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October 26, 2009

Mr. David A. Starwick
Secretary
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street, NW
Washington, DC 20581

COMMENT

VIA E-Mail

Re: Notices of Intent, Pursant to the Authority in Section 2(h)(7) of the Commodity Exchange Act and Commission Rule 36.3(c)(3), To Undertake a Determination Whether 15 Financial Basis Contracts, Offered for Trading on the Intercontinential Exchange, Inc., Perform Significant Price Discovery Functions:

AECO Financial Basis (AEC) Contract
Chicago Financial Basis (DGD) Contract
Dominion-South Financial Basis (DOM) Contract
HSC Financial Basis (HSC) Contract
Malin Financial Basis (MLN) Contract
NGPL TXOK Financial Basis (NTO) Contract
Northwest Rockies Financial Basis (NWR) Contract
Permian Financial Basis (PER) Contract
PG&E Citygate Financial Basis (PGE) Contract
San Juan Financial Basis (SNJ) Contract
Socal Border Financial Basis (SCL) Contract
TCO Financial Basis (TCO) Contract
TETCO-M3 Financial Basis (TMT) Contract
Waha Financial Basis (WAH) Contract
Zone 6–NY Financial Basis (TZS) Contract

Dear Mr. Starwick,

Enclosed are my commments concerning whether the contracts listed above meet the criteria for significant price discovery contracts. The comments discuss and provide data for all 15 contracts.

Respectfully submitted,

/s/ *John R. Morris*
Dr. John R. Morris

Cc: Gregory Price
Susan Nathan

Comments to the Commodity Futures Trading Commission

Concerning

October 9, 20, and 22, 2009 Notices of Intent to Determine Whether 15 Financial Basis Swap Contracts Related to Natural Gas Prices Offered for Trading on the Intercontinental Exchange, Inc., Perform Significant Price Discovery Functions

By

Dr. John R. Morris
Economists Incorporated

October 26, 2009

On October 9, 2009, the Commodity Futures Trading Commission ("Commission") issued a notice of intent to determine whether 17 contracts offered for trading on the Intercontinental Exchange, Inc. ("ICE") perform significant price discovery functions. Four of the 17 contracts are electric power contracts and 13 of the 17 contracts are financial basis swap contracts based on natural gas prices. On October 20, 2009, the Commission issued a similar notice for the Socal Border financial basis contract, and on October 22, 2009, the Commission issued a notice for the Northwest Rockies financial basis contract. This comment concerns the 15 natural gas financial basis swap contracts. The Commission requests comments by October 26, 2009.

I. Background, Summary, and Conclusion

A. Background

My name is John R. Morris, and I am a Principal at Economists Incorporated, an economic consulting firm located at 1200 New Hampshire Avenue, NW, Washington, DC 20036. I have a bachelor's degree in economics from Georgetown University, and I have a master's degree and a Ph.D. in economics from the University of Washington. I have been studying and consulting in the natural gas industry since joining the Federal Trade Commission in 1985. Since joining Economists Incorporated in 1992, I have consulted on many competition matters involving electric and gas companies, examined competitive issues relating to utility rates, examined issues concerning undue discrimination by operators of natural gas and electric power transmission facilities, provided market power studies for applications for market-rate authority, and studied market power issues in state restructuring proceedings. I have published articles on competition and energy matters and have spoken on numerous occasions concerning competition in natural gas, electric power, and other industries. I have previously has been accepted as an expert witness on energy matters before the Federal Energy Regulatory Commission, state commissions, and in federal court. I have taught economics at the University of Washington, Indiana University, and Stanford University (Washington Campus). A complete listing of my experience, publications, and testimony is contained in the curriculum vitae presented as Attachment 1.

My experience includes testimony and consulting concerning pricing issues in the natural gas industry and the relationships between the prices of financial instruments such as financial basis swaps and the price of physical gas, including evaluating allegations that El Paso Merchant Energy exercised market power in California in 2000 and 2001, that Energy Transfer Partners manipulated

physical natural gas prices at the Houston Ship Channel, and whether a combination of Exelon Corporation and Public Service Enterprise Group would allow them to manipulate natural gas prices in the Mid-Atlantic region. As part of my work I have spoken with natural gas traders and managers, reviewed testimony by traders, examine price relationships among various natural gas prices and market fundamentals, reviewed industry information and literature, and spoken with industry and academic experts.

The views expressed in these comments are mine alone and do not necessarily reflect the views of Economists Incorporated or any clients. The comments are not being sponsored by past or current clients.

B. Financial Basis Swaps

The 15 natural gas contracts considered by the Commission are all financial basis swaps. Although the contracts are purely financial, they are not really part of the financial banking system as are credit default swaps. Instead, financial basis swaps are instruments that settle based upon the actual physical prices of natural gas. For example, the Chicago basis swap settles on the difference between the NYMEX futures contract settlement price at the Henry Hub in Louisiana and the *Natural Gas Intelligence* ("NGI") reported index for Chicago. Because the NYMEX futures contract requires physical delivery of gas and the NGI Chicago index is based upon actual physical trades of gas, the financial basis swap derives its value from actual physical trades of gas. Basis swaps are financial because their settlements are based upon index values and no physical delivery of gas is required to settle the contracts.

All of the 15 natural gas basis swaps in the Notices are settled in part on the local published indices. Chicago, Malin, PG&E Citygate, and Socal, are settled based on the NGI index and Dominion-South, HSC, NGPL TexOk,

Northwest Rockies, Permian, San Juan, TCO, TETCO M-3, Transco Zone 6 NY, and Waha are settled based on Platts' *Inside FERC* ("IFERC") index. Both the NGI and IFERC indices are based upon transactions conducted in the last five trading days of a month, known as "bidweek". The AECO index is published by Canadian Enerdata, Ltd.'s *Canadian Gas Price Reporter* ("CGPR"), which publishes the weighted average price of trades over the month prior to the delivery month. Because all three publications report indices based on trades over multiple days, the indices do not represent prices on any one day but an average over several days. Hence, the basis swap prices have limited ability to predict prices on any given day of trading, especially during times of significant price volatility.

