ROCKY MOUNTAIN POWER
A DIVISION OF PACIFICORP

1407 North Temple, Suite 330
Salt Lake City, Utah 84116

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IDAHO PUBLIC UTILITIES COMMISSION

November 8, 2019

VIA OVERNIGHT DELIVERY

Diane Hanian
Commission Secretary
Idaho Public Utilities Commission
11331 W Chinden Blvd
Building 8 Suite 201A
Boise, Idaho 83714

RE: CASE NO. PAC-E-19-16
PACIFICORP'S APPLICATION FOR ACKNOWLEDGEMENT OF THE 2019 INTEGRATED RESOURCE PLAN

Dear Ms. Hanian:

PacifiCorp identified corrections within the 2019 IRP, Volume II – Appendices A-L and one correction in Volume I – Chapter 5 that are summarized in the table below. Enclosed as a second supplement to the 2019 IRP are replacement pages incorporating the corrections. Regarding the work papers that were filed October 25, 2019, PacifiCorp also seeks to replace certain files listed below with those provided in this second supplement filing. Note, the identified corrections and replacement files do not affect the analysis, preferred portfolio, inputs or outcomes of the 2019 IRP, and do not affect any other materials provided.

PacifiCorp 2019 IRP Volume II Appendices A-L and Volume I Chapter 5[1]		
Reference	**Update**	**Page**
Appendix L	Replacement pages correct the data in the standard deviation column and the upper tail column of Tables L.11 through L.23.	248-253
Appendix L	Replacement page corrects the data in Table L.55 to reflect initial cases P-16 through P-20 under social cost of carbon. This table was incorrectly populated with initial cases P-45CP through P-53CP.	264
Appendix L	Replacement page corrects the data in Table L.59 and Table L.60 to correct total PVRR.	266
Appendix L	Replacement page corrects the data in Table L.65 to correct total PVRR for the P70-P74 confirmation cases.	269
Chapter 5	Replacement page corrects graphic of winter system capacity trends.	120

[1] Corrections are incorporated in the publicly posted version of the 2019 IRP available at:
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2019_IRP_Volume_II_Appendices_A-L.pdf
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2019_IRP_Volume_I.pdf

Please find enclosed two data discs containing the second supplement confidential work papers and second supplement non-confidential work papers outlined in the table below. Please replace the files as described in the table below that were previously provided on October 25, 2019 with the files provided in this second supplemental filing. Replacements for confidential files remain confidential. Confidential information in the 2019 IRP will be provided to any party who has intervened in this case and signed a non-disclosure agreement. PacifiCorp requests that interested parties contact the state manager at the number listed below for a copy of the non-disclosure agreement that must be executed and submitted to the Company prior to obtaining a copy of the confidential information.

