

Surplus Baseload Generation (SBG)

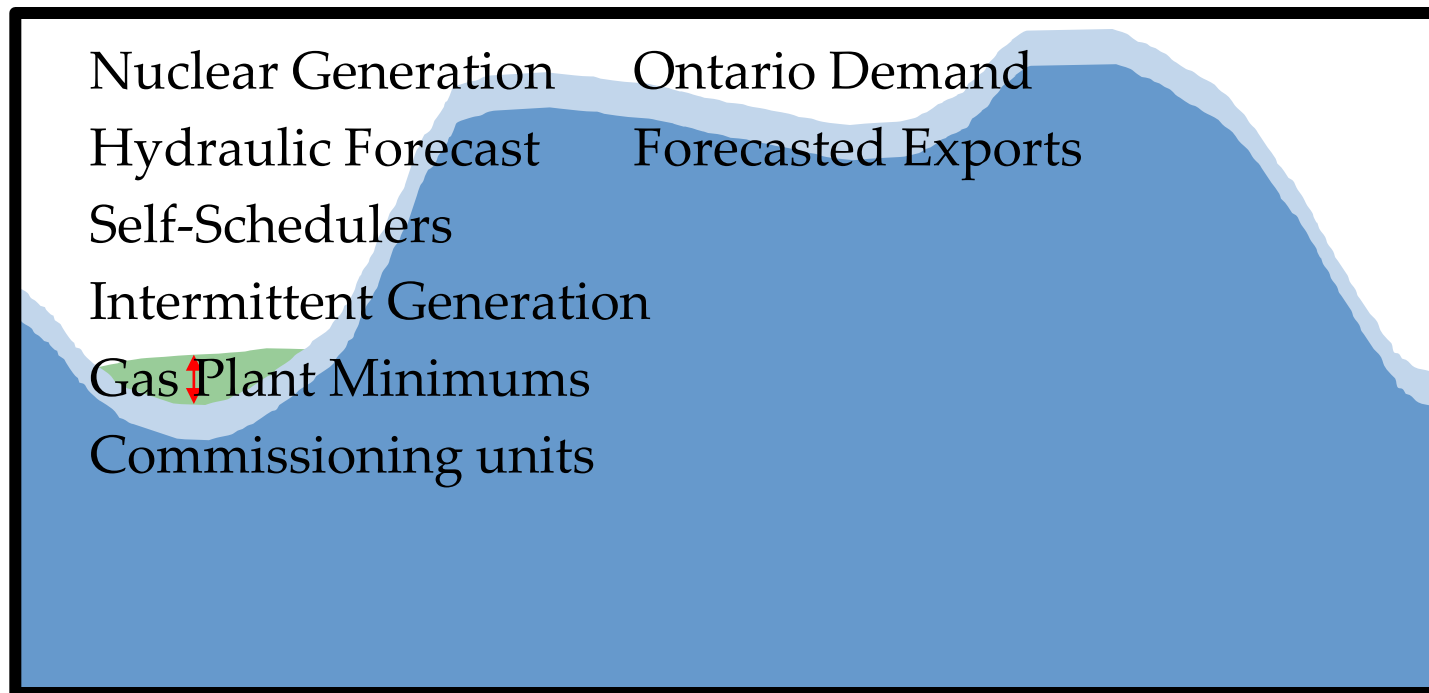
Near-Term Operational Planning – April 09, 2014



- Near-Term SBG Calculation
- Coordination performed ahead of Real Time
- Communication of the forecast

- The near-term SBG analysis:
 - Scope: Days 1-10
 - Emphasis: Days 1-4
 - Granularity: Hourly
 - Audience:
 - Market Participants (MP's) – bidding strategy, outage planning, early warning of potential impacts
 - Control Room – part of next days operating plan

Near-Term SBG Calculation



- Ontario Demand Forecast
 - Hourly forecast which considers:
 - Weather (less accurate further out), day of the week, significant events (Olympics), historical data
 - Adjusted by IESO, based upon recent history
- Variable Generation Forecast
 - Supplied by AWST
 - Hourly forecast which considers:
 - Wind speed forecast, wind ramps, weather fronts
- Export Forecast
 - Daily forecast which considers:
 - Recent export patterns, intertie limits/scheduled outages, holidays, market demand of neighbouring jurisdictions

- Hydroelectric Forecast
 - Supplied by MP's
 - Hourly forecast which considers
 - River flows, rainfall, snow melt
 - Adjusted by IESO based upon recent history
- Commissioning Units Forecast
 - Supplied by MP's
 - Hourly forecast.
- Embedded Generation Effect
 - Considered in demand forecast based on:
 - Recent history of visible generators (5MW or greater) and a estimate of the effect of other embedded generators.

