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Witness: David Humphreys  
Sponsoring Party: Union Electric Company  
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**MISSOURI PUBLIC SERVICE COMMISSION**

**FILE NO. ER-2014-0258**

**REBUTTAL TESTIMONY**

**OF**

**DAVID HUMPHREYS**

**ON**

**BEHALF OF**

**UNION ELECTRIC COMPANY  
d/b/a Ameren Missouri**

London, United Kingdom  
January, 2015

**NP**

**REBUTTAL TESTIMONY**

**OF**

**DAVID HUMPHREYS**

**FILE NO. ER-2014-0258**

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

2 A. David Humphreys. My business address is 18 St Michael's Street, London W2  
3 1QT, United Kingdom.

4

5 **Q. WHAT IS YOUR OCCUPATION?**

6 A I am principal of my own consulting company, DaiEcon Advisors.

7

8 **Q. PLEASE DESCRIBE YOUR BUSINESS AND EDUCATIONAL BACKGROUND**

9 A I have worked on mining and mineral-related issues for over 37 years. Between  
10 1997 and 2008, I served as chief economist to two of the world's largest mining  
11 companies, Rio Tinto and Norilsk Nickel. In both these companies I had group-wide  
12 responsibility for economic and industry analysis and commodity price forecasting.  
13 These responsibilities extended across all commodities, including aluminium. I have  
14 served on the statistics committees of both the International Aluminium Institute and  
15 the European Aluminium Association, including a period as chairman of the latter. For  
16 ten years I authored the annual review of the aluminium industry for the trade  
17 publication *Mining Journal*.

18

1 Since 2009, I have worked as a consultant and as a mining company non-executive  
2 director. I have lectured and published widely on the economics of the mining industry.  
3 I have been a visiting scholar at the Colorado School of Mines and the Catholic University  
4 of Chile in Santiago, a Bosch Fellow at the Transatlantic Academy in Washington DC, and  
5 an honorary lecturer at the University of Dundee.

6

7 I have a bachelor's degree and PhD from the University of Wales.

8

9 **Q. PLEASE DESCRIBE THE BUSINESS OF DAIECON ADVISORS**

10 A. DaiEcon Advisors provides strategic consulting services to mining companies,  
11 financial institutions and international agencies.

12

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

14 A. The purpose of my testimony is to respond to the direct testimony given by  
15 Mr. Dale W. Boyles on behalf of Noranda Aluminum, Inc. Specifically, my testimony  
16 evaluates the approach employed by Noranda Aluminum to forecast aluminium prices  
17 used in the assessment of future sales revenues for the New Madrid smelter.

18

19 **Q. YOU MENTIONED THAT YOU HAVE EXPERIENCE IN THE ALUMINIUM INDUSTRY.**

20 **DOES THIS EXPERIENCE INCLUDE WORK FOR COMPANIES THAT OWN AND OPERATE**

21 **ALUMINIUM SMELTERS?**

22 A. Yes. As mentioned, I was Rio Tinto's chief economist between 1997 and 2004.

23 Rio Tinto is one of the largest aluminium producers in the world. Like Noranda

1 Aluminum, Rio Tinto has bauxite mining and alumina refining operations, and operates  
2 aluminium smelters around the world.

3

4 **Q. HOW WOULD YOU CHARACTERISE THE APPROACH ADOPTED BY NORANDA**  
5 **ALUMINUM IN FORECASTING ALUMINIUM PRICES?**

6 A. Noranda Aluminum takes as its starting point the forecast of the average  
7 aluminium price<sup>1</sup> for the period 2016-2025 made by consultants CRU in December  
8 2014,<sup>2</sup> expressed in 2013 dollar terms. CRU is a reputable commodity sector  
9 consultancy, based in London. Noranda Aluminum has engaged Mr. Colin Pratt of CRU  
10 as an expert witness.

