)** – Mr. Gettings is simply incorrect when he asserts that the IOUs treat the call options as costless. All three IOUs accounted the costs associated with the options.

3. Volatile nature of option prices **(P. 34, line 17 - P. 35, line 11)** – I agree with Mr. Gettings that the natural gas market can be very volatile. This volatility is driven by the fundamentals of supply and demand. However, Mr. Gettings' testimony is confusing. Earlier in his testimony, Mr. Gettings describes the natural gas market as being efficient and he states that all market information is reflected in the market price. However, he describes options as being priced on widely varying emotional perceptions. Mr. Gettings argues the futures market trades efficiently but the options market does not. If this were the case, there would be continuous market arbitrages between the two markets that would be worthy to publish in the Wall Street Journal. This is not the case. His two opinions are counter to each other.

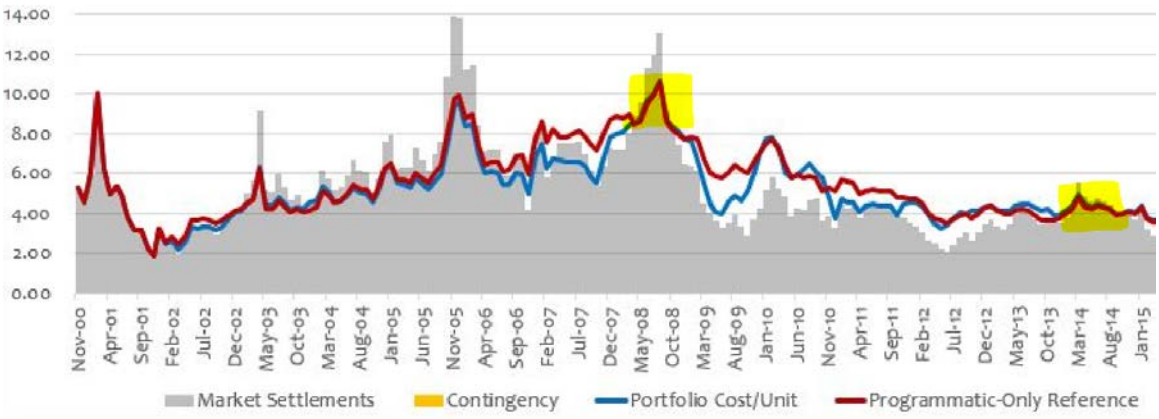
I will provide a simple explanation why the swaps market and the options markets have similar levels of liquidity. Assume you have two different portfolios. The first portfolio (A) consists of a futures contract, fixed price

swap or forward agreement that allows the consumer the ability to buy natural gas at $3.00. Assume the second portfolio (B) consists of buying a natural gas call option (cap) and selling a natural gas put option (floor) (this combined strategy is often called a consumer collar strategy). If the price is above $3.00, the consumer exercises the call option at $3.00. If the price is below $3.00, the counterparty will require the consumer buy at $3.00. Therefore, portfolios (A) and (B) are equal at maturity. If their respective values separate from each other prior to maturity, investors will take advantage of the arbitrage. Thus, the two markets must behave rationally in relation to each other. Mr. Gettings' arguments violate basic principles of Market Finance.

The market implied volatility is also known as the instantaneous volatility. It represents the volatility that is occurring at that moment in the market. I will provide an example for illustration. Assume natural gas prices start the day at $3.00. The price drops to $2.50 before rising to $3.50 at lunch. By the end of the day, the market settles back at $3.00. To an observer, one might argue the opening price and closing price were both $3.00. Therefore, the historic volatility for the day was zero (0). However, intra-day, the rise had a $0.50 fall, a $1.00 rise and a $0.50 fall again for a total move of $2.00 on an asset priced at $3.00. The market implied volatility captures the instantaneous volatility whereas the historic volatility does not.

Finally, Mr. Gettings addresses his concerns by referencing how an OTM call option strategy would perform in 2014 and 2008 in his testimony (P. 33, line 11). However, during the 2014 period to which Mr. Gettings refers, the programmatic swaps portfolio (red line) results were no worse than the results from the best case scenario of his model (blue line). I have highlighted these periods in yellow using Mr. Gettings' results from his August 10, 2017 testimony in Figure 5.

Figure 5: 2008 and 2014 Highlighted Regions comparing Mr. Gettings' Risk Responsive Model to FP&L Programmatic Swaps Approach (P. 23, line 10).



A programmatic OTM call option strategy should be only slightly more expensive in cost to the programmatic swaps strategy (incurring the expense of the call option premiums) to execute. In 2008 and 2014, the OTM call options model performed substantially better than Mr. Giddings' Risk Responsive Model. In addition, during declining price and low price environments, the customer benefits more so from the OTM call

option strategy than either of these two simulations. I will present this later in my testimony.

4. Likelihood that human nature will defeat the strategy **(P. 36, line 12 - P. 37, line 4)** – I find this a challenging argument to address because Mr. Gettings' support for it is just dramatic hyperbole, designed to create fear. First, I am a proponent of the IOU providing a standardized and consistent hedging strategy to the Commission. However, it is the Commission that has the responsibility to approve or deny the IOU request to change hedging policies. The simple response is that the IOU cannot veer from its preapproved strategy unless the change is approved by the Commission. The IOU is to provide a reasonable strategy for the Commission to approve. I expect the OTM call option strategy approved by the Commission to be a consistent strategy that will benefit the customer over the long-term; not a strategy that is changed arbitrarily on an annual basis according to supposed expected programmatic improvements (per Mr. Gettings, **P. 31, line 25**).

I would like to close this portion by addressing Mr. Gettings' final paragraph in addressing human nature (P. 36, lines 21-25). Mr. Gettings makes a comment regarding how an IOU should respond to periods of increasing volatility. These increasing volatility periods are positively correlated to increasing prices (notice the positive trend lines in Figure 1b). Therefore, the increasing volatility time periods will typically occur when the underlying asset is increasing in value. Since option prices

increase at less than a 1:1 relationship to the underlying asset, the option premium should be increasing at a rate less than the underlying asset price.

For example, assume natural gas prices are $3.00. The IOU is considering purchasing an OTM call option that bears a $0.50 premium. If the price for natural gas increases by $0.10, the option premium for the OTM call option will increase by less than $0.10. Without specifics, a call option that is slightly out of the money in this scenario will likely increase by $0.05 - $0.07. Therefore, the swap strategy Mr. Gettings addresses in this section (P. 36, lines 1-5) will be more expensive to implement than the options at that time.

5. Pragmatic concerns **(P. 37, line 5 - P. 38, line 12)** – I spoke with several industry personnel regarding Mr. Gettings' comments that the IOU would not receive fair market pricing because of its transaction size. That argument cannot be substantiated without more analysis as to market liquidity.

Again, I am concerned that Mr. Gettings recommends each individual IOU use "customized tolerances" to create "natural diversity" in the market transactions. The natural gas market ecosphere has significant diversity of transactions based on the implied volatility parameters provided by Mr. Gettings in his earlier testimony.

OTM Call Option Model

Q. Would you like to present the model you created to represent a series of potential options strategies?

A. I would.

Q. Please explain the model.

A. I have created an OTM call option purchase strategy model to compare to the results of Mr. Gettings' Risk Responsive Model results. The model assumes the following:

1. All transactions occur using spot data at Henry Hub and NYMEX/CME settlements consistent with Mr. Gettings' Risk Responsive Model.
2. The IOU hedges 70% of its total expected consumption with OTM call options. The IOU hedges 10% of its total hedge (the 70%) by purchasing OTM calls. The IOU starts hedging 12 months out and completes the last hedge 3 months prior to natural gas consumption.
3. The results presented are based on option strikes that range from $0.10 OTM to $0.50 OTM of the Henry Hub spot price on the first day of the month.
4. The call option volatilities are calculated using a 10-day historic volatility to approximate the implied volatility used to calculate the option value. It should be substantially closer to the true implied volatility than the forty-day historic volatility used in Mr. Gettings' Risk Responsive Model.
5. At maturity, the settlement price is compared to the strike price for each option and the lesser of the two prices is chosen for execution.

6. Results are aggregated and compared to NYMEX/CME contract settled prices and Mr. Gettings' prices.

Q. What are the results of your model?

A. I will present the results using the following graphs:

Figure 6: A comparison of the five strategies ranging from $0.10 OTM to $0.50 OTM in a monthly line chart.

Figure 7: A recreation of Mr. Gettings' Risk Responsive Model comparing the market settlements price, Mr. Gettings' Risk Responsive Model and the $0.30 OTM model results.

Figure 8: An annual savings comparison of the Gettings Risk Responsive Model and the $0.30 OTM call option model in an annualized candlestick format based on the 200 BCF annualized IOU consumption used in Mr. Gettings' Risk Responsive Model.

Figure 9: Table of % hedged ratios for the OTM call option strategy based on target total hedged at maturity.

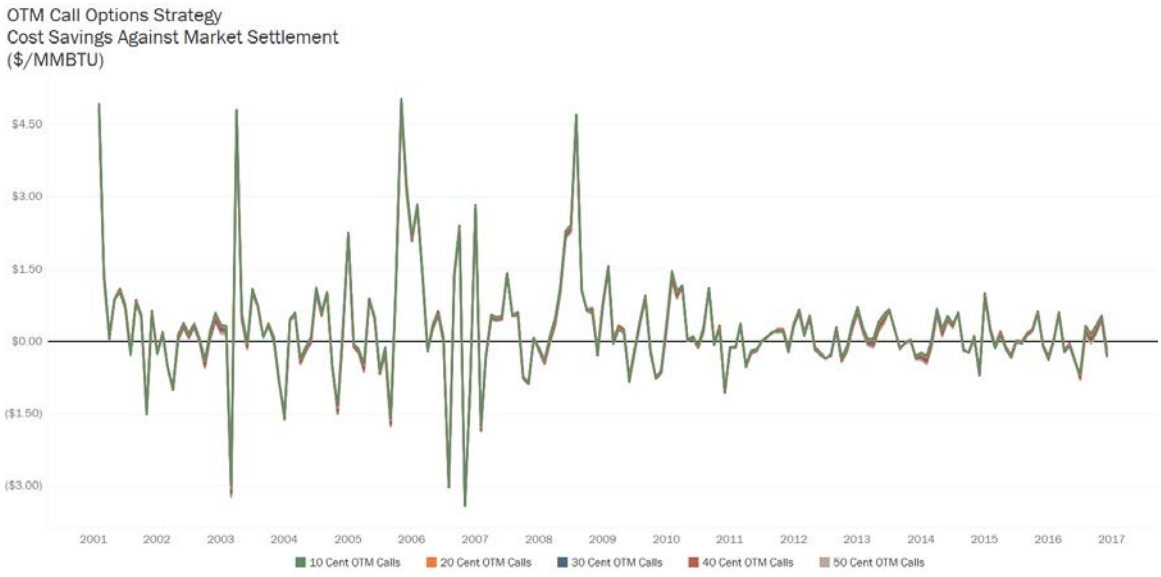
Figure 10: A comparison of hedge ratios by both models.

