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MISSOURI PUBLIC SERVICE COMMISSION

File No. EC-2014-0224

REBUTTAL TESTIMONY

OF

MATT MICHELS

ON

BEHALF OF

UNION ELECTRIC COMPANY
d/b/a Ameren Missouri

St. Louis, Missouri
May 9, 2014

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FILE NO. EC-2014-0224

I. INTRODUCTION AND SUMMARY

Q. Please state your name and business address.

A. Matt Michels, One Ameren Plaza, 1901 Chouteau Avenue, St. Louis, Missouri 63103.

Q. By whom and in what capacity are you employed?

A. I am employed by Union Electric Company d/b/a/ Ameren Missouri (Ameren Missouri or the Company) as a Senior Manager, Corporate Analysis.

Q. Please describe your qualifications.

A. I joined Ameren Services Company in 2005 as a Consulting Engineer in Corporate Planning. My responsibilities included coordination and monitoring of projects implemented in conjunction with the integration of processes and systems following the acquisition by Ameren Corporation of Illinois Power Company (Illinois Power) in October 2004. I subsequently was involved in the integration of combustion turbine facilities acquired by Ameren Missouri in 2006. In September 2008, I was promoted to Managing Supervisor of Resource Planning with responsibility for long-range resource planning including Ameren Missouri's Integrated Resource Plan (IRP) filings and associated analysis. In February 2013, I was promoted to Corporate Analysis Manager. In February 2014, my position and duties were transferred to Ameren Missouri, where I now have the title Sr. Manager, Corporate

Analysis. My current responsibilities include long-range resource planning, environmental compliance planning, fuel budgeting and other resource-related analysis.

I earned a Bachelor of Science degree in Electrical Engineering from the University of Illinois at Urbana-Champaign in May of 1990. I have been employed by Ameren or Illinois Power since June of 1990 in various positions related to resource and business planning. During most of that time, my responsibilities have included the development, use and oversight of various planning models used for purposes such as production costing, acquisition evaluation, corporate restructuring, financial forecasting and resource planning.

Q. What is the purpose of your rebuttal testimony in this proceeding?

A. The purpose of my rebuttal testimony is to demonstrate that Noranda Aluminum, Inc.'s (Noranda) rate proposal amounts to a massive subsidy of Noranda by our other customers and an unwarranted transfer of risk to our other customers.

Q. Please summarize your findings and conclusions.

A. Noranda's claims to the contrary notwithstanding, I will show, using Noranda's own approach, that Ameren Missouri's other 1.2 million customers would expect to suffer significant harm if Noranda's request is granted. In fact, I will show that under Noranda's proposal, Ameren Missouri's other customers will likely suffer much greater harm than they would if Noranda reduced its consumption and ultimately closed down the New Madrid smelter. My testimony will demonstrate that Noranda's proposed ten-year term, combined with a retail rate reduction to $30 per megawatt-hour (MWh) and a very low cap on any future rate increases, places an unacceptable burden on Ameren Missouri's other customers in the form of substantial risk of changes in a variety of costs that Ameren Missouri incurs to serve Noranda and will incur in the future. These costs reflect market

prices for energy, capacity and ancillary services, other load-related Midcontinent Independent System Operator, Inc. (MISO)[1] charges (including those based on expansion of the transmission grid in the region), costs for nuclear fuel, coal, natural gas and fuel oil, emissions compliance costs, labor, debt and capital, and a variety of other investments and services which are included in determining cost of service under our traditional ratemaking process.

I will also show that Noranda's existing base rate – one established under the traditional cost of service ratemaking process – is not significantly different than the net effect of (i) costs that Ameren Missouri would avoid if the New Madrid smelter ceased operations and Ameren Missouri no longer had to purchase power and other services for Noranda's load in the MISO market, and (ii) the revenues from incremental sales of capacity in the MISO market that would be available if the smelter ceased operations. These represent the net market opportunity costs that Ameren Missouri incurs to serve Noranda.

Under any fixed price scenario, the downside risk to our customers is hundreds of millions of dollars. Because of the significant unwarranted subsidy and transfer of risk that I will describe, Noranda's proposal is not in our other customers' best interests and should therefore be rejected by the Commission.

[1] MISO is the Regional Transmission Organization (RTO) regulated by the Federal Energy Regulatory Commission that operates the wholesale energy market into which Ameren Missouri sells its power and from which Ameren Missouri buys power to serve its load. MISO also operates a capacity and ancillary services market, among other services.

II. NORANDA'S RATE SHIFT REQUEST SEEKS AN UNFAIR SUBSIDY

Q. Please state your understanding of Noranda's rate shift proposal.

A. Noranda proposes to reduce its retail rate from the present level of approximately $41.44[2] to only $30/MWh, with very low caps and limits on future increases in that rate while also avoiding their share of future charges under Ameren Missouri's fuel adjustment clause (FAC). Noranda further proposes that the reduction in its rate be coupled with a simultaneous increase in the retail rates paid by all other Ameren Missouri customers (and only Ameren Missouri's customers) to offset the reduction in Noranda's rate. Under Noranda's proposal, future increases in the proposed $30/MWh rate would be limited to no more than two percent in each general rate case where a rate increase is granted to Ameren Missouri by the Commission during the ten-year period the rate subsidy is in place, regardless of the actual level of increase in the Company's cost to provide service to Noranda or the percentage increase in rates authorized for other customers. Any future shortfall between Noranda's capped rate and the actual cost of providing service to the New Madrid smelter would be recovered instead of from Ameren Missouri's other customers.

Q. Please characterize the negative effects that adopting Noranda's proposal would have on Ameren Missouri's other customers.

A. Through its proposal, Noranda is seeking to transfer a significant portion of Ameren Missouri's costs to serve the New Madrid smelter to Ameren Missouri's other customers. In addition to the immediate subsidy that would be created under Noranda's proposal, our other customers would also bear most of the risk of any increases in the cost to serve Noranda during the proposed ten-year term. These costs include fuel costs (nuclear

[2] $37.94/MWh is the base rate amount without the fuel adjustment clause surcharge added.

fuel, coal, natural gas, and fuel oil), environmental compliance costs, labor, debt, capital and a variety of other operations and maintenance costs.

Noranda attempts to justify this shift in costs and risks by claiming that other customers would bear an even larger share of these costs if the smelter were to cease operations. This claim is based upon the assertion that the retail rate Noranda has proposed would be greater than the net costs that Ameren Missouri, and therefore its other customers, would avoid by 1) not having to purchase power and other services to serve Noranda's load in the MISO market, and 2) selling capacity in the MISO market that would otherwise be needed to meet Noranda's load obligation if the smelter ceased operations.

