STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

Commonwealth Edison Company	)	
	)	
Proposal to implement a competitive	)	Docket No. 05-0159
procurement process by establishing	)	
Rider CPP, Rider PPO-MVM,	)	
Rider TS-CPP and revising	)	
Rider PPO-MI.	)	

REBUTTAL TESTIMONY OF ROBERT M. FAGAN ON BEHALF OF THE CITIZENS UTILITY BOARD AND THE COOK COUNTY STATE'S ATTORNEY'S OFFICE

CUB-CCSAO EXHIBIT 3.0

August 3, 2005

REBUTTAL TESTIMONY OF
ROBERT M. FAGAN

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1. Introduction

Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.

A. My name is Robert M. Fagan. I am a Senior Associate at Synapse Energy Economics, Inc., 22 Pearl Street, Cambridge, Massachusetts, 02139.

Q. ON WHOSE BEHALF DID YOU PREPARE THIS PREFILED TESTIMONY?

A. I prepared this testimony on behalf of the Illinois Citizens Utility Board and the Cook County State's Attorney's Office.

Q. ARE YOU THE SAME MR. FAGAN THAT PREVIOUSLY FILED DIRECT TESTIMONY ON JUNE 8, 2005 IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY

A. The purpose of my testimony is to rebut certain critiques from ComEd witnesses Dr. Hieronymus, Dr. Hogan, Mr. Naumann, and Ms. Juracek regarding my direct testimony in this proceeding.

Q. PLEASE BRIEFLY SUMMARIZE THE MAIN POINTS OF YOUR DIRECT TESTIMONY.

A. Generation supply concentration in the Northern Illinois region of PJM in the post-2006 period, coupled with the expiration of the existing Exelon-ComEd contracts for BUS supply, will result in the ability of generation suppliers to exercise market power at times, leading to wholesale market prices that do not reflect competitive market outcomes. Also, the relative immaturity of the MISO spot markets, along with the presence of the MISO/PJM seam will negatively affect the ability of MISO-located supply sources to serve as sources of competitive supply either directly in the proposed BUS auctions or as a source of forward supply for those participating in the proposed auction. Lastly, the ability of the PJM market monitor to mitigate any potential exercise of market power in the PJM region is limited.

2. Summary of Rebuttal Testimony

Q. PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY

A. My rebuttal testimony focuses on ten related aspects of the wholesale markets in the Illinois region. I summarize each below.

Northern Illinois as Relevant Region to Analyze for Potential Exercise of Market Power.

As a separate control zone within PJM, and formerly a separate control area, the ComEd region in Northern Illinois is an appropriate area in which to measure market concentration post-2006 because of the potential for transmission limitations to restrict the ability of non-Northern Illinois generation to effectively compete with internal Northern Illinois generation.

Transmission Constraints "into ComEd."

There has been no relevant and detailed prospective analysis of post-2006 transmission constraints during summer periods (2007-2011) into the Northern Illinois region by the auction proponents that demonstrates that transmission constraints into the region are not problematic during summer peak periods. Dr. Hieronymus' analysis is retrospective, and does not include data from key summer months, July and August.

HHIs in Northern Illinois.

Including import capacity into the Northern Illinois region does not automatically result in lower HHIs and a "moderately concentrated" market, contrary to Dr. Hieronymus' contention.

GE MAPS Analyses.

The GE MAPS analyses undertaken by Dr. Hieronymus are flawed, and do not sufficiently explore potential "price commonality" across the Illinois and proximate regions for the post-2006 periods. The methodologies used do not sufficiently examine the potential for exercise of market power in the post-2006 timeframe.

Linkage Between Spot, Forward, and Auction Prices.

Dr. Hogan mischaracterizes my direct testimony when claiming no evidence of a potential for market power exercise in the BUS auctions themselves. My testimony focuses on the linkage between the potential for exercise of market power in the spot market, and the exercise of market power in critical forward markets. The presence of market power potential in the spot market will influence forward market prices and thus drive up the clearing prices in the auction beyond what would be expected if the supply market was less concentrated structurally, even if the auction vehicle itself was operationally sound. Dr. Hieronymus, and Dr. Hogan recognize this linkage.

PJM Mitigation.

It is unwise to premise market-based procurement on a wholesale market that at times will likely exhibit excessive ownership concentration – i.e., during those times when transmission constraints into ComEd bind – and thus present the potential for the exercise of market power. Proceeding with the procurement would be an acknowledgement that leaning on mitigation is an acceptable first choice, rather than a last resort. The PJM MMU is currently limited to capping generator price offers to 110% of marginal cost if there is evidence of local market power exercise not mitigated by the presence of at least four pivotal suppliers. PJM's mitigation rules during those times do not necessarily lead to price outcomes that would equal those which would be seen absent the high concentration. Lastly, even this limited level of mitigation authority is threatened by recent FERC actions. FERC has questioned the PJM MMU's use of a "no three pivotal suppliers" test when deciding whether or not to implement local market power mitigation when transmission constraints bind. A recent FERC Order has set the issue for hearing, and it is possible, pending the results of the hearing, that the PJM MMU's ability to impose mitigation on suppliers behind a transmission constraint could be weakened, perhaps considerably, in the near future.

Price of Hedges.

Dr. Hieronymus relies on an assessment of simple average monthly prices between April and June of this year to illustrate likely price convergence among Illinois and midwest regional pricing hubs. He claims, “all that matters is that the price averaged over the year is similar”. However, it is not just similarity across average annual prices that would matter, it is the absolute value of those prices, and the impact of load-weighting those prices, that affects the ultimate price of the hedge. Dr. Hieronymus also looks at three months of price data and gleans from a three-month average that there is price commonality across regional hubs. A more careful review of the data shows that during June 2005 – the one month reviewed by Dr. Hieronymus that includes market-based price offer data for the MISO Illinois Hub – their was an average hourly price spread of $13.86/MWh between the PJM Chicago Generation Hub and the MISO Illinois Hub, which contrary to indicating “commonality” of prices instead invites more careful analysis as to the cause of the spread. An average monthly or annual level of granularity is not sufficient to determine the extent of “price commonality” among regional hubs affecting the pricing for hedges.

MISO/PJM Seam.

Progress in PJM-MISO coordinated operations across the MISO/PJM seam is not the same as instituting a joint and common market, the underpinning of FERC’s allowance for ComEd to join PJM. If fully implemented, a joint and common market will address the current dissimilarities across the two RTOs, including different capacity and ancillary service structures; and more fully address price divergence at common points. As noted by Mr. Naumann, the full coordination efforts between PJM and MISO have yet to be seen. As evidenced by the price spread noted above, even under the current seams progress there were still considerable hourly price differentials in June 2005 across at least one part of the MISO/PJM seam – the Illinois Hub (MISO) and the PJM Chicago Generation Hub.

MISO Wholesale Market.

The concerns I've expressed with MISO spot market immaturity are focused on implementation, not market design; and the concerns I've expressed with Northern Illinois are focused on structural concentration, not market design. Dr. Hogan is mistaken in interpreting my testimony as criticizing the overall design of LMP-based spot markets. Also, Dr. Hogan does not present any analysis of the functioning or the performance of the MISO spot markets; there are no public analyses by the MISO market monitor, as indeed it is too soon to conduct any such analysis. It is premature to draw any conclusions as to the level of competitiveness of MISO market functioning.

Use of Obsolete Information.

My testimony does not rely on "obsolete" data or information. The main points of my testimony reflect the current operational and financial structures in place in PJM; and my use of information from earlier reports does not depend on "incorrect perceptions" of the electric system operations of PJM.

Witness Qualifications.

As noted in my resume included as an exhibit to my direct testimony, I am fully qualified to address the functioning of the PJM markets.

3. Northern Illinois Region as Relevant Market

Q. WHAT DOES DR. HIERONYMUS STATE IN REGARDS TO NORTHERN ILLINOIS AS A RELEVANT MARKET TO MEASURE SUPPLIER CONCENTRATION OR TEST FOR THE POTENTIAL FOR EXERCISE OF MARKET POWER?

A. Dr. Hieronymus states at lines 128-32:

"Q. The second point made by these witnesses is that generation ownership in northern Illinois is highly concentrated. Is the claim a valid reason to criticize the proposed competitive procurement mechanism? A. No. These allegations are premised on an incorrect conclusion – that northern Illinois is a market unto itself."

And Dr. Hieronymus states at lines 186-87:

"The basic fact is that northern Illinois is not a separate market for wholesale power because it is a fully integrated part of the regional PJM energy market."