11

12 Mr. Pratt explains that, in the early years of the forecast period (up to 5 years), CRU  
13 forecasts are based on modelling the fundamentals of supply and demand. For this  
14 period, the price cycle forecast by CRU is clear and explicit. Out beyond this period, CRU  
15 provides its price forecast in the form of a multi-year average. Cycles reflecting  
16 variations in economic growth, metal output and inventory levels are implicit in the  
17 forecasts. For this second period, Mr. Pratt explains that “CRU forecasts are based on  
18 the idea of mean reversion towards a value that is based on the long run costs of  
19 production (long run marginal cost or LRMC).”<sup>3</sup> From the standpoint of statistical  
20 probability, I (and I believe aluminium industry professionals generally) interpret

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<sup>1</sup> Unless otherwise specified, the aluminium price in this testimony refers to the London Metal Exchange (LME) three-month price plus the Midwest Premium.

<sup>2</sup> CRU, *Aluminium Market Outlook*. December 2014. My understanding is that Noranda has relied upon CRU forecasts for various purposes in the past, for example in its presentation to the credit rating agency Moody's on 31 January 2014.

<sup>3</sup> Pratt testimony, page 10.

1 forecasts like those of CRU to represent an “expected” or “central” case, with equal  
2 likelihood of actual prices turning out to be higher or lower.

3

4 Mr. Boyles’s testimony claims that forecasts such as CRU’s do not constitute a realistic  
5 basis for projecting expected revenues for a smelter producing and selling primary  
6 aluminium since the price forecasts beyond the first few years do not show explicit year-  
7 to-year cyclical variation. To overcome this perceived limitation, Noranda Aluminum  
8 imposes on the CRU forecast a specified path of price reductions and increases to be  
9 assumed for the period 2016-2025 based on select historic patterns of price volatility.

10 Specifically, Mr. Boyles adopts the actual performance of aluminium prices in the

11 10-year periods commencing 1998, 1999 and 2000 as the “model” for this future cycle.

12 For each period, Mr. Boyles calculates the average level of primary aluminium pricing in  
13 the US.<sup>4</sup> Mr. Boyles then calculates the historic variation from the average for each year

14 in the whole 10-year period, in percentage terms.<sup>5</sup> The resulting series of percentage  
15 variations from average for the selected historic periods is then applied to CRU’s

16 forecast average for 2016-2025.<sup>6</sup> The calculation is detailed in Exhibits A1, A2 and A3 of

17 Mr. Boyles’s testimony, corresponding to each of the three-year periods. Mr. Boyles

18 explains the methodology further, as follows:

19 By using the ten year period beginning in 1999 for example, to determine  
20 projected price for 2016, we applied the variation of 1999 to the real ten year  
21 average (16% below average) to the **\*\*[REDACTED]\*\*** per pound long-term average  
22 [forecast by CRU], to determine a projected real price (in 2013 dollars) of

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<sup>4</sup> This consists of the LME three-month price plus the Midwest Premium.

<sup>5</sup> Note that historic price data are converted into 2013 dollar terms in order to assess volatility independently of general inflationary effects.

