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MISSOURI PUBLIC SERVICE COMMISSION

Case No. EC-2014-0224

REBUTTAL TESTIMONY

OF

ROBERT S. MUDGE

ON

BEHALF OF

UNION ELECTRIC COMPANY
d/b/a AMEREN MISSOURI

Washington, D.C.
May, 2014

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I. INTRODUCTION

Q. Please state your name, position, business address, and the nature of your business.

A. My name is Robert S. Mudge. I am a Principal with *The Brattle Group, Inc.* My office address is 1850 M Street NW, Washington D.C. *The Brattle Group* is an economics and finance consulting firm with practice areas heavily focused on energy industry regulation and finance.

Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri").

Q. What is your professional and academic background?

A. I am currently a Principal and Chief Operating Officer of *The Brattle Group*, where I have worked since 2008. Prior to joining *The Brattle Group*, I was with another consulting firm, Charles River Associates, for 5 years. From 1989 to 2002, I was a banker at N.M. Rothschild, ABN AMRO, and Sanwa Bank focusing on energy project and corporate finance. I have an M.B.A. from the University of Chicago Graduate School of Business and a B.A. from Harvard College.

Q. Do you have experience with financial analysis?

A. Yes. I have advised energy clients on issues relating to asset valuation, acquisitions and divestitures, corporate restructuring, contract terminations or amendments, special capital needs, and bankruptcy. I have experience in analyzing contractual, regulatory, financing, and tax matters, and in estimating effects on cash flows, earnings, and end-user costs. With relevance to the matter at hand, I developed the financial model used to assess the impact of the $800 million "unwind" transaction concluded between Big Rivers Electric Corporation and E.On US in 2009, including lease termination, acquisition of generating assets, negotiation of power supply arrangements with aluminum smelters and other customers, and related financing arrangements. The model was used to support negotiation and secure regulatory approval, creditor consents, and to obtain an investment grade rating. I have assessed financial structuring, liquidity, and asset disposition issues (including closure) in separate litigation and arbitration settings for confidential clients. I have also provided business consulting services to a variety of institutions, including an investor-owned utility negotiating a transmission investment joint venture, independent power developers contemplating plant acquisitions and divestitures, and a pension fund manager assembling an energy project finance debt fund. As a banker, the bulk of my work was in connection with energy project financing as well as corporate mergers and acquisitions. I worked on numerous power project financings in the United States and abroad, as well as played a central role in developing financeable contract structures for large public/private infrastructure projects sponsored by the U.S. Department of Energy. Many of my consulting assignments have been related to project financing, including litigation cases where the cost and terms of structured

financings were at issue. In total, I have worked on more than 40 project finance-related engagements as a banker or consultant.

Q. Have you testified in other proceedings?

A. Yes. I have provided expert testimony in proceedings before the Federal Energy Regulatory Commission, utility regulatory commissions in Kentucky, Michigan, and Alberta, the United States Tax Court, the Massachusetts Superior Court, and the Maine Board of Environmental Protection, as well as in connection with arbitration proceedings.

II. PURPOSE AND SUMMARY OF MY TESTIMONY

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to respond to the direct testimony provided on behalf of Noranda Aluminum, Inc. by Kip Smith, and by Henry Fayne. I also respond to the affidavit of Kip Smith submitted subsequent to his direct testimony.

Q. Please summarize the contentions you address.

A. Mr. Smith's Testimony (the "Smith Testimony") asserts that, without a reduction in the rates at which Noranda purchases electricity for its New Madrid aluminum smelter in Southeast Missouri (the "Power Rates"), "the New Madrid Smelter would have insufficient liquidity and be subject to closure **[redacted]**, resulting in the loss of all jobs at the smelter."[1] Mr. Smith's follow-up affidavit adds the assertion that

[1] Smith Testimony, p. 6.

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"Noranda's financial performance and outlook has continued to deteriorate"[2] since Mr. Smith's direct testimony, reports on the credit downgrade for Noranda issued by Moody's in March 2014, and reemphasizes the urgency of Noranda's request for reduced Power Rates. Separately, Mr. Fayne (the "Fayne Testimony") creates the impression that the New Madrid smelter is uncompetitive at current Power Rates and that Noranda's requested Power Rates are needed to put New Madrid "near the middle of the U.S. smelters".[3]

Q. "Liquidity" is an important term in this case because of Noranda's focus on it in the Smith Testimony. Before you respond to Messrs. Smith's and Fayne's assertions, please explain how Mr. Smith defines the term "liquidity".

A. The Smith Testimony defines "liquidity" as the sum of cash on hand plus borrowing capacity, in this case under a revolving credit facility. More details are provided in the discussion below.

Q. Please summarize your responses to Messrs. Smith's and Fayne's assertions.

A. My responses to these assertions are as follows:

- Mr. Smith's assertions about a near-term liquidity crisis are not reflected in the information Noranda has provided and is providing to investors and debt rating agencies. In my opinion, this significantly calls Mr. Smith's assertions into question, as one would expect a company like Noranda to provide to investors and credit rating agencies accurate information about material financial facts – here the

[2] Smith Affidavit, p. 1.

[3] Fayne Testimony, pp. 4-5.

claimed existence of an unavoidable, near-term liquidity crisis absent a substantial reduction in one of its largest costs.

- Mr. Smith supports his assertion about liquidity with reference to a cash flow forecast for the five-year period 2014 – 2018 (the "Five-Year Period"). I observe that the cash flow forecast in the Smith Testimony relies upon assumptions that are inconsistent with Noranda's own analysis developed contemporaneously for presentation to Moody's Investors Service (the "Moody's Presentation"), a point acknowledged by Noranda in its response to data requests.[4] Notably, the Moody's Presentation forecasts cumulative liquidity hundreds of millions of dollars in excess of those in the Smith Testimony. Equally important, I show that certain assumptions underlying the Smith Testimony (but not reflected in the Moody's Presentation) are internally inconsistent. I conclude by showing that a cash flow forecast using more realistic assumptions does not require reduced Power Rates to maintain adequate liquidity, as Mr. Smith himself defines it.

- Additionally, the Smith Testimony omits any consideration of raising additional debt or equity capital as a buffer against forecast or contingent liquidity needs. This ignores possibilities for project-specific financing such as Noranda is currently implementing for the rod mill project at New Madrid.

- As to equity, I show below that Noranda's 34% owner, the private equity firm Apollo Management, L.P. (collectively with affiliates, "Apollo"), has realized nearly $360 million in dividends and stock sale proceeds *in excess of* its initial investment in Noranda in 2007, as well as earning an additional $31 million in management fees. Indeed,

[4] Noranda response to Ameren Missouri data request 7.1. The referenced Moody's presentation (the "Moody's Presentation" is attached to this testimony as Schedule RSM-1.

Noranda's own management of its balance sheet (during the period since Apollo has been its controlling shareholder) is a significant factor in any liquidity challenges Noranda may face today. Had Apollo left more cash in the business, with less need for borrowing, Noranda would not be as highly-leveraged as it is today, would have lower debt costs, and would have greater liquidity. As a result, Apollo could contribute significant additional equity capital to Noranda today with little adverse impact on its already-realized and significant returns to date to help address perceived liquidity concerns.

- Mr. Smith's follow-up affidavit does not change the above conclusions. In particular, there is no information in the affidavit that changes Mr. Smith's liquidity analysis.

- Mr. Fayne's focus on electricity costs in isolation presents data selectively and is hence misleading.

- The Fayne Testimony is opportunistic in selectively characterizing New Madrid's electricity costs in rank order relative to the average cost of other smelters. This allows the impression that New Madrid has higher relative electricity costs than it does.

- The Fayne Testimony compares smelter electricity costs without qualification for differential risks and costs embedded in other smelters' power supply arrangements that are necessary to place the electricity costs in context. I observe that there is a wide diversity of such factors accompanying different smelter electricity costs, and hence that comparing electricity costs in isolation is an oversimplification.