Dr. Hieronymus provides five reasons why he thinks Northern Illinois is not a relevant market (lines 138-68):

"First, prices relevant to northern Illinois are not formed in a northern Illinois 'island,' but rather in a much larger geographic area. Moreover, northern

Illinois generation supply, properly counted, is not highly concentrated even if one merely takes into account the finite amount of transmission available."

Dr. Hieronymus states that transmission is constrained in the other direction, to the east or out of ComEd, and that there is no "real world existence" of constraints in the other direction.

He also states that bids will be mitigated automatically if transmission constraints are binding into ComEd.

Dr. Hieronymus further states that the type of generation, especially Exelon's nuclear units, makes the ability to withhold generation less likely than under typical circumstances. He also states that non-Illinois generation will bid in the auction, and Northern Illinois generation will have "strong incentives" to make generation available in the auction or to bidders on a competitive basis.

Q. DO YOU AGREE WITH THE REASONS HE PROVIDES?

A. No. I address each of them in turn here, and expand on them in other sections of this testimony.

First, while prices are formed in the larger PJM area whenever transmission is not binding into ComEd, when transmission does bind into ComEd, price formation is essentially limited to the offers of suppliers within the Northern Illinois region. His claim that the generation supply is not highly concentrated if one takes into account transmission imports is based on an assumption of import rights allocation that I rebut in a subsequent section of this testimony. He allocates all import rights to suppliers other than those with generation in Northern Illinois, an unsupported assumption.

Second, he concurs with Mr. Naumann that transmission does not bind "into ComEd," but like Mr. Naumann, he does not support this contention with any analysis that reflects likely or possible conditions in the 2007-2011 time period. He relies on current conditions, and even analyzes transmission constraints with only one month of early summer data (June 2005), yet ComEd's historical peak occurs in the mid-summer.

Third, Dr. Hieronymus would rely on PJM mitigation if transmission constraints were binding. He clearly acknowledges at least the impact of the high generation supply concentration when he states, "[g]iven the size of Exelon Generation and Midwest Generation in the northern Illinois area, the three-pivotal supplier test would be failed if the northern Illinois geographic region became constrained, thereby triggering the mitigation measures" (lines 268-271).

Fourth, he asserts that withholding ability will be "substantially less than under typical circumstances" (line 162) because of the nature of the generation supply in northern Illinois, especially Exelon's nuclear units. However, the mechanisms for physical or economic withholding still remain and, even if it were true that the ability would be "substantially less" because of the nature of nuclear power supply, he does not explain why or how such withholding ability would be less for the other dominant generator, Midwest Generation.

Fifth, he provides no evidence that northern Illinois generators would have "strong incentives" (line 167) to bid competitively with respect to generation price offers during times when transmission may bind into ComEd. I address this in my section describing the relationship between spot, forward, and auction prices.

Q. WHY IS NORTHERN ILLINOIS AN APPROPRIATE GEOGRAPHICAL MARKET TO BOTH MEASURE SUPPLIER CONCENTRATION AND TEST FOR THE POTENTIAL FOR A SUPPLIER OR SUPPLIERS TO EXERCISE MARKET POWER?

A. As a separate control zone within PJM, and formerly a separate control area, the ComEd region in Northern Illinois is an appropriate area in which to measure market concentration post-2006 because of the potential for transmission limitations to restrict the ability of non-Northern Illinois generation to effectively compete with internal Northern Illinois generation.

During the hours when transmission binds “into ComEd,” other generation in PJM (or MISO) cannot effectively compete with Northern Illinois generation in PJM’s day-ahead or real-time spot energy markets. In those markets, it is probable that only the generators within the Northern Illinois region will be able to be dispatched without violating PJM’s “security constraints” (e.g., transmission system element physical limitations) that form the basis for its security-constrained economic dispatch operations. The extent to which such transmission constraints may bind during summer peak periods (or even in other periods) in 2007-2011 is unclear because ComEd did not include any such analysis as part of its application and no such analysis has been published (or likely even conducted) by PJM. The fact that these constraints may bind on occasion, coupled with high supplier concentration within the region indicates that such an analysis should be undertaken. In the absence of such an analysis, it is reasonable to presume that the ability to exercise market power during at least summer peak periods in 2007-2011 will be present in the Northern Illinois region.

I note that the rebuttal witnesses for ComEd do not rebut my statement that when transmission constraints bind into the Northern Illinois region (i.e., the ComEd control zone), other non-Northern Illinois generation cannot effectively compete with Northern Illinois generation as this reflects a fundamental tenet of LMP-based dispatch. Thus, even though the broader PJM spot energy market includes many more suppliers than those located in Northern Illinois, during times when constraints bind generation capacity outside of Northern Illinois cannot compete to serve load behind the constraint in Northern Illinois.

Q. HOW DOES THE INTEGRATION OF AEP INTO THE PJM RTO IMPACT THE QUESTION OF WHETHER OR NOT NORTHERN ILLINOIS IS A RELEVANT MARKET TO TEST FOR THE POTENTIAL OF A SUPPLIER OR SUPPLIERS TO EXERCISE MARKET POWER?

A. The integration of AEP and Dayton Power and Light into the PJM RTO occurred on October 1, 2004. There is not yet even a single summer season's worth of operational data on transmission constraints reflecting the impact of PJM's expanded congestion management into this region during the peak load period for ComEd (and the rest of PJM). Until such data has been collected and analyzed, and until rigorous modeling of the ability to exercise market power in the region is undertaken – modeling that reflects both physical conditions likely to exist post-2006, and changed contractual arrangements that could impact spot price offers – it would be inappropriate to assume that the Northern Illinois region shouldn't be considered and analyzed separately solely because the AEP/Dayton integration is now complete. Notably, even data from 2005 and 2006 would be insufficient to fully gauge whether conditions during the 2007-2011 period could lead to constraints that would allow for the exercise of market power. For example, physical conditions change: load grows, generation retires (or is added); and transmission topology changes. Also, as noted in my direct testimony, the load serving obligations currently in place between ComEd and Exelon will no longer be in force on January 1, 2007. Thus, price offers into the PJM spot market can change. Careful assessment of likely conditions is required to properly analyze the potential for the exercise of market power.

Q. WHAT SHOULD BE DONE TO TEST FOR THE POTENTIAL EXERCISE OF MARKET POWER?

A. Simulation modeling incorporating strategic bidding behavior should be undertaken (for the period 2007-2011) to determine the extent to which market power might be able to be exercised during those periods when transmission constraints bind. As I note later, Dr. Hieronymus' analysis using the GE MAPS model was not sufficient to make this determination. Concentration analysis, like FERC's screening tests for market power, is inadequate to definitively determine whether or not the potential to exercise market power is present. However, the concentration analysis results for Northern Illinois provide enough of an indication that the ability to exercise market power might be present to justify a more detailed analytical inquiry.

Given the likely rate consequences pending for ComEd BUS customers, it is not unreasonable to expect such an analysis be conducted prior to approval of any market-based procurements method.

Q. DOES MR. NAUMANN ADDRESS YOUR TESTIMONY IN THIS AREA?

A. Yes. At line 132-133, he asks this question:

"Q. Why is it incorrect, operationally, to assume that northern Illinois is a separate energy market?"

And at lines 156-61 Mr. Naumann states:

> The intervenor witnesses, however, ignore these facts and perform their analyses as if generation in northern Illinois was dispatched by itself and generators physically located outside of that geographic area either could not participate in serving Illinois load and setting Illinois prices (i.e., as if there were a moat around the area) or, in Mr. Fagan's case, a moat crossed only by a narrow bridge of artificially limited physical import capability.

And, at lines 168-73 Mr. Naumann states:

> This illustrates one of the results of AG and CUB/CCSAO witnesses ignoring my direct testimony: they end up with entirely incorrect perceptions of electric system operations within PJM. As I stated above, they perform their analyses as if ComEd were still operating its own control area and the ability to import power from surrounding regions was severely limited. They implicitly ignore the difference between the financial and operational functions of the PJM market.

Q. DO YOU ASSUME THAT NORTHERN ILLINOIS OPERATIONALLY IS A "SEPARATE ENERGY MARKET?"

A. No. My testimony does not rely on any such operational separation. While it is sometimes unclear exactly which intervener witnesses Mr. Naumann is ascribing assertions to, my testimony in no way reflects pre-RTO operational constructs.

High supplier concentration when transmission constraints bind "into ComEd," an immature MISO spot market, and the existence of PJM/MISO seams are present even with the current PJM operational structure.

