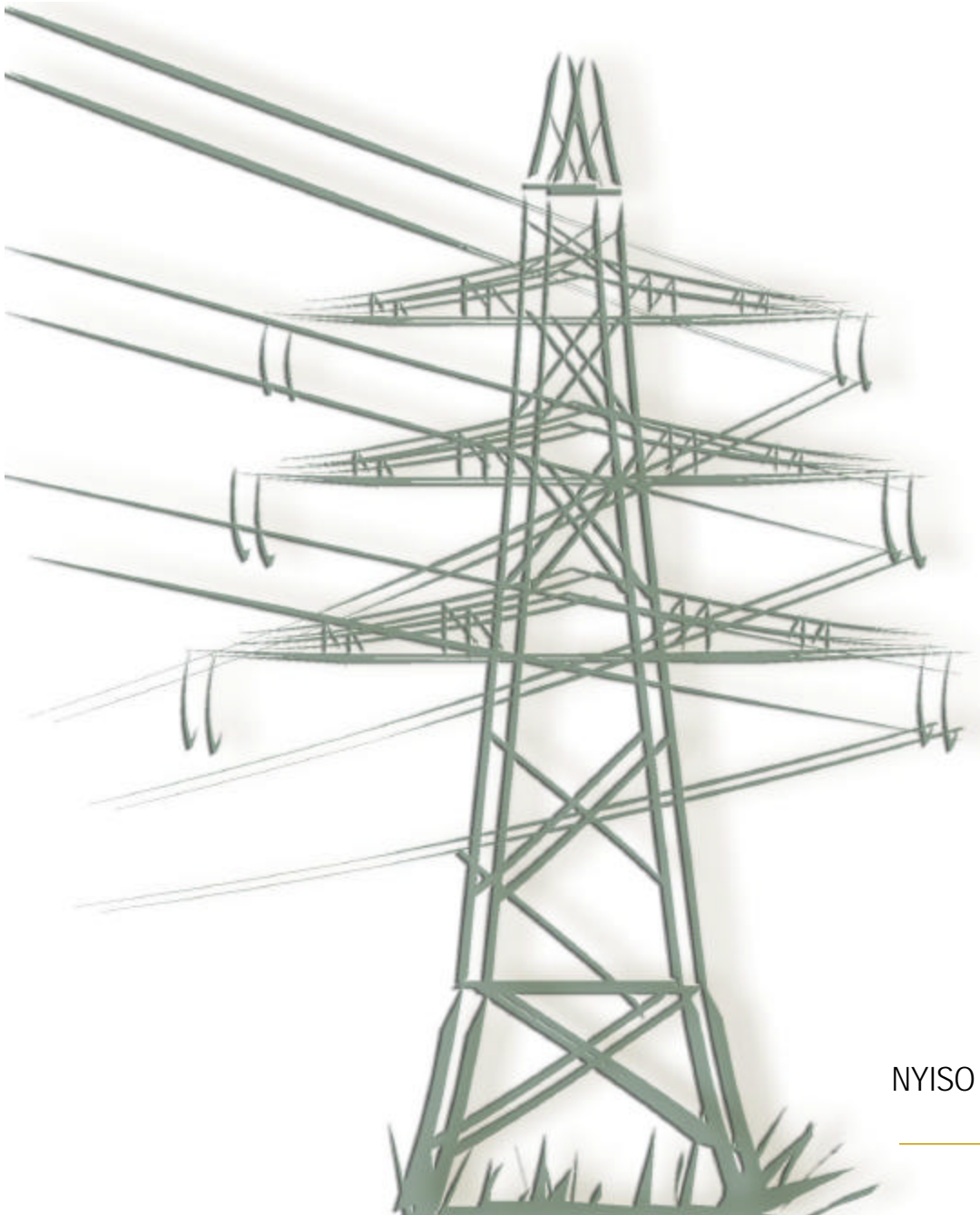




2001 TRANSMISSION PERFORMANCE REPORT



April 2002
prepared by
NYISO Operations Engineering



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 Non-Operating Interface Definitions

 Sprain Brook/Dunwoodie South (Con Ed Cable Interface) Definitions

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NYISO Transmission Performance Report – 2001

Introduction

This report summarizes NYISO transmission utilization during 2001 and compares this with transmission use in 1998, 1999, and 2000. Data is presented in a general format using histograms, cumulative distribution plots, and box plots. Included are graphical depictions of power flows on:

- NYISO interfaces and OASIS Transmission paths, including all operating interfaces and selected planning interfaces.
- Selected individual transmission lines
- Energy schedules with external pools.

There are also sections on power transfer margins and simultaneously constraining interfaces. The power transfer margins show the difference between the active real time power transfer limit and the actual power flow on the interface. The analysis of simultaneously constraining interfaces tallies the number of hours two or more interfaces were within 100 MW of their respective operating limits. These analyses are included only for NY operating interfaces.

The analysis is based on NY historical real time data sampled in 5-minute (nominal) intervals. The power flow values in each of the charts are hourly averages of the scan data. The data is presented in three graphical formats; histograms (frequency bar charts) flow duration curves, and box plots (showing monthly average flows through time).

Conclusions

Average transmission utilization on most internal NYISO operating interfaces in 2001 was similar to levels observed in 2000. Central East and Total East interfaces are consistently operating near limits, however the margin to limit is lower in 2001 than in previous years

The Open Access Same Time Information System (OASIS) transmission paths have been monitored since 1997. The flow data on these paths are presented in this report for informational purposes only.

Schedules and actual power flows between NYISO and external systems vary significantly. NY was importing from PJM about 87% of the time in 2001 compared to 85% of the time in 2000, 70% of the time in 1999, and 65% in 1998. The highest exports to PJM occurred between June and August in 2001, a period during which the eastern systems experienced seasonal peak demand levels. During the summer months the average NY exports to PJM were lower in 2001 than in 2000.



Ontario-NY scheduled imports were also almost the same in 2001 and 2000. Exports to Ontario increased both in magnitude and duration. NY exported to Ontario 14% of the time in 2001, compared with 10% in 2000.

Exports to ISO-NE decreased in 2001, nearly 87% of the time, while imports from ISO-NE decreased to nearly zero (approximately 13% of the time).

Total East flows were lower in 2001 than in 2000. Total East flows from 1998 through 2001 were not near limits. Total East power flows were above the previous limit of 5450 MW about 3% of the time in 2001, 10% of the time in 2000, 3% of the time in 1999, and 12 % of the time in 1998.

The table below compares minimum flows that occurred 75% of the time (above the lower quartile) and the percent of time the respective flows were within 200 MW of their active limits. For example, in 2001 the Total East flow was greater than 4800 MW 24% of the time and operated to within 200 MW of its active operating limits less than 1% of the time. Central East is operating further from limits in 2001 than in 2000.

Year	Central East		Total East	
	Flow >75% of the time	% of time within 200 MW of limit	Flow > 75% of the time	% of time within 200 MW of limit
2001	1827MW	42%	3795MW	<1%
2000	2021 MW	68%	4231 MW	< 1%
1999	1697MW	26%	3375 MW	1%
1998	1549 MW	35%	3493 MW	3%

Moses South (Adirondack-Central Transmission Path) flows were significantly lower in 2001 than 2000. Flows were north less than 3% of the time.

Flows from HQ are lower in 2001 than in previous years. The amount of time there are imports is about 65% compared with 90% in 2000. Imports are below 1000 MW about 28% of the time and below 700 MW 38% of the time. Exports to HQ increase to 35% of the time in 2001 from 10% in 2000.

Results

The three graphical formats, histograms, flow duration curves, and box plots, present the data in different ways to show statistical distribution and comparisons of flows from year to year. The following describes each of the graphical formats. An explanation of the transfer margin calculation is also included.

Histograms

These show the statistical distribution of flows over the observed operating range for the year. The data is presented for the current year (2001). The values along the ordinate are midpoints of a preselected range. For example, two consecutive midpoints of 300 and 600 represent all the flows with values of 300 MW \pm 150 and 600 MW \pm 150. The length of the bars represents the frequency, or the number of times a flow is within the range around the midpoint.

In the case of unrestricted operation on a facility there would be a random distribution of flows leading to a statistically normal distribution. In practical cases the distribution is skewed in one direction or there may be certain ranges that have "spikes". The flows may skew towards a certain level for several reasons: an economic optimum may exist for a while that inclines the flow to a certain value, an interface or facility may be operating at or near its limit, or a nearby facility may be limited and consequently limits the facility in question.

An example of spikes in the histogram is a transmission line out of service. The line may have a normal distribution of flows from 200 to 600 MW and a large spike at zero representing the time the facility was out of service. Unfortunately the raw data does not distinguish between O/S conditions or actual zero flow, although the latter is fairly uncommon for most facilities.

Flow Duration Curves

In a continuous monotonically decreasing curve, this shows the percentage of time a facility or interface was operating at or above a certain value in its observed operating range. The graphs include the current year, 2001, and the previous three years (1998, 1999, and 2000). Overlaying the curves for each year gives a visual comparison on how the utilization of the particular facility is changing.

Box Plots

Box and whisker plots give a through time graphic view of statistical distributions of data at each discrete time or time period. The plots in this report include four years of data, the current year (2001) and the previous three years (1998-2000). The time axis (abscissa) represents each month during the four-year analysis period. The boxes and whiskers represent all the flows observed during a month.

The heavy solid line on the plots in this report connects the monthly average (MW flow) values. The "box" represents the inter-quartile range, in which 50% of the data values lie. The bar in the middle of the box is the (statistical) median. The median cuts the box into two parts; each contains 25% of the data values. The long vertical lines extending from the boxes, whiskers, represent the higher and lower 25% (quartiles) of the data values. These whiskers extend to the absolute minimum and maximum value observed in the respective time period (1 month in this case). The tick marks on the whiskers are placed at distance not exceeding 1.5 times the length of the box (inter-quartile range), from each edge of the box. This highlights extreme minimums

and maximums that may have occurred and separates the extremes from the rest of the data values.

Transfer Margins

A supplementary section is included showing transfer margins on NYPP operating interfaces. The transfer margin is the MW transfer capability remaining from the instantaneous flow to the active transfer limit. These values are calculated by taking the active directional transfer limit and subtracting the real time flow at each (5 minute) scan.

$$\text{Transfer Margin} = \text{Transfer Limit}_{\text{directional}} - \text{ABS (Actual Flow)}$$

The transfer margin is generally a positive number. A negative number would represent flow exceeding the transfer limit. The plotted values are the hourly averages of the calculated differences. The transfer margins are presented in the same format as the flows and schedules (i.e., histograms, duration curves, and box plots).

It is important to keep in mind that the bars on the histograms represent the frequency of occurrence in a range around the midpoint. Using the Total East margin as an example, the histogram 2001 has midpoints at -100 and 300 MW. The bar at 300 means that Total East was operating within 400 MW of its active limit .51% of the time during 2001. The bar at -100 means that Total East was operating at levels potentially up to 100 MW above its active limit .21% of the time during 2001. Except in the case of unusually high overloads on an interface (i.e., spikes, contingencies), the margins are generally zero or greater.

There are two sets of charts for Central East Transfer Margins. One for pre-contingency flows and the second for post-contingency flow and limits. The Central East post-contingency transfer margin is calculated by taking the minimum margin, or difference, of the three post contingency voltage collapse limits and their respectively calculated post contingency flows.

Interfaces Simultaneously Constraining Transfers

The table in Appendix D summarizes the combinations of interfaces as they were simultaneously constraining during 1998, 1999, 2000, and 2001. Interfaces were considered constraining if the actual flow was within 100 MW of the respective interface's limit. This limit was the active transfer limit in the real-time system at the time of the sampling.

The results are summarized as hourly values derived from 5-minute real time samples. In the four year time period sampled, there were 76 unique combinations of NY operating interfaces that were constraining at various times. These combinations range from two to five interfaces at a time. Some of the combinations are recurring over each of the years, others occurred in only one year. Several combinations occurred only once.

For the circumstances analyzed, two or more interfaces were constraining from 4% to 22% of the time in a given year between 1998 and 2001. Only the Central East/Total East combination appeared regularly more than 5% of the time. Most of the rest of the simultaneous constraints

occurred 3% of the time or less. This indicates the total percentage is an accumulation of many combinations, that may occur for a variety of reasons, rather than a few that may occur for some common phenomenon. Central East and Total East are closely related. If this combination is removed, the percentages are still significant. The annual totals with and without the Total East/Central East combination are summarized in the table below.

Year	All Combinations		Central East/Total East Excluded	
	Hours	Percent of Year	Hours	Percent of Year
1998	333	4.0%	106	1.7%
1999	382	4.0%	360	3.8%
2000	1921	22.0%	1874	21.4%
2001	1252	14.0%	1243	14.0%

Further restrictions are also likely by virtue of individual line constraints. The analysis presented here only used interface flow related data. Interfaces, or Transmission Paths (to use the new terminology) are often implicitly limited by a single element for some contingency (e.g., the loss of one Leeds-Pleasant Valley 345 kV circuit on the parallel Leeds-Pleasant Valley 345 kV circuit). This contingency will implicitly limit both Central East and UPNY-Con Ed. This is not reflected as an explicit interface limit and outside the context of this analysis. While the overall trend from 1998 to 2001 is decreased simultaneous interface limits, this may be due, in part, to Central East singularly limiting so frequently.



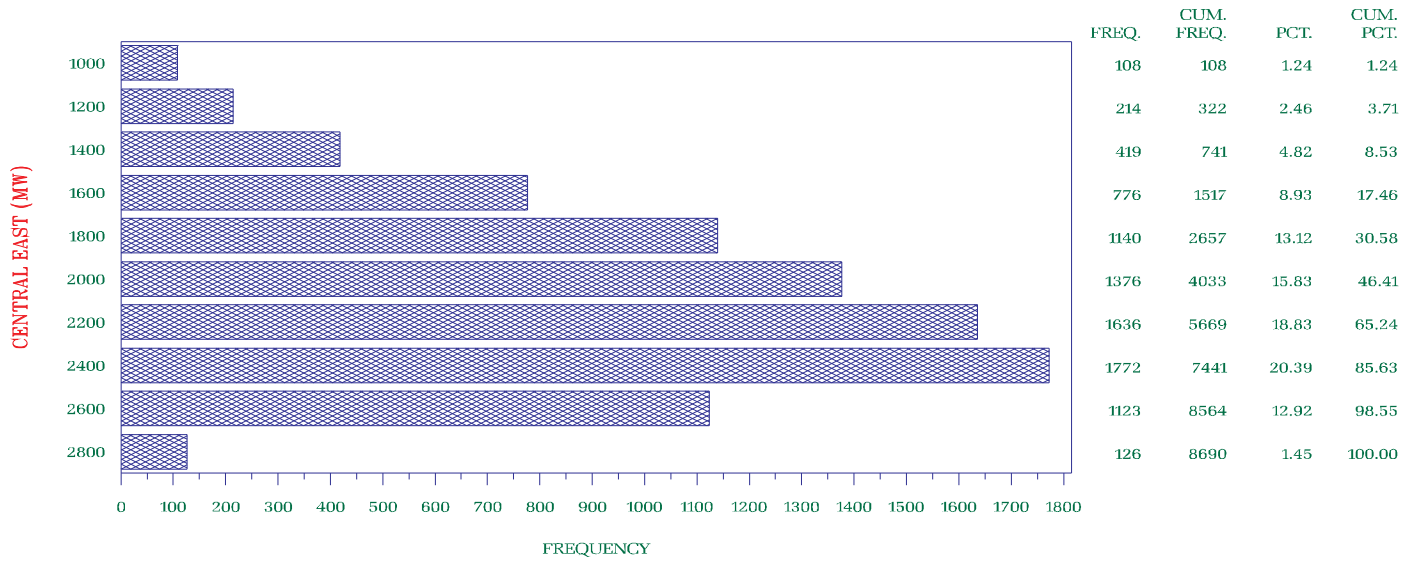
Appendix A – Power Flows

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Table listing various power flow categories and their corresponding page numbers, such as CENTRAL EAST (A2), TOTAL EAST (A4), and WEST NY Gen Export (MW) (A88).

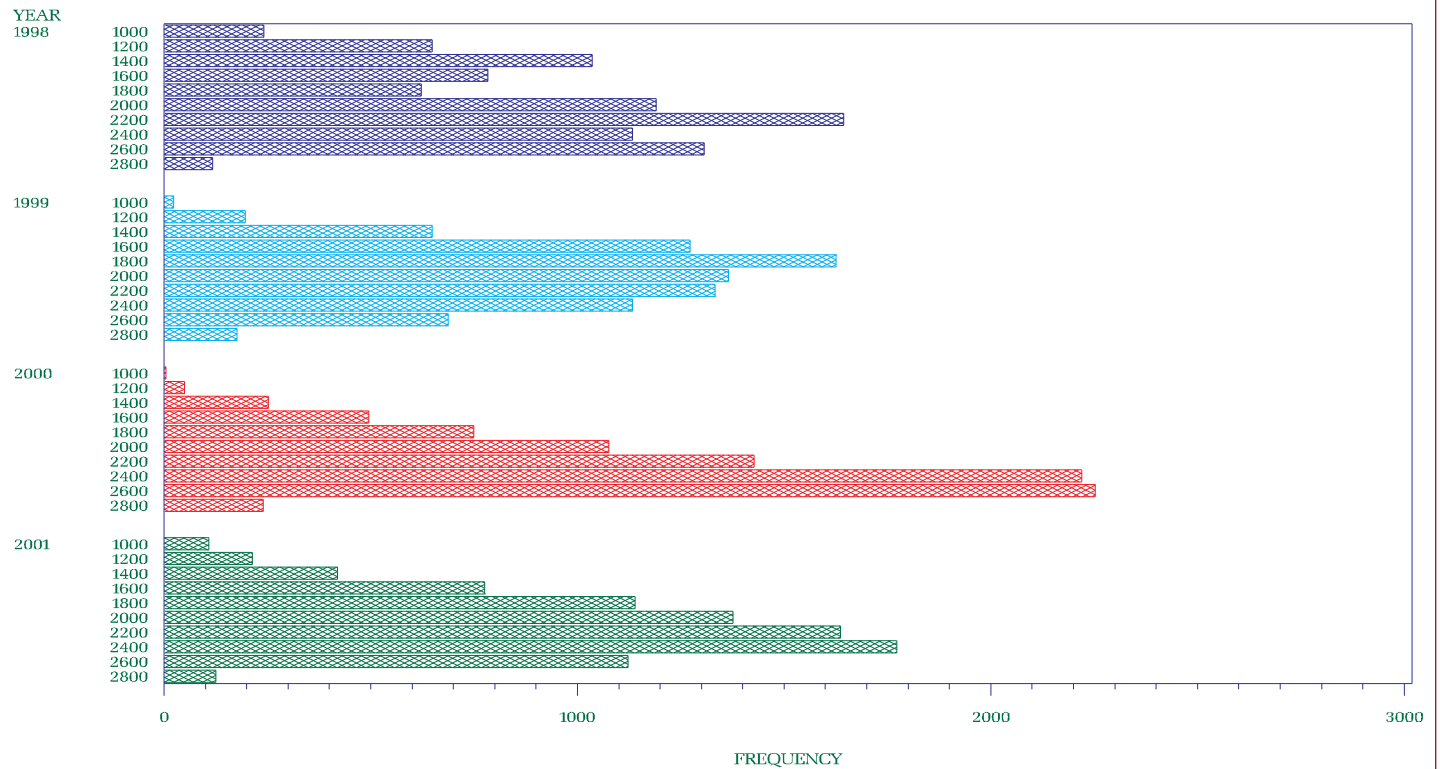
NYISO Frequency Interface Flow For January – December 2001

CENTRAL EAST



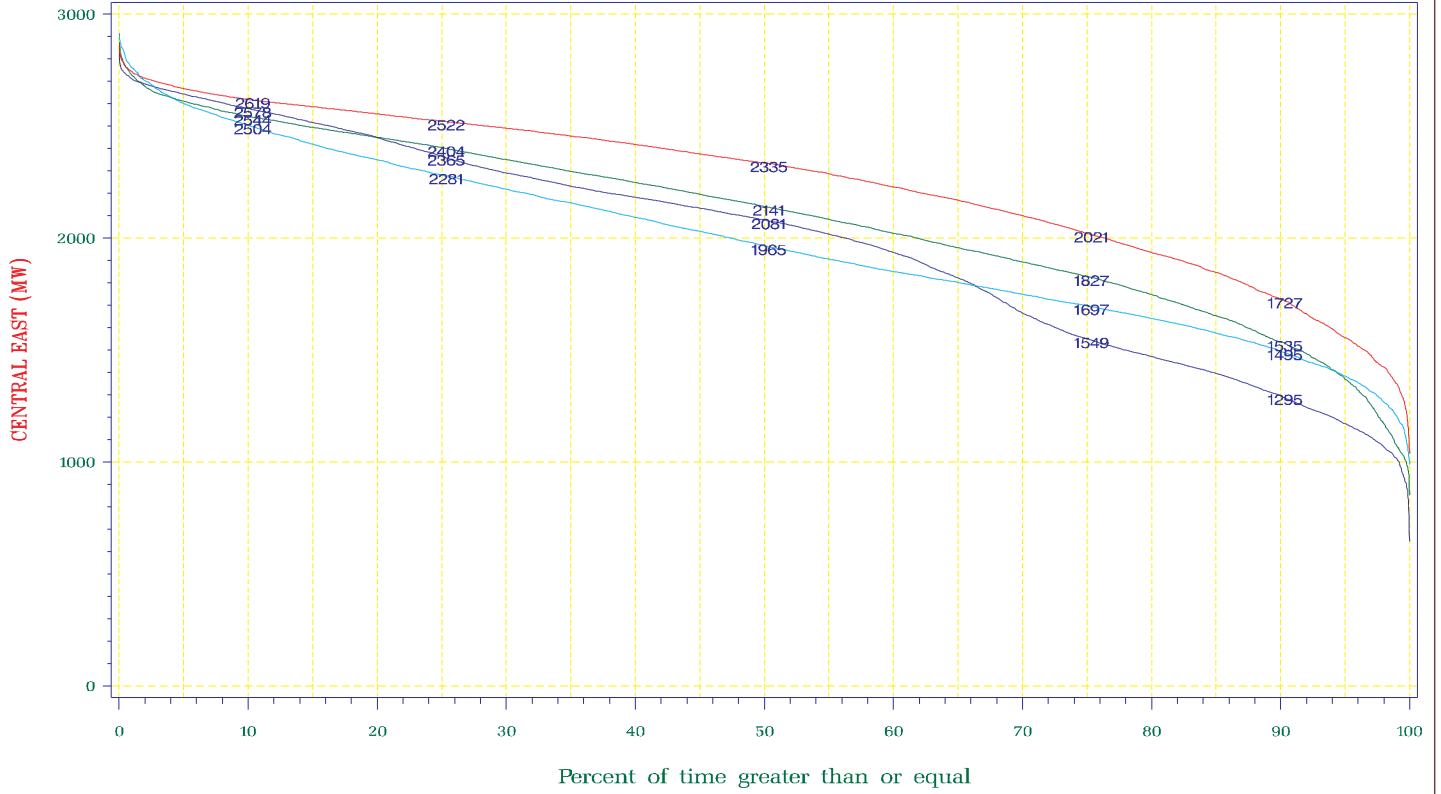
NYISO Frequency Interface Flow For January 1998 – December 2001

CENTRAL EAST



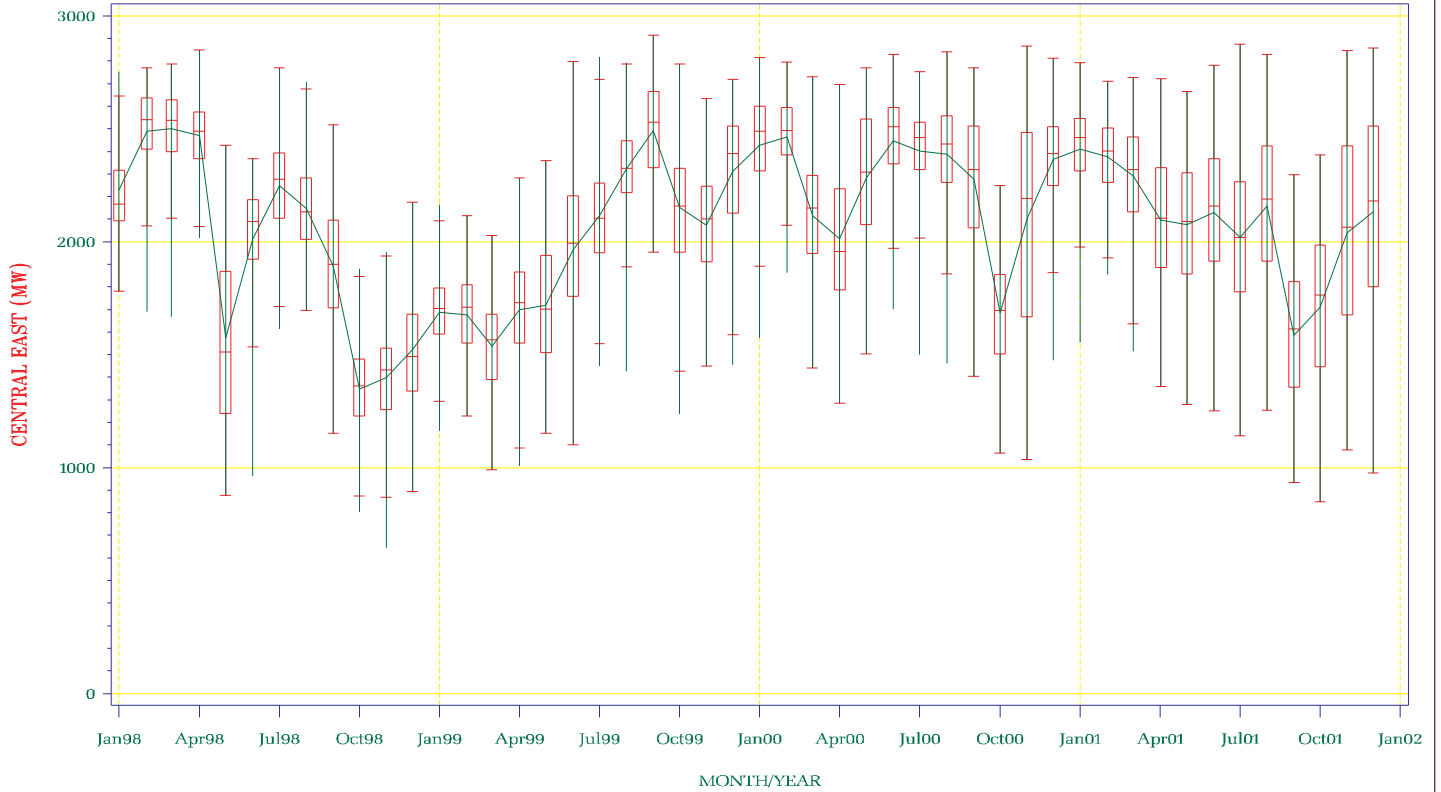
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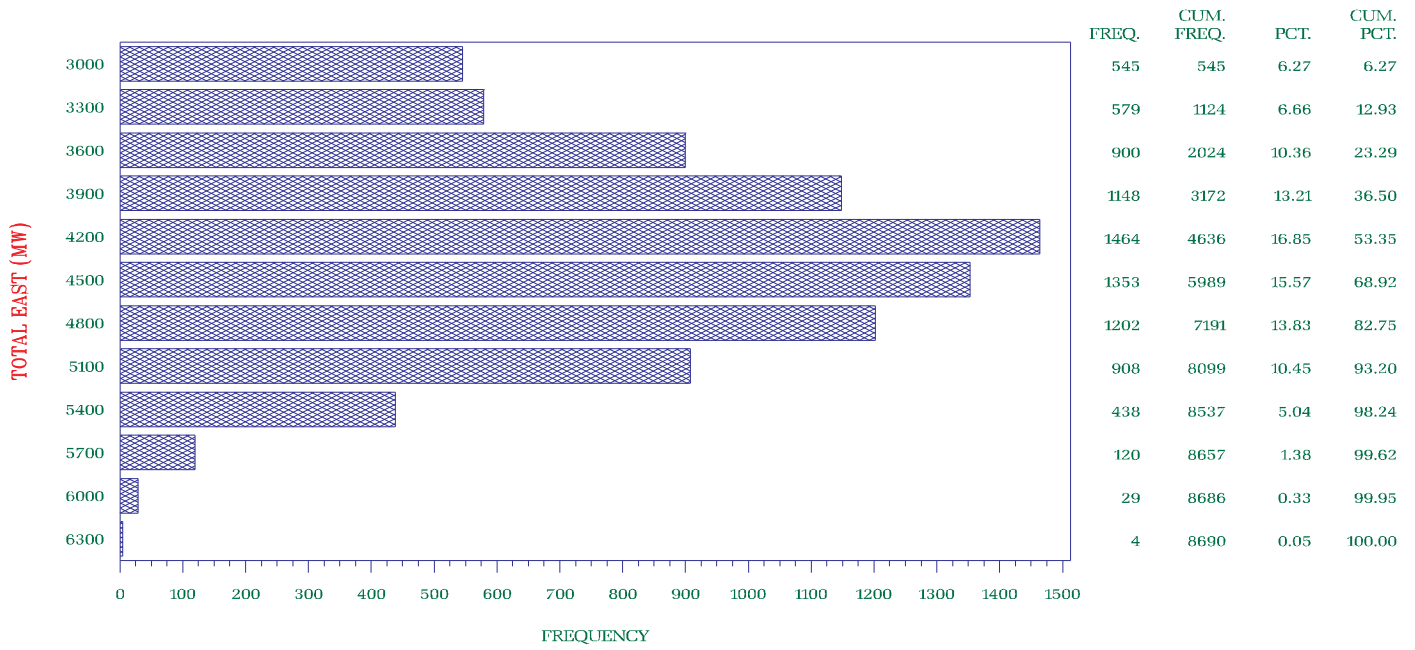
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NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001
CENTRAL EAST



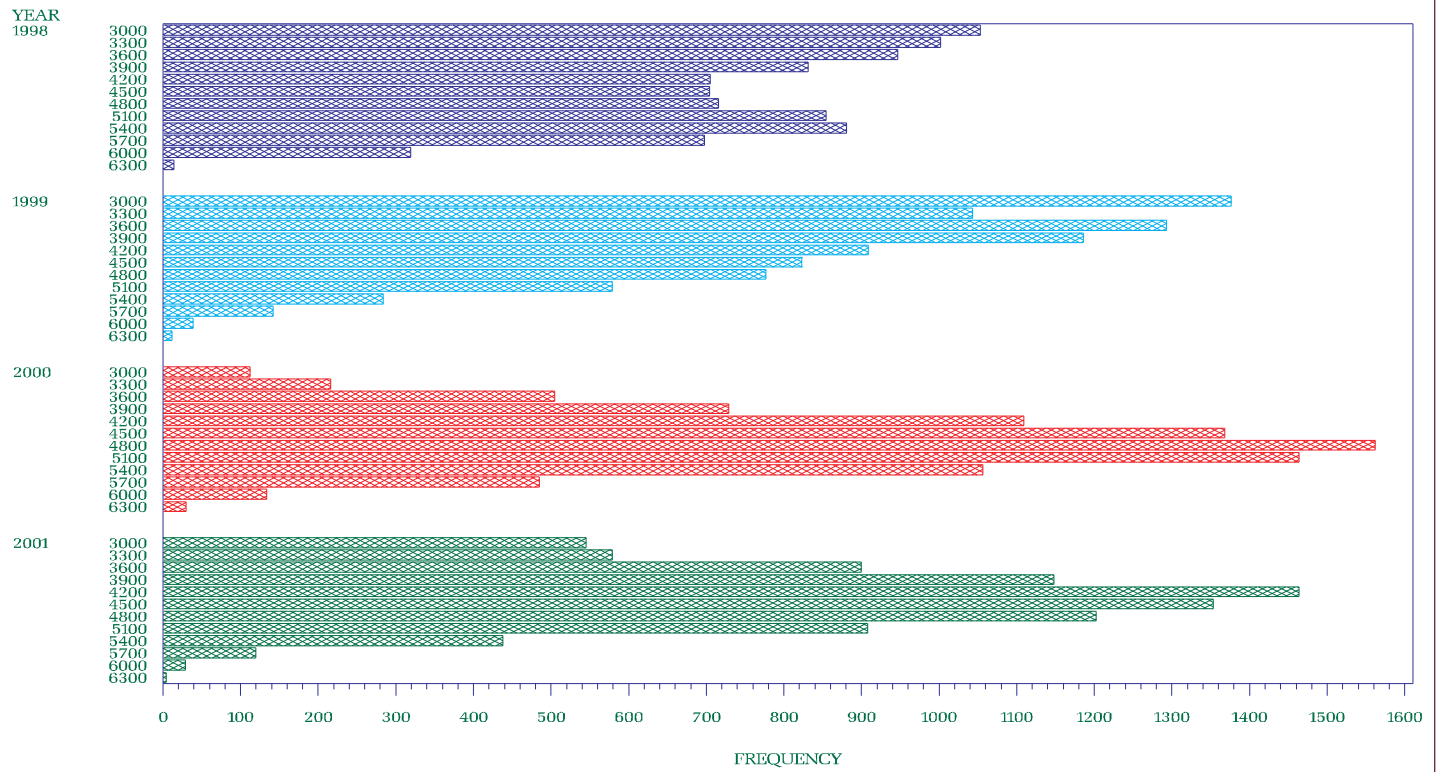
NYISO Frequency Interface Flow For January – December 2001

TOTAL EAST



NYISO Frequency Interface Flow For January 1998 – December 2001

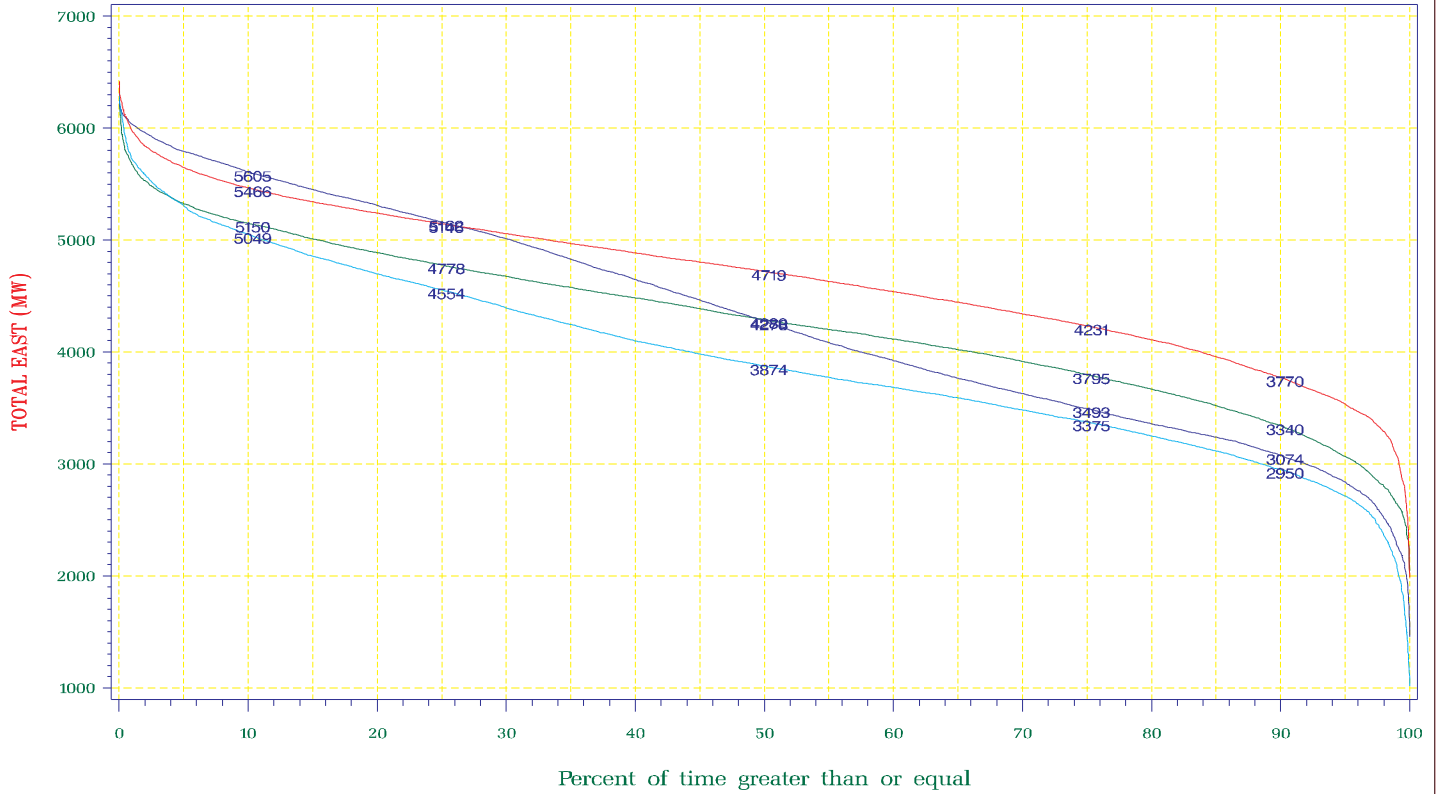
TOTAL EAST



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

TOTAL EAST



1998 1999 2000 2001

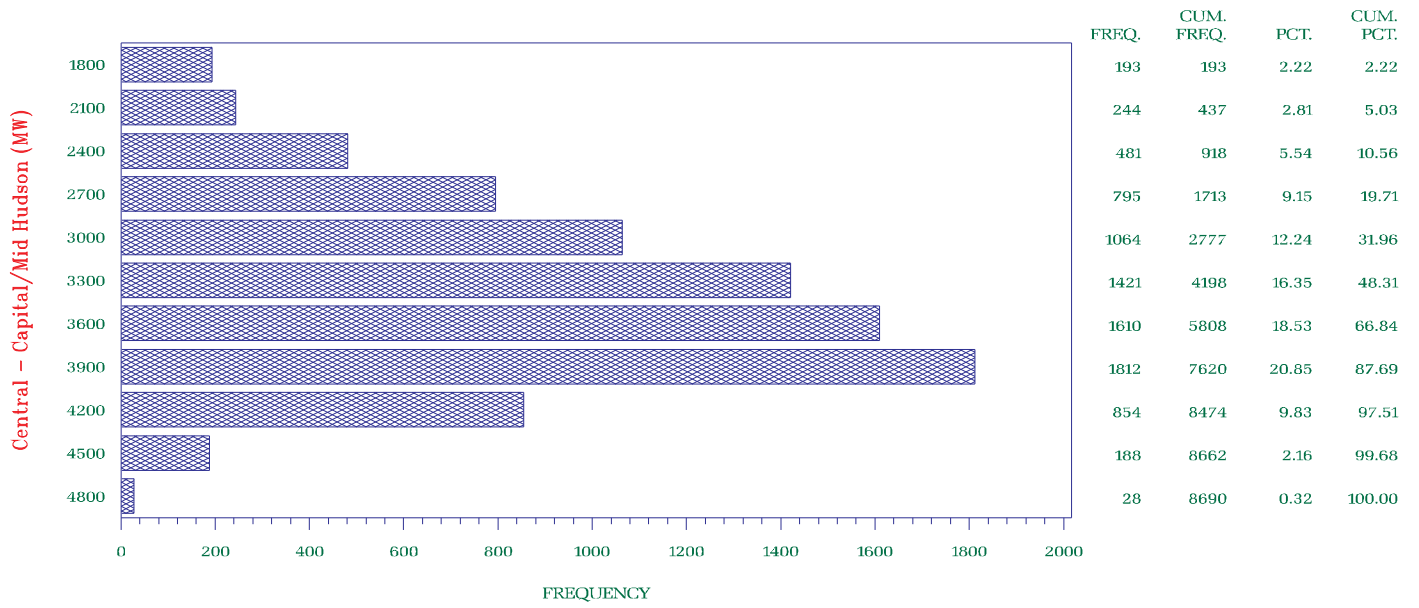
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TOTAL EAST



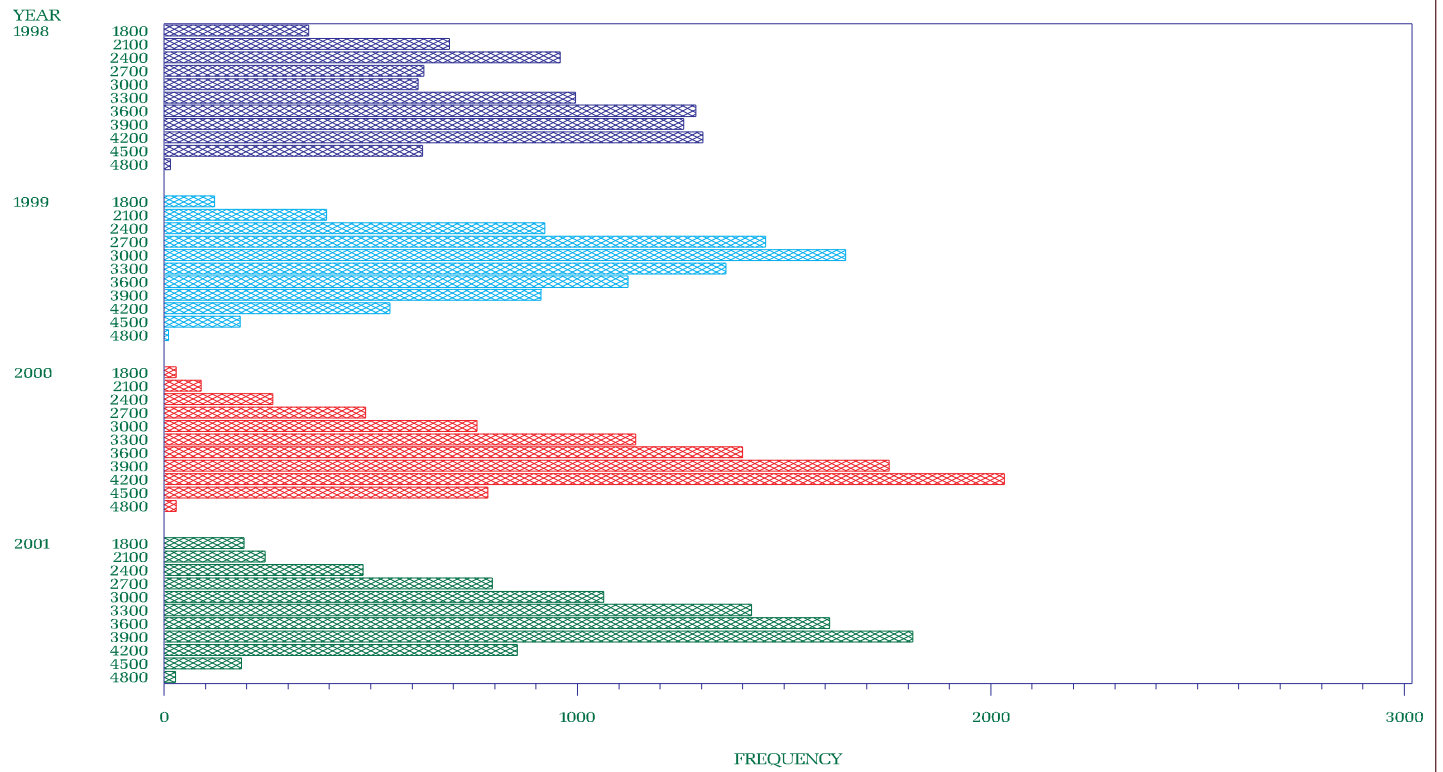
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Central – Capital/Mid Hudson



NYISO Frequency Interface Flow For January 1998 – December 2001

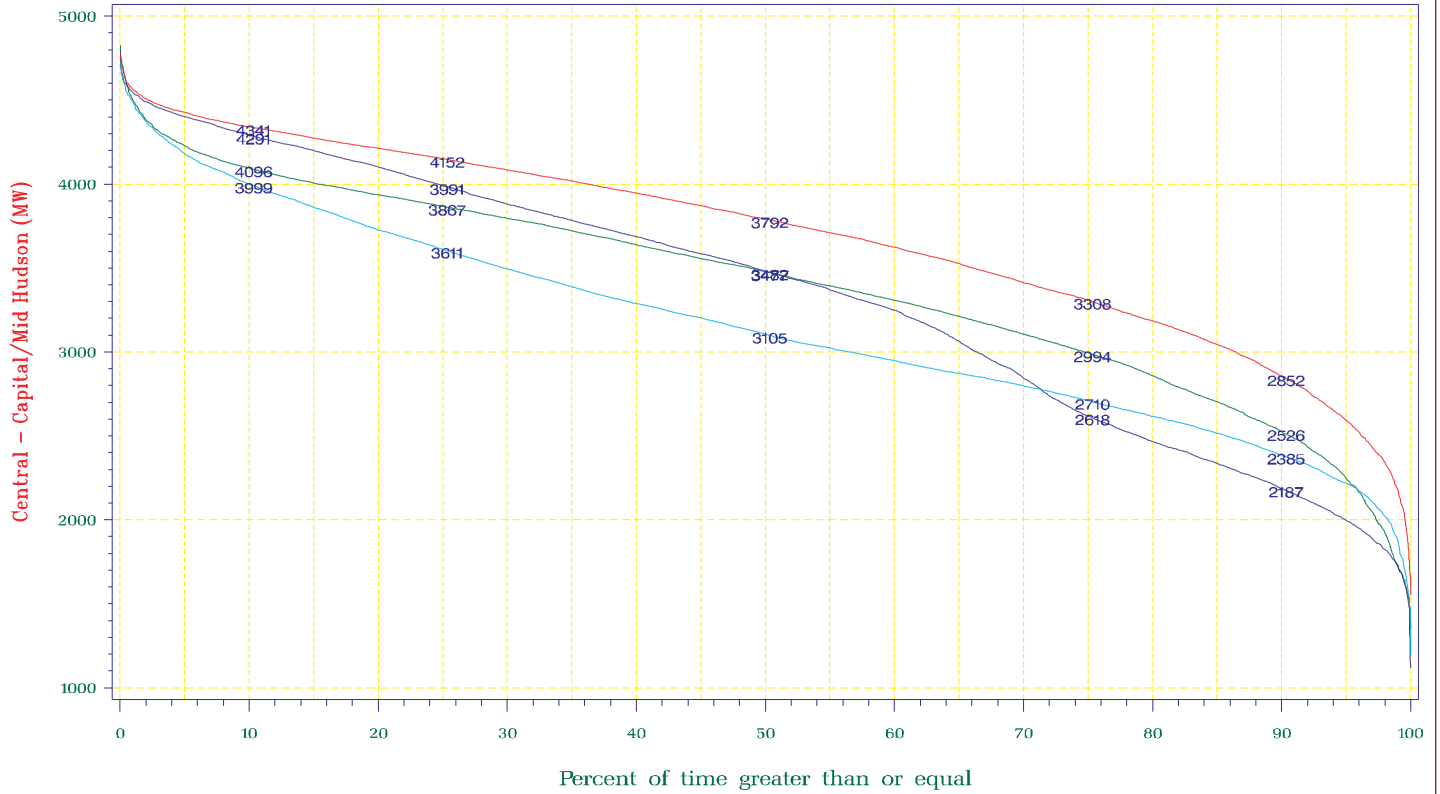
Central – Capital/Mid Hudson



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

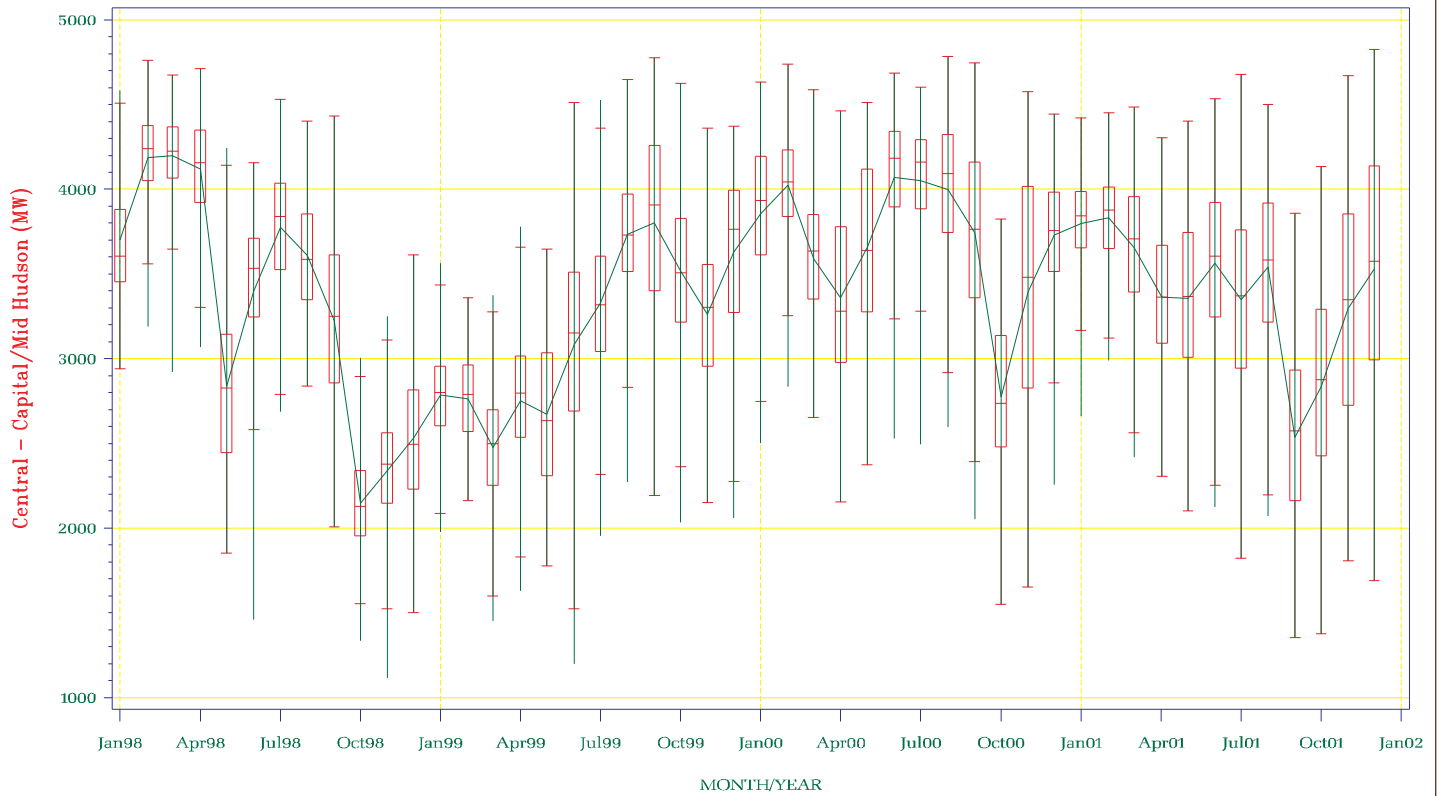
Central – Capital/Mid Hudson



1998 1999 2000 2001

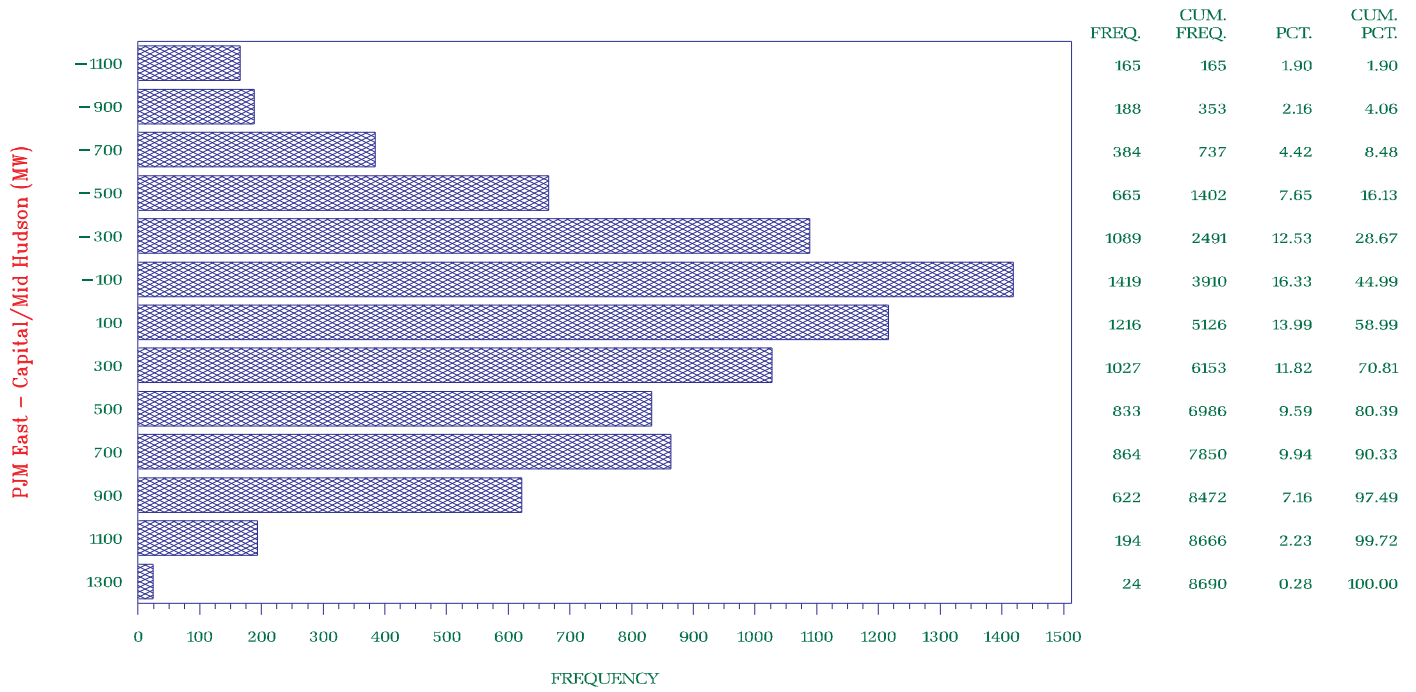
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Central – Capital/Mid Hudson



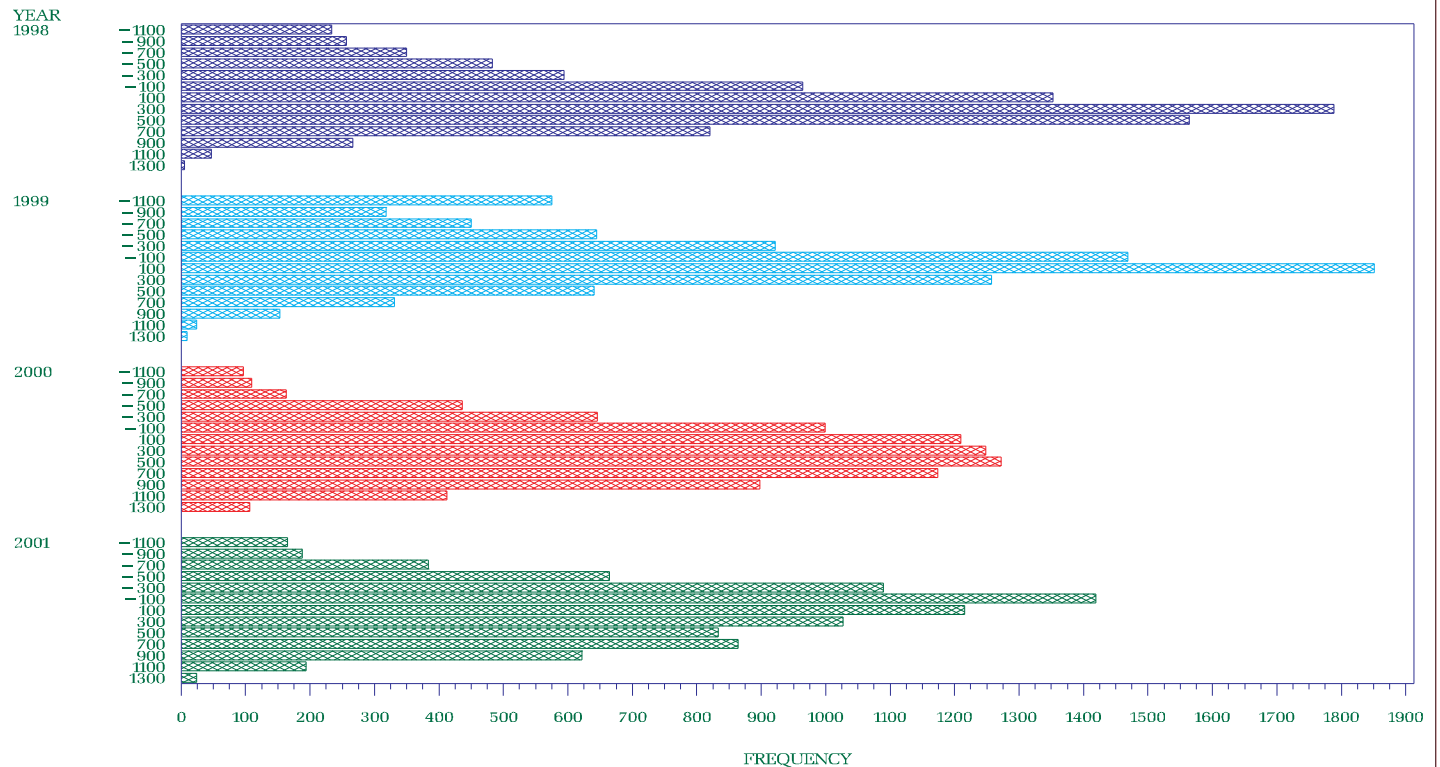
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PJM East – Capital/Mid Hudson



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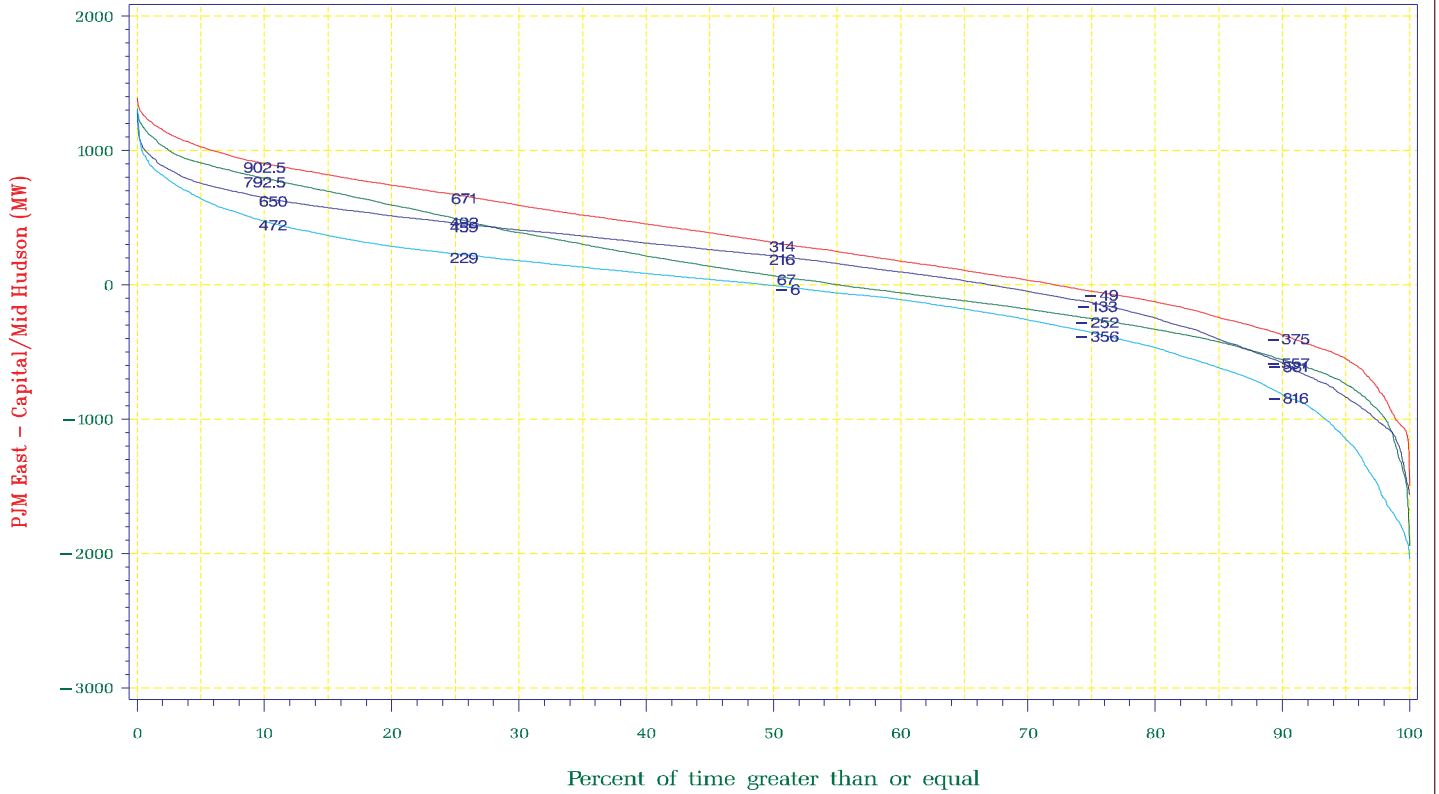
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1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

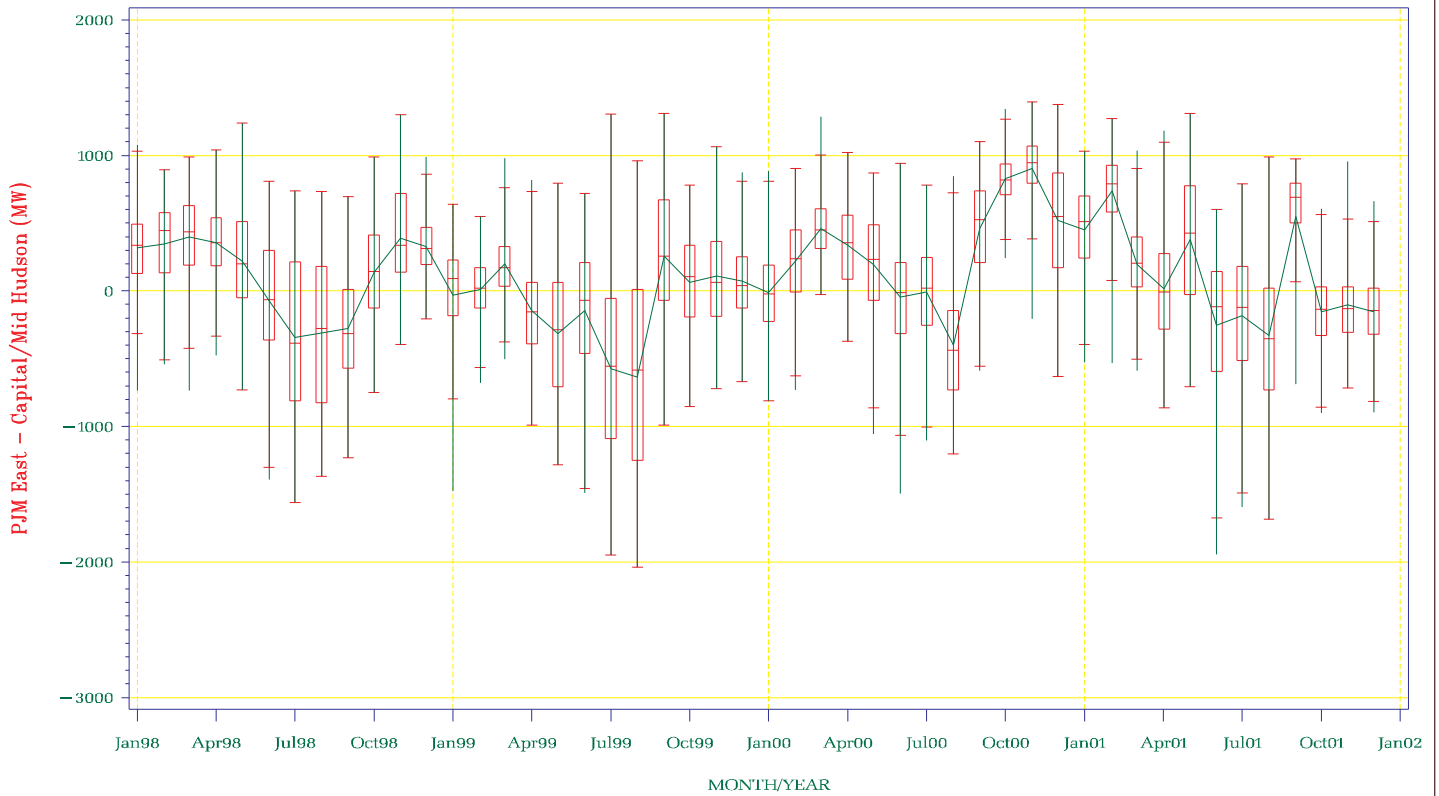
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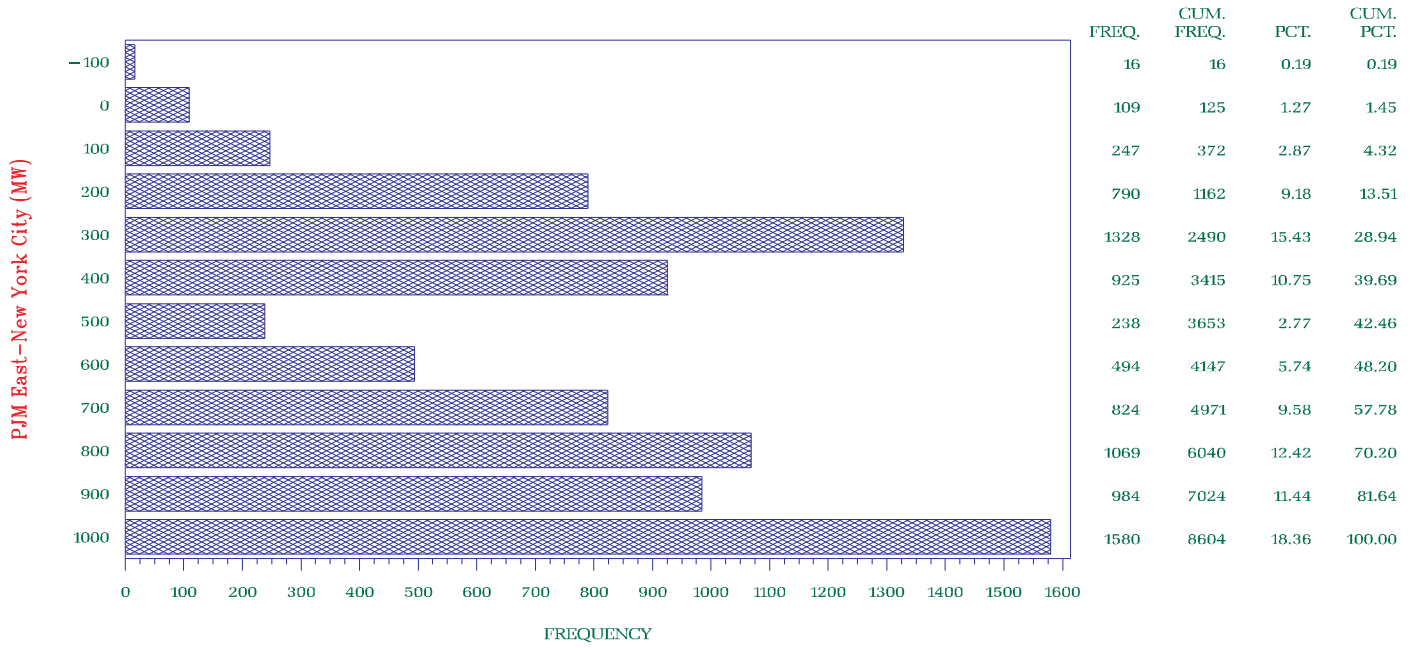
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PJM East – Capital/Mid Hudson



