

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

3 A. My name is Cindy A. Crane. My business address is 1407 West North Temple,
4 Suite 310, Salt Lake City, Utah 84116. My position is Vice President, Interwest
5 Mining Company and Fuel Resources for PacifiCorp Energy.

6 **Q. Briefly describe your business experience.**

7 A. I joined PacifiCorp in 1990 and have held positions of increasing responsibility,
8 including Director of Business Systems Integration, Managing Director of
9 Business Planning and Strategic Analysis and Vice President of Strategy and
10 Division Services. My responsibilities have included the management and
11 development of PacifiCorp's 10-year business plan, assessing individual business
12 strategies for PacifiCorp Energy, managing the construction of the Company's
13 Wyoming wind plants and assessing the feasibility of a nuclear power plant. In
14 March 2009, I was appointed to my present position as Vice President of
15 Interwest Mining Company and Fuel Resources. In my position I am responsible
16 for the operations of Energy West Mining Company and Bridger Coal Company
17 as well as overall coal supply acquisition and fuel management for PacifiCorp's
18 coal plants.

19 **Purpose of Testimony**

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

21 A. My testimony:

- 22 • Outlines the increases in coal costs reflected in net power costs in this
23 proceeding and explains the reasons for the increases; and

- 1 • Provides a detailed discussion of the Company’s efforts to manage adverse
2 coal quality at the Jim Bridger plant associated with Bridger Coal
3 Company’s (BCC) underground mining operations, as directed by the
4 Commission in Order 06 of the Company’s last general rate case, Docket
5 UE-100749 (the 2010 Rate Case).¹

6 **Coal Cost Increases**

7 **Q. Which Company-owned coal plants are included in Washington’s net power
8 costs under the west control area (WCA) allocation methodology?**

9 A. Colstrip 4 and Jim Bridger. Although the Company has shares in two units of the
10 Colstrip plant, only Colstrip 4 has been included in Washington rates by this
11 Commission. In addition, because there is a limitation on transmission
12 capabilities, the generation from the Jim Bridger plant that can be wheeled into
13 the west control area is approximately 96 percent of the total Jim Bridger plant
14 capability. As such, the WCA allocation methodology only includes
15 approximately 96 percent of the costs and output of the Jim Bridger plant.

16 **Q. Have coal costs increased since the 2010 Rate Case?**

17 A. Yes. As discussed in the testimony of Company witness Gregory N. Duvall, test
18 period coal costs have increased on a west control area basis from \$175.9 million
19 in the 2010 Rate Case to \$192.3 million for the current case, an increase of \$16.4
20 million. The increase related to higher coal *prices* is approximately

¹ See *Wash. Utils. & Transp. Comm'n v. PacifiCorp*, Docket UE-100749, Order 06 (March 25, 2011) (Order 06).

1 \$20.3 million; this increase is partially offset due to reduced coal-fired generation,
2 a reduction of approximately \$3.9 million.

3 **Q. What are the key drivers of the coal price increases?**

4 A. The \$20.3 million price-related increase is associated with the Jim Bridger plant.
5 The increase in Jim Bridger plant costs is a combination of higher costs from the
6 Black Butte mine of approximately \$3.9 million and higher BCC mine operating
7 costs of approximately \$16.4 million.

8 **Q. Please explain the \$3.9 million increase in delivered costs from the Black
9 Butte mine.**

10 A. Approximately 31 percent of the Jim Bridger plant's fuel requirements are
11 supplied by Kiewit Mining's Black Butte mine, currently under a multi-year coal
12 supply agreement through 2014 and transported by the Union Pacific Railroad
13 under a rail agreement, also through 2014. The delivered cost of Black Butte coal
14 to the Jim Bridger plant has increased from [REDACTED] per ton in the 2010 Rate Case
15 to [REDACTED] per ton in the current case, an increase of [REDACTED] per ton. This increase
16 is related to both the coal supply and rail agreements.

17 Escalation of contract-specific producer and consumer price indices in the
18 coal supply agreement has resulted in an increase in Black Butte's coal price from
19 [REDACTED] per ton to [REDACTED] per ton, an increase of [REDACTED] per ton. Increased rail
20 rates and anti-freeze agent costs, [REDACTED] per ton in this proceeding versus [REDACTED]
21 per ton in the 2010 Rate Case, account for the remaining [REDACTED] per ton increase
22 in the delivered cost of Black Butte coal.

1 **Q. Please explain the \$16.4 million increase in BCC costs.**

2 A. BCC costs have increased from [REDACTED] per ton to [REDACTED] per ton, an increase of
3 [REDACTED] per ton, largely due to higher underground mining costs. Underground
4 mine operating costs have increased from [REDACTED] per ton to [REDACTED] per ton while
5 surface operating costs have decreased from [REDACTED] per ton to [REDACTED] per ton.

