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March 30, 2018

***VIA ELECTRONIC FILING  
AND OVERNIGHT DELIVERY***

Public Utility Commission of Oregon  
201 High Street SE, Suite 100  
Salem, OR 97301-3398

Attn: Filing Center

**Re: UE 323 – PacifiCorp’s Compliance Filing**

In compliance with Order No. 17-444, PacifiCorp d/b/a Pacific Power hereby submits for filing the updated Long-Term Fuel Supply Plan for the Jim Bridger Plant. This attachment has also concurrently been included in PacifiCorp’s 2019 Transition Adjustment Mechanism filing in docket UE 339.

Highly protected information has been provided under Order No. 18-106.

Please direct any questions regarding this filing to me at (503) 813-6583.

Sincerely,

A handwritten signature in black ink, appearing to read "Natasha Siores".

Natasha Siores  
Manager, Regulatory Affairs

Enclosures



# **PACIFICORP CONFIDENTIAL LONG-TERM FUEL SUPPLY PLAN FOR THE JIM BRIDGER PLANT**

March 2018



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# 1 INTRODUCTION AND EXECUTIVE SUMMARY

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In the final order in PacifiCorp's 2014 Transition Adjustment Mechanism (TAM) filing, Order No. 13-387, the Public Utility Commission of Oregon (Oregon Commission) adopted PacifiCorp's proposal to prepare periodic fuel supply plans comparing affiliate mine supply to alternative fuel supply options, including market alternatives. In December 2015, PacifiCorp complied with Order No. 13-387 by providing "PacifiCorp's Confidential Long-Term Fuel Supply Plan for the Jim Bridger Plant" (2015 Fuel Plan). Subsequently, PacifiCorp committed in testimony to provide periodic updated filings to the 2015 Fuel Plan. In its orders in the 2017 and 2018 TAMs, the Oregon Commission directed PacifiCorp to hold workshops to discuss information and analyses required to meaningfully evaluate long-term fueling plans for the Jim Bridger plant. To date, three different workshops have been held with the Oregon staff and intervenors to discuss various details and assumptions associated with the development of the updated PacifiCorp Confidential Long-Term Fuel Supply Plan for the Jim Bridger Plant (2018 Fuel Plan).

As set forth in PacifiCorp's compliance filing in docket UE 287, the purpose of long-term fuel supply plans for plants fueled from captive mines is to determine the least-cost, least-risk coal supply evaluated on a multi-year basis. The long-term fuel supply plan is designed to ensure that fuel supplies are fair, just and reasonable, and that they satisfy the Oregon Commission's prudence and affiliate interest standards.

Additionally, PacifiCorp agreed to provide a long-term fueling strategy for the Jim Bridger plant in the stipulation Settlement Agreement to the 2015 Wyoming Energy Cost Adjustment Mechanism (ECAM) filing (docket 20000-472-EA-15). The evaluation would include coal supply pricing, transportation and modifications to the plant for an alternative fuel supply. The report would be updated periodically to address significant milestones.

To develop the 2018 Fuel Plan, PacifiCorp has studied, reviewed and evaluated different fueling options for the Jim Bridger plant. For the 2018 Fuel Plan, the annual generation requirements expressed in consumed tons were derived from PacifiCorp's budget which is calculated using PacifiCorp's Generation and Regulation Initiative Decision Tools (GRID) model<sup>1</sup>. The generation requirements derived from the GRID model have also been used for the basis of PacifiCorp's 2017 Integrated Resource Plan (IRP) Update. Within the 2018 Fuel Plan, different fueling options are presented. The fueling options consider varying tonnage delivery schedules sourced from Bridger Coal Company (Bridger mine), the Black Butte mine, and mines located in Wyoming's Southern Powder River Basin (SPRB), which are "8,800" Btu/lb. mines. Additionally, the different coal delivery options for the Bridger mine contain various mine plan scenarios outlining specified tonnage delivery schedules from both the underground and surface mining operations. Included in these different mine scenarios are estimated shutdown dates for Bridger mine's underground and surface operations. The 2018 Fuel Plan provides third party coal supply tonnages and pricing estimates based upon recent negotiations, as well as recent coal pricing forecasts from Energy Ventures Analysis (EVA). The 2018 Fuel Plan provides estimated tonnage volumes and rail rates for transportation services provided by the Union Pacific Railroad for the transport of coal from third party coal supply sources. The estimated plant modifications and capital requirements, defined by equipment category, as well as total costs needed to support large volumes of SPRB coal are presented in a detailed third party study completed in 2017 by the engineering and consulting firm Burns & McDonnell.

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<sup>1</sup> The GRID model used for budget purposes is different than the GRID model used in the Oregon TAM. The budget GRID model is used to determine the net power cost budget, but is not subject to the same normalizing and regulatory modeling constraints as the GRID model used in the Oregon TAM.

After considering all of the factors influencing long-term fueling strategy, the Company developed and evaluated six different Jim Bridger plant fueling options. A Present Value Revenue Requirement (PVRR) calculation was completed for the various fueling options and includes a composite ranking considering both financial and risk weighting. Based upon the results of the detailed PVRR analysis and utilizing a risk profile, Option F ( [REDACTED] ) is the current least-cost, least-risk option. While the current analyses shows Option F as the least-cost, least-risk option, Option D is the lowest cost option and will continue to be analyzed. PacifiCorp will continue to evaluate the best fueling option for the Jim Bridger plant taking in to consideration both cost and risk of the different options and will change the long-term fuel supply plan as necessary to provide the least-cost, least-risk fuel supply for the Jim Bridger plant.

The benefits of pursuing Option F as the long-term fueling strategy for the Jim Bridger plant include the following:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

## 2 BACKGROUND

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The Jim Bridger plant is a four unit coal-fired plant located in Sweetwater County, Wyoming. The facility is located approximately eight miles north of Point of Rocks, Wyoming, and approximately 24 miles east of Rock Springs, Wyoming.

The Jim Bridger plant is the largest power plant on the PacifiCorp system (2,120 megawatts) and is jointly owned by PacifiCorp (66.7%) and Idaho Power Company (Idaho Power) (33.3%). The Jim Bridger plant consists of four almost identical units, each with a nominal 530 net megawatt capacity. Over the past two years, Jim Bridger plant has consumed approximately 6.6 million tons of coal per year. From 2006 to 2015, the Jim Bridger plant consumed on average 8.0 million tons per year. The plant is designed to burn coal sourced from southwest Wyoming with heat content in the range of 9,000 Btu/lb. to 10,000 Btu/lb. The depreciable life of PacifiCorp's share of the Jim Bridger plant extends through 2025 in Oregon and through 2037 in all other states based on PacifiCorp's 2012 depreciation study.

The Bridger mine is located adjacent to the Jim Bridger plant. The Bridger mine includes both surface and underground mining operations and, similar to the Jim Bridger plant, is jointly owned by PacifiCorp (66.7%) and Idaho Power (33.3%). The surface operation consists of a combination dragline and truck/loader operation that produces approximately [REDACTED] million tons of coal per year. Bridger mine's underground operation uses continuous miners and longwall mining equipment to produce coal. The underground mine produces approximately [REDACTED] million tons of coal per year. The coal is transported from both the underground and surface mining operations to surface stockpiles or directly to the Jim Bridger plant via a nine mile overland conveyor system.

For regulatory purposes, Bridger mine is consolidated with PacifiCorp's operations. PacifiCorp's share of Bridger mine is included in the PacifiCorp rate base and its share of mining costs, including depreciation and depletion, is included in net power costs.