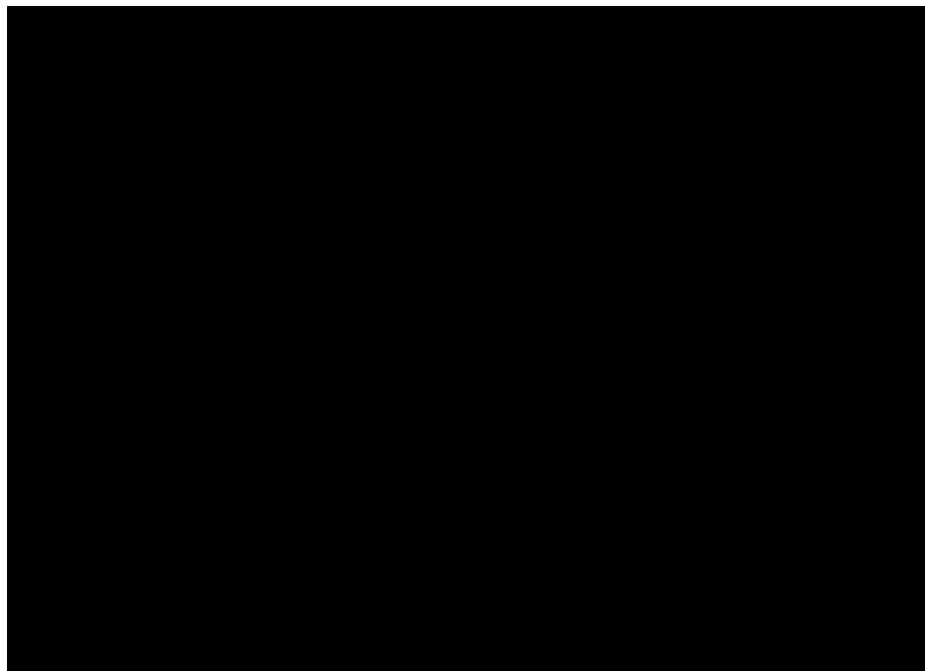
<sup>6</sup> Note that CRU’s price forecasts are also converted into 2013 dollar terms in order to derive historical deviations independent of general inflationary effects. The average CRU forecast for 2016-2025 in 2013 dollar terms is **\*\*[REDACTED]\*\*** per pound.

1            \*\* [REDACTED] \*\*. We repeated this step, applying the variation for 2000 as a basis for  
2            forecasting the average price for 2017.<sup>7</sup>

3

4            I have closely examined Mr. Boyles's exhibits. The calculation corresponding to the  
5            period starting in 1999 (Exhibit A2) can be represented in graphical terms, as shown  
6            below in Figure 1:

\*\*



\*\*

Figure 1. Graphical representation of Noranda Aluminum's Exhibit A2 volatility analysis<sup>8</sup>

7            **Q.        CAN YOU EXPLAIN THE USE THAT HAS BEEN MADE OF THE ALUMINIUM PRICES**  
8            **DERIVED IN EXHIBITS A1, A2 AND A3 IN MR. BOYLES'S TESTIMONY?**

9            A.        Mr. Boyles takes the aluminium prices for the period 2016-2025 in 2013 dollar  
10           terms derived from his methodology and coverts them into nominal (money-of-the-day)  
11           terms using a general inflation factor. He uses the resulting nominal aluminium prices to

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<sup>7</sup> Boyles testimony, page 16.

<sup>8</sup> The data for this figure are taken directly from spreadsheets supplied by Mr. Boyles and Mr. Pratt in support of their testimonies. Similar patterns exist for Mr. Boyles's 1998 and 2000 cases, which I have depicted in Schedule DH-R1 to this testimony.

1 drive expected revenue assumptions in Noranda Aluminum's cash flow forecasts for the  
2 period 2016-2021.<sup>9</sup>

3

4 **Q. DO YOU SEE ANY PROBLEMS WITH NORANDA ALUMINUM'S APPROACH?**

5 A. Yes, I do. But first I should like to isolate the points where I do not have a  
6 problem with Noranda Aluminum's testimony. I wholly accept that aluminium prices are  
7 volatile year to year and endorse much of the analysis in the testimony supplied by CRU.  
8 I also accept that over time the aluminium price tends to reflect broad cyclical patterns,  
9 albeit that the precise length and amplitude of these cycles vary widely. For both these  
10 reasons, I am drawn to the conclusion that the future course of the aluminium price  
11 cannot be known with any certainty.

12

13 **Q. SO WHERE DO YOU SEE THE PROBLEMS?**

14 A. First, I see a basic conceptual problem with adjusting the CRU forecast using  
15 price volatility experienced over selectively chosen historic 10-year periods to represent  
16 an "expected" or "central" case. This is in part rooted in the particular historical time  
17 periods Mr. Boyles has chosen to serve as "models" for his future price projections. The  
18 time periods cannot fairly be considered representative of market conditions relevant to  
19 the period 2016-2025 and are therefore arbitrary predictors for that period.  
20 Additionally, I see a problem with the assumptions made about the length of the price  
21 cycle. Most fundamentally, however, I believe it is invalid to select any particular prior  
22 period of price volatility (or tightly grouped range) to impose upon a forecast such as  
23 CRU's for purposes of generating an expected case.