Noranda's proposal clearly represents a significant departure from the rate design policy the Commission has consistently applied in the past, which ties the rates for each rate class to the costs of providing service to the rate class. As described in the rebuttal testimony of Ameren Missouri witness William Davis, both Noranda's initial $30/MWh rate and all of the capped increases to future rates will produce revenues and fixed cost support that are substantially below Ameren Missouri's actual cost of serving the New Madrid smelter. Consequently, if the Commission adopts Noranda's proposal, all of Ameren Missouri's other retail customers will be required to provide a substantial rate subsidy to Noranda throughout the ten-year period by paying higher rates than they would have paid if Noranda continued to bear its fair share of cost incurred to serve the smelter. And that subsidy will likely grow significantly over the ten-year period.

Q. Have you quantified what the level of this subsidy would be if Noranda continues to operate its smelter as an Ameren Missouri customer at rates reflected in Noranda's request?

A. Yes. If Noranda's request to shift cost recovery onto Ameren Missouri's other customers is granted, it would create a subsidy of *no less than* $300 million, and more likely a subsidy that exceeds $500 million, over the ten-year period they have proposed.

Q. How did you arrive at these figures?

A. To calculate a minimum value for the cost shift to other customers, I simply took the difference between Noranda's current base rate of $37.94/MWh and its proposed rate of $30/MWh – a difference of $7.94/MWh – and multiplied that difference by 4,169,000 MWh per year (Noranda's expected load) for 10 years to arrive at a minimum cost shift of $331 million. This $331 million very likely understates the actual subsidy because it assumes there would be no FAC charges. The $331 million corresponds to the rate shift Complainants' witness Maurice Brubaker calculates on a per-year basis, as shown in Mr. Brubaker's Schedule MEB-2 attached to his direct testimony.

But the Commission must understand that this is the minimum cost shift because it assumes no increases in Ameren Missouri's base rates for any reason at all for the full ten-year period and, as noted previously, ignores FAC charges. Ameren Missouri has already stated its intention to file for a rate increase later this year. The entire utility industry, including Ameren Missouri, also continues to be faced with the prospect of cost increases attributable to more stringent environmental regulation, to name but one example of significant long-term cost pressures. In addition, Ameren Missouri, like other utilities across the country, is facing the prospect of having to replace in the near term a significant portion of its infrastructure that was built in the 1950s and '60s, or before. It should be clear for these reasons alone that Noranda's assumption that there will be no rate increases for the ten-year term in its proposal is unrealistic.

Consequently, I looked at the potential size of the shift in costs Noranda has proposed under two more realistic, but conservative, scenarios that assume periodic rate increases over the ten-year period: 1) a 6% increase in June 2015, with subsequent 6% increases every thirty-six months thereafter, and 2) a 6% increase in June 2015 with subsequent 6% increases every twenty-four months thereafter. These two scenarios correspond to average annual rate increases of 3% and 2%, respectively.

The estimated cost shift for the scenario that assumes triennial increases in rates is $468 million. The estimated cost shift for the other scenario, which is based on assumed biennial rate increases, is $529 million.

Q. Could the impact be greater than $529 million?

A. Yes the impact may very well be higher than either of these estimates of the impact of Noranda's proposal. A variety of factors could significantly increase Ameren Missouri's cost of service, any or all of which could result in rate increases higher than the 6% increases assumed in the scenarios described above. As I previously mentioned, we are facing a great degree of uncertainty about the future cost to comply with various environmental regulations, many of which have yet to be fully enacted. Next month, the United States Environmental Protection Agency is expected to release proposed regulations governing the emission of greenhouse gases from existing fossil-fired power plants. Over the ten-year period covered by Noranda's proposal, Ameren Missouri's environmental compliance costs could add tens of millions of dollars, if not hundreds of millions of dollars, of additional costs that would have to be paid by the Company's other customers. This is just one example of a category of costs that could increase significantly.

Q. Do the kinds of cost increases you just described have implications beyond Noranda's proposed ten-year term?

A. Yes. In his rebuttal testimony, Mr. Davis raises serious concerns about how and when Noranda would return to cost-based rates, and I share those concerns. Over the ten-year term of Noranda's proposal, a significant disparity will develop between the rates Noranda pays and the actual cost to provide electricity to the New Madrid smelter. This amount will continue to grow year to year, and will grow even larger if there is any delay in returning to cost-based rates at the end of the ten-year term. When one considers that the highest rate that Noranda could ever pay under its proposal – $36.57/MWh (based on a 2% increase in June of 2015, and 2% increases every twelve months thereafter) – is lower than the base rate Noranda is paying today, it is obvious that a return to cost based rates eleven years from now would require Noranda's rates to be increased substantially. It is not hard to imagine that the "rate shock" that Noranda would experience from such an increase could result in yet another request for further subsidies.

Q. Please summarize the magnitude of the cost shift Noranda is proposing.

A. Table 1 below contains such a summary.

Table 1. Summary Of Potential Subsidy Borne By Other Customers

	10-Year Average $/MWh	Difference from Noranda Proposal $/MWh	Average Annual Subsidy	10 Year Subsidy
Noranda Proposed Rate - No Increases	$ 30.00			
Noranda Current Base Rate - No Increases	$ 37.94	$ 7.94	$ 33,101,860	$ 331,018,600
Noranda Proposed Rate - Triennial Increases	$ 31.14			
Noranda Base Rate - Triennial Increases	$ 42.37	$ 11.23	$ 46,835,230	$ 468,352,304
Noranda Proposed Rate - Biannual Increases	$ 31.59			
Noranda Base Rate - Biannual Increases	$ 44.27	$ 12.68	$ 52,874,746	$ 528,747,464

These figures, in effect, reflect the costs Ameren Missouri would incur to serve Noranda and Noranda's contribution to cost of service under its proposal. The difference is shifted to other customers through their rates.

Q. Do your estimates of the cost shift presume that the New Madrid smelter continues to operate over the next ten years regardless of the rate paid by Noranda?

A. Yes. While Noranda has offered no guarantee that the New Madrid smelter will remain open throughout the ten-year period even if its rate shift proposal is adopted, the comparison performed by Mr. Brubaker is based on two alternative cases: 1) continued operation of the smelter under Noranda's rate proposal, or 2) cessation of operation of the smelter. To directly address this comparison, I have also compared the cost impact to Ameren Missouri's other customers of these same two alternative cases.

III. NORANDA'S DETERMINATION OF AMEREN MISSOURI'S NET MARKET OPPORTUNITY COST TO SERVE THE NEW MADRID SMELTER IS DEFICIENT

Q. How does Noranda justify its request for a rate reduction and the associated rate subsidy it is seeking from all of Ameren Missouri's other customers?

