Exhibit No.
Issue: Cost – Benefit Analysis
Witness: Jonathan A. Lesser
Sponsoring Party: Dogwood Energy, LLC
Type of Exhibit: Surrebuttal Testimony
Case No.: EO-2008-0046

BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION

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

SURREBUTTAL TESTIMONY OF

JONATHAN A. LESSER, PH.D.

ON BEHALF OF

DOGWOOD ENERGY, LLC

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COUNTY OF BERNALILLO)

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AFFIDAVIT OF JONATHAN A. LESSER

COMES NOW Jonathan A. Lesser, of lawful age, sound of mind and being first duly sworn, deposes and states:

1. My name is Jonathan A. Lesser; I am a partner with Bates White, LLC.

2. Attached hereto and made a part hereof for all purposes is my Surrebuttal Testimony in the above-referenced case.

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

Jonathan A. Lesser

SUBSCRIBED AND SWORN to before me, a Notary Public, this 26th day of February, 2008

Notary Public

My Commission Expires: February 1, 2010
(SEAL)

OFFICIAL SEAL
KELLEY PRIESKORN
Notary Public
State of New Mexico
My Comm. Expires 2/1/10

TABLE OF CONTENTS

I. INTRODUCTION, QUALIFICATIONS, AND PURPOSE

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

A My name is Jonathan A. Lesser. I am a Partner with Bates White, LLC ("Bates White" or "the firm"). Bates White is a national consulting firm offering services in economics, finance, and business analytics to leading law firms, FORTUNE 500 companies, and government agencies. My business address is 1300 Eye Street N.W., Suite 600, Washington, DC 20005.

Q PLEASE DESCRIBE YOUR PROFESSIONAL QUALIFICATIONS, EMPLOYMENT EXPERIENCE, AND EDUCATIONAL BACKGROUND.

A I am an economist and member of the firm's Energy Practice, where I specialize in litigation and market analysis. I have twenty-five years' experience in the energy industry, and have focused on electric industry restructuring and deregulation, investment strategy, asset valuation, risk management, and financial risk and the cost of capital. I have testified on numerous issues affecting the design and operation of regional transmission organizations ("RTOs"), including installed capacity market

design, market power mitigation, and "opportunity cost pricing" in ancillary services markets.

I have provided expert testimony before the Federal Energy Regulatory Commission (FERC), and regulatory agencies in Alaska, Arkansas, Connecticut, Illinois, Maryland, New Jersey, Oklahoma, Rhode Island, Vermont, Guatemala, Mexico and Puerto Rico; in commercial litigation cases in Arizona, Vermont, and Washington; and before legislative committees in Connecticut, Maryland, Texas, Vermont, and Washington State.

Before joining Bates White, I served as Director of Regulated Planning for the Vermont Department of Public Service. Previously, I was employed as a Senior Managing Economist at Navigant Consulting. Prior to that, I was the Manager, Economic Analysis, for Green Mountain Power Corporation. I also spent seven years as an Energy Policy Specialist with the Washington State Energy Office and also worked for Idaho Power Corporation and the Pacific Northwest Utilities Conference Committee, an electric industry trade group, where I specialized in electric load and price forecasting.

I hold an M.A. and Ph.D. in Economics from the University of Washington, and a B.S., *with honors*, in Mathematics and Economics from the University of New Mexico. I have written numerous articles for academic and trade journals, and am the co-author of *Fundamentals of Energy Regulation*, which was published in 2007 by Public Utilities Reports, Inc. I have attached a copy of my curriculum vita as Schedule JAL-1.

Q DO YOU CONSIDER YOURSELF AN EXPERT IN COST-BENEFIT ANALYSIS?

A Yes. I have specific expertise on applied cost-benefit analysis ("CBA" or "C/B analysis"). First, I studied the theory and application of cost-benefit analysis as part of my doctoral program in Economics at the University of Washington. Second, I have published scholarly articles on aspects of cost-benefit analysis. Third, I have previously provided expert testimony on CBA studies I have performed. For example, on behalf of the New Jersey Board of Public Utilities, I testified on the costs and benefits of a proposed (and subsequently withdrawn) merger between Exelon Corporation and Public Service Enterprise Group. I also testified

on behalf of the Electric Power Supply Association (EPSA) regarding a cost-benefit analysis prepared by the MISO Independent Market Monitor with respect to implementing wholesale energy price mitigation measures in what are called Broad Constrained Areas.

Q DO YOU HOLD THE OPINIONS YOU EXPRESS IN THIS TESTIMONY TO A REASONABLE DEGREE OF CERTAINTY AS AN EXPERT REGARDING COST-BENEFIT ANALYSIS?

A Yes.

Q HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION?

A No, I have not.

Q WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A The purpose of my testimony is to rebut many of the statements and conclusions made by MISO witnesses Messrs. Pfeifenberger and Doying, and City of Independence, Missouri, witness Volpe, with respect to the C/B Analysis prepared by CRA International ("CRA Study") and its implications for whether Aquila ("the Company") should formally join SPP or MISO, or remain in its current status with SPP.

Q HOW IS YOUR TESTIMONY ORGANIZED?

A In the next section, I provide a brief summary of my findings and conclusions. Then, in Section III, because much of this case appears to revolve around the CRA Study, I provide a brief introduction to the principles and practicalities of applied cost-benefit analysis. This introduction will also, I hope, provide the Commission with useful background with which to better understand my criticisms of the conclusions reached by Messrs. Pfeifenberger, Doying, and Volpe.

In Section IV, I address Mr. Pfeifenberger's rebuttal and supplemental rebuttal testimony, with respect to the relative costs and benefits associated with Aquila joining MISO or SPP. I show that, whereas Mr. Pfeifenberger's rebuttal testimony faults the studies prepared by CRA on behalf of Aquila, his supplemental rebuttal testimony effectively contradicts his own findings in his rebuttal testimony.

In Section V, I rebut the conclusions reached by MISO witness Mr. Doying, who discusses at great length the generic benefits provided by full membership in an RTO like MISO or SPP. In Section VI, I rebut the findings and conclusions of Mr. Volpe, whose testimony discusses the

costs of SPP's current market components as compared to MISO and its smaller size relative to MISO. Mr. Volpe's criticisms of the results of the CRA Study are misleading, erroneous, and unsupported by any facts. Moreover, his ultimate conclusion regarding the "probabilistic certainty" of the CRA Study results are contradicted by MISO witness Pfeifenberger. In Section VII, I provide my conclusions and recommendations as to how the Commission can best determine which of the alternatives is likely to provide the greatest net benefits for Aquila and its ratepayers.

II. SUMMARY OF FINDINGS

Q PLEASE SUMMARIZE YOUR REBUTTAL OF MR. PFEIFENBERGER.

A Mr. Pfeifenberger's rebuttal and supplemental rebuttal testimony addressed the results of the CRA Study using a production-simulation model called GE-MAPS. In his rebuttal testimony filed on November 30, 2007, Mr. Pfeifenberger emphasized what he characterized as unrealistic results of the simulation studies performed by CRA with respect to the

Dogwood Generating Facility ("Dogwood").[1] Specifically, Mr. Pfeifenberger concluded that the benefits of Aquila's joining MISO were underestimated because of significant amounts of "uplift" costs assigned to Aquila by the analysis, stemming from "uneconomic dispatch" of the Dogwood plant.[2] Mr. Pfeifenberger noted that uplift costs are distributed among all MISO participants, rather than any individual utility. He concluded that, since Aquila ratepayers would not bear all of the estimated uplift costs, including those uplift costs in the cost-benefit analysis was inappropriate, and thus biased the CRA Study. Mr. Pfeifenberger's conclusion is wrong and inconsistent with the principles that guide cost-benefit analysis. In fact, the structure of the CRA Study requires uplift costs to be included, regardless of how those costs are allocated among MISO participants. Additionally, Mr. Pfeifenberger fails to address the possibility that, if Aquila joins MISO, it will bear a portion

[1] In his testimony, Mr. Pfeifenberger refers to this facility as the "Aries" plant, which was the name of the plant before being sold to Dogwood Energy, LLC, by Calpine. Mr. Janssen's testimony provides additional discussion of the history of the Dogwood plant.

[2] Uneconomic dispatch arises because of transmission constraints. A generating unit may be located in an area into which transmission capacity is constrained, thus requiring additional output from that unit, even though, in the absence of transmission constraints, loads could otherwise be served by lower cost generating units elsewhere.

of the uplift costs paid to other MISO generators so as to provide those generators with what is termed a "revenue sufficiency guarantee" ("RSG").[3]

Q PLEASE CONTINUE.

