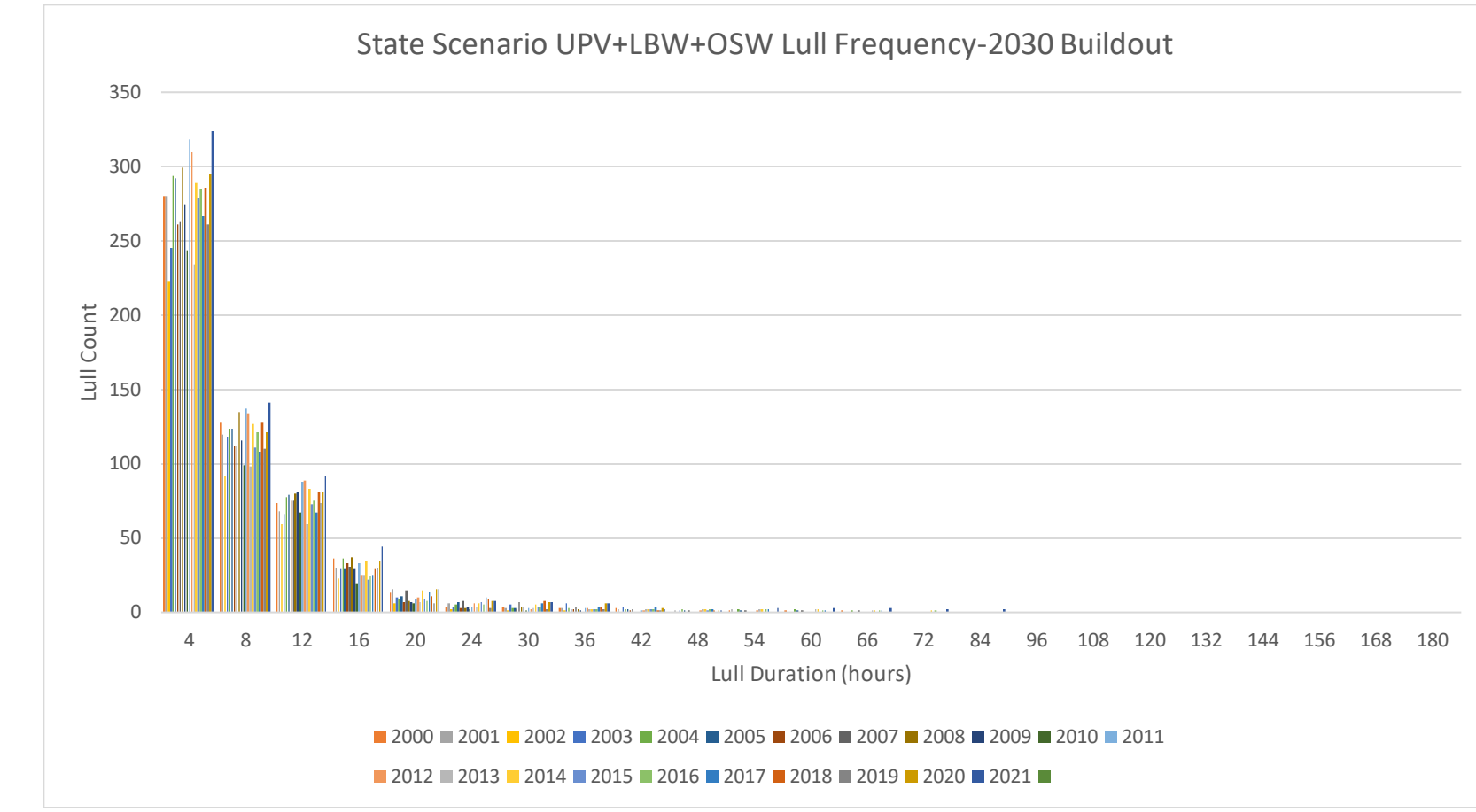


Buildout Year	State Scenario	Title
2030	UPV+LBW+OSW	State Scenario UPV+LBW+OSW Lull Frequency-2030 Buildout

Profile Year	Lull Duration (hours)																						
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180
2000	280	128	74	36	13	4	4	3	3	0	1	1	1	0	0	0	0	0	0	0	0	0	0
2001	280	120	68	30	18	6	3	3	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0
2002	223	92	59	23	6	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	245	118	66	29	10	4	5	6	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	294	124	78	36	9	5	3	3	2	1	2	2	1	0	0	0	0	0	0	0	0	0	0
2005	292	124	79	29	11	7	3	2	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0
2006	261	112	75	33	7	3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	263	112	75	31	15	8	7	4	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0
2008	299	135	80	37	8	3	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	275	116	81	29	7	4	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	244	99	67	20	6	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	318	137	88	33	9	4	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	310	134	89	25	10	6	2	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2013	234	98	59	25	7	4	3	2	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0
2014	289	127	83	35	15	6	5	2	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0
2015	279	111	73	22	9	7	4	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	285	121	75	24	8	5	4	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0
2017	267	108	67	25	14	10	6	4	3	2	2	1	1	0	0	0	0	0	0	0	0	0	0
2018	286	128	81	29	11	9	5	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	261	110	74	30	6	3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	295	121	81	35	10	8	7	5	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	324	141	92	44	16	10	8	7	4	2	3	3	3	2	2	0	0	0	0	0	0	0	0
Average	277	119	76	30	10	5	4	3	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Max	324	141	92	44	16	10	8	7	4	2	3	3	3	2	2	0	0	0	0	0	0	0	0
Min	223	92	59	20	6	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Red Fill=Most Occurrences
Green Fill=Least Occurrences

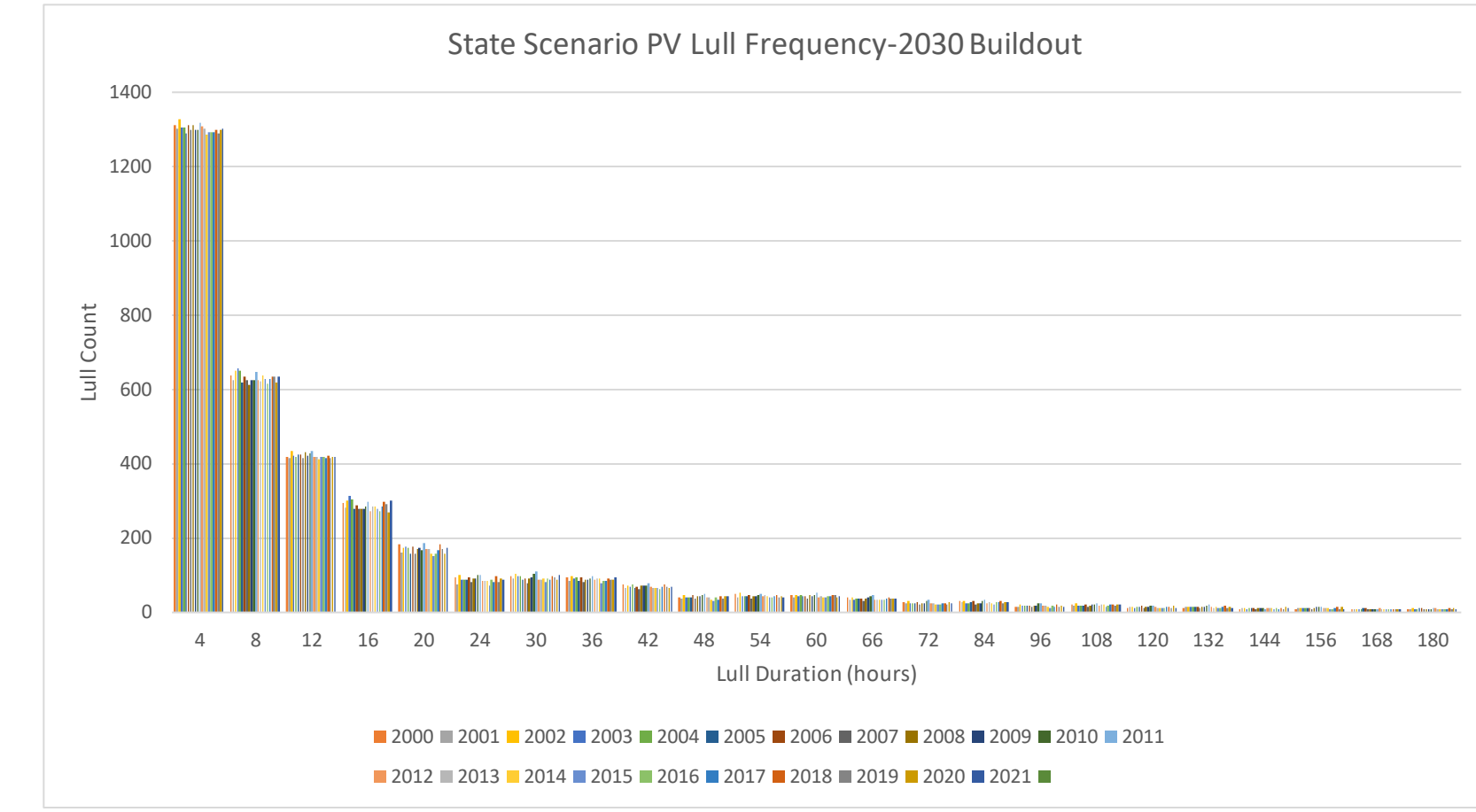


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout Year	State Scenario	Title	State Scenario PV Lull Frequency-2030 Buildout																
Type	2030	PV																	

Profile Year	Lull Duration (hours)																						
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180
2000	1310	639	420	294	183	93	96	94	76	39	50	48	41	27	31	16	21	12	13	9	8	8	9
2001	1303	625	414	281	160	74	90	85	65	37	41	40	34	24	28	16	17	14	14	12	12	10	9
2002	1327	645	435	301	174	102	103	98	72	46	51	48	41	32	31	20	23	16	16	13	13	10	11
2003	1304	658	423	318	177	87	99	91	69	41	43	43	35	25	23	17	18	13	15	10	11	10	10
2004	1304	651	420	305	175	88	96	93	74	41	43	46	38	25	26	19	19	14	16	12	13	9	10
2005	1289	618	426	279	159	88	88	85	65	40	42	43	37	24	27	19	19	15	16	11	11	11	11
2006	1310	636	426	287	176	93	92	93	68	46	46	42	37	28	30	19	20	17	16	13	12	12	11
2007	1298	624	415	279	159	81	77	82	63	36	37	37	32	20	22	14	14	12	12	10	10	8	7
2008	1312	613	430	278	171	91	91	89	73	45	45	46	38	25	26	19	17	15	16	12	13	9	10
2009	1298	625	421	280	173	90	95	87	71	43	45	44	39	26	26	18	20	16	16	11	14	8	9
2010	1298	626	429	286	166	101	105	91	71	48	48	48	42	30	32	24	22	18	18	12	14	9	10
2011	1317	646	435	299	188	101	110	97	78	48	51	54	46	34	34	24	25	19	20	10	14	10	11
2012	1307	624	419	272	171	84	88	87	70	39	42	40	35	23	26	17	19	14	15	12	12	11	11
2013	1302	622	417	284	170	85	89	90	65	39	46	42	35	26	28	17	20	11	13	11	11	9	9
2014	1288	637	428	285	159	84	90	90	67	35	42	40	35	22	26	16	20	12	15	12	12	9	9
2015	1293	627	417	280	151	72	82	78	65	32	39	40	33	20	21	13	14	11	11	8	8	8	7
2016	1291	615	418	272	159	87	90	84	64	39	40	43	35	21	28	17	17	13	13	11	10	9	9
2017	1292	628	416	284	166	82	87	84	69	34	43	45	36	24	27	16	21	15	16	10	11	8	10
2018	1298	634	422	298	183	97	96	92	76	42	47	46	41	25	30	21	22	15	18	12	15	10	11
2019	1288	636	416	292	172	83	95	87	68	37	40	46	37	22	26	14	17	12	13	10	10	8	9
2020	1298	620	418	270	159	92	88	87	65	42	43	41	36	27	29	19	21	18	16	14	14	10	12
2021	1301	635	420	301	174	88	101	93	70	42	41	42	37	26	28	15	21	12	13	11	10	9	9
Average	1301	631	421	287	169	88	93	89	69	41	44	44	37	25	28	18	19	14	15	11	12	9	10
Max	1327	656	435	315	188	102	110	98	78	49	52	54	46	34	34	24	25	19	20	14	15	12	12
Min	1285	613	413	270	151	72	77	78	63	32	37	37	32	20	21	13	14	11	11	8	8	8	7

Red Fill-Most Occurrences
Green Fill-Least Occurrences

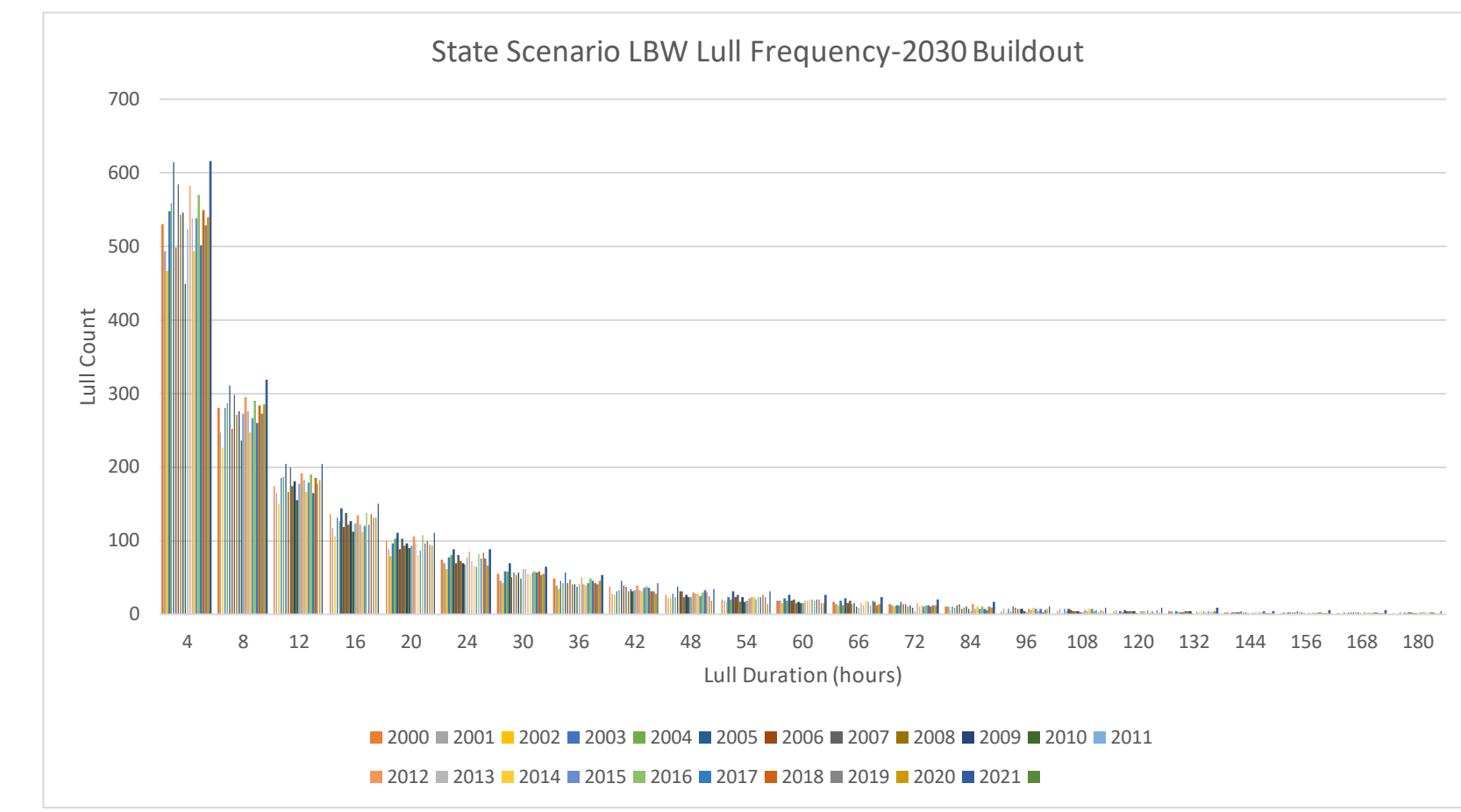


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout Year	State Scenario	Title
2030	LBW	State Scenario LBW Lull Frequency-2030 Buildout