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<sup>9</sup> These calculations and the resulting cash flows are detailed in Exhibits A1, A2 and A3 attached to Mr. Boyles's testimony.

1

2 **Q. PLEASE EXPLAIN YOUR CASE IN MORE DETAIL.**

3 A. I have a general problem with the implication of the approach adopted by  
4 Noranda Aluminum that the CRU forecasts do not take any account of price volatility. As  
5 already noted, price volatility may not be explicit in CRU's longer-term forecasts but it is  
6 clearly implicit. If it is the case, as Mr. Boyles claims (and I am not particularly  
7 challenging this), that prices spend more time in cyclical troughs than they do at cyclical  
8 peaks, then this will be reflected in the average price forecasts arrived at. In other  
9 words, some downside price risk is already built into the CRU forecasts.

10

11 A more specific problem I have concerns the particular past cycles which Noranda  
12 Aluminum has chosen as the "models" for its forward price projections, namely those  
13 commencing 1998, 1999 and 2000. Noranda Aluminum's testimony states that these  
14 periods were selected "because they are representative of average conditions" although  
15 no explanation is offered as to the sense in which these are "average conditions" or how  
16 this conclusion has been arrived at.<sup>10</sup> CRU's statement that "[t]he patterns chosen are a  
17 reasonable sample of the potential cyclical patterns that may be faced in the coming 10  
18 years"<sup>11</sup> would appear to stop some way short of fully endorsing Noranda Aluminum's  
19 selection of "model" time periods.<sup>12</sup>

20

21 In point of fact, the periods chosen appear to be far from average. Despite Mr. Boyles's  
22 acknowledgement of the need to avoid "assuming either near term occurrence of

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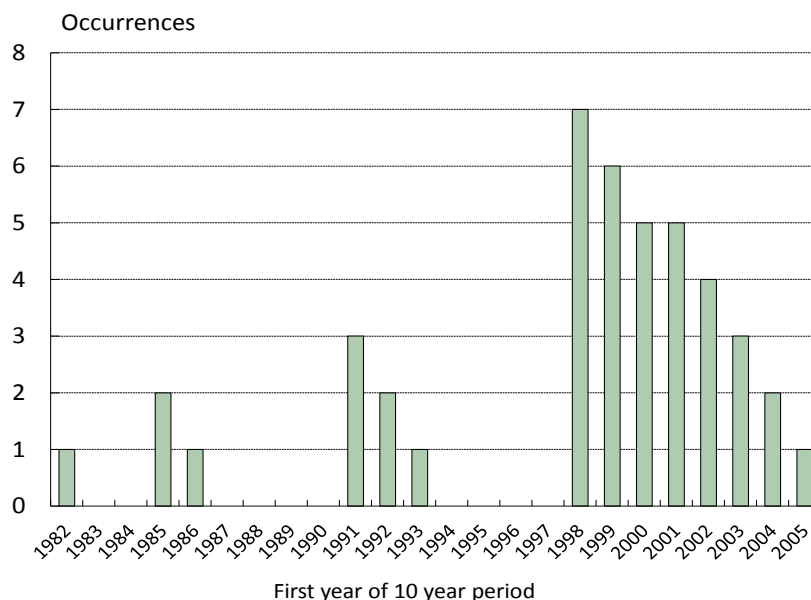
<sup>10</sup> Boyles testimony, page 15.

<sup>11</sup> Pratt testimony, page 22.

<sup>12</sup> The words "potential" and "may be faced" hardly sound like an endorsement of Mr. Boyles's analysis.