6 **Q. Have there been changes to the mine production?**

7 A. Yes. Deliveries from the underground mine are approximately 273,000 tons
8 lower than in the 2010 Rate Case. Surface mine deliveries will offset this
9 difference by shifting the draglines from reclamation activities to production
10 activities.

11 **Q. What are the primary drivers for the increase in the underground mine
12 costs?**

13 A. The increase in underground mine costs is due to several factors including
14 contract services associated with mine development, materials and supplies,
15 depreciation, royalties and production taxes.

16 **Q. Why are the Bridger underground mine's contract service costs increasing?**

17 A. Due to workforce hiring and retention challenges, BCC has supplemented its
18 workforce with contractors. The number of contract employees is expected to
19 increase in the test period as the mine will utilize contract labor to staff the third
20 continuous miner section beginning in January 2012 and to perform activities
21 related to Mine Safety and Health Administration compliance. The third
22 continuous miner is necessary to support the timely advancement of the

1 longwall. The number of contractors included in the 2010 Rate Case was
2 minimal.

3 **Q. Please explain why material and supply costs are increasing.**

4 A. Expenditures for roof and rib bolting have increased in order to manage ongoing
5 geologic conditions of underground mining as the mine has moved into longer
6 panels with greater depth of cover. Additionally, upon completion of the next
7 longwall move in December 2011, Bridger's longwall system will mine two
8 narrower panels; 500 and 550 feet rather than 750 feet. The narrower face will
9 enhance management of the mine's geology while mining through the panels and
10 will mitigate risks associated with the recovery and relocation of the longwall
11 system from panel to panel. While mining the narrower panels, the longwall
12 system will advance at a more accelerated rate thus requiring continuous miner
13 development to keep pace. This accelerated pace, driven by the narrower panels,
14 results in an increased proportion of continuous miner coal to the longwall coal.
15 Mining with continuous miners is both labor and material and supply intensive
16 compared to longwall mining.

17 **Q. Why are depreciation, royalties and production taxes increasing?**

18 A. The increase in depreciation coincides with the increase in investment in mine
19 infrastructure. These infrastructure investments include a water treatment clarifier
20 and a disposal facility for water pumped from the underground mine, equipment
21 for the third continuous miner to be deployed in January 2012, and improvements
22 to BCC's fuel handling system. The project to improve fuel handling capabilities,
23 which is discussed later in my testimony, is designed to lessen Jim

1 Bridger plant coal quality restrictions associated with Bridger Coal quality.

2 Royalties are assessed as a percentage of operating costs, as operating
3 costs increase royalties increase. Production taxes are assessed as a percentage of
4 the Black Butte coal price. The increase in Black Butte's coal price results in
5 increased production taxes for both the BCC surface and underground mines.

6 **Q. Please compare BCC mine costs relative to other supply options.**

7 A. Test period costs for BCC and Black Butte are almost identical, [REDACTED] per ton
8 and [REDACTED] per ton, respectively. The Kemmerer mine is the only other coal mine
9 in operation in Southwest Wyoming. However, the 125 mile haul to the Jim
10 Bridger plant renders Kemmerer coal uneconomic.

11 **Q. Have Colstrip's coal costs changed from the 2010 Rate Case?**

12 A. Yes. They have decreased slightly from [REDACTED] per mmbtu to [REDACTED] per
13 mmbtu.

14 **Jim Bridger Coal Quality**

15 **Q. Did the Commission make an adjustment to net power costs in Order 06 of
16 the 2010 Rate Case for Jim Bridger plant fuel derations?**

17 A. No. The Commission did, however, request the Company provide evidence of its
18 efforts to manage coal quality at the Jim Bridger plant and explain its efforts to
19 mitigate the adverse effects of the coal quality attendant to its underground
20 mining operations in the next general rate case.

21 **Q. Has the development of the BCC underground mine impacted BCC's fuel
22 quality and Jim Bridger plant's availability?**