Profile Year	Lull Duration (hours)																						
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180
2000	531	281	175	136	99	74	55	48	37	26	20	18	17	14	10	5	5	4	4	2	1	1	1
2001	493	248	164	117	88	70	46	40	28	22	19	19	14	13	10	7	7	6	5	3	3	1	0
2002	467	226	151	106	79	62	43	34	26	22	17	15	12	10	6	3	1	1	1	1	1	0	0
2003	548	280	185	131	96	77	59	45	32	28	23	22	19	12	10	8	7	4	4	2	2	2	2
2004	559	287	187	127	103	81	59	43	33	24	20	18	13	12	9	5	4	2	2	2	2	1	0
2005	614	311	206	144	111	85	66	48	36	28	26	22	17	12	11	8	6	3	2	3	3	3	3
2006	498	252	166	118	89	69	51	43	39	31	23	19	16	14	14	9	6	4	3	3	2	2	1
2007	585	298	200	137	103	80	57	47	38	32	27	20	18	14	8	7	5	4	4	4	4	2	2
2008	543	272	174	122	94	72	54	41	31	23	17	16	14	10	9	8	5	5	4	2	3	3	2
2009	546	276	180	126	97	69	56	41	34	27	23	17	15	13	11	7	5	4	4	3	2	2	1
2010	469	236	155	112	90	68	49	38	32	24	17	15	10	9	8	5	3	1	1	1	1	1	1
2011	524	273	178	123	93	78	61	41	33	24	19	16	9	5	4	3	2	0	0	0	0	0	0
2012	583	295	192	134	106	86	62	50	40	30	21	19	15	15	14	8	6	4	4	3	3	3	3
2013	538	276	182	122	97	72	55	41	33	28	24	19	13	10	7	6	5	4	3	2	1	1	2
2014	494	248	167	113	80	66	53	40	31	28	23	20	18	13	11	9	7	4	4	4	2	2	2
2015	538	266	179	120	87	64	57	42	36	25	20	20	17	11	8	7	6	4	2	1	1	1	0
2016	570	290	190	137	108	82	59	49	37	30	23	19	13	12	11	5	4	3	3	3	3	3	3
2017	502	260	164	122	96	75	57	45	36	33	24	20	18	13	8	7	6	5	4	4	3	2	2
2018	550	284	186	136	99	84	59	42	32	29	27	20	17	10	6	2	2	1	2	1	1	1	1
2019	529	273	178	132	95	76	53	41	32	25	23	15	13	12	10	6	6	6	3	1	1	1	0
2020	540	286	182	131	94	66	55	46	28	19	14	15	14	12	9	7	4	3	4	1	1	1	1
2021	616	319	205	151	110	88	64	54	43	34	31	27	24	20	17	11	9	9	9	5	6	6	5
Average	537	274	179	127	96	75	56	44	34	27	22	19	16	12	10	7	5	4	3	2	2	2	1
Max	616	319	205	151	111	89	70	56	46	38	32	27	24	20	17	11	9	9	9	5	6	6	5
Min	449	226	151	106	79	62	43	34	26	19	14	15	9	5	4	2	1	0	0	0	0	0	0

Red Fill-Most Occurrences
Green Fill-Least Occurrences

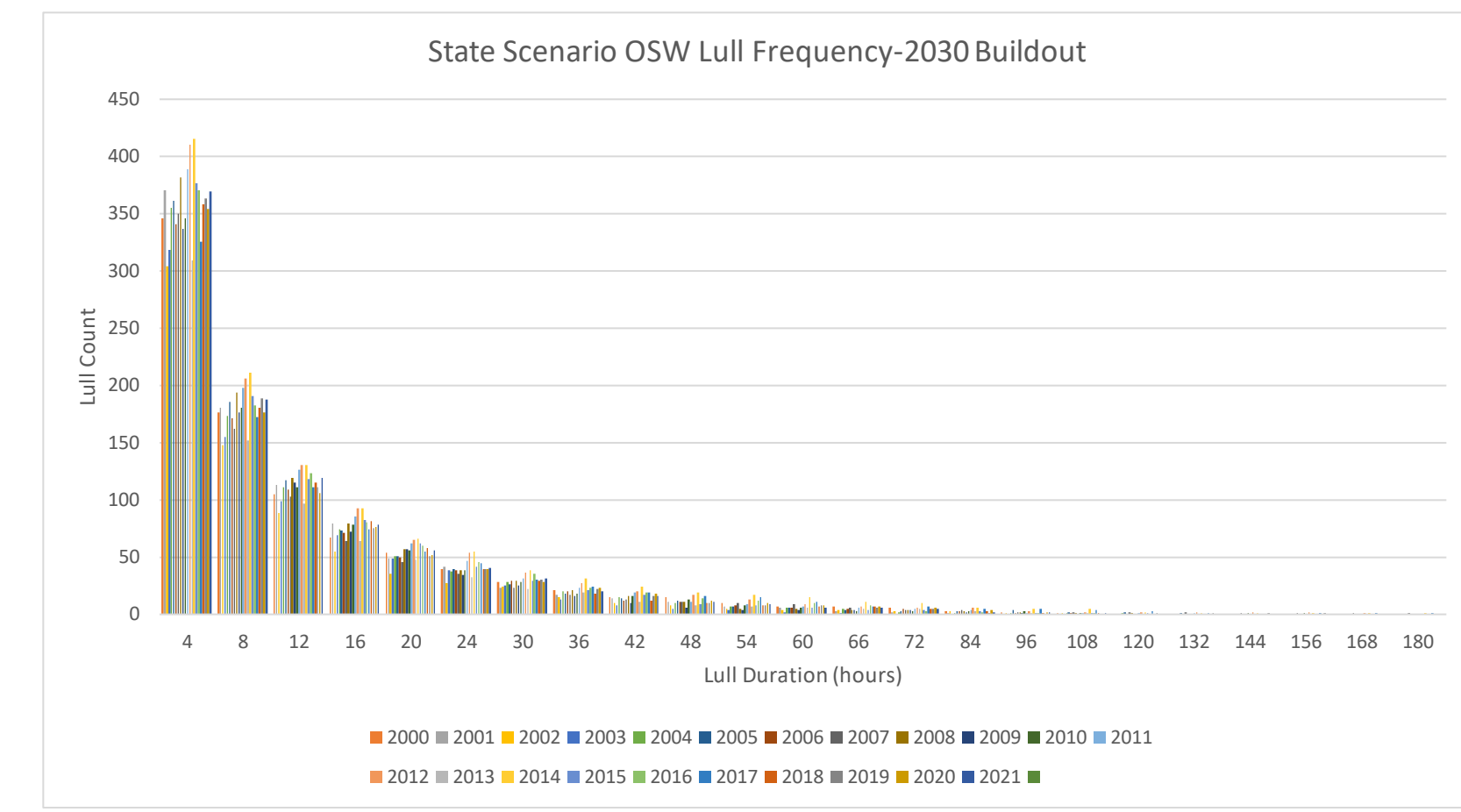


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout Year	State Scenario	Title
2030	OSW	State Scenario OSW Lull Frequency-2030 Buildout

Profile Year	Lull Duration (hours)																						
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180
2000	346	176	105	67	54	40	28	21	15	15	10	7	7	6	3	2	1	0	0	0	0	0	0
2001	371	180	113	79	49	42	23	17	14	11	7	6	3	2	1	0	0	0	0	0	0	0	0
2002	304	148	89	55	35	27	24	15	10	8	5	4	4	3	3	1	1	0	0	0	0	0	0
2003	318	155	99	69	49	39	25	13	8	5	4	2	1	0	0	0	0	0	0	0	0	0	0
2004	355	173	111	74	51	37	28	20	15	10	7	6	5	2	1	1	1	1	0	0	0	0	0
2005	361	186	117	73	51	40	26	18	14	12	7	6	4	3	3	4	2	2	1	0	0	0	0
2006	341	171	109	71	50	39	29	20	12	11	8	6	5	5	3	1	1	0	0	0	0	0	0
2007	350	162	103	64	46	35	23	17	13	11	10	9	6	4	4	2	2	2	2	1	1	1	1
2008	382	194	119	79	57	39	29	21	16	11	5	5	4	4	3	2	1	1	0	0	0	0	0
2009	337	176	115	72	57	34	25	16	10	6	8	4	4	4	2	1	0	0	0	0	0	0	0
2010	346	180	111	78	56	38	28	18	16	13	6	6	3	3	3	3	1	0	0	1	1	0	0
2011	389	198	126	86	62	47	31	23	19	11	9	7	6	5	4	1	1	1	1	0	0	0	0
2012	410	206	130	93	65	54	36	27	20	17	13	9	7	6	4	3	2	2	2	2	2	1	0
2013	309	152	97	64	48	32	22	19	11	8	7	6	5	5	3	1	1	0	0	0	0	0	0
2014	315	159	93	68	52	36	25	26	17	12	10	11	10	8	5	5	2	1	1	1	1	1	1
2015	377	191	118	82	62	42	29	21	17	9	8	6	4	4	3	1	1	1	0	0	0	0	0
2016	371	183	123	80	60	46	35	23	19	14	12	10	8	3	2	1	1	0	0	0	0	0	0
2017	326	172	111	74	55	45	30	24	19	16	15	11	7	7	5	4	3	1	0	1	1	1	1
2018	358	180	115	81	58	40	29	18	12	10	8	7	7	5	3	1	1	0	0	0	0	0	0
2019	363	189	111	75	51	40	30	22	16	10	8	8	6	5	1	0	0	1	1	1	1	0	0
2020	354	176	106	76	52	40	28	18	12	10	8	7	6	4	2	0	0	0	0	0	0	0	0
2021	369	188	119	78	56	41	31	20	16	11	9	6	6	5	2	2	1	0	0	0	0	0	0
Average	357	179	113	76	54	41	29	20	15	11	9	7	5	4	3	2	1	1	0	0	0	0	0
Max	415	211	130	93	66	55	38	31	24	19	17	15	11	10	6	5	5	3	2	2	2	1	1
Min	304	148	89	55	35	27	22	13	8	5	4	2	1	0	0	0	0	0	0	0	0	0	0

Red Fill=Most Occurrences
Green Fill=Least Occurrences

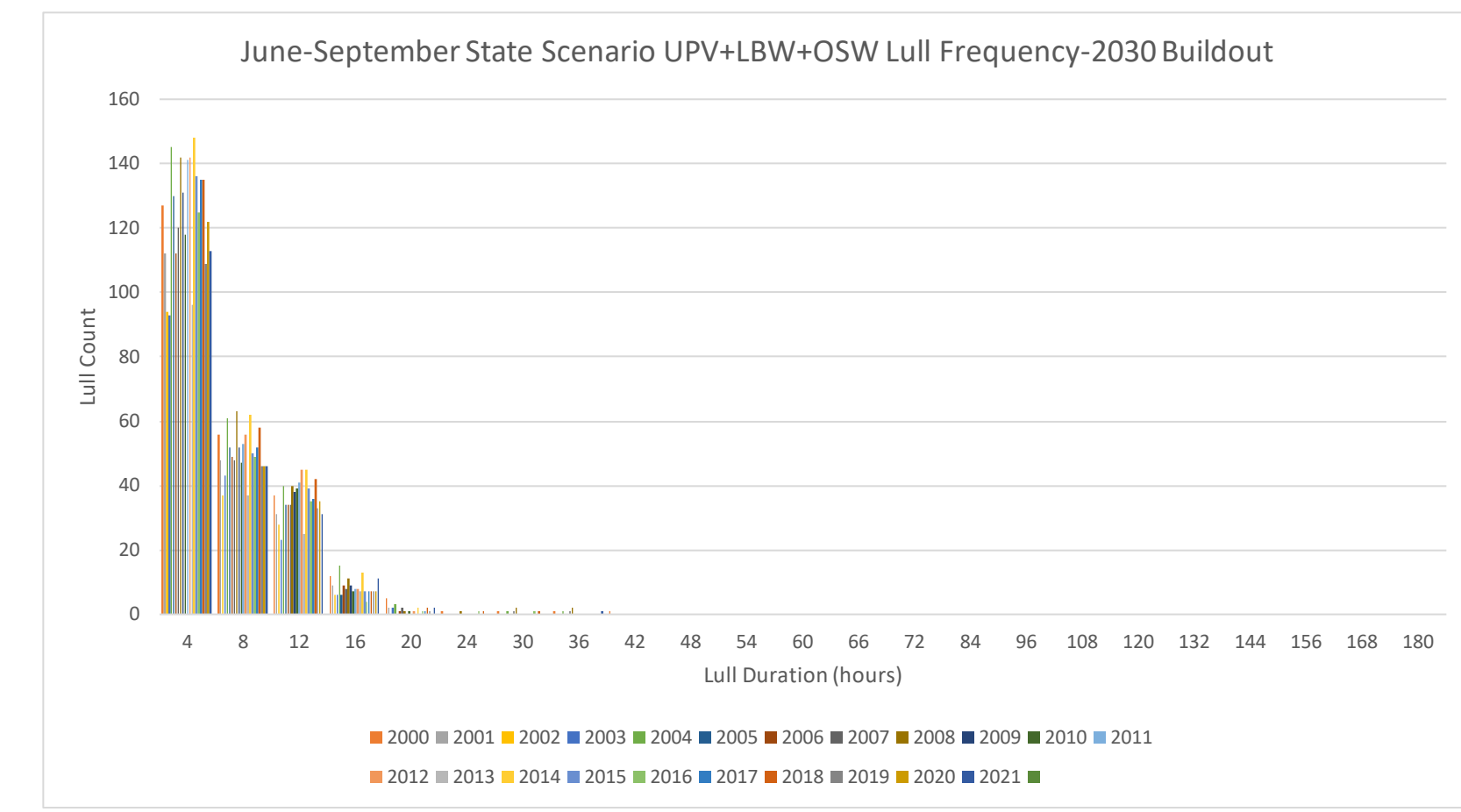


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout Year	June-September State Scenario	Title	June-September State Scenario UPV+LBW+OSW Lull Frequency-2030
Type	UPV+LBW+OSW		