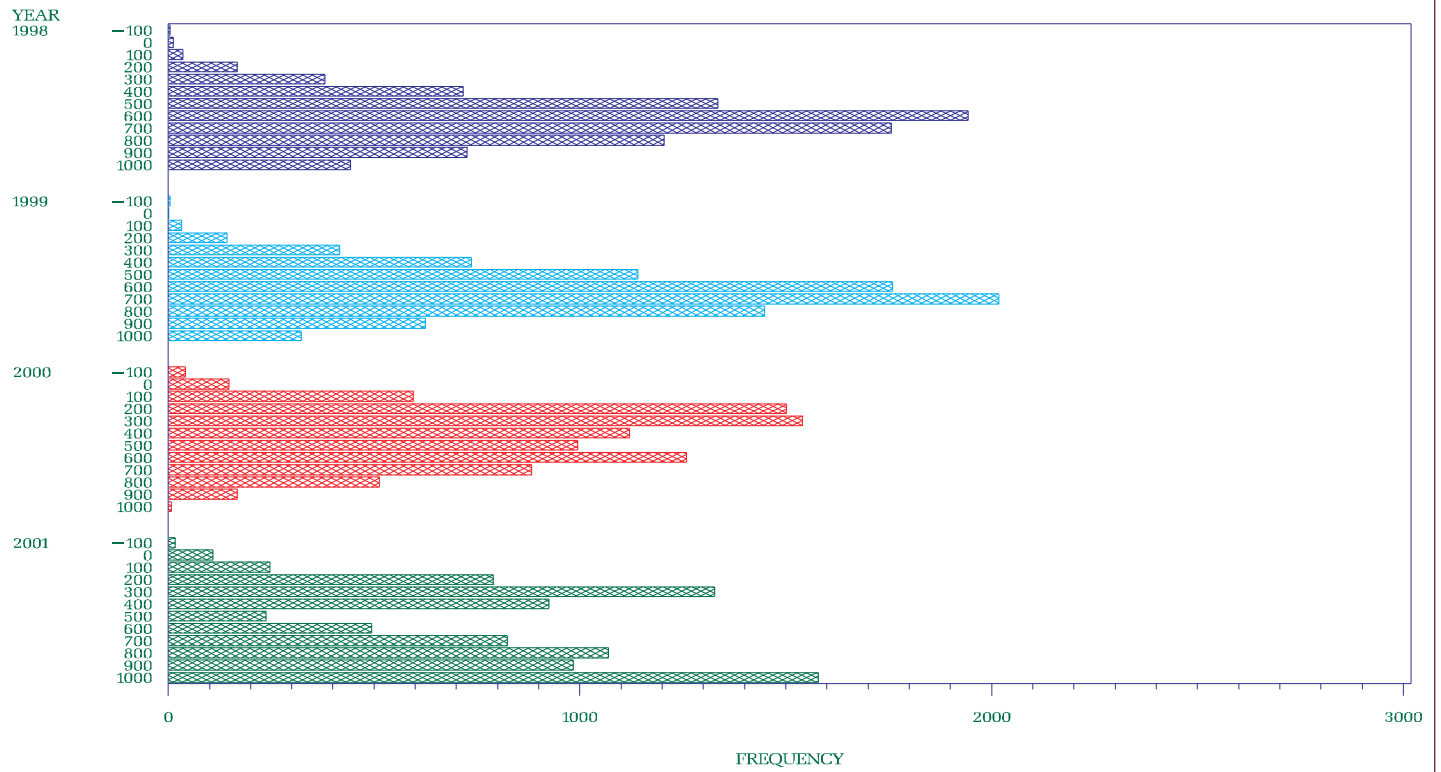
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PJM East – New York City



NYISO Frequency Interface Flow For January 1998 – December 2001

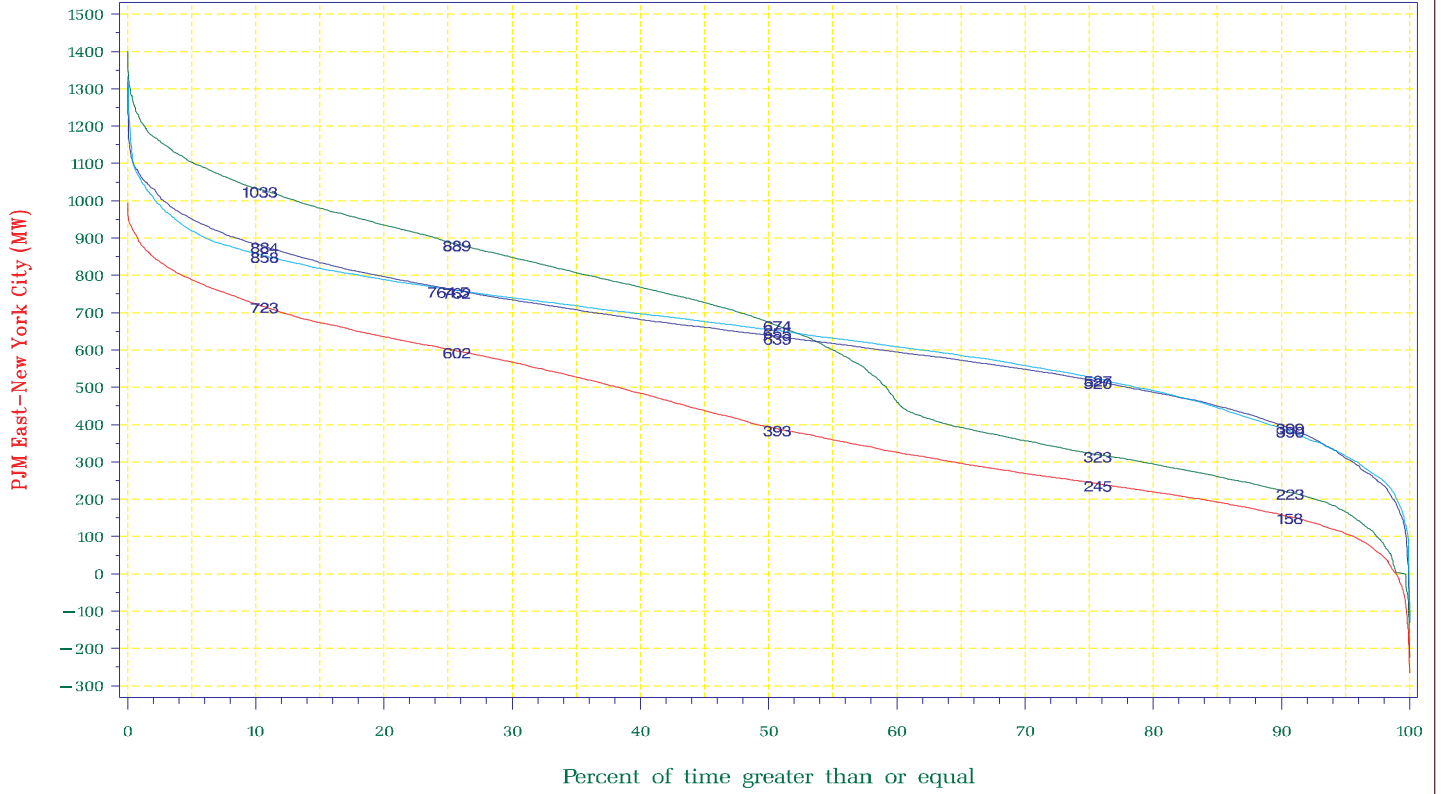
PJM East – New York City



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

PJM East – New York City



1998 1999 2000 2001

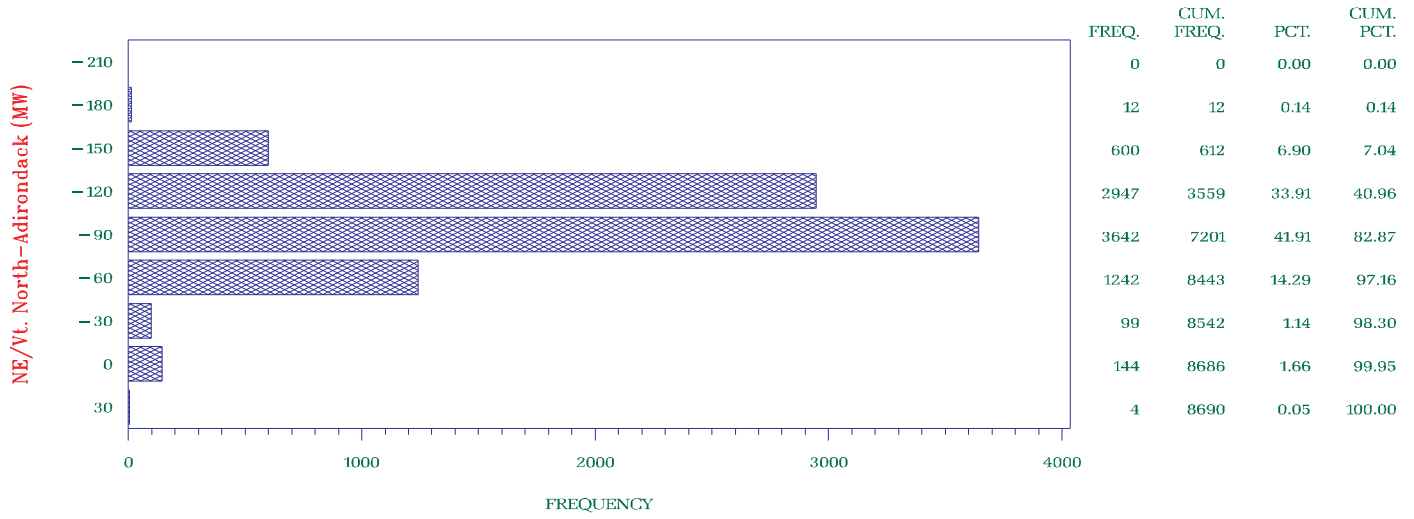
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

PJM East – New York City



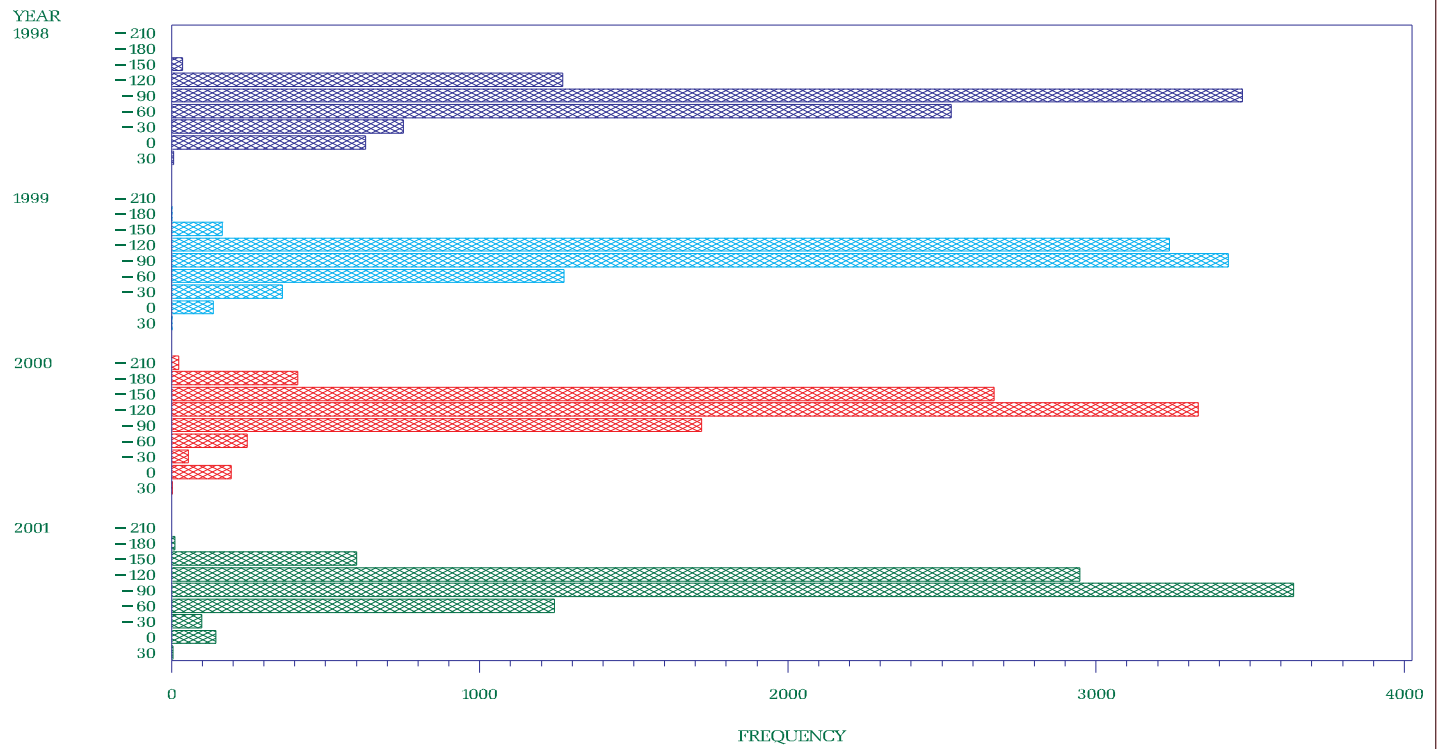
NYISO Frequency Interface Flow For January – December 2001

NE/Vt. North – Adirondack
 PV – 20 Grand Isle – Plattsburgh



NYISO Frequency Interface Flow For January 1998 – December 2001

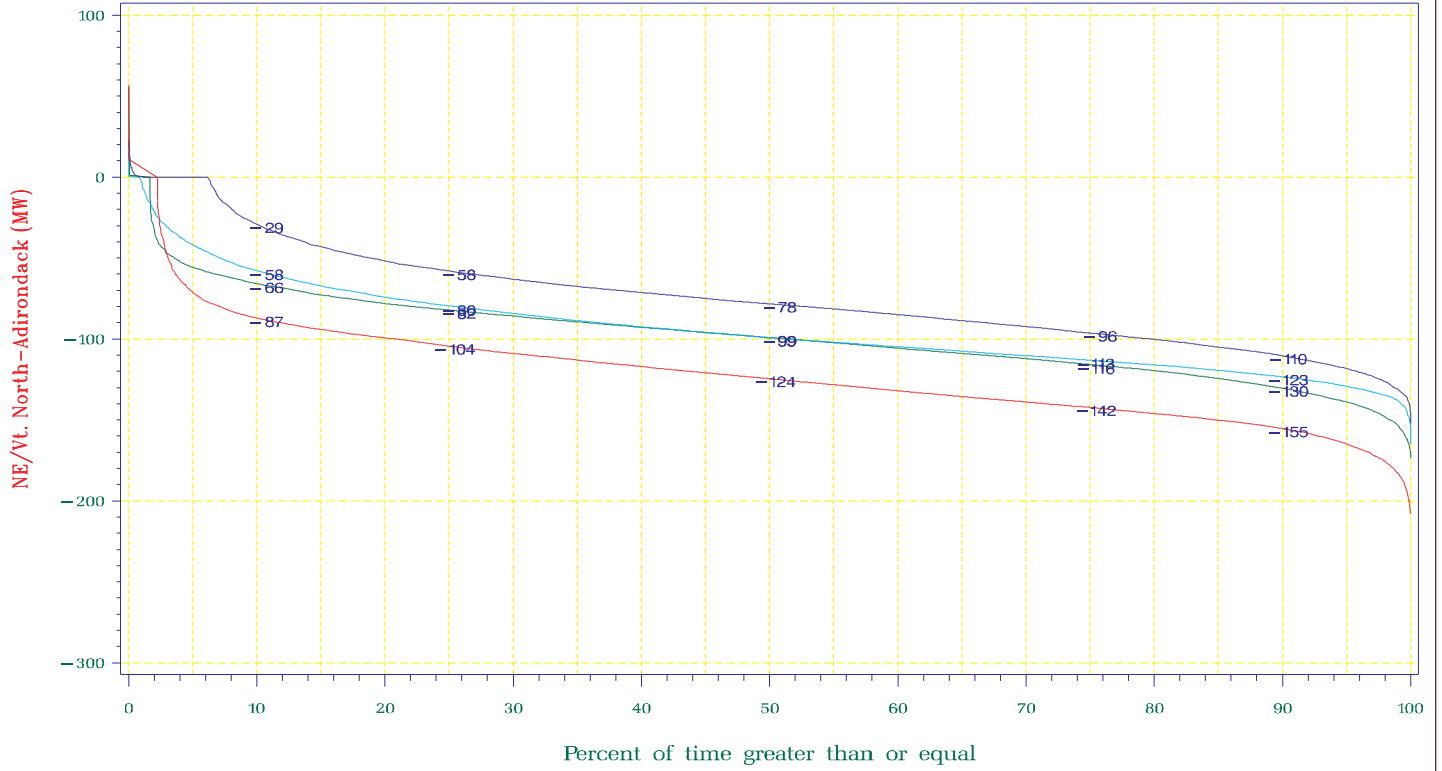
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 PV – 20 Grand Isle – Plattsburgh



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

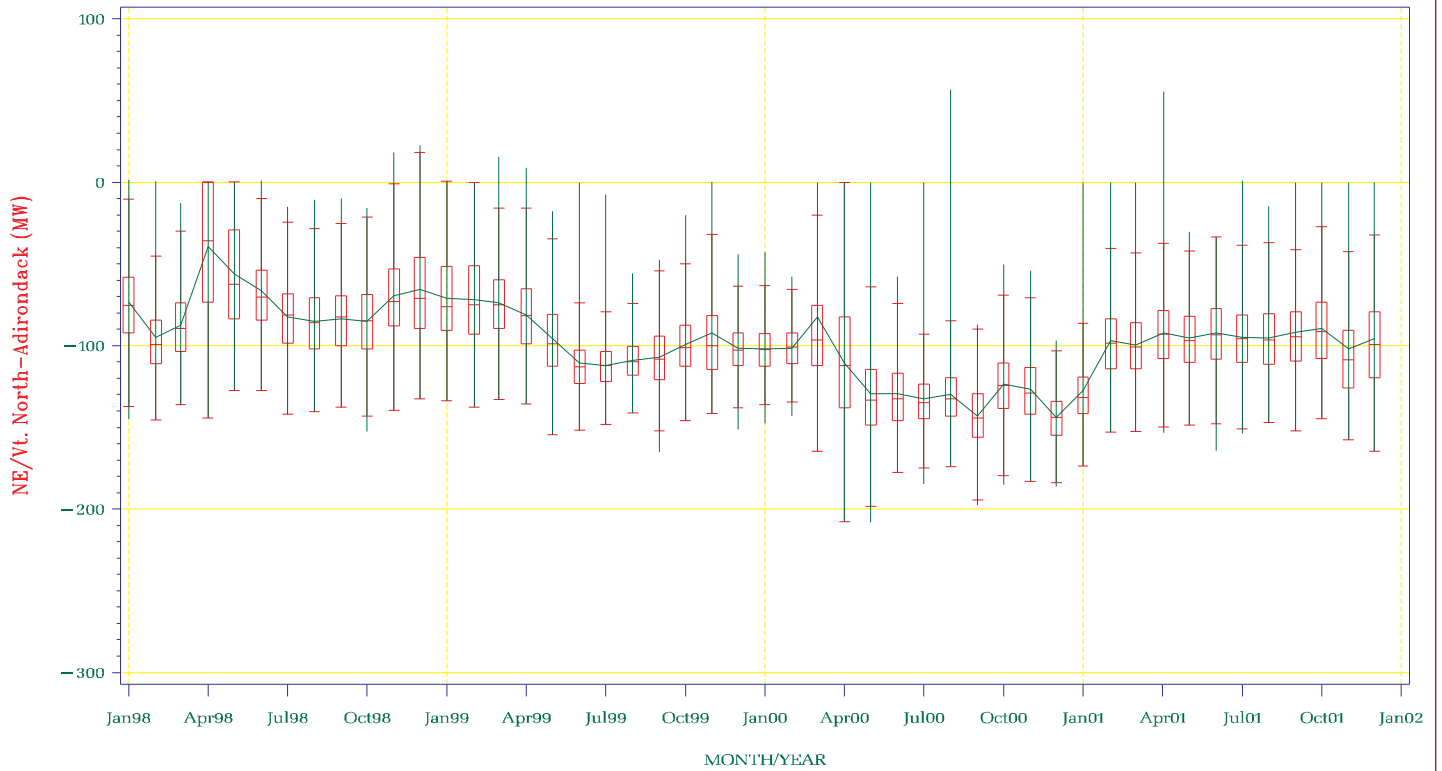
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 PV – 20 Grand Isle – Plattsburgh



1998 1999 2000 2001

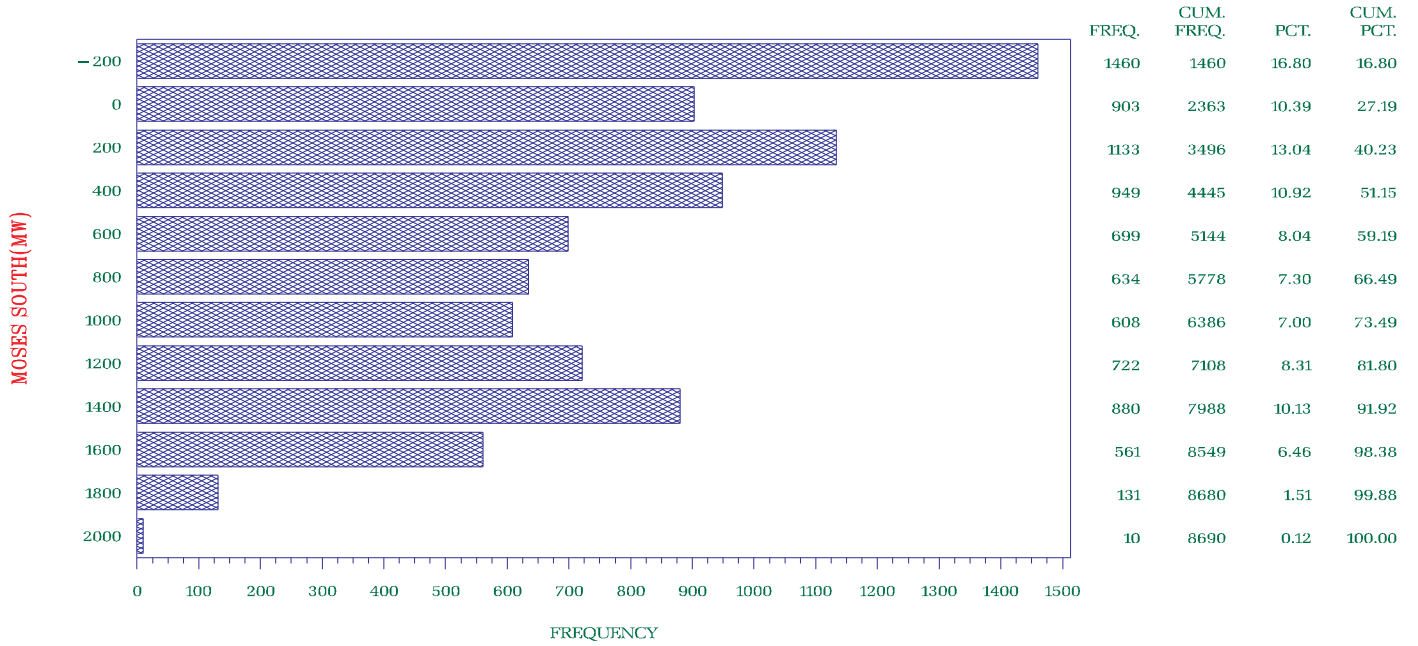
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NE/Vt. North – Adirondack
 PV – 20 Grand Isle – Plattsburgh



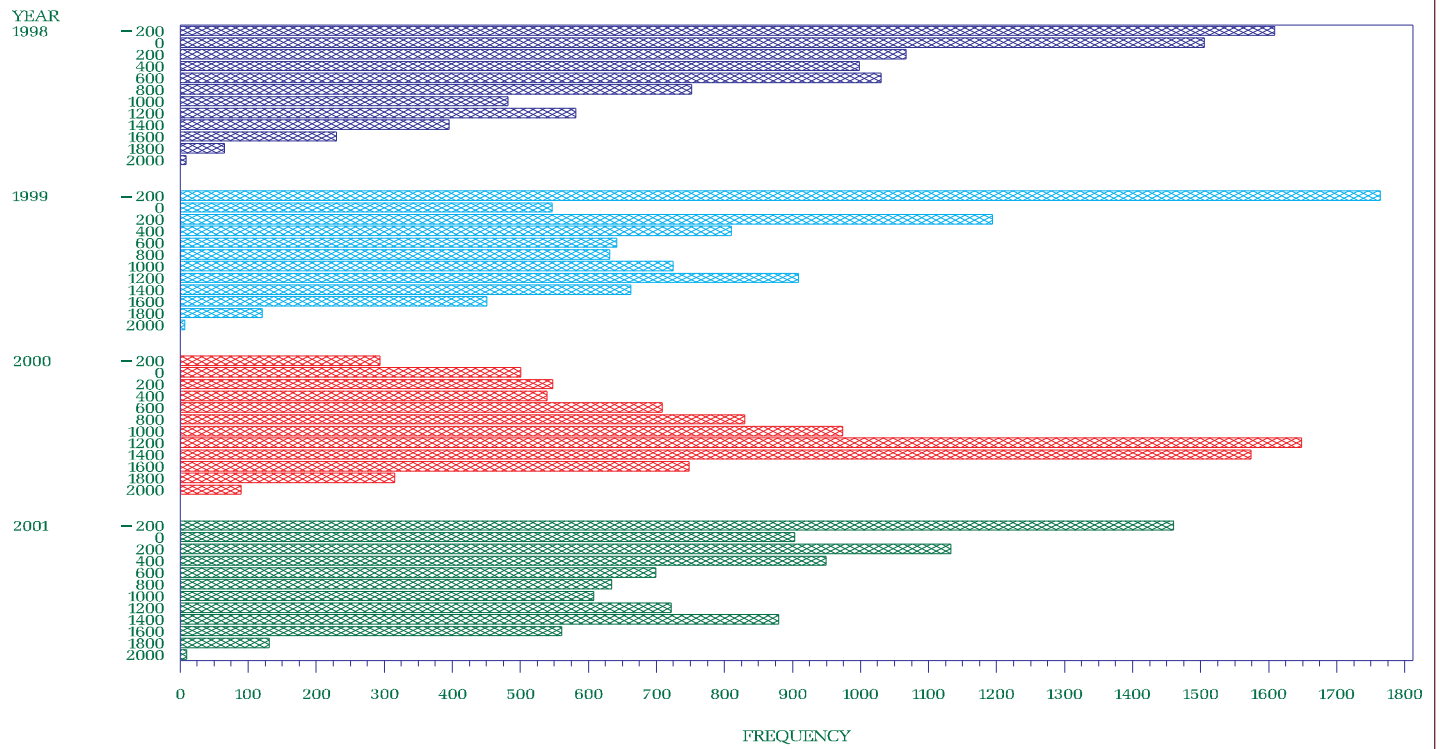
NYISO Frequency Interface Flow For January – December 2001

MOSES SOUTH
Adirondack – Central



NYISO Frequency Interface Flow For January 1998 – December 2001

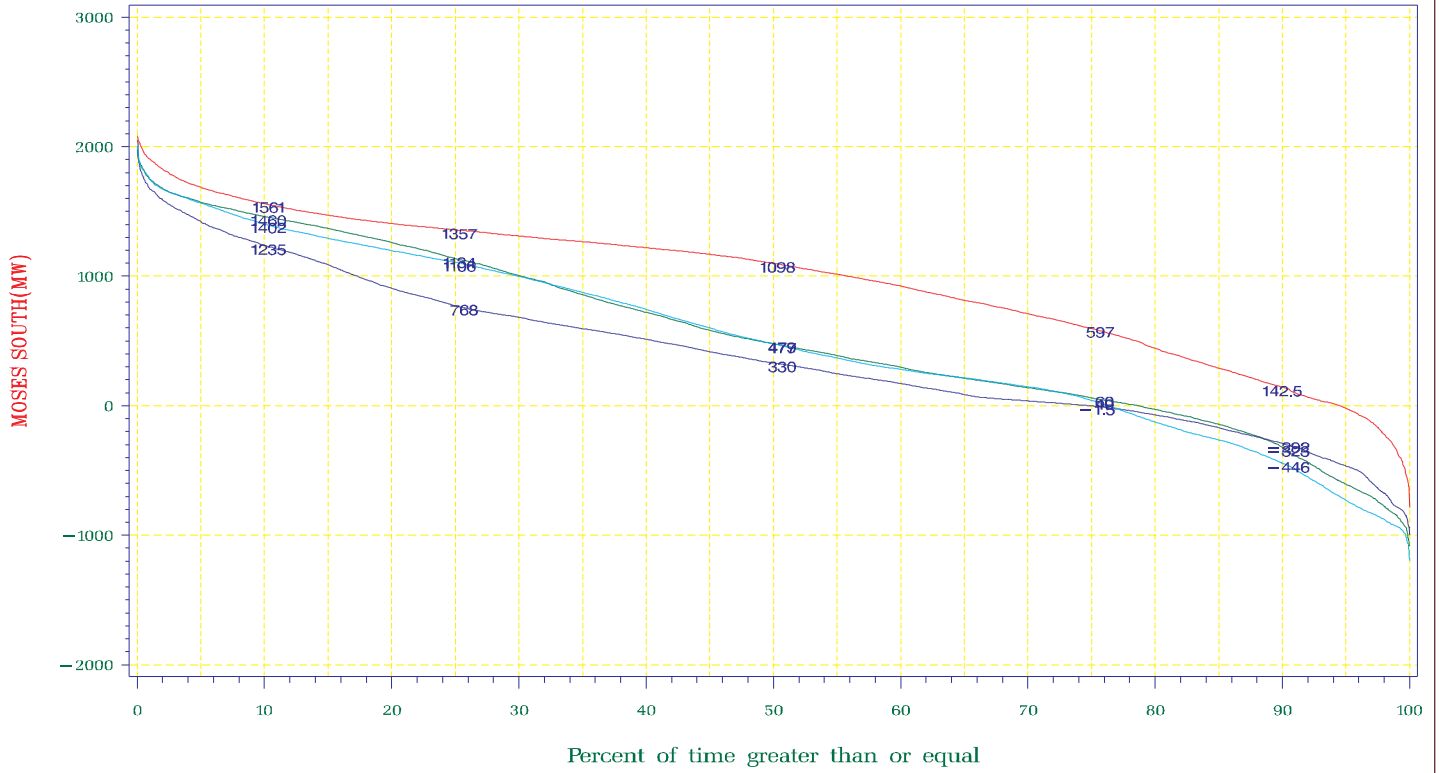
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Adirondack – Central



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

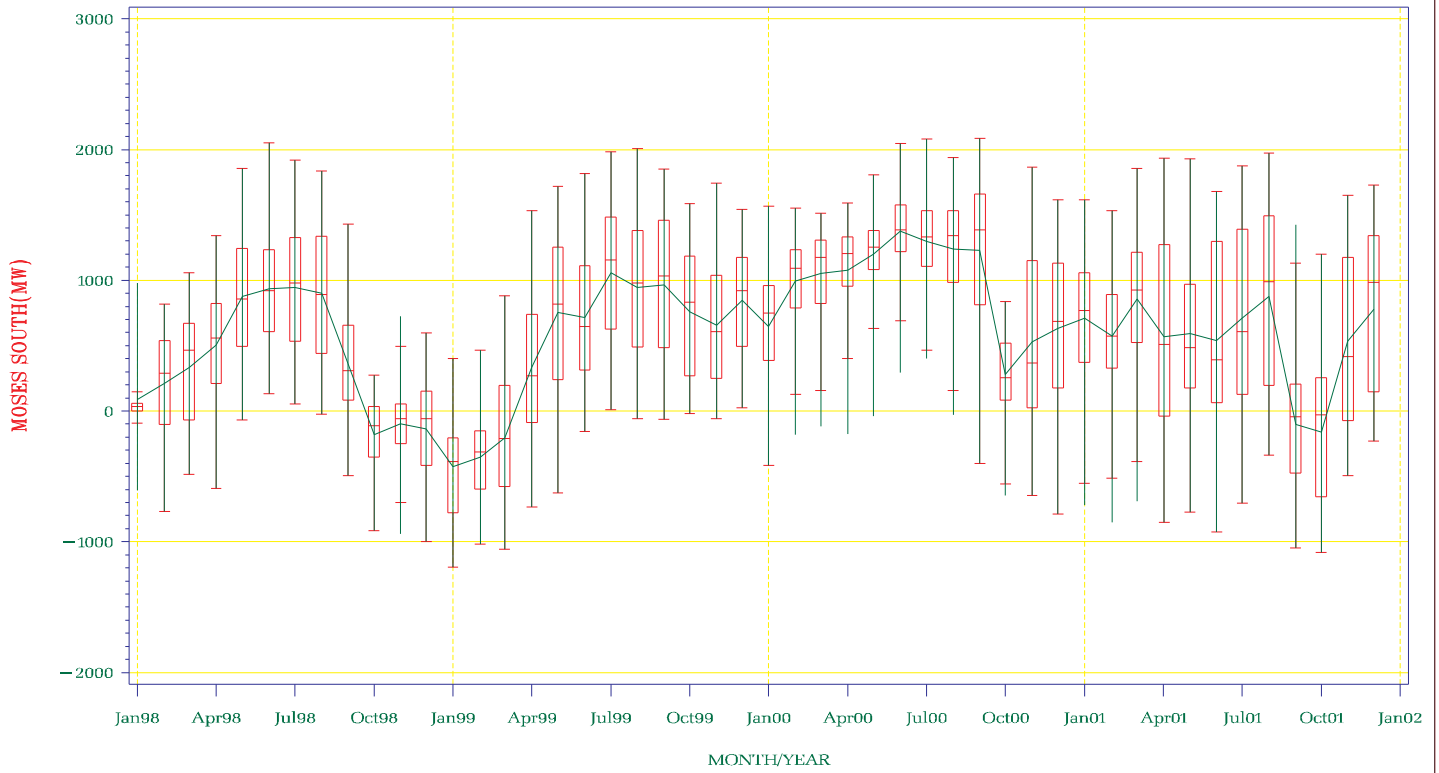
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Adirondack – Central



1998 1999 2000 2001

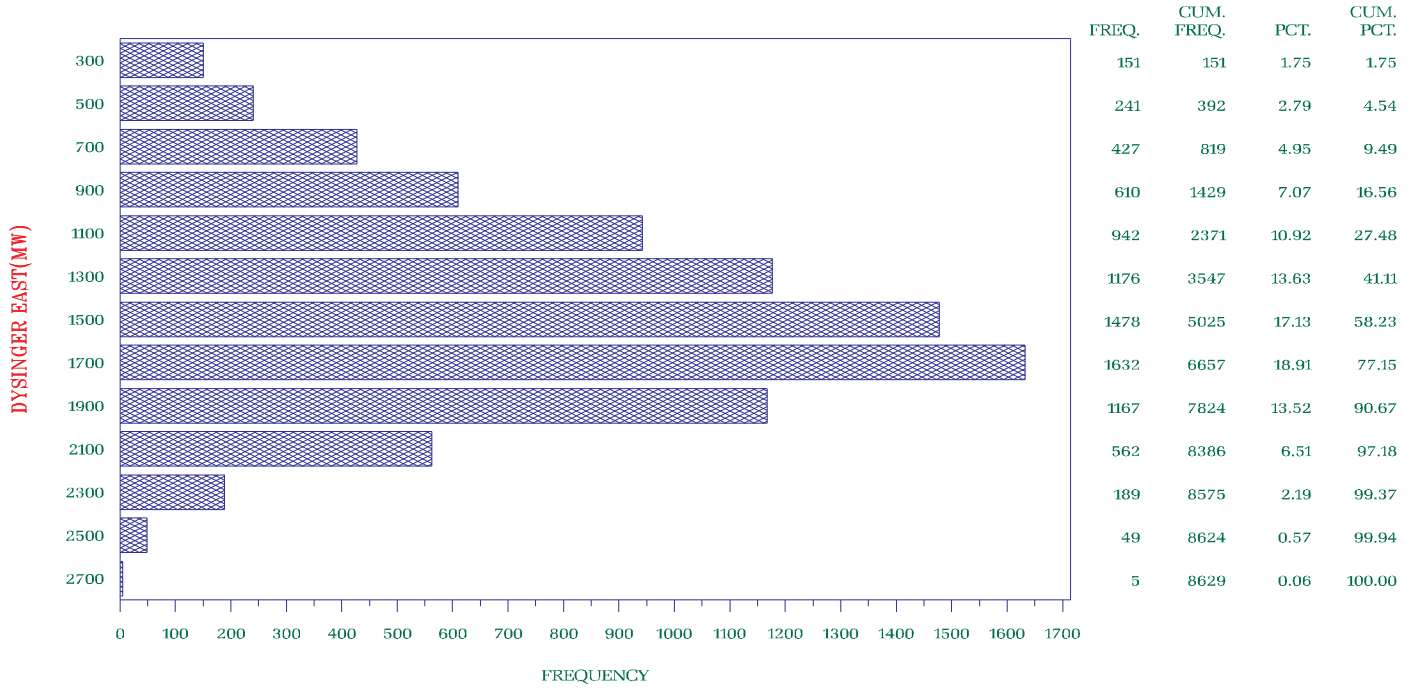
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MOSES SOUTH
Adirondack – Central



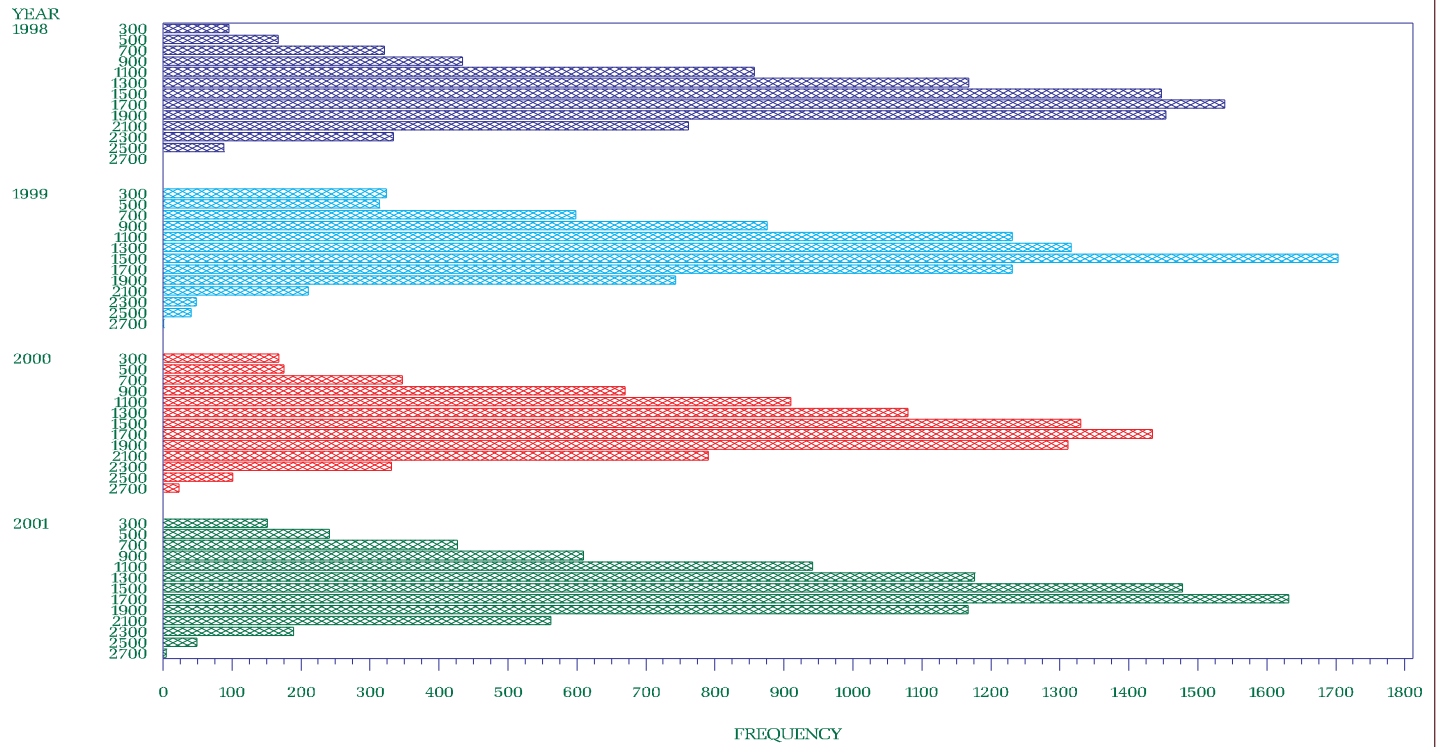
NYISO Frequency Interface Flow For January – December 2001

DYSINGER EAST
Frontier – Genesee



NYISO Frequency Interface Flow For January 1998 – December 2001

DYSINGER EAST
Frontier – Genesee

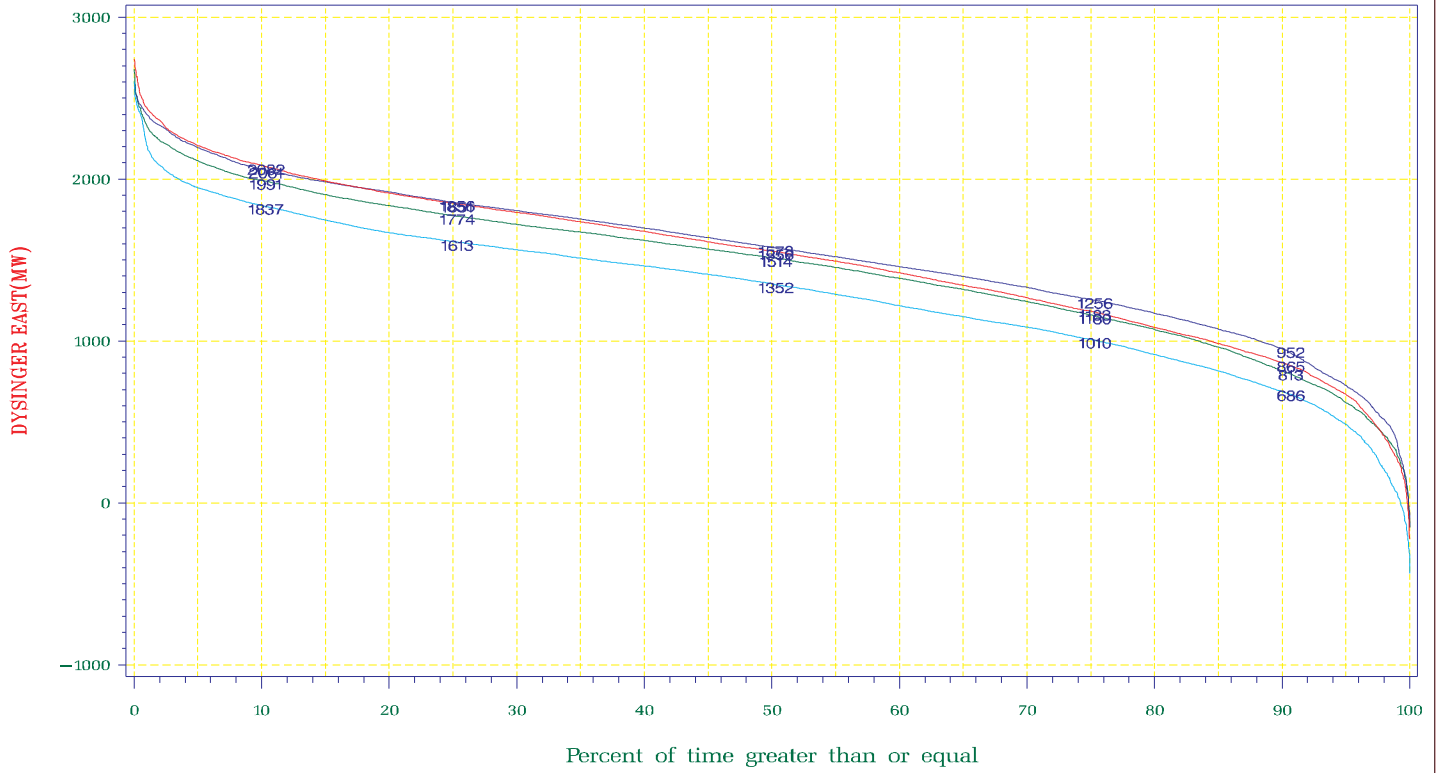


1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

DYSINGER EAST

Frontier – Genesee

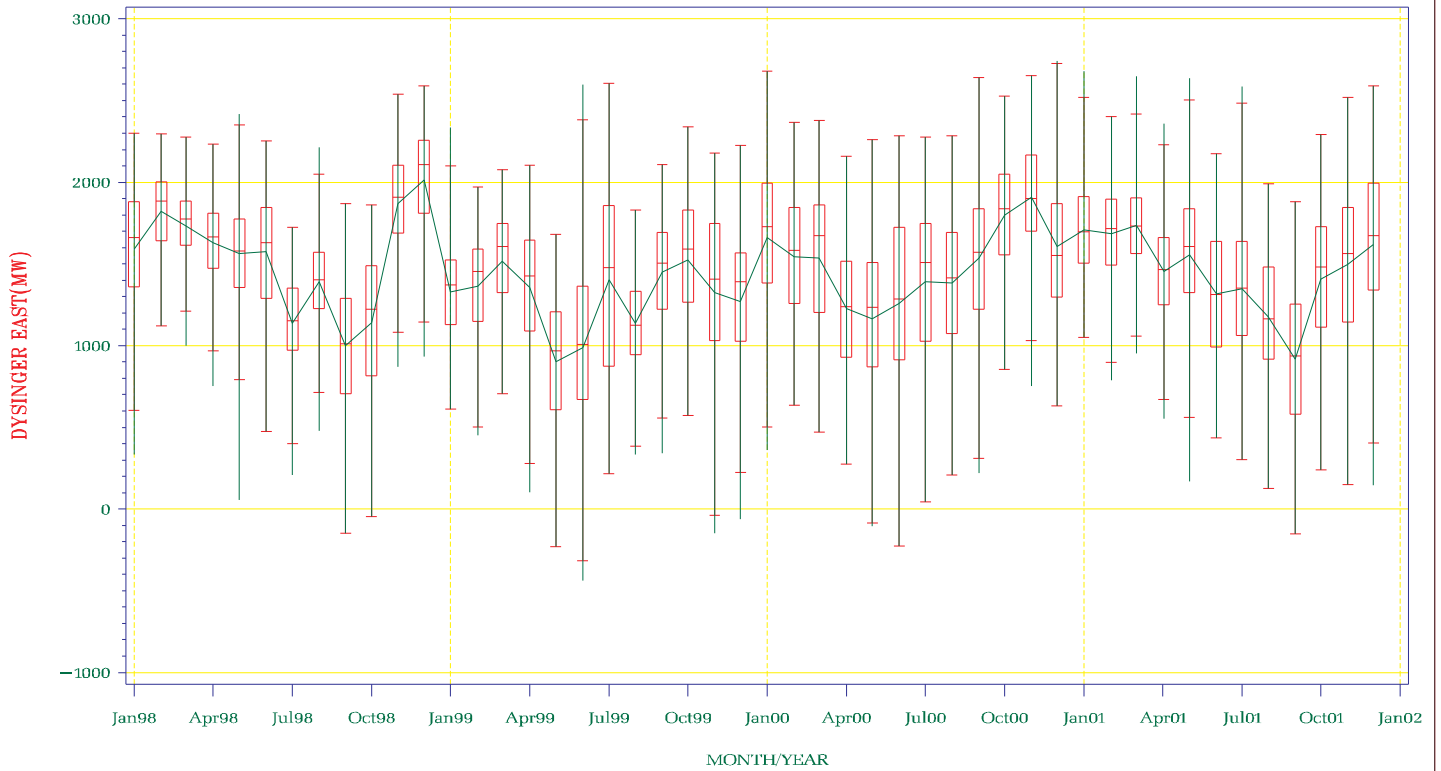


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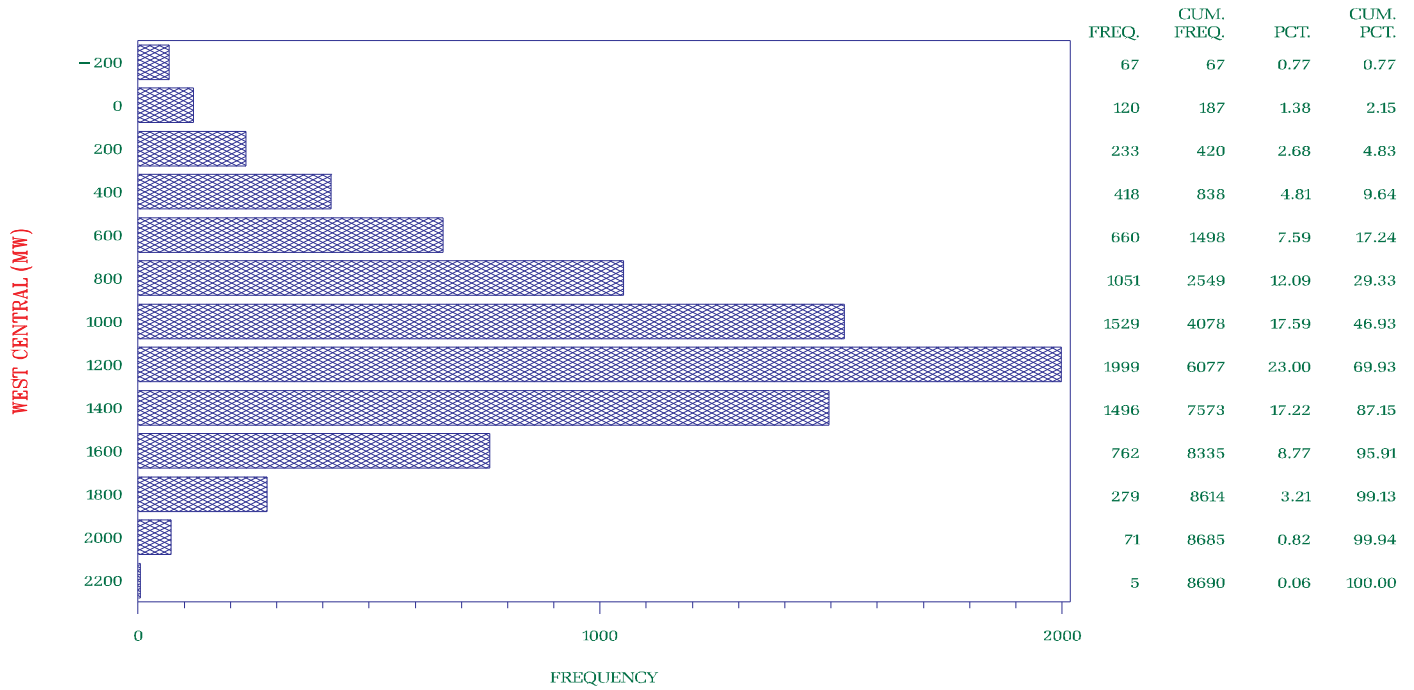
DYSINGER EAST

Frontier – Genesee



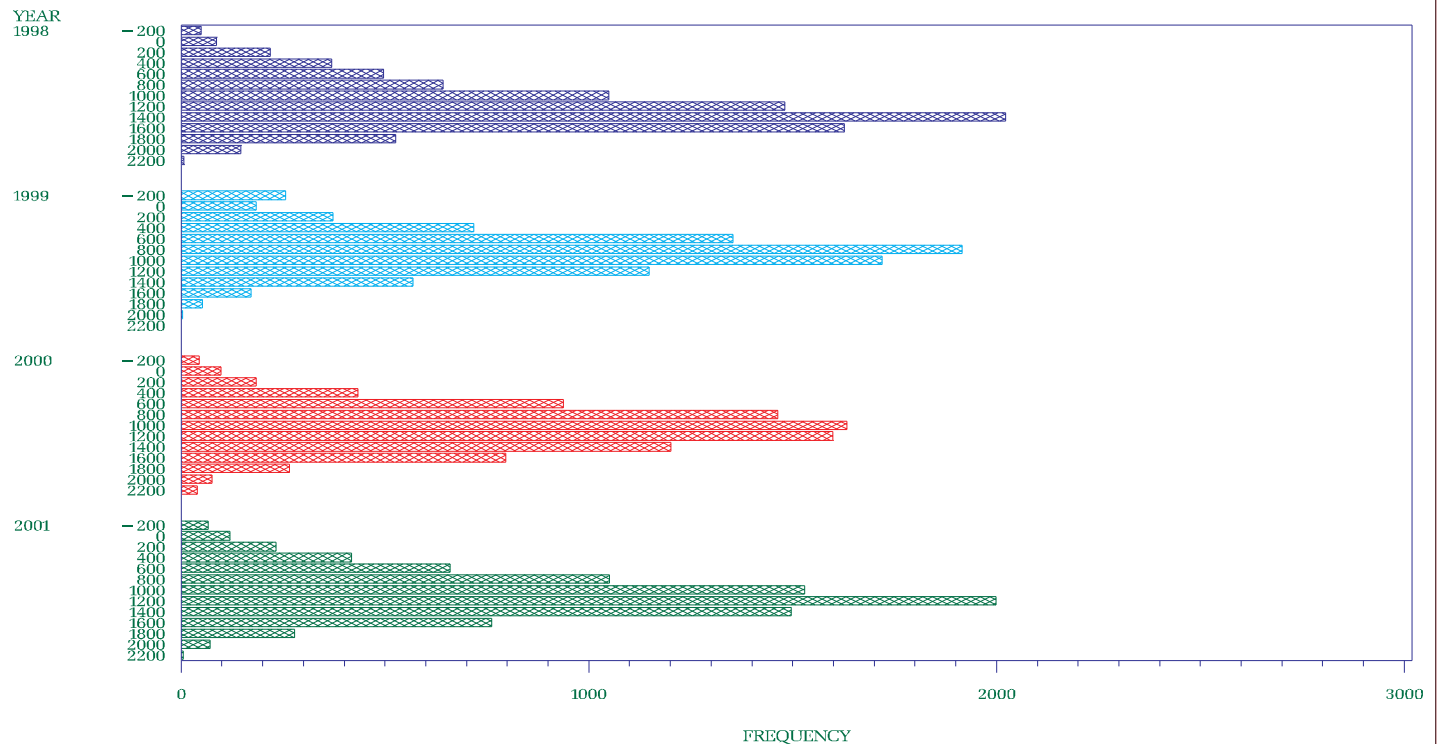
NYISO Frequency Interface Flow For January – December 2001

WEST CENTRAL
Genesee – Central



NYISO Frequency Interface Flow For January 1998 – December 2001

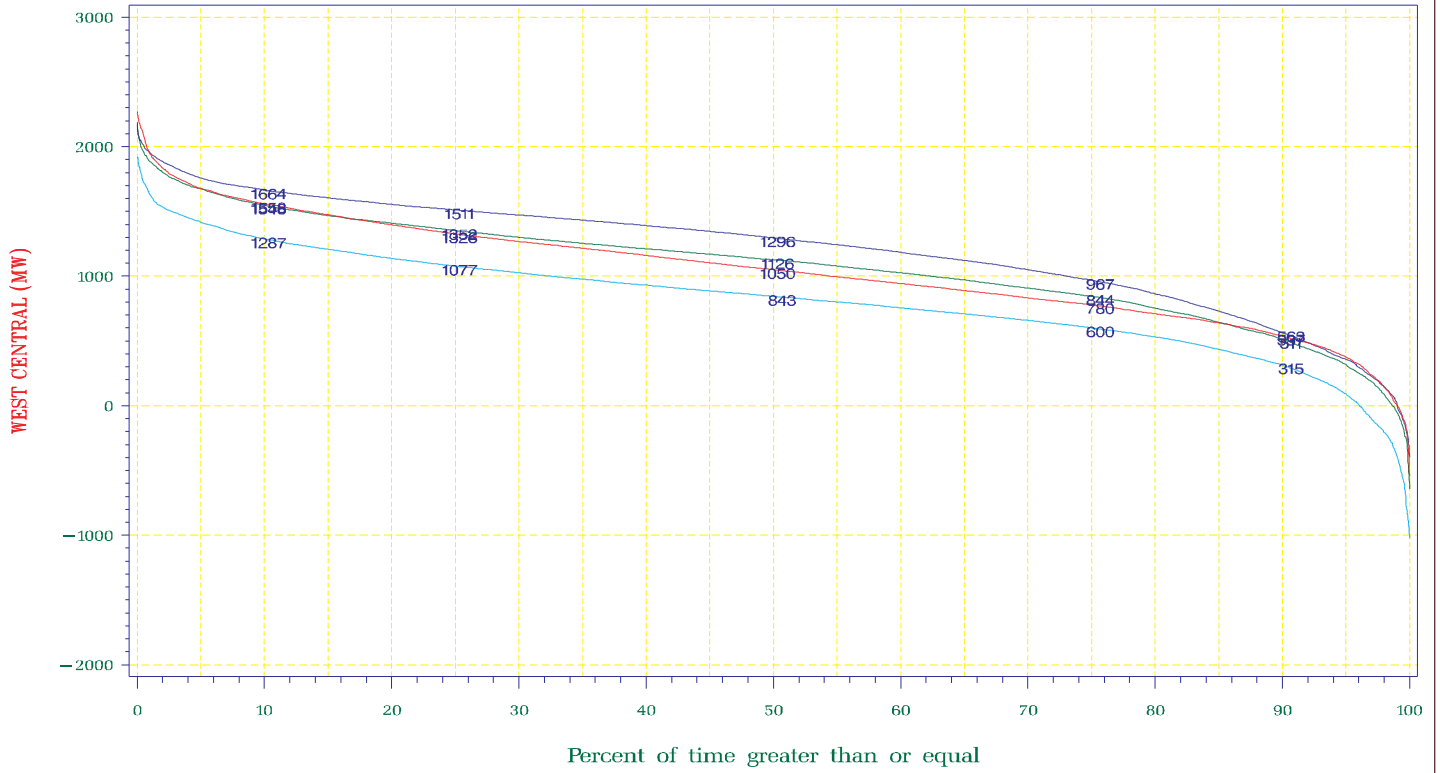
WEST CENTRAL
Genesee – Central



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

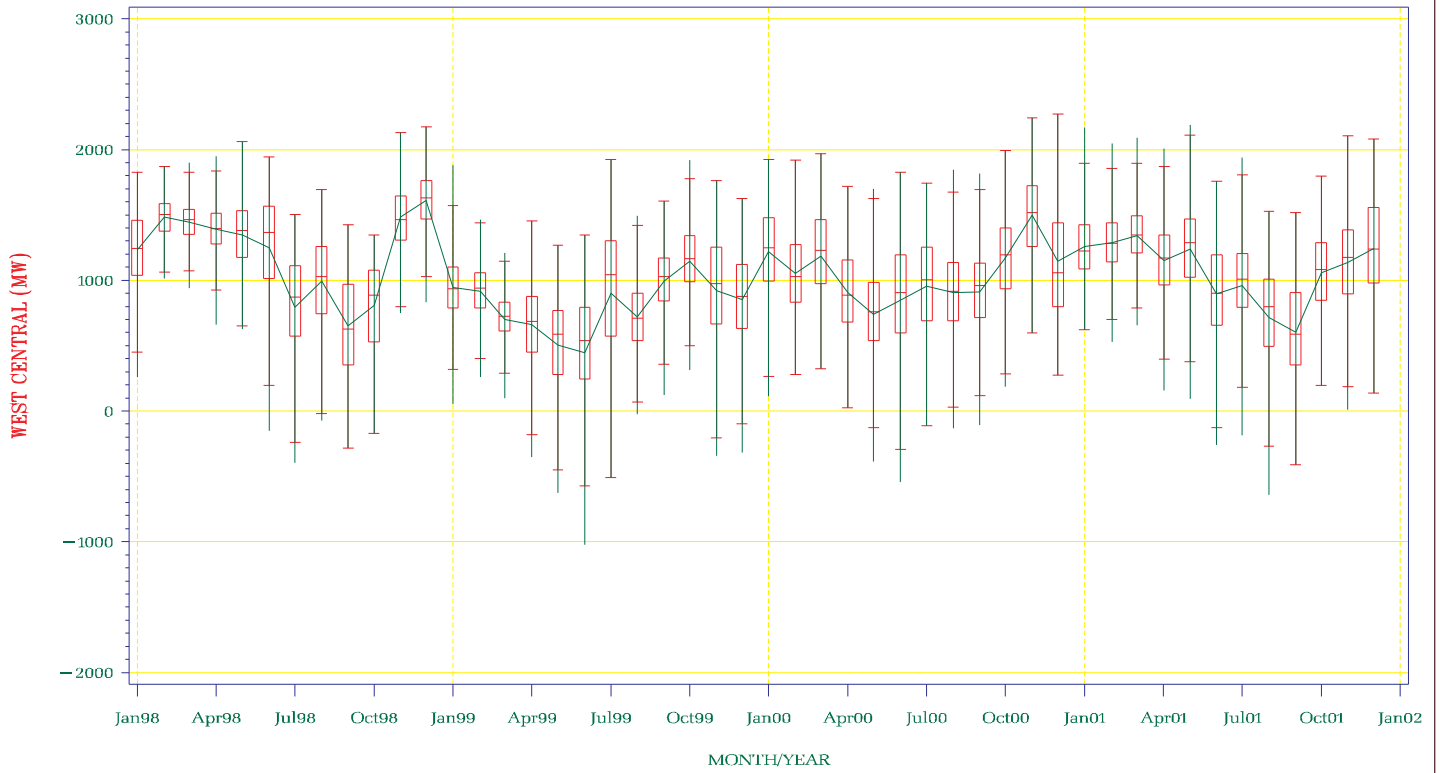
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Genesee – Central



1998 1999 2000 2001

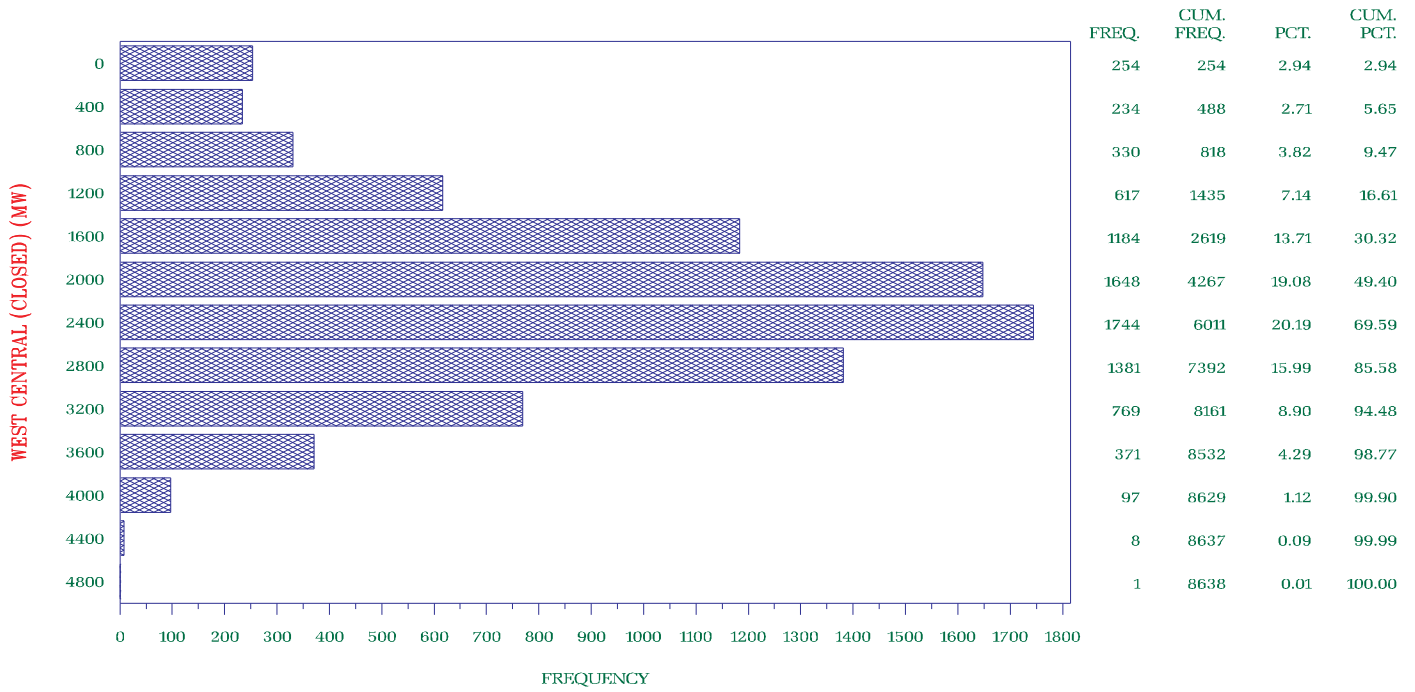
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WEST CENTRAL
Genesee – Central



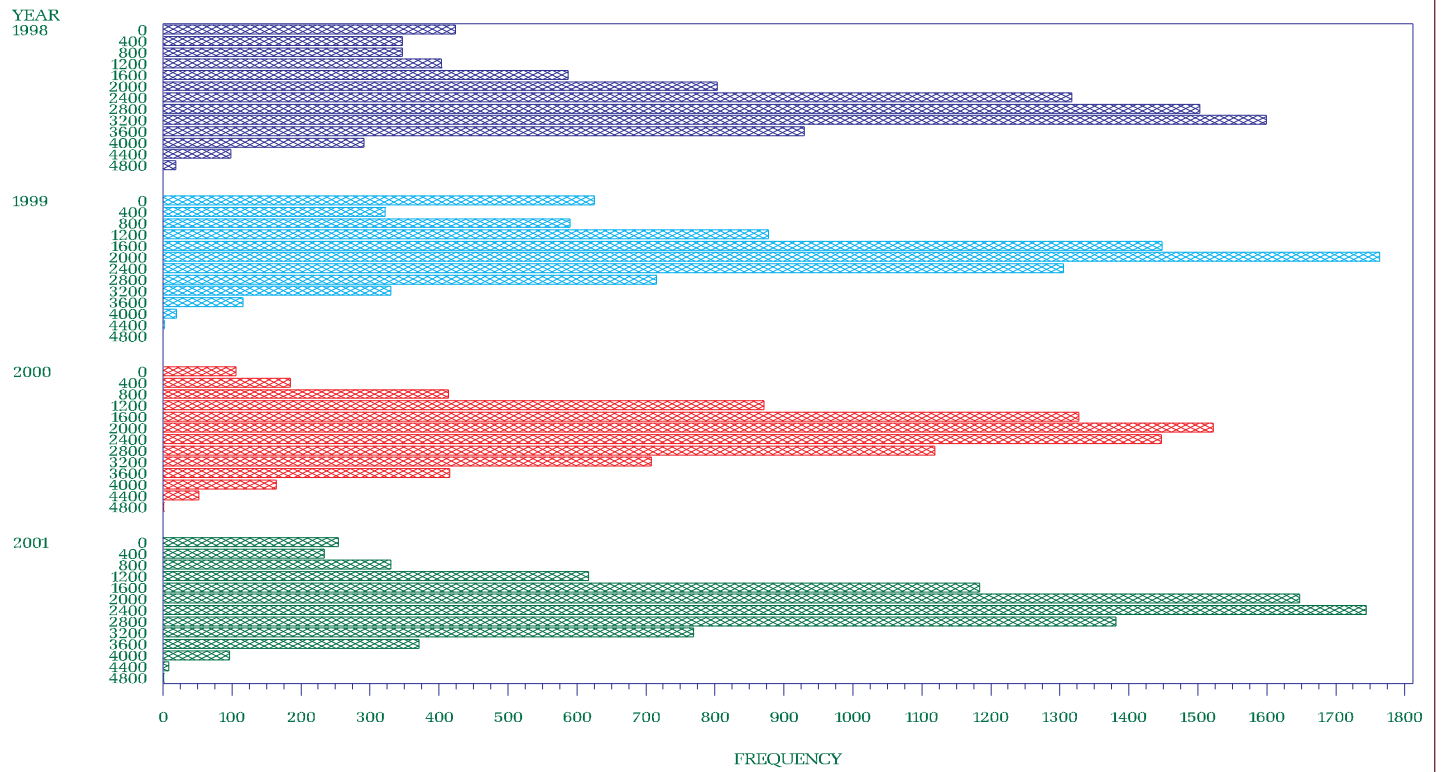
NYISO Frequency Interface Flow For January – December 2001