In addition to the estimated [REDACTED] million tons of coal forecast to be delivered annually from the Bridger mine to the Jim Bridger plant, the Jim Bridger plant has historically received the remaining portion of its coal supply requirements, approximately [REDACTED] million tons per year, from the nearby Black Butte mine. The Union Pacific Railroad provides rail access for all the coal delivered from the Black Butte mine to the plant.

### 3 ASSUMPTIONS

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The 2018 Fuel Plan for the Jim Bridger Plant was prepared in two phases. The key variables used in the plan were subject to in-depth review and study. These assumptions are explained below:

#### 3.1 EVALUATION – PHASE 1

##### 3.1.1 Generation

Generation assumptions are taken from PacifiCorp’s budget GRID model and parallel PacifiCorp’s 2017 IRP Update which will be submitted in May 2018, and are used in all evaluated alternatives. Consistent with the findings of the IRP, the 2018 Fuel Plan assumes the closure of Jim Bridger Unit 1 on December 31, 2028, and Jim Bridger Unit 2 on December 31, 2032. These assumptions represent a significant change from the assumed generation requirement used to evaluate the plant’s fueling needs in the 2015 Fuel Plan. This plan assumed a total plant annual consumption of [REDACTED] million tons through the life of the plant.

Consistent with the IRP, coal consumption is shown to decline through 2037, the depreciable plant life. The assumed burn level is approximately [REDACTED] million tons per year for 2018 through 2022; approximately [REDACTED] million tons per year for 2023 through 2028; approximately [REDACTED] million tons per year for 2029 through 2032; and approximately [REDACTED] million tons per year through 2037. The assumed generation levels between the 2015 and 2018 Fuel Plans are compared in Appendix A.

##### 3.1.2 Plant Depreciable Life

The assumed depreciable life of PacifiCorp’s share of the Jim Bridger plant extends through 2025 in Oregon and through 2037 in all other states, based on PacifiCorp’s 2012 depreciation study.

##### 3.1.3 2015 Fuel Plan –“Base Operating Plan”

The 2015 Fuel Plan recommended fueling the plant under the Base Operating Plan. This plan consisted of the following main elements:

- Continued surface mining at Bridger mine through [REDACTED]
- Permitting and mining the Deadman Wash tract at Bridger mine
- Closure of the Bridger mine underground operations in [REDACTED] – remaining inventory delivered in [REDACTED]
- Continued purchase of Black Butte mine coal through [REDACTED]
- Conversion of the Jim Bridger plant to SPRB coal deliveries requiring estimated capital expenditures of [REDACTED] million (PacifiCorp share)
- [REDACTED] SPRB deliveries, replacing Black Butte coal deliveries, begin in [REDACTED] and continue through [REDACTED]
- Infrastructure improvements begin in [REDACTED] with infrastructure fully in place and operable by [REDACTED]

As mentioned above, the Base Operating Plan was recommended based on the assumption that Jim Bridger plant consumption would be between [REDACTED] and [REDACTED] million tons per year (total plant). Actual plant coal consumption for 2016 and 2017 was significantly less than the assumed consumption. Total coal

consumption at the plant was [REDACTED] than expected in the Base Operating Plan over the two-year period as shown in Table 1.

**TABLE 1**

<b>"Base Operating Plan" - 2015 Long-Term Fuel Supply Plan for the Jim Bridger Plant</b>						
	2016		2017		Average	
	<u>PacifiCorp</u>	<u>Total</u>	<u>PacifiCorp</u>	<u>Total</u>	<u>PacifiCorp</u>	<u>Total</u>
<i>Deliveries (Million Tons)</i>						
Bridger Coal Company	[REDACTED]					
Black Butte Coal Company	[REDACTED]					
<i>Consumption (Million Tons)</i>						
Total	[REDACTED]					
<b>Actual Tonnage Consumed at the Jim Bridger Plant</b>						
	2016		2017		Average	
	<u>PacifiCorp</u>	<u>Total</u>	<u>PacifiCorp</u>	<u>Total</u>	<u>PacifiCorp</u>	<u>Total</u>
<i>Deliveries (Million Tons)</i>						
Bridger Coal Company	[REDACTED]					
Black Butte Coal Company	[REDACTED]					
<i>Consumption (Million Tons)</i>						
Total	[REDACTED]					
<b>Variance in Tonnage Consumed at the Jim Bridger Plant</b>						
	2016		2017		Average	
	<u>PacifiCorp</u>	<u>Total</u>	<u>PacifiCorp</u>	<u>Total</u>	<u>PacifiCorp</u>	<u>Total</u>
<i>Deliveries (Million Tons)</i>						
Bridger Coal Company	[REDACTED]					
Black Butte Coal Company	[REDACTED]					
<i>Consumption (Million Tons)</i>						
Total	[REDACTED]					
% Change	[REDACTED]					



The significant decrease in forecasted consumption required revisions to the recommended Base Operating Plan. [REDACTED] Effective March 2017, the Base Operating Plan was modified to include this change.

#### 3.1.4 Further Refinement of the “Base Operating Plan”

In addition to the change mentioned above, an additional step was taken to further optimize the Base Operating Plan by determining the optimal closure plan for the Bridger mine underground mining operation. Bridger mine prepared four, [REDACTED] mine plans with varying underground closure dates. The mine production volume target was based on estimated consumption and purchases of third party coal. The four plans are summarized below:

- Underground Mine Option A –
  - Underground closure in [REDACTED]
  - Surface closure in [REDACTED]
- Underground Mine Option B –
  - Underground closure in [REDACTED]
  - Surface closure in [REDACTED]
- Underground Mine Option C –
  - Underground closure in [REDACTED]
  - Surface closure in [REDACTED]
- Underground Mine Option D –
  - Underground closure in [REDACTED]
  - Surface closure in [REDACTED]

Bridger mine’s underground operations experienced a significant challenge with the mine’s western reserves in 2015 and 2016. Based on knowledge gained from this experience, the Bridger mine reduced planned production in the area and accelerated the move to the mine’s eastern reserves. Ultimately Underground Mine Option D with the underground closure in [REDACTED], emerged and was found to be the least-cost, least-risk option. Table 2 compares the results of the analysis in terms of (PVRR):

**TABLE 2**

<b>PVRR Summary</b>		
<b>PVRR Summary (PacifiCorp Share)</b>	<b>PVRR (000's)</b>	<b>Differential (from lowest \$)</b>
<b>Financial Ranking &amp; Operation Risk Ranking</b>		
<b>PVRR Summary (PacifiCorp Share)</b>	<b>Financial Ranking (low to high)</b>	<b>Operation Risk Ranking (low to high)</b>

The results of this analysis were presented to Oregon Commission staff in a workshop held March 1, 2017. The analysis established the Base Operating Plan as modified, consistent with Underground Mine Option D above as the new baseline for continued evaluation.

Underground Mine Option D – The March 2017 Base Operating Plan consists of the following main elements:

- Continued surface mining at Bridger mine through [REDACTED]
- Permitting and mining the Deadman Wash tract at Bridger mine
- Closure of Bridger mine underground operations in [REDACTED]
- Continued purchase of Black Butte mine coal through [REDACTED]
- SPRB coal deliveries from [REDACTED] continuing through [REDACTED] in quantities which will not require significant capital modifications at the plant

### **3.2 EVALUATION – PHASE 2**

#### **3.2.1 Economic closure of the Bridger mine surface operation**

With the March 2017 Base Operating Plan established and the underground mine closure date determined, Bridger mine prepared three, [REDACTED] million ton per year mine plans. This level of production complemented expected future total plant consumption of [REDACTED] million tons per year and third party purchases. One of the options also considered was a complete conversion to SPRB deliveries as soon as practicable. The three mine plans are summarized as follows:

- Surface Mine Option D –
  - Underground closure in [REDACTED]
  - Surface closure in [REDACTED]
- Surface Mine Option E –
  - Underground closure in [REDACTED]

- Surface closure in [REDACTED]
- Surface Mine Option F –
  - Underground closure in [REDACTED]
  - Surface closure in [REDACTED]

The revised Surface Mine Option D mine plan maintained assumptions consistent with those described above for the March 2017 Base Operating Plan, except the assumed Bridger mine production level was reduced to reflect deliveries of [REDACTED] million tons per year from the [REDACTED] million tons per year level mentioned previously.