Profile Year	Lull Duration (hours)																						
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180
2000	127	56	37	12	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	112	48	31	9	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	94	37	28	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	93	43	23	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	145	61	40	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	130	52	34	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	112	49	34	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	120	48	34	8	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	142	63	40	11	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	131	52	38	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	118	47	39	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	141	53	41	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	142	56	45	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	96	37	25	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	128	62	48	13	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	136	50	39	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	125	49	35	4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	135	52	36	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	135	58	42	7	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	109	46	33	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	122	46	35	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	113	46	31	11	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average	124	51	36	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max	148	63	45	15	5	1	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min	93	37	23	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Red Fill=Most Occurrences
Green Fill=Least Occurrences

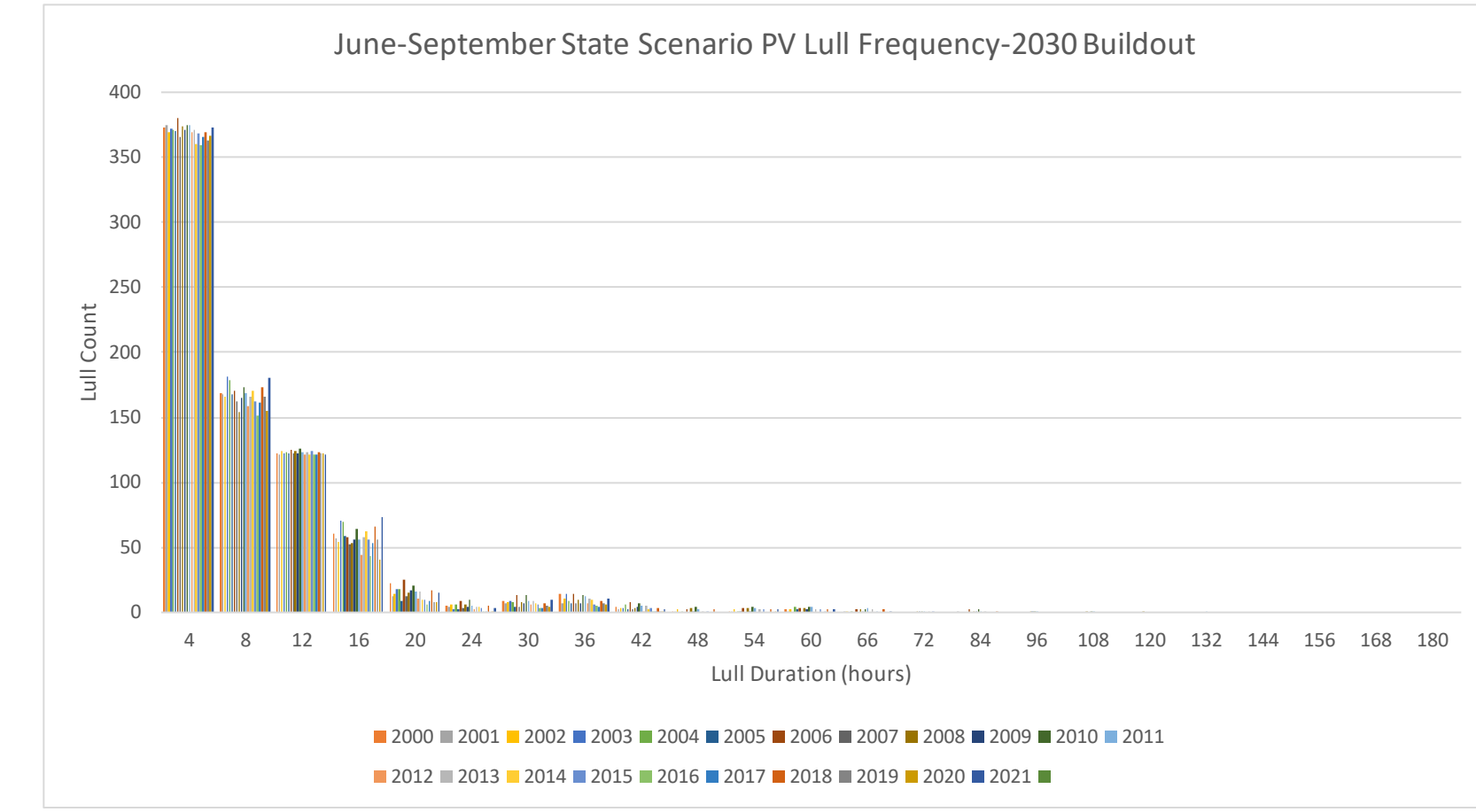


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout Year	June-September State Scenario	Title	June-September State Scenario PV Lull Frequency-2030 Buildout
Type	PV		

Profile Year	Lull Duration (hours)																						
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180
2000	373	169	122	61	22	5	9	18	4	1	1	2	0	0	0	0	0	0	0	0	0	0	0
2001	375	166	121	57	12	4	7	7	2	1	1	1	1	0	1	0	0	0	0	0	0	0	0
2002	369	166	124	54	14	6	8	11	3	2	2	2	1	0	0	0	0	0	0	0	0	0	0
2003	372	183	122	71	18	2	9	11	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	371	179	123	70	18	6	8	9	6	1	1	2	1	0	0	0	0	0	0	0	0	0	0
2005	370	168	122	59	9	2	4	7	2	0	1	2	0	0	0	0	0	0	0	0	0	0	0
2006	368	170	125	58	23	9	13	14	8	2	3	3	2	0	0	0	0	0	0	0	0	0	0
2007	366	162	122	52	12	3	4	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	374	154	124	53	15	6	8	10	3	3	3	3	2	1	1	1	1	1	0	0	0	0	0
2009	371	165	122	56	17	4	7	7	4	1	1	2	1	1	1	0	0	0	0	0	0	0	0
2010	375	173	124	64	21	16	18	13	7	4	4	4	2	1	1	1	0	0	0	0	0	0	0
2011	375	169	123	56	16	5	9	12	5	2	3	4	3	1	1	1	1	0	1	0	0	0	0
2012	369	159	121	44	11	2	6	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	371	166	123	58	16	4	9	11	5	1	2	2	2	1	1	0	0	0	0	0	0	0	0
2014	360	170	121	62	10	4	7	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	368	162	124	56	10	3	6	6	3	1	2	2	1	0	0	0	0	0	0	0	0	0	0
2016	359	151	121	43	6	1	3	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	366	161	121	53	9	1	3	4	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2018	369	173	123	66	17	5	7	9	3	2	2	2	2	0	1	0	0	0	0	0	0	0	0
2019	363	166	122	56	8	0	5	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	367	155	122	41	8	1	4	6	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
2021	373	180	121	53	15	3	10	11	2	0	2	2	1	0	0	0	0	0	0	0	0	0	0
Average	370	167	123	57	14	4	7	9	3	1	1	2	1	0	0	0	0	0	0	0	0	0	0
Max	380	181	126	73	25	10	13	14	8	4	4	4	3	1	2	1	1	1	1	0	0	0	0
Min	359	151	121	41	6	0	3	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Red Fill-Most Occurrences
Green Fill-Least Occurrences

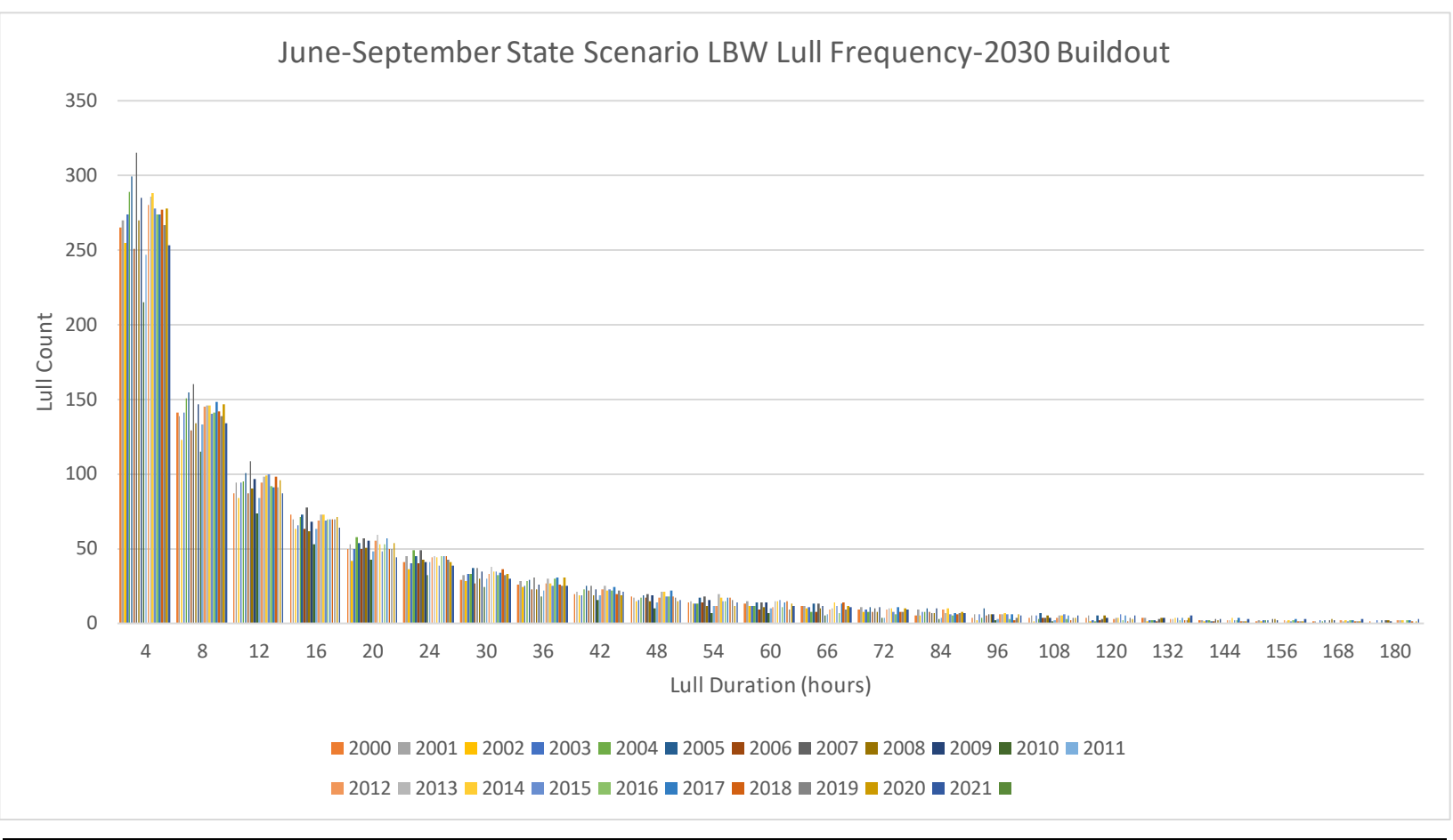


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout Year	June-September State Scenario	Title	June-September State Scenario LBW Lull Frequency-2030 Buildout
Type	2030		
	LBW		

Profile Year	Lull Duration (hours)																						
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180
2000	265	141	87	73	50	41	29	26	20	18	14	13	12	9	5	4	4	4	4	2	1	1	1
2001	270	139	94	70	53	45	32	28	21	17	15	15	12	8	5	4	5	4	2	2	1	0	0
2002	255	123	84	63	42	36	28	24	19	15	13	12	10	8	5	2	1	1	1	1	1	0	0
2003	274	141	94	66	50	40	33	25	19	16	13	12	11	9	8	6	5	2	2	2	2	2	2
2004	289	151	95	71	58	48	33	28	23	17	13	12	8	8	8	4	3	1	2	2	2	1	0
2005	299	155	101	73	54	45	37	29	25	19	17	14	13	12	10	7	5	2	1	2	2	2	2
2006	251	129	87	63	50	40	27	23	22	17	14	9	8	8	8	5	4	2	1	1	0	0	0
2007	315	160	109	78	57	49	37	31	25	20	18	14	13	10	7	6	4	3	3	3	3	2	2
2008	270	134	90	62	51	43	30	23	19	15	12	11	10	8	7	6	5	5	4	2	3	3	2
2009	285	147	97	68	55	41	35	26	23	19	16	14	12	11	10	6	4	4	4	3	2	2	1
2010	215	115	74	53	43	32	24	18	16	10	7	7	5	4	3	2	1	0	0	0	0	0	0
2011	247	133	84	63	48	41	30	22	19	14	12	10	6	4	4	3	2	0	0	0	0	0	0
2012	280	145	94	69	55	44	33	27	23	17	12	11	9	9	9	6	4	3	3	2	2	2	2
2013	286	146	98	73	59	45	38	30	25	21	17	15	10	10	7	6	5	4	3	2	1	1	2
2014	288	146	99	73	53	44	35	27	22	21	17	15	10	10	7	7	5	4	4	4	2	2	2
2015	278	140	100	69	48	39	35	25	23	18	15	12	12	8	6	6	6	6	4	2	1	1	0
2016	274	141	92	70	53	45	32	30	22	18	15	11	7	6	5	3	3	2	2	2	2	2	2
2017	274	148	91	70	57	45	34	31	24	22	17	14	13	11	7	6	5	5	4	4	3	2	2
2018	277	142	98	70	50	45	36	26	20	18	17	15	11	8	6	2	2	1	2	1	1	1	1
2019	267	139	91	70	50	43	32	25	22	17	16	9	9	8	7	4	4	4	2	1	1	1	0
2020	278	147	96	71	54	41	33	31	19	15	12	13	12	10	8	6	4	3	4	1	1	1	1
2021	253	134	87	64	44	39	30	25	21	16	14	12	11	9	7	5	5	5	5	3	3	3	3
Average	272	141	93	68	52	42	32	26	21	17	15	12	11	9	7	5	4	3	3	2	2	1	1
Max	315	160	109	78	59	49	38	31	25	22	20	16	14	11	10	10	7	6	5	4	3	3	3
Min	215	115	74	53	42	32	24	18	16	10	7	7	5	4	3	2	1	0	0	0	0	0	0