A On December 28, 2007, Mr. Pfeifenberger filed supplemental rebuttal testimony that corrected several errors in his November 30, 2007 testimony and discussed the results of additional simulation runs that had been performed by CRA. The conclusions Mr. Pfeifenberger reached in his supplemental rebuttal testimony ultimately vacate the conclusions he reached in his originally filed rebuttal testimony. Specifically, in his supplemental rebuttal, Mr. Pfeifenberger states:

> The market modeling efforts undertaken simply are not sufficiently precise to conclude that joining either the Midwest ISO or SPP would offer significantly larger production cost savings. Under some modeling assumptions these savings are slightly larger in SPP, while under alternative assumptions the savings may be slightly larger in the Midwest ISO. Accordingly, it is important to recognize

[3] RSG is a mechanism that ensures generating resources committed by MISO for reliability purposes are guaranteed cost recovery for their start-up costs, no load costs, and incremental energy offers. Unlike MISO, SPP does not provide generators with a "revenue sufficiency" guarantee to determine "uplift" costs. Instead, SPP provides "revenue neutrality" to generators, based on differences between predicted and actual dispatch. A detailed presentation on SPP's "Revenue Neutrality Uplift" can be found at: http://www.spp.org/publications/SPP_RNU_EXPLANATION_Sept_master.ppt

> that, in addition to these production cost studies, it is equally important and essential that the broader RTO as [sic] benefits discussed in Mr. Richard Doying's rebuttal testimony be examined and considered when assessing overall RTO benefits.

[Pfeifenberger, Supplemental Rebuttal, at 14: 3–8]. In other words, Mr. Pfeifenberger concludes that there are too many uncertainties to effectively differentiate between the overall costs and benefits of joining MISO versus joining SPP, and instead points to the benefits of MISO membership that are discussed by Mr. Doying. However, as I discuss below, Mr. Doying's testimony is completely irrelevant from a C/B analysis standpoint.

Mr. Pfeifenberger's observation regarding the uncertainties surrounding the cost and benefit estimates ascribed to either MISO or SPP membership is correct. There are numerous uncertainties that can affect the projected costs and benefits, such as future market prices, the specific structure of ancillary services markets in the respective RTOs, how forced outages are modeled, and so forth. More importantly, however, Mr. Pfeifenberger's argument undercuts the very conclusions he reached previously in his rebuttal testimony. Specifically, having concluded the

variability of costs and benefits is too great to rely on the results of the GE-MAPS modeling runs performed by CRA to determine whether Aquila would be better off joining either MISO or SPP, Mr. Pfeifenberger's assertion that Aquila will realize greater benefits by joining MISO rather than SPP is simply based on Mr. Doying's unsubstantiated exposition of the qualitative benefits provided by MISO. Moreover, while discussing uncertainties that can affect the GE-MAPS model results, Mr. Pfeifenberger ignores numerous uncertainties that could reduce the overall benefits to Aquila from joining MISO. Ultimately, therefore, Mr. Pfeifenberger has provided no quantitative evidence to bolster his conclusion that Aquila should be required to join MISO.

Q PLEASE SUMMARIZE YOUR REBUTTAL OF MR. DOYING.

A Mr. Doying's testimony provides a qualitative assessment of the benefits provided by MISO, focusing on what he terms the MISO "value proposition." Mr. Doying states that this value proposition "cannot be fully captured by production cost studies" [Doying Rebuttal, at 8:12–13]. He also states that MISO's benefits fall into three categories: "(1) improved reliability; (2) improved efficiency; and (3) improved opportunities for

development of generation and transmission infrastructure" [Doying Rebuttal, at 8:14-16]. Of course, this is true of any well-run regional transmission organization.

Mr. Doying fails to provide any rigorous empirical estimate of the benefits that would accrue to Aquila from joining MISO. Instead, he develops estimates for each of the three categories of benefits he identifies based on Aquila's estimated load share if it joined MISO. Moreover, like Mr. Pfeifenberger, Mr. Doying fails to consider key uncertainties that could reduce the benefits that Aquila's ratepayers would realize from MISO membership, such as the possibility that the Company could find itself "islanded" within MISO if Ameren decides to withdraw from MISO and join SPP.

Most crucially, Mr. Doying fails to provide any comparative estimates of the benefits that would accrue to Aquila by joining SPP. In other words, Mr. Doying's testimony fails to provide the most basic component of any cost-benefit analysis: comparisons between different alternatives. This fact alone renders Mr. Doying's testimony useless for the purpose of comparing the estimated benefits accruing to Aquila

ratepayers from joining MISO and those benefits accruing from joining SPP.

Q PLEASE SUMMARIZE YOUR REBUTTAL OF MR. VOLPE.

A Mr. Volpe's criticisms of the results of the CRA cost-benefit analysis are misleading, erroneous, and unsupported by facts. Mr. Volpe asserts that the GE-MAPS model results are invalid because SPP currently lacks a day-ahead market [Volpe Rebuttal, at 6:15 – 7:4]. However, the GE-MAPS model used by CRA is a production-cost model that is designed to identify the costs associated with least-cost dispatch of generating resources, subject to existing transmission constraints. In other words, GE-MAPS model results are not determined by regulatory or market structure (such as a day-ahead market), per se, but rather by the physical characteristics of the relevant generating units and high voltage transmission system. Mr. Volpe wishes to eliminate the first three years' of net trade benefits from the Aquila in SPP case [Volpe Direct, at 8:18-21]. This is clearly wrong. Not only does Mr. Volpe apparently not understand that the SPP "imbalance" market is actually a fully-functioning real-time energy market, he implies that, but for a day-ahead

market and a system of financial transmission rights, there are no trade benefits associated with RTO membership. This conclusion strains credulity, since SPP members obviously participate in that real-time market today. Compounding his error, Mr. Volpe then fails to account for the present value of the net benefits he subtracts. To use his own analogy, he subtracts "apple" dollars from an "oranges" net present value estimate (NPV). Moreover, as Staff witness Mr. Proctor correctly states, the short-term absence of a day-ahead market in SPP should not be a defining consideration in determining which RTO Aquila should join [Proctor, Rebuttal at 26:15-17].

Mr. Volpe also asserts, with no support, that the total administrative costs associated with SPP's developing a day-ahead energy market will be the same as those for MISO and, as a result of SPP's smaller size, the administrative costs per MWh for Aquila will be much higher [Volpe Direct at 10:3-17]. Not only does Mr. Volpe not provide any factual basis for this assertion, he is contradicted by data provided by SPP in its response to Dogwood-SPP-1 (attached as Schedule JAL-2). Mr. Volpe also objects to the CRA Study having included MISO's costs for

development of an ancillary services market, when SPP does not have one. This objection is also contrary to basic tenets of cost-benefit analysis. Since MISO does, in fact, have such a market, it is a legitimate cost to consider. Finally, Mr. Volpe asserts, without any factual basis, and in direct contradiction to MISO witness Pfeifenberger, that Aquila would realize benefits with greater certainty by joining MISO than by joining SPP [Volpe, Direct at 12:11-13].

Q GIVEN THE UNCERTAINTIES SURROUNDING THE CRA STUDY RESULTS, HOW CAN THE COMMISSION DETERMINE WHETHER AQUILA SHOULD JOIN MISO OR JOIN SPP?

A Mr. Pfeifenberger is correct that the uncertainties inherent in the GE-MAPS modeling performed by CRA preclude making a definitive decision about Aquila based solely on the results of the analysis. However there are several factors that the Commission should consider in making its determination. First, if the proposed merger between KCPL's parent corporation, Great Plains Energy ("GPE"), and Aquila takes place, then since KCPL is already a member of SPP, so should be Aquila. From an economic and planning standpoint, it would make no sense for Aquila to be a member of MISO, while KCPL is a member of SPP. The testimony

by KCPL witness Richard Spring in Docket No. EM-2007-0374 indicates that the merged entity will realize cost savings if both belong to the same RTO. Similarly, the rebuttal testimony of Staff witness Mr. Proctor states that there is a potential conflict if the merged entity wishes to operate the individual companies' generating units jointly [Proctor, Rebuttal at 44:14-20]. Thus, requiring the merged company to belong to both RTOs will needlessly – and I would argue, imprudently – force Aquila's ratepayers to pay higher rates than necessary.

Second, it is my understanding that Ameren is considering leaving MISO and joining SPP, based on the Federal Energy Regulatory Commission's (FERC) conditional Order dated February 1, 2008. That Order eliminates an annual $60 million payment to Ameren from MISO.[4] Should Ameren withdraw from MISO, and if Aquila is a MISO member, the Company would be "islanded" within MISO, that is, it would be completely surrounded by SPP members. As Mr. Janssen's surrebuttal testimony discusses, such islanding is likely to limit Aquila's access to

[4] See, *Midwest Independent System Operator, Inc. and the Transmission Owners of the Midwest Independent Transmission System Operator, Inc.*, Docket No. ER08-296-000, 122 FERC ¶ 61,090, February 1, 2008.