Q. Please describe how Figure 6 compares the results of the OTM call option strategies.

A. We ran the OTM Call Option model using strike prices ranging from $0.10 OTM to $0.50 OTM using $0.10 increments. They are in a line chart in Figure 6. The results from all five sensitivities are quite consistent across the $0.40 range of strike prices. Therefore, any of the five strategies can be used to compare to the Gettings Risk Responsive Model. Because the results of all five strategies are so

similar, it is reasonably representative to use the $0.30 OTM call option strategy, the middle strategy of the five strikes.

Figure 6: A comparison of the five OTM call strategies ranging from $0.10 OTM to $0.50 OTM in a monthly line chart.



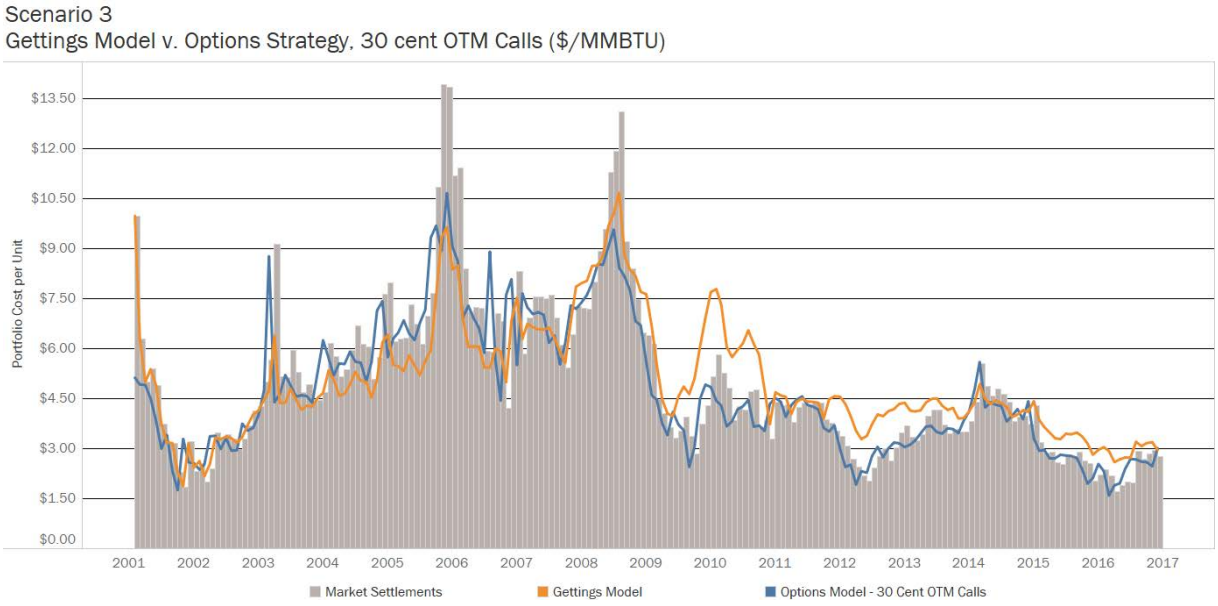
Q. Please compare the $0.30 OTM option strategy to the market settled price for natural gas to and the model presented by Mr. Gettings.

A. When one compares the $0.30 OTM call option strategy to the market settlements price and Mr. Gettings' Risk Responsive Model, the results are very interesting (Figure 7). Two results stand out.

First, the OTM call option strategy and the market settlement price track well with each other. The OTM call option model follows the market settlement price fairly closely, while significantly mitigating upward price movement, such as those that occurred in 2005-2006 and 2008-2009.

Second, Mr. Gettings' Risk Responsive Model performs reasonably well from 2003-2008. However, the model creates significant loss to the customer every year but one from 2009 to 2017. Mr. Gettings' Risk Responsive Model has not performed well since the shale gas revolution. By comparison, the OTM call option strategy has continued to perform well in the 2009-2017 period, generally following declining market prices while providing a degree of protection against price spikes.

Figure 7: A recreation of Mr. Gettings' Risk Responsive Model results comparing the market settlements price, Mr. Gettings' Risk Responsive Model and the $0.30 OTM Call Option model results.



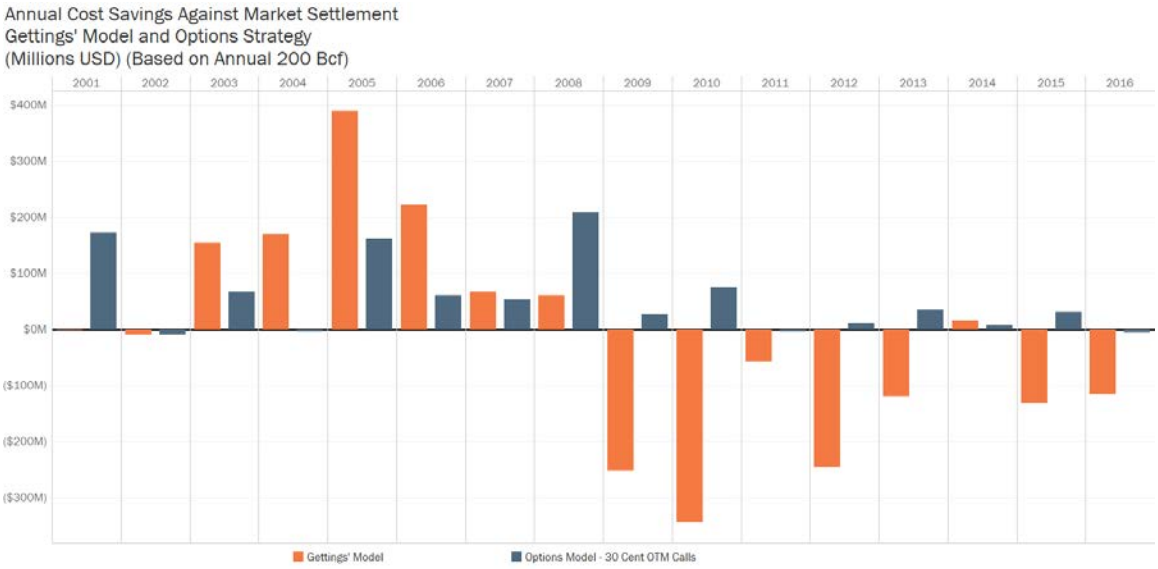
Thus, the key takeaway from Figure 7 is that the OTM call option model provides the customer the ability to have cost protection during rising prices while participating in a majority of the benefit when prices fall. Mr. Gettings' Risk Responsive Model does not provide this same assurance.

Q. Are the savings to the customer significant?

A. I believe so. I applied the prices under the two approaches to an annual 200 BCF consumption budget, per Mr. Gettings' Risk Responsive Model. In Figure 8, I compared the total gain or loss to the customer by both models. As I noted earlier, Mr. Gettings' Risk Responsive Model performs well for the period from 2001-2008, but consistently loses considerable money for the customer when that period is extended to 2016.

By comparison, the OTM call option model consistently performs well over that entire period. With the exception of 2004-2006, the model outperformed the Gettings Risk Responsive Model. Even in those years, the OTM call option model performed significantly better than the market settlement price, saving the customer $50-$200 million.

Figure 8: Annual savings comparison of the Gettings Risk Responsive Model and the $0.30 OTM call option model based on the 200 BCF annualized IOU consumption.



Q. You have shown that the results under the OTM call option strategy are better than the Risk Responsive strategy. Would you please comment on the relative predictability of executing those two strategies?

A. Execution of the OTM call option strategy is far more stable and straightforward. Mr. Gettings' Risk Responsive Model varies the hedge ratios wildly according to volatility in the market and the model parameters. The hedge ratios vary from the maximum of 50% hedged to 0% hedged erratically. There is a small time period from 2011-2012 in which it seems the hedge ratio is not at its maximum or its minimum value. Based on Mr. Gettings' Risk Responsive Model, this represents 100 BCF position swings in a month when a trigger occurs.