A fueling plan option based on Bridger mine’s Surface Mine Option E mine plan assumed a complete conversion to the consumption of SPRB coal following the closure of both underground and surface mining operations at Bridger mine in [REDACTED]. A complete conversion was not possible prior to [REDACTED], due to the capital modifications required at the Jim Bridger plant to safely and reliably receive and consume SPRB coal in large volumes. As a result, the fueling options have been separated into “near-term” and “long-term” periods for discussion purposes. For purposes of the 2018 Fuel Plan, the near-term period has been defined as the next three-to-four years and corresponds to the estimated time required to design, procure and construct the capital infrastructure to successfully unload trains and consume coal originating in the SPRB.

Surface Mine Option F further developed Surface Mine Option D. The key change was the assumption of [REDACTED], avoiding [REDACTED] million ([REDACTED] million PacifiCorp share) in development costs, and closure of the Bridger mine surface mining operation in [REDACTED]. After closure of the Bridger mine surface mining operation, Surface Mine Option F supplements the Bridger mine deliveries with coal from both the [REDACTED].

### 3.2.2 Third Party Coal

Based on the location of the Jim Bridger plant, economic fuel supply alternatives are limited to two operating mines located in southwest Wyoming and the SPRB mines of Campbell County, Wyoming.

The Black Butte mine, 20 miles southeast of the Jim Bridger plant, is jointly owned by Lighthouse Resources Inc. (Lighthouse) and Anadarko Petroleum. Operated by Lighthouse, the mine is a multiple seam, multiple pit operation with the overburden removed by draglines and a truck/loader fleet. Historically, Black Butte mine has mined approximately 3.5 to 4.0 million tons per year, a significant portion of which has supplied the Jim Bridger plant. However, one of Black Butte mine’s significant contracts has expired. The mine is now producing less than [REDACTED] million tons per year and the Jim Bridger plant is the mine’s only customer. During 2016 and 2017, the Jim Bridger plant received approximately one-third of its fuel supplies from the Black Butte mine under a contract that will terminate in [REDACTED]. Coal from the Black Butte mine is delivered by rail to the Jim Bridger plant under an agreement with the Union Pacific Railroad.

The other southwest Wyoming mine is Westmoreland’s Kemmerer mine. In 2017, Westmoreland purchased the idled Haystack mine located 30 miles south of the Kemmerer mine. Presently the Kemmerer mine supplies PacifiCorp’s Naughton plant and southwest Wyoming’s trona (soda ash) industry. The Kemmerer mine coal is delivered to customers via overland conveyor, truck transportation and limited rail operations. Presently the Kemmerer mine’s rail loading infrastructure is incapable of loading a full unit train efficiently. In addition, the grade elevation surrounding the mine requires additional locomotives

to power a full unit train. As a result, the mine very rarely loads full unit trains. Given the Kemmerer mine's current rail loading infrastructure, rail delivery of coal would only be viable on a limited scale. Delivery of a sizable volume of Kemmerer coal to the Jim Bridger plant would require more costly truck transportation.

The Powder River Basin is the largest coal mining region in the United States. Coal from the SPRB is classified as sub-bituminous coal. SPRB coal contains an average heat content of approximately 8,800 Btu/lb. The coal mined in the SPRB is low sulfur and low ash. Due to its unique quality characteristics, SPRB coal has been consumed by energy markets in multiple states across the country. In 2017, there were eight different mining companies operating fourteen active mines in the Powder River Basin, producing roughly 300 million tons. SPRB mines contain the highest heat content coal ranging between 8,600 Btu/lb. and 8,950 Btu/lb. These mines are located about 550 miles from the Jim Bridger plant.

SPRB mines are served by the Union Pacific Railroad and Burlington Northern Santa Fe Railway railroads. Both of these railroads have joint access to all of the mines located south of Gillette, Wyoming, in the SPRB.

### 3.2.3 Black Butte Pricing

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]

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<sup>2</sup> See footnote [REDACTED].

**TABLE 3**

<b>CONTRACT PROPOSALS - ANNUAL VOLUME &amp; PRICING</b>					
<b>Proposal A</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>Total</b>
Take-or-Pay Volume					
Price Per Ton					
Total \$					
Btu/lb					
MMBtus					
\$/MMBtu					
<b>Proposal B</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>Total</b>
Take-or-Pay Volume					
Price Per Ton					
Total \$					
Btu/lb					
MMBtus					
\$/MMBtu					
<b>Proposal C</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>Total</b>
Take-or-Pay Volume					
Price Per Ton					
Total \$					
Btu/lb					
MMBtus					
\$/MMBtu					
<b>Proposal D</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>Total</b>
Take-or-Pay Volume					
Price Per Ton					
Total \$					
Btu/lb					
MMBtus					
\$/MMBtu					
<b>Proposal E</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>Total</b>
Take-or-Pay Volume					
Price Per Ton					
Total \$					
Btu/lb					
MMBtus					
\$/MMBtu					

The least-cost, least-risk option for the near-term was identified by comparing the cost of purchasing incremental volume from Black Butte mine to the cost of producing incremental volume at Bridger mine. The comparison consisted of the following two options:

1. [REDACTED] (Black Butte mine Proposal A)
2. [REDACTED] (Black Butte mine Proposal D)

Other options were considered and evaluated, but were found to not be economically viable. Specifically, an option considering Bridger mine deliveries at [REDACTED] million tons per year and Black Butte mine deliveries at [REDACTED] million tons per year is discussed in the following pages.

The Company ultimately selected Black Butte mine's Proposal A as the least-cost, least-risk coal supply option for the near-term. Proposal A preserves flexibility to further assess and implement long-term fuel options before making any long-term, large capital investments. Table 4 details the delivered cost savings of [REDACTED] million to PacifiCorp from purchasing coal under the selected option:

**TABLE 4**

PacifiCorp Share							
							(Black Butte Mine - Proposal A)
<i>Mine</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>	<i>Total</i>	
<b>Bridger Mine</b>							
Tons							
Btu/lb							
Mmbtus							
Total Dollars							
\$/Ton Delivered							
\$/MMBtu Delivered							
<b>Black Butte Mine</b>							
Tons							
Btu/lb							
Mmbtus							
\$/Ton							
Rail Rate \$/Ton							
Total Coal Dollars							
Total Rail Dollars							
Total Dollars							
\$/Ton Delivered							
\$/MMBtu Delivered							
<b>Total Deliveries</b>							
Tons							
Btu/lb							
Mmbtus							
Total Dollars							
\$/Ton Delivered							
\$/MMBtu Delivered							
							(Black Butte Mine - Proposal D)
<i>Mine</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>	<i>Total</i>	
<b>Bridger Mine</b>							
Tons							
Btu/lb							
Mmbtus							
Total Dollars							
\$/Ton Delivered							
\$/MMBtu Delivered							
<b>Black Butte Mine</b>							
Tons							
Btu/lb							
Mmbtus							
\$/Ton							
Rail Rate \$/Ton							
Total Coal Dollars							
Total Rail Dollars							
Total Dollars							
\$/Ton Delivered							
\$/MMBtu Delivered							
<b>Total Deliveries</b>							
Tons							
Btu/lb							
Mmbtus							
Total Dollars							
\$/Ton Delivered							
\$/MMBtu Delivered							
<b>VARIANCE</b>							
	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>	<i>Total</i>	
Tons							
Btu/lb							
Mmbtus							
Total Dollars							
\$/Ton Delivered							
\$/MMBtu Delivered							
<b>Calculation of Price Savings -</b>							
MMBtu Delivered Variance							
*Multiplied by	(Proposal D) MMBtus						
<b>Price Savings</b>							

Concurrent negotiations were held with Union Pacific Railroad for coal transportation from the Black Butte mine. The delivered costs shown in the above Table 4 includes rail transportation rates consistent with the negotiations. The estimated savings shown in the table represents PacifiCorp’s share of the total savings.

