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Portland, Oregon 97232

December 1, 2020

VIA ELECTRONIC FILING

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

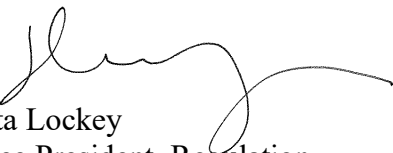
Attn: Filing Center

RE: UE 374—Response to ALJ Bench Requests Set 4 (1-4)

Pursuant to Administrative Law Judge (ALJ) Alison Lackey's Ruling of November 20, 2020, enclosed for filing in this docket are the Responses to ALJ Bench Request Nos. 4.1 through 4.4, including attachments.

Please direct any questions regarding this filing to Cathie Allen at (503) 813-5934.

Sincerely,



Etta Lockey
Vice President, Regulation

Enclosures

UE 374/PacifiCorp
December 1, 2020
ALJ Bench Request 4.1

ALJ Bench Request 4.1

Please provide actual Jim Bridger NOx emissions from 2010 to 2014. Please provide:

- (a) Electricity generation (MWb)
- (b) Nitrogen oxide emissions (tons)
- (c) Nitrogen oxide emissions rate (lbs/MWh)

We request the amounts be shown for the entire Jim Bridger plant (including Idaho Power Company's share), and for each unit individually. We also request the amounts be shown by total for each year, and for each month.

Response to ALJ Bench Request 4.1

Please refer to Attachment ALJ Bench Request 4.1 for the following data elements:

- (a) Electrical generation (gross MWh)
- (b) Nitrogen oxide emissions (tons)
- (c) Nitrogen oxide emissions rate (lbs/MWh)

Data for gross MWh and Nitrogen oxide emissions are found on the Clean Air Markets Database at <https://ampd.epa.gov/ampd/>

		NOx (tons)	Heat Input (MMBtu)	Coal Heating Value (BTU/lb)
Jim Bridger Unit 1	2017	2,861	31,162,650	9,194
Jim Bridger Unit 1	2018	2,380	23,838,587	9,285
Jim Bridger Unit 1	2019	2,795	28,952,154	9,341
Total (2017-2019)		8,037	83,953,390	
Average Unit 1 Coal Heating Value (BTU/lb)				9,274

Average Unit 1 NOx Emission Rate (lb/MMBtu)	0.191
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		NOx (tons)	Heat Input (MMBtu)	Coal Heating Value (BTU/lb)
Jim Bridger Unit 2	2017	2,463	26,190,658	9,188
Jim Bridger Unit 2	2018	2,748	28,796,835	9,285
Jim Bridger Unit 2	2019	2,688	30,444,359	9,347
Total (2017-2019)		7,899	85,431,852	
Average Unit 2 Coal Heating Value (BTU/lb)				9,273

Average Unit 2 NOx Emission Rate (lb/MMBtu)	0.185
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		NOx (tons)	Heat Input (MMBtu)	Coal Heating Value (BTU/lb)
Jim Bridger Unit 3	2017	825	33,169,658	9,190
Jim Bridger Unit 3	2018	794	31,802,277	9,286
Jim Bridger Unit 3	2019	757	29,287,057	9,348
Total (2017-2019)		2,377	94,258,992	
Average Unit 3 Coal Heating Value (BTU/lb)				9,275

Average Unit 3 NOx Emission Rate (lb/MMBtu)	0.050
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		NOx (tons)	Heat Input (MMBtu)	Coal Heating Value (BTU/lb)
Jim Bridger Unit 4	2017	812	33,082,042	9,187
Jim Bridger Unit 4	2018	745	30,193,965	9,245
Jim Bridger Unit 4	2019	872	31,995,178	9,352
Total (2017-2019)		2,429	95,271,186	
Average Unit 4 Coal Heating Value (BTU/lb)				9,261

Average Unit 4 NOx Emission Rate (lb/MMBtu)	0.051
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Average Units 1-4 NOx Emission Rate (lb/MMBtu)	0.119
Average Units 1-4 Coal Heating Value (BTU/lb)	9,271

