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Request IR-1:

Please provide an update on the Effective Load Carrying Capacity Study (ELCC) in general, and as it relates to Battery Energy Storage Systems (BESS), and Long Duration Energy Storage (LDES). Has the consideration of BESS and LDES changed in this study *vis a vis* the previous one? If yes, please describe. Has stakeholder feedback resulted in changes to the scope of the study? If yes, please describe.

Response IR-1:

The new ELCC study will include an examination of the interactive effect of the identified clean resources (wind, solar, battery energy storage, and demand response) to update the existing diversity benefits, so that the full suite of identified clean resources may be considered. This aspect of the study directly relates to Battery Energy Storage Systems (BESS) and Long Duration Energy Storage (LDES).

As part of the study, input assumptions will be reviewed and updates will be made if changes are warranted for BESS, LDES, or any other resource studied.

Please refer to NSEB IR-9 for details on updates to the study scope.

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Request IR-2:

Please provide the Renewable Electricity Standard (RES) contributions by renewable energy source, and the corresponding installed capacity by renewable energy source, for the year 2024. And, please provide the anticipated RES contributions by renewable energy source, and the corresponding installed capacity by renewable energy source, for the years 2030 and 2035.

Response IR-2:

For the RES contributions in 2024 and the contributing resources, please refer to the 2025 10-Year System Outlook report.¹

For 2030, please refer to the 2025 10-Year System Outlook for the RES compliance forecast (80 percent).² For 2035, using the Evergreen IRP scenario CE1-E1-R2, the RES compliance forecast is 95 percent.

¹ NS Power 2025 10 Year System Outlook report (M12386), July 14, 2025, Figure 8, p.24.

² NS Power 2025 10-Year System Outlook report (M12386), July 14, 2025, Figure 15, p.34.

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Request IR-3:

Please describe the generation profile of the fleet of thermal assets (e.g., annual capacity factor; hourly profile for average day; and hourly profile for highest utilization day) in 2030 and 2035.

Response IR-3:

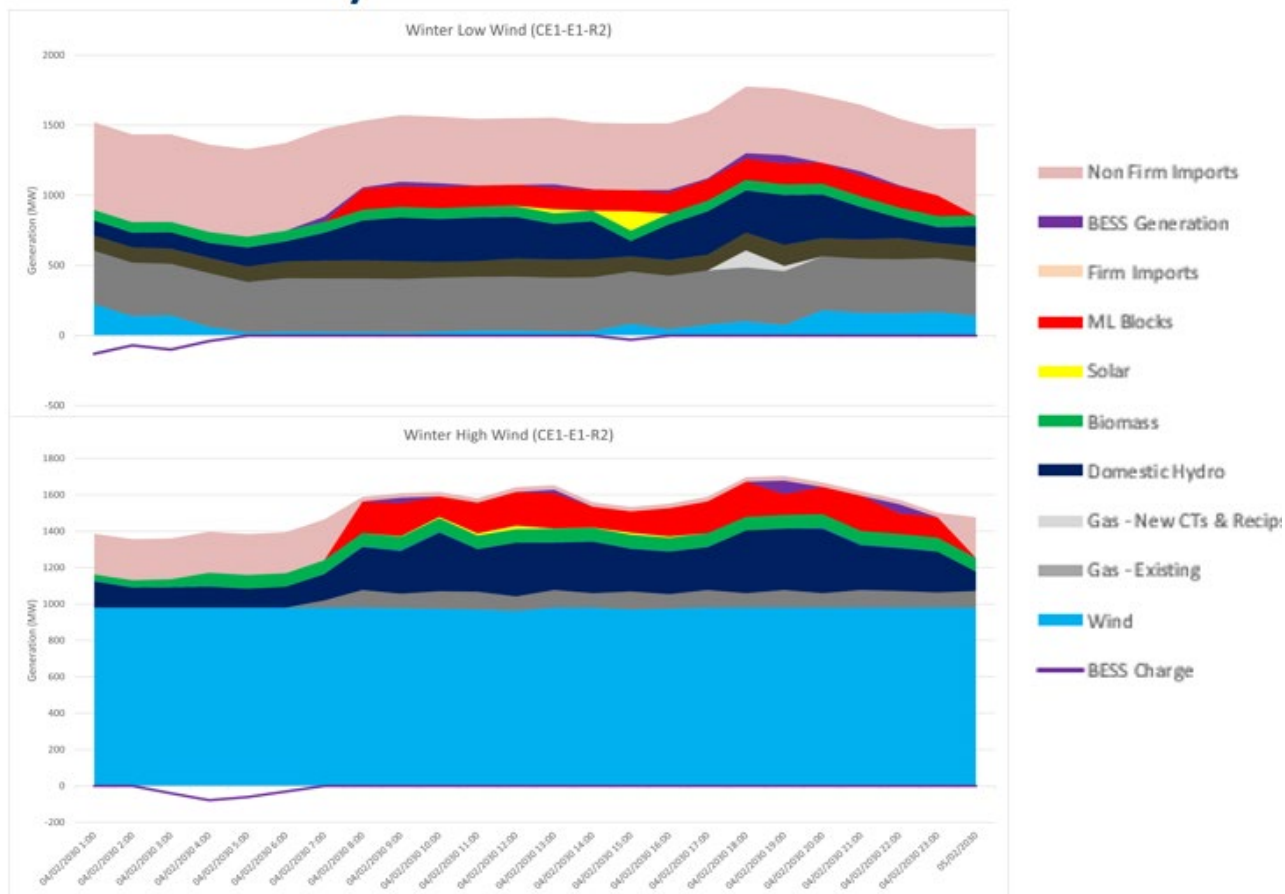
The total annual generation for the thermal fleet can be accessed on the NS Power IRP website (<https://www.nspower.ca/irp>) under Document Library / 2022 Evergreen IRP / [evergreen-IRP-Final-Modeling-Results-Data-Tables-2023](#) for the scenario CE1-E1-R2¹ on the tab titled “Annual Energy Balance.” The unit utilization factors and the capacity factors for each of the thermal units can also be accessed in the 2025 10-Year System Outlook report.²

