

Rocky Mountain Power
Docket No. 10-035-124
Witness: Howard M. Ellis

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

Rebuttal Testimony of Howard M. Ellis

Environmental Controls Investments

June 2011

1 **Q. Please state your name and business address.**

2 A. My name is Howard M. Ellis, President. My business address is Enviroplan
3 Consulting, 155 Route 46 West, Wayne, NJ 07470.

4 **Qualifications**

5 **Q. Please describe your education and business experience.**

6 A. I hold a B.S. in Electrical Engineering from the Massachusetts Institute of
7 Technology. I hold a Masters in Business Administration from the Harvard
8 Business School. I also hold a Doctor of Business Administration from the
9 Harvard Business School. My doctoral research was carried out jointly with the
10 Harvard School of Public Health on the subject of the Application of Decision
11 Analysis to the Problem of Choosing an Air Pollution Control Program for New
12 York City. Since 1970, I have specialized in the study and measurement of air
13 pollution. Since 1972, I have served as President of Enviroplan Consulting
14 (organized until 1997 as Enviroplan, Inc.).

15 I have 40 years of experience in air quality modeling, air pollution
16 emissions inventory development, developing air pollution compliance strategies,
17 air pollution permitting and air quality and meteorological monitoring. I have
18 served as Project Manager and Co-Principal Investigator on numerous projects on
19 behalf of electric power companies for development of State Implementation Plan
20 revisions for demonstrating attainment of the National Ambient Air Quality
21 Standards for ozone and PM2.5, Reasonable Progress Goals for Regional Haze in
22 PSD Class I Areas. I have also conducted several BART Determination studies
23 for electric power plants.

24 I am author or coauthor of over 30 publications dealing with air pollution
25 subjects most of which have either been published in peer-reviewed journals or
26 presented at professional conferences. I am a Qualified Environmental
27 Professional, Certificate No. 7990037, Institute of Professional Environmental
28 Practice. My curriculum vitae is attached as Appendix A.

29 **Background**

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

31 A. Rocky Mountain Power (“RMP” or “Company”).

32 **Q. What is the purpose of your testimony?**

33 A. I have been retained by RMP to conduct an independent review of their air
34 pollution control investment decisions relating to this proceeding based on my 40
35 years of experience working on air pollution issues for the electric power industry
36 and government agencies. The main conclusion of my testimony is that these
37 decisions were prudent. I will respond in my testimony to the direct testimony of
38 Mr. Howard Gephardt on behalf of the UAE Intervention Group and Dr. William
39 Steinhurst, Ph. D. and Dr. Jeremy Fisher, Ph.D. on behalf of the Sierra Club
40 regarding the prudence of the Company’s pollution control expenditures for coal-
41 fired power generation plants.

42 **Q. Which of the Company’s power generating facilities are the subject of your
43 testimony?**

44 A. Jim Bridger Unit 3, Naughton Units 1 and 2, Wyodak Unit 1, Hunter Units 1 and
45 2, Huntington Unit 1 and Dave Johnston Units 3 and 4.

- 46 **Q. What information did you review in preparing your testimony?**
- 47 A. The information I reviewed in preparing my testimony included:
- 48 a. Direct Testimony of Mr. Chad Teply on behalf of RMP
- 49 b. Direct Testimony of Howard Gephardt on behalf of the UAE Intervention
- 50 Group
- 51 c. Direct Testimony of Ms. Nancy Kelly on behalf of Western Resource
- 52 Advocates
- 53 d. Direct Testimony of Ms. Michele Beck on behalf of the Utah Office of
- 54 Consumer Advocate
- 55 e. Direct Testimony of William Steinhurst, Ph. D. on behalf of the Sierra
- 56 Club
- 57 f. Direct Testimony of Jeremy Fisher, Ph. D. also on behalf of the Sierra
- 58 Club
- 59 g. RMP Application for General Rate Increase, Docket No. 10-035-124
- 60 h. Utah State Implementation Plan Section XX, Regional Haze, Addressing
- 61 Regional Haze Visibility Protection for the Mandatory Federal Class I
- 62 Areas Required Under 40 CFR 51.309, Adopted by the Air Quality Board,
- 63 April 6, 2011
- 64 i. Wyoming State Implementation Plan, Regional Haze, Addressing
- 65 Regional Haze Requirements for Wyoming Mandatory Federal Class I
- 66 Areas Under 40 CFR 51.309(g), January 7, 2011
- 67 j. BART Permits issued by Wyoming DEQ for the Naughton, Wyodak,
- 68 Dave Johnston and Jim Bridger Plants

- 69 k. Approval Orders issued by the Utah DEQ for the Hunter and Huntington
70 Plants
- 71 l. Wyoming DEQ, Wyoming Ambient Air Monitoring Annual Network Plan
72 2010
- 73 m. Permits MD-1552 issued by Wyoming DEQ for the Jim Bridger Plant
- 74 n. Permit MD-5156 issued by Wyoming DEQ for the Naughton Plant
- 75 o. Permit MD-7487 issued by Wyoming DEQ for the Wyoak Plant
- 76 p. Permit MD-5098 issued by Wyoming DEQ for the Dave Johnston Plant

77 In addition, I reviewed the exhibits to the information described above.

78 **Q. Based upon your experience and your review of these materials, have you**
79 **found any errors in the testimony submitted to this Commission by Mr.**
80 **Gephardt, Dr. Steinhurst and Dr. Fisher in this matter?**

81 A. Yes, I have.

82 **Q. And, have you formulated any opinions or conclusions of your own that**
83 **would rebut the conclusions reached by the above parties in their testimony?**

84 A. Yes, I have. In summary, it is my opinion that RMP acted prudently in planning
85 for, and implementing the emissions control equipment at its Utah and Wyoming
86 power generating facilities that are part of this proceeding. My testimony gives
87 detailed reasons why I believe the conclusions of the above parties regarding this
88 subject are wrong.

89 **Q. As background for your testimony, what are the specific air pollution control**
90 **investments; the underlying State and Federal regulations; State issued**
91 **permits, construction permits, BART permits and Approval Orders; and**
92 **sections of the applicable State Implementation Plan mandating these air**
93 **pollution control investments that are the subject of your work?**

94 A. I have prepared a chart, attached as Exhibit RMP____(HME-1R), that provides this
95 information.

96 **Specific concerns regarding the intervenor testimony of Mr. Gebhart, Dr.**
97 **Steinhurst, Ph. D. and Dr. Fisher.**

98 **Q. Mr. Gebhart indicates generally that pollution control investments expressed**
99 **in dollars-per-ton of pollutant removed should be at \$2,000 per ton or less to**
100 **be cost effective. Is this consistent with your experience?**

101 A. No. Mr. Gebhardt stated: "Based on the above and on my experience, it is my
102 opinion that the cost effectiveness for BART control on coal-fired EGU SO₂
103 emissions control projects should generally be no higher than \$2,000 per ton. Any
104 costs that exceed \$2,000 per ton SO₂ removed should not be designated as BART
105 unless other regulatory factors in the analysis warrant a higher cost level."¹ The
106 information Mr. Gebhardt used in reaching this opinion consisted of information
107 from the WRAP BART Clearinghouse² and a statement in the preamble to the
108 Federal BART Regulation³ stating: "For uncontrolled coal-fired EGUs, EPA

¹UAE Exhibit RR 2.0, Direct Testimony of Howard Gebhart, UPSC Docket 10-035-124, Page 10, Lines 179-183.