- The Fayne Testimony does not consider New Madrid's competitiveness on the basis of overall costs, including alumina, labor, and other operations. I show that New Madrid is well below the U.S.

average on an overall cost basis and that relevant data does not support the conclusion that Noranda must have a much lower power rate to be competitive. I also show that, based on industry data, smelters that have closed recently in the U.S. have had significant cost disadvantages *unrelated* to electricity.

III. THE SMITH TESTIMONY OVERSTATES ANY LIQUIDITY ISSUES NORANDA MAY FACE

Q. Please summarize Mr. Smith's assertions about Noranda's liquidity requirements.

A. Mr. Smith states that Noranda needs liquidity of at least **[redacted]** million for operations and **[redacted]** million "to remain a competitive smelter."[5] Per Mr. Smith's calculations at the time of his direct testimony, Noranda liquidity stood at $177 million at year-end 2013.[6]

Mr. Smith also observes that "[m]arket conditions are creating short-term liquidity challenges throughout the aluminum industry."[7] In Noranda's case, Mr. Smith presents a cash flow forecast for the Five-Year Period 2014 – 2018 that depicts a result where Noranda's liquidity is below **[redacted]** million by **[redacted]** absent reduced electricity rates, even assuming cost reductions in other aspects of company operations. This is illustrated below in Table 1 using data from Exhibit A of the Smith

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5 Smith Testimony, p. 7. As noted previously, Noranda defines liquidity as the sum of cash on hand plus borrowing capacity. More specifically, liquidity is defined in both the Smith Testimony and the Moody's Presentation as cash plus amounts available for borrowing under Noranda's asset-based revolving credit facility ("ABL"), less letters of credit outstanding, and any reduction in availability under the ABL relating to a Fixed Charge Coverage Reserve Ratio ("FCCR Ratio") below 1.0x.

6 This was the result of applying the formula in footnote 1: $79.4m + $151.7m - $34.6m -20.0m = $176.5m. Per subsequent Noranda investor presentations, the liquidity at year end 2013 was $196.5m (no FCCR deduction).

7 Smith Testimony, p. 5.

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Testimony corresponding to the scenario "With Liquidity Actions, But No Power Rate Reduction":

Table 1 – Noranda Asserted Liquidity Derivation: With Liquidity Actions, But No Power Rate Reduction *($ Millions)*

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In this hypothetical scenario, with liquidity of ** [redacted] ** million at the end of 2015 (item C in Table 1), Mr. Smith asserts that "the New Madrid Smelter would have insufficient liquidity and be subject to closure ** [redacted] **, resulting in the loss of all jobs at the smelter."[8] The implication is that once liquidity drops below ** [redacted] **

[8] Smith Testimony, p. 6.

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million the smelter would be "subject to" closure, although Mr. Smith does not say that it would in fact close.[9]

The above and other scenarios shown in Exhibit A are based on calculations in an Excel financial model accompanying the Smith Testimony: "HC_Noranda Enterprise Model_01 30 2014.xlsx", (the "Enterprise Model").

Based on the above hypothetical scenario, Mr. Smith argues, Noranda must obtain rate relief under its electricity supply arrangements in order to "survive these short-term market conditions and to sustainably reinvest in the business."[10] The result of this scenario is illustrated below in Table 2 using data from Mr. Smith's Exhibit A corresponding to the scenario "With Liquidity Actions and $30 Power Rate":

[9] Ameren Missouri asked Noranda several data requests relating to the claim that the smelter was "subject to closure," including requests for documents that address, discuss, analyze or otherwise relate or pertain to the possibility of closure. I have attached Noranda's responses to my testimony as Schedule RSM-2 HC. I would note that Noranda produced no documents that describe a possible closure of the smelter in the circumstances presented in the Smith Testimony liquidity forecasts, nor do the documents Noranda pointed to in response to other data requests (most notably data request Nos. 1.1 and 1.5).

[10] Smith Testimony, p. 12.

Table 2 – Noranda Asserted Liquidity Derivation: With Liquidity Actions and $30 Power Rate
($ Millions)

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In this scenario, with liquidity greater than ** [redacted] ** million in every year, Mr. Smith states that "Noranda has a sustainable future with this requested rate ('With Liquidity Actions and $30 Power Rate')."[11] Mr. Smith's testimony indicates that reduced electricity rates would contribute ** [redacted] ** million in additional cash flow available for capital expenditures over the Five-Year Period, or an average of ** [redacted] ** million per year.

[11] Smith Testimony, p. 12.

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Q. Are Mr. Smith's assertions about a near-term liquidity crisis in his testimony filed with the Commission consistent with the information Noranda has provided and is providing to investors and debt rating agencies?

A. No, they are not. I have thoroughly reviewed recent Noranda investor and rating agency presentations, and annual and quarterly filings with the Securities and Exchange Commission ("SEC"), (collectively, "Investor Communications").[12] Those documents, as well as documents provided with data request responses from Noranda in this case (also included in Schedule RSM-3 HC), suggest that the liquidity forecasts relied upon by Mr. Smith have not been used for any purpose other than in Noranda's efforts in this case to obtain a lower Power Rate.

Q. How does the Smith Testimony depart from information provided to investors and debt rating agencies?

A. The Smith Testimony paints a picture of an impending liquidity crisis—within Mr. Smith's definition of near-term, or 2 years[13]—that is absent from any Investor Communications or like documents. In particular, there are no suggestions that New Madrid might imminently be threatened by a cash shortfall.

To the contrary, recent Investor Communications convey a very different message. For example, Noranda's earnings presentation and conference call for Q1 2014, on

[12] Copies of the relevant Investor Communications are attached to this testimony as Schedule RSM-3 HC.

[13] Noranda response to Ameren Missouri data request 4.18.

February 19, 2014 emphasized as its final take away that Noranda has "a healthy balance sheet and a solid liquidity position". [14] The earnings call transcript elaborated:

> We ended the year with $79 million of cash combined with $117 million of availability under our ABL facility. We had $196 million of total liquidity at the end of the year. Our revolver was undrawn at year-end. We had no material funded debt maturities before 2019. We have no maintenance covenants under our credit facilities except for a requirement to maintain a minimum level of availability under the asset backed revolver to certain circumstances. We believe this flexible capital structure combined with our focus on managing controllable cost and working capital provides us with solid liquidity foundation as we work through the headwind presented by this portion of the commodity cycle.[15]

This data was corroborated in Noranda's 2013 Annual Report filed as form 10-K with the SEC on March 3, 2014.

The strong liquidity theme was echoed as recently as Noranda's earnings presentation and conference call for Q1 2014, on April 23, 2014, in which the company reported $191 million in liquidity (as Mr. Smith defines it as explained above). On that occasion, in response to an analyst question about expectations for liquidity at year-end 2014, Noranda Chief Financial Officer ("CFO") Dale Boyles responded: "I'm not seeing any material changes unless there's something that was unexpected."[16]

Separately, shortly prior to the earnings calls referenced above on January 30, 2014, Noranda had presented a confidential credit update to Moody's Investors' Service (the "Moody's Presentation") in which liquidity was naturally a core issue. The Moody's Presentation observed the following:

[14] Sch. RSM-3, p. 194.

[15] Sch. RSM-3, p. 193.

[16] Sch. RSM-3, p. 23.

- **"[redacted]**
- **[redacted]**
- **[redacted]"[17]**

As outlined below, under the analysis presented to Moody's just 13 days before the complaint was filed in this case, there was nothing suggesting a liquidity crisis for Noranda.

Q. Do the Investor Communications provide cash flow forecasts or other indicia of sustainable operations in a manner similar to the Smith Testimony?

A. No. The Investor Communications are principally retrospective.

Q. Do any other documents you have reviewed provide cash flow forecasts or other indicia of sustainable operations in a manner similar to the Smith Testimony?

