

460

Exhibit No.:  
Issues: Rate Design  
Witness: Steve W. Chriss  
Type of Exhibit: Rebuttal Testimony  
Sponsoring Party: Wal-Mart Stores East, LP,  
and Sam's East, Inc.  
Case No.: EC-2014-0224  
Date Testimony Prepared: May 9, 2014

MISSOURI PUBLIC SERVICE COMMISSION

NORANDA ALUMINUM, INC., *et al.*, )  
Complainants, )  
v. ) Case No. EC-2014-0224  
UNION ELECTRIC COMPANY, d/b/a AMEREN )  
MISSOURI, )  
Respondent. )

REBUTTAL TESTIMONY OF STEVE W. CHRISS  
ON BEHALF OF  
WAL-MART STORES EAST, LP, AND SAM'S EAST, INC.

May 9, 2014

Wal Mart Exhibit No. 460  
Date 6-16-14 Reporter KF  
File No. EC-2014-0224

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI

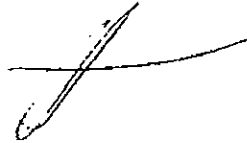
Noranda Aluminum, Inc., *et al.*, )  
Complainants, )  
v. ) Case No. EC-2014-0224  
Union Electric Company, d/b/a Ameren Missouri )  
Respondent. )

AFFIDAVIT OF STEVE W. CHRISS

STATE OF ARKANSAS )  
COUNTY OF BENTON ) ss:

Steve W. Chriss, being first duly sworn, deposes and states that:

1. He is employed by Wal-Mart Stores, Inc., as Senior Manager, Energy Regulatory Analysis in Bentonville, Arkansas;
2. He is the witness sponsoring the accompanying testimony entitled Rebuttal Testimony Of Steve W. Chriss;
3. Said testimony was prepared by him and under his direction and supervision;
4. If inquiries were made as to the facts and schedules in said testimony, he would respond as therein set forth; and
5. The aforesaid testimony and testimony and schedules are true and correct to the best of his knowledge, information and belief.

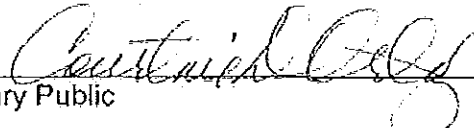


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Steve W. Chriss

AFFIDAVIT OF STEVE W. CHRISS,  
Case No. EC-2014-0224

Subscriber and sworn to or affirmed before me this 9<sup>th</sup> day of May, 2014, by  
Steve W. Chriss.

  
\_\_\_\_\_  
Notary Public

My Commission No: 12384731

My Commission Expires: 11-15-2021

(SEAL)

COURTNIE D ORTIZ  
NOTARY PUBLIC  
BENTON COUNTY, ARKANSAS  
COMMISSION # 12384731  
DATE OF EXPIRATION 11-15-2021

1 Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

2 A. My name is Steve W. Chriss. My business address is 2001 SE 10th St.,  
3 Bentonville, AR 72716-0550. I am employed by Wal-Mart Stores, Inc. as  
4 Senior Manager, Energy Regulatory Analysis.

5 Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS DOCKET?

6 A. I am testifying on behalf of Wal-Mart Stores East, LP, and Sam's East, Inc.  
7 ("Walmart").

8 Q. PLEASE DESCRIBE YOUR EDUCATION AND EXPERIENCE.

9 A. In 2001, I completed a Master of Science in Agricultural Economics at Louisiana  
10 State University. From 2001 to 2003, I was an Analyst and later a Senior Analyst  
11 at the Houston office of Econ One Research, Inc., a Los Angeles-based consulting  
12 firm. My duties included research and analysis on domestic and international  
13 energy and regulatory issues. From 2003 to 2007, I was an Economist and later a  
14 Senior Utility Analyst at the Public Utility Commission of Oregon in Salem,  
15 Oregon. My duties included appearing as a witness for PUC Staff in electric,  
16 natural gas, and telecommunications dockets. I joined the energy department at  
17 Walmart in July 2007 as Manager, State Rate Proceedings, and was promoted to  
18 my current position in June 2011. My Witness Qualifications Statement is  
19 included herein as Schedule SWC-R1.

20 Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY BEFORE THE MISSOURI  
21 PUBLIC SERVICE COMMISSION ("THE COMMISSION")?

22 A. Yes. I submitted testimony in Docket Nos. ER-2010-0036 and EO-2012-0009.

23 Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY BEFORE OTHER STATE  
24 REGULATORY COMMISSIONS?

25 A. Yes. I have submitted testimony in over 90 proceedings before 33 other utility  
26 regulatory commissions and before the Missouri House Committee on Utilities,  
27 the Missouri Senate Veterans' Affairs, Emerging Issues, Pensions, and Urban  
28 Affairs Committee, and the Kansas House Standing Committee on Utilities and  
29 Telecommunications. My testimony has addressed topics including, but not  
30 limited to cost of service and rate design, ratemaking policy, qualifying facility  
31 rates, telecommunications deregulation, resource certification, energy  
32 efficiency/demand side management, fuel cost adjustment mechanisms,  
33 decoupling, and the collection of cash earnings on construction work in progress.

34 Q. ARE YOU SPONSORING ANY SCHEDULES WITH YOUR TESTIMONY?

35 A. Yes. I am sponsoring Schedule SWC-R1, consisting of ten pages, Schedule SWC-  
36 R2, consisting of one page, Schedule SWC-R3, consisting of four pages, and  
37 Schedule SWC-R4, consisting of four pages.

38 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

39 A. The purpose of my testimony is to provide policy and technical  
40 recommendations regarding Noranda Aluminum, Inc.'s ("Noranda") rate design  
41 complaint against Ameren Missouri ("Ameren").

42 Q. PLEASE BRIEFLY DESCRIBE WALMART'S OPERATIONS IN MISSOURI.

43 A. Walmart operates 141 retail units and employs 40,374 associates in Missouri. In  
44 fiscal year ending 2013, Walmart purchased \$5.4 billion worth of goods and  
45 services from Missouri-based suppliers, supporting 51,215 supplier jobs.<sup>1</sup>

46 Q. PLEASE BRIEFLY DESCRIBE WALMART'S OPERATIONS WITHIN AMEREN'S  
47 MISSOURI SERVICE TERRITORY.

48 A. Walmart has approximately 48 stores and a distribution center serviced by  
49 Ameren, primarily on the Large General Service ("LGS") and Small Primary ("SP")  
50 rate schedules.

51 Q. DOES WALMART ALSO HAVE FACILITIES NOT SERVED BY AMEREN THAT COULD  
52 BE IMPACTED BY THE OUTCOME OF THIS DOCKET?

53 A. Yes. There are 10 Walmart stores and one Sam's Club within 50 miles of  
54 Noranda's smelter in New Madrid, MO, that could be impacted by the outcome  
55 of this docket. Ameren only serves a portion of these facilities, while others  
56 receive electrical service from other utilities.

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<sup>1</sup> <http://corporate.walmart.com/our-story/locations/united-states#/united-states/missouri>

57 Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS TO THE COMMISSION.

58 A. My recommendations to the Commission are as follows:

59 1) Given the specific and extraordinary circumstances surrounding  
60 Noranda's request, Walmart does not oppose Noranda's request for a  
61 rate of \$0.03/kWh subject to a two percent escalator.

62 2) Walmart does not oppose Noranda's proposed revenue requirement  
63 shortfall allocation methodology.

64 3) For LGS, SP, and Large Primary ("LP"), the revenue requirement shortfall  
65 allocated to each class should be calculated and charged on a \$/kW basis  
66 using the Commission-approved billing units from Ameren's most recent  
67 general rate case.

68 4) The collection of the revenue requirement shortfall should be done  
69 through transparent and identifiable standalone rates located either as  
70 an appendix to Noranda's proposed Schedule 10(M) or as a separate  
71 rider.

72 5) The structure of the Schedule 10(M) escalator and two percent cap  
73 should be clearly identified in the tariff if the Commission approves  
74 Noranda's requested relief.