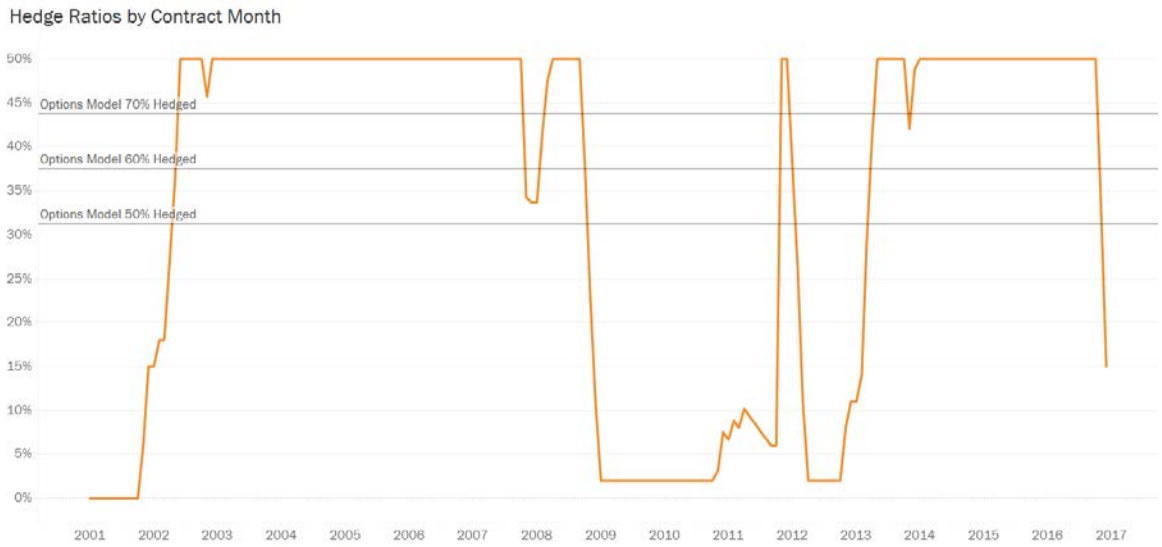
By comparison, the layering of the trades using the OTM call option model is relatively smooth and manageable. The twelve month profile of layering hedges

is provided in Figure 9. Therefore, when I compare the average hedge ratio for OTM calls model, and for Mr. Gettings' Risk Responsive Model, the OTM call option strategy is much more predictable and consistent (Figure 10). The OTM call option strategy is much more simple and easy to monitor. It enables the IOU the ability to demonstrate clearly to the Commission that the agreed execution plan has been followed, providing an important measure of certainty and predictability to the prudence review process.

Figure 9: Table of % hedged ratios for the OTM call option strategy based on target total hedged at maturity.

Months from	70% Hedged	60% Hedged	50% Hedged
12	7%	6%	5%
11	14%	12%	10%
10	21%	18%	15%
9	28%	24%	20%
8	35%	30%	25%
7	42%	36%	30%
6	49%	42%	35%
5	56%	48%	40%
4	63%	54%	45%
3	70%	60%	50%
2	70%	60%	50%
1	70%	60%	50%
Average	**43.75%**	**37.5%**	**31.25%**

Figure 10: A comparison of historic Gettings Risk Responsive Model and the OTM call model hedge ratios (assuming 70% hedged).



Q. Please summarize your conclusions.

A. My testimony addresses Mr. Gettings' risk responsive approach from three perspectives. First, the use VaR as a trade execution tool is flawed theoretically and strategically. VaR is only a statistical tool that has no ability to predict future market direction. It is the equivalent of stating there is a 35% probability the wind will blow tomorrow at 20 mph because it was windy today, but I cannot tell you the direction of the wind. The theoretical objection is borne out by experience: I surveyed industry literature and professionals and could not find a single industry professional interested in the idea. While VaR is a relevant tool to assess and evaluate risk, it is entirely ill suited to making trading decisions.

Second, I addressed specific concerns I have over the validity of Mr. Gettings' Risk Responsive Model. I found the presence of significant flaws in his calculation of volatility and true position. He does not appear to have performed

either one appropriately. I found a lack of proper back-testing methodologies regarding data used to determine parameters for his Risk Responsive Model. This deficiency is especially concerning given the erratic behavior of the model when changes are made to a small number of his inputs. Mr. Gettings' Risk Responsive Model is too flawed to ever be a basis for serious discussion regarding IOU hedging strategies.

Third, I addressed the flaws in Mr. Gettings' view of options. The five arguments presented by Mr. Gettings against an options-based hedging strategy are all unfounded.

Finally, I presented my own modeled comparison between risk responsive and OTM call option strategies which shows that the OTM call option approach outperformed the Mr. Gettings' Risk Responsive approach every year except for 2004-2006 in terms of cost savings and protection to the customer.

Q. Does this conclude your testimony?

A. Yes.

GLOSSARY OF TERMS

Exploration & Production (E&P):

The finding, augmenting, producing, and merchandising of different types of oil and gas. It is known as the upstream segment of the oil and gas industry.

Commodity Swap:

A contract where two sides of the deal agree to exchange cash flows, which are dependent on the price of an underlying commodity. These contracts are usually used to hedge against the price of a commodity and have been traded since the middle 1970s.

Value at Risk (VaR):

A statistical technique used to measure and quantify the level of financial risk within a firm or investment portfolio over a specific time frame. This metric is most commonly used by investment and commercial banks to determine the extent and occurrence ratio of potential losses in their institutional portfolios. VaR calculations can be applied to specific positions or portfolios as a whole or to measure firm-wide risk exposure.

VaR Historical Simulation Method:

A nonparametric method that uses the empirical distribution of past returns to generate a VaR. A downside of this method is that it does not take into account patterns such as volatility clustering because it assumes that historical returns are independent, which they are not.

VaR Delta-Normal Method:

Also called the Variance-Covariance Method. The method assumes that portfolio exposures are linear and that the risk factors are jointly normally distributed. Because the portfolio return is a linear combination of normal variables, it is normally distributed itself. Thus, the portfolio volatility can be calculated by using covariance matrix and weight vector. A downside of this method is that its normal distribution assumption may underestimate extreme outcomes.

VaR Monte Carlo Simulation Method:

A method that uses random samples from known populations of simulated data to track a statistic's behavior. An inference procedure typically characterizes the distribution of returns by assuming some standard joint distribution, such as the joint-normal distribution, and specifying a covariance matrix and mean vector.

Extreme Value Theory (EVT):

A theory dealing with the extreme deviations from the median of probability distributions. Extreme values are crucial for risk management because they are associated with catastrophic events such as market crash and extreme large losses. EVT does not assume a specific distribution and instead deals with extreme values specifically which can describe the tail area of the distribution more exactly.

The Basel Accords:

Refers to the bank supervision Accords, Basel I, Basel II, and Basel III, which were issued by the Basel Committee on Banking Supervision (BCBS). The purpose of the accords is to ensure the financial institutions have enough capital to meet obligations and absorb unexpected losses.

Call Option:

An agreement that gives an investor the right, but not the obligation, to buy a stock, bond, commodity, or other instrument at a specified price within a specific time period. An investor profits on a call when the underlying asset increases in price.

Option Strike Price:

The price at which the underlying security can be bought up to the expiration date. Also known as the exercise price.

Out of the Money (OTM) Call Option:

Used to describe a call option with a strike price that is higher than the market price of the underlying asset. An OTM Call Option has no intrinsic value, but only possesses extrinsic or time value. The value of an OTM Call Option erodes quickly with time as it gets close to expiry. If it remains out of the money at expiry, the Call Option will expire worthless.

Delta:

The delta of an option is the rate of change of the option price with regards to change of the price of the underlying asset.

Mark to Market (MtM):

A measure of the fair value of accounts that can change over time, such as assets and liabilities. MtM aims to provide a realistic appraisal of an institution’s or company’s current financial situation.

Historical Volatility:

A statistical measure of the dispersion of returns for a given security or market index. Volatility can either be measured using the standard deviation or variance between returns from that same security or market index.

Implied Volatility:

The estimated volatility of a security's price. In general, implied volatility increases when the market is bearish and decreases when the market is bullish. Implied volatility is a way of estimating future fluctuations of a security's worth.

Hedge:

An investment to reduce the risk of adverse price movements in an asset.

Programmatic Hedging:

Accumulating hedges on a set schedule to reach a particular hedge ratio.

Bollinger Band:

Bands on a price chart plotted two (2) standard deviations away from a simple moving average. Because standard deviation is a measure of volatility, when the market becomes more volatile, the bands widen; during less volatile periods, the bands contract.

Market Technicians Association (MTA):

An organization that was incorporated in 1973 as a not-for-profit with the intention to propagate the study of technical analysis for present and future market professionals. Today the MTA claims over 4,500 members in 85 countries.

Global Association of Risk Professional (GARP):

The leading professional associated for risk managers. The group's stated mission is to advance the risk profession through education, training, and the promotion of best practices globally.

Energy Trading and Risk Management (ETRM):

Involves developing and adapting models to manage energy assets and build commodity trading strategies. ETRM applications help analysts respond to changing demands and operational constraints.

Prompt Month:

Also called near-month. Refers to the futures contract that is closest to expiration and is usually for delivery in the next calendar month.

Hedge Ratio:

A ratio which compares the value of a position protected through the use of a hedge with the size of the entire position.

Black Scholes Call Option Pricing Model:

A formula used for valuing call options that is calculated by multiplying the underlying security price by the cumulative standard normal probability distribution function. Thereafter, the net present value of the strike price multiplied by the cumulative standard normal distribution is subtracted from the resulting value of the previous calculation. The model assumes dividends and risk-free rates are constant. The model also assumes volatility remains constant over the option's life.

Front Month Equivalent (FME):

A statistical measure that defines the entire position of a commodity in an equivalent front month contract.

Collar:

A protective options strategy that is created by purchasing an OTM Call Option while simultaneously writing an OTM Put Option.

Risk-Free Rate of Return:

The theoretical rate of return of an investment with no risk.

Henry Hub:

A natural gas pipeline located in Erath, Louisiana that serves as the official delivery location for futures contracts on the NYMEX.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

REBUTTAL TESTIMONY OF GERARD J. YUPP

DOCKET NO. 20170057-EI

SEPTEMBER 1, 2017

Q. Please state your name and address.

A. My name is Gerard J. Yupp. My business address is 700 Universe Boulevard, Juno Beach, Florida, 33408.

Q. By whom are you employed and what is your position?

A. I am employed by Florida Power and Light Company ("FPL") as Senior Director of Wholesale Operations in the Energy Marketing and Trading Division.