A. Yes. Like Mr. Smith's testimony, the Moody's Presentation featured a five-year cash flow forecast. The Moody's Presentation also reflected Noranda's intention to seek lower electricity rates. However, the potential for lower electricity rates was not in any way shown as critical to Noranda's survival. In fact, the Moody's presentation showed liquidity above **[redacted]** million in all years, and reaching nearly **[redacted]** million in 2018, as summarized in Table 3 below:

[17] Sch. RSM-1, p. 6.

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Table 3 – Liquidity Derivation: Moody's Presentation by Noranda, January 31, 2014
($ Millions)

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For reference, a more direct comparison between the information in the Smith Testimony and Noranda's presentation to Moody's is provided below, summarizing the scenarios over the Five-Year Period 2014-2018:

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Table 4 – Noranda Liquidity Derivation: Comparative Scenarios over Five-Year Period 2014 – 2018 ***($ Millions)***

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The scenarios from the Smith Testimony are shown in columns 1 and 2, above, with differences between them reflecting the ** [redacted] ** million net impact of lowering the Power Rate over the Five-Year Period. The Moody's Presentation assumptions, shown in column 3, yield much more robust cash flows, as well as somewhat greater borrowing capacity. This results in increased liquidity of ** [redacted] ** million relative to the Smith Testimony.

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Q. Does the information Noranda provided to Moody's support Noranda's assertions that it must have a $30 Power Rate?

A. No, it does not. This is shown by Column 4 in the table above, which demonstrates that under the assumptions used by Noranda itself in the Moody's Presentation, *Noranda could operate with no reduction in electricity costs and still maintain strong liquidity.*[18]

Q. Why do the forecasts in Smith Testimony and the Moody's Presentation have such different liquidity outcomes?

A. The Smith Testimony and the Moody's Presentation differ very materially in two key forecasting assumptions: 1) London Metals Exchange ("LME") aluminum pricing[19], and 2) capital expenditures. I review these differing assumptions in greater detail below.

Q. How do the Smith Testimony and the Moody's Presentation differ in terms of forecasted LME aluminum pricing?

A. The Smith Testimony selectively forecasts revenues–and hence cash flow available for capital expenditures–on the basis of LME aluminum pricing at a single point in time rather than the market outlook from an industry expert service that was referenced by Noranda for its presentation to Moody's. The basis for this is shown clearly in a graph featured in the Moody's Presentation and reproduced below in

[18] Note that there is asymmetrical impact from adjusting Power Rates between scenarios 1 and 2 vs. scenarios 3 and 4 on a net basis, based on the workings of cash sweeps in Noranda's financing arrangements.

[19] LME aluminum pricing refers to the world price for aluminum quoted on the London Metals Exchange. LME aluminum pricing drives the bulk of Noranda revenues for products sold.

Figure 1.[20] The graph shows forward aluminum prices quoted on the London Metals Exchange ("Forward LME") as of January 22, 2014, and various analysts' forecasts of the LME price.

Figure 1 – Forward LME and Analysts' Forecasts from Moody's Presentation

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[20] Sch. RSM-1.

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The Smith Testimony adopts the Forward LME price for its forecast the lowest shown in Figure 1, while the Moody's Presentation uses the CRU forecast from CRU's Aluminum Market Outlook, December 2013.[21] Note that CRU is the same expert source of information that Mr. Fayne relies upon for most of the bases underlying the opinions he expresses in his testimony.

Q. What would be the dollar impact of adopting the CRU LME price forecast in the Enterprise Model?

A. I assess the dollar impact of adopting the CRU LME price forecast by incorporating it and related assumptions in the Enterprise Model. The outcome is shown below on a 5-year basis in Table 5:

[21] Notably, the Smith Testimony and the Moody's Presentation are based on the same forecast for the Midwest Premium, a regional price adder realized by smelters in North America.

Table 5 – Noranda Asserted Liquidity Derivation: Impact of CRU LME Price Forecast over Five-Year Period *($ Millions)*

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Adopting the CRU forecast data accounts for ** [redacted] ** million of the total ** [redacted] ** million difference between the Smith Testimony and Moody's Presentation as shown above in Table 5.

Q. How do the Smith Testimony and the Moody's Presentation differ in terms of forecast capital expenditures?

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A. The Smith Testimony forecasts much higher levels of capital expenditures than are shown in the Moody's Presentation. Noranda's historic and forecast capital expenditures are shown below in Figure 2:

Figure 2 – Noranda Historic and Forecast Capital Expenditures

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As shown in Figure 2, the Smith Testimony forecasts capital expenditures significantly greater than those in the Moody's presentation, approximately ** [redacted] ** million per year on average over the Five-Year Period for a total of ** [redacted] ** million.[22] Importantly, the Smith Testimony forecasts capital expenditures that also

[22] Source: Calculated from Noranda response to Ameren Missouri data request 7.1.

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exceed historic levels (2007 – 2013) by an even greater margin, almost **[redacted]** million per year on average.

Q. What would be the dollar impact of adopting the Moody's capital expenditure forecast in the Enterprise Model?

A. I assess the dollar impact of adopting the Moody's capital expenditure forecast by incorporating it in the Enterprise Model (shown alongside the impact of adopting the CRU LME price forecast discussed above). The outcome is shown below on a 5-year basis in Table 6:

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Table 6 – Noranda Asserted Liquidity Derivation: Impact of CRU LME Price Forecast and Moody's Capital Expenditure Forecast *($ Millions)*

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Q. What are the forecast capital expenditures in the Smith Testimony for?

A. The capital expenditure assumptions underlying the Smith Testimony are reproduced from the Enterprise Model below in Table 7. Capital expenditures fall into two broad categories, as defined in the Smith Testimony:

- *Growth Capex*: Mr. Smith defines this as needed to "grow to support Noranda's customers and maintain Noranda's competitive position"[23], and
- *Sustaining/ Other Capex*: Mr. Smith defines this as needed to "support daily operations of its plants."[24]

Capital expenditures are also distributed across the business segments, as shown in Table 7.

[23] Smith Testimony, p. 10.

[24] Smith Testimony, p. 10. Note that industry data provider CRU defines Sustaining Capital for a smelter as follows: "[T]he capital expenditures required to keep the smelter operational to a reasonably competitive and functional level. This includes the material costs for replacement and major repair of cranes and other specialised vehicles, rectifiers, transformers, pollution control equipment, the floor in the potroom, and the building superstructure. Not all of these tasks are necessarily conducted annually, but smelters normally have an annual budget for indicative purposes."

Table 7 – Capital Expenditure Assumptions in Mr. Smith's Enterprise Model ($ Millions).

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Key observations from Table 7 include the following:

- A large portion of overall forecast capital expenditures consists of Growth Capex and therefore, by definition, is not needed to maintain and *sustain* Noranda's operations, including at the New Madrid smelter;[25]
- The bulk of Growth Capex (** [redacted] ** million) is for "Unidentified Growth Projects," meaning that either Noranda doesn't know how it would spend these dollars, or is unwilling to disclose it;[26]

[25] Note that the Smith Testimony does not show that a lack of growth capital would make the smelter "subject to closure" in ** [redacted] **, but rather a lack of liquidity generally.

[26] When asked in Ameren Missouri data request 3.15 to list and describe its planned capital projects for 2014 through 2018 and to identify whether each such project would consume "Sustaining" versus "Growth" capital, Noranda responded by providing a list of capital projects "for the current plan year" (i.e., for 2014). The list identifies one "Growth" project for the New Madrid smelter: The ** [redacted] ** million rod mill project

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- The amounts allocated to Unidentified Growth Projects comprise most of the capex-related difference between the Moody's Presentation and the Smith Testimony;
- Forecast Sustaining Capex somewhat exceeds historic levels for total capex;
- Overall, the forecasts of annual capital spending on "Unidentified Growth Projects" for 2015-2018 in the Smith Testimony appear to have been estimated on a "back-calculated" basis, so that Noranda's total capital spending would amount to exactly **[redacted]** million per year, or **[redacted]** million for the 4-year period. By "back-calculated" I mean that the dollar amounts included for "Unidentified Growth Projects" were calculated as a "plug" or residual number to ensure that the total capital spending (across all projects) for each year would sum to the round figure of **[redacted]** million.

