

J. LOAD AND RESOURCE BALANCE 2021–2040

This appendix contains three load and resource balances tables: one for Cheyenne Light, one for Black Hills Power, and one for both utilities jointly. These balances compare annual peak demand with the capacity contribution of existing resources over the entire planning period: 2021 through 2040.

The load and resource balances highlight the years in which forecasted demand exceeds resources, thus indicating a need for additional capacity. All three load and resource balances consider the 15 percent planning reserve margin requirement.

Black Hills Power Load and Resources Balance - 2021-2040																				
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
PEAK DEMAND¹																				
Black Hills Power Native Load	372	375	377	379	377	377	380	383	385	387	389	390	392	393	395	396	397	399	400	401
yearly % change		0.8%	0.5%	0.7%	-0.6%	0.0%	0.9%	0.7%	0.7%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%
EXISTING RESOURCES¹																				
Neil Simpson Unit II	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Wyodak	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Ben French Diesels	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Ben French CTs	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Lange CT	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
Neil Simpson CT	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
Wygen III	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
CPGS CC	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
Corriedale (32.5 MW) ²	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Total Existing Resources	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	418	356
PURCHASE																				
Colstrip	50	50	50																	
Happy Jack ²	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4												
Silver Sage ²	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8											
Wind Contract (12 MW) ²	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5											
Fall River Solar (80 MW) ³			8.8	8.8	8.7	8.7	8.6	8.6	8.5	8.5	8.5	8.4	8.4	8.3	8.3	8.2	8.2	8.2	8.1	8.1
Total Purchases	64	64	72	22	22	22	22	22	18	8	8	8	8	8	8	8	8	8	8	8
SALES																				
MEAN Contract	15	15	10	10	10	10	10													
MDU All-Requirements	40	41	42	43	44	45	46	47												
COG All-Requirements	15	16																		
Total Sales	70	72	52	53	54	55	56	47	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL RESOURCES-SALES	412	410	439	388	387	386	385	394	436	427	427	427	427	427	427	427	427	427	427	365
COG NS CT II (40 MW Planning Reserve)	40	40																		
MDU Wygen III Ownership (25 MW Planning Reserve)	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
COG Wygen III Ownership (23 MW Planning Reserve)	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
MDU Planning Reserves	9	8	7	6	5	4	3	2	4	4	4	4	4	4	4	4	4	4	4	4
TOTAL PLANNING RESERVES	76	76	67	66	65	64	64	63	65	65	65	66	66	66	66	67	67	67	67	67
PEAK PLUS RESERVES	448	450	443	445	442	441	444	446	450	452	454	456	458	459	461	463	464	466	467	469
CAPACITY EXCESS/DEFICIT (MW)	-36	-41	-5	-58	-55	-55	-59	-52	-14	-25	-27	-29	-31	-33	-34	-36	-38	-39	-41	-104
CAPACITY EXCESS/DEFICIT (%)	-8%	-9%	-1%	-13%	-13%	-13%	-13%	-12%	-3%	-6%	-6%	-6%	-7%	-7%	-7%	-8%	-8%	-8%	-9%	-22%
1: Peak demand is forecasted summer peak and resource capacities are summer ratings corresponding to the peak day. 2: 29% of Happy Jack, Silver Sage, and Corriedale's capacities count as accredited capacity. 3: 11% of Fall River's capacity counts as accredited capacity.																				

Table J-1. Cheyenne Light Load and Resource Balance: 2021-2030

Cheyenne Light Load and Resources Balance - 2021-2040																				
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
PEAK DEMAND¹																				
Cheyenne Light Native Load	215	224	225	226	225	229	231	233	234	236	238	239	241	242	244	245	247	248	250	251
yearly % change		4.1%	0.7%	0.3%	-0.5%	2.0%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
PLANNING RESERVE (15%)	32	34	34	34	34	34	35	35	35	35	36	36	36	36	37	37	37	37	37	38
PEAK plus RESERVES	247	257	259	260	259	264	266	268	270	271	273	275	277	279	280	282	284	286	287	289
EXISTING RESOURCES and CONTRACTS¹																				
Wygen II	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
CPGS SC	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
CPGS CC	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Wygen 1 Current PPA	60																			
Wygen 1 New PPA		60	60	60	60	60	60	60	60	60	60	60								
Happy Jack ²	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4												
Silver Sage ²	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9											
Corriedale ²	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
TOTAL EXISTING CAPACITY	240	240	240	240	240	240	240	240	236	233	233	233	173	173	173	173	173	173	173	173
PEAK plus RESERVES	247	257	259	260	259	264	266	268	270	271	273	275	277	279	280	282	284	286	287	289
CAPACITY EXCESS/(DEFICIT) MW	(7)	(17)	(19)	(20)	(19)	(24)	(26)	(28)	(34)	(39)	(41)	(42)	(104)	(106)	(108)	(109)	(111)	(113)	(115)	(116)
CAPACITY EXCESS/DEFICIT %	-3%	-7%	-7%	-8%	-7%	-9%	-10%	-10%	-13%	-14%	-15%	-15%	-38%	-38%	-38%	-39%	-39%	-40%	-40%	-40%
1: Peak demand is forecasted summer peak and resource capacities are summer ratings corresponding to the peak day.																				
2: 29% of Happy Jack, Silver Sage, and Corriedale's capacities counts as accredited capacities.																				