A. Simply put, Noranda's rationale is based upon the assertion that by paying $2.95/MWh more than what it claims would be Ameren Missouri's net avoided cost to serve the New Madrid smelter, Ameren Missouri's other customers are better off under the rate shift proposal than they would be if the smelter ceased operations. In other words, Noranda acknowledges a significant cost shift to our other customers, but then claims that our other customers would be negatively impacted even more if the smelter ceased operations.

In pleadings filed in this case, Noranda raises the specter of ceasing operations by stating that, "without the requested relief in this matter, rendered quickly, Noranda will be soon be forced to lay off 150-200 employees, and will suffer the substantial likelihood of imminent closure of the New Madrid smelter."[3] And in support of its contention that it's better for them to pay a heavily-subsidized $30/MWh rate than to leave the system, Noranda further claims that the costs that Ameren Missouri would avoid from not having to purchase power from the MISO market to serve Noranda's load, coupled with revenue from incremental sales of capacity freed up by the smelter's closure (which Noranda calculated to be a total of $27.05/MWh), would be less than Noranda's proposed $30/MWh retail rate. Therefore, according to Noranda's analysis, compared to the costs associated with losing

[3] I would note that while Noranda's pleadings refer to an "imminent" closure, its sworn testimony does not claim closure is imminent. I would also note that Ameren Missouri witness Robert S. Mudge observes in his rebuttal testimony that Noranda's statements to investors and credit rating agencies do not foreshadow an imminent closure of the smelter.

Noranda's load altogether, Ameren Missouri's customers would benefit by an amount equal to $2.95/MWh even if the $30/MWh retail rate is approved.

Q. Do you agree with Noranda's rationale and analysis?

A. Not at all. My review of Complainants' witness James Dauphinais' direct testimony reveals significant deficiencies, in both the data he selected for his calculation of the net market opportunity cost to serve Noranda (i.e., the net costs that would be avoided) and the completeness of his calculation. Because of these deficiencies, Noranda has grossly underestimated both the net market opportunity costs that Ameren Missouri would avoid from not having to buy power to serve Noranda and the value of capacity that would be made available for sale into the MISO market resulting from the closure of the New Madrid smelter.

Additionally, no Noranda witness has attempted to quantify the potentially significant reduction in resource costs that could result from the loss of Noranda's load and that would be identified as part of Ameren Missouri's long-term planning process.

Consequently, under Noranda's proposal, customers are worse off bearing the burden of Noranda's proposed and heavily-subsidized rate than they would be if Noranda ceased operations.

Q. Please describe the methodology utilized by Noranda witnesses Messrs. Dauphinais and Brubaker to support Noranda's claim that Ameren Missouri's other customers benefit under their proposal as opposed to the smelter ceasing operations.

A. In their respective direct testimonies, Mr. Brubaker and Mr. Dauphinais put forth a comparison of the implications of Noranda's proposed rate of $30/MWh to Ameren Missouri's opportunity to avoid the net market costs to serve Noranda. Mr. Brubaker

concludes that because (i) Noranda's proposal would (he claims) allow the smelter to continue operating, and (ii) the net revenue loss if the smelter closes is greater than the revenue loss associated with the proposed reduced retail rate, Ameren Missouri's other customers are better off with the proposed rate shift.

Q. Please describe the deficiencies you have identified in Noranda's methodology.

A. While I agree that comparing revenues to avoided costs is a reasonable means of illustrating the impact on Ameren Missouri's other customers if Noranda were to cease operations, I take exception with many facets of Noranda's analysis, and in particular its estimate of avoided costs.

For example, to estimate avoided cost, Noranda selected a time period that is extremely short and used historical data that is unnecessarily stale. No reason is provided for using historical data that, at the time of filing, was more than three months old and was not the most recent data available. Messrs. Brubaker and Dauphinais have also made several errors – mainly errors of omission – in their assumptions regarding the costs that Ameren Missouri would avoid from not having to clear Noranda's load in the MISO market and the price of capacity that would be made available for sale if the smelter were to cease operations.

My analysis, which corrects for errors in Mr. Dauphinais' calculation and also considers a variety of time periods for comparison (as opposed to a single twelve-month period that ended more than three months prior to the filing of Noranda's complaint), demonstrates that instead of providing a benefit to other customers, Noranda's proposal

actually could cost other customers $600 million or more over the ten-year period than would be the case if the smelter were to cease operations.

Q. How does this $600 million figure relate to your prior estimates of the rate subsidy?

A. Whereas my prior calculations of customer subsidy (i.e., $331 million to $529 million) were based on comparisons of Noranda's proposal to cost-based rates, this $600 million figure represents the difference between Noranda's proposal and the net costs which would be avoided if the smelter were to cease operations. This directly refutes the notion put forth by Mr. Brubaker that Ameren Missouri's other customers would be better off under Noranda's proposal than if the smelter were to cease operations.

Q. Before you explain the errors in Mr. Dauphinais' calculation, please summarize the errors and the impact of them on Mr. Dauphinais' (and Mr. Brubaker's) results.

A. Table 2 below summarizes the Noranda analysis and the necessary corrections to it:

Table 2. Summary of Impact of Errors In Dauphinais' Calculation

	Net Market Opportunity Cost	$/MWh Difference	Historical Year Impact
Dauphinais' Original	$ 27.05		
Correction for AMMO.UE CpNode	$ 26.42	$ (0.63)	-$2,616,067
Correction for AECI Losses	$ 27.35	$ 0.92	$3,855,369
Correction for Omitted MISO Charges	$ 27.74	$ 0.40	$1,650,890
Total		**$ 0.69**	**$2,890,193**

I address each of these corrections in more detail below.

Q. Before addressing each correction, can you please explain your understanding of Noranda's approach to estimating the costs that Ameren Missouri would avoid from not having to buy power for Noranda's load from the MISO market and the price of capacity that would be freed up if the smelter were to cease operations?

A. Mr. Dauphinais provides a fairly concise explanation in his direct testimony (pg. 5, lines 11-14) when he refers to "the cost avoided by Ameren Missouri by not having to clear the Noranda retail sales in its MISO market and transmission settlements for its load." And he does a fair job of describing the mechanics of how this avoided cost is determined (page 4, line 17 – page 7, line 20). He also notes, "[a]s a participant in the MISO Regional Transmission Organization ("RTO"), Ameren Missouri must clear all of its generation and its entire load in the MISO market." Put another way, Ameren Missouri sells all of its generation output to the MISO market and purchases all of its load requirements from the MISO market. Mr. Dauphinais also correctly notes that the impact on the MISO market price Ameren Missouri would pay for its load and generation as a result of the loss of Noranda's load would be negligible. As a result, Ameren Missouri's generation output would be virtually unaffected by the loss of Noranda's load, and the cost which would be avoided is the cost to buy power for the lost load in the MISO market. Therefore, if Noranda remains on the Ameren Missouri system, we have "lost" the opportunity to avoid the costs associated with serving Noranda's load. However, Mr. Dauphinais' testimony fails to note a variety of other market costs which would also be avoided if the smelter were to cease operations.