75 The fact that an issue is not addressed should not be construed as an  
76 endorsement of any filed position. Additionally, for issues not addressed in this

77 testimony, Walmart reserves the right to address these issues in surrebuttal  
78 and/or cross-rebuttal testimony if they are brought up by other parties.

79 **Q. WHAT IS YOUR UNDERSTANDING OF NORANDA'S PROPOSAL IN THIS DOCKET?**

80 A. Noranda has proposed to move from its current tariff, Service Classification No.  
81 12(M) ("12(M)"), "Large Transmission Service," and create Service Classification  
82 No. 10(M) ("10(M)"), "Large Transmission Service Rate Applicable to Aluminum  
83 Smelters." See Direct Testimony of Maurice Brubaker, page 2, line 12 to line 13,  
84 and page 3, line 8 to line 9. The key difference between 12(M) and the proposed  
85 10(M), as it relates to other Ameren customers, is that the 10(M) energy charge  
86 would be set at \$0.03/kWh with a general rate case-tied escalator, not to exceed  
87 two percent of the energy charge effective at the time of the change in rates  
88 approved in Ameren's next general rate case. See Schedule MEB-1, page 1.

89 **Q. IS IT YOUR UNDERSTANDING THAT 10(M) AS PROPOSED IS NOT A COST BASED**  
90 **RATE?**

91 A. Yes.

92 **Q. IS IT YOUR UNDERSTANDING THAT AMEREN WILL EXPERIENCE REVENUE**  
93 **SHORTFALLS PER 10(M) AS PROPOSED?**

94 A. Yes. At the proposed rate of \$0.03/kWh, within the context of current rates,  
95 Noranda estimates that Ameren will experience a revenue shortfall of  
96 approximately \$33.1 million versus the currently approved revenue requirement  
97 for 12(M) recovered through base rates. See Direct Testimony of Maurice



98 Brubaker, page 4, line 6 to line 11. Additionally, 10(M) as proposed would result  
99 in a reduction in Fuel Adjustment Clause ("FAC") revenues of approximately  
100 \$14.6 million. *Id.*, page 5, line 9 to line 10. In all, the total estimated revenue  
101 requirement impact of Noranda's requested rate relief is approximately \$47.7  
102 million.

103 **Q. HOW DOES NORANDA PROPOSE TO ALLOCATE THE REVENUE SHORTFALL TO**  
104 **THE OTHER RATE CLASSES?**

105 A. Noranda proposes to allocate the revenue shortfall to the other rate classes  
106 based on each class' relative contribution to base rate revenue. *Id.*, page 4, line  
107 14 to line 16.

108 **Q. HOW DOES NORANDA PROPOSE TO MODIFY AMEREN'S RATES TO COLLECT**  
109 **THE ALLOCATED SHORTFALL FROM EACH RATE CLASS?**

110 A. Noranda proposes to directly modify the base rate tariffs and increase the  
111 customer charge, energy charge, and demand charge components, as applicable,  
112 of each rate class by an equal percentage. *See* Schedule MEB-4.

113 **Q. HAS NORANDA INDICATED WHAT ACTIONS IT WILL TAKE ABSENT THE RELIEF**  
114 **REQUESTED IN THIS DOCKET?**

115 A. Yes. Noranda has indicated that the near-term impact will be a reduction in the  
116 workforce at its smelter by 150-200 employees before the end of 2014. In the  
117 longer-term, Noranda has indicated that it will be forced to close the smelter,

118 resulting in loss of all jobs at the smelter. See Direct Testimony of Kip Smith,  
119 page 5, line 12 to page 6, line 10.

120 **Q. HAS NORANDA PROVIDED DATA REGARDING THE IMPACTS OF THE CLOSURE**  
121 **OF THE SMELTER?**

122 A. Yes.

123 **Q. HAS NORANDA CALCULATED THE IMPACT TO ALL OTHER RATE CLASSES IF THE**  
124 **SMELTER CLOSED?**

125 A. Yes. If the smelter were to close, Noranda calculates that the impact to all other  
126 rate classes will be approximately \$60 million per year. See Direct Testimony of  
127 Maurice Brubaker, page 6, line 12 to line 15.

128 **Q. HAS NORANDA PRESENTED EVIDENCE REGARDING THE IMPACT ON THE**  
129 **ECONOMY IN SOUTHEAST MISSOURI WERE THE SMELTER TO CLOSE?**

130 A. Yes. Of note is the potential loss of the smelter's annual payroll of \$95 million.  
131 See Direct Testimony of Kip Smith, page 3, line 21 to page 4, line 22.

132 **Q. WHAT ASPECTS OF NORANDA'S PROPOSAL WILL YOU ADDRESS?**

133 A. The proposal essentially has four primary components that I will address. The  
134 first component is whether Noranda's requested rate relief is appropriate. The  
135 second component is whether Noranda's proposed revenue requirement  
136 shortfall allocation methodology is appropriate. The third component is whether  
137 Noranda's proposed rate design methodology is appropriate. Finally, the fourth  
138 component is the appropriate tariff structure for any approved relief.

139 *Noranda's Requested Rate Relief*

140 Q. GENERALLY, WHAT IS WALMART'S POSITION ON SETTING RATES BASED ON  
141 THE UTILITY'S COST OF SERVICE?

142 A. Walmart advocates that rates be set based on the utility's cost of service. This  
143 produces equitable rates that reflect cost causation, sends proper price signals,  
144 and minimizes price distortions. Under normal circumstances, Noranda's  
145 requested rate relief would be both out of the ordinary and inappropriate.  
146 However, the specific and extraordinary circumstances of this docket warrant  
147 the Commission's consideration of whether movement away from cost-based  
148 rates for Noranda is in the public interest.

149 Q. WHAT SPECIFIC AND EXTRAORDINARY CIRCUMSTANCES ARE OF PARTICULAR  
150 CONCERN?

151 A. As a large commercial customer of Ameren's, the first specific and extraordinary  
152 circumstance is the impact to all customers if Noranda shuts down the smelter  
153 or otherwise leaves Ameren's system. As I state above, Noranda has estimated  
154 that the annual revenue requirement impact of the lost smelter load would be  
155 approximately \$60 million. This exceeds the proposed impact to other rate  
156 classes of Noranda's requested rate relief. This estimate and its impact on  
157 individual customers may be conservative as well.

158 Q. PLEASE EXPLAIN.

159 A. Ameren has filed a notice of intent to file a general rate case.<sup>2</sup> The particulars of  
160 that case are not yet known and ostensibly not included in Noranda's estimated  
161 impact calculation. To the extent that Ameren's general rate case seeks to  
162 include new plant – fixed costs that will not change with reductions in system  
163 energy consumption from Noranda's departure – in rate base, closure of the  
164 smelter will reduce the customer base over which costs for that plant can be  
165 charged. In other words, Noranda's departure from the system could have an  
166 even greater impact to the remaining customers than the \$47.7 million revenue  
167 shortfall estimated in this docket.

168 While Noranda will not pay its full fixed cost of service under the  
169 relief requested in this docket, it will be making some contribution to fixed cost  
170 through its requested rate and that rate will also be subject to a portion of any  
171 increase approved by the Commission in the upcoming rate case.

172 Q. IS THERE ANOTHER FACTOR THAT SHOULD BE CONSIDERED?

173 A. Yes. Noranda's load constitutes approximately 11.3 percent of Ameren's load on  
174 an energy basis, so the smelter closing or otherwise leaving Ameren's system will  
175 constitute a significant reduction to Ameren's load. Additionally, usage by all  
176 other customers on Ameren's system declined by 0.68 percent a year on average  
177 from 2004 to 2013. As the result, there appears to be little to no new load to

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<sup>2</sup> Docketed as File No. ER-2014-0258.

178 "pick up the slack" for cost recovery if the smelter is shut down. See Schedule  
179 SWC-R2.