MISO energy markets, preventing the Company and its ratepayers from reaping the benefits of MISO membership.

Third, and again as Mr. Janssen's testimony discusses, Aquila currently has greater physical connectivity to SPP than to MISO. If Aquila joins MISO, there is the potential for more transmission congestion between MISO and Aquila, again which would reduce the benefits of MISO membership to Aquila's ratepayers. Additionally, as indicated in its response to Dogwood 2-43 (attached as Schedule JAL-3), MISO states that it has not undertaken any deliverability studies of Aquila's generating resources. As a result, there is uncertainty, even if Ameren does not leave MISO, whether Aquila would realize the full benefits of participating in the MISO energy market.

Fourth, as Aquila's witnesses have stated, the Company currently relies on numerous transmission services provided by SPP, plus security coordination from MISO. As a result, the CRA Study may underestimate the benefits of both the SPP and MISO membership alternatives compared with the Stand-alone case. Since Aquila already purchases some services

from both RTOs, the Company will not need to "pay extra" for those services, as implicitly assumed in the CRA Study.

Fifth, the CRA study included the administrative costs of developing a day-ahead market in SPP. Since such a market will be implemented only if the expected benefits exceed those costs, and since it is important to consider the long-term benefits and costs to Aquila of RTO membership, the Commission should not view the lack of a day-ahead market in SPP for the next two or so years as a defining consideration in their decision.

While Messrs. Pfeifenberger, Doying, and Volpe make much of the uncertainties associated with Aquila's joining SPP, they are oddly silent with respect to these other uncertainties, all of which would reduce the potential economic benefits and costs of joining MISO. Given those uncertainties, the fact that Aquila already relies on SPP to provide numerous transmission services, and the impending combination with Great Plains Energy, I believe it is reasonable and prudent for the Commission to require Aquila to join SPP.

III. PRINCIPLES OF COST-BENEFIT ANALYSIS

Q WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A The instant proceeding hinges on the costs and benefits of Aquila's joining either MISO or SPP, as compared to today's "status quo."[5] Since my rebuttal testimony criticizes the conclusions reached by Messrs. Pfeifenberger, Doying, and Volpe with respect to the CRA Study, I believe it is important to discuss some of the principles that underlie applied cost-benefit analysis generally. Within the context of how such analyses should be performed, I hope that my criticisms of the conclusions reached by Messrs. Pfeifenberger, Doying, and Volpe will be better understood by the Commission. Thus, in this section, I provide a brief introduction to cost-benefit analysis and how it works, including the conceptual steps involved in performing a cost-benefit analysis.

Q WHAT IS COST-BENEFIT ANALYSIS?

[5] The "status quo" is defined in the CRA Study as Aquila operating as a stand-alone entity. However, that is not the case, since Aquila currently takes numerous services from SPP as well as some from MISO.

A Cost-benefit analysis is an analytical tool that is designed to assist decision makers with making complex decisions. It is not a substitute for decision makers. From the perspective of an economist like myself, CBA can be used to improve the allocation of society's scarce resources and thus improve overall economic efficiency. In the instant proceeding, the purpose of the cost-benefit study performed by CRA, as well as the various testimonies of the parties involved, is to assist the Commission in determining whether the benefits to Aquila, and thus its ratepayers, will be maximized by the company's joining SPP or MISO.

Q HOW IS A COST-BENEFIT ANALYSIS PERFORMED?

Conceptually, performing a CBA is straightforward. Typically, there are nine different steps associated with performing a CBA, as shown in Table 1.

Table 1: Steps Necessary to Perform CBA

1. Determine whose benefits and costs count (standing)
2. Select the portfolio of alternatives
3. Identify the potential costs and benefits
4. Forecast the costs and benefits over the lifetime of the alternatives
5. Attach dollar values to the costs and benefits
6. Discount the dollar costs and benefits to determine present values
7. Add up all of the costs and benefits of each alternative
8. Perform sensitivity studies to determine uncertainties that can change the outcome, if any.
9. Recommend the alternative having the largest net benefit.

Source: adapted from A. Boardman, et al. *Cost-Benefit Analysis: Concepts and Practice*. (New York: Prentice-Hall, 1996), Table 1.2.

In practice, completing all of the nine steps shown in Table 1 can be a daunting and controversial task. There can be, and often are, disagreements over who has "standing," what are the actual alternatives, what is the appropriate discount rate to use for determining a present value, how does one trade off expected net benefits versus the uncertainty surrounding those net benefits, and so forth.

Q PLEASE EXPLAIN THE TERM "STANDING" IN THE CONTEXT OF COST-BENEFIT ANALYSIS.

A Standing determines whose benefits and costs "count."[6] For the purposes of my analysis in this case, standing is limited to members of SPP, MISO, and Aquila. For example, if Aquila joined MISO, it is theoretically possible that the security constrained dispatch of all MISO generating resources, including Aquila's, could lead to additional exports from MISO to PJM, a regional transmission organization (RTO) that encompasses mid-Atlantic states and Midwestern states, lowering average market prices there. However, for the purposes of the CRA Study, PJM members and ratepayers within PJM do not have standing.

In determining standing in applied C/B analysis, there are a few general principles that typically apply. First, benefits gained from illegal acts don't count. If a thief steals your lunch, a C/B analysis will not determine that the benefits to the thief outweigh the costs to you because the thief is hungrier than you are. The thief has no standing. Second, standing is typically limited to direct and measurable costs and benefits in applied C/B analysis. The reason for this is that, ultimately, any action can indirectly affect everything else. (This is what economists mean by

[6] I am not applying the concept of "standing" in a legal context.

"general equilibrium.") For example, if the Missouri PSC ordered Aquila to provide electricity for free, one could argue that doing so would affect the electricity market in China, by tracing all of the inter-related market impacts. Clearly, doing so would be time consuming and highly speculative, especially when compared with the direct impacts on Aquila's ratepayers and investors. In the same way, for the purposes of CRA's C/B analysis, it makes sense to examine the costs and benefits to Aquila's ratepayers, and to other SPP and MISO members who will be directly affected by Aquila's membership. For example, in his rebuttal testimony, Mr. Pfeifenberger correctly points out that all MISO members would pay uplift costs associated with out-of-merit dispatch of resources, not just Aquila ratepayers.[7] The costs directly imposed on those MISO members as a result should be included in a C/B analysis.

Q HOW ARE ALTERNATIVES IDENTIFIED?

A Selecting the alternatives to evaluate can be daunting and controversial in some CBA analyses. Because of the myriad of potential

[7] This is similar to the issue of "external" costs, which C/B analysis should attempt to account for. Using a C/B analysis to justify "beggar thy neighbor" policies, by excluding the costs imposed on them, will not lead to economically efficient outcomes.

alternatives, it is critical in CBA to define a "status quo" or "do-nothing" alternative carefully so that there is an appropriate and uniform basis with which to compare costs and benefits of the alternatives under consideration. In the case of the CRA Study, the "status quo" is somewhat problematic, because it is defined as Aquila operating as a stand-alone entity. In other words, the CRA Study assumes that Aquila does not purchase any transmission-related services from either MISO or SPP. In reality, however, Aquila currently purchases a number of services from SPP and some from MISO as well. As I discuss in Section IV, infra, the result is that the CRA Study erroneously double-counts the costs of those services under the "Aquila in SPP" alternative, and accordingly underestimates the net benefit of Aquila formally joining SPP.

Q HOW ARE THE DIFFERENT CATEGORIES OF BENEFITS AND COSTS IDENTIFIED?

A Identifying the different categories of costs and benefits to be included in the analysis proceeds in the context of standing. That is, knowing whose benefits and costs count is a prerequisite to identifying the different categories of costs and benefits. Once standing is

determined, the different categories of costs and benefits can be identified in different ways.

In some cases, the impacts of a proposed action may be straightforward. For example, a proposed increase in gasoline taxes will raise the price of gasoline, reduce gasoline consumption by some amount (depending on what economists call "elasticity of demand"), and reduce economic efficiency relative to a tax-free market. Higher gasoline taxes may also lead to decreased demand for automobiles and result in layoffs of autoworkers, increasing unemployment insurance payments. However, reduced gasoline consumption will also reduce greenhouse gas (carbon) emissions, which will confer benefits in the form of improved health and wellbeing. Higher gasoline taxes may also reduce traffic congestion and therefore improve drivers' quality of life. It may also lead to greater "energy independence." Unfortunately, while it is straightforward to identify these benefits, accurately quantifying them may be difficult or impossible.