1 unusually positive or negative events like the commodities boom of 2006, 2007, and  
2 2008, or the Global Financial Crisis of 2009,”<sup>13</sup> the 10-year period starting 1998, 1999  
3 and 2000 inevitably capture towards their end the boom years of 2006-2008, a  
4 circumstance which has the effect of ensuring that, in the early years of the 10-year  
5 periods selected, prices are well are below the 10 years period average. Thus, in the  
6 period 1998-2007, the aluminium price was below the period average for the first seven  
7 years of the 10-year period, the most successive such “down” years at the beginning of  
8 any 10-year period since 1982 when the data set begins. For the period 1999-2008, the  
9 price was below the period average for the first six years of the 10-year period, and for  
10 the period 2000-2009, it was below the period average for the first five years of the  
11 10-year period. Prior to 1998, the most successive “down” years at the start of any  
12 10-year period since 1982 was three years. This occurred in the period starting 1991.  
13 (See Figure 2).



**Figure 2. Number of successive “down” years at the beginning of specified 10 year period**

<sup>13</sup> Boyles testimony, page 15.

1 Note: A “down” year is defined as any year in which the average aluminium price for the  
2 year is below the average price for the whole 10-year period

3

4 Far from representing “average conditions”, the projections used by Noranda Aluminum  
5 imply an unusually prolonged cyclical downswing in projected aluminium prices in all  
6 three scenarios tested (A1, A2 and A3). For the approach to have any validity, more  
7 diverse patterns of cyclical behaviour, drawn from a wider range of past experience,  
8 would need to be employed.<sup>14</sup> However, the reality is that we really don’t – and can’t –  
9 know where we are in the price cycle at any particular moment. Noranda Aluminum, by  
10 choosing the past periods which it has to serve as models for its future price projections,  
11 is implicitly making a rather strong statement about where it claims we currently stand  
12 in the price cycle and the direction in which it claims aluminium prices are headed. Put  
13 another way, the historic periods chosen by Noranda Aluminum, and the assumption  
14 that we are now at the very beginning of a period that would repeat the conditions that  
15 were seen in those historic periods, reflect what can fairly be described as a worst-case  
16 scenario, appropriate to a sensitivity analysis, not a central case or reasonable expected  
17 case.

18

19 **Q. DO YOU HAVE OTHER CONCERNS ABOUT THE HISTORIC “MODEL” PERIODS**  
20 **CHOSEN BY NORANDA TO DRIVE THEIR PRICE PROJECTIONS?**

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<sup>14</sup> If any one 10-year period qualifies, there may be a case for arguing that the period selected as the “model” for the future cycle should be the period ending 2014, since this will be the 10-year period which most closely approximates the conditions of the present day. This point is given additional emphasis by recent changes in the world economy, notably the effects of globalisation and the emergence of China as a major economic and industrial power, which make conditions over the past few years considerably different from those which prevailed in the earlier years covered by the historical data set. While for the reasons discussed in my testimony I do not believe any 10-year period qualifies as such a “model,” if one were to pick the most recent 10-year period the picture would be much different than that painted by the periods chosen by Mr. Boyles, as shown on Schedule DH-R2 to my testimony.

1 A. I do. Noranda Aluminum employs a 10-year cycle for its price projections on the  
2 grounds that aluminium prices follow the general business cycle which is “commonly  
3 accepted to be approximately 10 years in length.”<sup>15</sup> There is vast literature on cycles in  
4 economics and it is true that historically the so-called investment cycle, or Juglar cycle,  
5 was deemed to be 7-11 years in length. However, in recent years, globalisation has  
6 enormously complicated the form and nature of economic cycles. Recent price  
7 behaviours have been highly erratic as the analysis by CRU makes clear, a condition it  
8 puts down in part to a series of wholly unanticipated “shocks.” The adoption of a  
9 10-year cycle thus implies a degree of mechanical predictability which is not warranted.  
10 The figure on page 9 of the CRU testimony shows price peaks since 1973 occurring in  
11 1974, 1980, 1983, 1988, 1995, 2006/08 and 2011. This implies peak-to-peak cycles of 6,  
12 3, 5, 7, 9 and 3 years respectively. In short, the reality is that we have very little idea  
13 how long any forthcoming price cycle is likely to be, nor do we have any real idea about  
14 where we might be in a given cycle, whatever the length the cycle may turn out to be.

