



Exhibit No.:  
Issue: Fuel Hedging - Implementation  
Witness: Aaron Doll  
Type of Exhibit: Rebuttal Testimony  
Sponsoring Party: Empire District Electric  
Case No. EO-2017-0065  
Date Testimony Prepared: June 2017

FILED  
September 1, 2017  
Data Center  
Missouri Public  
Service Commission

Before the Public Service Commission

of the State of Missouri

Rebuttal Testimony

of

Aaron Doll

June 2017



**Empire District**<sup>™</sup>  
A Liberty Utilities Company

Empire Exhibit No. 101  
Date 6-24-17 Reporter AE  
File No. EO-2017-0065

REBUTTAL TESTIMONY  
OF  
AARON DOLL  
THE EMPIRE DISTRICT ELECTRIC COMPANY  
BEFORE THE  
MISSOURI PUBLIC SERVICE COMMISSION  
CASE NO. EO-2017-0065

1 INTRODUCTION

2 Q. ARE YOU THE SAME AARON DOLL WHO PROVIDED DIRECT  
3 TESTIMONY IN THIS CASE ON BEHALF OF THE EMPIRE DISTRICT  
4 ELECTRIC COMPANY?

5 A. Yes.

6 Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN THIS  
7 CASE?

8 A. My rebuttal testimony addresses inaccuracies in the Direct Testimony of Office of  
9 Public Counsel ("OPC") witness John Riley and comments made by OPC witness  
10 Lena Mantle in her Direct Testimony with regard to FERC Order 668 and Empire's  
11 netting procedures.

12 Q. WHAT OTHER REBUTTAL TESTIMONIES WILL BE PROVIDED BY  
13 EMPIRE?

14 A. Empire witness Blake Mertens will address the response to OPC direct testimonies  
15 related to hedge performance evaluation, and Robert Sager will discuss the structure  
16 and policy of risk management for Empire as it relates to hedging activities.

17 Q. AS BACKGROUND FOR YOUR REBUTTAL TESTIMONY, PLEASE  
18 BRIEFLY EXPLAIN HOW EMPIRE HEDGES NATURAL GAS.

1 A. Empire hedges its natural gas exposure using a ladder approach, referred to in its Risk  
2 Management Policy ("RMP") as progressive dollar cost averaging, where it provides  
3 maximum level volumetric thresholds up to four years out with the ability to procure  
4 above the bands if desired. This structure allows for strategic input to vary the amount  
5 of natural gas hedged, while still requiring that some minimum level of hedging take  
6 place.

7 **Q. IN RELATION TO THE AUDIT PERIOD, WHEN WERE HEDGES**  
8 **EXECUTED?**

9 A. For the audit period of this prudency review, March 2015 through August 2016,  
10 hedges were placed at various times between 2010 and 2015 as is defined in the Risk  
11 Management Policy ("RMP") discussed in Empire witness Sager's rebuttal testimony.

12 **Q. WHAT INSTRUMENTS ARE USED IN EMPIRE'S NATURAL GAS**  
13 **HEDGING EFFORTS?**

14 A. Empire hedges using both futures and forwards. The financial contracts are generally  
15 procured from the New York Mercantile Exchange ("NYMEX"), which is the  
16 world's largest commodity futures exchange. At times, Empire has secured futures  
17 from counterparties like Bank of America, but most futures are secured from the  
18 NYMEX. Empire will also procure physical forwards from counterparties with  
19 which it has a standard commodities contract (NAESB, ISDA, etc.) and an  
20 established counterparty credit limit.

21 **Q. WHAT IS EMPIRE'S POLICY FOR SECURING NATURAL GAS HEDGES?**

22 A. Please see the Rebuttal Testimony of Empire witness Robert Sager for the details  
23 surrounding Empire's natural gas hedging parameters and policy.

24 **REBUTTAL OF OPC WITNESS RILEY'S DIRECT TESTIMONY**

1

2 Q. WHAT ARE SOME INACCURACIES YOU WOULD LIKE TO CORRECT  
3 FROM MR. RILEY'S DIRECT TESTIMONY?

4 A. On page 17, lines 14-16, of Mr. Riley's Direct Testimony, he states that "...in  
5 December 2011, Empire hedged over 1 million Dekatherm (Dth) (11% of expected  
6 volume) to be delivered in 2015 at \$5.44/MMBTu. Mr. Riley goes on to state that in  
7 December 2011, natural gas was \$3.17.

8 Q. HOW ARE THESE STATEMENTS INACCURATE?

9 A. First of all, the position to which Mr. Riley was referring was from Empire's Natural  
10 Gas Position Report as of December 31, 2011. The 2015 hedged position was  
11 comprised of 5 transactions, none of which were procured in December 2011.  
12 Rather, 400,000 Dth were procured in October of 2010, 300,000 Dth were procured  
13 in June 2011, and 310,000 Dth were procured in October 2011. Below is Table AD-1  
14 of the NYMEX forward curves at the end of each month over the two year time frame  
15 that the hedges were secured. Additionally, I shaded the month end curves of the  
16 future periods leading up to the hedge transaction, to provide some context as to the  
17 prices that would have been seen at that time. As indicated in table, the four  
18 transactions that comprised the 1,000,000 Dth hedges referred to in Mr. Riley's  
19 testimony, were clearly "in the money" at the time of the transactions and  
20 "reasonable" as indicated by the forward curves in the timeframe leading up to the  
21 hedge transaction dates.

22 Table AD-1

AARON DOLL  
REBUTTAL TESTIMONY

1

2015 NYMEX Henry Hub Futures as of												
Dt	1/29/2010	2/26/2010	3/31/2010	4/30/2010	5/28/2010	6/30/2010	7/30/2010	8/27/2010	9/30/2010	10/29/2010	11/26/2010	12/31/2010
1/1/2015	7.405	7.200	7.060	7.094	6.972	6.739	6.264	6.376	5.929	5.933	6.122	5.983
2/1/2015	7.385	7.175	7.025	7.054	6.927	6.694	6.209	6.331	5.884	5.888	6.082	5.938
3/1/2015	7.170	6.955	6.825	6.854	6.727	6.494	6.029	6.156	5.709	5.713	5.912	5.760
4/1/2015	6.570	6.365	6.345	6.384	6.247	6.049	5.594	5.821	5.344	5.348	5.562	5.402
5/1/2015	6.525	6.320	6.305	6.349	6.212	6.019	5.569	5.806	5.334	5.333	5.549	5.390
6/1/2015	6.590	6.380	6.365	6.407	6.270	6.077	5.604	5.836	5.362	5.355	5.573	5.410
7/1/2015	6.665	6.455	6.440	6.479	6.340	6.147	5.656	5.881	5.404	5.390	5.613	5.452
8/1/2015	6.730	6.520	6.505	6.544	6.403	6.210	5.704	5.929	5.452	5.430	5.653	5.492
9/1/2015	6.765	6.555	6.540	6.577	6.436	6.243	5.729	5.954	5.477	5.450	5.673	5.512
10/1/2015	6.870	6.660	6.645	6.679	6.538	6.345	5.814	6.034	5.557	5.528	5.748	5.587
11/1/2015	7.125	6.910	6.895	6.929	6.776	6.580	6.014	6.224	5.742	5.708	5.926	5.757
12/1/2015	7.400	7.185	7.175	7.209	7.038	6.840	6.234	6.434	5.947	5.910	6.141	5.972