WEST CENTRAL (CLOSED)



NYISO Frequency Interface Flow For January 1998 – December 2001

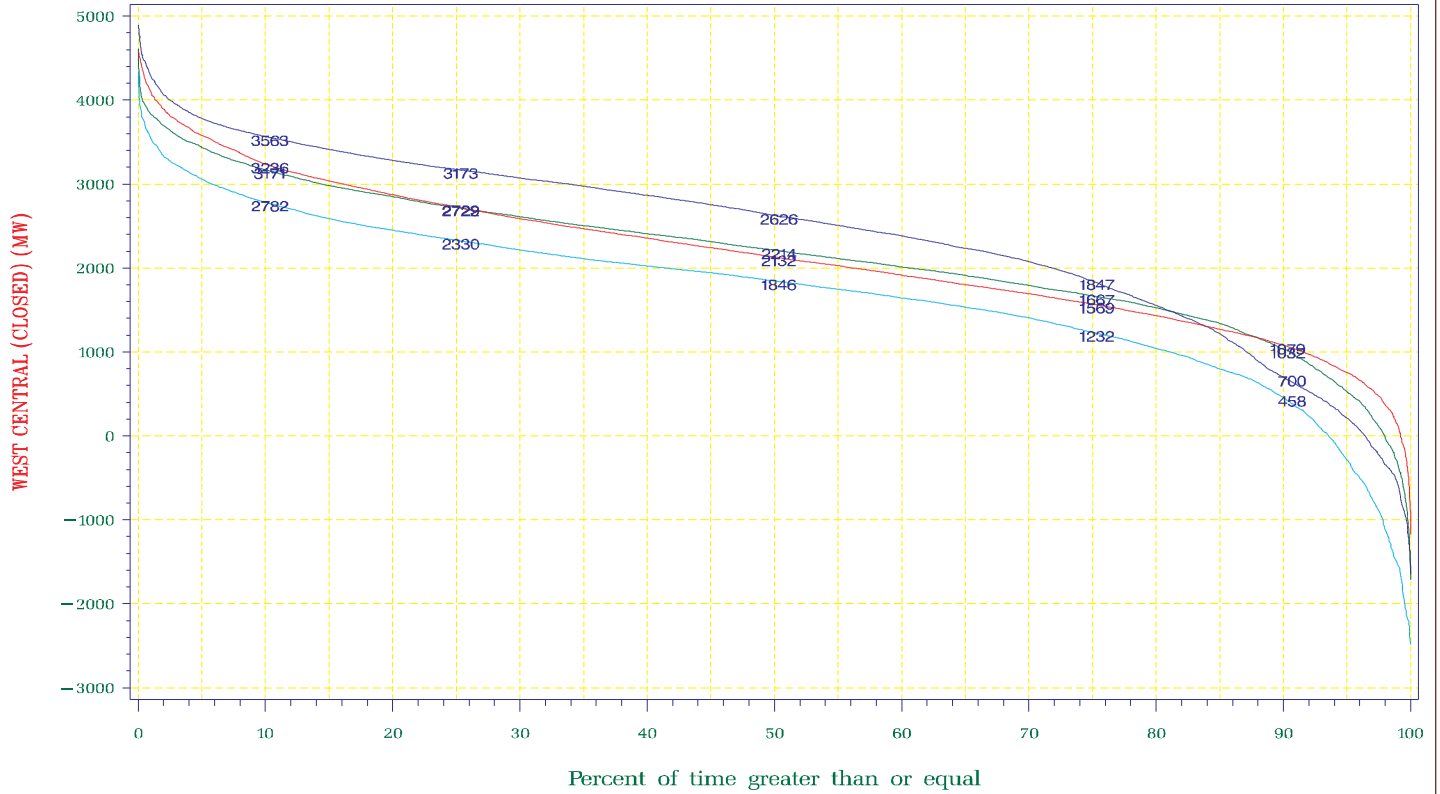
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1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

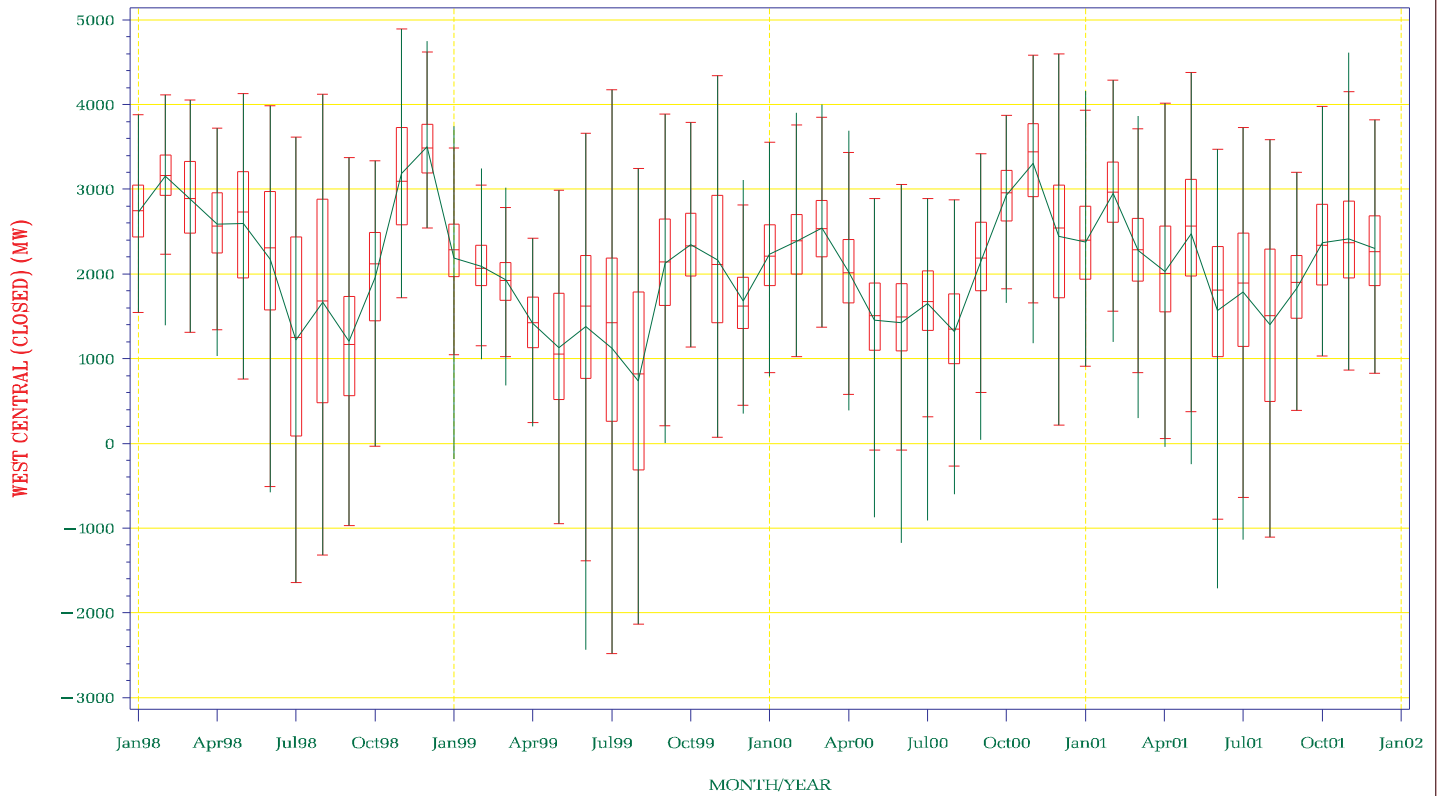
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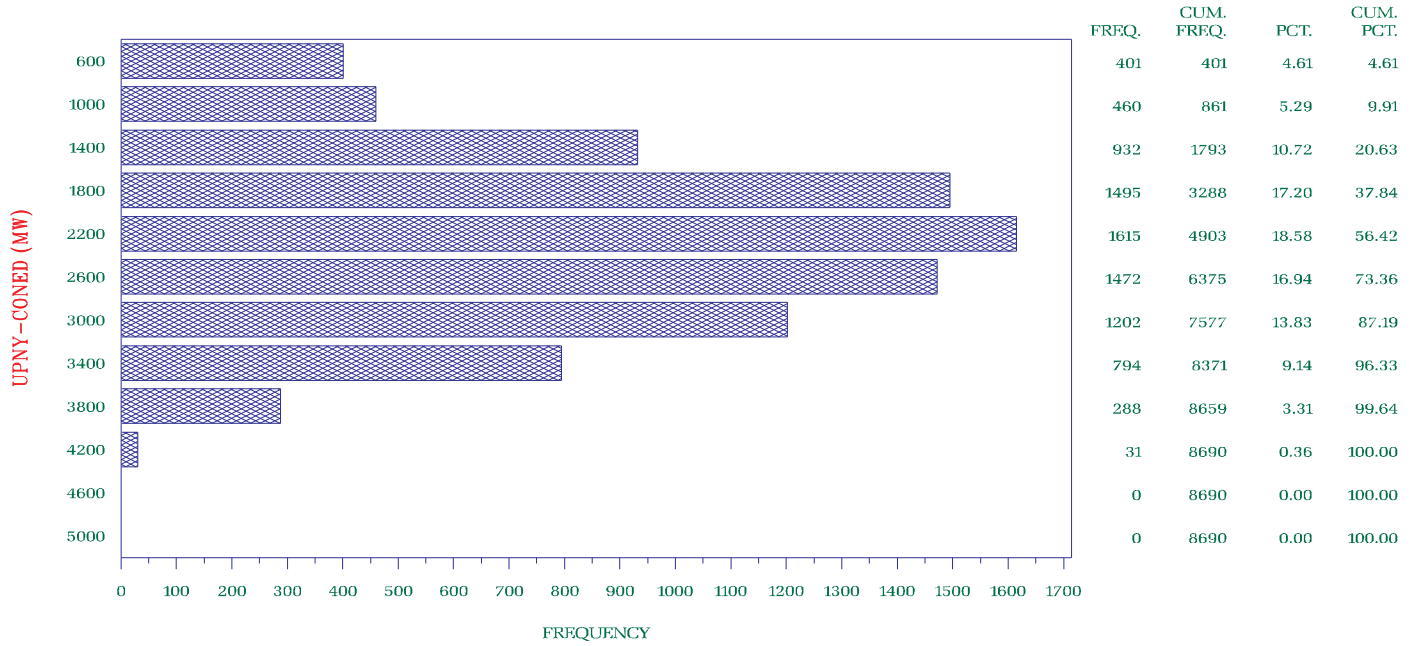
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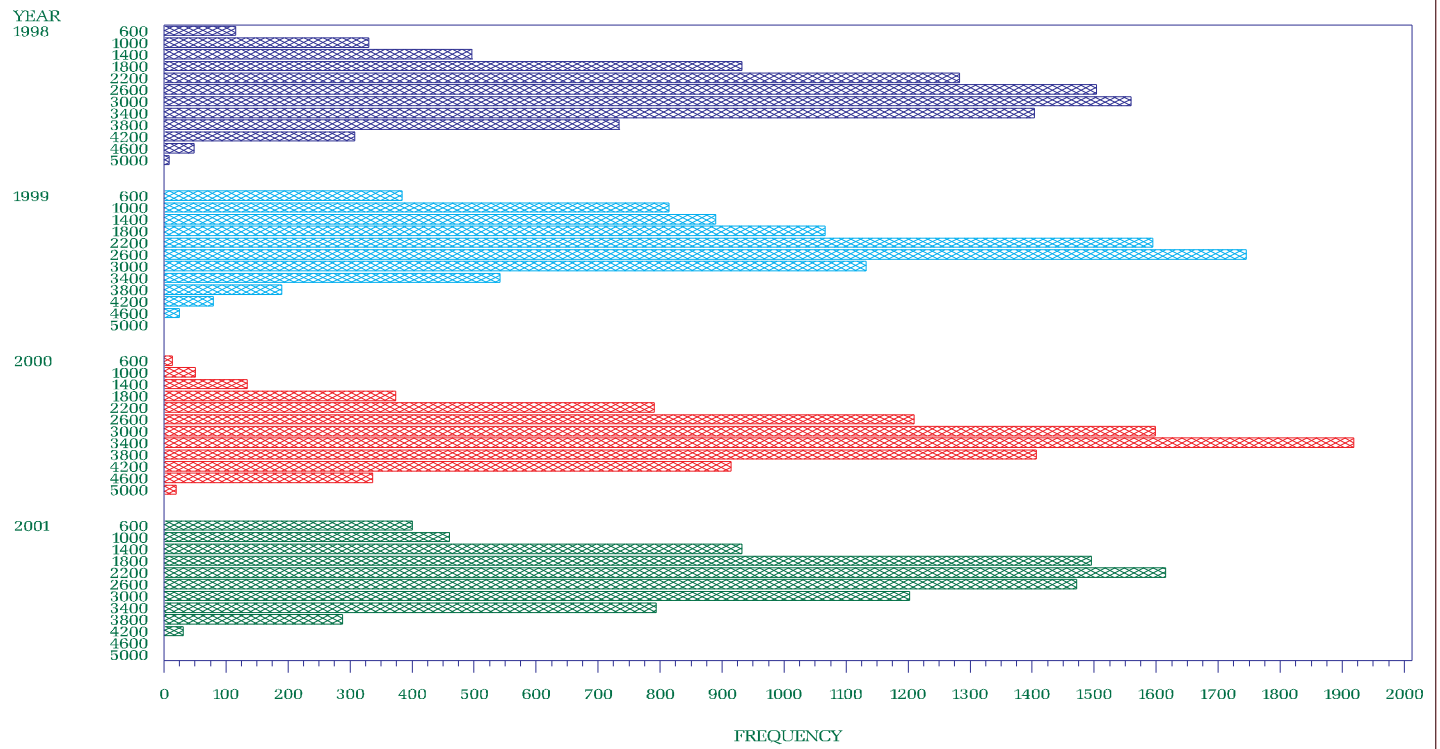
NYISO Frequency Interface Flow For January – December 2001

UPNY – CONED
Capital/Mid Hudson – Westchester



NYISO Frequency Interface Flow For January 1998 – December 2001

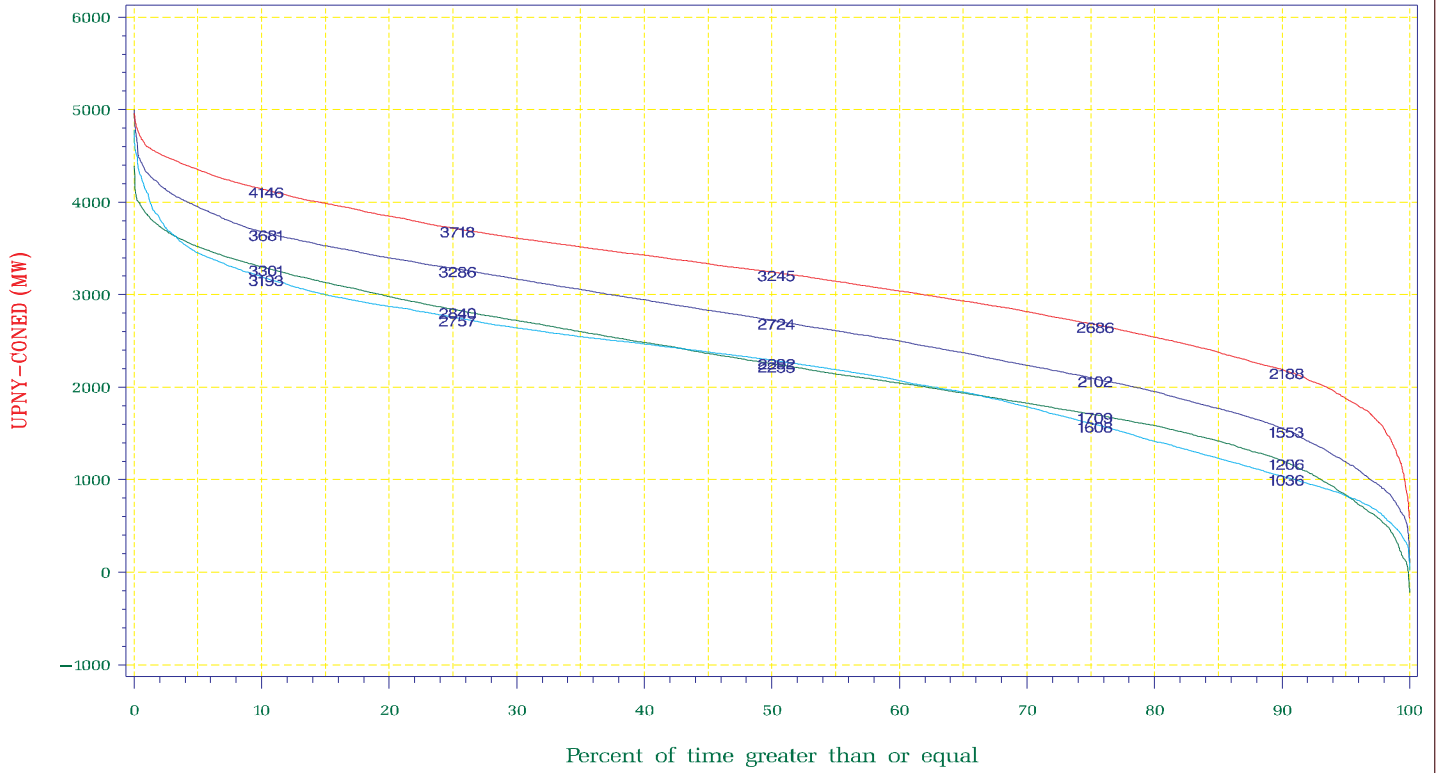
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Capital/Mid Hudson – Westchester



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

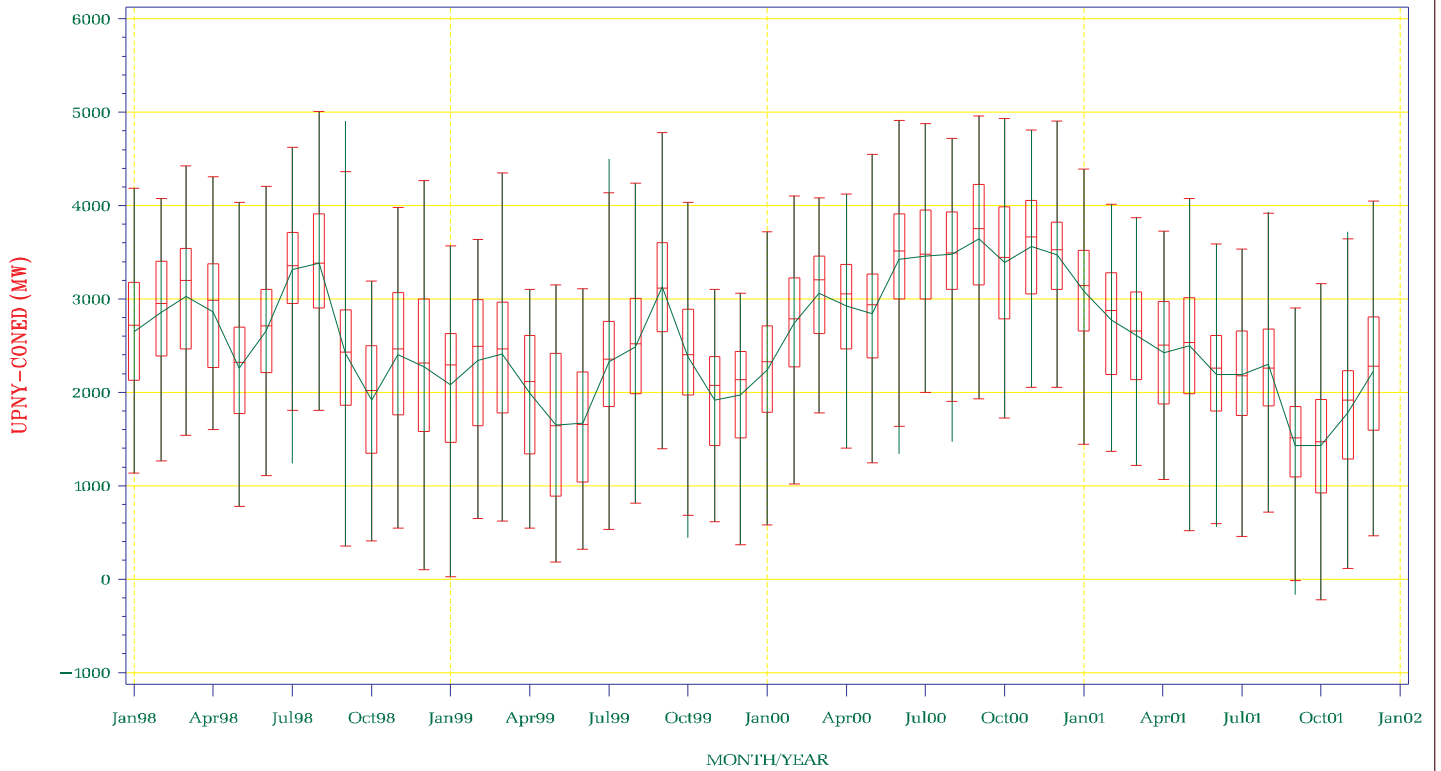
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1998 1999 2000 2001

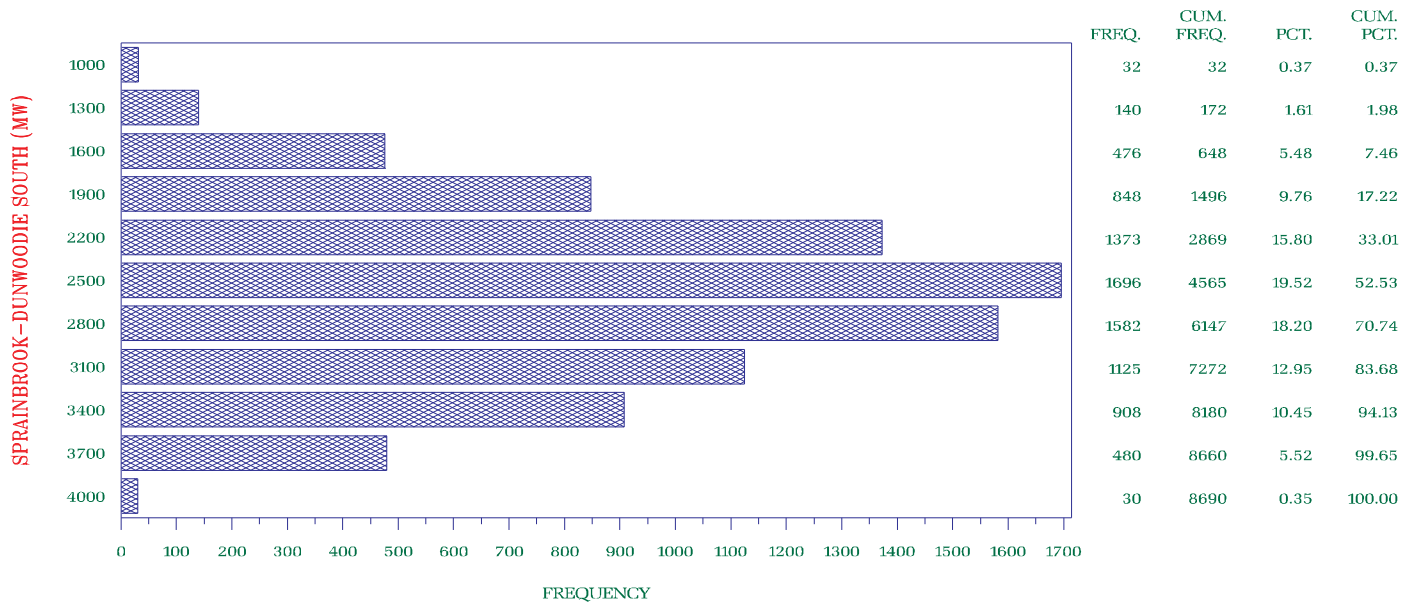
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UPNY – CONED
Capital/Mid Hudson – Westchester



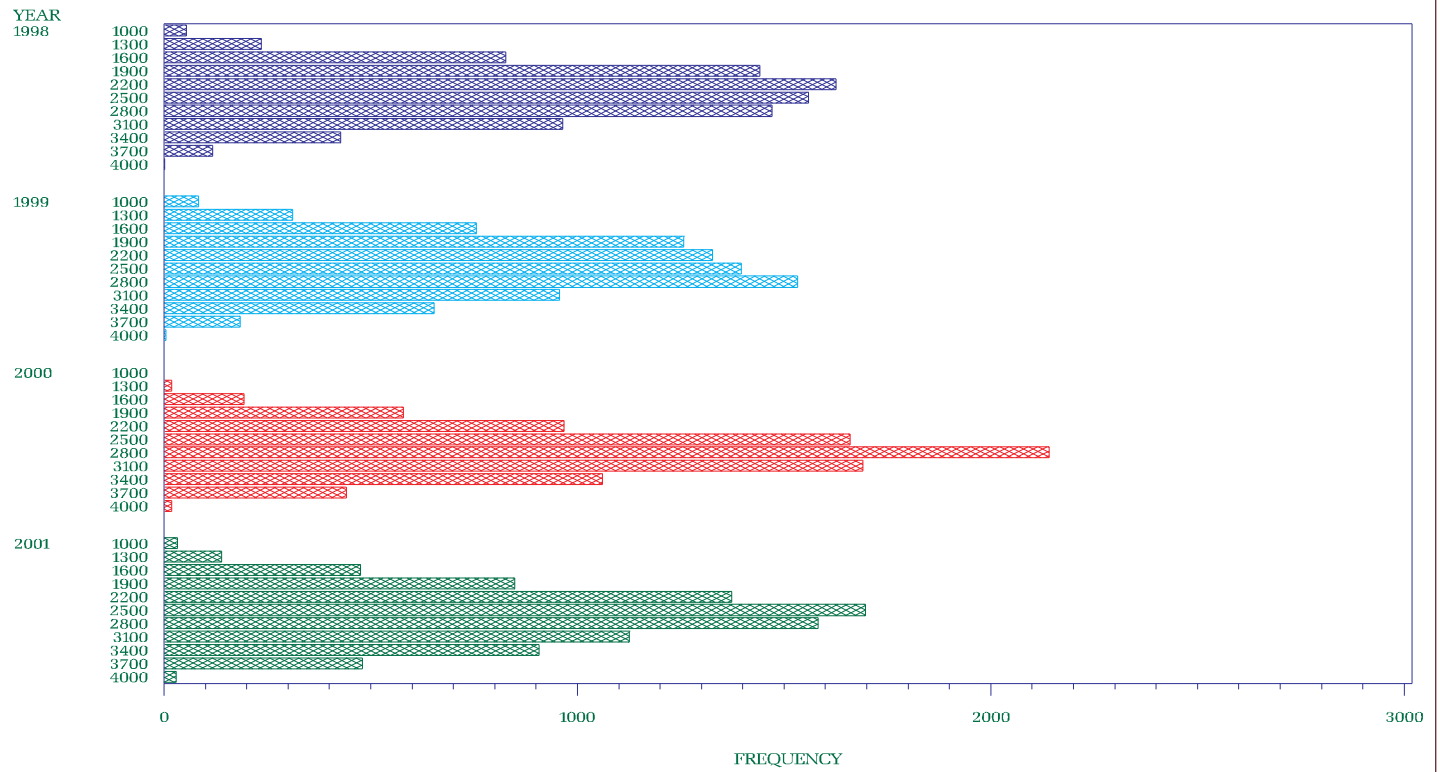
NYISO Frequency Interface Flow For January – December 2001

SPRAINBROOK – DUNWOODIE SOUTH



NYISO Frequency Interface Flow For January 1998 – December 2001

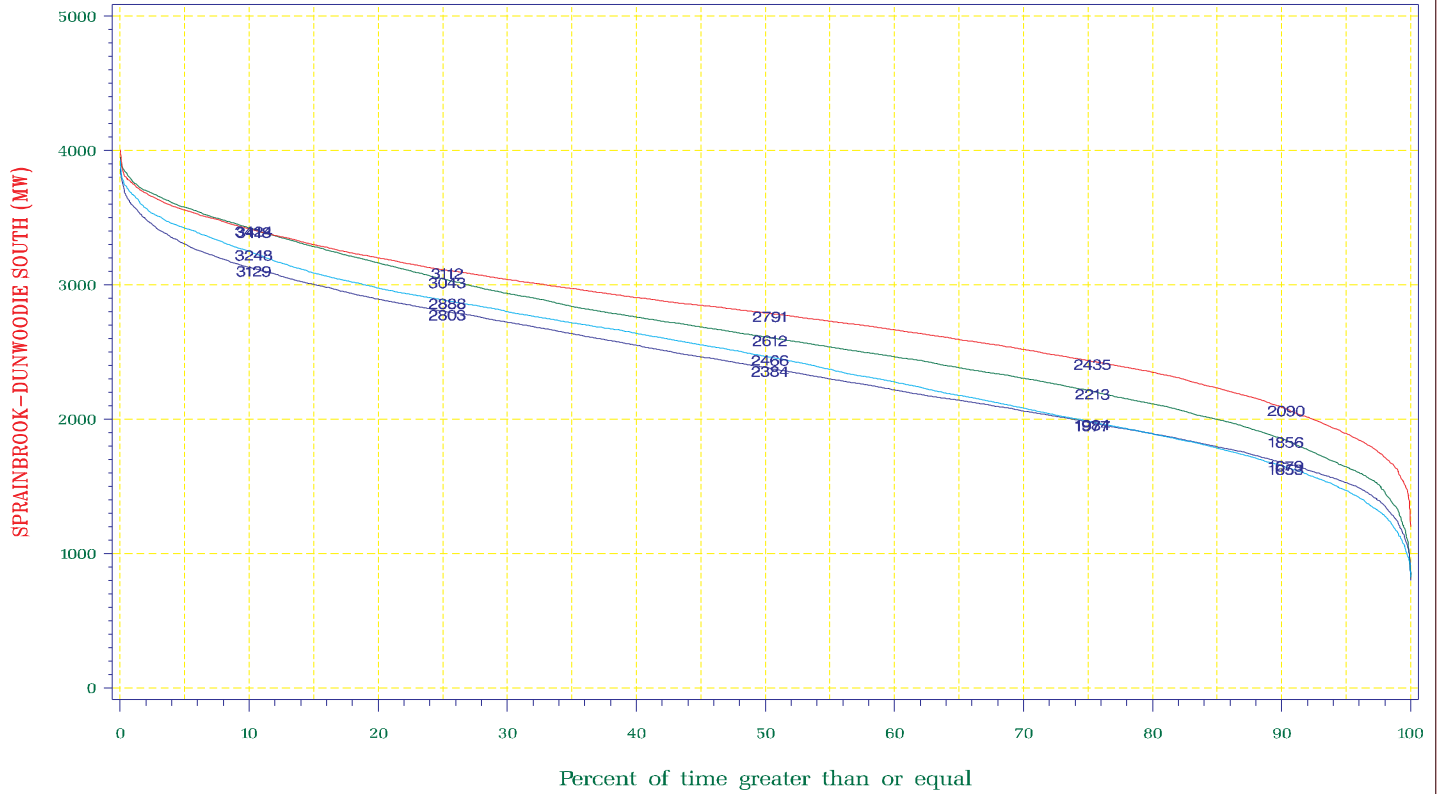
SPRAINBROOK – DUNWOODIE SOUTH



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

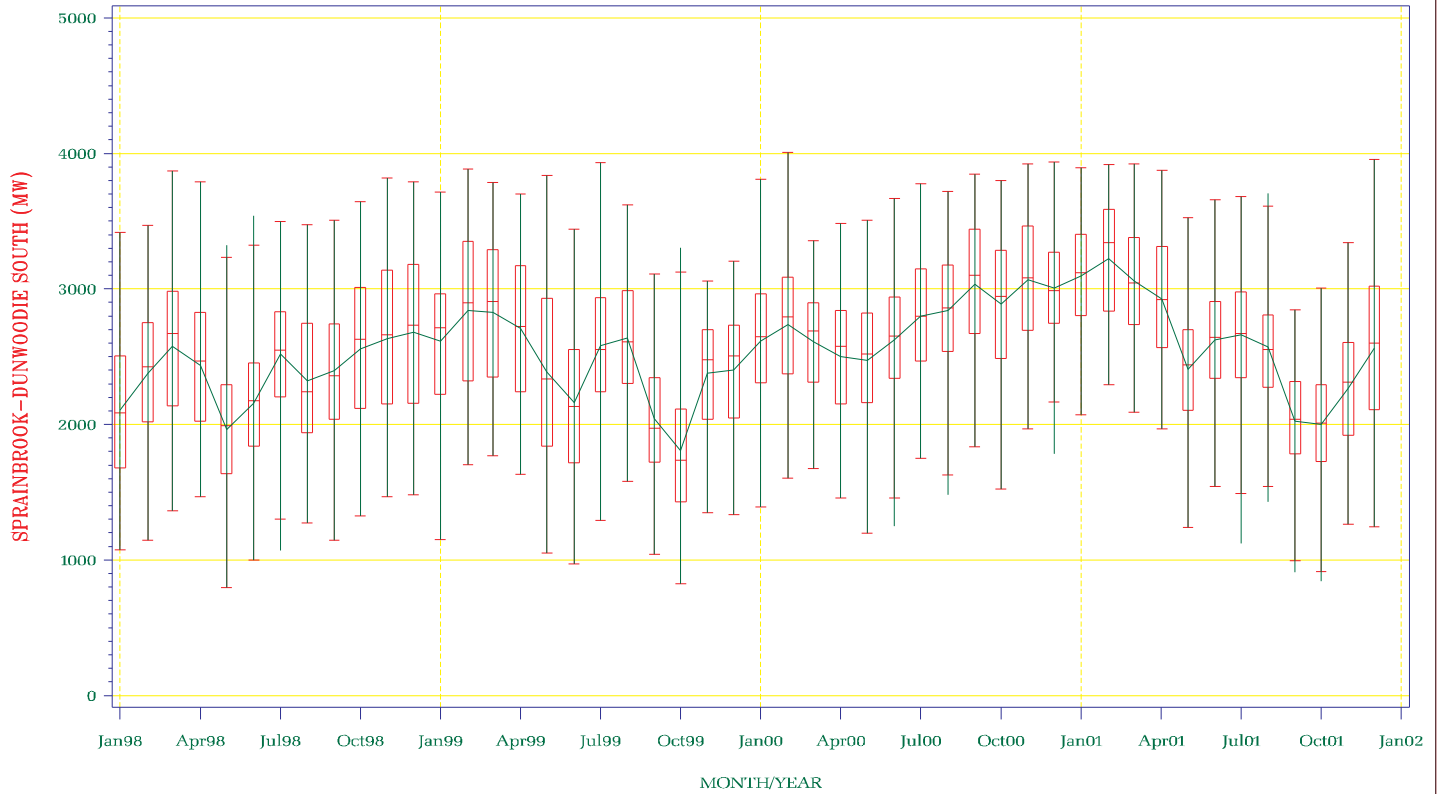
SPRAINBROOK – DUNWOODIE SOUTH



1998 1999 2000 2001

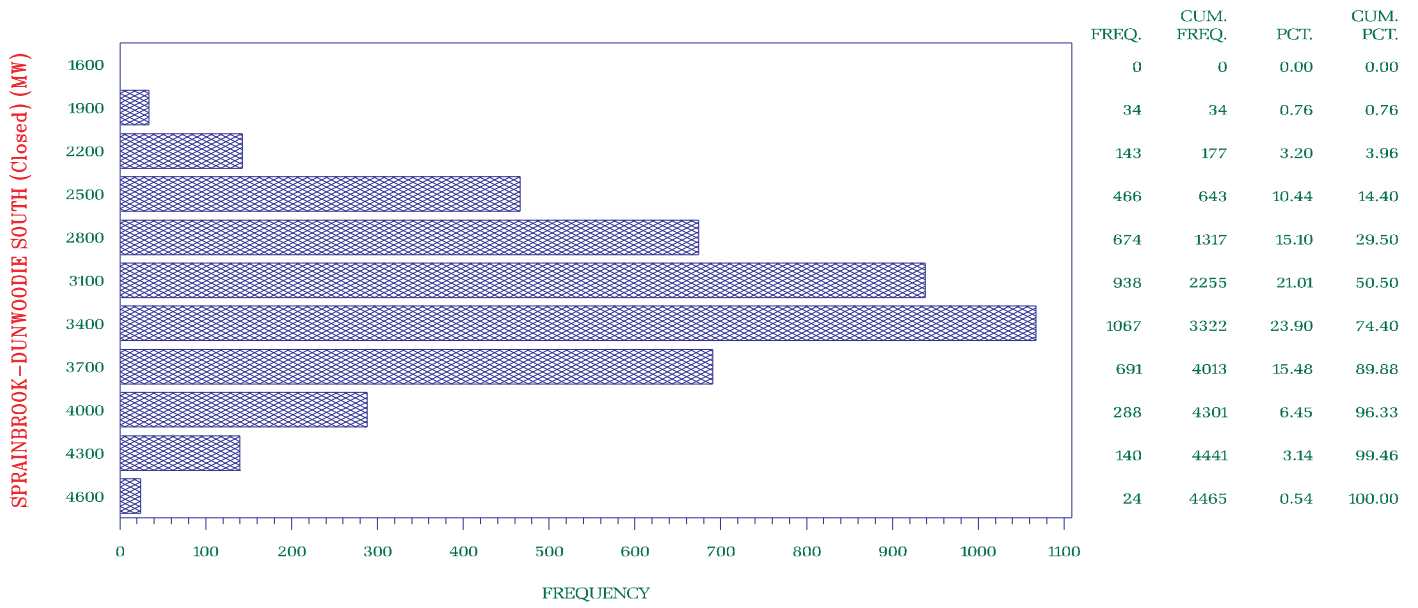
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

SPRAINBROOK – DUNWOODIE SOUTH



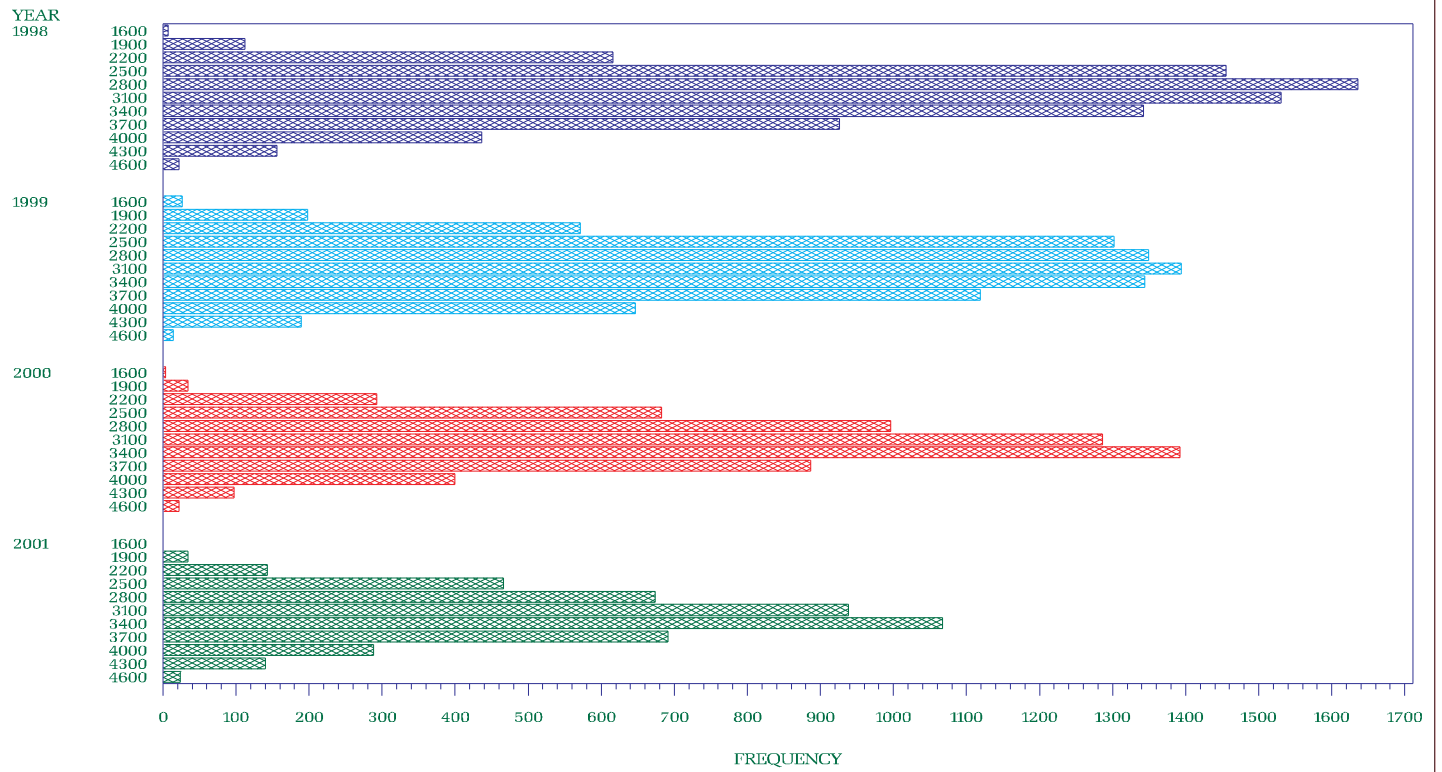
NYISO Frequency Interface Flow For January – December 2001

SPRAINBROOK – DUNWOODIE SOUTH (Closed)



NYISO Frequency Interface Flow For January 1998 – December 2001

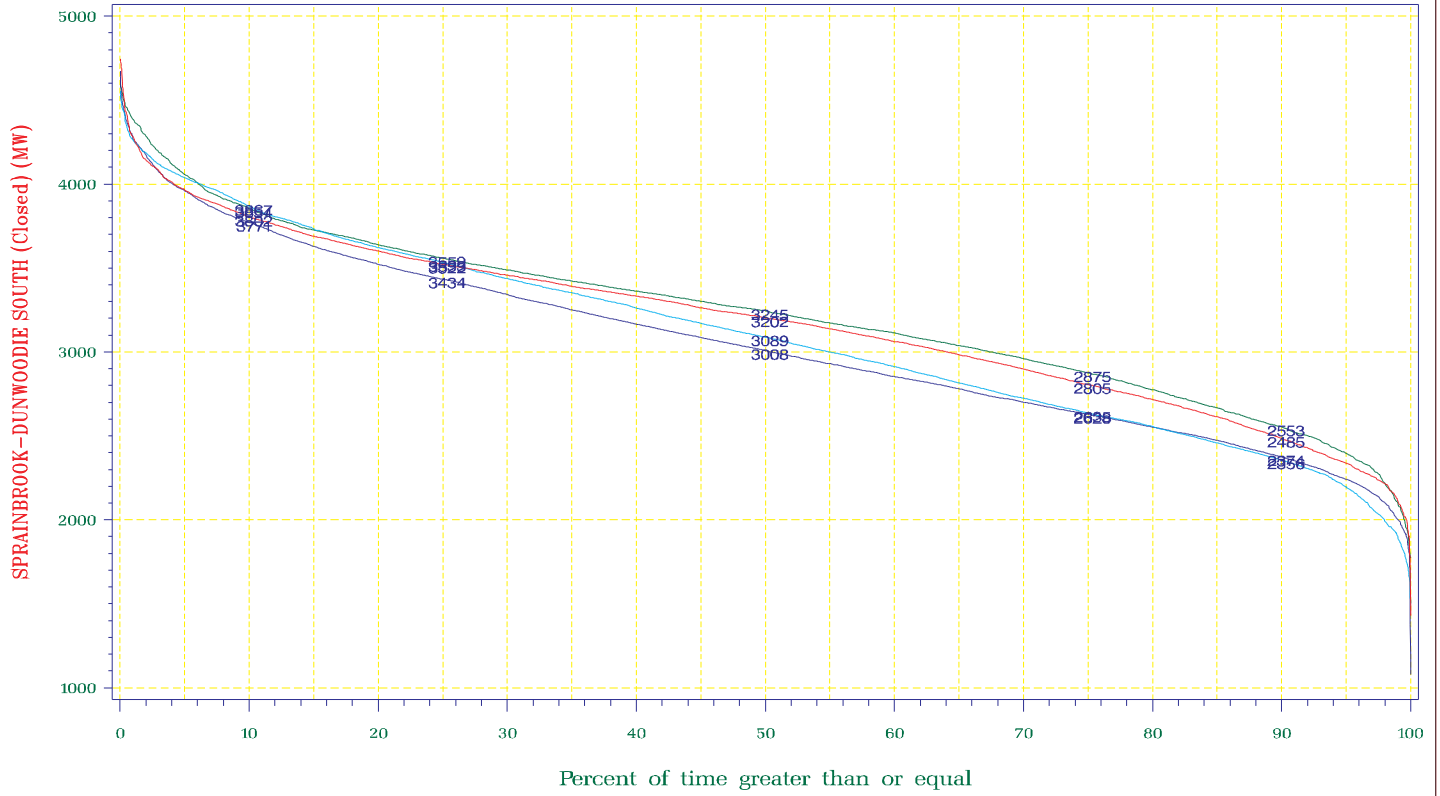
SPRAINBROOK – DUNWOODIE SOUTH (Closed)



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

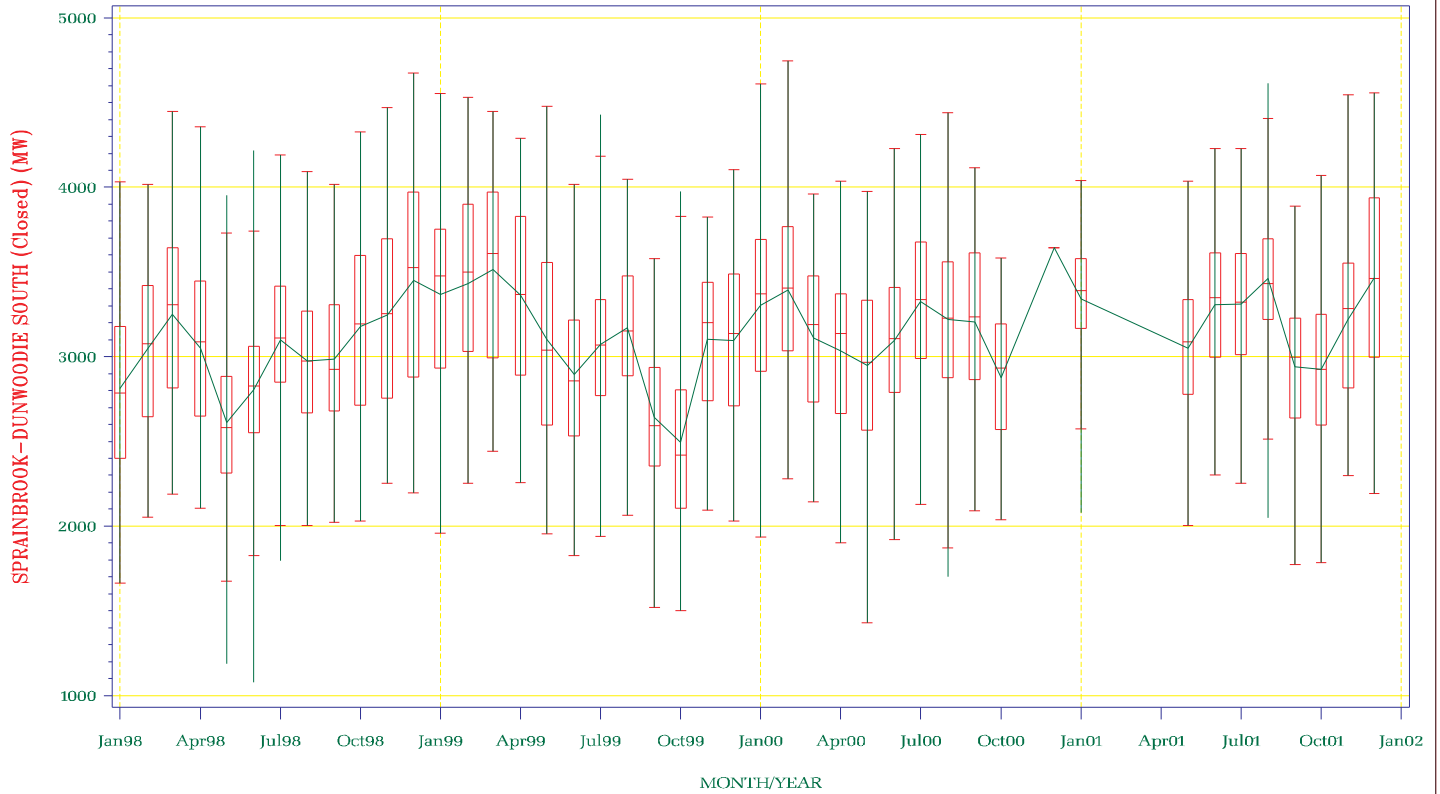
SPRAINBROOK – DUNWOODIE SOUTH (Closed)



1998 1999 2000 2001

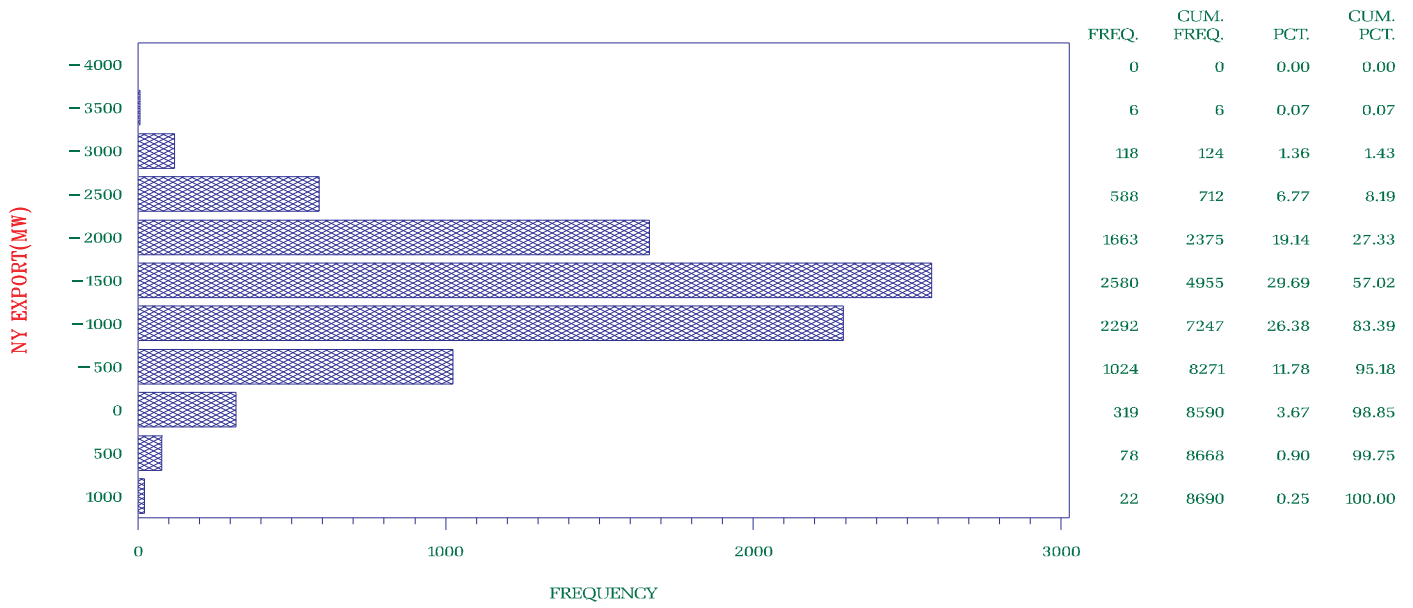
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

SPRAINBROOK – DUNWOODIE SOUTH (Closed)



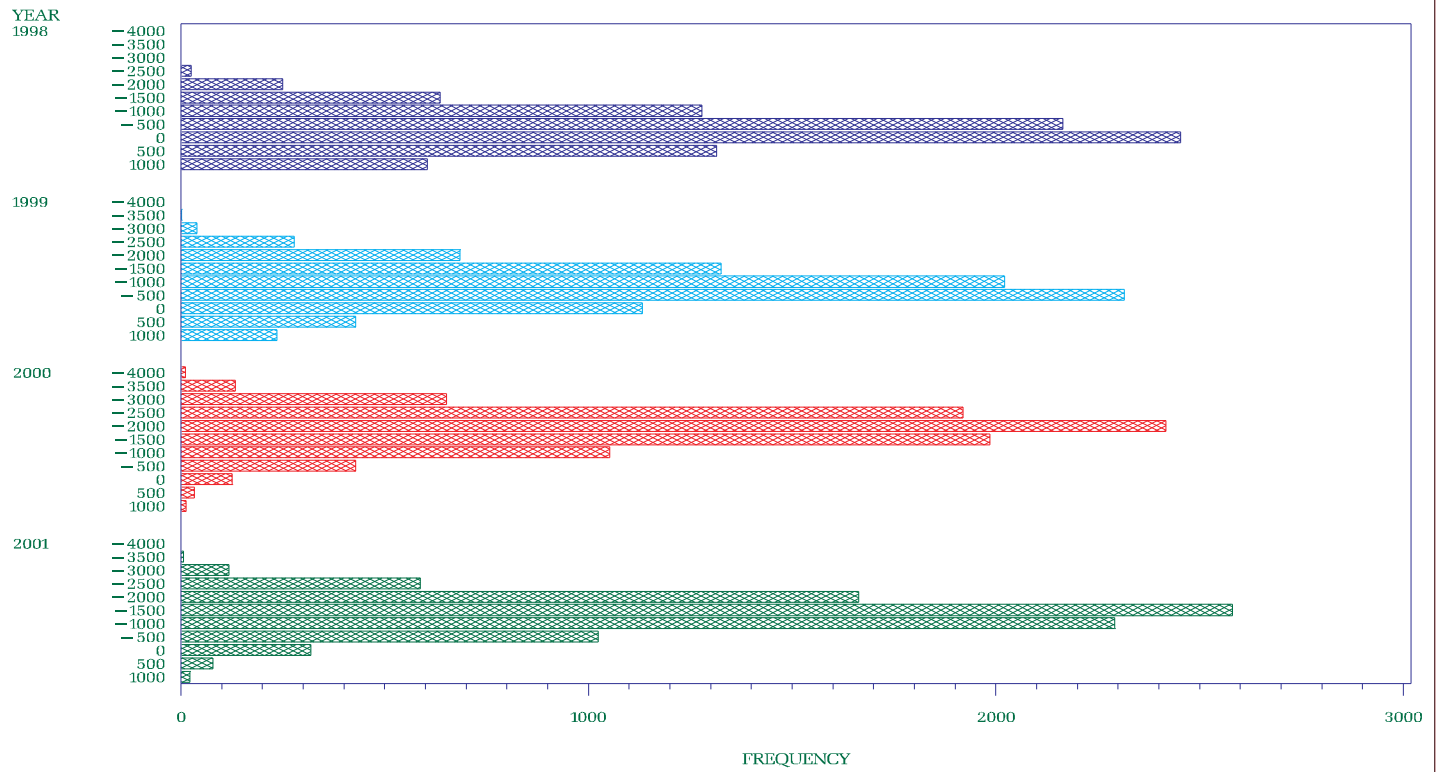
NYISO Frequency Interface Flow For January – December 2001

NY EXPORT



NYISO Frequency Interface Flow For January 1998 – December 2001

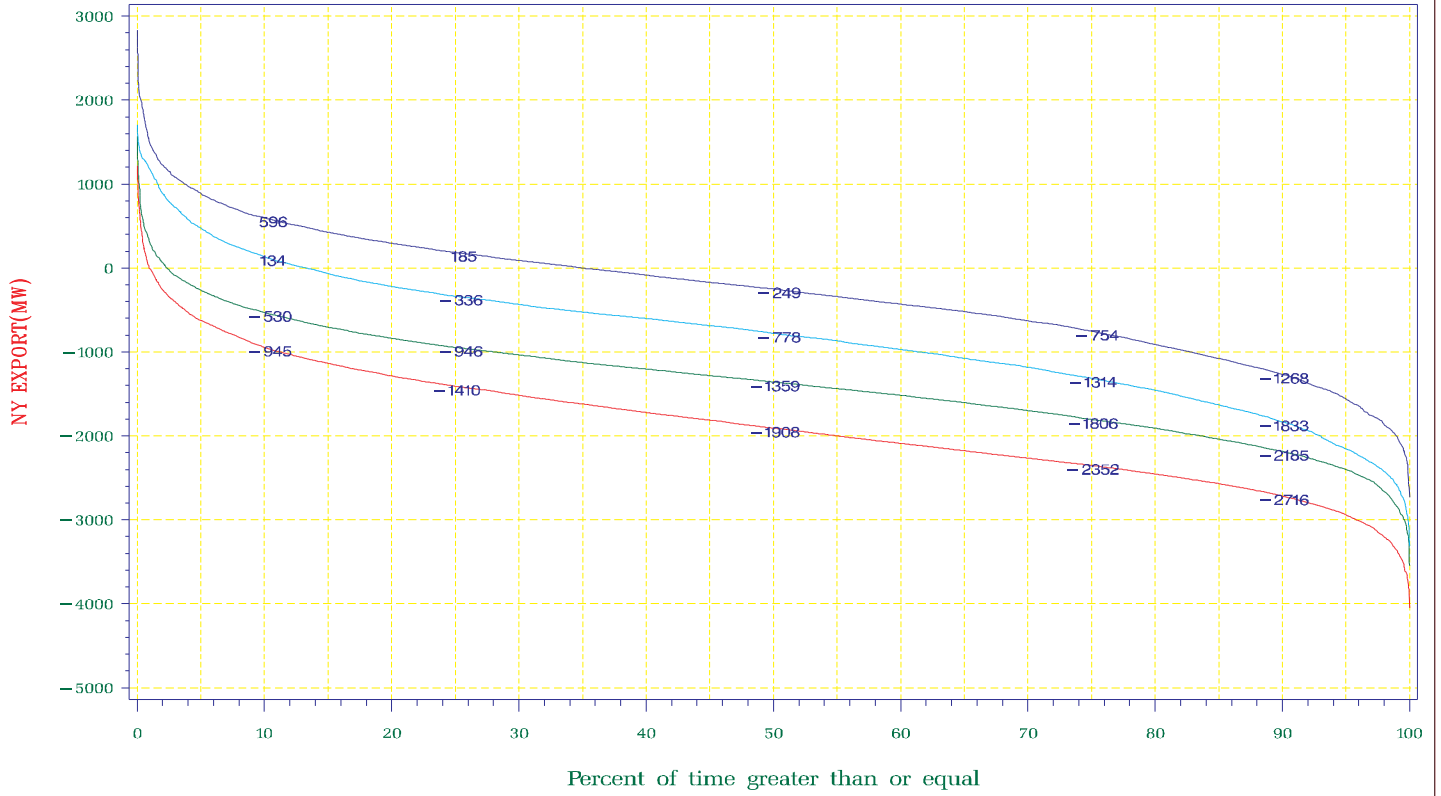
NY EXPORT



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

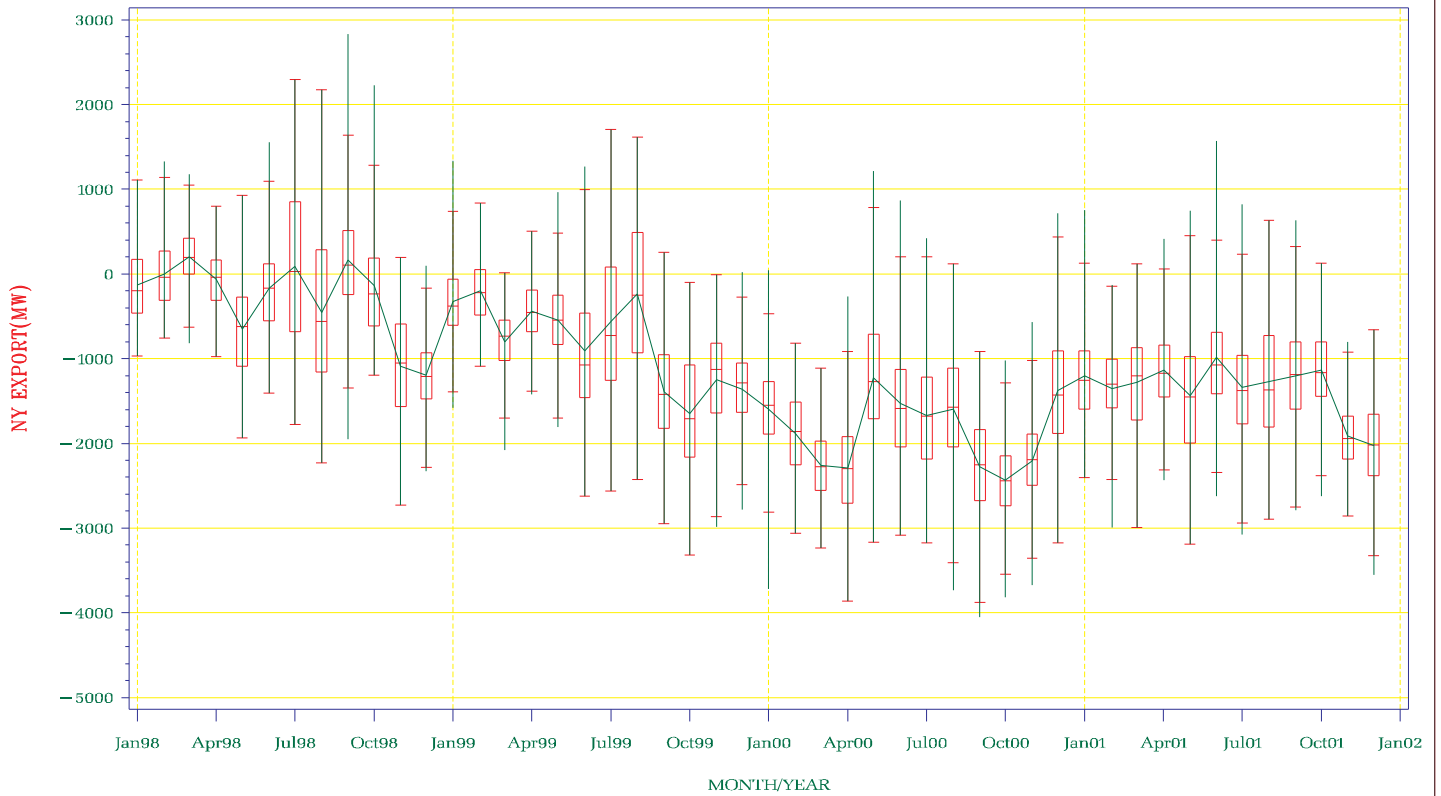
NY EXPORT



1998 1999 2000 2001

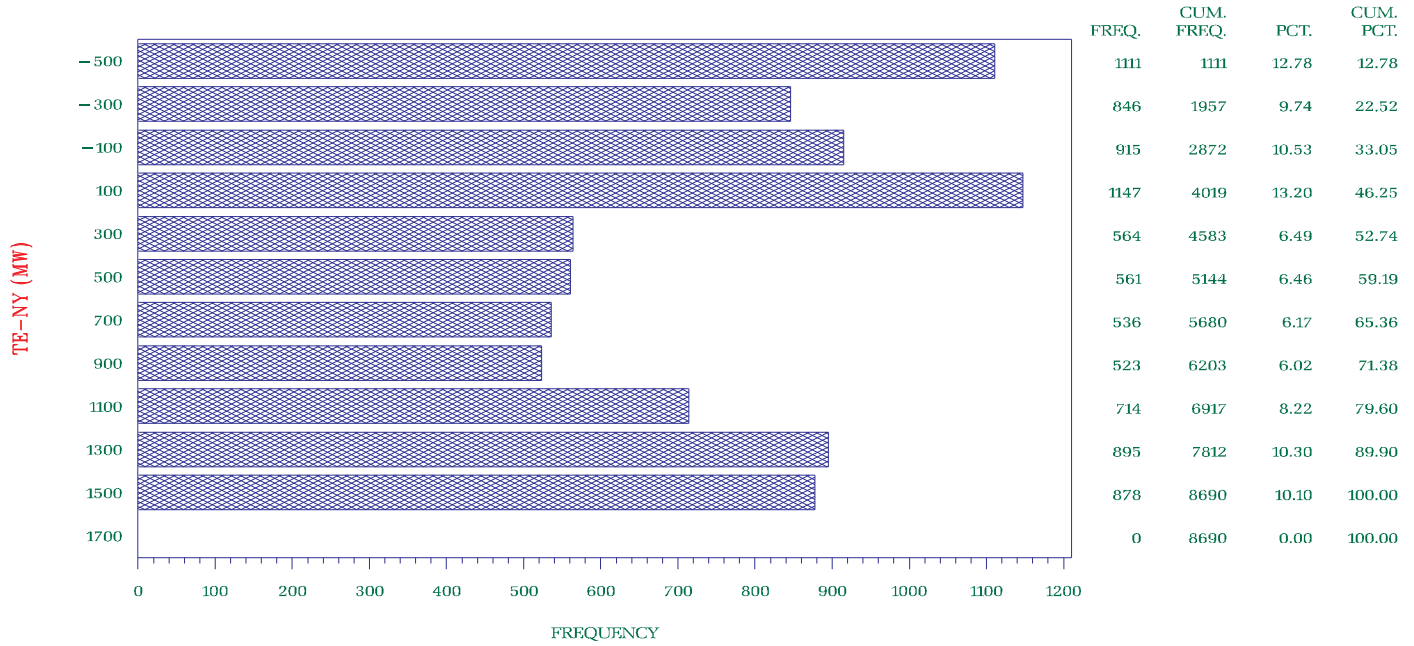
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

NY EXPORT



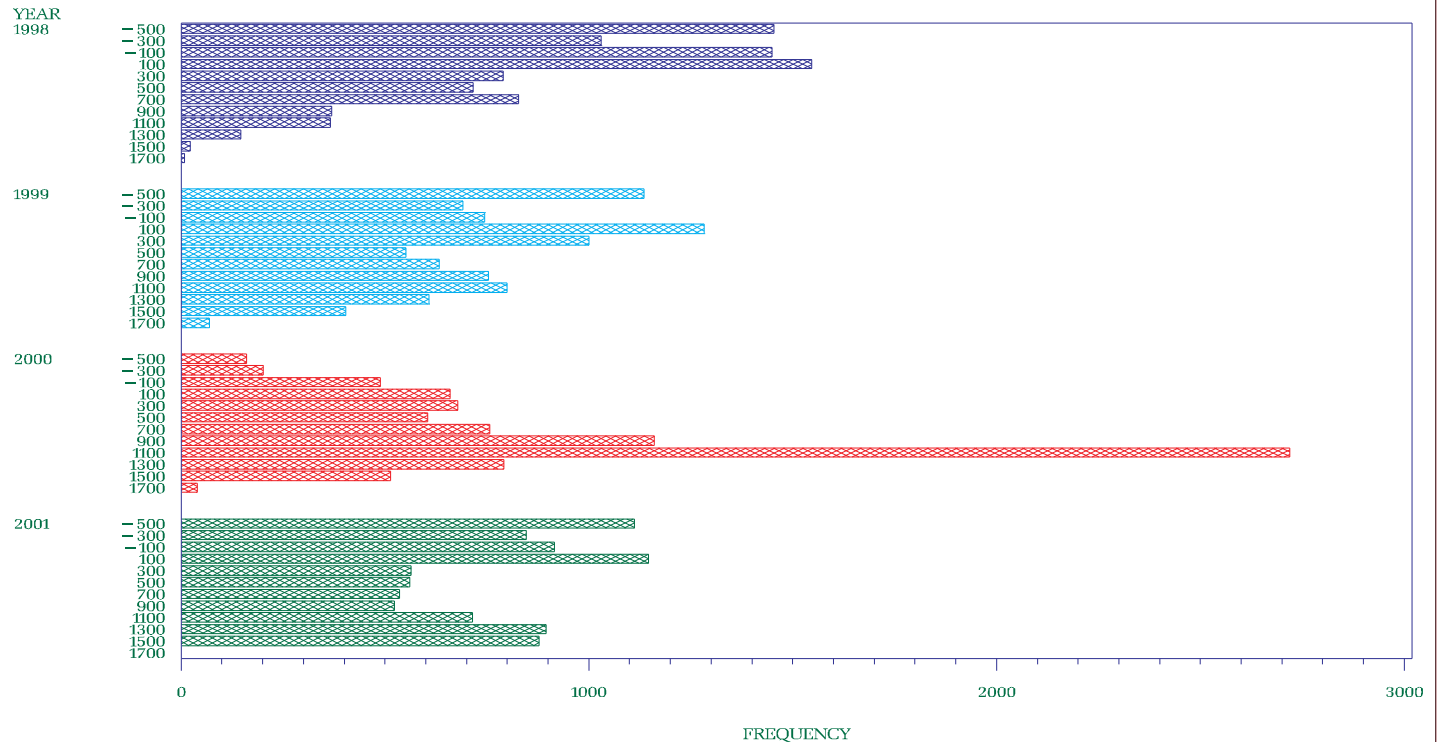
NYISO Frequency Interface Flow For January – December 2001

