

Exhibit No.:

4

Issue:

Range of benefits for Aquila as a
member participant in Midwest ISO

Witness:

Richard Doying

Sponsoring Party:

Midwest Independent Transmission
System Operator, Inc.

Case No.:

Case No. EO-2008-0046

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MIDWEST INDEPENDENT TRANSMISSION SYSTEM OPERATOR, INC.

REBUTTAL TESTIMONY

OF

RICHARD DOYING

Carmel, Indiana
November, 2007

MTSO Exhibit No. 4
Case No(s) EO-2008-0046
Date 4-14-08 Rptr RF

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of the Application of)
Aquila, Inc., d/b/a Aquila)
Networks – MPS and Aquila)
Networks – L&P for Authority to)
Transfer Operational Control of)
Certain Transmission Assets)
to the Midwest Independent)
Transmission System Operator, Inc.)

Case No. EO-2008-0046

AFFIDAVIT OF RICHARD DOYING


STATE OF INDIANA)
) ss.
COUNTY OF HAMILTON)

Richard Doying, being first duly sworn on his oath, states:

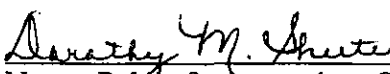
1. My name is Richard Doying. I am presently Vice President of Market Operations for Midwest Independent Transmission System Operator, Inc., intervener in the above-referenced matter.

2. Attached hereto and made a part hereof for all purposes is my rebuttal testimony.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my personal knowledge, information and belief.


Richard Doying

Subscribed and sworn before me this 29th day of November, 2007.


Notary Public for ~~Hamilton~~ Hendricks County, Indiana
My Commission expires: May 8, 2009

DOROTHY M. SHUTE
NOTARY PUBLIC, State of Indiana
My County of Residence: Hendricks
My Commission Expires: May 8, 2009

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is Richard Doying. My business address is 701 City Center Drive, Carmel,
4 Indiana, 46032.

5 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

6 A. I am employed by the Midwest Independent Transmission System Operator, Inc.
7 ("Midwest ISO") as the Vice President - Market Operations.

8 **Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND AND**
9 **BUSINESS EXPERIENCE.**

10 A. I received my Bachelor of Arts in Geography from the University of California, Los
11 Angeles in 1991 and my Master of Arts of Public Affairs in Policy Analysis, Energy and
12 Environmental Policy from the University of Minnesota in 1993. Starting in 1993, I was
13 an Associate with ICF Resources Incorporated, becoming a Senior Associate in 1995. In
14 1997, I was made the Project Manager for ICF Resources Incorporated. In 1997, I
15 became a manager in the Market Assessment division of PG&E National Energy Group,
16 where I was also made Director of the same division in 1999. In 2001, I was named the
17 Director of the Strategy and New Initiatives division of the PG&E National Energy
18 Group. In December 2003, I became the Director of Market Development and Analysis
19 with the Midwest ISO, and in September 2006, I became the Vice President of Market
20 Operations.

21 **Q. WHAT ARE YOUR JOB RESPONSIBILITIES AT THE MIDWEST ISO?**

22 A. As Vice President of Market Operations, I am responsible for the operations of the
23 Day-Ahead Energy Market, Financial Transmission Rights Market, Real-Time Energy
24 Market Pricing, Tariff and Market Settlements, Customer Management, and Market

1 Development and Analysis. I also manage the Midwest ISO's stakeholder efforts related
2 to market issues.

3 **Q. HAVE YOU SPONSORED ANY OTHER TESTIMONY BEFORE**
4 **REGULATORY COMMISSIONS?**

5 **A.** I have testified before a number of regulatory commissions and state legislative bodies.
6 In addition, I have also submitted written testimony before the Federal Energy
7 Regulatory Commission in Docket No. ER04-691-000 concerning the Midwest ISO's
8 Open Access Transmission and Energy Markets Tariff ("EMT"), which provides for the
9 implementation of the Midwest ISO's Centralized Security Constrained Economic
10 Dispatch supported by Day-Ahead and Real-Time Energy Markets and Congestion
11 Management Provisions based on Locational Marginal Pricing and Financial
12 Transmission Rights within the Midwest ISO Region.

13 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

14 **A.** The limited testimony of Aquila witness Mr. Dennis Odell presents a necessary but
15 incomplete picture of the benefits available to Aquila from full participation in the
16 Midwest ISO. The production cost study conducted by CRA International ("Aquila
17 Study") is not designed to and therefore does not take into account the full range of
18 benefits that would be available to Aquila from joining the Midwest ISO. Accordingly,
19 the purpose of my testimony is to provide the Public Service Commission of the State of
20 Missouri ("Commission") a more complete picture and record on all benefits for an entity
21 such as Aquila becoming a transmission-owning member and fully participating in the
22 Midwest ISO. In particular, I will discuss the broader value proposition that comes from
23 full participation in the Midwest ISO. The details of these benefits will be discussed in
24 Part III of this testimony.

