NYISO OPERATING STUDY WINTER 2005-06

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1. INTRODUCTION

The following report, prepared by the Operating Studies Task Force (OSTF) at the direction and guidance of the System Operations Advisory Subcommittee (SOAS), highlights the significant results of the thermal analysis completed for the Winter 2005-06 capability period. This analysis indicates that, for the Winter 2005-06 capability period, the New York interconnected bulk power system can be operated reliably in accordance with the ***NYSRC Reliability Rules for Planning and Operating the New York State Power System*** and the NYISO System Operating Procedures.

Transfer limits cited in this report are based on the forecast peak load conditions and are intended as a guide to system operation. Changes in generation dispatch or load patterns that significantly change pre-contingency line loadings may change limiting contingencies or limiting facilities, and result in higher, or lower, interface transfer capabilities. Transient or Voltage stability constraints are addressed separately through specific studies and those approved limits are summarized on the NYISO website (www.nyiso.com) under "Operating Studies and Reports."

2. RECOMMENDATIONS

The following recommendations are presented based on the analysis and results documented in this report.

1) System Operators should monitor the critical facilities noted in the enclosed tables, along with other limiting conditions, while maintaining bulk system power transfers within secure operating limits.

2) Installed Capacity (ICAP) resources of 37,715 MW are anticipated to be adequate to meet the forecast peak demand of 25,350 MW. The NYISO should have adequate operating reserve during the period.

3. SYSTEM REPRESENTATION AND BASE STUDY ASSUMPTIONS

I. System Representation

The representation was developed from the NYISO Transmission Planning Databank and assumes the forecast winter coincident peak load of 25,350 MW. The other NPCC Areas and adjacent regions representations were obtained from MEN/VEM Winter 2005-06 Reliability Assessment power flow.

The generator output levels for major EHV-connected units are summarized in Appendix B, and are consistent with typical operation for the period. The inter-Area transactions represented in the study base case are summarized in Appendix A, and are consistent with those modeled in the MEN/VEM Winter 2005-06 Reliability Assessment.

Significant changes in the NYISO system since the Winter 2004-05 capability period include:

Transmission Facilities

Completion of the installation of the 345kV fault-current limiting series reactors at the Dunwoodie and Sprain Brook 345kV stations (series reactors on bypass for winter season)
Establish the Chases Lake Road 230kV station on the Adirondack – Porter #11 230kV circuit
Chases' Lake Road to Rector Road 230kV circuit
Establish Rector Road 230/34.5kV station

Generation Resources

Albany Steam (retirement)	-356MW
Bethlehem Energy Center	750MW
East River Repowering	288MW
Waterside Station (retirement)	166MW
Hudson Avenue #10 (retirement)	65MW
Maple Ridge Wind (Rector Road)	198MW
NYPA Astoria Combined Cycle	500MW

II. Base Study Assumptions

The PTI PSS/E power flow and MUST thermal transfer analysis program are used to determine the Normal and Emergency Criteria thermal limits. The thermal limits presented have been determined for all transmission facilities scheduled in service during the Winter 2005-06 period.

The schedules used in the base case load flows for this analysis assumed a net flow of 1000 MW from PSE&G to Consolidated Edison via the phase-angle-regulating (PAR) transformers controlling the Hudson – Farragut and Linden – Goethals interconnections, and 1000 MW on the South Mahwah – Waldwick circuits from Consolidated Edison to PSE&G, controlled by the PARs at Waldwick. The Branchburg - Ramapo 500 kV (5018) circuit is scheduled in accordance with the "Ramapo Phase Angle Regulator Operating Procedure", December 11, 1987. These schedules are consistent with the scenarios developed in the MAAC-ECAR-NPCC (MEN) Inter-Regional Reliability Assessment for Winter 2005-06, and the NERC/MMWG Winter 2005-06 load flow base case.

Thermal transfer capabilities between New York and adjacent Areas are also determined in this analysis. These transfer limits supplement, but do not change, existing internal operating limits. *There may be facilities internal to each system that may reduce the transfer capability between Areas. Reductions due to these situations are considered to be the responsibility of the respective operating authority*. Some of these potential limitations are indicated in the summary tables by "____ Internal" limits, which supplement the "Direct Tie" limits. Transfer conditions within and between neighboring Areas can have a significant effect on inter- and intra-Area transfer capabilities. Coordination of schedules and conditions between Areas is necessary to provide realistic transfer conditions while maintaining the reliability and security of the interconnected systems.