Delete from 1st Supplement	2019 IRP Data Disc or Drive Location	Replace with
Tbl L.1-L.64 Stochastic Simulation Results.xlsx	\Public\Chapters + Appendices\Appendix L - Stochastic Simulation Results	Tbl L.1-L.65 Stochastic Simulation Results 2nd Supp.xlsx
Folder and contents: P_I19-P26CNW-MMR_CONF	\Confidential\Planning & Risk_CONF\Gateway and No Gas Cases_CONF.zip\Gateway and No Gas Cases Conf\Model Input + Output_CONF\P_I19-P26CNW-MMR_CONF\	Folder and Contents: P_I19-P26CNW-MMR_CONF 2nd Supp
Folder and contents: I19-P26CNW-MMR	\Confidential\System Optimizer Output_CONF\Gateway and No Gas Cases_CONF.zip\Gateway and No Gas Cases_CONF\Model Input + Ouptut_CONF\I19-P26CNW-MMR_CONF\	Folder and contents: I19-P26CNW-MMR CONF 2nd Supp
PaR Stochastic Summary P_I19-P26CNW-MMR _1909300244_CONF.xlsm	\Confidential\Planning & Risk_CONF\Gateway and No Gas Cases_CONF.zip\Gateway and No Gas Cases Conf\PaR Summary Report_CONF\	PaR Stochastic Summary P_I19-P26CNW-MMR _1910011720 CONF 2nd Supp.xlsm
PaR_Detail_Report_P_I19-P26CNW-MMR_2019101_CONF.xlsm	\Confidential\Planning & Risk_CONF\Gateway and No Gas Cases_CONF.zip\Gateway and No Gas Cases Conf\PaR Detail Report_CONF\	PaR_Detail_Report_P_I19-P26CNW-MMR_2019103 CONF 2nd Supp.xlsm
SO Portfolio I19-P22-MM_1909251150_CONF.xlsm	\Confidential\System Optimizer Output_CONF\Gateway and No Gas Cases_CONF.zip\Gateway and No Gas Cases_CONF\SO Summary Report Pre-Reliability_CONF\	SO Portfolio I19-P22CNW-MM_1909290011 CONF 2nd Supp.xlsm
SO Portfolio I19-P23-MM_1909261445_CONF.xlsm	\Confidential\System Optimizer Output_CONF\Gateway and No Gas Cases_CONF.zip\Gateway and No Gas Cases_CONF\SO Summary Report Pre-Reliability_CONF\	SO Portfolio I19-P23CNW-MM_1909290013 CONF 2nd Supp.xlsm
SO Portfolio I19-P25-MM_1909251201_CONF.xlsm	\Confidential\System Optimizer Output_CONF\Gateway and No Gas Cases_CONF.zip\Gateway and No Gas Cases_CONF\SO Summary Report Pre-Reliability_CONF\	SO Portfolio I19-P25CNW-MM_1909290020 CONF 2nd Supp.xlsm
SO Portfolio I19-P26-MM_1909251203_CONF.xlsm	\Confidential\System Optimizer Output_CONF\Gateway and No Gas Cases_CONF.zip\Gateway and No Gas Cases_CONF\SO Summary Report Pre-Reliability_CONF\	SO Portfolio I19-P26CNW-MM_1909290025 CONF 2nd Supp.xlsm
SO Portfolio I19-P29-MMR_1909261504_CONF.xlsm	\Confidential\System Optimizer Output_CONF\Gateway and No Gas Cases_CONF.zip\Gateway and No Gas Cases_CONF\SO Summary Report Reliability_CONF\	SO Portfolio I19-P26CNW-MMR_1910021007 CONF 2nd Supp.xlsm

All formal correspondence and data requests regarding this filing should be addressed as follows:

By e-mail (preferred):
datarequest@pacificorp.com
irp@pacificorp.com
ted.weston@pacificorp.com
yvonne.hogle@pacificorp.com

By regular mail:
Data Request Response Center
PacifiCorp
825 NE Multnomah Street, Suite 2000
Portland, Oregon, 97232

With copies to:
Ted Weston
Idaho Regulatory Affairs Manager
Rocky Mountain Power
1407 North Temple, Suite 330
Salt Lake City, Utah 84116

Yvonne R. Hogle
Assistant General Counsel
Rocky Mountain Power
1407 North Temple, Suite 320
Salt Lake City, Utah 84116

Informal inquiries may be directed to Ted Weston, Idaho Regulatory Affairs Manager, at (801) 220-2963.

Sincerely,

Joelle Steward
Vice President, Regulation

Enclosures

cc: Jim Yost, Idaho Governor's Office (without enclosures)
Benjamin Otto, Idaho Conservation League (without enclosures)
Mark Stokes, Idaho Power Company (without enclosures)
Teri Carlock, Idaho Public Utilities Commission staff (without enclosures)
Randy Budge, (Bayer/Monsanto) (without enclosures)
Nancy Kelly, Western Resource Advocates (without enclosures)

2019 IRP Second Supplemental

Table L.11 – Stochastic Risk Results, Initial Development Cases – Low Gas, No CO_2

PVRR ($m)	Initial Cases Low Gas, No CO2				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P16	112	19,295	19,555	19,593	8,955
P17	86	20,892	21,102	21,161	7,759
P18	111	22,315	22,592	22,623	6,856
P19	103	20,052	20,296	20,318	7,471
P20	94	20,702	20,913	20,952	6,962

Table L.12 – Stochastic Risk Results, Initial Development Cases – High Gas, High CO_2

PVRR ($m)	Initial Cases High Gas, High CO2				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P16	200	29,555	30,056	30,202	19,534
P17	136	28,652	29,014	29,069	15,676
P18	149	27,575	27,947	28,030	12,249
P19	178	28,970	29,407	29,539	16,665
P20	163	28,151	28,575	28,700	14,677