Q. Did you previously submit direct testimony in this proceeding?

A. Yes.

Q. Are you sponsoring any rebuttal exhibits in this case?

A. Yes. I am sponsoring the following rebuttal exhibits:

GJY-3 Updated Comparison of Risk-Responsive and OTM Call Option Strategies

GJY-4 Defensive and Contingent Transaction Graphs

GJY-5 Transaction Volume Table

GJY-6 Hedge Ratio Graphs

GJY-7 Summary Comparison Table with Varying Parameters

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to rebut the testimony of Staff witnesses Michael A. Gettings and Mark Anthony Cicchetti and to address FPL's concerns with witness Gettings' risk-responsive strategy. I will demonstrate in my testimony that witness Gettings' risk-responsive strategy requires a large set of subjective input parameters that are difficult, if not impossible, to implement effectively in the real world where one does not have the benefit of historical price information for forward periods. I will also demonstrate that witness Gettings' model outcomes can vary drastically with different input parameters. Additionally, I will address FPL's concerns with potential prudence risk associated with implementation of witness Gettings' risk-responsive strategy. Lastly, my rebuttal testimony addresses the core deficiency with the testimony of Sierra Club witness Elizabeth A. Stanton.

Q. Please summarize your rebuttal testimony.

A. FPL understands that the Commission would now like to accomplish a two-fold hedging objective: mitigating upside cost risk while minimizing hedge losses. FPL welcomes any new ideas or tools that can help better accomplish this objective; however witness Gettings' risk-responsive strategy is a much less effective approach for accomplishing this objective than the OTM Call Option strategy. FPL's analysis clearly shows that the OTM Call Option strategy results in significantly lower overall costs than witness Gettings' risk-responsive strategy. Furthermore, witness Gettings' risk-responsive approach is based on a number of discretionary input parameters that are crucial in

determining the results of his model; however, he has not provided any insight on how to choose the "right" parameters without having the benefit of historical forward prices at the time of selection. Because that information is necessarily unavailable until after the fact, using witness Gettings' model would entail trying to outguess the market. From the inception of the Commission's hedging policy in 2001, one of the most fundamental precepts has been that IOU hedging programs should not try to outguess the market.

The OTM Call Option strategy is much less complicated than witness Gettings' risk-responsive approach and does not require an IOU to try to outguess the market. Furthermore, it can guarantee that maximum hedging losses will not exceed a pre-determined amount, while giving customers the full benefit of downward price movements. Witness Gettings' risk-responsive approach cannot provide this assurance.

Witness Stanton's testimony does not solve the problem she purports to address. Even if her alternative approach had been followed, putting aside all sense of cost-effectiveness, Florida's IOUs would still be primarily dependent upon natural gas for generation, customers would still be subject to the risk of gas prices increasing, and the Commission would still need to address in this case the same central issue – whether Florida utilities should continue financial hedging of natural gas, and if so, how.

MODEL CHANGES

Q. Has witness Gettings changed the risk-responsive model that he presented in his testimony in Docket No. 160001-EI and at the workshops held in January 2017 and February 2017?

A. Yes. On page 27 (line 14) of his testimony, witness Gettings states that he has "substantially revised the model for this testimony." For background purposes, I note that FPL received an Excel-based model from witness Gettings in December 2016. While reviewing that model, FPL identified six errors and presented its findings and proposed corrections to witness Gettings. Witness Gettings validated FPL's corrections and subsequently provided a revised model. Witness Gettings' revised model contained historical data through 2011, and FPL believed it would be important to extend the historical data set through 2016 in order to draw meaningful conclusions by incorporating more recent market conditions. Updating the historical data set in the revised model proved to be a challenge because, as witness Gettings acknowledged at the January workshop, the Excel program wasn't really designed to handle the complexity and interrelatedness of the necessary calculations. To address those limitations, FPL prepared a slightly simplified version of the model that ran more smoothly while yielding very similar results to witness Gettings' revised model. Witness Gettings confirmed the validity of FPL's replication, and FPL used the replicated witness Gettings' model ("original model") as the basis for the hedging workshop discussions, as well as post-hedging workshop comments and my direct testimony in this proceeding. This original model is a

complicated, spreadsheet-based model that contains approximately 40 input parameters, with approximately 30 tabs that cross-reference each other frequently.

On August 10, 2017, FPL received witness Gettings' testimony that included the reference to the substantial model changes that I mentioned above. FPL received a copy of witness Gettings' revised model ("new model") on August 16, 2017. This new model is an even more complicated, spreadsheet-based model that has grown to contain more than 50 input parameters and more than 40 cross-referencing tabs.

Q. Has FPL had adequate time to thoroughly review witness Gettings' new model prior to filing rebuttal testimony?

A. No. Due to its complexity, FPL has only been able to conduct a preliminary review of the new model. Even on the surface, however, it is clear that FPL's concerns remain the same with both the original and new models.

Q. Can you please give an overview of the changes that you have found in the new model?

A. Yes. The primary revisions that FPL has discovered to this point involve the discretionary parameters utilized in the model. For example, witness Gettings revised the contingent holding period from 90 days all the way down to 20 days and the contingent confidence level from 99% to 97.5% in his new model. He also changed the MtM VaR from a percentage-based threshold to a fixed dollar amount threshold. Additionally, he lowered the maximum hedge ratio and now

sets defensive boundaries utilizing "Days VaR" as opposed to VaR multipliers.

Q. Does witness Gettings describe the reason for the changes to the parameters used in his model?

A. No.

Q. Has FPL been able to determine why witness Gettings revised his model for his testimony in this proceeding?

A. No. However, the fact that witness Gettings has continued to make changes to his model are cause for concern, and I will address these concerns throughout my rebuttal testimony.

Q. Has FPL identified any errors in witness Gettings' new model?

A. Yes. FPL believes it has found several errors in its preliminary review, some of which appear to be significant. Because FPL has not had time to develop a full understanding of the new model, it has not attempted to correct these errors.

DISCRETIONARY PARAMETERS

Q. On page 29 of his testimony, witness Gettings disputes FPL's contention that his risk-responsive approach requires the exercise of a considerable amount of discretion. He asserts that the only discretion required is how to set the annual strategy. Do you agree with witness Gettings' assertion?

A. No. Witness Gettings' characterization is misleading as he fails to mention that the annual strategy is comprised of numerous discretionary parameters that the utility must set that, *in aggregate*, form the annual strategy. As I will discuss later, witness Gettings has provided no insight into how these parameters should

be set prospectively to respond appropriately to the range of potential future market outcomes.

Q. Are the results of witness Gettings' model dependent on how these numerous discretionary parameters are set?

A. Absolutely. The setting of these discretionary parameters is what drives the outcome of the model. For example, in his new model, witness Gettings changed the holding period on his contingent strategy by more than 75 percent, from 90 days to 20 days. He does not offer any explanation as to why he changed that parameter, but the model results with the change are different. Exhibit GJY-3 shows the differences that result over the 2007 through 2015 time period from the parameter changes that witness Gettings made in his new model. This exhibit is essentially an update to Exhibit GJY-2 that was attached to my direct testimony in this proceeding. I have now added a column to reflect the results of the new model. Please note that witness Gettings' new model did not include weekly simulations beyond September 2015 and therefore, 2016 results for the new model are not available. As you can see on the exhibit, those parameter changes affect the outcome of the risk-responsive strategy. Presumably, witness Gettings initially felt that the parameters used in his original model were appropriate and now feels that the changed parameters are appropriate, yet he provides no explanation as to why he changed his mind. Of course, he had the benefit of hindsight to help him make that choice when the model was applied to historical periods. The fact that the choice of parameters matters a great deal, but Mr. Gettings provides no real guidance as to how to

choose the "right" parameters for *future* periods is a disturbing limitation of the risk-responsive approach.

Q. Please explain what Exhibit GJY-3 shows in regard to the outcome of the original model as compared to the new model.

A. Overall, for the 2007 through 2015 period, the new model's average portfolio cost is a modest $0.03 per MMBtu higher than the original model. However, the variance in the *annual* results is striking. For example, in 2007, the original model generated an average portfolio cost for the year of $7.70 per MMBtu, or $0.84 per MMBtu *higher* than the average market settlement price of $6.86 per MMBtu. Witness Gettings' new model generated an average portfolio cost in 2017 of $6.62 per MMBtu, or $0.24 per MMBtu *lower* than the market. This pattern of better results holds true for 2007 through 2009, a period that contained a significant price spike followed by a sustained period of declining prices. In contrast, during the 2010 through 2015 period, the new model generates average portfolio prices that are worse than the original model in 5 out of the 6 years.

What I believe is most important about Exhibit GJY-3, however, is that it shows FPL's proposed OTM Call Option strategy performing better than the new model, just as it had outperformed the original model. The OTM Call Option strategy resulted in a lower portfolio cost 6 out of 9 years and yielded an average savings of $0.34 per MMBtu compared to the new model or 7 out of 9 years with an average savings of $0.31 per MMBtu compared to the original

model. To put that into perspective, on a 600 BCF per year gas portfolio, the OTM Call Option strategy would have delivered total savings of $1.674 billion for the 9-year period versus the original model and $1.836 billion for the 9-year period versus the new model.

Q. Has FPL analyzed how witness Gettings' new model performs under varying parameters?

A. Yes. FPL ran multiple cases with varying parameters using witness Gettings' new model. The results are summarized in Exhibit GJY-7. From 2001 through 2015, witness Gettings' new model yielded an average gas cost of $5.25 per MMBtu. Simply changing the maximum buy/sell percentage from 3% per week (which had been 7% per week in the original model) to 2% per week yields an average cost of gas of $5.29 per MMBtu. Applying this $0.04 per MMBtu difference to FPL's current annual consumption of approximately 600 BCF per year, or 9 TCF for the time period, results in a cost difference of $360 million. This clearly demonstrates that making one seemingly small change can have a major impact.

DEFENSIVE AND CONTINGENT STRATEGIES

Q. On page 21 of his testimony, witness Gettings asserts that contingent strategies have rarely been necessary since the year 2000. Do you agree with that assertion?