TE – NY SCHEDULE
Chateauguay – Massena



NYISO Frequency Interface Flow For January 1998 – December 2001

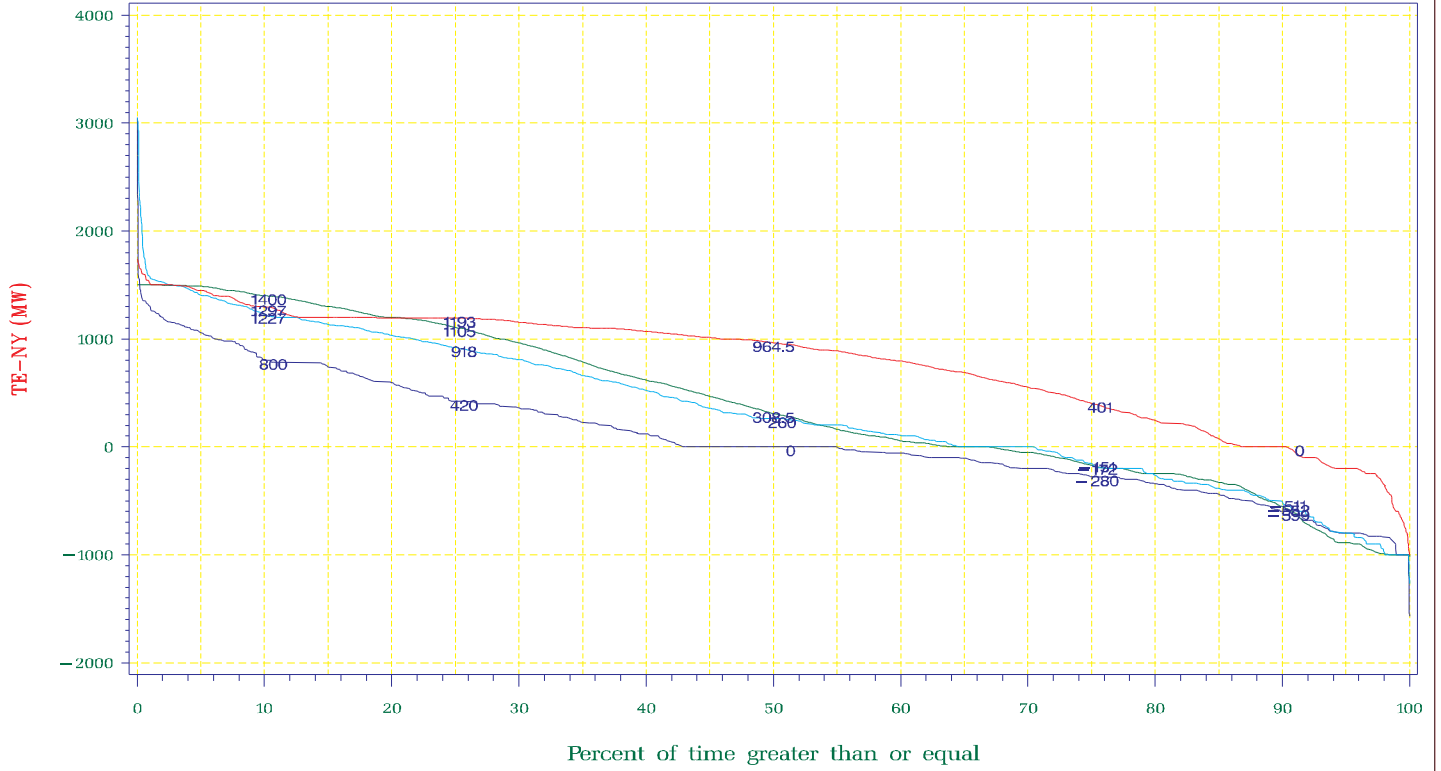
TE – NY SCHEDULE
Chateauguay – Massena



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

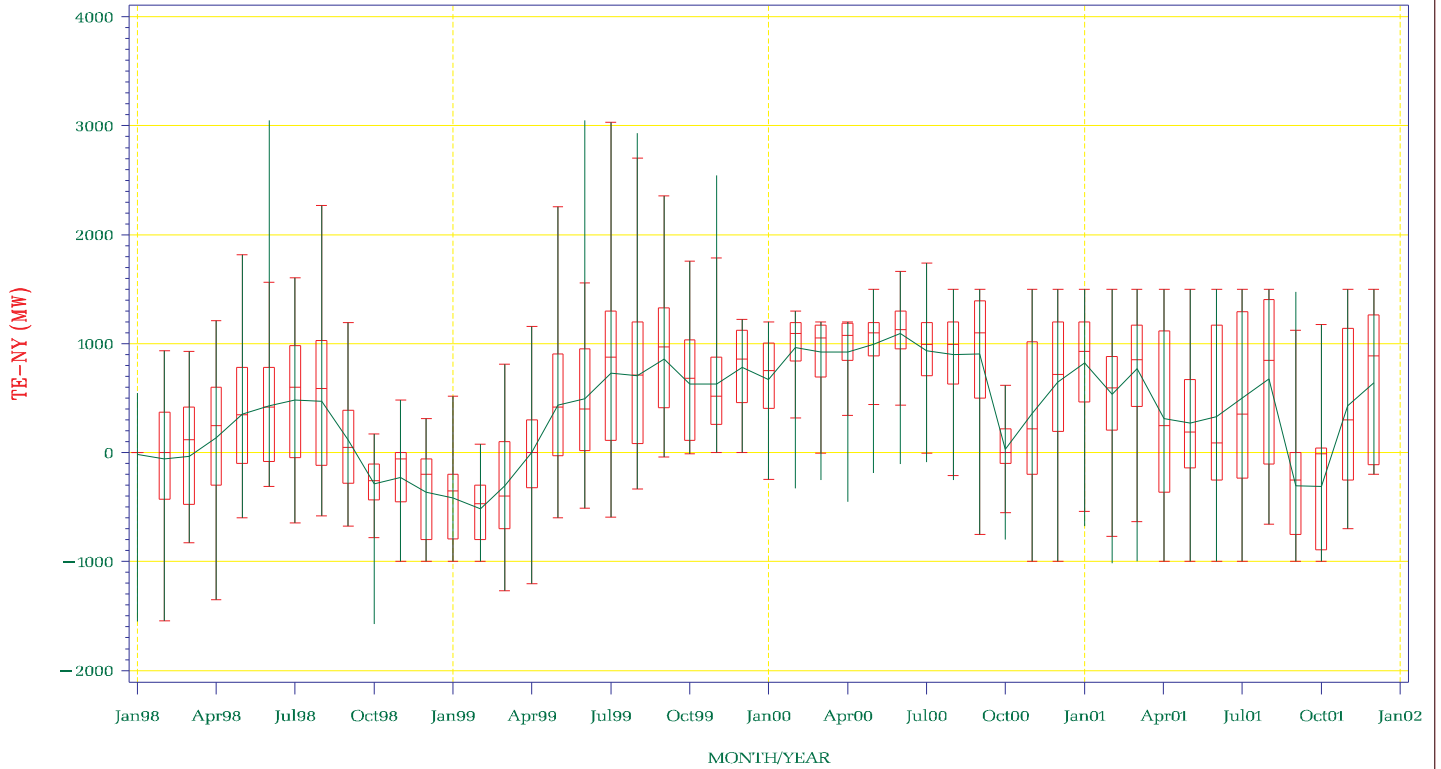
TE – NY SCHEDULE
Chateauguay – Massena



1998 1999 2000 2001

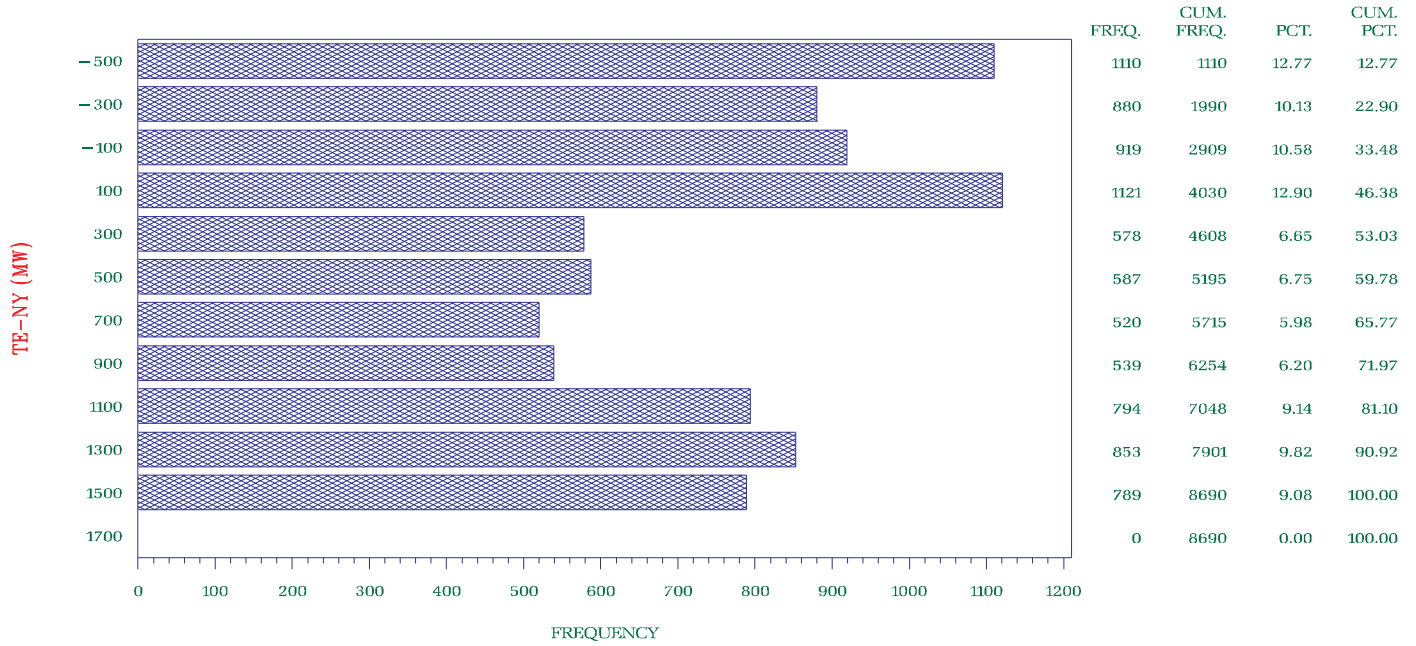
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

TE – NY SCHEDULE
Chateauguay – Massena



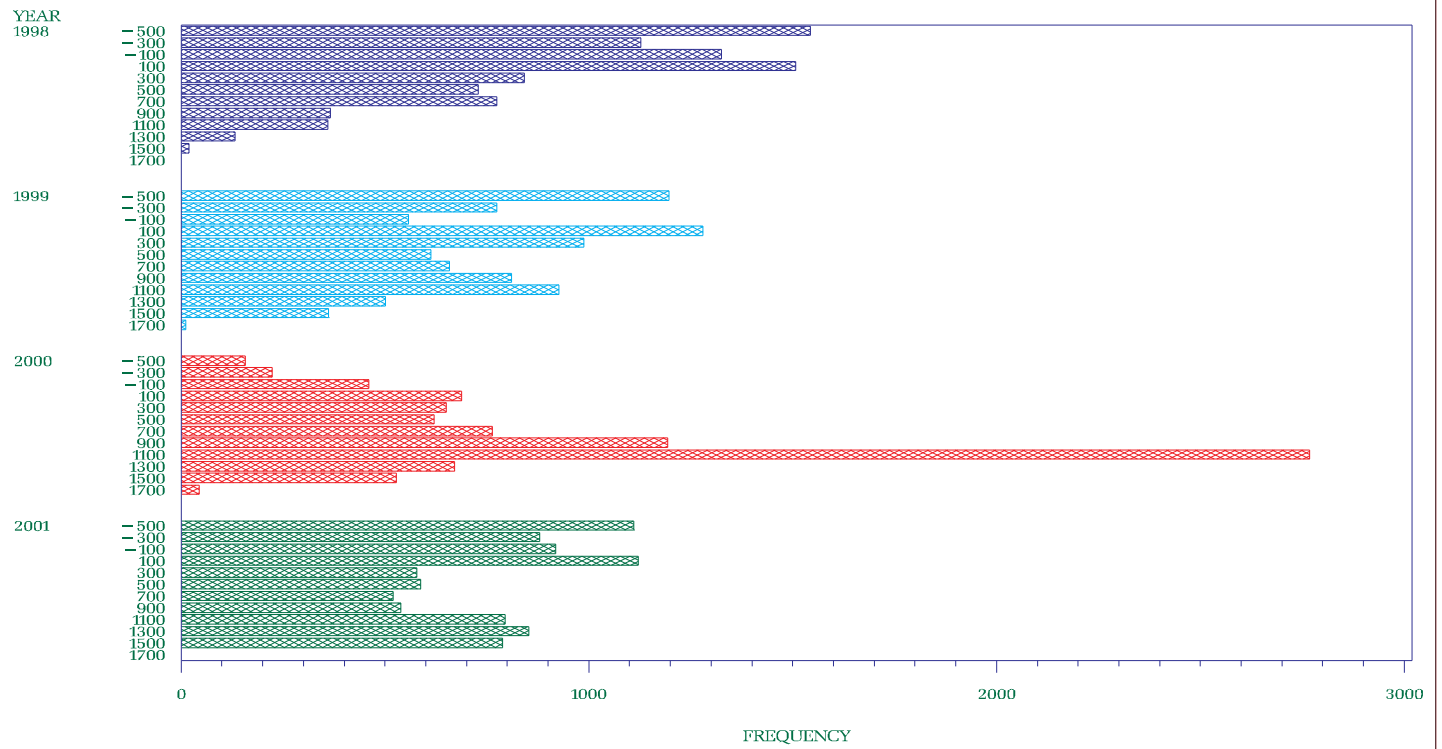
NYISO Frequency Interface Flow For January – December 2001

TE – NY
Chateauguay – Massena



NYISO Frequency Interface Flow For January 1998 – December 2001

TE – NY
Chateauguay – Massena

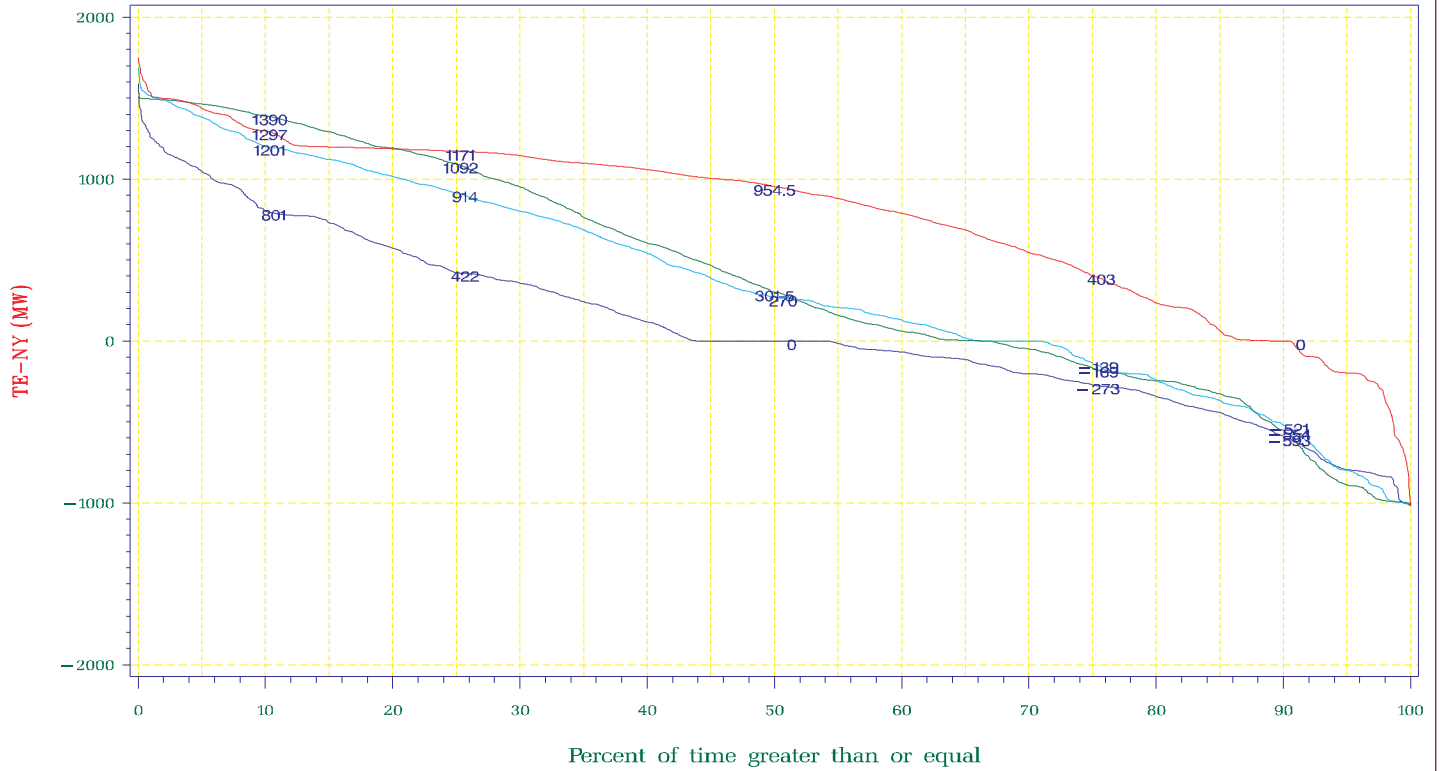


1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

TE – NY

Chateauguay – Massena

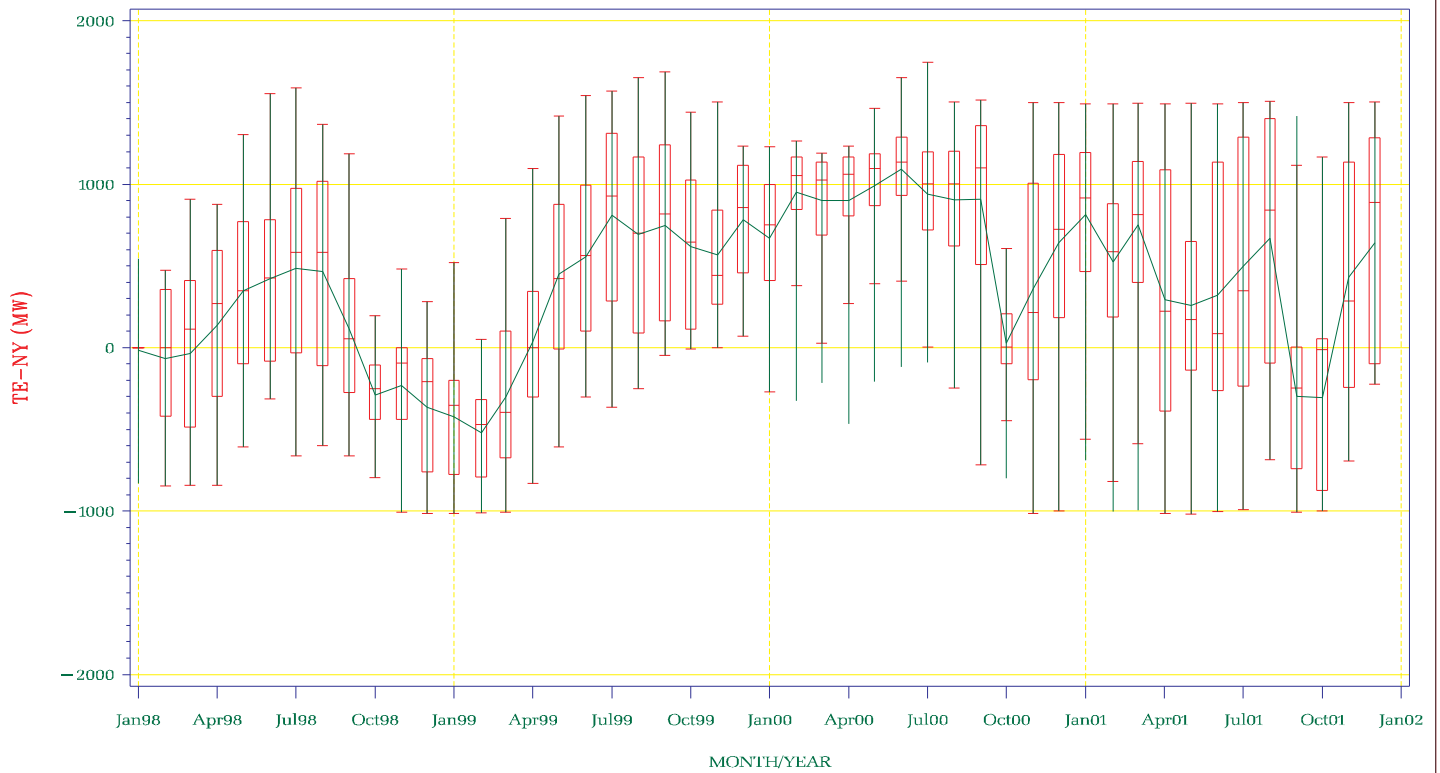


1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

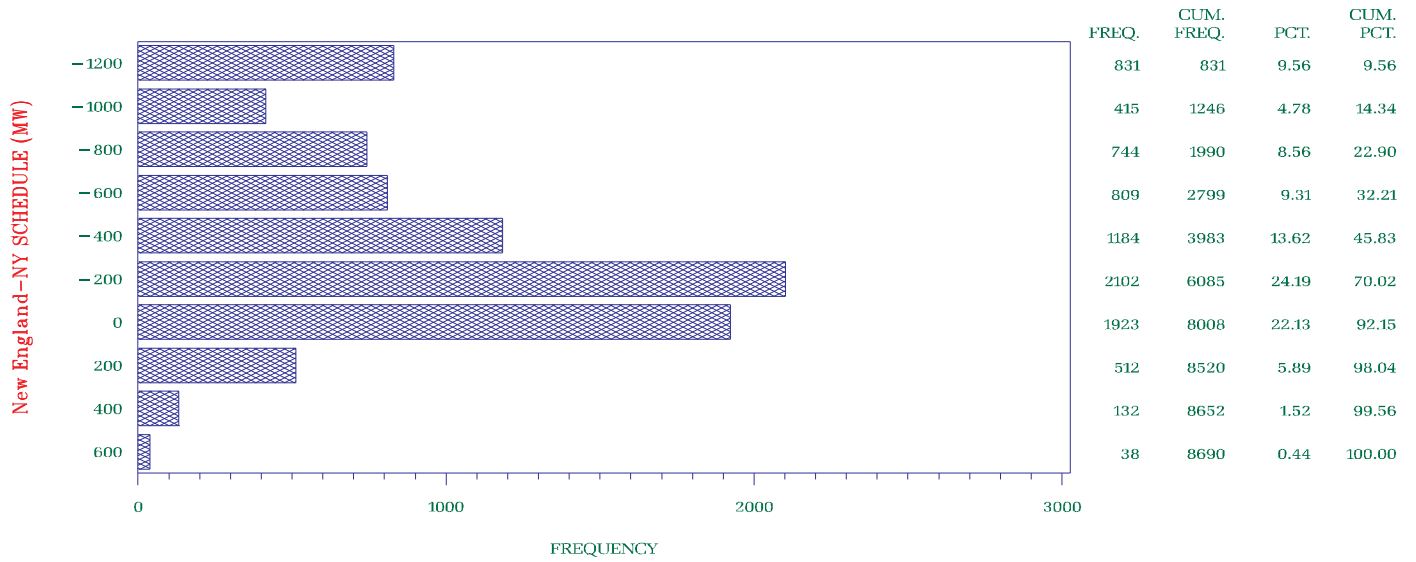
TE – NY

Chateauguay – Massena



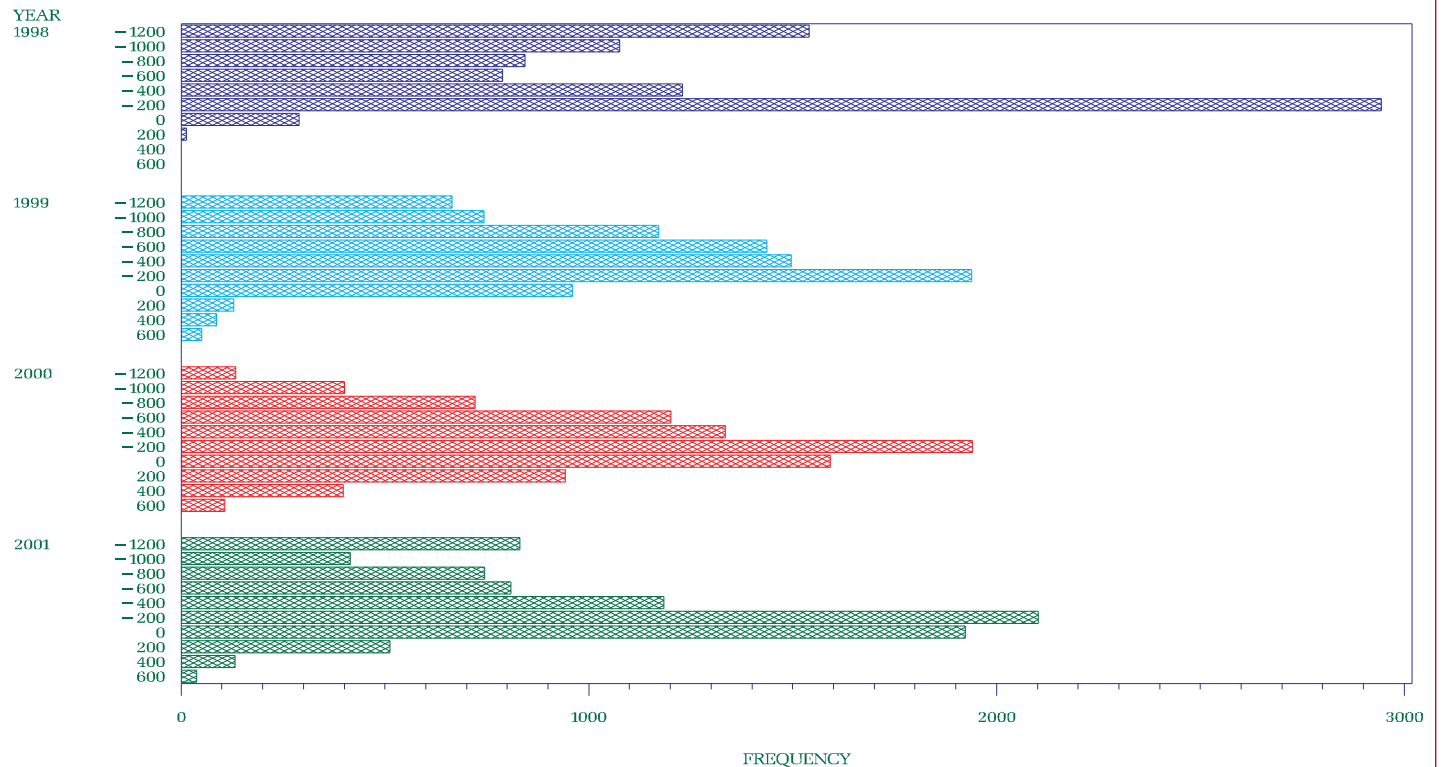
NYISO Frequency Interface Flow For January – December 2001

New England – NY SCHEDULE



NYISO Frequency Interface Flow For January 1998 – December 2001

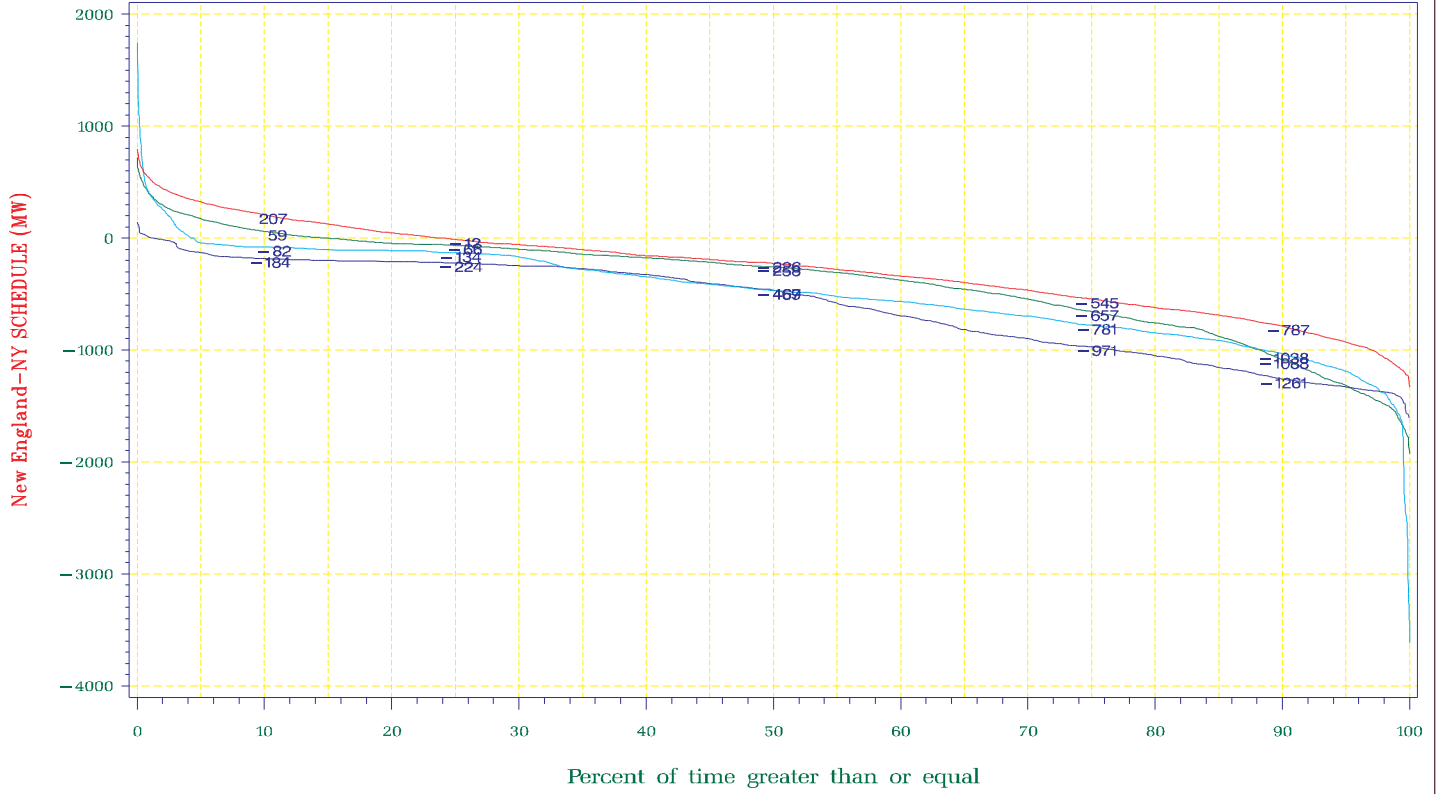
New England – NY SCHEDULE



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

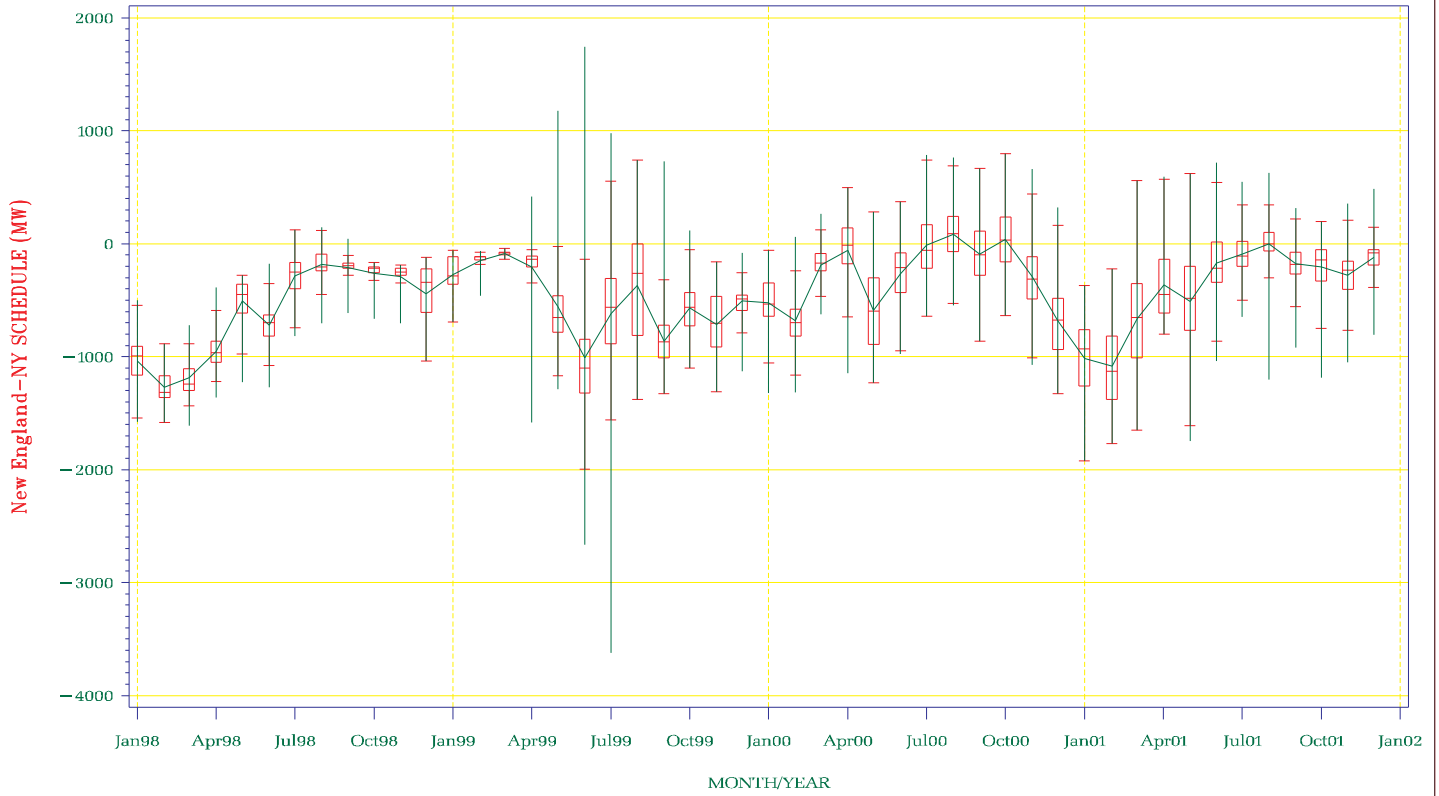
New England – NY SCHEDULE



1998 1999 2000 2001

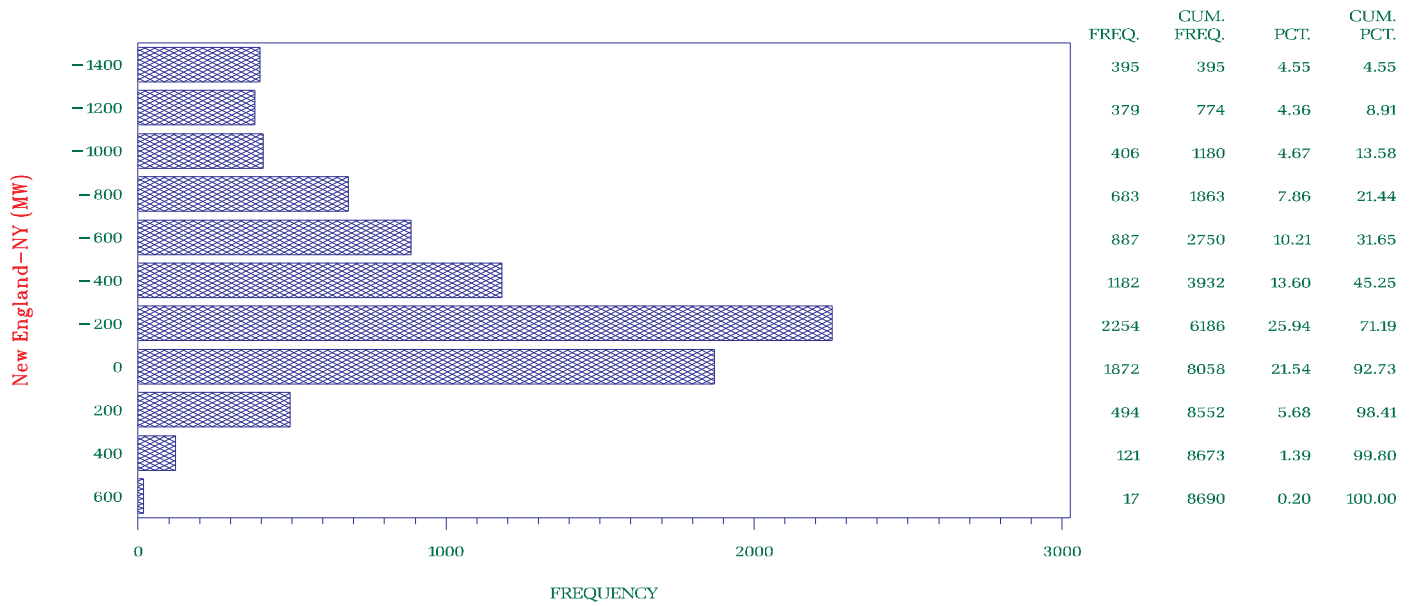
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

New England – NY SCHEDULE



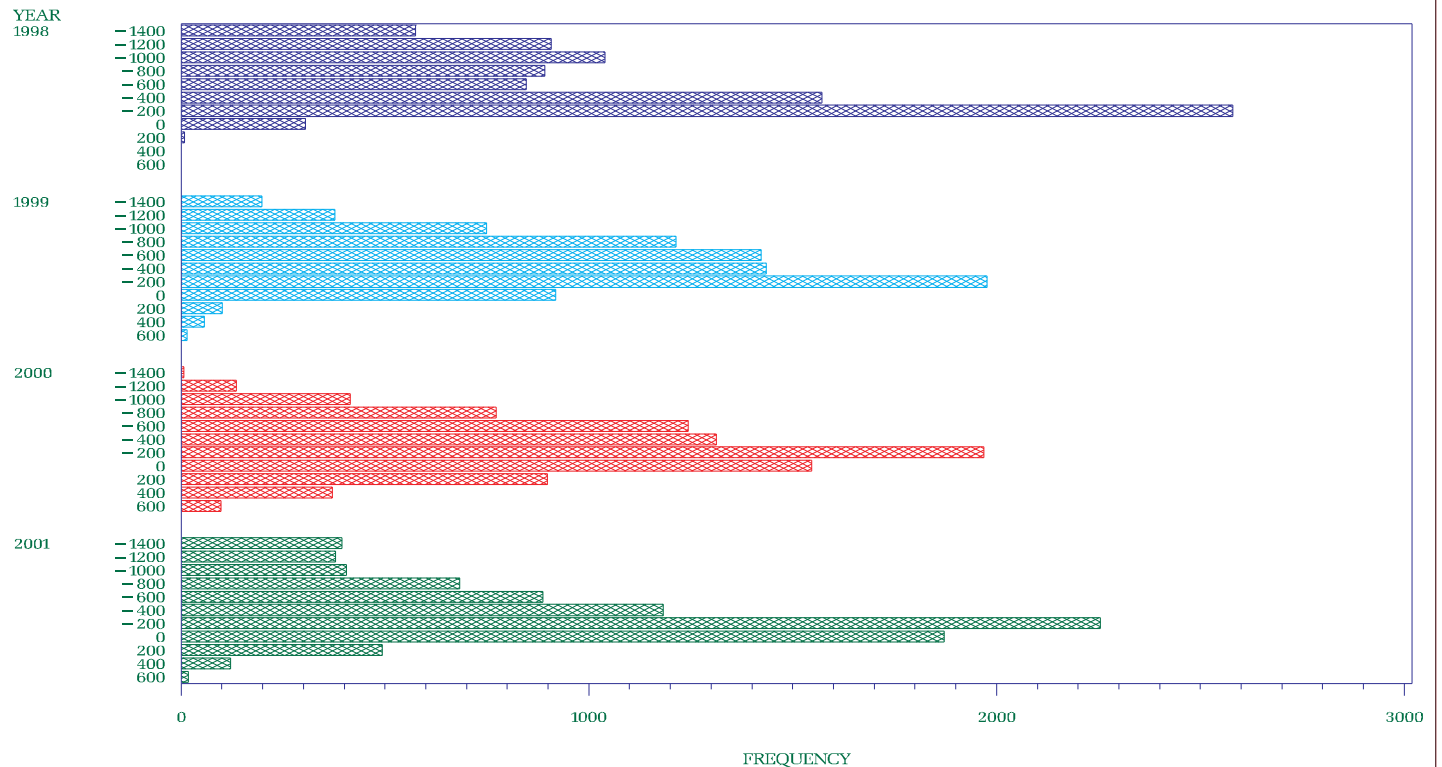
NYISO Frequency Interface Flow For January – December 2001

New England – NY



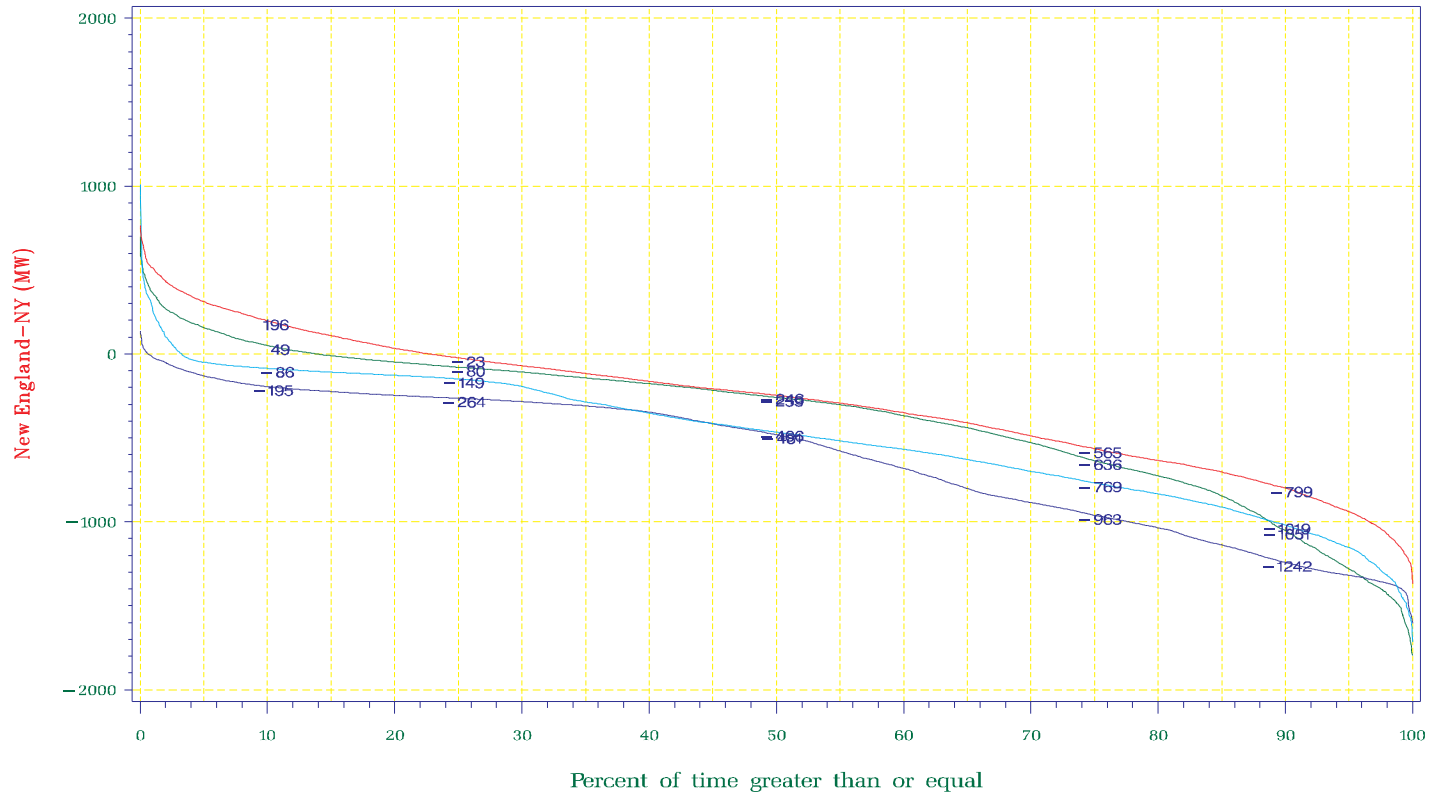
NYISO Frequency Interface Flow For January 1998 – December 2001

New England – NY



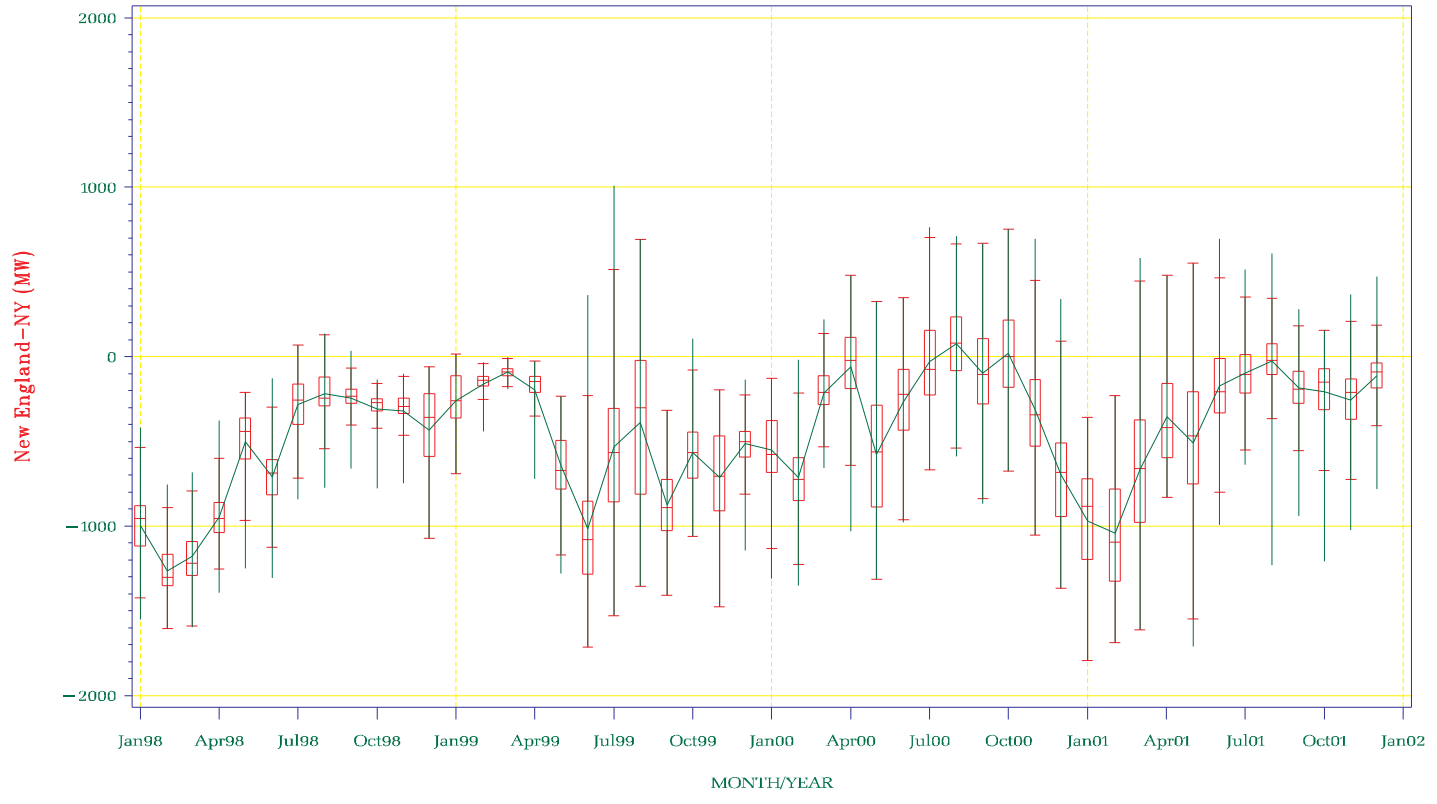
1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001
New England – NY



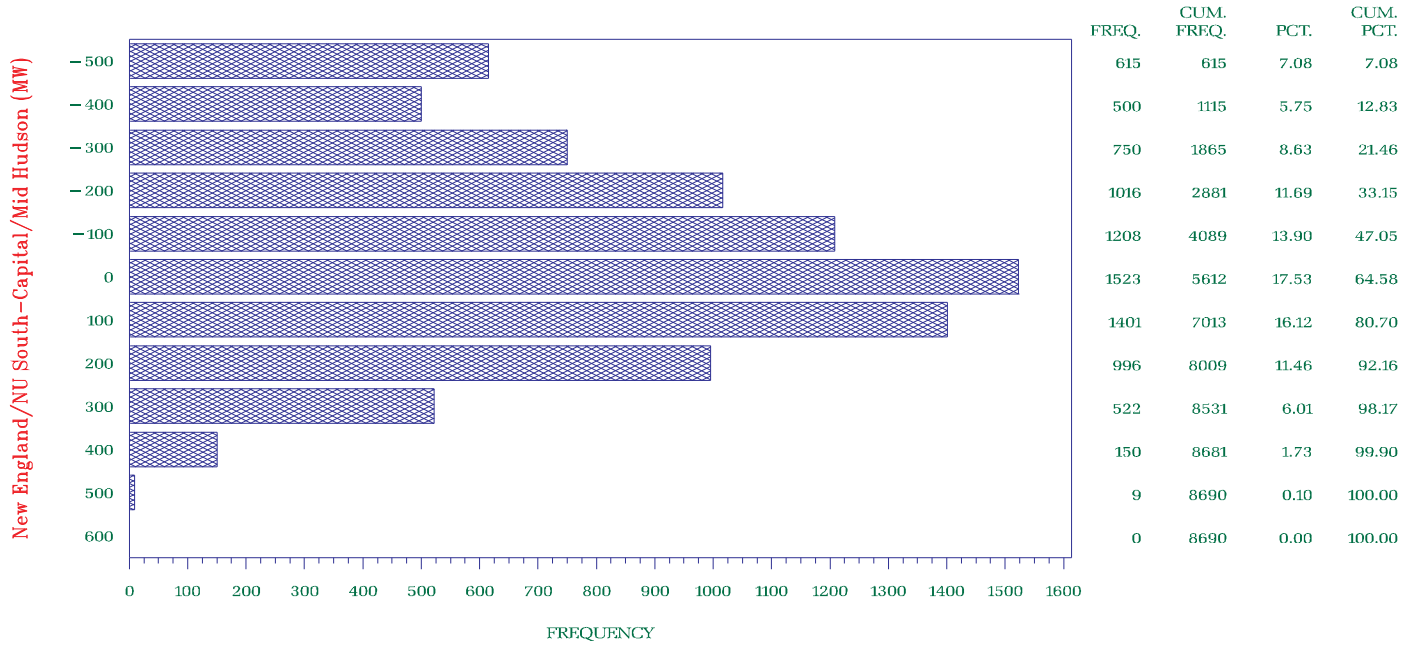
1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001
New England – NY



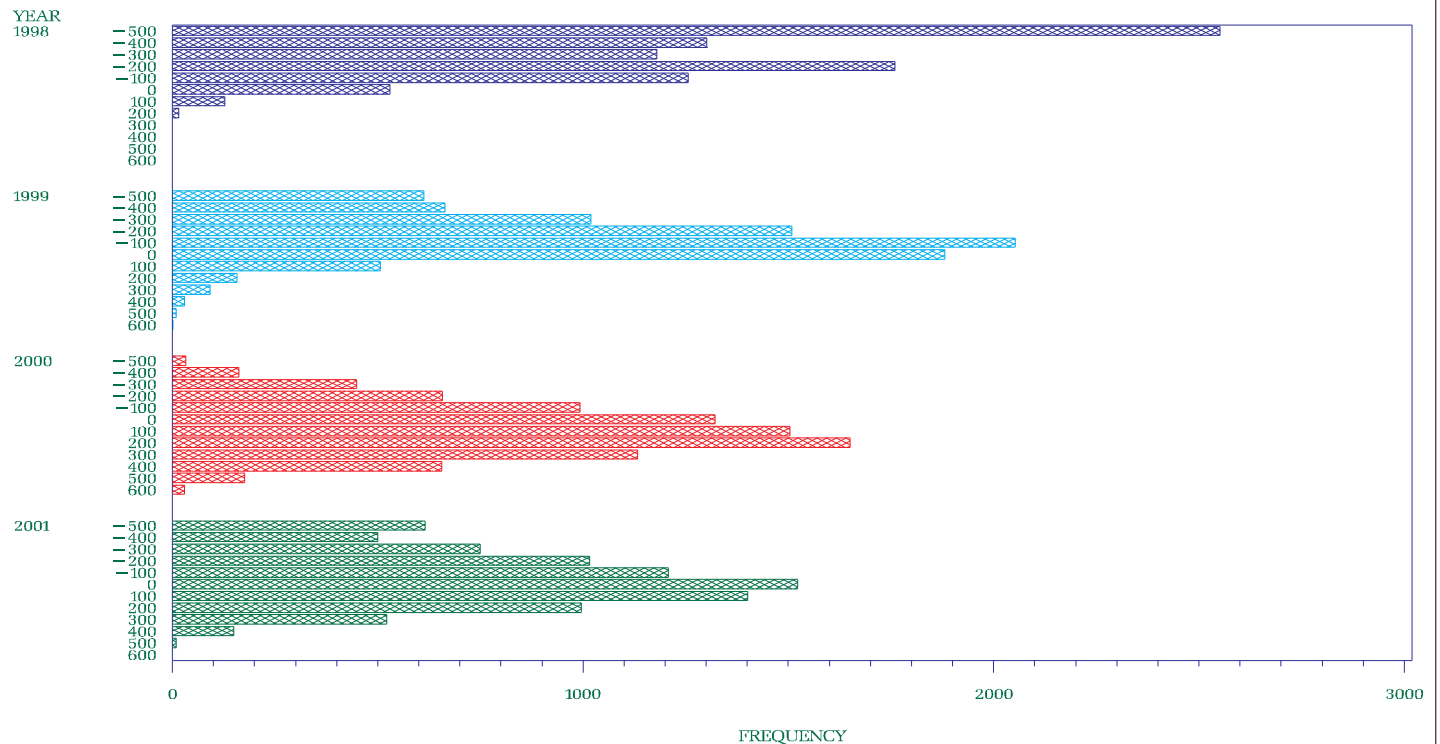
NYISO Frequency Interface Flow For January – December 2001

New England/NU South – Capital/Mid Hudson
398 Long Mt. – Pleasant Valley



NYISO Frequency Interface Flow For January 1998 – December 2001

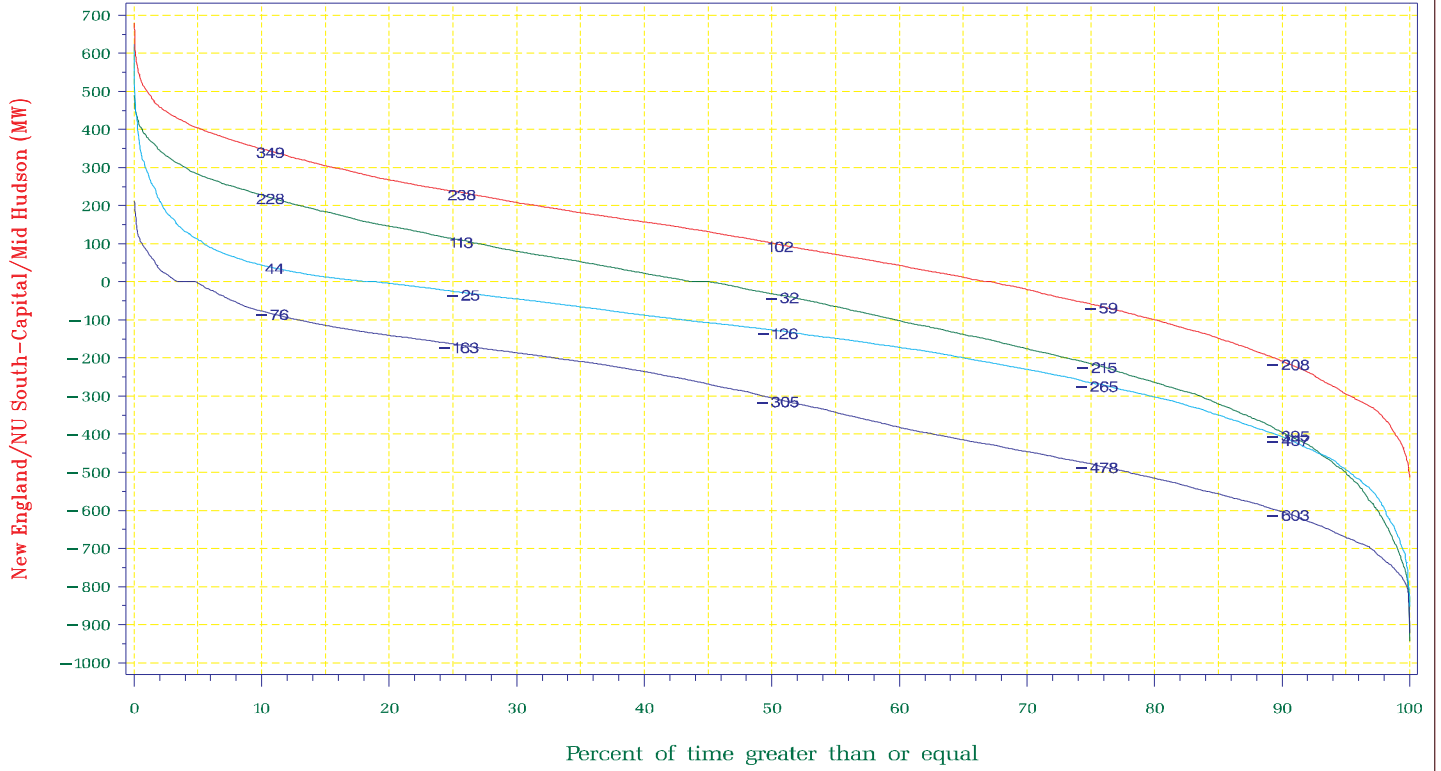
New England/NU South – Capital/Mid Hudson
398 Long Mt. – Pleasant Valley



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

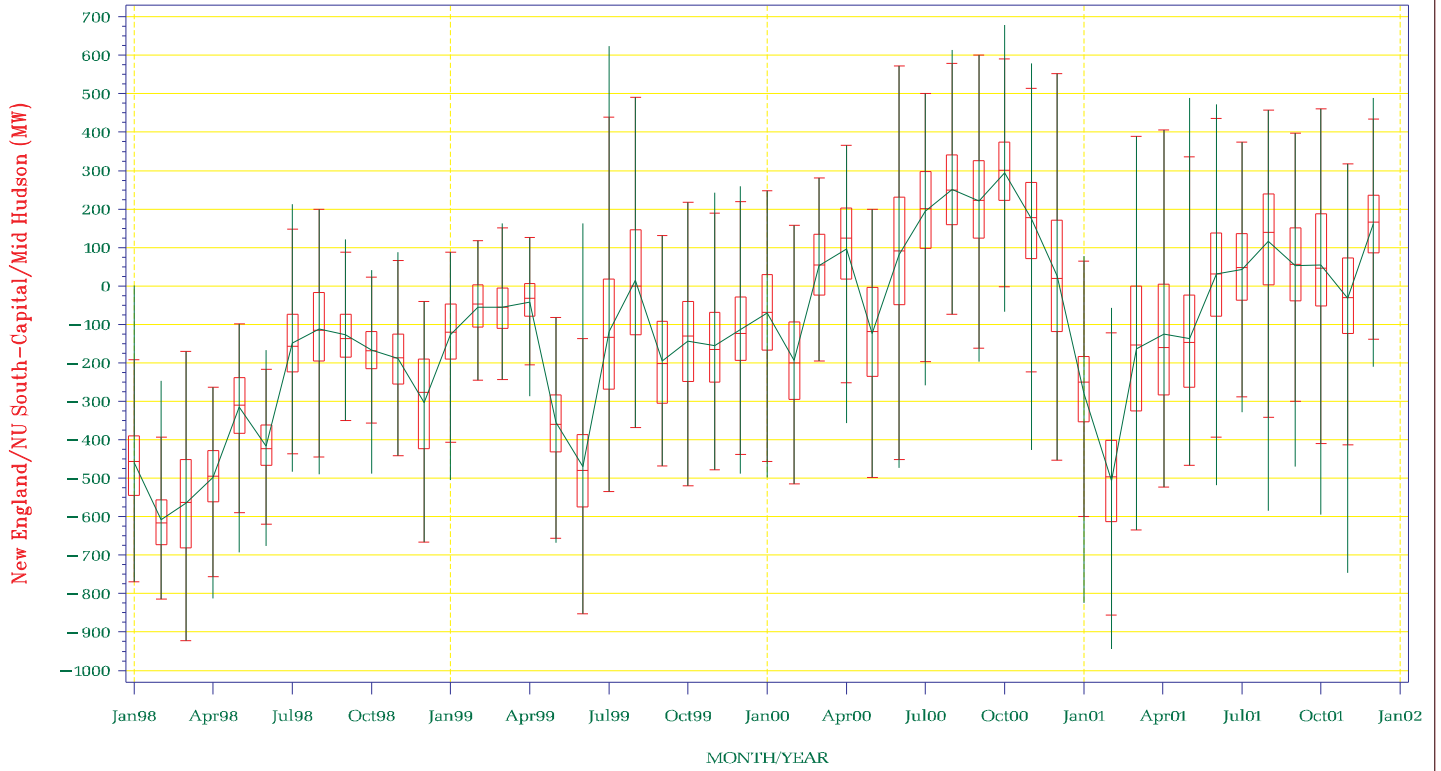
New England/NU South – Capital/Mid Hudson
398 Long Mt. – Pleasant Valley



1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

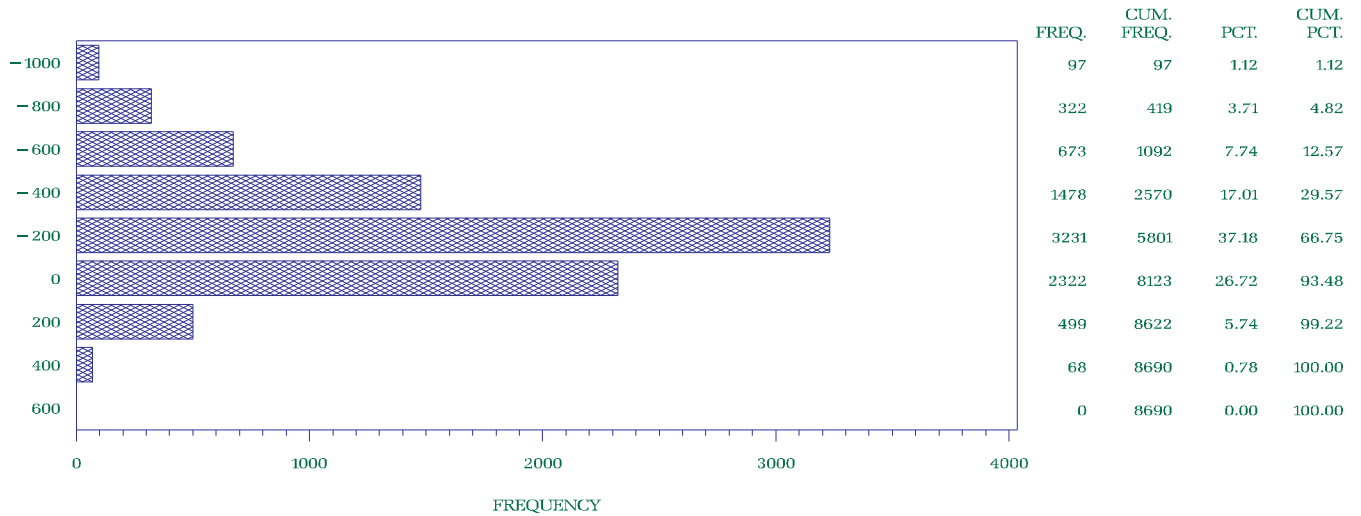
New England/NU South – Capital/Mid Hudson
398 Long Mt. – Pleasant Valley



NYISO Frequency Interface Flow For January – December 2001

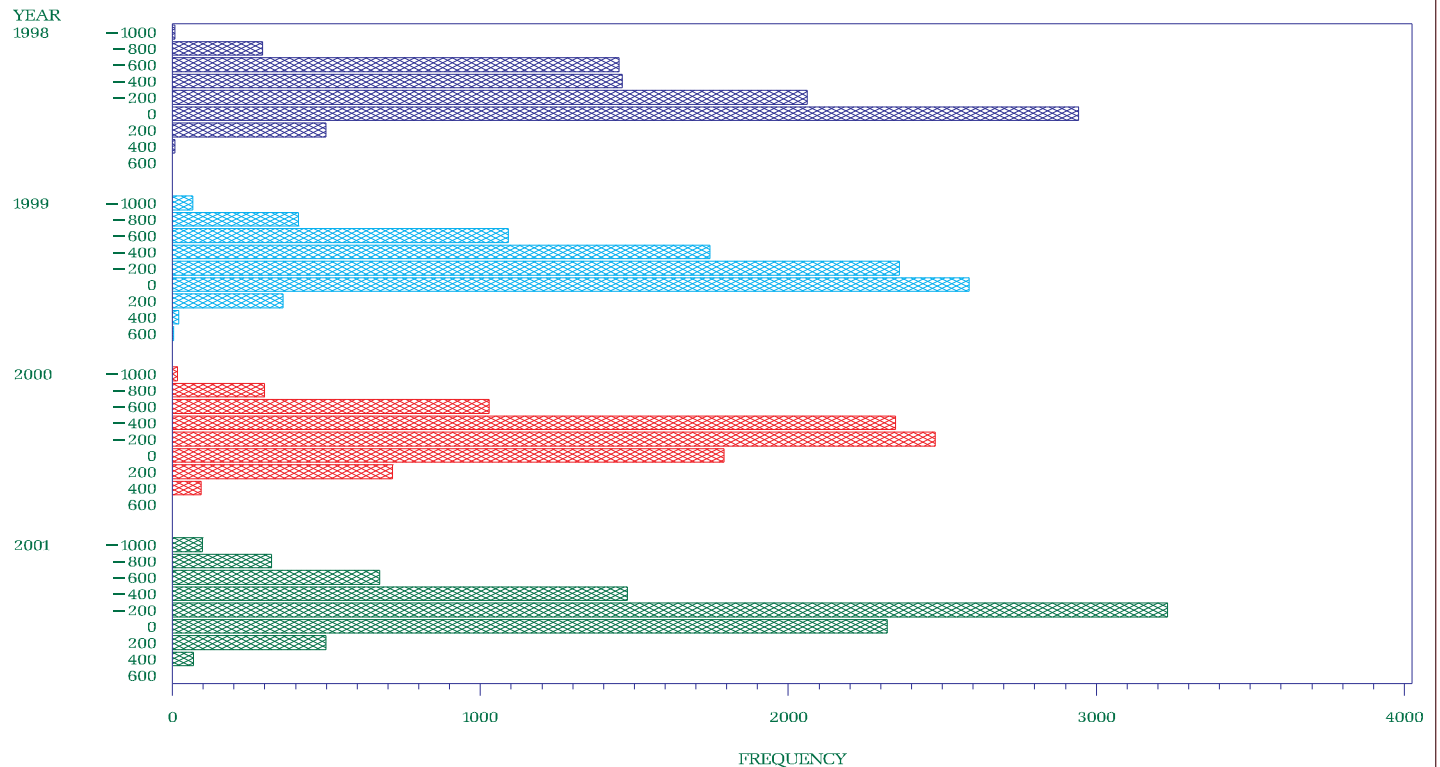
New England/Vt/NE/NU South – Capital/Mid Hudson