Q. DOES YOUR TESTIMONY IGNORE MR. NAUMANN'S DIRECT TESTIMONY AND "END UP WITH ENTIRELY INCORRECT PERCEPTIONS OF ELECTRIC SYSTEM OPERATIONS WITHIN PJM" (NAUMANN, LINES 169-170), OR "IMPLICITLY IGNORE THE DIFFERENCE BETWEEN THE FINANCIAL AND OPERATIONAL FUNCTIONS OF THE PJM MARKET?"

A. No. High supplier concentration in the Northern Illinois region results in the potential for exercise of market power during times when transmission is constrained into ComEd. If market power is exercised, the resulting spot prices will be higher than they would otherwise be with a more competitive market during these times. This potential impact on spot prices will affect the forward market prices for power deliverable to the northern Illinois region, which will affect BUS auction supplier price offers and ultimately the clearing prices in the BUS auction. I describe these linkages in a subsequent section of this testimony. The existence of this mechanism for exercising market power occurs within the current framework for financial and operational functions of the PJM market. Contrary to Mr. Naumann's statement, it is based entirely on an entirely correct perception of PJM electric system operations.

4. The Extent of Binding Transmission Constraints Into the ComEd Region

Q. WHAT ARE YOU REBUTTING IN THIS SECTION OF YOUR TESTIMONY?

A. Ms. Juracek, Mr. Naumann, and Dr. Hieronymus have made several assertions as to the nature of transmission limitations (or the absence thereof) into the ComEd region. The relevant sections of their testimony are as follows:

Juracek, at lines 402-14, states:

> Third, the testimony of the CUB/CCSAO and AG witnesses is notable in the degree to which it fails to refute, and in many cases simply ignores, ComEd's direct testimony concerning the nature, state, and operation of the existing regional energy markets and transmission systems. For example, ComEd submitted testimony more than four months ago (as of the July 6 date this rebuttal testimony was filed) addressing and responding to concerns about possible transmission limitations, the deliverability of resources throughout PJM, the ability of both owners of geographically-remote generation resources and financial market participants to compete effectively in the proposed auction, and the operation of RTO energy and capacity markets. That testimony is not only not refuted by the Opponents, it is largely simply ignored, in favor of relying on quotations from a collection of reports that pre-date the full integration of ComEd and American Electric Power and its operating companies (collectively, "AEP") into PJM.

Naumann, at lines 234-36, states: "No intervenor witness identifies any "binding" transmission constraint or any circumstance in which physical transfer limits "bind." That is not surprising, because this situation does not exist under realistic conditions."

Naumann, at lines 263-66: "While occasionally there will be local redispatch of generation to address congestion, this is exactly how regional redispatch and locational prices are designed to, and do, address the fact that the transmission system is finite."

Hieronymus, at lines 149-54:

> Second, as Mr. Fagan properly concedes, the concentration of generation ownership in northern Illinois is relevant only when transmission is constrained into, not out of, northern Illinois. However, virtually all of the constraints around northern Illinois occur in the other direction – from northern Illinois to the east. Hence, the theoretical concerns that Mr. Fagan expresses concerning market structure when northern Illinois is constrained have essentially no real world existence.

Hieronymus, at lines 284-89:

> Q. Have you examined data on the transmission system operation to determine whether northern Illinois is inward constrained a significant amount of time? A. Yes. CRA has examined two sets of data. The first is PJM data on limiting transmission elements in the area around northern Illinois. The period we have examined is the approximately 6,600 hours between AEP joining PJM on October 1, 2004 and June 30, 2005.

Q. DOES YOUR DIRECT TESTIMONY "FAIL TO REFUTE" OR "IGNORE" COMED'S DIRECT TESTIMONY CONCERNING THE NATURE, STATE AND OPERATIONS OF THE EXISTING REGIONAL ENERGY MARKETS AND TRANSMISSION SYSTEMS?

A. No. I did not comment on the direct testimony of the ComEd witnesses because I have no major concern with the general design of the PJM LMP spot markets. My direct testimony focuses in large part on supplier concentration, PJM limitations on mitigating market power, MISO implementation issues, and PJM/MISO seams issues. The direct testimony of ComEd witnesses did not address the supplier concentration concerns I raise and certainly did not provide any evidence demonstrating a lack of potential to exercise market power in the region during the 2007-2011 time frame. In fact, there was no submittal of a market power analysis at all. The ComEd witnesses' direct testimony did not address in any way the possibility that the MISO spot market may not be mature enough to be relied upon as a competitive source of power, nor did it address PJM/MISO seams concerns.

Q. MR. NAUMANN STATES THAT THERE ARE NO BINDING TRANSMISSION CONSTRAINTS BECAUSE THIS SITUATION DOES NOT EXIST UNDER "REALISTIC CONDITIONS." DOES HE PROVIDE ANY EVIDENCE TO SUPPORT THIS ASSERTION?

A. No. More importantly, he does not even address the fact that it will be conditions during 2007-2011 that will be relevant. Today's conditions are only marginally germane to the issue. Also, Mr. Naumann seems to contradict himself by stating both that "binding constraint[s]… [don't] exist under realistic conditions," and that "while occasionally there will be local redispatch of generation to address congestion…and…the fact that the transmission system is finite."

Q. HOW ARE THOSE TWO STATEMENTS CONTRADICTORY?

A. Local redispatch of generation to address congestion occurs when transmission constraints bind. Admittedly, Mr. Naumann is probably distinguishing between local constraints within the ComEd zone and the aggregate group of constraints that in total would define an "into ComEd" interface.

Q. WHAT ARE THE CONSTRAINTS THAT MAY BIND "INTO COMED"?

A. The constraints include transformer and transmission line elements between the ComEd-owned transmission system (controlled by PJM) and the transmission systems owned by the adjacent transmission owners AEP (under the control of PJM) and NIPSCO, Ameren, and American Transmission Company (formerly, Wisconsin Electric), all under the control of MISO. The constraints include specific transmission elements that operate at 765 kV, 365kV, and other transmission level voltages.

Q. HOW ARE TODAY'S CONDITIONS ONLY MARGINALLY RELEVANT TO 2007-2011?

A. There are two key differences between current conditions and conditions likely to exist in 2007-2001.

First, and most importantly, as I stated in my direct testimony, Exelon's contracts to serve ComEd load will expire in 2006, and Exelon (and other suppliers with contracts tied to this expiration date) will be free to offer into the market at any price the market will bear, possibly subject to PJM's mitigation when transmission constraints bind.

Second, physical conditions change. For example, the New England grid was generally seen to be reasonably unconstrained in the mid-1990s. But within a few years of market opening, significant congestion developed. Load increases, generation changes, and transmission topology changes all contribute to regional patterns of transmission use that can change over sometimes surprisingly short time periods. The loss or de-rating or extended outage of a major piece of equipment, with little lead-time, can produce extended effects on the marketplace.

For example, the PJM Branchburg transformer de-rating during 2004-2005, the extended outage of the AEP Cook nuclear plant starting in 1997, and the energy efficiency efforts of California consumers in the summer of 2001 illustrate that unexpected circumstances do arise, beyond the more routine smaller-scale forced and planned outages which occur regularly. I raise these examples to illustrate how important it is not to just assume that future conditions will mirror, or at least resemble, current conditions. As Dr. Hogan stated (line 249), “market power should not be assumed away.” Nor should other elements that have a bearing on market power questions, such as the extent to which transmission constraints into ComEd will bind in the post-2006 world.

Lastly, the complexity of the networked grid, especially one as large as that operated by PJM, can lead to unexpected changes in requirements to ensure reliability. While some of those changes lead to improved utilization of the grid, and even to reduced wholesale prices, other changes certainly can result in shifts in flow patterns and increases to expected prices.

Q. HAS THERE BEEN A DETAILED ANALYSIS OF THE LIKELY LEVEL OF TRANSMISSION CONSTRAINT INTO THE COMED REGION DURING THE 2007-2011 PERIOD?

A. No. There has been no relevant and detailed analysis of post-2006 transmission constraints during summer periods (2007-2011) into the Northern Illinois region by the auction proponents that demonstrates that transmission constraints into the region are not problematic during summer peak periods.

Q. HAVE YOU SEEN A MARKET POWER ANALYSIS BY COMED THAT DEMONSTRATES THAT THE PROPOSED PROCUREMENT WILL TAKE PLACE WITHIN A REGIONAL MARKET THAT IS WORKABLY COMPETITIVE?

A. No. The proponents filed no such analysis, even though they are proposing a move that would fully expose BUS ratepayers to that market.