1 Q. DO YOU ADDRESS THE SUBSTANCE OF THE AQUILA STUDY?

2 A. No. I do not. Witness Johannes Pfeifenberger does so in his testimony.

3
4 **II. MIDWEST ISO OPERATIONAL BACKGROUND**

5 Q. PLEASE DESCRIBE THE MIDWEST ISO'S OPERATIONAL
6 CHARACTERISTICS.

7 A. The Midwest ISO's operational area or "footprint" consists of 15 states and the province
8 of Manitoba, Canada. This area covers 920,000 square miles of territory, and 93,600
9 miles of transmission lines. The Midwest ISO performs its Energy Markets Tariff and
10 related responsibilities over this broad region through control rooms located in Carmel,
11 Indiana, and Saint Paul, Minnesota.

12 The Federal Energy Regulatory Commission, or "FERC," approved the
13 establishment of the Midwest ISO as an "ISO" – *i.e.*, an Independent System Operator –
14 in 1998 in the mid-western part of the United States. Then in 2001, FERC ruled that our
15 company also met the requirements for being an "RTO" – *i.e.*, a Regional Transmission
16 Organization. Broadly speaking, ISOs and RTOs are independent entities that have
17 functional control over the operation of transmission facilities of multiple transmission
18 owners under a common tariff.

19 An ISO administers a common tariff that applies to all transmission services
20 provided on the transmission facilities placed under the ISO's control. [FERC developed
21 a template for such a common tariff – called an "Open Access Transmission Tariff," or
22 "OATT."] The common tariff ensures that the same set of rules applies to all
23 transmission customers, and also avoids the "pancaking" of rates that occurs when power
24 goes through transmission facilities governed by multiple tariffs each of which may

1 impose separate charges and terms of service. Subsequently, to further improve the
2 accessibility and reliability of transmission system operations, FERC also promoted
3 system operation across broad regions by an ISO. Finally, to assure non-discriminatory
4 pricing for transmission services, FERC required ISOs to adopt market-based approaches
5 to congestion management and schedule imbalance services.

6 **Q. HOW DOES THE MIDWEST ISO OPERATE AND UTILIZE THE**
7 **TRANSMISSION ASSETS ONCE A UTILITY TRANSFERS FUNCTIONAL**
8 **CONTROL?**

9 **A.** System operations under the Midwest ISO's Open Access Transmission and Energy
10 Markets Tariff ("Energy Markets Tariff") includes balancing of generation supply to
11 assure demand is satisfied in a dependable and efficient manner and managing
12 transmission congestion that arises due to physical limitations of the transmission system.
13 These services are provided by the Midwest ISO through a coordinated competitive
14 market for electric energy. The Midwest ISO energy market operates by matching offers
15 to sell energy with bids to buy energy through a process that determines market clearing
16 quantities and prices while assuring total demand ("load") is satisfied at the lowest
17 possible cost while honoring the physical limitations of the transmission used to deliver
18 energy from generation to load.

19 **Q. PLEASE BRIEFLY EXPLAIN THE ENERGY MARKETS THAT THE**
20 **MIDWEST ISO OPERATES.**

21 **A.** The Midwest ISO's energy markets currently operate over two timeframes. First is a
22 "Day-Ahead" market, through which market participants can pre-schedule the
23 transactions they plan to engage in on the following operating day. Second is a

1 "Real-Time" market, where market participants can buy or sell energy to meet conditions
2 during the operating day that may differ from those anticipated in the Day-Ahead market.

3 The Midwest ISO is currently focusing efforts to further reduce supply cost and
4 improve reliability by seeking to consolidate certain functions currently performed by
5 twenty-four (24) separate Balancing Authorities or Control Area Operators. To that end,
6 the Midwest ISO is presently working to implement an Ancillary Services Markets, or
7 "ASM," designed to facilitate the management of Operating Reserves. In addition the
8 Midwest ISO is pursuing: 1) mechanisms to encourage more flexible demand
9 participation, 2) further coordination of transmission planning, and 3) implementation of
10 new mechanisms to assure longer-term adequacy of regional supply resources. These
11 enhancements will provide additional tangible benefits in terms of lower energy cost and
12 improved reliability throughout the Midwest ISO region.