Q. What is your assessment of Mr. Dauphinais' characterization and assumptions regarding avoided cost?

A. Mr. Dauphinais has grossly underestimated the costs that Ameren Missouri would avoid if it did not have to buy power to serve Noranda's load in the MISO market. He has also severely underestimated the price of capacity that would be made available for sale if the smelter were to cease operations. His underestimations result from: 1) his selection of a very short sample period for energy prices, 2) his use of a single (and now out-of-date) data point for estimating prices for capacity, and 3) his failure to include a variety of other costs which Ameren Missouri incurs to serve Noranda's load.

Q. Please explain your disagreement with Mr. Dauphinais' estimates.

A. My primary point of disagreement is that Mr. Dauphinais has used very specific historical and forecasted data for a very narrow window of time to establish his estimates. He also failed to consider the risk of future changes in these values.

Despite the fact that Noranda's proposal would extend ten years into the future, during which its retail rate would be decoupled from Ameren Missouri's actual cost to serve the smelter's load, Mr. Dauphinais only used energy prices from the historical twelve months ending October 31, 2013, to estimate avoided energy costs for the entire proposed ten-year term. He also used the capacity price from the April 2013 MISO capacity auction for the 2013-2014 planning year to estimate avoided capacity costs over the entire proposed ten-year term. In addition, for transmission charges, he used only the forecasted regional transmission rate for MISO's Schedule 26A for 2014, despite the fact that his own workpaper included projected values for future years. He also ignored charges billed under MISO's Schedule 26 (that arise from regional transmission expansion).

While Noranda's witnesses claim that Noranda's proposal would benefit Ameren Missouri's other customers compared to ceasing operation of the smelter, those witnesses

failed to acknowledge that if the time periods for data sampling used by Mr. Dauphinais were shifted even slightly, their results would change dramatically. Those changed results would, in turn, dramatically change the comparison of whether Ameren Missouri's other customers would be better off if the smelter closed instead of operating under Noranda's proposed retail rate. A simple evaluation of a slight change in assumptions, as I will discuss further, highlights the kind of risk Noranda seeks to transfer to Ameren Missouri's other customers.

I also disagree with Mr. Dauphinais' failure to include a variety of other charges in his calculation of avoided costs, including the transmission losses on the Associated Electric Cooperative, Inc. (AECI) system (which must be used to get the energy it purchases to Noranda's smelter), ancillary services, transmission charges for Schedule 26, and other load-based MISO charges. I further disagree with his use of the AMMO.AECI CpNode as the specific point for determining the price at which Ameren Missouri must purchase power from MISO to serve Noranda's load.[4]

In addition to the failure to include numerous components in the calculation of the costs Ameren Missouri would avoid if the New Madrid smelter ceased operation, I would also note that neither Mr. Dauphinais nor any other Noranda witness acknowledges likely future increases in any of the costs that comprise the total cost to serve the smelter's load. Over a ten-year period, it is completely unreasonable to assume that all such costs will remain static.

Further, with the very limited exception of their provision for increases of no more than 2% in any general rate proceeding, Noranda's proposal would force the entirety of the

[4] A CpNode is a representation of a transaction point within the MISO market for which prices are established.

risk of changes in these market and operational costs onto Ameren Missouri's other customers.

Q. Please elaborate further on each of these concerns.

A. Certainly. I will first address three simple errors in Mr. Dauphinais' calculation – (i) his use of the AMMO.AECI CpNode as the point used for determining the price of power used to serve the Noranda load; (ii) his failure to account for 3.5% physical losses required for use of the AECI system to deliver energy to Noranda; and (iii) his failure to include a variety of load-based costs in his calculation. I will then address his failure to consider other time periods for available data regarding avoided costs.

First, Ameren Missouri settles 100% of its load in the MISO at the AMMO.UE CpNode. Consequently, the purchases – and associated costs – that would be avoided if Noranda were to cease operations are determined by prices at the AMMO.UE CpNode, not at the AMMO.AECI CpNode, as Mr. Dauphinais assumed for purposes of his calculation. Mr. Dauphinais simply erred in his selection of CpNode, which caused him to use historical price information that is not applicable to a determination of the true avoided costs of serving Noranda's load. Correcting for this error reduced the average historical energy price for the twelve months ending October 31, 2013, (what Mr. Dauphinais' workpapers label as Net Energy, Transmission Loss and Congestion Costs (NETC)) from $26.63/MWh to $26.00/MWh.

Second, Mr. Dauphinais' calculation fails to account for the 3.5% physical losses (also referred to as line losses) that Ameren Missouri must provide to AECI in order to move energy across AECI's transmission system to serve the New Madrid smelter. These losses are the simple result of the physics of transmitting electricity over any distance across wires

that are not 100% efficient, which is true for all wires on the interconnected grid. As a result, for each 100 MWh of energy delivered to Noranda's meter, Ameren Missouri must purchase 103.5 MWh of energy in the MISO market. Accordingly, it is necessary to gross up Noranda's metered load by 3.5% to determine the components of avoided costs. Mr. Dauphinais made the same error in his calculation of capacity costs, because Ameren Missouri must include these same line losses in the peak demand forecast it provides to MISO for resource adequacy purposes. Correcting for these errors, and combining this correction with the correction to the CpNode discussed in my answer to the immediately preceding question, results in a corrected value for Mr. Dauphinais' calculation of the net market opportunity cost to serve Noranda's load. The corrected value of $27.35/MWh represents a $0.30/MWh net increase from the value estimated by Mr. Dauphinais, which equates to $1.3 million per year.

Third, Mr. Dauphinais failed to recognize several other costs that would be avoided if the New Madrid smelter ceased operations. These costs include any MISO charges that are based on the amount of Ameren Missouri's total load. These charges include ancillary services (regulation service, spinning and operation reserves), market administration charges, and transmission charges arising from regional transmission expansion. While I have not individually identified each of these charges, a review of Ameren Missouri's actual market and transmission settlements for 2013 reveals average load-based charges (for just the items described above, all of which Mr. Dauphinais failed to include in his calculation), of approximately $0.40/MWh, which when added to the other corrections described above, result in a corrected value of $27.74 per MWh. Given Mr. Dauphinais' own estimate of Noranda's annual load of 4,169,000 MWh, and grossing up to 4,314,915 MWh to include

AECI line losses, Mr. Dauphinais' omission of these load-based MISO charges results in an additional understatement of the net market opportunity cost to serve Noranda of more than $1.6 million per year.