Q. Is there a clear rationale for the forecast spending on Unidentified Growth Projects in the Smith Testimony, Enterprise Model or elsewhere?

A. No. Descriptions of the Unidentified Growth Projects in the public materials Noranda provides to investors and debt rating agencies, as well as those provided in response to data requests, are sparse. The Smith Testimony refers to a **[redacted]** million project to enhance electrical efficiency at the New Madrid smelter, but notes that this project

mentioned above. In another response, Noranda notes, "Noranda looks only at a detailed listing of capital projects for the current plan year." ... "Noranda is working on a project to develop a five year strategic plan, but this project will not be completed until Q4 of 2014." Letter from Diana M. Vuylsteke to Russell Mitten, April 24, 2014. Thus Noranda is claiming that larger-than-historic capital expenditures are driving it to a liquidity crisis that justifies rate relief, but Noranda hasn't even identified the capital projects on which all of these funds would be spent. I address that issue further, below.

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is "currently on hold until the viability of the smelter is solidified".[27] This project is not explicitly described in other Noranda materials.

Q. Did you attempt to obtain more information about these Unidentified Growth Projects?

A. Yes. Ameren Missouri submitted several data requests to Noranda seeking this information.[28] Notably, discussion of future capital projects in monthly CEO reports and quarterly board presentations provided by Noranda in response to these data requests have been redacted. Consequently, Ameren Missouri is left with Mr. Smith's assertions that Noranda needs about ** [redacted] ** million per year of additional capital to invest in growth projects, but has no identification of what those projects would be, and Noranda (in a letter from its attorney) claims that it hasn't developed a capital spending plan, even though Noranda's internal documents, which as noted were not provided to Ameren Missouri, address the topic of capital investment.

Q. In your experience as a banker and consultant, would you expect a company like Noranda to have plans at some level of specificity for capital expenditures claimed to be required over the upcoming five years?

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[27] Smith Testimony, p. 14. ** [redacted] ** This underscores management discretion in the timing of capital expenditures.

[28] Noranda was asked several data requests seeking documents that discuss, address, analyze or otherwise relate or pertain to capital investments, including those for growth. Noranda produced no documents that substantiate these Unidentified Growth Projects, nor do other data request responses Noranda directed Ameren Missouri to do so. I have attached these data request responses a Schedule RSM-4 HC to my testimony.

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A. Yes, I would. Before the management of any company could expect its board to approve funding of capital expenditures of this level, I would expect that management would have to develop well-thought-out and supported justifications for the projects that would comprise such expenditures and the expected returns.[29] I would also expect any investment in "growth capital" to produce visible positive financial results for the company. Yet as I discuss below, despite asserting that it must have an additional **[redacted]** million over the five year forecast period – and must have a $30 Power Rate to obtain those dollars – this Growth Capex appears to provide no financial benefit for Noranda.

Q. Are there specific examples of investments in growth projects at Noranda that would produce positive returns and cash flows for Noranda that support your contention that growth-related projects should improve financial results?

A. Yes. Contrast the Unidentified Growth Capex Noranda asserts it needs with the capital budget for expansion of a rod mill at the smelter I mentioned above (**[redacted]** million for **[redacted]** as reflected in Table 7 above). The rod mill project is well articulated in Noranda's public and private documents (including the Moody's Presentation) and appears clearly motivated by associated increases in cash flow that it is expected to produce.[30] In the Enterprise Model, the Rod Mill investment is modeled to result in **[redacted]** million pounds per year of additional "premium" value-added product with an associated increase in earnings before interest, taxes,

[29] Noranda confirms that it evaluates new "Growth" project investments with reference to the project's internal rate of return ("IRR"). Noranda response to Ameren Missouri data request 8.1. See further discussion of internal rates of return, below.

[30] The total project cost is cited as **[redacted]** million in other documents.

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depreciation and amortization ("EBITDA") of approximately **[redacted]** million per year starting in **[redacted]**. If the incremental EBITDA were maintained for ten years, that would represent a pre-tax IRR on capital invested of more than **[redacted]**.

Q. Did Noranda provide any information about the cash flows and returns the **[redacted] million of Unidentified Growth Projects would produce?**

A. No. In fact, the Enterprise Model provided with the Smith Testimony does not appear to yield any production or cash flow improvement within the Five-Year Period, despite its assumption that Noranda would invest more than **[redacted]** million in projects designed to create "growth." According to the model, no step-change in production levels or product mix occurs after the rod mill expansion project increases rod shipments in **[redacted]**. Smelter production in the Enterprise Model is modeled identically to that underlying the Moody's Presentation, even though a much greater capital expenditure is incurred in the Enterprise Model.

Q. Does the inclusion of a claimed need for **[redacted] million of Growth Capex in Mr. Smith's model with no resulting financial benefit to Noranda make sense?**

A. No, it does not. In my opinion, including these Unidentified Growth Projects in Mr. Smith's model reflects a late-hour addition to the model used to support Noranda's assertions to the Commission, which are designed to secure the requested $30 Power Rate. This conclusion is strongly supported by the fact that the Unidentified Growth Projects produce no financial benefits for Noranda, according to the model, and by the fact that these Unidentified Growth Projects were not included in the modeling

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provided to Moody's less than two weeks before Noranda filed its complaint.[31] As earlier noted, it is also supported by the fact that Noranda has not identified what the projects are.

Q. What is the impact of including the Unidentified Growth Projects in Mr. Smith's model?

A. It artificially and unrealistically depresses cash flows making it appear that Noranda's liquidity situation is much worse than it really is (indeed, making it appear that Noranda's liquidity situation is poor, when that is not the case).

Q. Has Noranda offered any explanation for the difference in forecasting assumptions between the Smith Testimony and the Moody's Presentation?

A. Yes. In response to a data request, **[redacted]** (internal quotes added)[32] As to capital expenditures, **[redacted]**[33]

[31] In addition, capex for Unidentified Growth Projects is further disjointed in the Enterprise Model by not having been included in the Model's calculations of tax depreciation. That is, the Enterprise Model calculates and includes tax depreciation on other Capex at Noranda's U.S. facilities, but tax depreciation is not calculated or included for these Unidentified Growth Projects. This is both unrealistic and *understates* Noranda's after-tax cash flow, which further makes it appear that Noranda's liquidity position is worse than it really is.

[32] Noranda response to Ameren Missouri data request 7.1, p. 1.

[33] Noranda response to Ameren Missouri data request 7.1, p. 2.

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Q. For purposes of this proceeding, would it be reasonable to adopt assumptions more in line with those made in the Moody's Presentation in lieu of those underlying Mr. Smith's testimony?

A. Yes. At minimum, the offering of such widely divergent forecasts by the same management team days apart raises significant questions regarding which one is more appropriate to rely upon for purposes of this proceeding. In the category of LME pricing, the CRU forecast exceeded the Forward LME price by a substantial margin, and other analyst estimates exceeded the Forward LME price by yet more. Noranda clearly ascribed sufficient credibility to the CRU LME forecast to use it as the basis for a presentation to a major investor credit rating agency. Because LME pricing and associated hedging costs are not within the control of management, I believe the range of LME price assumptions shown in the Moody's Presentation are viewed appropriately as sensitivity analyses. There is nothing in Noranda's explanation of the difference in forecasting assumptions between the Smith Testimony and the Moody's Presentation that should compel acceptance of the former for purposes of this proceeding.

Management *does* have discretion over the amount and pace of spending on capital expenditures—especially in the growth category. The mere fact that Noranda claims that it only includes announced growth projects in rating agency presentations does not address or mitigate the fact that the Unidentified Growth Project assumptions in the Smith Testimony are unsubstantiated, nor does it mitigate the fact that the model relied upon by Mr. Smith assumes expenditures on the growth projects but no benefits from them, which, if included, should improve Noranda's claimed liquidity picture.