Q. IS THE ANALYSIS PERFORMED BY DR. HIERONYMUS ON TRANSMISSION CONSTRAINTS IN THE COMED REGION BETWEEN OCTOBER, 2004 AND JUNE 2005 SUFFICIENT TO DEMONSTRATE THAT TRANSMISSION CONSTRAINTS INTO COMED ARE NOT A CONCERN?

A. No. The relevant analysis would need to examine prospective conditions for the 2007-2011 summer peak periods, at a minimum. Dr. Hieronymus' analysis includes only one summer month's worth of data (June 2005).

5. Supplier Concentration in the Northern Illinois Region

Q. DR. HIERONYMUS STATES (AT LINES 172-181) THAT THE HHI FOR THE NORTHERN ILLINOIS REGION WOULD BE LOWER IF IMPORTS WERE ACCOUNTED FOR, AND THAT SUCH AN ACCOUNTING WOULD RESULT IN A MODERATELY

CONCENTRATED, RATHER THAN A HIGHLY CONCENTRATED, MARKET. DO YOU AGREE WITH HIS METHOD FOR ACCOUNTING FOR IMPORTS?

A. No. Including import capacity into the Northern Illinois region does not automatically result in lower HHIs and a "moderately concentrated" market, contrary to Dr. Hieronymus' contention. Exhibit 3.1 illustrates two alternative scenarios for market concentration when imports are accounted for. In these illustrative scenarios, the HHI either remains approximately the same or it increases.

Dr. Hieronymus' key unsupported assumption is that existing suppliers in the region would not be allocated any share of the import capacity. This is an unrealistic assumption given that at least some of the existing Northern Illinois generators also have generation capacity external to the region, although they do not need it to secure FTRs, a form of firm transmission right, into the ComEd zone. It is not unreasonable to assume a distribution of import capacity that includes some allocation to existing suppliers. CUB-CCSAO Exhibit 3.1 illustrates the minimum level of such allocation that would result in maintenance or an increase in the HHI for installed capacity in the Northern Illinois region.

6. GE MAPS Results Submitted by Dr. Hieronymus

Q. DR. HIERONYMUS REFERENCES TWO GE MAPS ANALYSES HE UNDERTOOK. WHAT DOES DR. HIERONYMUS CONCLUDE FROM THESE ANALYSES?

Dr. Hieronymus concludes from his first analysis "very high price commonality between ComEd and the broad area to its east extending all the way to the Allegheny Mountains. ComEd prices were essentially identical with those at buses in Northern Indiana Public Service ("NIPSCO"), the lower peninsula of Michigan, AEP, Dayton Power and Light, CINergy, and the Ohio portion of First Energy. Much of this time, they were also identical to prices in MidAmerican, Louisville Gas and Electric and Illinois Power." (lines 204-09).

Dr. Hieronymus concludes from his second analysis that a hypothetical monopolist owning all the generation in Northern Illinois would have to raise its bid prices by 40% to achieve a sustained five percent price increase, and he posits that such behavior is unlikely to be profitable (lines 239-42).

Q. ARE THESE ANALYSES FLAWED WITH RESPECT TO THEIR ABILITY TO SHED LIGHT ON POST-2006 CONCERNS?

A. Yes, in a number of ways.

First, the analyses use a 2006 time period. While there could be similarities in results between 2006 and adjacent years, the BUS auction is proposed to cover periods between 2007-2011. System conditions during this period, and not 2006, should be reflected in any analysis that attempts to ascertain wholesale market impacts on the proposed auction. For this reason alone, the credibility of the results of these analyses is diminished.

Second, the GE MAPS model used covers the entire Eastern Interconnection. It does not mimic the RTO-wide dispatches used by PJM and MISO, and likely does not model accurately the seam that exists between PJM and MISO. It likely does not treat the boundaries of the PJM and MISO regions in the same way that those boundaries are treated by the dispatch methodologies used by PJM and MISO. For this reason alone, the price outputs are suspect. Additionally, the structure of GE MAPS is not flexible enough to be easily reconfigured to fully adapt to the changing RTO boundaries of the Eastern Interconnection. The MAPS model was originally structured on NERC region boundaries, and both PJM and MISO regions cut across NERC region boundaries.

Third, GE MAPS is not designed to allow for careful simulation of the potential exercise of market power, and Dr. Hieronymus' analysis was not designed to do so. Thus, the approach used was fairly blunt, increasing the price offers of all northern Illinois generators by 40% in order to obtain a five percent annual average price increase. Dr. Hieronymus' modeling exercise is a woefully incomplete assessment of the potential profitability of likely scenarios of market power exercise. Scenarios where market power could be exercised likely would involve a form of physical or economic withholding for far fewer than 8,760 hours (the total hours in a year), which is what Dr. Hieronymus' unrealistic scenario envisions. While it may be true that a 40% offer price increase would be needed to sustain an annual average price increase of five percent, such a result does not imply that there don't exist more nimble strategies of exercising market power profitably over much smaller time intervals, such as during peak periods when transmission is constrained.

Q. ARE THERE ANY OTHER ANALYTICAL FLAWS WITH THE GE MAPS MODELING EXERCISE UNDERTAKEN BY DR. HIERONYMUS?

A. Possibly. I received the information containing additional detail on the GE MAPS runs too late to include in this testimony any additional critique of the analytical methods used.

Q. PUTTING ASIDE THE ANALYTICAL FLAWS, DO YOU AGREE THAT DR. HIERONYMUS HAS USED THE RIGHT METHODOLOGIES TO ASCERTAIN PRICE COMMONALITY?

A. No. I do not agree that he has used the right methodologies to ascertain the type of price commonality that is likely important to this case, namely how the price of hedges for delivery into the ComEd zone will be affected by regional price variation. Dr. Hieronymus presented his results using annual average prices, and he did not distinguish between price commonality or price divergence that occurs over smaller intervals than one year. In particular, he did not look at summer peak periods, or assess the extent of price commonality or divergence that exists during these times, when load is generally higher and prices are generally higher. The presentation of price commonality in ComEd Exhibit 15.2 does not provide any useful information about how price divergence during peak loading periods might exist, and how it would affect the price for hedges for delivery into the ComEd zone.

Q. DO YOU AGREE THAT DR. HIERONYMOUS USED THE APPROPRIATE METHODOLOGIES TO FULLY ASCERTAIN LIKELY IMPACTS OF A POTENTIAL EXERCISE OF MARKET POWER BY A NORTHERN ILLINOIS SUPPLIER OR SUPPLIERS?

A. No. As I noted above, the scope of his second analysis is far too broad to act as any meaningful indicator of whether or not it might be profitable for a supplier or suppliers in the Northern Illinois region to exercise market power.

7. Relationships Among Market Power Potential in Spot Markets, Forward Markets, and the Price Outcomes of the BUS Auction

Q. WHICH TESTIMONY DO YOU REBUT IN THIS SECTION?

A. I am rebutting the testimony of Dr. William Hogan and Dr. William Hieronymus. Their testimony, especially Dr. Hogan’s, concerns in part the relationship between PJM physical spot prices and forward market prices. For context, I first provide a brief background on how spot and forward prices are related in an LMP pricing construct. I then directly address market power issues from Dr. Hogan and Dr. Hieronymus’ testimony.

Q. ARE THERE SEPARATE PJM PRICING "NODES" OR "ZONES" OR "HUBS" FOR THE NORTHERN ILLINOIS REGION?

A. Yes. There is a Northern Illinois Hub price and there is a ComEd zone price. These price points are derived using aggregations – simple or weighted averages – of nodal prices. There are also other hub prices in the Northern Illinois region, in addition to prices at all generator and load nodes or individual buses.

Q. HOW ARE THE PRICES AT THESE NODES, ZONES, AND HUBS RELATED, AND HOW DO THEY RELATE TO OTHER PJM PRICES, SUCH AS THOSE IN THE CENTRAL AND EASTERN REGIONS OF PJM?

A. PJM computes all of the prices using their system of locational marginal pricing (LMP). In short, if there is no congestion, prices are the same everywhere in PJM (a result of PJM treating losses separately, unlike the LMP practices of MISO, New York and New England). In reality, it is unusual for prices to actually be the same everywhere, because with such a large system there is often at least one binding constraint that results in price separation. Thus, when there is congestion, clearing prices are not identical everywhere. For example, if the transmission paths into the Northern Illinois region were congested "into ComEd," the prices in the ComEd zone and at the Northern Illinois hubs would be higher than those PJM prices immediately outside of this region. Conversely, when transmission is constrained "out of" ComEd, prices would be lower in the Northern Illinois region than in the rest of PJM. Depending on where the congestion is located, the physical spot price pattern will be different, although broad trends can be detected.