Table L.13 – Stochastic Risk Results, Initial Development Cases – Social Cost of Carbon

PVRR ($m)	Initial Cases Social Cost of Carbon				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P16	212	39,365	40,000	40,096	29,355
P17	156	36,173	36,605	36,635	23,280
P18	161	35,050	35,433	35,491	19,747
P19	193	38,115	38,642	38,752	25,807
P20	184	37,236	37,761	37,881	23,791

Table L.14 – Stochastic Risk Results, C Cases – Medium Gas, Medium CO_2

PVRR ($m)	C Cases				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P31C	99	23,233	23,507	23,536	10,353
P36C	146	23,213	23,574	23,677	10,275
P45C	99	23,131	23,409	23,449	10,072
P46C	104	23,125	23,404	23,458	9,864
P46J23C	106	23,160	23,445	23,506	9,856
P47C	103	23,045	23,333	23,371	10,023
P48C	103	23,073	23,342	23,396	9,933
P53C	105	23,185	23,466	23,518	9,921
P53J23C	107	23,235	23,525	23,580	9,915
P54C	102	23,233	23,509	23,547	10,211

Table L.15 – Stochastic Risk Results, CP Cases – Medium Gas, Medium CO_2

PVRR ($m)	CP Cases Medium Gas, Medium CO2				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P36CP	142	23,194	23,561	23,657	10,241
P45CP	100	23,043	23,322	23,367	10,061
P46CP	104	23,143	23,426	23,464	9,844
P46J23CP	109	23,144	23,456	23,492	9,850
P47CP	103	23,067	23,349	23,393	10,040
P48CP	104	23,051	23,327	23,374	9,963
P53CP	105	23,199	23,476	23,521	9,892
P45CNW	98	23,062	23,348	23,372	10,338

Table L.16 – Stochastic Risk Results, CP Cases – Low Gas, Low CO_2

PVRR ($m)	CP Cases Low Gas, No CO2				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P36CP	101	20,229	20,485	20,515	7,103
P45CP	68	20,001	20,187	20,216	6,895
P46CP	72	20,187	20,387	20,409	6,771
P46J23CP	79	20,195	20,412	20,427	6,802
P47CP	72	20,030	20,223	20,264	6,883
P48CP	72	20,070	20,268	20,293	6,862
P53CP	73	20,228	20,428	20,450	6,800
P45CPNW	67	19,878	20,052	20,085	7,029

Table L.17 – Stochastic Risk Results, CP Cases – High Gas, High CO_2

PVRR ($m)	CP Cases High Gas, High CO2				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P36CP	180	27,612	28,091	28,193	14,782
P45CP	133	27,585	27,947	28,039	14,733
P46CP	139	27,596	27,971	28,067	14,443
P46J23CP	142	27,595	28,008	28,059	14,409
P47CP	134	27,596	27,957	28,060	14,696
P48CP	137	27,528	27,893	27,990	14,571
P53CP	140	27,672	28,051	28,144	14,508
P45CPNW	133	27,748	28,121	28,190	15,151

Table L.18 – Stochastic Risk Results, CP– Social Cost of Carbon

PVRR ($m)	CP Cases Social Cost of Carbon				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P36CP	187	36,278	36,808	36,887	23,413
P45CP	152	36,713	37,137	37,141	23,870
P46CP	153	36,451	36,897	36,923	23,327
P46J23CP	153	36,296	36,755	36,784	23,151
P47CP	153	36,699	37,139	37,150	23,819
P48CP	155	36,567	37,007	37,020	23,620
P53CP	155	36,576	37,025	37,043	23,436
P45CPNW	152	36,877	37,292	37,303	24,302

Table L.19 – Stochastic Risk Results, FOT Risk Assessment Cases – Medium Gas, Medium CO_2

PVRR ($m)	FOT Cases				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P45CNW	104	23,917	24,212	24,258	11,032
P45CP	108	23,867	24,160	24,193	10,923
P46CP	113	23,924	24,239	24,296	10,762
P47CP	109	23,835	24,130	24,156	10,829
P48CP	111	23,927	24,241	24,293	10,904
P53CP	115	23,986	24,305	24,357	10,828