For this reason, and based on the analysis above, I view the inclusion of the **[redacted]** million of Unidentified Growth Projects as an unwarranted and logically inconsistent burden on liquidity in the Enterprise Model. Importantly, if one excludes the impact of these Unidentified Growth Projects from the Enterprise Model relied upon by Mr. Smith, even by its own calculations Noranda has sufficient liquidity. Put another way, Noranda's assertions about its liquidity crisis depend upon these Unidentified Growth Projects, which themselves are speculative and unsupported.

Q. What do the Moody's Presentation assumptions imply about the claim that Noranda must have a reduced Power Rate to preserve minimum liquidity over the next 5 years?

- Clearly, the Moody's Presentation assumptions are incompatible with such a claim, since they yield a sustainable level of liquidity, as defined in the Smith Testimony, through the Five-Year Period.[34] This is true even if the Moody's forecast is adjusted downward for the assumption of lower Forward LME prices. This can be seen in Table 8, below:

[34] Ameren Missouri sent data requests to Noranda seeking documents that discuss, address, analyze, or otherwise relate or pertain to a minimum level of liquidity that Noranda claims it needs. I have attached Noranda's responses to this testimony as Schedule RSM-5 HC. I would uote that Noranda did not produce any such documents, and that the other data request responses to which Noranda pointed Ameren Missouri in these responses (and the documents produced with these other responses) also do not provide analysis supporting the minimum liquidity requirement stipulated in the Smith Testimony.

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Table 8 – Noranda Asserted Liquidity Derivation: Comparative Scenarios over Five-Year Period 2014 – 2018 (*Millions*)

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The original Moody's scenario—column 3 from Table 4—is reproduced above, yielding liquidity of ** [redacted] ** million at year-end 2018. The impact of adjusting the original Moody's scenario to remove the Power Rate reduction—column 4 from Table 4—is also reproduced above, yielding liquidity of ** [redacted] ** million at year-

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end 2018. As a sensitivity analysis, column 5 above shows the impact of further stressing cash flows by adopting the assumption of lower Forward LME prices. Even then, using the lowest of all of alternative LME price sources discussed in the Moody's Presentation, Column 5 reflects liquidity comfortably over the threshold ** [redacted] ** million Mr. Smith claims is needed to sustain operations.

IV. HOW ADDITIONAL LIQUIDITY NEEDS, IF THEY DID EXIST, COULD BE ADDRESSED.

Q. Could Noranda's claimed target liquidity level over the next 5 years require more capital than shown in the scenarios discussed above?

A. The Smith Testimony cites target liquidity of ** [redacted] ** million, although it acknowledges that ** [redacted] ** million is sufficient. Based on the target liquidity level of ** [redacted] ** million, Noranda might need additional savings or eapital infusions in some circumstances (such as the circumstance where LME prices are below those used by Noranda in support of the Moody's Presentation). Again, this assumes Noranda has additional liquidity needs at all, which, as explained above, in my opinion is not the case and certainly has not been justified by the analysis presented by Mr. Smith.

Q. But if it had to, could Noranda raise additional debt?

A. Yes, or so one would conclude from the Investor Communications including the Moody's Presentation. As noted above, the Moody's Presentation drew attention to Noranda's financial flexibility, stating that [redacted]

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[redacted]**[35] Noranda is in fact arranging project-specific financing for the rod mill expansion (as reflected in the Moody's presentation and elsewhere).[36] Project-specific financing could arguably be arranged for other capital projects as well, which would further improve Noranda's liquidity.

Q. As a practical matter, would it be feasible for Noranda to raise additional capital from its shareholders?

A. Yes. Noranda has a distinctive shareholder mix resulting from its having been acquired by Apollo in 2007 in a leveraged buyout transaction (the "LBO"). The LBO and subsequent transactions have resulted in an equity investment with low risk and highly remunerative returns to Apollo. Apollo has realized cash returns of $360 million in excess of its original investment, and still holds 34% of Noranda's equity. In addition, Apollo has been paid management fees totaling $31 million. Meanwhile, today, Noranda has the highest debt burden of the U.S. aluminum producers, used partly to fund recent dividends to equity holders, which is a reason for the liquidity concerns described in the Smith Testimony.

To the degree liquidity issues remain a concern of management, with a bearing on the value of Apollo's remaining stake, Apollo may be the party with *both* the most to gain and least to lose by making an additional capital contribution to Noranda at this stage, as further discussed below.

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[35] Sch. RSM-1, p. 6.

[36] Notably, no such financing is indicated in the Enterprise Model for the Unidentified Growth Projects. Instead, these projects fall into the category of "Non-financed capex". This means that the **[redacted]** million in spending on Unidentified Growth Projects is funded entirely from operating cash flows—with adverse impact on liquidity—when in a more realistic scenario it might likely be funded with incremental debt, subject to the specific characteristics of the projects.

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Q. Please describe Apollo and its business.

A. Apollo is a private equity investment firm, commonly referred to in the industry as an "alternative investment" fund.[37] Private equity firms are specialized asset managers that invest money with the goal of earning a higher rate of return than the typical market investor. Private equity firms customarily, though not exclusively, invest in the equity of private (i.e., non-publicly traded) companies that may yield both greater risks and greater returns than publicly traded companies.

Private equity firms make investments through individual funds organized as limited partnerships. The private equity firm contributes its own money to the fund as well as the money of third party investors who share in the fund's returns. The funds have finite lives, typically ten years.[38] Prior to the expiration of the partnership, the fund will seek to "exit" its investments. The most common exit transactions are initial public offerings ("IPOs") and sales to other companies.

The companies in which the fund invests are frequently referred to as the fund's "portfolio companies." A portfolio company generates returns for investors in two ways. First, the fund receives dividends while it owns the portfolio company. These dividends are often much higher than the dividends typically paid by public companies. Second, the funds earn returns for their investors by selling portfolio companies for a gain (selling at a price higher than the fund's original acquisition

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37 Certain Apollo affiliates are also engaged in hedge fund activities.

38 "The Illiquidity Puzzle: Theory and Evidence from Private Equity" (with Antoinette Schoar), *Journal of Financial Economics*, 72 (April 2004) 3-40.

cost). Private equity companies frequently also earn management fees from the portfolio companies.

Founded in 1990, Apollo raises, invests and manages funds on behalf of pension, endowment and sovereign wealth funds, as well as other institutional and individual investors. As of December 31, 2013, Apollo (across multiple investment funds) had total assets under management of $161 billion.[39]

Q. Please describe the Apollo Acquisition.

A. Noranda is a portfolio company of a fund affiliated with Apollo. Apollo acquired Noranda on May 18, 2007, in a deal valued at $1.165 billion. The deal consisted of $214.2 million of equity from Apollo and the balance from debt secured by Noranda assets and operations. Under this deal structure, Apollo's only capital initially at risk was the $214.2 million of equity. That fact is important because 25 days later, on June 12, 2007, Noranda *borrowed* money to pay Apollo a dividend of $214.2 million – an amount equal to the entirety of Apollo's capital at risk.[40] In other words, after only 25 days, Apollo no longer had any risk of losing money on its acquisition of Noranda.

Q. How has Noranda's debt and equity capitalization evolved since the Apollo acquisition?

A. Debt and equity since the LBO are shown below in Figure 3.

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[39] Apollo Global Management, LLC, Form 10-K for the period ended December 31, 2013.

[40] Noranda paid a special dividend of $216.1 million on this date. $214.2 million was paid to Apollo and $1.9 million was paid to Noranda senior executives who also held a small amount of equity in the company.