Q. HOW ARE PHYSICAL SPOT MARKET PRICES AT PJM NORTHERN ILLINOIS PRICING POINTS SUCH AS THE COMED ZONE OR THE NORTHERN ILLINOIS HUB RELATED TO BILATERAL FORWARD MARKET PRICES FOR POWER DELIVERY TO THIS AREA OF PJM?

A. Expected physical spot market prices will influence forward bilateral market prices. While the relationship can be complex, in general suppliers and buyers both know that they can choose to sell and buy at spot market prices, or they can sell and buy at contracted, forward prices.

Q. HOW ARE FORWARD MARKET PRICES RELATED TO THE PRICES THAT WILL ARISE FROM THE PROPOSED BUS AUCTION, IF IT IS HELD?

A. Forward market prices likely will serve as a key factor in the price offers of auction suppliers. Rational auction participants will likely attempt to determine, within some range and in advance of the auction, a forward market price for supply available to meet any supply obligations they would incur if they won at auction. These supplies can be local, from Northern Illinois generators, or they can be distant, from other PJM generators. However, if they are distant, the participant could incur additional costs for ultimate delivery to the Northern Illinois pricing points, if there is any congestion into the region.

Q. ARE EXPECTED SPOT MARKET PRICES ALSO DIRECTLY RELEVANT TO AUCTION PARTICIPANTS?

A. Yes, likely. Some auction participants would likely use the spot market to backstop at least some small portion of their supply obligations. It is also likely that auction participants will also gauge forward market price offerings based on their own understanding of spot market price expectations.

Q. CAN A DISTANT GENERATOR OFFERING TO PROVIDE SUPPLY TO A WINNING AUCTION PARTICIPANT PROVIDE A FINANCIAL GUARANTEE FOR DELIVERY TO THE NORTHERN ILLINOIS REGION?

A. Yes, if they were willing to either secure FTRs or to absorb the spot market delivery risk, or congestion risk. In either case, the costs associated with such FTR purchases or risk absorption would form part of the forward market price. Alternatively, the auction participant can assess the cost associated with such congestion risk hedging, and purchase from the distant generator at a price reflecting delivery at or near the distant generator's location.

Q. PLEASE SUMMARIZE THE RELATIONSHIP BETWEEN THE PJM NORTHERN ILLINOIS SPOT PRICES, MORE DISTANT PJM LOCATIONAL PRICES, LIKELY FORWARD MARKET PRICES, AND RESULTING BUS AUCTION PRICES.

A. The primary benchmark for forward prices associated with energy delivered for Northern Illinois load would be the spot prices at the PJM Northern Illinois pricing points. Any generator that can deliver directly to these locations, i.e., generators in Northern Illinois, would be a source for a potential forward contract, at prices likely benchmarked to physical spot prices at or near their generators. A generator from a more distant location might be able to deliver power at a less expensive PJM pricing point, but that same generator would then need to financially "deliver" power to Northern Illinois, for example through purchase of FTRs that sink in the ComEd zone. Thus, while the relationships remain complex, all forward price guarantees for power delivered in support of BUS auction obligations likely would be benchmarked to some considerable extent on expected PJM physical spot market prices at the Northern Illinois locations. And, resulting BUS auction prices would be linked to the forward price offerings auction participants likely obtain in preparation for the auction.

Q. IS THE LINK BETWEEN FORWARD AND SPOT PRICES AND BUS AUCTION PRICE OUTCOMES RELEVANT TO THIS CASE?

A. Yes, critically. My primary contention is that any ability to exercise market power in the physical spot markets in PJM through economic or physical withholding of resources in the Northern Illinois region can result in the potential for higher Northern Illinois spot market prices during any period in which transmission is constrained "into ComEd." This translates into a potential for forward market prices that would reflect the potential for such market power exercise in the spot market. This in turn would lead to auction offer prices benchmarked (as described above) on spot market prices in Northern Illinois that reflect the potential for exercise of market power.

Q. DOES DR. HOGAN ACKNOWLEDGE SUCH BENCHMARKING?

A. Yes, directly, when describing the difference between the markets for energy and risk management services. Dr. Hogan states at lines 375-81:

> The spot energy market would be the point of reference for energy prices. Market participants would be looking ahead to the spot energy prices and forming a view of the expected energy price. Given the open access assured by the efficient design of the RTO markets, any supplier could and would anticipate that if it did not have a natural physical hedge at any moment it could and would turn to the spot market to buy to cover its deficits, or to sell to dispose of its surpluses.

Q. WHAT DOES DR. HOGAN MEAN BY A "NATURAL PHYSICAL HEDGE?"

A. I interpret this phrase to mean access – via ownership, control, or contract - to a physical generation resource within the Northern Illinois region.

Q. HOW HAS DR. HOGAN CHARACTERIZED YOUR CONTENTION THAT THERE IS A POTENTIAL FOR MARKET POWER TO BE EXERCISED IN THE SPOT MARKETS?

A. Dr. Hogan has mischaracterized my testimony by focusing on whether or not there is the potential for exercise of market power in the BUS auction itself. Dr. Hogan states at lines 411-13: "Importantly for the present discussion, there has been no evidence offered to support any claim that there is a market power problem in the proposed ComEd auction for the financial hedges."

Q. ARE YOU ASSERTING THAT MARKET POWER CAN BE EXPLICITLY EXERCISED IN THE BUS AUCTION ITSELF?

A. No. My direct testimony is based on the potential for exercise of market power in the physical spot markets.

Q. DOES DR. HOGAN ACKNOWLEDGE THE LINK BETWEEN FORWARD MARKET PRICES AND SPOT PRICES, IN THE CONTEXT OF MARKET POWER?

A. I believe he does. In one location in his testimony he acknowledges the converse of this point, stating at lines 359-63: "Simply put, if a generator could not exercise market power by physical withholding or excessive bids in the real-time spot market, then the generator could not successfully increase its ability to exercise market power in energy by withholding in the forward contract markets."

However, at lines 605-08 Dr. Hogan states: "If there is market power in the physical market, if it could be exercised in the real-time markets, **and if it could somehow affect prices in the forward auction**, it would pose a problem that would need to be addressed even if no auction were held." (emphasis added).

Based on the emphasized phrasing above, it's not clear that Dr. Hogan is concretely acknowledging the link between forward, auction, and spot prices.

Q. DOES DR. HIERONYMUS ACKNOWLEDGE THE LINK BETWEEN FORWARD MARKET PRICES AND SPOT PRICES, IN THE CONTEXT OF MARKET POWER?

A. Yes, directly. Dr. Hieronymus recognizes that if there were the potential for the exercise of market power in the physical spot markets, then that could translate to exercise of market power in the forward markets – which I claim would impact the pricing results of the BUS auction. Dr. Hieronymus states, at lines 421-30:

> **First, it is axiomatic that market power can be exercised in forward contract markets only if market participants believe that the actual generation suppliers can exercise market power in short term markets**. However, it also is acknowledged that PJM has mitigation tools sufficient to prevent the exercise of local market power in short-term markets in a region such as northern Illinois. If the northern Illinois generators were to seek to exercise market power in the forward contract market – either directly (by bidding high in the auction) or indirectly (by offering hedges only at high prices) -- competitors/customers could simply wait them out and buy some or all of their power in the mitigated spot markets. Thus, the competitive (or mitigated) spot markets impose price discipline in the forward markets.

(emphasis added).

Q. DOES DR. HIERONYMUS' POINT ABOUT PJM MITIGATION TOOLS IMPACT YOUR CONCLUSIONS REGARDING THE PRICING RELATIONSHIPS BETWEEN THE SPOT MARKET, THE FORWARD MARKET, AND THE PRICE OUTCOMES OF THE PROPOSED BUS AUCTION?

A. No. The relationships between spot and forward market prices and the BUS auction price outcome remain whether or not there is the potential for the exercise of market power. I address the PJM mitigation tool issue in a subsequent section of this rebuttal testimony.

Q. PLEASE SUMMARIZE THE MAIN POINT YOU ARE CONVEYING IN THIS SECTION OF YOUR REBUTTAL TESTIMONY.

A. I do not claim that suppliers would necessarily exercise direct market power in the BUS auction, but rather that the presence of market power potential in the spot market will influence forward market prices and thus drive up the clearing prices in the auction beyond what would be expected if the supply market were less concentrated structurally, even if the auction vehicle itself were operationally sound. Dr. Hieronymus, and I believe Dr. Hogan, both recognize this linkage, but the discount it by claiming that even if there were a potential for the exercise of market power, PJM's mitigation tools would remedy any concerns of high prices.