Q HOW ARE COSTS AND BENEFITS CLASSIFIED?

A Typically, costs and benefits are divided into two general categories: direct and indirect. Within those two categories, there are market and non-market costs and benefits. Direct benefits and costs are those that are an immediate consequence of a proposed alternative. Thus, in the example of a higher gasoline tax, the reduction in economic efficiency from the market-distorting impacts of a tax are a direct, market cost, whereas the reduction in pollution levels and improvement in health would be a direct, non-market benefit.

Indirect benefits and costs are those that result from the direct impacts. A reduction in automobile manufacturing employment, for example, would not be a direct impact of higher gas taxes. Instead, higher gas taxes, by raising the cost of driving, can reduce the demand for cars, which can be thought of as an "input" to car manufacturing.

Non-market costs and benefits are those that are not exchanged (bought and sold) in the marketplace. For example, the economic value of reduced greenhouse gas emissions stemming from a higher gas tax cannot be valued directly, as we cannot (as yet) go the local store and price carbon dioxide emissions.

Finally, there are classes of impacts that are neither costs nor benefits, but which simply transfer dollars between different groups. In any CBA, it is crucial to distinguish transfer payments from costs and benefits. Otherwise, the CBA is likely to be biased.

Q HOW ARE BENEFITS AND COSTS ESTIMATED?

A Accurately estimating benefits and costs is obviously critical if the results of a CBA are to be useful. In some cases, measuring costs and benefits will be straightforward. This is especially true for costs that are incurred in the present. For example, the cost to build a new 200-megawatt ("MW") combined-cycle generating plant at an existing site can be estimated reasonably accurately. On the other hand, the benefits of the additional generation supplied by that combined-cycle plant will depend on the overall shape of the supply and demand curves. While estimating the supply curve is straightforward – it will be based on the variable marginal costs of all generating plants in the relevant market – estimating the demand curve requires, at the least, a forecast of future electric prices, which in turn will depend on fossil fuel prices, environmental regulations, and so forth. Non-market costs and benefits, such as changes in system

reliability are more difficult to estimate, as "prices" for these goods and services cannot be directly observed. Fortunately, there are several techniques to estimate the value of non-market goods and services have been developed.[8]

Q WHAT IS AN APPROPRIATE TIME FRAME FOR A CBA?

A In theory, benefits and costs should be estimated even when they extend indefinitely into the future. Of course, that raises numerous practical problems, since projects can provide benefits or result in costs far after the end of their "normal" lives. The usual approach, therefore, is to estimate benefits and costs for a set period of time and then add a "terminal value," which, ideally, reflects all future costs and benefits. For example, it is common to estimate terminal values based on the depreciated value of an asset after a specific number of years or an estimate of an asset's salvage value. In the instant proceeding, the CRA Study failed to include a terminal value estimate. Instead, the CRA Study was limited to a ten-year period. That matters, especially in light of Mr.

[8] See, *e.g.*, Boardman, et al., *op. cit.*, Chapters 10 and 11.

Volpe's assertion that the first three years of net benefits under the "Aquila in SPP" alternative should be eliminated.

As a rule of thumb, a CBA should extend far enough into the future so that assumptions about terminal values are not the primary factor determining the preferred choice of alternatives. Moreover, terminal value assumptions must be based on realistic assumptions. For example, assumptions that high short-term growth rates in a stock's earnings or merger savings will continue indefinitely can lead to absurd results, such as the value of a stock exceeding the entire U.S. Gross Domestic Product. Clearly, in cases such as this, terminal value calculations must be revised to comport to reality.

Q. HOW SHOULD FUTURE COSTS AND BENEFITS BE DISCOUNTED TO THE PRESENT?

A Discounting future benefits and costs is another potential source of controversy in CBA, especially when dealing with a CBA that affects non-market costs and benefits, such as pollution levels. For a CBA undertaken by a private firm addressing investment alternatives, the appropriate discount rate is the firm's weighted average cost of capital ("WACC").

When addressing non-market and social impacts, or performing studies from the perspective of the public at large, some economists, myself included, recommend using what is called the "social rate of time preference" ("SRTP"), which can be considered as society's opportunity cost.[9]

Q WHY ARE SENSITIVITY STUDIES IMPORTANT?

A Sensitivity studies, or more complex evaluations of future uncertainties, such as monte-carlo studies, are important in order to address the inherent uncertainties associated with forecasting the future. Before choosing the alternative with the highest net benefits, it is important to determine the "robustness" of that choice. In other words, policy makers will want to determine whether the preferred alternative remains so, even if underlying assumptions are changed. For example, a wholesale generator wanting to build new generation capacity may be considering several different types of generation technologies. The choice of technology will depend on the various alternatives' projected construction cost, operating costs, and reliability. The choice may also

[9] For a discussion, see J. Lesser and R. Zerbe, "The Discount Rate for Environmental Projects," *Journal of Policy Analysis and Management*, *13* (Winter 1994): p. 140–156.

depend on the future price of fossil fuels, the market price of electricity, and the type and stringency of future environmental regulations.

Ideally, a sensitivity study will reveal whether the preferred generating technology under a set of "Base Case" assumptions changes if one or more of those assumptions change. For example, if even a small change in forecast fuel prices changes the preferred alternative, then the developer may want to investigate strategies for reducing future uncertainty, such as purchasing hedging contracts to fix the future price of fossil fuel. Moreover, in cases where sensitivity studies reveal significant variation in the preferred alternative, it may be appropriate to use more sophisticated modeling techniques that can determine entire probability distributions of net benefits, and then compare the probability distributions themselves.[10]

In the case of the CRA Study, uncertainty with respect to the estimated future costs and benefits is a critical issue in this case. Mr. Pfeifenberger concludes that there is too much uncertainty surrounding the CRA Study results to determine whether the benefits to Aquila are

[10] For an example, see J. Lesser "Application of Stochastic Dominance Tests to Utility Resource Planning Under Uncertainty," *Energy*, 14 (December 1990): pp. 949–961.

greater under the "Aquila in SPP" or "Aquila in MISO" alternatives. Mr. Volpe, on the other hand, asserts (wrongly) that there is greater certainty of the net benefits associated with the "Aquila in MISO" alternative than with the "Aquila in SPP" alternative.

IV. REBUTTAL OF PFEIFENBERGER TESTIMONIES

A. Pfeifenberger Rebuttal

Q DID MR. PFEIFENBERGER PERFORM AN INDEPENDENT COST-BENEFIT ANALYSIS OF AQUILA'S JOINING EITHER MISO OR SPP?

A No he did not. Mr. Pfeifenberger's rebuttal testimony criticizes the C/B analysis performed for Aquila by CRA, but does not present any independent C/B analysis.

Q WHAT WERE MR. PFEIFENBERGER'S MAIN CRITICISMS OF THE CRA STUDY?

A Mr. Pfeifenberger has two primary criticisms of the CRA Study results. First, he states that the production cost savings were driven by "entirely unrealistic" unit commitment of the Dogwood (Aries) plant in the "Aquila in MISO" case, which resulted in excessive uplift costs.

Second, he states there was erroneous treatment of Dogwood-related uplift costs [Pfeifenberger, Rebuttal at 6:15-18; 21:12-23:2].

Q ARE THESE CRITICISMS VALID?

A No. Mr. Janssen's testimony will address Mr. Pfeifenberger's first criticism with respect to unit commitment of the Dogwood plant. As Mr. Janssen notes, Mr. Pfeifenberger attempted to show that actual dispatch of the Dogwood plant differs from that predicted by the GE-MAPS model, but failed to take into account that the Dogwood plant was, in fact, shut down for an extended period.

Mr. Pfeifenberger's second criticism, regarding the treatment of uplift costs, indicates a misunderstanding of "standing" in cost-benefit analysis. As I discussed in the previous section, whether the estimated uplift costs are paid solely by Aquila ratepayers or by all MISO participants, in either case, the uplift costs should be included in the C/B analysis.[11]

Q PLEASE DEFINE UPLIFT COSTS AS CALCULATED BY MISO.

[11] Mr. Pfeifenberger also questions the amount of the estimated uplift costs themselves, but that is immaterial to the question of whether to include the costs in the analysis.

A As I mentioned previously, in MISO, uplift costs take the form of a revenue sufficiency guarantee ("RSG"). RSG is a mechanism ensuring that generating resources committed by MISO for reliability purposes are guaranteed cost recovery for their start-up costs, no load costs, and incremental energy offers.