Figure 3 – Noranda Balance Sheet Components Since the LBO

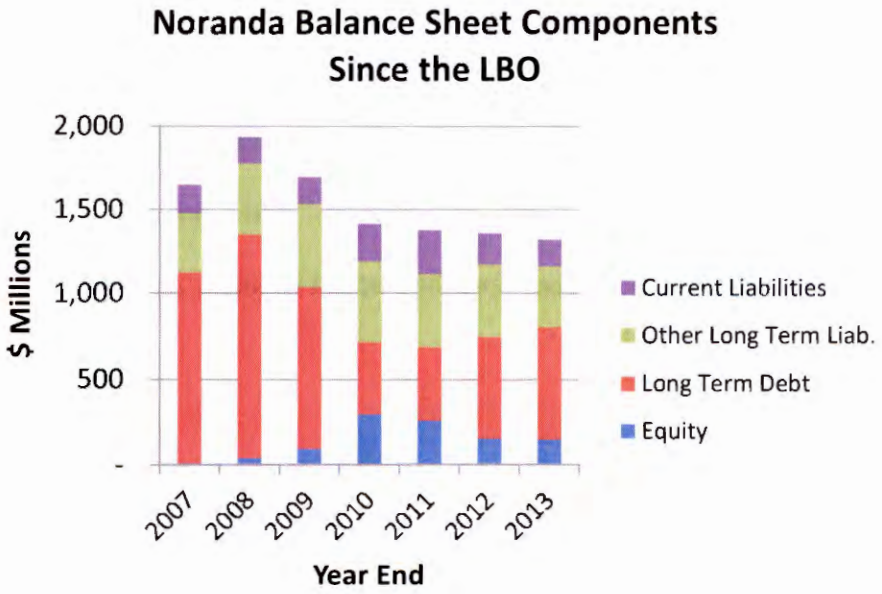

Figure 3 is based on data from Noranda's 10-K filings. As indicated, the company was nearly 100% debt capitalized at year end 2007, reflecting the LBO structure plus the subsequent debt-funded special dividend that reduced equity effectively to zero in that year. The acquisition debt was reduced via operating cash flow through 2010, when equity was raised via the IPO, raising $226 million and bringing total equity to nearly $300 million. Thereafter, however, debt increased and equity was eroded by more than $170 million in dividends to shareholders (of which $107.9 was the dividends to Apollo cited above). The ratio of long term liabilities to book capitalization stood at 87% at year-end 2013.

Q. How does this compare to other US aluminum producers?

A. It is extremely high. The ratio of long term liabilities to book capitalization at year-end 2013 stood at 59% for Alcoa and 36% for Century.

Q. Are you suggesting that Noranda's liquidity situation today, or any crisis it claims exists, could have been avoided?

A. Yes. Importantly, as I noted earlier, Apollo was still the controlling shareholder throughout the post-IPO period, and hence made the decision to incur debt to pay dividends to itself and the public shareholders. Had it not done so, or had it done so to a significantly less degree, Noranda's actual liquidity position today would be far better than it is.

Q. Please describe Apollo's returns on its investment in Noranda.

Following the acquisition, Noranda paid Apollo an additional dividend of $100.7 million on June 13, 2008. Then, as is typical for private equity investments, Noranda conducted an IPO of approximately 1/3 of its equity on May 19, 2010, to set the stage for Apollo's eventual exit. After the IPO, Apollo received an additional $107.9 million in dividends and $151.1 million from the secondary sale[41] of Noranda stock. In total, since the acquisition, Apollo has realized dividends of $422.8 million and realized stock sale proceeds of $151.1 million ($359.7 million in excess of its initial investment of $214.2 million) while still retaining a 34% ownership stake in the company. Apollo's initial investment and realization of returns over time are summarized below in Table 9. Importantly, Apollo has also realized an additional $31 million in management fees since the acquisition.

[41] The sales were "secondary" in the sense that they occurred after the IPO and there was already a public market for Noranda stock.

Table 9 – Pre-tax Cash Flows to Apollo from Noranda Investment

Apollo Return on Investment ($M)				
	Initial Investment	Dividends	Stock Sales	Net Investment
5/18/07	$ (214.20)	$ -	$ -	$ (214.20)
6/12/07	$ -	$ 214.20	$ -	$ 214.20
2008	$ -	$ 100.67	$ -	$ 100.67
2009	$ -	$ -	$ -	$ -
2010	$ -	$ -	$ -	$ -
2011	$ -	$ 44.13	$ -	$ 44.13
2012	$ -	$ 59.20	$ 106.10	$ 165.30
2013	$ -	$ 4.27	$ -	$ 4.27
2014	$ -	$ 0.33	$ 45.00	$ 45.33
Total	**$ (214.20)**	**$ 422.80**	**$ 151.10**	**$ 359.70**
Pre-Tax IRR				**340%**

For perspective, I have also undertaken to characterize Apollo's return in the form of an internal rate of return ("IRR"), a metric commonly used to evaluate the attractiveness of investments in many settings (including for private equity firms), which is shown for Apollo on a pre-tax basis. The IRR measures the *annual* rate of return of an investment, taking into account the timing of cash flows. Over time, an IRR really measures the same thing as an annual return on equity ("ROE") as it might occur in a public utility context or in the context of other industries. If the average annual ROE is 10%, and cost recovery for initial capital invested (or depreciation) occurs over ten years, then the IRR of that investment over ten years would be 10%.[42]

In the case of the Apollo investment, the IRR--calculated on a pre-tax basis--is an astronomical 340% through the stock sale just closed on March 17, 2014, as shown in

[42] This is a generic example. Note that *any particular* IRR calculation must be qualified for factors such as riskiness of the investment and whether it is applied to cash flows pre or post debt financing, and pre or post tax.

Table 9. This high IRR reflects the extremely short time frame in which Apollo's original investment of $214.2 million was recovered. The timing of cash flows can be mechanically analogized to a utility investment in which depreciation is recovered in 25 days, but an ROE continues to be earned on the original investment for a period of years.[43]

Q. You mentioned before that Apollo retains 34% of Noranda's stock. Why is this significant?

A. First, it is significant because under Noranda's corporate structure a 34% interest is a controlling interest, allowing Apollo to control Noranda's decisions. Second, to the degree Noranda management or Apollo view the value of Noranda equity as imperiled by liquidity concerns, Apollo is in a superb position to make additional capital investments critical to preserving the value of its 34% share, but with minimal adverse impact on its realized return to date.[44] Conversely, for Apollo to allow a liquidity crisis at Noranda to occur, potentially leading to the closure of New Madrid, would impair the value of its remaining investment.

From another perspective, given that Apollo has already earned spectacular returns on its investment *even before considering the value of its 34% share*, a reduced Power Rate could be viewed as a windfall to Apollo funded by the other ratepayers of Ameren Missouri.

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[43] To put a finer point on this by analogy to a public utility, the utility would recover through rates from customers all of its investment in plant in just 25 days, but would leave the plant in its rate base for many years thereafter and earn a return on it, without lowering its rates to reflect that it had recovered the depreciation.

[44] Mathematically, because of the timing of Apollo's realized cash flows, it would require a very significant cash outflow at this stage to adversely affect returns to date.

V. MR. FAYNE'S FOCUS ON COMPARATIVE ELECTRICITY COSTS USES DATA SELECTIVELY AND IS THEREFORE MISLEADING

Q. Please summarize Mr. Fayne's assertions about comparative Electricity Costs.

A. The Fayne Testimony is centered around Exhibit HWF-1, which is reproduced below in Figure 4.

Figure 4 – Reproduction of Exhibit HWF-1

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Exhibit HWF-1 shows electricity costs in 2013 for the nine U.S. smelters operating in that year (the left-hand panel above) as well as a "Proforma" depiction of electricity costs for those nine smelters to reflect going-forward assumptions (the right-hand panel), including in particular the Power Rate requested for New Madrid.[45] The Fayne Testimony refers to Exhibit HWF-1 to assert the following:

> [T]he electricity rate for the New Madrid smelter is $41.2/MWh, which represents the fourth highest electricity rate among U.S. smelters for 2013, and a rate that is more than 39% higher than the average rate paid by non-U.S. smelters, excluding China. At the rate requested in this proceeding, New Madrid would fall near the middle of the U.S. smelters and still be above the global average.[46]

The implication of this is that the New Madrid Smelter has a high cost relative to other U.S. smelters and to smelters in the rest of the world. Mr. Fayne asserts about New Madrid that "[i]f its costs are high relative to other producers, its continued viability is at risk…".[47]

Q. Does Mr. Fayne definitively assert that the economic viability of the New Madrid smelter is threatened by its electricity costs?