The SGB Forecast Report shows the potential for:

- Nuclear unit manoeuvres
- Wind curtailments
- Nuclear unit shutdowns

We help to coordinate SBG activities with MP's that mimic the expected results of economic dispatch. We do this due to the plant limitations and or contractual requirements of these MP's. We help to coordinate:

- OEFC NUG curtailments
 - OEFC responsible for coordinating curtailments
 - Advise OEFC on Wednesday for possible weekend curtailment
 - Advise OEFC on alternative days as needed
- Nuclear maneuvers and shutdowns
 - Given unit characteristics (i.e. controlled shutdown, lengthy minimum downtime periods) the IESO tries to provide advance notice for nuclear operators to adjust output safely

| Date | Surplus Baseload Generation for Hour | | | | | | | | | | | | | | | | | | | | | | | | Export Forecast | Min Generation Status |
|------------------|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|----|-----|-----|------|------|-----------------|-----------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | | |
| Thu Feb 20, 2014 | | 46 | 269 | 304 | 255 | | | | | | | | | | | | | | | | | | | 866 | 2400 | |
| Fri Feb 21, 2014 | 2140 | 2541 | 2779 | 2858 | 2884 | 2343 | 1911 | 1465 | 1474 | 1597 | 1650 | 1559 | 1528 | 1653 | 1688 | 1689 | 1683 | 948 | 291 | 80 | 376 | 907 | 1375 | 1755 | 2400 | Alert |
| Sat Feb 22, 2014 | 1876 | 2386 | 2631 | 2712 | 2744 | 2689 | 2529 | 2507 | 2006 | 1732 | 1565 | 1527 | 1481 | 1682 | 1756 | 1730 | 1483 | 722 | | | 27 | 280 | 334 | 650 | 2400 | Alert |
| Sun Feb 23, 2014 | 1004 | 1340 | 1472 | 1503 | 1539 | 1503 | 1470 | 1813 | 1526 | 1414 | 1299 | 1211 | 1095 | 1270 | 1297 | 1302 | 1148 | 458 | | | | | | 180 | 2400 | |
| Mon Feb 24, 2014 | 1060 | 1298 | 1252 | 1264 | 1114 | 676 | 41 | | | | | | | | | | | | | | | | | | 2400 | |
| Tue Feb 25, 2014 | | | | | | | | | | | | | | | | | | | | | | | | | 2400 | |
| Wed Feb 26, 2014 | | | | | | | | | | | | | | | | | | | | | | | | | 2400 | |
| Thu Feb 27, 2014 | | | | | | | | | | | | | | | | | | | | | | | | | 2400 | |
| Fri Feb 28, 2014 | | | | | | | | | | | | | | | | | | | | | | | | | 2400 | |
| Sat Mar 01, 2014 | | | | | | | | | | | | | | | | | | | | | | | | | 2400 | |

- Generation from baseload resources in excess of Ontario demand
- Alerts issued when this generation exceeds expected exports
- Signal to MPs to consider shifting generation
- Indication of possible economic dispatch of baseload resources