Q PLEASE EXPLAIN WHY UPLIFT COSTS, EVEN IF NOT PAID ENTIRELY BY AQUILA RATEPAYERS, SHOULD BE INCLUDED IN THE C/B ANALYSIS CALCULATIONS.

A Mr. Pfeifenberger faults the CRA Study for assuming that only Aquila ratepayers would pay the uplift costs, rather than uplift costs being spread to all MISO participants [Pfeifenberger, Rebuttal at 6, fn. 4; 21:19-22]. Thus, for C/B analysis purposes, Mr. Pfeifenberger assumes that any costs incurred as a result of Aquila's joining MISO by other MISO participants do not "count" (i.e., do not have standing).

For C/B analysis purposes, it makes sense to limit standing to existing MISO participants, but it does not make sense to exclude all other MISO participants besides Aquila. The reason is that those other MISO participants will directly incur costs as a result of Aquila's joining MISO. Thus, whether or not Aquila ratepayers pay all of the uplift costs, all of the

uplift costs should be incorporated into the C/B analysis. Mr. Pfeifenberger, however, simply assumes away all of the uplift costs, drawing an artificial boundary between Aquila and all other MISO participants.

Q BUT IF COSTS ACCRUING TO OTHER MISO PARTICIPANTS FROM AQUILA'S JOINING MISO ARE INCLUDED IN THE C/B ANALYSIS, THEN WHY STOP WITH MISO? WHY DON'T OTHER POWER POOL PARTICIPANTS (E.G. PJM, WECC, ETC.) HAVE STANDING?

A The reason is that that, while Aquila's joining MISO would have direct impacts on other MISO members, it would only have indirect impacts on others. Again, in a typical C/B analysis, only direct costs and benefits are included.

Q MR. PFEIFENBERGER ALSO DISCUSSED THE RESULTS OF THE "NO ARIES" GE-MAPS MODEL RUNS. WHAT DID THOSE MODEL RUNS SHOW?

A Mr. Pfeifenberger provides a summary table of the different GE-MAPS model runs without the Dogwood (Aries) plant [Pfeifenberger, Rebuttal at 19, Table 2]. These estimates show that the "Aquila in SPP" case still provides larger net benefits, by $0.31 million.

Q DOES MR. PFEIFENBERGER'S REBUTTAL TESTIMONY DEMONSTRATE EMPIRICALLY THAT THE BENEFITS TO AQUILA JOINING MISO ARE GREATER THAN THE BENEFITS OF JOINING SPP?

A No. The conclusions Mr. Pfeifenberger reached in his rebuttal testimony, some of which he later corrected in his supplemental rebuttal testimony, indicate that, compared to the "Aquila Stand-alone" case, the estimated benefits of Aquila's joining MISO or SPP are roughly equivalent, as discussed previously.

Q BASED ON THOSE RESULTS, DID MR. PFEIFENBERGER CONCLUDE THAT IT WAS BENEFICIAL FOR AQUILA TO JOIN SPP?

A No. Mr. Pfeifenberger stated that, because SPP currently lacks a day-ahead ("Day 2") market, Aquila would not realize all of the cost savings estimated in the GE-MAPS runs [Pfeifenberger, Rebuttal at 24:20-22]. He states that SPP "operates less efficiently than is assumed in the market simulations of the Aquila Study" [Pfeifenberger, Rebuttal at 24:17-18], although Mr. Pfeifenberger never quantifies the "cost" of that

purported operating inefficiency.[12] Moreover, as Mr. Janssen's surrebuttal testimony discusses, Mr. Pfeifenberger appears not to realize that the "imbalance" market currently operated by SPP is, in fact, a real-time energy market. Mr. Pfeifenberger also relies on other purported benefits of joining MISO that are not incorporated in the CRA Study, and that are discussed in the rebuttal testimony of Mr. Doying [Pfeifenberger, Rebuttal at 25:1-4]. (I rebut Mr. Doying's testimony in Section V infra.)

Q THE GE-MAPS STUDIES COMPARE THE COSTS AND BENEFITS OF AQUILA'S MEMBERSHIP IN EITHER MISO OR SPP WITH A "STAND-ALONE" CASE. WHAT DOES "STAND-ALONE" MEAN?

A As stated in the CRA Study, the "Stand-alone" case is defined as "Aquila Missouri does not join an RTO, and performs (or procures) its transmission- and reliability-related functions on its own" [CRA Study, at 7].

Q DOES THE "STAND-ALONE" CASE ACCURATELY PORTRAY THE "STATUS QUO," AS REQUIRED FOR A COST-BENEFIT ANALYSIS?

[12] As I discussed in the previous section, Mr. Volpe asserts that the lack of that day-ahead market implies no cost savings whatsoever for SPP participants.

A No. Aquila currently obtains numerous transmission services from SPP. As stated in the Direct testimony of Aquila witness Mr. Odell, Aquila obtains from SPP services including "tariff administration, OASIS administration, available transmission capacity and total transmission capacity calculations, scheduling agent, and regional transmission planning from SPP" [Odell, Direct at 6:10-12]. However, the "Stand-alone" case assumes that Aquila provides these services itself or purchases them from a source other than SPP or MISO. Moreover, Aquila purchases reliability coordination services from MISO. Thus, in both RTO membership alternatives, the costs are somewhat overstated and the net benefits understated compared with the "Stand-alone" alternative.

Q WHY DOES AQUILA NOT CURRENTLY PURCHASE ALL TRANSMISSION SERVICES FROM MISO?

A I presume that Aquila purchases the indicated transmissions services from SPP because: (1) SPP can provide those services at a lower cost than MISO; (2) MISO cannot physically provide those same services to Aquila; or (3) some combination of (1) and (2). Moreover, I presume that, if MISO could provide those transmission services at a lower cost to

Aquila than does SPP, that Aquila would purchase those services from MISO. To do otherwise could be considered imprudent.

Q ARE THERE UNCERTAINTIES THAT COULD INCREASE THE COSTS AND REDUCE THE BENEFITS OF THE "AQUILA IN MISO" CASE?

A Yes. First, if the merger between Great Plains Energy and Aquila takes place, and if Aquila is required to join MISO, then the merged entity will be forced to operate in two separate RTOs. This makes no economic sense. Typically, since a utility merger is designed to realize various cost "synergies" – i.e., cost reductions that can be achieved by the merger – it is improbable that dispatching the combined portfolio of generating assets under two different sets of rules would reduce electric generating costs paid by ratepayers. Second, dispatching the combined portfolio of generating assets under two different sets of rules would likely increase the complexity of the merged companies' accounting, again raising costs paid by ratepayers. Third, as Mr. Janssen discusses in his surrebuttal testimony, it will likely complicate congestion management and cost allocation issues between SPP and MISO themselves, especially since the "seam" between MISO and SPP will be "convoluted" because of the

presence of AECI, which operates as a stand-alone entity, between Aquila and MISO. Fourth, there remain questions of the actual deliverability of Aquila's generating resources into MISO owing to potential transmission system congestion, since MISO has not conducted those studies. If Aquila's generating resources are not fully deliverable into MISO, then its realized trade benefits may be reduced compared to the case of full deliverability. Moreover, as Staff witness Mr. Proctor points out in his rebuttal testimony, the interconnection capacity between SPP and Aquila (14 lines and 5,915 MVA) is much greater than the interconnection capacity between MISO and Aquila (2 lines and 1,207 MVA) [Proctor, Rebuttal at 29:10-11]. Fifth, Mr. Pfeifenberger never discusses the potential for uplift costs that could be borne by Aquila ratepayers stemming from other MISO participants' generating plant operations, should Aquila join MISO.

Q ARE THERE ANY OTHER UNCERTAINTIES THAT COULD INCREASE THE COSTS AND REDUCE THE BENEFITS OF THE "AQUILA IN MISO" CASE?

A Yes. Another major uncertainty at this time is the status of Ameren as a MISO member. Specifically, should Ameren withdraw from MISO

and join SPP, then Aquila would find itself "islanded" within SPP as a MISO member. Mr. Janssen's testimony discusses several issues associated with such a situation, such as difficulties with congestion management and the limitations such a situation would place on Aquila's ability to fully participate in the MISO market, as Messrs. Pfeifenberger, Doying, and Volpe all assume. To the extent these issues occur, the costs to Aquila ratepayers will increase and the benefits associated with access to lower cost generating resources will decrease.

Q DID MR. PFEIFENBERGER EVALUATE THE POTENTIAL COSTS ASSOCIATED WITH ALL OF THESE UNCERTAINTIES FOR THE "AQUILA IN MISO" CASE?

A No. He focused solely on the uncertainties associated with future development of SPP markets.