15

16 **Q. IS IT YOUR VIEW THAT NORANDA HAS ASSUMED THAT IT KNOWS WHERE IT IS**  
17 **IN THE CYCLE AND THE LENGTH OF THE CYCLE?**

18 A. I believe it has. As explained, the modelling in the Boyles testimony makes a  
19 clear assumption that aluminium is at the beginning of a sustained period of price  
20 weakness. I consider such an assumption to be unwarranted. We can never know for  
21 sure where we are in the cycle or how long the cycle will persist. The assumption of the  
22 Boyles testimony also appears to be at odds with what Noranda Aluminum has said  
23 previously on this matter. In evidence given before the Commission in an earlier

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<sup>15</sup> Boyles testimony, page 15.

1 hearing, the CEO of Noranda Aluminum was asked where in the cycle aluminium  
2 currently was. He said “it’s really hard to know.”<sup>16</sup> It is. I agree with him.

3

4 **Q. WHAT ARE THE IMPLICATIONS OF THE ABOVE FOR ESTABLISHING A REALISTIC**  
5 **EXPECTED CASE FORECAST OF ALUMINIUM PRICES?**

6 A. CRU observes that “[w]hile we may know that the future is likely to be more  
7 volatile than is forecast, we cannot accurately predict the timing, *and to do so could be*  
8 *very misleading*” (my italics).<sup>17</sup> Detailed analysis of consumption, production and stock  
9 movements for aluminium provides some visibility on the likely direction of the market  
10 and of prices in the near term. CRU has produced a price forecast reflecting these near  
11 term cyclical factors. Mr. Pratt’s testimony claims no more than that “it is unlikely that  
12 the aluminium market will experience tight market conditions in the next two years.”<sup>18</sup>  
13 Beyond this time period, we have precious little information available to us to guide a  
14 judgment on what will occur. In this setting, I agree with the approach to price  
15 forecasting described by Mr. Pratt in his expert testimony.

16

17 **Q. HOW DO OTHER MINING AND METALS COMPANIES, INCLUDING OTHER**  
18 **COMPANIES PRODUCING ALUMINIUM LIKE RIO TINTO, NORMALLY APPROACH THESE**  
19 **MATTERS?**

20 A. Obviously I can only speak from the perspective of those companies I have  
21 worked for or consulted for. But generally I would say that companies make their price  
22 forecasts for two to three years out using fundamental analysis of supply and demand.

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<sup>16</sup> Hearing Transcript, Testimony of Layle (Kip) Smith, p.304, l. 14 to p. 305, l. 7 (Case No. EC-2014-0224).

<sup>17</sup> Pratt testimony, page 11.

<sup>18</sup> Pratt testimony, page 11

1 They may do this themselves or else employ consultants like CRU to advise them. Some  
2 may opt to use a consensus of several market forecasts rather than just one forecast.  
3 Other companies may elect to make use of forward market price quotations as the basis  
4 for their price forecasts for the next year or two.

5

6 Out beyond this two to three year period, I would say that the most common practice  
7 would be to use broader price averages without any imposed cycle, and to deal with  
8 price risk through sensitivity analysis. Most economists, I think, would subscribe to the  
9 view – as Mr. Pratt does in his testimony, noted above – that prices have a tendency to  
10 revert to trend (or to the mean) over time. Of course, there is scope to debate exactly  
11 what the trend actually is and how it is calculated. The analysis of historical prices will  
12 likely play a part in the assessment, as will the analysis of contemporary industry costs.  
13 However, the important point is that companies adopt this approach because they have  
14 no idea of the timing of future cycles or when prices will revert to trend. They recognise  
15 that there is simply no rational basis for forecasting price cycles out beyond three years  
16 or so and that they could not therefore have any confidence in the outcomes of such  
17 forecasting. Put bluntly, anticipating cyclical patterns beyond this period is no more  
18 than guesswork.