²www.wrapair.org.

³U.S. EPA, Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations, Appendix Y to Part 51—Guidelines for BART Determinations Under the Regional Haze Rule, Federal Register / Vol. 70, No. 128 / Wednesday, July 6, 2005, pp. 39104-39172.

109 projects the cost-effectiveness of SO₂ BART at an average of \$919 per ton, with a
110 range of \$400 to \$2,000 per ton SO₂ removed for a *majority* of the *uncontrolled*
111 BART-eligible EGUs.”

112 I totally disagree with Mr. Gebhardt on his opinion of having a \$2,000
113 limit on the cost per ton reduced for SO₂ BART Determinations for EGUs. The
114 BART Determination process is a case by case undertaking with no upper limits
115 on the cost per ton reduced for the BART control option selected. The Federal
116 Regional Haze Rule⁴ and 40 CFR Part 51 Appendix Y Guidelines for BART
117 Determinations Under the Regional Haze Rule⁵ provide no dollar limit or
118 recommendation on the maximum cost per ton reduced for a BART
119 Determination. The \$2,000 upper end of the range referred to by Mr. Gebhardt is
120 only “for a *majority* of the *uncontrolled* BART-eligible EGUs” and is in 2005
121 dollars with no accounting for inflation in capital and operating costs since then. I
122 have also reviewed several of the state regulations dealing with BART and also
123 found no mandatory regulatory requirement for the upper limit on control costs
124 per ton reduced for BART Determination purposes. Some states may offer
125 suggested guidance but to the best of my knowledge none has a mandatory
126 requirement for the upper limit on control costs per ton reduced for BART
127 Determination purposes.

128 Furthermore, Mr. Gebhardt’s opinion of a \$2,000 upper limit on cost
129 effectiveness for SO₂ BART Determinations is inconsistent with his own

⁴U.S. EPA, Regional Haze Regulations, Federal Register / Vol. 64, No. 126 / Thursday, July 1, 1999, pp. 35714-35774.

⁵U.S. EPA, Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations, Appendix Y to Part 51—Guidelines for BART Determinations Under the Regional Haze Rule, Federal Register / Vol. 70, No. 128 / Wednesday, July 6, 2005, pp. 39104-39172.

130 conclusions on Line 918 of Page 46 of his testimony where he concludes that the
131 cost per ton reduction of SO₂ of \$5,028 for an SO₂ scrubber upgrade for Dave
132 Johnston Unit #4 is cost effective.

133 **Q. Mr. Gebhart seems to imply that if the Company were to have taken a**
134 **regional approach, it would not have been forced to make pollution control**
135 **investments at plants like Hunter 1 and 2 and Huntington 1, and instead,**
136 **could have met pollution milestones by reducing emissions at other plants in**
137 **the region. Do you agree?**

138 A. No. Mr. Gebhardt states in his testimony:

139 "My opinion is buttressed by the fact that WRAP's regional
140 estimates of 2018 SO₂ emissions reductions from achievable
141 controls, as reflected on UAE Exhibit 2.4 (Utah tab/page), did not
142 assume any additional reductions from Hunter Unit #2 (or from
143 Hunter Unit #1 or Huntington Unit #1), given that those units were
144 already controlling 80 – 83.5% of SO₂ emissions. ...PacifiCorp's
145 internal analysis confirmed that these three Utah units (Huntington
146 Unit #1 and Hunter Units #1 and #2) would be the most expensive
147 and least productive places to target dollars designed to reduce
148 regional SO₂ emissions."⁶

149 Hunter Units #1 and #2 and Huntington Unit #1 are large sources of
150 emissions of visibility impairing pollutants with moderate emission reductions
151 from the air pollution controls that are the subject of this proceeding. They are
152 also located in relatively close proximity to the five PSD Class I Areas in Utah

⁶ UAE Exhibit RR 2.0, Direct Testimony of Howard Gebhart, p.35, Lines 716-727.

153 (Table 1 and Figures 1 and 2). Smaller sources of emissions of visibility impairing
154 pollutants referred to by Mr. Gebhardt in his testimony are expected to have
155 smaller impacts than the RMP plants on improving visibility because of their
156 considerably smaller total emissions and expected considerably smaller emission
157 reductions through application of air pollution controls. Gebhardt has not
158 provided actual evidence that controlling other sources will be more cost effective
159 in terms of visibility improvement than controlling Hunter Units #1 and #2 and
160 Huntington Unit #1.