Upon the expiration of the near-term 2018 contract with Black Butte mine, the pricing for Black Butte mine coal is assumed to increase at [REDACTED] per year.

### 3.2.4 Powder River Basin Coal in the Near-Term

Powder River Basin coal has a high propensity to spontaneously combust, and is the most friable coal type burned in the power industry. While major plant modifications would be required to safely and reliably receive and consume large volumes of SPRB coal at the Jim Bridger plant, the plant is likely capable of consuming SPRB coal on a limited scale without major modification to the plant’s coal unloading or coal consuming infrastructure. For example, in a test burn in 2015, the plant handled and consumed 10 trains totaling 140,540 tons of SPRB coal. Based on knowledge gained from the test burn and PacifiCorp’s professional judgement, plant management believes that up to [REDACTED] tons of SPRB coal per year might be safely and reliably consumed without major modifications to the plant. This estimate is considered to be aggressive.

PacifiCorp considered the possibility of reducing the amount of coal purchased from the Black Butte mine and purchasing a small amount, up to [REDACTED] tons (PacifiCorp share), from a SPRB coal mine on an annual basis. As shown in Table 5, the purchase of small volumes of SPRB coal was not the least-cost option.

For example, PacifiCorp has chosen to purchase [REDACTED] tons per year<sup>3</sup> of incremental coal from Black Butte mine under Proposal A, [REDACTED]. PacifiCorp has also chosen to forego the purchase of [REDACTED] tons per year of coal from Bridger mine (or SPRB coal) that would have been required if Black Butte mine Proposal D, [REDACTED], had been elected. Average costs for the [REDACTED] annual incremental ton variances can be derived from the proposals and mine plans outlined in Table 4 and are shown for both the Black Butte mine and Bridger mine in Table 5. The estimated average delivered cost of [REDACTED] tons of SPRB coal is also shown. On a delivered \$/MMBtu basis, the estimated average delivered cost of [REDACTED] tons of SPRB coal [REDACTED] is [REDACTED] than the delivered cost of Black Butte mine’s incremental coal [REDACTED] over the term of the proposals. In addition, the estimated delivered cost of [REDACTED] tons of SPRB coal [REDACTED] is [REDACTED] over the four year term than the incremental cost of coal mined at the Bridger mine [REDACTED].

As shown in Table 5, this relationship also holds when comparing deliveries under Black Butte mine Proposal A and Black Butte mine Proposal B, [REDACTED]. If Proposal B was chosen, PacifiCorp would forego the purchase of [REDACTED] tons of the [REDACTED] total incremental tons available under Black Butte mine Proposal A. On a delivered \$/MMBtu basis, the estimated average delivered cost of [REDACTED] tons of SPRB coal [REDACTED] is [REDACTED] than the delivered cost of Black Butte mine’s incremental coal [REDACTED] over the term of the proposals. In addition, the estimated average delivered cost of [REDACTED] tons of SPRB coal [REDACTED] is [REDACTED] over the four year term than the incremental cost of coal mined at the Bridger

<sup>3</sup> Represents PacifiCorp’s share of the [REDACTED] differential between Proposal A and Proposal D (difference between [REDACTED])



mine [REDACTED]. The concept of PacifiCorp purchasing fewer tons from Black Butte mine and replacing that volume with a small amount, from [REDACTED] tons up to [REDACTED] tons, of SPRB coal (or coal from Bridger mine) was eliminated in the near-term based on these findings.

PacifiCorp also considered accepting Black Butte mine Proposal B, [REDACTED], and simultaneously [REDACTED] Bridger mine deliveries by [REDACTED] tons per year to [REDACTED] million tons per year, on a total mine basis. Based on data shown in Table 5, in accepting Proposal B, PacifiCorp would purchase [REDACTED] tons of the [REDACTED] total incremental tons available from Bridger mine at an [REDACTED] premium over the cost of purchasing the coal from Black Butte mine. As a result, PacifiCorp chose to forego the purchase of [REDACTED] tons from the Bridger mine at an incremental cost of [REDACTED] in favor of purchasing the [REDACTED] incremental tons from Black Butte mine at an incremental cost of [REDACTED].

TABLE 5

<b>Incremental Cost For Black Butte Proposal Term</b>				
	<u>SPRB</u>	<u>Bridger</u>	<u>Black Butte</u> <u>(Prop. A - Prop. D)</u>	<u>Black Butte</u> <u>(Prop. A - Prop. B)</u>
Coal \$	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Freight \$	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
\$/Ton \$	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Btu/lb	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
\$/mmBtu \$	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

### 3.2.5 Black Butte Mine Volume

PacifiCorp conducted a high-level review of the Lighthouse Resources Inc. Black Butte mine coal resource and reserve estimates in 2015. The study consisted of reviewing available third-party Black Butte reserve and geology documents, along with Black Butte’s geology information and permitting status. At the time, based on the information reviewed, the conclusion of the review was that Black Butte mine had [REDACTED] million tons that could be considered economic coal reserves under the terms and conditions of the then-current contract.

For assumed Black Butte mine production in the 2018 Fuel Plan, PacifiCorp has updated these reserve estimates. The estimated reserves have been [REDACTED] since the date of the 2015 reserve review, and have [REDACTED] based on discussions with Lighthouse [REDACTED]

[REDACTED] As of that date, Black Butte mine claimed permitted reserves of [REDACTED]

<sup>4</sup> Consistent with Table 4, incremental prices shown are weighted over the near-term, with exception of the SPRB pricing. SPRB prices are averaged over four years with equal annual volumes.

- 2018 Fuel Plan Option D – [REDACTED]
- 2018 Fuel Plan Option F [REDACTED]
- 2018 Fuel Plan Option F – [REDACTED]

### 3.2.6 Assumed SPRB Coal Pricing

Due to the Jim Bridger plant's distance from the SPRB, roughly 550 miles by rail, the Jim Bridger plant would source SPRB coal from the mines with the highest heat content (Btu/lb.) The economics of the purchase decision would target coal originating from three mines in the SPRB, Cloud Peak Energy Resources LLC's Antelope mine, Peabody COALSALES, LLC's North Antelope Rochelle Mine and Arch Coal Sales Company Inc.'s Black Thunder mine. These mines typically sell coal on an 8,800 Btu/lb. basis as opposed to other areas of the Powder River Basin that sell 8,400 Btu/lb. or lesser heat content coals.

The Powder River Basin is the largest coal mining region in the United States. As a result, standard 8,800 Btu/lb. and 8,400 Btu/lb. Powder River Basin coal is routinely traded, indexed and forecast. Assumed SPRB coal pricing used in the 2018 Fuel Plan is based on a long-term coal forecast published by EVA in September 2017.

