

1 **Q. Please state your name, business address and present position with**
2 **PacifiCorp (the Company).**

3 A. My name is Gregory N. Duvall, my business address is 825 NE Multnomah
4 Street, Suite 600, Portland, Oregon 97232. My present position is Director, Long-
5 Range Planning and Net Power Costs.

6 **Qualifications**

7 **Q. Briefly describe your educational and professional background.**

8 A. I received a degree in Mathematics from University of Washington in 1976 and a
9 Masters of Business Administration from University of Portland in 1979. I was
10 first employed by PacifiCorp in 1976 and have held various positions in resource
11 and transmission planning, regulation, resource acquisitions and trading. From
12 1997 through 2000 I lived in Australia where I managed the Energy Trading
13 Department for Powercor, a PacifiCorp subsidiary at that time. After returning to
14 Portland, I was involved in direct access issues in Oregon and was responsible for
15 directing the analytical effort for the Multi-State Process (MSP). Currently, I
16 direct the work of the integrated resource planning group, the load forecasting
17 group, the net power cost group, and the renewable compliance area.

18 **Purpose of Testimony**

19 **Q. What is the purpose of your testimony in this proceeding?**

20 A. I present the net power cost (NPC) study used to support the 2010 Protocol
21 revenue requirement analyses that is presented in the testimony of Mr. Steven R.
22 McDougal. In addition, I present the NPC studies that were conducted to test the
23 sensitivity of high and low market prices, the studies that were conducted to

24 estimate the increased NPC that the Company would incur if there were structural
25 separation by balancing areas, and the study that was used to develop the NPC
26 and resource changes associated with the load growth study. I also present an
27 analysis estimating the increased generation-related costs the Company would
28 incur if each jurisdiction were to go-it-alone. The structural separation study and
29 the go-it-alone study were conducted to provide a rough estimate of cost savings
30 that may arise from continuing to plan and operate as a single integrated system.
31 Finally, I present the NPC results associated with the load growth study. All
32 studies except the go-it-alone study were conducted using the Company's
33 Generation and Regulation Initiative Decision Tool (GRID) model.

34 **2010 Protocol NPC Study**

35 **Q. Why did the Company prepare the 2010 Protocol NPC study?**

36 A. The Company prepared the 2010 Protocol NPC study (Base NPC Study) at the
37 request of the Standing Committee. The purpose of the study was to compute a
38 current projection of total company NPC to support revenue requirement analysis
39 as presented in the testimony of Mr. McDougal. The Standing Committee
40 requested that the Company update its NPC study to reflect the most recent
41 information available at the time.

42 **Q. What input data did the Company use to conduct the Base NPC Study?**

43 A. The Company used the 2008 Integrated Resource Plan (IRP) preferred portfolio,
44 along with (i) the Company's February 2009 load forecast, (ii) June 2009 Official
45 Forward Price Curves, and (iii) updated information of new and existing contracts
46 as of August 2009. Input assumptions for the Klamath River operations and dam

47 removal schedule were taken from the Klamath Hydroelectric Settlement
48 Agreement (KHSA) dated February 18, 2010.

49 **Market Price Sensitivity Studies**

50 **Q. Why did the Company perform market price sensitivity studies?**

51 A. Wholesale power and gas market prices are volatile and unpredictable and have
52 the potential to affect each jurisdiction differently under the Revised Protocol. To
53 test this, the Company was requested by the Standing Committee to run a high
54 and a low market price sensitivity study and report the results of those studies.

55 **Q. What assumptions were used for the high and low market price studies?**

56 A. For the NPC studies supporting the high and low market price sensitivity
57 analyses, the Company increased or decreased market prices by 20 percent,
58 respectively. An annual summary of the base, high and low market prices at
59 California Oregon Border (COB) and Palo Verde (PV) for electricity and at
60 Rocky Opal for natural gas are provided in Exhibit RMP___(GND-1). Chart 1
61 below shows the impact of the high and low market prices on net power cost,
62 presented as percentage changes in NPC from the Base NPC Study.

**Chart 1
High and Low Price Studies Compared to Base NPC Study**



63 **Structural Separation Studies and Go-It-Alone Analysis**

64 **Q. Why did the Company perform the structural separation studies and the go-**
 65 **it-alone analysis?**

66 A. The Company was requested to perform structural separation studies and the go-
 67 it-alone analysis by the Standing Committee as a means of estimating the cost
 68 savings that may arise from continuing to plan and operate as a single integrated
 69 system. These studies are highly assumption driven and should not be relied upon
 70 other than for the purpose they are used for in the MSP. The structural separation
 71 studies assume that Pacific Power and Rocky Mountain Power would become
 72 separate entities and operate on a balancing area basis, and the go-it-alone study
 73 assumes that each state jurisdiction would become a separate entity. In the case
 74 of structural separation, it was assumed that the current system-wide planning is
 75 sufficient to cover the resource needs of both balancing areas, rather than as a

76 single, integrated power system as is currently done. However, the balancing
77 areas were assumed to operate on their own. In the case of the go-it-alone
78 analysis, the jurisdictional entities would need to plan and operate on their own
79 because the significant differences in the jurisdictional non-coincidental peaks as
80 compared with the coincidental peaks of the system that are used in the
81 Company's planning.