New England/Vt/NE/NU South – Capital/Mid Hudson (MW)



NYISO Frequency Interface Flow For January 1998 – December 2001

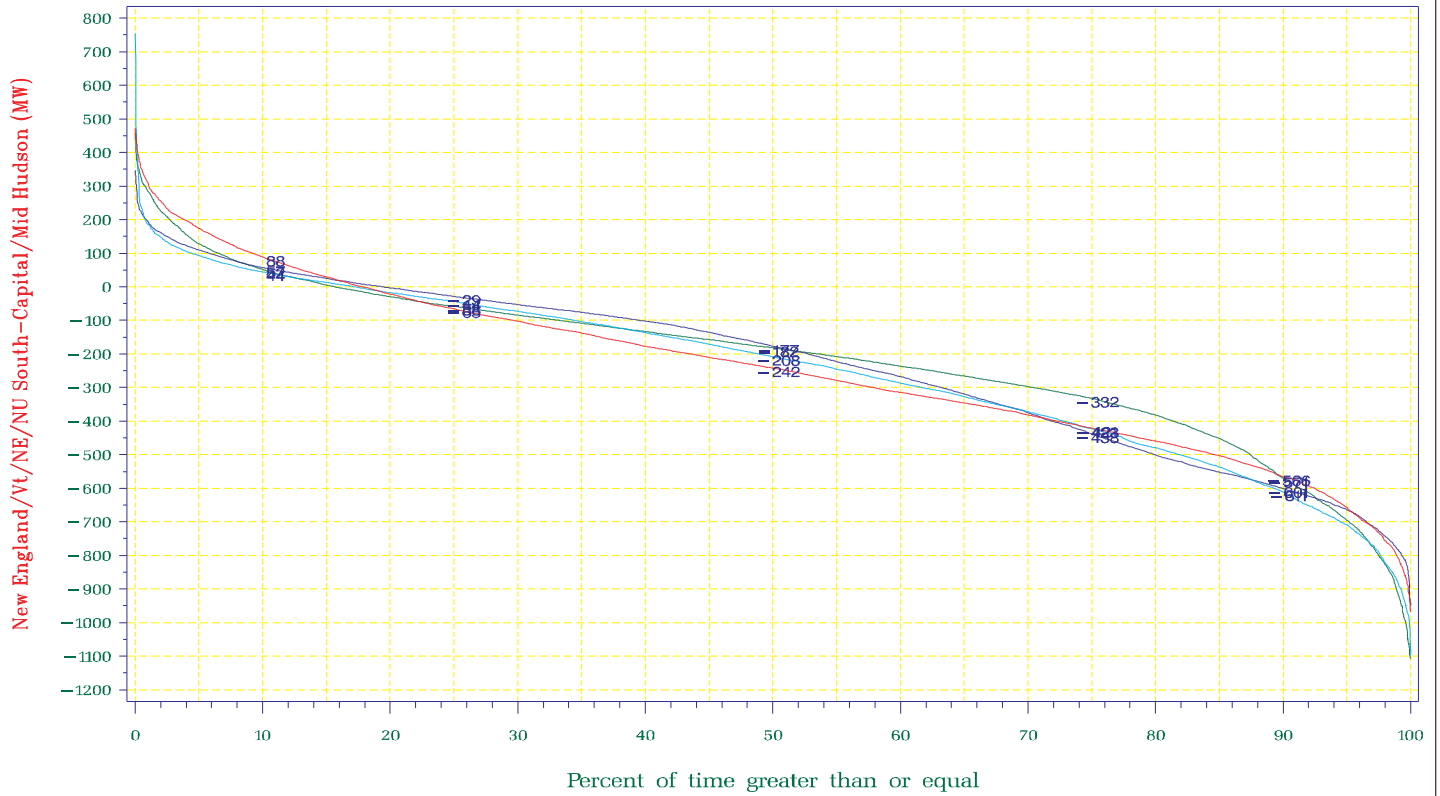
New England/Vt/NE/NU South – Capital/Mid Hudson



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

New England/Vt/NE/NU South – Capital/Mid Hudson



1998 1999 2000 2001

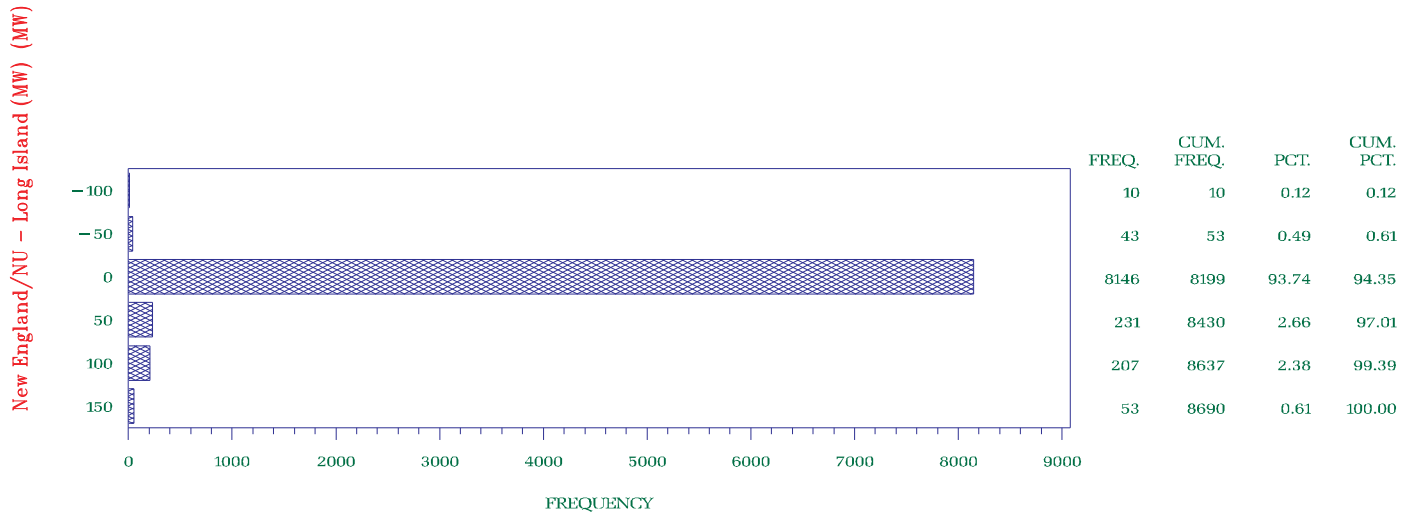
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

New England/Vt/NE/NU South – Capital/Mid Hudson



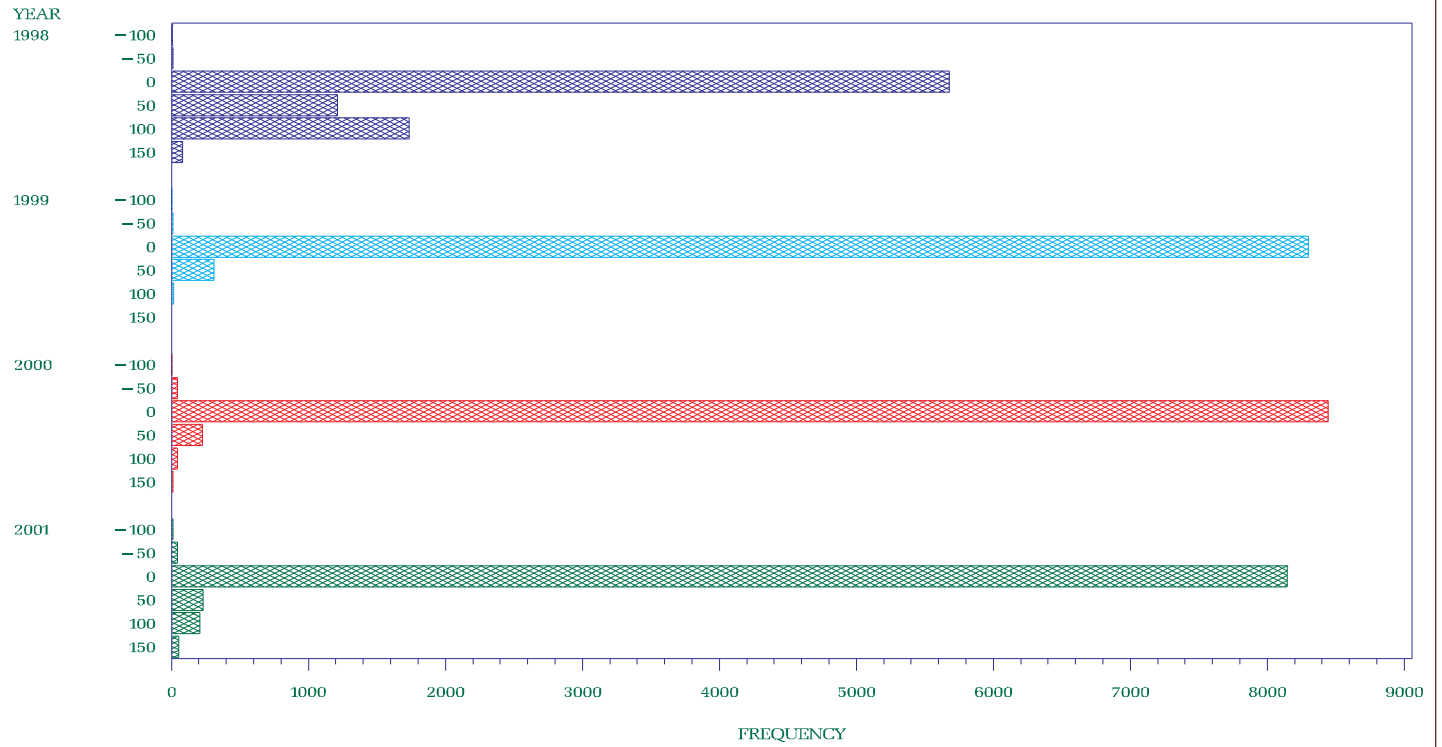
NYISO Frequency Interface Flow For January – December 2001

New England/NU – Long Island
1385 Northport – Norwalk Harbor



NYISO Frequency Interface Flow For January 1998 – December 2001

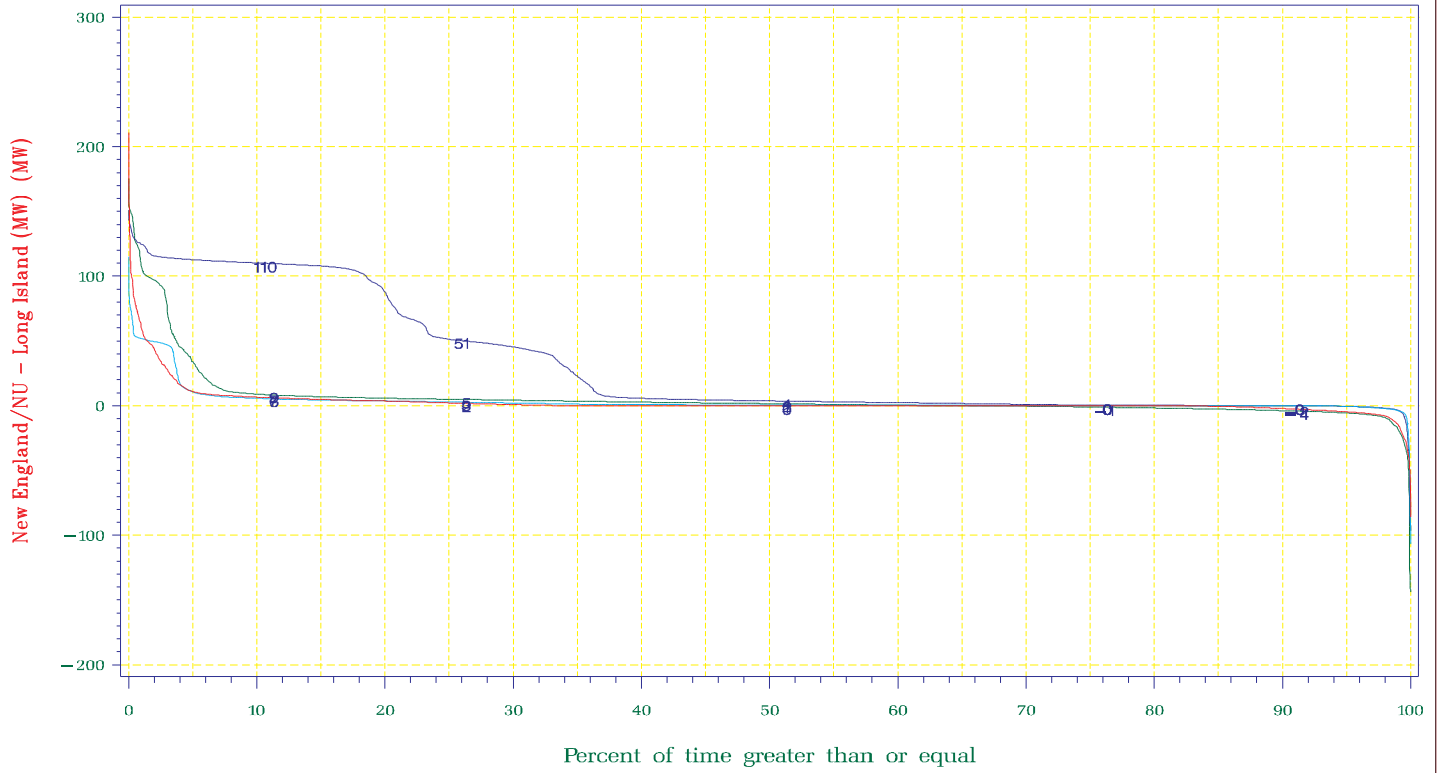
New England/NU – Long Island
1385 Northport – Norwalk Harbor



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

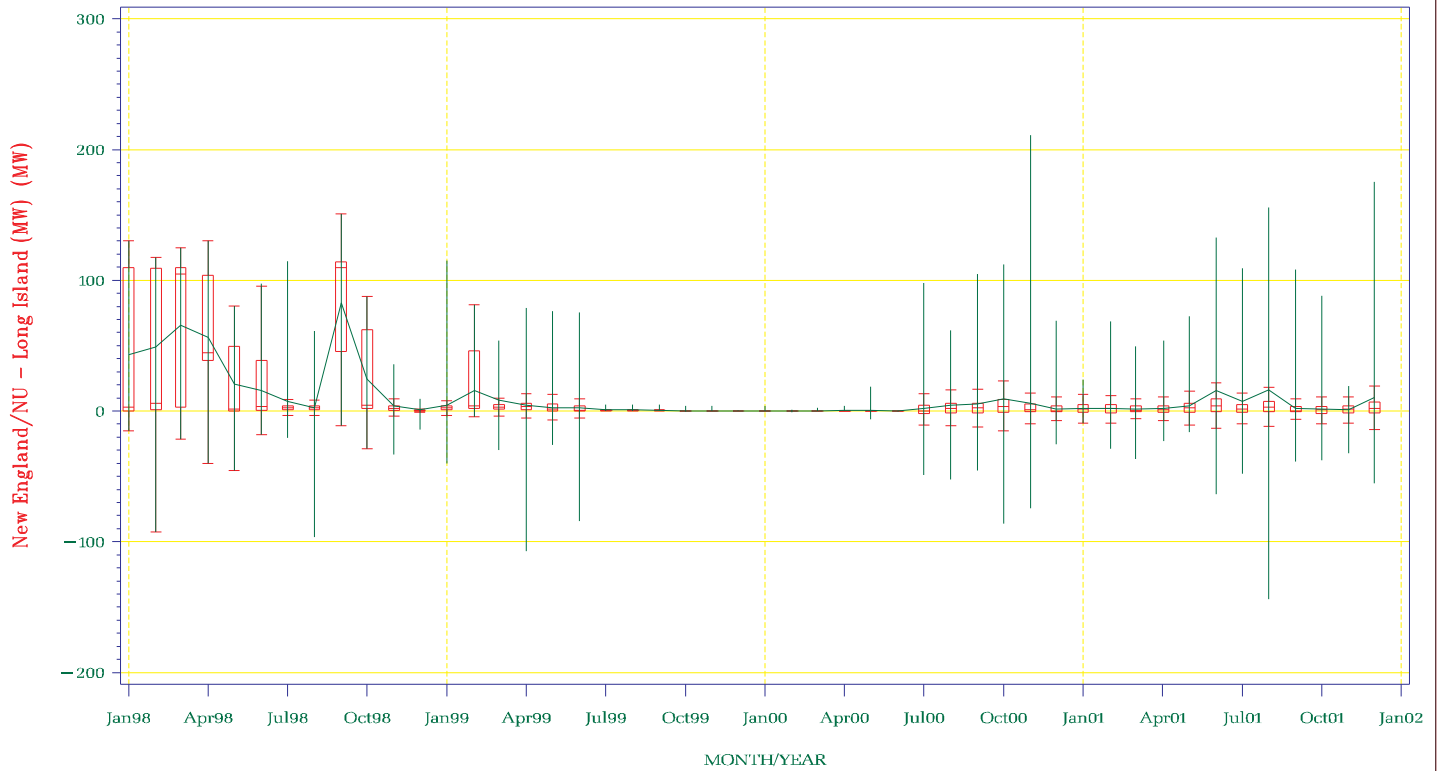
New England/NU – Long Island
1385 Northport – Norwalk Harbor



1998 1999 2000 2001

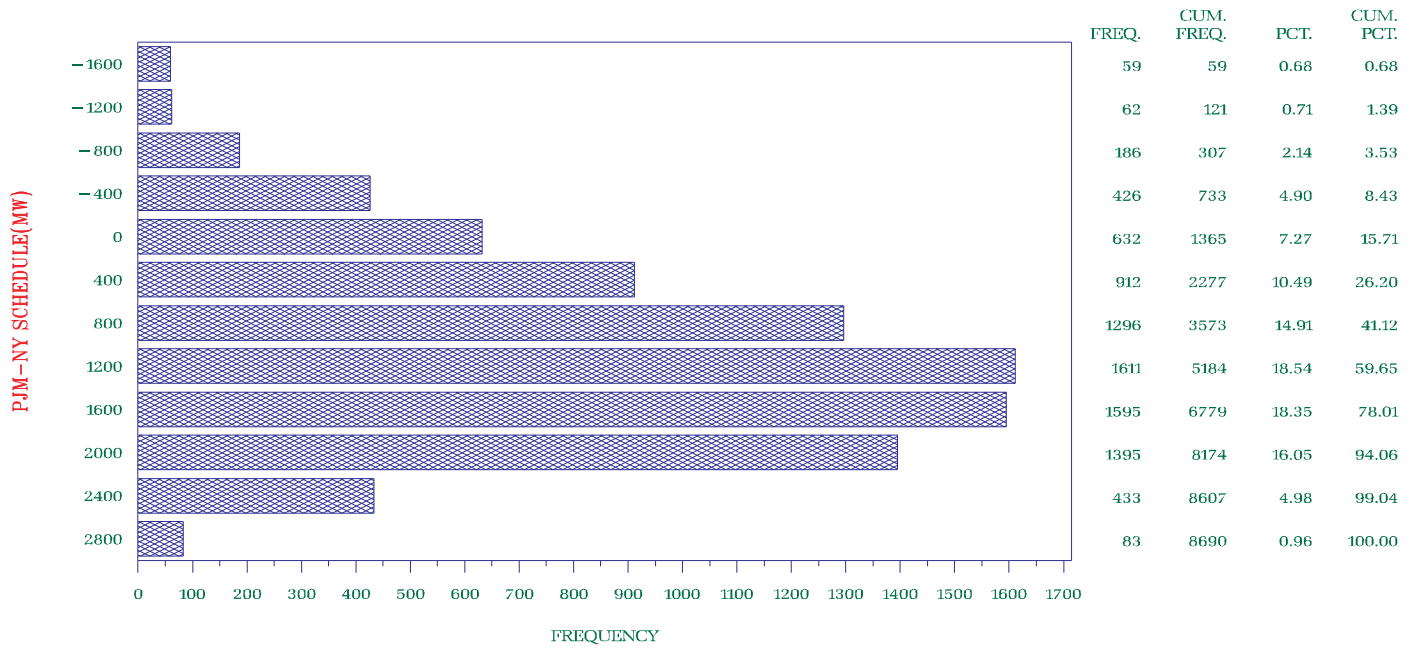
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

New England/NU – Long Island
1385 Northport – Norwalk Harbor



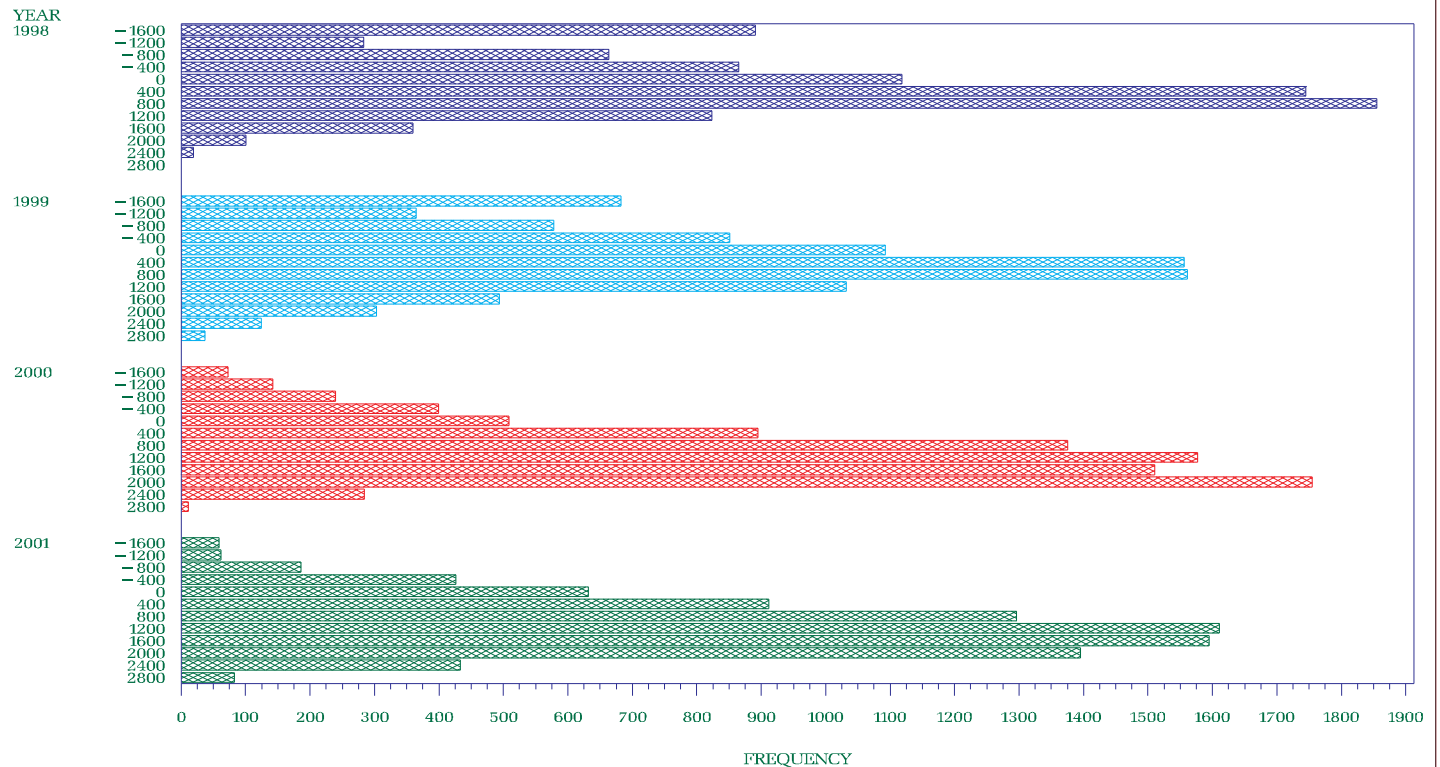
NYISO Frequency Interface Flow For January – December 2001

PJM – NY SCHEDULE



NYISO Frequency Interface Flow For January 1998 – December 2001

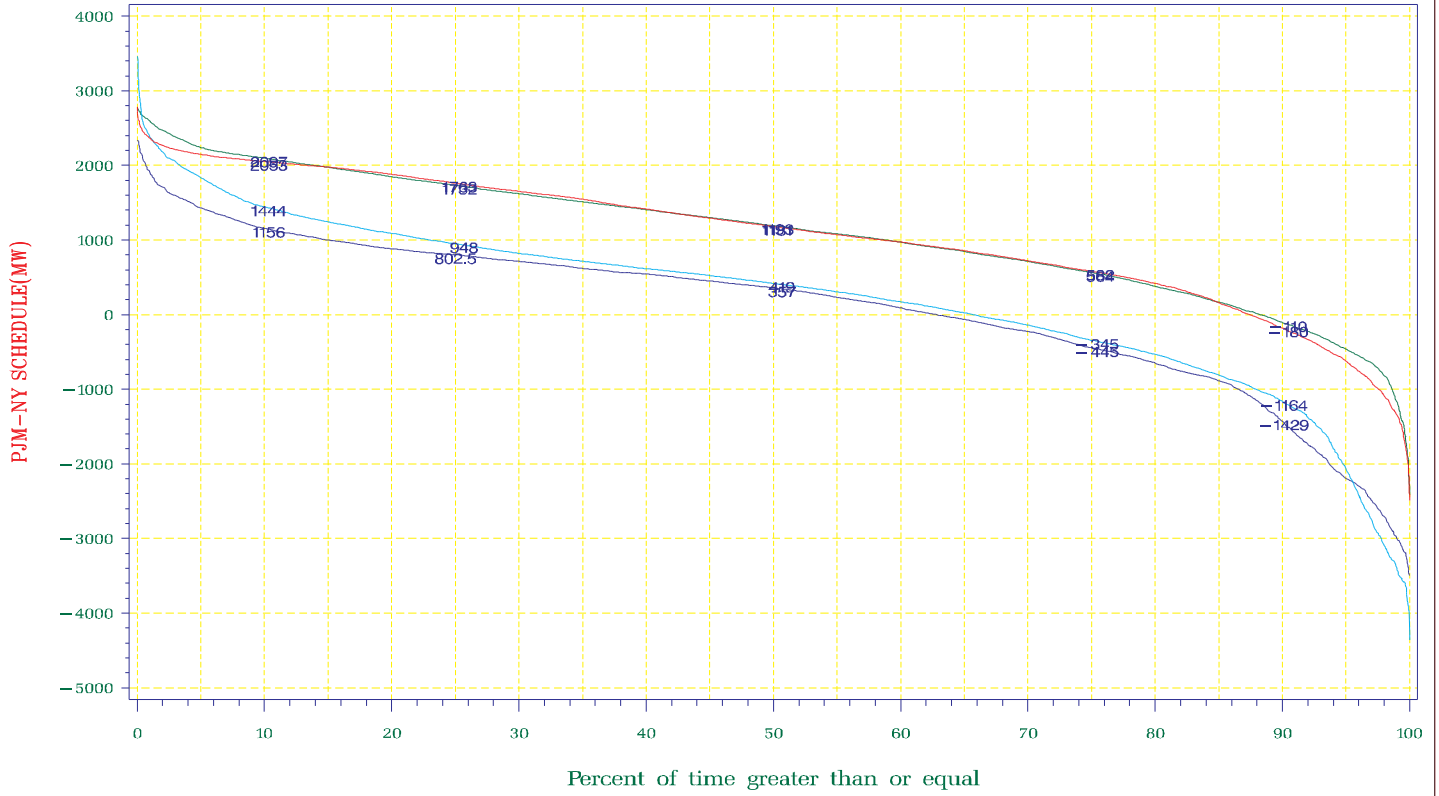
PJM – NY SCHEDULE



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

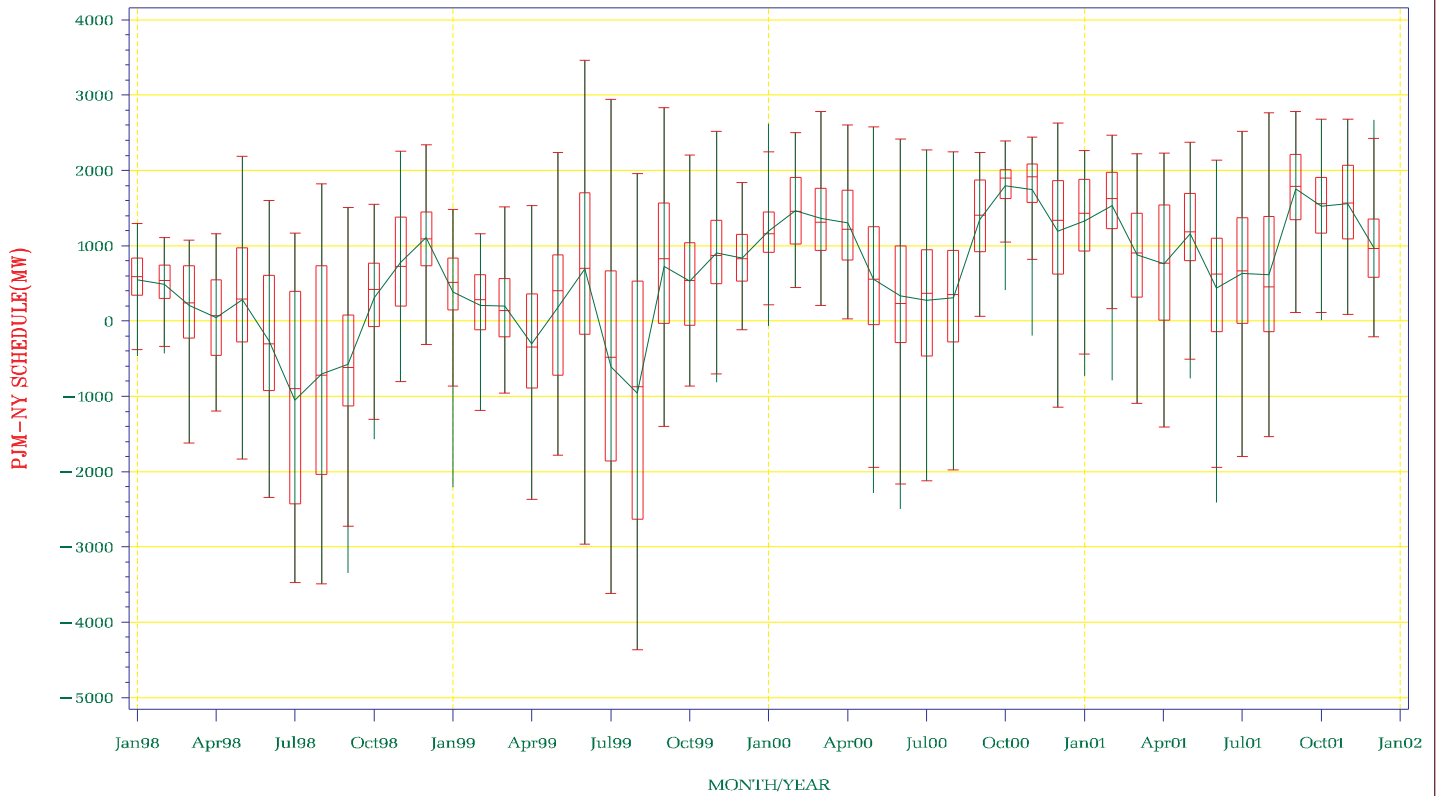
PJM – NY SCHEDULE



1998 1999 2000 2001

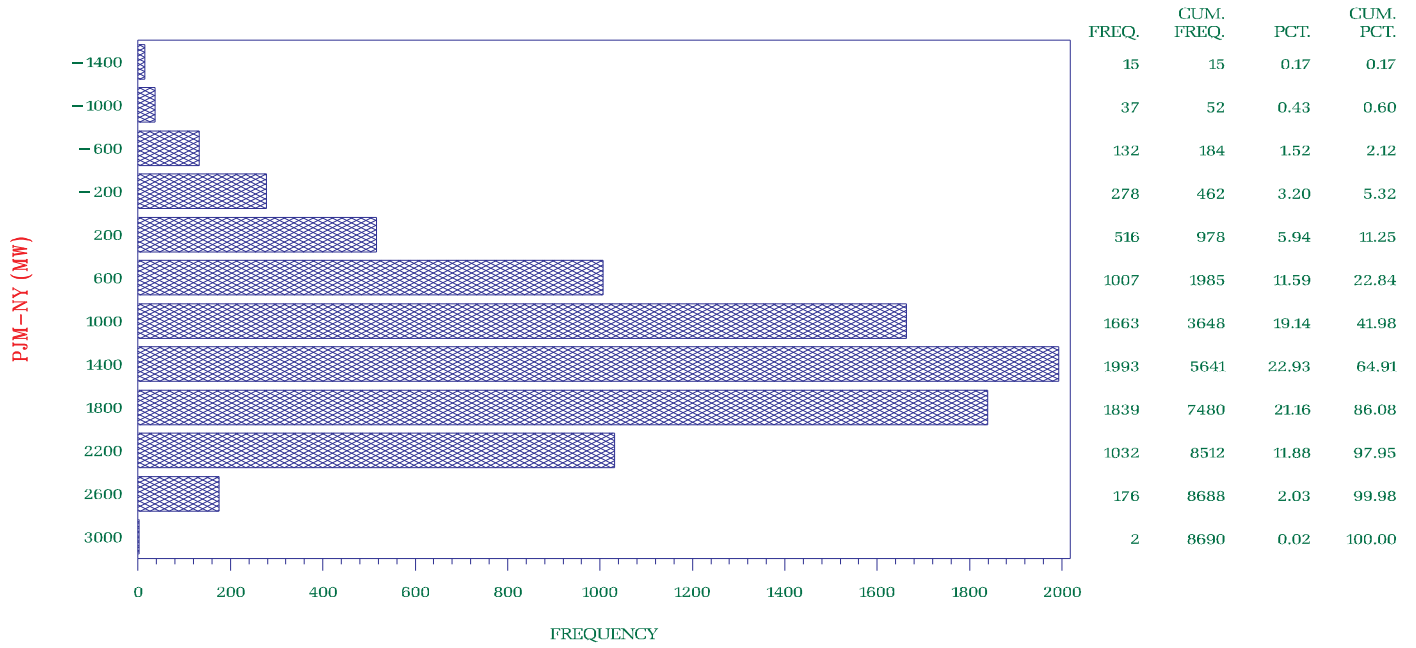
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

PJM – NY SCHEDULE



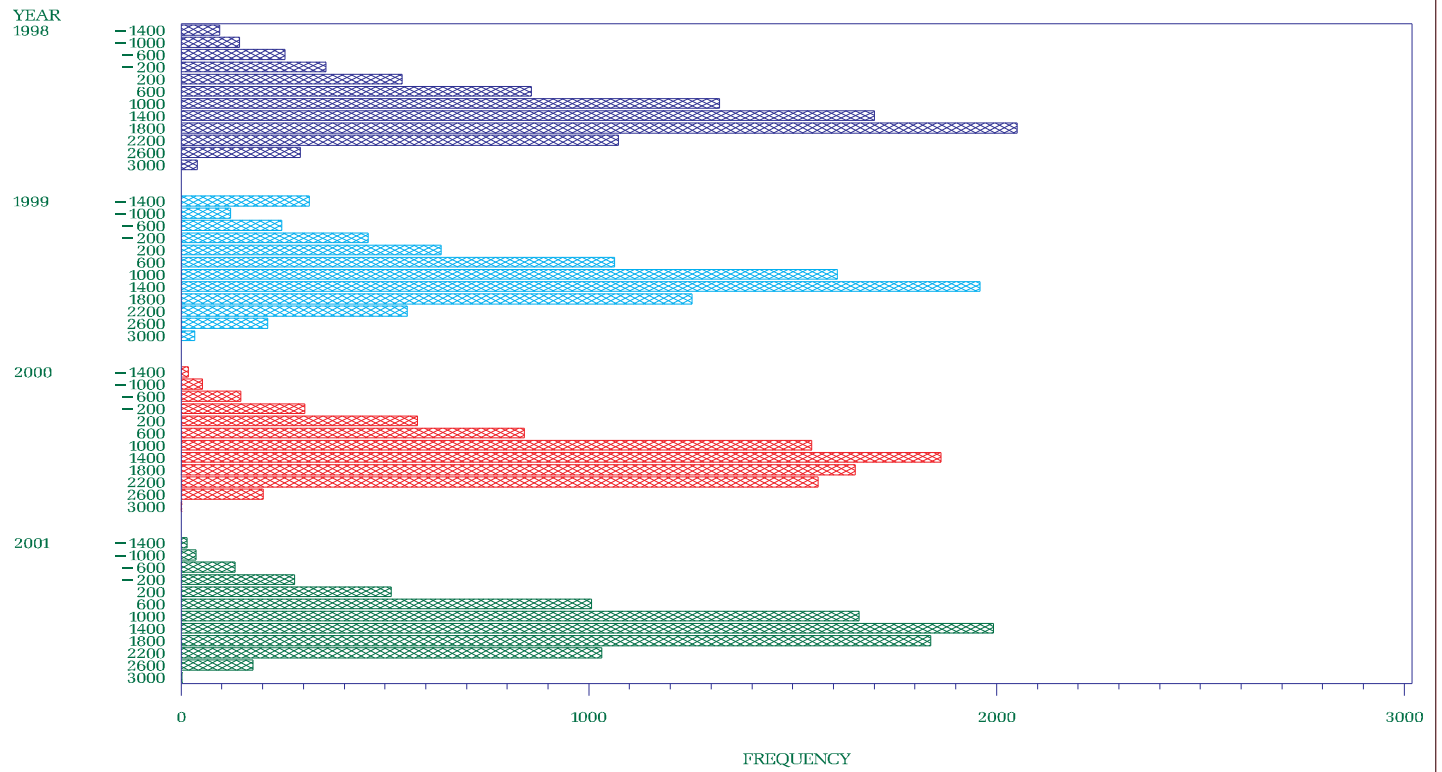
NYISO Frequency Interface Flow For January – December 2001

PJM – NY



NYISO Frequency Interface Flow For January 1998 – December 2001

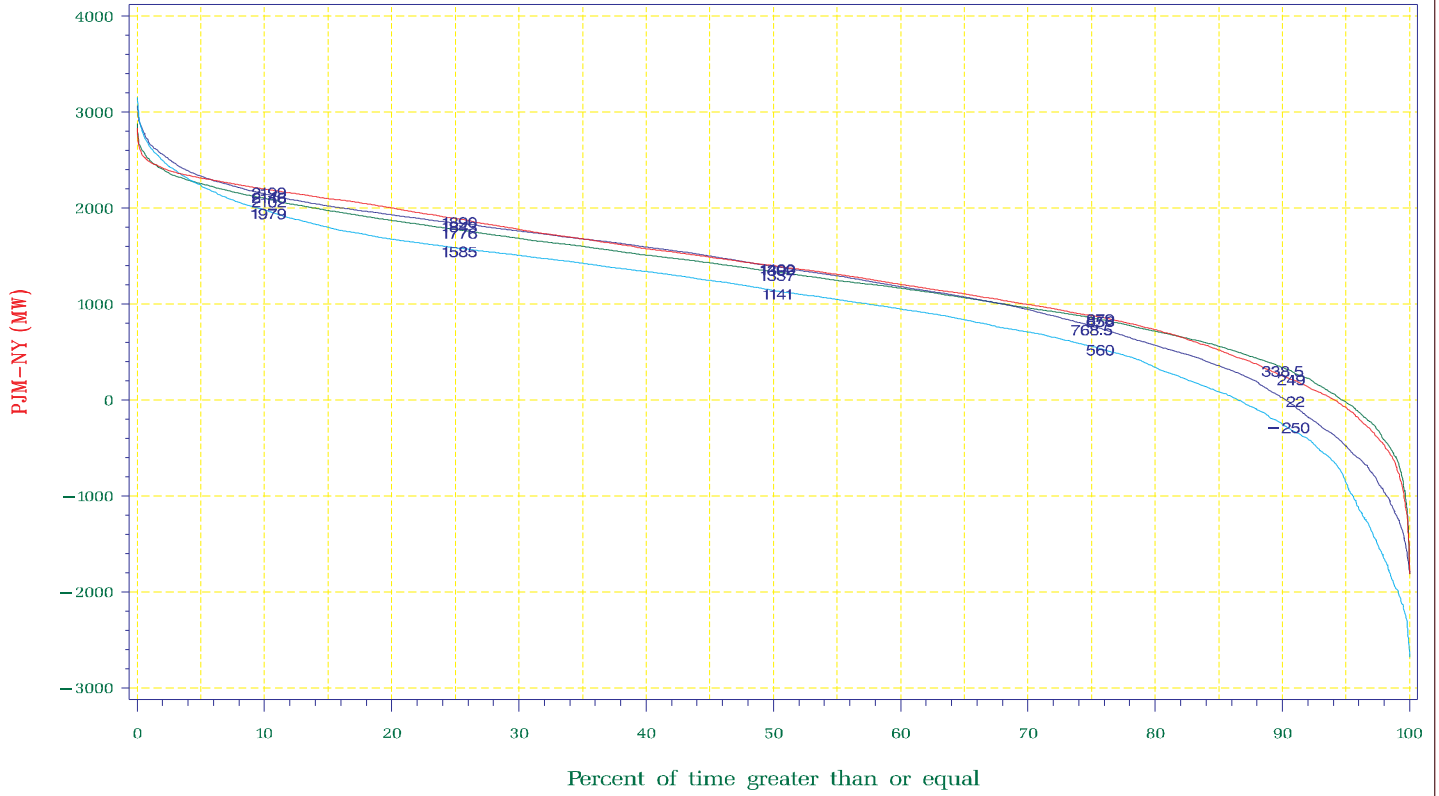
PJM – NY



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

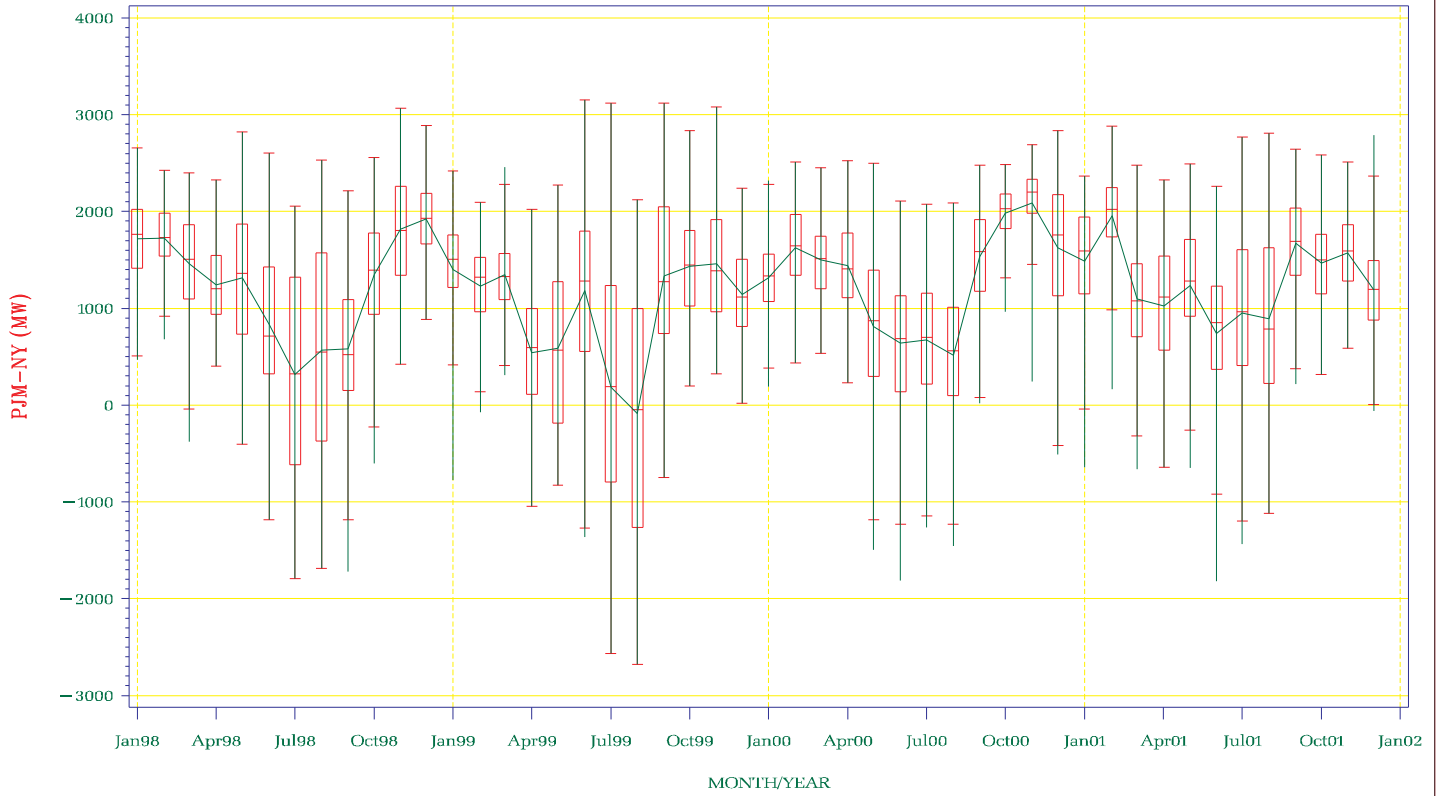
PJM – NY



1998 1999 2000 2001

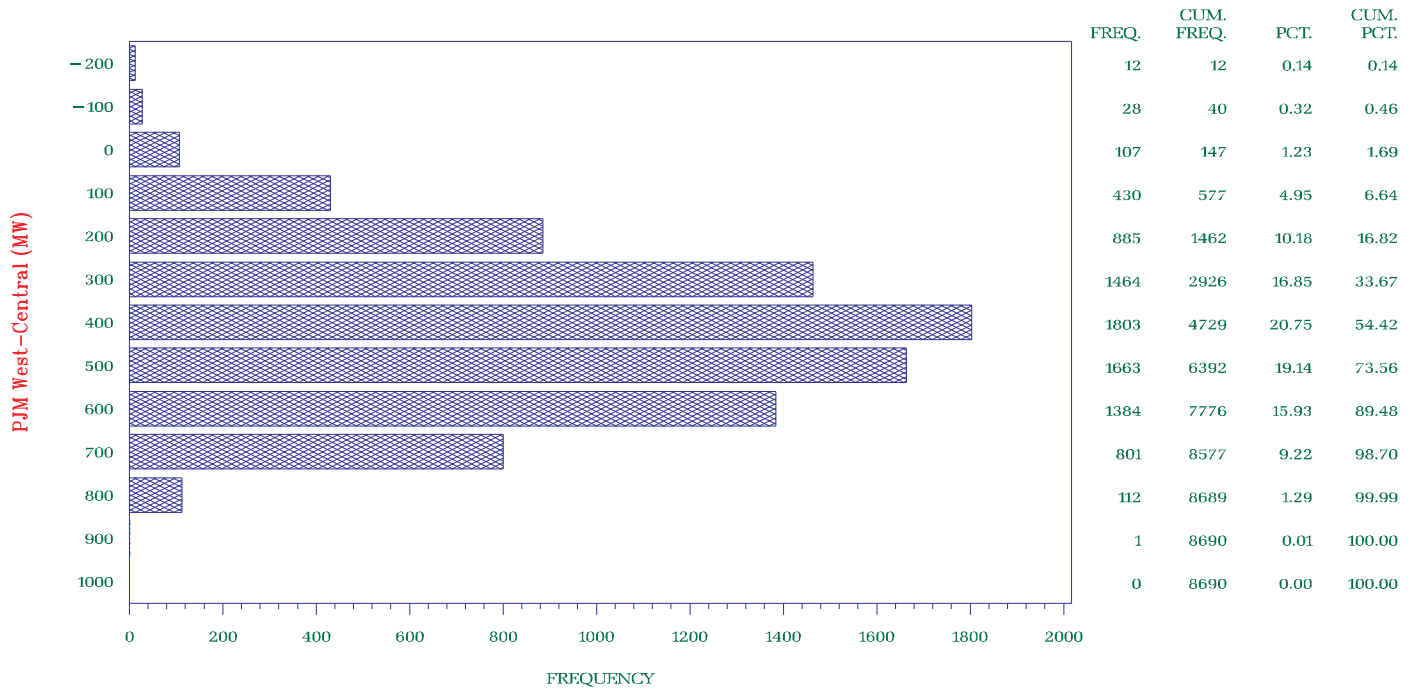
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

PJM – NY



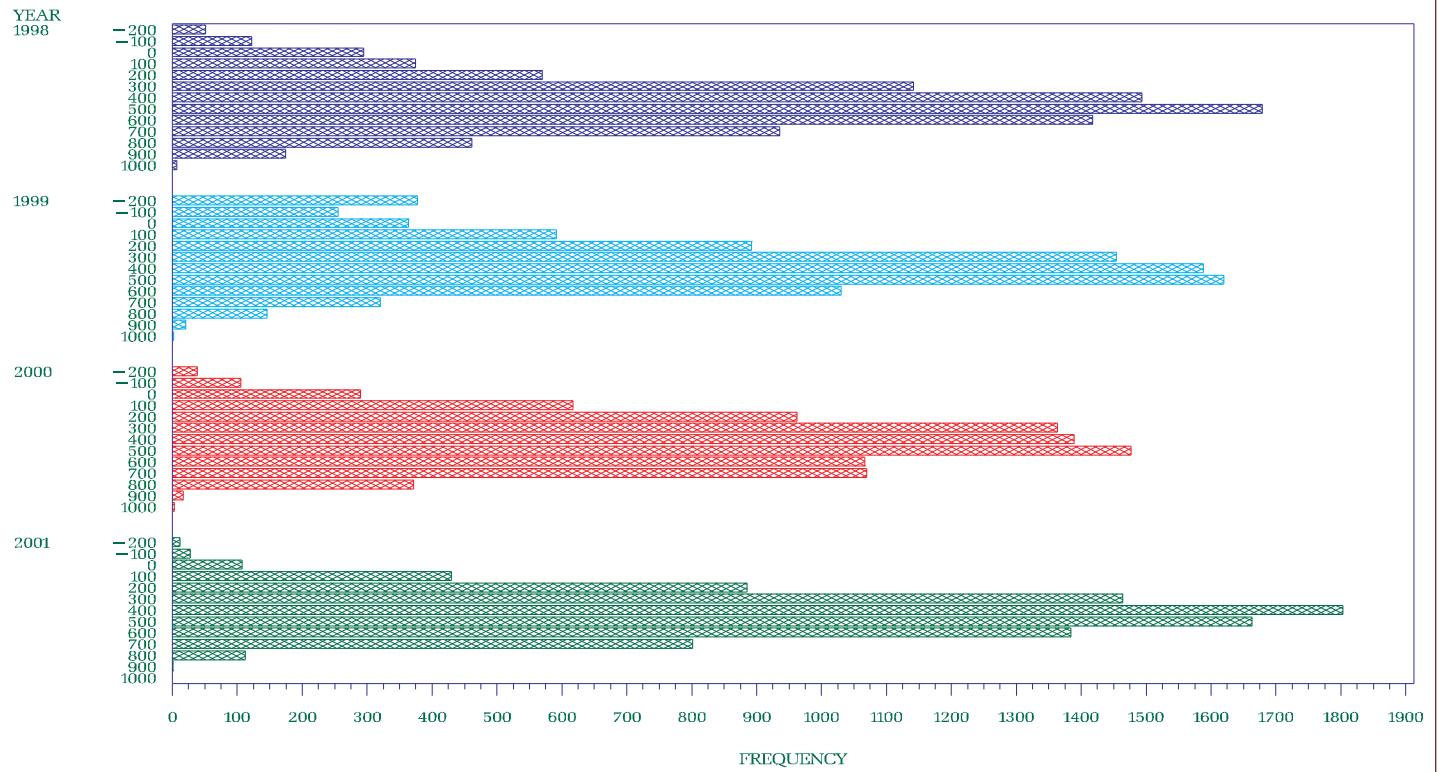
NYISO Frequency Interface Flow For January – December 2001

PJM West – Central



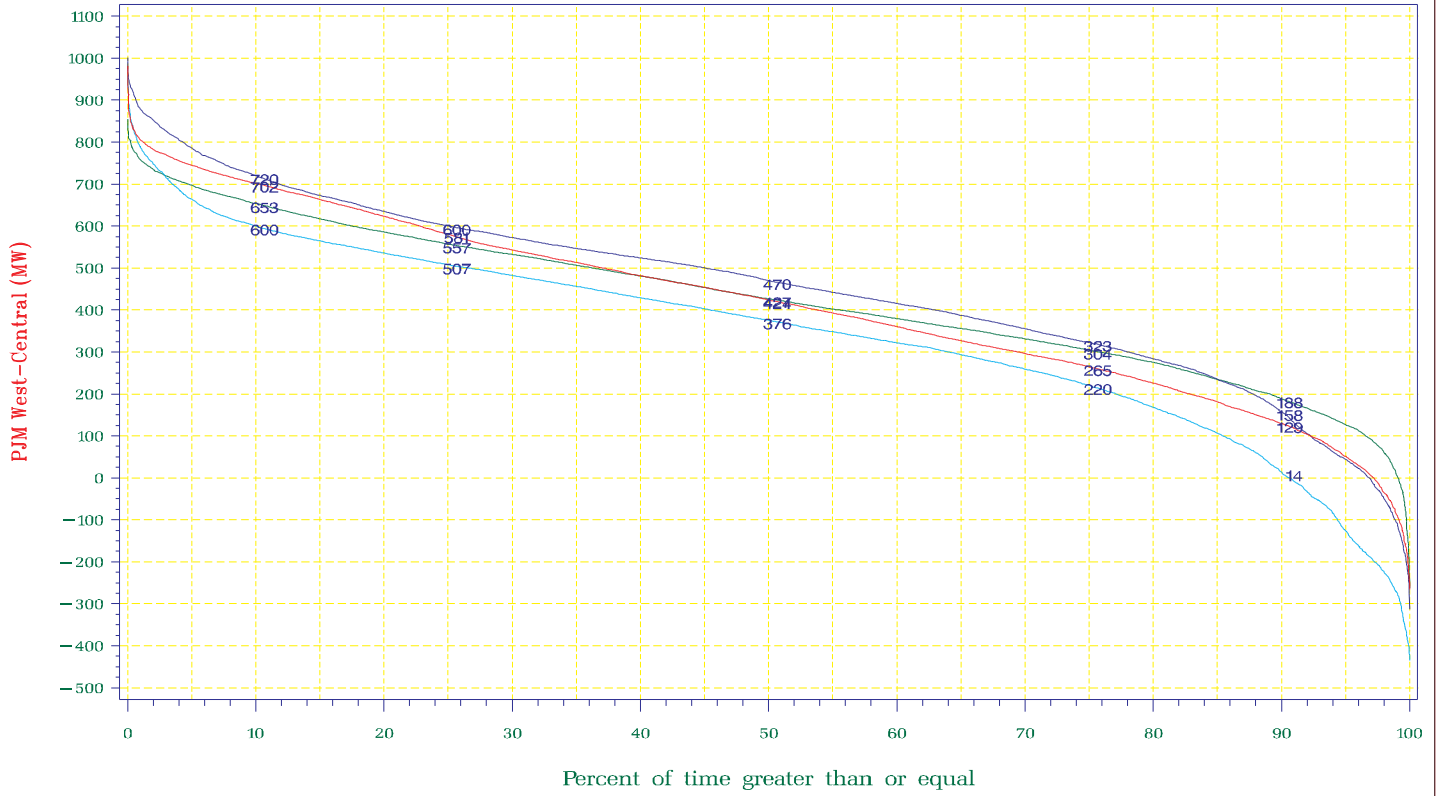
NYISO Frequency Interface Flow For January 1998 – December 2001

PJM West – Central



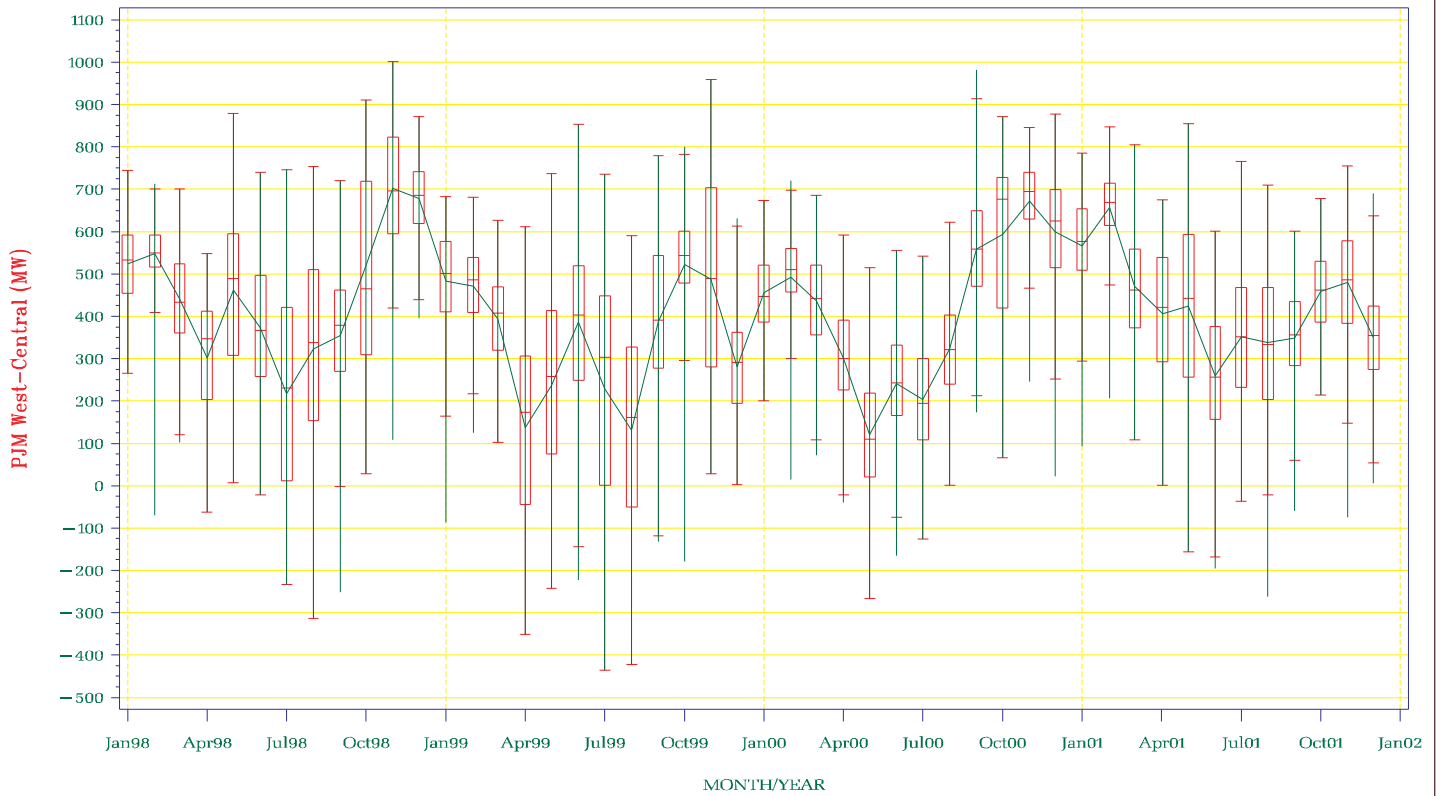
1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001
PJM West – Central



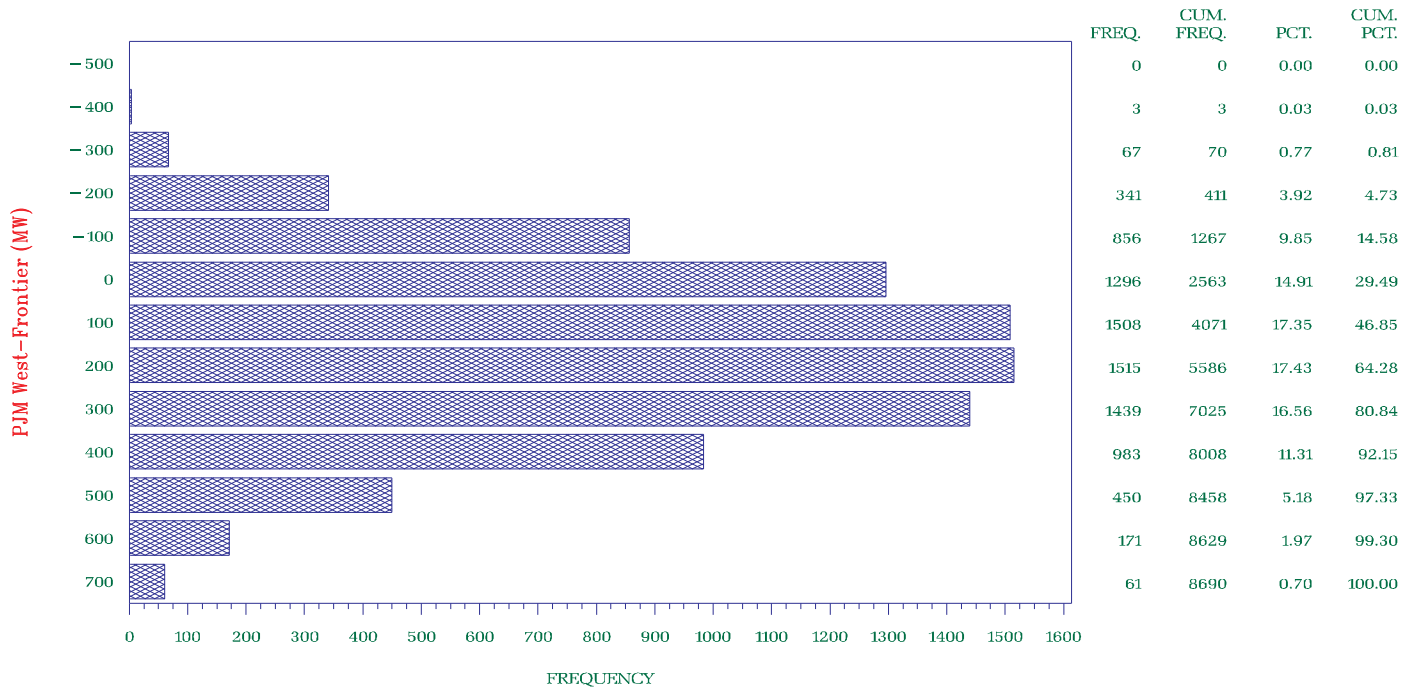
1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001
PJM West – Central



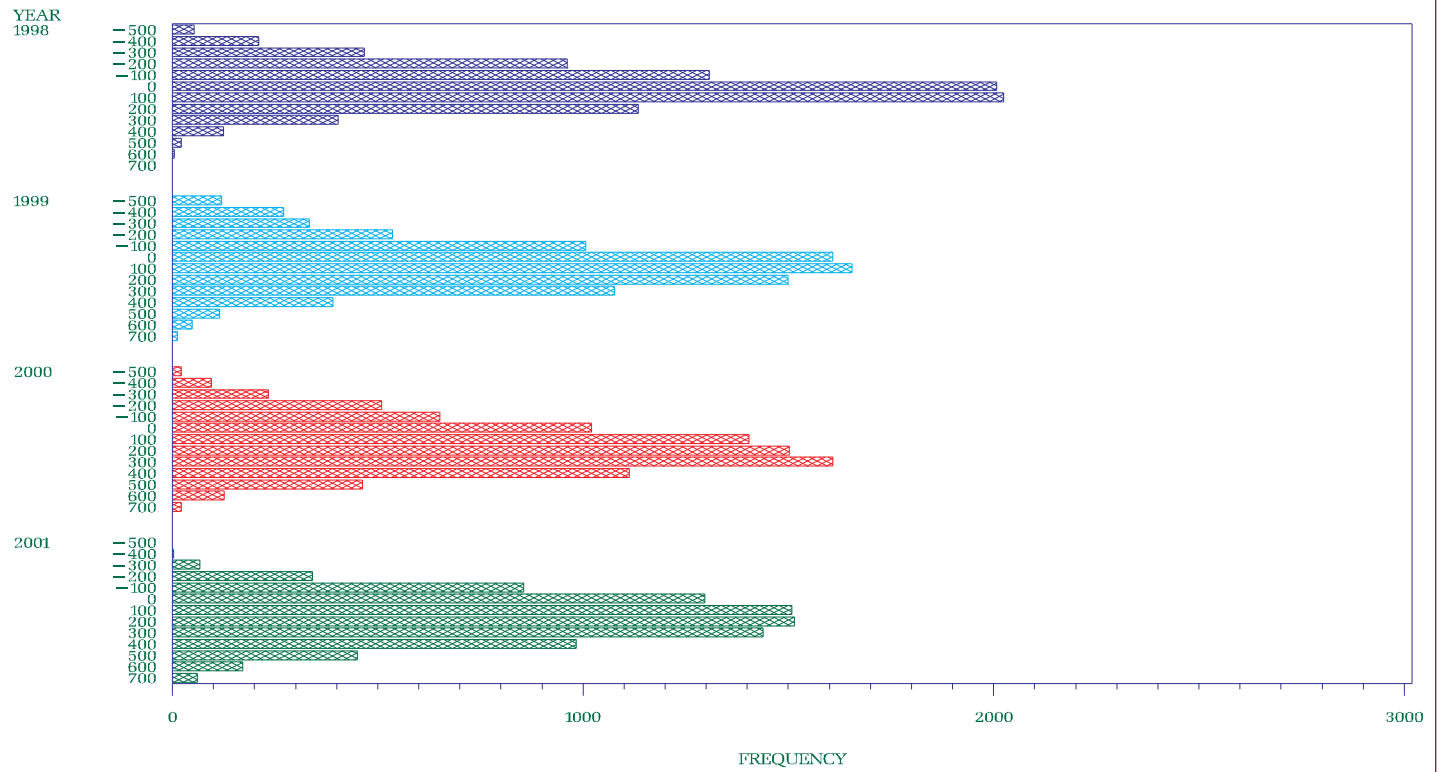
NYISO Frequency Interface Flow For January – December 2001