The total amount of Mr. Dauphinais' underestimation of avoided costs related only to the three items I just described is $2.9 million per year.

Q. Have you determined the impact of using a different data collection period for calculating the costs that Ameren Missouri would avoid if it did not have to purchase power from MISO to serve Noranda's load and the price of capacity that would be made available for sale if the smelter were to cease operations?

A. Yes. Table 3 below shows the incremental increase in those costs related to simply updating the data collection period to the twelve months ending April 30, 2014. These increases are in addition to the increases due to correction of Mr. Dauphinais' errors illustrated in Table 2 above.

Table 3. Summary of Impact of Updating Data Collection Period to TME 4/30/14 On Dauphinais' Calculation

	Net Market Opportunity Cost	$/MWh Difference	Historical Year Impact
Corrected Value for TME 10/13/2014	$ 27.74		
Update Capacity to 4/15/2014	$ 28.50	$ 0.76	$3,158,531
Update Energy Prices to TME 4/30/14	$ 33.89	$ 5.39	$22,480,535
Total		**$ 6.15**	**$25,639,066**

The past six months provide a perfect example of just how volatile changes in Ameren Missouri's costs can be and why Noranda's ten-year, virtually fixed-price proposal poses an unacceptable risk for Ameren Missouri's other customers.

The most dramatic change I observed was in the price of capacity. Mr. Dauphinais used a capacity price of $1.05 per megawatt (MW)-day, which was the price applicable to Ameren Missouri's zone for the 2013-2014 MISO planning year. In mid-April of 2014, MISO released the results of its 2014-2015 planning year auction. The price for capacity in Ameren Missouri's zone in this auction was $16.75 per MW-day. This is a 1,495% increase from the prior year's capacity price.

The average locational marginal price (LMP) for the AMMO.UE CpNode (the location actually used by Ameren Missouri to settle its load in MISO) for the twelve months ending April 30, 2014, was $31.21/MWh. This is 20% higher than the value for the twelve months ended October 31, 2013, the period used by Mr. Dauphinais. By itself, this cost is more than $1/MWh higher than the entire retail rate that Noranda proposes to pay for the next ten years.

Using data that is just six months more recent than the data used by Noranda's witnesses, these changes, along with the corrections I previously described, yield a significantly different picture than the one portrayed in Noranda's estimate of avoided costs.

While Mr. Dauphinais' calculation (which Mr. Brubaker relied upon in supporting Noranda's request for a $30/MWh retail rate) yielded a net market opportunity cost to serve Noranda's load of only $27.05, the corrected and updated value, taking into account the more recent data as well as all of the other corrections I discussed above, as of April 30, 2014, is at least $33.89. That is nearly $7/MWh higher than the net market opportunity cost calculated by Mr. Dauphinais and almost $4/MWh higher than the rate requested by Noranda.

Q. After you have made all of the corrections and updates explained above, do you find Noranda's claim that Ameren Missouri customers are better off under the

proposed rate shift than they would be if Noranda were to cease operations to be substantiated in any way, even if one were to accept the implication that a single historical year is representative of prices for the next ten years?

A. Not at all. Using Noranda's own methodology, the answer to that question is clearly "no." It certainly isn't true as of May 1, 2014, and even if one were to make the unreasonable assumption that prices would remain exactly the same over the next ten years, it would be equally untrue for the entire ten-year period proposed by Noranda. If the costs that could be avoided if the smelter were to cease operations are greater than the $30/MWh rate proposed by Noranda, there is no basis for claiming the kind of benefit Noranda asserts. The fact that the corrected and updated value for the costs which would be avoided if the smelter were to cease operations is higher than Noranda's proposed $30/MWh rate demonstrates that Noranda's claim is not true.

Q. You indicated earlier that you did not agree with Mr. Dauphinais' use of a single, short time period for market data regarding energy and capacity prices. Have you performed any analysis using other time periods for calculating these values?

A. Yes. For purposes of illustrating the wide range of potential results depending on the market data set you select, I made these same energy cost calculations for each full and partial calendar year from June 2005 to April 2014, as well as for the full period beginning June 1, 2005, to April 30, 2014, which coincides with the time period that the current Noranda contract has been in place. I then inserted each of these values into Mr. Dauphinais' calculation (correcting for CpNode and AECI losses) to obtain a net market opportunity cost value for each year. For the sake of simplicity, I did not correct his other

price assumptions even though, as I've stated previously, some of those assumptions are invalid.

My analysis found that in only two of the eight years from 2006 to 2013 were market and capacity costs lower than the cost for the twelve month's ending October 31, 2013 (again, corrected for CpNode and AECI losses). Table 4 below illustrates the range of results. Compared to the corrected values for the twelve months ending October 31, 2013, the net market opportunity cost calculated using the average energy price for the period June 1, 2005, through April 30, 2014, would be $9.83/MWh, or $41 million per year, greater than Mr. Dauphinais' estimate.

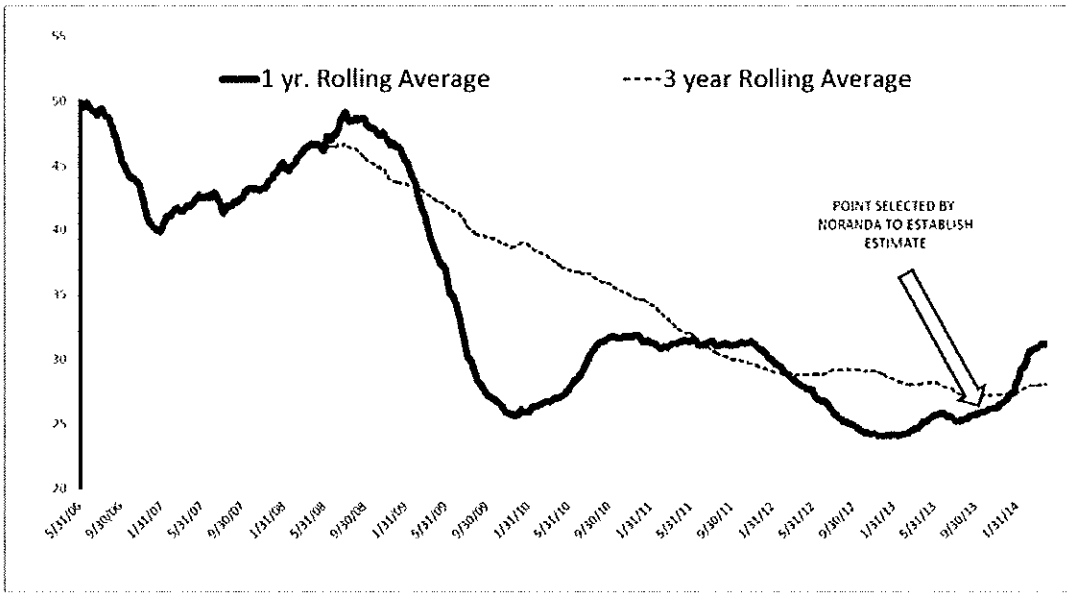
Table 4. Summary of Impact of Replacing Only The Average Energy Charge With Other Historical Time Period Values

