BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

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Direct Testimony of John J. Spanos

September 11, 2018

1	Q.	**Please state your name, business address, and present position.**
2	A.	My name is John J. Spanos. I am a Senior Vice President at Gannett Fleming Valuation
3		and Rate Consultants, LLC ("Gannett Fleming"). My business address is 207 Senate
4		Avenue, Camp Hill, Pennsylvania 17011.
5	Q.	**How long have you been associated with Gannett Fleming?**
6	A.	I have been associated with the firm since college graduation in June 1986.
7	Q.	**On whose behalf are you testifying** in **this case?**
8	A.	I am testifying on behalf of PacifiCorp d/b/a Rocky Mountain Power (the "Company").
9		**QUALIFICATIONS**
10	Q.	**Please state your qualifications.**
11	A.	Please refer to Exhibit RMP___(JJS-1) for my qualifications.
12		**PURPOSE OF TESTIMONY**
13	Q.	**What is the purpose of your testimony?**
14	A.	I sponsor and support the depreciation study titled, "Depreciation Study – Calculated
15		Annual Depreciation Accruals Related to Electric Plant as of December 31, 2017" (the
16		"Depreciation Study"), performed for the Company, attached as Exhibit RMP___(JJS-
17		2). The Depreciation Study sets forth the calculated annual depreciation accrual rates
18		by account as of December 31, 2017. Based on the Depreciation Study, I recommend
19		approval of the depreciation rates using the projected December 31, 2020 plant and
20		reserve balances. The proposed rates appropriately reflect the rates at which the
21		Company's assets should be depreciated over their useful lives and are based on the
22		most commonly used methods and procedures for determining depreciation rates.

DEPRECIATION STUDY

23

24 **Q. Please define the concept of depreciation.**

25 A. Depreciation refers to the loss in service value that is not restored by current

26 maintenance, incurred in connection with the consumption or prospective retirement of

27 utility plant in the course of service from causes which are known to be in current

28 operation, against which the Company is not protected by insurance. Among the causes

29 to consider are wear and tear, decay, action of the elements, inadequacy, obsolescence,

30 changes in the art, changes in demand, and the requirements of public authorities.

31 **Q. Did you prepare the Depreciation Study filed by the Company in this proceeding?**

32 A. Yes.

33 **Q. Are there guidelines in the preparation of depreciation studies?**

34 A. Yes. In preparing the Depreciation Study, I followed generally accepted practices in the

35 field of depreciation valuation.

36 **Q. How do the methods and procedures of this Depreciation Study compare to those**

37 **used historically?**

38 A. The methods and procedures of this study are the same as those used in past studies of

39 this Company as well as others before this Commission. Depreciation rates are

40 determined based on the average service life procedure and the remaining life method.

41 **Q. Please describe the contents of the Depreciation Study.**

42 A. The Depreciation Study includes nine parts. Part I, Introduction, presents the scope and

43 basis for the Depreciation Study. Part II, Estimation of Survivor Curves, describes the

44 methodology of estimating survivor curves. Parts III and IV set forth the analysis used

45 for determining service life and net salvage estimates. Part V, Calculation of Annual

46 and Accrued Depreciation, includes the concepts of depreciation and amortization

47 using the remaining life. Part VI, Results of Study, describes the results of my analysis

48 and a summary of the depreciation calculations. Parts VII, VIII, and IX include graphs

49 and tables that relate to the service life and net salvage analyses, and the detailed

50 depreciation calculations by account. The section beginning on page VIII-2 presents

51 the results of the salvage analysis. The section beginning on page IX-2 presents the

52 depreciation calculations related to surviving original cost as of December 31, 2017.

53 The table on pages VI-4 through VI-21 of the Depreciation Study presents the

54 estimated survivor curve, the net salvage percent, the original cost as of

55 December 31, 2017, the book depreciation reserve, and the calculated annual

56 depreciation accrual and rate for each account or sub-account. The section beginning

57 on page VII-2 presents the results of the retirement rate and simulated plant analyses

58 prepared as the historical bases for the service life estimates. Finally, the section in the

59 Appendix presents the recommended depreciation rates and parameters as of

60 December 31, 2020.

61 **Q.** **Please explain how you performed your Depreciation Study.**

62 A. I used the straight line remaining life method of depreciation, with the average service

63 life procedure. Under this methodology, the annual depreciation is determined by

64 distributing the unrecovered cost of fixed capital assets over the estimated remaining

65 useful life of each unit, or group of assets, in a systematic and reasonable manner.