PJM West – Frontier



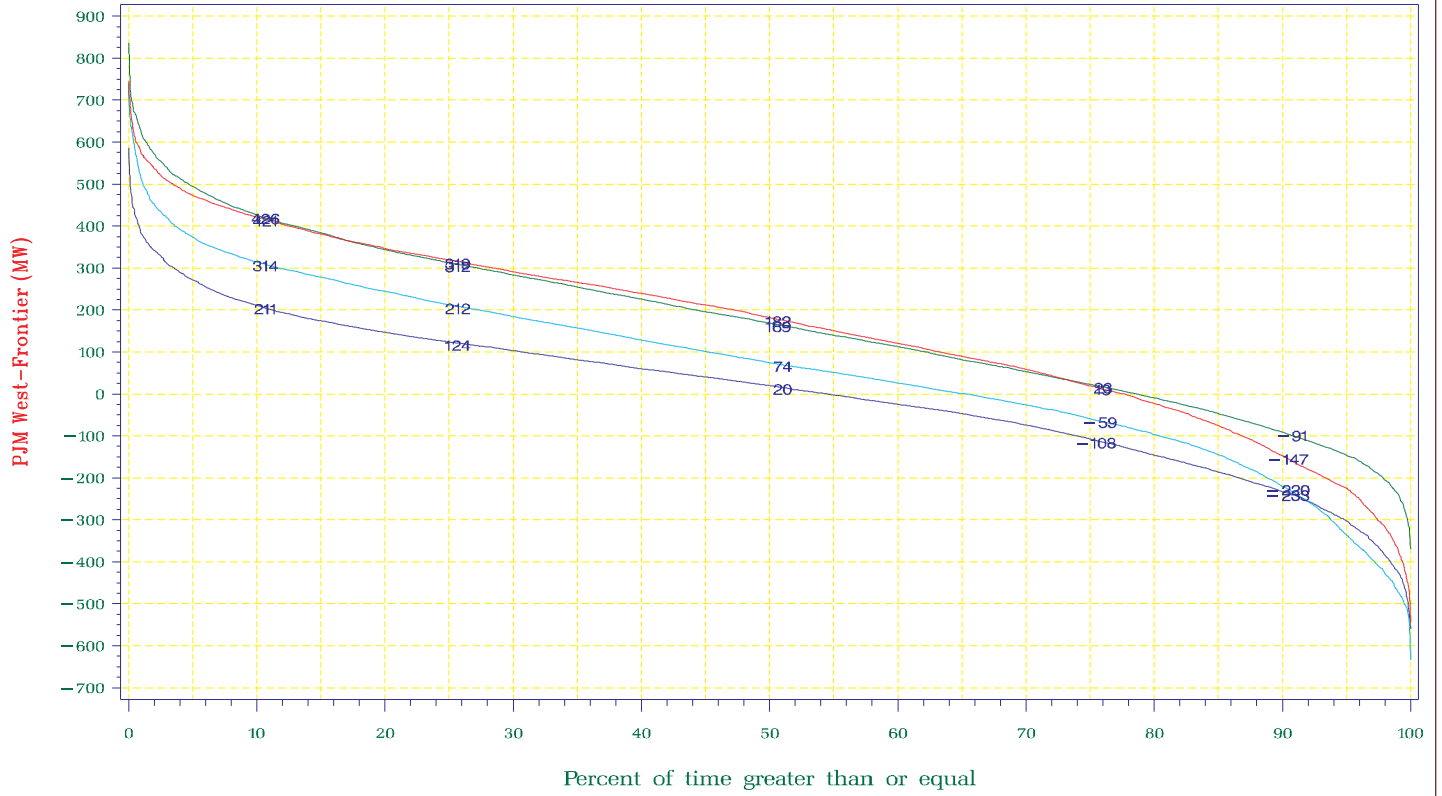
NYISO Frequency Interface Flow For January 1998 – December 2001

PJM West – Frontier



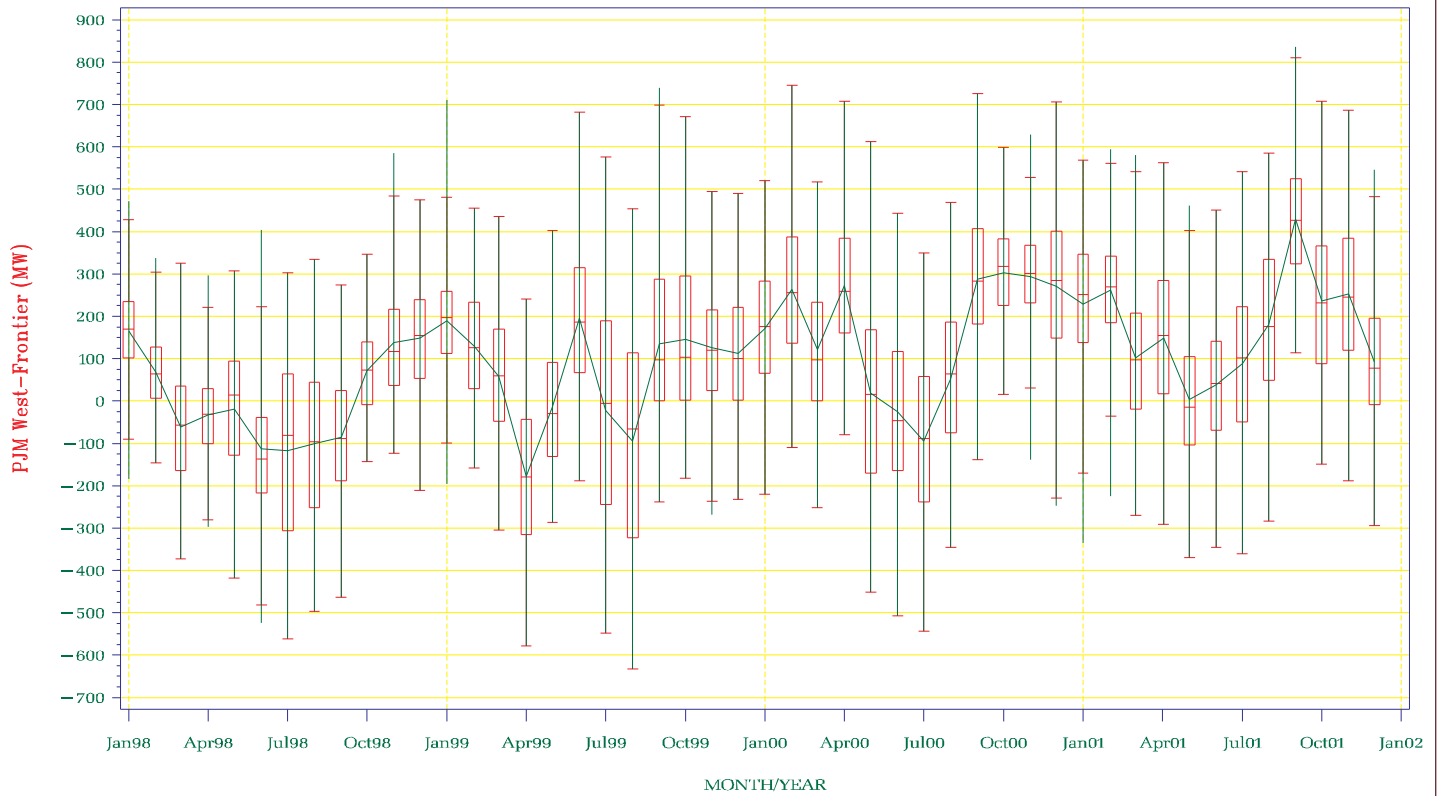
1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001
PJM West – Frontier



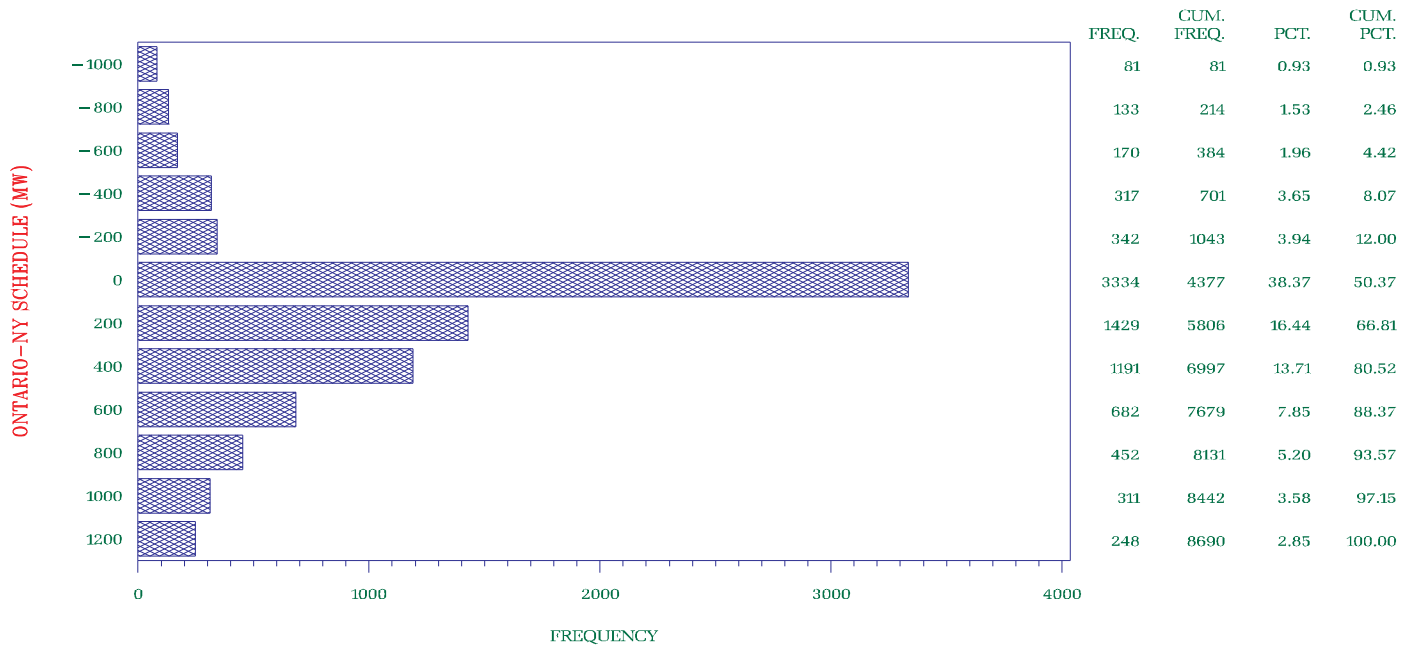
1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001
PJM West – Frontier



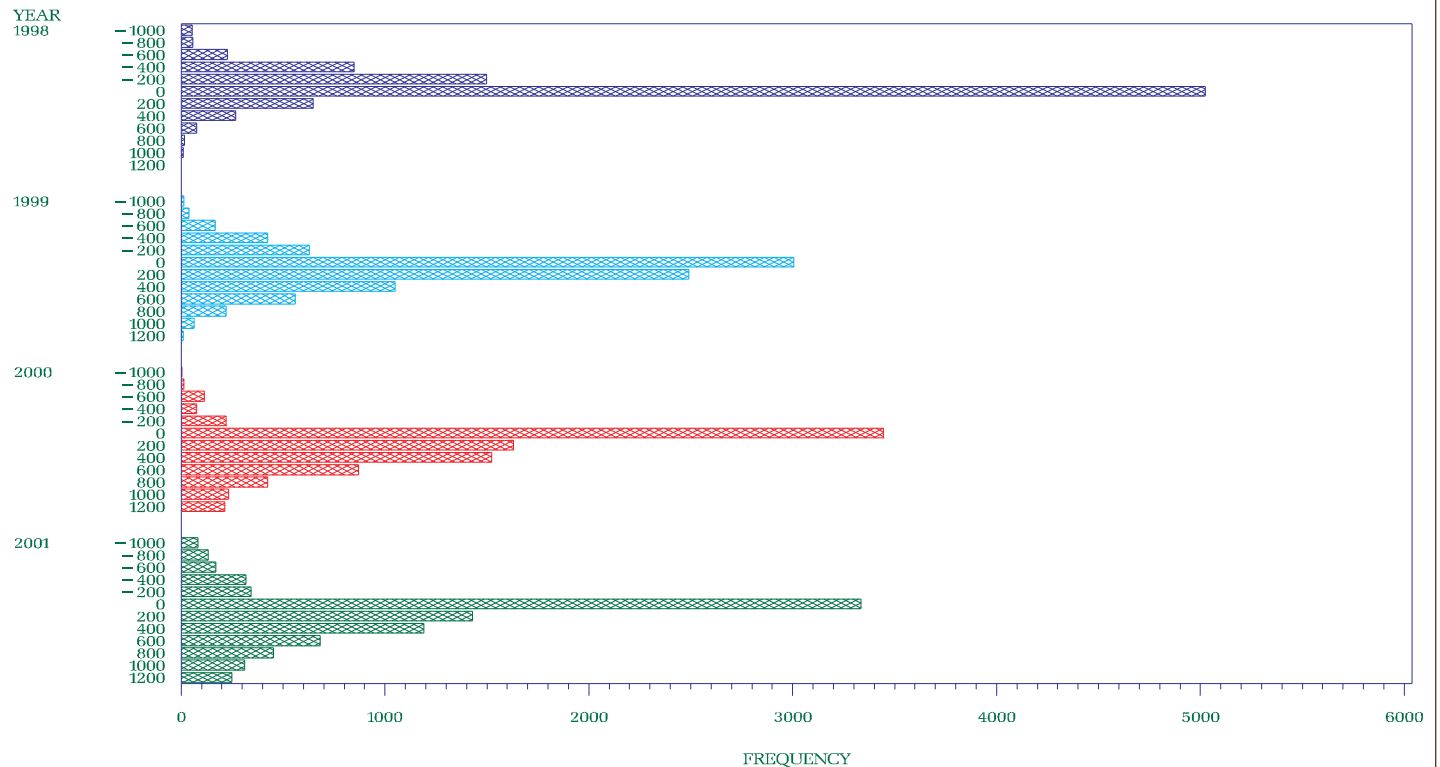
NYISO Frequency Interface Flow For January – December 2001

ONTARIO-NY SCHEDULE



NYISO Frequency Interface Flow For January 1998 – December 2001

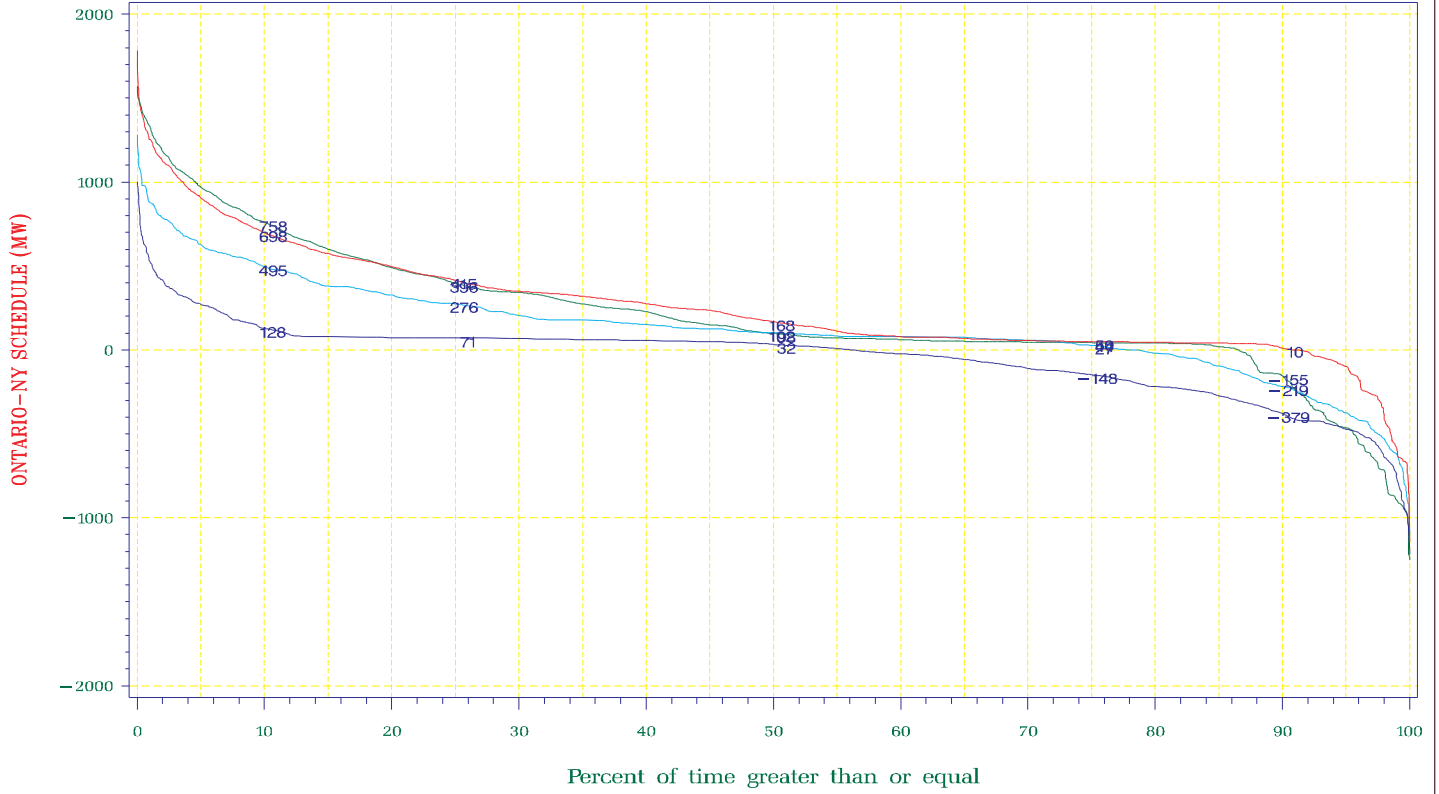
ONTARIO-NY SCHEDULE



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

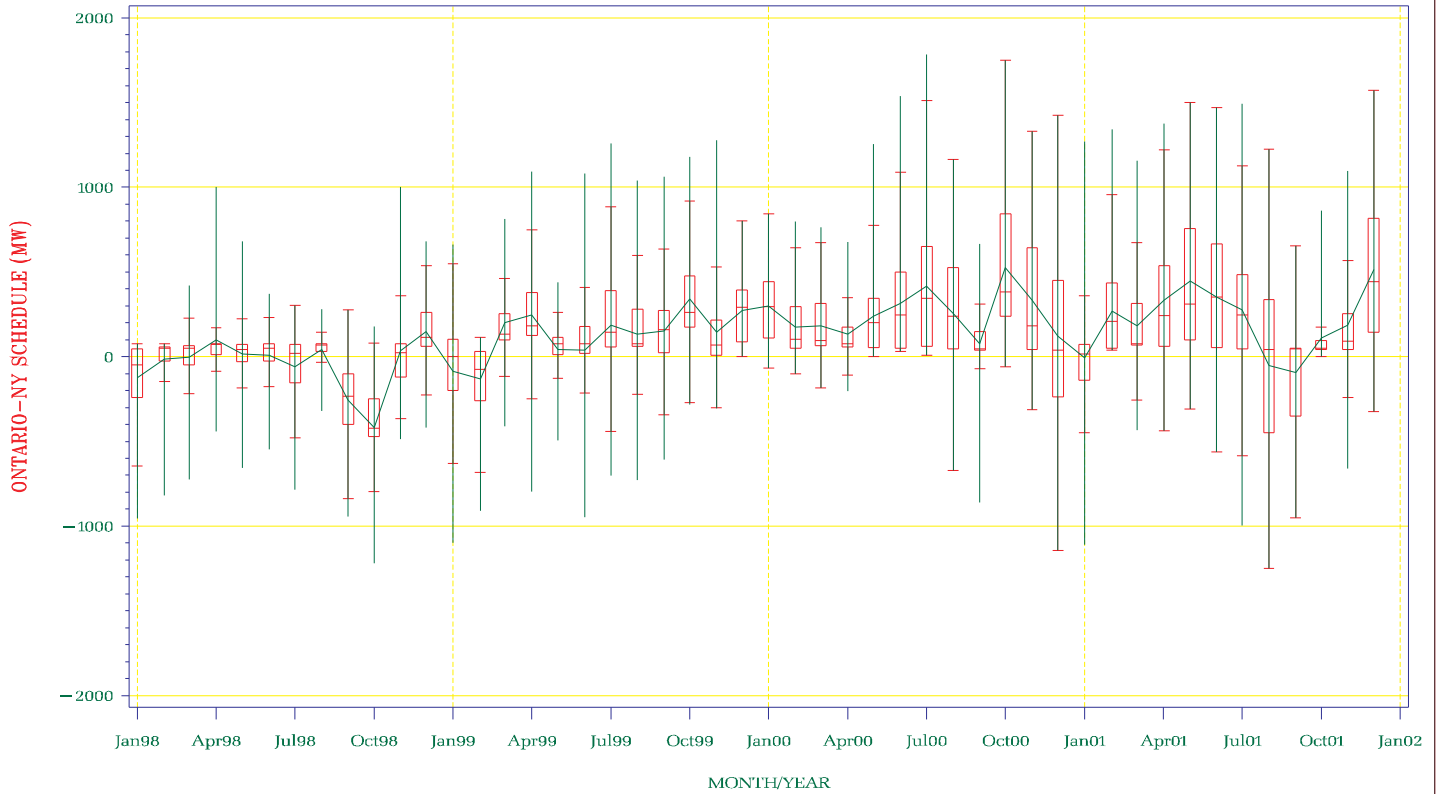
ONTARIO- NY SCHEDULE



1998 1999 2000 2001

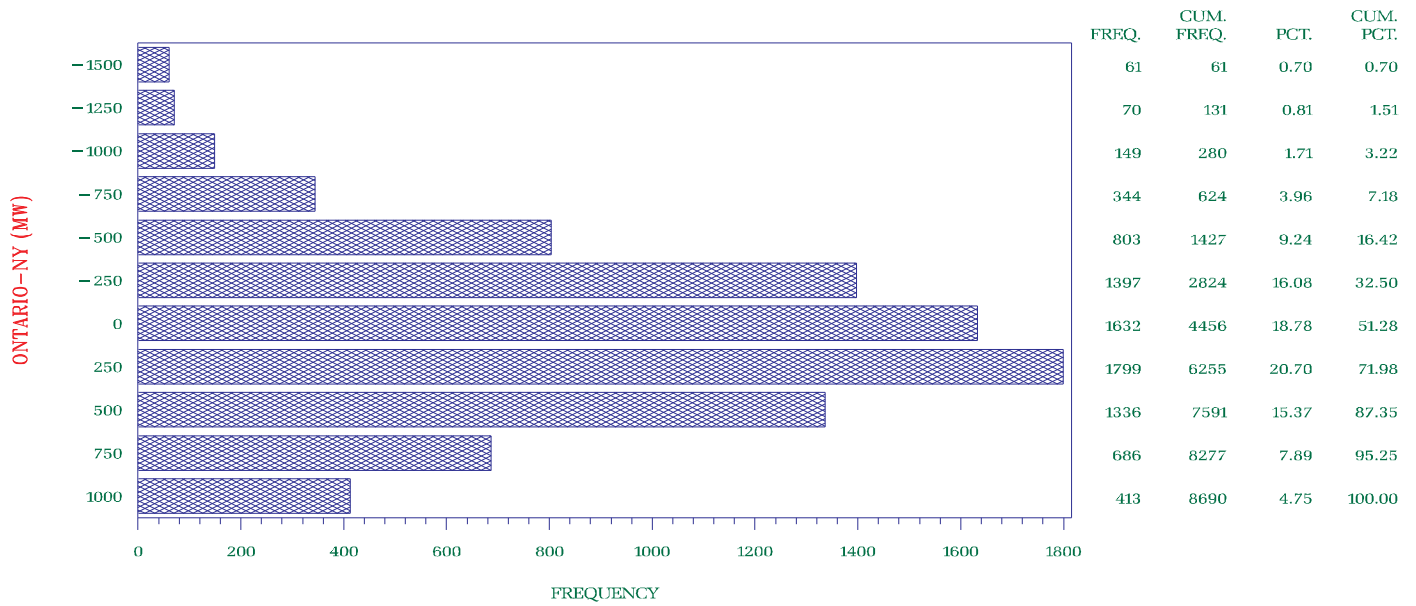
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

ONTARIO- NY SCHEDULE



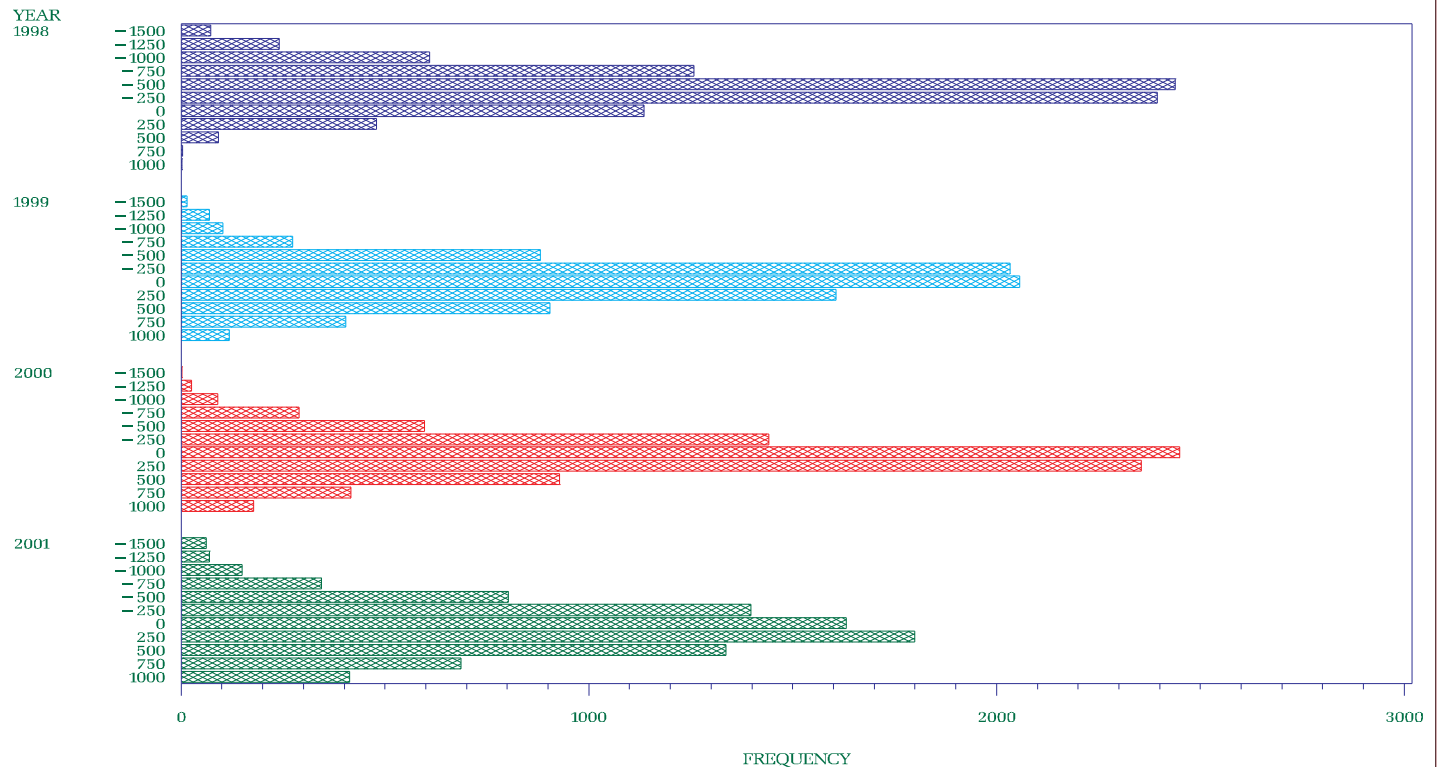
NYISO Frequency Interface Flow For January – December 2001

ONTARIO – NY



NYISO Frequency Interface Flow For January 1998 – December 2001

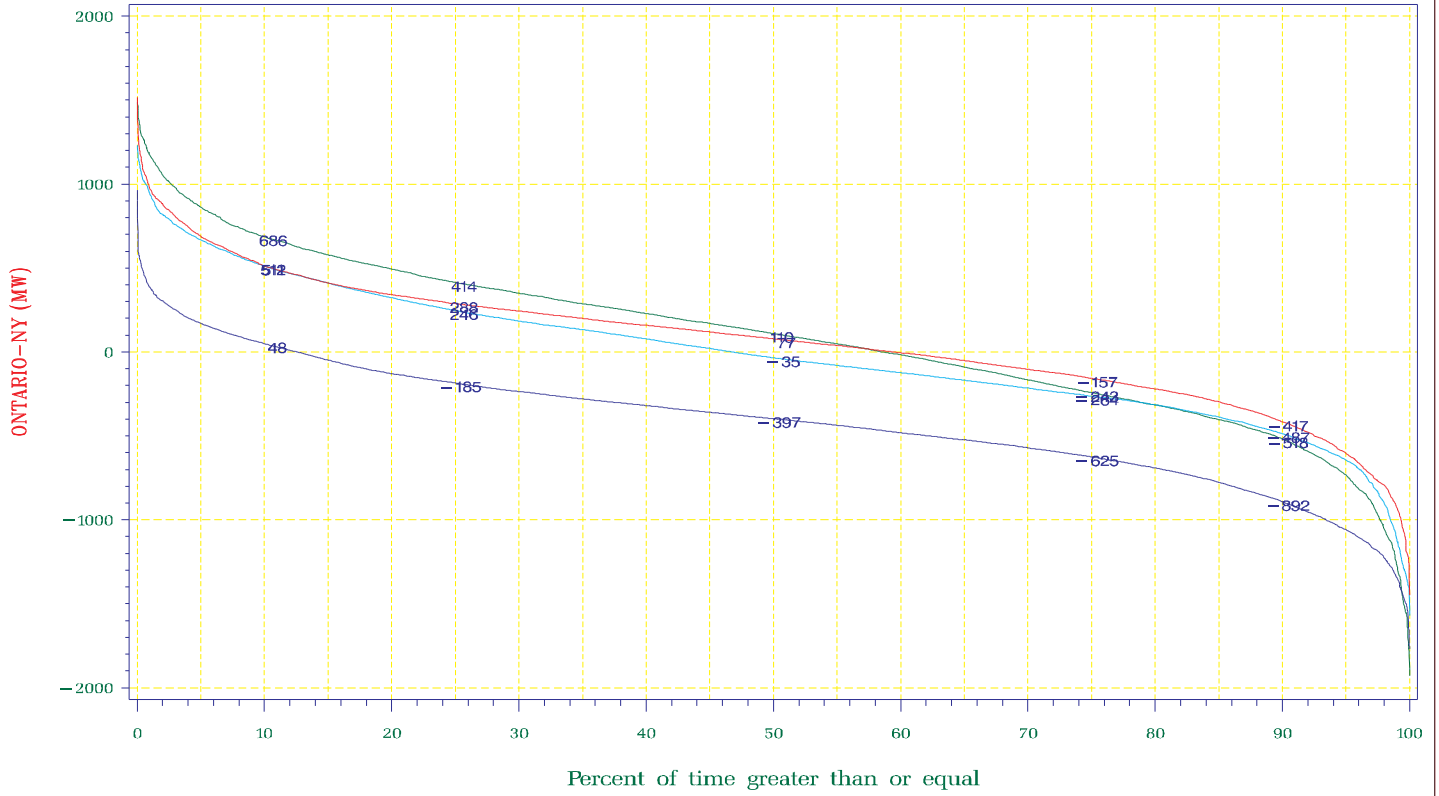
ONTARIO – NY



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

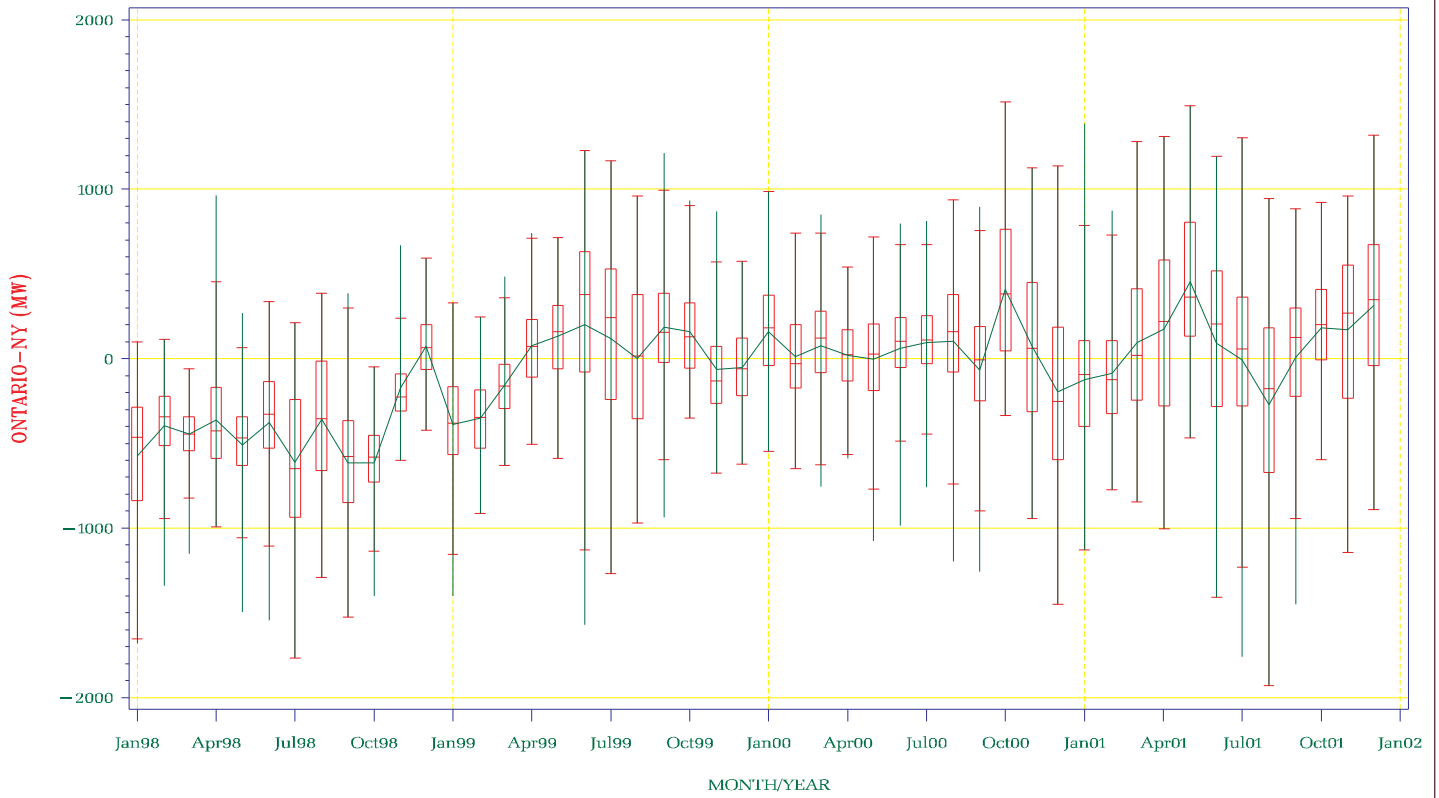
ONTARIO – NY



1998 1999 2000 2001

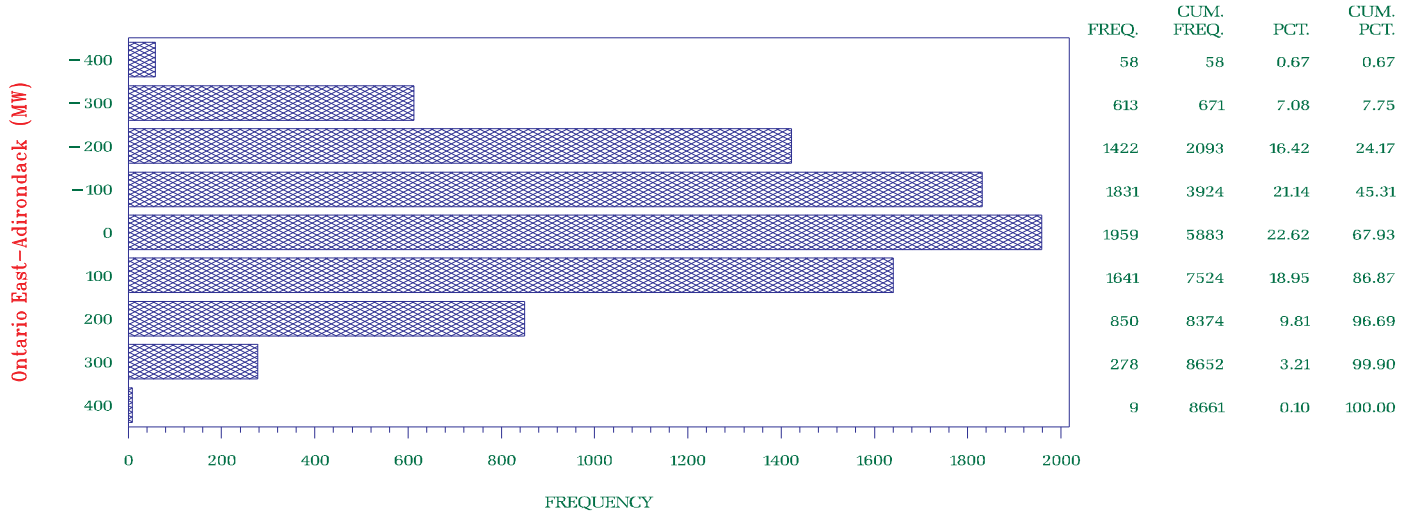
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

ONTARIO – NY



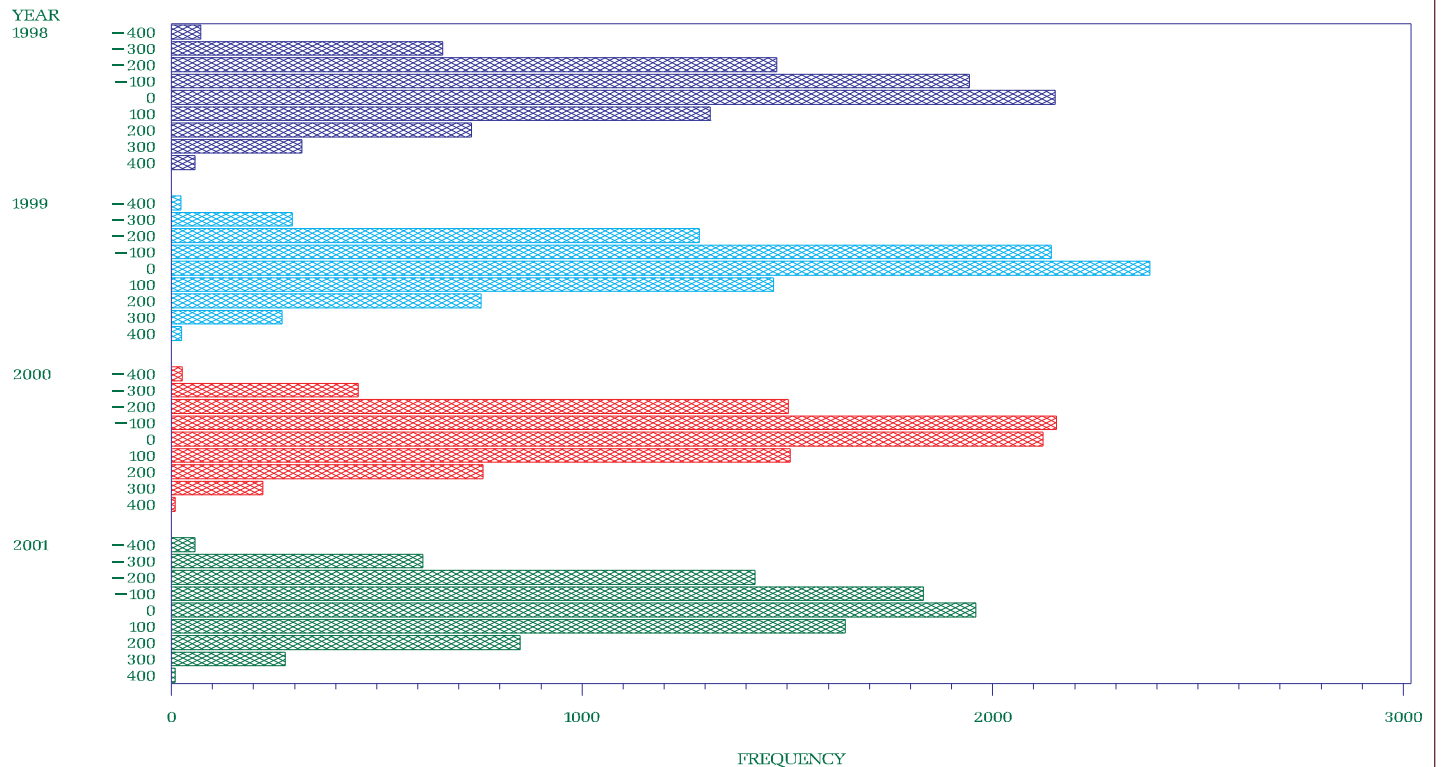
NYISO Frequency Interface Flow For January – December 2001

Ontario East – Adirondack



NYISO Frequency Interface Flow For January 1998 – December 2001

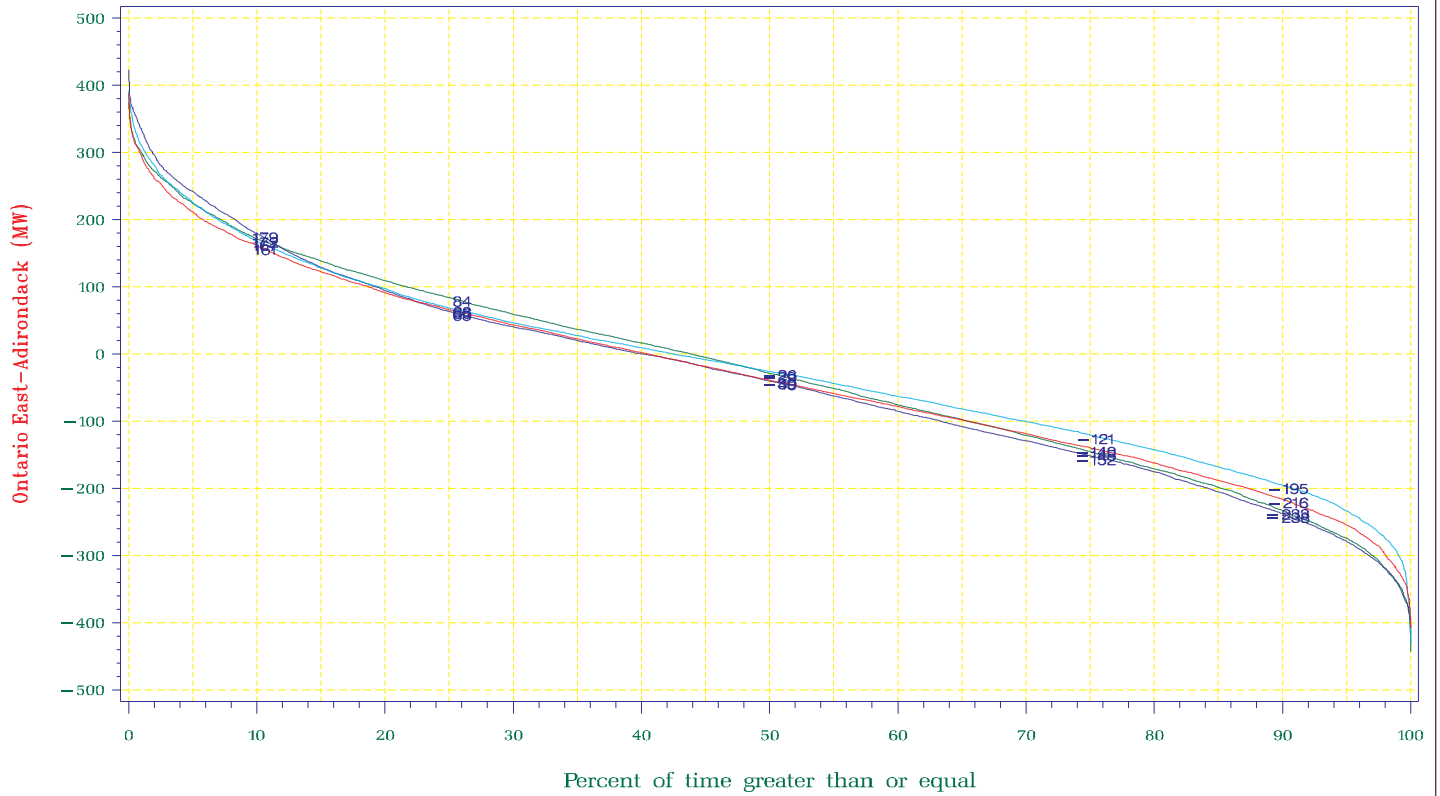
Ontario East – Adirondack



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

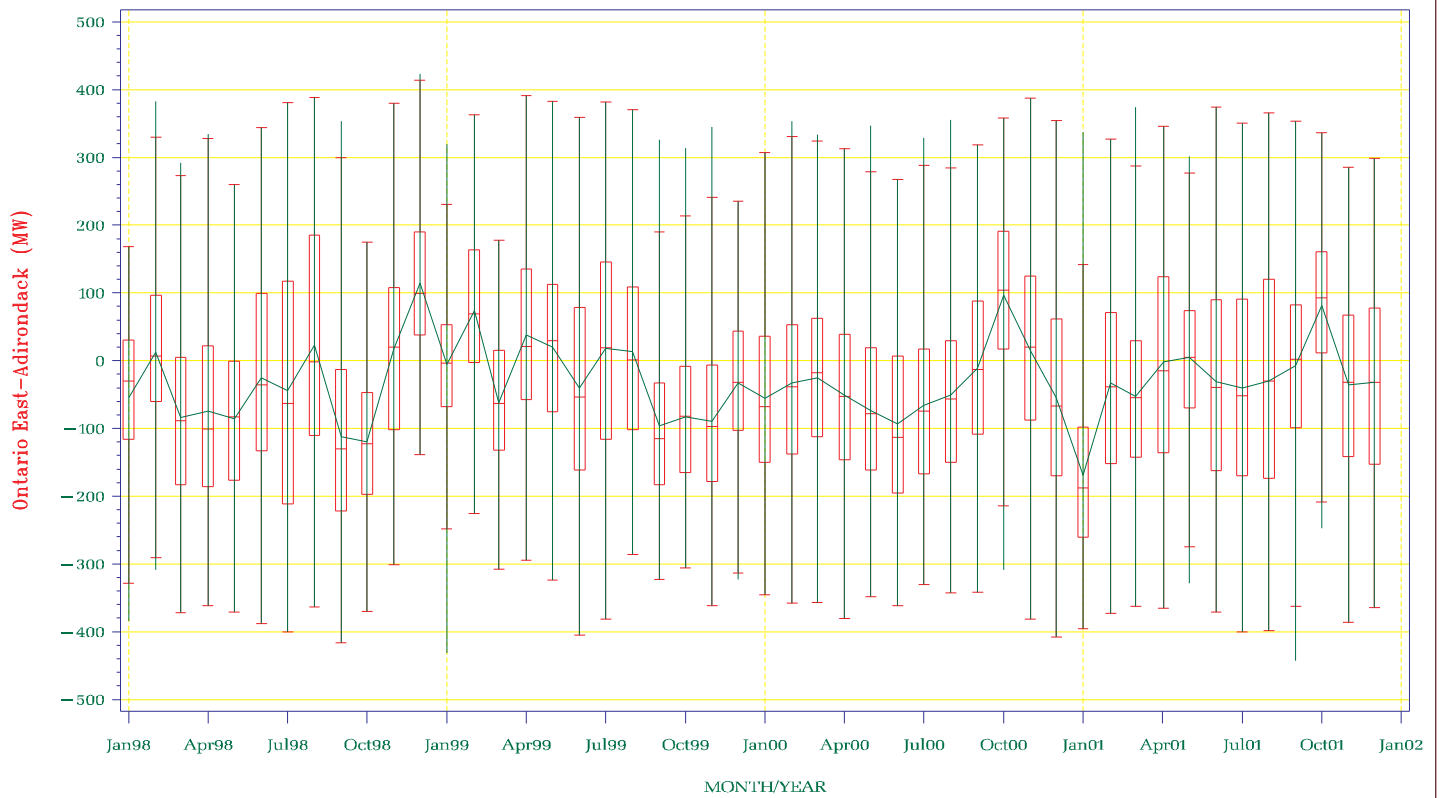
Ontario East – Adirondack



1998 1999 2000 2001

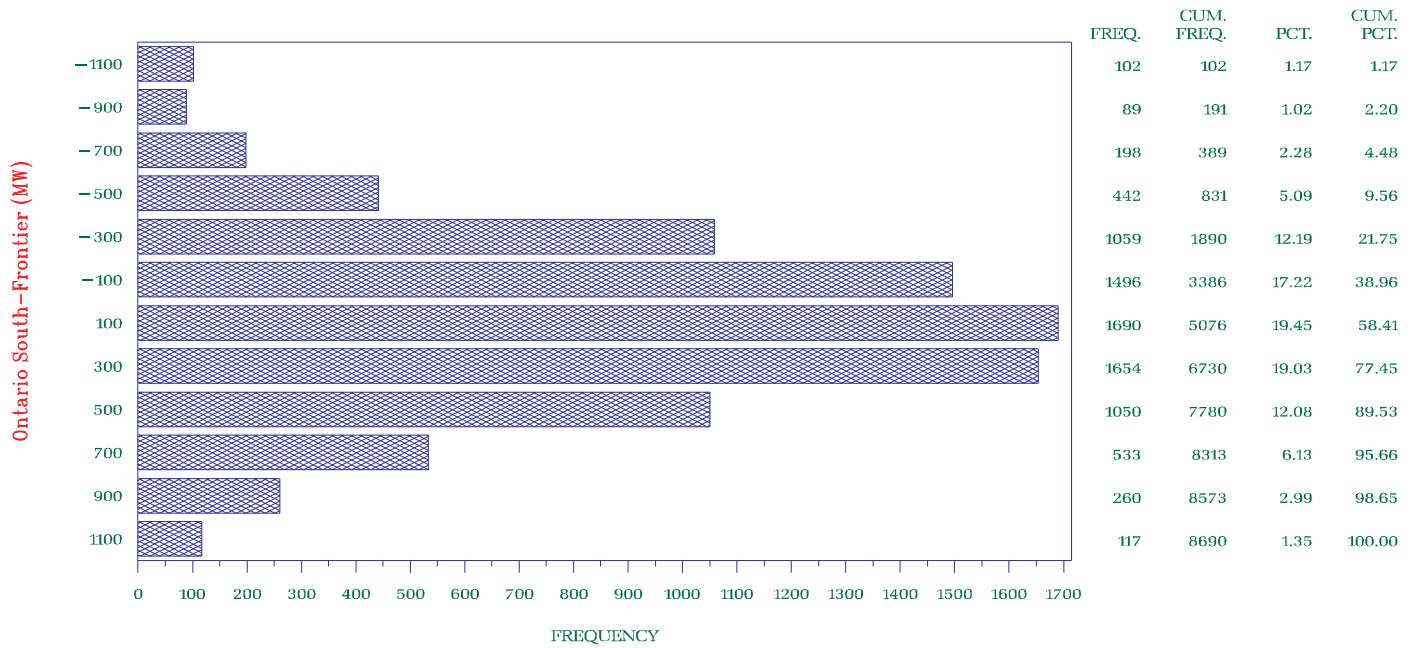
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

Ontario East – Adirondack



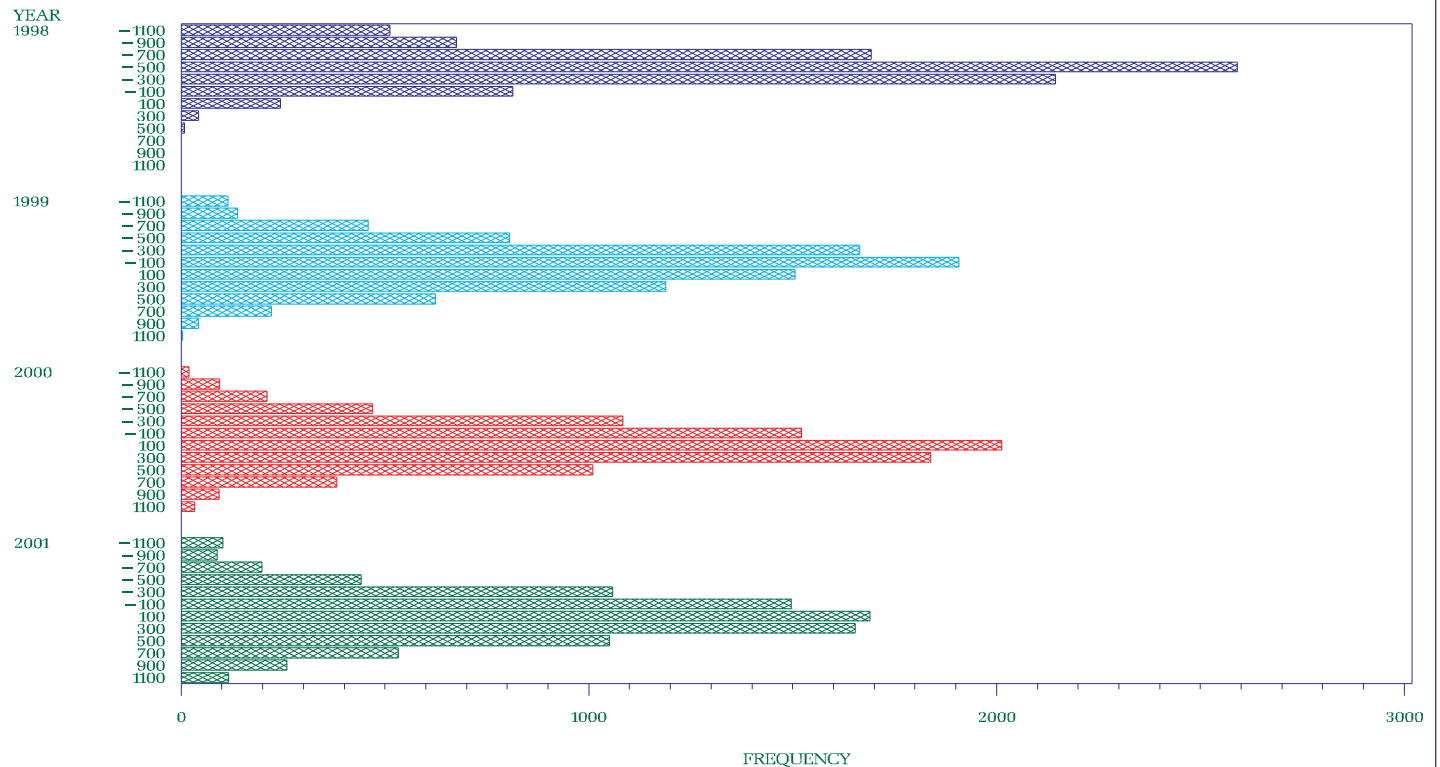
NYISO Frequency Interface Flow For January – December 2001

Ontario South – Frontier



NYISO Frequency Interface Flow For January 1998 – December 2001

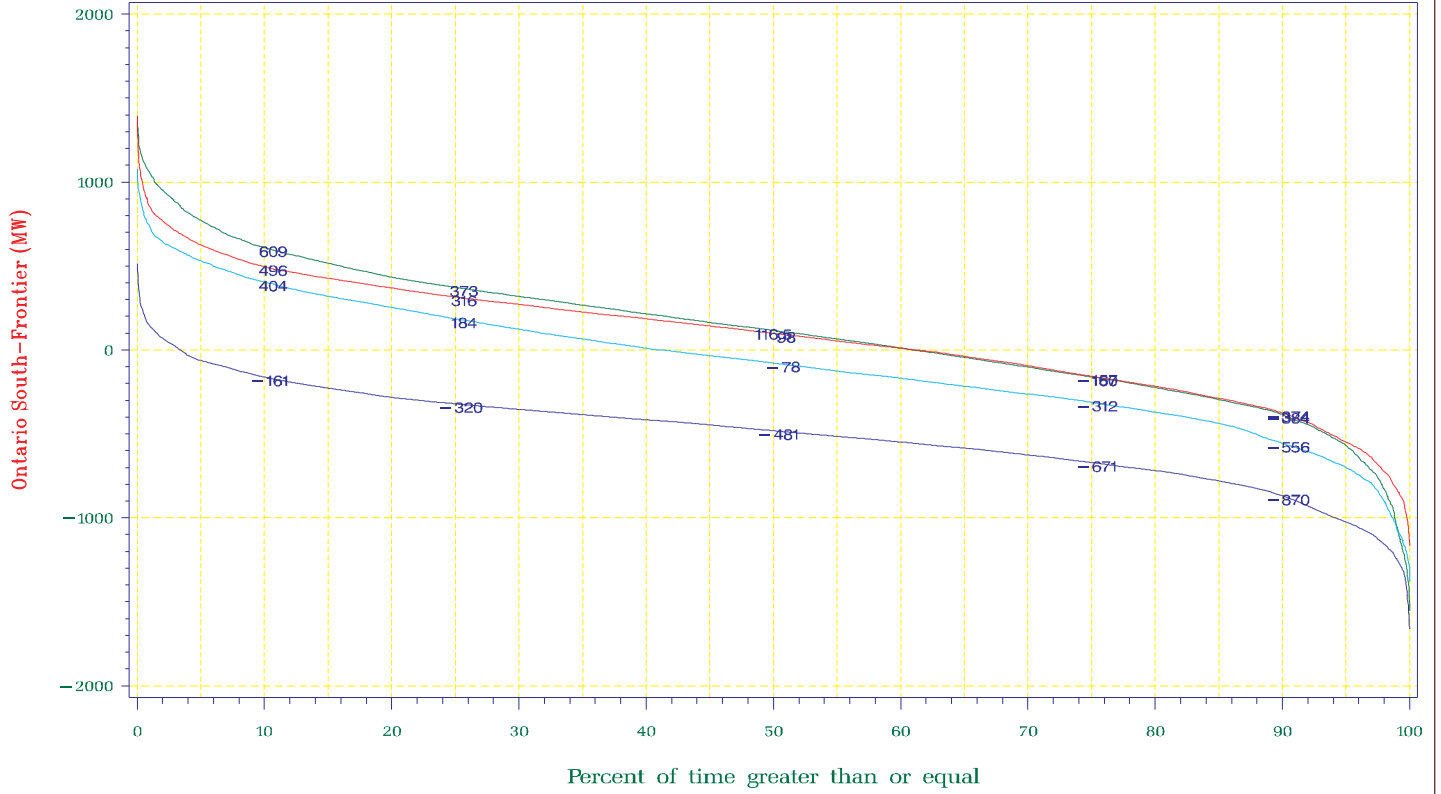
Ontario South – Frontier



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

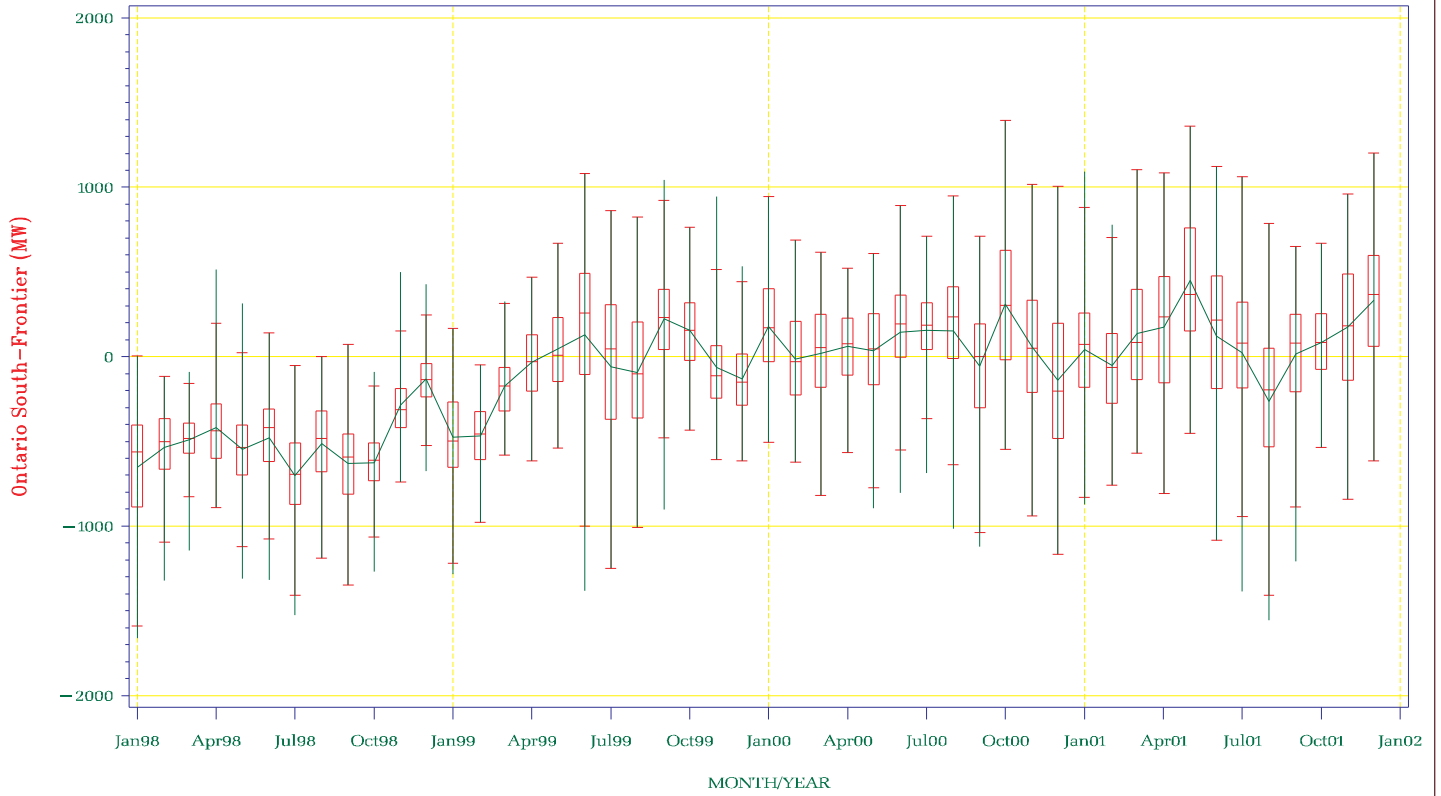
Ontario South – Frontier



1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

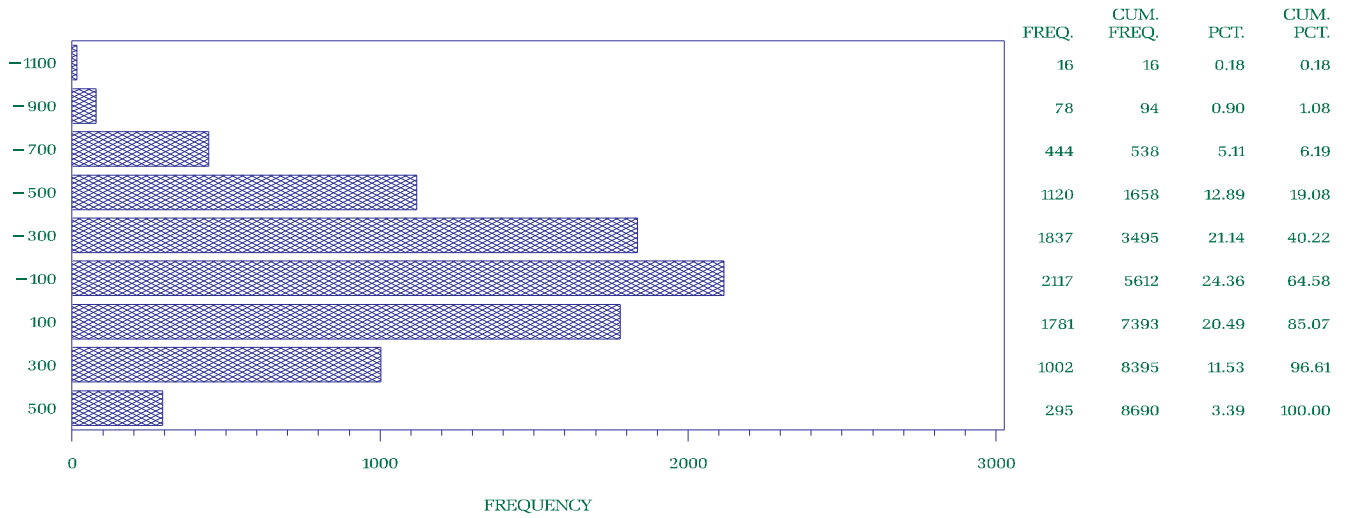
Ontario South – Frontier



NYISO Frequency Interface Flow For January – December 2001

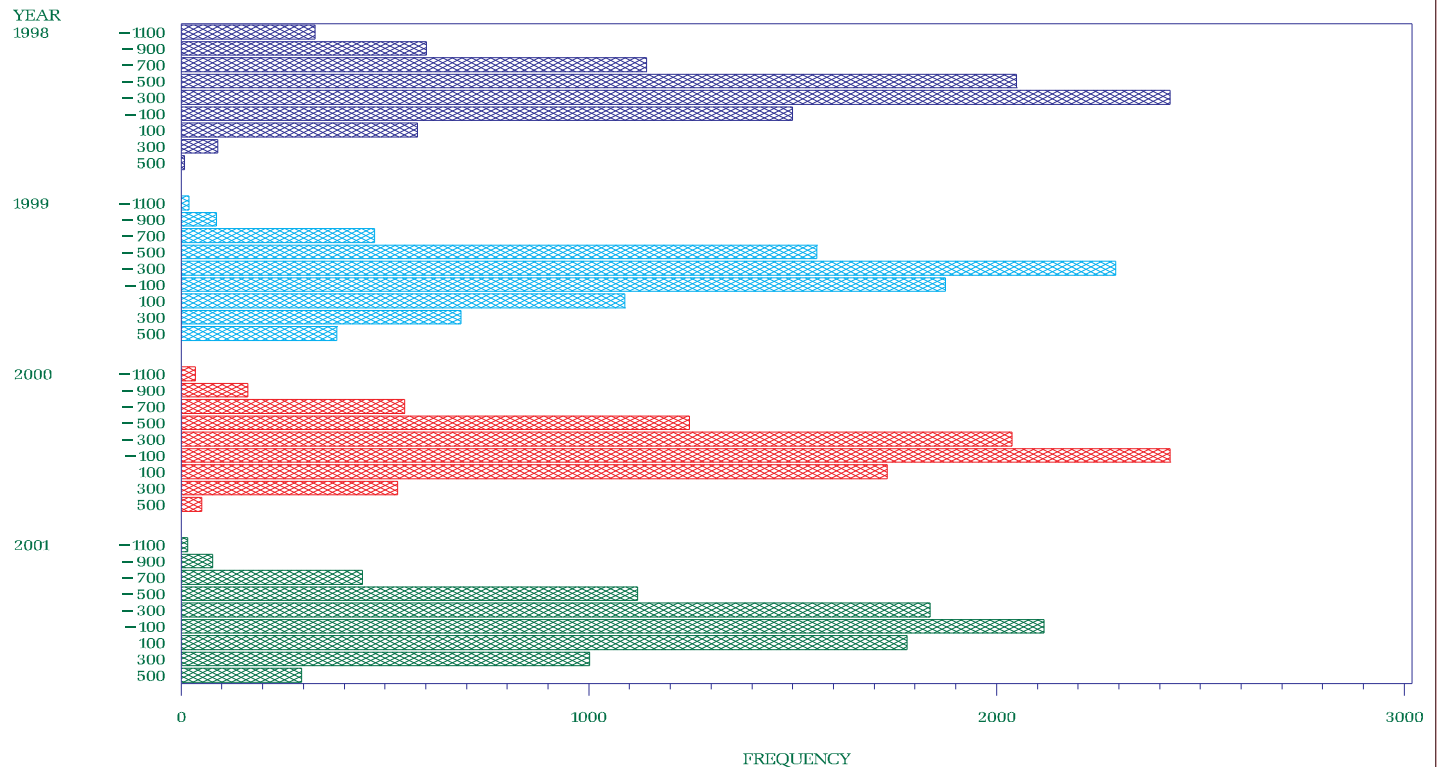
NY – ONTARIO COUNTER CLOCKWISE CIRCULATION

NY – ONTARIO COUNTER CLOCKWISE CIRCULATION (MW)