State	Facility Name	Facility ID (ORISPL)	Unit	Year	Program(s)	Gross Load (MW-h)	Avg. NOx Rate (lb/MMBtu)	NOx (tons)	Avg. NOx Rate (lb/gMWh)
WY	Jim Bridger	8066	Unit1	2010	ARP	3,196,123	0.254	3,927	2.458
WY	Jim Bridger	8066	Unit 2	2010	ARP	4,311,939	0.200	4,585	2.127
WY	Jim Bridger	8066	Unit 3	2010	ARP	4,184,067	0.208	4,211	2.013
WY	Jim Bridger	8066	Unit 4	2010	ARP	4,134,931	0.212	4,285	2.072
2010 Plant Totals						15,827,061		17,008	
WY	Jim Bridger	8066	Unit1	2011	ARP	3,595,752	0.193	3,356	1.867
WY	Jim Bridger	8066	Unit 2	2011	ARP	3,476,658	0.185	3,367	1.937
WY	Jim Bridger	8066	Unit 3	2011	ARP	2,928,226	0.198	2,857	1.951
WY	Jim Bridger	8066	Unit 4	2011	ARP	3,668,730	0.198	3,595	1.960
2011 Plant Totals						13,669,366		13,175	
WY	Jim Bridger	8066	Unit1	2012	ARP	3,817,318	0.180	3,283	1.720
WY	Jim Bridger	8066	Unit 2	2012	ARP	3,562,889	0.187	3,536	1.985
WY	Jim Bridger	8066	Unit 3	2012	ARP	3,862,941	0.197	3,726	1.929
WY	Jim Bridger	8066	Unit 4	2012	ARP	3,298,579	0.194	3,217	1.950
2012 Plant Totals						14,541,728		13,762	
WY	Jim Bridger	8066	Unit1	2013	ARP	4,117,575	0.186	3,657	1.776
WY	Jim Bridger	8066	Unit 2	2013	ARP	3,695,296	0.194	3,714	2.010
WY	Jim Bridger	8066	Unit 3	2013	ARP	3,995,778	0.198	3,957	1.981
WY	Jim Bridger	8066	Unit 4	2013	ARP	4,008,267	0.208	4,013	2.002
2013 Plant Totals						15,816,915		15,341	
WY	Jim Bridger	8066	Unit1	2014	ARP	3,381,707	0.185	2,997	1.773
WY	Jim Bridger	8066	Unit 2	2014	ARP	3,949,177	0.187	3,696	1.872
WY	Jim Bridger	8066	Unit 3	2014	ARP	3,834,914	0.195	3,762	1.962
WY	Jim Bridger	8066	Unit 4	2014	ARP	3,839,283	0.199	3,446	1.795
2014 Plant Totals						15,005,081		13,902	

State	Facility Name	Facility ID (ORISPL)	Unit	Month	Year	Program(s)	Gross Load (MW-h)	Avg. NOx Rate (lb/MMBtu)	NOx (tons)	Avg. NOx Rate (lb/gMWh)
WY	Jim Bridger	8066	Unit1	1	2010	ARP	342,346	0.410	699	4.086
WY	Jim Bridger	8066	Unit1	2	2010	ARP	334,740	0.422	680	4.060
WY	Jim Bridger	8066	Unit1	3	2010	ARP	335,515	0.398	644	3.838
WY	Jim Bridger	8066	Unit1	4	2010	ARP				
WY	Jim Bridger	8066	Unit1	5	2010	ARP				
WY	Jim Bridger	8066	Unit1	6	2010	ARP	37,908	0.123	36	1.874
WY	Jim Bridger	8066	Unit1	7	2010	ARP	377,253	0.194	326	1.727
WY	Jim Bridger	8066	Unit1	8	2010	ARP	359,745	0.190	316	1.759
WY	Jim Bridger	8066	Unit1	9	2010	ARP	295,961	0.184	255	1.724
WY	Jim Bridger	8066	Unit1	10	2010	ARP	369,488	0.173	301	1.627
WY	Jim Bridger	8066	Unit1	11	2010	ARP	359,106	0.181	307	1.709
WY	Jim Bridger	8066	Unit1	12	2010	ARP	384,054	0.207	364	1.896
WY	Jim Bridger	8066	Unit 2	1	2010	ARP	400,007	0.214	444	2.218
WY	Jim Bridger	8066	Unit 2	2	2010	ARP	353,789	0.216	408	2.309
WY	Jim Bridger	8066	Unit 2	3	2010	ARP	343,528	0.198	353	2.053
WY	Jim Bridger	8066	Unit 2	4	2010	ARP	359,135	0.189	351	1.954
WY	Jim Bridger	8066	Unit 2	5	2010	ARP	391,539	0.203	423	2.162
WY	Jim Bridger	8066	Unit 2	6	2010	ARP	276,234	0.187	288	2.084
WY	Jim Bridger	8066	Unit 2	7	2010	ARP	317,168	0.208	352	2.219
WY	Jim Bridger	8066	Unit 2	8	2010	ARP	381,359	0.197	396	2.077
WY	Jim Bridger	8066	Unit 2	9	2010	ARP	385,730	0.197	410	2.125
WY	Jim Bridger	8066	Unit 2	10	2010	ARP	347,210	0.183	350	2.017
WY	Jim Bridger	8066	Unit 2	11	2010	ARP	363,929	0.207	400	2.200
WY	Jim Bridger	8066	Unit 2	12	2010	ARP	392,306	0.197	410	2.090
WY	Jim Bridger	8066	Unit 3	1	2010	ARP	321,490	0.200	310	1.929
WY	Jim Bridger	8066	Unit 3	2	2010	ARP	368,734	0.221	369	2.001
WY	Jim Bridger	8066	Unit 3	3	2010	ARP	409,400	0.207	414	2.025
WY	Jim Bridger	8066	Unit 3	4	2010	ARP	318,266	0.205	318	1.995
WY	Jim Bridger	8066	Unit 3	5	2010	ARP	294,647	0.188	280	1.898
WY	Jim Bridger	8066	Unit 3	6	2010	ARP	296,359	0.181	264	1.781
WY	Jim Bridger	8066	Unit 3	7	2010	ARP	384,667	0.224	414	2.152
WY	Jim Bridger	8066	Unit 3	8	2010	ARP	350,223	0.221	374	2.135
WY	Jim Bridger	8066	Unit 3	9	2010	ARP	392,062	0.217	404	2.059
WY	Jim Bridger	8066	Unit 3	10	2010	ARP	297,202	0.212	301	2.025
WY	Jim Bridger	8066	Unit 3	11	2010	ARP	356,056	0.202	355	1.993
WY	Jim Bridger	8066	Unit 3	12	2010	ARP	394,956	0.211	409	2.071
WY	Jim Bridger	8066	Unit 4	1	2010	ARP	408,336	0.223	439	2.151
WY	Jim Bridger	8066	Unit 4	2	2010	ARP	368,935	0.221	389	2.111
WY	Jim Bridger	8066	Unit 4	3	2010	ARP	314,019	0.201	298	1.896
WY	Jim Bridger	8066	Unit 4	4	2010	ARP	389,316	0.221	399	2.048
WY	Jim Bridger	8066	Unit 4	5	2010	ARP	396,281	0.213	415	2.094
WY	Jim Bridger	8066	Unit 4	6	2010	ARP	172,162	0.202	173	2.012
WY	Jim Bridger	8066	Unit 4	7	2010	ARP	395,867	0.213	424	2.140
WY	Jim Bridger	8066	Unit 4	8	2010	ARP	316,880	0.224	356	2.249
WY	Jim Bridger	8066	Unit 4	9	2010	ARP	390,060	0.222	427	2.189
WY	Jim Bridger	8066	Unit 4	10	2010	ARP	260,823	0.187	242	1.855
WY	Jim Bridger	8066	Unit 4	11	2010	ARP	342,163	0.202	340	1.989
WY	Jim Bridger	8066	Unit 4	12	2010	ARP	380,083	0.204	383	2.013