13 **Q. WHAT OTHER FUNCTIONS ARE PERFORMED BY THE MIDWEST ISO**
14 **UNDER ITS ENERGY MARKETS TARIFF THAT MAY BE IMPORTANT**
15 **WHEN CONSIDERING BENEFITS OF MIDWEST ISO PARTICIPATION?**

16 **A.** Another important category of RTO membership benefits is associated with transmission
17 expansion planning. Midwest ISO is the NERC Planning Authority for its member
18 footprint, and performs regional planning in accordance with FERC Planning Principles
19 delineated in Order 890. These planning principles provide mechanisms to ensure that
20 the regional planning process is open, transparent, coordinated, includes both reliability
21 and economic planning considerations, and includes mechanisms for equitable cost
22 sharing of expansion costs. The Midwest ISO regional planning process integrates the
23 local planning processes of its member companies into a coordinated regional
24 transmission plan and identifies additional expansions. The regional plan has as its

1 objective the provision of an efficient and reliable transmission system that delivers
2 reliable power supply to connected load customers, expands trading opportunities, better
3 integrates the grid, alleviates congestion, provides access to diverse energy resources, and
4 enables state and federal energy policy objectives to be met. Regional plans are produced
5 no less frequently than biennially, and are publicly available on the Midwest ISO web
6 site.

7 **Q. HAVE YOU BEEN ABLE TO QUANTIFY THE BENEFITS OF**
8 **PARTICIPATION IN THE MIDWEST ISO?**

9 **A.** Many of the benefits of regionally coordinated transmission system operations and
10 planning are widely recognized within the industry. Also generally recognized is the
11 inherent difficulty in tracking and measuring each of these recognized and accepted
12 benefits. This is due in no small part to the fact that many of the benefits cannot be
13 measured directly given that the benefits are relative to what would have occurred but for
14 the RTO and its operations. There is no means to directly measure what would have
15 occurred if the RTO did not exist. The Midwest ISO has nonetheless undertaken an
16 effort to measure, where possible, and report on these significant RTO benefits. These
17 efforts have recently culminated in a Midwest ISO value proposition report that focuses
18 on the benefits that accrue to the region as a result of the Midwest ISO's operations. The
19 benefits described in that report will be discussed below in Part III of my testimony.

20
21 **III. MIDWEST ISO VALUE PROPOSITION**

22 **Q. WHY IS THE MIDWEST ISO FILING TESTIMONY IN THIS MATTER?**

23 **A.** My testimony augments and supplements the testimony of Witness Pfeifenberger who is
24 responding directly to the conclusions presented by Aquila about the Aquila Study. As

1 noted earlier, the type of study performed by CRA for Aquila is a necessary but
2 insufficient analysis of the benefits of RTO participation. Accordingly, I will discuss the
3 broader value proposition that comes from full participation in the Midwest ISO. From
4 the outset, I recognize and submit that many of the benefits I will touch upon are easy to
5 describe but may be difficult to quantify with precision. This cannot and should not,
6 however, be a basis to leave an incomplete record regarding the value and benefits of
7 participation in the Midwest ISO under consideration by the Commission in the course of
8 this important review process.

9 **Q. CAN YOU DESCRIBE THE FULL RANGE OF BENEFITS THAT WOULD BE**
10 **AVAILABLE TO AQUILA AS A MEMBER OF THE MIDWEST ISO?**

11 **A.** Aquila would accrue significant direct and indirect benefits from participation as a
12 transmission-owning member of the Midwest ISO – benefits that cannot be fully captured
13 by production cost studies such as the Aquila Study. These benefits can be grouped
14 under the following three general categories: (1) improved reliability; (2) improved
15 efficiency; and (3) improved opportunities for development of generation and
16 transmission infrastructure. I am aware that some of the benefits under the second
17 category are or may be partially addressed by the CRA-Aquila production cost study, but
18 there are others that may not be fully covered that I will touch upon. Due to the
19 complexities inherent with the Aquila Study and the different, broader scope of the
20 Midwest ISO value proposition compilation that I am presenting in my testimony, a
21 direct comparison or analysis to determine overlap cannot and should not be made.
22 Instead, I submit this description in order to provide a full and complete picture of all the
23 relevant benefits of Midwest ISO membership and full participation. I therefore will
24 discuss each of the above general three categories, in turn.