A. No. Witness Gettings appears to acknowledge that implementing the contingent strategy is the most problematic aspect of his risk-responsive

approach and seeks to downplay the need to do so. However, an analysis of witness Gettings' original model shows a significant number of executed contingent actions. To demonstrate this point, I have put together Exhibit GJY-4, showing the frequency and volume of natural gas hedges that both the original model and the new model would have required to be purchased (defensive) and sold (contingent) beginning in November 2002. As one can see from the original model graph, there are numerous periods of purchasing hedges and unwinding hedges, in some cases this occurs in back-to-back weeks. Exhibit GJY-5 compiles the transaction volumes from the Exhibit GJY-4 graphs in tabular format (including the year 2001). As can be seen on Exhibit GJY-5, there are multiple years from 2001 through 2015 where FPL would have purchased and sold swaps, in combination, that totaled more than its current overall consumption volume of roughly 600 BCF. In three of those years, the total transaction volumes were more than double FPL's annual consumption. Exhibit GJY-5 also shows the maximum weekly transaction volumes that would have been required under the original model. In one week in 2008, FPL would have been required to purchase 131 BCF of natural gas hedges or 22% of its 600 BCF portfolio. In that same year, FPL would have been required to sell or "unwind" 84 BCF of natural gas hedges in a one-week period. This level of transactional volume would most likely result in large transactional costs that customers would incur in the form of market premiums for purchases and market discounts on sales.

Q. Does witness Gettings' new model eliminate this turn-over tendency in the implementation of the contingent strategy?

A. No. While the different discretionary parameters in the new model reduced the overall volume of purchases and sales somewhat, the levels remain significant. For example, as shown on Exhibit GJY-5, the maximum weekly requirement to purchase hedges dropped in 2008 from 131 BCF under the original model to 57 BCF under the new model. Still, 57 BCF in a one-week period represents a significant transactional volume.

Q. Are there any other conclusions that can be drawn from the comparison of the original model and the new model from a transactional perspective?

A. Yes. Exhibit GJY-6 shows the average hedge ratio for the prompt 12-months at the end of each month beginning in November 2002. As can be seen on the graphs, the new model shows much less trading in and out of positions, with more consistent hedge ratios. The comparison of these graphs reinforces the point of how changing parameters can drive significant changes in the results.

Q. Witness Gettings states that no post facto knowledge was utilized in the simulations. Does this seem reasonable given the difference in the results between the original and new models?

A. All I can say is that, if witness Gettings used no post facto knowledge to prepare his simulations, one must question why he decided to change the parameters in the new model, and how he decided on the changes to make. As the exhibits I just covered demonstrate, the results are dramatically different between the two models, yet FPL can discern no pattern or rationale for the changes that would

make the parameters in the new model inherently or intuitively more attractive for future application. In the real world, the IOUs must submit a set of parameters for Commission approval in August of each year before it enters into the applicable hedging transactions without knowledge of what the future market holds and without the ability to test different parameters. Nothing in witness Gettings' testimony, his original model or his new model provides the insight FPL would need to choose what will turn out to be the right parameters.

THE "EXPERIENCE" FACTOR

Q. On page 27 of his testimony, witness Gettings states that the risk-responsive strategy can be refined as experience is gained. Does this reference to needing yet-to-be-acquired "experience" cause FPL concern?

A. Yes. In FPL's opinion, the only experience that can be gained will be based on past performance. FPL has two substantial concerns with the approach. First, customers will bear the costs attributable to whatever parameters each IOU has set, which initially will be done on the basis of very little experience. Second, it is not clear to FPL that the experience gained from this trial-and-error approach will be all that useful in improving the selection of parameters for future periods. Working with the model continuously and back-testing it with historical market data will certainly allow one to keep refining the parameters, but only to develop what would have worked best with market conditions that have already occurred. I do not see how that experience will help to determine future parameters unless the premise is that each IOU will need to project what

market conditions will exist moving forward, find a historical period that resembles that projection, and set the discretionary parameters to those that achieved the most favorable outcome with historical data.

Q. Does this problem with picking parameters for the future relate to your contention that the risk-responsive methodology would take the IOUs and the Commission into the realm of "outguessing" the market?

A. Absolutely. Witness Gettings argues in his testimony that my concerns over trying to outguess the market are groundless, but that is far from the case. If setting parameters drives the results of the methodology and one does not know what the future market conditions will be, then setting parameters cannot be anything other than trying to outguess the market. As I previously stated, the only experience to be gained over time is to evaluate how the model performed and what parameters could have been set differently to achieve better results. It's the "what could have been set differently" that opens the door for second-guessing and prudence concerns.

OTM CALL OPTION STRATEGY

Q. On page 33 of his testimony, witness Gettings asserts that the IOUs believe the OTM option premiums are insurance and therefore costless. Does that accurately characterize FPL's understanding of option premiums?

A. No. Witness Gettings misunderstands FPL's prior analyses of the economics of the OTM Call Option strategy. All of those analyses explicitly include the cost of option premiums in the total cost of gas. As shown on my Exhibit GJY-3,

the OTM Call Option strategy is superior from a cost perspective to the risk-responsive approach after fully accounting for the cost of the options and regardless of whether one uses the original or new model.

Q. Witness Gettings continually compares his risk-responsive model to the targeted-volume strategy previously used by the IOUs. Is this a useful comparison?

A. No. In FPL's case, the targeted-volume swaps approach was appropriate for the original goal of hedging as set by this Commission, which was to reduce volatility. With FPL's understanding that the Commission now wants to explore a different strategy to mitigate upside cost exposure while limiting hedge losses, the targeted-volume swaps approach is no longer as appropriate, so FPL and the other IOUs have addressed this change in preferred strategy by jointly proposing the OTM Call Option strategy. Therefore, any comparison between witness Gettings' risk-responsive approach and the targeted-volume swaps approach provides no guidance for choosing future hedging strategies. The valid comparison is how the risk-responsive approach compares to the OTM Call Option approach, and the result of that comparison is clear. The OTM options approach is superior at mitigating upside risk while allowing customers to benefit fully from falling prices, thereby reducing total expenditures on hedging to the cost of the option premiums. As can be seen on my Exhibit GJY-3, the OTM Call Option strategy outperforms even the new witness Gettings' model significantly, with a lower average annual natural gas cost in 6 out of 9 years and a lower average cost over the entire 2007 through

2015 period of $0.34 per MMBtu.

Q. Would you please comment on witness Gettings' claim that the OTM options approach is not risk-responsive?

A. Frankly, I do not see the significance of whether or not a hedging approach is deemed to be "risk-responsive." The only relevant consideration is what approach accomplishes the Commission's goals better. Does trading in and out of positions on a frequent basis make something risk-responsive? Is the goal to appear to be actively managing hedge positions just to say that an approach is risk-responsive? I don't believe that those would be productive ways to judge the success of a hedging program.

Q. Witness Gettings continues to express concerns about liquidity and large bid-ask spreads for OTM call options. Can you comment on his concerns?

A. As FPL has previously explained in discovery, OTM call option liquidity is sufficient for this program. As far as large bid-ask spreads go, this is a potential risk for any form of market participation. I'm wondering what witness Gettings believes the market premiums would be if FPL were layering in 131 BCF of hedges in one week and then unwinding 84 BCF in another week under his strategy.

UNMITIGABLE PRUDENCE RISK

Q. Witness Gettings and witness Cichetti both speak of a Commission policy indicating a rebuttable presumption of prudence if key strategy elements are incorporated in the risk management plans and then executed per the plan. What is your reaction to that proposal?

A. Assuming that key strategy elements refer to discretionary parameters in the model, how can a presumption of prudence hold any meaning when it will be simple to run the model post facto, change the parameters, and achieve better results under the guise of "you should have known that"? Witness Gettings' risk-responsive approach introduces prudence risk that is unmitigable because FPL would be forced to forecast market conditions in order to set the discretionary parameters that are required in the risk-responsive model. While FPL operates with prudence risk on its fuel-related activities today, FPL can control this risk through the actions it takes. In contrast, FPL cannot control market conditions and therefore, cannot control the prudence risk associated with setting discretionary parameters based on trying to "outguess" the market.

Q. Would the implementation of witness Gettings' risk-responsive model pose a problem for the Commission in reviewing the prudence of hedging activities?

A. Yes. As I stated previously, the results of witness Gettings' risk-responsive model are highly dependent on the discretionary parameters that are set. The ability to run the model post facto, change the parameters, and achieve better results provides the opportunity for intervenors to challenge the IOUs'

parameter choices as "wrong." This will put the Commission in a position of trying to determine if the parameters used by each IOU were appropriate or if there was something that each IOU "should have known" about future market conditions which would have led to the selection of different parameters. The problem is that future market conditions cannot be known and therefore, setting the "right" parameters in advance is not possible.

Q. On page 32 of his testimony, witness Gettings recommends that the Commission specify common parameters such as a 20-day holding period at two standard deviations. Can you comment on his recommendation?

A. I'm not sure why the Commission would want to be in that position for the same reasons that FPL does not want to be in that position. As I previously stated, varying the holding period and confidence level can drastically change the results of witness Gettings' model. Why would anyone want to be in the position of guessing at – or arbitrarily choosing – parameters?

Q. Witness Gettings states in his testimony that strategy formulation would be left to utility management, but after one year of reporting risk metrics, he would expect strategies to reflect lower programmatic hedge targets, relying more heavily on defensive protocols and contingent response plans to constrain hedge loss potential. He contends that the simple act of requiring such measurement and reports will change the utilities' perspective on prudence risk (page 31, line 24 and page 32, lines 1-3). Do you agree with those contentions?

A. No. As I addressed previously, evidence clearly shows input parameters are

crucial in determining model outcomes, but there has been no showing by witness Gettings that the "right" parameters can be selected in advance, since one does not have the benefit of historical forward prices at the time of selection.

WITNESS STANTON'S $6.9 BILLION "WHAT IF" SCENARIO

Q. If witness Stanton's "what if" scenario had been deployed, would the core issue before the Commission in this case still be the same?

A. Yes. Witness Stanton hypothesizes about what would have happened if $6.9 billion in historical hedging losses had not been incurred and instead that the same amount of money had been invested in expanded renewable energy systems and energy efficiency. Her hypothetical scenario ignores two key facts. First, the $6.9 billion in historical hedging losses were the result of falling gas prices that ultimately provided a substantial benefit to customers through the unhedged portion of each IOUs portfolio, making gas generation even more attractive to them from an economic standpoint. Second, even with her hypothetical expanded investment, the Florida IOUs' dependence on natural gas generation in 2016 would still be above the national average. This above average reliance on gas would still expose customers to fuel price volatility. In such a circumstance, the Commission would still find itself addressing in this case whether utilities should continue financial hedging of natural gas.

