



Proposed Changes for the 2010 Methodology for Determining Ancillary Service Requirements

John Dumas
Manager, Operations Planning

Board of Directors

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- **Proposed changes to the Non-spin Reserve Service (NSRS) requirement**
- **Resulting NSRS requirements using the proposed methodology**
- **Ancillary Services related to NERC Operating Reserves**
- **Conclusions and questions**

Overview of Proposed Changes

- **The only changes for 2010 are to the requirement calculations for NSRS**
- **As opposed to analyzing the last 90 days, ERCOT will instead analyze the last 30 days and the same month of the previous year**
 - Same thing that is done for Regulation Service requirement calculations
- **ERCOT calculates the NSRS based on the load and wind forecast accuracy**
 - An amount of NSRS is purchased to cover 95 percent of the uncertainty observed in the net load forecast
 - ERCOT will also calculate the average uncertainty in the net load forecast to determine if there is a tendency in the forecast to over-forecast
- **Lastly, ERCOT will consider the size of the largest unit**
 - Covers the loss of the largest unit during periods of higher risk

Details of NSRS Requirement Calculations

- **Using the same 4 hours blocks, ERCOT will calculate the 95th percentile of the net load forecast uncertainty using the 30 days prior to the study and the same month of the previous year for analysis**
- **The Regulation Up Service requirements will be subtracted from the 95th percentile values to determine an initial NSRS requirement for each 4 hour block**
- **ERCOT will also calculate the average net load forecast uncertainty to determine if there has been a tendency towards over-forecasting net load for any block of hours**
- **If this tendency is observed, the calculated value will be added to the initially calculated NSRS requirement (requirement determined using the 95th percentile analysis)**
 - **The average net load forecast uncertainty will be adjusted such that the sum of the two values will not exceed 2000 MW for any block of hours**
 - **This will place a cap of 2000 MW on the NSRS requirement**

Details of NSRS Requirement Calculations cont.

- **Concurrently, the same adjusted uncertainty value will be subtracted from the ERCOT load forecast during the month for the set of hours to which it applies**
 - **Shifts MWs from Load Forecast and unit commitment (Replacement and OOMC) to NSRS requirement for periods during which over-forecasting has been historically observed**
- **A floor of the single largest unit will be applied to on-peak hours (HE 7 – 22)**
 - **Protects against the risk of loss of generation**
 - **The periods during which this risk is the highest may not correlate with the periods during which net load forecast uncertainty is the highest**
- **The NSRS requirement will then be posted in the usual fashion**

Methodology Results – August '09

Current Methodology

IE	NSRS Requirement
1	799
2	799
3	1230
4	1230
5	1230
6	1230
7	1172
8	1172
9	1172
10	1172
11	1249
12	1249
13	1249
14	1249
15	376
16	376
17	376
18	376
19	588
20	588
21	588
22	588
23	799
24	799

Proposed Methodology

IE	Initial NSRS Requirement Based on 95 th Percentile Analysis	Negative Net Load Forecast Average Error	Final NSRS Requirement (With 2000 Cap and On-peak Floor)	Net Load Forecast Error to be Subtracted from the Load Forecast
1	730	-304	1034	-304
2	730	-304	1034	-304
3	1569	0	1569	0
4	1569	0	1569	0
5	1569	0	1569	0
6	1569	0	1569	0
7	1829	0	1829	0
8	1829	0	1829	0
9	1829	0	1829	0
10	1829	0	1829	0
11	1570	-449	2000	-430
12	1570	-449	2000	-430
13	1570	-449	2000	-430
14	1570	-449	2000	-430
15	461	-1736	2000	-1539
16	461	-1736	2000	-1539
17	461	-1736	2000	-1539
18	461	-1736	2000	-1539
19	0	-1927	1927	-1927
20	0	-1927	1927	-1927
21	0	-1927	1927	-1927
22	0	-1927	1927	-1927
23	730	-304	1034	-304
24	730	-304	1034	-304