C. Summary and Conclusions

The 15 natural gas financial basis swap contracts proposed by the Commission as Significant Price Discovery Contracts ("SPDCs") do not meet any previously articulated criteria for SPDCs. When the data are viewed properly, it becomes apparent that the contracts do not meet any indicia of material liquidity necessary for an SPDC. Moreover, each of the 15 financial basis swap contracts has a miniscule share of the total NYMEX trading volume, and 11 of the 15 contracts have prices significantly different from the underlying contracts from which the basis swap contracts derive value. Finally, the financial basis swap contracts are not material price references. Other contracts are not indexed to the financial basis swap contracts and the market liquidity of the contracts is not robust enough to produce meaningful information on forward prices without a significant amount of additional information and editorial judgments. Given these facts, I recommend that the Commission determine that the 15 financial basis swap contracts are not SPDCs.

II. The CFTC Factors for Determining whether Contracts are Significant Price Discovery Contracts

Section 2(h)(7) of the Commodity Exchange Act ("CEA") specifies four factors that the CFTC must consider when designating a contract as a SPDC: (1) Material Liquidity; (2) Price Linkage; (3) Arbitrage; and (4) Material Price Reference. I now consider each of these factors in relation to the 15 natural gas basis swap contracts.

A. Material Liquidity

Sufficient material liquidity is required so that the trading of the target contract "is sufficient to have a material effect on other agreements, contracts or transactions listed for trading on or subject to the rules of a designated contract market, a derivatives transaction execution facility, or an electronic trading facility."[1] Several concepts of liquidity are discussed in Appendix A to 17 CFR §36 ("Appendix A"). One concept is whether a steady enough stream of trades takes place to have a continuous stream of information on prices that is consistent with other prices in the marketplace. A second concept is whether someone can sell desired quantities at any time without a significant price concession. A third concept is whether the depth and breadth of the market for the target contract is sufficient to have an informational impact on other markets. This third concept is addressed in more detail in the discussions on price linkage, arbitrage, and material price reference.

We can examine data from ICE to determine whether liquidity in the market exists in terms of trades and bids and offers to sell contracts. In liquid natural gas markets, transactions occur on a continuous basis with many trades

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[1] Appendix A to 17 CFR §36 (2009).

occurring each day, as occurs with the NYMEX futures contract at the Henry Hub.

The Notices specified data that allegedly indicate the potential for material liquidity. These data, however, have serious flaws and more careful inspection is likely to lead one to conclude that the contracts lack material liquidity. The data presented in the Notices are summarized in Table 1. Although all the locations show more than 5 trades per day on average, this number is highly misleading because the average is over every month the contract is offered. Because the contracts can be offered for as long as 120 months, the average per day for an individual contract may be less than 1 per day. For example, the AECO contract is offered for delivery 120 months (10 years) into the future. Even though the AECO contract averages 113.5 trades per day, the average could be less than 1 trade per day for any given delivery month. These contracts are also offered for strips of multiple months, further reducing the average per contract.

Table 1 — Summary Data from SPDC Notices

Hub	Months	Trades	Trades Per Day	Contracts	Contracts Per Day	Open Interest Contracts
AECO	120	7,263	113.5	806,438	12,601.0	443,402
Chicago Citygates	72	1,572	24.6	146,193	2,284.3	127,744
Dominion South	72	347	5.4	38,872	607.4	97,240
HSC	84	2,524	39.4	209,010	3,265.8	313,594
Malin	72	664	10.4	59,564	930.7	65,804
NGPL-TXOK	72	1,083	16.9	84,432	1,319.3	70,557
Northwest Rockies	30	3,013	47.1	276,187	4,315.4	349,931
Permian	72	727	11.4	49,200	768.8	55,940
PG&E Citygate	72	1,142	17.8	99,418	1,553.4	150,299
San Juan	72	391	6.1	30,722	480.0	49,105
Socal Border	120	8,102	126.6	612,452	9,569.0	417,121
TCO	72	583	9.1	61,944	967.9	141,544
Tetco-M3	72	1,073	16.8	145,328	2,270.8	168,963
Transco Z6-NY	72	522	8.6	55,371	865.2	87,520
Waha	72	1,165	18.2	100,490	1,570.2	96,371

Another feature of the data is that the number of contracts per trade ranges from 67 to 135. This level of contracts per trade is many times the level that I have observed in trade data available from ICE. One reason is that the contract data used by the Commission includes bilateral over-the-counter ("OTC") contracts that are traded bilaterally or through brokers and then cleared through ICE for processing. These contracts do not represent trades on the ICE electronic trading platform, but other trades with prices confidential to the transacting parties. These contracts do not serve a price discovery function because their prices are not shown on ICE's real-time platform or daily reports and are not generally made available to the public. It is also possible that the Commission has misinterpreted the data supplied by ICE.

To address these issues, I have examined actual transactions data from the ICE electronic trading platform. Data from the second quarter of 2009 could not

be obtained and processed in the short period allowed for comments. Accordingly, I have used the most recent data that I had available, which runs from trades on September 1, 2008 through November 30, 2008. Although these data are from an earlier period, they are close enough in time to illustrate the actual trading activity on ICE for the 15 contracts.

For each of the 15 contracts, Table 2 shows the average number of trades per day, the total number of contract-equivalents per trade, and the average number of trades per day for the December 2008 contracts.[2] Table 2 shows that the number of transactions in the December 2008 contracts, the most commonly traded contract of the available delivery terms, were significantly less than the average number of total trades, as expected. On average, the December 2008 contracts accounted for less than one out of three trades. Only AECO and Socal averaged more than 20 trades per day for the last 90 days of trading a contract. Moreover, the number of contracts per trade averages less than 3. This compares to over 67 contracts per trade in the Notices. This difference (3 is actual trade data versus 67 in the Notices) suggests that the Commission's data are unrelated to the actual trading activity on the ICE electronic trading platform.

