ISO new england

System Operating Procedures

SOP-OUTSCH.0040.0020

Create Seven-Day Capacity Margin Forecast

Effective Date: January 6, 2011
Revision No. 14

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Contents

1. Objective

The objective of this procedure is to define the process for the development of the Seven-Day-Ahead Forecast of ISO Capacity Margin.

2. Background

The Seven-Day-Ahead forecast of ISO Capacity Margin was developed to provide ISO and the Market Participants with the anticipated capacity state of the New England bulk power system. It is used by ISO to identify capacity deficiencies several days in advance and triggers the commitment of long lead-time Generators (Start times > 24 hours). It also provides similar information to Market Participants.

3. Responsibilities

1. The Forecaster is responsible for executing all aspects of this procedure to include the preparation, review and publication of the Seven-Day-Ahead Forecast of the ISO Capacity Margin by 1100 each day or when a Cold Weather Event has been declared by 0800 the day prior to the Cold Weather Event day.

2. The Manager, Control Room Operations is responsible for additional oversight during extreme weather conditions and when capacity problems are determined in the next seven-day period. The Manager, Control Room Operations or designee shall ensure:

   - Necessary departments are notified of upcoming capacity problems
   - Necessary transmission and Generator/Dispatchable Asset Related Demand (DARD) outages are rescheduled
   - Communications with other ISO departments occur in a timely manner

4. Controls

- The Forecaster uses the Seven-Day-Ahead forecast spreadsheet as described in this procedure

5. Instructions

5.1 Verify Seven-Day-Ahead Forecast Initial Conditions

1. The Forecaster shall normally perform this procedure during the morning hours in order to publish the Seven-Day-Ahead Forecast by 1100.

2. When a Cold Weather Event has been declared, in accordance with SOP-RTMKTS.0050.0007 - Perform Cold Weather Condition Operations, the Forecaster shall perform the required actions of this procedure and publish the Seven-Day-Ahead Forecast prior to 0800 the day prior to the Cold Weather Event day.

3. The Forecaster shall verify the following:

   A. Initial load forecast has been developed per SOP-OUTSCH.0040.0010 - Create Load Forecast.

   B. Generator and DARD outage schedules have been developed per SOP-OUTSCH.0030.0010 - Evaluate Generation and Dispatchable Asset Related Demand Outage Requests.

   C. Interchange Schedules have been developed per SOP-OUTSCH.0030.0020 - Perform Short-Term Outage Coordination.

NOTE

An Excel Spreadsheet is provided for the Forecaster to use to complete the directed actions for the tasks contained in this procedure.

5.2 Complete Seven-Day-Ahead Forecast Initial Data

1. Using the Excel spreadsheet the Forecaster shall:
   A. Import the Forecast Temps and Loads from the Load Forecast Database
   B. Import the Forced Outages, Short Term Outages, Annual Inspections, and Annual Inspection Overruns from the ISO Outage Scheduling software
   C. Perform a one day rollover.
2. From the ISO Outage Scheduling software, the Forecaster shall:
   A. Review transmission outages in the next seven days that have indicated an impact on a generator resource(s).
   B. Enter the Transmission Constrained Down by ≥ 50 MW data.
3. The Forecaster shall obtain outage data from the "EMS Capacity Monitor" display and using the Excel spreadsheet the Forecaster perform the following:
   A. Enter current total generation and DARD unavailable excluding Generators ramping in UCM 3 (This quantity shall be equal to the sum of Outages, Offline Reductions, and Online Reductions as obtained from the "EMS Capacity Monitor" display in real time).
   B. Include information such as:
      - Availability notices issued by gas pipeline operators, or Generators

NOTE

When temperatures get down into the 30 degrees Fahrenheit and below the supply of natural gas available to Generators may be affected. This could affect the capacity available on the system and should be accounted for.

      - Forecasted weather conditions used to determine if Cold Weather Conditions are forecast
4. Based on the information obtained in Steps above, the Forecaster shall verify the Afternoon Spreadsheet calculates the Short Term Operable Capacity Margin (STOCM). (This is listed as the projected surplus / deficiency on the spreadsheet).

5. Using the Excel spreadsheet the Forecaster shall enter a quantity reflecting the total current miscellaneous Generator and DARD outages (including outages due to startup times) and verify that the Day's total Outages matches the known outages from the ISO Outage Scheduling software.

5.3 Project Seven-Day-Ahead Forecast Conditions

1. Using the Excel spreadsheet the Forecaster shall:
   A. Verify the correct weather data has been correctly imported.
   B. Verify the correct Load Forecast data has been correctly imported.

NOTE

If manual forecast adjustments are made, past historical data to identify the load curve for the most similar day is available for review and use by the Forecaster.

2. If the following conditions exist, the Forecaster shall make manual adjustments to the Excel spreadsheet:
   - Significant sociological impacts are anticipated
   - Forecast weather conditions are such that the Artificial Neural Network (ANN) program is expected to have a significant error based on past experience
3. If necessary, based on the temperature and dew point data obtained in Steps 5.3.1 & 5.3.2, the Forecaster shall perform the following actions:
   A. Using the applicable formula(s) manually calculate the individual daily peak load values for Days 3-7
   B. Override the forecast values in the Excel spreadsheet.
4. After reviewing "EMS Capacity Monitor" display for current day capacity additions, the Forecaster shall enter Anticipated De-List Mw Offered for peak hours for Days 2-7 in the Excel spreadsheet.
5. Based on Enhanced Energy Scheduler Market Operator Interface (EES-MOI) information and current interchange scheduling trends, the Forecaster shall enter the peak hour external interchange for each day in the Excel spreadsheet.
6. Based on the requirements of ISO New England Operating Procedure No. 8 – Operating Reserve and Regulation (OP-8) enter the anticipated Required Reserve for each day in the Excel spreadsheet.