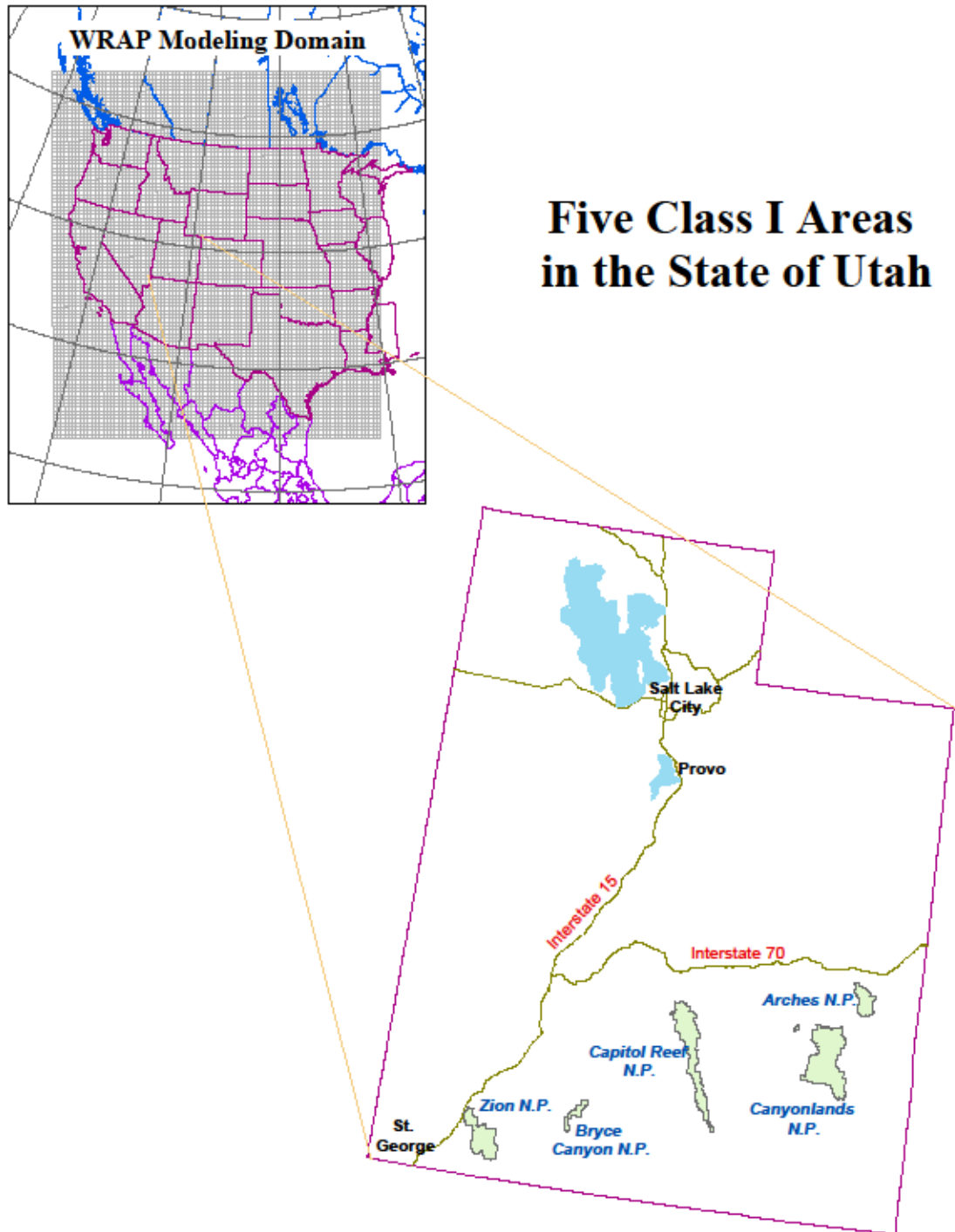
TABLE 1: DISTANCE OF RMP PLANTS FROM THE FIVE UTAH PSD CLASS I AREAS		
Class I Area	Closest Distance to Hunter Plant (km)	Closest Distance to Huntington Plant (km)
Arches N.P.	120	132
Canyonlands N.P.	106	126
Capitol Reef N.P.	75	95
Bryce Canyon N.P.	189	206
Zion N.P.	258	274

FIGURE 1: MAP OF THE HUNTER AND HUNTINGTON PLANTS AND CLOSEST POINT OF EACH UTAH PSD CLASS I AREA TO THESE PLANTS



Notes to Figure 1: The yellow pins represent the locations of the Huntington and Hunter Plants. The green pins represent the closest point of each of these five PSD Class I Areas to the Hunter and Huntington Plants.

FIGURE 2: MAP OF THE ENTIRE STATE OF UTAH SHOWING THE COMPLETE EXTENT OF EACH OF THE FIVE PSD CLASS I AREAS



Utah Division of Air Quality April, 2002

161 **Q. On the one hand, Mr. Gebhart accuses the Company of doing more than**
162 **what is legally required with respect to environmental pollution control**
163 **equipment. Are there parties in this case who accuse the Company of not**
164 **doing *enough* to account for future environmental requirements?**

165 A. Yes. UAE and Sierra Club definitely have different, albeit erroneous, points of
166 view as to the Company's actions/inactions in light of current and future
167 regulations on this issue.

168 **Q. How do you respond to that testimony?**

169 A. I have several concerns with their testimonies. I will address each of them in turn.
170 First, Dr. Steinhurst states in his Conclusion (3) that the Company failed to
171 determine whether the Current Case Retrofits would be cost effective in the light
172 of known and *likely* environmental regulations. He goes on to state that the failure
173 to determine whether the Current Case Retrofits are cost effective in the face of
174 those known and likely *future* costs constitutes imprudence.⁷

175 I strongly disagree. Because it is uncertain what future emission
176 reductions will be required in order to comply with recent and future air pollution
177 regulations and their resulting Wyoming and Utah DEQ operating permit
178 conditions for each of the six RMP plants, there is no basis for Dr. Steinhurst's
179 statement in Conclusion (3) that "The magnitude of the costs of those known and
180 likely regulations is actually greater than the cost of the Current Case Retrofits."
181 Also, because of these large uncertainties, there is no basis for Dr. Steinhurst's
182 statement in Conclusion (3) that "Failure to determine whether the Current Case
183 Retrofits are cost effective in the face of those known and likely future costs,

⁷ William Steinhurst – Direct Testimony, pp. 3-4.

184 which the company knew or should have known would be required, constitutes
185 imprudence.”

186 What would be imprudent, in my opinion, is to guess what the future
187 regulation permit conditions will be despite these large uncertainties and then use
188 this information to make investment decisions now that do not need to, and should
189 not, be made until there is considerably more certainty about these costs. The
190 Company has not done this. Dr. Steinhurst’s opinions would actually have the
191 Company take such imprudent steps. I want to stress that addressing uncertainty
192 in business decisions is important. While it is prudent to consider potential future
193 requirements to inform the business decision-making process as RMP does in its
194 planning process, making business decisions on inadequately developed future
195 rules when there is no need to make those decisions now would be imprudent.

196 **Q. Do you have other concerns with Dr. Steinhurst’s testimony?**

197 A. Yes. Dr. Steinhurst also states that the Commission should require the Company
198 to provide a full analysis and accounting for the impact of existing and upcoming
199 environmental regulations affecting its fleet of coal plants, as well as the full
200 range of options for addressing those regulations, including both supply and
201 demand-side resources, and capital and operating expenses associated with
202 reasonably anticipated environmental retrofits and other environmental mitigation
203 requirements, including the price on carbon dioxide emissions based on likely
204 regional and federal policies on greenhouse gasses.⁸

205 Again, because of the large uncertainties about future air pollution permit
206 conditions and the resulting capital and operating costs of complying with future

⁸William Steinhurst– Direct Testimony, pp. 4, 5.

207 permit requirements as well as the large uncertainties in the future prices of CO₂
208 emissions, it is not possible to provide to the Commission now accurate cost
209 estimates for complying with these future, unknown requirements. Therefore, Dr.
210 Steinhurst urges the Commission to ask the Company to perform an impossible
211 task. While the Company does use its best information on these issues for
212 planning as evidenced in its Integrated Resource Plan process, it cannot be
213 required to account for these highly uncertain costs in this rate case setting.