ALJ Bench Request 4.1

State	Facility Name	Facility ID (ORISPL)	Unit	Month	Year	Program(s)	Gross Load (MW-h)	Avg. NOx Rate (lb/MMBtu)	NOx (tons)	Avg. NOx Rate (lb/gMWh)
WY	Jim Bridger	8066	Unit1	1	2011	ARP	107,507	0.175	99	1.834
WY	Jim Bridger	8066	Unit1	2	2011	ARP	285,849	0.197	266	1.861
WY	Jim Bridger	8066	Unit1	3	2011	ARP	336,407	0.203	334	1.986
WY	Jim Bridger	8066	Unit1	4	2011	ARP	313,279	0.197	303	1.936
WY	Jim Bridger	8066	Unit1	5	2011	ARP	256,432	0.180	216	1.682
WY	Jim Bridger	8066	Unit1	6	2011	ARP	266,533	0.179	231	1.737
WY	Jim Bridger	8066	Unit1	7	2011	ARP	307,650	0.202	303	1.971
WY	Jim Bridger	8066	Unit1	8	2011	ARP	357,886	0.204	352	1.968
WY	Jim Bridger	8066	Unit1	9	2011	ARP	349,338	0.189	303	1.738
WY	Jim Bridger	8066	Unit1	10	2011	ARP	332,017	0.188	295	1.779
WY	Jim Bridger	8066	Unit1	11	2011	ARP	296,872	0.181	265	1.785
WY	Jim Bridger	8066	Unit1	12	2011	ARP	385,979	0.206	388	2.010
WY	Jim Bridger	8066	Unit 2	1	2011	ARP	352,900	0.200	377	2.139
WY	Jim Bridger	8066	Unit 2	2	2011	ARP	284,231	0.181	269	1.894
WY	Jim Bridger	8066	Unit 2	3	2011	ARP	226,175	0.179	217	1.921
WY	Jim Bridger	8066	Unit 2	4	2011	ARP	149,656	0.170	135	1.808
WY	Jim Bridger	8066	Unit 2	5	2011	ARP	196,814	0.167	167	1.699
WY	Jim Bridger	8066	Unit 2	6	2011	ARP	266,066	0.178	243	1.828
WY	Jim Bridger	8066	Unit 2	7	2011	ARP	319,516	0.186	305	1.911
WY	Jim Bridger	8066	Unit 2	8	2011	ARP	360,676	0.188	352	1.953
WY	Jim Bridger	8066	Unit 2	9	2011	ARP	333,355	0.181	309	1.853
WY	Jim Bridger	8066	Unit 2	10	2011	ARP	390,613	0.194	391	2.003
WY	Jim Bridger	8066	Unit 2	11	2011	ARP	249,914	0.195	255	2.038
WY	Jim Bridger	8066	Unit 2	12	2011	ARP	346,738	0.198	346	1.995
WY	Jim Bridger	8066	Unit 3	1	2011	ARP	359,800	0.220	388	2.158
WY	Jim Bridger	8066	Unit 3	2	2011	ARP	248,640	0.219	271	2.184
WY	Jim Bridger	8066	Unit 3	3	2011	ARP	259,428	0.196	249	1.921
WY	Jim Bridger	8066	Unit 3	4	2011	ARP	234,165	0.184	210	1.798
WY	Jim Bridger	8066	Unit 3	5	2011	ARP				
WY	Jim Bridger	8066	Unit 3	6	2011	ARP	-	0.015	0	
WY	Jim Bridger	8066	Unit 3	7	2011	ARP	174,128	0.189	175	2.015
WY	Jim Bridger	8066	Unit 3	8	2011	ARP	348,080	0.197	327	1.881
WY	Jim Bridger	8066	Unit 3	9	2011	ARP	342,665	0.198	330	1.923
WY	Jim Bridger	8066	Unit 3	10	2011	ARP	339,330	0.196	325	1.914
WY	Jim Bridger	8066	Unit 3	11	2011	ARP	276,643	0.189	251	1.816
WY	Jim Bridger	8066	Unit 3	12	2011	ARP	345,342	0.196	329	1.905
WY	Jim Bridger	8066	Unit 4	1	2011	ARP	361,296	0.196	345	1.910
WY	Jim Bridger	8066	Unit 4	2	2011	ARP	233,410	0.177	199	1.702
WY	Jim Bridger	8066	Unit 4	3	2011	ARP	274,466	0.210	282	2.058
WY	Jim Bridger	8066	Unit 4	4	2011	ARP	218,658	0.202	213	1.945
WY	Jim Bridger	8066	Unit 4	5	2011	ARP	299,262	0.184	282	1.884
WY	Jim Bridger	8066	Unit 4	6	2011	ARP	298,182	0.180	267	1.789
WY	Jim Bridger	8066	Unit 4	7	2011	ARP	320,759	0.200	316	1.970
WY	Jim Bridger	8066	Unit 4	8	2011	ARP	372,657	0.212	396	2.124
WY	Jim Bridger	8066	Unit 4	9	2011	ARP	268,118	0.195	263	1.961
WY	Jim Bridger	8066	Unit 4	10	2011	ARP	325,676	0.198	311	1.911
WY	Jim Bridger	8066	Unit 4	11	2011	ARP	318,421	0.209	325	2.041
WY	Jim Bridger	8066	Unit 4	12	2011	ARP	377,820	0.210	397	2.101

