

Examination of IRM Results Due to Replacing External Area Representations in the 2019 IRM Study

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Background

- **Each year, the NYISO updates the external area representations (Ontario, Quebec, New England, and PJM interconnection) for the IRM study.**
 - The data used for the updates is provided by each external control area and is often coordinated by GE as a part of its normal duties for the NPCC CP-8 working group.
 - This process includes adjustments if the neighboring LOLEs are better (lower) than their loss of load criteria.
 - The process is meant to prevent “over reliance” on the NYISO’s neighbors when establishing the IRM study’s calculated Installed Reserve Margin (IRM).
 - A total import limit of 3,500 MW has been placed on the amount of emergency assistance that New York can rely on from all external areas when setting the IRM.

Impact on 2019 IRM Following External Modeling Updates

- The 2019 model produced a 1.1% decrease in the IRM when the external area representations were replaced with the upgraded representations.
- This decrease exceeded expectations, especially when considering the 3,500 MW limit on emergency assistance.
- The NYISO has examined the unexpected decrease in the IRM, as follows:

External Modeling Details *(see also Appendix A)*

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<u>External Control Area LOLEs with summer capacities, loads and resulting margins</u>								
Area	2018 IRM FBC			2019 IRM PBC**			Delta Reserve Margin*	
	Summer Capacity (MW)	Summer Load (MW)	Reserve Margin (MW)	Summer Capacity (MW)	Summer Load (MW)	Reserve Margin (MW)		
PJM Areas								
PJM_EAST	35,065	33,962	1,103	32,608	32,321	287	-817	
PJM_CENT	34,258	25,570	8,688	36,888	24,335	12,553	3,865	
PJM_WEST	4,946	2,993	1,953	6,102	2,848	3,253	1,301	
PJM_SW	92,108	84,322	7,786	86,345	80,249	6,096	-1,690	
DOMVEPC	26,891	20,360	6,531	27,262	19,376	7,886	1,354	
ISO-NE Areas								
BOSTON	3,107	6,061	-2,954	4,059	6,694	-2,635	319	
SWCT	2,447	2,478	-31	3,996	2,737	1,259	1,290	
*Zones with greater than 150 delta are shown								
** This contains new external data. NYISO recommends keeping the 2018 representation.								

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Preliminary Findings on External Modeling

- NYISO initially believed that the introduction of the 3,500 MW emergency assistance limit would prevent significant impacts on the IRM due to changes in capacity and load of external control areas.
- However, it appears that changes in the capacity and load of external control areas, despite being relatively small to a neighboring system (such as PJM), can have a large effect on the NYISO's system.

NYISO Recommendation for the IRM PBC

- For purposes of studying the IRM, Policy 5 notes that the “primary consideration for developing the final load and capacity models for the external Control Areas is to avoid overdependence on the external Control Areas for emergency capacity support.”
- While Policy 5 states that the IRM study will use the “latest model information available for representation of external areas,” the use of the updated external area representations for the 2019 has produced preliminary results that suggest that the NYISO would be overly dependent on external control areas.
- As a result, the NYISO recommends the following:
 - At least for the Preliminary Base Case (PBC), the 2019 IRM study should keep the external area representations as they were in the 2018 IRM study.
 - NYISO will continue to examine the drivers causing the decrease in IRM due to the replacement of the external area representations.
 - The ICS adds this issue to the list of possible white papers for next year.

Questions?

Questions or comments can be sent to Greg Drake:

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- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system



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Appendix A

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External Control Area LOLEs with summer capacities, loads and resulting margins