Red Fill=Most Occurrences
Green Fill=Least Occurrences

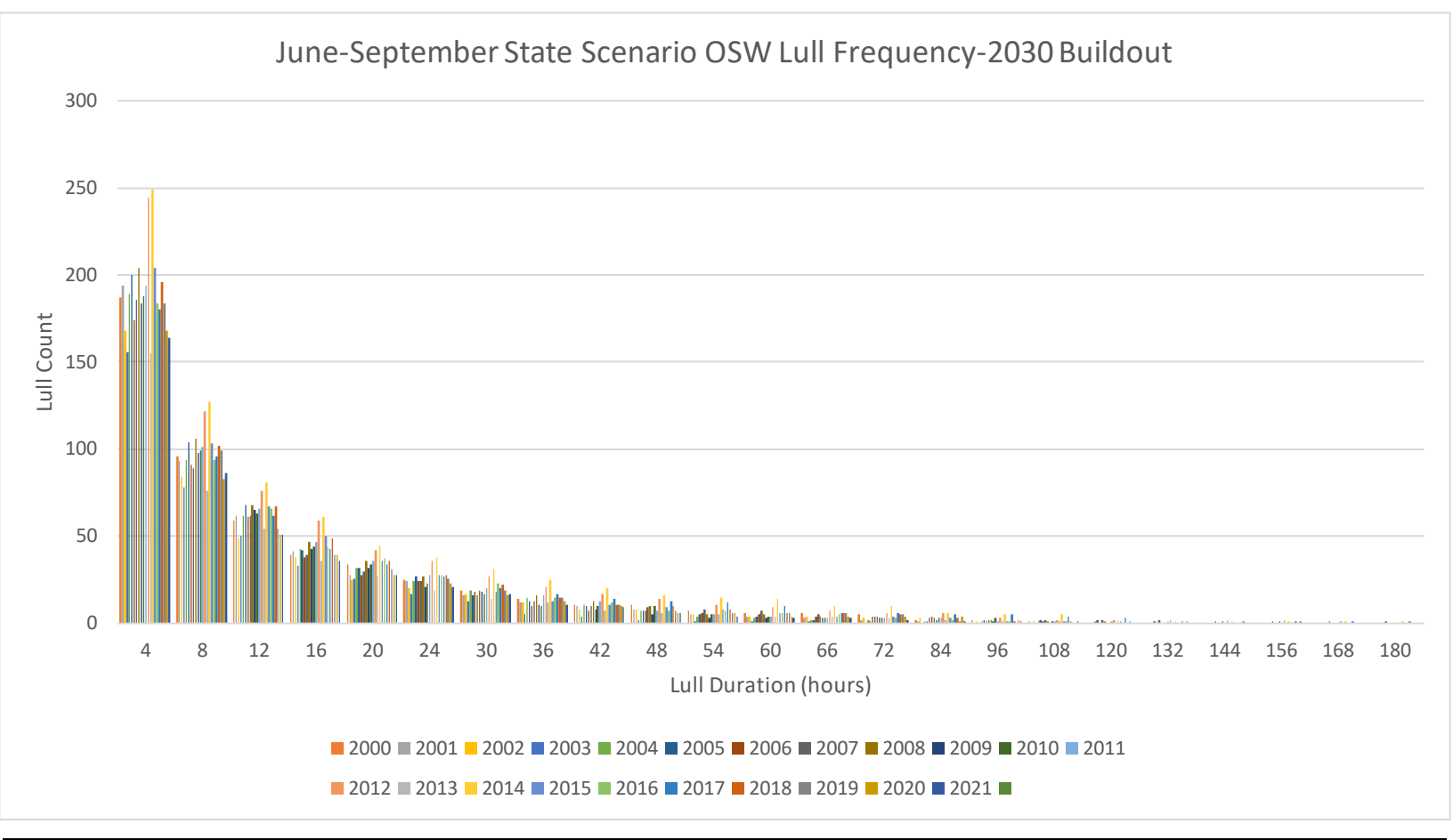


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout Year	June-September State Scenario 2030	Title	June-September State Scenario OSW Lull Frequency-2030 Buildout
Type	OSW		

Profile Year	Lull Duration (hours)																							
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180	
2000	187	96	59	39	34	25	19	14	11	11	7	6	6	5	2	2	1	0	0	0	0	0	0	0
2001	194	93	62	41	28	24	16	12	10	8	5	4	3	2	1	0	0	0	0	0	0	0	0	0
2002	168	84	49	38	25	20	17	12	8	8	5	4	4	3	3	1	1	0	0	0	0	0	0	0
2003	156	78	50	33	26	17	13	5	4	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0
2004	189	94	62	43	32	24	19	15	11	7	4	3	2	2	1	1	1	1	0	0	0	0	0	0
2005	200	104	68	42	32	27	16	13	10	7	5	4	2	1	1	2	2	2	1	0	0	0	0	0
2006	174	91	61	38	28	24	18	10	7	7	6	5	4	4	3	1	1	0	0	0	0	0	0	0
2007	186	89	62	39	30	24	16	13	10	9	8	7	5	4	4	2	2	2	2	1	1	1	1	1
2008	204	106	68	47	36	27	19	16	13	10	5	5	4	4	3	2	1	1	0	0	0	0	0	0
2009	184	98	65	43	32	21	18	11	8	5	3	3	3	3	2	1	0	0	0	0	0	0	0	0
2010	188	99	63	44	34	23	17	10	10	10	5	4	3	3	3	3	1	0	0	1	1	0	0	0
2011	194	101	66	47	36	28	20	16	13	7	5	4	3	3	3	1	1	1	1	0	0	0	0	0
2012	244	122	76	59	42	36	27	21	17	14	11	9	7	6	4	3	2	2	2	2	2	2	1	0
2013	155	76	54	36	27	19	14	12	7	6	5	4	4	3	2	1	1	0	0	0	0	0	0	0
2014	249	123	81	61	45	38	28	20	16	13	10	8	6	5	4	3	2	1	1	1	1	1	1	1
2015	204	103	67	50	36	28	18	13	11	9	8	6	4	4	3	1	1	1	0	0	0	0	0	0
2016	184	94	66	44	37	28	23	15	12	7	7	6	5	3	2	1	1	0	0	0	0	0	0	0
2017	180	96	62	43	34	27	20	17	14	13	12	10	6	6	5	5	4	3	1	0	1	1	1	1
2018	196	102	67	49	36	28	22	15	11	10	8	6	6	5	3	1	1	0	0	0	0	0	0	0
2019	184	99	64	39	31	26	19	15	11	7	6	6	6	5	1	0	0	1	1	1	1	1	0	0
2020	168	83	51	39	28	23	16	13	10	6	6	4	4	4	4	2	0	0	0	0	0	0	0	0
2021	164	86	51	36	28	21	17	11	9	6	4	3	3	2	1	1	1	0	0	0	0	0	0	0
Average	189	96	62	43	33	25	19	14	11	8	6	5	4	4	3	2	1	1	0	0	0	0	0	0
Max	249	127	81	61	45	38	31	25	20	16	15	14	10	10	6	5	5	3	2	2	2	2	1	1
Min	155	76	49	33	25	17	13	5	4	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0

Red Fill=Most Occurrences
Green Fill=Least Occurrences

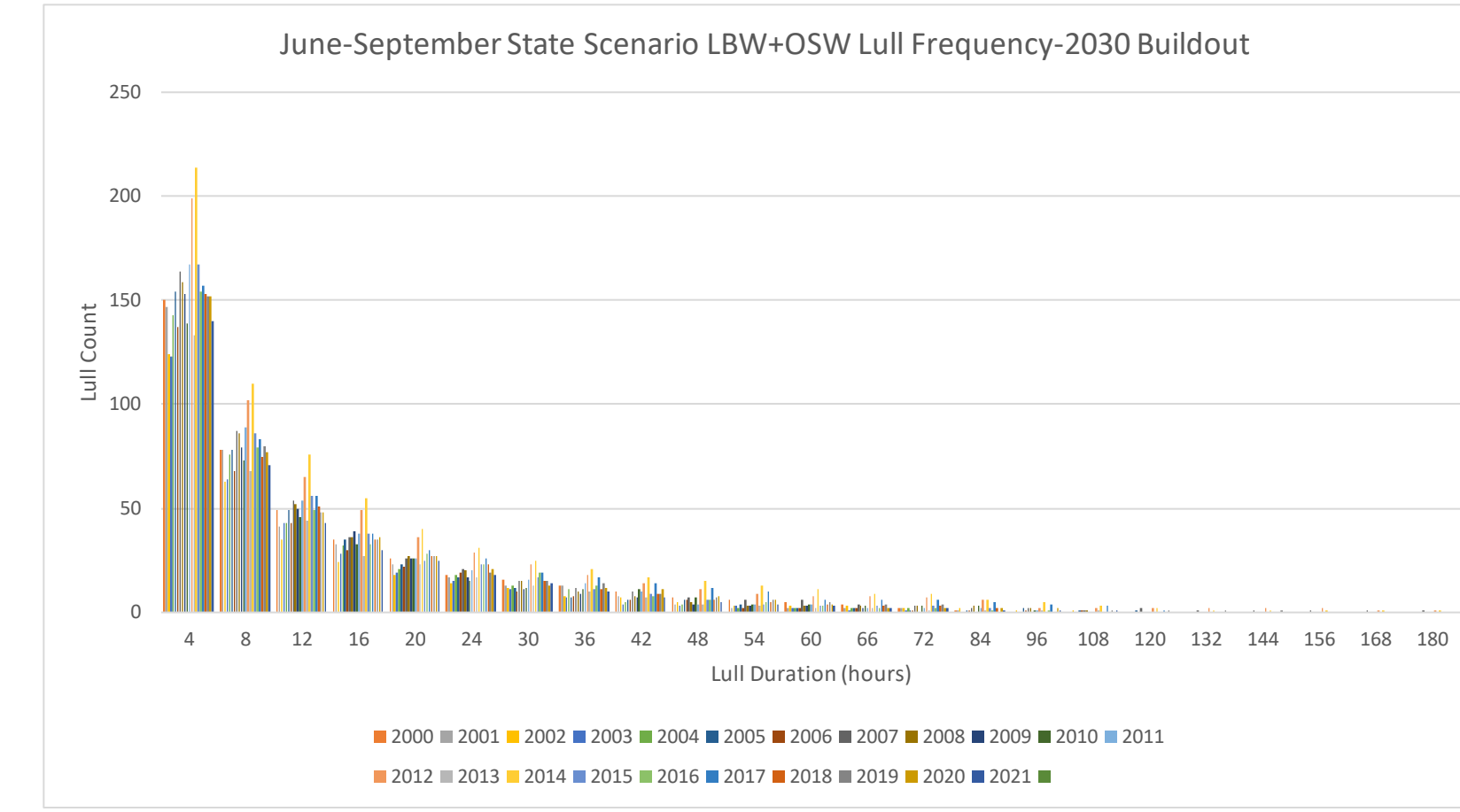


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout Year	June-September State Scenario 2030	Title	June-September State Scenario LBW+OSW Lull Frequency-2030 Buildout
Type	LBW+OSW		

Profile Year	Lull Duration (hours)																							
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180	
2000	150	78	49	35	26	18	16	13	10	7	6	5	4	2	1	0	0	0	0	0	0	0	0	0
2001	147	78	41	33	23	17	13	13	8	4	2	2	2	2	1	0	0	0	0	0	0	0	0	0
2002	124	63	35	24	18	14	12	8	7	5	3	3	3	2	2	1	1	0	0	0	0	0	0	0
2003	123	64	43	28	19	15	11	7	4	3	3	2	1	1	0	0	0	0	0	0	0	0	0	0
2004	143	76	43	32	21	18	13	11	5	4	2	2	2	2	0	0	0	0	0	0	0	0	0	0
2005	154	78	49	35	23	17	12	9	6	6	4	2	2	1	1	2	1	1	0	0	0	0	0	0
2006	137	68	43	30	22	19	10	8	6	6	2	2	2	1	1	1	1	0	0	0	0	0	0	0
2007	164	87	54	36	26	21	15	12	10	7	6	6	4	3	2	2	1	2	1	1	1	1	1	1
2008	159	86	52	36	27	20	15	10	8	5	3	3	3	3	3	2	1	0	0	0	0	0	0	0
2009	153	79	50	39	26	17	11	9	7	4	3	3	2	0	0	0	0	0	0	0	0	0	0	0
2010	139	73	46	33	26	15	12	11	11	7	4	4	3	3	3	1	0	0	0	0	0	0	0	0
2011	167	89	54	38	26	20	16	14	10	4	4	4	2	2	2	1	0	0	0	0	0	0	0	0
2012	199	102	65	49	36	29	23	18	14	11	9	8	8	7	4	2	2	2	2	2	2	2	1	1
2013	133	68	44	27	23	17	13	10	7	4	3	2	2	1	1	1	1	0	0	0	0	0	0	0
2014	214	110	76	55	40	31	25	21	17	15	13	11	9	9	6	5	3	2	1	1	1	1	1	1
2015	167	86	56	38	25	23	17	11	9	6	4	3	3	2	0	0	0	0	0	0	0	0	0	0
2016	154	79	49	33	28	23	19	13	8	6	5	3	2	2	1	1	0	0	0	0	0	0	0	0
2017	157	83	56	38	30	26	19	17	14	12	10	6	6	6	5	4	3	1	0	0	0	0	0	0
2018	153	75	51	35	27	23	15	11	9	6	5	4	3	3	2	0	0	0	0	0	0	0	0	0
2019	152	80	48	35	27	19	15	14	9	7	6	5	4	4	0	0	1	1	1	1	0	0	0	0
2020	152	77	48	36	27	21	13	12	11	8	6	4	2	2	2	0	0	0	0	0	0	0	0	0
2021	140	71	43	30	25	18	14	10	7	5	4	3	2	2	1	1	1	0	0	0	0	0	0	0
Average	154	80	50	35	26	20	15	12	9	6	5	4	3	3	2	1	1	0	0	0	0	0	0	0
Max	214	110	76	55	40	31	25	21	17	15	13	11	9	9	6	5	3	2	2	2	2	2	1	1
Min	123	63	35	24	18	14	10	7	4	3	2	2	1	0	0	0	0	0	0	0	0	0	0	0

Red Fill=Most Occurrences
Green Fill=Least Occurrences

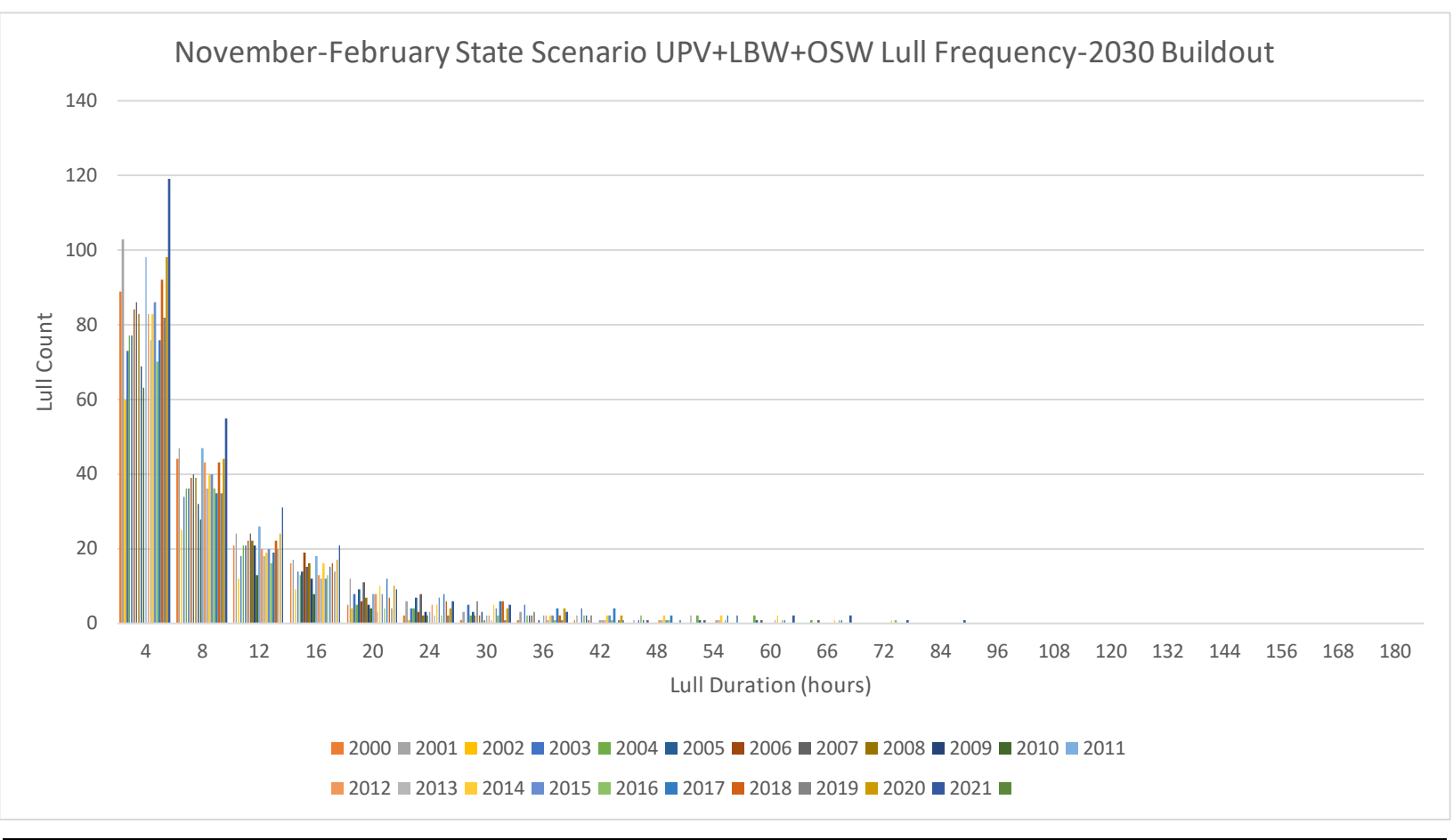


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout Year	November-February State Scenario Title	November-February State Scenario UPV+LBW+OSW Lull Frequency
2030		
Type	UPV+LBW+OSW	