The following charts show the generation profile for all resources on a high-wind and low-wind winter day in 2030, which includes contributions from NS Power’s thermal assets.

¹ [evergreen-irp-final-modeling-results-data-tables-2023.xlsx](#)

² NS Power 2025 10 Year System Outlook report (M12386), July 14, 2025, Figure 9, p.24.

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- 2
- 3 The generation profile demonstrates the supportive nature of the thermal generation in meeting
- 4 system load when wind resources are in low supply and/or in periods of peak load demand.

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Request IR-4:

Please describe how the IRP model optimizes for renewable curtailment versus building new storage. Please describe what factors the IRP model would consider before selecting energy storage to charge or discharge in the merit order.

Response IR-4:

The model optimizes resources during capacity expansion based on their attributes (firm capacity or effective load carrying capability, contribution to renewable energy, ramp rate, etc.) and the cost of the resources (including capital, fuel, and any emissions costs). The model develops a resource portfolio that meets required customer load, environmental policy compliance and ensures system reliability requirements are met at the lowest cost. Curtailment is considered in this economic optimization as the full cost of wind resources is included in the capacity expansion cost model, regardless of how many kWh are curtailed.

The economic dispatch model will charge and discharge the BESS in a manner that provides the lowest-cost energy supply while still meeting the environmental policy targets in that year, with consideration for all other available resources and the operational nature of the resources (example: ramp rates).

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Request IR-5:

Please provide the amount of renewable curtailment that occurred in 2022, 2023, and 2024 (annual MWh, and capacity factor of fleet curtailed), and that is expected by the IRP model (e.g., hourly curtailment profile for highest curtailment day) in 2030 and 2035. Please describe where and when curtailment is expected to be most prevalent in the province in 2030 and 2035. Please describe the scope of the work related to renewable curtailment that remains ongoing following the Decision in M10905.

Response IR-5:

Historic levels of curtailment are not indicative of future curtailment with the increase in wind capacity forecast for the grid.