214 **Q. Dr. Steinhurst implies the Company should have waited for the EPA to**
215 **further clarify its rules before making pollution control decisions. Do you**
216 **agree?**

217 A. No. Dr. Steinhurst states that the EPA is explicitly pursuing a multi-pollutant plan
218 to enable companies to take a comprehensive approach to planning for
219 compliance. Thus, he claims, that “the Current Case Retrofit investments are not
220 prudent for the company to have [made] at this time because the final pollution
221 control requirements are not yet known.” *Id.*⁹ Dr. Steinhurst is mistaken to imply
222 that the EPA’s policy on multi-pollutant plans for companies as justification for
223 his above statement.

224 The reality is that the EPA has imposed on the electric power industry
225 different air pollution regulations and compliance schedules driven in part by
226 judicial mandates.

227 If RMP must wait until there is close to certainty about its future air
228 pollution compliance obligations before making investments to comply with its
229 *current* air pollution compliance requirements, it will only be subjecting itself and

⁹ William Steinhurst – Direct Testimony, p. 13.

230 its stakeholders to unwarranted enforcement risks, including the potential for unit
231 closure, large penalties and other liabilities, by not complying with its current
232 compliance requirements and the government mandated schedules for satisfying
233 these requirements. I have provided details about these requirements in my
234 testimony below and in Exhibit RMP____(HME-1R).

235 **Q. Do you have further concerns with Dr. Steinhurst’s testimony?**

236 A. Yes. Dr. Steinhurst argues that examining cost-effectiveness only in light of
237 current regulations would be “incomplete,” and ignores information that the
238 Company’s management knows or should know, and is a “piecemeal approach.”¹⁰

239 I could not disagree more. Dr. Steinhurst’s statement is not correct. Where
240 pending and/or proposed air pollution regulations as well as the associated costs
241 of compliance are known with a reasonable degree of certainty, his statement
242 would make sense. I understand the Company has included such costs in its
243 planning processes, i.e., the Air Toxics MACT compliance costs and potential
244 coal combustion byproducts compliance costs. But as I discussed previously,
245 because of the large uncertainties about future air pollution permit conditions and
246 therefore future air pollution control costs RMP will be subject to at its plants,
247 especially future greenhouse gas regulations and future regulations to comply
248 with the NAAQS, the only prudent way to proceed is to make now the most cost
249 effective decisions needed to be made now to satisfy current requirements as
250 RMP has done and evaluate future air pollution control requirements as potential
251 outcomes become known with a reasonable degree of certainty and future
252 decisions need to be made before deciding on how to satisfy those requirements.

¹⁰ William Steinhurst – Direct Testimony, p. 15.

253 **Q. Do you also have similar concerns with the Direct Testimony of Dr. Fisher in**
254 **this matter?**

255 A. Yes. First, Dr. Fisher states that the Commission should require the Company to
256 provide a full analysis and accounting of the impact of existing and upcoming
257 environmental regulations affecting its fleet of coal plants, as well as the full
258 range of options for addressing those regulations, including both supply and
259 demand-side resources.¹¹

260 I believe it is virtually certain that there will be future regulations further
261 regulating electric power plant emissions of SO₂, NO₂, pollutants that are
262 precursors to ozone and fine particulate (PM_{2.5}) formation (SO₂, NO₂ and VOC),
263 Hazardous Air Pollutants (HAPs) and greenhouse gases including CO₂. However,
264 it is very uncertain exactly what future emission reductions will be required for
265 each of these pollutants from each of the RMP plants. In view of this uncertainty,
266 the most prudent steps that RMP can take now are the ones it has taken: making
267 air pollution control investments to satisfy existing state air pollution permit
268 requirements and incorporate in these investments the engineering flexibility to
269 accommodate further emission reductions but without committing today to make
270 unnecessary investments based purely on speculation of exactly what these future
271 regulations will require, or when they will require compliance.

272 **Q. Dr. Fisher argues that the Company hasn't properly planned for the Utility**
273 **MACT Rule. Is this correct?**

274 A. Absolutely not. Dr. Fisher does state that the Company has not adequately
275 planned for the Utility Maximum Achievable Control Technology (MACT) Rule.

¹¹ Jeremy Fisher – Direct Testimony, p. 7.

276 Dr. Fisher cites the Company's 2008 IRP in support of his contention:
277 "PacifiCorp and MEHC anticipate spending \$1.2 billion over a 10-year period to
278 install necessary equipment under future emissions control scenarios to the extent
279 that it's cost effective."¹² Dr. Fisher's conclusion that the Company is not
280 adequately planning for the Utility MACT Rule is misleading. The proposed
281 Utility MACT Rule specifying emission limits on emissions of Hazardous Air
282 Pollutants from coal and oil-fired electric power plants was issued by the EPA on
283 March 16, 2011 with a court-ordered date of November 16, 2011, for
284 promulgation of the final rule and currently proposed compliance by 2014 or
285 2015. Until this proposed rule was issued, and until the final rule is issued, there
286 remains considerable uncertainty about the emission limits and permit conditions
287 that will apply to each RMP plant. Therefore, only limited planning and a
288 moderately wide range of compliance costs estimates could be provided by RMP
289 before the proposed rule and final rule are issued. There is no basis then, to say
290 the Company has not adequately planned for this rule at this point.

291 **Q. Does Dr. Fisher make other statements or conclusions that you believe to be**
292 **unwarranted?**

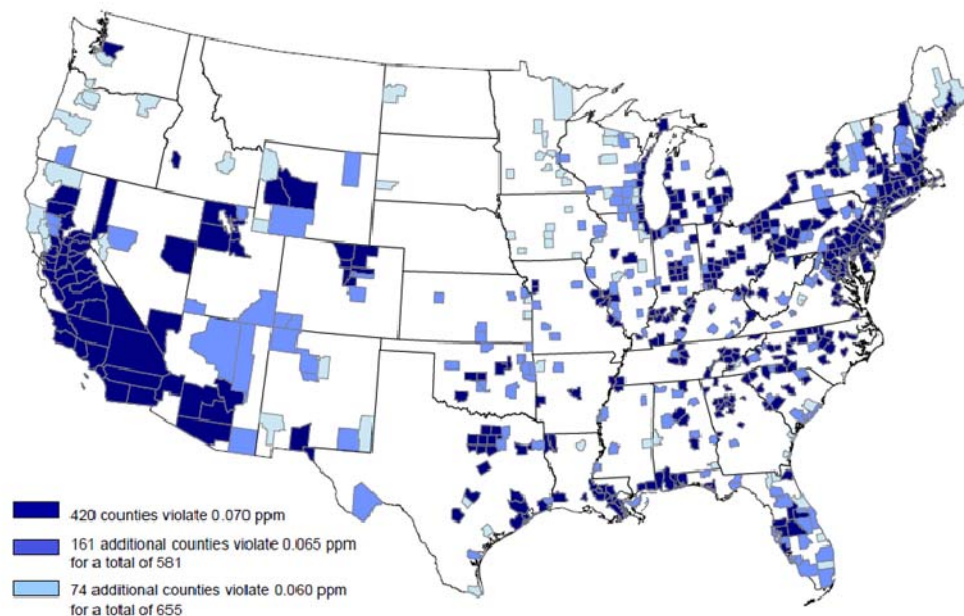
293 A. Yes. Dr. Fisher also states that while the new Nonattainment designations are not
294 yet available and the United States Environmental Protection Agency (EPA) has
295 done preliminary mapping estimating ozone Nonattainment status. He claims that
296 the EPA expects six counties in Wyoming and nine counties in Utah could be in
297 Nonattainment Areas (Air Quality Program Update. October 5, 2010. US EPA).