Methodology Results – October '09

Current Methodology

IE	NSRS Requirement
1	737
2	737
3	1015
4	1015
5	1015
6	1015
7	766
8	766
9	766
10	766
11	874
12	874
13	874
14	874
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	737
24	737

Proposed Methodology

IE	Initial NSRS Requirement Based on 95 th Percentile Analysis	Negative Net Load Forecast Average Error	Final NSRS Requirement (With 2000 Cap and On-peak Floor)	Net Load Forecast Error to be Subtracted from the Load Forecast
1	1083	-476	1559	-476
2	1083	-476	1559	-476
3	1282	-175	1457	-175
4	1282	-175	1457	-175
5	1282	-175	1457	-175
6	1282	-175	1457	-175
7	1168	-49	1354	-49
8	1168	-49	1354	-49
9	1168	-49	1354	-49
10	1168	-49	1354	-49
11	493	-1096	1589	-1096
12	493	-1096	1589	-1096
13	493	-1096	1589	-1096
14	493	-1096	1589	-1096
15	31	-1956	1987	-1956
16	31	-1956	1987	-1956
17	31	-1956	1987	-1956
18	31	-1956	1987	-1956
19	460	-1492	1952	-1492
20	460	-1492	1952	-1492
21	460	-1492	1952	-1492
22	460	-1492	1952	-1492
23	1083	-476	1559	-476
24	1083	-476	1559	-476

Methodology Results – November '09

Current Methodology

IE	NSRS Requirement
1	641
2	641
3	782
4	782
5	782
6	782
7	686
8	686
9	686
10	686
11	406
12	406
13	406
14	406
15	89
16	89
17	89
18	89
19	0
20	0
21	0
22	0
23	641
24	641

Proposed Methodology

IE	Initial NSRS Requirement Based on 95 th Percentile Analysis	Negative Net Load Forecast Average Error	Final NSRS Requirement (With 2000 Cap and On-peak Floor)	Net Load Forecast Error to be Subtracted from the Load Forecast
1	1377	-37	1414	-37
2	1377	-37	1414	-37
3	1015	0	1015	0
4	1015	0	1015	0
5	1015	0	1015	0
6	1015	0	1015	0
7	829	0	1354	0
8	829	0	1354	0
9	829	0	1354	0
10	829	0	1354	0
11	556	-801	1357	-801
12	556	-801	1357	-801
13	556	-801	1357	-801
14	556	-801	1357	-801
15	470	-1316	1786	-1316
16	470	-1316	1786	-1316
17	470	-1316	1786	-1316
18	470	-1316	1786	-1316
19	1068	-742	1810	-742
20	1068	-742	1810	-742
21	1068	-742	1810	-742
22	1068	-742	1810	-742
23	1377	-37	1414	-37
24	1377	-37	1414	-37

ERCOT Operating Reserve

- **ERCOT requires a minimum of 2,300 MW of Responsive Reserve Service (RRS)**
(NERC Operating Reserve-Spinning and Contingency Reserve)
 - Used to arrest sudden frequency decay due to system disturbances
 - May be provided by governor response from generating units (Operating Reserve-Spinning)
 - Up to 50% may be provided by LaaR (Load acting as a Resource - similar to interruptible load)
- **ERCOT requires an amount of Regulation Service (RGS) (Up and Down) This is in addition to the RRS obligation (NERC Operating Reserve-Spinning)**
 - Used to maintain frequency control and to meet the NERC CPS1 performance criteria
- **ERCOT requires a variable amount of Non-Spinning Reserve. This is in addition to the RRS obligation (NERC Operating Reserve-Supplemental)**

Conclusions

- **Makes use of additional historical data to capture both recent observations and possible seasonal tendencies**
- **Attempts to shift MWs from the ERCOT load forecast and unit commitment to the NSRS requirement during periods in which the net load forecast has tended to over-forecast**
- **Addresses concern that a greater risk of loss of generation may not coincide with a greater risk of net load forecast uncertainty**