180 **Q. ARE THE LOCAL ECONOMIC IMPACTS DETAILED IN NORANDA'S FILING A**  
181 **CONCERN AS WELL?**

182 **A.** Yes. As I state above, there are 10 Walmart stores and a Sam's Club within 50  
183 miles of the smelter. While it is not possible to estimate the specific impact to  
184 these stores, the potential loss of \$95 million of annual payroll from the local  
185 economy due to the shutdown of the smelter is a significant general concern.

186 **Q. GIVEN THE SPECIFIC AND EXTRAORDINARY CIRCUMSTANCES DISCUSSED**  
187 **ABOVE, DOES WALMART OPPOSE NORANDA'S REQUEST FOR A RATE OF**  
188 **\$0.03/KWH SUBJECT TO A TWO PERCENT ESCALATOR?**

189 **A.** No. However, as I will discuss below, the structure of the two percent escalator  
190 should be clarified and included in the effective tariff.

191

192 *Revenue Requirement Shortfall Allocation Methodology, Rate Design, and*  
193 *Tariff Structure*

194 **Q. HOW DOES NORANDA PROPOSE TO ALLOCATE THE REVENUE REQUIREMENT**  
195 **SHORTFALL TO OTHER RATE CLASSES?**

196 **A.** As I state above, Noranda proposes to allocate the revenue shortfall to other  
197 rate classes based on each class' relative contribution to base rate revenue. See  
198 Direct Testimony of Maurice Brubaker, page 4, line 14 to line 16.

199 Q. DOES WALMART OPPOSE NORANDA'S PROPOSED REVENUE REQUIREMENT  
200 SHORTFALL ALLOCATION METHODOLOGY?

201 A. No.

202 Q. HOW DOES NORANDA PROPOSE TO MODIFY AMEREN'S RATES TO COLLECT  
203 THE ALLOCATED SHORTFALL FROM EACH RATE CLASS?

204 A. As I state above, Noranda proposes to directly modify the base rate tariffs and  
205 increase the customer charge, energy charge, and demand charge components,  
206 as applicable, of each rate class by an equal percentage. See Schedule MEB-4.

207 Q. DO YOU HAVE CONCERNS ABOUT THE PROPOSED METHODOLOGY?

208 A. Yes. I have two concerns regarding Noranda's proposal.

209 Q. WHAT IS YOUR FIRST CONCERN?

210 A. My first concern is the inconsistency between the nature of the underlying costs  
211 of the revenue responsibility shifted to the other rate classes and Noranda's  
212 proposal to increase the customer, energy, and demand charges for LGS and SP  
213 customers.

214 Q. PLEASE EXPLAIN.

215 A. Noranda states in their filing that the average variable cost currently included in  
216 base rates is approximately \$0.01469/kWh and, with the FAC factor, is  
217 approximately \$0.0182/kWh. Noranda also states that the proposed \$0.03/kWh  
218 rate exceeds the average variable cost of service and, as such, the remainder  
219 between the average variable cost and the proposed rate provides for

220 contribution to fixed costs. See Direct Testimony of Maurice Brubaker, page 6,  
221 line 1 to line 9. As a result, the costs underlying the revenue requirement  
222 shortfall, the recovery of which is shifted to the other rate classes, are essentially  
223 fixed, or demand-related, costs. Noranda's proposal will result in these fixed or  
224 demand-related costs being collected, at least in part, through the energy  
225 charge. For demand-metered customers, this structure is inappropriate and  
226 violates cost causation principles.

227 **Q. HOW DOES THE COLLECTION OF DEMAND-RELATED COSTS THROUGH THE**  
228 **ENERGY CHARGE VIOLATE COST CAUSATION PRINCIPLES?**

229 **A.** The collection of demand-related costs on per kWh energy charges shifts  
230 demand cost responsibility from lower load factor customers to higher load  
231 factor customers that are more efficiently utilizing utility facilities. In essence,  
232 under Noranda's proposal two LGS or SP customers can have the same level of  
233 demand and cause the utility to incur the same amount of fixed cost, but  
234 because one customer uses more kWh than the other, that customer will pay  
235 more of the demand cost than the customer using fewer kWh. This results in  
236 misallocation of cost responsibility as higher load factor customers overpay for  
237 the demand-related costs incurred by the utility to serve them, and are  
238 essentially penalized for more efficiently using the utility's system.

239 Q. DOES NORANDA'S PROPOSAL EXACERBATE PRE-EXISTING ISSUES WITHIN  
240 AMEREN'S LGS AND SP RATES?

241 A. Yes. An examination of the results of the class cost of service study performed  
242 by Ameren in their last rate case<sup>3</sup> shows that 68.4 percent of the costs for the  
243 combined LGS/SP class are demand-related. However, only 10.5 percent of the  
244 revenues for those classes are currently being collected from the demand  
245 charge. See Schedule SWC-R3, page 1. As such, no more fixed costs should be  
246 collected on the energy charge for either LGS or SP as proposed by Noranda.  
247 While the broader issues with the rate design for LGS and SP are appropriately  
248 addressed in the upcoming general rate case, the Commission should note that  
249 overlaying the revenue requirement shortfall for this docket on top of the  
250 existing rates as proposed is not appropriate.

251 Q. DOES THIS ISSUE ALSO AFFECT THE LP RATE CLASS?

252 A. Yes. *Id.*

253 Q. WHAT IS YOUR RECOMMENDATION TO THE COMMISSION ON THIS ISSUE?

254 A. For LGS, SP, and LP, the revenue requirement shortfall allocated to each class  
255 should be calculated and charged to the respective classes on a \$/kW basis using  
256 the billing units approved for each class by the Commission in Ameren's most  
257 recent general rate case.

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<sup>3</sup> ER-2012-0166.



258 Q. WHAT IS YOUR SECOND CONCERN?

259 A. My second concern is the proposal to directly modify the base rate tariffs.  
260 Optimally, base rate tariffs should transparently reflect Ameren's cost of service  
261 for each customer class.<sup>4</sup> Additionally, base rates are essentially permanent until  
262 new rates are approved by the Commission as the result of a general rate case.  
263 If no general rate case occurs, the base rate tariffs should not change. Noranda's  
264 proposal is for a period of ten years and is not a permanent modification of base  
265 rates. As such, the base rate tariffs should not be directly modified to  
266 accommodate Noranda's proposal.

267 Q. WHAT IS YOUR RECOMMENDATION TO THE COMMISSISON ON THIS ISSUE?

268 A. The collection of the revenue requirement shortfall both in this case and after  
269 future general rate cases should be done through transparent and identifiable  
270 standalone rates either as an appendix to Noranda's proposed Schedule 10(M)  
271 or as a separate rider.

272 Q. WHAT INFORMATION SHOULD THIS APPENDIX OR RIDER CONTAIN?

273 A. The appendix or rider should contain the following:

274 1) Terms and conditions governing the application of the appendix or rider,  
275 including a description of when and how the appendix or rider is updated with  
276 new rates and the expiration date of the appendix or rider;

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<sup>4</sup> It should be noted that the cost of service basis of Ameren's current base rates has been a contested issue in recent general rate cases and will likely be a contested issue in ER-2014-0258. The statement above is not an endorsement of the cost of service basis for either the base revenue requirement allocation or the rate design of the tariffs on which Walmart is served.

- 277           2) A calculation of the revenue requirement shortfall that details the initial 10(M)  
278           rate, if approved in this docket, and any subsequent applications of the  
279           escalator;
- 280           3) A calculation of the allocation of the revenue requirement shortfall by rate class;  
281           and
- 282           4) A determination of the \$/kW rates for LGS, SP, and LP and the rates or base rate  
283           multipliers, as approved by the Commission, for the Residential and Small  
284           General Service classes.

285           **Q.    HAVE YOU PROVIDED AN EXAMPLE OF THE RECOMMENDED CALCULATIONS**  
286           **FOR INCLUSION IN THE APPENDIX OR RIDER?**

287           A.    Yes. I have calculated the rates and multipliers per Noranda's requested relief  
288           and proposed revenue requirement shortfall. *See* Schedule SWC-R4.