### 3.2.7 Transportation

Bridger mine coal is delivered to the plant via conveyor belt, and the cost of conveying the coal is included in the delivered coal cost. The Jim Bridger plant is also connected by a rail spur to the Union Pacific Railroad mainline track. Union Pacific Railroad has the trackage rights to the mainline and spur to the Jim Bridger plant and, as a result, the Jim Bridger plant is captive to the Union Pacific Railroad for deliveries by rail. Deliveries from all sources other than Bridger mine are assumed to be delivered by the Union Pacific Railroad.

#### UNION PACIFIC RAILROAD INDICATIVE PRICING

Early in 2017, PacifiCorp requested that Union Pacific Railroad provide indicative rates to aid in evaluating increased SPRB coal deliveries to the Jim Bridger plant with an estimated start-up in [REDACTED]. PacifiCorp requested rates for deliveries ranging from [REDACTED] million tons per year. To better understand potential price discounts for added volume, rates for deliveries in both PacifiCorp and Union Pacific Railroad railcars were requested at various volume levels in the [REDACTED] per year range.

Union Pacific Railroad provided indicative rates in June 2017. The rates applied to the volume range previously specified, from [REDACTED] per year up to [REDACTED] per year and were provided in current dollars. However, Union Pacific Railroad did not provide information on volume discounts for specific volume ranges as requested, nor did Union Pacific Railroad provide specific rates for deliveries in PacifiCorp or Union Pacific Railroad railcars. Instead, it provided an estimated freight rate for planning purposes in the range of [REDACTED] per net ton, which included railroad owned railcars, but excluded a fuel component and quarterly escalation.

## UNION PACIFIC RAILROAD CONTRACT PRICING

In 2017, while negotiations took place with Black Butte mine for near-term coal supplies, near-term rail transportation negotiations were also conducted with Union Pacific Railroad. Similar to the Jim Bridger plant, the Black Butte mine is connected by a rail spur to Union Pacific Railroad's mainline track. Negotiations with Union Pacific Railroad concluded with a signed contract in February 2018. The transportation agreement includes the following key provisions as of January 1, 2018:

- Minimum volume: [REDACTED]
- Maximum volume: [REDACTED]
- Rail rates provided for shipments from:
  - Lighthouse's Black Butte mine - [REDACTED]
  - Wyoming's SPRB region - [REDACTED]
  - Westmoreland Kemmerer, LLC's Kemmerer mine located in Lincoln County, Wyoming - [REDACTED]
  - Peabody's Twentymile mine located in Routt County, Colorado - [REDACTED]
- All rates subject to escalation and fuel surcharge

## USE OF INDICATIVE AND CONTRACT PRICING

For SPRB deliveries, the lower end of the indicative rate range, [REDACTED] per ton, is used as of January 1, 2018, in any fueling option where more than [REDACTED] per year are delivered to the plant. This rate is then escalated at [REDACTED] (provided by IHS/Global Insights in Q3 2017) per year thereafter.

When SPRB deliveries are less than [REDACTED] per year, the contract rate is applied. For example, a [REDACTED] per ton contract rate is used as of January 1, 2018, in fueling options where only small volumes of SPRB coal is delivered to the plant. This rate is also escalated at a rate of [REDACTED] per year thereafter.

PacifiCorp owns 121 aluminum bottom-dump railcars with a net payload of 105 tons per car. Consistent with current operating practice for Black Butte mine deliveries, the [REDACTED] per ton rate is used and is escalated at a rate of [REDACTED] per year.

### 3.3 CAPITAL

PacifiCorp selected the consulting firm Burns & McDonnell (BMcD) to perform an independent capital evaluation of the plant modifications and capital expenditures required at the Jim Bridger plant to consume volumes, up to 100%, of SPRB coal. BMcD completed a comprehensive study in June 2017. The study outlined high priority plant modifications and the estimated costs in converting the Jim Bridger plant's main fuel source to SPRB coal. The study focused on required modification to several systems including coal handling & storage, rail delivery, mechanical process/power island, electrical, substation and overhead distribution and air permitting.

The required coal handling system modifications identified engineering controls that would be needed and relied upon to reduce and mitigate coal dust throughout the coal handling system. The study emphasized the importance of having adequate wash down capability by installing and utilizing fixed pipe wash down systems in existing coal reclaim and conveyor tunnels, crusher houses, tripper bays and in the rail unloading hopper facilities. Recommendations were made on how to safely and reliably handle SPRB coal: keep areas clean, eliminate ignition sources and detect spontaneous combustion with accumulated SPRB coal dust. These safety steps are designed to protect people, equipment, and enclosures from explosions due to the dangerous spontaneous combustion tendencies of SPRB coal.

Required modifications to the rail delivery system outlined in the study indicate that the current unloading configuration is

. SPRB coal requirements at this level require the plant to receive approximately

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<sup>5</sup> PacifiCorp also engaged RungePincockMinarco to evaluate the impact from converting to SPRB coal on the Jim Bridger plant's stockpile level and configuration. This study was used to verify the findings of the Burns & McDonnell study.



Table 6 below shows a summary outline of BMcD's total estimated costs, [REDACTED], associated with the different components referenced in their report.

**TABLE 6**

<b>Jim Bridger Plant - Burns &amp; McDonnell Estimated Capital Costs</b>	
	[REDACTED]
Coal Handling	\$ [REDACTED]
Coal Handling Additional	\$ [REDACTED]
Existing Conveyor Scraper Tower with Wind Fence	\$ [REDACTED]
New Loop	\$ [REDACTED]
Power Island Modifications (Unit 1-4)	\$ [REDACTED]
Power Island Modifications (Unit 1-3 Only)	\$ [REDACTED]
Pulverizer Steam Inerting (Units 1-4)	\$ [REDACTED]
Electrical	\$ [REDACTED]
T&D	\$ [REDACTED]
Air Permit	\$ [REDACTED]
<b>TOTAL</b>	<b>\$ [REDACTED]</b>
<b>Investment Total w/ Land/ROW Costs</b>	<b>\$ [REDACTED]</b>
<b>PacifiCorp Share (Includes AFUDC, Loadings)</b>	<b>\$ [REDACTED]</b>

## 4 FUEL SUPPLY MIX OF PHASE 2 FUELING OPTIONS

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The fueling options evaluated during Phase 2 are referenced as 2018 Fuel Plan Options D, E and F, including several variations on those primary options as described below. Please refer to Confidential Appendix B for detailed fueling mix and pricing information for each fueling option considered. The following summaries of the fuel supply mix, including average volumes for the near-term and long-term, for each fueling option evaluated are provided below:

### 4.1 OPTION D

#### Option D

- Near-term deliveries (2018-2021)

- Bridger mine

- Total deliveries – [REDACTED]
- PacifiCorp deliveries – [REDACTED]

- Black Butte mine

- Total deliveries – [REDACTED]
- PacifiCorp deliveries – [REDACTED]
- [REDACTED]

- Long-Term deliveries (2022-2037)

- Bridger mine

- [REDACTED]
- [REDACTED]
- [REDACTED]
- Total Deliveries – [REDACTED]
- PacifiCorp deliveries – [REDACTED]

- Black Butte mine

- [REDACTED]
- [REDACTED]
- [REDACTED]
- Total deliveries – [REDACTED]
- PacifiCorp deliveries – [REDACTED]

- SPRB

- SPRB deliveries from [REDACTED]
  - Total deliveries – [REDACTED]<sup>6</sup>
  - PacifiCorp deliveries – [REDACTED]

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<sup>6</sup> [REDACTED]

## 4.2 OPTION D ( )

Option D ( ) is a slight variation on Option D and contemplates . Option D ( ) assumes that in . Option D ( ) also assumes that the required capital investment is made to allow for the safe delivery and handling of a large volume of SPRB coal at that time.