	Avg. Energy Charge	Net Market Opportunity Cost	$/MWh Difference	Historical Year Impact Compared to TME 10/13 Additional Cost/(Benefit)
TME 10/13	$ 26.00	$ 27.35		
Partial 2005	$ 56.49	$ 58.91	$ 31.56	$131,569,675
2006	$ 40.58	$ 42.44	$ 15.09	$62,913,190
2007	$ 44.04	$ 46.02	$ 18.67	$77,829,590
2008	$ 46.65	$ 48.72	$ 21.37	$89,103,088
2009	$ 25.68	$ 27.01	$ (0.34)	($1,407,633)
2010	$ 31.80	$ 33.35	$ 6.00	$25,025,340
2011	$ 30.80	$ 32.31	$ 4.97	$20,709,617
2012	$ 24.12	$ 25.40	$ (1.94)	($8,105,487)
2013	$ 26.86	$ 28.23	$ 0.89	$3,698,064
Partial 2014	$ 38.93	$ 40.72	$ 13.38	$55,762,206
6/1/05-4/30/14	$ 35.50	$ 37.17	$ 9.83	$40,968,329

If I added in the current capacity value from the April 15, 2014, MISO auction and the additional load-based costs detailed earlier in my testimony, the net market opportunity cost for the full period between June 2005 and April 2014 (which is closer in length to the

ten-year term Noranda seeks) would rise to $38.33, which is higher than Noranda's current base rate.

I also looked at both the 12 month and the 36-month rolling averages during the same 8-year period. The 12-month and 36-month rolling average day-ahead energy prices for the AMMO.UE CpNode are shown in the chart below. As the chart shows, the average price for the time period chosen by Mr. Dauphinais is among the very lowest average prices for any of the periods during the past eight years. In fact, it is not much higher than the lowest values over the past three years. It appears that after cherry-picking a very low historical value, Mr. Dauphinais either chose not to update this value or simply failed to do so.



Q. The analysis you've described has relied primarily on historical values. Is there a liquid forward market for energy for the next ten years that could be used as a basis for estimates of what energy prices could be in the future?

A. I have been advised by our trading group that there is not a visible, let alone liquid, forward market for energy in the MISO region for the next ten years. As far as I am

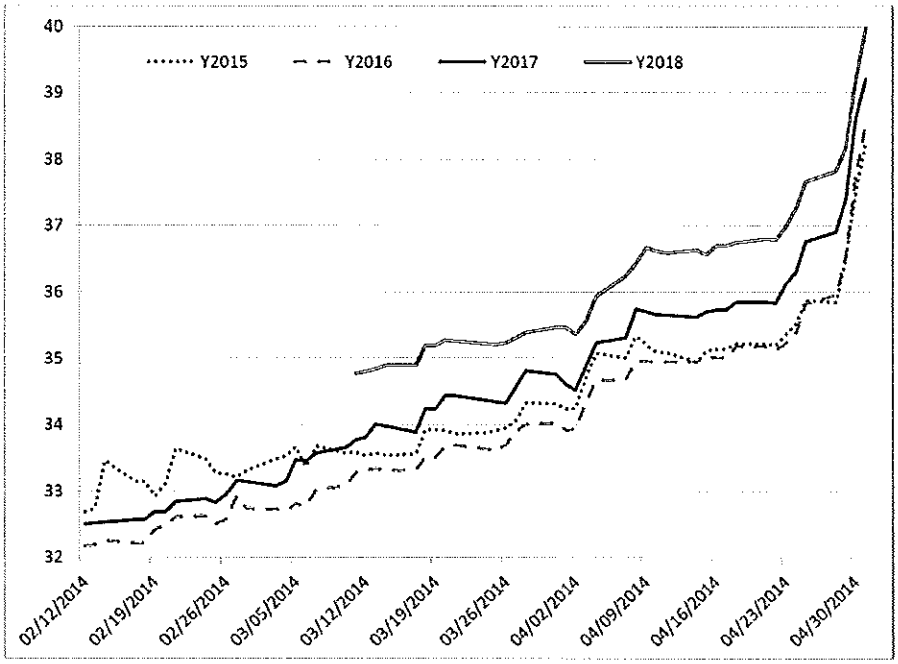
aware, there is not a visible forward market for any term specific to Ameren Missouri's load zone. As a result, there is no published, non-proprietary market information applicable to Ameren Missouri's loads on which to base assumptions for power prices for the next ten years.

Q. Are there visible forward markets in the MISO region for a period shorter than ten years?

A. Yes. There is a visible forward market for energy; however, I am not aware of a visible forward market for capacity. Forward prices for the Indiana Hub (the primary trading hub in the MISO market and the one most applicable to Ameren Missouri) are currently available for calendar years 2015, 2016, 2017 and 2018.

Q. Have these forward prices changed since Noranda filed its complaint?

A. Yes. As illustrated in the graph below, the forward prices for 2015, 2016 and 2017 have increased substantially since Noranda filed its complaint. The forward prices for 2018 were not available until mid-March, but they also have increased significantly since that time.



Q. How large has this increase been?

A. Table 5 below illustrates these increases from February 12, 2014 (the date the complaint in this case was filed), to May 1, 2014, (except for the 2018 contract which was first reported March 11, 2014.)

Table 5. Summary Of Increases In Indiana Hub Forwards Since Date Noranda Filed Complaint

	2015	2016	2017	2018**	
02/12/2014	$32.69	$32.18	$32.51	$34.78	**3/11/14
05/01/2014	$38.23	$38.54	$39.21	$39.97	
Increase	$5.55	$6.36	$6.70	$5.19	
% Increase	17%	20%	21%	15%	

Q. If you updated the energy price to reflect increases of the magnitude you just described, what costs would Ameren Missouri avoid if the New Madrid smelter were to cease operations?