289           **Q.    DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING NORANDA'S FILING?**

290           A.    Yes. Noranda's proposed 10(M) contains the following escalator language:

291                        "This rate is subject to increases only when the rates of other customers  
292                        change as a result of a general rate proceeding, but the increases in any  
293                        general rate proceeding shall not exceed 2% of the then-effective energy  
294                        charge." *See* Schedule MEB-1, page 1.

295                                It is unclear whether this means (a) the increase shall be equal to the  
296                        approved revenue requirement increase for the Large Transmission Service rate  
297                        class, up to two percent, or (b) the increase shall be equal to the approved  
298                        system average increase, up to two percent. The structure of the escalator and

299 two percent cap should be clearly identified in the tariff if the Commission  
300 approves a Schedule 10(M) tariff.

301 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

302 A. Yes.

# Steve W. Chriss

Senior Manager, Energy Regulatory Analysis

Wal-Mart Stores, Inc.

Business Address: 2001 SE 10<sup>th</sup> Street, Bentonville, AR, 72716-0550

Business Phone: (479) 204-1594

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## EXPERIENCE

July 2007 – Present

Wal-Mart Stores, Inc., Bentonville, AR

Senior Manager, Energy Regulatory Analysis (June 2011 – Present)

Manager, State Rate Proceedings (July 2007 – June 2011)

June 2003 – July 2007

Public Utility Commission of Oregon, Salem, OR

Senior Utility Analyst (February 2006 – July 2007)

Economist (June 2003 – February 2006)

January 2003 - May 2003

North Harris College, Houston, TX

Adjunct Instructor, Microeconomics

June 2001 - March 2003

Econ One Research, Inc., Houston, TX

Senior Analyst (October 2002 – March 2003)

Analyst (June 2001 – October 2002)

## EDUCATION

2001	Louisiana State University	M.S., Agricultural Economics
1997-1998	University of Florida	Graduate Coursework, Agricultural Education and Communication
1997	Texas A&M University	B.S., Agricultural Development B.S., Horticulture

## TESTIMONY BEFORE REGULATORY COMMISSIONS

2014

Oklahoma Corporation Commission Cause No. PUD 201300217: Application of Public Service Company of Oklahoma to be in Compliance with Order No. 591185 Issued in Cause No. PUD 201100106 Which Requires a Base Rate Case to be Filed by PSO and the Resulting Adjustment in its Rates and Charges and Terms and Conditions of Service for Electric Service in the State of Oklahoma.

Public Utilities Commission of Ohio Case No. 13-2386-EL-SSO: In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to §4928.143, Ohio Rev. Code, in the Form of an Electric Security Plan.

2013

Oklahoma Corporation Commission Cause No. PUD 201300201: Application of Public Service Company of Oklahoma for Commission Authorization of a Standby and Supplemental Service Rate Schedule.

Georgia Public Service Commission Docket No. 36989: Georgia Power's 2013 Rate Case.

Florida Public Service Commission Docket No. 130140-EI: Petition for Rate Increase by Gulf Power Company.

Public Utility Commission of Oregon Docket No. UE 267: In the Matter of PACIFICORP, dba PACIFIC POWER, Transition Adjustment, Five-Year Cost of Service Opt-Out.

Illinois Commerce Commission Docket No. 13-0387: Commonwealth Edison Company Tariff Filing to Present the Illinois Commerce Commission with an Opportunity to Consider Revenue Neutral Tariff Changes Related to Rate Design Authorized by Subsection 16-108.5 of the Public Utilities Act.

Iowa Utilities Board Docket No. RPU-2013-0004: In Re: MidAmerican Energy Company.

South Dakota Public Utilities Commission Docket No. EL12-061: In the Matter of the Application of Black Hills Power, Inc. for Authority to Increase its Electric Rates. (filed with confidential stipulation)

Kansas Corporation Commission Docket No. 13-WSEE-629-RTS: In the Matter of the Applications of Westar Energy, Inc. and Kansas Gas and Electric Company for Approval to Make Certain Changes in their Charges for Electric Service.

Public Utility Commission of Oregon Docket No. UE 263: In the Matter of PACIFICORP, dba PACIFIC POWER, Request for a General Rate Revision.

Arkansas Public Service Commission Docket No. 13-028-U: In the Matter of the Application of Entergy Arkansas, Inc. for Approval of Changes in Rates for Retail Electric Service.

Virginia State Corporation Commission Docket No. PUE-2013-00020: Application of Virginia Electric and Power Company for a 2013 Biennial Review of the Rates, Terms, and Conditions for the Provision of Generation, Distribution, and Transmission Services Pursuant to § 56-585.1 A of the Code of Virginia.

Florida Public Service Commission Docket No. 130040-EI: Petition for Rate Increase by Tampa Electric Company.

South Carolina Public Service Commission Docket No. 2013-59-E: Application of Duke Energy Carolinas, LLC, for Authority to Adjust and Increase Its Electric Rates and Charges.

Public Utility Commission of Oregon Docket No. UE 262: In the Matter of PORTLAND GENERAL ELECTRIC COMPANY, Request for a General Rate Revision.

New Jersey Board of Public Utilities Docket No. ER12111052: In the Matter of the Verified Petition of Jersey Central Power & Light Company For Review and Approval of Increases in and Other Adjustments to Its Rates and Charges For Electric Service, and For Approval of Other Proposed Tariff Revisions in Connection Therewith; and for Approval of an Accelerated Reliability Enhancement Program ("2012 Base Rate Filing")

North Carolina Utilities Commission Docket No. E-7, Sub 1026: In the Matter of the Application of Duke Energy Carolinas, LLC for Adjustment of Rates and Charges Applicable to Electric Service in North Carolina.

Public Utility Commission of Oregon Docket No. UE 264: PACIFICORP, dba PACIFIC POWER, 2014 Transition Adjustment Mechanism.

Public Utilities Commission of California Docket No. 12-12-002: Application of Pacific Gas and Electric Company for 2013 Rate Design Window Proceeding.

Public Utilities Commission of Ohio Docket Nos. 12-426-EL-SSO, 12-427-EL-ATA, 12-428-EL-AAM, 12-429-EL-WVR, and 12-672-EL-RDR: In the Matter of the Application of the Dayton Power and Light Company Approval of its Market Offer.

Minnesota Public Utilities Commission Docket No. E-002/GR-12-961: In the Matter of the Application of Northern States Power Company for Authority to Increase Rates for Electric Service in Minnesota.

North Carolina Utilities Commission Docket E-2, Sub 1023: In the Matter of Application of Progress Energy Carolinas, Inc. For Adjustment of Rates and Charges Applicable to Electric Service in North Carolina.

2012

Public Utility Commission of Texas Docket No. 40443: Application of Southwestern Electric Power Company for Authority to Change Rates and Reconcile Fuel Costs.

South Carolina Public Service Commission Docket No. 2012-218-E: Application of South Carolina Electric & Gas Company for Increases and Adjustments in Electric Rate Schedules and Tariffs and Request for Mid-Period Reduction in Base Rates for Fuel.

Kansas Corporation Commission Docket No. 12-KCPE-764-RTS: In the Matter of the Application of Kansas City Power & Light Company to Make Certain Changes in its Charges for Electric Service.

Kansas Corporation Commission Docket No. 12-GIMX-337-GIV: In the Matter of a General Investigation of Energy-Efficiency Policies for Utility Sponsored Energy Efficiency Programs.

Florida Public Service Commission Docket No. 120015-El: In Re: Petition for Rate Increase by Florida Power & Light Company.

California Public Utilities Commission Docket No. A.11-10-002: Application of San Diego Gas & Electric Company (U 902 E) for Authority to Update Marginal Costs, Cost Allocation, and Electric Rate Design.

Utah Public Service Commission Docket No. 11-035-200: In the Matter of the Application of Rocky Mountain Power for Authority to Increase its Retail Electric Utility Service Rates in Utah and for Approval of its Proposed Electric Service Schedules and Electric Service Regulations.