A. No. As indicated above, Mr. Fayne simply allows the impression to exist. This is reinforced by the response to Ameren Missouri's data request clarifying that Mr. Fayne did not review total smelter costs.[48] In this way, Mr. Fayne implicitly concedes that a comparison of electricity costs in isolation is incomplete and does not

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[45] The Proforma electricity costs also reflect market electricity purchases for the Hawesville and Sebree smelters, which have terminated their contractual supply arrangements. Based on responses to data requests, I understand that Mr. Fayne relied on an article from a local newspaper as the source of assumptions for market electricity costs.

[46] Fayne Testimony, p. 4.

[47] Fayne Testimony p. 5.

[48] Noranda responses to Ameren Missouri data requests 2.12 and 2.19.

demonstrate the relevant point in determining the likely future success of the New Madrid smelter, which does not depend solely on electricity costs.

Q. Is the above implication of the Fayne Testimony, that New Madrid is non-competitive because of excessive electricity costs, supported by the data highlighted in the Fayne Testimony?

A. No. Mr. Fayne's exclusive focus is on comparative electricity costs. Furthermore, the Fayne Testimony 1) highlights data selectively and 2) is presented out of context, and is therefore misleading.

Q. How is data highlighted selectively?

A. The Fayne Testimony is opportunistic in characterizing New Madrid's electricity costs in rank order as well as relative to the average cost of other smelters. For example, in the 2013 data in Exhibit HWF-1, the Fayne Testimony highlights New Madrid's electricity costs as the fourth most expensive of the nine U.S. smelters. By contrast, on a Proforma basis reflecting Noranda's requested $30 Power Rate, the Fayne Testimony says New Madrid would "fall near the middle of the U.S. smelters."[49] This creates the impression that the requested Power Rate reduction is needed to achieve equitable treatment for New Madrid.

What the Fayne Testimony does not highlight is that New Madrid's electricity was only slightly more expensive than the U.S. average in 2013, by only approximately 3%. Meanwhile, on a Proforma basis, as shown in the adaptation of Exhibit HWF-1

[49] Fayne Testimony, pp. 4-5.

in Table 10 below, the Noranda rate request would put New Madrid 13% below the U.S. average. This is true even depicting the Hawesville and Sebree smelters at assumed market electricity costs distinctly lower than 2013 levels on a Proforma basis.[50]

Table 10 – Adaptation of Proforma Results from Exhibit HWF-1

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[50] Note also that, since Mr. Fayne filed his direct testimony Alcoa has shut down operations at the Massena East smelter. Therefore I have removed Massena East from the Proforma comparison.

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Q. Even if depicted accurately, is a comparison of electricity costs in isolation like Exhibit HWF-1 a definitive indicator of smelter viability?

A. No. The impact of electricity costs on smelter viability can only be meaningfully assessed in the context of all cost and risk factors. These fall into at least the following two categories: 1) additional costs and risks that are embedded in other smelter electricity supply arrangements, and 2) total costs of production, including major cost drivers such as alumina[51] and labor, as well as cost offsets resulting from value-added premia.[52]

Q. Is there evidence of additional costs and risks embedded in other smelter electricity supply arrangements?

A. Yes. Each U.S. smelter has a unique power agreement and most of the smelters have agreed to, or have potentially exposed themselves to, additional costs or risks in exchange for lower rates instead of simply obtaining an unconditional supply of lower cost power. These include the following[53]:

- *Investment commitments:* For the Massena and Ferndale smelters, Alcoa has agreed to make capital improvements of $600 million and $35 million respectively. By contrast, Noranda has made no commitments even if it were to receive a lower electricity rate.

[51] Alumina is the raw material used to produce aluminum.

[52] As evidenced by Noranda's responses to a series of data requests, neither Noranda nor Mr. Fayne considered or even have information (unless it is in CRU data in their possession, which they refused to provide) about the cost of production at other smelters. I have attached those data request responses to my testimony as Schedule RSM-6. Without that cost information, Noranda cannot validly suggest, much less claim, that New Madrid's costs are high relative to other producers. As I discuss herein, the competitiveness and viability of the smelter, like any business, depends on overall costs and not just one cost.

[53] Based on CRU data and public information.

- *Employment commitments:* Alcoa agreed to maintain 750 employees at Massena and to maintain employment at Ferndale (in proportion to electricity consumed). Again, Noranda has made no such commitments.
- *Closure penalties:* For the Wenatchee smelter, Alcoa signed an agreement in which it agreed to pay an $89 million capacity reservation charge, but over $66 million of that charge was deferred as long as the smelter continues to operate.[54] This in effect created a large penalty for closing the smelter in exchange for a lower power rate.
- *Market risk:* Three smelters are exposed to market electricity risk: Hawesville and Sebree recently won approval to terminate their contract with Big Rivers Electric Corporation and source power from the wholesale market, while Warrick self-supplies power through a coal-fired generation unit, with potential contingent exposure to the market. Consequently, Hawesville, Sebree and Warrick cannot properly be characterized as "having" the rates Mr. Fayne cites because these market risks could significantly raise those rates. As noted above, the electricity cost for Hawesville and Sebree of $37/MWh reported in Exhibit HWF-1 was based on an article from a local newspaper and is subject to considerable uncertainty. Warrick may be significantly threatened by tightening environmental regulation affecting coal resources, as well as plant outages when market electricity must be purchased.

While the Fayne Testimony alludes to these arrangements, they are not used to qualify the data in Exhibit HWF-1 or conclusions based on that data. Consequently, it is misleading to make claims about the relative ranking of the New Madrid smelter's electricity costs to the other U.S. smelters as if they all have fixed electricity

[54] Chelan County PUD News Release, "Alcoa Power Sales Contract Signed," July 14, 2008.

prices when some of those prices are not fixed and where, in some cases, the smelters were required to make other commitments or expose themselves to other financial risks in order to gain modifications to their previous electric supply arrangements.

Q. Has Noranda proposed to undertake any investments or to guarantee a particular level of employment in exchange for their requested rate reduction?

A. No, to my knowledge it has not.

Q. What about total costs?

A. While electricity makes up a large portion of total costs for all aluminum smelters, there are many other significant cost components which can also vary greatly across facilities and affect overall viability. The Fayne Testimony itself makes this point: "[t]he cost of production will vary among smelters based on the cost of goods and services as well as the configuration of the plant. However, in general, the cost of alumina, labor and electricity account for 75%-80% of the cost, with alumina and electricity each compromising about one-third of the cost of production."[55]

Q. Have you compared total cost data for New Madrid to that of other Smelters?

A. Yes. For this purpose I consulted the same industry database cited in the Fayne Testimony, CRU.[56] I compiled data provided by CRU on the balance of production costs (i.e. non-electricity) for each smelter in the U.S., as well as related parameters

[55] Fayne Testimony, p. 3.

[56] CRU is an independent business analysis and consulting organization that concentrates solely on mining, metals and fertilizers. CRU provides data, business intelligence, and consulting services to clients in these industries. Aluminum is one of the key industries followed by CRU, and CRU collects data on the costs and production processes of all smelters around the world. As Mr. Fayne states in his direct testimony, CRU is "generally used in the industry as a source of such data."

such as efficiency, and then integrated that data with the electricity costs cited in the Proforma scenario of the Fayne Testimony to produce total costs on a dollar per ton basis.[57]

The results are shown graphically below in Figure 5. Note that New Madrid is shown twice: on the basis of its Proforma (requested) cost of electricity, as well as based on its current power cost.

Figure 5 – U.S. Smelters – 2013 Total Costs

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[57] Notably, other than Sebree and Hawesville, now purchasing power in the wholesale market, and the requested reduced Power Rate for New Madrid, the electricity cost data I reviewed from CRU is materially the same as that cited in Exhibit HWF-1.