[2] The number of contract-equivalents is equal to the total mmBtu/d volume transacted divided by the 2,500 mmBtu/d standard contract size.

Table 2 — Summary of Actual ICE Trading Data, September 1, 2008 through November 30, 2008

Hub	Average Number of Trades Per Day	Number of Contracts Per Trade	Average Number of Trades Per Day for Dec. 2008 Strip
AECO	99.5	2.9	25.3
Chicago Citygates	12.3	2.3	2.9
Dominion South	6.2	3.0	3.0
HSC	50.6	2.8	10.1
Malin	7.4	2.3	2.3
NGPL-TXOK	7.9	2.6	2.9
Northwest Rockies	41.8	2.0	7.5
Permian	18.6	1.9	5.2
PG&E Citygate	15.0	2.3	3.9
San Juan	7.0	1.8	1.6
Socal	100.8	2.1	28.6
TCO	3.7	2.5	1.5
Tetco-M3	13.8	2.7	6.2
Transco Z6-NY	8.6	2.0	6.3
Waha	20.5	2.1	7.1

Table 3 provides additional data on liquidity. It provides a percentage distribution of the number of trades per day in the last 90 days of trading for the prompt-months of October, November, and December 2008. For the most liquid trading point, Socal, it shows that on 3.1 percent of days no contacts were traded. Moreover, only 42.7 percent of days at Socal have more than 30 trades per day, less than one-half the number of trades necessary to have a minimum level of liquidity.

Necessary liquidity must be viewed in relationship to the volatility in the market under consideration. NYMEX future prices can easily change value by 1 percent within a minute, and by 10 percent within a day. Daily natural gas prices can change by over 20 percent from one day to the next. Given this volatility, it would seem that trades would need to occur on average at least every five minutes to give any buyer or seller a reasonable expectation that he could make

trades when desired without a price concession. Trades every five minutes would be twelve trades per hour, or 72 trades over a six-hour trading session. Without at least an average of 72 trades per day for each monthly contract within 90 days of the beginning of the delivery month (or strip), material liquidity appears unlikely to exist in natural gas markets.

Table 3 — Percentage Distribution of the Number of Trades per Day in the Last 90 Days of Trading for Prompt Months October, November, and December 2008

Hub	0 Trades	1-5 Trades	6-10 Trades	11-20 Trades	21-30 Trades	More than 30 Trades
AECO	1.5	5.6	11.3	26.2	24.1	31.3
Chicago Citygates	31.9	52.9	9.9	3.1	1.0	1.0
Dominion South	47.6	38.2	10.5	3.1	0.5	0.0
HSC	9.4	26.2	20.9	16.8	15.2	11.5
Malin	36.6	49.7	9.9	3.1	0.5	0.0
NGPL-TXOK	44.0	38.2	11.0	5.8	1.0	0.0
Northwest Rockies	7.9	34.6	24.1	14.7	10.5	8.4
Permian	17.8	41.9	14.7	19.4	3.1	3.1
PG&E Citygate	29.8	41.9	15.7	10.5	2.1	0.0
San Juan	50.3	33.0	11.0	4.7	1.0	0.0
Socal	3.1	7.3	12.0	19.3	15.6	42.7
TCO	58.1	29.8	9.4	2.1	0.0	0.5
Tetco-M3	37.2	42.4	8.9	7.3	3.1	1.0
Transco Z6-NY	43.5	41.4	6.8	6.3	1.6	0.5
Waha	20.9	36.1	18.3	12.0	7.9	4.7

Only four locations, AECO, HSC, Northwest Rockies, and Socal had more than 5 trades on 50 percent of days or more. At two of these locations, HSC and Northwest Rockies, over 50 percent of days had 10 or fewer trades. In total, only AECO and Socal had more than 12 percent of days with 30 or more trades. In other words, 13 of 15 locations did not have even one-half of the necessary trading volume to demonstrate sufficient liquidity on over 85 percent of days.

Finally, in liquid markets buyers and sellers continuously seek to buy and sell the product. Although actual transactions may not occur every minute, at

least bids and offers are continuously available. In my experience in reviewing bids and offers for basis swaps on ICE, it is common that there will be no offers to sell and no bids to purchase specific basis swaps. This provides a further indication of a lack of material liquidity for basis swaps on the ICE electronic trading platform.

B. Price Linkage

On a very superficial level, basis swaps are linked to the NYMEX gas futures contact and the bidweek prices at the basis location. But, as the Commission has stated:

> For a linked contract, the mere fact that a contract is linked to another contract will not be sufficient to support a determination that a contract performs a significant price discovery function. To assess whether such a determination is warranted, the Commission will examine the relationship between transaction prices of the linked contract and the prices of the referenced contract(s). The Commission believes that where material liquidity exists, prices for the linked contract would be observed to be substantially the same as or move substantially in conjunction with the prices of the referenced contract(s).[3]

The Commission articulated two criteria that it would consider. First, it would consider whether the volume of the target contract is 5 percent or greater of the volume of the contract to which it is linked.[4] Second, it will consider whether the target contract price is within 2.5 percent of the linked contract price(s) more than 95 percent of the time.[5] If two contracts are truly linked, then the prices should be very close (within 2.5 percent) virtually all the time. Accordingly, I have examined these two conditions.

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[3] Appendix A, at (B)2.

[4] Appendix A, at (B)3.

[5] Appendix A, at (B)4.

Table 4 shows the volume of trades on ICE as a percentage of the volume of trading for the NYMEX contract. None of the locations even reached 0.1 percent of the volume on NYMEX in any of the three months. These shares are substantially below the 5 percent threshold established by the Commission. These shares are so small that it is clear that trading in financial basis swaps cannot influence trading for the NYMEX futures contract.