8. PJM Mitigation

Q. WHAT ARE THE MAIN POINTS MADE BY THE COMED REBUTTAL WITNESSES DR. HOGAN, DR. HIERONYMUS, AND MR. NAUMANN CONCERNING MARKET POWER MITIGATION?

A. Each of the witnesses claims a minimal effect of any potential market power exercise because of the ability of the PJM MMU to impose mitigation measures. Thus, in the event of an ability to exercise market power, the witnesses rely upon mitigation measures, rather than any structural alternatives (such as a reduction in the concentration of supply ownership in the region). The witnesses do not address any PJM MMU mitigation limitations that may exist. The following is taken from their rebuttal testimony:

Dr. Hieronymus, at lines 155-59: "Third, precisely because of the concentration of generation ownership within northern Illinois, bids automatically will be mitigated by PJM whenever the area is constrained. Such mitigation may in fact occur only rarely if at all. However, this is not because PJM's market power mitigation is ineffective, as Mr. Fagan suggests, merely because it is unneeded."

Dr. Hieronymus, at lines 261-71:

> Q. Would bid price increases of the magnitude your analysis found to be necessary to raise prices significantly in fact be possible? A. No. The profitability of bid increases arises primarily when northern Illinois becomes constrained, a situation that rarely occurs. If it did occur, however, automatic PJM market power mitigation measures likely would be triggered. As I will discuss in more detail below, PJM market power mitigation automatically reduces bids to marginal cost plus 10 percent when an area is constrained and the market fails the three-pivotal supplier test. Given the size of Exelon Generation and Midwest Generation in the northern Illinois area, the three-pivotal supplier test generally would be failed if the northern Illinois geographic region became constrained, thereby triggering the mitigation measures.

Dr. Hogan, at lines 78-80: "Even if there were a prospective concern with market power in the physical energy market, the RTO market monitoring function has substantial market power mitigation authority and effective tools."

Mr. Naumann, at lines 283-85: "However, even if there were load pockets, PJM market rules provide mitigation to ensure that no supplier could exercise market power."

Q. IS THE PJM MARKET MONITOR ABLE TO PREVENT THE EXERCISE OF MARKET POWER DURING THOSE PERIODS WHEN TRANSMISSION CONSTRAINTS BIND?

A. No, not fully. The PJM MMU is currently limited to capping generator price offers to 110% of marginal cost if there is evidence of local market power exercise not mitigated by the presence of at least 4 pivotal suppliers. As I will show, even this limited authority is threatened by recent FERC actions.

Q. DOES PJM MARKET POWER MITIGATION PROVIDE ADEQUATE PROTECTION TO COMED RATEPAYERS IN THE EVENT OF EXERCISE OF MARKET POWER BY SUPPLIERS IN THE NORTHERN ILLINOIS REGION?

A. No. First, it is generally unwise to premise market-based procurement on a wholesale market that at times will likely exhibit excessive ownership concentration, i.e., during those times when transmission constraints into ComEd restrict the number of suppliers able to effectively compete to physically serve the Northern Illinois region load, and thus present the potential for the exercise of market power. Proceeding with the procurement would be an acknowledgement that leaning on mitigation is an acceptable first choice, rather than a last resort. Second, PJM's mitigation policy during those times, e.g., offer-capping at 110% of marginal costs, does not necessarily lead to price outcomes that would equal those which would be seen absent the high concentration.

Lastly, I reiterate here the limitations that the PJM MMU currently faces when addressing the potential exercise of market power:

- An inability to initiate mitigation if transmission constraints are not binding in PJM;
- An inability to mitigate price offers that are less than 110% of marginal cost in instances where transmission constraints are binding;
- An inability to mitigate price offers in instances when certain transmission constraints are binding but an exemption is in place for those constraints;
- An inability to direct any structural changes to the market, such as divestiture of generation supplies to reduce ownership concentration;
- An inability to fully monitor or control generation outage patterns or durations; and
- An inability to impose mitigation on certain post-July-1996 generators who will be grandfathered and will remain exempt from mitigation even in the event of local market power exercise.

Regardless, even if one were confident that PJM's existing rules would suffice – as Dr. Hogan, Dr. Hieronymus, and Mr. Naumann are – there remains the distinct possibility that PJM market rules will weaken.

Q. HOW MIGHT PJM MARKET RULES WEAKEN?

A. The PJM market rules that allow the PJM MMU to impose the 110% offer capping mitigation during times of a transmission constraint "into ComEd" may be weakened, pending a FERC hearing on the matter.

In a recent FERC Order of July 5, 2005[1], FERC questioned the PJM MMU's use of a "no three pivotal suppliers" test when deciding whether or not to implement local market power mitigation when transmission constraints bind. The "no three pivotal suppliers" test means that unless there are at least four "pivotal" suppliers, the PJM MMU will impose the 110% offer capping on generators behind a transmission constraint. However, FERC's order set the issue for hearing and included FERC's discussion questioning the grounds and

[1] 112 FERC 61,031 (July 5, 2005).

documentation provided by the PJM MMU to support the test. Thus, while the outcome is pending the results of the hearing and FERC did not conclude "that the concept is unsound," a critical reading of the relevant sections of the Order leads me to believe it is very possible that the PJM MMU's ability to impose mitigation on suppliers behind a transmission constraint could be weakened, perhaps considerably, in the near future. The relevant paragraphs from the Order are as follows:[2]

"116. Specific deficiencies with the PJM filing and remaining general concerns with the no-three pivotal supplier test follow. First, one of PJM's principal justifications for the no-three pivotal supplier test, as stated in the Bowring Declaration, is that it represents the practical application of the Commission's market power tests in real-time. Moreover, the Bowring Declaration asserts that "the no-three pivotal supplier test is an explicit derivation, within the context of the Commission's delivered price test, of how to weigh the various structural features of a particular type of local market,"[Bowring Declaration at P. 8] and that the no-three pivotal supplier "is not more stringent than the complete delivered price test, taken as an integrated whole." [Bowring Declaration at P. 9] However, the Bowring Declaration does not adequately support these assertions. It does not show how the no-three pivotal supplier test was derived from the Commission's screens, nor does it provide support that the no-three pivotal supplier test is not more stringent than the delivered price test. The Bowring Declaration offers a few limited hypothetical examples and general assertions in support of these conclusions, but fails to provide data showing whether the assumptions underlying the examples are typical of actual conditions in the load pockets where offer capping occurs. Nor does the Bowring Declaration provide analytical, conceptual or theoretical analysis demonstrating why the no-three pivotal supplier test would produce results consistent with those of the AEP screens. [For example, the Bowring Declaration states that PJM's no-three pivotal supplier test is equivalent to the 5 percent delivered price test because it includes all suppliers, regardless of their position on the relevant market supply curve, and therefore includes more competitors than the delivered price test. The Declaration does not provide any analytical support to demonstrate that the no-three pivotal supplier is equivalent to the delivered price test, nor

[2] Ibid., P.116 through P. 119.

respond to commenters who argue that the no-three pivotal supplier test is more stringent.]

117. Second, the discussion in the Bowring Declaration of whether other modifications of its no-three pivotal supplier test would be appropriate was insufficient. The discussion relies upon hypothetical examples and draws upon references to Cournot competition theory, particularly in the analysis of the deficiencies of a no-two pivotal supplier test. The brief analysis did not provide sufficient support to indicate that the conclusions contained in the Declaration were robust under a variety of operating conditions and configurations.

118. Finally, the Bowring Declaration did not adequately address why the existing market power screens or reasonable modifications of those screens would not be an appropriate means of determining market power in load pockets. In addition, the Declaration dismisses the use of the AEP screens as impractical or impossible to apply on an hourly basis and that the use of judgment cannot be applied in a real-time application, without providing any detailed examination of how such screens or subsets of these screens could be implemented within PJM's current systems.