ALJ Bench Request 4.1

State	Facility Name	Facility ID (ORISPL)	Unit	Month	Year	Program(s)	Gross Load (MW-h)	Avg. NOx Rate (lb/MMBtu)	NOx (tons)	Avg. NOx Rate (lb/gMWh)
WY	Jim Bridger	8066	Unit1	1	2012	ARP	379,904	0.190	344	1.810
WY	Jim Bridger	8066	Unit1	2	2012	ARP	346,716	0.183	297	1.712
WY	Jim Bridger	8066	Unit1	3	2012	ARP	257,072	0.177	217	1.686
WY	Jim Bridger	8066	Unit1	4	2012	ARP	194,254	0.186	172	1.770
WY	Jim Bridger	8066	Unit1	5	2012	ARP	252,466	0.171	209	1.659
WY	Jim Bridger	8066	Unit1	6	2012	ARP	246,136	0.168	202	1.643
WY	Jim Bridger	8066	Unit1	7	2012	ARP	304,973	0.170	251	1.643
WY	Jim Bridger	8066	Unit1	8	2012	ARP	365,589	0.180	311	1.701
WY	Jim Bridger	8066	Unit1	9	2012	ARP	375,564	0.186	330	1.758
WY	Jim Bridger	8066	Unit1	10	2012	ARP	377,293	0.197	349	1.850
WY	Jim Bridger	8066	Unit1	11	2012	ARP	339,827	0.176	291	1.712
WY	Jim Bridger	8066	Unit1	12	2012	ARP	377,520	0.173	310	1.644
WY	Jim Bridger	8066	Unit 2	1	2012	ARP	319,563	0.196	325	2.032
WY	Jim Bridger	8066	Unit 2	2	2012	ARP	328,371	0.182	313	1.909
WY	Jim Bridger	8066	Unit 2	3	2012	ARP	277,549	0.176	261	1.877
WY	Jim Bridger	8066	Unit 2	4	2012	ARP	66,310	0.180	64	1.936
WY	Jim Bridger	8066	Unit 2	5	2012	ARP	159,565	0.172	152	1.901
WY	Jim Bridger	8066	Unit 2	6	2012	ARP	303,635	0.169	278	1.829
WY	Jim Bridger	8066	Unit 2	7	2012	ARP	321,630	0.180	319	1.982
WY	Jim Bridger	8066	Unit 2	8	2012	ARP	346,403	0.191	341	1.968
WY	Jim Bridger	8066	Unit 2	9	2012	ARP	366,412	0.205	396	2.162
WY	Jim Bridger	8066	Unit 2	10	2012	ARP	370,436	0.198	382	2.065
WY	Jim Bridger	8066	Unit 2	11	2012	ARP	349,837	0.188	344	1.967
WY	Jim Bridger	8066	Unit 2	12	2012	ARP	353,177	0.196	362	2.050
WY	Jim Bridger	8066	Unit 3	1	2012	ARP	350,336	0.208	347	1.982
WY	Jim Bridger	8066	Unit 3	2	2012	ARP	325,310	0.211	327	2.008
WY	Jim Bridger	8066	Unit 3	3	2012	ARP	285,743	0.189	261	1.829
WY	Jim Bridger	8066	Unit 3	4	2012	ARP	245,370	0.183	221	1.798
WY	Jim Bridger	8066	Unit 3	5	2012	ARP	289,390	0.173	252	1.743
WY	Jim Bridger	8066	Unit 3	6	2012	ARP	341,343	0.198	329	1.928
WY	Jim Bridger	8066	Unit 3	7	2012	ARP	320,937	0.188	294	1.835
WY	Jim Bridger	8066	Unit 3	8	2012	ARP	354,605	0.210	362	2.042
WY	Jim Bridger	8066	Unit 3	9	2012	ARP	361,957	0.204	358	1.976
WY	Jim Bridger	8066	Unit 3	10	2012	ARP	302,224	0.203	306	2.027
WY	Jim Bridger	8066	Unit 3	11	2012	ARP	330,701	0.192	318	1.921
WY	Jim Bridger	8066	Unit 3	12	2012	ARP	355,022	0.199	351	1.980
WY	Jim Bridger	8066	Unit 4	1	2012	ARP	345,679	0.194	327	1.893
WY	Jim Bridger	8066	Unit 4	2	2012	ARP	327,156	0.194	308	1.882
WY	Jim Bridger	8066	Unit 4	3	2012	ARP	284,202	0.170	233	1.642
WY	Jim Bridger	8066	Unit 4	4	2012	ARP	82,439	0.183	71	1.733
WY	Jim Bridger	8066	Unit 4	5	2012	ARP				
WY	Jim Bridger	8066	Unit 4	6	2012	ARP	157,977	0.171	141	1.782
WY	Jim Bridger	8066	Unit 4	7	2012	ARP	311,502	0.197	305	1.961
WY	Jim Bridger	8066	Unit 4	8	2012	ARP	354,984	0.192	342	1.928
WY	Jim Bridger	8066	Unit 4	9	2012	ARP	367,351	0.219	410	2.232
WY	Jim Bridger	8066	Unit 4	10	2012	ARP	369,784	0.196	373	2.018
WY	Jim Bridger	8066	Unit 4	11	2012	ARP	341,920	0.201	330	1.928
WY	Jim Bridger	8066	Unit 4	12	2012	ARP	355,584	0.199	376	2.113