1 **Q. CAN YOU QUANTIFY THE DISCRETE AND DIRECT BENEFITS FOR**
2 **AQUILA UNDER THESE THREE GENERAL CATEGORIES OF BENEFITS?**

3 **A.** While the Midwest ISO has not performed any specific studies attempting to quantify the
4 benefits that can be attributed just to Aquila should it join the Midwest ISO, the Midwest
5 ISO has evaluated the numerous benefits that accrue to all members and participants in its
6 markets. These same benefits would accrue to Aquila as a transmission-owning member
7 and full participant in the Midwest ISO. Aquila represents approximately 1.7%¹ of the
8 load and generation within the Midwest ISO footprint. It is reasonable to assume that
9 Aquila would realize benefits in a roughly proportionate share and I therefore utilize that
10 load ratio share to develop the ranges of numbers presented below as an approximation of
11 the magnitude of the potential benefits for Aquila's participation in the Midwest ISO. It
12 should be noted that this estimate is conservative in that the total benefits would increase
13 with the addition of Aquila as a full participating member of the Midwest ISO, thereby
14 increasing the benefits realized by Aquila.

15 **Q. WHAT IMPROVED RELIABILITY BENEFITS WOULD AQUILA RECEIVE**
16 **FROM JOINING THE MIDWEST ISO?**

17 **A.** The reliability benefits fall into three categories: (a) improved reliability as compared to
18 stand-alone operations; (b) enhanced seams management; and (c) regulatory compliance.
19 The first category, improved reliability relative to stand-alone operations, has been
20 quantified. Spanning 15 states and the Canadian province of Manitoba, the Midwest ISO
21 leverages its broad regional view to identify potential impacts of transmission or
22 generation issues on the entire Midwest ISO power system as well as on bordering

¹ This amount was calculated using Aquila's projected 2008 peak load of 1,942 MW (as presented in the CRA-Aquila Study) versus the 2008 Midwest ISO forecast peak load of 110,869 MW.

regions. This analysis looks at more than 7,500 “what if” scenarios every five minutes to identify the quickest, most effective way to manage potential issues, while also ensuring the continued operation of the wholesale bulk electric system. A quick response requires accurate information. The Midwest ISO processes system condition information every four seconds, resulting in appropriate signals being sent to generation owners in a timely manner. Using more than 240,000 points of information, the Midwest ISO examines the state of the system every 90 seconds, allowing for greater visibility into system conditions, increased ability to quickly identify the most effective response, and better coordination of needed system maintenance. The reliability benefits resulting from the above were quantified by evaluating the reduced size, duration, cost and probability of transmission outages under regional rather than stand-alone transmission systems operations. Those benefits were estimated to be between \$230 and \$340 million per year.

Midwest ISO Annual Benefit: Improved Reliability²

Market-wide Improved Reliability Benefit

\$230 to \$340 million

Aquila Potential

\$4.0 to \$5.9 million

Q. WHAT IMPROVED EFFICIENCY BENEFITS WOULD AQUILA REALIZE BY JOINING THE MIDWEST ISO?

A. These benefits can likewise be separated into categories reflecting a more efficient dispatch of energy as compared to stand-alone operations, reduction in the quantity of required contingency reserves and more efficient use of generation to provide operating

² Figures reflect annual benefits reflected in 2007 U.S. dollars, including both current and achieved benefits and projected future benefits.

reserves. As noted above, I recognize that there is overlap with the Aquila Study for these particular items, but I present this information as additional points of reference since these benefits would specifically relate to Aquila's full participation in the Midwest ISO. The concept of the benefits of coordinated market operations is simple; the more options available to meet a need, the more competitive the pricing and the more efficient delivery of the final product can become. The Midwest ISO broad regional competitive wholesale market allows the Midwest ISO to match the most cost effective and reliable source of generation with power needs over an extensive area, consequently reducing the amount of generation supply required to serve the region's needs. The annual benefits associated with all three of the categories of efficiency-related benefits identified above have been estimated at between \$450 and \$600 million for the Midwest ISO region as a whole. The individual components are shown in the table below.

Midwest ISO Annual Benefit: Improved Efficiencies³

<u>Market-wide Improved Efficiencies Benefit</u>	<u>Aquila Potential</u>
Dispatch of energy: \$200 to \$250 million	\$3.4 to \$4.3 million
Contingency reserves: \$135 to \$145 million	\$2.3 to \$2.5 million
Dispatch of reserves: \$115 to \$205 million	\$2.0 to \$3.5 million

**Q. WHAT IMPROVED LONG-TERM INVESTMENT PLANNING BENEFITS
WOULD AQUILA REALIZE BY JOINING THE MIDWEST ISO?**

³ Figures reflect annual benefits reflected in 2007 U.S. dollars, including both current and achieved benefits and projected future benefits.