119. Because PJM has not adequately supported the no-three pivotal supplier test, we will establish further hearing procedures for this matter. The primary focus of the hearing before the Administrative Law Judge (ALJ) will be to address what test or tests should be used to determine whether a supplier has market power in a load pocket and should be subject to offer capping. The hearing before the ALJ will examine whether the no-three pivotal supplier test accurately identifies whether suppliers within load pockets have market power in PJM's spot market at the nodes in the load pocket, or whether a different test should be used. Specific issues that the hearing should address include: (a) the appropriateness and strengths/drawbacks of applying market power screening test in real-time; (b) whether the no-three pivotal supplier test is no more stringent than the screens approved by the Commission for granting market-based rate applications, and whether the tests produce similar results; (c) the implications of using a no-one or no-two pivotal supplier instead of the no-three pivotal supplier test; (e) whether the Commission market screens (such as the AEP screens) can be implemented in real-time; (f) whether tests more or less stringent than the AEP screens should be used to monitor and mitigate actual transactions in the market on a real time basis; and finally, (g) whether any of the above market power tests are likely to pass a supplier that should fail (i.e., incorrectly conclude that a supplier lacks market power when, in fact, it has market power) or fail a supplier that should pass (i.e., incorrectly conclude that a supplier has market power when, in fact, it lacks market power). PJM and parties should support and defend their findings and

assertions with as much analysis and specific data as possible. Since no test may be completely accurate in identifying suppliers with and without market power, the hearing should also explore the relative harm of mitigating suppliers without market power under the various tests versus failing to mitigate suppliers with market power under those tests.

Q. IF THE PJM MITIGATION RULES ARE WEAKENED, WHAT WOULD THIS MEAN FOR THE NORTHERN ILLINOIS REGION?

A. It will depend on the specific recommendations of the ALJ in the proceeding. However, if for example the test were rejected, it could mean that the PJM MMU would no longer be able to impose the 110% offer cap during hourly time periods when transmission constraints were binding in the Northern Illinois region. This might allow suppliers to offer energy at prices higher than the 110% offer cap currently in place.

9. Hedge Prices for Energy Delivered to ComEd

Q. WHAT IS DR. HIERONYMUS' TESTIMONY ON THE PRICE OF HEDGES AVAILABLE TO SUPPLIERS PARTICIPATING IN THE BUS AUCTION, AND WHAT IS HIS TESTIMONY ON PRICE COMPARISONS BETWEEN PJM AND MISO HUB PRICES?

A. Dr. Hieronymus testifies that hourly price differences are not important to hedge quality. He also testifies that average monthly prices for the three months April 2005 through June 2005 across two MISO and two PJM regional hubs are "quite similar."

Dr. Hieronymus states at lines 213-23:

> Second, and of more immediate relevance, it means that bidders into the Illinois auction can hedge their load shares with contracts

> to buy power in this broader area. As Mr. Naumann explained, in LMP markets, what is "shipped" is not electricity, but dollars. Hence, if a supplier bidding in the auction can buy electricity in CINergy at the price that would be expected in northern Illinois, this is just as effective a hedge as buying the same electricity from a northern Illinois generator. Indeed, the price analysis that I performed is unnecessarily strict. It does not matter to the auction supplier that prices in the market where it hedges are literally the same as in northern Illinois in each hour. All that matters is that the price averaged over the year is similar. Hour-by-hour price differences that average out to near zero are irrelevant to the quality of the hedge.

And he testifies at lines 304-09:

> From October 1, 2004 through June 30, 2005, day-ahead average prices in the Northern Illinois Generation Hub and the AEP Generation Hub differed by about 3% overall ($37.27/MWh AEP and $36.21/MWh ComEd), but differed by only about 1% during on peak-hours. The trend may be toward a further convergence of prices: from March 1, 2005 through June 30, 2005, both on- and off-peak prices between the hubs were almost identical, differing by less than $0.50/MWh on average.

And at lines 328-35 Dr. Hieronymus states:

"Q. Have you also examined prices in northern Illinois and in surrounding areas since the commencement of the MISO market? A. Yes, for the period since MISO energy markets became operational, the average prices among the AEP and Chicago PJM Generation Hubs and the CINergy and Illinois MISO Hubs are quite similar, as shown below:

	Chicago PJM Generation Hub	AEP PJM Generation Hub	Illinois MISO Hub	Cinergy MISO Hub
April	40.18	40.34	40.67	41.20
May	33.63	33.04	31.38	31.42
June	44.73	43.38	47.09	47.26
Average	39.52	38.92	39.71	39.96

This is not to suggest that there is no price variation among these pricing points over time. However, as I explained previously, ultimately it is the average price over a period that determines the quality of a hedge."

Q. DO YOU AGREE WITH DR. HIERONYMUS THAT "ALL THAT MATTERS IS THAT THE PRICE AVERAGED OVER THE YEAR IS SIMILAR. HOUR-BY-HOUR PRICE DIFFERENCES THAT AVERAGE OUT TO NEAR ZERO ARE IRRELEVANT TO THE QUALITY OF THE HEDGE"?

A. I do not agree as to the first part of his answer, that the only thing that matters is that price averaged over the course of the year is similar. The absolute value of the price average over the course of the year also matters, as it is the expectation of this average value that drives the price of the hedge. Dr. Hieronymus also relies on simple averages, yet it is the weighted average price that is more important, as the load during higher priced peak periods is usually greater than load during lower priced off-peak periods.

Q. HOW DOES THIS AFFECT THE PRICE OFFERED BY BUS AUCTION SUPPLIERS?

A. BUS auction suppliers will assess the price of hedges by estimating the load obligation they would bear each month if they win, along with expectations of prices in the Northern Illinois region each month. Based on these factors, BUS auction suppliers could procure FTRs. The critical point is that if there were an expectation that market power might be exercised in the region, then the prices for hedges – FTRs – would be higher than if there were not an expectation of market power exercise. While price movement over time that averages out to zero would not affect the "quality" of the hedge once it is bought, spot price expectations certainly do impact the price of the hedge.

Q. DR. HIERONYMUS LOOKS AT THREE MONTH'S WORTH OF AVERAGE PRICES AT FOUR HUB PRICING POINTS IN MISO AND PJM. IS MONTHLY AVERAGE GRANULARITY SUFFICIENT TO DETERMINE "PRICE COMMONALITY" ACROSS THE HUBS?

A. No. Dr. Hieronymus uses these results to suggest commonality of prices across the hubs. I disagree that this table of prices provides enough of an indication to draw any conclusions about the price similarity or dissimilarity between PJM and MISO prices in the Illinois area. It certainly provides no information that indicates conditions in 2007-2011 might reflect any pattern discerned from this limited dataset.

I also note that the table does not even contain a full set of summer peak period prices. First, the months of April and May of 2005 reflect MISO prices arising from "cost-based" offers mandated by FERC. There is no information in those months to suggest how market-based pricing trends may unfold.

Second, looking solely at June, there is a distinct difference in average prices between the PJM Chicago and the MISO Illinois hubs. In fact, looking more carefully at the real-time hourly prices at these two locations in June 2005 illustrates that there is marked variation in prices. For example, the average of the absolute value of the 720 hourly price differences between the PJM Chicago

Generation Hub and the MISO Illinois Hub is $13.86/MWh for June 2005. This means that on average, there has been a $13.86/MWh spread between the two Illinois hub points in each hour during June 2005. This does not suggest "price commonality" between regions, as Dr. Hieronymus concludes, but rather invites more careful analysis of hourly prices and the source of such spreads between two adjacent Illinois regions.

10. MISO/PJM Seams Progress Compared to a Joint and Common Market

Q. IS THE PROGRESS ASSOCIATED WITH MISO AND PJM'S JOINT OPERATING AGREEMENT EQUIVALENT TO THE PLANNED BENEFITS OF FERC'S "JOINT AND COMMON MARKET"?

A. No. Progress in PJM-MISO coordinated operations across the MISO/PJM seam, as noted by Mr. Naumann at lines 394-398, is not the same as instituting a joint and common market, the underpinning of FERC's allowance for ComEd to join PJM. If fully implemented, a joint and common market will address the current dissimilarities across the two RTOs, including different capacity and ancillary service structures; and more fully address price divergence at common points. As noted by Mr. Naumann at line 400, the full coordination efforts between PJM and MISO have yet to be seen. As evidenced by the price spread noted in my previous section, even under the current seams progress noted by Mr. Naumann, there were still considerable price differentials in June 2005 across at least one part of the MISO/PJM seam – the Illinois Hub (MISO) and the PJM Chicago Generation Hub.

11.MISO Wholesale Market

Q. DOES DR. HOGAN MISCHARACTERIZE YOUR TESTIMONY ON MISO AND PJM WHOLESALE MARKET STRUCTURE?

A. Yes. Dr. Hogan states at lines 539-44:

> In the third argument against reliance on the wholesale markets, Mr. Fagan argues that the PJM wholesale market structure is incomplete, while the MISO market structure is both incomplete and immature. (e.g. Fagan at 18-21) He thus concludes that the wholesale markets administered by the RTOs in and around Illinois are not sufficiently developed or proven to produce competitive results. This argument is both misleading and mistaken.