State	Facility Name	Facility ID (ORISPL)	Unit	Month	Year	Program(s)	Gross Load (MW-h)	Avg. NOx Rate (lb/MMBtu)	NOx (tons)	Avg. NOx Rate (lb/gMWh)
WY	Jim Bridger	8066	Unit1	1	2013	ARP	377,464	0.182	327	1.732
WY	Jim Bridger	8066	Unit1	2	2013	ARP	346,360	0.193	313	1.808
WY	Jim Bridger	8066	Unit1	3	2013	ARP	258,816	0.193	236	1.825
WY	Jim Bridger	8066	Unit1	4	2013	ARP	340,203	0.184	303	1.783
WY	Jim Bridger	8066	Unit1	5	2013	ARP	343,573	0.171	284	1.650
WY	Jim Bridger	8066	Unit1	6	2013	ARP	348,182	0.180	300	1.726
WY	Jim Bridger	8066	Unit1	7	2013	ARP	369,626	0.171	307	1.663
WY	Jim Bridger	8066	Unit1	8	2013	ARP	352,820	0.182	313	1.776
WY	Jim Bridger	8066	Unit1	9	2013	ARP	330,581	0.208	337	2.041
WY	Jim Bridger	8066	Unit1	10	2013	ARP	359,483	0.212	355	1.975
WY	Jim Bridger	8066	Unit1	11	2013	ARP	358,008	0.172	289	1.613
WY	Jim Bridger	8066	Unit1	12	2013	ARP	332,455	0.185	292	1.754
WY	Jim Bridger	8066	Unit 2	1	2013	ARP	358,793	0.196	376	2.099
WY	Jim Bridger	8066	Unit 2	2	2013	ARP	326,142	0.187	328	2.013
WY	Jim Bridger	8066	Unit 2	3	2013	ARP	260,400	0.191	259	1.991
WY	Jim Bridger	8066	Unit 2	4	2013	ARP				
WY	Jim Bridger	8066	Unit 2	5	2013	ARP	200,462	0.174	196	1.954
WY	Jim Bridger	8066	Unit 2	6	2013	ARP	359,670	0.186	330	1.833
WY	Jim Bridger	8066	Unit 2	7	2013	ARP	369,860	0.190	359	1.940
WY	Jim Bridger	8066	Unit 2	8	2013	ARP	400,158	0.211	431	2.155
WY	Jim Bridger	8066	Unit 2	9	2013	ARP	359,393	0.215	397	2.208
WY	Jim Bridger	8066	Unit 2	10	2013	ARP	361,705	0.188	343	1.897
WY	Jim Bridger	8066	Unit 2	11	2013	ARP	355,457	0.202	359	2.020
WY	Jim Bridger	8066	Unit 2	12	2013	ARP	343,253	0.191	336	1.958
WY	Jim Bridger	8066	Unit 3	1	2013	ARP	355,575	0.198	357	2.005
WY	Jim Bridger	8066	Unit 3	2	2013	ARP	319,951	0.220	344	2.152
WY	Jim Bridger	8066	Unit 3	3	2013	ARP	370,584	0.212	395	2.131
WY	Jim Bridger	8066	Unit 3	4	2013	ARP	284,650	0.203	291	2.043
WY	Jim Bridger	8066	Unit 3	5	2013	ARP	231,271	0.174	209	1.804
WY	Jim Bridger	8066	Unit 3	6	2013	ARP	337,437	0.182	310	1.837
WY	Jim Bridger	8066	Unit 3	7	2013	ARP	337,819	0.186	317	1.875
WY	Jim Bridger	8066	Unit 3	8	2013	ARP	379,988	0.204	392	2.062
WY	Jim Bridger	8066	Unit 3	9	2013	ARP	312,451	0.197	308	1.970
WY	Jim Bridger	8066	Unit 3	10	2013	ARP	348,658	0.186	320	1.837
WY	Jim Bridger	8066	Unit 3	11	2013	ARP	340,815	0.208	346	2.028
WY	Jim Bridger	8066	Unit 3	12	2013	ARP	376,576	0.205	371	1.968
WY	Jim Bridger	8066	Unit 4	1	2013	ARP	315,112	0.225	389	2.471
WY	Jim Bridger	8066	Unit 4	2	2013	ARP	334,580	0.205	375	2.243
WY	Jim Bridger	8066	Unit 4	3	2013	ARP	312,684	0.218	372	2.377
WY	Jim Bridger	8066	Unit 4	4	2013	ARP	323,192	0.189	269	1.665
WY	Jim Bridger	8066	Unit 4	5	2013	ARP	320,247	0.200	266	1.659
WY	Jim Bridger	8066	Unit 4	6	2013	ARP	334,884	0.210	316	1.888
WY	Jim Bridger	8066	Unit 4	7	2013	ARP	368,869	0.218	372	2.020
WY	Jim Bridger	8066	Unit 4	8	2013	ARP	382,917	0.228	409	2.138
WY	Jim Bridger	8066	Unit 4	9	2013	ARP	299,884	0.189	280	1.870
WY	Jim Bridger	8066	Unit 4	10	2013	ARP	296,412	0.194	262	1.768
WY	Jim Bridger	8066	Unit 4	11	2013	ARP	345,540	0.205	321	1.858
WY	Jim Bridger	8066	Unit 4	12	2013	ARP	373,945	0.213	381	2.037