Table J-2. Black Hills Power Load and Resource Balance: 2021-2030

Joint Load and Resources Balance - 2021-2040																				
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
PEAK DEMAND*																				
Black Hills Power Native Load	372	375	377	379	377	377	380	383	385	387	389	390	392	393	395	396	397	399	400	401
Cheyenne Light Load	215	224	225	226	225	229	231	233	234	236	238	239	241	242	244	245	247	248	250	251
Coincident Joint Peak Load	543	543	544	567	577	562	565	552	555	580	600	580	565	566	567	613	591	592	576	576
yearly % change		-0.1%	0.2%	4.2%	1.8%	-2.7%	0.7%	-2.4%	0.5%	4.6%	3.5%	-3.5%	-2.5%	0.1%	0.2%	8.2%	-3.7%	0.3%	-2.8%	-0.1%
EXISTING RESOURCES¹																				
Neil Simpson Unit II	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Wyodak	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Ben French Diesels	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Ben French CTs	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
Lange CT	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
Neil Simpson CT	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
Wygen III	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
Wygen II	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
CPGS SC	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
CPGS CC	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
Comedale ²	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2
Total Existing Resources	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	529
PURCHASE																				
Colstrip	50	50	50																	
Wygen I Current PPA	60																			
Wygen I New PPA		60	60	60	60	60	60	60	60	60	60	60								
Happy Jack ²	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7												
Silver Sage ²	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7											
Wind Contract (12 MW) ²	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5											
Fall River Solar (80 MW) ³			8.8	8.8	8.7	8.7	8.6	8.6	8.5	8.5	8.5	8.4	8.4	8.3	8.3	8.2	8.2	8.2	8.1	8.1
Total Purchases	131	131	140	90	90	90	90	89	81	68	68	68	8	8	8	8	8	8	8	8
SALES																				
MEAN Contract	15	15	10	10	10	10	10													
MDU All-Requirements	40	41	42	43	44	45	46	47												
COG All-Requirements	15	16																		
Total Sales	70	72	52	53	54	55	56	47	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL RESOURCES minus SALES	652	650	679	628	627	626	625	634	672	660	660	660	600	600	600	599	599	599	599	537
COG NS CT II (40 MW Planning Reserve)	40	40																		
MDU Wygen III Ownership (25 MW Planning Reserve)	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
COG Wygen III Ownership (23 MW Planning Reserve)	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
MDU Planning Reserves	9	8	7	6	5	4	3	2	4	4	4	4	4	4	4	4	4	4	4	4
TOTAL PLANNING RESERVES	102	101	92	94	95	92	91	89	90	94	97	94	92	92	92	99	96	96	94	94
PEAK PLUS RESERVES	645	644	636	661	672	653	657	640	645	675	698	674	657	658	659	712	686	689	670	669
CAPACITY EXCESS/DEFICIT (MW)	7	6	43	-34	-45	-28	-32	-6	27	-15	-38	-14	-57	-58	-60	-113	-87	-89	-70	-132
CAPACITY EXCESS/DEFICIT (%)	1%	1%	7%	-5%	-7%	-4%	-5%	-1%	4%	-2%	-5%	-2%	-9%	-9%	-9%	-16%	-13%	-13%	-11%	-20%

1: Peak demand is forecasted summer peak and resource capacities are summer ratings corresponding to the peak day.
 2: 29% of Happy Jack, Silver Sage, and Comedale's capacities count as accredited capacity.
 3: 11% of Fall River's capacity counts as accredited capacity.

Table J-3. Cheyenne Light and Black Hills Power Joint Load and Resource Balance: 2021-2030