### Option D ( )

- Near-term deliveries (2018-2021)
  - Bridger mine
    - Total deliveries –
    - PacifiCorp deliveries –
  - Black Butte mine
    - Total deliveries –
    - PacifiCorp deliveries –
    -
  
- Long-Term deliveries (2022-2037)
  - Bridger mine
    - 
    - 
    - 
    - Total Deliveries –
    - PacifiCorp deliveries –
  - Black Butte mine
    - 
    -
  - SPRB
    - SPRB deliveries
      - Total deliveries –
      - PacifiCorp deliveries –
      - Assumes plant capital (w/AFUDC and escalation) of
    -



### 4.3 OPTION E

Option E contemplates the closure of the Bridger mine in [REDACTED], as soon as practicable, and assumes [REDACTED] of the coal burned thereafter comes from the SPRB. This option assumes a required plant capital investment to safely and reliably deliver and consume large volumes of SPRB coal, approximately [REDACTED] million tons per year from [REDACTED]. The estimated investment is [REDACTED] million with AFUDC and escalation ([REDACTED] million PacifiCorp share) and includes a rail loop to comply with the railroad standard of unloading a unit train within six hours.

#### Option E

- Near-term deliveries (2018-2021)
  - Bridger mine
    - Total deliveries – [REDACTED]
    - PacifiCorp deliveries – [REDACTED]
  - Black Butte mine
    - Total deliveries – [REDACTED]
    - PacifiCorp deliveries – [REDACTED]
    - [REDACTED]
  
- Long-Term deliveries (2022-2037)
  - Bridger mine
    - Underground mining operations [REDACTED]
    - Surface mining operations [REDACTED]
    - Total Deliveries – [REDACTED]
    - PacifiCorp deliveries – [REDACTED]
  - Black Butte mine
    - [REDACTED]
    - [REDACTED]
  - SPRB
    - SPRB deliveries from [REDACTED]
      - Total deliveries – [REDACTED]
      - PacifiCorp deliveries – [REDACTED]
      - Assumes plant capital (w/AFUDC and escalation) of [REDACTED]
    - [REDACTED]

#### 4.4 OPTION F ( [REDACTED] )

Option F ( [REDACTED] ) considers the closure of the Bridger surface mining operations in [REDACTED] and the avoidance of [REDACTED] million ( [REDACTED] million PacifiCorp share) in development costs required to permit and mine Deadman Wash, further refining Option D.

##### Option F

- Near-term deliveries (2018-2021)
  - Bridger mine
    - Total deliveries – [REDACTED]
    - PacifiCorp deliveries – [REDACTED]
  - Black Butte mine
    - Total deliveries – [REDACTED]
    - PacifiCorp deliveries – [REDACTED]
    - [REDACTED]
  
- Long-Term deliveries (2022-2037)
  - Bridger mine
    - [REDACTED]
    - [REDACTED]
    - [REDACTED]
    - Total Deliveries – [REDACTED]
  - Black Butte mine
    - [REDACTED]
    - [REDACTED]
    - Total deliveries – [REDACTED]
    - PacifiCorp deliveries – [REDACTED]
    - For 2018-2037 time period
      - Total deliveries – [REDACTED]
      - PacifiCorp deliveries – [REDACTED]
  - SPRB
    - SPRB deliveries from [REDACTED]
      - [REDACTED]
        - [REDACTED]
      - Total deliveries – [REDACTED]
      - PacifiCorp deliveries – [REDACTED]

#### 4.5 OPTION F ( [REDACTED] )

Option F ( [REDACTED] ) is a variation of Option F ( [REDACTED] ). The primary difference is that this scenario is based on a Bridger mine plan delivering [REDACTED] million tons per year in the near-term and assumes Black Butte mine Proposal D, the [REDACTED] million tons per year proposal, is chosen in the near-term as well.

##### Option F ( [REDACTED] )

- Near-term deliveries (2018-2021)
  - Bridger mine
    - Total deliveries – [REDACTED]
    - PacifiCorp deliveries – [REDACTED]
  - Black Butte mine
    - Total deliveries – [REDACTED]
    - PacifiCorp deliveries – [REDACTED]
  
- Long-Term deliveries (2022-2037)
  - Bridger mine
    - [REDACTED]
    - [REDACTED]
    - [REDACTED]
    - Total Deliveries – [REDACTED]
    - PacifiCorp deliveries – [REDACTED]
  - Black Butte mine
    - [REDACTED]
    - Total deliveries – [REDACTED]
    - PacifiCorp deliveries – [REDACTED]
    - For 2018-2037 time period
      - Total deliveries – [REDACTED]
      - PacifiCorp deliveries – [REDACTED]
  - SPRB
    - SPRB deliveries [REDACTED]
      - [REDACTED]
        - [REDACTED]
      - Total deliveries – [REDACTED]
      - PacifiCorp deliveries – [REDACTED]

## 4.6 OPTION F (REDACTED)

Option F (REDACTED) is a slight variation on Option F and contemplates no longer purchasing Black Butte mine coal after the near-term Coal Supply Agreement ends. Option F (REDACTED) assumes that REDACTED coal replaces Black Butte mine coal in REDACTED. Option F (REDACTED) also assumes that the required capital investment is made to allow for the safe delivery and handling of a REDACTED.

Option F (REDACTED)

- Near-term deliveries (2018-2021)
  - Bridger mine
    - Total deliveries – REDACTED
    - PacifiCorp deliveries – REDACTED
  - Black Butte mine
    - Total deliveries – REDACTED
    - PacifiCorp deliveries – REDACTED
    - REDACTED
  
- Long-Term deliveries (2022-2037)
  - Bridger mine
    - REDACTED
    - REDACTED
    - REDACTED
    - Total Deliveries – REDACTED
    - PacifiCorp deliveries – REDACTED
  - Black Butte mine
    - REDACTED
    - REDACTED
  - SPRB
    - SPRB deliveries from REDACTED
      - Total deliveries – REDACTED
      - PacifiCorp deliveries – REDACTED
      - REDACTED
    - Peak deliveries will occur from 2029 through 2032 – REDACTED

## 5 PVRR ANALYSIS & RESULTS

Table 7 below shows the results of a PVRR analysis for each fueling option in the 2018 Fuel Plan. The PVRR analysis represents a present value revenue requirement analysis of the total delivered fuel costs and the estimated capital requirements for both the Jim Bridger plant and the Bridger mine, discounted by PacifiCorp’s weighted average cost of capital. A total dollar PVRR variance or differential has also been calculated for every fueling option comparing the total PVRR dollar for each fueling option against Option [REDACTED]. Also included in Table 7 is a financial ranking from 1 to 6 for each of the six fueling options. The Table shows Option [REDACTED] is ranked [REDACTED], and Option [REDACTED] is ranked number [REDACTED]. The other fueling options fall between these two options. Additional discussion on risk assessment for each fueling option is shown below.

**TABLE 7**

Jim Bridger Plant Fueling Evaluation (2018-2037) - PacifiCorp Share								
PVRR Summary PAC Portion	PVRR (000's)	PVRR Differential (from lowest \$)	Financial Ranking (low to high)	Percent Change (%)	Risk Ranking (low to high)	Project Ranking (Weighted - Financial 60%, Risk, 40%)	Plant Capital (w/AFUDC and escalation, 000's)	Bridger Coal Capital (2018-LOM, escalated, 000's)
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Table 8 presents a risk table for each option and outlines the specific categories that have been considered in the risk evaluation analysis.