¹² Jeremy Fisher - Direct Testimony, p. 31.

298 However, using 2007-2009 ozone monitoring data collected at the monitor
299 sites in the State of Wyoming, the EPA projected that five counties (not the six
300 counties mentioned by Dr. Fisher) are expected to be designated as Nonattainment
301 for ozone if the ozone NAAQS is set at .060 parts per million (ppm). As shown in
302 Figure 3 prepared by the EPA, these counties are Teton, Fremont, Uinta,
303 Sweetwater and Campbell.¹³ For the period 2007-2009, all air quality monitors in
304 the State of Wyoming monitored compliance with the existing NAAQS except for
305 the ozone Boulder monitor, which violated the existing ozone NAAQS of 0.075
306 ppm.¹⁴

FIGURE 3

Counties With Monitors Violating Proposed Primary 8-hour Ground-level Ozone Standards
0.060 - 0.070 parts per million
(Based on 2007 - 2009 Air Quality Data)



307 Furthermore, using 2007-2009 ozone monitoring data collected at the
308 monitor sites in the State of Utah, four counties, not the nine counties mentioned

¹³ U.S. EPA, Scott Mathias, Presentation at LADCO Workshop, October 26, 2010.

¹⁴ Wyoming DEQ, Wyoming Ambient Air Monitoring Annual Network Plan 2010, Section 3.

309 by Dr. Fisher, are expected to be designated as Nonattainment for ozone if the
310 ozone NAAQS is set at .060 parts per million (ppm). As shown in the map below,
311 these counties are Box Elder, Cache, Washington and San Juan.

312 It is very uncertain which, if any, of the RMP plants will be in
313 Nonattainment Areas for the new 1-hour SO₂ and NO₂ NAAQS. This means that
314 it is very uncertain what future SO₂ or NO_x emission limits for these plants will
315 be to comply with the new 1-hour SO₂ and NO₂ NAAQS. Also, since SO₂ and
316 NO_x (NO₂ +NO) are precursors to PM 2.5 concentrations and NO_x is a precursor
317 to the new ozone and NAAQS, this adds additional uncertainty as to what future
318 SO₂ and NO_x emission limits will be for these plants.

319 Notwithstanding the above government mandates, the air pollution control
320 investments that are the subject of this proceeding will substantially reduce the air
321 pollution emissions from RMP plants in Utah and Wyoming and thereby make
322 progress towards attaining these NAAQS and reduce the risks of further costly air
323 pollution control investments.

324 **Q. Have you found other unwarranted conclusions in Dr. Fisher's testimony?**

325 A. Yes. With respect to cost compliance, Dr. Fisher stated that the Company failed to
326 present any analysis of the cost implications of current regulations or analysis of
327 the cost implications of upcoming regulations.¹⁵

328 First, the Company has done cost analyses for current regulations. Much
329 of Mr. Teply's testimony is devoted to this topic. And, as I have repeatedly stated,
330 it is uncertain what future air pollution emission reductions will be required from
331 each of the six RMP plants covered in this proceeding to comply with future air

¹⁵ Jeremy Fisher – Direct Testimony, p. 33.

332 pollution regulations and their resulting Wyoming and Utah DEQ operating
333 permit conditions. Because of this, it is not possible nor is it necessary for RMP to
334 conduct now the specific kinds of analyses Dr. Fisher is advocating in any
335 meaningful way regarding the “expectation of additional compliance costs facing
336 the company fleet beyond the Current Case Retrofits.”

337 **Q. Based upon your review of the materials in this matter, have you developed**
338 **independent conclusions and opinions which rebut the positions of Mr.**
339 **Gebhardt and Drs. Steinhurst and Fisher?**

340 A. Yes, I have.

341 **Summary of Conclusions**

342 **Q. Summarily, what are your conclusions?**

343 A. I have five primary conclusions:

- 344 1. Based on my review of the information described above, I believe that
345 100% of the air pollution control investments that are the subject of this
346 proceeding were necessary to comply with existing regulations in the Utah
347 and Wyoming State Implementation Plans¹⁶ and to comply with the
348 Approval Orders issued by the Utah DEQ and the existing permit
349 conditions in the Best Available Retrofit Technology (BART) permits
350 issued by the Wyoming DEQ.
- 351 2. RMP’s pollution control investments also appear prudent and reasonably
352 calculated in scope and timing to comply with anticipated regulations, to
353 the extent those regulations can be ascertained at this time.

¹⁶ A State Implementation Plan (SIP) is a state plan for complying with the federal [Clean Air Act](#), administered by the U.S. EPA. The SIP consists of narrative, rules, technical documentation, and agreements.

- 354 3. If RMP did not make these investments and comply with the requirements
355 and deadlines in the applicable SIPs and permits, the Company likely
356 would be subject to enforcement actions by the Utah DEQ, Wyoming
357 DEQ, the EPA and even private citizens, any or all of whom would seek to
358 require the Company to meet the applicable SIP and permit requirements.
359 Such enforcement actions potentially could result in orders to shut down
360 units until required controls are installed, injunctive relief requiring
361 controls to be installed, and substantial penalties. Moreover, the Company
362 would be required to expend significant sums defending or attempting to
363 settle such enforcement actions.
- 364 4. It is improper to set a \$2,000 limit on the cost per ton reduced for SO₂
365 BART Determinations for EGUs. Neither the Federal Regional Haze Rule
366 nor any state, I believe, has a Regional Haze Program with a regulatory
367 upper limit on the cost per ton reduced for SO₂ BART Determinations.
368 The BART Determination process is a case by case undertaking with no
369 upper limits on the cost per ton reduced for the BART control option
370 selected.
- 371 5. While Mr. Gephardt apparently believes that other sources with lower
372 costs per ton of emission reductions of visibility impairing pollutants than
373 Hunter Unit #2 and Huntington Unit #1 should reduce their emissions
374 instead of these plants to achieve the Utah Regional Haze reduction goals
375 in its State Implementation Plan, I disagree. The Hunter and Huntington
376 Plants are located relatively close to the five PSD Class I Areas in Utah

377 and will be achieving moderate emission reductions of visibility impairing
378 pollutants under the Utah Regional Haze SIP compared to other smaller
379 sources throughout the state. The smaller sources of emissions of visibility
380 impairing pollutants referred to by Mr. Gebhardt are expected to have
381 smaller impacts than the RMP plants on improving visibility because of
382 their considerably smaller total emissions and in most cases greater
383 distances from the five PSD Class I Areas.