4. DISCUSSION

I. Resource Assessment

Load and Capacity Assessment

The forecast peak demand for the Winter 2005-06 capability period is 25,350MW. This forecast is approximately 1.05% below the forecast for Winter 2004-05 capability period 25,620 MW, and .35% above the all-time New York control area seasonal peak of 25,262 MW, which occurred in January 2004. The Installed Capacity (ICAP) requirement of 37,715 MW, based on the NYSRC 18% reserve requirement, is anticipated to be adequate to meet forecast demand.

NYISO Peak Load and Capacity Assessment – Winter 2005-06

NYISO ICAP Requirement	37715
Net of full-responsibility purchases/sales	0
Scheduled generation outages	2506
Allowance for unplanned outages	3274
Net capacity for load	31935
NYISO Forecast Peak	25350
Operating Reserve Requirement	1800
Available Reserve	***6585***
Net Margin	4785

The assumed allowance for unplanned outages is an equivalent rate of 8.7% and includes forced outages and de-ratings based on historical performance of all generation in the New York Control Area.

II. Cross-State Interfaces

A. Transfer Limit Analysis

Figure 1 presents a comparison of the Winter 2005-06 thermal transfer limits to Winter 2004-05. Changes in these limits from last year are due to changes in the base case load flow generation and load patterns that result in different pre-contingency line loadings, changes in limiting contingencies, or changes in circuit ratings, or line status. The detailed comparison of Cross-State limits between Winter 2005-06 and 2004-05, with limiting element/contingency descriptions, is located in Appendix H.

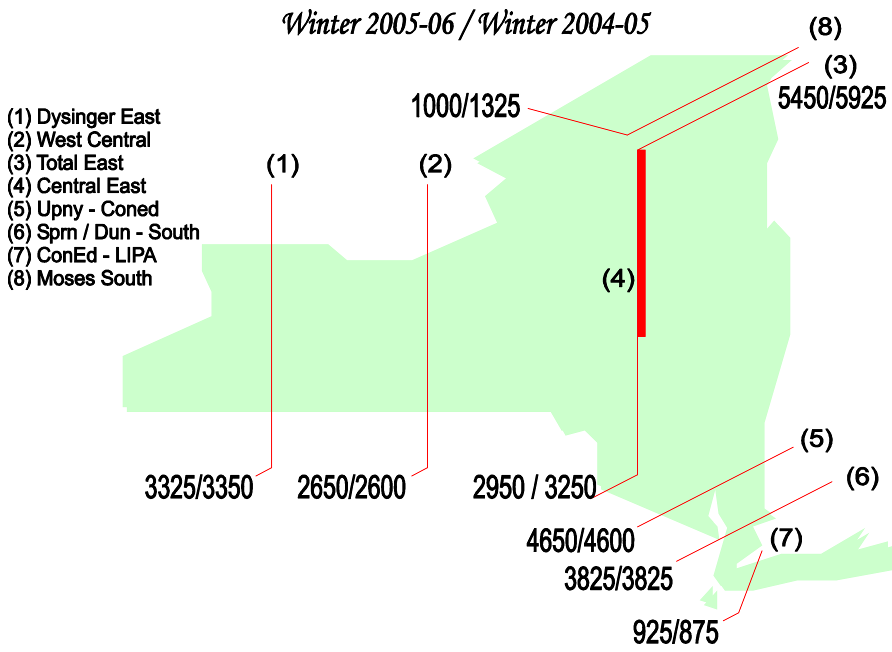

Figure 1 – Cross-State Transfer Limits

- ***Central East*** limit has decreased by 300 MW, and ***Total East*** limit also has decreased by 475 MW due to the changes in limiting elements/contingencies. The Winter 2005-06 *Central East* limit is 2950 MW and *Total East* limit is 5450 MW for New Scotland - Leeds (93) 345 kV for the loss of New Scotland - Leeds (94) 345kV; Last winter *Central East* limit was 3250 MW, and *Total East* limit was 5925 MW limited by Clay – Edic 345kV for the loss of Clay – Edic 345kV and the transformer at Clay (345/115kV).
- ***Moses South*** interface limit has decreased by 325 MW due to the changes in the base case generation and load that moves the limiting element for the similar contingencies in the winter 2005-06 base case to the southerly sections of the Moses – Adirondack – Porter 230kV corridor. The Winter 2005-06 *Moses South* limit is 1000 MW for Porter2 -Chases Lake 230kV for the loss of Moses - Massena (MMS-1) 230 kV and

Moses - Massena (MMS-2) 230 kV; previous winter *Moses South* limit was 1325 MW limited by Moses - Adirondack 230kV for the same contingency (MMS-1 and MMS-2).