The curtailment values forecast in 2030 and 2035 as an outcome of the Evergreen IRP are included in the “Evergreen IRP Update to the Action Plan and Roadmap” report.¹ Also, annual variable renewable generation curtailment values are included in the Evergreen IRP data tables.²

Due to the cyber incident continuing to affect portions of NS Power’s IT system, it is not possible to provide the historic hourly requested data at this time. NS Power’s IT team is working diligently with cyber security experts to bring the affected portions of the IT system back online. However, NS Power can provide the curtailment data requested pulled from the NS-NB Reliability Intertie model for 2030 and 2035. Please refer to Attachment 1.

NS Power is unable to comment on where in the province the curtailment is most likely to occur, as the level of curtailment will depend on the location of future variable renewable projects.

¹ [Nova Scotia Power Evergreen IRP](#), Figure 5, p.11.

² [evergreen-irp-final-modeling-results-data-tables-2023.xlsx](#)

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- 1 Please refer to NS Power's annual Interconnection Processes report filed with the NSEB on March
- 2 31, 2025 regarding renewable curtailment scope of work under the interconnection processes
- 3 proceeding (M10905).

2030 Curtailment Peak Load Generation

Curtailment Peak Day
2030-07-05

2030	Installed Capacity (MW)															
	Coal	Gas - Existing	Gas - New CTs & Recips	Gas - Conversion	Diesel CTs	Domestic Hydro	Tidal	Biomass	Wind	Solar	Maritime Link Blocks	HFO - Conversion	Hydrogen	Battery	Market Imports	Total
	0	462	600	150	231	374	9	75	2069	102	153	459	0	170		4855

Generation (GWh) July 4, 2030 - July 6, 2030																
Date/Time	Coal	Gas - Existing	Gas - New CTs & Recips	Gas - Conversion	Diesel CTs	Domestic Hydro	Tidal	Biomass	Wind	Solar	Maritime Link Blocks	HFO - Conversion	Hydrogen	Battery	Market Imports	Total
2030-07-04 1:00	0	189	50	0	0	88	0	34	0	262	0	0	0	0	625	1247
2030-07-04 2:00	0	189	0	0	0	43	1	43	0	279	0	0	0	0	625	1179
2030-07-04 3:00	0	189	0	0	0	101	2	43	0	228	0	0	0	0	625	1187
2030-07-04 4:00	0	189	0	0	0	43	3	43	0	219	0	0	0	0	625	1121
2030-07-04 5:00	0	189	0	0	0	43	3	43	0	173	0	0	0	0	625	1075
2030-07-04 6:00	0	189	0	0	0	140	2	24	10	54	13	0	0	0	625	1057
2030-07-04 7:00	0	189	0	0	0	95	1	33	71	29	50	0	0	0	625	1093
2030-07-04 8:00	0	189	0	0	0	142	0	43	110	19	79	187	0	0	425	1192
2030-07-04 9:00	0	189	0	0	0	133	2	43	155	23	97	113	0	0	500	1254
2030-07-04 10:00	0	189	0	0	0	106	4	43	130	39	100	125	0	0	500	1236
2030-07-04 11:00	0	189	0	0	0	255	4	43	0	41	99	175	0	0	450	1255
2030-07-04 12:00	0	189	0	0	0	166	4	43	109	47	96	175	0	0	450	1278
2030-07-04 13:00	0	189	0	0	0	50	1	43	0	90	97	175	0	0	450	1094
2030-07-04 14:00	0	189	0	0	0	50	0	50	159	155	96	193	0	0	425	1317
2030-07-04 15:00	0	189	0	0	0	42	2	0	0	262	100	193	0	0	425	1211
2030-07-04 16:00	0	189	0	0	0	42	2	0	10	335	97	175	0	0	450	1299
2030-07-04 17:00	0	189	0	0	0	42	3	0	97	400	87	150	0	0	425	1392
2030-07-04 18:00	0	189	0	0	0	42	2	0	10	654	52	193	0	0	275	1416
2030-07-04 19:00	0	185	0	0	0	42	2	0	0	729	29	113	0	0	425	1524
2030-07-04 20:00	0	189	0	0	0	42	0	0	21	504	5	113	0	0	500	1373
2030-07-04 21:00	0	189	0	0	0	42	2	0	49	499	0	125	0	0	450	1355
2030-07-04 22:00	0	189	0	0	0	42	3	0	130	675	0	130	0	0	150	1318
2030-07-04 23:00	0	154	0	0	0	12	4	0	0	1004	0	113	0	0	0	1286
2030-07-05	0	162	0	0	0	2	4	0	0	1038	0	0	0	0	0	1205
2030-07-05 1:00	0	280	0	30	0	0	0	33	0	777	0	0	0	0	150	1270
2030-07-05 2:00	0	280	0	108	0	0	0	33	0	641	0	0	0	0	150	1211
2030-07-05 3:00	0	280	0	108	0	0	0	33	0	610	0	0	0	0	150	1181
2030-07-05 4:00	0	280	0	108	0	0	0	10	150	326	0	0	0	0	150	1023
2030-07-05 5:00	0	280	0	108	0	0	0	33	10	552	0	0	0	0	150	1133
2030-07-05 6:00	0	280	0	108	0	0	0	10	20	604	0	0	0	0	150	1172
2030-07-05 7:00	0	280	0	108	0	0	0	43	150	379	4	0	0	0	150	1114
2030-07-05 8:00	0	280	0	108	0	0	0	10	20	669	0	113	0	0	150	1349