7. Whenever either a capacity deficiency or a surplus of less than 300 MW is forecast for the next day, the Forecaster shall notify the Manager, Control Room Operations (or designee).
8. Whenever the on-peak temperatures in New England are forecasted to be 30 degrees Fahrenheit or less, the following actions shall be completed:

   A. The Forecaster shall notify the Manager, Control Room Operations (or designee) of these conditions.

   B. The Manager, Control Room Operations (or designee) shall communicate with natural gas pipeline operators on this condition as directed in SOP-RTMKTS.0050.0007 - Perform Cold Weather Condition Operations.

5.4 Verify Seven-Day-Ahead Forecast Calculations

NOTE

The program will automatically calculate the following quantities for each of the forecast days in accordance with Attachment A - Seven-Day-Ahead Forecast Calculations:

1. The Forecaster shall verify the following values at the completion of the Seven-Day-Ahead Forecast Calculations:

   - Total Generation Outages
   - Total Generation Available
   - Total DARD Available (If applicable)
   - Total Generation and DARD Available and Imports
   - Total Load Plus Required Reserve
   - Projected Surplus/Deficiency

5.5 Communicate Seven-Day-Ahead Forecast

1. The Forecaster shall perform the following actions:

   A. Click on the "Upload" button

   B. Post the Seven-Day-Ahead Forecast to the ISO Web site prior to 1100 hours at:

   http://www.iso-ne.com/sys_ops/op_frcstng/7day_frcst/index.html

2. When a Cold Weather Event has been declared in accordance with SOP-RTMKTS.0050.0007 - Perform Cold Weather Condition Operations, the Forecaster shall post the Seven-Day-Ahead Forecast prior to 0800 the day prior to the Cold Weather Event day.

6. Performance Measures

None.

7. References

SOP-OUTSCH.0030.0010 - Evaluate Generation and Dispatchable Asset Related Demand Outage Requests

SOP-OUTSCH.0040.0010 - Create Load Forecast

ISO New England Operating Procedure No. 8 – Operating Reserve and Regulation (OP-8)

SOP-OUTSCH.0030.0020 - Perform Short-Term Outage Coordination

SOP-RTMKTS.0050.0007 - Perform Cold Weather Condition Operations

8. Revision History

Rev. No.	Date	Reason	Contact
0	03/01/03	Original	Joe Mercer
1	07/07/03	Revised to reflect changes since implementation of SMD	Joe Mercer
2	01/07/04	Changes to the Controls and Performance Measures sections	Joe Mercer
3	02/01/05	Updated SOP for RTO terminology	Seamus McGovern

Rev. No.	Date	Reason	Contact
4	09/30/05	Revised to address Forecast Audit. Added steps for using natural gas data.	Seamus McGovern
5	11/28/05	Revised to incorporate Changes to MR 1 App H (Cold Weather) and new OP-21	Seamus McGovern
6	05/05/06	Updated for Control Room Forecaster Split, removed Cold Weather Condition actions (MR1 App H retired)	Steve Weaver
7	10/01/06	Revised for ASM Phase II	Steve Weaver
8	11/30/06	Revised to incorporate Changes to MR 1 App H (Cold Weather)	Steve Weaver
9	05/04/07	Minor clerical changes resulting from annual review	Steve Weaver
10	06/18/07	Incorporate the new separated tie 1385 from the NY Northern AC ties	Steve Weaver
11	08/14/08	Annual Review by Procedure Owner – no changes requied	Steve Weaver
12	03/17/09	Revised for periodic review	Steve Weaver
13	06/01/10	Biennial review by procedure owner; Updated header copyright date; Section 3 replaced Resources with Generator/DARD; Modified Steps 5.1.2, 5.1.3, & and NOTE following 5.1.3; Re-wrote Steps 5.2.1, 5.2.2, 5.2.3 & all sub-steps; Modified steps 5.2.4 & 5.2.5; Modified steps 5.3.1 through Step 5.3.8 (including all sub-steps) and added new step 5 for section 5.3; Modified Steps 5.5.1, 5.5.2 and all sub-steps	Steve Weaver
14	01/06/11	Updated Header copyright date; Replaced page numbering in all footers with Page X of Y; Global: replaced all references to “SAM Db” with “ISO Outage Scheduling software” In 5.2.2.A replaced Print Event Detail Summary Report with review transmission outages tat impact generator resource(s); In 5.2.3, 5.2.3.A, 5.3.4 replaced EMS Capacity Analysis with EMS Capacity Monitor	Steve Weaver

9. Attachments

Attachment A - Seven-Day-Ahead Forecast Calculations

Attachment A - Seven-Day-Ahead Forecast Calculations

Total Capacity Supply Obligation = CSO

Anticipated Cold Weather Outages = CW

Total Generation Outages (GO) = DO + MR

Anticipated De-List Mw Offered = DL

Total Generation Available (GA) = CSO -CW – GO+DL

Total Generation Available Plus Purchases (GA&PUR) = GA + PUR)

Total Load Plus Reserve (REQ) = EL + OR

Capacity Margin = GA&PUR – REQ

Where

CSO = Capacity Supply Obligation
CW = Cold Weather Outages
DO = Discreet Generating Unit Outages and Reductions
MR = Miscellaneous Generating Unit Outages and Reductions
DL = Anticipated Mw De-List Mw Offered
PUR = New York Northern AC New York Cross Sound Cable (CSC), 1385 Cable, NBEPC, and HQ Capacity Backed Purchases (net of external purchases and sales)
EL = Expected Load
OR = Operating Reserve Requirement

NOTE: DARDs do not currently pertain to this calculation.