B. Sensitivity Testing

The thermal limits presented in Section 5 were determined using the base conditions and transactions. The effects of various intra- and inter-Area transfers or generation patterns in the system are presented in Appendix G.

Phase angle regulator schedules may vary from day-to-day. Sensitivity analysis for selected interfaces has been included for the Ramapo, St. Lawrence, and Northport interconnections. Graphs showing the sensitivity of the interface limit to the PAR schedule are included in Appendix G.

C. West Woodbourne Transformer

The Total-East interface may be limited at significantly lower transfer levels for certain contingencies that result in overloading of the West Woodbourne 115/69kV transformer. Should the West Woodbourne tie be the limiting facility, it may be removed from service to allow higher Total-East transfers. An over current relay is installed at West Woodbourne to protect for contingency overloads.

D. Con Ed – LIPA Analysis

Normal transfer limits were determined using the base case generation dispatch and PAR settings as described in Appendix B. Emergency limits are dispatch dependant and can vary based on generation and PAR schedule.

For emergency transfer limit analysis the ConEd - LIPA PARs are adjusted to allow for maximum transfer capability into LIPA:

ConEd – LIPA PAR Settings

	Normal	**Emergency**
Jamaica – Lake Success 138kV	-200MW	0MW
Jamaica – Valley Stream 138kV	-120MW	200MW
Sprain Brook – E. Garden City 345kV	693MW	693MW

ISO-NE – LIPA PAR Settings

Norwalk Harbor – Northport 138kV	100MW	100MW

E. Transfer Limits for Outage Conditions

Transfer limits for scheduled outage conditions are determined by the NYISO Scheduling and Market Operations groups. The NYISO RTC/RTD system monitors the EHV transmission continuously to maintain adequate resources and secure operation of the interconnected system.

III. Transfer Capabilities with Adjacent Control Areas

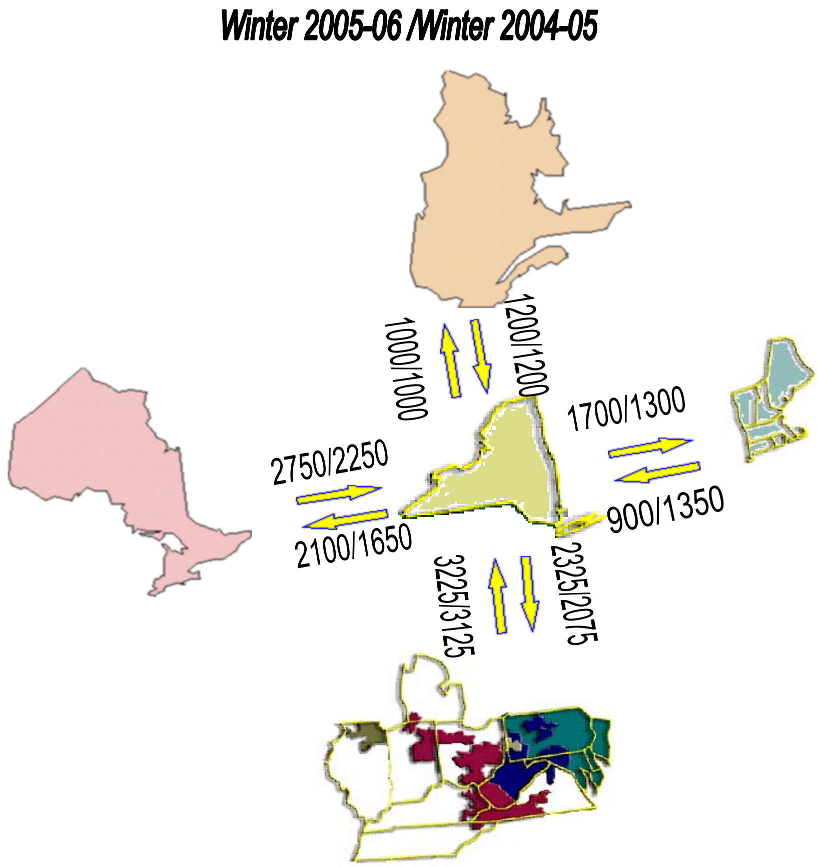

Figure 2 – Inter-Area Transfer Capabilities

A. New York ISO - New England Analysis

1. New England Transmission/Capacity Additions

Transmission

In the New England Control Area, at the Haddam substation in Connecticut, a new 600MVA 345kV/115kV will be added in winter 2006. Construction has begun on a new 345kV circuit in southwestern Connecticut, which will be part of a multi-year transmission reinforcement project in the SWCT area.