Profile Year	Lull Duration (hours)																						
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180
2000	89	44	21	16	5	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	103	47	24	17	13	6	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	60	25	12	9	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	73	34	18	14	8	4	5	5	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	77	36	21	13	5	4	2	2	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0
2005	77	36	21	14	9	7	3	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0
2006	84	39	22	19	6	3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	86	40	24	15	11	8	8	3	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0
2008	83	39	22	16	7	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	69	32	21	12	5	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	63	28	13	8	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	98	47	26	18	8	3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	83	43	20	13	8	5	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2013	76	36	18	12	3	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2014	83	40	19	16	10	5	5	2	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0
2015	86	40	20	12	8	7	4	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	70	36	16	13	4	2	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
2017	76	35	19	15	17	8	8	4	4	2	2	1	1	0	0	0	0	0	0	0	0	0	0
2018	92	43	22	16	7	6	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	82	35	20	14	4	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	98	44	24	17	10	4	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	119	55	31	21	9	6	5	3	1	1	2	2	2	1	1	0	0	0	0	0	0	0	0
Average	83	39	21	15	7	4	3	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Max	119	55	31	21	12	8	6	5	4	2	2	2	2	1	1	0	0	0	0	0	0	0	0
Min	60	25	12	8	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Red Fill=Most Occurrences
Green Fill=Least Occurrences

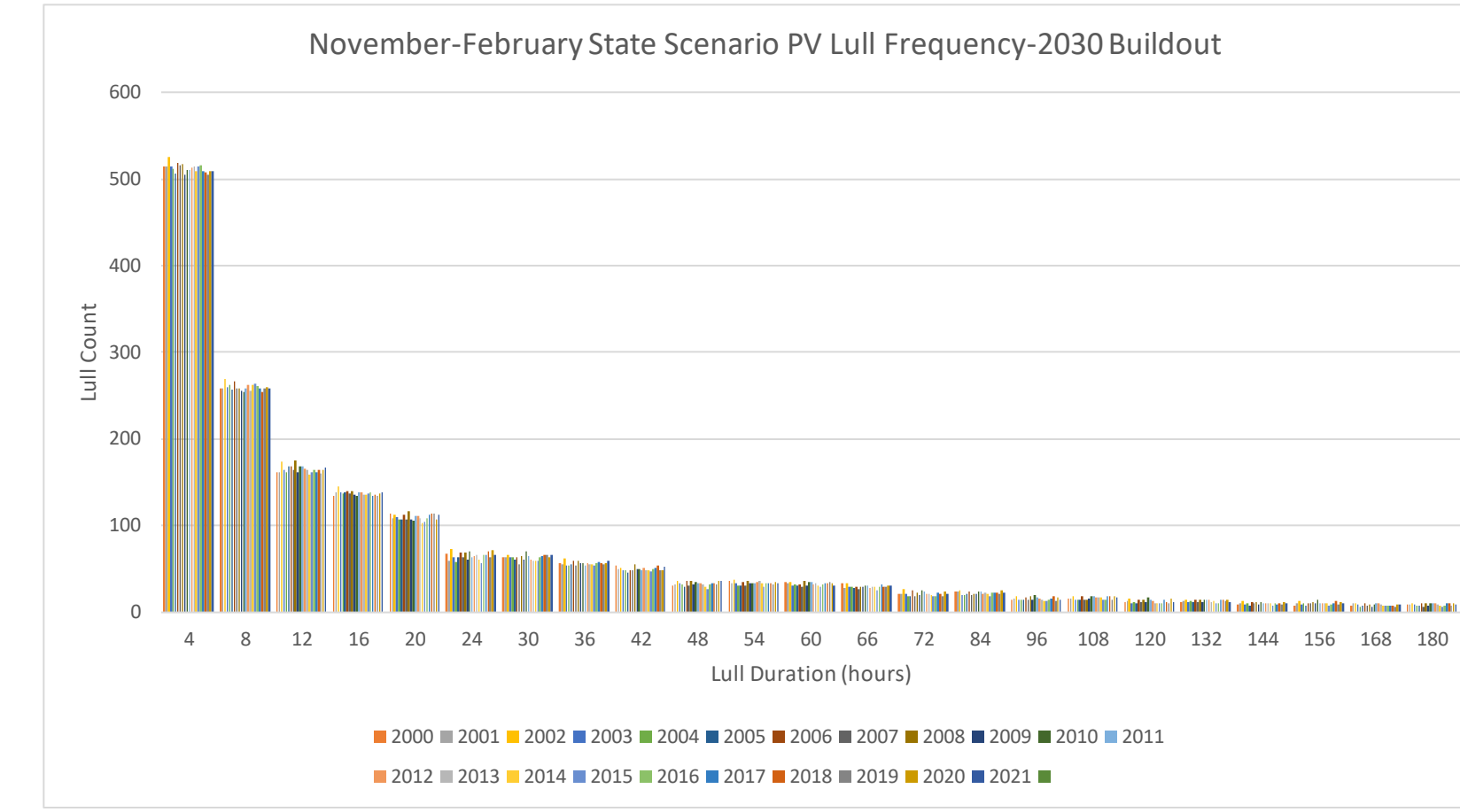


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout Year	November-February State Scenario	November-February State Scenario PV Lull Frequency-2030 Buildout
Type	2030	PV

Profile Year	Lull Duration (hours)																							
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180	
2000	514	259	162	134	114	88	64	57	54	31	37	35	28	22	24	15	16	12	12	9	8	8	9	
2001	515	259	162	138	109	58	63	56	50	32	34	33	28	22	24	16	16	13	11	11	10	10	9	
2002	525	269	174	142	112	73	66	62	51	36	34	35	33	27	25	18	18	16	15	13	13	10	11	
2003	515	260	165	139	110	63	64	54	49	34	33	31	29	22	20	15	15	10	12	9	9	9	9	
2004	512	263	161	137	107	58	63	54	48	32	31	32	30	19	20	14	14	12	13	10	11	7	8	
2005	506	257	168	138	107	63	61	56	46	30	31	31	28	28	21	14	15	11	12	8	8	8	8	
2006	518	266	168	140	113	69	63	59	48	36	35	32	29	25	24	17	18	15	14	12	11	11	10	
2007	516	258	164	137	107	64	56	54	48	31	31	29	27	19	20	14	14	12	12	10	10	8	7	
2008	517	258	165	140	117	69	65	59	58	31	37	36	30	23	22	18	15	14	14	12	12	9	10	
2009	505	256	162	136	107	61	61	57	50	32	33	31	30	20	22	14	16	12	12	9	11	7	8	
2010	510	254	168	134	106	71	67	57	50	35	34	35	31	25	24	20	18	17	15	12	14	9	10	
2011	511	259	168	139	111	64	65	54	49	33	34	35	31	24	24	17	18	15	14	10	11	10	10	
2012	513	263	166	138	111	65	61	57	52	33	35	32	28	21	21	16	17	13	14	11	11	10	10	
2013	515	255	164	136	108	66	60	56	48	32	36	34	29	21	23	15	17	11	12	11	11	9	9	
2014	509	263	159	136	108	61	60	55	49	30	33	31	29	20	21	13	17	11	13	11	11	8	8	
2015	515	264	161	137	104	57	59	54	47	27	30	29	25	19	18	13	14	11	11	8	8	8	7	
2016	516	261	164	138	109	67	64	57	50	32	33	32	30	19	23	15	15	11	11	10	9	8	8	
2017	509	259	162	134	113	66	65	58	51	33	34	34	32	23	19	13	16	19	14	15	9	11	8	10
2018	507	254	164	136	114	70	67	57	54	33	34	34	30	22	23	19	18	12	14	11	13	8	10	
2019	505	258	160	134	114	64	67	56	49	32	32	35	30	19	22	13	15	11	13	9	9	7	8	
2020	509	260	165	137	107	72	64	57	49	32	35	34	31	24	23	17	19	16	14	12	12	9	10	
2021	509	258	167	139	113	66	66	60	53	36	33	31	31	22	23	14	17	12	12	11	10	9	9	
Average	512	260	165	137	110	65	63	57	50	33	34	33	30	22	22	16	16	13	13	10	11	9	9	
Max	525	269	175	145	117	73	70	62	56	37	38	36	34	27	25	20	19	17	15	13	14	11	11	
Min	505	254	159	134	103	57	56	54	46	27	30	29	25	18	18	13	14	10	11	8	8	7	7	

Red Fill-Most Occurrences
Green Fill-Least Occurrences

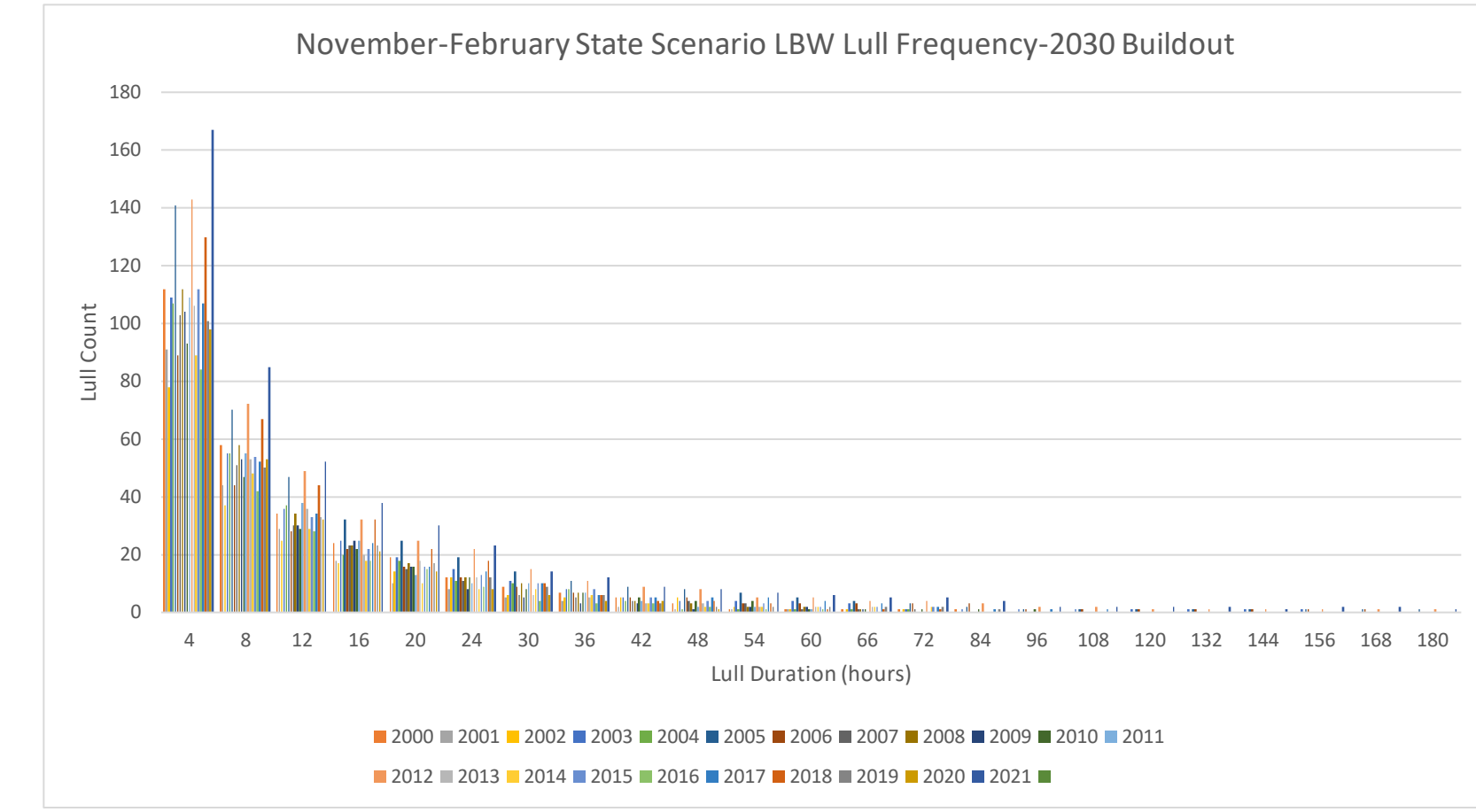


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout	November-February State Scenario	November-February State Scenario LBW Lull Frequency-2030 Build
Year	2030	
Type	LBW	