2015 NYMEX Henry Hub Futures as of												
Dt	1/28/2011	2/25/2011	3/31/2011	4/29/2011	5/27/2011	6/30/2011	7/29/2011	8/26/2011	9/30/2011	10/28/2011	11/25/2011	12/31/2011
1/1/2015	5.871	5.966	6.244	6.167	6.137	5.889	5.797	5.688	5.567	5.484	5.118	4.733
2/1/2015	5.838	5.936	6.224	6.142	6.117	5.855	5.765	5.653	5.532	5.450	5.083	4.705
3/1/2015	5.706	5.826	6.134	6.057	6.042	5.771	5.683	5.570	5.447	5.364	4.998	4.622
4/1/2015	5.431	5.576	5.864	5.757	5.757	5.486	5.423	5.311	5.217	5.154	4.775	4.444
5/1/2015	5.421	5.566	5.879	5.777	5.775	5.501	5.436	5.321	5.227	5.164	4.783	4.454
6/1/2015	5.441	5.586	5.909	5.807	5.815	5.536	5.469	5.349	5.255	5.192	4.811	4.481
7/1/2015	5.481	5.626	5.954	5.850	5.880	5.576	5.505	5.384	5.290	5.227	4.848	4.518
8/1/2015	5.514	5.661	5.994	5.882	5.897	5.609	5.535	5.408	5.312	5.249	4.870	4.538
9/1/2015	5.531	5.676	6.009	5.892	5.912	5.624	5.546	5.415	5.319	5.256	4.875	4.541
10/1/2015	5.601	5.746	6.069	5.944	5.962	5.672	5.588	5.445	5.349	5.286	4.905	4.576
11/1/2015	5.743	5.881	6.224	6.089	6.114	5.810	5.723	5.575	5.472	5.408	5.017	4.671
12/1/2015	5.948	6.091	6.464	6.329	6.364	6.042	5.957	5.798	5.697	5.635	5.244	4.881

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Secondly, the Henry Hub Spot Price chart referenced by Mr. Riley is based on the spot price of natural gas at Henry Hub rather than the futures price. The spot price, as defined on the EIA website<sup>1</sup> is “the price for a one-time open market transaction for immediate delivery of a specific quantity of product at a specific location where the commodity is purchased ‘on the spot’ at current market rates.” This is different than the futures price, which is a financial price which does not require delivery and expires three business days prior to the first calendar day of the month. This comparison by Mr. Riley is flawed, as Empire would not take physical positions at Henry Hub, as we have no fixed transportation contracts at that location. Rather, our fixed transportation contracts are sourced from production and market areas at the

<sup>1</sup> [https://www.eia.gov/dnav/ng/TblDefs/ng\\_pri\\_fut\\_tbldef2.asp](https://www.eia.gov/dnav/ng/TblDefs/ng_pri_fut_tbldef2.asp)


1 Southern Star Central Gas Pipeline ("SSCGP"). Furthermore, NYMEX futures are  
2 settled with the NYMEX futures Contract 1 price - and not the NYMEX spot price.

3 **Q. PLEASE CONTINUE.**

4 The third problem with the statements made by Mr. Riley on page 17, lines 14-16, of  
5 his Direct Testimony is that even if Mr. Riley had used the correct NYMEX figures in  
6 his comparison, the current spot price is not a reflection of what the cost of natural  
7 gas may be in the future. Mr. Riley mistakenly assumes that if spot natural gas is in  
8 the low \$3.00 range that it would inevitably stay in the low \$3.00 for the next four  
9 years. Table AD-2, from *www.future.tradingcharts.com* for the current Henry Hub  
10 futures as of June 19, 2017, shows current next month futures (July 2017) at  
11 \$3.037/Dth and July 2018 futures at \$2.904/Dth. July 2019 futures are \$2.739. The  
12 fact that futures in outer years are priced cheaper than historical year's futures  
13 supports the fact that current spot prices are certainly not the best indicators for future  
14 prices. Furthermore, the phenomenon where outer year futures are priced lower than  
15 current years is referred to as backwardation. If anything, backwardation may  
16 prognosticate opportunities for hedgers to lock in low rates that may move adversely  
17 in the future (see *Natural Gas Backwardation Buying Opportunity* - Appendix AD-3).  
18 It is clear from his testimony that Mr. Riley is not making an apples to apples  
19 comparison and is making unbiased and unrealistic inferences as to the movement of  
20 the natural gas market.