66 **Q.** **In your analysis, how did you determine the recommended annual depreciation**

67 **accrual rates?**

68 A. I did this in two phases. First, I estimated the service life and net salvage characteristics

69		for each depreciable group, that is, each plant account or sub-account identified as
70		having similar characteristics. Second, I calculated the composite remaining lives and
71		annual depreciation accrual rates based on the service life and net salvage estimates
72		determined in the first phase.
73	**Q.**	**Please describe the first phase of the Depreciation Study, in which you estimated**
74		**the service life and net salvage characteristics for each depreciable group.**
75	A.	The service life and net salvage study consisted of compiling historical data from
76		records related to the Company's plant; analyzing these data to obtain historical trends
77		of survivor characteristics; obtaining supplementary information from management
78		and operating personnel concerning practices and plans as they relate to plant
79		operations; and interpreting the above data and the estimates used by other electric
80		utilities to form judgments of average service life and net salvage characteristics.
81	**Q.**	**What historical data did you analyze to estimate service life characteristics?**
82	A.	I analyzed the Company's accounting entries that recorded plant transactions during
83		the 1937 through 2017 period; however, the earliest year of data varied by account. The
84		transactions included additions, retirements, transfers, sales, and the related balances.
85	**Q.**	**What method did you use to analyze the service life data?**
86	A.	I used the retirement rate method for most plant accounts. This is the most appropriate
87		method when retirement data covering a long period of time is available because this
88		method determines the average rates of retirement actually experienced by the
89		Company during the period of time covered by the Depreciation Study.

90	**Q.**	**Please describe how you used the retirement rate method to analyze the**
91		**Company's service life data.**

92	A.	I applied the retirement rate analysis to each different group of property in the study.
93		For each property group, I used the retirement rate data to form a life table which, when
94		plotted, shows an original survivor curve for that property group. Each original survivor
95		curve represents the average survivor pattern experienced by the several vintage groups
96		during the experience band studied. The survivor patterns do not necessarily describe
97		the life characteristics of the property group; therefore, interpretation of the original
98		survivor curves is required in order to use them as valid considerations in estimating
99		service life. The Iowa-type survivor curves were used to perform these interpretations.

100	**Q.**	**Did you use any other methods to analyze service life data?**

101	A.	Yes. For most distribution assets in Utah and Idaho, the Company accounting records
102		do not include the vintage of each transaction. Therefore, I used the simulated plant
103		record method to determine life characteristics.

104	**Q.**	**What are "Iowa-type survivor curves," and how did you use them to estimate the**
105		**service life characteristics for each property group?**

106	A.	They are a widely-used group of survivor curves that contain the range of survivor
107		characteristics usually experienced by utilities and other industrial companies. The
108		Iowa curves were developed at the Iowa State College Engineering Experiment Station
109		through an extensive process of observing and classifying the ages at which various
110		types of property used by utilities and other industrial companies had been retired.
111		Iowa-type curves are used to smooth and extrapolate original survivor curves
112		determined by the retirement rate method. I used the Iowa curves and truncated Iowa

113		curves in this study to describe the forecasted rates of retirement based on the observed
114		rates of retirement and the outlook for future retirements.

115   The estimated survivor curve designations for each depreciable property group

116   indicates the average service life, the family within the Iowa system to which the

117   property group belongs, and the relative height of the mode. For example, the Iowa 60-

118   R2 indicates an average service life of sixty years; a right-moded, or R, type curve (the

119   mode occurs after average life for right-moded curves); and a relatively low height, 2,

120   for the mode (possible modes for R type curves range from 1 to 5).

121 **Q.**   **What approach did you use to estimate the lives of significant facilities structures**

122   **such as production plants?**

123 A.   I used the life span technique to estimate the lives of significant facilities for which

124   concurrent retirement of the entire facility is anticipated. In this technique, I describe

125   the survivor characteristics of such facilities by using interim survivor curves and

126   estimated probable retirement dates.