| Anticipated Action to Manage Surplus Baseload Energy | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|------|------|------------------|
| Generated on Mar 31, 2014 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date | Hours | | | | | | | | | | | | | | | | | | | | | | | | Forecast Exports |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | |
| Tue April 01, 2014 | 3258 | 3520 | 3693 | 3704 | 3299 | 2166 | 1269 | 1315 | 1403 | 1550 | 1609 | 1627 | 1657 | 1798 | 1804 | 1397 | 1439 | 1392 | 1117 | 423 | 794 | 1502 | 2199 | 2683 | 2400 |
| Wed April 02, 2014 | 2661 | 2964 | 3018 | 2928 | 2319 | 1131 | 409 | 513 | 1033 | 1227 | 1456 | 1451 | 1440 | 1616 | 1665 | 1418 | 1380 | 1336 | 932 | 366 | 742 | 1442 | 1895 | 2093 | 2400 |
| Thu April 03, 2014 | 2662 | 2835 | 2924 | 2837 | 2289 | 1530 | 1080 | 1334 | 1578 | 1821 | 1906 | 2098 | 2104 | 2302 | 2272 | 2127 | 2153 | 2114 | 1772 | 1124 | 821 | 1632 | 1695 | 2108 | 2400 |
| Fri April 04, 2014 | 2300 | 2523 | 2575 | 2461 | 1942 | 1348 | 510 | 552 | 663 | 852 | 893 | 1057 | 894 | 1165 | 1212 | 1161 | 1052 | 1053 | 841 | 153 | 646 | 1485 | 1643 | 2151 | 2400 |
| Sat April 05, 2014 | 2600 | 2875 | 2938 | 2933 | 2761 | 2428 | 2304 | 2201 | 1700 | 1609 | 1520 | 1591 | 1603 | 1893 | 1936 | 1812 | 1647 | 1488 | 1280 | 709 | 904 | 1315 | 1765 | 2153 | 2400 |
| Sun April 06, 2014 | 2592 | 2902 | 3065 | 3039 | 2930 | 2721 | 2804 | 2747 | 2329 | 2252 | 2077 | 2025 | 2053 | 2289 | 2280 | 2020 | 1793 | 1631 | 1331 | 521 | 920 | 1546 | 2168 | 2496 | 2400 |
| Mon April 07, 2014 | 3098 | 3186 | 3144 | 2939 | 2351 | 1427 | 749 | 754 | 875 | 1052 | 1111 | 1288 | 1223 | 1407 | 1373 | 1144 | 1115 | 1303 | 1223 | | | 372 | 779 | 1186 | 2400 |
| Tue April 08, 2014 | 2568 | 2758 | 2784 | 2664 | 2132 | 988 | 352 | 357 | 470 | 614 | 594 | 681 | 589 | 756 | 713 | 498 | 487 | 533 | 318 | | | 674 | 1495 | 1936 | 2400 |
| Wed April 09, 2014 | 2564 | 2764 | 2784 | 2661 | 2122 | 1289 | 748 | 751 | 942 | 1095 | 1076 | 973 | 857 | 1003 | 1033 | 1020 | 1105 | 1180 | 1005 | 309 | 638 | 984 | 1394 | 1806 | 2400 |
| Thu April 10, 2014 | 2385 | 2539 | 2569 | 2439 | 1892 | 1129 | 693 | 719 | 853 | 1030 | 1040 | 1140 | 1058 | 1204 | 1264 | 1115 | 1243 | 1302 | 1106 | 372 | 662 | 1005 | 1466 | 1970 | 2400 |

Legend

| | |
|--|--|
| | No Surplus |
| | Surplus is expected to be managed with anticipated exports |
| | Potential Market Dispatch |
| | Potential to dispatch VGs to manage global SBG |
| | Potential to shutdown a nuclear unit |

We will issue System Status Reports (SSR's) or Security and Adequacy Advisories (SAA's) to provide early warning of actions to manage SBG:

- For Day 1 and 2 (SSR's)
 - If $SBG > Exports$ for 2 or more consecutive hours we will issue a SSR with the advisory notice for the affected hours

- For Day 3 and 4 (SAA's)
 - If $SBG > Exports$ for 4 or more consecutive hours we will issue a SAA with the advisory notice for the affected hours

- <http://ieso.ca/Pages/Power-Data/default.aspx#report>
- IESO Public Site → Power Data → All Reports →
 - System Status Report

Normal SSR Report for 2014/02/21 generated on 2014/02/19 12:55

System Advisory/Summary

[System Advisory/Summary](#) [Hourly Details H1-12](#) [Hourly Details H13-24](#) [Transmission Interfaces](#) [SAA Notes](#)

| Forecast Supply Energy(MW hr) | Forecast Demand Energy(MW hr) | Forecast Excess(Shortfall) Energy(MW hr) | Energy Shortfall Hours(Yes/No) |
|-------------------------------|-------------------------------|--|--------------------------------|
| 623534 | 404406 | 221720 | No |

| System Advisory Notices-Title | Date/Time Issued | Start Date/Time | End Date/Time | Comment |
|-------------------------------|------------------|------------------|------------------|--|
| Minimum Generation Alert | 2014/02/19 12:43 | 2014/02/21 02:00 | 2014/02/21 04:59 | Surplus Baseload Generation is expected to exceed forecasted exports of 2400 MW for HE 2 -HE 5. IESO may take actions to minimize the effect of SBG. These actions may include the curtailment of imports and reduction of generation units. |

Hourly Details H1-12

[System Advisory/Summary](#) [Hourly Details H1-12](#) [Hourly Details H13-24](#) [Transmission Interfaces](#) [SAA Notes](#)

| Forecast Supply | H1 | H2 | H3 | H4 | H5 | H6 | H7 | H8 | H9 | H10 | H11 | H12 |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Energy(MW hr) | 25226 | 24741 | 24745 | 24782 | 24810 | 24891 | 25400 | 25510 | 25976 | 26099 | 26180 | 26123 |
| Capacity(MW) | 33432 | 33432 | 33432 | 33432 | 33432 | 33432 | 33432 | 33432 | 33432 | 33432 | 33432 | 33432 |
| Intermittent (MW hr/hr) | 588 | 588 | 588 | 588 | 588 | 588 | 588 | 588 | 588 | 588 | 588 | 588 |
| Self Sched (MW hr/hr) | 725 | 725 | 725 | 725 | 725 | 725 | 725 | 725 | 725 | 725 | 725 | 725 |

Questions?