21 **Table AD-2**

1

Commodity Futures Price Quotes For Natural Gas (NYMEX)											
(Price quotes for NYMEX Natural Gas delayed at least 10 minutes as per exchange requirements)											
Also available: electronic Session Quotes											
Trade Natural Gas now with:											
Click for Chart	Current Session								Prior Day		Opt's
	Open	High	Low	Last	Time	Set	Chg	Vol	Set	Op Int	
Jul'17	-	3.082	3.021	3.037	18:01 Jun 18	3.037	-0.019	119322	3.056	141820	Call Put
Aug'17	-	3.102	3.042	3.060	18:01 Jun 18	3.060	-0.018	76977	3.078	227329	Call Put
Sep'17	-	3.087	3.034	3.047	18:01 Jun 18	3.047	-0.017	31022	3.064	181116	Call Put
Oct'17	-	3.108	3.057	3.070	18:01 Jun 18	3.070	-0.016	24075	3.086	177414	Call Put
Nov'17	-	3.172	3.124	3.136	18:01 Jun 18	3.136	-0.014	12159	3.150	72402	Call Put
Dec'17	-	3.304	3.263	3.272	18:01 Jun 18	3.272	-0.011	7801	3.283	65253	Call Put
Jan'18	-	3.387	3.349	3.356	18:01 Jun 18	3.356	-0.010	11994	3.366	108998	Call Put
Feb'18	-	3.367	3.327	3.337	18:01 Jun 18	3.337	-0.011	3699	3.348	45716	Call Put
Mar'18	-	3.308	3.266	3.275	18:01 Jun 18	3.275	-0.012	8748	3.287	76466	Call Put
Apr'18	-	2.904	2.878	2.882	18:01 Jun 18	2.882	-0.015	11441	2.897	84096	Call Put
May'18	-	2.869	2.844	2.847	18:01 Jun 18	2.847	-0.015	3557	2.862	34940	Call Put
Jun'18	-	2.896	2.872	2.876	18:01 Jun 18	2.876	-0.014	847	2.890	20420	Call Put
Jul'18	-	2.923	2.905	2.904	18:01 Jun 18	2.904	-0.013	2065	2.917	25336	Call Put
Aug'18	-	2.929	2.908	2.911	18:01 Jun 18	2.911	-0.014	1119	2.925	16999	Call Put
Sep'18	-	2.903	2.884	2.888	18:01 Jun 18	2.888	-0.015	1275	2.903	17061	Call Put
Oct'18	-	2.920	2.900	2.904	18:01 Jun 18	2.904	-0.016	2383	2.920	39682	Call Put
Nov'18	-	2.960	2.952	2.952	18:01 Jun 18	2.952	-0.017	1040	2.969	20479	Call Put
Dec'18	-	3.095	3.082	3.084	18:01 Jun 18	3.084	-0.015	983	3.099	21878	Call Put
Jan'19	-	3.182	3.172	3.170	18:01 Jun 18	3.170	-0.016	2021	3.186	11206	Call Put
Feb'19	-	3.163	3.154	3.146	18:01 Jun 18	3.146	-0.016	690	3.162	3505	Call Put
Mar'19	-	-	-	3.096	18:01 Jun 18	3.080	-0.016	820	3.096	4808	Call Put
Apr'19	2.720	2.720	2.720	2.726	18:01 Jun 18	2.726	-0.009	473	2.735	4655	Call Put
May'19	2.684	2.684	2.684	2.681	18:01 Jun 18	2.681	-0.009	18	2.690	1551	Call Put
Jun'19	-	-	-	2.716	18:01 Jun 18	2.709	-0.009	-	2.718	1406	Call Put
Jul'19	-	-	-	2.746	18:01 Jun 18	2.739	-0.009	-	2.748	1205	Call Put
Aug'19	-	-	-	2.760	18:01 Jun 18	2.753	-0.009	16	2.762	1160	Call Put
Sep'19	-	-	-	2.753	18:01 Jun 18	2.746	-0.009	-	2.755	1115	Call Put
Oct'19	-	-	-	2.778	18:01 Jun 18	2.771	-0.009	-	2.780	2149	Call Put
Nov'19	-	-	-	2.853	18:01 Jun 18	2.846	-0.009	-	2.855	1345	Call Put
Dec'19	-	-	-	3.001	18:01 Jun 18	2.991	-0.009	2	3.000	1350	Call Put

2

1 Q. ON PAGE 4 OF MR. RILEY'S DIRECT TESTIMONY, MR. RILEY  
2 ALLEGES THAT EIA FORECASTS DURING AN UNSPECIFIED  
3 TIMEFRAME PROVIDED LOWER NATURAL GAS FORECASTS THAN  
4 EMPIRE WAS HEDGING. IS THIS TRUE?

5 A. With the information provided, the accuracy of the statement cannot be confirmed,  
6 but we do know the statement is irrelevant to this proceeding. Since Mr. Riley does  
7 not specify a timeframe or a consultant's forecast, the only evidence I can seek to  
8 corroborate this claim is the EIA Short Term Energy Outlook ("STEO"). Since Mr.  
9 Riley incorrectly identifies the transaction dates of the hedges, his statement  
10 regarding the December 2011 EIA STEO is irrelevant. Rather, if the October 2010  
11 STEO, June 2011 STEO, and October 2011 STEO are considered, all 3 cite an  
12 increase in natural gas prices in the next year. Mr. Riley does correctly identify that  
13 the December 2011 EIA STEO revised prices downward from earlier predictions;  
14 however, the hedges he attributed with ignoring this information were already in  
15 place at this time. Furthermore, Mr. Riley is continuing to improperly evaluate the  
16 prudence of the hedge by citing a single source that predicts only in the short term  
17 (typically the next year) as indicative of information available and ignored by Empire.  
18 It appears that Mr. Riley is selectively picking any sources he may find to fit his  
19 narrative, needing to mistakenly identify the transaction dates to support his case.

20 Q. IF THE PRUDENCE OF A HEDGE SHOULD NOT BE EVALUATED BY  
21 LOOKING TO A SINGLE SOURCE THAT PREDICTS ONLY IN THE  
22 SHORT TERM, WHAT SHOULD BE DONE?

23 A. A fair analysis regarding the prudence of hedging positions ought to look at the  
24 forward curves in the general time frames leading up to the transaction dates to



1 determine what the market is offering as fixed price hedges to lock in a price  
2 commensurate with all of the risk and volatility baked into the forward curves.

3 **Q. WHAT OTHER CONCERNS DO YOU HAVE WITH MR. RILEY'S DIRECT**  
4 **TESTIMONY IN THIS CASE?**

5 A. On page 5 of his Direct Testimony, he describes the "Polar Vortex" which occurred  
6 in February 2014 as the only month that natural gas spot prices rose above \$5/Dth  
7 from February 2010 through current day. However, Mr. Riley fails to acknowledge  
8 that no forecast predicted the Polar Vortex and daily spot prices rose above \$5 during  
9 the months of January, February, and March, reaching an apex of \$31.27/Dth for  
10 February 6, 2014 from SSCGP. Adverse price movement, as evident during the Polar  
11 Vortex, are generally not forecasted, and using the NYMEX spot curves is not an  
12 accurate reflection of the true cost of procuring natural gas.

13 **Q. PLEASE CONTINUE.**

14 A. On page 7 of his Direct Testimony, Mr. Riley points to natural gas storage levels as  
15 an indicator of future pricing. As Empire witness Blake. Mertens explains in his  
16 Rebuttal Testimony, natural gas storage levels is simply one metric that is correlated  
17 with present natural gas prices and provides no forecast to future natural gas prices.  
18 To put this in context with Mr. Riley's comments surrounding the Polar Vortex,  
19 natural gas storage levels never predicted the price spikes seen as a result of the Polar  
20 Vortex nor did they do anything to suppress the price spike seen at the time. This  
21 example points to the difference between the powers of explanation and prediction.

22 **Q. DO YOU HAVE ANY OTHER CONCERNS?**

23 A. Yes. Another concern I have with the Direct Testimony of Mr. Riley, as well as the  
24 Direct Testimony of OPC witness Hyneman, involves a lack of deference given to

1 changes in demand that may cause adverse price movements. On page 8 of his Direct  
2 Testimony, Mr. Riley says more utilities "...have turned to natural gas generation  
3 plants to replace coal-fired systems," yet he fails to make the connection that as  
4 demand for natural gas increases, price movements are likely to occur. An EnerKnol  
5 article cited on page 4 of Mr. Riley's Direct Testimony, and included as Appendix  
6 AD-1 in this testimony, describes the numerous demand-side changes that may  
7 increase the price for natural gas, including: increased demand for electrical  
8 generation from natural gas sourced facilities, petrochemical production, increasing  
9 exports of liquefied natural gas, and increases in extreme weather.