Table 4 — Basis Swap Volume Compared to NYMEX Volume, Last 90 Days of Trading for October, November, and December 2008 Prompt-months

Hub	Oct-08	Nov-08	Dec-08	Overall
AECO	0.07	0.09	0.09	0.08
Chicago Citygates	0.01	0.01	0.01	0.01
Dominion South	0.01	0.01	0.01	0.01
HSC	0.06	0.05	0.03	0.05
Malin	0.01	0.01	0.01	0.01
NGPL-TXOK	0.01	0.01	0.01	0.01
Northwest Rockies	0.03	0.03	0.02	0.03
Permian	0.02	0.02	0.01	0.02
PG&E Citygate	0.01	0.02	0.01	0.01
San Juan	0.00	0.01	0.00	0.01
Socal	0.07	0.10	0.07	0.08
TCO	0.01	0.00	0.00	0.01
Tetco-M3	0.01	0.02	0.02	0.01
Transco Z6-NY	0.00	0.00	0.01	0.01
Waha	0.02	0.02	0.02	0.02

Table 5 shows the percentage of basis swap trades that have values within 2.5 percent of the value of the actual trades during bidweek at each of the 15 locations.[6] The values were calculated by taking a financial basis trade and subtracting the actual basis at settlement. This difference was then divided by

[6] At the AECO location, the results were based upon the IFERC Index as opposed to the CGPR index. This gives a higher percentage because the IFERC Index is based upon bidweek trades whereas the CGPR is based upon trades over a month.

the local settlement price to obtain the percentage difference.[7] Trades were limited to bidweek trades because the local settlement price is based upon trades only in bidweek. Table 5 then gives the percentage of financial basis trades with implied prices within 2.5 percent of the local settlement price for each year from 2004 through 2008 and the five-year average.[8]

Table 5 — Share of Financial Basis Swap Trades Within 2.5 Percent of Final Settlement Price, 2004 through 2008

Hub	2004	2005	2006	2007	2008	5-year
AECO*	--	15	17	29	36	29
Chicago Citygates	57	64	79	60	73	67
Dominion South	100	100	100	100	100	100
HSC	89	44	62	73	83	76
Malin	0	25	30	58	67	51
NGPL-TXOK	87	42	90	73	78	77
Northwest Rockies	40	20	32	39	38	37
Permian	26	7	49	61	47	50
PG&E Citygate	38	33	31	76	64	56
San Juan	28	59	30	62	29	41
Socal	36	47	42	56	60	53
TCO	100	100	100	100	100	100
Tetco-M3	61	100	100	100	100	99
Transco Z6-NY	65	99	100	95	100	96
Waha	31	52	54	56	41	48

*Compared with IFERC Index and not the CGPR index.

The results reveal that only 4 of the 15 locations have more than 95 percent of financial basis trades with implied prices within 2.5 percent of the local settlement price: Dominion South, TCO, Tetco-M3, and Transco Z6-NY. It should be noted that all four of these locations have IFERC indices comprised mainly of physical basis trades, which are indexed to NYMEX, as are financial basis contracts. Hence, at these locations we would expect the financial basis

[7] Hence, the percentage difference was give by (Basis Price – (Local Settlement – NYMEX Settlement))/Local Settlement. The results in Table 5 would not be materially different if the NYMEX settlement price was the divisor instead of the local settlement price.

[8] The years are based upon the delivery month for the natural gas.

contracts to be consistent with the IFERC indices. In other words, the financial basis trades provide little or no additional information beyond the actual prices of the physical basis trades for physical gas. At all of the locations where fixed-priced trades predominate the local price indices, the implied prices from financial basis trades are within 2.5 percent of the local settlement prices less than 95 percent of the time. This indicates that prices of financial basis swaps are not sufficiently linked to the prices of the underlying physical transactions in the NYMEX futures market and the local physical natural gas markets to meet the Commission's articulated standard for price linkage.

C. Arbitrage

The Commission also inquires whether the contracts can be used to arbitrage a designated contract market or other market under regulation by the Commission. The empirical factors for evaluating arbitrage possibilities are the same ones used for price linkage.[9] The reasoning is that without price linkage, the ability to arbitrage will be limited. In addition to price linkage, it is also necessary to have material liquidity. Arbitrage can occur when traders notice price discrepancies and can execute trades to lock in a profit with little or no risk. If a trader must wait to trade or must offer a significant price concession to trade quickly, then arbitrage will be limited because the trader would take the risk that market conditions could change or the price concession could evaporate the potential gains from arbitrage. In other words, without material liquidity and the ability to trade quickly, traders may speculate, but they will not be able to arbitrage. For the reasons discussed above, it appears that the basis swaps do not meet Commission standards for material liquidity and price linkage. Hence, the ability to arbitrage using basis swaps is limited.

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[9] Appendix A, at (C)3.

D. Material Price Reference

The Commission examines both direct and indirect evidence for material price reference.[10] Direct evidence is whether other contracts directly reference the prices in the target contracts. Indirect evidence occurs from sources such as whether the ECM distributes or sells the price data from its exchanges or other evidence that market participants rely on the target prices in their pricing decisions for regulated contracts. As discussed below, the 15 financial basis swaps do not appear to meet the standards for material price reference.

I am unaware of any direct evidence of material price reference. Rather than being contracts to which others are referenced, financial basis swaps reference other contracts and indices. Rather than referencing the prices of financial basis swaps, other contracts routinely reference the underlying contracts and indices: the NYMEX futures settlement and the local indices reported by NGI, IFERC, and CGPR. Hence, there is simply no need to reference the prices of financial basis swaps.

Nor am I aware of indirect evidence. Physical natural gas contracts have indices reported daily, weekly, and monthly. In the case of monthly contracts, IFERC also reports volumes and average prices of physical basis trades. But prices of financial basis swaps are not reported in the same manner.

Platts publishes prompt-month basis and forward curves based, in part, on ICE basis trades. But the methodology described by Platt's clearly shows that these published data incorporate substantial amounts of other information and editorial judgment because of the lack of material liquidity in the financial basis swap market. Platts states:

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[10] Appendix A, at (D)1.