Witness Stanton quantifies the dependence of the state of Florida in its entirety

and the dependence of Florida's three largest IOUs on natural gas in 2016. She reports that in its entirety the state of Florida relies upon natural gas to generate 66% of its electricity. In contrast, she reports that the national average of gas generation as a percent of total generation was 43%. She also reports that if her "what if" approach had been followed, Florida IOUs' reliance upon natural gas generation in 2016 would have been reduced by 9%. So, even under her approach, the state of Florida's total dependence on gas generation would have been 57% which is still significantly above the national average that she cites.

Thus, one need look no further than witness Stanton's testimony to realize her "what if" approach would not solve the very problem she postulates – customers' exposure to natural gas price volatility. At most, it would modestly mitigate Florida's dependence on natural gas and customers' exposure to natural gas price volatility. Witness Stanton's "what if" approach would not make the issue – whether utilities should continue financial hedging of natural gas – go away. That is why witness Stanton's testimony and her "what if" analysis are ultimately irrelevant to the issues to be resolved in this proceeding.

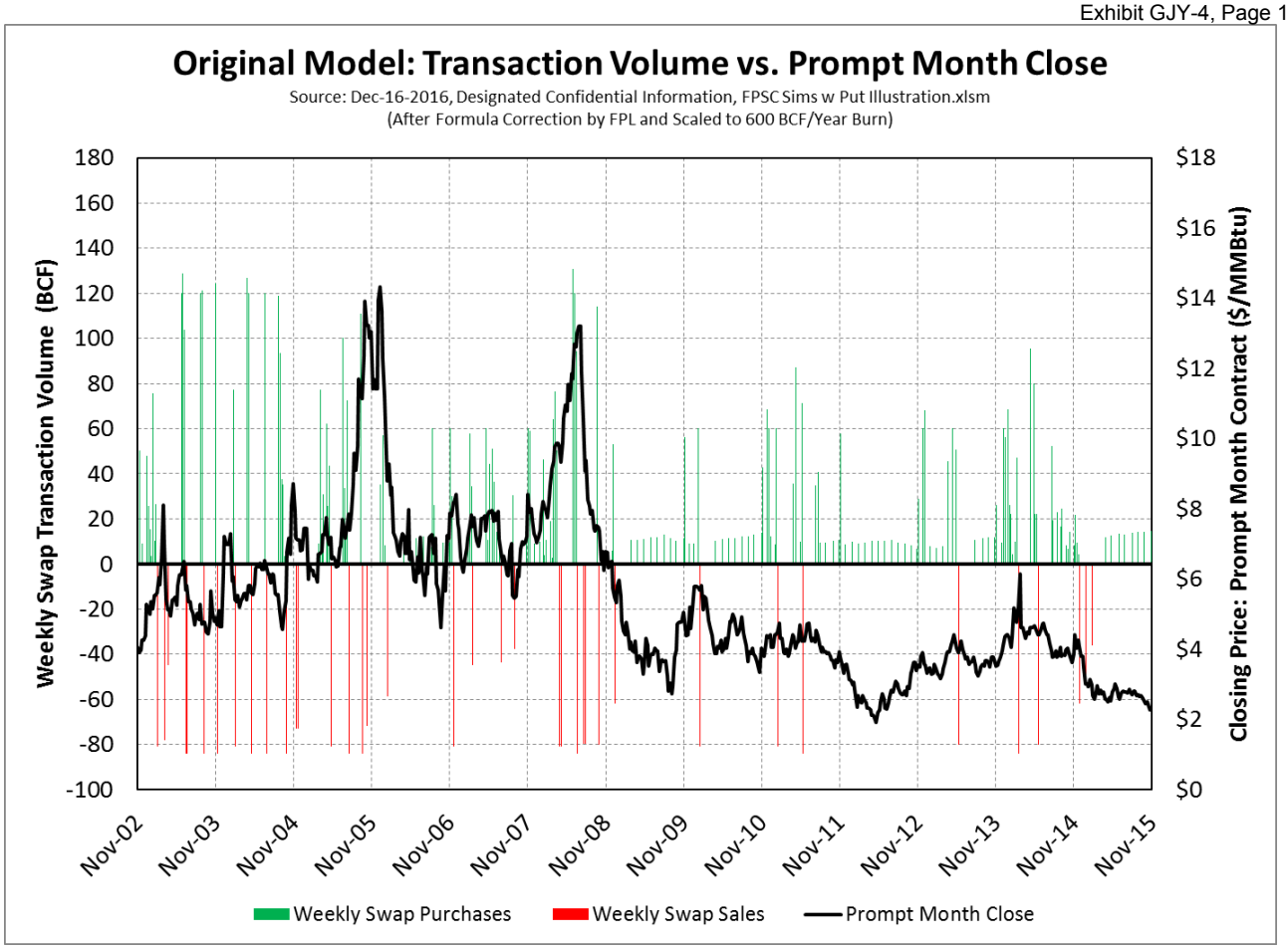
Q. Does that conclude your testimony?

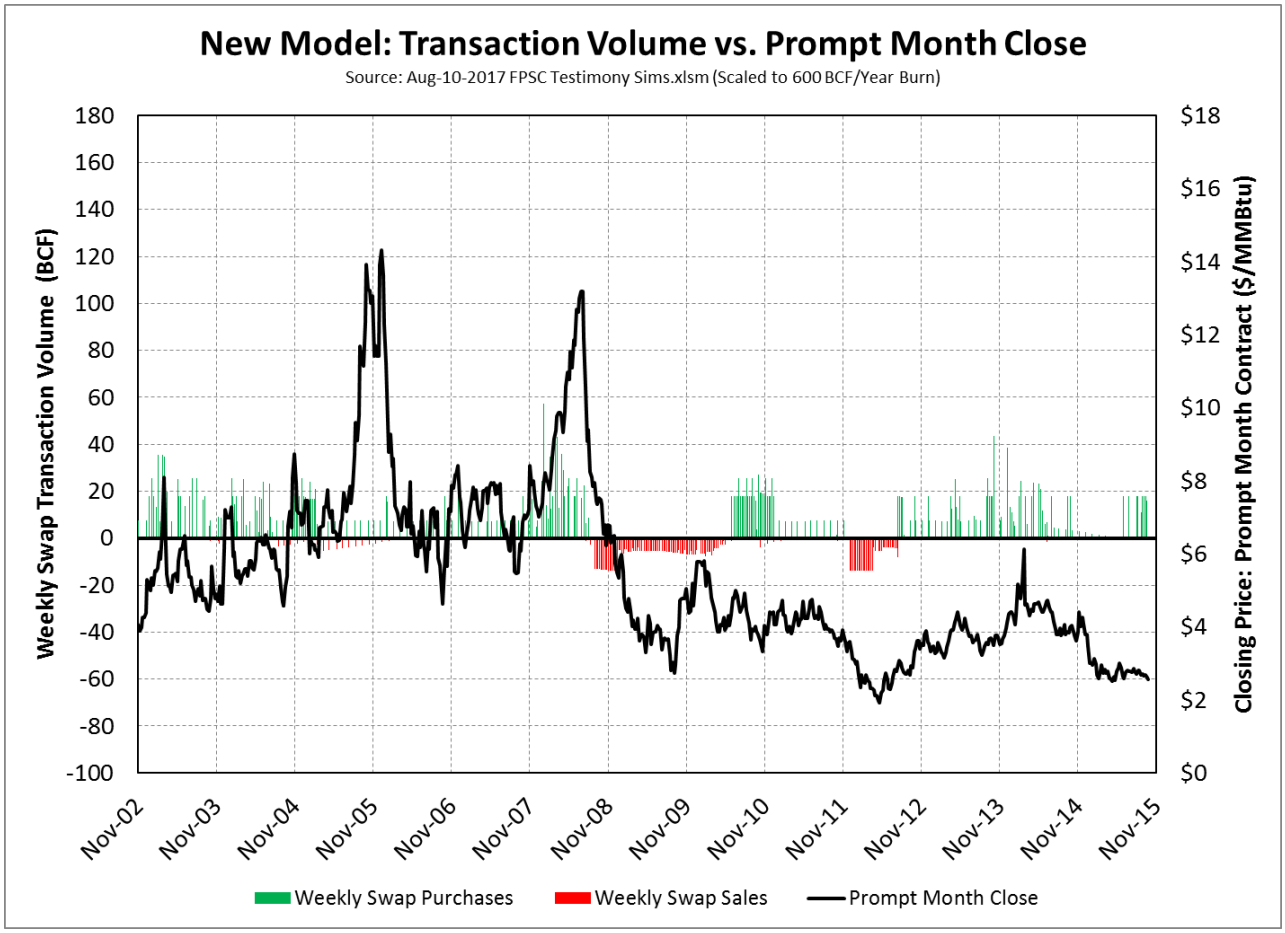
A. Yes.