10 **Q. ON PAGE 5 OF HIS DIRECT TESTIMONY, MR. RILEY STATES THAT AN**  
11 **ENVIRONMENT WITH STABLE OR DROPPING PRICES CREATES AN**  
12 **EXPENSIVE SETTING WITH LITTLE OR NO BENEFIT, THUS MAKING**  
13 **HEDGING IMPRUDENT. DO YOU AGREE WITH THIS STATEMENT?**

14 **A.** No. On the contrary, the current environment, as stated by both the EnerKnol article  
15 referenced by Mr. Riley and the Public Utilities Fortnightly article referenced by Mr.  
16 Hyneman, is an attractive environment that allows for utilities to lock in historically  
17 low natural gas hedges. Empire would have more concern with waiting until forward  
18 volatility reached a level deemed worthy of hedging by OPC and we were suddenly  
19 requested to take positions in which the forward curves reflected the increase in  
20 volatility thus creating high futures pricing in comparison to the current futures.

21 **Q. DO YOU CONCUR WITH MR. RILEY'S STATEMENT ON LINES 12-13 OF**  
22 **PAGE 9 OF HIS DIRECT TESTIMONY THAT EMPIRE'S HEDGING IS**  
23 **BASED ON "VOLUME NEED, NOT PRICE RISK"?**

1 A. No. I am a little confused by Mr. Riley's statement when he uses the phrase "volume  
2 need," since the majority of our natural gas hedged positions are fixed price futures in  
3 nature. If we were hedging purely for volume certainty and "not price risk" as Mr.  
4 Riley alleges, we would simply purchase physical forwards at an index, thus  
5 preserving our ability to procure the volume of gas needed while floating the price.

6 Q. DOES MR. RILEY'S STATEMENT ON PAGE 20 LINE 19 OF HIS DIRECT  
7 TESTIMONY THAT EMPIRE HAS INCURRED HEDGING LOSSES WHICH  
8 REPRESENT 38.5% OF ACTUAL NATURAL GAS FUEL COSTS  
9 ACCURATELY REFLECT THE IMPACT OF EMPIRE'S HEDGING  
10 PROGRAM?

11 A. No. First, Empire utilizes hedges to lock in prices. Prices may decline after a hedge  
12 has been executed. However, it should not be viewed as a loss simply due to the fact  
13 it could have been purchased for a lower price at a later time. The ability to  
14 consistently buy at the exact moment prices are at their lowest is not a reasonable  
15 expectation. In addition, the limited 18 month time frame of this audit period does not  
16 tell the entire story of Empire's hedging program. As is shown in Appendix AD-2, the  
17 net of Empire's financial hedging "gains and losses" over the life of the program is  
18 approximately \$3 million for the 15 year span, or on average approximately \$200,000  
19 or less than 1% per year.

20 Q. PLEASE SUMMARIZE YOUR RESPONSE TO OPC'S CONCERNS  
21 REGARDING EMPIRE'S HEDGING PROGRAM.

22 A. Empire's hedging policy has been strategic yet steady, and while historic lows have  
23 created some hedging losses in the audit period, a review of Appendix AD-2 to this  
24 testimony demonstrates that Empire's hedging program has provided value over the

1 course of its existence. OPC's supposed clairvoyance is without merit, insinuates that  
2 "beating the market" is the yard stick with which one should measure hedging  
3 effectiveness, and is blind to the dynamics of the natural gas market.

4 **REBUTTAL OF OPC WITNESS MANTLE'S DIRECT TESTIMONY**

5 **Q. DOES EMPIRE FOLLOW THE FERC ORDER 668 NETTING**  
6 **REQUIREMENT?**

7 A. Yes. Since Empire has been a market participant (March 1, 2014), Empire has  
8 reported its sales and revenues within the Southwest Power Pool ("SPP") Integrated  
9 Marketplace ("IM") as netted per FERC requirements.

10 **Q. HAS THE STAFF OF THE COMMISSION REVIEWED EMPIRE'S NETTED**  
11 **FIGURES?**

12 A. Yes. Although Empire's operational reports are reported gross to create an accurate  
13 portrait of unit performance and charges for procuring energy to serve its native load,  
14 all SPP IM charges reported in the general ledger ("GL") are netted. Staff, like OPC,  
15 has access to Empire's GL during rate cases and prudence reviews.

16 **Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**


17 A. Yes it does.

18

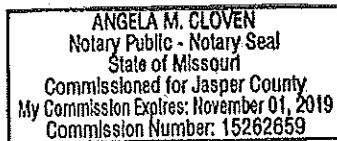
AFFIDAVIT OF AARON J. DOLL

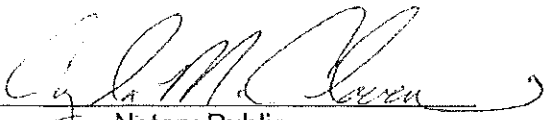
STATE OF MISSOURI )  
                                  ) ss  
COUNTY OF JASPER )

On the 21st day of June, 2017, before me appeared Aaron J. Doll, to me personally known, who, being by me first duly sworn, states that he is the Director Electric Procurement of The Empire District Electric Company and acknowledges that he has read the above and foregoing document and believes that the statements therein are true and correct to the best of his information, knowledge and belief.

  
\_\_\_\_\_  
Aaron J. Doll

Subscribed and sworn to before me this 21st day of June, 2017.



  
\_\_\_\_\_  
Notary Public

My commission expires: 11/01/2019.

1

# ENERKNOL RESEARCH

## North America

Fossil Fuels | Natural Gas

### Regulators Reconsider Utility Hedging Policies Given Shifts In Natural Gas Flow

Utilities Prioritize Price Stability Over Cost Reduction In Fuel Procurement

December 21, 2015

Policy Brief

#### Author

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#### Key Takeaways:

- Florida's investor-owned utilities will continue to employ current natural gas hedging practices, which have resulted in approximately \$6B opportunity costs
- Evolving supply-demand dynamics of the natural gas market spur utility commissioners to reconsider hedging policy
- Ongoing state efforts to enhance hedging mechanisms reflect the need for long-term supply contract structures

#### Entities Mentioned:

- American Natural Gas Association
- Energy Information Administration
- Environmental Protection Agency
- Florida Public Service Commission
- Kentucky Public Service Commission
- Louisiana Public Service Commission
- Public Utility Commission of Oregon
- Washington Utilities and Transportation Commission

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**Insight for Industry – Florida Natural Gas Hedging Programs Prioritize Price Stability over Cost Savings**

On December 3, 2015, the Florida Public Service Commission (PSC) voted to approve the continuation of the state's investor-owned utilities' (IOUs) natural gas financial hedging activities. The decision is a setback for consumer groups, which requested that hedging be abandoned in view of prolonged periods of losses. Florida's natural gas hedging programs have cost ratepayers more than \$6 billion since 2002, with projected losses of \$789 million in 2015 alone. Hedging allows utilities to manage the risk of volatility in natural gas prices by locking in prices ahead of time. It serves to ensure price stability and prevent the impacts of high price spikes for customers. While physical hedging involves long-term fixed price contracts with suppliers in order to fix the fuel price over a period, financial hedging involves swap contracts and options to fix the price at the time the hedge instrument is executed for delivery at a future date.