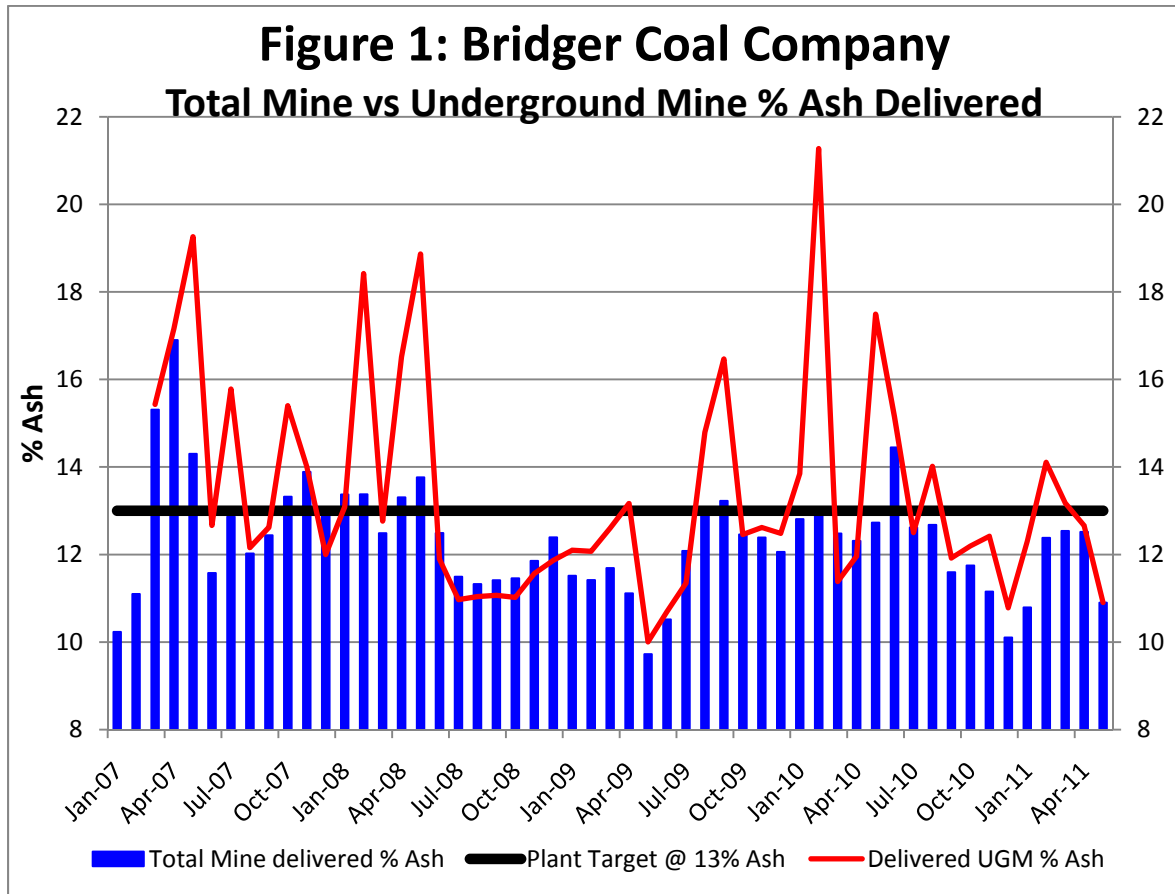
23 A. Yes. All coal plants are affected by changes in coal quality and the plant's ability

1 to blend coals. With coal mining, coal quality can vary dramatically from seam to
2 seam or within a seam. The development of the underground mine has resulted in
3 an increased ash content and greater variability in coal deliveries to the Jim
4 Bridger plant. Through blending of surface and underground coals, the BCC
5 mine minimizes quality variations that undermine optimal plant performance.
6 Traditionally, the surface operation was able to minimize out-of-seam dilution by
7 cleaning the exposed coal seam with dozers prior to mining. With underground
8 mining, however, coal quality is often impacted by both in and out-of-seam
9 dilution and weak roof and floor material such as clay and sandstone.

10 **Q. Have BCC and Jim Bridger plant personnel established coal quality targets?**

11 A. Yes. Both BCC and Jim Bridger plant have established coal quality targets for
12 heat value, ash, sulfur, sodium, etc. With the development of the BCC
13 underground mine, ash content is the critical quality characteristic. Prior to
14 underground mining, the mine consistently delivered the Jim Bridger plant coal
15 with a maximum of 13 percent ash. Since the commencement of longwall
16 operations in early 2007, most of the restrictions at the Jim Bridger plant
17 associated with coal quality are due to either the high ash content of the
18 underground coal or low heat content of the underground coal, which results from
19 high ash. Figure 1 below illustrates, on a monthly basis, the weighted average ash
20 content of coal delivered from the underground mine and the weighted average
21 ash content of all BCC deliveries, surface and underground. The ash content of
22 the coal delivered from the underground mine coal was consistently above the
23 established target, 13 percent, through April 2008. Through utilization of low ash

1 surface coal, mine personnel were able to partially mitigate the impact on the Jim
2 Bridger plant of the high ash coal from the underground mine.



3 BCC has been able to minimize quality variations that undermine optimal
4 plant performance. The mine, however, is limited by the size and quality of the
5 mine stockpiles and blending capabilities. The development of the underground
6 mine and the scaling back of the surface operation has resulted in increased
7 blending requirements, greater unpredictability in coal deliveries and the potential
8 for extended periods of high ash coal production.