> Methodology systems used to assess forward markets remain the preserve of Platts editorial. ICE provides some of the data considered by Platts editorial experts who formulate forward assessments for the gas and electricity markets. ICE transactions play a valuable but not dominant role in editors' analysis of price term structure and outright valuations of the daily forward market and thus the determination of market-on-close assessments.[11]

In addition to the ICE electronic trading data, Platts seeks information from the back-office operations of companies and interviews brokers and traders. Platts also reviews historical and spatial price relationships as part of its editorial process. So, although the pricing data from ICE on financial basis swaps are "valuable", they do not play a "dominant role" is formulating the prices published by Platts.

Although the data from the financial basis swaps are available from ICE in a number of different packages as indicated in the Notices, it should be noted that these packages include data for all the products in a region (or all regions) including NYMEX look-a-like contracts, fixed-priced physical daily contracts, indexed physical daily contracts, fixed-priced physical monthly contracts, index physical monthly contracts, and physical-basis monthly contracts. Given the electronic world in which it is often lower-cost to include data rather than to exclude specific data, the fact that financial basis swaps are included as part of these data packages provides little to no probative value on material price reference for any particular product, including financial basis swaps. Indeed, the data packages include products (for example, local fixed-for-float swaps) that clearly would not meet any material liquidity criteria, and the presence of any particular product provides little to no information that the data for that product are providing material price references.

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[11] Platts, Methodology and Specification Guide: Platts-ICE Forward Curve – Natural Gas (North America), October 2008, at 3.

EXPERIENCE AND QUALIFICATIONS OF

Dr. John R. Morris

OVERVIEW	Dr. Morris, a recognized expert in studying competition in energy industries, currently is a Principal at Economists Incorporated. He began his research of competition in energy industries in 1985 while working for the Federal Trade Commission. Since joining Economists Incorporated in 1992, he has consulted on many mergers and acquisitions involving energy companies, examined competitive issues relating to rates, and studied issues in state restructuring proceedings. He has published articles on competition and energy matters, and he has spoken on numerous occasions concerning competition in natural gas, electric power and other industries. He has been accepted as an expert witness on energy matters before the Federal Energy Regulatory Commission, state regulatory commissions, and in federal court.
EDUCATION	Ph.D., University of Washington, August 1985 Dissertation: *Intellectual Property: Creating, Pricing, Copying* • M.A., University of Washington, December 1983 • A.B., Georgetown University, May 1981
PRESENT POSITION	Dr. Morris is a *Principal* at Economists Incorporated, an economic consulting firm located at 1200 New Hampshire Avenue, NW, Suite 400, Washington, DC 20036. (202-223-4700) Economists Incorporated studies competition and regulation in many industries in the United States and in other countries. It is a leading firm in studying the competitive effects of mergers and acquisitions.
PREVIOUS EXPERIENCE	*Senior Vice President*, Economists Incorporated, December 2001 – December 2002 • *Vice President*, Economists Incorporated, December 1995 – December 2001 • *Senior Economist*, Economists Incorporated, June 1992 – December 1995 • *Economic Tutorial Leader*, Stanford University (Stanford in Washington), April 1993 – June 1995 • *Visiting Assistant Professor*, Department of Business Economics and Public Policy, School of Business, Indiana University, September 1991 – May 1992 • *Assistant to the Director for Antitrust*, Bureau of Economics, Federal Trade Commission, November 1989 – August 1991 • *Economic Advisor*, Office of Commissioner Machol, Federal Trade Commission, December 1988 – October 1989 • *Economist*, Division of Antitrust, Bureau of Economics, Federal Trade Commission, October 1985 – December 1988
MEMBERSHIPS	Member, International Association of Energy Economics • Associate, Energy Bar Association • Member, American Economic Association • Member, Western Economic Association International • Associate, American Bar Association

AWARDS & HONORS

Award for Excellence in Law Enforcement, Federal Trade Commission, 1988 • Graduate School Scholarship, University of Washington, 1984 • Graduated Cum Laude Georgetown University, 1981 • Senior Comprehensive Passed with Distinction, Georgetown University, 1981

TESTIMONY BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

Prepared Answering Testimony, People of the State of California, *ex rel*; Bill Lockyer, Attorney General of the State of California v. Powerex Corp., *et al.*, EL02-71-000 (2009) • Affidavit, Integrys Energy Services, Inc. v. New Brunswick Power Generation Corporation, EL09-32-002 (2009) • Affidavit, People of the State of California, *ex rel*; Edmund G. Brown Jr. Attorney General of the State of California v. Powerex Corp., *et al.*, EL09-56-000 (2009) • Affidavit, San Diego Gas & Electric Company v. Sellers of Energy and Ancillary Services, EL00-95-000 (2009) • Affidavit, Troy Energy, LLC, *et al.*, ER02-25-010 (2009) • Affidavit, Combined Locks Energy Center, LLC, *et al.*, ER01-2659-015 (2009) • Prepared Direct Testimony and Deposition, Energy Transfer Partners, *et al.*, IN06-3-003 (2009) • Prepared Direct Testimony and Hearing, Mobil Pipe Line Company, OR07-21-000 (2009) • Idaho Power Company, ER06-787-002 (2009) • Affidavit, Southern Indiana Gas and Electric Co. d/b/a Vectren Energy Delivery of Indiana, Inc. ER96-2734-007 (2008) • Affidavit, Choctaw Gas Generation, LLC, *et al.* ER08-1332-002 • Affidavit, TransCanada Energy Sales Ltd., ER09-328-001 (2008) • Prepared Direct Testimony and Deposition, Oasis Pipeline L.P., *et al.*, IN06-3-004 (2008) • Affidavit, Tampa Electric Company, ER99-2342-012 • Affidavit, ANP Bellingham Energy Company, LLC, *et al.*, ER00-2117-005 (2008) • Affidavit, SUEZ Energy Marketing, NA, *et al.*, ER06-169-003 (2008) • Affidavit, TransCanada Energy Marketing ULC, *et al.*, ER07-1274-001 (2008) • Affidavit, Georgia-Pacific Brewton LLC, *et al.*, ER08-1126-000 (2008) • Affidavit, Montgomery L'Energia Power Partners LP, ER08-864-000 (2008) • Affidavit (with Joseph P. Kalt), Energy Transfer Partners, *et al.*, IN06-3-002 (2008) • Affidavit, Energy Transfer Partners, *et al.*, IN06-3-002 (2008) • Affidavit, TransCanada Maine Wind Development Inc., ER08-685-000 (2008) • Affidavit (with Joseph P. Kalt), Energy Transfer Partners, *et al.*, IN06-3-000 (2007) • Affidavit, Energy Transfer Partners, *et al.*, IN06-3-000 (2007) • Affidavit, The People of the State of Illinois, *ex rel.* Illinois Attorney General Lisa Madigan v. Exelon Generation Co., LLC, *et al.*, EL07-47-000 (2007) • Affidavit, Baltimore Gas and Electric Company, ER07-576-000 (2007) • Affidavit, Trans-Allegheny Interstate Line Company, ER07-562-000 (2007) • Affidavit, TransCanada Energy Marketing Ltd., *et al.*, ER07-331-000 (2006) • Affidavit, Tampa Electric Company, ER99-2342-000, ER07-173-000 (2006) • Affidavit, Koch Supply & Trading, LP, ER07-100-000 (2006) • WPS Resources Corporation and Peoples Energy Corporation, EC06-152-000 (2006) • Affidavit, Sabine Cogen, LP, ER06-744-000 (2006) • Affidavit, Air Liquide Large Industries U.S. LP, ER06-743-000 (2006) • Affidavit, ANP Bellingham Energy Company, LLC., *et al.*, ER00-2117-000