A. If I assume that the market price for the AMMO.UE CpNode were to increase by the same percentages that the Indiana Hub forward prices published on May 1, 2014, increased relative to the average energy price for the twelve months ending April 30, 2014, the net market opportunity cost for each year would be $33.29, $33.54, $34.10 and $34.73 per MWh, respectively, for 2015, 2016, 2017 and 2018. Each revised value is more than $6/MWh higher than the $27.05/MWh calculated by Mr. Dauphinais. More importantly, they are all more than $3/MWh higher than the $30/MWh retail rate Noranda has proposed, which again means that if those prices were realized, our customers would be better off if Noranda were to cease operations than if the smelter remains on our system at the requested subsidized rate of $30/MWh. In considering these data, the Commission should note that the net market opportunity cost estimates I just quoted each assume no change in capacity prices, and also do not include any of the other load-related MISO charges discussed previously, which necessarily would add to the net market opportunity costs. Again, these values only represent the net market opportunity cost.

Q. Does Ameren Missouri make projections of forward market prices for capacity and energy as part of its IRP process?

A. Yes. We project energy prices for a range of scenarios and also forecast capacity prices for use in evaluating resource planning decisions as part of our IRP process. Those price projections have been recently updated for use in the development of Ameren Missouri's 2014 IRP, which is due to be filed with the Commission by October 1, 2014.

Q. Have you calculated values for costs that Ameren Missouri would avoid from not having to purchase power to serve Noranda's load from the MISO market and

the price of capacity that would be freed up if the smelter were to cease operations based on those price projections?

A. Yes. When I update the values for average energy and capacity prices based on our latest IRP projections, corrected for AECI losses and CpNode selection, and including load-based charges left out by Mr. Dauphinais, I obtain an average value for net market opportunity cost over the ten-year period 8/1/2014 to 7/31/2024 of $46.72/MWh. This average value is more than 70% greater than Mr. Dauphinais' estimate of $27.05, and represents an increase in cost to our other customers of $820 million over Mr. Dauphinais' estimate. This net market cost also is more than $630 million greater than the expected revenue Ameren Missouri would receive from the New Madrid smelter for the full ten years under Noranda's proposal.

Q. Is it reasonable to believe that power prices could increase that much over the next ten years?

A. Certainly. While no one can predict prices over ten years with a high degree of certainty, it is reasonably possible that prices could rise to levels projected in the analysis we have prepared for our upcoming IRP filing. A recent article in the *Los Angeles Times* describes some of the factors that could place significant upward pressure on power prices in the coming years.[5] These factors include the retirement of large amounts of coal generation in response to environmental regulations and the volatility of prices for natural gas as an electricity generation fuel, because natural gas is the fuel that is often used to serve an incremental amount of load.

[5] http://www.latimes.com/nation/la-na-power-prices-20140426,0,6329274.story#axzz303VGZATP

Ranges of values for these factors, along with ranges for electricity demand, are routinely included in Ameren Missouri's consideration and modeling of future power prices, including those recently developed for our 2014 IRP. Those factors and values serve as not only the basis for the $46.72/MWh ten-year average avoided cost value I just described, but are representative of those relied upon in our investment planning process and our review of demand response and energy efficiency programs.

Q. Is it possible that market prices will differ from the scenarios you presented above?

A. It is not only possible, it is almost certain that they will differ. That they could be different simply highlights the fact that essentially fixing Noranda's rate for ten years creates an enormous risk to our other customers. For the next ten years, Noranda's proposal would shift to Ameren Missouri's other customers virtually the entire risk of changes in the market prices for energy, capacity and ancillary services, other load related MISO charges (including those related to transmission expansion), costs for nuclear fuel, coal, natural gas and fuel oil, emissions compliance costs, labor, debt and capital, and a variety of other investments and services. All of these costs directly affect Ameren Missouri's cost to serve the New Madrid smelter, but the burden of paying those increased costs would be borne by Ameren Missouri's other customers – every residential customer, every small business, and every large employer that is served by Ameren Missouri, including the more than 90% of Ameren Missouri's customers who are located more than 100 miles from Noranda's facility.

Q. You have indicated that the costs that can be avoided if the smelter ceased operations, and Ameren Missouri no longer had to serve its load, are greater than the $30/MWh rate proposed by Noranda using both historical and future

assumptions for power prices. Regardless of what power prices actually turn out to be, is an adjustment necessary to provide the roughly $12 million annual benefit that Mr. Brubaker asserts Ameren Missouri's other customers would realize under Noranda's proposal?

A. Yes. Mr. Brubaker's estimate of annual benefits is simply the difference between the $30/MWh rate proposed by Noranda and Mr. Dauphinais $27.05 estimate of the net costs Ameren Missouri would avoid if Noranda were to cease operations multiplied by its annual load of 4.169 million MWh's. To achieve the $12 million annual benefit he alleges, this same $2.95/MWh would have to be added to the assumed costs that can be avoided - whatever they may be. For example, I have shown that by correcting Mr. Dauphinais' errors and updating his price assumptions to reflect more recent experience, the calculated avoided costs using his approach would be $33.89/MWh as of May 1, 2014. To provide the same level of benefit that Mr. Brubaker purports Noranda's proposal would provide, Noranda's price would have to be $36.84/MWh, or just $1.10/MWh less than Noranda's current base rate. If we instead use the 10-year average price of $46.72/MWh based on our current IRP assumptions, Noranda's rate would have to be $49.67/MWh to provide the same level of benefits.

Q. You have indicated that there are other costs related to serving Noranda that could potentially be avoided if Noranda were to cease operations. Can you describe these in more detail?

A. Yes. Ameren Missouri's peak demand requirement to serve Noranda is approximately 550 MW, including the MISO required reserve margin and AECI losses. This demand is included in the amounts Ameren Missouri uses to plan for future resource needs.

Such future needs must be satisfied through a combination of demand side resources, such as energy efficiency programs, and supply side resources, such as our existing generating fleet and possible new generating plants.

If Noranda were to cease operations, the addition of any new generating resources could be substantially delayed or even eliminated. It also would allow for greater flexibility in addressing environmental regulations, planning for the eventual retirement of aging generators in our existing fleet, and taking steps to transition Ameren Missouri's resource portfolio to one that relies more on cleaner sources of energy.

For example, environmental regulations may set limits on greenhouse gas emissions such that installation of carbon capture equipment on existing coal generators would be necessary in order to continue operating the units and comply with those limits. Those limits may be satisfied either by installing these controls or retiring an existing generator and replacing it with new generation, which may be some combination of renewable, natural gas, or nuclear generation. In either case, the costs of complying with such environmental regulations will be borne by Ameren Missouri's customers. Reducing Ameren Missouri's load and reserve requirement by over 500 MW – about the size of one of our existing coal units – means that one of these units could potentially be retired without being replaced and incurring the associated additional costs.