Capacity

Since the previous Winter, the Seabrook nuclear power station was uprated by approximately 60MW to a net output of 1221MW.

2. Thermal Transfer Limit Analysis

The transfer limits between the NYISO and ISO New England for normal and emergency transfer criteria are summarized in Section 5, Table 2. Referring to Figure 2 the transfer capability from NY to NE has increased by 400MW and the transfer capability from NE to NY has decreased by 450 MW. This is due to the change in primarily dispatch generation in New England in the Winter 2005-06 base case.

3. Cross-Sound Cable

The Cross-Sound Cable is an HVdc facility between the New Haven Harbor 345kV (United Illuminating, ISO-NE) station and Shoreham 138kV (LIPA). It has a design capacity of 330MW. This facility is not metered as part of NY-NE interface, and HVdc transfers are scheduled separate from transfers between the NYISO and ISO-NE via the synchronous ties.

4. Smithfield – Salisbury 69kV

Central Hudson G&E and Northeast Utilities will operate the Smithfield-Falls Village 69kV line (FV/690) normally closed during the winter period. The maximum allowable transfer on this line is 28 MVA, based on limitations in the Northeast Utilities 69 kV system. The FV/690 has directional over-current protection that will trip the line in the event of an actual overload when the flow is toward ISO-NE. This facility will not limit NYISO-ISO-NE transfers.

5. Northport - Norwalk Harbor Cable Flow

Flow on this facility is controlled by a phase angle regulating (PAR) transformer at Northport. As system conditions vary the following may be used to optimize transfer capability between the Areas. The thermal transfer limits are presented in Table 2 for two different PAR schedule assumptions on the Northport – Norwalk Harbor interconnection. Exhibits in Appendix G graphically demonstrate the optimization of transfer capability by regulating the flow on the Northport-Norwalk Harbor tie.

> **New York to New England**: With power flowing from New York to New England on the Northport to Norwalk Harbor (1385) cable, potential overloads of the Norwalk Harbor to Rowayton Junction (1867) and the Norwalk Harbor to Rowayton Junction (1880) circuits must be considered as follows:
>
> > The flow from Norwalk Harbor to Rowayton Junction (1867) should not exceed 237 MVA (Normal rating of Norwalk Harbor to Rowayton Junction (1867).

The flow from Norwalk Harbor to Rowayton Junction (1880) should not exceed 214 MVA (Normal rating of Norwalk Harbor to Rowayton Junction (1880)).

New England to New York: With power flowing from New England to New York on the Norwalk Harbor to Northport (1385) cable, potential overloads of the Trumbull Junction to Weston (1730) circuit must be considered as follows:

The algebraic sum of the flow from Trumbull Junction to Weston (1730) and 27% of the flow from Pequonnock to Trumbull Junction (1710) and 29% of the flow from Devon to Trumbull Junction (1710) should not exceed 239 MVA (STE rating of Trumbull Junction to Weston (1730)).

The algebraic sum of the flow from Trumbull Junction to Weston (1730) and 25% of the flow from Pequonnock to Ash Creek (91001) and 21% of the flow from Bridgeport Resco should not exceed 239 MVA (STE rating of Trumbull Junction to Weston (1730)).

In order to transfer 200 MVA from Norwalk Harbor to Northport, Norwalk Harbor generation should be on.

6. Plattsburgh – Sandbar (PV-20) Circuit

A new phase angle regulating transformer at Sandbar controlling the Plattsburgh, NY, to Sandbar, VT, 115kV circuit (PV-20) is in service, and the existing phase angle regulator at Plattsburgh is out of service for repair and is bypassed.

7. Transient Stability Limitations

For certain system configurations, stability performance determines the transfer capability between the Areas. For those instances, the limits have been obtained from the report "1992-1996 NYPP-NEPOOL TRANSFER LIMIT STUDY - OCTOBER 1992."

The stability limits are expressed in terms of the transfer on the "Northern Ties", i.e., excluding flow on the Norwalk Harbor – Northport circuit. Stability limits for transfers from New England to New York are a function of the New England MW load level, and include the effect of Northfield and Bear Swamp in the generating and pumping mode.