(2005) • Affidavit, Duke Energy Corporation and Cinergy Corp., EC05-103-000 (2005) • Affidavit, El Paso Marketing, L.P., *et al.*, ER95-428-000 (2005) • Affidavit, TransCanada Energy Ltd., *et al.*, ER95-692-000 (2005) • Affidavit, Granite Ridge Energy, LLC, ER00-1147-000, ER05-287-001 (2005) • Affidavit, TransCanada Power (Castleton) LLC, ER05-743-000 (2005) • Affidavit, Tampa Electric Company, *et al.*, ER99-2342-003 (2005) • Affidavit, Wisconsin Public Service Corporation, WPS Energy Services, Inc., and WPS Power Development, Inc., ER96-1088-035 and Wisconsin Public Service Corporation, ER95-1528-010 (2005) • Affidavit, Wisconsin River Power Company, ER05-453-000 (2005) • Affidavit, Upper Peninsula Power Company, ER05-89-001 (2005) • Affidavit, Southern Indiana Gas and Electric Company, ER96-2734-003 (2004) • Affidavit, Tampa Electric Company, *et al.*, ER99-2342-003 (2004) • Affidavits, TransCanada Hydro Northeast, Inc., *et al.*, EC05-12-000, ER05-111-000 (2004) • Affidavits, Dominion Energy New England, Inc., *et al.*, EC05-4-000, ER05-34-000 (2004) • Affidavit, Wisconsin Public Service Corporation, WPS Energy Services, Inc., and WPS Power Development, Inc., ER96-1088-033 and Wisconsin Public Service Corporation, ER95-1528-008 (2004) • Affidavit, NorthPoint Energy Solutions Inc. ER04-1244-000 (2004) • Affidavit, Union Power Partners, L.P., ER01-930-004 (2004) • Affidavit, Panda Gila River, L.P., ER01-931-004 (2004) • Affidavit, Dominion Energy Kewaunee, Inc., ER04-318-000 (2003) • Affidavit, TPS GP, Inc., TPG LP, Inc., Panda GS V, LLC & Panda GS VI, LLC, EC03-90-000 (2003) • Affidavit, Berkshire Power Company, L.L.C. *et al.*, ER99-3502-001 (2002) • Affidavit, El Paso Merchant Energy, L.P., ER95-428-024 (2002) • Affidavit, Tampa Electric Company, ER99-2342-001 (2002) • Affidavit, Hardee Power Partners Limited, ER99-2341-001 (2002) • Affidavit, TECO-PANDA Generating Company, L.P., ER02-1000-000 (2002) • Affidavit, Commonwealth Chesapeake Company, LLC, ER99-415-004 (2002) • Affidavit, Wisconsin Public Service Corporation, WPS Energy Services, Inc., and WPS Power Development, Inc., ER96-1088-031 and Wisconsin Public Service Corporation, ER95-1528-006 (2001) • Affidavit, TPS McAdams, LLC and TPS Dell, LLC, ER02-507-000 and ER02-510-000 (2001) • Affidavits, Prepared Direct Testimony, and Hearing, CPUC v. El Paso Natural Gas Company, et al., RP00-241-000 (2000-2001), Affidavit, El Paso Energy Corporation and The Coastal Corporation, EC00-73-000, (2000) • Affidavit, El Paso Energy Corporation and Sonat Inc., EC99-73-000 (1999) • Prepared Testimony, San Diego Gas & Electric Company and Enova Energy, Inc., EC97-12-000 (1997) • Prepared Testimony and Hearing, Wisconsin Electric Power Co., Northern States Power Co. (Minnesota), Northern States Power Co. (Wisconsin), and Cenerprise, Inc., EC95-16-000 (1996)

TESTIMONY BEFORE STATE REGULATORY COMMISSIONS

Prepared Direct Testimony, Application of Wisconsin Power and Light Company for Issuance of a Certificate of Public Convenience and Necessity for Construction and Placement in Operation of an Approximately 300 MW Coal-Fired Baseload