19

20 **Q. FOR PURPOSES OF MODELING PROBABILISTICALLY EXPECTED ALUMINIUM**  
21 **PRICES, IS THERE ANY RATIONALE FOR DEVIATING FROM CRU'S FORECAST**  
22 **METHODOLOGY: FUNDAMENTAL SUPPLY AND DEMAND ANALYSIS IN THE NEAR TERM**  
23 **AND MARGINAL COSTS OF PRODUCTION IN THE LONG TERM?**

24 A. No. I do not believe so.

1

2 **Q. FOR PURPOSES OF ASSESSING POTENTIAL CONTINGENT EVENTS, INCLUDING**  
3 **PRICING DOWNSIDES, ARE THERE NOT TECHNIQUES FOR EVALUATING THE**  
4 **LIKELIHOOD OF DIFFERENT CYCLICAL PATTERNS OCCURRING IN THE FUTURE?**

5 A. There are. Using the history of prices and their volatility, it is possible to  
6 estimate the statistical probability of a price in any particular year – or particular series  
7 of years – falling within a given price range. It is also possible to run multiple simulations  
8 of possible price outcomes using statistical techniques such as the Monte Carlo method.  
9 These techniques are not bound by static assumptions such as a 10-year price cycle.  
10 Such techniques are sometimes of assistance in testing the likelihood of divergences  
11 from a central estimate of future prices. Importantly, however, as stated above, these  
12 techniques do not address the problem of determining what the central estimate of  
13 future prices should be.

14

15 **Q. WHAT IF MANAGEMENT HAS A STRONG CONVICTION THAT THE ALUMINIUM IS**  
16 **GOING TO GO INTO A MAJOR CYCLICAL DOWNTURN AS YOU SUGGEST IS IMPLICIT IN**  
17 **THE NORANDA ALUMINUM PRICE PROJECTIONS? WHAT CAN THEY DO ABOUT IT?**

18 A. As I have said, I don't believe there is much visibility in how the market will  
19 develop more than two to three years out. However, if it is the view of Noranda  
20 Aluminum management that prices are going to trend downwards over the next few  
21 years, then there is always the possibility to hedge their price exposure using forward  
22 sales or options to lock in future sales prices.

23

1           It would appear from their published financial statements that Noranda  
2 Aluminum already uses hedging routinely to protect itself on its fixed price contracts  
3 from adverse price movements during the time between when the contract is struck and  
4 the metal is delivered. However, it has the possibility to go beyond this and to take a  
5 “strategic hedge”; that is to say, to sell forward metal which has not yet been  
6 contracted for sale in order to protect itself against a fall in market prices. Noranda  
7 Aluminum’s 10k report for 2013 makes clear that the company has made use of such  
8 strategic hedging in the past. Although the company says that the last of these strategic  
9 hedges were closed out in 2010, it would appear from the document supplied in  
10 response to question 2.71 (although undated) that the company is fully aware of the  
11 potential of hedging to protect downside price risk and that the matter of hedging  
12 remains under active consideration. If it is the company’s genuine belief that market  
13 prices are headed down over the next few years, then the adoption of strategic hedges  
14 would be a rational way to mitigate the effects of this.<sup>19</sup>

15

16 **Q.       ARE YOU AWARE OF ANY REASON WHY NORANDA COULD NOT ENTER INTO**  
17 **MEDIUM TERM STRATEGIC HEDGING TRANSACTIONS IF NORANDA MANAGEMENT**  
18 **EXPECTED FUTURE ALUMINIUM PRICES TO BE LOWER THAN HAS BEEN FORECAST BY**  
19 **CRU?**

20 A.       No.

21

22 **Q.       HOW WOULD HEDGING HELP TO INSULATE NORANDA FROM MEDIUM TERM**  
23 **ALUMINIUM PRICE VOLATILITY?**

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<sup>19</sup> See Noranda’s Responses to Data Requests 2.70 and 2.71.