B. New York - PJM Analysis

1. Thermal Analysis

The transfer limits for the New York - PJM interface are summarized in Section 5, Table 3. The comparison with Winter 2004-05 in Figure 2 shows the New York to PJM limit has increased by 250 MW, and an increase of 100 MW transfer capability toward NY. This change is primarily due in the base case dispatch in the vicinity of the limiting elements.

2. Opening of PJM to New York 115 kV Ties as Required

The normal criteria thermal transfer limits presented in Section 5 were determined for an all lines in-service condition. The 115kV interconnections between First Energy and New York (Warren - Falconer, East Sayre – North Waverly,and Tiffany - Goudey) may be opened in accordance with NYISO and PJM Operating Procedures provided this does not cause unacceptable impact on local reliability in either system. Over-current protection is installed on the Warren - Falconer and the East Sayre – North Waverly 115kV circuits; either of these circuits would trip by relay action for an *actual overload* condition. There is no overload protection on the Tiffany - Goudey circuit, however it may be opened by operator action if it imposes an actual or post-contingency overload condition. The results presented in Table 3 include limits that assume one (or more) of these lines removed from service to achieve higher inter-Area transfer capability.

C. Ontario – New York Analysis

1. Thermal Analysis

The thermal limits between the New York ISO and the Independent Electricity System Operator (IESO-Ontario) areas for normal and emergency transfer criteria are presented in Section 5, Table 4. The New York to Ontario limit has increased 450 MW, and the Ontario to New York limit also has increased 500 MW. This is due to the change of the limiting elements and the internal generation dispatch in Ontario in the Winter 2005-06 base case.

2. Transient Stability Limitations

Transient stability limits for the NYISO - IESO interconnection are reported in "NYPP-OH TRANSIENT STABILITY TESTING REPORT on DIRECT TIE TRANSFER CAPABILITY - OCTOBER 1993."

3. Ontario – Michigan PARs

Phase Angle Regulating (PAR) transformers are being installed on the interconnections between Ontario and Michigan:

Lambton – St. Clair 345kV	L4D
Lambton – St. Clair 230kV	L51D
Scott – Bunce Creek 230kV	B3N

The collapsed tower of circuit B3N does not yet have a firm replacement date. The failed phase shifter that is part of B3N (PS3) has not yet been removed from site to be repaired.

Although the L4D and L51D PARs will be in-service this date, there are still no operating agreements between HydroOne and ITC and between the IESO and MISO. Until these agreements are in place, the L4D and L51D PARs will only be used to control flow during emergency situations in the Ontario or Michigan systems.

During normal system conditions the existing PAR controlling the Waterman – Keith (J5D) circuit is controlling scheduled flow, and the PARs controlling the L4D and L51D circuits at Lambton, are operated at a fixed angle of 0 degrees (center tap).

4. Generation Rejection for Loss of L33P/L34P-St. Lawrence Ties

The interface limits were determined for a particular load, transmission and generation pattern. When system conditions vary from those forecast in the study, normal interface limits may vary. Generation rejection special protection systems (SPSs) are available at Beauharnois, St. Lawrence/Saunders, and St. Lawrence/FDR to reject generation for the loss of the L33P and/or L34P interconnections. These SPSs can be selected by the Ontario or NYPA (as appropriate) operators, consistent with system conditions.

Of the two circuits, L33P is more limiting. At 0 degrees phase shift the limiting STE rating is 465 MVA (voltage regulator rating). The outage distribution factor for the loss of L34P is 0.601 and based on this, the maximum pre-contingency flow on each circuit should not exceed 290 MW. At 40 degrees phase shift the limiting STE rating is 334 MVA (PAR rating). The outage distribution factor for the loss of L34P is 0.462 and based on this, the maximum flow on each circuit should not exceed 228 MW.

D. TransEnergie–New York Interface

Thermal transfer limits between TransEnergie (Hydro-Quebec) and New York are not analyzed as part of this study. Respecting the NYSRC and NYISO operating reserve requirements, the maximum allowable delivery into the NYCA from TE is limited to 1200 MW. Maximum delivery from NYCA to TE is 1000 MW.