384 **Testimony Applicable to Conclusion 1**

385 **Q. Does this conclusion conflict with the testimony offered by Mr. Gebhardt,**
386 **and Drs. Steinhurst and Fisher in this matter?**

387 A. Yes.

388 **Q. Primarily in what regard?**

389 A. Each of these individuals fails to account for existing regulations in Utah and
390 Wyoming and at the federal level that require RMP to make the disputed
391 environmental control investments at issue, and also fails to account for the
392 significant enforcement risk the Company would face by not complying with
393 these existing requirements.

394 **Q. What are the existing regulations in the Utah and Wyoming State**
395 **Implementation Plans (SIPs) that required RMP to make the air pollution**
396 **control investments that are the subject of this proceeding?**

397 A. For Utah, it is the Utah State Implementation Plan, Section XX, Regional Haze,
398 Addressing Regional Haze Visibility Protection for the Mandatory Federal Class I
399 Areas Required Under 40 CFR 51.309, Adopted by the Air Quality Board, April

400 6, 2011, Section D.6, p. 24 and Section E for the Hunter and Huntington plants. In
401 addition, Utah has specific state regulations (State Rule 307-424-4) that require
402 electric generating units to meet specific mercury emission rates or control
403 efficiencies, notwithstanding any federal rules.

404 For Wyoming, it is the Wyoming State Implementation Plan, Regional
405 Haze: Addressing Regional Haze Requirements for Wyoming Mandatory Federal
406 Class I Areas Under 40 CFR 51.309(g), January 7, 2011, Sections 6.2, 6.5.4,
407 6.5.5, 6.5.6 and 6.5.7 covering the BART requirements for the Jim Bridger, Dave
408 Johnston, Naughton and Wyodak Plants, respectively.

409 **Q. What are the permit conditions in the BART Permits issued by the Approval**
410 **Orders issued by the Utah DEQ and the Wyoming DEQ that required RMP**
411 **to make the air pollution control investments that are the subject of this**
412 **proceeding?**

413 A. They are set forth in Exhibit RMP__(HME-1R). This exhibit lists the permit
414 conditions and air pollution control investments. They are the air pollution control
415 investments described in the direct testimony of Mr. Teply.¹⁷ This table also lists
416 the required compliance dates and the specific permits with the permit conditions
417 requiring these investments.

418 **Q. Are the air pollution control investments identified in Exhibit**
419 **RMP__(HME-1R) the investments complained of by Mr. Gebhardt and**
420 **Drs. Steinhurst and Fisher?**

421 A. Yes.

¹⁷ Chad A. Teply – Direct Testimony, p. 2-12.

422 **Q. Are there deadlines in the applicable SIP, construction and operating**
423 **permits the Company is obligated to follow for making these air pollution**
424 **control investments?**

425 A. Yes. The deadlines for completing all air pollution control investments are
426 provided in the Compliance Date column of Exhibit RMP___(HME-1R).

427 **Q. Were 100% of the air pollution control investments that are the subject of**
428 **this proceeding made by RMP to comply with the existing regulations and**
429 **conditions in the Utah SIP Approved Orders and BART Permits in the**
430 **Wyoming SIP and listed in Exhibit RMP___(HME-1R)?**

431 A. Yes, these existing regulations and permits do mandate these investments.

432 **Testimony Applicable to Conclusion 2**

433 **Q. Are there recent air pollution regulations and anticipated future air pollution**
434 **regulations that will result in additional construction and operating permit**
435 **conditions being imposed by the Utah DEQ and Wyoming DEQ on the six**
436 **RMP plants that are the subject of this proceeding?**

437 A. There are four categories of recent and anticipated future air pollution regulations
438 that likely will result in additional construction and operating permit conditions
439 being imposed by the Utah DEQ and Wyoming DEQ on the six RMP plants that
440 are the subject of this proceeding. They are:

441 a. New National Ambient Air Quality Standards (NAAQS) for SO₂
442 concentrations, NO₂ concentrations, PM_{2.5} concentrations (particles with
443 an aerodynamic diameter of 2.5 millionths of a meter and less), coarse

444 PM defined as PM10-PM2.5, ozone concentrations, oxides of nitrogen and
445 sulfur as they relate to visibility impacts, CO and Lead.

446 b. The Utility MACT, representing emission standards for Hazardous Air
447 Pollutants for all coal and oil-fired electric power plants of 25MW or
448 more.

449 c. The requirements under The Regional Haze Rule even after the Section
450 308 BART Permit requirements and Section 309 Regional Haze SIP
451 requirements have been met to progressively continue reducing emissions
452 of SO₂, NO_x and other visibility impairing air pollutants emitted from
453 electric power plants to comply with the Reasonable Progress visibility
454 goals set and revised from time to time until natural visibility conditions
455 are returned to PSD Class I Areas by 2064.

456 d. Greenhouse Gas (GHG) emission reduction requirements. Currently, RMP
457 is subject to two of these requirements.

458 The first is the U.S. EPA GHG Tailoring Rule.¹⁸ Beginning July 1,
459 2011, new construction projects that emit GHG emissions of at least
460 100,000 tons per year of CO₂ equivalent (CO₂e) emissions will be subject
461 to Best Available Control Technology and other air pollution permitting
462 requirements that may require new capital and operating cost investments.
463 Modifications at existing facilities that increase GHG emissions by at least
464 75,000 tons per year of CO₂e will also trigger these requirements.

465 The second GHG emission reduction requirement is related to the

¹⁸U.S. EPA, “Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule”, Federal Register, Vol. 75, No. 106, pp. 31514-31608.

466 state of Utah's membership in the Western Climate Initiative (WCI). The
467 WCI is establishing an international cap and trade program that would
468 involve both the United States and Canada. On September 23, 2008, the
469 WCI released an outline for the implementation of its cap and trade
470 proposal. The first phase of this plan would be implemented on January 1,
471 2012, followed three years later by a broader cap on carbon emissions in
472 2015. On 22 August 2007, the WCI set a goal of reducing GHG emissions
473 by 15% from 2005 levels by 2020.

474 e. The Utah Mercury Rule states that by no later than December 31, 2012,
475 the owner or operator of any EGU with an input heat capacity in excess of
476 1,500 MMbtu per hour and having commenced operations prior to
477 November 17, 2006, shall demonstrate compliance with at least one of the
478 following:

- 479 (i) A maximum emission rate of 6.50×10^{-7} pounds mercury per
480 million btu heat input; or
481 (ii) A minimum of 90% control of total mercury emissions.