Area	2018 IRM Study Final Base Case					IRM 2019 Draft Preliminary Base Case (pre-Policy 5)					IRM 2019 Draft Preliminary Base Case (post-Policy 5)					Delta Reserve Margin
	Annual LOLE	Summer Capacity (MW)	Summer Load (MW)	Reserve Level	Reserve Margin (MW)	Annual LOLE	Summer Capacity (MW)	Summer Load (MW)	Reserve Level	Reserve Margin (MW)	Annual LOLE	Summer Capacity (MW)	Summer Load (MW)	Reserve Level	Reserve Margin (MW)	
_PJM_MA_	0.146	193,267	166,588	116.0%	26,679	0.017	189,205	151,791	124.6%	37,414	0.148	189,205	158,541	119.3%	30,664	3,984
_J_SONE_	0.108	32,894	28,913	113.8%	3,981	0.000	37,094	25,511	145.4%	11,583	0.107	37,094	31,934	116.2%	5,160	1,179
IESO	0.104	31,870	23,781	134.0%	8,089	0.000	31,588	22,016	143.5%	9,572	0.105	31,588	24,556	128.6%	7,032	-1,056
HQ	0.110	34,929	24,239	144.1%	10,690	0.000	34,165	23,077	148.0%	11,087	0.106	34,165	24,729	138.2%	9,436	-1,254
HQ(winter)	-	40,708	40,734	99.9%	-26	-	41,866	38,782	107.9%	3,083	-	41,866	41,557	100.7%	308	334
PJM Areas																
PJM_EAST	0.077	35,065	33,962	103.2%	1,103	0.000	32,608	30,945	105.4%	1,663	0.010	32,608	32,321	100.9%	287	-817
PJM_CENT	0.000	34,258	25,570	134.0%	8,688	0.000	36,888	23,299	158.3%	13,589	0.000	36,888	24,335	151.6%	12,553	3,865
PJM_WEST	0.001	4,946	2,993	165.2%	1,953	0.000	6,102	2,727	223.7%	3,375	0.000	6,102	2,848	214.2%	3,253	1,301
PJM_SW	0.145	92,108	84,322	109.2%	7,786	0.017	86,345	76,832	112.4%	9,513	0.147	86,345	80,249	107.6%	6,096	-1,690
DOMVEPC	0.000	26,891	20,360	132.1%	6,531	0.000	27,262	18,551	147.0%	8,711	0.000	27,262	19,376	140.7%	7,886	1,354
ISO-NE Areas																
BHE	0.000	1,125	331	339.8%	794	0.000	1,156	292	395.7%	864	0.000	1,156	366	316.1%	790	-4
ME	0.076	926	1,038	89.2%	-112	0.000	1,009	916	110.2%	93	0.098	1,009	1,147	88.0%	-138	-26
SME	0.000	1,544	747	206.5%	796	0.000	1,600	660	242.7%	941	0.001	1,600	826	193.8%	775	-21
NH	0.002	4,291	2,172	197.6%	2,120	0.000	4,401	1,916	229.7%	2,485	0.003	4,401	2,399	183.5%	2,003	-117
VT	0.073	548	1,325	41.3%	-777	0.000	769	1,169	65.8%	-400	0.085	769	1,463	52.5%	-694	83
BOSTON	0.103	3,107	6,061	51.3%	-2,954	0.000	4,059	5,348	75.9%	-1,288	0.098	4,059	6,694	60.6%	-2,635	319
CMA_NEMA	0.103	581	1,795	32.4%	-1,214	0.000	620	1,584	39.1%	-964	0.098	620	1,983	31.3%	-1,363	-149
WMA	0.007	4,997	2,322	215.2%	2,674	0.000	5,331	2,049	260.2%	3,282	0.020	5,331	2,565	207.8%	2,766	91
SEMA	0.092	3,616	3,066	117.9%	550	0.000	3,877	2,705	143.3%	1,172	0.105	3,877	3,386	114.5%	491	-59
RI	0.004	3,333	2,702	123.3%	631	0.000	3,522	2,384	147.7%	1,138	0.018	3,522	2,985	118.0%	537	-93
CT	0.015	5,376	3,727	144.3%	1,649	0.000	5,702	3,288	173.4%	2,414	0.027	5,702	4,116	138.5%	1,586	-63
SWCT	0.103	2,447	2,478	98.7%	-31	0.000	3,996	2,186	182.7%	1,809	0.012	3,996	2,737	146.0%	1,259	1,290
NOR	0.103	253	1,382	18.3%	-1,128	0.000	301	1,219	24.7%	-1,104	0.086	301	1,526	19.8%	-1,104	24
LAKEROAD	0.000	751	0	-	751	0.000	751	0	-	751	0.000	751	0	-	751	0



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