Curtailed Renewables (MW)
75
13
62
14
14
22
95
133
216
124
32
121
35
7
7
25
50
7
87
87
75
70
142
405
807
995
1063
1326
1102
1008
1213
1203

Generation (GWh) July 4, 2030 - July 6, 2030																	Curtailed Renewables (MW)
Date/Time	Coal	Gas - Existing	Gas - New CTs & Recips	Gas - Conversion	Diesel CTs	Domestic Hydro	Tidal	Biomass	Wind	Solar	Maritime Link Blocks	HFO - Conversion	Hydrogen	Battery	Market Imports	Total	
2030-07-05 9:00	0	280	0	108	0	0	0	33	20	719	38	113	0	0	0	1311	1072
2030-07-05 10:00	0	280	0	108	0	0	0	10	150	427	0	193	0	0	0	1168	1310
2030-07-05 11:00	0	280	0	108	0	0	0	10	20	707	0	113	0	0	150	1387	1268
2030-07-05 12:00	0	280	0	112	0	0	0	33	150	321	0	113	0	0	75	1084	1539
2030-07-05 13:00	0	280	0	108	0	0	0	10	150	255	0	144	0	0	150	1097	1686
2030-07-05 14:00	0	280	0	108	0	0	0	33	0	551	33	113	0	0	150	1268	1277
2030-07-05 15:00	0	280	0	108	0	0	0	33	20	512	0	193	0	0	150	1296	1199
2030-07-05 16:00	0	280	0	108	0	0	1	10	150	370	45	113	0	0	150	1227	856
2030-07-05 17:00	0	280	0	108	0	0	2	33	20	800	15	193	0	0	0	1451	281
2030-07-05 18:00	0	280	0	108	0	0	2	25	150	564	30	193	0	0	0	1351	380
2030-07-05 19:00	0	280	0	108	0	0	2	33	117	476	19	113	0	0	150	1298	782
2030-07-05 20:00	0	280	0	108	0	0	0	0	20	686	3	193	0	0	150	1439	537
2030-07-05 21:00	0	280	450	108	0	9	0	0	150	151	0	162	0	0	0	1309	1247
2030-07-05 22:00	0	280	0	108	0	0	0	0	20	660	0	193	0	0	150	1411	423
2030-07-05 23:00	0	280	0	108	0	0	2	0	150	512	0	193	0	0	0	1245	275
2030-07-06	0	280	0	108	0	0	3	0	157	450	0	0	0	0	150	1147	552
2030-07-06 1:00	0	47	0	0	0	2	3	0	0	1165	0	0	0	0	0	1216	240
2030-07-06 2:00	0	54	0	0	0	3	0	0	0	1116	0	0	0	0	0	1173	467
2030-07-06 3:00	0	45	0	0	0	6	0	0	20	1058	0	0	0	0	0	1129	509
2030-07-06 4:00	0	45	0	0	0	1	1	0	80	857	0	0	0	0	0	983	446
2030-07-06 5:00	0	45	0	0	0	1	2	0	93	837	0	0	0	0	0	978	248
2030-07-06 6:00	0	45	0	0	0	2	2	0	150	766	10	0	0	0	0	975	452
2030-07-06 7:00	0	47	0	0	0	1	3	0	0	1063	27	0	0	0	0	1141	194
2030-07-06 8:00	0	0	0	0	0	0	2	0	20	1009	52	113	0	0	0	1196	190
2030-07-06 9:00	0	0	0	0	0	5	1	0	20	1053	89	113	0	0	0	1280	198
2030-07-06 10:00	0	0	0	0	0	0	0	0	150	861	93	113	0	0	0	1217	488
2030-07-06 11:00	0	0	0	0	0	5	2	0	20	1120	62	113	0	0	0	1321	191
2030-07-06 12:00	0	0	0	0	0	5	3	0	150	866	97	113	0	0	0	1233	386
2030-07-06 13:00	0	0	0	0	0	0	3	0	0	861	94	113	0	0	0	1071	109
2030-07-06 14:00	0	0	0	0	0	6	3	0	0	785	101	149	0	0	0	1044	51
2030-07-06 15:00	0	0	0	0	0	5	2	0	0	651	102	193	0	0	0	952	7
2030-07-06 16:00	0	45	0	0	0	6	0	0	0	505	97	187	0	0	150	990	13
2030-07-06 17:00	0	45	0	0	0	6	1	0	143	373	63	193	0	0	275	1098	7
2030-07-06 18:00	0	45	291	0	0	6	3	3	164	180	48	193	0	0	250	1182	4
2030-07-06 19:00	0	45	186	0	0	6	3	0	162	297	19	193	0	0	275	1186	7
2030-07-06 20:00	0	45	98	0	0	6	3	0	155	395	1	193	0	0	275	1171	7
2030-07-06 21:00	0	45	0	0	0	6	2	0	2	731	0	193	0	0	175	1153	7
2030-07-06 22:00	0	0	0	0	0	6	0	0	0	1087	0	117	0	0	0	1210	83
2030-07-06 23:00	0	0	0	0	0	6	2	0	17	995	0	159	0	0	0	1178	41
2030-07-07	0	0	20	0	0	5	0	0	131	846	0	0	0	0	0	1001	320

2035 Curtailment Peak Generation

Curtailment Peak Day
2035-05-05

2035	Installed Capacity (MW)															
	Coal	Gas - Existing	Gas - New CTs & Recips	Gas - Conversion	Diesel CTs	Domestic Hydro	Tidal	Biomass	Wind	Solar	Maritime Link Blocks	HFO - Conversion	Hydrogen	Battery	Market Imports	Total
	0	462	750	150	231	374	9	75	2619	142	153	459	0	360		5785