Q. HOW DOES DR. HOGAN MISCHARACTERIZE YOUR TESTIMONY?

A. My testimony argues that the PJM MMU's ability to mitigate the exercise of market power is limited. Other than this specific point, I do not offer evidence that the PJM wholesale market structure is "incomplete." The section Dr. Hogan is referring to ("e.g. Fagan at 18-21") solely addresses the MISO, not the PJM market structure.

Dr. Hogan also states at lines 545-547 that, "[t]he argument first ignores the fact that PJM and MISO use essentially the same proven market design for their day-ahead and real-time markets that has now worked successfully in PJM and elsewhere for several years."

However, I have not ignored the fact that PJM and MISO use a similar LMP-based spot market structure, nor have I offered evidence calling into question the fundamental PJM and MISO market design. Rather, the relevant section of my direct testimony (lines 352-420) is focused on the immaturity of the implementation of the MISO markets, not the fundamental design tenets of LMP-based spot markets. I also focus on the distinction between MISO's implementation in a region with an entirely different history than the single-control-area "PJM Classic," which initiated the LMP-based spot market structure. While the market designs are similar, the implementation process is different, as MISO is not transitioning to LMP-based markets with the same "tight power pool" experience with centralized dispatch that PJM had.

Dr. Hogan also states, at lines 575-76, "Mr. Fagan notes that PJM and MISO do not have ISO-coordinated markets for certain ancillary services. (Fagan at 19-20)." My testimony at 19-20 references the lack of structured ancillary service markets in MISO and the related impact on MISO energy market pricing. This does not address either the lack of ISO-coordinated ancillary service markets between PJM and MISO, or the competitiveness of the stand-alone ancillary service structure currently in place in MISO. My fundamental point is that energy market dispatch efficiencies are affected by the way in which ancillary services are structured in a region, and that unlike PJM, MISO does not have structured ancillary service markets that would allow for a more optimal dispatch (and greater spot market efficiencies) to serve combined energy and regulation and operating reserve requirements.

Q. PLEASE SUMMARIZE YOUR REBUTTAL OF DR. HOGAN'S CRITIQUE OF THE SECTIONS OF YOUR DIRECT TESTIMONY ADDRESSING THE MISO WHOLESALE MARKET.

A. The concerns I've expressed with MISO spot market immaturity are focused on implementation, not market design, and the concerns I've expressed with Northern Illinois are focused on structural concentration, not market design. Dr. Hogan is mistaken in interpreting my testimony as criticizing the overall design of LMP-based spot markets.

Q. HAS DR. HOGAN OFFERED ANY EVIDENCE ON THE PERFORMANCE OF THE MISO SPOT MARKETS TO DATE?

A. No. Dr. Hogan states at lines 568-570 that "the relatively uneventful startup of its markets indicates that the core features are, as anticipated, sound and working well." However, he does not present any analysis of the functioning or of the performance of the MISO spot markets; there are no public analyses by the MISO market monitor, as indeed it is too soon to conduct any such analysis. In particular, I note that it is premature to conclude that the MISO markets are performing in a way that indicates no concerns with their level of competitiveness.

12. Claims of Use of Obsolete Information

Q. WHAT ASSERTIONS ARE MADE THAT YOU USED OBSOLETE INFORMATION IN YOUR DIRECT TESTIMONY?

A. Mr. Naumann makes a number of assertions in this regard:

Lines 195-97: "References to statistics about the capacity market at the time when ComEd or northern Illinois was a separate control area (e.g., CUB/CCSAO Ex. 1.0 at lines 227-233) are simply obsolete."

Lines 219-21. "Dr. Rose and Mr. Fagan view the market as if physical limitations on the simultaneous import of electricity into the ComEd service territory, often described using obsolete data, prevents or meaningfully limits effective competition to serve load in the auction and/or permits the exercise of market power by local generation operators."

Lines 231-34. "As I stated above, Mr. Fagan relies on a calculation of simultaneous import capability prior to ComEd's integration into PJM and applicable only to completely different and now obsolete system conditions."

Q. IN YOUR DIRECT TESTIMONY DO YOU USE "OBSOLETE DATA," RELY UPON "OBSOLETE SYSTEM CONDITIONS," OR MAKE "REFERENCES TO STATISTICS ABOUT THE CAPACITY MARKET [THAT ARE] OBSOLETE?"

A. No. My use of capacity market statistics from the time period when ComEd was a separate control area and AEP was not yet integrated into the PJM RTO is also indicative of the supplier concentration that currently exists in the ComEd control zone when transmission constraints bind into ComEd. Such references are not obsolete. The notion of two separate capacity markets may be considered obsolete only if you discount the effect that PJM's proposed Reliability Pricing Model ("RPM") could have in re-instituting locational capacity considerations for the ComEd control zone. However, my direct testimony was not inferring or stating anything about the PJM capacity market structure *per se*. I was simply pointing out - rightly so - that supplier concentration of installed capacity in the Northern Illinois region is high and, during times of transmission constraints into the region, the ability to exercise market power is a concern. This high concentration does not disappear with the integration of the AEP system into the PJM RTO, nor does it disappear because there is no longer a separate capacity construct in PJM for the Northern Illinois region.

In Exhibit 1.2 of my direct testimony demonstrating high supplier concentration of installed capacity in the Northern Illinois region, I used 4,700 MW as the value for simultaneous transmission import capacity for the purpose of assessing market share of suppliers including those who can access Northern Illinois load through imports. Dr. Hieronymus used this value in a November 2003 FERC filing addressing Exelon's market-based rate application. While ComEd and AEP have since integrated into PJM, the notion of simultaneous import capacity into the ComEd control zone is not obsolete, contrary to Mr. Naumann's contention, especially when considering supplier concentration when transmission constraints bind. There remains a finite level of physical interconnection between the ComEd control zone and the rest of PJM and MISO, and a simultaneous import capacity into the ComEd control zone can be computed for a given set of system conditions. As noted in my testimony, that value "varies considerably depending on system conditions." (Hieronymus lines 251-52). System conditions have changed with the integration of AEP. However, for the purposes of assessing the supplier concentration in Northern Illinois, the notion of using a ComEd control zone simultaneous import capability is not obsolete, and the supplier concentration values themselves do not dramatically change upon integration. For example, even if I were to use a conservatively higher value of 6,000 MW, the supplier share for Exelon decreases minimally from 32.5% to 31.3%.

13. Witness Qualifications and Understanding of PJM Markets

Q. WHAT DOES MR. NAUMANN ASSERT IN REGARD TO YOUR QUALIFICATIONS TO TESTIFY ON PJM MARKET ISSUES?

A. Mr. Naumann states at lines 100-103: "I also note that none of the witnesses testifying on issues affected by system operation -- Drs. Rose and Steinhurst, Mr. Fagan, and some extent, Professor Sibley have any practical experience or significant education and background in either transmission planning, system operations, or electric market operations."

Q. ARE YOU QUALIFIED TO TESTIFY ON THE STRUCTURE AND OPERATION OF THE PJM MARKETS?

A. Yes. My full qualifications are included in Exhibit 1.1 of my direct testimony.

In response to Mr. Naumann's particular assertion, I understand the structure of centralized dispatch approaches to power system operation and my practical experience over the last 10 years or so has been almost exclusively focused on analysis of wholesale electricity markets and transmission pricing structures. Between 1996 and December 2004, my work focused in large part on the evolving nature of ISO and RTO structures and the way in which spot locational energy markets and centralized energy dispatch shaped the development of competitive generation markets. I have experience with the modeling of security-constrained centralized dispatch, and I was part of a team of consultants using the GE MAPS security-constrained production cost modeling tool to estimate locational marginal prices using a centralized dispatch approach.

In 1998, I was a member of the Ontario Wholesale Market Technical Panel and sub-panels on bidding and scheduling and ancillary services. For work on behalf of the Alberta Transmission Administrator in 2001, I was the lead team member and presenter of information on transmission congestion alternatives to a group of stakeholders. I have supported the testimony of Dr. Richard D. Tabors in federal and state forums, working with him (and in one case, sponsoring joint testimony) on issues including transmission tariff pricing, LMP-based market operations, RTO integration, and market monitoring and mitigation. I was also part of the Tabors Caramanis and Associates team presenting training seminars on LMP-based markets and financial transmission rights (FTRs).

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.