Historical Analysis of SCR Performance Using Various Baseline Methodologies

The NYSRC Installed Capacity Subcommittee requested the NYISO to provide historical information as to the load reduction performance of ICAP Special Case Resources (SCRs) under two different baseline assumptions.

Average Peak Monthly Demand Methodology

SCR Performance is determined by comparing the actual hourly interval metered energy with the Average Peak Monthly Demand (APMD):

$$RED\_MW_{gn} = APMD_{gm} - AMD_{gn}$$

where:

- RED_MW_{gn} is the Installed Capacity Equivalent performance that Resource g supplies during hour n of an SCR event;
- $APMD_{gm}$ is the Average of Peak Monthly Demands for Resource g applicable to Capability Period m, using data submitted in its Special Case Resource Certification, and
- AMD_{gn} is the metered hourly integrated energy for Resource g in hour n of an SCR event.

Performance using this measure compares actual reduction with the reduction capability sold as ICAP by the SCR.

It should be noted that APMD during 2006 was based on the peak hour at any time during the day; ICAP market rules were modified for 2007 and beyond to use peak hours between noon and 8 pm only. This rule change if in place in 2006 may have reduced the APMD aggregate values shown in the Tables below and resulted in lower performance measurement using the APMD approach.

Customer Baseline Load Methodology

Performance for purposes of determining energy payment is based upon the NYISO's Emergency Demand Response Program (EDRP) method of performance measurement, which calculates a Customer Baseline Load (CBL) from recent historical data to determine what energy consumption would have been if the participant had not reduced load. The CBL is determined as follows:

- Beginning with the weekday two days prior to the demand response event, look back ten weekdays and determine the five highest energy consumption days corresponding to the time period of the event. For example, if the demand response event occurs between noon and 4 pm, the baseline consumption is determined by the five previous days with the highest energy consumption between noon and 4 p.m.
- Take the average of the five readings for each hour to determine the baseline for that hour.

The difference between the hourly CBL and hourly interval meter readings serves as the measure of load reduction.

August 2, 2006 Results

A detailed analysis of the August 2, 2006 event was performed using on the subset of SCR data where performance data using both baseline measures was submitted. On August 2, SCRs in Zones A, B, C, J and K were activated. Table 1 contains the declared ICAP aggregated by

capacity region for SCRs reporting both CBL and APMD data; a total of 805.7 MW of ICAP equivalent was sold for these resources.

Table 1

Commitment (based on Declared values) for August 2006 (ICAP Equivalent)

For resources reporting CBL and APMD data (APMD - CMD)

Zones	CBL + APMD Data
ROS (A+B+C)	422.3
J	225.0
K	158.4
Total	805.7

Table 2 contains load reduction performance through the APMD method (top) and CBL method (bottom). The ratio of CBL performance to APMD performance was 582.8/826.3 or 70.5%. By capacity region, the ratios are:

- ROS (Zones A, B and C): 69.3%
- Zone J: 66%
- Zone K: 81.3%

~~Similar results were reported to FERC in the NYISO's annual demand response compliance filing[1] reporting on 2006 statistics, which includes resources not reporting CBL data. The ratio of CBL/APMD performance for August 2 from the FERC report was 68.9%.~~

The CBL methodology can understate load reduction if loads on the event day are not weather-adjusted. Of the 913 SCRs reporting both APMD and CBL data, 129 reported CBL data using the weather sensitive model. For resources using the weather sensitive model, the ratio of CBL to APMD performance was 78.2% vs. the 70.5% ratio for all resources reporting CBL and APMD.

Table 2

Curtailment by Hour for August 2, 2006
Resources reporting CBL and APMD data

APMD-AMD methodology

Zones	Average
ROS (A+B+C)	454.5
J	224.8
K	147.0
Total	826.3

CBL Methodology

Zones	Average
ROS (A+B+C)	314.8
J	148.3
K	119.5
Total	582.8

[1] *New York Independent System Operator, Inc.*, Answer and Motion for Leave to Correct Filing of the New York Independent System Operator, Inc., FERC Docket Nos. ER01-3001-016, ER03-647-009 (Feb. 16, 2007).

Analysis of All 2006 Events Using FERC Compliance Report Data

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At the request of the ICS, the NYISO performed a similar analysis using data from all EDRP/SCR events in 2006. This analysis did not work with a stratified sample of SCRs who reported both APMD- and CBL-based performance data, but did factor in the number of SCRs reporting data of each type. For each Capacity Region and Locality, Table 3 contains:

- the reported load reduction using the CBL method (CBL MW)
- the reported load reduction using the APMD method (APMD MW)
- the number of SCRs reporting CBL-based data (#cbl_cust)
- the number of SCRs reporting APMD-based data (#apmd_cust)
- the ratio of CBL-to-APMD reported MW reductions, unadjusted for the number of responses (CBL-to-APMD ratio)
- the ratio of customers reporting CBL vs. APMD data (Cust report ratio)
- the CBL-to-APMD MW reduction, adjusted for the number of responses by dividing the CBL-to-APMD ratio by the Cust report ratio.

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As can be seen from the last column of Table 3, the overall performance ratios, with some exceptions, are close to the 66%-88.3% figures determined from the August 2 detailed analysis. The July 18 results for ROS and Zone K are less accurate for the following reasons:

- ROS results involved only one Zone with few SCRs registered, with greater statistical error,
- Zone K results included APMD data and not CBL data from some customers who did report both in subsequent events.

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Table 3

2006 EDRP/SCR Event Analysis Based on FERC Compliance Report

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Date	Zone	CBL MW	APMD MW	#cbl_cust	#apmd_cust	CBL-to-APMD ratio	Cust_report_ratio	Performance Ratio
18-Jul	*ROS*	4.4	12.9	15	17	0.341	0.882	0.387
	J	134.1	290.7	554	788	0.461	0.703	0.656
	K	95.1	92.4	208	262	1.029	0.794	1.296
19-Jul	*J*	108.9	243.6	546	745	0.447	0.733	0.610
1-Aug	*J*	144.8	166.3	549	454	0.871	1.209	0.720
	K	114.5	50.3	241	78	2.276	3.090	0.737
2-Aug	*ROS*	276.5	473.0	119	148	0.585	0.804	0.727
	J	147.4	219.2	562	663	0.673	0.848	0.793
	K	108.0	79.9	237	148	1.351	1.601	0.844
3-Aug	*J*	142.8	231.6	576	667	0.617	0.864	0.714
	K	106.4	77.9	239	144	1.366	1.660	0.823

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