Facility and an Application for Approval of Fixed Financial Parameters and Capital Cost Rate-Making Principles for the Baseload Facility, Docket No. 6680-CE-170, Public Service Commission of Wisconsin (2008) • Prepared Rebuttal Testimony and Hearing, In the Matter of the Joint Petition of Public Service Electric and Gas Company and Exelon Corporation for Approval of a Change in Control of Public Service Electric and Gas Company, and Related Authorizations, BPU Docket No. EM05020106, OAL Docket No. PUC-01874-05, New Jersey Board of Public Utilities (2005, 2006) • Affidavit, Application of Duke Energy Corporation for Authorization to Enter Into a Business Combination Transaction with Cinergy Corp., Docket No. 2005-210-E, Public Service Commission Of South Carolina (2005) • Prepared Rebuttal Testimony and Hearing, Joint Application of PECO Energy Company and Public Service Electric and Gas Company for Approval of the Merger of Public Service Enterprise Group Incorporated with and into Exelon Corporation, Docket No. A-110550F0160, Pennsylvania Public Utility Commission (2005) • Prepared Direct Testimony and Hearing, Application of Washington Gas Light Company for amendments to Rate Schedule No. 9, Firm Delivery Gas Supplier Agreement of its Gas Tariff, Docket No. PUE-2004-00085 (2005) • Prepared Direct Testimony, Application of Wisconsin Public Service Corporation for a Certificate of Public Convenience and Necessity for Construction of A Large Electric Generating Plant with Associated Facilities, known as Weston 4, at Its Existing Weston Generating Station Located in Marathon County, Docket No. 6690-CE-187, Public Service Commission of Wisconsin (2004) • Prepared Direct Testimony, Metromedia Energy, Inc. - Regarding Washington Gas Light Company's Plan to Return Customers to Sales Service Effective December 1, 2003, Docket No. PUE-2003-00536 (2004) • Report (with Mark Frankena) and Testimony, Analysis of Competitive Implications: An investigations into whether electric industry restructuring and competition in the provision of retail electric service is in the public interest, Louisiana Public Service Commission Docket No. U-21453, U-20925 (SC), U-22092 (SC) (Subdocket A) (2000) • Report and Hearing, Atlantic City Electric Company: Audit of Restructuring, New Jersey Board of Public Utilities, Docket No. EA97060395 (1998) • Prepared Testimony and Hearing, Proceeding on Motion of the Commission to Redesign Niagara Mohawk Power Corporation's Current SC-7 Service Classification and Implement a New SC-7-A Service Classification, Case 94-E-0172, New York Public Service Commission (1995)

TESTIMONY BEFORE FEDERAL COURTS

Report, Deposition, and Bench Trial, FTC v. Arch Coal, Inc., et al., Civil Action 04-0534 (JDB), U.S. Dist. Court, Dist. of Columbia (2004) • Report, Deposition and Jury Trial, Trigen v. OG&E, CIV-96-1595L, U.S. Dist. Court, Western Dist. of Oklahoma (1998)

TESTIMONY BEFORE STATE COURTS	Affidavit, City Public Service Board of San Antonio vs. Public Utility Commission of Texas, et al., No. 97-02917, District Court of Travis County, Texas, 200th Judicial District (1997)
OTHER TESTIMONY	Report, Metromedia Energy, Inc. v. Mirant Americas Energy Marketing, RE: 18 198 Y 18484 03 (2005) • Report and Deposition, King Provision Corporation v. Burger King Corporation and Grand Metropolitan PLC, 90-05718-CA, 4th Cir., Duval Co., Florida (1992) • Deposition, West Texas Transmission L.P. v. Enron Corp. et al., SA 88 CA 0638, W.D. Texas, San Antonio Division (1988)
PUBLICATIONS	"The Likely Effect of the Proposed Exelon-PSEG Merger on Wholesale Electricity Prices," *Electricity Journal* 21(1) (Jan./Feb. 2008): 45-54 • "FERC MBR Screens: The Good, the Bad, and the Ugly," *Public Utilities Fortnightly* 143(7) (July 2005): 37-42 • "Finding Market Power in Power Markets," *International Journal of the Economics of Business*, 7(2) (July 2000): 167-178 • "Why Applicants Should Use Computer Simulation Models to Comply with the FERC's New Merger Policy," with Mark Frankena, *Public Utilities Fortnightly*, 135(3) (February 1, 1997): 22-26 • *Electric Utility Mergers,* with Mark Frankena and Bruce Owen, Chapters 1, 4, & 5, 1994 • "International Trade and Antitrust: Comments," *University of Cincinnati Law Review*, 61(3) (1993): 945-953 • "Upstream Vertical Integration with Automatic Price Adjustments," *Journal of Regulatory Economics* 4 (1992): 279-287 • "Should the U.S. Department of Justice deviate from the 5% price test for market definition on a case-by-case basis?" with Gale Mosteller, *International Merger Law*, April 1992 • "Defining Markets for Merger Analysis," with Gale Mosteller, *Antitrust Bulletin* 36 (Fall 1991): 599-640 • "Analyzing Agreements Among Competitors: What Does the Future Hold?" with Jim Langenfeld, *Antitrust Bulletin* 36 (Fall 1991): 651-679 • "In Defense of Antitrust," with Jim Langenfeld, *Regulation* 14(2) (Spring 1991): (Letters) 2-4 • "Enforcement of Property Rights and the Provision of Public Good Attributes," *Information Economics and Policy* 3 (1988): 91-108
WORKING PAPERS	"Advertising Restrictions as Rent Increasing Costs," FTC Bureau of Economics Working Paper No. 196, May 1992 • "Rent Increasing Costs: The Antitrust Implications from a Paradox in Value Theory," FTC Bureau of Economics Working Paper No. 182, November 1990 • "The Relationship Between Industrial Sales Prices and Concentration of Natural Gas Pipelines," FTC Bureau of Economics Working Paper No. 168, November 1988 • "Deregulation by Vertical Integration?" FTC Bureau of Economics Working Paper No. 166, November 1988
PRESENTATIONS & PROFESSIONAL ACTIVITIES	"Efficacy of Vertical Integration in Energy Industries with Applications to Proposed Standards of Conduct for Transmission Providers," submitted to FERC by Santee Cooper in Docket No. RM07-1-000 (2007) • Chair, Antitrust Committee, Energy Bar