Profile Year	Lull Duration (hours)																						
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180
2000	112	58	34	24	19	12	9	7	5	3	1	1	1	1	0	0	0	0	0	0	0	0	0
2001	91	44	29	18	10	8	5	4	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0
2002	78	37	25	17	14	12	6	5	5	5	2	1	1	1	0	0	0	0	0	0	0	0	0
2003	109	55	36	25	19	15	11	8	5	4	4	4	3	1	1	1	1	1	1	1	1	1	0
2004	107	55	37	20	18	11	10	8	4	1	1	1	1	1	0	0	0	0	0	0	0	0	0
2005	141	70	47	32	25	19	14	11	8	6	5	4	3	2	1	1	1	1	1	1	1	1	1
2006	89	44	28	22	16	12	9	7	5	5	3	3	3	3	3	1	1	1	1	1	1	1	0
2007	103	51	30	23	15	11	6	5	4	4	3	1	1	1	0	0	0	0	0	0	0	0	0
2008	112	58	34	23	17	12	10	7	4	3	2	2	1	0	0	0	0	0	0	0	0	0	0
2009	104	53	30	25	16	8	5	3	3	1	2	2	1	0	0	0	0	0	0	0	0	0	0
2010	93	47	29	22	16	12	8	7	5	4	4	1	1	1	1	1	0	0	0	0	0	0	0
2011	109	55	38	25	13	10	10	7	4	2	2	1	0	0	0	0	0	0	0	0	0	0	0
2012	143	72	49	32	25	22	15	11	9	8	5	5	4	4	3	2	2	1	1	1	1	1	1
2013	106	53	36	20	18	12	6	5	3	3	2	2	2	0	0	0	0	0	0	0	0	0	0
2014	89	48	29	18	10	8	8	6	3	2	2	2	2	0	0	0	0	0	0	0	0	0	0
2015	112	54	33	22	16	13	10	8	5	4	3	2	2	0	0	0	0	0	0	0	0	0	0
2016	84	42	28	18	15	9	4	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2017	107	52	34	24	16	14	10	6	5	5	4	3	2	1	1	1	0	0	0	0	0	0	0
2018	130	67	44	32	22	18	10	6	4	4	3	1	1	1	0	0	0	0	0	0	0	0	0
2019	101	50	33	23	17	12	9	6	3	2	2	2	2	1	0	0	0	0	0	0	0	0	0
2020	98	53	32	21	14	8	6	4	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	167	85	52	38	30	23	14	12	9	8	7	6	5	5	4	2	2	2	2	1	2	2	1
Average	108	55	35	24	17	13	9	7	5	4	3	2	2	1	1	0	0	0	0	0	0	0	0
Max	167	85	52	38	30	23	15	12	9	8	7	6	5	5	4	2	2	2	2	1	2	2	1
Min	78	37	25	17	10	8	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0

Red Fill=Most Occurrences
Green Fill=Least Occurrences

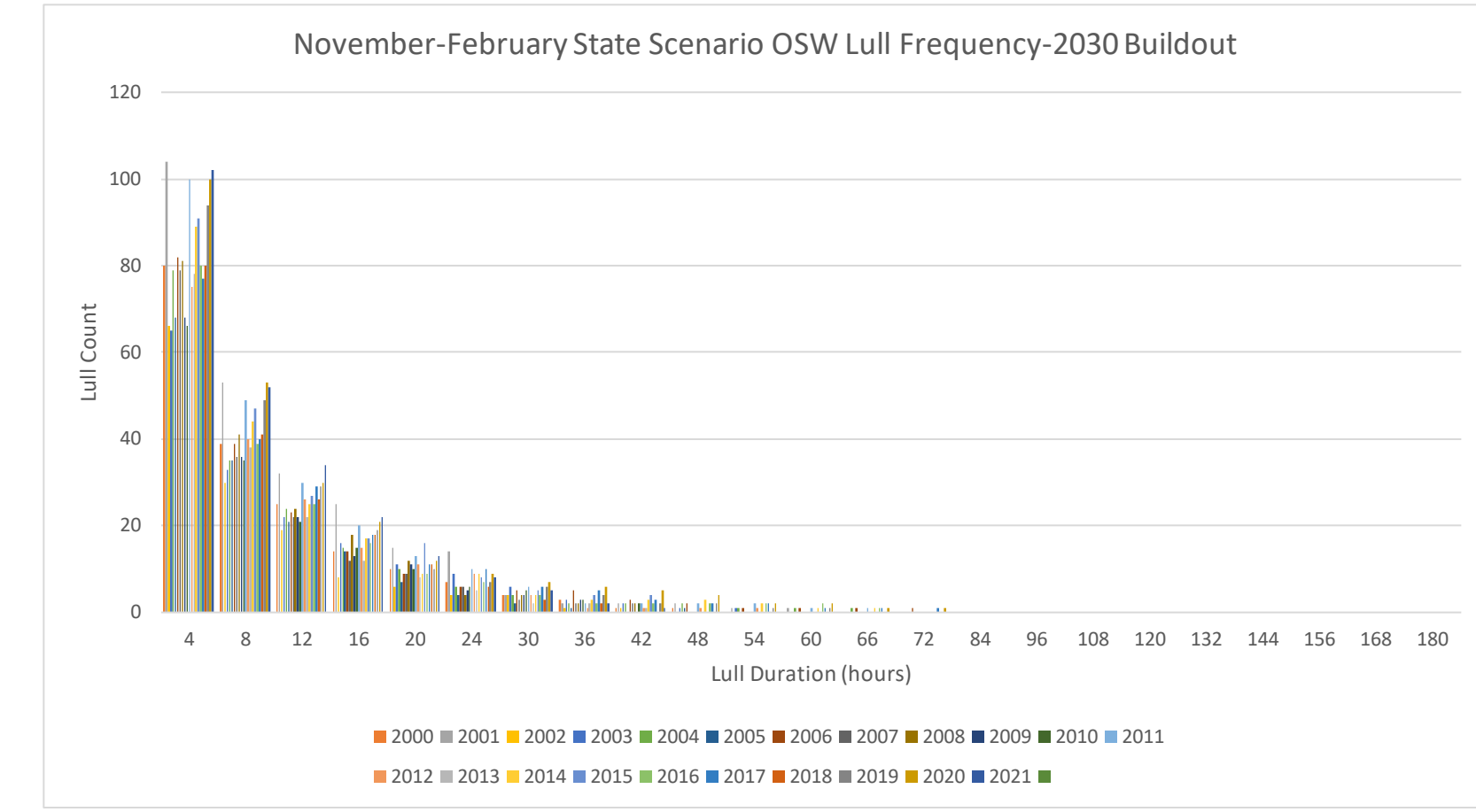


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout	November-February State Scenario	November-February State Scenario OSW Lull Frequency-2030 Build
Year	2030	
Type	OSW	

Profile Year	Lull Duration (hours)																						
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180
2000	80	39	25	14	10	7	4	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	104	38	32	24	15	14	4	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0
2002	66	30	19	8	6	4	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	65	33	22	16	11	9	6	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2004	79	35	24	15	10	6	4	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0
2005	68	35	21	14	7	4	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	82	39	23	14	9	6	5	5	3	2	1	1	1	1	0	0	0	0	0	0	0	0	0
2007	79	36	22	12	9	6	3	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	81	41	24	18	12	4	4	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	68	36	22	13	11	5	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	66	35	21	15	10	6	5	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	100	49	30	20	13	10	6	2	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0
2012	75	40	26	15	11	9	4	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2013	78	38	22	12	8	5	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	89	44	25	17	9	9	4	3	3	3	3	1	1	1	0	0	0	0	0	0	0	0	0
2015	91	47	27	17	10	8	5	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	80	39	25	16	9	7	4	2	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0
2017	77	40	29	18	11	10	6	5	3	2	2	1	1	1	0	0	0	0	0	0	0	0	0
2018	80	41	26	18	11	6	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	94	49	29	19	10	7	6	4	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0
2020	100	53	30	21	12	9	7	6	1	4	2	2	1	1	0	0	0	0	0	0	0	0	0
2021	102	52	34	22	13	8	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average	82	41	25	16	11	7	4	3	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Max	104	53	34	25	16	14	7	6	5	4	2	2	1	1	0	0	0	0	0	0	0	0	0
Min	65	30	19	8	6	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Red Fill=Most Occurrences
Green Fill=Least Occurrences

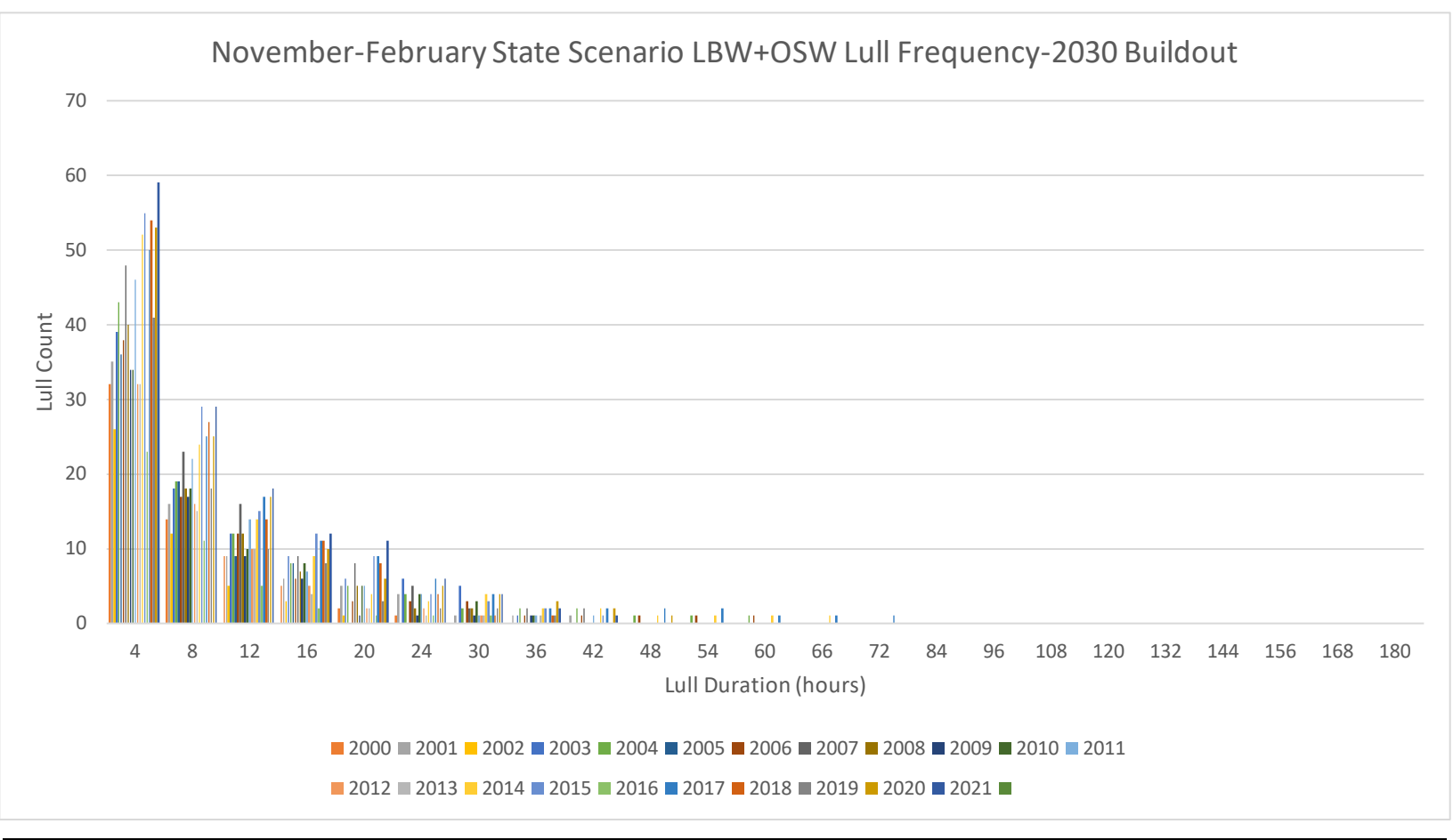


Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

Buildout	November-February State Scenario	November-February State Scenario LBW+OSW Lull Frequency-203
Year	2030	
Type	LBW+OSW	

Profile Year	Lull Duration (hours)																						
	4	8	12	16	20	24	30	36	42	48	54	60	66	72	84	96	108	120	132	144	156	168	180
2000	32	14	9	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	35	16	9	6	5	4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	26	12	5	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003	39	18	12	9	6	6	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004	43	19	12	8	5	4	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0
2005	36	19	9	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	38	17	12	6	3	3	3	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
2007	48	23	16	9	8	5	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	40	18	12	7	5	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	34	17	9	6	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	34	18	10	8	5	4	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	46	22	14	7	5	4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	32	16	10	5	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	32	15	10	4	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	52	24	14	9	4	3	4	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0
2015	55	28	15	10	9	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	23	11	5	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	50	25	17	11	9	0	4	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0
2018	54	27	14	11	8	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	41	18	10	8	3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	53	25	17	10	6	5	4	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	59	29	18	12	11	6	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Average	41	20	12	8	5	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max	59	29	18	12	11	6	5	3	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0
Min	23	11	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Red Fill=Most Occurrences
Green Fill=Least Occurrences



Note: The above chart represents lull frequency of the stated buildout type based on which year of NYISO (DNV) renewable data used to develop the overall capacity weighted net capacity factor profile.
Lulls for the purpose of this analysis were defined as periods where rolling average capacity factor was below 10%. Rolling mean was implemented using pandas.DataFrame.rolling method.

2030 Longest Lulls

Year	Lull Rank	Start Date	End Date	Duration (hours)	Resource
2000	1	11/8/2000 16:00	12/31/2000 23:00	1280	UPV_SRO_2030
2001	1	1/3/2001 16:00	2/11/2001 11:00	932	UPV_SRO_2030
2002	1	11/9/2002 16:00	12/31/2002 23:00	1256	UPV_SRO_2030
2003	1	12/8/2003 16:00	12/31/2003 23:00	560	UPV_SRO_2030
2004	1	11/16/2004 16:00	12/31/2004 23:00	1088	UPV_SRO_2030
2005	1	11/14/2005 16:00	12/31/2005 23:00	1136	UPV_SRO_2030
2006	1	11/27/2006 16:00	12/31/2006 23:00	824	UPV_SRO_2030
2007	1	12/1/2007 16:00	12/31/2007 23:00	728	UPV_SRO_2030
2008	1	11/23/2008 16:00	12/31/2008 23:00	920	UPV_SRO_2030
2009	1	11/19/2009 16:00	12/31/2009 23:00	1016	UPV_SRO_2030
2010	1	11/15/2010 16:00	12/31/2010 23:00	1112	UPV_SRO_2030
2011	1	11/26/2011 16:00	12/31/2011 23:00	848	UPV_SRO_2030
2012	1	11/22/2012 16:00	12/31/2012 23:00	944	UPV_SRO_2030
2013	1	11/30/2013 16:00	12/31/2013 23:00	752	UPV_SRO_2030
2014	1	11/21/2014 16:00	12/31/2014 23:00	968	UPV_SRO_2030
2015	1	11/30/2015 16:00	12/31/2015 23:00	752	UPV_SRO_2030
2016	1	11/23/2016 16:00	12/31/2016 23:00	920	UPV_SRO_2030
2017	1	12/4/2017 16:00	12/31/2017 23:00	656	UPV_SRO_2030
2018	1	11/24/2018 16:00	12/31/2018 23:00	896	UPV_SRO_2030
2019	1	11/26/2019 16:00	12/31/2019 23:00	848	UPV_SRO_2030
2020	1	11/10/2020 16:00	12/31/2020 23:00	1232	UPV_SRO_2030
2021	1	11/24/2021 16:00	12/31/2021 23:00	896	UPV_SRO_2030
2000	1	7/23/2000 4:00	7/30/2000 8:00	173	LBW_SRO_2030
2001	1	3/31/2001 2:00	4/6/2001 14:00	157	LBW_SRO_2030
2002	1	9/15/2002 11:00	9/18/2002 16:00	78	LBW_SRO_2030
2003	1	8/4/2003 10:00	8/22/2003 6:00	429	LBW_SRO_2030
2004	1	8/12/2004 8:00	8/18/2004 18:00	155	LBW_SRO_2030
2005	1	7/11/2005 5:00	7/17/2005 2:00	142	LBW_SRO_2030
2006	1	3/23/2006 5:00	3/31/2006 2:00	190	LBW_SRO_2030
2007	1	7/21/2007 2:00	8/3/2007 11:00	322	LBW_SRO_2030
2008	1	8/30/2008 8:00	9/5/2008 6:00	143	LBW_SRO_2030
2009	1	8/31/2009 6:00	9/14/2009 18:00	349	LBW_SRO_2030
2010	1	5/25/2010 7:00	5/31/2010 19:00	157	LBW_SRO_2030
2011	1	7/13/2011 19:00	7/17/2011 17:00	95	LBW_SRO_2030
2012	1	11/13/2012 17:00	11/22/2012 21:00	221	LBW_SRO_2030
2013	1	7/12/2013 7:00	7/18/2013 17:00	155	LBW_SRO_2030
2014	1	8/1/2014 14:00	8/12/2014 1:00	252	LBW_SRO_2030
2015	1	7/8/2015 8:00	7/14/2015 1:00	138	LBW_SRO_2030
2016	1	5/18/2016 3:00	5/25/2016 2:00	168	LBW_SRO_2030
2017	1	9/9/2017 5:00	10/3/2017 3:00	575	LBW_SRO_2030
2018	1	8/10/2018 8:00	8/15/2018 13:00	126	LBW_SRO_2030
2019	1	7/31/2019 2:00	8/6/2019 18:00	161	LBW_SRO_2030
2020	1	8/12/2020 2:00	8/17/2020 14:00	133	LBW_SRO_2030
2021	1	8/19/2021 14:00	8/29/2021 4:00	231	LBW_SRO_2030
2000	1	9/1/2000 18:00	9/4/2000 19:00	74	OSW_SRO_2030
2001	1	6/25/2001 0:00	6/27/2001 16:00	65	OSW_SRO_2030
2002	1	9/6/2002 13:00	9/10/2002 23:00	107	OSW_SRO_2030
2003	1	9/20/2003 5:00	9/22/2003 23:00	67	OSW_SRO_2030
2004	1	7/19/2004 6:00	7/24/2004 5:00	120	OSW_SRO_2030
2005	1	8/6/2005 4:00	8/11/2005 19:00	136	OSW_SRO_2030
2006	1	8/23/2006 4:00	8/26/2006 9:00	78	OSW_SRO_2030
2007	1	7/29/2007 3:00	8/3/2007 5:00	123	OSW_SRO_2030
2008	1	8/20/2008 12:00	8/25/2008 9:00	118	OSW_SRO_2030