5. SUMMARY OF RESULTS
TRANSFER LIMIT ANALYSIS

TABLE 1

NYISO CROSS STATE INTERFACE THERMAL LIMITS-WINTER 2005-06
ALL LINES I/S

	Dysinger East	West Central	UPNY-ConEd	Sprain Brook Dunwoodie So.	ConEd-LIPA
NORMAL	3325(1)	2650(2)	4650(3)	3825(4)	925(5)
EMERGENCY	3600(1)	2925(2)	5100(3)	4125(4)	1550(6)

	LIMITING ELEMENT				LIMITING CONTINGENCY
(1)	Niagara – Rochester (NR2) 345kV	@LTE @STE	1745 MW 1904 MW	L/O	AES/Somerset – Rochester (SR-1) 345kV
(2)	Stolle – Meyer (67) 230kV	@LTE @STE	564 MW 606 MW	L/O	Niagara – Rochester (NR2) 345kV
(3)	Leeds - Pleasant Valley (92) 345kV	@LTE @STE	1783 MW 1912 MW	L/O	Athens - Pleasant Valley (91) 345kV
(4)	Dunwoodie – Rainey (72) 345kV	@SCUC @STE	992 MW 1113 MW	L/O	Dunwoodie – Rainey (71) 345kV
(5)	Dunwoodie - Shore Road (Y50) 345kV	@LTE	925 MW	L/O	Sprain Brook - EGC (Y49) 345kV
(6)	Dunwoodie - Shore Road (Y50) 345kV	@NOR	664 MW		Pre-Contingency Loading

NOTE: Some transfers may be stability limited.

TABLE 1.a

NYISO CROSS STATE INTERFACE THERMAL LIMITS-WINTER 2005-06
ALL LINES I/S

	HQ → NY @ 400 MW	HQ → NY @ 0 MW	HQ → NY @ -550 MW
CENTRAL EAST			
NORMAL	2975[1]	2950 [1]	2900[6]
EMERGENCY	3350[1]	3300[2]	2950[2]
TOTAL EAST			
NORMAL	5350[1]	5450[1]	5525[6]
EMERGENCY	6100[1]	6150[2]	5650[2]
MOSES SOUTH			
NORMAL	1300[3]	1000[4]	500[4]
EMERGENCY	1750[5]	1425[5]	1375[5]

	LIMITING ELEMENT				LIMITING CONTINGENCY
(1)	New Scotland – Leeds (93) 345kV	@LTE @STE	1692 MW 1912MW	L/O	New Scotland – Leeds (94) 345kV
(2)	Clay - Edic 345kV	@STE	1434 MW	L/O	Clay – Edic 345kV
(3)	Chase Lake - Porter2 230kV	@LTE	376 MW	L/O	Chateauguay - Massena 765kV Marcy- Massena 765 kV
(4)	Chase Lake - Porter2 230 kV	@LTE	376 MW	L/O	Moses - Massena (MMS-1) 230 kV Moses - Massena (MMS-2) 230 kV
(5)	Chase Lake - Porter2 230kV	@STE	478 MW	L/O	Chateauguay - Massena 765kV Marcy- Massena 765 kV
(6)	Oakdale – Fraser (32) 345kV	@LTE	1380MW	L/O	(Tower 40&41) Marcy – Coopers Corners 345kV Edic – Fraser 345kV

NOTE: Some transfers may be stability limited.

TABLE 2.a

NYISO to ISO-NE INTERFACE LIMITS - WINTER 2005-06
ALL LINES I/S

New York to New England	Northport – Norwalk @ 100MW		
	DIRECT TIE	**NYISO FACILITY**	**ISO-NE FACILITY**
NORMAL	1700 (1)	1675 (3)	2400 (6)
EMERGENCY	2150 (2)	1925 (4)	2400 (6))

	Northport – Norwalk @ 0 MW		
NORMAL	1750 (5)	1600 (3)	2550 (6)
EMERGENCY	2225 (7)	1875 (4)	2550 (6)

	LIMITING ELEMENT				LIMITING CONTINGENCY
(1)	Norwalk - Northport (1385) 138kV	@LTE	363MW	L/O	Breaker failure @ Long Mtn Long Mtn – Plumtree (321) 345 kV Long Mtn – Pleas. Valley (398) 345kV
(2)	Norwalk - Northport (1385) 138kV	@STE	428MW	L/O	Long Mtn – Pleas. Valley (398) 345kV
(3)	Mohican - Whitehall (13) 115kV	@LTE	144 MW	L/O	(Breaker failure @ Northfield) Berkshire - Northfield (312) 345kV Berkshire 345/115kV and Northfield delivery
(4)	Greenbush- Reynolds (9)115kV	@LTE	318MW	L/O	Alps - N Scotland77 (2) 345kV
(5)	Bennington – Hoosick (6) 115kV	@LTE	159MW	L/O	(Breaker failure @ Northfield) Berkshire - Northfield (312) 345kV Berkshire 345/115kV and Northfield delivery
(6)	Berkshire 345//115kV transformer	@STE	448MW	L/O	Bearswamp- Pratts Junction (E205W) 230kV
(7)	Whitehall – Blissville (7) 115kV	@STE	239 MW	L/O	Vermont Yankee-Coolidge (340) 345kV

NOTE: Northport – Norwalk Harbor flow is positive in the direction of transfer.