82 **Q. What assumptions were made to perform the structural separation studies?**

83 A. The Company currently operates in two balancing areas, east and west. The
84 structural separation studies disconnect the transfer between the two balancing
85 areas. Loads and resources were assigned to each balancing area based on their
86 physical location. The Company has a small number of exchanges under which
87 power is received by the Company in one balancing area and returned to the
88 Company in the other balancing area. For purposes of the structural separation
89 studies, the Company assumed these cross-balancing area exchanges would be
90 terminated, and therefore they were not included in either balancing area. A list
91 of major assumptions to NPC studies for the structural separation analysis is
92 provided in Exhibit RMP____(GND-2). The studies were performed on calendar
93 years 2012, 2015 and 2017 based on changes in the Company's transmission
94 additions that impact the modeling topologies.

95 **Q. What are the limitations of the structural separation NPC study results?**

96 A. As previously mentioned, the structural separation study results are a highly
97 assumption-driven assessment of a balancing area structural separation model.
98 The assignment of resources and the modeling of a balancing area structural

99 separation are based on one set of assumptions. It is not advocated by any party
100 including the Company and is provided solely for informational purposes. The
101 balancing area split of generation and transmission resources does not reflect the
102 pre-1989 merger assignment of resources between Pacific Power and the former
103 Utah Power. This study does not analyze the potential costs of refinancing,
104 additional workforce and other costs associated with changing the operation of a
105 single integrated system that serves each of California, Idaho, Oregon, Utah,
106 Washington and Wyoming to a control area structural separated system. Neither
107 does the analysis evaluate what resources changes might occur under a balancing
108 area structurally separated system.

109 **Q. What were the results of the structural separation studies?**

110 A. The structural separation studies for calendar years 2012, 2015 and 2017 indicate
111 that the total NPC for the combined east and west balancing areas would be
112 higher than the Base NPC Study by about 3 percent as shown in Table 1 below.
113 Assuming a level of NPC at \$1.5 billion, the dollar increased ranged from \$37
114 million to \$45 million.

Table 1
Combined East and West Studies Compared to Base NPC Study

2012	2.50%
2015	3.68%
2017	3.02%

115 **Q. Has the Company updated its structural separation studies to incorporate**
116 **the KHSA?**

117 A. Yes. The Company updated the studies that were previously provided to the
118 Standing Committee. The results presented in Table 1 above are from the updated

119 studies, and are consistent with what the Company has previously provided,
120 which indicated significant savings operating the system as a whole.

121 **Q. Please describe the go-it-alone analysis.**

122 A. The go-it-alone analysis quantifies the difference between the total amount of
123 peak load that would need to be met on a state-by-state basis and the amount of
124 peak load that would need to be met with the continuation of integrated system
125 resource planning. The loss of diversity that would occur if each jurisdiction were
126 to go-it-alone would directly translate into an increased need for generating
127 resources, and therefore increased costs. For this analysis, the increased resource
128 requirements were priced at the 2008 IRP costs of new combined cycle
129 combustion turbines.

130 **Q. What are the limitations of the go-it-alone NPC study results?**

131 A. Like the structural separation study, the go-it-alone study is a highly assumption
132 driven assessment of a state separation model. It is not advocated by any party
133 including the Company and is provided solely for informational purposes. This
134 study does not analyze the potential costs of refinancing, additional workforce and
135 other costs associated with changing the operation of a single integrated system
136 that serves each of California, Idaho, Oregon, Utah, Washington and Wyoming to
137 a six-state separated system. The study also does not evaluate the impact of the
138 resource dispatching under a six-state separated system.

139 **Q. What were the results of the go-it-alone analysis?**

140 A. If each jurisdiction were required to plan to meet their own peak loads, the
141 additional costs incurred to acquire the necessary additional resources could be

142 approximately \$270 million each year. The results of the analysis are provided in
143 Exhibit RMP___(GND-3).