ALJ Bench Request 4.1

State	Facility Name	Facility ID (ORISPL)	Unit	Month	Year	Program(s)	Gross Load (MW-h)	Avg. NOx Rate (lb/MMBtu)	NOx (tons)	Avg. NOx Rate (lb/gMWh)
WY	Jim Bridger	8066	Unit1	1	2014	ARP	381,779	0.191	340	1.781
WY	Jim Bridger	8066	Unit1	2	2014	ARP	327,547	0.194	295	1.799
WY	Jim Bridger	8066	Unit1	3	2014	ARP	281,690	0.173	229	1.627
WY	Jim Bridger	8066	Unit1	4	2014	ARP	98,934	0.184	84	1.694
WY	Jim Bridger	8066	Unit1	5	2014	ARP	-	0.050	1	
WY	Jim Bridger	8066	Unit1	6	2014	ARP	224,424	0.181	195	1.740
WY	Jim Bridger	8066	Unit1	7	2014	ARP	370,538	0.205	360	1.946
WY	Jim Bridger	8066	Unit1	8	2014	ARP	383,231	0.210	378	1.975
WY	Jim Bridger	8066	Unit1	9	2014	ARP	379,214	0.198	356	1.877
WY	Jim Bridger	8066	Unit1	10	2014	ARP	312,519	0.179	269	1.724
WY	Jim Bridger	8066	Unit1	11	2014	ARP	308,373	0.166	246	1.592
WY	Jim Bridger	8066	Unit1	12	2014	ARP	313,456	0.161	243	1.552
WY	Jim Bridger	8066	Unit 2	1	2014	ARP	344,539	0.205	356	2.067
WY	Jim Bridger	8066	Unit 2	2	2014	ARP	338,059	0.193	330	1.954
WY	Jim Bridger	8066	Unit 2	3	2014	ARP	287,089	0.165	249	1.736
WY	Jim Bridger	8066	Unit 2	4	2014	ARP	277,527	0.162	229	1.651
WY	Jim Bridger	8066	Unit 2	5	2014	ARP	325,833	0.182	303	1.860
WY	Jim Bridger	8066	Unit 2	6	2014	ARP	336,262	0.192	323	1.921
WY	Jim Bridger	8066	Unit 2	7	2014	ARP	371,535	0.212	388	2.091
WY	Jim Bridger	8066	Unit 2	8	2014	ARP	347,031	0.214	360	2.072
WY	Jim Bridger	8066	Unit 2	9	2014	ARP	355,337	0.199	338	1.903
WY	Jim Bridger	8066	Unit 2	10	2014	ARP	319,038	0.178	276	1.732
WY	Jim Bridger	8066	Unit 2	11	2014	ARP	335,478	0.176	285	1.701
WY	Jim Bridger	8066	Unit 2	12	2014	ARP	311,445	0.167	258	1.655
WY	Jim Bridger	8066	Unit 3	1	2014	ARP	390,443	0.210	401	2.054
WY	Jim Bridger	8066	Unit 3	2	2014	ARP	332,138	0.212	339	2.038
WY	Jim Bridger	8066	Unit 3	3	2014	ARP	267,948	0.180	243	1.812
WY	Jim Bridger	8066	Unit 3	4	2014	ARP	267,069	0.176	232	1.738
WY	Jim Bridger	8066	Unit 3	5	2014	ARP	302,230	0.181	279	1.843
WY	Jim Bridger	8066	Unit 3	6	2014	ARP	312,972	0.201	312	1.991
WY	Jim Bridger	8066	Unit 3	7	2014	ARP	321,609	0.199	328	2.038
WY	Jim Bridger	8066	Unit 3	8	2014	ARP	344,940	0.199	352	2.040
WY	Jim Bridger	8066	Unit 3	9	2014	ARP	308,178	0.217	332	2.155
WY	Jim Bridger	8066	Unit 3	10	2014	ARP	376,776	0.207	387	2.056
WY	Jim Bridger	8066	Unit 3	11	2014	ARP	304,620	0.182	274	1.800
WY	Jim Bridger	8066	Unit 3	12	2014	ARP	305,990	0.184	284	1.858
WY	Jim Bridger	8066	Unit 4	1	2014	ARP	386,155	0.209	380	1.968
WY	Jim Bridger	8066	Unit 4	2	2014	ARP	324,813	0.215	330	2.030
WY	Jim Bridger	8066	Unit 4	3	2014	ARP	271,468	0.181	195	1.438
WY	Jim Bridger	8066	Unit 4	4	2014	ARP	260,459	0.175	188	1.441
WY	Jim Bridger	8066	Unit 4	5	2014	ARP	328,792	0.202	299	1.817
WY	Jim Bridger	8066	Unit 4	6	2014	ARP	257,309	0.205	243	1.890
WY	Jim Bridger	8066	Unit 4	7	2014	ARP	362,611	0.205	347	1.916
WY	Jim Bridger	8066	Unit 4	8	2014	ARP	366,491	0.198	326	1.778
WY	Jim Bridger	8066	Unit 4	9	2014	ARP	358,178	0.195	324	1.810
WY	Jim Bridger	8066	Unit 4	10	2014	ARP	308,318	0.195	268	1.740
WY	Jim Bridger	8066	Unit 4	11	2014	ARP	317,782	0.205	284	1.785
WY	Jim Bridger	8066	Unit 4	12	2014	ARP	296,906	0.203	263	1.769