While utilities support hedging strategy as a prudent risk management practice, consumer groups argue that current practices which only aim to mitigate fuel price volatility impose an unreasonable burden for customers who bear the entire cost of hedging. Consumer groups say that Florida IOUs should reconsider their hedging programs in light of declining volatility, lower projected prices, and increased production and reserve levels.

The Florida PSC maintained that the main objective of hedging programs is to reduce the customer's exposure to fuel price volatility rather than reducing fuel costs. It held that the level of opportunity savings and costs – hedging-induced gains and losses – should not be a key factor in determining whether to continue hedging practices. The PSC Staff recommended continuing hedging programs, saying that despite losses, the hedging strategy works to minimize natural price volatility. The PSC plans to consider revisions next year with options to limit losses, such as placing a cap on hedging.

Among other states, Kentucky and Nevada have ended their hedging programs, citing declining price volatility, while Washington, Louisiana, and Oregon are planning revisions to enhance their utilities' risk management programs.

**Florida PSC Approves Continuation of Natural Gas Hedging Programs Despite Prolonged Periods of Losses**

Though hedging-induced gains and losses are expected to offset over time, hedging losses have continued to mount since 2002 when the Florida PSC first issued an order providing a framework to incorporate hedging into fuel procurement. For the period 2004 to 2008, the cumulative hedging costs/losses for the state's four IOUs were approximately \$121.7 million. For the period 2009 to 2014, the cumulative hedging costs/losses soared to approximately \$5.2 billion (Figure 1).

Florida's natural gas hedging programs have cost ratepayers more than \$6 billion since 2002, with projected losses of \$789 million in 2015 alone

While utilities support hedging strategy as a prudent risk management practice, consumer groups argue that current practices which only aim to mitigate fuel price volatility impose an unreasonable burden for customers

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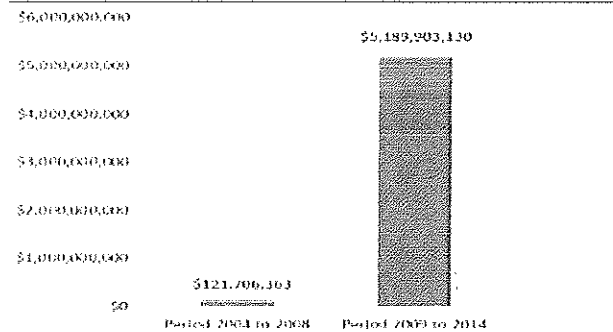
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DECEMBER 21, 2015

Figure 1 - Total Hedging Losses of Florida IOUs



Source: Florida Public Service Commission

Following an analysis of utilities and consumer groups' positions in proceedings regarding fuel and purchased power adjustment and generating performance incentive factor clause (Docket No. 150001-EI), Florida PSC Staff found that continuing fuel price hedging activities serves consumer interest.

Groups representing a wide range of consumers – the Florida Office of Public Counsel (OPC), Florida Retail Federation, and Florida Industrial Power Users Group – argued that prolonged periods of losses justify discontinuation of natural gas hedging programs in the state. The OPC expressed support for programs that meet the objectives of lowering overall utility fuel costs and reducing volatility in consumer electric bills.

Florida Power & Light Company (FPL), Gulf Power Company (Gulf), and Tampa Electric Company (TECO) sought to continue hedging programs saying that market price risks and volatility continue to exist as gas producers and consumers adapt to regulatory and market price changes and uncertainty. Duke Energy Florida (DEF) expressed support for the strategy as a prudent risk management practice to address price volatility but said it was a policy decision for PSC to determine. Utilities also found that the PSC-approved hedging guidelines provide reasonable tradeoffs to mitigate volatility.

Significant fluctuations in natural gas and oil prices in 2000 and 2001 prompted the PSC to address issues regarding the utilities' management of fuel price risk as part of its 2001 fuel clause proceeding. In 2008, the PSC established guidelines for risk management plans clarifying the timing and content of regulatory filings for hedging activities, while allowing IOUs flexibility in creating and implementing programs, finding that these programs provide customer benefits by mitigating price volatility. The PSC noted that a hedging program's primary purpose is to reduce the impact of volatility in the fuel adjustment charges paid by an IOU's customers. The PSC also recognized the

Significant fluctuations in natural gas and oil prices in 2000 and 2001 prompted the Florida PSC to address issues regarding the management of fuel price risk as part of its 2001 fuel clause proceeding

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DECEMBER 21, 2015

need for a balanced, systematic, and long-term view of hedging transactions for appropriate review of hedging programs.

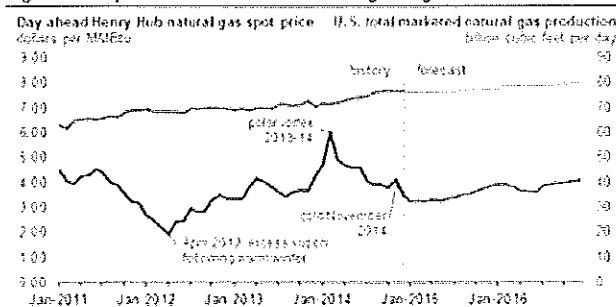
The PSC recognized that hedging could result in significant lost opportunities for saving costs when fuel prices drop to levels lower than at the time of placing hedges. However, the Commission explained that lost opportunities are a reasonable trade-off to reduce exposure to cost increases that would result when prices ascend to higher levels. These programs should be non-speculative and designed to meet the objective of minimizing price volatility. The Commission directed staff to work with stakeholders on a collaborative process on considering changes to hedging programs next year for the benefit customers.

#### Florida Regulators Fear Gas Price Volatility because of Rising Demand in Electricity Generation and Exports

Despite the downward trend in natural gas prices over the last few years, the PSC staff found that price volatility remains high and unpredictable. Price volatility is interconnected to supply and demand in the natural gas market, which has substantially changed from 2002-2015. In addition, prices become more volatile when weather affects supply or demand, as evident from the January 2014 polar vortex, which had a significant impact on natural gas prices (Figure 2).