Q IN PERFORMING A C/B ANALYSIS, IS IT REASONABLE TO ONLY CONSIDER RISKS AND UNCERTAINTIES ASSOCIATED WITH A SUBSET OF ALTERNATIVES?

A Of course not. If there are identified uncertainties that can affect the costs and benefits of each alternative, then the alternatives should be

evaluated in an equivalent manner. Otherwise, the results of the C/B analysis will not be valid.

Q DOES MR. PFEIFENBERGER'S REBUTTAL TESTIMONY PROVIDE CLEAR EVIDENCE THAT THE NET BENEFITS OF AQUILA JOINING MISO WILL BE GREATER THAN IF AQUILA JOINS SPP?

A No. While Mr. Pfeifenberger criticized the GE-MAPS analysis performed as part of the CRA Study (criticisms which he later modified), his ultimate conclusion that the net benefits of Aquila joining MISO will be greater than the net benefits of the company joining SPP are based on: (1) erroneously eliminating uplift costs from the cost-benefit calculus and (2) failing to consider any of several uncertainties that would likely reduce the net benefits to Aquila ratepayers if Aquila joins MISO.

B. Pfeifenberger Supplemental Rebuttal

Q DID MR. PFEIFENBERGER'S SUPPLEMENTAL REBUTTAL TESTIMONY ADDRESS THE DEFICIENCIES YOU IDENTIFIED IN HIS REBUTTAL TESTIMONY?

A No. However, Mr. Pfeifenberger's supplemental rebuttal testimony effectively negates all of his testimony surrounding the flaws of GE-MAPS analysis performed for the CRA Study.

Q PLEASE EXPLAIN.

A In his supplemental rebuttal, Mr. Pfeifenberger states:

> The market modeling efforts undertaken simply are not sufficiently precise to conclude that joining either the Midwest ISO or SPP would offer significantly larger production cost savings. Under some modeling assumptions these savings are slightly larger in SPP, while under alternative assumptions the savings may be slightly larger in the Midwest ISO. Accordingly, it is important to recognize that, in addition to these production cost studies, it is equally important and essential that the broader RTO as [sic] benefits discussed in Mr. Richard Doying's rebuttal testimony be examined and considered when assessing overall RTO benefits.

[Pfeifenberger, Supplemental Rebuttal, p. 14, lines 3–8.] This is an important statement, because it means that Mr. Pfeifenberger is concluding that there are too many uncertainties to effectively

differentiate between the overall costs and benefits of joining MISO versus joining SPP. Thus, all of Mr. Pfeifenberger's discussions of the limitations of the GE-MAPS "pool commitment" algorithm [Pfeifenberger, Supplemental Rebuttal at 2:2 -3:12]; flaws in the "system commitment" GE-MAPS runs performed by CRA (despite having previously testified that it was because the CRA Study did not use a "system commitment" approach that the results were flawed [Pfeifenberger, Supplemental Rebuttal, Exhibit JPP-2, at 3]; modeling limitations with respect to planned generator outages [Pfeifenberger, Supplemental Rebuttal at 7:17-10:15]; and, finally, modeling limitations with respect to transmission rate "depancaking" benefits [Pfeifenberger, Supplemental Rebuttal at 10:7-13:11], are immaterial.

Applying Mr. Pfeifenberger's logic, since the GE-MAPS studies cannot adequately differentiate between the costs and benefits of either SPP or MISO membership for Aquila, the current lack of a day-ahead market in SPP and the qualitative benefits of MISO membership presented by Mr. Doying would have to be the determining factors in choosing the appropriate course of action. As I previously discussed, and as Mr.

Janssen's surrebuttal testimony explains in more detail, Mr. Pfeifenberger appears not to understand the nature of the SPP imbalance market nor the cause of the estimated uplift costs associated with the Dogwood plant. Thus, it is important to examine Mr. Doying's testimony with respect to the MISO "value proposition," which as Mr. Doying himself states "cannot be fully captured by production cost studies" [Doying Rebuttal, at 8:12–13].

V. REBUTTAL OF MISO WITNESS DOYING

Q WHAT DOES MR. DOYING MEAN BY THE "VALUE PROPOSITION" OFFERED BY MISO?

A Mr. Doying states that MISO's "value proposition" is providing three types of benefits: "(1) improved reliability; (2) improved efficiency; and (3) improved opportunities for development of generation and transmission infrastructure" [Doying Rebuttal, at 8:14-16]. Of course, this is true of <u>any</u> well-run regional transmission organization ("RTO"). Therefore, while Mr. Doying's listing of benefits provides a rationale for RTO membership, it provides no economic rationale for joining MISO instead of solidifying Aquila's existing relationship with SPP.

Q DOES MR. DOYING PROVIDE ESTIMATES OF THE SPECIFIC BENEFITS THAT WOULD ACCRUE TO AQUILA FROM JOINING MISO?

A No. Moreover, Mr. Doying's testimony is contradicted by several of the responses provided by MISO to data requests submitted by Dogwood, as I discuss below.

In his testimony, Mr. Doying presents an overall estimate of benefits from MISO membership, as compared to a stand-alone status, and then estimated the benefits that would accrue to Aquila based on its load share within MISO if the Company joined MISO. As he states in his testimony,

> While the Midwest ISO has not performed any specific studies attempting to quantify the benefits that can be attributed just to Aquila should it join the Midwest ISO, the Midwest ISO has evaluated the numerous benefits that accrue to all members and participants in its markets. These same benefits would accrue to Aquila as a transmission-owning member and full participant in the Midwest ISO.

[Doying, Rebuttal at 9:3-7, (emph. added)]. Thus, Mr. Doying testifies that, although MISO hasn't calculated specific benefits for Aquila, the Company will obtain all of these benefits. The obvious problem with such load share-based estimates is that they are highly uncertain. The actual

benefits that would accrue to Aquila by joining MISO would depend on a number of factors, including whether the Company was "islanded" in MISO (owing to Ameren's joining SPP), whether Aquila's generating resources would be fully deliverable, and so forth.

Q DID EITHER MR. DOYING OR MISO ATTEMPT TO DEVELOP MORE ACCURATE ESTIMATES OF THE THREE TYPES OF BENEFITS THAT WOULD ACCRUE TO AQUILA BASED ON MR. DOYING'S SO-CALLED "MISO VALUE PROPOSITION?"

A No. For example, as indicated by the response to Dogwood 1-31(a) (attached as Schedule JAL-4), neither Mr. Doying nor MISO has estimated the <u>actual</u> reliability benefits that would accrue to Aquila if it joined MISO:

> The incremental reliability impact of Aquila formally joining the Midwest ISO has not been specifically measured. The analysis performed by Midwest ISO has evaluated the reliability benefits of the current fully participating members and has not attempted to evaluate relative gains of additional, discrete member companies.

Q IN YOUR REBUTTAL OF MR. PFEIFENBERGER, YOU STATED THAT HE DID NOT ADDRESS THE UNCERTAINTIES THAT COULD AFFECT THE NET BENEFITS TO AQUILA FROM JOINING MISO. DID MR. DOYING ADDRESS THESE UNCERTAINTIES?

A No.

Q IS THERE ANY EVIDENCE THAT AQUILA WOULD NOT RECEIVE THESE SAME RELIABILITY BENEFITS IN PROPORTION TO ITS LOAD SHARE IF IT JOINED MISO?

A Yes. First, if member companies always received benefits in proportion to their load shares within MISO, then there would be no need to estimate benefits accruing to those individual companies. Second, as indicated in the response to Dogwood 1-34 (attached as Schedule JAL-4), not only might adding Aquila not provide Aquila with reduced production costs in proportion to its load share, it might actually increase production costs.

> The Midwest ISO has not evaluated the incremental change in production cost with or without Aquila as a member of the Midwest ISO. In general, economies of scale are realized as the number and diversity of available generation increase. However, the change in production cost for a region may be higher or lower when adding a new member depending on the relative generation characteristics of each system (emph. added).

This is a clear contradiction to Mr. Doying's testimony quoted previously that Aquila would obtain all of the benefits of the "MISO value proposition."

Q DID MR. DOYING PROVIDE ANY COMPARATIVE ANALYSIS OF THE BENEFITS OF AQUILA'S JOINING SPP? IN OTHER

WORDS, FOR THE PURPOSE OF THE C/B ANALYSIS, DID MR. DOYING ESTIMATE SIMILAR BENEFITS THAT WOULD ACCRUE TO AQUILA IF THE COMPANY JOINED SPP?

A No. This is the most critical flaw in Mr. Doying's testimony and one that renders his testimony of no probative value. Even if, arguendo, Aquila would obtain benefits from joining MISO in the range presented by Mr. Doying [Doying, Rebuttal at 12:18-20], he never provides any comparison of the benefits that would accrue to Aquila from joining SPP. This is like performing a C/B analysis and looking only at either costs or benefits, but not both.