Virginia State Corporation Commission Case No. PUE-2012-00051: Application of Appalachian Power Company to Revise its Fuel Factor Pursuant to § 56-249.6 of the Code of Virginia.

Public Utilities Commission of Ohio Case Nos. 11-346-EL-SSO, 11-348-EL-SSO, 11-349-EL-AAM, and 11-350-EL-AAM: in the Matter of the Application of Columbus Southern Power Company and Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form on an Electric Security Plan and In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company for Approval of Certain Accounting Authority.

New Jersey Board of Public Utilities Docket No. ER11080469: In the Matter of the Petition of Atlantic City Electric for Approval of Amendments to Its Tariff to Provide for an Increase in Rates and Charges for Electric Service Pursuant to N.J.S.A. 48:2-21 and N.J.S.A. 48:2-21.1 and For Other Appropriate Relief.

Public Utility Commission of Texas Docket No. 39896: Application of Entergy Texas, Inc. for Authority to Change Rates and Reconcile Fuel Costs.

Missouri Public Service Commission Case No. EO-2012-0009: In the Matter of KCP&L Greater Missouri Operations Notice of Intent to File an Application for Authority to Establish a Demand-Side Programs Investment Mechanism.

Colorado Public Utilities Commission Docket No. 11AL-947E: In the Matter of Advice Letter No. 1597-Electric Filed by Public Service Company of Colorado to Revise its Colorado PUC No. 7-Electric Tariff to Implement a General Rate Schedule Adjustment and Other Changes Effective December 23, 2011.

Illinois Commerce Commission Docket No. 11-0721: Commonwealth Edison Company Tariffs and Charges Submitted Pursuant to Section 16-108.5 of the Public Utilities Act.

Public Utility Commission of Texas Docket No. 38951: Application of Entergy Texas, Inc. for Approval of Competitive Generation Service tariff (Issues Severed from Docket No. 37744).

California Public Utilities Commission Docket No. A.11-06-007: Southern California Edison's General Rate Case, Phase 2.

*2011*

Arizona Corporation Commission Docket No. E-01345A-11-0224: In the Matter of Arizona Public Service Company for a Hearing to Determine the Fair Value of Utility Property of the Company for Ratemaking Purposes, to Fix and Just and Reasonable Rate of Return Thereon, to Approve Rate Schedules Designed to Develop Such Return.

Oklahoma Corporation Commission Cause No. PUD 201100087: In the Matter of the Application of Oklahoma Gas and Electric Company for an Order of the Commission Authorizing Applicant to Modify its Rates, Charges, and Tariffs for Retail Electric Service in Oklahoma.

South Carolina Public Service Commission Docket No. 2011-271-E: Application of Duke Energy Carolinas, LLC for Authority to Adjust and Increase its Electric Rates and Charges.

Pennsylvania Public Utility Commission Docket No. P-2011-2256365: Petition of PPL Electric Utilities Corporation for Approval to Implement Reconciliation Rider for Default Supply Service.

North Carolina Utilities Commission Docket No. E-7, Sub 989: In the Matter of Application of Duke Energy Carolinas, LLC for Adjustment of Rates and Charges Applicable to Electric Service in North Carolina.

Florida Public Service Commission Docket No. 110138: In Re: Petition for Increase in Rates by Gulf Power Company.

Public Utilities Commission of Nevada Docket No. 11-06006: In the Matter of the Application of Nevada Power Company, filed pursuant to NRS 704.110(3) for authority to increase its annual revenue requirement for general rates charged to all classes of customers to recover the costs of constructing the Harry Allen Combined Cycle plant and other generating, transmission, and distribution plant additions, to reflect changes in the cost of capital, depreciation rates and cost of service, and for relief properly related thereto.

North Carolina Utilities Commission Docket Nos. E-2, Sub 998 and E-7, Sub 986: In the Matter of the Application of Duke Energy Corporation and Progress Energy, Inc., to Engage in a Business Combination Transaction and to Address Regulatory Conditions and Codes of Conduct.

Public Utilities Commission of Ohio Case Nos. 11-346-EL-SSO, 11-348-EL-SSO, 11-349-EL-AAM, and 11-350-EL-AAM: In the Matter of the Application of Columbus Southern Power Company and Ohio Power

Company for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form on an Electric Security Plan and In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company for Approval of Certain Accounting Authority.

Virginia State Corporation Commission Case No. PUE-2011-00037: In the Matter of Appalachian Power Company for a 2011 Biennial Review of the Rates, Terms, and Conditions for the Provision of Generation, Distribution, and Transmission Services Pursuant to § 56-585.1 A of the Code of Virginia.

Illinois Commerce Commission Docket No. 11-0279 and 11-0282 (cons.): Ameren Illinois Company Proposed General Increase in Electric Delivery Service and Ameren Illinois Company Proposed General Increase in Gas Delivery Service.

Virginia State Corporation Commission Case No. PUE-2011-00045: Application of Virginia Electric and Power Company to Revise its Fuel Factor Pursuant to § 56-249.6 of the Code of Virginia.

Utah Public Service Commission Docket No. 10-035-124: In the Matter of the Application of Rocky Mountain Power for Authority to Increase its Retail Electric Utility Service Rates in Utah and for Approval of its Proposed Electric Service Schedules and Electric Service Regulations.

Maryland Public Utilities Commission Case No. 9249: In the Matter of the Application of Delmarva Power & Light for an Increase in its Retail Rates for the Distribution of Electric Energy.

Minnesota Public Utilities Commission Docket No. E002/GR-10-971: In the Matter of the Application of Northern States Power Company d/b/a Xcel Energy for Authority to Increase Rates for Electric Service in Minnesota.

Michigan Public Service Commission Case No. U-16472: In the Matter of the Detroit Edison Company for Authority to Increase its Rates, Amend its Rate Schedules and Rules Governing the Distribution and Supply of Electric Energy, and for Miscellaneous Accounting Authority.

*2010*

Public Utilities Commission of Ohio Docket No. 10-2586-EL-SSO: In the Matter of the Application of Duke Energy Ohio for Approval of a Market Rate Offer to Conduct a Competitive Bidding Process for Standard Service Offer Electric Generation Supply, Accounting Modifications, and Tariffs for Generation Service.

Colorado Public Utilities Commission Docket No. 10A-554EG: In the Matter of the Application of Public Service Company of Colorado for Approval of a Number of Strategic Issues Relating to its DSM Plan, Including Long-Term Electric Energy Savings Goals, and Incentives.

Public Service Commission of West Virginia Case No. 10-0699-E-42T: Appalachian Power Company and Wheeling Power Company Rule 42T Application to Increase Electric Rates.

Oklahoma Corporation Commission Cause No. PUD 201000050: Application of Public Service Company of Oklahoma, an Oklahoma Corporation, for an Adjustment in its Rates and Charges and Terms and Conditions of Service for Electric Service in the State of Oklahoma.

Georgia Public Service Commission Docket No. 31958-U: In Re: Georgia Power Company's 2010 Rate Case.

Washington Utilities and Transportation Commission Docket No. 100749: 2010 Pacific Power & Light Company General Rate Case.



Colorado Public Utilities Commission Docket No. 10M-254E: In the Matter of Commission Consideration of Black Hills Energy's Plan in Compliance with House Bill 10-1365, "Clean Air-Clean Jobs Act."

Colorado Public Utilities Commission Docket No. 10M-245E: In the Matter of Commission Consideration of Public Service Company of Colorado Plan in Compliance with House Bill 10-1365, "Clean Air-Clean Jobs Act."

Public Service Commission of Utah Docket No. 09-035-15 *Phase II*: In the Matter of the Application of Rocky Mountain Power for Approval of its Proposed Energy Cost Adjustment Mechanism.

Public Utility Commission of Oregon Docket No. UE 217: In the Matter of PACIFICORP, dba PACIFIC POWER Request for a General Rate Revision.

Mississippi Public Service Commission Docket No. 2010-AD-57: In Re: Proposal of the Mississippi Public Service Commission to Possibly Amend Certain Rules of Practice and Procedure.