Year	Market Settlement Prices	Hypothetical Risk-Responsive Approach (Original Model)	Hypothetical Risk-Responsive Approach (New Model)	Hypothetical OTM Call Options Approach	Difference in Average Annual Cost Between Hypothetical Risk-Responsive Approach (Original Model) and OTM Call Options Approach*	Difference in Average Annual Cost Between Hypothetical Risk-Responsive Approach (New Model) and OTM Call Options Approach*
	$/MMBtu	$/MMBtu	$/MMBtu	$/MMBtu	$/MMBtu	$/MMBtu
2007	$6.86	$7.70	$6.62	$7.48	($0.22)	$0.86
2008	$9.03	$9.07	$8.76	$9.24	$0.17	$0.47
2009	$3.99	$5.56	$5.37	$4.42	($1.14)	($0.95)
2010	$4.39	$5.17	$6.14	$4.76	($0.41)	($1.38)
2011	$4.04	$4.47	$4.41	$4.33	($0.14)	($0.08)
2012	$2.79	$3.52	$3.96	$2.91	($0.61)	($1.05)
2013	$3.65	$3.92	$4.22	$3.81	($0.11)	($0.41)
2014	$4.42	$4.28	$4.30	$4.45	$0.17	$0.15
2015	$2.66	$3.27	$3.48	$2.78	($0.49)	($0.70)
2016	$2.46	$2.57		$2.58	$0.01	
2007-2015 Average	**$4.65**	**$5.22**	**$5.25**	**$4.91**	**($0.31)**	**($0.34)**

** Negative number indicates that OTM Call Options Approach resulted in a lower portfolio cost than the portfolio cost of the Risk-Responsive Model under consideration*

Docket No. 20170057-EI
Updated Comparison of Risk-Responsive and OTM Call Option Strategies
Exhibit GJY-3, Page 1 of 1


Original Model: Transaction Volume vs. Prompt Month Close
Source: Dec-16-2016, Designated Confidential Information, FPSC Sims w Put Illustration.xlsm
(After Formula Correction by FPL and Scaled to 600 BCF/Year Burn)
Weekly Swap Transaction Volume (BCF)
Closing Price: Prompt Month Contract ($/MMBtu)
180
160
140
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
$18
$16
$14
$12
$10
$8
$6
$4
$2
$0
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Nov-10
Nov-11
Nov-12
Nov-13
Nov-14
Nov-15
Weekly Swap Purchases
Weekly Swap Sales
Prompt Month Close

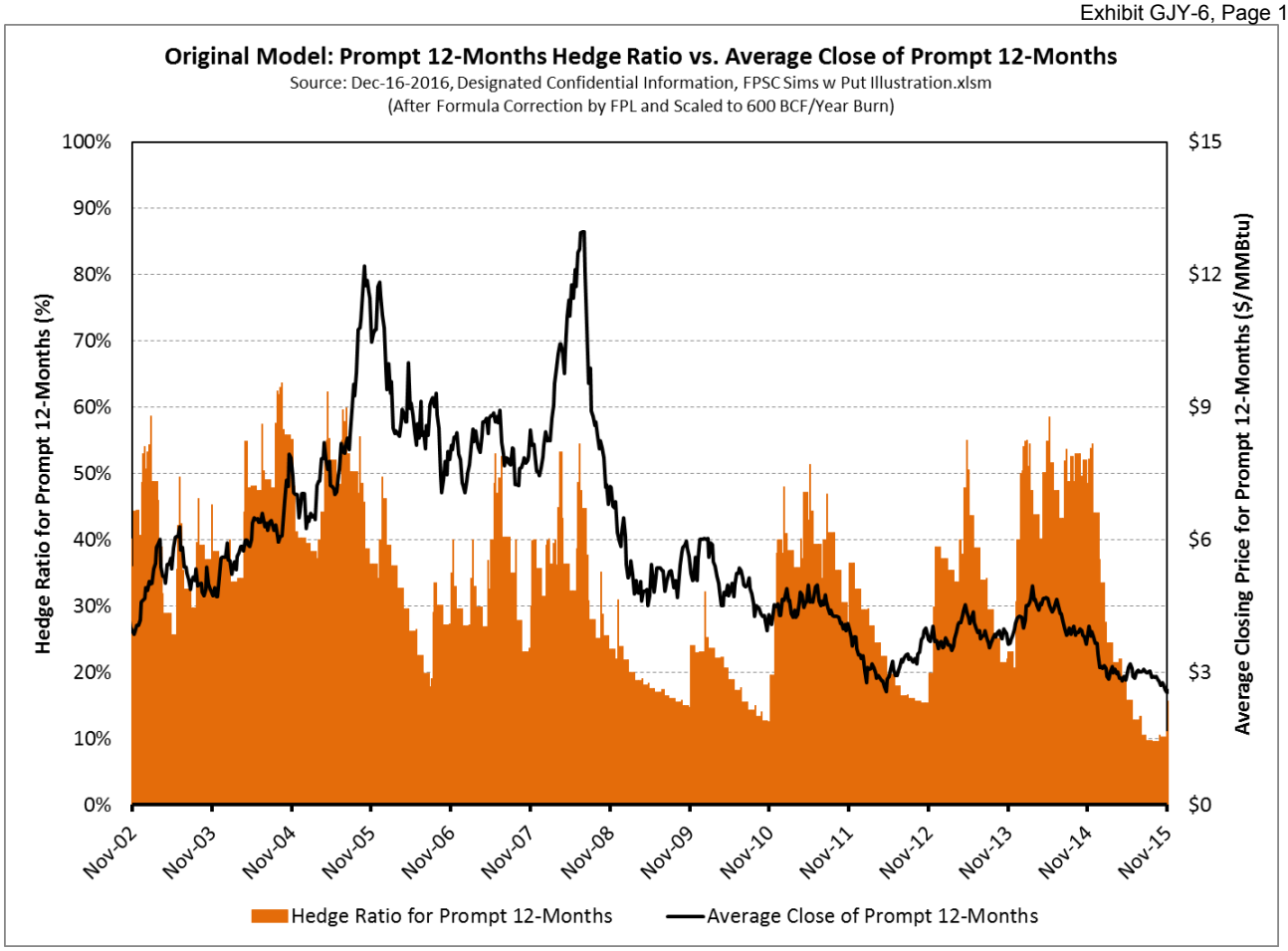

New Model: Transaction Volume vs. Prompt Month Close
Source: Aug-10-2017 FPSC Testimony Sims.xlsm (Scaled to 600 BCF/Year Burn)
Weekly Swap Transaction Volume (BCF)
Closing Price: Prompt Month Contract ($/MMBtu)
180
160
140
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
$18
$16
$14
$12
$10
$8
$6
$4
$2
$0
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Nov-10
Nov-11
Nov-12
Nov-13
Nov-14
Nov-15
Weekly Swap Purchases
Weekly Swap Sales
Prompt Month Close

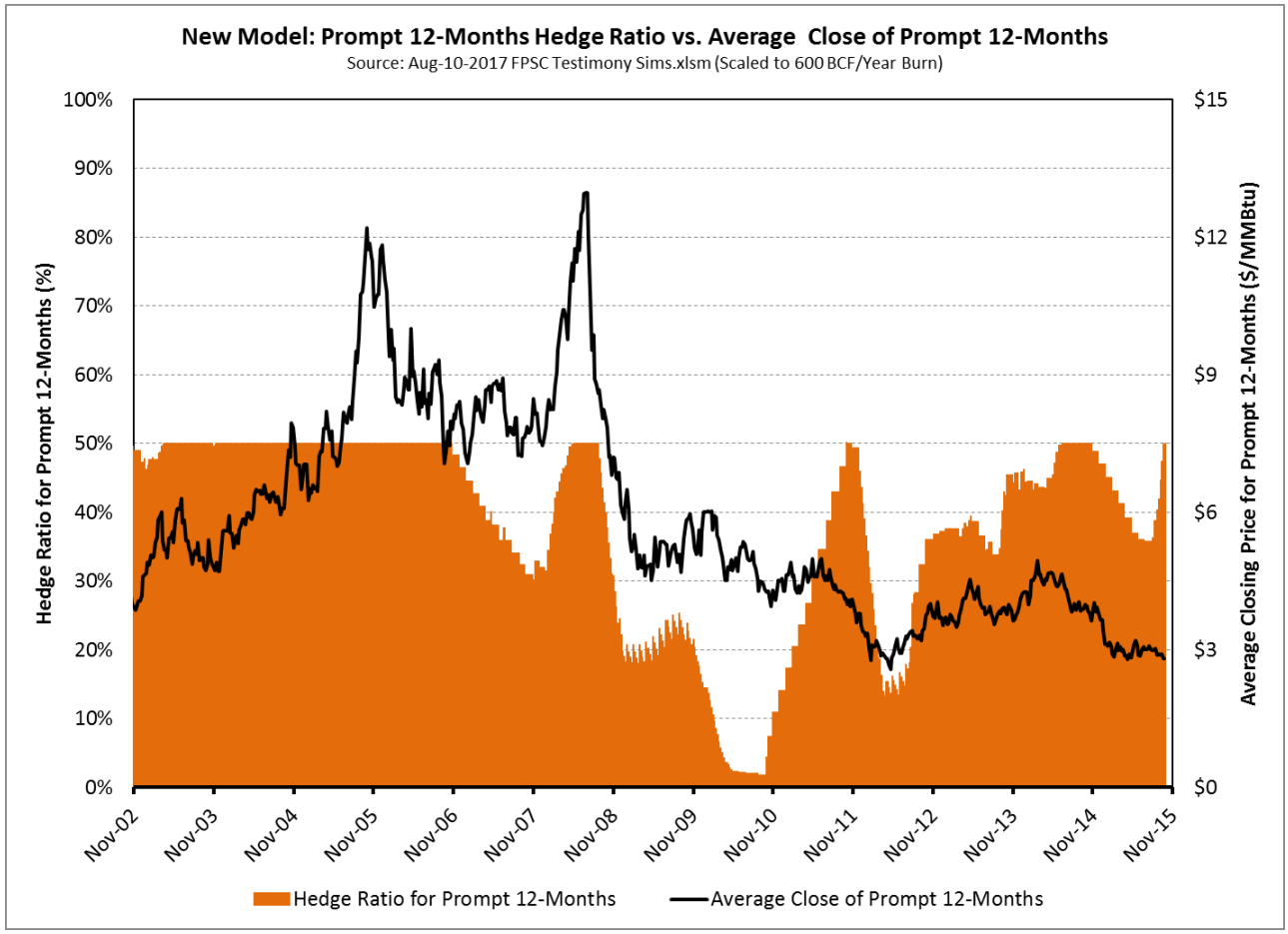
ORIGINAL MODEL*								
Hedge Execution Year	**Purchases (BCF)**	**Sales (BCF)**	**Total Transacted Volume (BCF)**	**Maximum Weekly Purchases (BCF)**	**Maximum Weekly Sales (BCF)**	**Market Settle ($/MMBtu)**	**65% Risk-Responsive Portfolio Price ($/MMBtu)**	**65% Risk-Responsive Final Hedge Ratio ($/MMBtu)**
2001	400	-226	625	130	-84	$4.27	$4.54	27%
2002	518	-71	590	70	-71	$3.23	$3.45	45%
2003	834	-540	1,374	129	-84	$5.37	$4.66	55%
2004	732	-479	1,211	127	-84	$6.14	$5.68	47%
2005	685	-321	1,006	111	-84	$8.62	$6.82	53%
2006	271	-140	411	60	-81	$7.23	$7.34	50%
2007	520	-126	646	60	-45	$6.86	$7.70	54%
2008	792	-548	1,339	131	-84	$9.03	$9.07	53%
2009	177	0	177	56	0	$3.99	$5.56	25%
2010	348	-81	429	69	-81	$4.39	$5.17	26%
2011	456	-165	621	87	-84	$4.04	$4.47	57%
2012	259	0	259	68	0	$2.79	$3.52	35%
2013	438	-80	518	68	-80	$3.65	$3.92	51%
2014	539	-280	818	95	-84	$4.42	$4.28	62%
2015	273	-36	309	60	-36	$2.66	$3.27	35%
2016	787	-482	1,269	131	-84	$2.46	$2.57	50%
2001-2015	**7,241**	**-3,093**	**10,335**	**131**	**-84**	**$5.11**	**$5.30**	**45%**