2009	1	9/19/2009 13:00	9/23/2009 13:00	97	OSW_SRO_2030
2010	1	8/18/2010 1:00	8/22/2010 9:00	105	OSW_SRO_2030
2011	1	8/29/2011 9:00	9/3/2011 17:00	129	OSW_SRO_2030
2012	1	8/19/2012 9:00	8/26/2012 0:00	160	OSW_SRO_2030
2013	1	8/15/2013 7:00	8/19/2013 18:00	108	OSW_SRO_2030
2014	1	8/3/2014 4:00	8/12/2014 16:00	229	OSW_SRO_2030
2015	1	9/16/2015 5:00	9/20/2015 20:00	112	OSW_SRO_2030
2016	1	9/20/2016 2:00	9/24/2016 4:00	99	OSW_SRO_2030
2017	1	7/30/2017 20:00	8/4/2017 20:00	121	OSW_SRO_2030
2018	1	7/2/2018 3:00	7/5/2018 22:00	92	OSW_SRO_2030
2019	1	8/16/2019 4:00	8/19/2019 11:00	80	OSW_SRO_2030
2020	1	6/29/2020 17:00	7/2/2020 23:00	79	OSW_SRO_2030
2021	1	10/12/2021 21:00	10/16/2021 9:00	85	OSW_SRO_2030
2000	1	11/12/2000 17:00	11/14/2000 13:00	45	Renewables_SRO_2030
2001	1	1/13/2001 16:00	1/15/2001 5:00	38	Renewables_SRO_2030
2002	1	11/3/2002 16:00	11/4/2002 19:00	28	Renewables_SRO_2030
2003	1	11/1/2003 23:00	11/3/2003 17:00	43	Renewables_SRO_2030
2004	1	11/16/2004 16:00	11/19/2004 11:00	68	Renewables_SRO_2030
2005	1	2/7/2005 17:00	2/10/2005 3:00	59	Renewables_SRO_2030
2006	1	11/4/2006 16:00	11/6/2006 9:00	42	Renewables_SRO_2030
2007	1	1/13/2007 17:00	1/15/2007 11:00	43	Renewables_SRO_2030
2008	1	12/18/2008 16:00	12/19/2008 13:00	22	Renewables_SRO_2030
2009	1	11/4/2009 15:00	11/5/2009 22:00	32	Renewables_SRO_2030
2010	1	11/15/2010 16:00	11/16/2010 15:00	24	Renewables_SRO_2030
2011	1	2/6/2011 17:00	2/8/2011 9:00	41	Renewables_SRO_2030
2012	1	2/14/2012 19:00	2/17/2012 4:00	58	Renewables_SRO_2030
2013	1	10/3/2013 17:00	10/6/2013 13:00	69	Renewables_SRO_2030
2014	1	12/19/2014 23:00	12/22/2014 19:00	69	Renewables_SRO_2030
2015	1	12/12/2015 14:00	12/14/2015 6:00	41	Renewables_SRO_2030
2016	1	11/23/2016 16:00	11/26/2016 16:00	73	Renewables_SRO_2030
2017	1	12/2/2017 0:00	12/4/2017 16:00	65	Renewables_SRO_2030
2018	1	9/30/2018 16:00	10/1/2018 21:00	30	Renewables_SRO_2030
2019	1	1/17/2019 16:00	1/19/2019 10:00	43	Renewables_SRO_2030
2020	1	1/30/2020 17:00	2/1/2020 12:00	44	Renewables_SRO_2030
2021	1	12/29/2021 20:00	12/31/2021 23:00	52	Renewables_SRO_2030
2000	1	9/1/2000 17:00	9/4/2000 19:00	75	OSW_LBW_SRO_2030
2001	1	6/25/2001 0:00	6/27/2001 16:00	65	OSW_LBW_SRO_2030
2002	1	9/6/2002 12:00	9/10/2002 20:00	105	OSW_LBW_SRO_2030
2003	1	8/12/2003 6:00	8/14/2003 18:00	61	OSW_LBW_SRO_2030
2004	1	8/2/2004 3:00	8/5/2004 1:00	71	OSW_LBW_SRO_2030
2005	1	8/6/2005 4:00	8/10/2005 4:00	97	OSW_LBW_SRO_2030
2006	1	8/23/2006 4:00	8/26/2006 10:00	79	OSW_LBW_SRO_2030
2007	1	7/29/2007 3:00	8/3/2007 5:00	123	OSW_LBW_SRO_2030
2008	1	8/20/2008 12:00	8/25/2008 0:00	109	OSW_LBW_SRO_2030
2009	1	3/13/2009 9:00	3/16/2009 7:00	71	OSW_LBW_SRO_2030
2010	1	8/18/2010 1:00	8/22/2010 3:00	99	OSW_LBW_SRO_2030
2011	1	8/29/2011 9:00	9/2/2011 6:00	94	OSW_LBW_SRO_2030
2012	1	8/19/2012 9:00	8/26/2012 1:00	161	OSW_LBW_SRO_2030
2013	1	8/15/2013 7:00	8/19/2013 18:00	108	OSW_LBW_SRO_2030
2014	1	8/3/2014 4:00	8/12/2014 11:00	224	OSW_LBW_SRO_2030
2015	1	9/16/2015 5:00	9/19/2015 19:00	87	OSW_LBW_SRO_2030
2016	1	9/20/2016 8:00	9/24/2016 1:00	90	OSW_LBW_SRO_2030
2017	1	8/13/2017 11:00	8/18/2017 2:00	112	OSW_LBW_SRO_2030
2018	1	7/29/2018 6:00	8/1/2018 9:00	76	OSW_LBW_SRO_2030
2019	1	7/3/2019 4:00	7/6/2019 5:00	74	OSW_LBW_SRO_2030

2020	1	8/6/2020 1:00	8/10/2020 1:00	97	OSW_LBW_SRO_2030
2021	1	10/13/2021 1:00	10/16/2021 6:00	78	OSW_LBW_SRO_2030

2030 Longest Lulls June-September

Year	Lull Rank	Start Date	End Date	Duration (hours)	Zone
2000	1	9/22/2000 17:00	9/25/2000 8:00	64	UPV_SRO_2030
2001	1	9/26/2001 17:00	9/29/2001 8:00	64	UPV_SRO_2030
2002	1	6/13/2002 18:00	6/15/2002 14:00	45	UPV_SRO_2030
2003	1	6/12/2003 18:00	6/14/2003 13:00	44	UPV_SRO_2030
2004	1	9/7/2004 18:00	9/10/2004 10:00	65	UPV_SRO_2030
2005	1	9/25/2005 17:00	9/27/2005 9:00	41	UPV_SRO_2030
2006	1	9/12/2006 18:00	9/15/2006 14:00	69	UPV_SRO_2030
2007	1	9/8/2007 17:00	9/10/2007 12:00	44	UPV_SRO_2030
2008	1	9/27/2008 17:00	9/30/2008 23:00	79	UPV_SRO_2030
2009	1	9/26/2009 16:00	9/30/2009 23:00	104	UPV_SRO_2030
2010	1	9/26/2010 17:00	9/29/2010 13:00	69	UPV_SRO_2030
2011	1	9/4/2011 17:00	9/9/2011 9:00	113	UPV_SRO_2030
2012	1	9/17/2012 17:00	9/19/2012 9:00	41	UPV_SRO_2030
2013	1	6/5/2013 19:00	6/9/2013 7:00	85	UPV_SRO_2030
2014	1	9/10/2014 17:00	9/12/2014 11:00	43	UPV_SRO_2030
2015	1	9/28/2015 17:00	9/30/2015 23:00	55	UPV_SRO_2030
2016	1	6/4/2016 19:00	6/6/2016 6:00	36	UPV_SRO_2030
2017	1	9/2/2017 18:00	9/4/2017 7:00	38	UPV_SRO_2030
2018	1	9/9/2018 17:00	9/12/2018 11:00	67	UPV_SRO_2030
2019	1	9/25/2019 17:00	9/26/2019 14:00	22	UPV_SRO_2030
2020	1	9/28/2020 17:00	9/30/2020 13:00	45	UPV_SRO_2030
2021	1	8/17/2021 17:00	8/19/2021 11:00	43	UPV_SRO_2030
2000	1	7/23/2000 4:00	7/30/2000 8:00	173	LBW_SRO_2030
2001	1	6/23/2001 7:00	6/29/2001 17:00	155	LBW_SRO_2030
2002	1	9/15/2002 11:00	9/18/2002 16:00	78	LBW_SRO_2030
2003	1	8/4/2003 10:00	8/22/2003 6:00	429	LBW_SRO_2030
2004	1	8/12/2004 8:00	8/18/2004 18:00	155	LBW_SRO_2030
2005	1	7/11/2005 5:00	7/17/2005 2:00	142	LBW_SRO_2030
2006	1	6/12/2006 7:00	6/16/2006 22:00	112	LBW_SRO_2030
2007	1	7/21/2007 2:00	8/3/2007 11:00	322	LBW_SRO_2030
2008	1	8/30/2008 8:00	9/5/2008 6:00	143	LBW_SRO_2030
2009	1	8/31/2009 6:00	9/14/2009 18:00	349	LBW_SRO_2030
2010	1	8/10/2010 1:00	8/13/2010 23:00	95	LBW_SRO_2030
2011	1	7/13/2011 19:00	7/17/2011 17:00	95	LBW_SRO_2030
2012	1	8/18/2012 2:00	8/26/2012 4:00	195	LBW_SRO_2030
2013	1	7/12/2013 7:00	7/18/2013 17:00	155	LBW_SRO_2030
2014	1	8/1/2014 14:00	8/12/2014 1:00	252	LBW_SRO_2030
2015	1	7/8/2015 8:00	7/14/2015 1:00	138	LBW_SRO_2030
2016	1	9/2/2016 5:00	9/8/2016 5:00	145	LBW_SRO_2030
2017	1	9/9/2017 5:00	9/30/2017 23:00	523	LBW_SRO_2030
2018	1	8/10/2018 8:00	8/15/2018 13:00	126	LBW_SRO_2030
2019	1	7/31/2019 2:00	8/6/2019 18:00	161	LBW_SRO_2030
2020	1	8/12/2020 2:00	8/17/2020 14:00	133	LBW_SRO_2030
2021	1	8/19/2021 14:00	8/29/2021 4:00	231	LBW_SRO_2030
2000	1	9/1/2000 18:00	9/4/2000 19:00	74	OSW_SRO_2030
2001	1	6/25/2001 0:00	6/27/2001 16:00	65	OSW_SRO_2030
2002	1	9/6/2002 13:00	9/10/2002 23:00	107	OSW_SRO_2030
2003	1	9/20/2003 5:00	9/22/2003 23:00	67	OSW_SRO_2030
2004	1	7/19/2004 6:00	7/24/2004 5:00	120	OSW_SRO_2030
2005	1	8/6/2005 4:00	8/11/2005 19:00	136	OSW_SRO_2030
2006	1	8/23/2006 4:00	8/26/2006 9:00	78	OSW_SRO_2030
2007	1	7/29/2007 3:00	8/3/2007 5:00	123	OSW_SRO_2030
2008	1	8/20/2008 12:00	8/25/2008 9:00	118	OSW_SRO_2030