**TABLE 8**

Jim Bridger Plant Fueling Risk Evaluation (2018-2037)							
Options	Risk Ranking (low to high)	Composite Project Risk Score	Incremental Capital	Coal Market	Power Market Volatility	Jim Bridger Plant Environmental Compliance	Deadman Wash Lease Permitting
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

The different categories making up the defined risk profile include (1) incremental capital – the risks associated with the total costs of incremental capital expenditures related to each fueling option, (2) coal market – risks associated with adequate coal supplies, as well as coal & transportation price escalation, (3) power market volatility – risks associated with power market price volatility related to changing natural gas prices, the impacts of renewable energy sources impacting GRID dispatch, all which could result in reduced coal consumption, (4) environmental compliance – risks associated with new environmental regulations that could reduce coal generation at the Jim Bridger plant, and (5) Deadman Wash permitting – risks associated with being able to permit the Deadman Wash coal reserve tract in the estimated number of years that would allow the Bridger mine to access the Deadman Wash coal reserve tract and achieve the projected mine cost savings.

For each fueling option under each risk category, a number 1, 2, or 3 has been assigned. Number 1 is designated as “most favorable and low risk,” number 2 is “less favorable and moderate risk,” and number 3 is “least favorable and high risk.” The summation of the assigned risk number for each category for each fueling option, results in an overall “composite project risk” score.

As shown in Table 8, the fueling option with the highest composite risk score is fueling Option [REDACTED] with a score of [REDACTED]. Option [REDACTED] requires incremental capital associated with both the Deadman Wash coal tract as well as new plant capital to support future SPRB coal deliveries. As such, there is added risk for Option [REDACTED] associated with the capital projects meeting projected cost estimates. Furthermore, there is additional risk associated with the permitting of the Deadman Wash coal reserves in sufficient time which allows for the projected coal production and deliveries from the Bridger mine to be realized. An additional sensitivity was run that determined that for each year of delay in the Deadman Wash permit, the total PVRR amount calculated for Option [REDACTED] increases by approximately [REDACTED]. This further closes the PVRR differential gap between Option [REDACTED] and the other fueling options. The fuel option with the lowest composite risk score, or most favorable score, is Option [REDACTED]. Under this option there is no incremental capital required and there is very low risk associated with the coal supplies. The other five fueling options have a composite risk score that falls between Option [REDACTED] and Option [REDACTED].

All six fuel options are ranked on ascending order from 1 to 6 based upon their composite risk score. Option [REDACTED] has the most favorable risk option score of [REDACTED], while Option [REDACTED] has the worst or highest ranking of [REDACTED].

From the financial and risk rankings, an overall project ranking has been determined for each fueling option. The overall project weighting is the result of assigning a weighting of [REDACTED] to the financial ranking and [REDACTED] to the risk ranking.

As seen in Table 7, in spite of Option [REDACTED] having the financial ranking of [REDACTED], it has a risk ranking of [REDACTED]. This results in an overall project ranking of [REDACTED]. Option [REDACTED], has a financial ranking of [REDACTED], but has the lowest risk ranking of [REDACTED]. With the weighting between financial and risk rankings, Option [REDACTED] has the best overall project ranking and is the preferred fueling option. The fueling option with the worst overall project ranking of [REDACTED] is Option [REDACTED]. The remaining fueling options are ranked in between Option [REDACTED] and Option [REDACTED].<sup>7</sup>

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<sup>7</sup> Additional sensitivity analysis was performed on two options. (1) Plant capital was reduced in Option [REDACTED] for the assumed removal of the rail loop. This change resulted in a reduction to the PVRR differential for Option [REDACTED] as the savings in capital were offset by increased transportation costs resulting from increased coal unloading times. (2) Option [REDACTED] was evaluated assuming that approximately [REDACTED] was purchased in years requiring high volumes of [REDACTED], deliveries in excess of [REDACTED]. The [REDACTED] purchases of roughly [REDACTED], reduced Black Butte mine volumes in those years. Due to the higher delivered fuel cost of the [REDACTED], this change resulted in an increase to the PVRR differential for Option [REDACTED].

## 6 CONCLUSION

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Over the past two years, PacifiCorp has developed a long-term fueling strategy for the Jim Bridger plant to align with the Company's IRP and respond to changing fuel requirements due to market conditions. Mine plans have been run, evaluated and reviewed for the Bridger mine. The various mine options have provided information and direction in determining the optimal total tonnage mix at the Bridger mine for both the underground mine and the surface mine. Different mine closure dates for both the underground mine and the surface mining operations have been considered and evaluated.

Over many months, numerous discussions and negotiations occurred with Lighthouse and the Union Pacific Railroad to develop new near-term coal and transportation agreements. Through these negotiations, new contract rates from different coal regions were obtained. Additionally, long-term indicative rail rates from mines located in the SPRB were provided by the Union Pacific Railroad for coal deliveries to the plant.

In addition to the estimated future coal and transportation rates provided, PacifiCorp also contracted for two consulting studies which provided important information in the PVRR analysis. These two studies were requested to better understand the overall fueling impacts, capital requirements and estimated costs related to a full or partial SPRB fuel switch at the plant. BMCD, a reputable engineering consulting company, completed a comprehensive fuel impact study in June 2017. The study outlined the relevant issues and total estimated costs that would be required to undertake a SPRB coal conversion at the plant.

After considering all of the factors influencing this long-term fueling strategy, six different fueling options were developed and evaluated. Based upon the results of the detailed PVRR analysis, which was further enhanced by utilizing a risk profile, Option [REDACTED] is the current least-cost, least-risk option and the strategy PacifiCorp is currently pursuing which includes the following:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

While the current analyses shows Option [REDACTED] as the least-cost, least-risk option, Option [REDACTED] is the lowest cost option and will continue to be analyzed. PacifiCorp will continue to evaluate the best fueling option for the Jim Bridger plant taking into consideration both cost and risk of the different options and will change the long-term fuel plan as necessary to provide the least-cost, least-risk long-term fuel supply for the Jim Bridger plant. Furthermore, both Options [REDACTED] and Option [REDACTED], allow PacifiCorp to [REDACTED]

This strategy allows PacifiCorp and the plant to maintain significant fuel supply flexibility related to future decisions impacting the plant's generation and potential unit closures. [REDACTED]



# Confidential Appendix A

**Jim Bridger Plant - Generation Summary  
 Generation Forecast  
 All Participant Shares - In Millions**

Plan Comparison	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total
<b>Dec-'15 Long Term Fuel Plan</b>	[REDACTED]																				
MMBtu's Required																					
Forecasted Generation (MWh)																					
<b>2018 Fuel Plan</b>	[REDACTED]																				
MMBtu's Required																					
Forecasted Generation (MWh)																					
<b>Variance</b>	[REDACTED]																				
MMBtu's Required																					
Forecasted Generation (MWh)																					
Percent Change (%)	[REDACTED]																				

REDACTED

# CONFIDENTIAL APPENDIX B-OPTION D

Jim Bridger Plant - Option D  
 Coal Received and Consumed  
 PacifiCorp Share - (in millions)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total
<b>Bridger Coal Company</b>																					
Tons																					
MMBTUs																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Black Butte</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Regional Coal</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Powder River Basin</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Total Coal Received</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Total Coal Consumed</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					