Indiana Utility Regulatory Commission Cause No. 43374: Verified Petition of Duke Energy Indiana, Inc. Requesting the Indiana Utility Regulatory Commission to Approve an Alternative Regulatory Plan Pursuant to Ind. Code § 8-1-2.5-1, *ET SEQ.*, for the Offering of Energy Efficiency Conservation, Demand Response, and Demand-Side Management Programs and Associated Rate Treatment Including Incentives Pursuant to a Revised Standard Contract Rider No. 66 in Accordance with Ind. Code §§ 8-1-2.5-1 *ET SEQ.* and 8-1-2-42 (a); Authority to Defer Program Costs Associated with its Energy Efficiency Portfolio of Programs; Authority to Implement New and Enhanced Energy Efficiency Programs, Including the Powershare® Program in its Energy Efficiency Portfolio of Programs; and Approval of a Modification of the Fuel Adjustment Clause Earnings and Expense Tests.

Public Utility Commission of Texas Docket No. 37744: Application of Entergy Texas, Inc. for Authority to Change Rates and to Reconcile Fuel Costs.

South Carolina Public Service Commission Docket No. 2009-489-E: Application of South Carolina Electric & Gas Company for Adjustments and Increases in Electric Rate Schedules and Tariffs.

Kentucky Public Service Commission Case No. 2009-00459: In the Matter of General Adjustments in Electric Rates of Kentucky Power Company.

Virginia State Corporation Commission Case No. PUE-2009-00125: For acquisition of natural gas facilities Pursuant to § 56-265.4:5 B of the Virginia Code.

Arkansas Public Service Commission Docket No. 10-010-U: In the Matter of a Notice of Inquiry Into Energy Efficiency.

Connecticut Department of Public Utility Control Docket No. 09-12-05: Application of the Connecticut Light and Power Company to Amend its Rate Schedules.

Arkansas Public Service Commission Docket No. 09-084-U: In the Matter of the Application of Entergy Arkansas, Inc. For Approval of Changes in Rates for Retail Electric Service.

Missouri Public Service Commission Docket No. ER-2010-0036: In the Matter of Union Electric Company d/b/a AmerenUE for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in the Company's Missouri Service Area.

Public Service Commission of Delaware Docket No. 09-414: In the Matter of the Application of Delmarva Power & Light Company for an Increase in Electric Base Rates and Miscellaneous Tariff Charges.

2009

Virginia State Corporation Commission Case No. PUE-2009-00030: In the Matter of Appalachian Power Company for a Statutory Review of the Rates, Terms, and Conditions for the Provision of Generation, Distribution, and Transmission Services Pursuant to § 56-585.1 A of the Code of Virginia.

Public Service Commission of Utah Docket No. 09-035-15 *Phase I*: In the Matter of the Application of Rocky Mountain Power for Approval of its Proposed Energy Cost Adjustment Mechanism.

Public Service Commission of Utah Docket No. 09-035-23: In the Matter of the Application of Rocky Mountain Power for Authority To Increase its Retail Electric Utility Service Rates in Utah and for Approval of Its Proposed Electric Service Schedules and Electric Service Regulations.

Colorado Public Utilities Commission Docket No. 09AL-299E: Re: The Tariff Sheets Filed by Public Service Company of Colorado with Advice Letter No. 1535 – Electric.

Arkansas Public Service Commission Docket No. 09-008-U: In the Matter of the Application of Southwestern Electric Power Company for Approval of a General Change in Rates and Tariffs.

Oklahoma Corporation Commission Docket No. PUD 200800398: In the Matter of the Application of Oklahoma Gas and Electric Company for an Order of the Commission Authorizing Applicant to Modify its Rates, Charges, and Tariffs for Retail Electric Service in Oklahoma.

Public Utilities Commission of Nevada Docket No. 08-12002: In the Matter of the Application by Nevada Power Company d/b/a NV Energy, filed pursuant to NRS §704.110(3) and NRS §704.110(4) for authority to increase its annual revenue requirement for general rates charged to all classes of customers, begin to recover the costs of acquiring the Bighorn Power Plant, constructing the Clark Peakers, Environmental Retrofits and other generating, transmission and distribution plant additions, to reflect changes in cost of service and for relief properly related thereto.

New Mexico Public Regulation Commission Case No. 08-00024-UT: In the Matter of a Rulemaking to Revise NMPRC Rule 17.7.2 NMAC to Implement the Efficient Use of Energy Act.

Indiana Utility Regulatory Commission Cause No. 43580: Investigation by the Indiana Utility Regulatory Commission, of Smart Grid Investments and Smart Grid Information Issues Contained in 111(d) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. § 2621(d)), as Amended by the Energy Independence and Security Act of 2007.

Louisiana Public Service Commission Docket No. U-30192 *Phase II (February 2009)*: Ex Parte, Application of Entergy Louisiana, LLC for Approval to Repower Little Gypsy Unit 3 Electric Generating Facility and for Authority to Commence Construction and for Certain Cost Protection and Cost Recovery.

South Carolina Public Service Commission Docket No. 2008-251-E: In the Matter of Progress Energy Carolinas, Inc.'s Application For the Establishment of Procedures to Encourage Investment in Energy Efficient Technologies; Energy Conservation Programs; And Incentives and Cost Recovery for Such Programs.

2008

Colorado Public Utilities Commission Docket No. 08A-366EG: In the Matter of the Application of Public Service Company of Colorado for approval of its electric and natural gas demand-side management (DSM)

plan for calendar years 2009 and 2010 and to change its electric and gas DSM cost adjustment rates effective January 1, 2009, and for related waivers and authorizations.

Public Service Commission of Utah Docket No. 07-035-93: In the Matter of the Application of Rocky Mountain Power for Authority to Increase its Retail Electric Utility Service Rates in Utah and for Approval of its Proposed Electric Service Schedules and Electric Service Regulations, Consisting of a General Rate Increase of Approximately \$161.2 Million Per Year, and for Approval of a New Large Load Surcharge.

Indiana Utility Regulatory Commission Cause No. 43374: Petition of Duke Energy Indiana, Inc. Requesting the Indiana Utility Regulatory Commission Approve an Alternative Regulatory Plan for the Offering of Energy Efficiency, Conservation, Demand Response, and Demand-Side Management.

Public Utilities Commission of Nevada Docket No. 07-12001: In the Matter of the Application of Sierra Pacific Power Company for authority to increase its general rates charged to all classes of electric customers to reflect an increase in annual revenue requirement and for relief properly related thereto.

Louisiana Public Service Commission Docket No. U-30192 *Phase II*: Ex Parte, Application of Entergy Louisiana, LLC for Approval to Repower Little Gypsy Unit 3 Electric Generating Facility and for Authority to Commence Construction and for Certain Cost Protection and Cost Recovery.

Colorado Public Utilities Commission Docket No. 07A-420E: In the Matter of the Application of Public Service Company of Colorado For Authority to Implement and Enhanced Demand Side Management Cost Adjustment Mechanism to Include Current Cost Recovery and Incentives.

*2007*

Louisiana Public Service Commission Docket No. U-30192: Ex Parte, Application of Entergy Louisiana, LLC for Approval to Repower Little Gypsy Unit 3 Electric Generating Facility and for Authority to Commence Construction and for Certain Cost Protection and Cost Recovery.

Public Utility Commission of Oregon Docket No. UG 173: In the Matter of PUBLIC UTILITY COMMISSION OF OREGON Staff Request to Open an Investigation into the Earnings of Cascade Natural Gas.

*2006*

Public Utility Commission of Oregon Docket No. UE 180/UE 181/UE 184: In the Matter of PORTLAND GENERAL ELECTRIC COMPANY Request for a General Rate Revision.

Public Utility Commission of Oregon Docket No. UE 179: In the Matter of PACIFICORP, dba PACIFIC POWER AND LIGHT COMPANY Request for a general rate increase in the company's Oregon annual revenues.

Public Utility Commission of Oregon Docket No. UM 1129 *Phase II*: Investigation Related to Electric Utility Purchases From Qualifying Facilities.