2009	1	9/19/2009 13:00	9/23/2009 13:00	97	OSW_SRO_2030
2010	1	8/18/2010 1:00	8/22/2010 9:00	105	OSW_SRO_2030
2011	1	8/29/2011 9:00	9/3/2011 17:00	129	OSW_SRO_2030
2012	1	8/19/2012 9:00	8/26/2012 0:00	160	OSW_SRO_2030
2013	1	8/15/2013 7:00	8/19/2013 18:00	108	OSW_SRO_2030
2014	1	8/3/2014 4:00	8/12/2014 16:00	229	OSW_SRO_2030
2015	1	9/16/2015 5:00	9/20/2015 20:00	112	OSW_SRO_2030
2016	1	9/20/2016 2:00	9/24/2016 4:00	99	OSW_SRO_2030
2017	1	7/30/2017 20:00	8/4/2017 20:00	121	OSW_SRO_2030
2018	1	7/2/2018 3:00	7/5/2018 22:00	92	OSW_SRO_2030
2019	1	8/16/2019 4:00	8/19/2019 11:00	80	OSW_SRO_2030
2020	1	6/29/2020 17:00	7/2/2020 23:00	79	OSW_SRO_2030
2021	1	8/15/2021 13:00	8/18/2021 15:00	75	OSW_SRO_2030
2000	1	9/2/2000 16:00	9/3/2000 14:00	23	Renewables_SRO_2030
2001	1	9/22/2001 17:00	9/23/2001 11:00	19	Renewables_SRO_2030
2002	1	9/29/2002 17:00	9/30/2002 8:00	16	Renewables_SRO_2030
2003	1	8/31/2003 18:00	9/1/2003 16:00	23	Renewables_SRO_2030
2004	1	9/16/2004 17:00	9/17/2004 13:00	21	Renewables_SRO_2030
2005	1	7/15/2005 19:00	7/16/2005 11:00	17	Renewables_SRO_2030
2006	1	8/18/2006 18:00	8/19/2006 12:00	19	Renewables_SRO_2030
2007	1	8/29/2007 18:00	8/30/2007 11:00	18	Renewables_SRO_2030
2008	1	8/28/2008 18:00	8/29/2008 11:00	18	Renewables_SRO_2030
2009	1	9/21/2009 17:00	9/22/2009 10:00	18	Renewables_SRO_2030
2010	1	9/18/2010 18:00	9/19/2010 13:00	20	Renewables_SRO_2030
2011	1	9/26/2011 17:00	9/27/2011 11:00	19	Renewables_SRO_2030
2012	1	9/29/2012 17:00	9/30/2012 11:00	19	Renewables_SRO_2030
2013	1	8/12/2013 18:00	8/13/2013 11:00	18	Renewables_SRO_2030
2014	1	9/15/2014 17:00	9/16/2014 11:00	19	Renewables_SRO_2030
2015	1	7/8/2015 19:00	7/9/2015 12:00	18	Renewables_SRO_2030
2016	1	9/22/2016 17:00	9/24/2016 1:00	33	Renewables_SRO_2030
2017	1	7/26/2017 18:00	7/27/2017 11:00	18	Renewables_SRO_2030
2018	1	9/29/2018 17:00	9/30/2018 14:00	22	Renewables_SRO_2030
2019	1	9/15/2019 17:00	9/16/2019 9:00	17	Renewables_SRO_2030
2020	1	9/7/2020 18:00	9/8/2020 9:00	16	Renewables_SRO_2030
2021	1	8/16/2021 18:00	8/17/2021 16:00	23	Renewables_SRO_2030
2000	1	9/1/2000 17:00	9/4/2000 19:00	75	OSW_LBW_SRO_2030
2001	1	6/25/2001 0:00	6/27/2001 16:00	65	OSW_LBW_SRO_2030
2002	1	9/6/2002 12:00	9/10/2002 20:00	105	OSW_LBW_SRO_2030
2003	1	8/12/2003 6:00	8/14/2003 18:00	61	OSW_LBW_SRO_2030
2004	1	8/2/2004 3:00	8/5/2004 1:00	71	OSW_LBW_SRO_2030
2005	1	8/6/2005 4:00	8/10/2005 4:00	97	OSW_LBW_SRO_2030
2006	1	8/23/2006 4:00	8/26/2006 10:00	79	OSW_LBW_SRO_2030
2007	1	7/29/2007 3:00	8/3/2007 5:00	123	OSW_LBW_SRO_2030
2008	1	8/20/2008 12:00	8/25/2008 0:00	109	OSW_LBW_SRO_2030
2009	1	8/23/2009 9:00	8/26/2009 3:00	67	OSW_LBW_SRO_2030
2010	1	8/18/2010 1:00	8/22/2010 3:00	99	OSW_LBW_SRO_2030
2011	1	8/29/2011 9:00	9/2/2011 6:00	94	OSW_LBW_SRO_2030
2012	1	8/19/2012 9:00	8/26/2012 1:00	161	OSW_LBW_SRO_2030
2013	1	8/15/2013 7:00	8/19/2013 18:00	108	OSW_LBW_SRO_2030
2014	1	8/3/2014 4:00	8/12/2014 11:00	224	OSW_LBW_SRO_2030
2015	1	9/16/2015 5:00	9/19/2015 19:00	87	OSW_LBW_SRO_2030
2016	1	9/20/2016 8:00	9/24/2016 1:00	90	OSW_LBW_SRO_2030
2017	1	8/13/2017 11:00	8/18/2017 2:00	112	OSW_LBW_SRO_2030
2018	1	7/29/2018 6:00	8/1/2018 9:00	76	OSW_LBW_SRO_2030
2019	1	7/3/2019 4:00	7/6/2019 5:00	74	OSW_LBW_SRO_2030
2020	1	8/6/2020 1:00	8/10/2020 1:00	97	OSW_LBW_SRO_2030

2021	1	8/15/2021 12:00	8/18/2021 11:00	72	OSW_LBW_SRO_2030
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2030 Longest Lulls November-February

Year	Lull Rank	Start Date	End Date	Duration (hours)	Zone
2000	1	11/8/2000 16:00	12/31/2000 23:00	1280	UPV_SRO_2030
2001	1	1/3/2001 16:00	2/11/2001 11:00	932	UPV_SRO_2030
2002	1	11/9/2002 16:00	12/31/2002 23:00	1256	UPV_SRO_2030
2003	1	12/8/2003 16:00	12/31/2003 23:00	560	UPV_SRO_2030
2004	1	11/16/2004 16:00	12/31/2004 23:00	1088	UPV_SRO_2030
2005	1	11/14/2005 16:00	12/31/2005 23:00	1136	UPV_SRO_2030
2006	1	11/27/2006 16:00	12/31/2006 23:00	824	UPV_SRO_2030
2007	1	12/1/2007 16:00	12/31/2007 23:00	728	UPV_SRO_2030
2008	1	11/23/2008 16:00	12/31/2008 23:00	920	UPV_SRO_2030
2009	1	11/19/2009 16:00	12/31/2009 23:00	1016	UPV_SRO_2030
2010	1	11/15/2010 16:00	12/31/2010 23:00	1112	UPV_SRO_2030
2011	1	11/26/2011 16:00	12/31/2011 23:00	848	UPV_SRO_2030
2012	1	11/22/2012 16:00	12/31/2012 23:00	944	UPV_SRO_2030
2013	1	11/30/2013 16:00	12/31/2013 23:00	752	UPV_SRO_2030
2014	1	11/21/2014 16:00	12/31/2014 23:00	968	UPV_SRO_2030
2015	1	11/30/2015 16:00	12/31/2015 23:00	752	UPV_SRO_2030
2016	1	11/23/2016 16:00	12/31/2016 23:00	920	UPV_SRO_2030
2017	1	12/4/2017 16:00	12/31/2017 23:00	656	UPV_SRO_2030
2018	1	11/24/2018 16:00	12/31/2018 23:00	896	UPV_SRO_2030
2019	1	11/26/2019 16:00	12/31/2019 23:00	848	UPV_SRO_2030
2020	1	11/10/2020 16:00	12/31/2020 23:00	1232	UPV_SRO_2030
2021	1	11/24/2021 16:00	12/31/2021 23:00	896	UPV_SRO_2030
2000	1	11/1/2000 0:00	11/3/2000 23:00	72	LBW_SRO_2030
2001	1	2/15/2001 9:00	2/16/2001 22:00	38	LBW_SRO_2030
2002	1	12/11/2002 12:00	12/13/2002 22:00	59	LBW_SRO_2030
2003	1	2/25/2003 17:00	11/1/2003 6:00	86	LBW_SRO_2030
2004	1	2/26/2004 1:00	2/28/2004 20:00	68	LBW_SRO_2030
2005	1	2/3/2005 11:00	2/6/2005 19:00	81	LBW_SRO_2030
2006	1	11/18/2006 7:00	11/25/2006 5:00	167	LBW_SRO_2030
2007	1	12/8/2007 20:00	12/11/2007 22:00	75	LBW_SRO_2030
2008	1	11/5/2008 10:00	11/7/2008 22:00	61	LBW_SRO_2030
2009	1	2/16/2009 2:00	2/17/2009 23:00	46	LBW_SRO_2030
2010	1	11/11/2010 7:00	11/13/2010 21:00	63	LBW_SRO_2030
2011	1	2/22/2011 9:00	2/23/2011 23:00	39	LBW_SRO_2030
2012	1	11/13/2012 17:00	11/22/2012 21:00	221	LBW_SRO_2030
2013	1	1/25/2013 12:00	1/27/2013 20:00	57	LBW_SRO_2030
2014	1	12/20/2014 0:00	12/22/2014 15:00	64	LBW_SRO_2030
2015	1	11/28/2015 2:00	12/1/2015 2:00	73	LBW_SRO_2030
2016	1	2/22/2016 2:00	2/23/2016 21:00	44	LBW_SRO_2030
2017	1	11/12/2017 9:00	11/15/2017 13:00	77	LBW_SRO_2030
2018	1	11/18/2018 0:00	11/20/2018 21:00	70	LBW_SRO_2030
2019	1	11/18/2019 11:00	11/21/2019 13:00	75	LBW_SRO_2030
2020	1	12/17/2020 14:00	12/19/2020 12:00	47	LBW_SRO_2030
2021	1	1/3/2021 12:00	1/9/2021 15:00	148	LBW_SRO_2030
2000	1	2/21/2000 13:00	2/23/2000 13:00	49	OSW_SRO_2030
2001	1	1/12/2001 23:00	1/15/2001 3:00	53	OSW_SRO_2030
2002	1	11/20/2002 7:00	11/21/2002 22:00	40	OSW_SRO_2030
2003	1	11/25/2003 18:00	11/28/2003 2:00	57	OSW_SRO_2030
2004	1	11/21/2004 16:00	11/24/2004 2:00	59	OSW_SRO_2030
2005	1	11/18/2005 14:00	11/19/2005 22:00	33	OSW_SRO_2030
2006	1	11/4/2006 16:00	11/7/2006 13:00	70	OSW_SRO_2030
2007	1	2/27/2007 11:00	2/28/2007 23:00	37	OSW_SRO_2030
2008	1	11/3/2008 3:00	11/4/2008 17:00	39	OSW_SRO_2030

2009	1	11/4/2009 10:00	11/5/2009 22:00	37	OSW_SRO_2030
2010	1	11/15/2010 1:00	11/16/2010 16:00	40	OSW_SRO_2030
2011	1	12/11/2011 9:00	12/13/2011 20:00	60	OSW_SRO_2030
2012	1	2/14/2012 20:00	2/17/2012 5:00	58	OSW_SRO_2030
2013	1	12/1/2013 18:00	12/3/2013 5:00	36	OSW_SRO_2030
2014	1	12/20/2014 1:00	12/22/2014 17:00	65	OSW_SRO_2030
2015	1	12/5/2015 5:00	12/7/2015 0:00	44	OSW_SRO_2030
2016	1	11/23/2016 17:00	11/26/2016 8:00	64	OSW_SRO_2030
2017	1	12/2/2017 4:00	12/5/2017 6:00	75	OSW_SRO_2030
2018	1	11/30/2018 7:00	12/1/2018 20:00	38	OSW_SRO_2030
2019	1	2/3/2019 7:00	2/5/2019 20:00	62	OSW_SRO_2030
2020	1	1/22/2020 7:00	1/24/2020 21:00	63	OSW_SRO_2030
2021	1	1/10/2021 19:00	1/12/2021 2:00	32	OSW_SRO_2030
2000	1	11/12/2000 17:00	11/14/2000 13:00	45	Renewables_SRO_2030
2001	1	1/13/2001 16:00	1/15/2001 5:00	38	Renewables_SRO_2030
2002	1	11/3/2002 16:00	11/4/2002 19:00	28	Renewables_SRO_2030
2003	1	11/1/2003 23:00	11/3/2003 17:00	43	Renewables_SRO_2030
2004	1	11/16/2004 16:00	11/19/2004 11:00	68	Renewables_SRO_2030
2005	1	2/7/2005 17:00	2/10/2005 3:00	59	Renewables_SRO_2030
2006	1	11/4/2006 16:00	11/6/2006 9:00	42	Renewables_SRO_2030
2007	1	1/13/2007 17:00	1/15/2007 11:00	43	Renewables_SRO_2030
2008	1	12/18/2008 16:00	12/19/2008 13:00	22	Renewables_SRO_2030
2009	1	11/4/2009 15:00	11/5/2009 22:00	32	Renewables_SRO_2030
2010	1	11/15/2010 16:00	11/16/2010 15:00	24	Renewables_SRO_2030
2011	1	2/6/2011 17:00	2/8/2011 9:00	41	Renewables_SRO_2030
2012	1	2/14/2012 19:00	2/17/2012 4:00	58	Renewables_SRO_2030
2013	1	12/1/2013 16:00	12/4/2013 7:00	64	Renewables_SRO_2030
2014	1	12/19/2014 23:00	12/22/2014 19:00	69	Renewables_SRO_2030
2015	1	12/12/2015 14:00	12/14/2015 6:00	41	Renewables_SRO_2030
2016	1	11/23/2016 16:00	11/26/2016 16:00	73	Renewables_SRO_2030
2017	1	12/2/2017 0:00	12/4/2017 16:00	65	Renewables_SRO_2030
2018	1	12/10/2018 19:00	12/12/2018 0:00	30	Renewables_SRO_2030
2019	1	1/17/2019 16:00	1/19/2019 10:00	43	Renewables_SRO_2030
2020	1	1/30/2020 17:00	2/1/2020 12:00	44	Renewables_SRO_2030
2021	1	12/29/2021 20:00	12/31/2021 23:00	52	Renewables_SRO_2030
2000	1	11/13/2000 1:00	11/14/2000 0:00	24	OSW_LBW_SRO_2030
2001	1	1/13/2001 9:00	1/14/2001 23:00	39	OSW_LBW_SRO_2030
2002	1	11/3/2002 14:00	11/4/2002 11:00	22	OSW_LBW_SRO_2030
2003	1	11/9/2003 11:00	11/10/2003 20:00	34	OSW_LBW_SRO_2030
2004	1	11/21/2004 16:00	11/23/2004 21:00	54	OSW_LBW_SRO_2030
2005	1	1/4/2005 18:00	1/5/2005 10:00	17	OSW_LBW_SRO_2030
2006	1	11/4/2006 16:00	11/7/2006 0:00	57	OSW_LBW_SRO_2030
2007	1	2/27/2007 10:00	2/28/2007 23:00	38	OSW_LBW_SRO_2030
2008	1	11/12/2008 3:00	11/13/2008 6:00	28	OSW_LBW_SRO_2030
2009	1	11/4/2009 10:00	11/5/2009 20:00	35	OSW_LBW_SRO_2030
2010	1	11/15/2010 3:00	11/16/2010 14:00	36	OSW_LBW_SRO_2030
2011	1	12/12/2011 6:00	12/13/2011 15:00	34	OSW_LBW_SRO_2030
2012	1	2/15/2012 13:00	2/16/2012 18:00	30	OSW_LBW_SRO_2030
2013	1	12/1/2013 18:00	12/3/2013 5:00	36	OSW_LBW_SRO_2030
2014	1	12/20/2014 1:00	12/22/2014 17:00	65	OSW_LBW_SRO_2030
2015	1	12/5/2015 6:00	12/6/2015 22:00	41	OSW_LBW_SRO_2030
2016	1	1/7/2016 4:00	1/8/2016 6:00	27	OSW_LBW_SRO_2030
2017	1	12/2/2017 4:00	12/4/2017 22:00	67	OSW_LBW_SRO_2030
2018	1	11/30/2018 7:00	12/1/2018 17:00	35	OSW_LBW_SRO_2030
2019	1	2/10/2019 6:00	2/11/2019 16:00	35	OSW_LBW_SRO_2030
2020	1	1/22/2020 10:00	1/24/2020 11:00	50	OSW_LBW_SRO_2030

2021	1	12/30/2021 12:00	12/31/2021 23:00	36	OSW_LBW_SRO_2030
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