Table L.20 – Stochastic Risk Results, Gateway and No Gas Cases – Medium Gas, Medium CO_2

PVRR ($m)	Gateway and No Gas Studies				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P-22CNW	96	23,470	23,733	23,772	10,057
P-23CNW	100	24,037	24,307	24,358	9,625
P-25CNW	98	24,093	24,372	24,414	9,958
P-26CNW	99	23,162	23,454	23,479	10,255
P29	98	23,182	23,467	23,503	10,256
P29PS	123	23,439	23,777	23,803	10,509

Table L.21 – Stochastic Risk Results, Sensitivity Cases – Medium Gas, Medium CO_2

PVRR ($m)	Sensitivity Studies				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
S01	96	21,939	22,208	22,248	9,646
S02	113	24,182	24,475	24,527	11,270
S03	103	23,235	23,514	23,550	10,594
S04	100	23,161	23,442	23,480	10,527
S05	99	22,827	23,102	23,134	10,231
S06	95	23,902	24,183	24,207	11,119
S07	98	22,992	23,254	23,301	10,346
S08	97	23,039	23,313	23,350	10,187
P45CPNW	98	23,062	23,348	23,372	10,338

Table L.22 – Stochastic Risk Results, DSM Rebundled Cases – Medium Gas Medium CO_2

PVRR ($m)	DP Studies				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P45DP	101	22,956	23,248	23,268	10,026
P46DP	106	23,012	23,321	23,344	9,639
P53DP	107	23,070	23,381	23,401	9,687

Table L.23 – Stochastic Risk Results, P70 Cases – Medium Gas, Medium CO_2

PVRR ($m)	P70 Studies				
	Standard Deviation	5th percentile	90th percentile	95th percentile	Upper Tail (mean of 3 Highest) No Fixed Costs
P70	99	23,882	24,161	24,204	10,457
P71	95	23,859	24,139	24,165	10,384
P72	95	23,969	24,238	24,275	10,517
P73	98	24,100	24,391	24,426	10,502
P74	96	24,075	24,364	24,381	10,604

Table L.24 – Stochastic Risk Adjusted PVRR, Initial Cases

Med Gas, Med CO2					
Name	PVRR ($m)	Name	PVRR ($m)	Name	PVRR ($m)
P01	25,319	P12	24,873	P30	24,928
P02	26,174	P13	25,226	P31	24,667
P03	25,022	P14	24,987	P32	24,947
P04	24,974	P15	25,506	P33	25,010
P06	25,139	P16	25,097	P34	25,146
P07	25,021	P17	25,400	P35	24,858
P08	25,081	P18	25,602	P45	24,710
P09	24,960	P19	25,211	P46	24,593
P10	24,848	P20	26,385	P53	24,650
P11	24,966	P28	24,879	P54	24,806

Table L.25 – Stochastic Risk Adjusted PVRR by Price Scenario, Initial Cases

Name	PVRR ($m)			
	Low Gas, No CO_2	Med Gas, Med CO_2	High Gas, High CO_2	Social Cost of Carbon
P16	20,427	25,097	31,357	41,717
P17	22,071	25,400	30,312	38,247
P18	23,587	25,602	29,187	37,051
P19	21,209	25,211	30,701	40,334
P20	21,881	26,385	29,832	39,421

Table L.55 – PVRR Cost Components by Price Scenario, Initial Cases, Social Cost of Carbon

	Stochastic PVRR ($ millions)									
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P16	10,374	437	488	17,102	(353)	875	(4,274)	4,110	10,833	39,712
P17	9,224	441	592	13,132	(831)	1020	(4,531)	3,785	13,476	36,415
P18	7,704	281	667	11,726	(729)	1258	(5,207)	3,541	15,869	35,276
P19	9,667	390	518	15,893	(840)	715	(4,531)	3,470	13,039	38,396
P20	9,001	298	534	15,270	(800)	1026	(5,174)	3,117	14,157	37,527