Generation (GWh) May 4, 2035 - May 6, 2035																
Date/Time	Coal	Gas - Existing	Gas - New CTs & Recips	Gas - Conversion	Diesel CTs	Domestic Hydro	Tidal	Biomass	Wind	Solar	Maritime Link Blocks	HFO - Conversion	Hydrogen	Battery	Market Imports	Total
2035-05-04 1:00	0	0	0	0	0	137	3	43	802	0	0	0	0	0	550	1535
2035-05-04 2:00	0	0	0	0	0	78	0	43	1214	0	0	0	0	0	250	1585
2035-05-04 3:00	0	0	0	0	0	134	2	43	937	0	0	0	0	0	450	1567
2035-05-04 4:00	0	0	0	0	0	132	1	43	506	0	0	0	0	80	625	1388
2035-05-04 5:00	0	0	0	0	0	114	0	43	825	0	0	0	0	0	575	1557
2035-05-04 6:00	0	0	0	0	0	135	2	43	354	0	0	0	0	327	375	1236
2035-05-04 7:00	0	0	0	0	0	345	3	43	379	3	0	0	0	90	625	1488
2035-05-04 8:00	0	0	0	0	0	105	3	43	513	22	161	0	0	182	450	1480
2035-05-04 9:00	0	0	0	0	0	131	3	43	235	32	175	0	0	182	450	1251
2035-05-04 10:00	0	0	0	0	0	114	2	43	38	33	193	0	0	241	425	1089
2035-05-04 11:00	0	0	0	0	0	129	2	43	40	32	175	0	0	101	450	970
2035-05-04 12:00	0	0	0	0	0	207	1	43	45	43	175	0	0	60	450	1023
2035-05-04 13:00	0	0	0	0	0	183	2	43	26	23	175	0	0	90	450	992
2035-05-04 14:00	0	0	0	0	0	350	2	43	27	18	125	0	0	0	500	1065
2035-05-04 15:00	0	0	0	0	0	131	2	43	28	17	125	0	0	78	500	925
2035-05-04 16:00	0	0	0	0	0	350	2	43	38	8	125	0	0	90	500	1156
2035-05-04 17:00	0	143	250	0	0	350	1	43	37	2	125	0	0	0	500	1451
2035-05-04 18:00	0	144	0	0	0	350	1	43	41	2	125	0	0	327	500	1533
2035-05-04 19:00	0	144	0	0	0	350	2	43	41	0	150	0	0	331	475	1536
2035-05-04 20:00	0	144	0	0	0	335	3	43	53	0	175	0	0	308	450	1511
2035-05-04 21:00	0	144	0	0	0	350	3	43	112	0	175	0	0	260	450	1537
2035-05-04 22:00	0	144	0	0	0	349	2	43	272	0	150	0	0	90	475	1525
2035-05-04 23:00	0	62	0	0	0	94	0	43	783	0	119	0	0	0	325	1426
2035-05-05	0	58	0	0	0	92	0	43	968	0	0	0	0	0	150	1311
2035-05-05 1:00	0	132	200	0	0	61	3	43	1001	0	0	0	0	0	150	1590
2035-05-05 2:00	0	144	0	0	0	75	2	43	1117	0	0	0	0	0	150	1532
2035-05-05 3:00	0	141	750	0	0	61	0	43	348	0	0	0	0	0	150	1493
2035-05-05 4:00	0	144	0	0	0	89	1	43	1050	0	0	0	0	0	150	1477
2035-05-05 5:00	0	144	0	0	0	108	0	43	322	0	0	0	0	350	150	1117
2035-05-05 6:00	0	124	0	0	0	158	0	43	306	9	0	0	0	350	150	1139
2035-05-05 7:00	0	144	0	0	0	164	2	43	961	55	0	0	0	0	150	1519
2035-05-05 8:00	0	141	0	0	0	44	2	43	927	22	193	0	0	0	150	1522
2035-05-05 9:00	0	144	500	0	0	61	0	43	134	31	113	0	0	260	150	1436
2035-05-05 10:00	0	141	0	0	0	177	0	43	1032	0	193	0	0	0	150	1736

Curtailed Renewables (MW)
8
139
10
13
31
10
12
45
25
31
34
62
86
75
75
75
75
50
40
25
51
81
80
783
1060
1924
1073
1480
1905
1422
1464
2210
1348