Florida PSC found that lost opportunities are a reasonable trade-off to reduce exposure to cost increases that would result when prices ascend to higher levels

Figure 2 – Drop in Natural Gas Prices Following Strong Production Growth



Source: EIA

Apart from federal and state regulations for hydraulic fracturing, natural gas production is influenced by increasing demand, particularly for electric generation. In Florida, natural gas represents a significant share in electricity generation. For 2016, DEF, FPL, TECO, and Gulf estimate 73 percent, 72 percent, 52 percent and 44 percent, respectively, of generation from natural gas. Demand will also be influenced by exports, scheduled to begin in 2015 year-end and several under-construction export terminals. In the absence of hedging practices, the PSC concludes that customers have significant exposure to price volatility.

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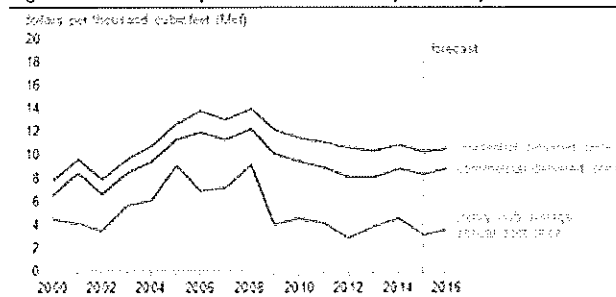
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DECEMBER 21, 2015

Changes in natural gas spot and residential prices are closely linked over longer periods (Figure 3). According to the Energy Information Administration (EIA), considerable declines in wholesale spot prices since the end of 2014 have not translated directly into lower retail prices for consumers due to the hedging practice involved in utility regulation.

Figure 3 – Natural Gas Spot and Delivered Price (2000-2016)



Source: EIA

Local distribution companies (LDCs) or the utility companies that serve consumers employ several approaches to shield the company from price fluctuations in the spot market. For example, LDCs can purchase gas ahead of time for later delivery by using New York Mercantile Exchange (NYMEX) futures contracts that lock in a certain price for the utility. LDCs may also use a physical hedge by buying and storing natural gas several months ahead of the upcoming winter to ensure supply adequacy and purchasing additional natural gas as needed on the spot market during the winter heating season. Due to hedging, residential and commercial prices often reflect the cost of gas purchased several months ago. In addition, requirements by state regulators may cause a further lag in changes in the LDC's costs of purchasing gas.

#### Consumer Groups Seek to End Hedging Due to Substantial Opportunity Costs, Declining Volatility, and Cost-Free Alternatives

The Florida OPC underscored that the billions of dollars in costs incurred by customers greatly outweighs the perceived benefits from hedging. It found that natural gas hedging programs have lost approximately \$5.3 billion from 2002-2014, with additional losses projected for 2015 (Table 1).

The Florida OPC underscored that the billions of dollars in costs incurred by customers greatly outweighs the perceived benefits from hedging

Table 1 - Hedging-Induced Losses for Florida IOUs

Year	Rate	Cost	Total	FPL	Total
2002-2014	\$1,267,848,634	\$127,278,227	\$381,417,733	\$3,516,671,769	\$5,293,216,363
2015 (estimated)	\$215,000,000	\$44,000,000	\$40,000,000	\$490,000,000	\$789,000,000
Total	\$1,482,848,634	\$171,278,227	\$421,417,733	\$4,006,671,769	\$6,082,216,363

Source: Florida Public Service Commission

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OPC also pointed to declining natural gas prices and price volatility drawing on the EIA's 2015 long term forecast of increased supply and lower natural gas prices compared to the 2011 forecast. Since 2011, known natural gas reserves have increased by nearly 31 trillion cubic feet, which is approximately 10 percent above the level in EIA's 2011 Annual Energy Outlook. Apart from prolonged periods of losses, the OPC explained that declining volatility, increased production and reserve levels, and forecasted lower prices justify reconsideration of hedging programs. Customers directly benefit from a decrease in price on the unhedged portion of natural gas. The OPC also suggested the annual fuel factor – which stabilizes price volatility – as a cost-free alternative to hedging. However, PSC staff found that the annual fuel factor does not limit the potential for fuel increases or decreases, whereas hedging can limit potential changes in costs and mitigate price and fuel factor volatility.

Illustrating the recognition for the natural gas price trend, the OPC noted that utility regulatory commissions of Nevada and Kentucky have terminated utility natural gas hedging programs. The Kentucky PSC ended utilities' hedging programs, finding that continued low and stable gas prices obviate the need for hedging and that it is no longer reasonable to pass hedging costs to customers, namely, because it has resulted in net costs rather than net savings. In March, the Kentucky PSC denied Duke Energy's request to continue its hedging program, stating that customer benefits in terms of reduced volatility is not significant enough to justify extension of the hedging program. Previously, the Kentucky PSC had denied requests of Columbia Gas of Kentucky and Atmos Energy Corporation to continue their gas cost hedging programs. In October 2014, Delta Natural Gas Company filed a letter informing the Kentucky PSC of its decision to discontinue its hedging program based on those denials. The Kentucky PSC 2001 order had allowed LDCs to consider limited hedging programs as a means to obtain low-cost gas supplies, minimize price volatility, and maintain supply reliability. In ending the practice, Kentucky PSC found that current conditions and the outlook for future natural gas supplies and prices are sufficiently different from those in 2001 and therefore dispel concerns regarding the potential adverse impact of price volatility on customer bills.

#### **Potential Demand Growth in Power Sector and Export Market Spur Efforts to Develop Prudent Hedging Standards that Protect Customers**

Despite hedging-induced losses, demand growth driven by increased consumption for natural gas-fired generation and export markets is prompting states to continue developing hedging programs. Several state utility regulators are exploring new approaches to create an effective framework for hedging practices:

#### **Dockets to watch:**

- In July, the Washington Utilities and Transportation Commission (UTC) released a study outlining an innovative approach to develop

The Kentucky PSC ended utilities' hedging programs, finding that continued low and stable gas prices obviate the need for hedging and that it is no longer reasonable to pass hedging costs to customers, as it has resulted in net costs rather than net savings

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standard hedging practices for regulated natural gas LDCs, as part of an investigation of gas utility hedging practices that began in 2013. The report supports a more sophisticated approach with proper evaluation and a step-by-step process to adopt a new hedging program by 2018. A 2013 report by the UTC found that aggregate hedge losses from November 2002 through October 2012 were approximately \$1.15 billion, on a system basis, for the state's four LDCs – Puget Sound Energy, Cascade Natural Gas, Avista, and Northwest Natural Gas. The 2013 report identified issues with the LDCs' hedging practices, such as the absence of hedging tolerances, apparent lack of efforts to mitigating hedge losses, and the utilities' decisions to lock in a large percentage of projected loads through programmatic hedging. A UTC workshop, held in January 2014, determined the need for additional discussion on regulatory policies to provide an effective framework for hedging practices. The UTC is exploring the strategy in Docket UG-132019, engaging regulated utilities, industrial customers, and consumer advocates.