ALJ Bench Request 4.2

Please provide illustrative calculations showing how the emission rates (unit specific and average, plant-wide) can be applied to the tons consumed or the MMBTU consumed to estimate Jim Bridger NOx emissions.

Response to ALJ Bench Request 4.2

Permitted nitrogen oxide (NOX) emissions in tons for each unit can be derived by multiplying the unit specific permitted NOX rate (lbs/MMBtu) by MMBtu consumed divided by 2,000 (lbs/ton).

Units 1 and 2 current permitted rate 0.21 lbs/MMBtu

Units 3 and 4 current permitted rate 0.07 lbs/MMBtu

Estimated actual NOX emissions in tons for each unit can be derived by multiplying the 2017 to 2019 post-selective catalytic reduction (SCR) NOX emission factor (lbs/MMBtu) by MMBtu consumed divided by 2,000 (lbs/ton).

Estimated NOX Emissions Factors (2017 to 2019):

Unit 1 @ 0.191 lb/MMBtu

Unit 2 @ 0.185 lb/MMBtu

Unit 3 @ 0.050 lb/MMBtu

Unit 4 @ 0.051 lb/MMBtu

The total plant wide emissions can be estimated by adding the tons emitted from each unit together for a given time period.

To estimate NOX emissions on a coal burn basis, multiply the actual coal burn times a coal heating value of 9,271 BTU/lb to get boiler heat input. Then, multiply the boiler heat input by the applicable NOx emission factor (lb/MMBtu).

See “2020-11-24 Jim Bridger NOX Emissions.xlsx Future Est Emissions Factors” tab of Attachment ALJ Bench Request 4.1 for 2017 to 2019 actual emissions used to develop the NOX emissions factors (lb/MMBtu) and average coal heating value (Btu/lb).

ALJ Bench Request 4.3

For the SCRs on each Jim Bridger Unit 3 and 4, provide an illustrative calculation showing the annual depreciation of the SCR investments on each unit for each year for the period from January 1, 2021, over the remaining life assumed in the company's modeling used to determine cost effectiveness of each SCR (i.e., 2032). Please provide these depreciation schedules on a company-wide and Oregon-allocated basis.

Response to ALJ Bench Request 4.3

Please refer to Attachment ALJ Bench Request 4.3.

The selective catalytic reduction systems (SCRs) are not depreciated in isolation, but as part of a group. Therefore, this response is for illustrative purposes only. The calculations provided are not the way depreciation expense is calculated nor do they represent actual depreciation expenses in this rate case. The depreciation expense for this response is calculated by taking the plant in-service amount and applying the Oregon 2012 stipulated Bridger Plant account 312 depreciation rate to calculate the net book value as of December 31, 2020. The depreciation expense for the years requested is calculated on a 5-year straight-line for Oregon and a 17-year straight line for the assumed life of 2037 used in the modeling of the cost effectiveness studies. The straight-line method is used because plant additions and retirements through 2025 and 2037 are unknown and therefore the Company is unable to forecast out the requested years

Under Oregon Revised Statute (ORS) 757.140, PacifiCorp must depreciate its assets using rates of depreciation approved by the Commission. PacifiCorp's generating plants depreciate using the group depreciation method, which is standard practice in the utility industry. Under group depreciation, assets within the group depreciate at a set annual percentage rate that is approved by the Commission. Investments, such as SCRs, added to a depreciation group between depreciation rate updates must depreciate at the approved percentage rate. When a utility files to update its depreciation rates, the percentage rates for group depreciation assets are revised to allow the entire group to fully depreciate by the end of the collective asset's depreciable life.

PacifiCorp invested in its generating facilities at Jim Bridger Units 3 and 4, Each of these units are subject to group depreciation, meaning that investments made to these plants must depreciate at the Commission-approved rate. At the time these investments were placed in service and began depreciating, the operative rates of depreciation were those approved by the Commission in Order No. 13-347 in docket UM 1647. In that order, the Commission approved an all-party settlement between PacifiCorp, Staff, CUB, and AWEC (then, the Industrial Customers of Northwest Utilities), which specifically included "group depreciation rates

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ALJ Bench Request 4.3

derived for each depreciation group.” PacifiCorp applied this Commission-approved group depreciation rate to the new generating plant investments.