Q. Is the example you provided above something that could come to pass within the next ten years?

A. It very well could. Next month the U.S. Environmental Protection Agency is due to release draft rules governing the emission of greenhouse gases from existing power plants as part of President Obama's Climate Action Plan (CAP). The CAP calls for these

rules to be finalized by June 2015 with state implementation plans to be finalized in 2016, with compliance a few years after that. While little is known at this time about the draft rules, they very well could require levels of reductions in greenhouse gas emissions such that retirement of existing coal-fired units would be necessary in order to comply. Based on the timeline in the President's plan, compliance may very well be required within the next ten years.

Q. Can you provide an estimate of the potential cost associated with your example?

A. Assuming that in this example the most cost-effective solution is retirement of an existing coal unit and replacement with a 600 MW natural gas fired combined cycle unit, the capital costs associated with the replacement would be on the order of $1 billion in today's dollars. In addition to the capital cost to build the new generating plant, there would also be operating costs, including the personnel and equipment needed to operate and maintain the plant and the natural gas fuel used to produce electricity. Those costs could be avoided – or at least deferred – if the capacity Ameren Missouri now uses to serve the New Madrid smelter was available for other purposes.

Q. Are there other sources of uncertainty that would be eliminated from Ameren Missouri's planning process if Noranda were to leave the system?

A. Yes. While it is true that any of our customers could change – or cease – operations during the next ten years, it is also true that no other Ameren Missouri customer represents the magnitude of load and demand that Noranda does. This is not the first time (nor would I expect it to be the last time) that Noranda has made statements about possible closure of their facility. As a consequence, we must seriously consider the very real

possibility that at some point Noranda may cease taking service from us. If that happens after we have made substantial investments in facilities based on studies that include Noranda's load, those costs, (which may have otherwise been avoidable), will be borne by our other customers. The burden of that cost transfer is only made larger if Noranda is not paying its fair share of costs while it remains in operation, as would occur under their proposal.

Q. Based on your analysis, is it your opinion that Ameren Missouri's other customers would be better off, as Mr. Brubaker contends, if Noranda continued to be served by Ameren Missouri under Noranda's proposal compared to a situation in which the smelter ceased operations?

A. Certainly not. Ameren Missouri continuing to bear an obligation to serve Noranda's load under the terms and conditions of its proposal presents unacceptable costs and risks to our other 1.2 million other customers. Those costs and risks are very real and must be considered in making a determination as to how Noranda's rate should be set – particularly so when the alternative being presented does not allow our other customers to escape these risks for a period of ten years. As my analysis has shown, Noranda's claim that Ameren Missouri's other customers would be better off under its proposal than if the smelter ceased operations is false under any number of methods for evaluating and comparing the implications of these two cases.

Q. Are you recommending that actions be taken to facilitate a change in electric provider for Noranda?

A. No. I'm not making such a recommendation at this time. I believe such actions would have to be preceded by careful consideration of all relevant factors as well as

the impacts on Ameren Missouri's other customers and Ameren Missouri itself. While I have examined some of these factors and provided the Commission with information that indicates that customers would be better off with Noranda off the system as opposed to taking service at a heavily-subsidized rate, I do not believe it is possible, within the extremely tight schedule adopted for this case, to undertake the kind of careful consideration I believe is warranted. However, Ameren Missouri is open to considering such an option if Noranda, other stakeholders and the Commission believe it would be worthwhile and that it would be in the public's best interest.

IV. CONCLUSION

Q. Please summarize your conclusions and recommendations.

A. Noranda's proposal seeks to radically alter the manner in which its electric service rate is determined, and also proposes an immediate drastic decrease in the retail rate which it pays for service at the New Madrid smelter along with a simultaneous increase in the rates paid by all other Ameren Missouri customers to offset the effect of that decrease. The rate Noranda asks the Commission to approve is significantly below the cost to provide Noranda service. It is also below the costs that Ameren Missouri would avoid from not having to buy power to serve Noranda's load from the MISO market and the price of capacity that would be made available for sale if the smelter were to cease operations. By any reasonable measure, Noranda's request represents a significant subsidy for the New Madrid smelter from our 1.2 million other customers. Moreover, despite Noranda's assertions that continued operation of the smelter provides significant benefits to the Southeast Missouri region and, more generally, to the entire state of Missouri, only Ameren Missouri's other customers will be required to pay the subsidy.

Based on my analysis, the subsidy to fund Noranda's proposal will require our customers to pay an additional amount that ranges from more than $300 million to over $600 million over the ten-year period covered by Noranda's proposal. In addition, the amount of the subsidy Noranda is asking Ameren Missouri's other customers to provide greatly exceeds the opportunity cost savings the Company would realize if the New Madrid smelter closed or otherwise stopped taking electric service from Ameren Missouri.

Given that my analysis of both historical and potential future prices does not include the potential for increases in fuel, environmental, and operational costs, the full magnitude of the risk Noranda proposes to shift to Ameren Missouri's other customers reasonably could approach more than a billion dollars under certain scenarios. It is simply not reasonable to expect Ameren Missouri's (and only Ameren Missouri's) other customers to bear this risk for a period of ten years with no hope for relief even if there are future improvements in the aluminum market or Noranda's financial condition. Again, under Noranda's proposal, there would be no chance to adjust the subsidy for ten years.

Noranda's proposal is simply unreasonable and represents an unjustified subsidy of a single customer from the rest of Ameren Missouri's customers and a massive shift in risk to those other customers. It should be rejected.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Noranda Aluminum, Inc.'s Request For Revisions to Union Electric Company d/b/a Ameren Missouri's Large Transmission Service Tariff to Decrease its Rate for Electric Service.	))))	**File No. EC-2014-0224**

AFFIDAVIT OF MATT MICHELS

STATE OF MISSOURI)
) **ss**
CITY OF ST. LOUIS)

Matt Michels, being first duly sworn on his oath, states:

1. My name is Matt Michels. I am employed by Ameren Services Company ("Ameren Services") as a Sr. Manager, Corporate Analysis in the Commercial Transactions Department.

2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony on behalf of Union Electric Company, d/b/a Ameren Missouri, consisting of 34 pages (and Schedules N/A through N/A if any), all of which have been prepared in written form for introduction into evidence in the above-referenced docket.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct.

Matt Michels

Subscribed and sworn to before me this 9th day of May, 2014.

Notary Public

My commission expires: 1/15/2017

Julie Irby - Notary Public
Notary Seal, State of
Missouri - St. Louis County
Commission #13753418
My Commission Expires 1/15/2017