# CONFIDENTIAL APPENDIX B-OPTION D ( )

Jim Bridger Plant - Option D ( )  
 Coal Received and Consumed  
 PacifiCorp Share - (in millions)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total	
<b>Bridger Coal Company</b>																						
Tons																						
MMBTUs																						
Dollars																						
\$/Ton																						
\$/MMBTU																						
<b>Black Butte</b>																						
Tons																						
MMBTU																						
Dollars																						
\$/Ton																						
\$/MMBTU																						
<b>Regional Coal</b>																						
Tons																						
MMBTU																						
Dollars																						
\$/Ton																						
\$/MMBTU																						
<b>Powder River Basin</b>																						
Tons																						
MMBTU																						
Dollars																						
\$/Ton																						
\$/MMBTU																						
<b>Total Coal Received</b>																						
Tons																						
MMBTU																						
Dollars																						
\$/Ton																						
\$/MMBTU																						
<b>Total Coal Consumed</b>																						
Tons																						
MMBTU																						
Dollars																						
\$/Ton																						
\$/MMBTU																						

# CONFIDENTIAL APPENDIX B-OPTION E

Jim Bridger Plant - Option E  
 Coal Received and Consumed  
 PacifiCorp Share - (in millions)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total
[REDACTED]																					
<b>Bridger Coal Company</b>																					
Tons																					
MMBTUs																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Black Butte</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Regional Coal</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
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<b>Powder River Basin</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Total Coal Received</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Total Coal Consumed</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					

# CONFIDENTIAL APPENDIX B-OPTION F

Jim Bridger Plant - Option F  
Coal Received and Consumed  
PacifiCorp Share - (in millions)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total	
<b>Bridger Coal Company</b>																						
Tons																						
MMBTUs																						
Dollars																						
\$/Ton																						
\$/MMBTU																						
<b>Black Butte</b>																						
Tons																						
MMBTU																						
Dollars																						
\$/Ton																						
\$/MMBTU																						
<b>Regional Coal</b>																						
Tons																						
MMBTU																						
Dollars																						
\$/Ton																						
\$/MMBTU																						
<b>Powder River Basin</b>																						
Tons																						
MMBTU																						
Dollars																						
\$/Ton																						
\$/MMBTU																						
<b>Total Coal Received</b>																						
Tons																						
MMBTU																						
Dollars																						
\$/Ton																						
\$/MMBTU																						
<b>Total Coal Consumed</b>																						
Tons																						
MMBTU																						
Dollars																						
\$/Ton																						
\$/MMBTU																						

# CONFIDENTIAL APPENDIX B-OPTION F ( )

Jim Bridger Plant - Option F ( )  
Coal Received and Consumed  
PacifiCorp Share - (in millions)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total
<b>Bridger Coal Company</b>																					
Tons																					
MMBTUs																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Black Butte</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Regional Coal</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Powder River Basin</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Total Coal Received</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					
<b>Total Coal Consumed</b>																					
Tons																					
MMBTU																					
Dollars																					
\$/Ton																					
\$/MMBTU																					

# CONFIDENTIAL APPENDIX B-OPTION F ( )

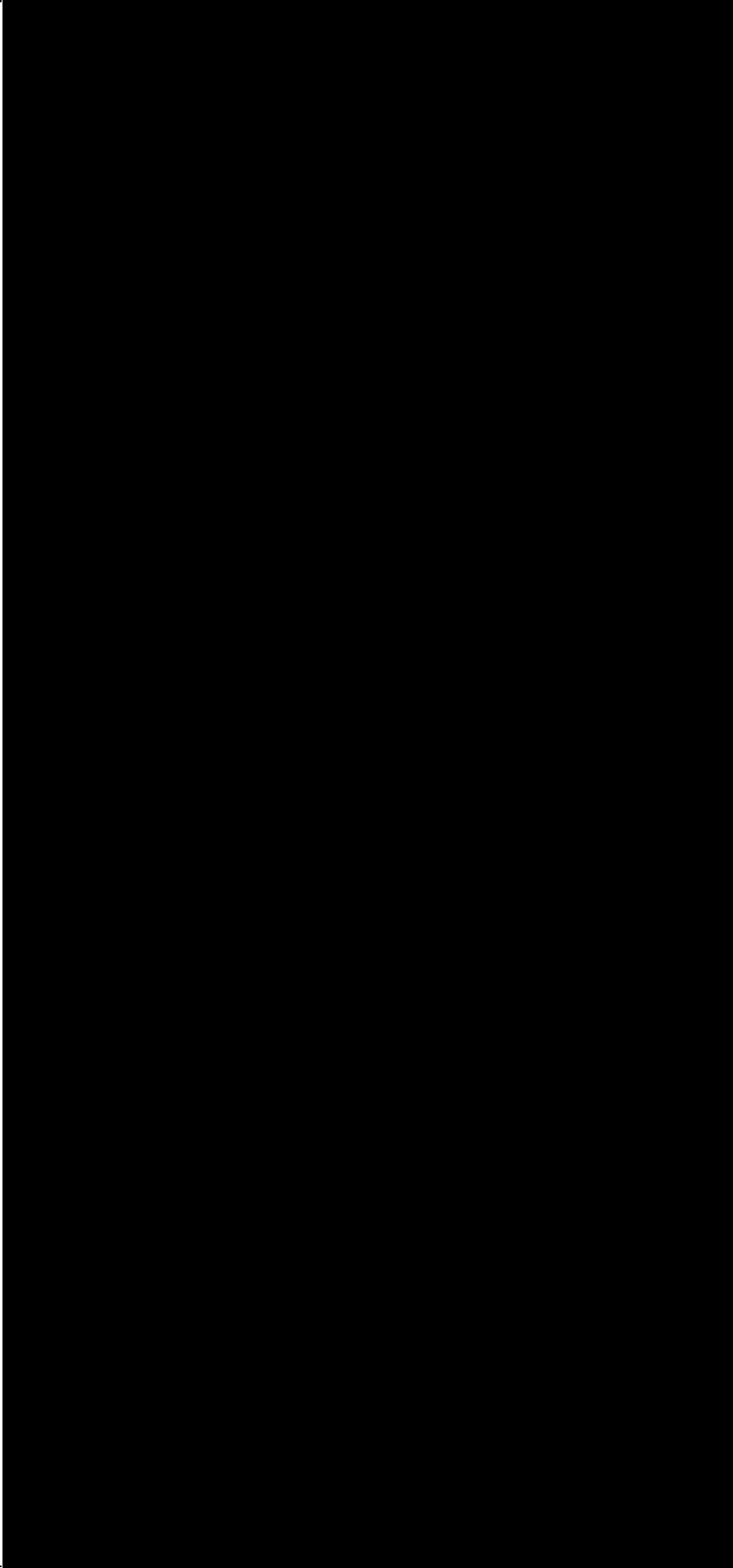
Jim Bridger Plant - Option F ( )  
Coal Received and Consumed  
PacifiCorp Share - (in millions)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total	
<b>Bridger Coal Company</b>																						
Tons																						
MMBTUs																						
Dollars																						
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<b>Black Butte</b>																						
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<b>Powder River Basin</b>																						
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<b>Total Coal Received</b>																						
Tons																						
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<b>Total Coal Consumed</b>																						
Tons																						
MMBTU																						
Dollars																						
\$/Ton																						
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# CONFIDENTIAL APPENDIX C-RISK RANKING

Jim Bridger Plant Fueling Risk Evaluation (2018-2037)

Options	Risk Ranking (low to high)	Composite Project Risk Score	Incremental Capital	Coal Market	Power Market Volatility	Jim Bridger Plant Environmental Compliance	Deadman Wash Lease Permitting
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## CERTIFICATE OF SERVICE

I certify that I served a true and correct copy of PacifiCorp's Compliance Filing on the parties listed below via electronic mail in compliance with OAR 860-001-0180.

### Service List UE 323

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Dated this 30<sup>th</sup> day of March, 2018.

  
Jennifer Angell  
Supervisor, Regulatory Operations