	JB U3 SCR SIIM/2011/C/038	JB U4 SCR SIIM/2011/C/039	2012 Study		JB U3 SCR Accum Depr	JB U4 SCR Accum Depr	JB U3 SCR Net Book	JB U4 SCR Net Book
			Rate	Years				
2015	100,333,715		4.85	5.5	(26,764,018)	-	73,569,696	-
2016	2,419,092	115,394,322	4.85	4.5	(527,967)	(25,184,811)	1,891,125	90,209,511
2017	37,434	357,801	4.85	3.5	(6,354)	(60,737)	31,080	297,064
2018	(10,994)	2,897	4.85	2.5	1,333	(351)	(9,661)	2,545
2019 through June	-	-						
Balances @ 12/2020	102,779,247	115,755,020			(27,297,007)	(25,245,899)	75,482,240	90,509,121

Uses Bridger Plant account 312 depreciation rate from Oregon 2012 stipulated depreciation study
Uses 1/2 year depreciation convention

For Illustrative Purposes Only

Total Company				Oregon Allocated			
Oregon 5-Year Straight Line Dec 2020 NBV				Oregon 5-Year Straight Line Dec 2020 NBV			
	JB U3 SCR	JB U4 SCR	SG		JB U3 SCR	JB U4 SCR	
2021	15,096,448	18,101,824	26.023%	2021	3,928,493	4,710,571	
2022	15,096,448	18,101,824	26.023%	2022	3,928,493	4,710,571	
2023	15,096,448	18,101,824	26.023%	2023	3,928,493	4,710,571	
2024	15,096,448	18,101,824	26.023%	2024	3,928,493	4,710,571	
2025	15,096,448	18,101,824	26.023%	2025	3,928,493	4,710,571	

Total Company				Oregon Allocated			
Non-Oregon States 17-Year Straight Line Dec 2020 NBV				Non-Oregon States 17-Year Straight Line Dec 2020 NBV			
			SG				
2021	4,440,132	5,324,066	26.023%	2021	1,155,439	1,385,462	
2022	4,440,132	5,324,066	26.023%	2022	1,155,439	1,385,462	
2023	4,440,132	5,324,066	26.023%	2023	1,155,439	1,385,462	
2024	4,440,132	5,324,066	26.023%	2024	1,155,439	1,385,462	
2025	4,440,132	5,324,066	26.023%	2025	1,155,439	1,385,462	
2026	4,440,132	5,324,066	26.023%	2026	1,155,439	1,385,462	
2027	4,440,132	5,324,066	26.023%	2027	1,155,439	1,385,462	
2028	4,440,132	5,324,066	26.023%	2028	1,155,439	1,385,462	
2029	4,440,132	5,324,066	26.023%	2029	1,155,439	1,385,462	
2030	4,440,132	5,324,066	26.023%	2030	1,155,439	1,385,462	
2031	4,440,132	5,324,066	26.023%	2031	1,155,439	1,385,462	
2032	4,440,132	5,324,066	26.023%	2032	1,155,439	1,385,462	
2033	4,440,132	5,324,066	26.023%	2033	1,155,439	1,385,462	
2034	4,440,132	5,324,066	26.023%	2034	1,155,439	1,385,462	
2035	4,440,132	5,324,066	26.023%	2035	1,155,439	1,385,462	
2036	4,440,132	5,324,066	26.023%	2036	1,155,439	1,385,462	
2037	4,440,132	5,324,066	26.023%	2037	1,155,439	1,385,462	

ALJ Bench Request 4.4

Refer to PAC/200, Wilding/47 (Table 5, illustrating mechanism timeline of 2021 through 2023), and PAC/3300, Lockey/35-36 (proposing timing changes to align the period in which costs are incurred with the period for which the Company reports its earnings" with a deferral period to align with the calendar year, a filing date of May 5, and a rate effective date of November 5). Please provide a revised version of Table 5 based on the proposed filing date of May 5 and rate effective date of November 5th. Include an explanation of the timing and application of the earnings test relative to each filing.

Response to ALJ Bench Request 4.4

**PAC/2000 Wilding, page 47
 Table 5 (Revised)**

Filing	Summary of Filing	Proposed Effective Date
May 5, 2022	<ul style="list-style-type: none"> Deferred Incremental vegetation management costs for the period January 1, 2021 through December 31, 2021. Deferred incremental wildfire mitigation capital costs not already included in rates for the period January 1, 2021 through December 31, 2021. Application of earnings test (not applicable to Independent Evaluator costs) 	November 5, 2022
May 5, 2023	<ul style="list-style-type: none"> Deferred Incremental vegetation management costs for the period January 1, 2022 through December 31, 2022. Deferred incremental wildfire mitigation capital not already included in rates for the period of January 1, 2022 through December 31, 2022. Application of earnings test (not applicable to Independent Evaluator costs) 	November 5, 2023
May 5, 2024	<ul style="list-style-type: none"> Deferred Incremental vegetation management costs for the period January 1, 2023 through December 31, 2023. Deferred incremental wildfire mitigation capital not already included in rates for the period of January 1, 2023 through December 31, 2023. Application of earnings test (not applicable to Independent Evaluator costs) 	November 5, 2024