NYISO Frequency Interface Flow For January 1998 – December 2001

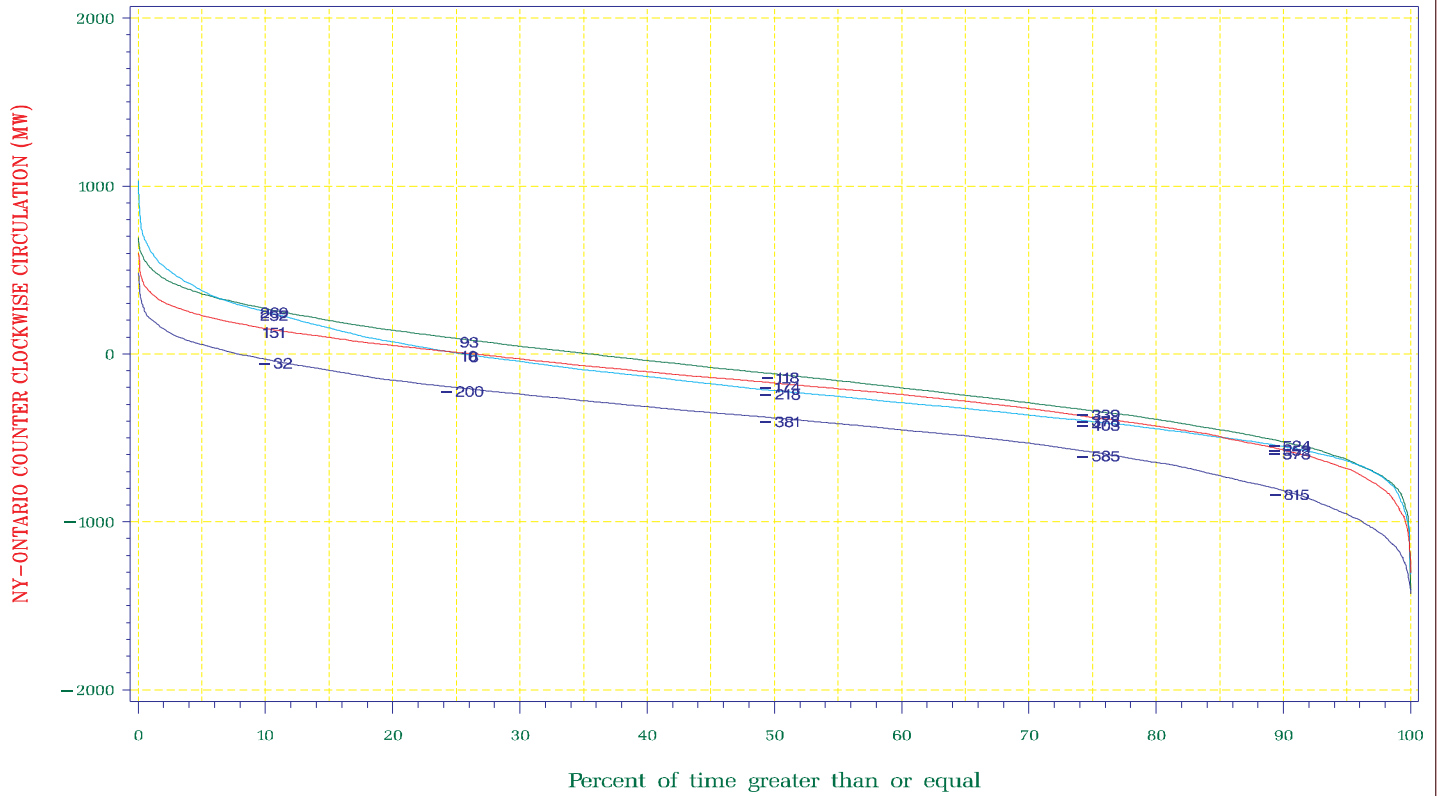
NY – ONTARIO COUNTER CLOCKWISE CIRCULATION



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

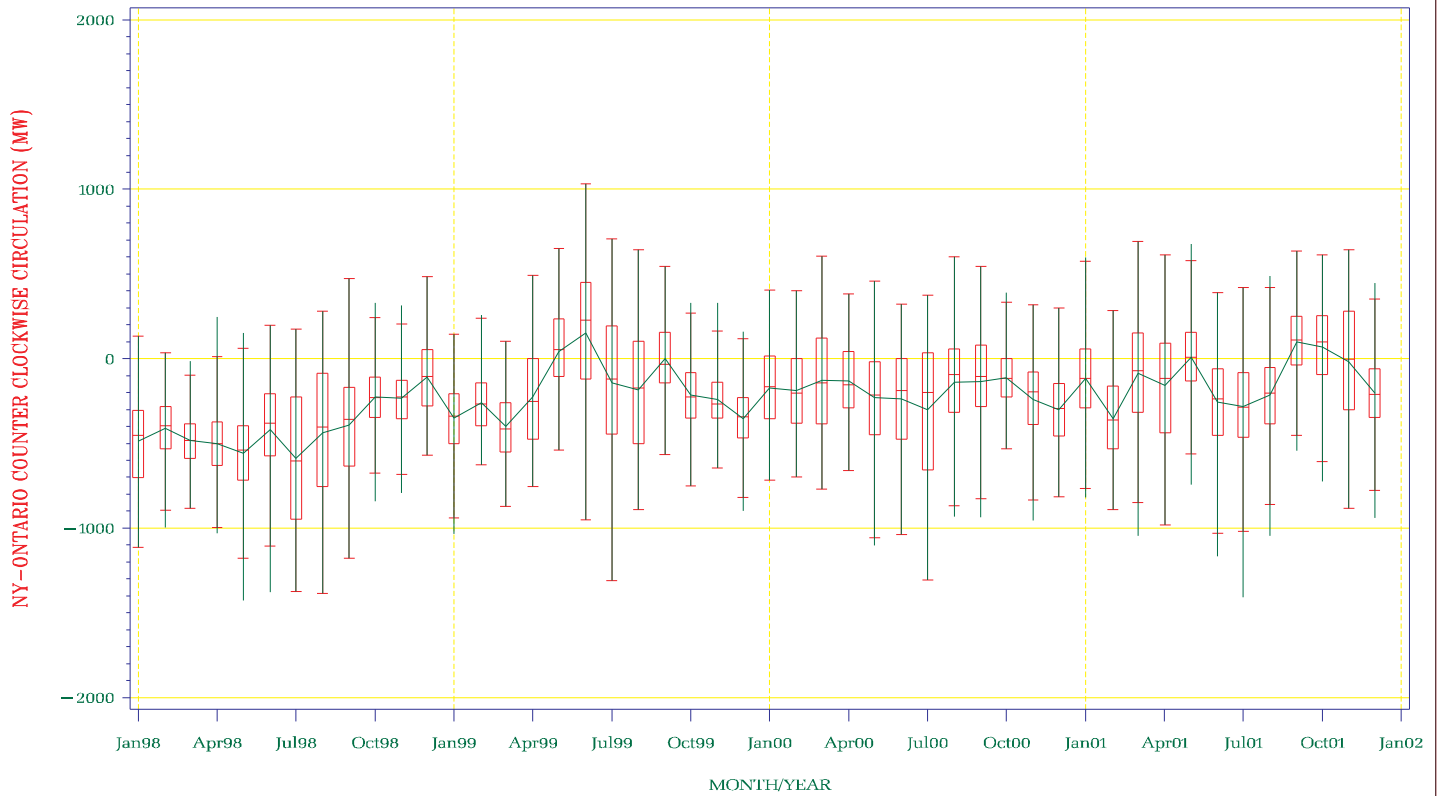
NY – ONTARIO COUNTER CLOCKWISE CIRCULATION



1998 1999 2000 2001

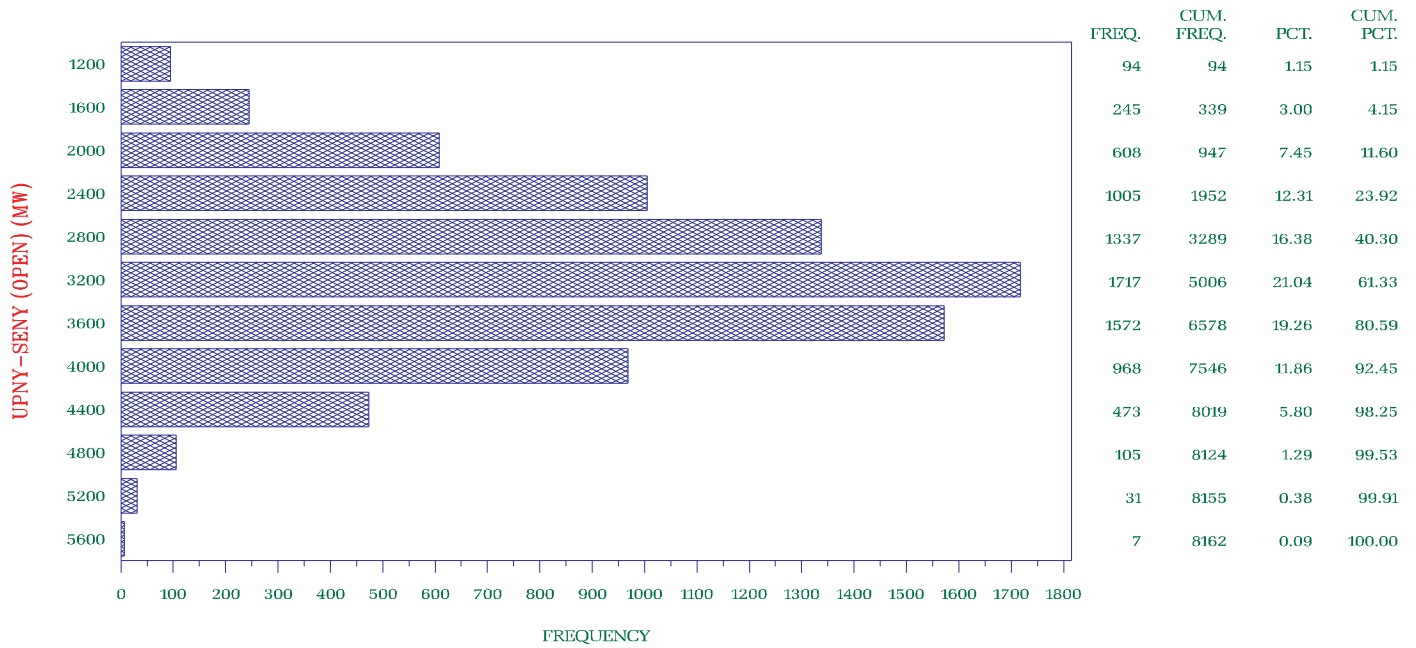
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

NY – ONTARIO COUNTER CLOCKWISE CIRCULATION



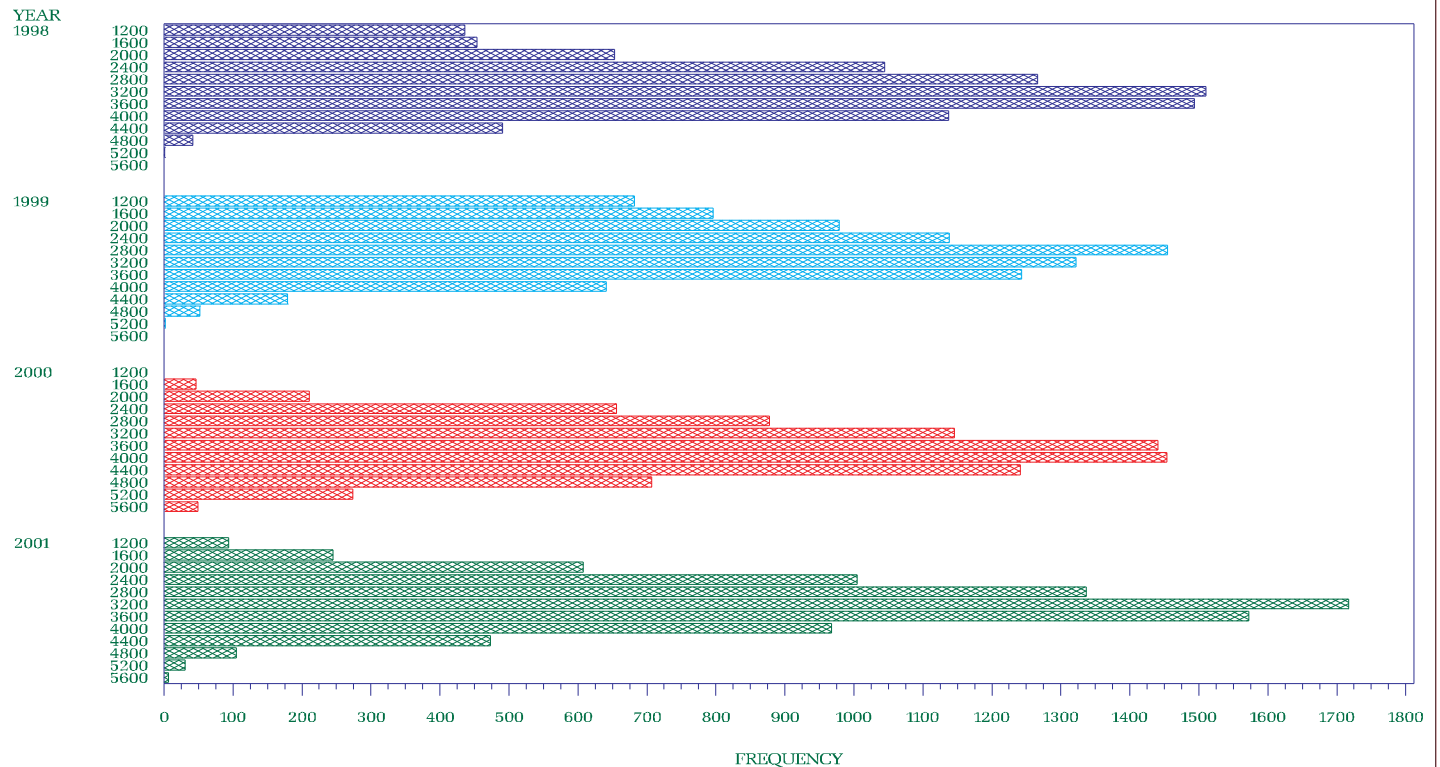
NYISO Frequency Interface Flow For January – December 2001

UPNY – SENY (OPEN)



NYISO Frequency Interface Flow For January 1998 – December 2001

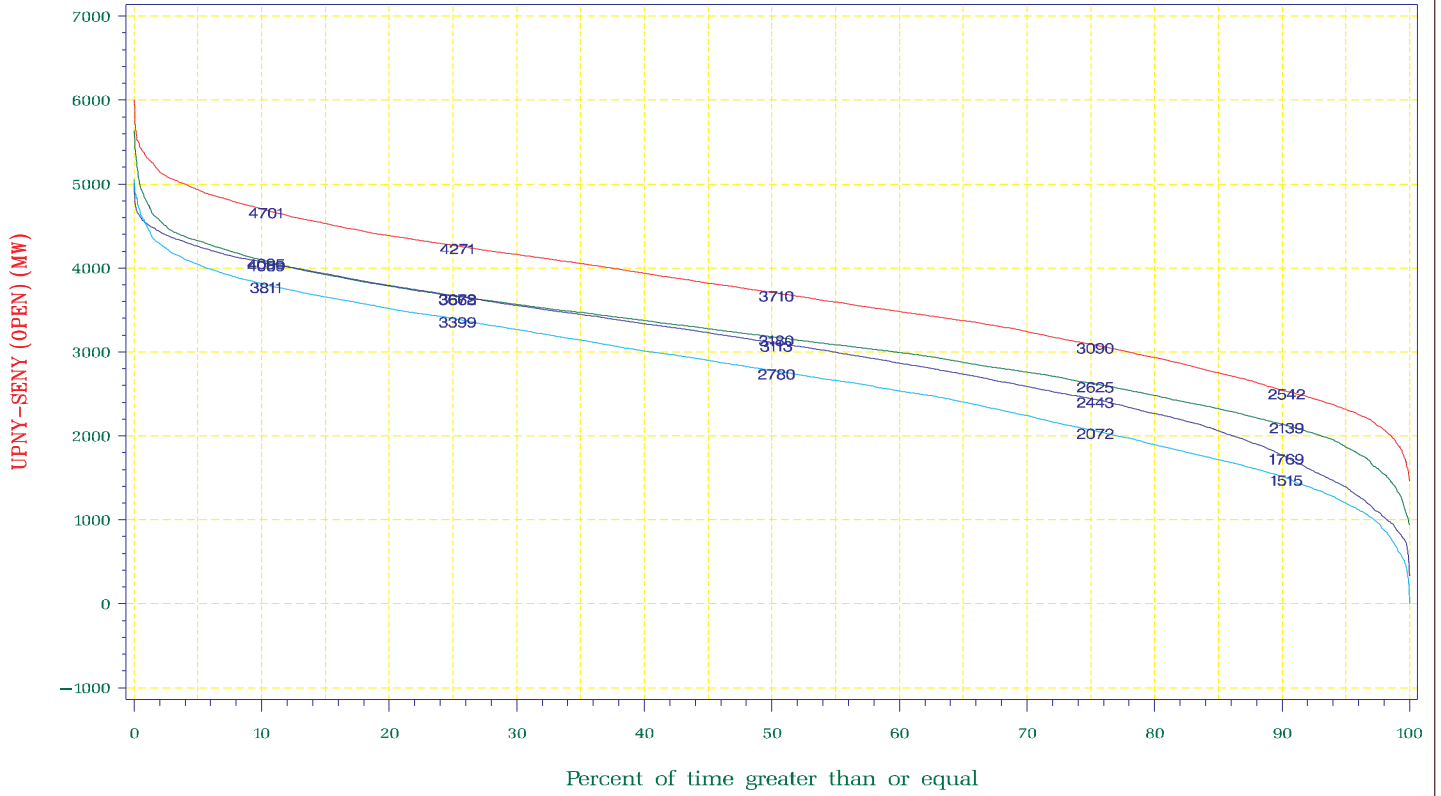
UPNY – SENY (OPEN)



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

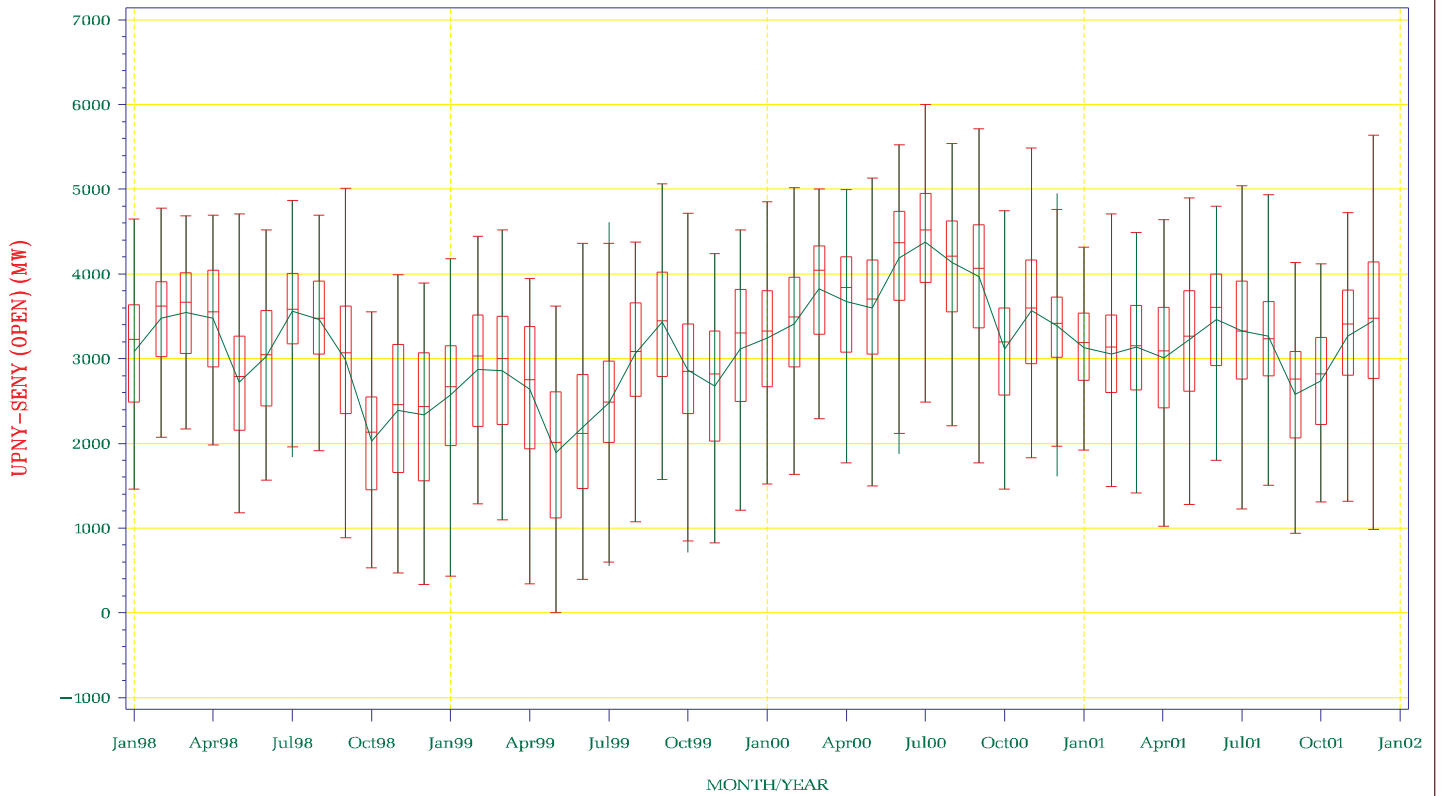
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1998 1999 2000 2001

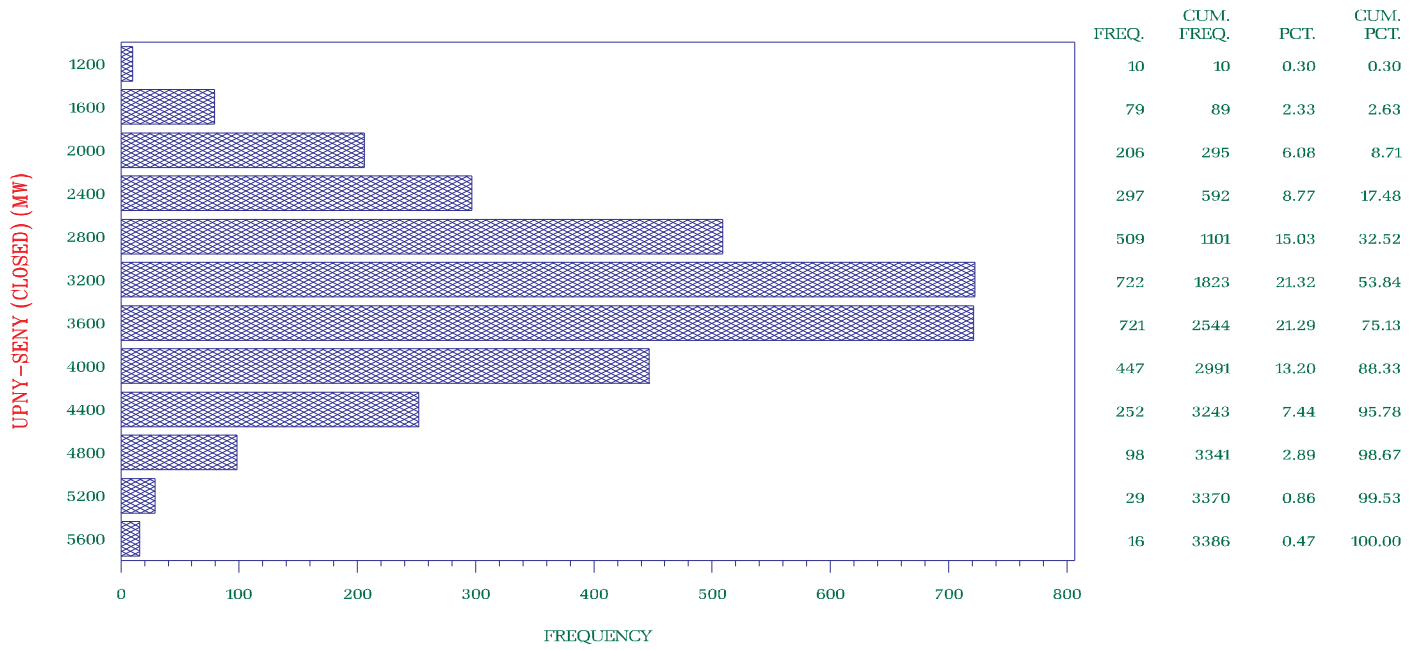
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

UPNY – SENY (OPEN)



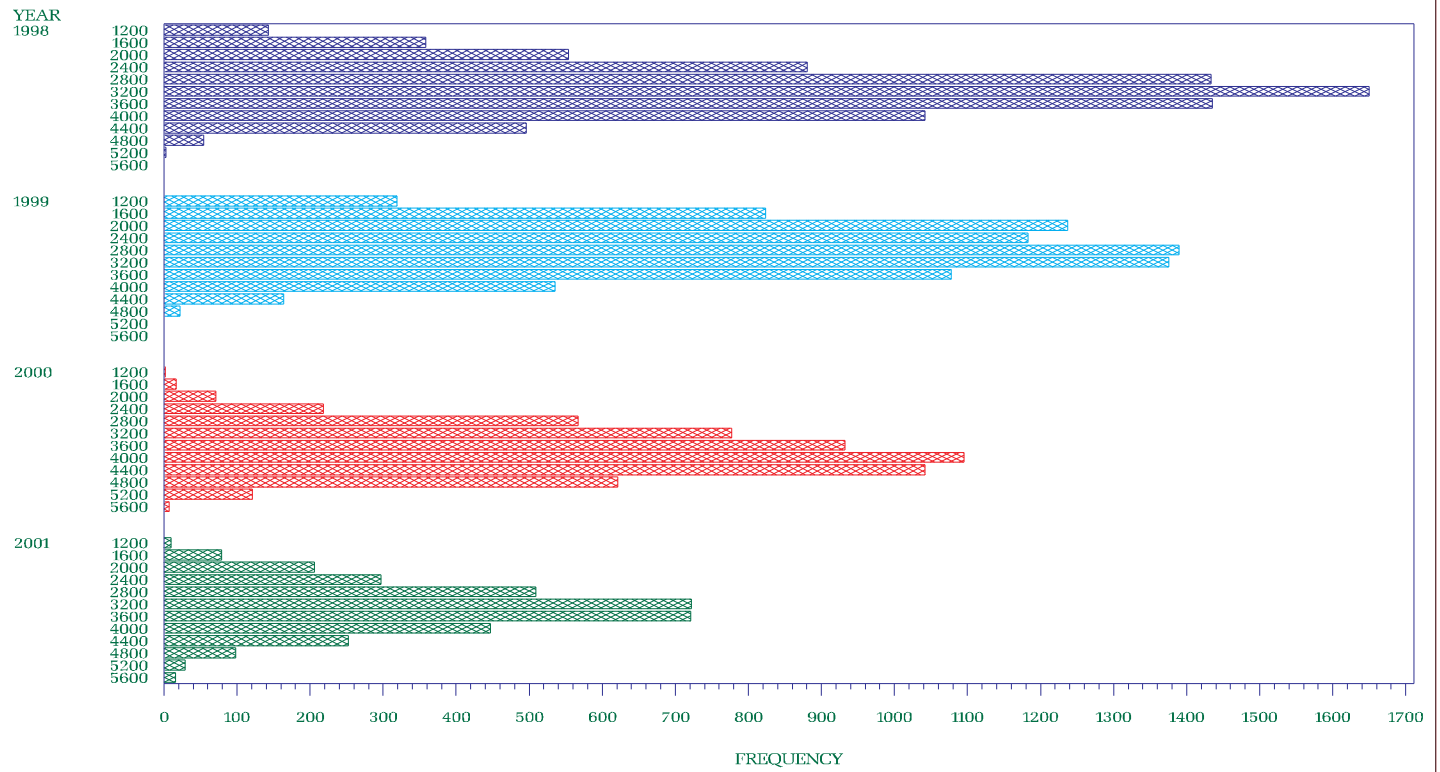
NYISO Frequency Interface Flow For January – December 2001

UPNY – SENY (CLOSED)



NYISO Frequency Interface Flow For January 1998 – December 2001

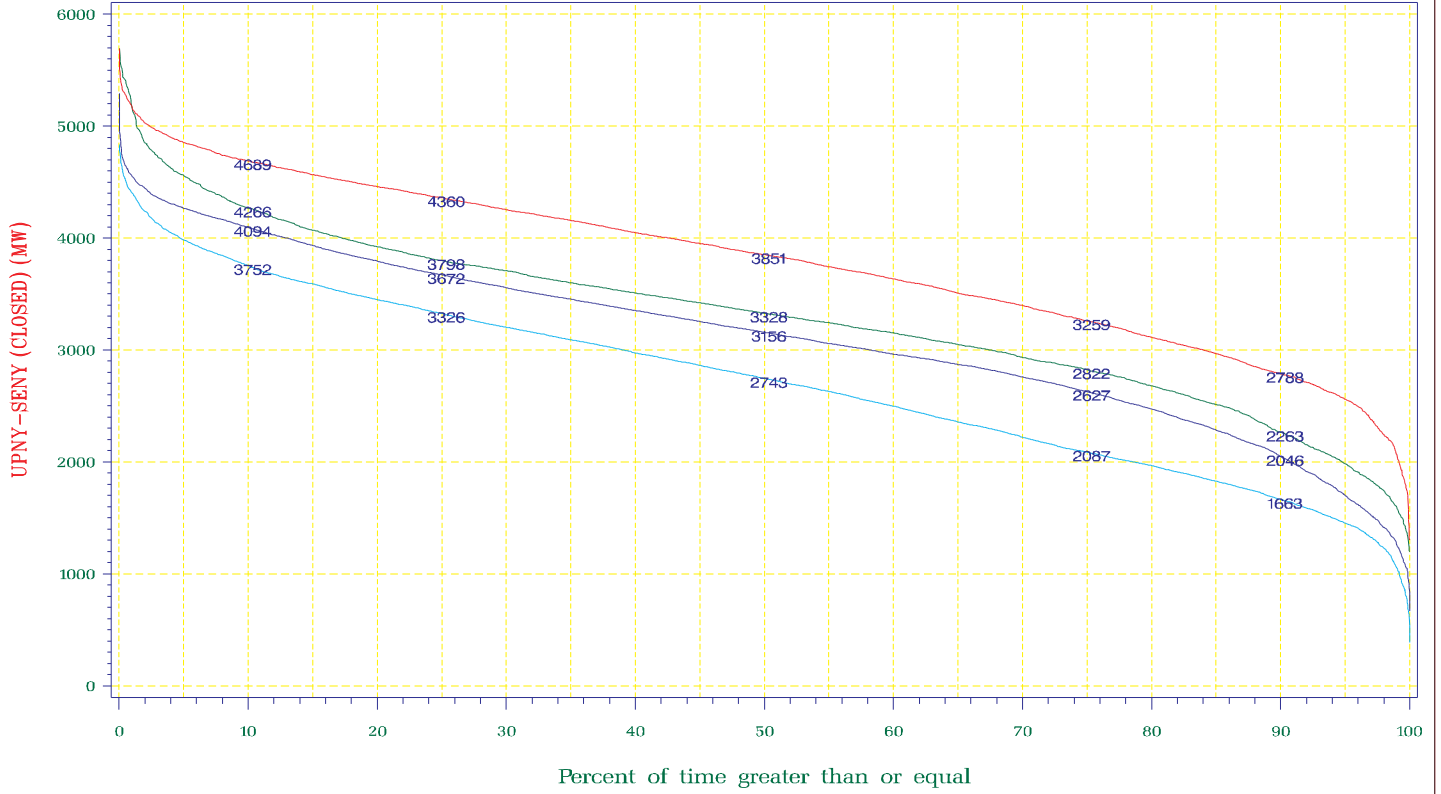
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1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

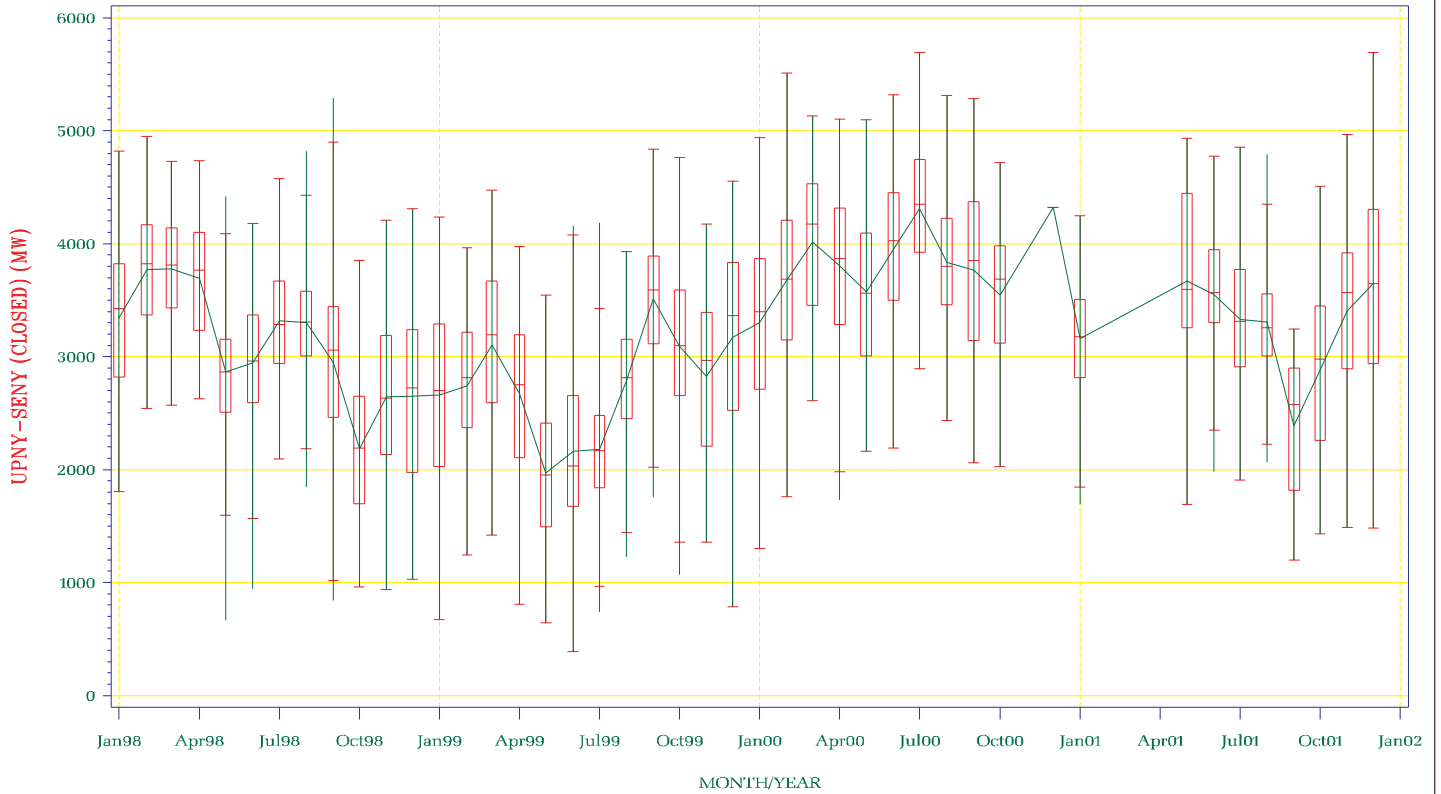
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1998 1999 2000 2001

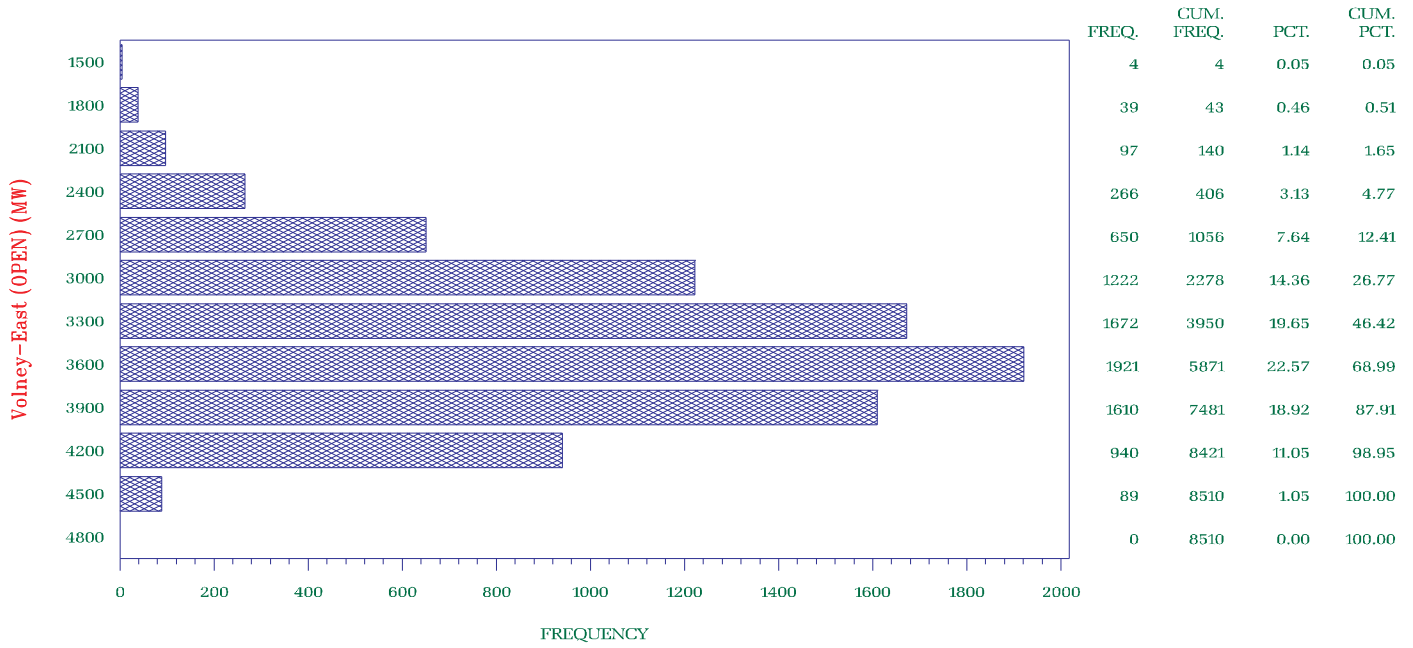
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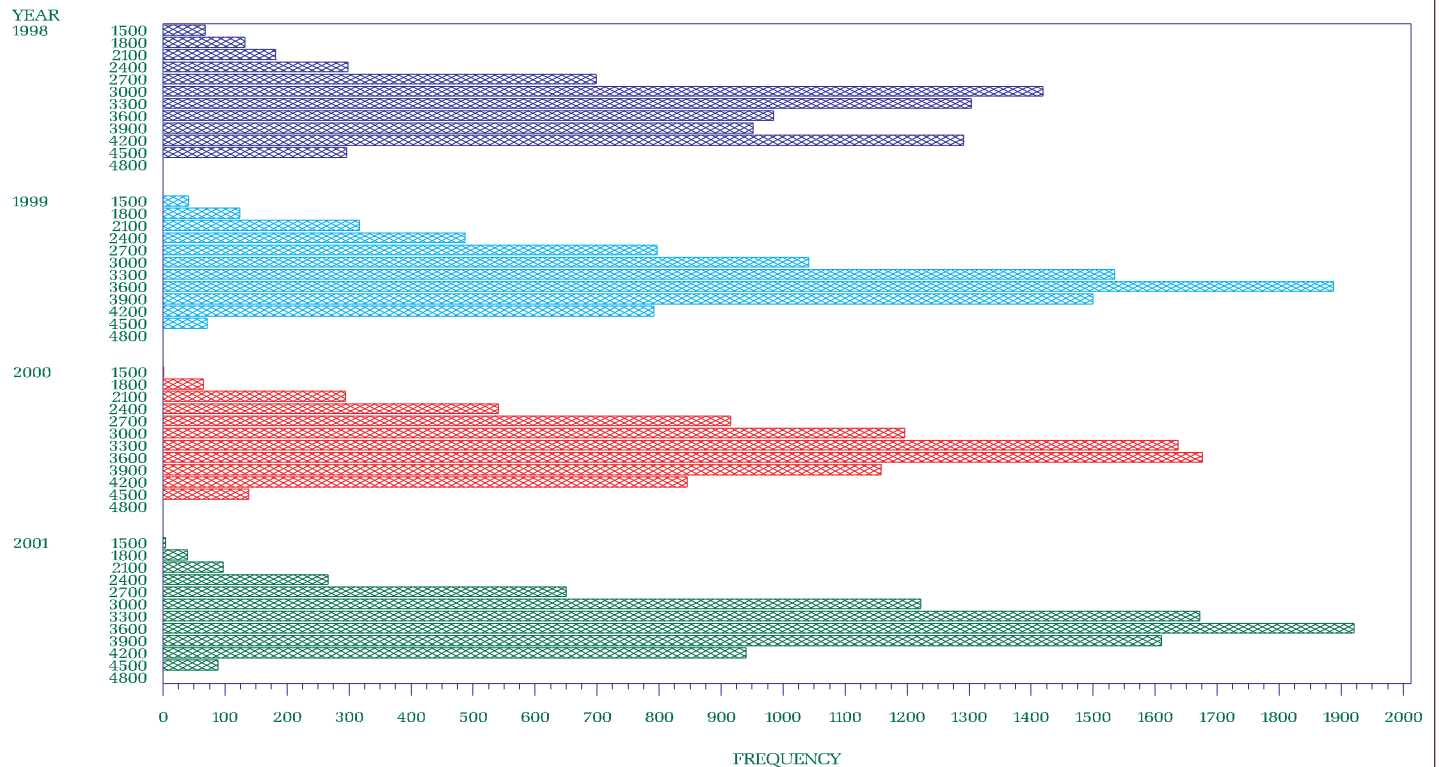
NYISO Frequency Interface Flow For January – December 2001

Volney – East (OPEN)



NYISO Frequency Interface Flow For January 1998 – December 2001

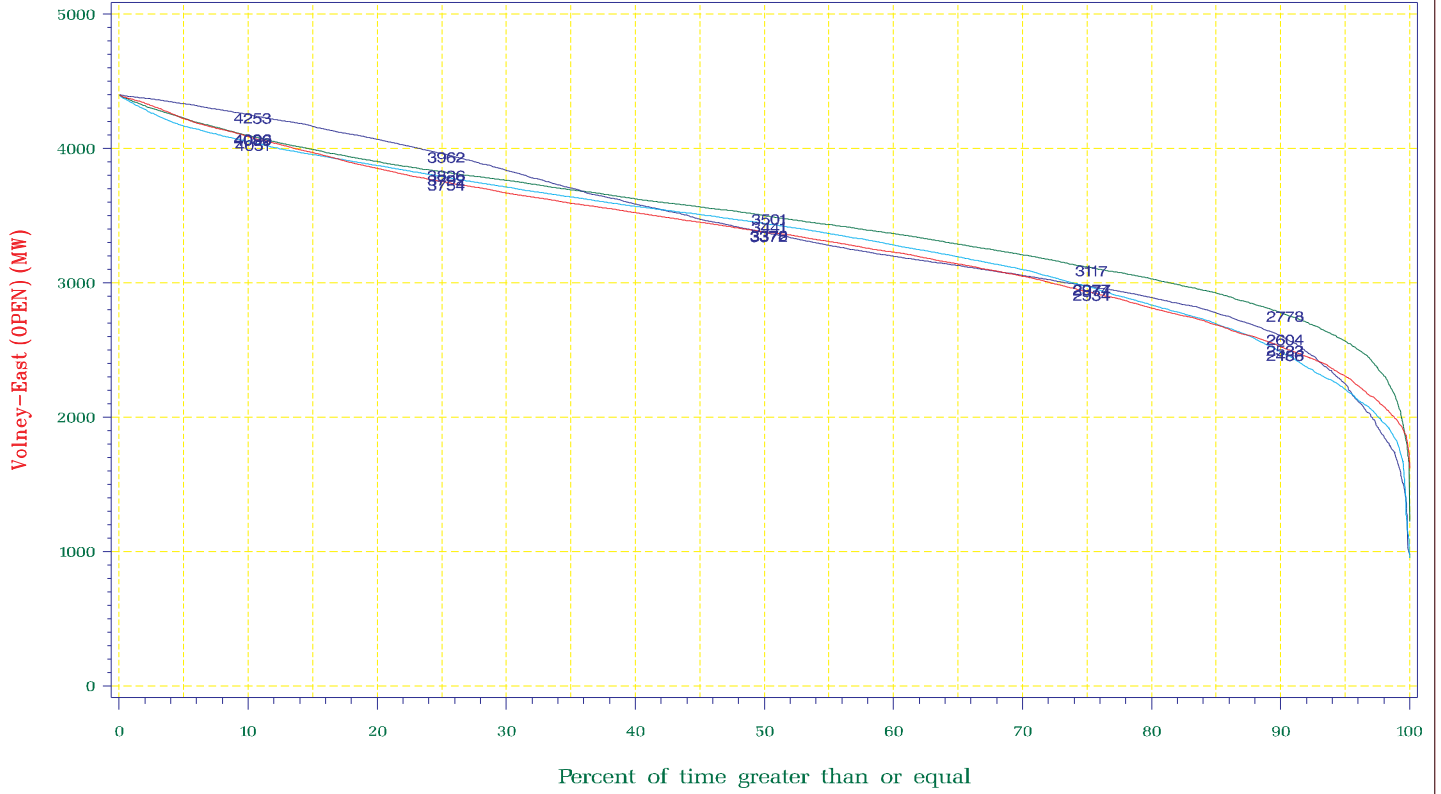
Volney – East (OPEN)



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

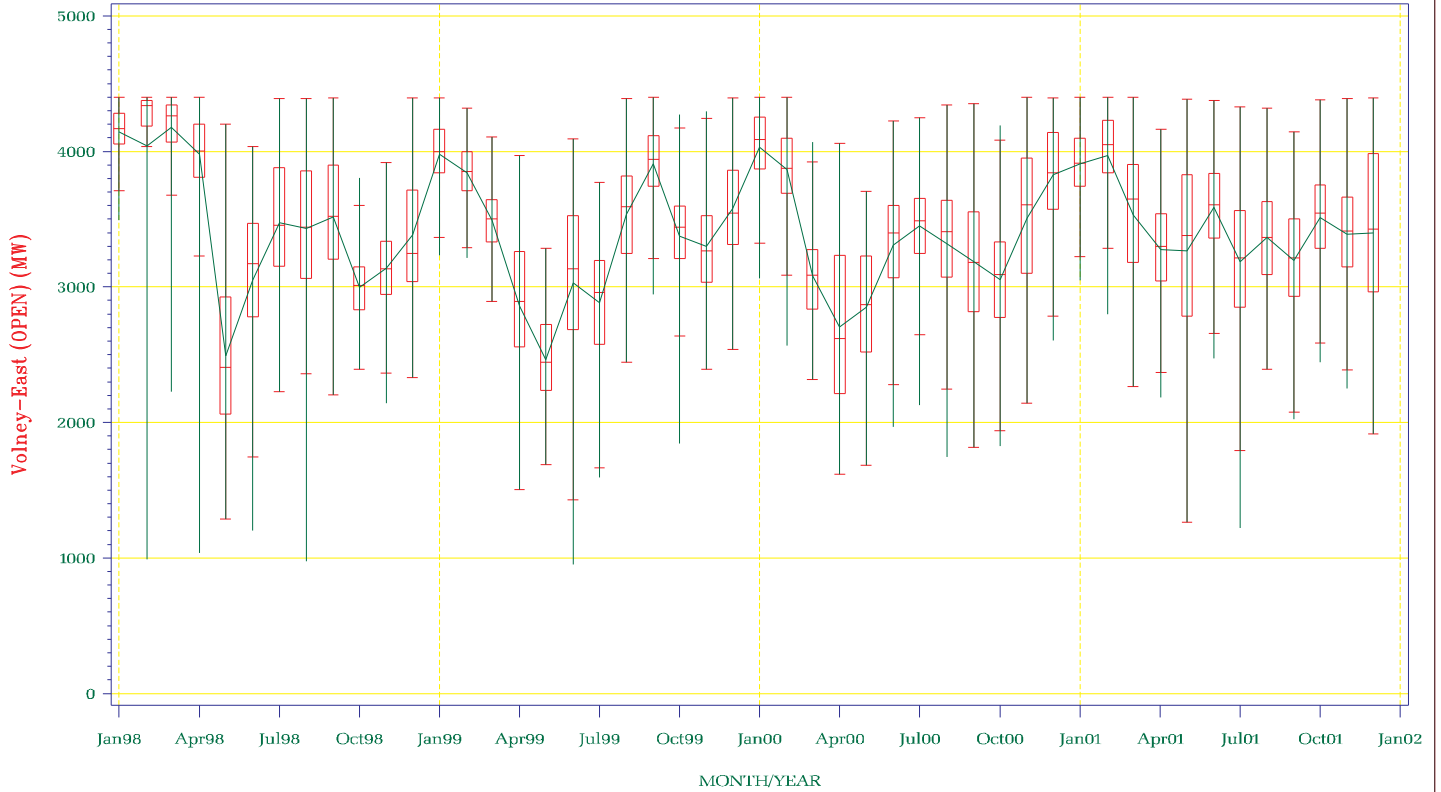
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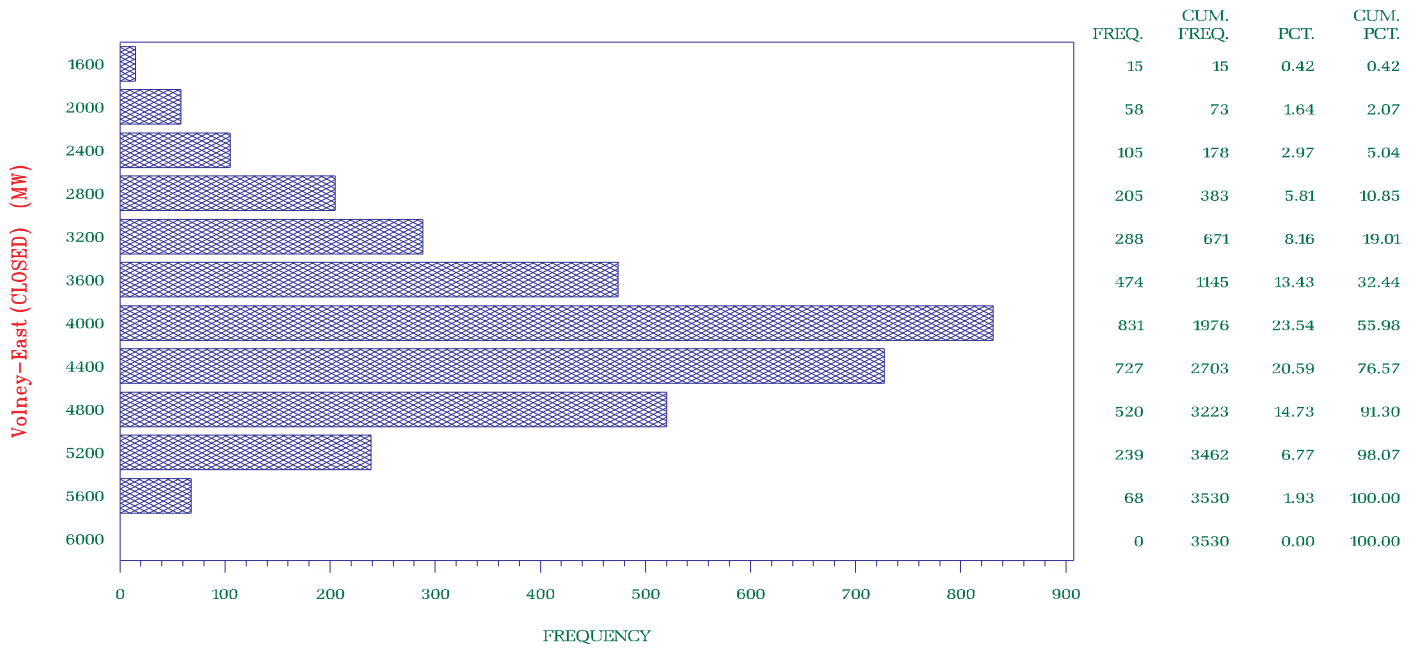
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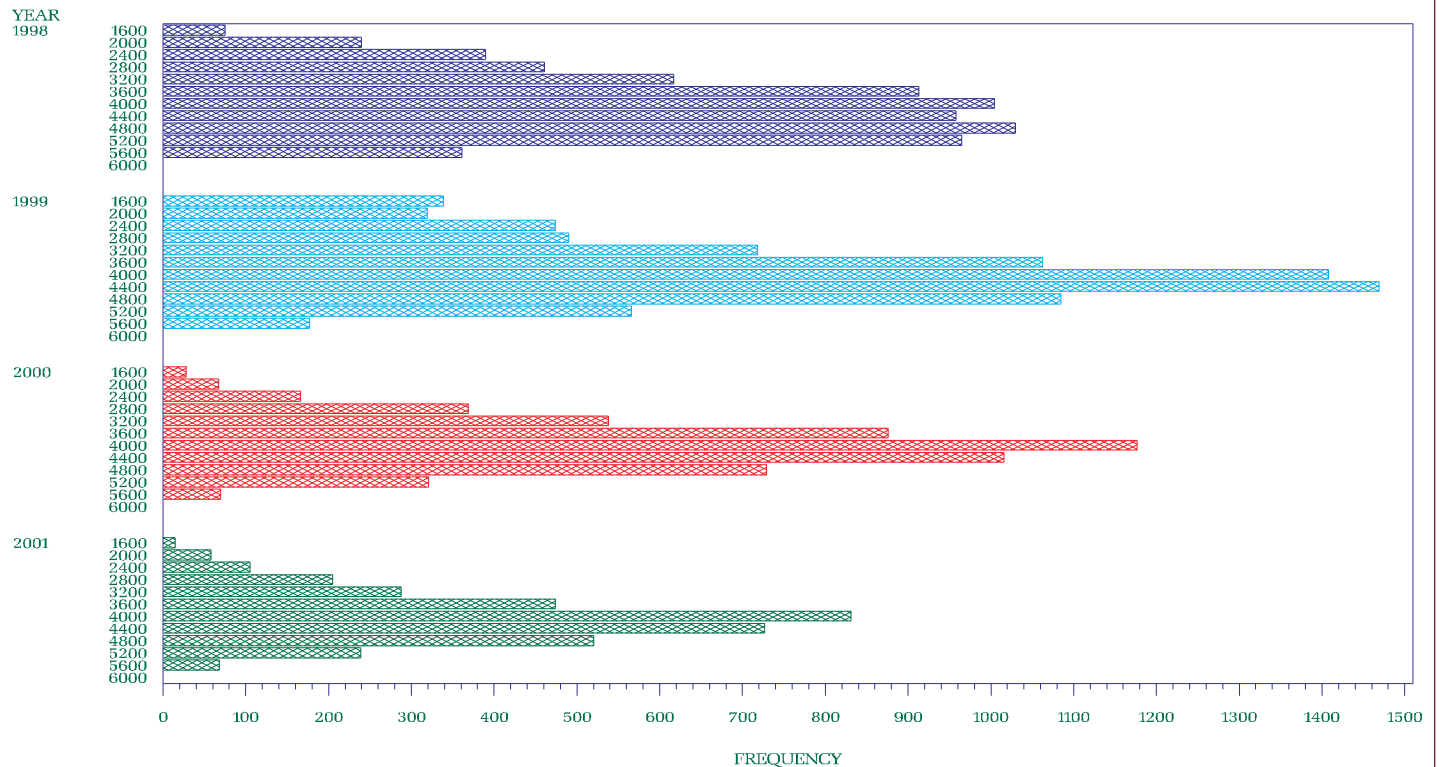
NYISO Frequency Interface Flow For January – December 2001

Volney – East (CLOSED)



NYISO Frequency Interface Flow For January 1998 – December 2001

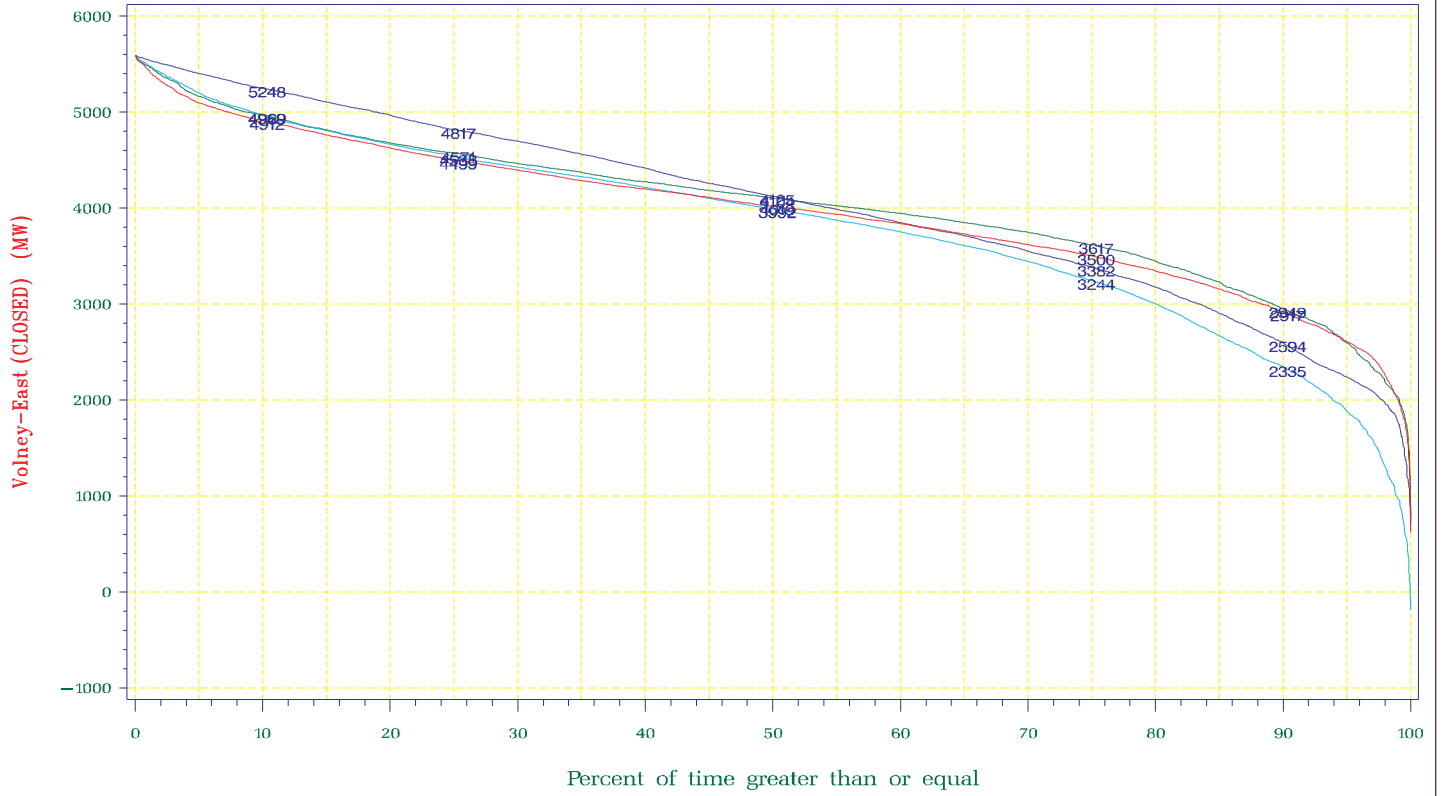
Volney – East (CLOSED)



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

Volney – East (CLOSED)



1998 1999 2000 2001

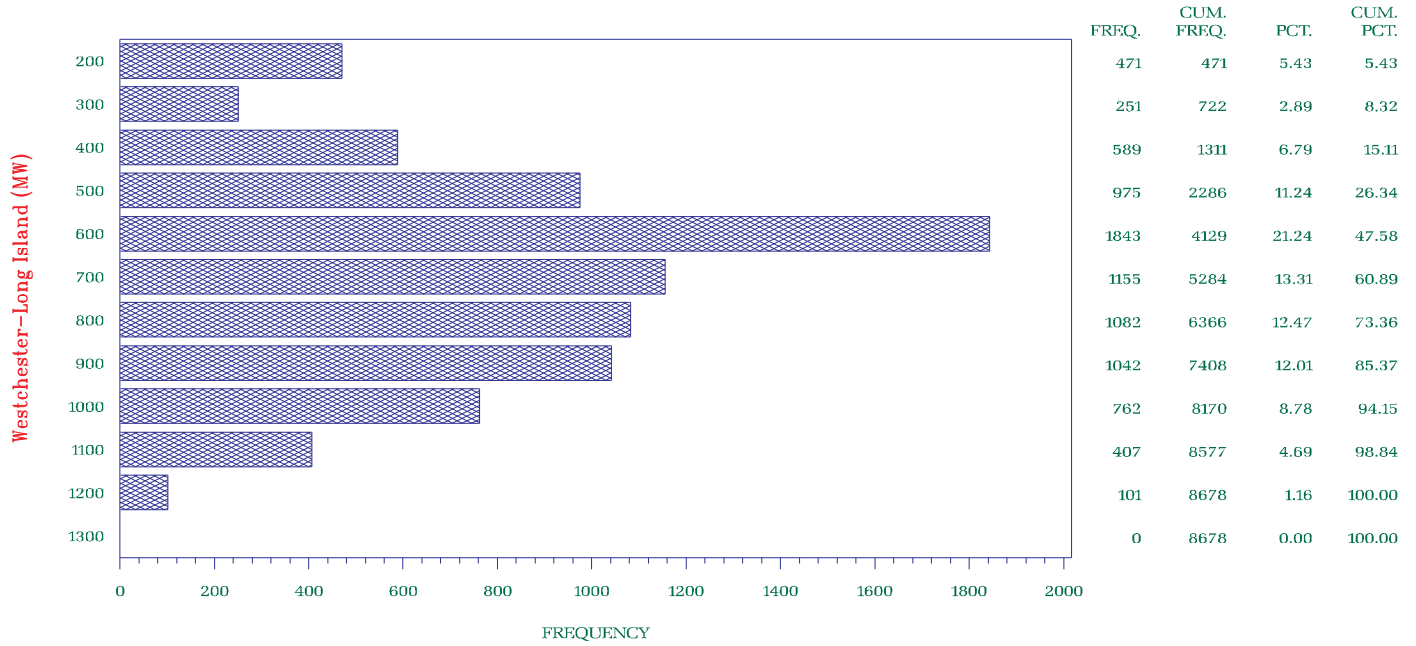
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

Volney – East (CLOSED)



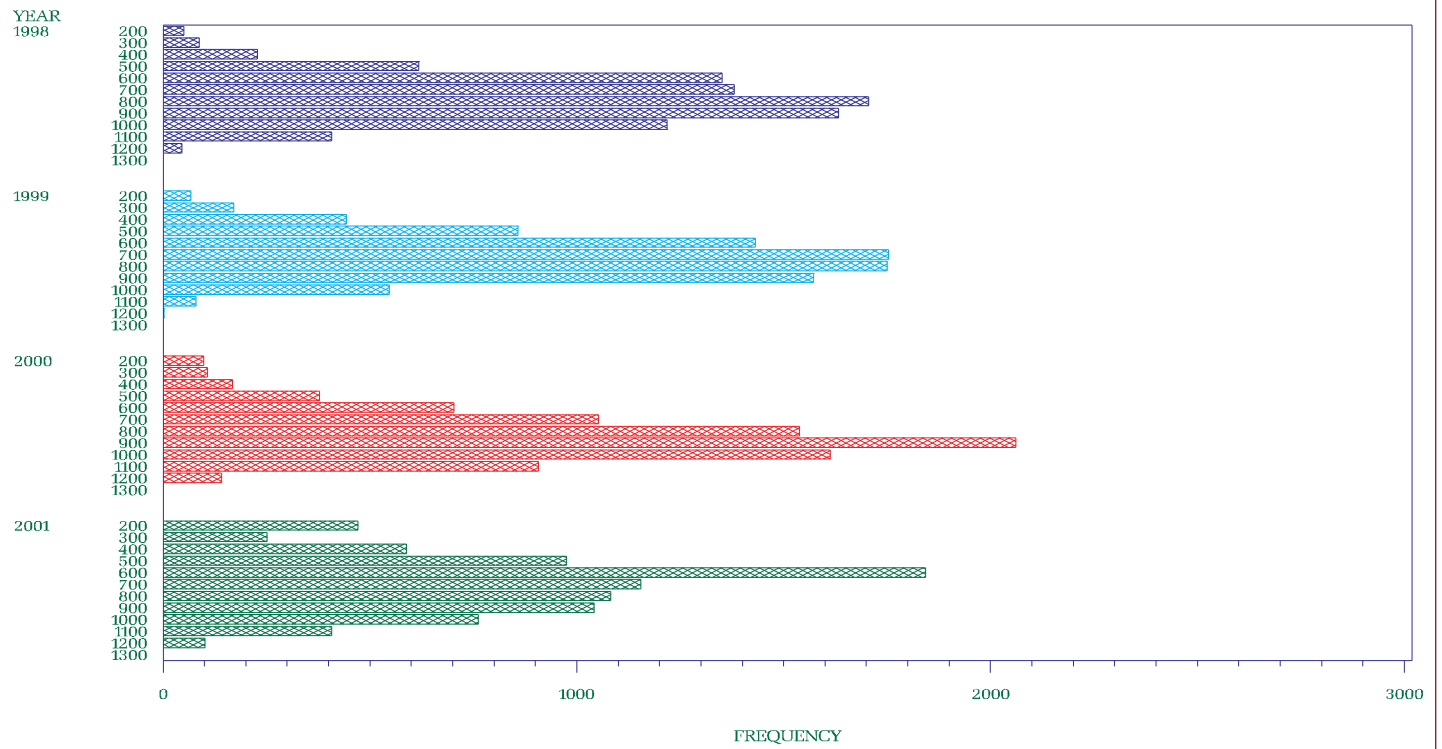
NYISO Frequency Interface Flow For January – December 2001