Generation (GWh) May 4, 2035 - May 6, 2035																	Curtailed Renewables (MW)
Date/Time	Coal	Gas - Existing	Gas - New CTs & Recips	Gas - Conversion	Diesel CTs	Domestic Hydro	Tidal	Biomass	Wind	Solar	Maritime Link Blocks	HFO - Conversion	Hydrogen	Battery	Market Imports	Total	
2035-05-05 11:00	0	144	0	0	0	106	0	43	390	0	193	0	0	350	150	1376	1973
2035-05-05 12:00	0	141	0	0	0	71	0	43	381	123	113	0	0	322	150	1343	1995
2035-05-05 13:00	0	141	0	0	0	78	0	43	919	121	193	0	0	0	150	1644	1397
2035-05-05 14:00	0	141	0	0	0	69	0	43	946	122	113	0	0	0	150	1583	1521
2035-05-05 15:00	0	144	0	0	0	120	0	43	137	126	176	0	0	348	150	1244	2212
2035-05-05 16:00	0	144	0	0	0	72	0	43	923	1	193	0	0	0	150	1526	1179
2035-05-05 17:00	0	141	0	0	0	106	0	43	165	72	177	0	0	350	150	1202	1634
2035-05-05 18:00	0	141	0	0	0	134	0	43	217	14	113	0	0	350	150	1161	1571
2035-05-05 19:00	0	144	0	0	0	56	2	43	975	25	127	0	0	0	150	1521	463
2035-05-05 20:00	0	144	0	0	0	100	0	43	202	0	193	0	0	350	150	1181	1017
2035-05-05 21:00	0	141	0	0	0	161	2	43	737	0	132	0	0	90	150	1456	603
2035-05-05 22:00	0	124	400	0	0	56	0	43	13	0	113	0	0	319	150	1216	1879
2035-05-05 23:00	0	144	0	0	0	91	2	43	1012	0	113	0	0	0	150	1555	1043
2035-05-06	0	144	0	0	0	113	0	43	348	0	0	0	0	350	150	1147	1961
2035-05-06 1:00	0	42	0	0	0	52	4	0	1347	0	0	0	0	0	0	1444	752
2035-05-06 2:00	0	42	0	0	0	61	4	0	1306	0	0	0	0	0	0	1413	918
2035-05-06 3:00	0	56	0	0	0	51	0	0	1112	0	0	0	0	90	0	1309	451
2035-05-06 4:00	0	56	0	0	0	60	0	0	756	0	0	0	0	255	0	1127	534
2035-05-06 5:00	0	50	0	0	0	61	0	0	850	0	0	0	0	180	0	1141	232
2035-05-06 6:00	0	42	0	0	0	76	2	0	1089	0	0	0	0	90	0	1299	124
2035-05-06 7:00	0	0	0	0	0	68	2	0	1006	1	0	0	0	90	100	1268	245
2035-05-06 8:00	0	0	0	0	0	94	3	0	891	28	193	0	0	0	0	1209	7
2035-05-06 9:00	0	0	0	0	0	67	2	0	209	3	148	0	0	335	0	765	397
2035-05-06 10:00	0	0	0	0	0	65	0	0	257	15	136	0	0	260	0	732	305
2035-05-06 11:00	0	0	0	0	0	61	0	0	454	23	193	0	0	90	0	821	996
2035-05-06 12:00	0	0	0	0	0	58	0	0	134	27	113	0	0	260	0	592	2406
2035-05-06 13:00	0	0	0	0	0	52	0	0	675	18	135	0	0	0	0	879	1263
2035-05-06 14:00	0	0	0	0	0	66	0	0	56	18	113	0	0	335	0	587	1884
2035-05-06 15:00	0	0	0	0	0	61	0	0	328	25	113	0	0	260	0	787	1697
2035-05-06 16:00	0	0	0	0	0	61	0	0	790	13	113	0	0	100	0	1077	1114
2035-05-06 17:00	0	0	0	0	0	55	0	0	1166	20	193	0	0	0	0	1434	396
2035-05-06 18:00	0	0	0	0	0	63	0	0	1166	20	193	0	0	100	0	1543	479
2035-05-06 19:00	0	0	0	0	0	60	2	0	929	3	193	0	0	260	0	1447	85
2035-05-06 20:00	0	0	0	0	0	61	0	0	1013	0	113	0	0	260	0	1447	432
2035-05-06 21:00	0	0	0	0	0	65	3	0	1280	0	193	0	0	92	0	1632	96
2035-05-06 22:00	0	0	0	0	0	61	0	0	1016	0	113	0	0	260	0	1450	347
2035-05-06 23:00	0	0	0	0	0	161	1	0	973	0	193	0	0	100	0	1428	80
2035-05-07	0	0	0	0	0	46	0	0	680	0	0	0	0	345	100	1171	341