TABLE 2.b

ISO-NE to NYISO INTERFACE LIMITS - WINTER 2005-06
ALL LINES I/S

New England to New York	Norwalk – Northport @ 100MW		
	DIRECT TIE	**NYISO FACILITY**	**ISO-NE FACILITY**
NORMAL	1425 (1)	1875 (2)	2000 (3)
EMERGENCY	1775 (1)	1875 (2)	2000 (3)

	Norwalk – Northport @ 200MW		
NORMAL	900 (1)	1350 (2)	1900 (3)
EMERGENCY	1200 (1)	1350 (2)	1900 (3)

	LIMITING ELEMENT				LIMITING CONTINGENCY
(1)	Norwalk - Northport (1385) 138kV	@LTE @STE	363 MW 428MW	L/O	Long Mtn (398) – Pleasant Valley 345kV
(2)	Northport - Northport (PAR) 138kV	@LTE @STE	450 MW 450 MW	L/O	Long Mtn (398) – Pleasant Valley 345kV
(3)	Southington – Canal (1950) 115 kV	@STE	352MW	L/O	Southington – FrostBridge (329) 345kV

NOTE: Norwalk Harbor – Northport cable schedule is positive in the direction of transfer

TABLE 3.a

PJM to NYISO INTERFACE LIMITS-WINTER 2005-06
ALL LINES I/S

PJM to NYISO	DIRECT TIE	NYISO FACILITY	PJM FACILITY
NORMAL	2300[(1)]	3675[(4)]	3650[(3)]
3-115-O/S	3225[(2)]	1625[(7)]	3850[(3)]
EMERGENCY	2725[(5)]	3675[(6)]	3650[(3)]
3-115-O/S	3325[(2)]	3525[(6)]	3850[(3)]

	LIMITING ELEMENT				**LIMITING CONTINGENCY**
(1)	Warren-Falconer (171) 115 kV	@LTE	136 MW	L/O	Forest – Glade TP 230kV Glade TP- Glade 230kV Glade TP- Lewis RN 230kV Lewis RN 230/115 kV Lewis RN 230/34.5kV
(2)	E. Towanda-Hillside (70) 230kV	@LTE @STE	564 MW 598 MW	L/O	Homer City - Watercure (30) 345kV
(3)	Oxbow – N. Meshoppen 230 KV	@NOR	567 MW		Pre – Contingency
(4)	Goudey – S. Owego 115 KV	@LTE @STE	157 MW 167 MW	L/O	Oakdale - Watercure (31) 345kV
(5)	Warren-Falconer (171) 115 kV	@NOR	96 MW		Pre - Contingency
(6)	Watercure 345/230kV	@STE	600MW	L/O	Oakdale - Watercure (31) 345kV
(7)	Dunkirk 230/115kV	@LTE @STE	177MW 226MW	L/O	Dunkirk – Gardenville2 230kV Dunkirk 230/115kV

NOTE: Emergency Transfer Limits may require line outages as described in Section 4.III. PAR schedules have been optimized for the emergency limits as described in Appendix B. Some transfers may be stability limited.

TABLE 3.b

NYISO to PJM INTERFACE LIMITS-WINTER 2005-06
ALL LINES I/S

NYISO to PJM	DIRECT TIE	NYISO FACILITY	PJM FACILITY
NORMAL	1875 (1)	1800 (5)	2650 (3)
3-115-O/S	2325 (9)	2050 (7)	2350 (11)
EMERGENCY	1875 (2)	2050 (6)	2650 (4)
3-115-O/S	2325 (10)	2150 (8)	2350 (4)