*2005*

Public Utility Commission of Oregon Docket No. UM 1129 *Phase I Compliance*: Investigation Related to Electric Utility Purchases From Qualifying Facilities.

Public Utility Commission of Oregon Docket No. UX 29: In the Matter of QWEST CORPORATION Petition to Exempt from Regulation Qwest's Switched Business Services.

*2004*

Public Utility Commission of Oregon Docket No. UM 1129 *Phase I: Investigation Related to Electric Utility Purchases From Qualifying Facilities.*

**TESTIMONY BEFORE LEGISLATIVE BODIES**

*2014*

Regarding Kansas House Bill 2460: Testimony Before the Kansas House Standing Committee on Utilities and Telecommunications, February 12, 2014.

*2012*

Regarding Missouri House Bill 1488: Testimony Before the Missouri House Committee on Utilities, February 7, 2012.

*2011*

Regarding Missouri Senate Bills 50, 321, 359, and 406: Testimony Before the Missouri Senate Veterans' Affairs, Emerging Issues, Pensions, and Urban Affairs Committee, March 9, 2011.

**AFFIDAVITS**

*2011*

Colorado Public Utilities Commission Docket No. 11M-951E: In the Matter of the Petition of Public Service Company of Colorado Pursuant to C.R.S. § 40-6-111(1)(d) for Interim Rate Relief Effective on or before January 21, 2012.

**ENERGY INDUSTRY PUBLICATIONS AND PRESENTATIONS**

Mock Trial Expert Witness, The Energy Bar Association State Commission Practice and Regulation Committee and Young Lawyers Committee and Environment, Energy and Natural Resources Section of the D.C. Bar, Mastering Your First (or Next) State Public Utility Commission Hearing, February 13, 2014.

Panelist, Customer Panel, Virginia State Bar 29<sup>th</sup> National Regulatory Conference, Williamsburg, Virginia, May 19, 2011.

Chriss, S. (2006). "Regulatory Incentives and Natural Gas Purchasing -- Lessons from the Oregon Natural Gas Procurement Study." Presented at the 19<sup>th</sup> Annual Western Conference, Center for Research in Regulated Industries Advanced Workshop in Regulation and Competition, Monterey, California, June 29, 2006.

Chriss, S. (2005). "Public Utility Commission of Oregon Natural Gas Procurement Study." Public Utility Commission of Oregon, Salem, OR. Report published in June, 2005. Presented to the Public Utility Commission of Oregon at a special public meeting on August 1, 2005.

Chriss, S. and M. Radler (2003). "Report from Houston: Conference on Energy Deregulation and Restructuring." USAEE Dialogue, Vol. 11, No. 1, March, 2003.

Chriss, S., M. Dwyer, and B. Pulliam (2002). "Impacts of Lifting the Ban on ANS Exports on West Coast Crude Oil Prices: A Reconsideration of the Evidence." Presented at the 22nd USAEE/IAEE North American Conference, Vancouver, BC, Canada, October 6-8, 2002.

Contributed to chapter on power marketing: "Power System Operations and Electricity Markets," Fred I. Denny and David E. Dismukes, authors. Published by CRC Press, June 2002.

Contributed to "Moving to the Front Lines: The Economic Impact of the Independent Power Plant Development in Louisiana," David E. Dismukes, author. Published by the Louisiana State University Center for Energy Studies, October 2001.

Dismukes, D.E., D.V. Mesyanzhinov, E.A. Downer, S. Chriss, and J.M. Burke (2001). "Alaska Natural Gas In-State Demand Study." Anchorage: Alaska Department of Natural Resources.

Year	Sales			Year Over Year Change	Contract Rate Portion of Load
	Ameren Total	Contract Rate	Ameren exc. Contract Rate		
(1)	(MWH) (2)	(MWH) (3)	(MWH) (4) (2) - (3)	(%) (5)	(%) (6) (3) / (2)
2004	35,649,754	526,856	35,122,898		1.5%
2005	37,362,021	2,191,808	35,170,213	0.13%	5.9%
2006	36,864,186	4,086,126	32,778,060	-6.80%	11.1%
2007	38,827,452	4,378,013	34,449,439	5.10%	11.3%
2008	37,980,626	4,130,422	33,850,204	-1.74%	10.9%
2009	35,098,274	2,217,306	32,880,968	-2.86%	6.3%
2010	38,427,458	3,952,400	34,475,058	4.85%	10.3%
2011	37,428,457	4,168,775	33,259,682	-3.53%	11.1%
2012	36,753,391	4,150,230	32,603,161	-1.97%	11.3%
2013	37,030,285	4,190,713	32,839,572	0.73%	11.3%
<b>Average</b>				<b>-0.68%</b>	

Sources:

Union Electric Company, 2004 FERC Form 1 through 2013 FERC Form 1, page 304.

Function	Large General Service/Small Primary Service				Large Primary Service			
	Cost of Service by Function		Revenue by Function		Cost of Service by Function		Revenue by Function	
	Class Cost of Service		Current Rates		Class Cost of Service		Current Rates	
	ER-2012-0166		Current Rates		ER-2012-0166		Current Rates	
	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(1) / Total		(3) / Total		(5) / Total		(7) / Total	
Customer	\$ 16,370	2.1%	\$ 12,955	1.6%	\$ 718	0.4%	\$ 260	0.1%
Demand	\$ 537,458	68.4%	\$ 85,247	10.5%	\$ 130,324	64.0%	\$ 89,803	44.2%
Energy	\$ 232,317	29.6%	\$ 716,035	87.9%	\$ 72,699	35.7%	\$ 113,294	55.7%
<b>Total</b>	<b>\$ 786,145</b>	<b>100%</b>	<b>\$ 814,237</b>	<b>100%</b>	<b>\$ 203,741</b>	<b>100%</b>	<b>\$ 203,356</b>	<b>100%</b>

Sources:

- (1), (5) Schedule WMW-E3, Docket ER-2012-0166
- (3) Exhibit SWC-3 page 2 and page 3
- (7) Exhibit SWC-3 page 4

Schedule	Charge	Billing Units	Rate	Revenue Requirement	
Large General Service	Customer Charge - Summer	40,276	\$ 88.32	\$	3,557,176
	Customer Charge - Winter	80,552	\$ 88.32	\$	7,114,353
	Customer Charge - TOD Bills	432	\$ 19.50	\$	8,424
	Demand Charge - Summer	8,666,428	\$ 4.62	\$	40,038,895
	Demand Charge - Winter	15,501,170	\$ 1.71	\$	26,507,001
	Energy Charge - Summer - First 150HU	1,149,640,737	\$ 0.099	\$	113,699,469
	Energy Charge - Summer - Next 200HU	1,272,845,437	\$ 0.074	\$	94,699,701
	Energy Charge - Summer - Over 350HU	532,079,669	\$ 0.050	\$	26,603,983
	Energy Charge - Summer - On-Peak	3,921,459	\$ 0.012	\$	45,881
	Energy Charge - Summer - Off-Peak	6,630,505	\$ (0.007)	\$	(43,761)
	Energy Charge - Summer - EE	2,945,243,641	\$ 0.001	\$	2,356,195
	Energy Charge - Summer - MEEIA	2,945,243,641	\$ 0.002	\$	6,185,012
	Energy Charge - Winter - First 150HU	1,928,002,501	\$ 0.062	\$	120,114,556
	Energy Charge - Winter - Next 200HU	2,077,949,662	\$ 0.046	\$	96,001,274
	Energy Charge - Winter - Over 350HU	849,130,221	\$ 0.036	\$	30,823,427
	Energy Charge - Winter - Seasonal	345,548,065	\$ 0.036	\$	12,543,395
	Energy Charge - Winter - On-Peak	5,657,762	\$ 0.004	\$	19,802
	Energy Charge - Winter - Off-Peak	9,959,606	\$ (0.002)	\$	(19,919)
	Energy Charge - Winter - EE	5,184,265,619	\$ 0.001	\$	2,592,133
	Energy Charge - Winter- MEEIA	5,184,265,619	\$ 0.002	\$	10,886,958
<b>Total</b>				<b>\$</b>	<b>593,733,954</b>
	Customer Charges		\$	10,679,953	1.9%
	Demand Charges		\$	66,545,896	11.6%
	Energy Charges		\$	516,508,105	90.3%