127   The interim survivor curves describe the rate of retirement related to the

128   replacement of elements of the facility. For example, for a building, the retirements of

129   its elements include plumbing, heating, doors, windows, roofs, etc., that occur during

130   the life of the facility. The probable retirement date provides the rate of final retirement

131   for each year of installation for the facility by truncating the interim survivor curve for

132   each installation year at its attained age at the date of probable retirement. The use of

133   interim survivor curves truncated at the date of probable retirement provides a

134   consistent method for estimating the lives of the several years of installation for a

135		particular facility inasmuch as a single concurrent retirement for all years of installation
136		will occur when it is retired.
137	**Q.**	**Has your firm, Gannett Fleming, used this approach in other proceedings?**
138	A.	Yes, we have used the life span technique in performing depreciation studies presented
139		to and accepted by many public utility commissions across the United States and
140		Canada. This technique was applied to develop the current depreciation rates being
141		used by the Company in the same manner recommended in this case.
142	**Q.**	**What are "probable retirement years," and what was your bases for estimating**
143		**them for each facility?**
144	A.	Probable retirement years are life spans for each facility, and my estimates therefore
145		are based on the life assessment study, consideration of the age, use, size, nature of
146		construction, management outlook and typical life spans experienced and used by other
147		electric utilities for similar facilities, and judgment. Most of the life spans result in
148		probable retirement years that are many years in the future. As a result, the retirements
149		of these facilities are not yet subject to specific management plans. Such plans would
150		be premature. At the appropriate time, detailed studies of the economics of
151		rehabilitation and continued use or retirement of the structure will be performed and
152		the results incorporated in the estimation of the facility's life span.
153	**Q.**	**Have you physically observed the Company's plant and equipment in**
154		**Depreciation Studies you've performed for the Company in the past?**
155	A.	Yes. I made field reviews of the Company's property as part of a past study in May and
156		June 2012 to observe representative portions of plant and equipment. I conduct field
157		reviews to become familiar with Company operations and understand the function of

158		the plant and information on the reasons for past retirements and the expected future
159		causes of retirements. I incorporated this knowledge as well as information from other
160		discussions with management in the interpretation and extrapolation of the statistical
161		analyses.
162	**Q.**	**Please describe how you estimated net salvage percentages.**
163	A.	I estimated the net salvage percentages by incorporating the historical data for the
164		period 1992 through 2017 and considered estimates for other electric companies. The
165		net salvage percentages are based on a combination of statistical analyses and informed
166		judgment. The statistical analyses consider the cost of removal and gross salvage ratios
167		to the associated retirements during the 26-year period. I also measured the trends of
168		these data based on three-year moving averages and the most recent five-year
169		indications.
170	**Q.**	**Were the net salvage percentages for generation facilities based on the same**
171		**analyses?**
172	A.	Yes, for the interim analyses. The net salvage percentages for generation facilities were
173		based on two components, the interim net salvage percentage and the final net salvage
174		percentage. The interim net salvage percentage is determined based on the historical
175		indications from the 1992–2017 period, of the cost of removal and gross salvage
176		amounts as a percentage of the associated plant retired. I determined the final net
177		salvage or dismantlement component based on the assets anticipated to be retired at the
178		concurrent date of final retirement.

179	Q.	**Have you included a dismantlement component into the overall recovery of**
180		**generation facilities?**
181	A.	Yes. A dismantlement component was included in the net salvage percentage for steam
182		and other production facilities. There is a separate decommissioning reserve for small
183		hydro facilities which are soon to be retired, as the dismantlement component for hydro
184		facilities in the study is zero.
185	Q.	**Can you explain how the dismantlement component is included in the**
186		**Depreciation Study?**
187	A.	Yes. The dismantlement component is part of the overall net salvage for each location
188		within the production assets. Based on studies for other utilities and the Company's
189		cost estimates, I determined that the dismantlement or decommissioning costs for steam
190		production and other production facilities is best calculated on a $/KW factor based on
191		surviving plant at final retirement. These amounts at a location basis are added to the
192		interim net salvage percentage of the assets anticipated to be retired on an interim basis
193		to produce the weighted net salvage percentage for each location. The detailed
194		calculation for each location is set forth on pages VIII-2 through VIII-12 of
195		Exhibit RMP___(JJS-2).
196	Q.	**Please describe the second phase of the process that you used in the Depreciation**
197		**Study in which you calculated composite remaining lives and annual depreciation**
198		**accrual rates.**
199	A.	After estimating the service life and net salvage characteristics for each depreciable
200		property group, I calculated the annual depreciation accrual rates for each group, using

