

***Determination of Loop Flow Setting in
New York MARS Related Studies***

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Issue

- ◆ An anomaly was observed in the 2008 IRM and External ICAP Import Rights Studies.
- ◆ The NYCA LOLE improved when External ICAP resource imports increased over specific external interfaces.
- ◆ Increases in External ICAP imports should result in no change in LOLE until the increase begins to reduce the Emergency Assistance. The LOLE should then worsen. At no time should the increase in imports improve the LOLE.

NYISO Actions

- ◆ 2008 Statement of Work for GE Energy Services included a task to investigate this anomaly and to assist the NYISO in developing a recommendation for the correct modeling of the Loop Flow switch.
- ◆ Conducted the 2008 External ICAP Import Rights Study with the Loop Flow (GEN-OPTN Table) switch in both the 'Yes' and 'No' positions.
- ◆ Expressed concerns to ICS, April 2008.

MARS Loop Flow Switches

- ◆ GE MARS Model has two Loop Flow switches.
 - *GEN-OPTN Table (LF1P)*
 - Controls Loop Flow for all Control Areas
 - Priority order of assistance set by GEN-POOL Table
 - Only affects MARS Pass 1
 - *RES-POOL Table (LF2P)*
 - Controls Loop Flow only for Control Areas listed in table
 - Sets priority order of assistance
 - Only affects MARS Pass 2

- ◆ Three distinct program model passes to determine assistance levels.

MARS Pass 1 (LF1P)

- ◆ Zones within a Control Area assist deficient zones within the same Control Area.
- ◆ Control Areas processed sequentially.
- ◆ Loop Flow Switch – LF1P (GEN-OPTN table).
 - *If 'Yes'; all ties left in place and will be used as needed to deliver assistance to deficient zones.*
 - *If 'No'; ties between the Control Area being processed and the rest of the system are cut. Only the internal ties can be used to provide assistance.*
- ◆ Tie Transfer Limits adjusted to account for flows after processing each Control Area (no double counting).

MARS Pass 2 (LF2P)

- ◆ Control Areas provide assistance to other Control Areas based upon the priority in the RES-POOL table.
- ◆ Each reserve sharing arrangement has its own Loop Flow switch within the RES-POOL table.
- ◆ Loop Flow Switch – LF2P (RES-POOL Table)
 - *If 'Yes'; MARS uses whatever ties are available to deliver assistance.*
 - *If 'No'; The Control Areas must be directly connected in order to deliver assistance.*
- ◆ Tie Transfer Limits adjusted to account for flows after processing each Control Area.

MARS Pass 3

- ◆ Sharing is open from all Control Areas to anywhere it can be delivered.
- ◆ All ties are available as needed.
- ◆ By definition, there is no Loop Flow switch in this pass.

Analysis

- ◆ GE Engineers were able to replicate this anomaly and confirm the MARS model runs conducted by the NYISO.
- ◆ GE studied specific occurrences where flows looping capacity from PJM West to PJM East through NY during Pass 1 interfered with assistance from Ontario during Pass 2.
- ◆ Data confirmed that looping flows from PJM decreased while the assistance from Ontario increased.

Flows w/w/o Loop Flow (LF1P)

Table 1 – Net Imports into NYCA for 2009 IRM Base Case (MWh)

Interface	With Loop Flow	Without Loop Flow	Difference
Ontario - A	608.1	1491.1	883.0
PJM W - A	-629.2	-1196.0	-566.8
PJM - C	425.4	137.9	-287.5

Conclusions

- ◆ NYISO concludes that operating with the Loop Flow switches in the ‘Yes’ position could distort the LOLE results in both the IRM and LCR studies and interferes with the External ICAP Import Rights Allocation Study. (2009 Import Rights Study had Loop Flow (LF1P) switch in the ‘No’ position.)
- ◆ GE Energy Services analysis confirms NYISO conclusions.

Recommendations

- ◆ The Loop Flow switch (LF1P, GEN-OPTN Table) should be set in the 'No' position for studies beginning with the 2010 IRM Study.
- ◆ RES-POOL table should be removed from the analysis as the appropriate sharing can occur without this table.
- ◆ The NYISO will provide its topology (transmission representation) for the 2010 IRM based on this switch position.

Results with new RES-POOL

IRM	J	K	LOLE
16.2	79.0	97.0	.137
18.8	79.0	97.0	.100

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