Sources:

- 1) Exhibit A, Non-Unanimous Stipulation and Agreement Regarding Class Kilowatt-Hours, Revenues and Billing Determinants, Net Base Energy Costs, and Fuel Adjustment Clause Tariff Sheets, Docket ER-2012-0166, 11/2/2012
- 2) Schedule MEB-4



Schedule	Charge	Billing Units	Rate	Revenue Requirement
Small Primary	Customer Charge - Summer	2,528	\$ 299.60	\$ 757,389
	Customer Charge - Winter	5,056	\$ 299.60	\$ 1,514,778
	Customer Charge - TOD Bills	144	\$ 19.50	\$ 2,808
	Demand Charge - Summer	2,919,052	\$ 3.82	\$ 11,150,779
	Demand Charge - Winter	5,083,447	\$ 1.39	\$ 7,065,992
	Reactive Charge	1,383,034	\$ 0.35	\$ 484,062
	Energy Charge - Summer - First 150HU	412,981,620	\$ 0.096	\$ 39,481,043
	Energy Charge - Summer - Next 200HU	507,102,884	\$ 0.072	\$ 36,511,408
	Energy Charge - Summer - Over 350HU	366,758,564	\$ 0.048	\$ 17,714,439
	Energy Charge - Summer - On-Peak	7,699,009	\$ 0.009	\$ 65,442
	Energy Charge - Summer - Off-Peak	12,121,608	\$ (0.005)	\$ (58,184)
	Energy Charge - Summer - EE	1,215,545,431	\$ 0.001	\$ 1,093,991
	Energy Charge - Summer - MEEIA	1,215,545,431	\$ 0.002	\$ 2,674,200
	Energy Charge - Winter - First 150HU	689,418,710	\$ 0.060	\$ 41,503,006
	Energy Charge - Winter - Next 200HU	845,409,050	\$ 0.045	\$ 37,789,785
	Energy Charge - Winter - Over 350HU	609,863,042	\$ 0.036	\$ 21,650,138
	Energy Charge - Winter - Seasonal	137,100,716	\$ 0.036	\$ 4,867,075
	Energy Charge - Winter - On-Peak	14,840,155	\$ 0.003	\$ 47,488
	Energy Charge - Winter - Off-Peak	26,209,113	\$ (0.002)	\$ (44,555)
	Energy Charge - Winter - EE	2,162,191,208	\$ 0.001	\$ 1,297,315
Energy Charge - Winter - MEEIA	2,162,191,208	\$ 0.002	\$ 4,756,821	
<b>Total</b>				<b>\$ 230,325,217</b>
	Customer Charges			\$ 2,274,974 1.0%
	Demand Charges			\$ 18,700,832 8.5%
	Energy Charges			\$ 199,527,084 90.5%

Sources:

- 1) Exhibit A, Non-Unanimous Stipulation and Agreement Regarding Class Kilowatt-Hours, Revenues and Billing Determinants, Net Base Energy Costs, and Fuel Adjustment Clause Tariff Sheets, Docket ER-2012-0166, 11/2/2012
- 2) Schedule MEB-4

Schedule	Charge	Billing Units	Rate	Revenue Requirement	
Large Primary	Customer Charge	864	\$ 299.60	\$ 258,854	
	Customer Charge - TOD Bills	48	\$ 19.50	\$ 936	
	Demand Charge - Summer	2,544,013	\$ 19.36	\$ 49,252,090	
	Demand Charge - Winter	4,586,240	\$ 8.79	\$ 40,313,050	
	Reactive Charge	678,599	\$ 0.35	\$ 237,510	
	Energy Charge - Summer	1,374,576,167	\$ 0.032	\$ 44,536,268	
	Energy Charge - Summer - On-Peak	33,088,064	\$ 0.006	\$ 208,455	
	Energy Charge - Summer - Off-Peak	67,487,890	\$ (0.004)	\$ (236,208)	
	Energy Charge - Summer - EE	1,000,963,032	\$ 0.000	\$ 400,385	
	Energy Charge - Summer - MEEIA	1,000,963,032	\$ 0.002	\$ 2,102,022	
	Energy Charge - Winter	2,397,397,828	\$ 0.029	\$ 68,805,318	
	Energy Charge - Winter - On-Peak	58,145,641	\$ 0.003	\$ 168,622	
	Energy Charge - Winter - Off-Peak	125,759,988	\$ (0.002)	\$ (188,640)	
	Energy Charge - Winter - EE	1,565,409,354	\$ 0.000	\$ 469,623	
	Energy Charge - Winter- MEEIA	1,565,409,354	\$ 0.002	\$ 3,287,360	
<b>Total</b>				<b>\$ 209,615,645</b>	
	Customer Charges		\$	259,790	0.1%
	Demand Charges		\$	89,802,650	44.2%
	Energy Charges		\$	113,293,815	55.7%

Sources:

- 1) Exhibit A, Non-Unanimous Stipulation and Agreement Regarding Class Kilowatt-Hours, Revenues and Billing Determinants, Net Base Energy Costs, and Fuel Adjustment Clause Tariff Sheets, Docket ER-2012-0166, 11/2/2012
- 2) Schedule MEB-4

**EXEMPLAR 10(M) APPENDIX OR RIDER CALCULATIONS**

**Determination of Revenue Requirement Shortfall**

LINE	DESCRIPTION	CALCULATION	AMOUNT
1	Revenue per kWh under SC 12 (M) approved in Case No. **** and Noranda's test year kWh purchases		\$ 0.03794
2A	SC 10(M) rate approved in Case No. EC-2014-0224		\$ 0.03
2B	Escalator approved in Case No. ****		
...			
2(n)	Escalator approved in Case No. ****		
3	Total SC 10(M) rate	$\Sigma (2A, 2B \dots 2(n))$	\$ 0.03
4	Difference	1 - 3	\$ 0.00794
5	Noranda's test year kWh, Case No. ****		4,168,922,201
6	Amount of revenue requirement shortfall	4 x 5	\$ 33,101,242

EXEMPLAR 10(M) APPENDIX OR RIDER CALCULATIONS

Allocation of Revenue Requirement Shortfall

LINE	RATE CLASS	TEST YEAR BASE RATE REVENUE (\$000), CASE NO. ****	ALLOCATOR	ADJUSTMENT (\$000)
1	Residential	\$ 1,298,918	49%	\$ 16,255
2	Small General Service	\$ 316,651	12%	\$ 3,963
3	Large General Service	\$ 593,843	22%	\$ 7,431
4	Small Primary Service	\$ 228,989	9%	\$ 2,866
5	Large Primary Service	\$ 206,716	8%	\$ 2,587
6	Total	\$ 2,645,117		
7	Amount of revenue requirement shortfall	\$ 33,101		

**EXEMPLAR 10(M) APPENDIX OR RIDER CALCULATIONS**

**Determination of Rates, Residential and Small General Service**

LINE	RATE CLASS	TEST YEAR BASE RATE		ADJUSTMENT (\$000)	MULTIPLIER
		REVENUE (\$000),	CASE NO.		
		****			
1	Residential	\$	1,298,918	\$ 16,255	1.25%
2	Small General Service	\$	316,651	\$ 3,963	1.25%

**Determination of Rates, Large General Service, Small Primary Service, and Large Primary Service**

LINE	RATE CLASS	BILLING UNITS, DEMAND,		ADJUSTMENT (\$000)	RATE (\$/KW)
		CASE NO.	****		
1	Large General Service		24,173,598	\$ 7,431	\$ 0.307
2	Small Primary Service		8,002,499	\$ 2,866	\$ 0.358
3	Large Primary Service		7,130,253	\$ 2,587	\$ 0.363