1 **Q. Please describe BCC's current blending capabilities for high ash**
2 **underground coal production.**

3 A. All of the coal produced by the underground mine is initially delivered to the
4 stacking tubes located outside the underground portal. The stacking tubes allow
5 the underground mine to segregate coal by quality. However, the stockpile
6 capacity at the stacking tubes is limited to 240,000 tons. To sustain the
7 underground mine during periods of high ash production, high ash coal may be
8 conveyed to the truck dump station, TDS-2, offloaded and hauled by truck to
9 other storage sites, provided capacity exists. As coal quality permits, mine
10 personnel will blend the high ash coal back into the delivery system by reloading
11 coal at the individual storage sites into trucks and redeliver the coal to the
12 conveyor system.

13 **Q. Has BCC made recent modifications to manage coal quality excursions**
14 **associated with the underground mine operation?**

15 A. Yes. The mine previously enlarged the stockpile footprint at the truck dump
16 station, TDS-2 and has requested the Wyoming Department of Environmental
17 Quality (WDEQ) to issue a permit allowing for an expansion of this site. Bridger
18 Coal expects the WDEQ to issue a permit by the end of the year. The permit
19 would allow the mine to expand the capacity of this truck dump station with an
20 additional 500,000 tons of sealed inventory capacity. This expansion would allow
21 the mine to further segregate coal produced by the underground mine, store higher
22 ash coal and minimize the variability of the ash content in deliveries to the Jim
23 Bridger plant.

1 **Q. Are additional modifications being made to the fuel handling system and**
2 **blending capabilities?**

3 A. Yes. Currently, TDS-2 does not have the capability to feed stockpiled coal back
4 onto the conveyor system. BCC has completed preliminary engineering and
5 design of an upgrade to truck dump station TDS-2. This upgrade will allow BCC
6 to feed or reclaim coal stockpiled at truck dump station TDS-2 directly back to the
7 conveyor system rather than being hauled by truck to another dump station,
8 ultimately improving the efficiency of coal handling at TDS-2.

9 **Q. When is the project expected to be completed?**

10 A. The first phase will provide BCC with the ability to reclaim and blend
11 underground mine coal at truck dump station TDS-2 and is projected to be
12 completed and in service by the end of 2011.

13 **Q. What equipment installation is required in phase one of the project?**

14 A. A McLanahan RF60-46 reclaim feeder and appurtenant conveyor system will be
15 installed by the end of 2011. This surface reclaim feeder will allow the mine to
16 reclaim coal from stockpiles located at truck dump station TDS-2 and blend coal
17 into Bridger's coal conveyor system.

18 **Q. What are the benefits of the project?**

19 A. Currently, all underground coal offloaded at truck dump station TDS-2 must be
20 trucked to other stockpiles or truck dump stations before re-entering the delivery
21 system. Rehandling BCC underground mine coal requires considerable
22 manpower and equipment and presents blending challenges. The new material
23 handling system will improve the utilization of live stockpiles, provide a surface

1 reclaim system, allow more consistent blending and reduce the multiple-hauling
2 of underground coal. The development of this material handling system will
3 provide a simple and efficient means of stockpiling, blending and reclaiming coal.

4 **Q. How will this system impact Jim Bridger plant fuel quality derations?**

5 A. Through increased reclaim and blending capability, BCC personnel can minimize
6 quality variations that undermine optimal plant performance. Mine personnel will
7 be able to reclaim different qualities of coal that on a blended basis to meet plant
8 quality targets. The increased capacity at truck dump station TDS-2 will allow
9 the mine to accommodate the expected coal quality variability associated with the
10 underground mine.

11 **Q. What other improvements to the Bridger fuel handling system are being**
12 **evaluated by BCC personnel?**

13 A. In addition to the modifications to truck dump station TDS-2 discussed above,
14 BCC personnel are evaluating further modifications to the fuel handling system.
15 Mine personnel are evaluating upgrading the bypass feeder at the stacking tubes.
16 This feeder would increase throughput capacity by allowing the mine to bypass
17 the stacking tubes, enabling coal to be conveyed directly to the plant or to a
18 downstream stockpile like truck dump station TDS-2. By reducing the handling
19 of the coal, mine personnel can reduce the degradation of coal quality. Mine
20 personnel are also evaluating the installation of analyzers at strategic points to the
21 conveyor system. These analyzers would provide real time quality information,
22 such as ash and moisture.

1 **Q. Have the efforts described above mitigated the adverse effects of the coal**
2 **quality from BCC's underground mining operations?**

3 A. Yes. Through past improvements to the fuel handling system, the number of
4 derations at the Jim Bridger plant has decreased substantially since 2008. With
5 the additional modifications addressed in my testimony, BCC personnel will
6 continue to mitigate the impact of high ash coal on the Jim Bridger plant and gain
7 fuel handling efficiencies.

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

9 A. Yes.