Association, 2004–2005 • "Competition in the Natural Gas Industry: An Antitrust Perspective, presentation to staff of the Federal Energy Regulatory Commission," March 28, 2005 • Vice Chair, Antitrust Committee, Energy Bar Association, 2003–2004 • "Weston 4 Effect on Wholesale Competition in WUMS," submitted to the Public Service Commission of Wisconsin by Wisconsin Public Service Corporation in Docket No. 6690-CE-187, September 26, 2003 • "Computer Models In The Electric Power Industry," presented to staff of the Federal Trade Commission, Washington, DC, June 11, 2002 • "TECO EnergySource Market Share Analysis," submitted to FERC by TECO EnergySource, Inc. in Docket No. ER96-1563-017, September 10, 2001 • "Finding Market Power in Power Markets," presented to staff of the Federal Trade Commission, Washington, DC, June 20, 2001 • "A Study of Marketing Affiliate and Other Affiliate Holdings of Firm Capacity on Interstate Natural Gas Pipelines and the Effects on Natural Gas Markets," April 30, 2001, submitted to FERC by the Interstate Natural Gas Association of America in Docket No. PL00-1-003 • "Why We Should Use Computer Models to Unveil Market Power," presented at the Sixth DOE–NARUC National Electricity Forum, Brown Convention Center, Houston, TX, September 16, 1998 • Comments, *Agency Information Collection and Dissemination Activities: Comment Request*, U.S. Department of Energy, Energy Information Administration, August 28, 1998 • Comments, *Revised filing Requirements Under Part 33 of the Commission's Regulations*, Federal Energy Regulatory Commission Docket No. RM98-4-000, August 21, 1998 • "Use of Computer Simulation Models to Unveil Market Power," presented to staff of the Federal Trade Commission, Federal Energy Regulatory Commission and U.S. Department of Justice, Federal Trade Commission, Washington, DC, April 10, 1998 • "Use of Computer Simulation Models to Unveil Market Power: The Primergy Case," presented to the Bureau of Economics, Federal Trade Commission, Washington, DC , December 8, 1997 • "Use of Computer Simulation Models to Unveil Market Power," presented at the 29th Annual Conference of the Institute of Public Utilities, Williamsburg, Virginia, December 3, 1997 • "Mergers and Market Power," presented at the National Association of State Utility Consumer Advocates Mid-Year Meeting, Charleston, South Carolina, June 9, 1997 • "Market Power Analysis: An Economic Perspective," (with Mark Frankena), presented at the Strategic Research Institute Conference on The Legal Challenges of Restructuring, Arlington, Virginia, April 16, 1997 • "Mergers and Market Power," presented at the Edison Electric Institute Workshop on FERC Merger Policy Guidelines, Arlington, Virginia, April 1, 1997 • "New Approaches to Controlling Distribution Company Market Power," presented at the New York Energy Efficiency Council Conference on Innovative Solutions to a Changing Energy Market, New York Athletic Club, February 7, 1997 • Description of the Western Power Model, with Mark Frankena, Exhibit 8 to Prepared Testimony Before the Nevada Public Service Commission,

January 31, 1997 • Reviewer, American Bar Association, Section of Antitrust Law, *Manual on the Economics of Antitrust Law, 14th Supplement*, 1995 • Referee, *Quarterly Journal of Business and Economics*, 1994—1995 • Reviewer, American Bar Association, Section of Antitrust Law, *Manual on the Economics of Antitrust Law, 10th Supplement*, 1993 • Expert Witness, Federal American Inn of Court, Washington, DC, Winter 1993 • "Advertising Restrictions as Rent Increasing Costs," presented at a *Contemporary Policy Issues* Session of the Western Economics Association's 67th Annual Conference, July 1992 • "Let's Make Merger Policy 'Fully Consonant With Economic Theory,'" presented at a *Contemporary Policy Issues* Session of the Western Economics Association's 67th Annual Conference, July 1992 • "Advertising Restrictions as Rent Increasing Costs," Seminar, Department of Business Economics, Indiana University, October 1991 • "International Trade and Antitrust: Comments," presented at a *Contemporary Policy Issues* Session of the Western Economics Association's 66th Annual Conference, July 1991 • Discussant, Western Economics Association's 66th Annual Conference, July 1991 • Horizontal Restraints Cases at the Federal Trade Commission: From *American Medical Association* through the Present," with Jim Langenfeld, presented at the 60th Annual Conference of the Southern Economics Association, November 1990 • "Defining Markets for Merger Analysis," with Gale Mosteller, presented at a *Contemporary Policy Issues* Session of the Western Economics Association's 65th Annual Conference, cosponsored by the *Antitrust Bulletin* and the Antitrust and Trade Regulation Section of the Federal Bar Association, July 1990 • "Analyzing Agreements Among Competitors: What Does the Future Hold?" with Jim Langenfeld, presented at a *Contemporary Policy Issues* Session of the Western Economics Association's 65th Annual Conference, cosponsored by the *Antitrust Bulletin* and the Antitrust and Trade Regulation Section of the Federal Bar Association, July 1990 • "The Relationship Between Industrial Sales Prices and Concentration of Natural Gas Pipelines," Seminar, Office of Economic Policy, Federal Energy Regulatory Commission, Summer 1989 • "The Relationship Between Industrial Sales Prices and Concentration of Natural Gas Pipelines," Seminar, Economic Analysis Group, Antitrust Division, U.S. Department of Justice, February 1989 • "Deregulation by Vertical Integration?" Seminar, Department of Business Economics, Indiana University, January 1989 • Discussant, Industrial Organization Society Session, Annual Meeting of the American Economics Association, December 1988 • "Concentration and Price in the Natural Gas Industry," Seminar, Federal Trade Commission, July 1988 • "Relevant Measures of Concentration for Antitrust Policy," presented at an Industrial Organization Society Session of the 57th Annual Conference of the Southern Economics Association, November 1987