144 **Q. Why was GRID not used to prepare the go-it-alone study?**

145 A. Modeling each jurisdiction in GRID would require assumptions on resource and
146 transmission assignment, as well as assumptions on each jurisdiction's access to
147 wholesale markets. In the Company's view, creating a set of assumptions on
148 these issues that would prove reasonably acceptable to all jurisdictions would be
149 impractical at this time. The Company believes that the analysis performed
150 reasonably captures the increased cost that would be incurred if each jurisdiction
151 needed to plan for itself.

152 **Load Growth Analysis**

153 **Q. Why did the Company perform the load growth analysis?**

154 A. The Company was requested to perform load growth analysis by the Standing
155 Committee as a means of evaluating whether the slower-growing states unfairly
156 subsidize the faster-growing states.

157 **Q. How is the NPC calculated for the load growth analysis?**

158 A. The first step is to identify which states are growing relatively faster than the rest
159 of the states, which are Utah and Wyoming in the current study. The growth rate
160 of these two states during the study period from calendar year 2010 through
161 calendar year 2019 was adjusted down to match the average growth rate of load in
162 the rest of the states. Then the 2008 IRP resource portfolio was modified to
163 remove resource additions that would no longer be needed due to the reduced
164 system load.

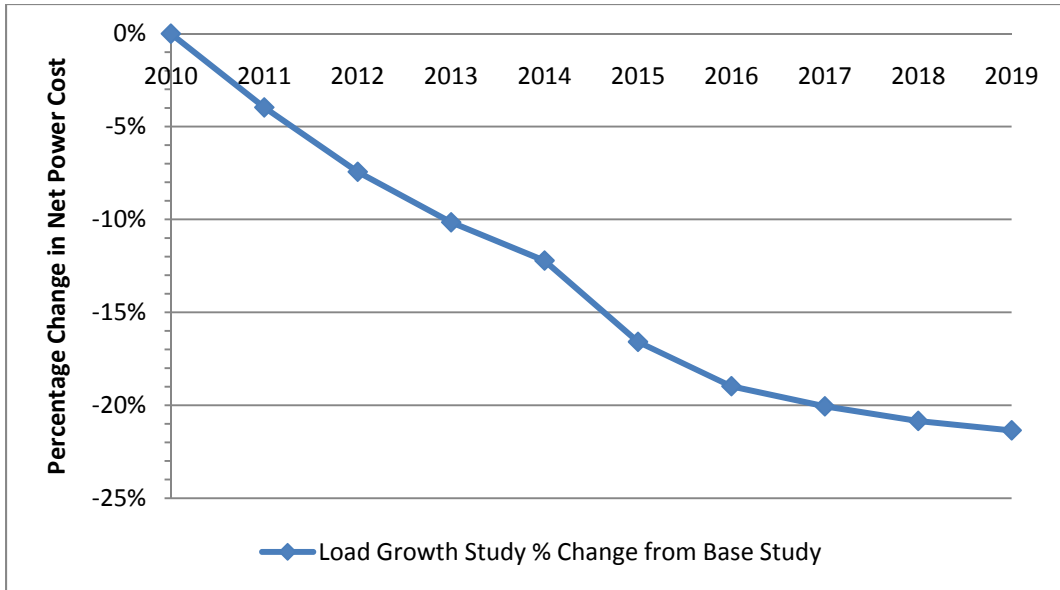
165 **Q. How was the 2008 IRP resource portfolio modified as a result of the changes**
166 **in load growth?**

167 A. First, the load and resource balance was updated from the 2008 IRP to reflect the
168 reduction in system peak load assumed for Utah and Wyoming. Next, the
169 resource additions in the east balancing area were reduced to maintain a minimum
170 of a 12 percent planning reserve margin. Several planned east resources included
171 in the 2008 IRP were removed, including the East CCCT (CCCT F 2x1, Utah
172 North), the East thermal PPA, the East Aero and the East Geothermal. Planned
173 east wind resources and demand side management assumptions were not changed.
174 Front office transactions in the load growth resource portfolio were reduced.
175 Exhibit RMP___(GND-4) illustrates the changes to the 2008 IRP preferred
176 portfolio as a result of the reduction in Utah and Wyoming load.

177 **Q. What is the impact of the reduced load?**

178 A. By the end of the study period, through calendar year 2019, the total Company
179 NPC decreases by approximately 21 percent as compared to the Base NPC Study.
180 The results of the analysis are provided in Chart 2 below. The overall revenue
181 requirement impact of the reduced load, including the change to NPC and the
182 corresponding change fixed costs related to resource additions that would no
183 longer be required, is reflected in the revenue requirement study that is addressed
184 by Mr. McDougal.

Chart 2
Load Growth Study Compared to Base NPC Study



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

186 **A. Yes.**