1 A. Using strategic hedging, a metal producer can fix in advance the price received  
2 for its metal. The London Metal Exchange offers producers the ability to sell aluminium  
3 up to 10 years ahead. Obviously there are costs to doing this – like any other form of  
4 insurance – and there is the risk that the producer’s judgment will be wrong and prices  
5 will not fall as expected. But where a company genuinely believes that prices are set to  
6 fall, or else is not commercially in a position to risk the possibility that they will fall, this  
7 is clearly an option.

8

9 **Q. BASED ON YOUR EXPERIENCE, IF YOU WERE ADVISING NORANDA ALUMINIUM**  
10 **WOULD IT BE YOUR ADVICE TO ADOPT STRATEGIC HEDGES?**

11 A. The decision of whether to hedge or not needs to be taken in the context of a  
12 company’s specific situation; its level of costs (and thus its commercial vulnerability to  
13 price declines), its loan book and the conditions attached to it, the attitude of its  
14 shareholders (some investors buy a company’s shares to gain exposure to the underlying  
15 commodity and do not want that exposure hedged away), as well as its perspective on  
16 the likely direction of the market. I do not have all this information. However, in light  
17 of what appears to be Noranda Aluminum’s perspective on where the market is headed,  
18 as suggested in the testimony I have seen, it would be a logical thing to consider. A gold  
19 company of which I am currently a non-executive director has been operating a hedging  
20 programme since early 2013 out of concern for the effects of the falling gold price on its  
21 operating margins and loan covenants.

22

23 **Q. IN VIEW OF WHAT YOU HAVE SAID ABOUT NORANDA ALUMINIUM’S**  
24 **APPROACH TO FORECASTING ALUMINIUM PRICES, IS IT YOUR OPINION THAT THE**



1 **ALUMINIUM PRICES RESULTING FROM THE APPLICATION OF THE APPROACH**  
2 **NORANDA ALUMINUM HAS USED ARE LIKELY TO PROVIDE A SOUND BASIS FOR THE**  
3 **EVALUATION OF FUTURE SMELTER REVENUES?**

4 A. It is not.

5

6 **Q. SO YOU DISAGREE WITH MR. PRATT'S VIEW THAT THE RANGE AND PATTERN**  
7 **OF ALUMINIUM PRICES REFLECTED IN [NORANDA ALUMINUM'S] ANALYSES ARE**  
8 **REASONABLE?**

9 A. I do. Mr. Pratt says that "The cyclical variations are based on overlaying a ten  
10 year cyclical pattern based on historical prices over a sample of ten year time periods."<sup>20</sup>  
11 While this may be true, the "sample" periods selected for the analysis are, as noted,  
12 neither typical nor random ones and to that extent the approach cannot to my mind be  
13 considered "reasonable."

14

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

16 A. It does.

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<sup>20</sup> Pratt testimony, page 22.


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

In the Matter of Union Electric Company    )  
d/b/a Ameren Missouri's Tariffs to         )  
Increase Its Revenues for Electric Service.    )                      Case No. ER-2014-0258

**AFFIDAVIT OF DAVID HUMPHREYS**


David Humphreys being first duly sworn on his oath, states:

1. My name is David Humphreys. I work in the City of London, United Kingdom, and am principal of my own consulting company, DaiEcon Advisors.
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 16 pages, and Schedules DH-R1 and DH-R2, 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.

  
\_\_\_\_\_  
David Humphreys

Subscribed and sworn to before me this 15 day of January, 2015.

Abdul Salam Fadl Seid Ahmed LLM  
Notary Public  
60 Bell Street, London NW1 6SP  
Tel: No 0207724 58 55  
Fax: 0207724 34 88  
Mobile: 07958220552  
Email asa@freemansolicitors.com

  
\_\_\_\_\_  
Notary

My Commission Expires on  
Death



**SCHEDULE DH-R1**

**HAS BEEN DEEMED**

**HIGHLY CONFIDENTIAL**

**IN ITS ENTIRETY**

**SCHEDULE DH-R2**

**HAS BEEN DEEMED**

**HIGHLY CONFIDENTIAL**

**IN ITS ENTIRETY**