1 A. One of the benefits of participation in a large regional system is more efficient use of the
2 existing infrastructure, both generation and transmission. Similar to the savings
3 associated with pooling of contingency reserves, pooling of planning reserves over a
4 larger region reduces the level necessary to assure reliable service in future periods. In
5 the Midwest ISO region, this is estimated to result in annual savings of \$135 to \$150
6 million.

7
8
9 **Midwest ISO Annual Benefit: Investment⁴**

10 **Market-wide Improved Efficiencies Benefit**

Aquila Potential

11 Planning reserves: \$135 to \$150 million

\$2.3 to \$2.6 million

12
13 Q. WHAT IS THE ACCUMULATED TOTAL FROM THE ABOVE GENERAL
14 CATEGORIES OF BENEFITS THAT YOU DESCRIBE?

15 A. The following shows the summed total of the value benefits described above:

16
17
18 **Midwest ISO Annual Benefit by Total Value Benefit⁵**

19 **Gross Annual Market-wide Benefit⁶**

Aquila Potential⁷

20 \$805 to \$1,100 million

\$13.9 to \$18.9 million

21
⁴ Figures reflect annual benefits reflected in 2007 U.S. dollars, including both current and achieved benefits and projected future benefits.

⁵ Figures reflect annual benefits reflected in 2007 U.S. dollars, including both current and achieved benefits and projected future benefits.

⁶ The Gross Benefits sum to slightly less than the individual components due to rounding and do not reflect the Midwest ISO operational and other cost components, which total approximately \$250 million.

⁷ The Aquila portion, if netted with its prorated portion of Midwest ISO operational costs (see Footnote 7), would be fixed at approximately \$4.3 million less regardless of where in this range it fell.

Q. IN YOUR OPINION, IS THE COMMISSION'S RECORD BASED SOLELY ON THE AQUILA STUDY COMPLETE IF IT DOES NOT INCLUDE ALL OF THESE BENEFITS?

A. No, in my view it is not. I recognize that the study presented by Aquila was not intended to address and quantify each of these benefits, but rather, as Witness Pfeifengerger notes and corrects, it was designed to capture only the production cost savings. My testimony is intended to highlight and raise for consideration the full range of benefits recognized within the industry of full participation in the Midwest ISO beyond the limited items noted in the Aquila Study and discussed by Witnesses Pfeifengerger and Aquila Witness Dennis Odell.

Q. ARE THERE ADDITIONAL QUALITATIVE BENEFITS THAT THE COMMISSION SHOULD ALSO CONSIDER IN ITS ANALYSIS FOR A COMPANY SUCH AS AQUILA JOINING THE MIDWEST ISO?

A. Yes. In addition to the benefits discussed above, there are also a significant number of more difficult to quantify benefits that participants, including Aquila, derive from the existence and operation of the Midwest ISO. Failure to include these benefits in an evaluation will therefore understate the total benefits of participation in the Midwest ISO. For example, price signals that are provided by the Midwest ISO's Day-Ahead and Real-Time Markets provide a level of transparency that simply was not available prior to its inception. This greater level of transparency:

- allows users or participants to efficiently respond to market conditions and adjust consumption levels,
- enables platforms for demand participation in the form of price-responsive demand response programs, and

- 1 • supports investment analysis for future generation and transmission
- 2 infrastructure development.

3 Another important but more difficult to quantify benefit is associated with coordinated
4 regional transmission planning. In an independent environment, the process of building a
5 new generator or expanding transmission can begin with the confidence that price signals
6 being provided are true indicators of where needs exist. This trust flows through the
7 planning process as an independent organization analyzes proposals and determines if the
8 recommendations are in the best interest of the region. The Midwest ISO's big picture
9 view and knowledge of the region affords the ability to more readily identify the
10 strengths of proposed enhancements to the high voltage transmission system. This view,
11 coupled with the Midwest ISO's independent nature, provides a level of confidence that
12 support for projects is done with an eye toward supporting reliability and a strong market.
13 On the reliability side, the Midwest ISO planning process strives to implement
14 enhancements in a manner that allows energy to flow through the system in an effective,
15 efficient, and reliable manner. On the business side, the planning process supports efforts
16 to access low cost supplies while also reducing congestion on the system, making it
17 easier to transfer energy between the buyer and seller. Since the Midwest ISO began
18 regional planning, nearly \$1 billion in improvement projects have been completed. These
19 improvements include more than 460 miles of new transmission lines and upgrading
20 almost 2,400 miles of transmission lines.

21 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

22 **A.** Yes, this concludes my testimony.