482 Should an EGU be unable to achieve the maximum emission rate or the minimum
483 control efficiency described in (1) above, despite proper operation of the unit in
484 conjunction with a baghouse as well as wet or dry flue gas de-sulfurization, the
485 owner or operator may petition the executive secretary for a modification to the
486 compliance limitation for the unit in accordance with R307-401.¹⁹

¹⁹ Utah Administrative Code Rule R307-424 . Permits: Mercury Requirements for Electric Generating Units

487 **Q. What are the EPA and Utah and Wyoming DEQ schedule requirements for**
488 **these six plants being in compliance with these new and anticipated future**
489 **air pollution regulations and their resulting new state air pollution permit**
490 **conditions?**

491 A. Table 2 provides the schedule requirements for being in compliance with these
492 recent and anticipated future air pollution regulations.

TABLE 2: SCHEDULE FOR COMPLIANCE WITH THE NEW CURRENT AND ANTICIPATED FUTURE AIR POLLUTION REGULATIONS	
NAAQS	Required Compliance Year for Emission Limits Required by This Rule
NO ₂ Primary	2017
SO ₂ Primary	2017
Ozone Primary and Secondary	2018
PM2.5 and Coarse PM Primary	2018
NO ₂ /SO ₂ Secondary	2019
CO	2018
Lead	2021
NO ₂ /SO ₂ Secondary	2019
CO	2018
Lead	2021
Utility MACT	2014-2015
Regional Haze SIP Revision	2018

493 **Q. How certain are you that these new and anticipated future air pollution**
494 **regulations will take effect?**

495 A. I am very certain that the above new and anticipated future air pollution
496 regulations described in Table 2 will take effect. Each of the new NAAQS is
497 subject to statutory requirements in the Clean Air Act where states must have

498 adopted SIP revisions including needed changes in emission limits in the air
499 permits for regulated sources and achieve compliance with these new emission
500 limits within five years after the EPA issues Attainment and Nonattainment
501 Designations for the new NAAQS. Such Designations must be made by the EPA
502 within two years of promulgation of each new NAAQS. If the EPA or a state
503 delays in meeting the above schedule, they are frequently sued by citizens leading
504 to a judicial mandate to meet this or a slightly revised schedule.

505 Under court order, the Utility MACT is required to be promulgated by
506 November 2011 and take effect for all affected sources between November 2014
507 and November 2015.

508 The Regional Haze Rule is mandated in the Clean Air Act and requires
509 states to continue making progress towards achieving natural visibility conditions
510 with SIP revisions and new emission reduction requirements every 10 years as
511 needed to achieve the goal of returning to natural background visibility in PSD
512 Class I Areas by 2064.

513 It is highly probable that there will be increasingly greater reductions in
514 GHG emissions from electric power companies in the future.

515 **Q. Is there a certain compliance schedule to meet the requirements of the**
516 **anticipated or recent regulations discussed in Table 2?**

517 A. No. While it is very certain that the new and anticipated future air pollution
518 regulations described in Table 2 will take effect, there is considerable *uncertainty*
519 as to the dates by which these regulations will translate into enforceable permit
520 conditions for the RMP plants. This uncertainty is caused by delays by the EPA

521 and state air pollution control agencies in meeting the deadlines in the regulations
522 combined with frequent judicial intervention that slows the process.

523 However, as my 40 years of experience with the Clean Air Act has shown,
524 with few exceptions, promulgated regulations get translated into enforceable air
525 pollution permit conditions and resulting additional capital and operating costs for
526 compliance being incurred by the regulated sources.

527 **Q. Does RMP know with certainty what its additional construction and**
528 **operating permit conditions will be to satisfy these requirements?**

529 A. No. While it is very certain that the above new and anticipated future air pollution
530 regulations will take effect, it is also very uncertain what they will mean in terms
531 of specific air pollution emission limits and permit conditions for each of the
532 RMP plants.

533 To illustrate this uncertainty, there is the possibility that Wyoming and/or
534 Utah will have several counties designated as Nonattainment for the new ozone
535 NAAQS as suggested in Figure 3 above. If so, U.S. EPA guidance for developing
536 ozone SIPs to attain the NAAQS requires that regional air quality modeling be
537 conducted to develop an attainment strategy that includes possibly more stringent
538 NO_x emission limits for various sources.²⁰

539 As a second illustration of this uncertainty for the new 1-hour SO₂ and 1-
540 hour NO₂ NAAQS, U.S. EPA will require the Utah DEQ and Wyoming DEQ to
541 carry out air quality modeling of major sources with potential emissions
542 exceeding 100 tons per year to see if there are any predicted violations of the

²⁰ U.S. EPA, Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, EPA -454/B-07-002, April 2007.

543 NAAQS.²¹ If so, then new SO₂ and NO_x emission limits will be set by the states
544 to demonstrate attainment of these NAAQS. No one knows now whether there
545 will be predicted violations of these NAAQS or what SO₂ and NO_x emission
546 limits will be required to attain them.

547 The same kinds of illustrations could be provided for the large uncertainty
548 in future GHG emission reductions required to comply with future Western
549 Climate Initiative requirements or possible future federal or other regional caps on
550 GHG emissions.

551 **Testimony Applicable to Conclusion 3**

552 **Q. Are there provisions in the Clean Air Act and Utah's and Wyoming's SIPs**
553 **that are triggered when plants such as those at issue in this proceeding fail to**
554 **comply with the permit conditions in its air pollution construction and**
555 **operating permits?**

556 A. Yes. The Clean Air Act requires the Utah and Wyoming SIPs to have provisions
557 for enforcement of regulations and other provisions including permit conditions
558 and compliance schedules. The Utah and Wyoming SIPs both contain such state-
559 enforcement provisions. Once the EPA approves a state SIP, these SIP
560 requirements also become federally enforceable both by EPA and by private
561 citizens. Thus, the SIP and the resulting permit requirements will be enforceable
562 at the state and federal levels, with various enforcement consequences available in
563 each. For example, under the Clean Air Act Section 113, whenever the EPA finds
564 that any person has violated any requirement or prohibition in an applicable SIP

²¹ U.S. EPA, Area Designations for the 2010 Revised Primary SO₂ NAAQS, Stephen Page, Director Office of Air Quality Planning and Standards, March 24, 2011.