A 2013 report by the Washington UTC found that aggregate hedge losses from November 2002 through October 2012 were approximately \$1.15 billion, on a system basis, for the state's four LDCs

- In June, the Louisiana Public Service Commission (LPSC) issued a general order (R-32975) to develop a Long-Term Natural Gas Hedging Pilot Program. Under the long-term pilot program, the state electric IOUs would be required to consider a range of long-term gas procurement plans to secure long-term natural gas price stability. The program would allow LPSC and IOUs to assess the effectiveness of long-term procurement policy without over-committing customers to a specific course of action. LPSC expects a three-year pilot program to supply sufficient data for the assessment. Despite the low profile risk on the long-term forward curve, LPSC finds that IOUs and LDCs purchase much of their gas with short-term contracts, employing a potentially higher risk strategy than long-term, fixed-price procurement. The LPSC envisions increased demand for electricity generation and LNG export facilities currently under construction in southern Louisiana.
- In March, the Public Utility Commission of Oregon (PUCO) opened a docket (Docket No: UM 1720) to investigate the Northwest Natural Gas Company's long-term hedging policy in an attempt to explore the benefits associated with long-term hedging that can facilitate a stable and reliable natural gas supply.

#### **Evolving Natural Gas Markets Could Motivate Utility Regulators to Reconsider Hedging Policy**

Key considerations for state utility regulators seeking to reevaluate natural gas hedging practices pertain to opportunity costs incurred as part of fuel costs paid by customers; anticipated decline in volatility of natural gas prices to determine the need for hedging; and stability in market conditions with regard to supply-demand dynamics.

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In its comments to the proposals of LPSC and PUCO, the American Natural Gas Association (ANGA) expressed support for long-term programs emphasizing the need for contracts that are structured to facilitate a fair, flexible, timely, and transparent process for utilities to enter into long-term arrangements. ANGA commended LPSC for recognizing the benefit of allowing the marketplace to propose price and contract structures. Program characteristics should incentivize producers and marketers to deliver contract structures that meet the objective of price stability and predictability, delivering benefits to consumers. Instead of setting prescriptive standards, ANGA recommends guidelines that allow utilities to establish flexible policies that can be adjusted to meet changing market conditions and accommodate basic structures, such as contractual arrangements for fixed or formula-priced supply contracts between the utility and a fuel provider or reserves investment arrangements that allow utilities to invest in reserves for future production at a predictable cost. Long-term contracts should aim to increase diversity in the portfolio strategy to deliver price stability and predictability rather than outperform the spot market on any one day year.

Despite the trend towards lower prices and abundant supply forecast, the natural gas market remains dynamic. While natural gas prices are projected to stay low, lower prices will increase demand for electricity generation, petrochemical production, and LNG exports, placing some upward pressure on prices. The Environmental Protection Agency's (EPA) regulations on carbon emissions could result in retirement of older coal-fired electric generation facilities, potentially requiring combined cycle natural gas generation to fill the generation gap. Cheniere Energy's Sabine Pass facility, with a total liquefaction capacity of three billion cubic feet of natural gas per day (bcf/d), is expected to be the first to liquefy natural gas produced in the Lower 48 states for export and is scheduled to come online in late 2015. Export facilities will greatly increase natural gas demand when they come on line. Demand is also influenced by weather and pipeline constraints. For these reasons, hedging could reach a point where the current costs to consumers turn into substantial benefits.

While natural gas prices are projected to stay low, lower prices will increase demand for electricity generation, petrochemical production, and LNG exports, placing some upward pressure on prices

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**Disclosures Section****RESEARCH RISKS**

Regulatory and Legislative agencies are subject to change.

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AARON DOLL  
REBUTTAL TESTIMONY

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Empire District Electric  
EO-2017-0065  
Hedging Results

Year	2002		2003		2004		2005	
Gains	\$	1,017,390	\$	10,245,457	\$	12,177,140	\$	8,369,693
Losses								
Net	\$	1,017,390	\$	10,245,457	\$	12,177,140	\$	8,369,693

Year	2006		2007		2008		2009	
Gains	\$	1,286,382	\$	1,466,655	\$	6,043,016		
Losses							\$	16,103,732
Net	\$	1,286,382	\$	1,466,655	\$	6,043,016	\$	(16,103,732)

Year	2010		2011		2012		2013	
Gains								
Losses	\$	5,984,150	\$	904,230	\$	5,374,710	\$	3,114,847
Net	\$	(5,984,150)	\$	(904,230)	\$	(5,374,710)	\$	(3,114,847)

Year	2014		2015		2016		2017	
Gains							\$	763,428
Losses	\$	1,233,467	\$	7,993,467	\$	3,803,464		
Net	\$	(1,233,467)	\$	(7,993,467)	\$	(3,803,464)	\$	763,428

Gains	\$	41,369,160
Losses	\$	44,512,067
Net	\$	(3,142,906)

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## Natural Gas Backwardation Buying Opportunity?

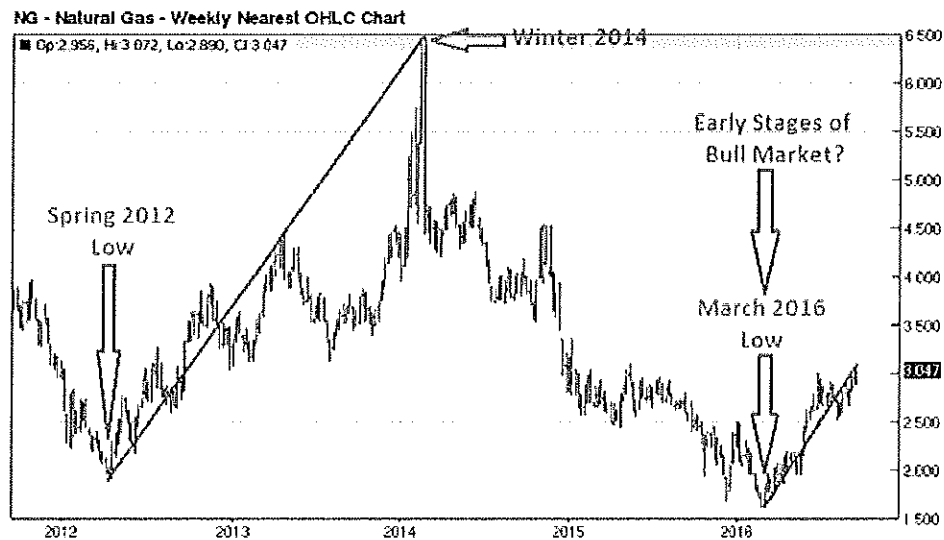
naea.today <http://naea.today/naea-forecast-for-natural-gas-backwardation-buying-opportunity/>

By Ray  
Franklin

10/6/2016

My reports focus on Natural Gas because it is now the largest source of energy for the generation of Electricity; therefore, Natural Gas and Electricity rates are highly correlated.