201		the straight line remaining life method, and using remaining lives weighted consistent
202		with the average service life procedure.
203	**Q.**	**Please describe the straight line remaining life method of depreciation.**
204	A.	The straight line remaining life method of depreciation allocates the original cost of the
205		property, less accumulated depreciation, less future net salvage, in equal amounts to
206		each year of remaining service life.
207	**Q.**	**Please illustrate how the annual depreciation accrual rate for a particular group**
208		**of property is presented in your Depreciation Study.**
209	A.	I will use Account 353, Station Equipment, as an example because it is one of the largest
210		depreciable mass accounts and represents approximately nine percent of depreciable
211		plant.
212		I used the retirement rate method to analyze the survivor characteristics of this
213		property group. I compiled aged plant accounting data from 1924 through 2017 and
214		analyzed it in periods that best represent the overall service life of this property. The
215		life tables for the 1924–2017 and 1988–2017 experience bands are presented on pages
216		VII-95 through VII-97 of the report. The life table displays the retirement and surviving
217		ratios of the aged plant data exposed to retirement by age interval. For example, page
218		VII-95 shows $2,133,875 retired at age 0.5 with $2,347,756,170 exposed to retirement.
219		Consequently, the retirement ratio is 0.0009 and the surviving ratio is 0.9991. These
220		life tables, or original survivor curves, are plotted along with the estimated smooth
221		survivor curve, the 58-S0 on page VII-94.
222		The net salvage percent is presented on pages VIII-49 and VIII-50. The
223		percentage is based on the result of annual gross salvage minus the cost to remove plant

224   assets as compared to the original cost of plant retired during the 1992 through 2017

225   period. The 26-year period experienced $20,503,595 ($8,621,261-$29,124,856) in net

226   salvage for $179,971,886 plant retired. The result is negative net salvage of eleven

227   percent ($20,503,595/$179,971,886). Although recent trends show more negative

228   indications, I determined that, based on industry ranges and Company expectations,

229   negative ten percent was the most appropriate estimate.

230   My calculation of the annual depreciation related to the original cost at

231   December 31, 2017, of electric plant is presented on pages IX-299 through IX-301. The

232   calculation is based on the 58-S0 survivor curve, ten percent negative net salvage, the

233   attained age, and the allocated book reserve. The tabulation sets forth the installation

234   year, the original cost, calculated accrued depreciation, allocated book reserve, future

235   accruals, remaining life and annual accrual. These totals are brought forward to the

236   table on page VI-18.

237   **CONCLUSION**

238   **Q.   Please summarize the results of your Depreciation Study.**

239   A.   The depreciation rates as of December 31, 2017 appropriately reflect the rates at which

240   the values of the Company's assets have been consumed over their useful lives to date.

241   These rates are based on the most commonly used methods and procedures for

242   determining depreciation rates. The life and salvage parameters are based on widely

243   used techniques and the depreciation rates are based on the average service life

244   procedure and remaining life method. Therefore, the depreciation rates set forth on

245   pages VI-4 through VI-21 of Exhibit RMP___(JJS-2) represent the calculated rates as

246   of December 31, 2017.

247 **Q.** **Does your Depreciation Study recommend new depreciation rates based on**

248 **December 31, 2020 plant and reserve balances?**

249 A. Yes. The depreciation accrual rates set forth in the Appendix to Exhibit

250 RMP___(JJS-2), which begins on page 1393, represent the rates most applicable in this

251 proceeding. These rates use all of the same methods and procedures described in the

252 Depreciation Study but apply the parameters to the projected December 31, 2020 plant

253 and reserve balances. The projected plant and book reserve balances as of December

254 31, 2020 properly established the most reasonable rate base when the rates will go into

255 effect. Thus, I recommend approval of the depreciation accrual rates in the Appendix

256 as being just and reasonable and in the public interest.

257 **Q.** **Does this conclude your direct testimony?**

258 A. Yes.