565 or permit, the EPA has many enforcement options available including issuing a
566 compliance order, seeking to enforce that order in a federal court. Penalties for
567 violations of the Clean Air Act can be up to \$37,500 per day per violation.²² EPA
568 or private citizens also can file suit in federal court and ask the court to impose
569 injunctive relief which could include the requirement to install the required
570 controls on a time schedule and at permit limits set by the court. EPA, Wyoming
571 and Utah environmental officials also have the authority to order a unit not in
572 compliance with applicable requirements to shut down until it comes into
573 compliance.²³

574 Furthermore, Section 51.308(d)(3)(v)(FT) of the EPA's Regional Haze
575 Rule requires states to ensure that emission limitations and control measures used
576 to meet reasonable progress goals are enforceable.

577 **Q. If RMP did not make the air pollution control investments that are the**
578 **subject of this proceeding by the dates specified in its construction and**
579 **operating permits as specified in Exhibit RMP___(HME-1R), could it be**
580 **subject to the potential penalties specified in the response to the preceding**
581 **question?**

582 A. Yes, for the reasons stated above. In my experience, a prudent utility would never
583 refuse to install required controls in a manner that triggers enforcement action.
584 Thus, it is prudent for the Company to install the required controls as it has done
585 and avoid enforcement action.

²² Clean Air Act, Section 113, 422 U.S.C. §7413, Sections (a)(1), (b), (d) and *Civil Monetary Penalty Inflation Adjustment Rule* 40 CFR §19..

²³ Id.

586 **Q. What other costs or liabilities could RMP be subject to if it did not make the**
587 **air pollution control investments that are the subject of this proceeding by**
588 **the dates specified in its construction and operating permits?**

589 A. The United States Security and Exchange Commission (SEC) has promulgated
590 regulations that require publicly-traded companies to comply with extensive
591 disclosure requirements. *See* Regulation S-K. These regulations set forth non-
592 financial disclosure guidelines for annual reports (Form 10-K); quarterly reports
593 (Form 10-Q); and episodic reports (8-K). The SEC environmental reporting
594 requirements are set forth in three sections of Regulation S-K in Items 101, 103
595 and 303. Under Item 101, registrants must describe the “material” effects that
596 compliance with federal, state and local environmental laws regulating the
597 discharge of materials into the environment will have on earnings, capital
598 expenditures and the competitive position of the Company and its subsidiaries.

599 If RMP failed to comply with the provisions of the Wyoming and Utah
600 SIPs regarding the installation and operation of the air pollution control
601 investments detailed in Exhibit RMP___(HME-1R), the Company could be
602 subject to substantial financial penalties, triggering the requirement to disclose
603 this material liability to the SEC. This, in turn, could have an adverse impact on
604 the Company’s costs of financing future operations.

605 Another potential cost RMP could face is the cost to defend and perhaps
606 settle third party lawsuits brought by citizens if the Company did not make the air
607 pollution control investments that are the subject of this proceeding by the dates
608 specified in its construction and operating permits. Many such lawsuits of this

609 kind have been filed and prosecuted throughout the U.S. against electric power
610 companies, including the Tennessee Valley Authority as one example.²⁴

611 **Q. In your opinion, if RMP did not make these investments and comply with the**
612 **deadlines in the applicable construction and operating permits, would the**
613 **Company potentially be subject to enforcement action by the Utah DEQ, the**
614 **Wyoming DEQ, the EPA, and private citizens, including the costs of**
615 **defending against such action?**

616 A. Yes. There is no question this is true. For example, the EPA has made clear
617 through its *New Source Review Coal-Fired Power Plant Enforcement Initiative*²⁵
618 that it will use the courts to impose new emission controls and penalties on utility
619 sources that the EPA believes have not installed required controls. I would expect
620 federal and state authorities, along with private citizens, to act in this same
621 manner if the Company were to refuse to install those controls required in the
622 state SIPs and related permits.

623 **Testimony Applicable to Conclusion 4**

624 **Q. Are there regulatory limits on the maximum cost per ton of emissions**
625 **reduced for BART Determinations?**

626 A. No there are not. The Federal Regional Haze Rule and Appendix Y to 40 CFR
627 Part 51 with federal guidance on making BART Determinations explicitly exclude
628 any mandatory upper limit on the cost per ton reduced that should be selected in
629 making a BART Determination. I believe the same is true in every state Regional

²⁴ Environmental Protection Agency Wins Historic Settlement for Clean Air, Public Health, Eastern Iowa Health, April 18, 2011, <http://easterniowahealth.com> and <http://www.epa.gov/oecaerth/resources/cases/civil/caa/tvacoal-fired.html>.

²⁵ See: <http://www.epa.gov/compliance/resources/cases/civil/caa/coal/index.html>.

630 Haze Rule dealing with BART. The BART Determination process is essentially a
631 case by case determination weighing the factors specified in Appendix Y that are
632 included in each BART Determination.

633 **Q. Therefore, is there any merit to Mr. Gebhardt's opinion that a limit of \$2,000**
634 **cost per ton emission reduction should be placed on any control option being**
635 **considered for BART?**

636 A. No. His opinion is inconsistent with the Federal and state BART regulations and
637 is inconsistent with the application of BART on a case by case basis throughout
638 the U.S.

639 **Testimony Applicable to Conclusion 5**

640 **Q. Mr. Gebhardt implies that other sources with lower costs per ton of emission**
641 **reductions of visibility impairing pollutants than Hunter Unit #2 and**
642 **Huntington Unit #1 should reduce their emissions instead of those plants to**
643 **achieve the Utah Regional Haze reduction goals in its State Implementation**
644 **Plan. Do you agree with this?**

645 A. No. I believe that Mr. Gebhardt has absolutely no basis for this opinion.

646 **Q. Please explain why you believe this.**

647 A. The Utah Regional Haze Program has been developed based on the Federal
648 Regional Haze Rule and supporting Federal and supporting guidance. The overall
649 approach for doing this includes developing regional emissions inventories and
650 conducting regional modeling of visibility impacts in PSD Class I Areas for a
651 range of control options for various source categories and then determining what
652 combination of control options will best achieve the state's Reasonable Progress

653 Goals for improving visibility in the PSD Class I Areas. The visibility
654 improvement and cost of each control option are the primary considerations of
655 states in deciding what emission reductions to adopt in their Regional Haze plans.
656 There is no way a person can categorically decide on the best ways for a state to
657 make progress in improving its visibility without the following the process
658 outlined in the Regional Haze Rule.

659 Mr. Gebhardt has not gone through this process and, therefore, has
660 absolutely no basis for his opinion.

661 **Q. Do you have any final conclusions for this Commission?**

662 A. Yes. Based upon my 40+ years of experience in the field of governmental
663 pollution regulation and electric utility pollution control practice, it is my firm
664 opinion that RMP's investment in the air pollution controls at issue in this
665 proceeding were not only reasonable and prudent, but they were mandatory.
666 Indeed, not making the investments at issue would likely subject the Company to
667 substantial costs or penalties and would be detrimental to rate payers.

668 **Q. Does this conclude your testimony?**

669 A. Yes.