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I draw the following conclusions from Figure 5:

- If Noranda were granted the electricity rate it has requested in this proceeding, New Madrid would have the lowest total costs of any smelter operating in the U.S.
- At current electricity rates, New Madrid operates at a lower total cost than the average U.S. smelter, and is the third cheapest producer of aluminum in the U.S.

Q. What contributes to New Madrid's current cost advantage relative to the average U.S. smelter?

A. According to the CRU data, the New Madrid smelter benefits from the cheapest alumina supply in the nation. New Madrid receives alumina delivered to the smelter at **[redacted]** per ton of alumina, translating into a cost of **[redacted]** per ton of aluminum as shown above in Figure 5. This is well below the 2013 average cost reported by CRU for currently operating smelters in the U.S. profiled in the Fayne Testimony, with a delivered cost of **[redacted]** per ton, or **[redacted]** per ton of aluminum. The CRU data also shows that New Madrid "subsidizes" its own costs by generating substantial value-added premia at the smelter. This effective offset to costs is shown in Figure 5 in the "Other" category, and is applied consistently for all the smelters in the CRU database.

Q. Why has New Madrid been able to benefit from such cheap alumina?

A. CRU reports that New Madrid has a substantial advantage over its peers in purchasing alumina. One component of this is delivery cost. Given that Noranda's Gramercy alumina refinery is located along the Mississippi River, no ocean freight is needed to transport alumina to the smelter in New Madrid. The only transportation

cost reported by CRU is the cost of moving alumina up the Mississippi by barge to New Madrid. This means that Noranda faces alumina delivery costs **[redacted]** cheaper than the average smelter in the U.S.

New Madrid also benefits from a very low "free on board" ("FOB") cost, prior to the cost of delivery.

Q. How are "Other" costs in Figure 5 calculated?

A. Other costs shown in Figure 5 are an aggregation of several smaller cost categories reported in the CRU data. This includes costs for fuel, carbon, bath materials, pot relining, maintenance, sustaining capital, working capital, marketing, financing, metal delivery, and other costs. In addition, CRU includes the cost of operating the cast house at each smelter. Importantly, CRU nets out from these costs the locational and value-added premiums received by each smelter. This netting in the derivation of total costs is maintained for purposes of comparability across the U.S. smelters.

Q. What does total cost data say about smelters that have retired?

A. As discussed in the Fayne Testimony, many smelters in the U.S. have closed in recent years. Mr. Fayne attributes that solely to electricity costs, but as I discuss below, this conclusion is not supported by cost data reported by CRU for recently closed smelters. Instead, the CRU data shows that the closed smelters had overall cost disadvantages that significantly outweighed electricity cost handicaps.

I reviewed total costs for six smelters which have recently shut down in the U.S. These are the smelters in Rockdale, TX, Columbia Falls, WY, Alcoa, TN,

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Ravenswood, WV, Hannibal, OH, and Massena, NY (Massena East). These smelters have all closed down operations within the last six years.

For each of the above listed smelters I compared the total cost data provided by CRU for the last year of operation with the total costs for the currently operating smelters. Figure 6 presents this comparison.[58]

Figure 6 – Total Costs at Recently Closed Smelters

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As previously shown, the average cost for currently operating smelters in 2013 was **[redacted]**/ton, shown in Figure 6 above as a dark horizontal line. Notably, the highest cost smelter, Wenatchee, had total costs of **[redacted]**/ton.[59] Figure 6 shows that all of the six recently closed smelters had higher total costs than the current

[58] I have adjusted historic data using an assumed 2% inflation rate to approximate 2013 dollars.

[59] See Figure 5.

average when they closed, in 2013 dollars. Moreover, all of the smelters that have closed in the last six years have higher total costs than Wenatchee.

Additionally, I reviewed electricity costs reported by CRU at each of these recently closed smelters. Mr. Fayne asserts that in each case where a smelter has shut down in the U.S. since 1980, "the smelter shut down because of high power costs."[60] But Figure 6 shows that, in terms of dollars per ton, non-electricity factors were much more consequential. Thus it is hard to understand how Mr. Fayne can claim (with any basis) that the reason the smelters shut down was due to high electricity costs, and high electricity costs alone.

VI. CONCLUSION

Q. Please summarize your response to the Smith Testimony.

A. The Smith Testimony overstates any liquidity issues Noranda may face. I conclude this based on material inconsistencies between the Smith Testimony and prior and contemporaneous Investor Communications, as well as internal inconsistencies in the liquidity forecast provided by Mr. Smith. In particular, the liquidity forecast is premised on an unsubstantiated need to spend ** [redacted] ** million on "Unidentified Growth Capex". The Unidentified Growth Capex is both unspecified in any Noranda materials I have had the opportunity to review and is depicted in an unrealistic fashion in Mr. Smith's cash flow model by omitting any associated benefits that might reasonably be expected to motivate such an investment (as well as associated tax depreciation). Mr. Smith's own liquidity forecast shows that, absent the

[60] Fayne Testimony page 4.

Unidentified Growth Capex, there is no near term liquidity crisis requiring a Power Rate reduction.

Additionally, the Smith Testimony omits any consideration of raising additional debt or equity capital as a buffer against forecast or contingent liquidity needs. This ignores potential possibilities for additional project-specific financing such as Noranda has implemented in the past. More importantly, the Smith Testimony disregards the hundreds of millions in cash extracted from Noranda in recent years by its controlling shareholder, Apollo, and the strong incentives for Apollo to protect the value of its remaining 34% stake with additional investment (at low risk, in light of its returns to date).

Q. Please summarize your response to the Fayne Testimony.

A. Mr. Fayne's focus on comparative electricity costs uses data selectively and is therefore misleading. Also, importantly, Mr. Fayne does not definitively assert that the economic viability of the New Madrid smelter is threatened by its electricity costs, but merely allows that impression to exist. Among other things, the Fayne Testimony compares smelter electricity costs without qualification for differential risks and costs embedded in other smelters' power supply arrangements that are necessary to place the electricity costs in context.

Most significantly, however, the Fayne Testimony does not consider New Madrid's competitiveness on the basis of overall costs, including alumina, labor, and other operations. A review of data compiled by CRU, an independent business analysis and consulting organization also relied upon by Mr. Fayne, shows the following:

- If Noranda were granted the electricity rate it has requested in this proceeding, New Madrid would have the lowest *total* costs of any smelter operating in the U.S., and
- At current electricity rates, New Madrid operates at a lower total cost than the average U.S. smelter, and is the third cheapest producer of aluminum in the U.S.

The relevant data does not support the conclusion that Noranda must have a much lower power rate to be competitive.

Q. Does this conclude your testimony?

A. Yes it does.

SCHEDULE RSM-1

IS DEEMED

HIGHLY CONFIDENTIAL

IN ITS

ENTIRETY

SCHEDULE RSM-2

IS DEEMED

HIGHLY CONFIDENTIAL

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SCHEDULE RSM-3

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SCHEDULE RSM-4

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SCHEDULE RSM-5

IS DEEMED

HIGHLY CONFIDENTIAL

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SCHEDULE RSM-6

IS DEEMED

HIGHLY CONFIDENTIAL

IN ITS

ENTIRETY

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 ROBERT MUDGE

STATE OF MASSACHUSETTS)
) **ss**
COUNTY OF BARNSTABLE)

Robert S. Mudge, being first duly sworn on his oath, states:

1. My name is Robert S. Mudge. I am employed by *The Brattle Group* as a Principal. *The Brattle Group* is an economics and finance consulting firm with practice areas heavily focused on energy industry regulation and finance.

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 54 pages (and Schedules RSM-1 through RSM-6 if any), all of which have been prepared in written form for introduction into evidence in the above-referenced docket.

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

Robert S. Mudge

Subscribed and sworn to before me this 8 day of May, 2014.

Notary Public

My commission expires: June 8, 2018