	LIMITING ELEMENT				**LIMITING CONTINGENCY**
(1)	Falconer - Warren (171) 115kV	@LTE	136 MW	L/O	Erie E. - S. Ripley 230 kV E. Sayre - N. Waverly 115kV
(2)	Falconer - Warren (171) 115kV	@STE	136 MW	L/O	Dunkirk - S. Ripley 230 kV
(3)	Erie E. – Erie S.E. 230 KV	@LTE	626 MW	L/O	Homer City – Stolle (37) 345kV Warren – Falconer (171) 115kV
(4)	Erie E. – Erie S.E. 230 KV	@NOR	542 MW		Pre-contingency loading
(5)	Goudey – Oakdale 115 KV	@LTE	239 MW	L/O	(Tower 68 & 69) Avoca- Hillside (68) 230kV Hillside- Watercure (69) 230kV
(6)	Goudey – Oakdale 115 KV	@STE	239 MW	L/O	Hillside-Watercure (69) 230kV
(7)	Dunkirk - S. Ripley 230 kV	@LTE	564 MW	L/O	Wayne-Handsome Lake 345kV
(8)	Dunkirk - S. Ripley 230 kV	@NOR	511 MW		Pre-contingency loading
(9)	S. Ripley- Erie E. 230 kV	@LTE	637 MW	L/O	Tower(67&37) Meyer - Stolle (67) 345kV Homer City - Stolle (37) 345kV
(10)	S. Ripley- Erie E. 230 kV	@NOR	553 MW		Pre-contingency loading
(11)	Erie E. – Erie S.E. 230 KV	@LTE	626 MW	L/O	(Tower 67&37) Meyer - Stolle (67) 345kV Homer City - Stolle (37) 345kV

NOTE: Emergency Transfer Capability Limits may have required line outages as described in Section 4.III. PAR schedules have been optimized for the emergency limits as described in Appendix B. Some transfers may be stability limited.

TABLE 4

NYISO- IESO INTERFACE LIMITS - WINTER 2005-06
ALL LINES I/S

Ontario to New York	L33/34P @ 0 MW			L33/34P @ 400 MW		
	DIRECT TIE	NYISO FACILITY	IESO FACILITY	DIRECT TIE	NYISO FACILITY	IESO FACILITY
NORMAL	2750[(6)]	1275[(3)]	2450[(9)]	3175[(6)]	1650[(3)]	2850[(9)]
EMERGENCY	2825[(1)]	2250[(8)]	2625[(4)]	3200[(1)]	2725[(8)]	3025[(4)]

New York to Ontario	L33/L34P @ 0 MW			L33/34P @ 200 MW		
NORMAL	2100[(5)]		1425[(2)]	2300[(5)]		1625[(2)]
EMERGENCY	1900[(7)]		2000[(10)]	2100[(7)]		2200[(10)]

	LIMITING ELEMENT				LIMITING CONTINGENCY
(1)	PA27 - Niagara2W (PA27) 230kV	@STE	685 MW	L/O	Beck2 DK - Beck2PA2 220kV
(2)	Beck2 DK - Hannon J24 220kV	@LTE	703MW	L/O	Beck- Hannon-Neal- Middleport2 (Q25BM) 220kV Beck- Hannon-Nebo – Middleport1 (Q29HM) 220kV
(3)	Packard2 – Niagara2W (61) 230kV	@LTE	717 MW	L/O	(Tower 62 & PA27) Packard2 – Niagara2W (62) 230kV Packard2 – Beck (BP76) 230kV
(4)	Beck – BP76 230kV	@LTE	586MW	L/O	Beck2 DK - Beck2PA2 220kV
(5)	Niagara2W- PA27 230kV	@LTE	685 MW	L/O	BK2-DT302 Beck2 DK – Beck2 PA2 220 kV Beck2 DK – Beck2 G15 220 /13.8 kV Beck2 DK – Beck2 Q22 220 kV
(6)	Beck A-Niagara2W (PA302) 345kV	@LTE	1469 MW	L/O	Niagara 345/230 kV Beck B-Niagara2W (PA301) 345kV
(7)	Beck2 DK - PA27 230kV	@NOR	480MW		Pre-Contingency Loading
(8)	Niagara –Rochester (NR-2) 345kV	@STE	1904 MW	L/O	AES/Somerset – Rochester (SR-1) 345 KV
(9)	Middleport1- AlanJQ30 220kV	@LTE	520MW	L/O	Beck- Hannon-Neal- Middleport2 (Q25BM) 220kV Beck- Hannon-Neal- Middleport2 (Q23BM) 220kV
(10)	Beck2 DK - Hannon J24 220kV	@NOR	577MW		Pre-Contingency Loading

NOTE: Some transfers may be stability limited.