**Results assume a 600 BCF annual burn*

NEW MODEL*								
Hedge Execution Year	**Purchases (BCF)**	**Sales (BCF)**	**Total Transacted Volume (BCF)**	**Maximum Weekly Purchases (BCF)**	**Maximum Weekly Sales (BCF)**	**Market Settle ($/MMBtu)**	**50% Risk-Responsive Portfolio Price ($/MMBtu)**	**50% Risk-Responsive Final Hedge Ratio ($/MMBtu)**
2001	321	0	321	62	0	$4.27	$4.58	2%
2002	391	0	391	36	0	$3.23	$3.11	38%
2003	441	-9	450	36	-2	$5.37	$4.58	50%
2004	468	-17	485	26	-3	$6.14	$5.03	50%
2005	195	-41	236	24	-5	$8.62	$6.45	50%
2006	131	-2	133	22	-1	$7.23	$6.38	50%
2007	218	0	218	29	0	$6.86	$6.62	47%
2008	495	-230	726	57	-14	$9.03	$8.76	41%
2009	0	-281	281	0	-7	$3.99	$5.37	2%
2010	539	-89	628	27	-8	$4.39	$6.14	3%
2011	84	-74	157	8	-14	$4.04	$4.41	15%
2012	139	-228	367	18	-14	$2.79	$3.96	9%
2013	378	0	378	44	0	$3.65	$4.22	40%
2014	267	-1	268	25	-1	$4.42	$4.30	50%
2015	159	0	159	18	0	$2.66	$3.48	50%
2001-2015	**4,226**	**-972**	**5,199**	**62**	**-14**	**$5.11**	**$5.16**	**33%**

**Results assume a 600 BCF annual burn and a $450 MM Hedge Loss Tolerance*


Original Model: Prompt 12-Months Hedge Ratio vs. Average Close of Prompt 12-Months
Source: Dec-16-2016, Designated Confidential Information, FPSC Sims w Put Illustration.xlsm
(After Formula Correction by FPL and Scaled to 600 BCF/Year Burn)
Hedge Ratio for Prompt 12-Months (%)
Average Closing Price for Prompt 12-Months ($/MMBtu)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
$15
$12
$9
$6
$3
$0
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Nov-10
Nov-11
Nov-12
Nov-13
Nov-14
Nov-15
Hedge Ratio for Prompt 12-Months
Average Close of Prompt 12-Months


New Model: Prompt 12-Months Hedge Ratio vs. Average Close of Prompt 12-Months
Source: Aug-10-2017 FPSC Testimony Sims.xlsm (Scaled to 600 BCF/Year Burn)
Hedge Ratio for Prompt 12-Months (%)
Average Closing Price for Prompt 12-Months ($/MMBtu)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
$15
$12
$9
$6
$3
$0
Nov-02
Nov-03
Nov-04
Nov-05
Nov-06
Nov-07
Nov-08
Nov-09
Nov-10
Nov-11
Nov-12
Nov-13
Nov-14
Nov-15
Hedge Ratio for Prompt 12-Months
Average Close of Prompt 12-Months

	Comparison of New Risk-Responsive Model Results (Varying Parameters) to OTM Call Options Results													
	Base Case		**Change Case 1**		**Change Case 2**		**Change Case 3**		**Change Case 4**		**Change Case 5**		**OTM Call Options Results**	
	Parameter Changes		**Parameter Changes**		**Parameter Changes**		**Parameter Changes**		**Parameter Changes**		**Parameter Changes**			
	None		**Max/Week Increment**		**Max Hedge Ratio**		**MtM VaR C.L.**		**MtM VaR C.L.**		**Annual BCF**			
			3% to 2%		50% to 65%		97.5% to 99%		97.5% to 99%		200 BCF to 600 BCF			
							MtM Holding Period		**MtM Holding Period**		**Aggregate MtM + MtM VaR>**			
							20 Days to 90 Days		20 Days to 90 Days		$150 MM to $450 MM			
									Max Hedge Ratio					
									50% to 65%					
Hedge Execution Year	Transacted Volume (BCF)	Risk-Responsive Portfolio Price ($/MMBtu)	Transacted Volume (BCF)	Risk-Responsive Portfolio Price ($/MMBtu)	Transacted Volume (BCF)	Risk-Responsive Portfolio Price ($/MMBtu)	Transacted Volume (BCF)	Risk-Responsive Portfolio Price ($/MMBtu)	Transacted Volume (BCF)	Risk-Responsive Portfolio Price ($/MMBtu)	Transacted Volume (BCF)	Risk-Responsive Portfolio Price ($/MMBtu)	Transacted Volume (BCF)	60% OTM Call Options, Including Premiums ($/MMBtu)
2001	107	$4.58	90	$4.58	107	$4.58	107	$4.58	107	$4.58	321	$4.58		
2002	130	$3.11	131	$3.10	159	$3.11	130	$3.11	159	$3.11	391	$3.11		
2003	150	$4.58	150	$4.61	203	$4.46	150	$4.58	207	$4.46	450	$4.58		
2004	162	$5.03	143	$5.05	192	$4.91	162	$5.03	230	$5.00	485	$5.03		
2005	79	$6.45	89	$6.46	100	$5.96	116	$7.04	168	$6.80	236	$6.45		
2006	44	$6.38	43	$6.39	41	$6.17	57	$6.41	90	$6.21	133	$6.38		
2007	73	$6.62	71	$6.67	74	$6.53	105	$6.55	84	$6.47	218	$6.62	360	$7.48
2008	242	$8.76	223	$8.83	304	$8.87	209	$9.14	228	$8.98	726	$8.76	360	$9.24
2009	94	$5.37	105	$5.69	94	$6.33	67	$4.80	65	$4.85	281	$5.37	360	$4.42
2010	209	$6.14	179	$6.20	247	$6.40	152	$5.43	160	$5.49	628	$6.14	360	$4.76
2011	52	$4.41	53	$4.36	73	$4.43	78	$4.29	77	$4.28	157	$4.41	360	$4.33
2012	122	$3.96	120	$3.89	143	$4.12	86	$3.60	83	$3.60	367	$3.96	360	$2.91
2013	126	$4.22	116	$4.20	129	$4.19	127	$4.24	154	$4.27	378	$4.22	360	$3.81
2014	89	$4.30	98	$4.30	133	$4.29	104	$4.31	156	$4.31	268	$4.30	360	$4.45
2015	53	$3.48	38	$3.47	76	$3.65	52	$3.49	105	$3.61	159	$3.48	360	$2.78
2007-2015	**1,061**	**$5.25**	**1,002**	**$5.29**	**1,272**	**$5.42**	**979**	**$5.09**	**1,112**	**$5.10**	**3,183**	**$5.25**	**3,240**	**$4.91**

Docket No. 20170057-EI
Summary Comparison Table with Varying Parameters
Exhibit GJY-7, Page 1 of 1

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

REBUTTAL TESTIMONY OF RENAE B. DEATON

DOCKET NO. 20170057-EI

SEPTEMBER 1, 2017

Q. Please state your name, business address, employer and position.

A. My name is Renae B. Deaton. My business address is 700 Universe Boulevard, Juno Beach, Florida 33408. I am employed by Florida Power & Light Company ("FPL" or "the Company") as the Director, Cost Recovery Clauses, in the Regulatory & State Governmental Affairs Department.

Q. Have you previously filed testimony in this docket?

A. Yes, I have.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to address the testimony of Florida Industrial Power Users Group ("FIPUG") witness Jeffry Pollock's proposal regarding optional hedging service.

Q. Do you agree with witness Pollock's suggestion on page 17, lines 11 - 16 that utilities should offer fuel hedging as an optional premium service to which customers can opt-in?

A. No. Whether or not the utilities should continue hedging is a policy issue before this Commission. If the Commission determines that utilities should continue to hedge against natural gas price volatility, that will be the standard service offering. Customers are not required to opt-in to standard service. Optional

services are provided where appropriate to serve special needs or interests of particular customers and are not appropriate for terms of service that the Commission has determined are generally appropriate.

For example, FPL's standard service includes the installation of smart meters for all residential and most commercial and industrial service accounts. Smart meters provide many benefits to FPL customers including identifying service interruptions and speeding restoration during outage events. The Non-Standard Meter Service Rider tariff is available to customers who opt out of FPL's standard service and opt in to a non-standard service. By Order No. PSC-15-0026-FOF-EI issued January 7, 2015, the Commission confirmed its long-standing policy that costs should be borne by the cost-causer and, accordingly, determined that the cost of offering the non-standard meter service is to be borne by the customers electing such service. Similarly, if the Commission finds that utilities should continue to hedge natural gas fuel prices, hedging would constitute standard service. Although witness Pollock's testimony does not support the position FIPUG has taken previously that IOUs should offer a hedging opt-out mechanism for large customers, if such a mechanism were created then its costs should be borne by the customers that opt out, because it would be non-standard service.

Q. Does this conclude your testimony?

A. Yes.