Starting with my *March 7th Energy Alert*, as shown in the chart below, I warned Natural Gas was forming a similar pattern to what we experienced in the *spring of 2012*, and based on past performance prices would likely trade much higher before reaching a final high in this cycle:



In my *September 21<sup>st</sup> Energy Alert*, I explained why Natural Gas closing above *its previous 2016 high of \$2.998* per MMBtu, *increased the risk* of higher prices near-term.

Since September 21<sup>st</sup>, Natural Gas has remained close to \$3.00 per MMBtu, and as I write this report Natural Gas is *holding above \$3.00* despite a higher than expected *80 Bcf* increase in supplies as reported by the EIA in their weekly storage report. The EIA report should have pushed prices lower, but when a market *ignores negative news*, it is signaling the path of least resistance is to the upside.

**Why are prices moving steadily higher in the face of negative news?** Simply stated, based on past performance large hedgers are aware prices will likely be higher on average long-term.

**Why do large hedgers believe prices will be higher on average long-term?**

I believe primarily for 2 reasons:

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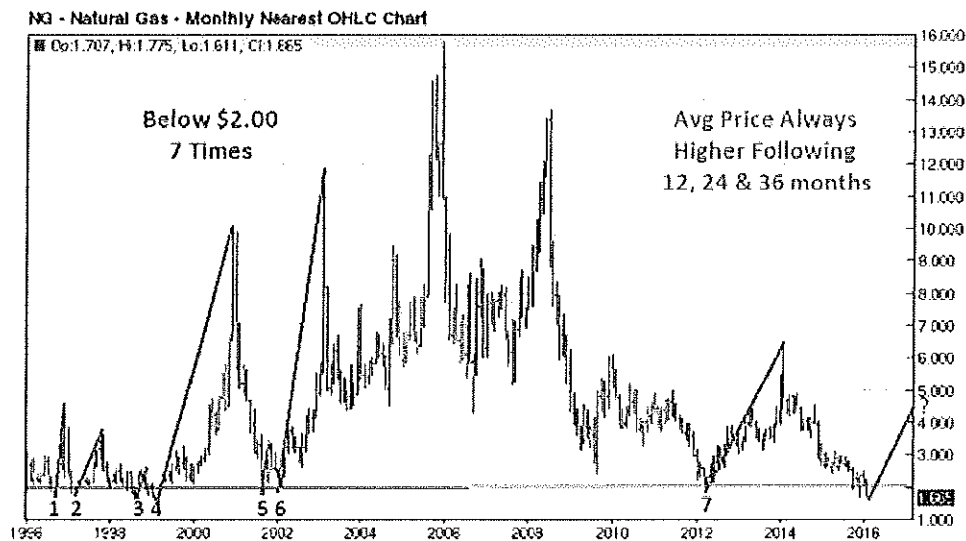
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1) Over the last 20 years Natural Gas traded close to the low reached in March 2016 seven times, and each time, rates were higher on average the following **12, 24 & 36 months**. Past performance does not guarantee future results, but large hedgers are fully aware of this historical tendency.

*The chart below contained in my March 7<sup>th</sup> Energy Alert pointed out this historical tendency:*



2) Long-term traders are also aware of another important factor. Natural Gas and in most regions Electricity are experiencing backwardation. **Backwardation** occurs when nearby contracts are sold at a higher price than contracts further out. Some traders mistakenly believe this is a bearish configuration, but large hedgers understand this historically is a bullish pattern.

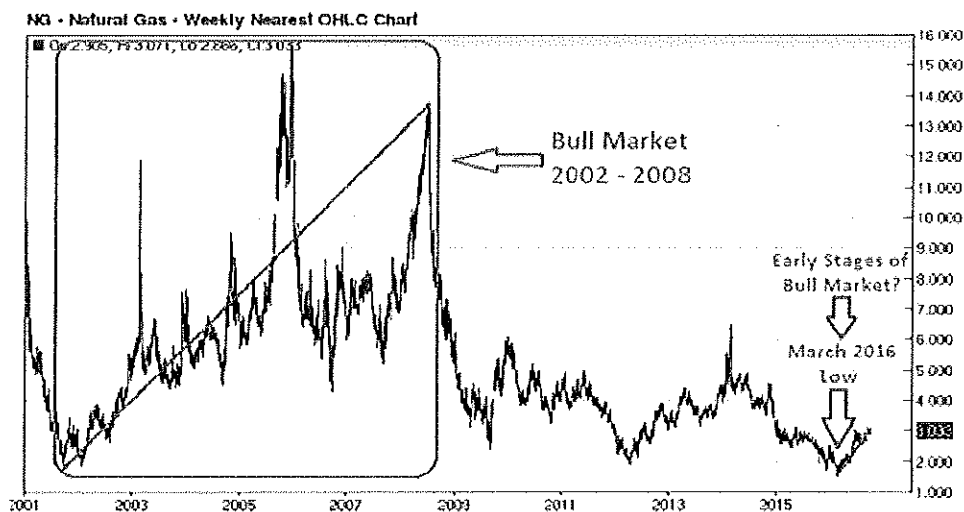
*The chart below* is example of a Bull Market in Natural Gas from **2002 to 2008**, which was also a period of backwardation in the forward markets:

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*During the Bull Market from 2002 thru 2008, the Natural Gas and Electricity markets were consistently in backwardation and hedgers who hedged longer-term benefited by reserving the lower rates further out in the forward markets.*

Based on all the factors I have delineated in reports since my *March 7<sup>th</sup> Energy Alert*, I believe, we are in the *early stages* of a Bull Market, and hedgers taking advantage of backwardation in Natural Gas and Electricity, similar to 2002 to 2008, will benefit by reserving the lower rates presently offered in the forward markets.

*Below is an example of the present backwardation in Natural Gas's April Contracts.*

*April 2017 – \$3.110 per MMBtu*

*April 2018 – \$2.841 per MMBtu*

*April 2019 – \$2.700 per MMBtu*

The price of Natural Gas is lower in the forward markets, and astute hedgers understand the benefit of reserving rates in the forward markets when they are below nearby rates, especially when, over the last 20 years, rates were always higher on average the following *12, 24 & 36 months* after trading near the lows we experienced in March 2016.

Therefore, if you have not already hedged your cost of Natural Gas and Electricity, *based on the above 2 factors, I recommend you do so near present levels.* As a hedger your objective should not be to catch the exact bottom, but to reserve a rate lower than the expected average rate over the term of the hedge.

Not every client's risk tolerance and hedging strategy is the same, but we trust the above report will help you put into perspective the risk/reward opportunities at this time. I invite you to call one of our energy analysts to help you plan a hedging strategy appropriate for your situation.

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**Ray Franklin**  
Senior Commodity Analyst  
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