Table L.56 – PVRR Cost Components, C Cases, Medium Gas, Medium CO_2

	Stochastic PVRR ($ millions)									
Name	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P31C	10,266	252	473	2,929	(763)	934	(4,948)	965	13,265	23,374
P36C	9,998	282	521	2,603	(740)	935	(4,860)	1,110	13,581	23,430
P45C	10,139	248	479	2,865	(764)	893	(5,006)	972	13,458	23,283
P46C	10,109	282	485	2,676	(847)	901	(4,970)	981	13,659	23,278
P46J23C	10,058	282	499	2,641	(845)	941	(4,966)	993	13,709	23,312
P47C	10,104	253	501	2,800	(782)	893	(4,994)	998	13,426	23,198
P48C	10,057	256	506	2,741	(780)	910	(5,000)	992	13,539	23,221
P53C	10,142	282	485	2,699	(847)	901	(4,974)	976	13,677	23,340
P53J23C	10,104	282	499	2,665	(845)	941	(4,973)	983	13,735	23,391
P54C	10,189	252	468	2,882	(759)	915	(4,970)	982	13,422	23,381

Table L.59 – PVRR Cost Components, CP Cases, High Gas High CO_2

Name	Stochastic PVRR ($ millions)									
	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P36CP	11,983	239	532	4,888	(750)	975	(5,357)	1,789	13,582	27,881
P45CP	12,054	208	509	5,389	(768)	906	(5,516)	1,631	13,374	27,786
P46CP	12,065	230	516	5,025	(851)	908	(5,452)	1,681	13,693	27,814
P46J23CP	12,084	234	516	4,982	(850)	955	(5,479)	1,647	13,723	27,812
P47CP	12,066	211	515	5,309	(786)	862	(5,487)	1,683	13,433	27,805
P48CP	12,039	216	515	5,200	(784)	904	(5,508)	1,659	13,495	27,736
P53CP	12,101	230	516	5,073	(851)	908	(5,463)	1,664	13,711	27,889
P45CPNW	12,098	217	506	5,534	(796)	932	(5,488)	1,676	13,110	27,946

Table L.60 – PVRR Cost Components, CP Cases, Social Cost of Carbon

Name	Stochastic PVRR ($ millions)									
	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P36CP	8,893	327	556	14,280	(826)	975	(4,712)	3,358	13,583	36,561
P45CP	8,979	289	532	15,098	(813)	906	(4,844)	3,261	13,375	36,934
P46CP	8,939	323	539	14,571	(897)	908	(4,795)	3,284	13,694	36,703
P46J23CP	8,901	324	540	14,444	(897)	955	(4,820)	3,251	13,723	36,555
P47CP	8,971	291	538	15,028	(831)	862	(4,818)	3,312	13,434	36,936
P48CP	8,954	298	538	14,875	(830)	904	(4,853)	3,272	13,496	36,798
P53CP	8,979	322	539	14,696	(897)	908	(4,818)	3,251	13,712	36,829
P45CPNW	9,127	301	529	15,253	(841)	932	(4,801)	3,330	13,111	37,095

Table L.65 – PVRR Cost Components, P70 Cases, Medium Gas Medium CO_2

Name	Stochastic PVRR ($ millions)									
	Thermal Fuel	Variable O&M incl. FOT	Long Term Contracts	Emissions	Renewable	DSM	System Balancing Sales	System Balancing Purchases	Capital and Fixed O&M Cost	Total PVRR
P70	10,384	249	487	3,111	(761)	992	(5,239)	920	13,828	24,041
P71	10,301	232	476	3,116	(761)	999	(5,182)	891	13,860	24,010
P72	10,400	244	470	3,161	(759)	959	(5,159)	887	13,838	24,121
P73	10,379	258	501	3,034	(758)	950	(5,135)	954	14,001	24,261
P74	10,447	248	467	3,178	(761)	984	(5,138)	873	13,857	24,230

Table L.66 – 10-year Average Incremental Customer Rate Impact*

$ Millions	10-year Average Incremental Customer Rate Impact (2019 - 2028)									
	Low Gas, No $C0_2$		Medium Gas, Medium CO_2		High Gas, High CO_2		Social Cost of Carbon		Average	
	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank	Difference from Preferred Portfolio	Rank
P45CNW	0	4	0	5	0	5	0	6	0	5
P36CP	114	8	102	8	81	8	9	8	77	8
P45CP	(1)	3	(1)	3	(1)	3	0	7	(0)	4
P46CP	4	5	(0)	4	(1)	4	(30)	1	(7)	1
P46J23CP	50	7	34	7	19	7	(28)	2	19	7
P47CP	(7)	1	(5)	1	(2)	2	(1)	5	(3)	2
P48CP	(5)	2	(4)	2	(2)	1	(2)	4	(3)	3
P53CP	18	6	15	6	16	6	(7)	3	11	6