In response to Dogwood 1-32(a) (attached as Schedule JAL-4), for example, which asks about the reliability benefits that would accrue to Aquila if it joined SPP, MISO states, "The specific impacts of Aquila formally joining SPP has not been reviewed or studied by either Mr. Doying or Midwest ISO." Similar responses were provided by MISO to questions about benefits to Aquila from reduced contingency reserves (Dogwood 1-33(a), attached as Schedule JAL-4), and more efficient generator dispatch (Dogwood 1-34, previously attached as Schedule JAL-4). Finally, in response to Dogwood 1-39 (attached as Schedule JAL-4),

MISO states that it has never prepared any comparative analysis of benefits provided by MISO membership versus those of SPP membership.

Q HOW DOES THIS LACK OF ANY COMPARATIVE ANALYSIS PROVIDED BY MISO OR MR. DOYING AFFECT THE DECISION AS TO WHETHER AQUILA SHOULD JOIN MISO OR SPP?

A The lack of comparative analysis means that Mr. Doying's "MISO value proposition" is irrelevant to the Aquila decision. So first, we have Mr. Pfeifenberger testifying that the production cost simulations cannot differentiate between the benefits of Aquila's joining either SPP or MISO, and therefore that the decision should be based on the qualitative benefits provided by MISO, as discussed by Mr. Doying. Then, we have Mr. Doying's testimony, which neither considers whether SPP membership would provide Aquila with similar benefits nor attempts to estimate the value of those benefits that would accrue to Aquila in SPP. We also have Mr. Doying's testimony contradicted by MISO's own responses to data requests with respect to production costs, namely that Aquila's joining MISO could lead to <u>higher</u> production costs, rather than lower production costs as Mr. Doying states.

Q DO MR. DOYING'S TESTIMONY OR MISO'S RESPONSES TO THE DATA REQUESTS YOU HAVE CITED PROVIDE ANY EVIDENCE THAT AQUILA'S RATEPAYERS WILL OBTAIN GREATER BENEFITS IF AQUILA JOINS MISO THAN IF THE COMPANY JOINS SPP?

A No. Mr. Doying's testimony boils down to a simple conclusion: an electric utility can benefit by joining an RTO. I agree. However, such a conclusion is completely irrelevant to this proceeding. Nothing in Mr. Doying's testimony indicates whether the benefits to Aquila from joining MISO will be greater than if the Company joins SPP. Nor did Mr. Doying ever consider any of the uncertainties that could affect those benefits.

VI. REBUTTAL OF INDEPENDENCE WITNESS VOLPE

Q WHAT ARE MR. VOLPE'S CONCERNS WITH THE CRA STUDY?

A Mr. Volpe appears to have two primary concerns with the CRA Study: (1) since SPP does not currently have a day-ahead energy market like MISO, the trade benefits estimated by CRA in the "Aquila in SPP" case for the years 2008 – 2010 should be removed [Volpe, Rebuttal at 4:16–5:3]; and (2) the fraction of SPP's administrative costs that Aquila will pay

if it joins SPP will be higher than the corresponding administrative costs the Company will pay if it joins MISO [Volpe, Rebuttal at 5:5-7].

Q ARE MR. VOLPE'S CRITICISMS VALID?

A No. With respect to his first criticism regarding the elimination, at a minimum, of the trade benefits estimated by the GE-MAPS model for the first three years of the analysis, Mr. Volpe appears not to understand the GE-MAPS model. With respect to the second criticism, Mr. Volpe appears to have misinterpreted the SPP administrative cost data on which he bases his assertion that SPP administrative costs are higher. That misinterpretation is further evidenced by his response to Aquila data request ILA-002 (attached as Schedule JAL-5).

Q DOES MR. VOLPE EXPLAIN WHY HE CONCLUDES THE TRADE BENEFITS ESTIMATED BY THE GE-MAPS MODEL FOR THE "AQUILA IN SPP" CASE ARE OVERESTIMATED?

A Yes. Mr. Volpe states that the GE-MAPS model results are invalid for two reasons. The first reason is that SPP lacks a day-ahead market and, instead, only has an "imbalance" market [Volpe Direct, at 6:15–7:4]. The second reason he cites is that SPP lacks a system of what are called Financial Transmission Rights ("FTRs") and instead relies on physical

transmission rights, also known as "Transmission Loading Relief" ("TLRs"). As a result, he recommends eliminating all of the estimated "trade benefits" for the "Aquila in SPP" case for the first three years of the analysis.

Q ARE THESE TWO REASONS – THE LACK OF A DAY-AHEAD ENERGY MARKET AND THE LACK OF FINANCIAL TRANSMISSION RIGHTS – VALID REASONS TO ELIMINATE THE FIRST THREE YEARS OF TRADE BENEFITS?

A No. First, as Mr. Janssen's testimony discusses in detail, Mr. Volpe appears not to understand the precise nature of the SPP "imbalance" market, which Mr. Janssen's surrebuttal testimony describes in detail. As Mr. Janssen explains, SPP's "imbalance" market is actually a fully-functioning real-time energy market, not a market of differences in pre-scheduled generation vs. actual generation flowing to loads, as Mr. Volpe assumes [Volpe, Rebuttal at 6:18-20]. Second, from a C/B analysis standpoint, Mr. Volpe's complete elimination of the first three years of SPP trade benefits assumes that, because the SPP market lacks a day-ahead energy market and FTRs, there would be no trade benefits from Aquila's joining SPP. Mr. Volpe thus states (incorrectly), "[A]t the very

least, the total net trade benefits of $45.1 million for the years 2008 through 2010 (See CRA Analysis, Table 16 at 39) should be subtracted from the analysis depicted in Table 21 of the study" [Volpe, Rebuttal at 8:18-21].

Q WHAT DOES THE GE-MAPS MODEL DO?

A GE-MAPS is a detailed production-cost model that determines least-cost physical dispatch of generating resources to meet projected peak loads and energy demand. GE-MAPS does this by accounting for transmission constraints, plant outages, projected fuel prices, and so forth. Moreover, the model can do so down to the individual transmission bus level, determining locations of specific bottlenecks and implicit congestion values. What this means is that GE-MAPS results are <u>not</u> determined by underlying market structures (such as a day-ahead market), per se. Rather, the results are determined by the physical attributes of the transmission system and generating resources that are modeled. Thus, from the standpoint of a GE-MAPS analysis, whether or not SPP has a day-ahead market like MISO will not affect the model results.

Q PLEASE EXPLAIN WHY MR. VOLPLE'S PROPOSED ELIMINATION OF ALL OF THE TRADE BENEFITS FROM THE

"AQUILA IN SPP" CASE FOR THE FIRST THREE YEARS IS WRONG.

A Mr. Volpe is asserting that, but for the presence of a day-ahead energy market and FTRs, there would be no trade benefits whatsoever associated with Aquila's SPP membership compared with a Stand-alone case. He has wrongly assumed that, because SPP has neither exactly the same energy markets at MISO nor the same system of FTRs, Aquila will realize no benefits whatsoever from full SPP membership. Of course, this begs the question of why current SPP members use the real-time energy market today. In essence, Mr. Volpe is asserting that either existing SPP members do not benefit from that energy market or that, for some unstated reason, if Aquila joined SPP, it would realize not benefits from that SPP energy market. The first assertion strains credulity, otherwise why would SPP have a real-time market at all. The second assertion lacks any foundation, especially since, as Staff witness Mr. Proctor's rebuttal testimony discusses, Aquila is already highly interconnected with SPP.

Q MR. VOLPE ALSO STATES THAT THE COSTS OF THE MISO ANCILLARY SERVICES MARKET SHOULD NOT BE INCLUDED [VOLPE, REBUTTAL AT 10:22-11:5]. DO YOU AGREE?

A No. Not only does Mr. Volpe's statement contradict basic C/B analysis tenets, it also contradicts his own recommendation for treatment of market benefits. If Aquila joins MISO, it will be required to pay the administrative costs associated with MISO's ancillary services market and, presumably, receive the benefits thereof. Thus, those administrative costs are real. Mr. Volpe cannot argue that MISO administrative costs should be reduced in order to preserve an "apples to apples" comparison [Volpe, Rebuttal at 11:2] and, hence, raise the net benefits of joining MISO, while also arguing that the benefits to joining SPP should be reduced because it does not have the same day-ahead market as MISO. Instead, Mr. Volpe would either need to eliminate the ancillary services costs in MISO (and accompanying benefits), but not any of the SPP market benefits, or include all of the ancillary services costs and reduce the SPP market benefits by a percentage reflecting the net contribution those ancillary services provide. The difference can be seen in the cost-benefit matrix below.