*The relative difference in customer rate impacts is negligible and no adjustment to the selection of P-45CNW as the preferred portfolio.
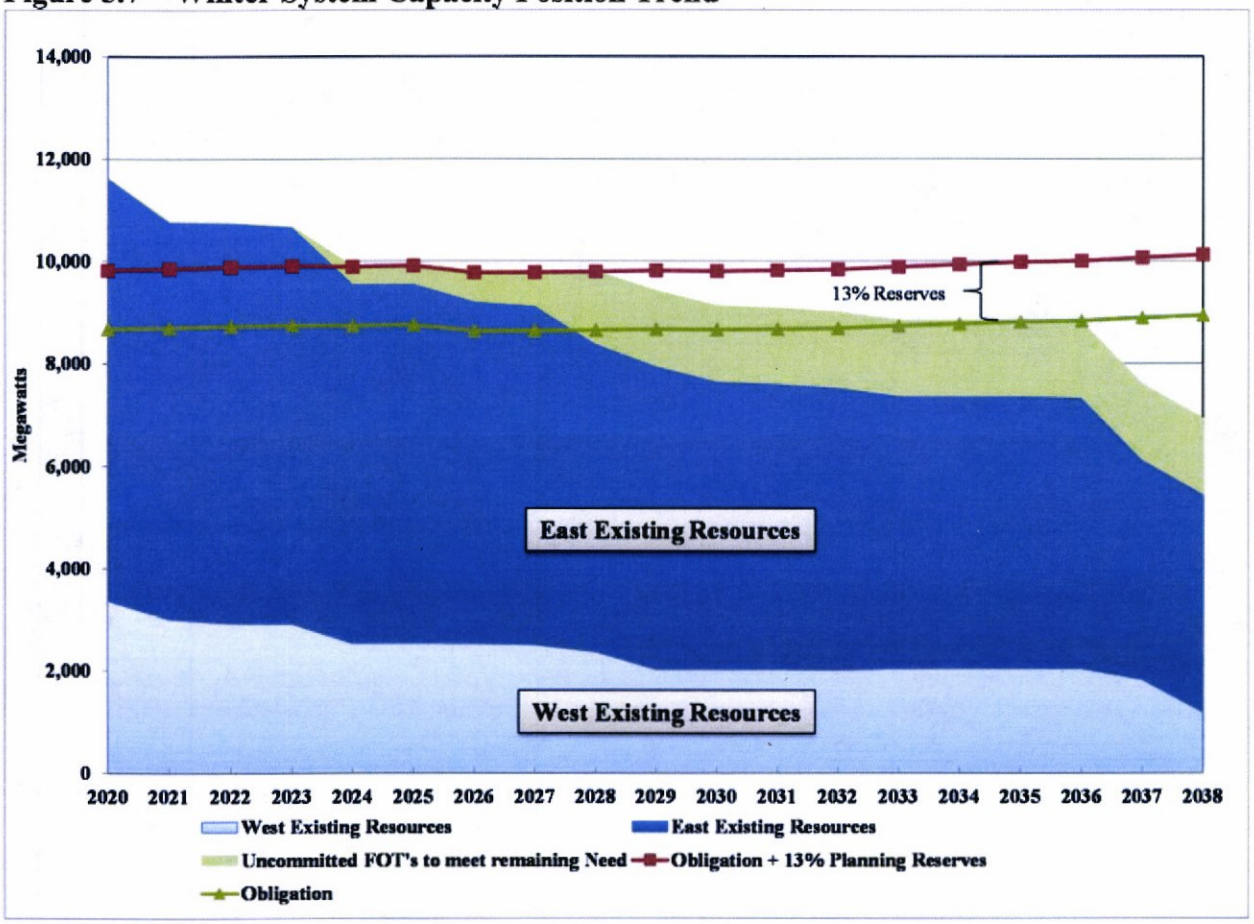
Figure 5.7 – Winter System Capacity Position Trend