Volpe Cost-Benefit Matrix

	Day-Ahead Market	Ancillary Services Market
MISO		
Include Cost?	Yes	**No**
Include Benefit?	Yes	**Yes**
SPP		
Include Cost?	**Yes**	No
Include Benefit?	**No**	No

For ease of exposition, I focus only on the day-ahead and ancillary services markets. As can be seen, Mr. Volpe states that all of the ancillary service market costs of MISO should be removed. However, he is silent on the accompanying benefits, thus introducing an upward bias into the calculated MISO benefits. As for SPP, however, he wants to eliminate the day-ahead benefits (and, in fact, all market benefits), but thinks the administrative costs of such a market should be included, thus biasing the SPP benefits downwards. If costs are included, then so must be the accompany benefits, and vice-versa.

Q SINCE SPP IS STILL DEVELOPING ITS MARKETS, WHAT IS THE BEST WAY OF COMPARING THE BENEFITS OF SPP AND MISO MEMBERSHIP ON AN EQUAL FOOTING?

A Ideally, we would compare membership benefits over a longer time horizon than 10-year period assumed in the CRA Study. The reason for this is that the benefits and costs of membership in either MISO or SPP will extend beyond the 10-year time frame. However, the CRA study did not include any terminal value considerations beyond the year 2017.

Mr. Volpe wishes to exclude the first three year's of SPP benefits shown in Table 16 of the CRA Study,[13] but he says nothing about going beyond the 10-year study period. This introduces a clear bias, since the net benefits of SPP membership are much higher than the net benefits of MISO membership. Besides the flaw in removing all of the SPP benefits in those first three years, comparing the net benefit shown in Tables 15 (MISO) and Table 16 (SPP) of the CRA Study, the out-year benefits for SPP membership are much higher than those for MISO membership (although both are shown to be declining over time). Suppose, arguendo, we compare the net benefits of membership beginning only after SPP's markets are fully developed, or 2011 according to Mr. Volpe. If we extend the study beyond 2017, the pattern of greater SPP benefits

[13] In doing so, Mr. Volpe also fails to account for present value effects. One cannot simply subtract different years' nominal values from the NPV total shown for SPP.

shown in Tables 15 and 16 would presumably continue, and thus the net present value benefits of SPP membership would continue to increase relative to those of MISO membership over time.

Q MR. VOLPE ASSERTS THAT AQUILA WOULD REALIZE BENEFITS WITH GREATER CERTAINTY BY JOINING MISO THAN BY JOINING SPP? IS THIS A VALID ASSERTION?

A No. Mr. Volpe's statement is completely unsupported. Moreover it is contradicted by MISO witness Pfeifenberger. At the end of his testimony, Mr. Volpe states, "From a probabilistic standpoint, there is much more certainty with regard to the benefits that would be attained by Aquila's participation in Midwest ISO's existing market design as depicted within the study" [Volpe, Rebuttal at 12:11-13]. That statement is the sum total of Mr. Volpe's discussion of uncertainty with respect to the costs and benefits of participation in either MISO or SPP. Moreover, as Mr. Pfeifenberger testified, the GE-MAPS modeling is not precise enough, given the multitude of uncertainties, to identify membership in either SPP or MISO as superior.

VII. CONCLUSIONS AND RECOMMENDATIONS

Q DOES THE TESTIMONY OF MESSRS. PFEIFENBERGER, DOYING, AND VOLPE PROVIDE CONCLUSIVE EVIDENCE THAT THE BENEFITS OF AQUILA'S JOINING MISO WILL BE GREATER THAN THOSE OF ITS JOINING SPP?

A No. Mr. Pfeifenberger initially focused on the various alleged "flaws" in the GE-MAPS model, based on that model's apparent dispatch of the Dogwood unit and the resulting estimates of "uplift" costs. As Mr. Janssen's testimony discusses, Mr. Pfeifenberger's assumptions about the Dogwood facility reflect a lack of understanding about the plant's actual history and operation. Moreover, contrary to Mr. Pfeifenberger's testimony, all of the uplift costs that occur if Aquila joined MISO, whether paid by Aquila ratepayers or other MISO members, are properly included in a C/B analysis.

Mr. Pfeifenberger's supplemental rebuttal testimony concludes that the results of the analytical modeling efforts are too uncertain to determine whether the benefits of Aquila's joining MISO are greater than or less than those of the Company's joining SPP. Hence, Mr. Pfeifenberger

ultimately simply relies on the qualitative benefits of MISO membership proffered by Mr. Doying.

Mr. Doying's testimony, however, fails to include the most basic aspect of a C/B analysis: a comparison of alternatives. Thus, not only are Mr. Doying's estimates of the benefits to Aquila of MISO membership problematic, he never compares those benefits to those of joining SPP, despite Aquila's already relying on SPP for numerous transmission services. Therefore, ultimately, Mr. Doying's testimony has no probative value. Additionally, several of the conclusions in Mr. Doying's testimony with respect to the benefits Aquila would realize by joining MISO are contradicted by his responses to Dogwood's data requests.

Mr. Volpe's testimony suffers from numerous analytical and economic flaws, most notably that he assumes SPP's real-time energy market provides no benefits whatsoever. Correcting those flaws would, in fact, indicate that Aquila's joining SPP will provide significantly greater benefits than joining MISO.

Finally, while these witnesses focus on the uncertainty of benefits from SPP membership, stemming from SPP's current lack of a day-ahead

market, none of these witnesses recognize the uncertainties associated with Aquila's joining MISO. In fact, Mr. Volpe goes so far as to make the wholly unsubstantiated assertion that Aquila will face far greater uncertainty of benefits by joining SPP than by joining MISO. Yet, none of them discusses issues associated with the potential merger between GPE and Aquila, nor discusses the potential for Aquila's "islanding" in MISO should Ameren join SPP, nor discusses the impacts of unknown deliverability of Aquila's generating resources into MISO. Messrs. Pfeifenberger, Doying, and Volpe are oddly silent with respect to these other uncertainties, all of which would reduce the potential economic benefits and/or increase the costs of joining MISO.

Q GIVEN THESE UNCERTAINTIES, HOW CAN THE COMMISSION DETERMINE WHETHER AQUILA SHOULD JOIN MISO OR JOIN SPP?

A First, if the proposed merger between GPE and Aquila is approved, then since KCPL is already a member of SPP, so should be Aquila. From an economic and planning standpoint, it makes no sense for Aquila to be a member of MISO, while KCPL is a member of SPP. The testimony by KCPL witness Richard Spring in Docket No. EM-2007-0374 indicates that

the merged entity will realize cost savings if both belong to the same RTO and the testimony of Staff witness Mr. Proctor indicates that there would be a potential conflict between the merged company operating its generating units jointly, while maintaining separate RTO memberships. Ultimately, requiring the merged company to belong to both RTOs will needlessly – and I would argue, imprudently – force Aquila's ratepayers to pay higher rates than necessary.

Second, should Ameren withdraw from MISO, Aquila would find itself "islanded" within MISO. As Mr. Janssen's surrebuttal testimony discusses, this is likely to limit Aquila's access to MISO energy markets, preventing the Company and its ratepayers from reaping the benefits of MISO membership.

Third, and again as Mr. Janssen's testimony discusses, Aquila currently has greater physical connectivity to SPP than to MISO. If Aquila joins MISO, there is the potential for more transmission congestion between MISO and Aquila, again which would reduce the benefits of MISO membership to Aquila's ratepayers. Additionally, MISO states that it has not undertaken any deliverability studies of Aquila's generating

resources. As a result, there is uncertainty whether, even if Ameren does not leave MISO, whether Aquila would realize the full benefits of participating in the MISO energy market. As the rebuttal testimony of Staff witness Mr. Proctor discusses, today Aquila has far greater interconnection capacity with SPP than it has with MISO. This suggests that the likelihood of Aquila's generating units fully-participating in SPP's energy markets will be at least as great as the likelihood of participating in MISO energy markets.

Fourth, as Aquila witness Mr. Odell testified, the Company already relies on numerous transmission services provided by SPP. If it were less costly for Aquila to obtain these same services from MISO, the company would have done so already. To do otherwise could be regarded as imprudent.

From a cost-benefit perspective, the evidence still points to the benefits of SPP membership exceeding those of MISO membership. Combined with the potentially critical uncertainties that would, if realized, reduce the benefits of MISO membership to Aquila and its ratepayers, and the fact that Aquila already relies on SPP to provide

numerous transmission services, I believe it is reasonable and prudent for the Commission to require Aquila to join SPP.

Q DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.