Westchester – Long Island
Y49 + Y50



NYISO Frequency Interface Flow For January 1998 – December 2001

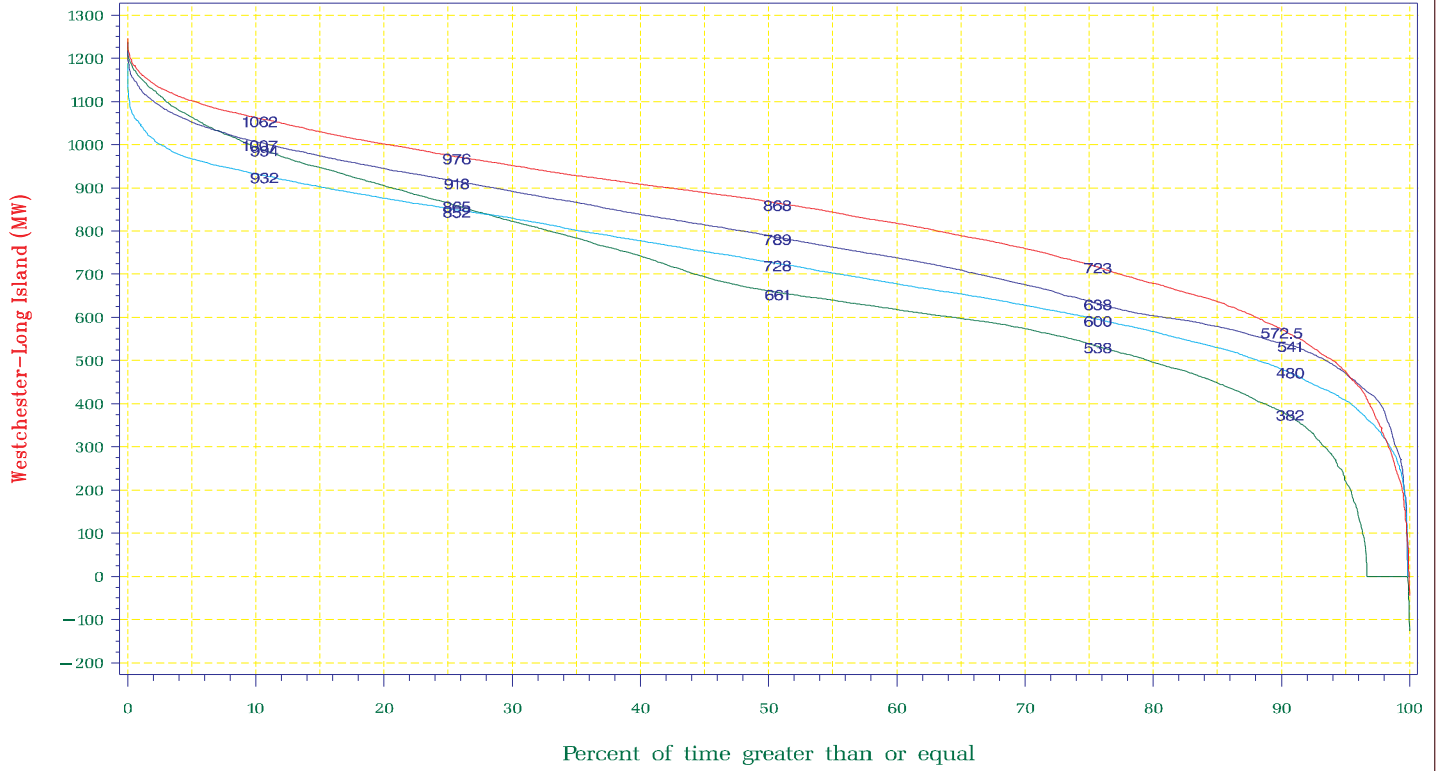
Westchester – Long Island
Y49 + Y50



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

Westchester – Long Island
Y49 + Y50



1998 1999 2000 2001

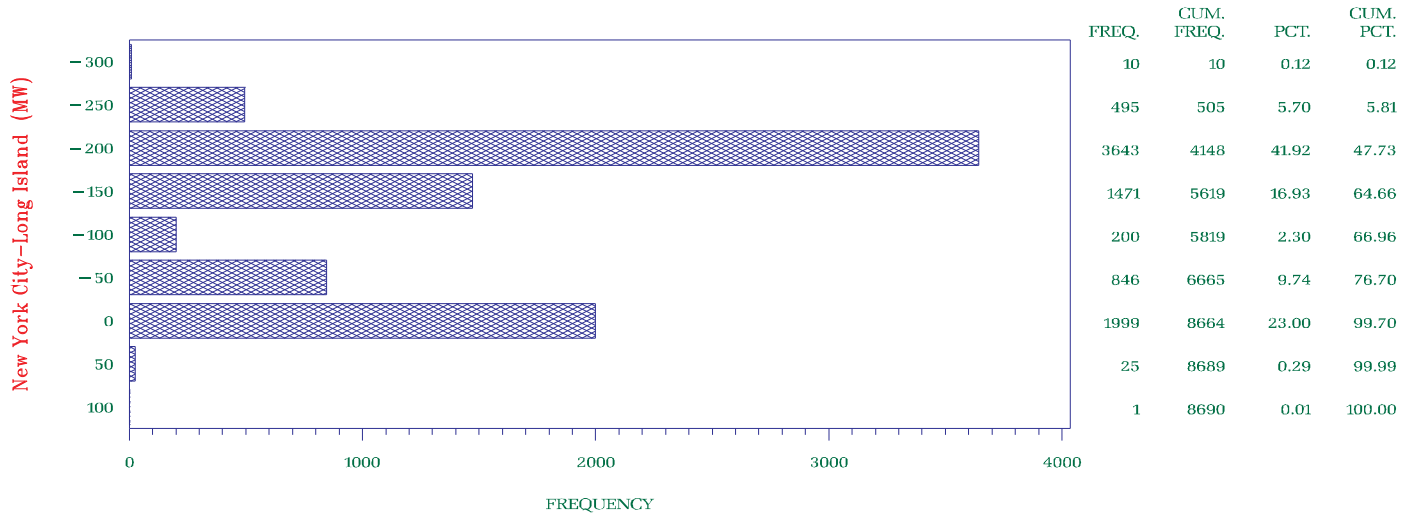
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

Westchester – Long Island
Y49 + Y50



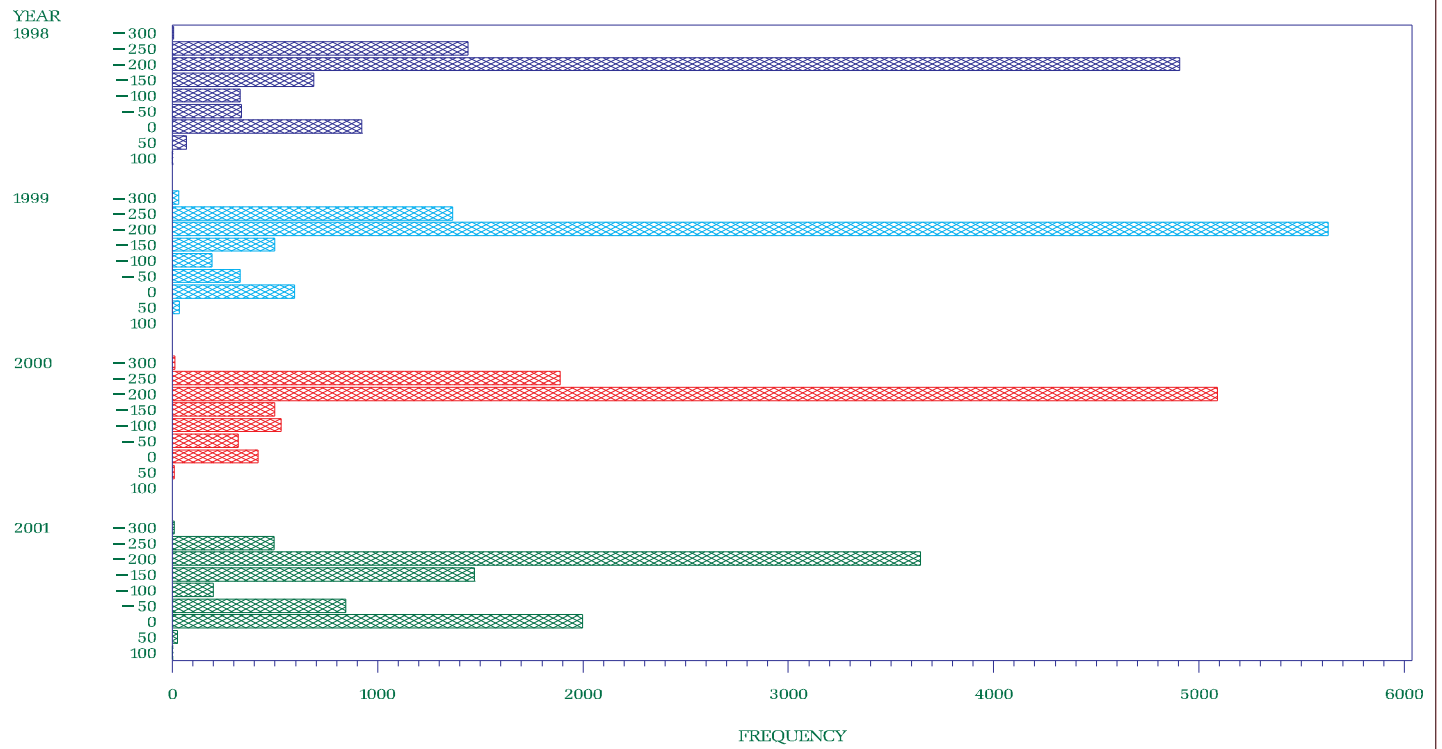
NYISO Frequency Interface Flow For January – December 2001

New York City – Long Island
901+903



NYISO Frequency Interface Flow For January 1998 – December 2001

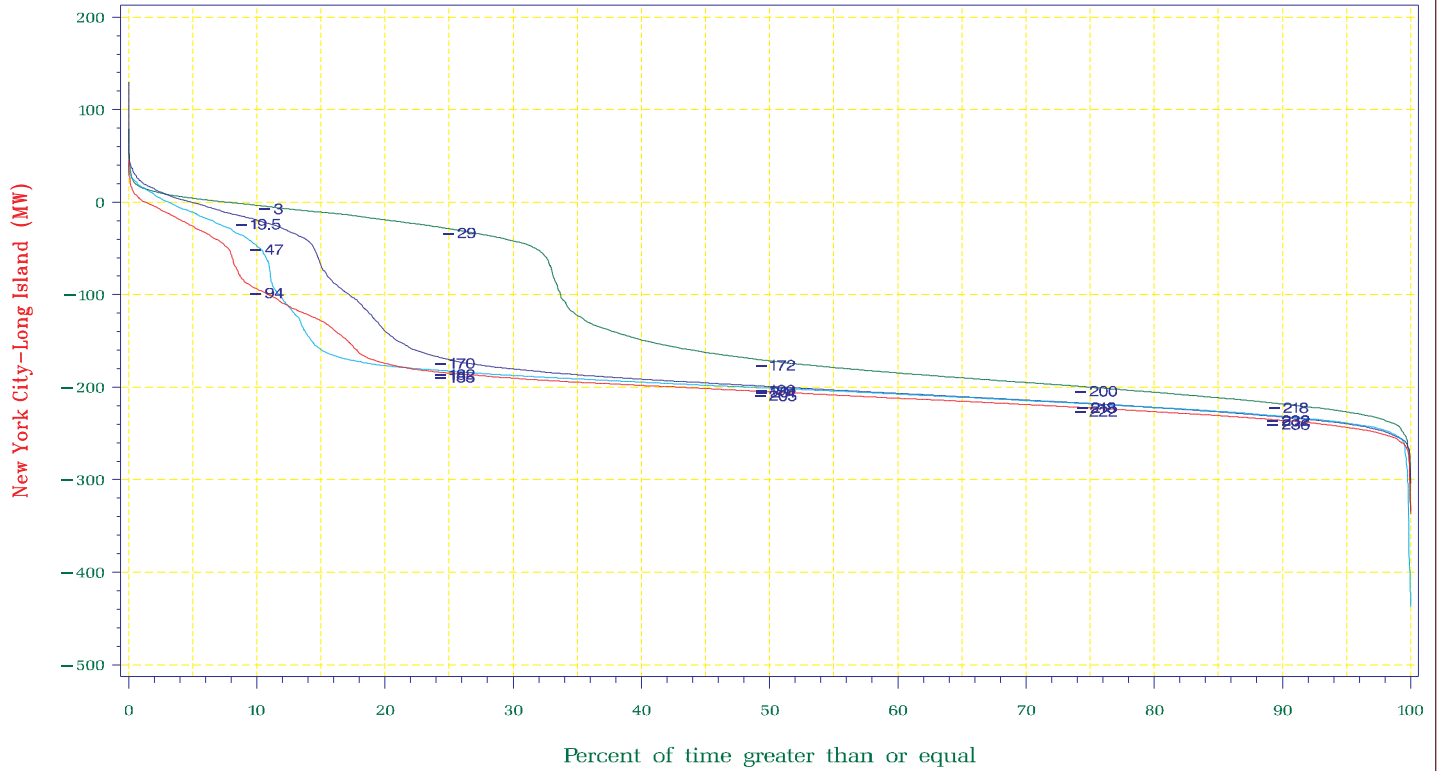
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NYISO Percent of time Interface Flow For January 1998 – December 2001

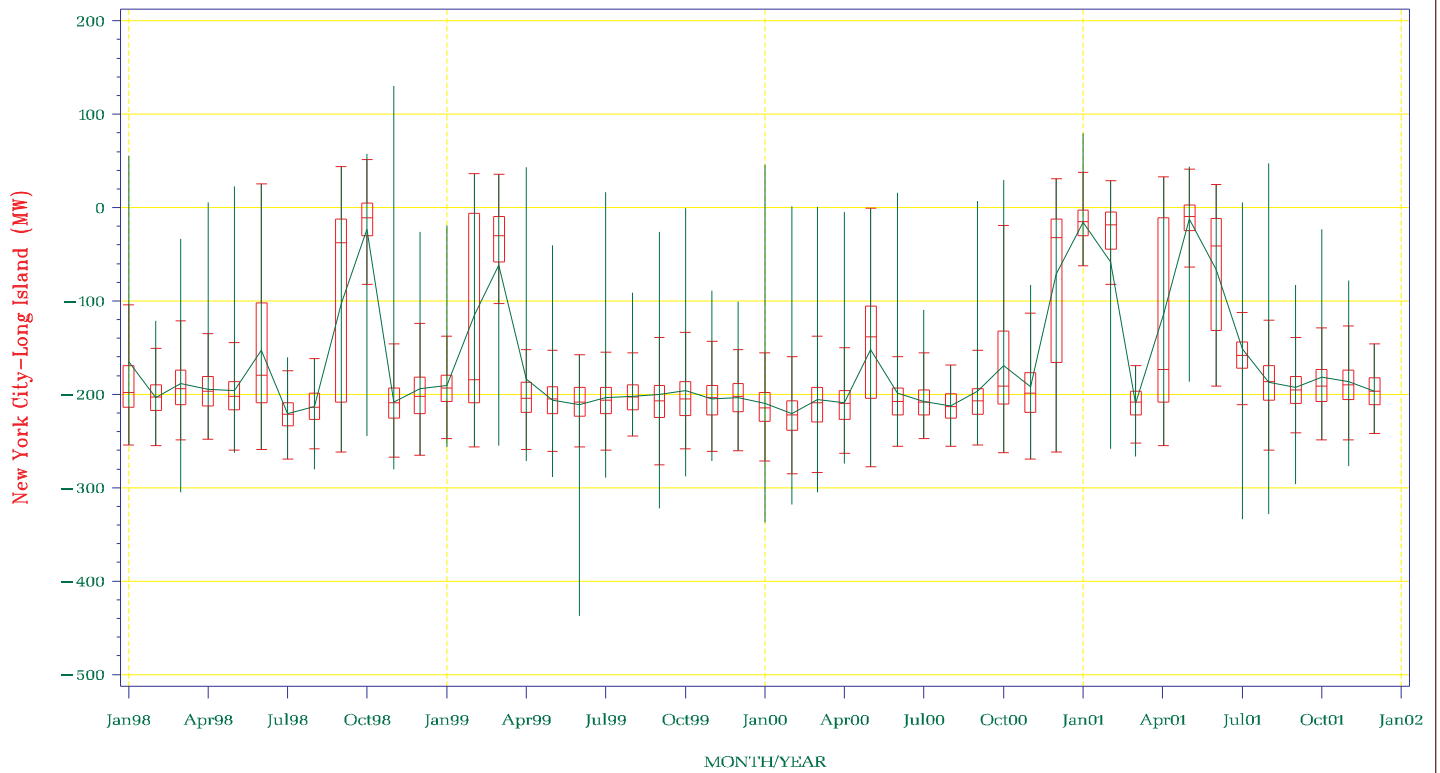
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901+903



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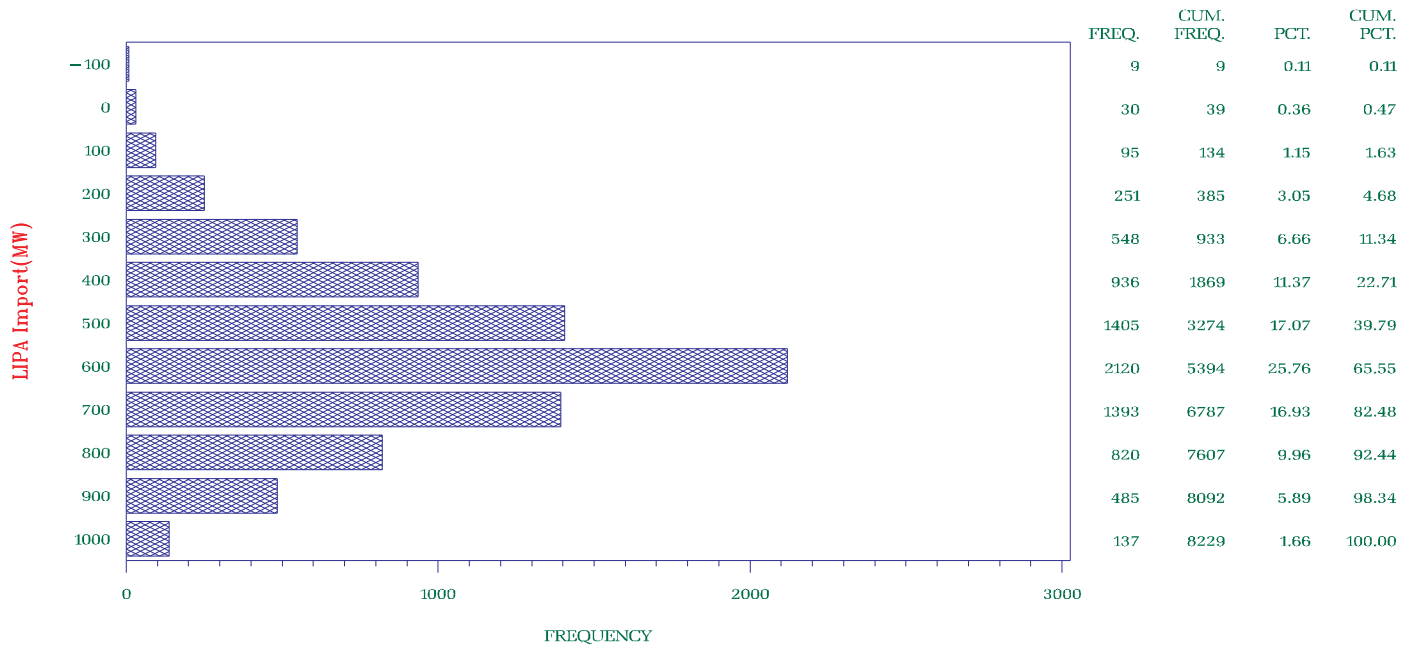
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New York City – Long Island
901+903



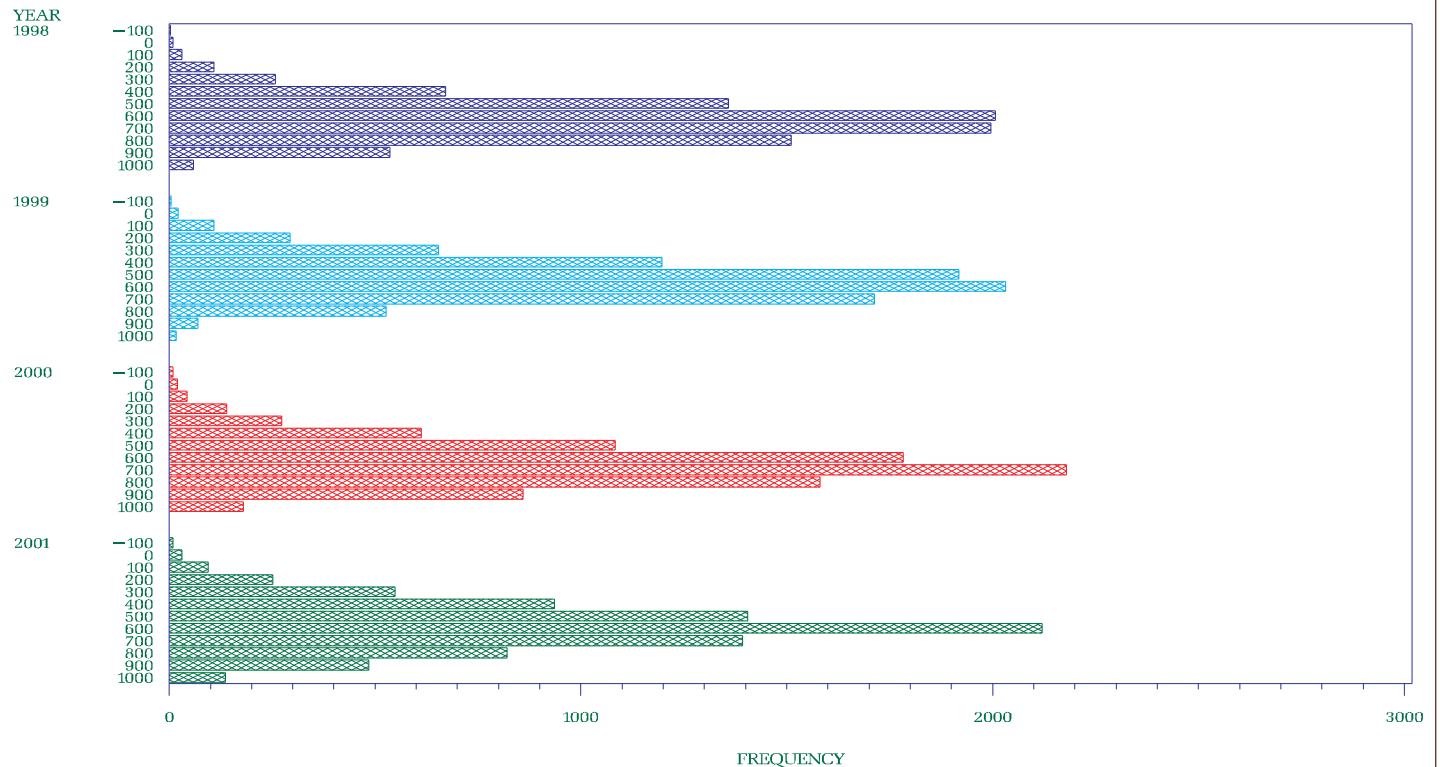
NYISO Frequency Interface Flow For January – December 2001

LIPA Import



NYISO Frequency Interface Flow For January 1998 – December 2001

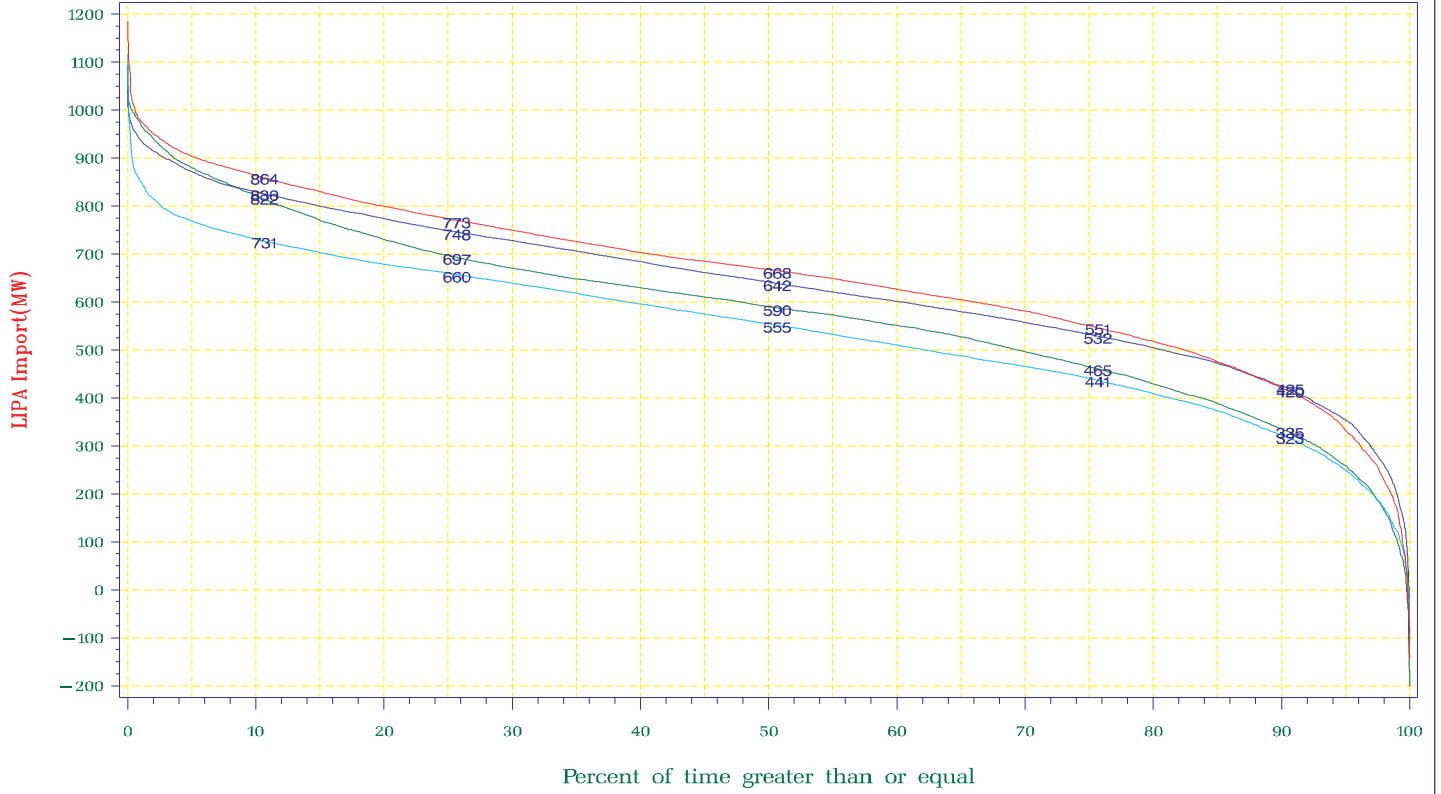
LIPA Import



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

LIPA Import



1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

LIPA Import



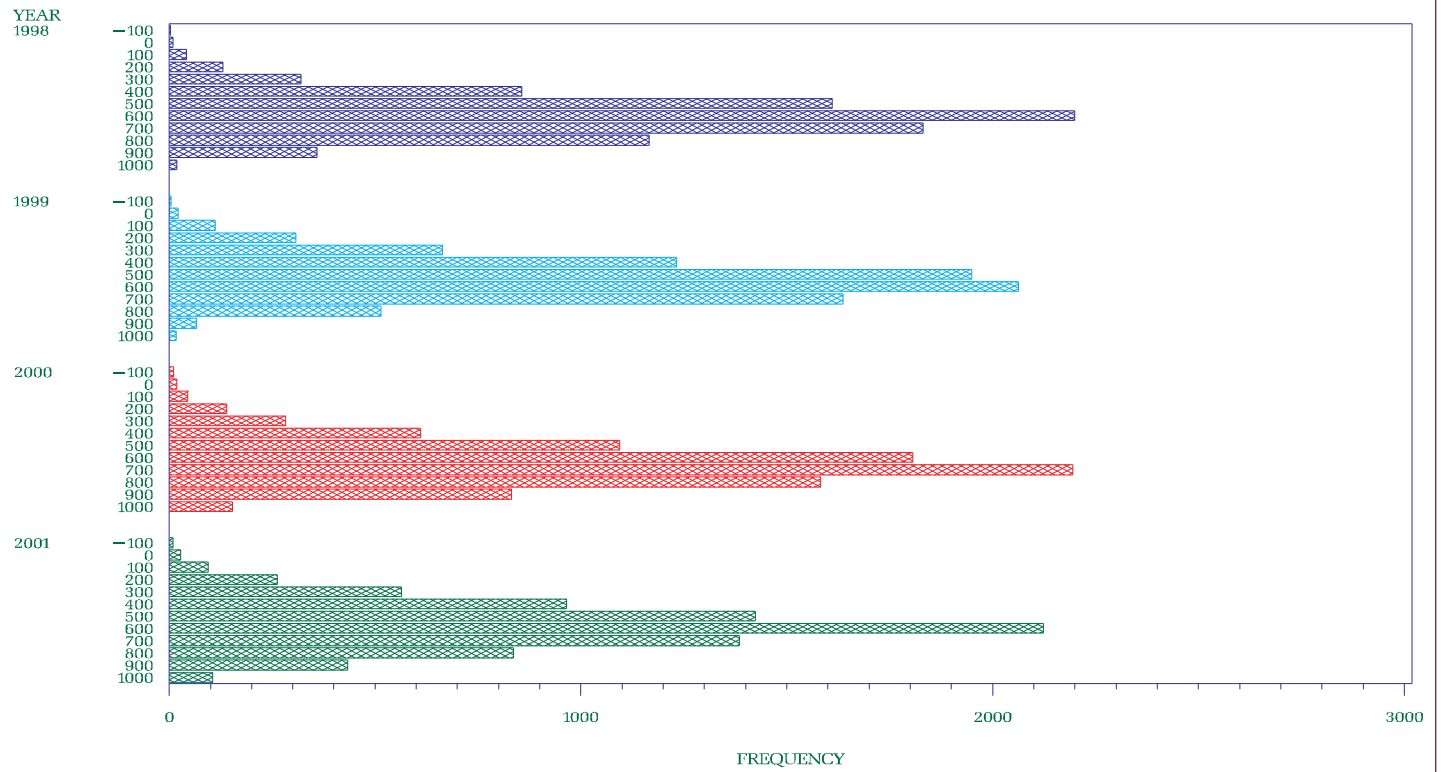
NYISO Frequency Interface Flow For January – December 2001

Con Ed – LIPA



NYISO Frequency Interface Flow For January 1998 – December 2001

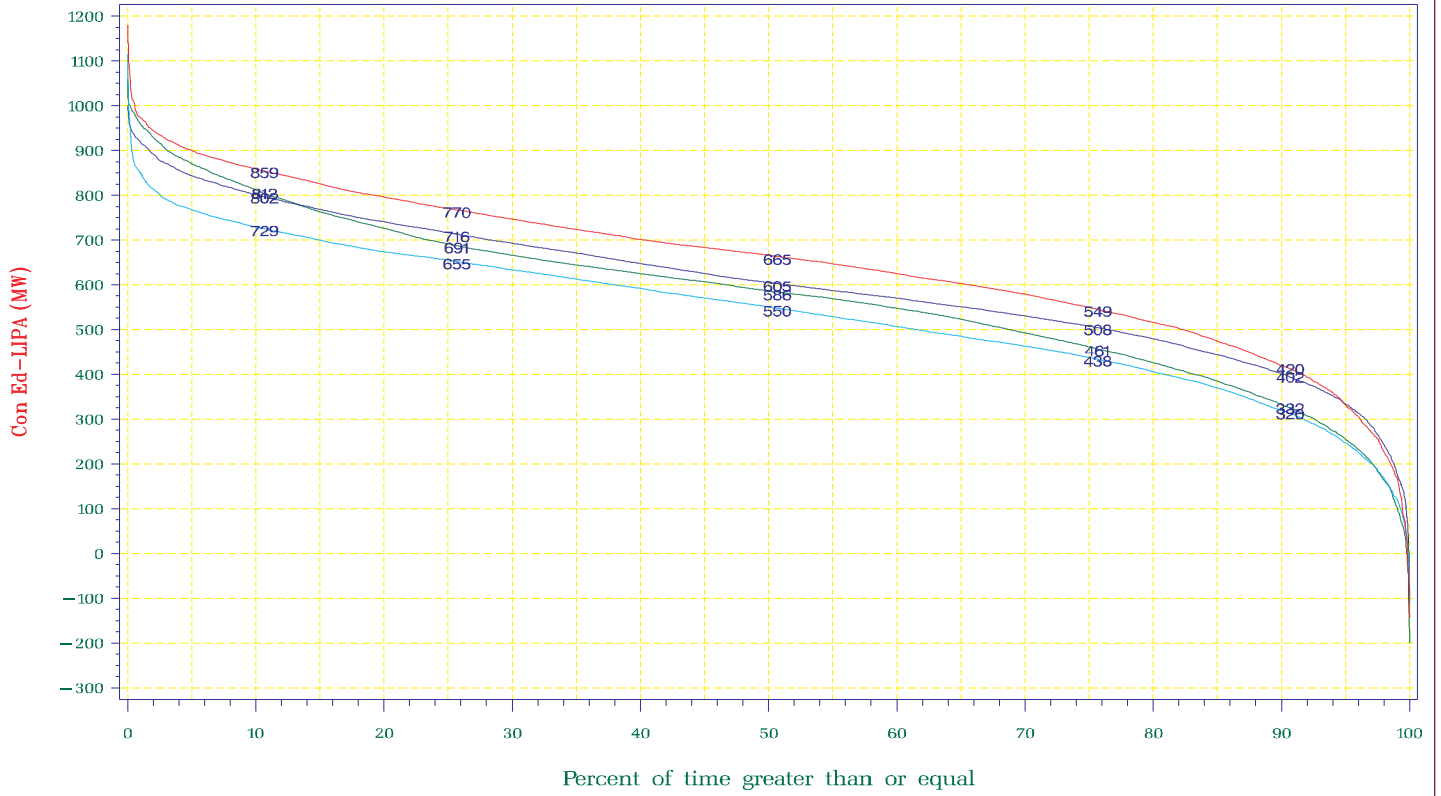
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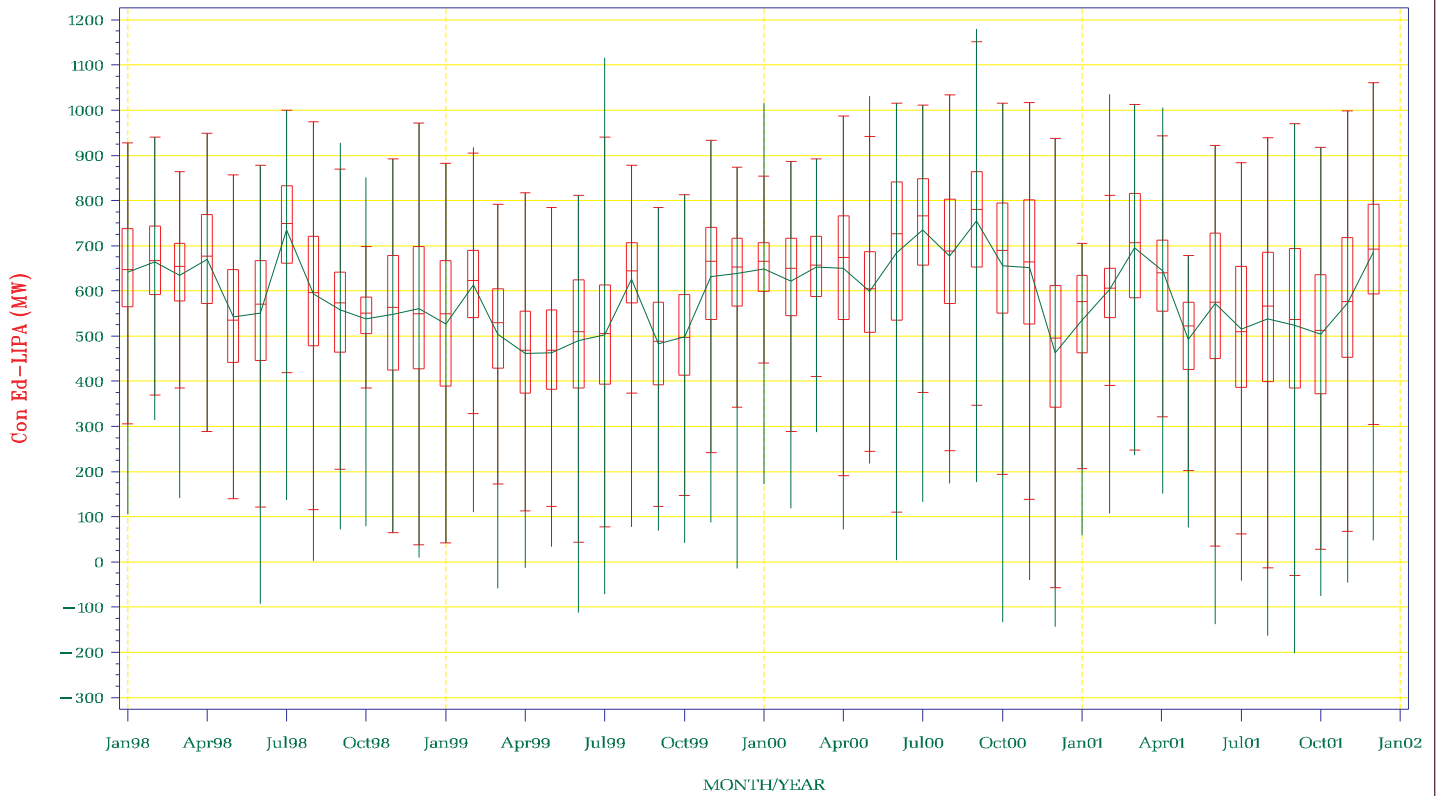
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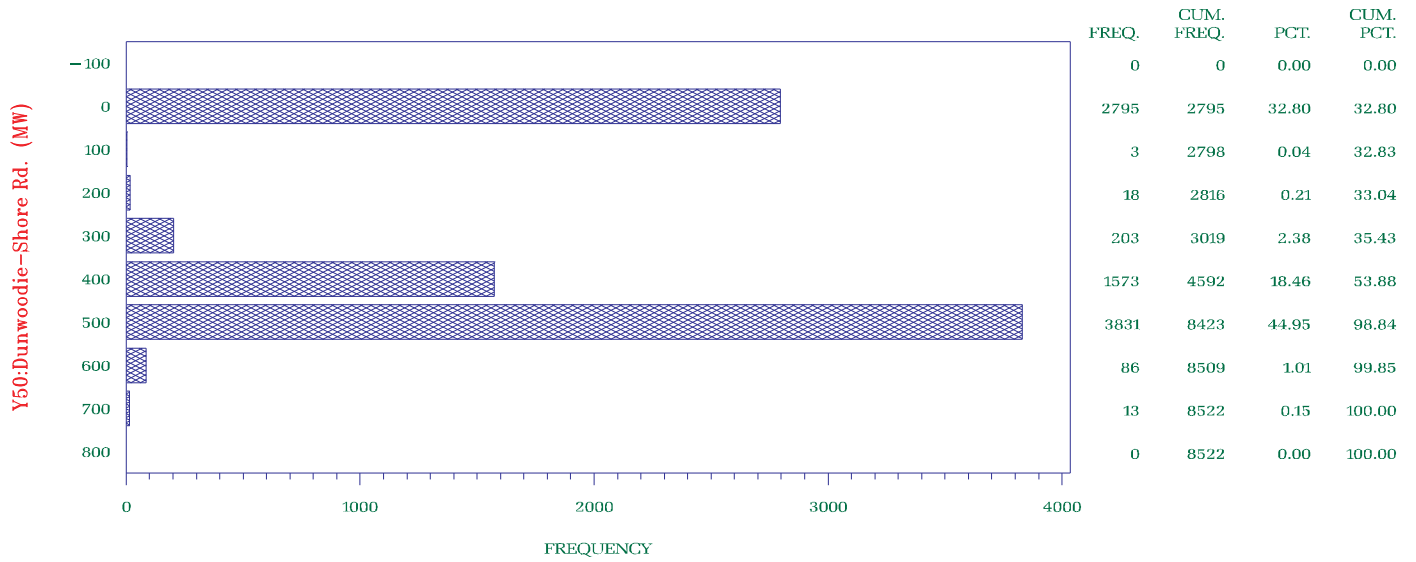
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Con Ed – LIPA



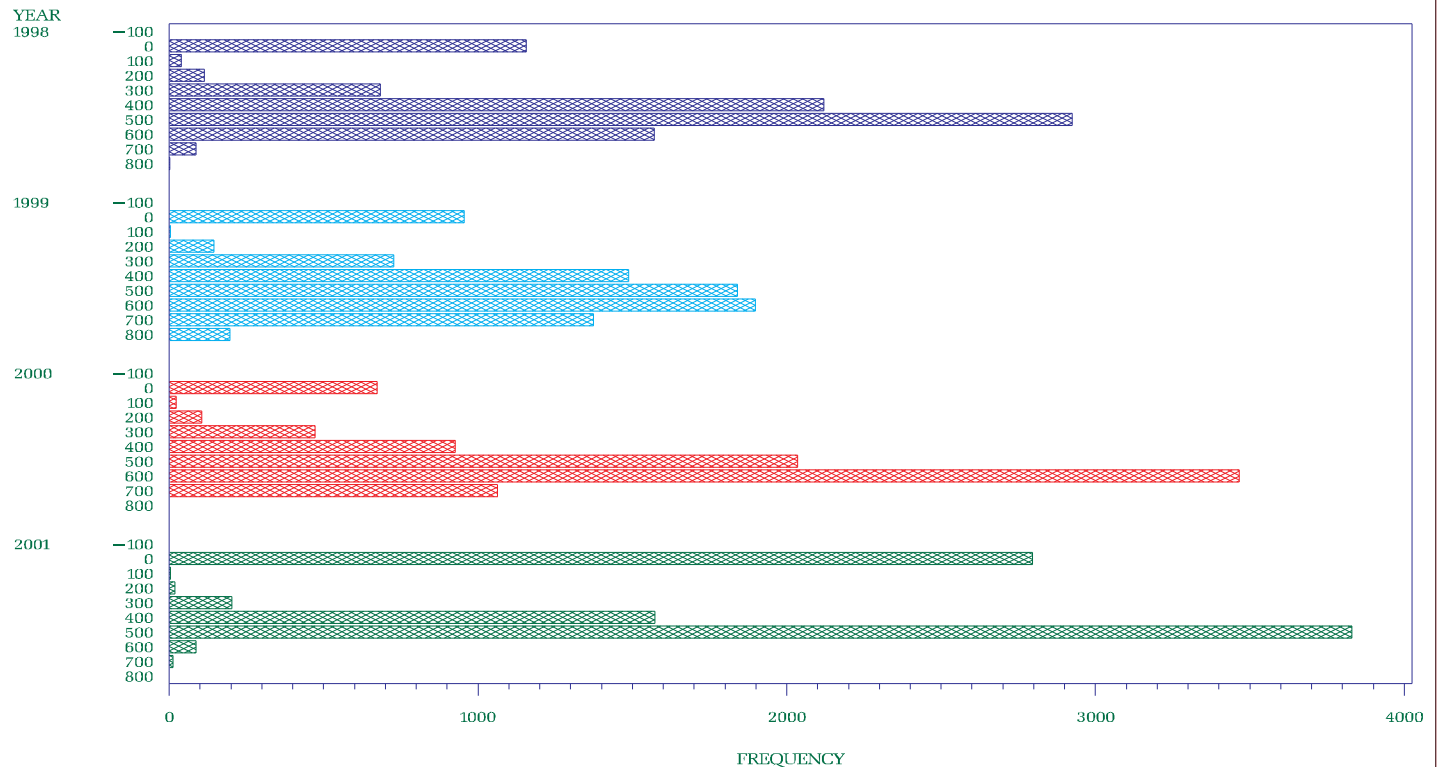
NYISO Frequency Interface Flow For January – December 2001

Y50:Dunwoodie – Shore Rd.



NYISO Frequency Interface Flow For January 1998 – December 2001

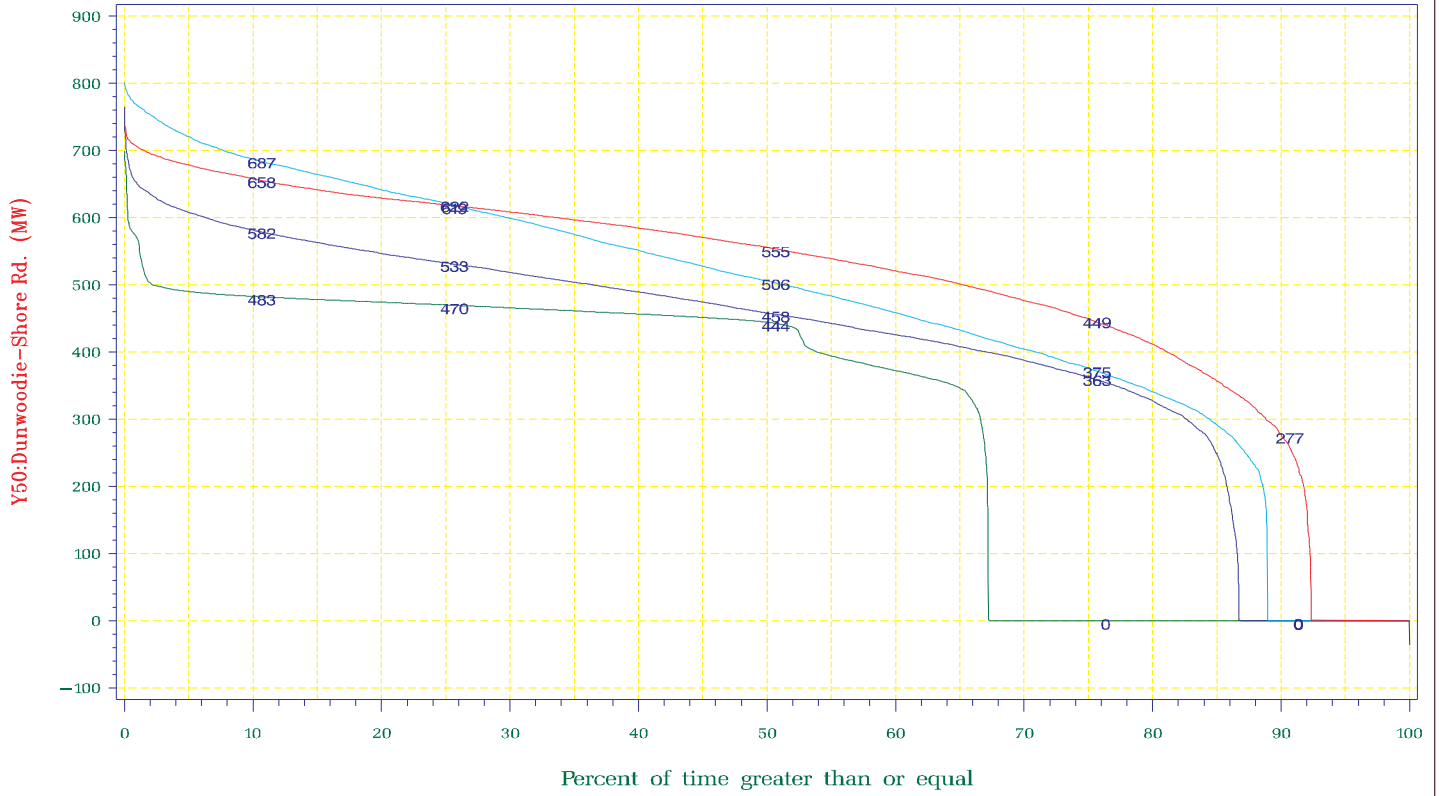
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1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

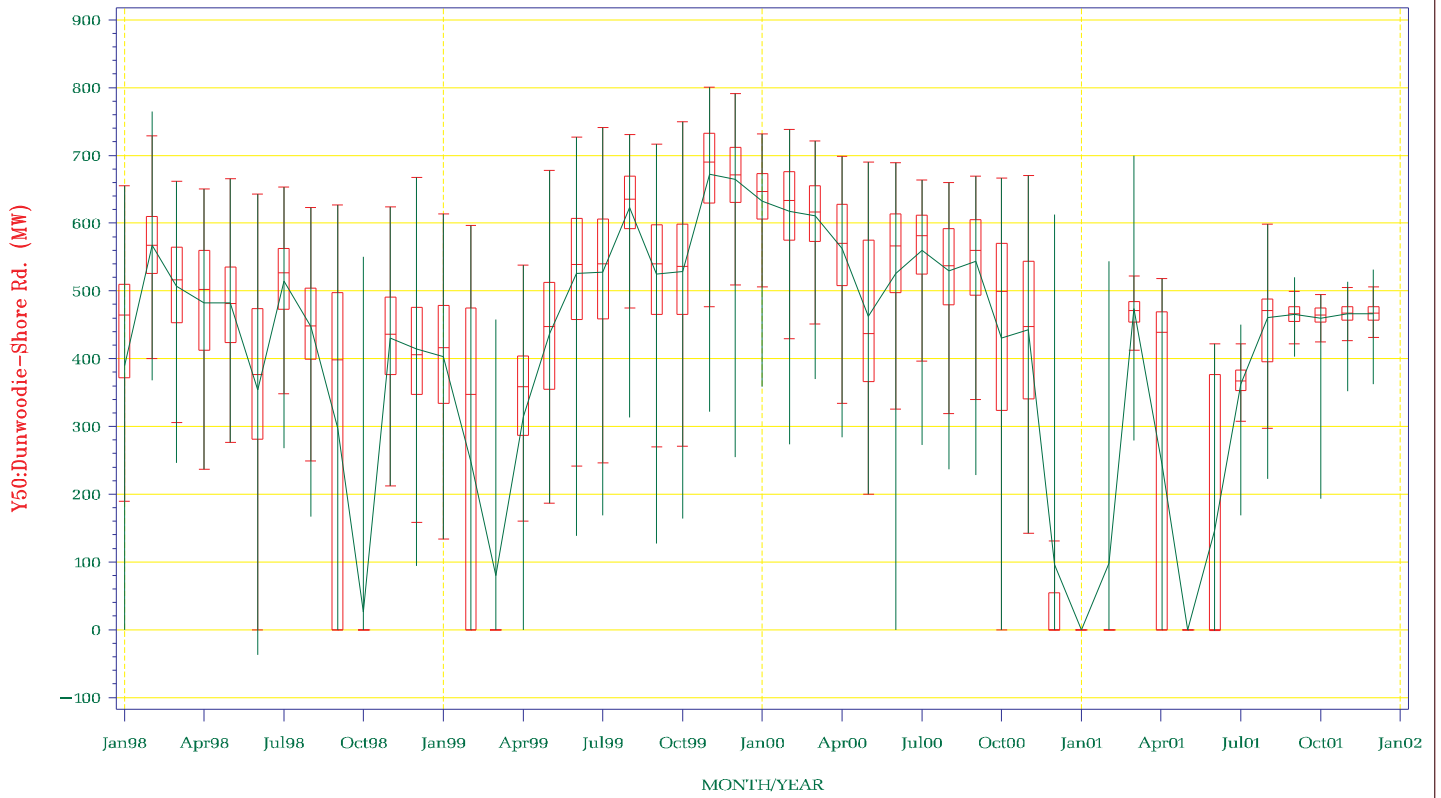
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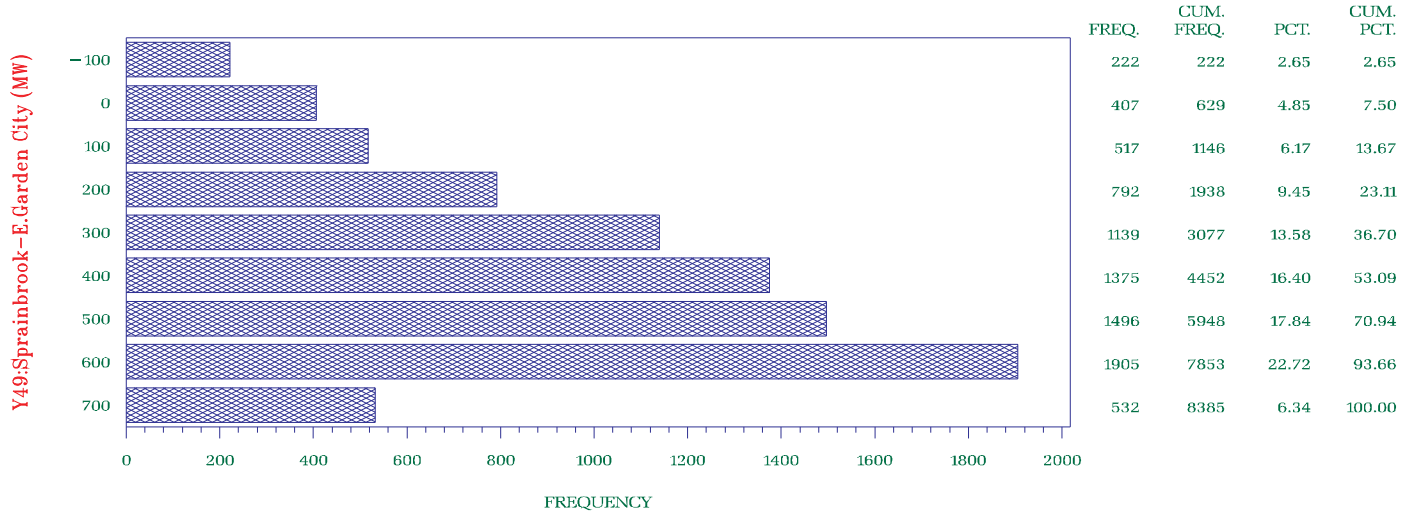
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Y50:Dunwoodie – Shore Rd.



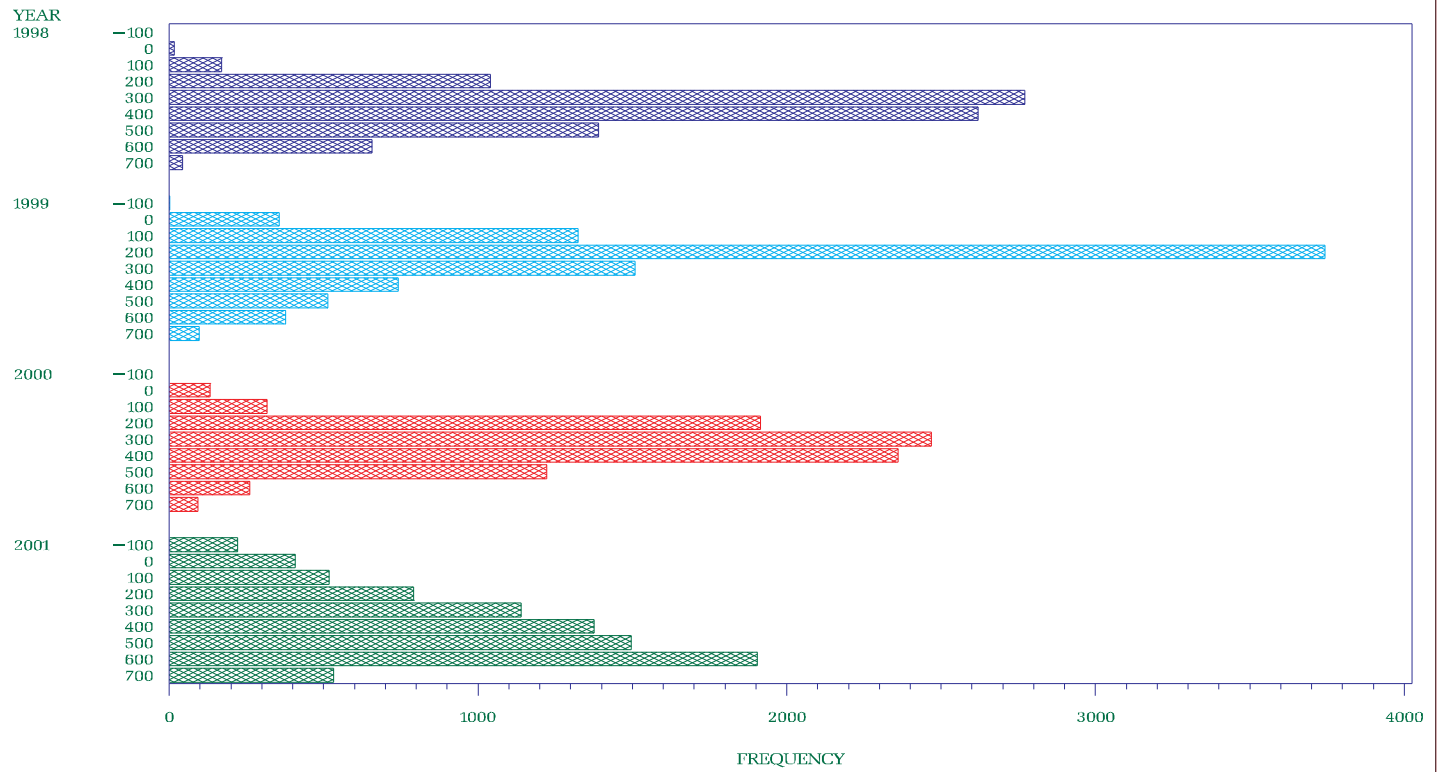
NYISO Frequency Interface Flow For January – December 2001

Y49:Sprainbrook – E.Garden City



NYISO Frequency Interface Flow For January 1998 – December 2001

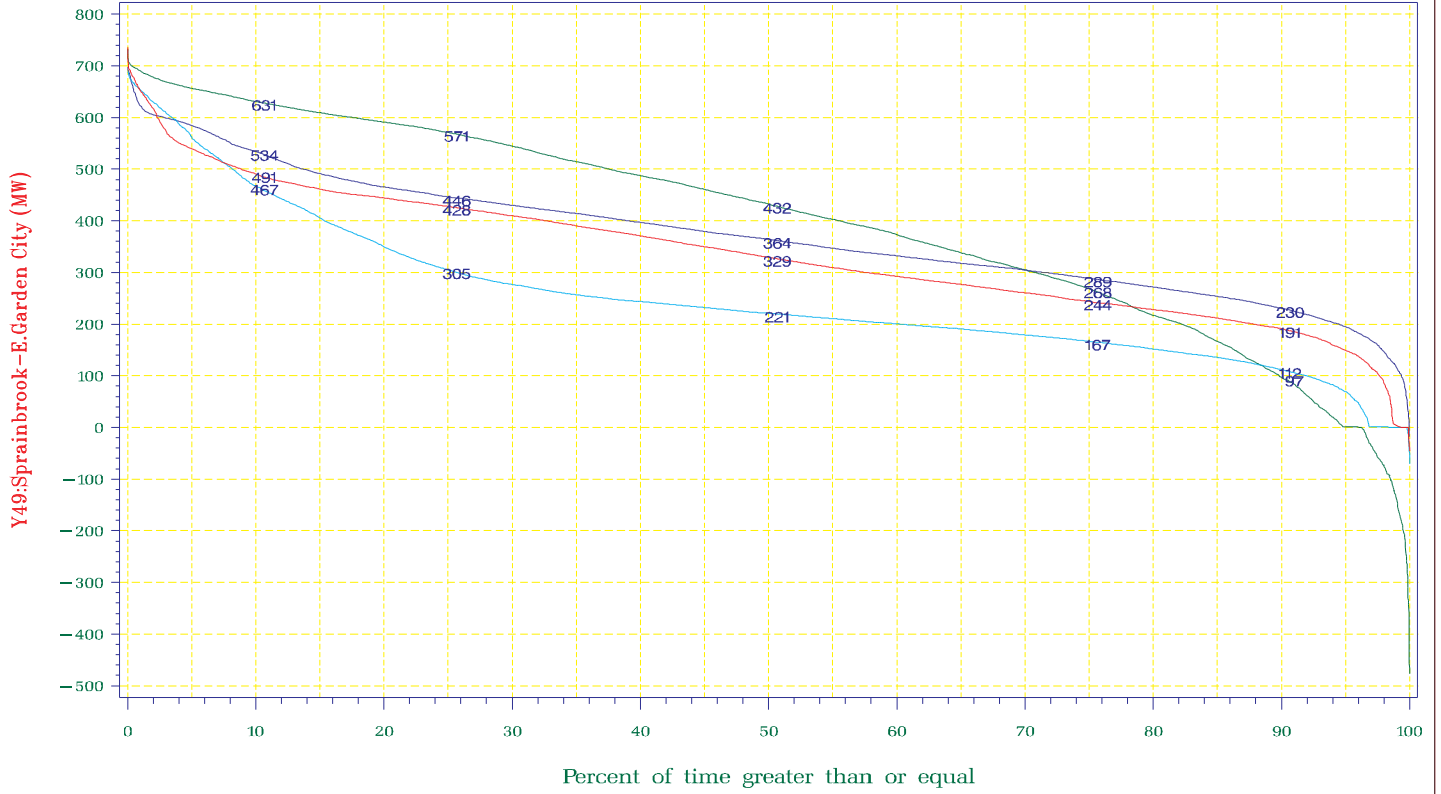
Y49:Sprainbrook – E.Garden City



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NYISO Percent of time Interface Flow For January 1998 – December 2001

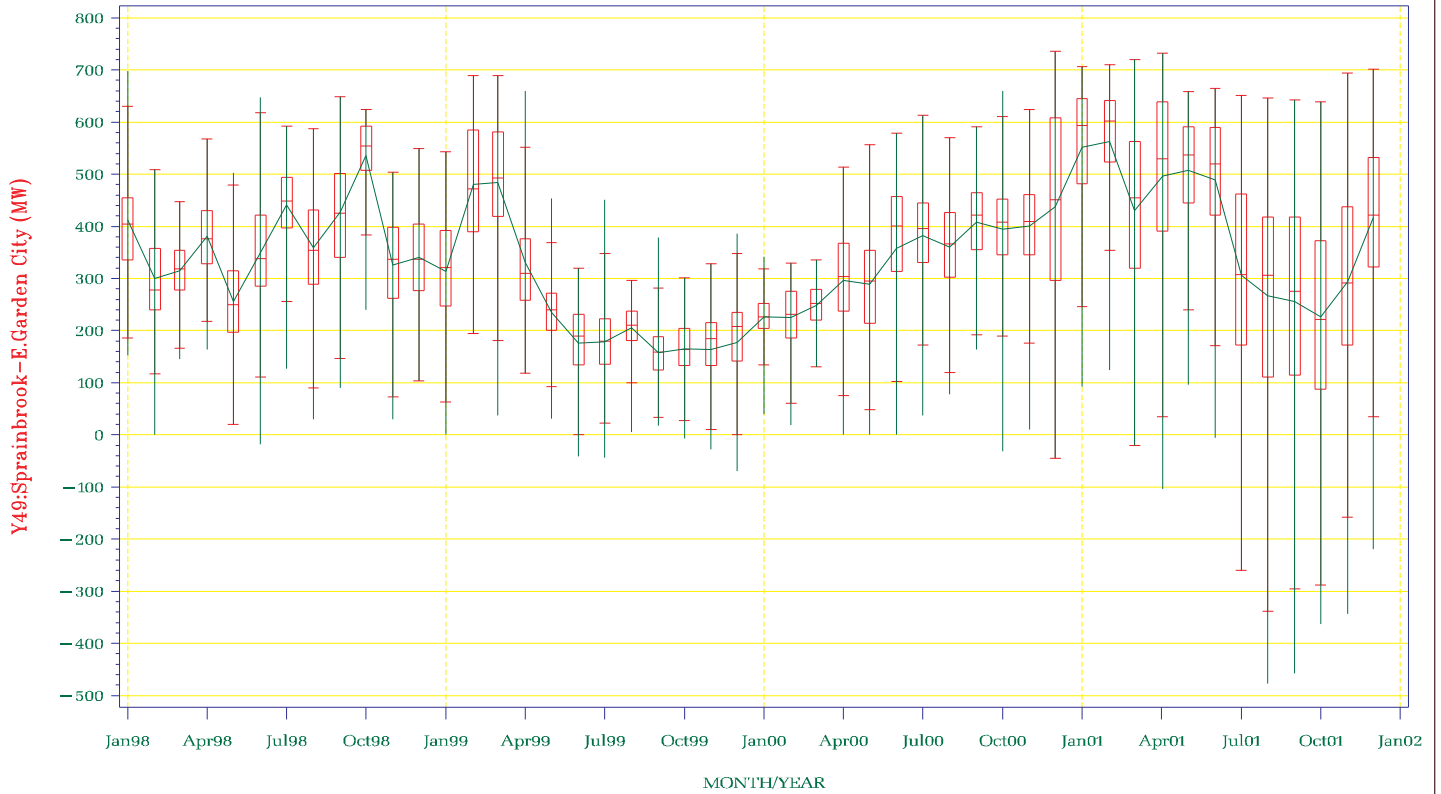
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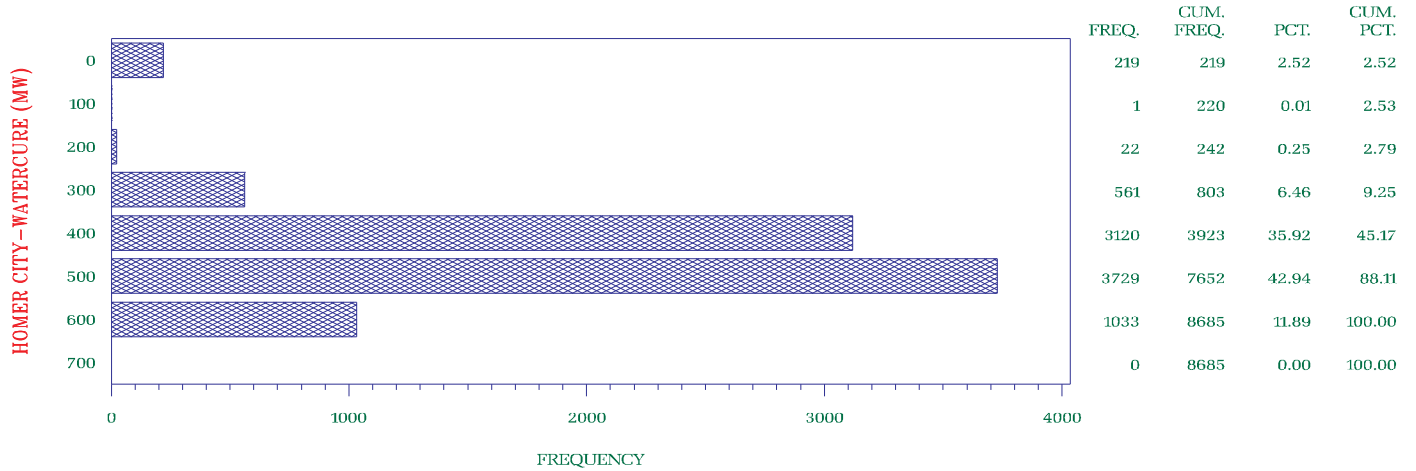
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Y49:Sprainbrook – E.Garden City



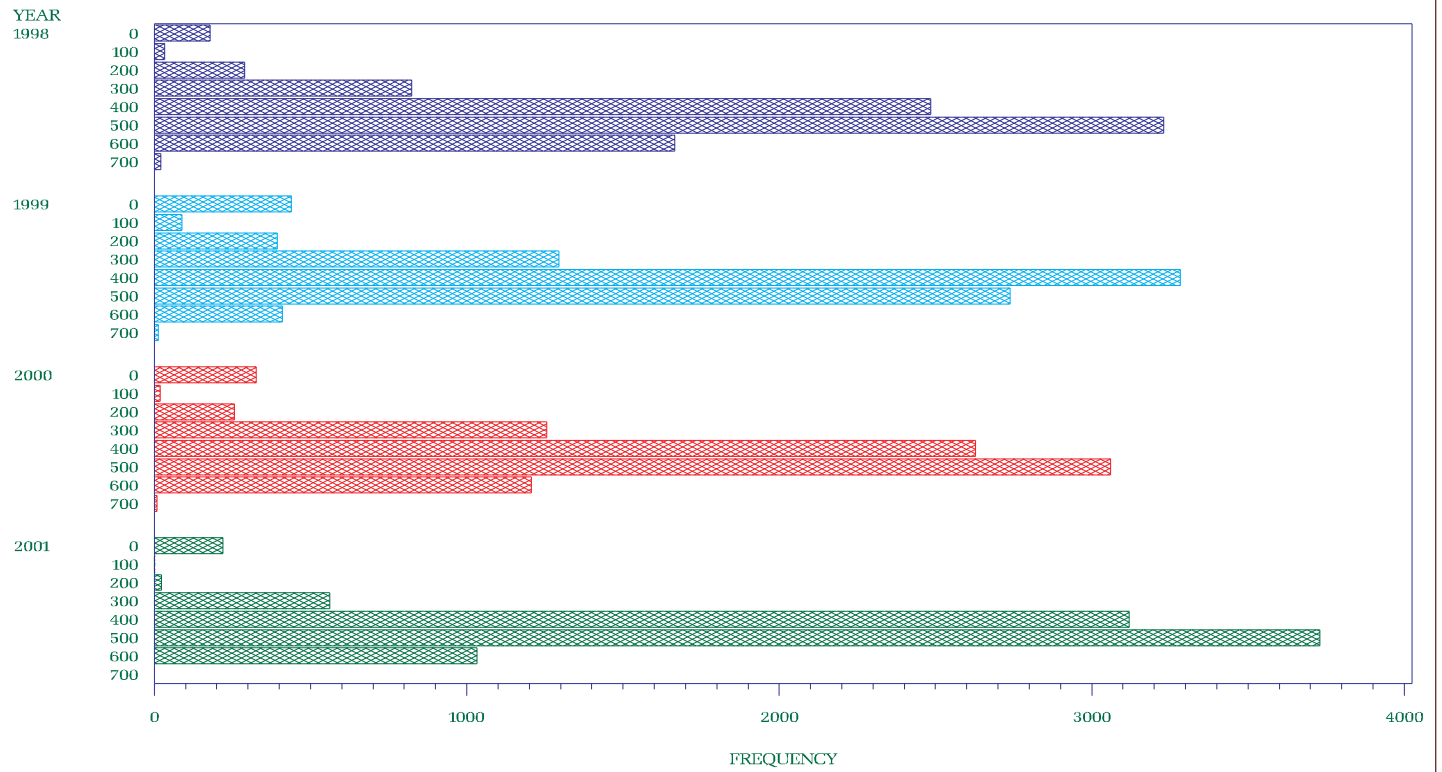
NYISO Frequency Interface Flow For January – December 2001

HOMER CITY – WATERCURE



NYISO Frequency Interface Flow For January 1998 – December 2001

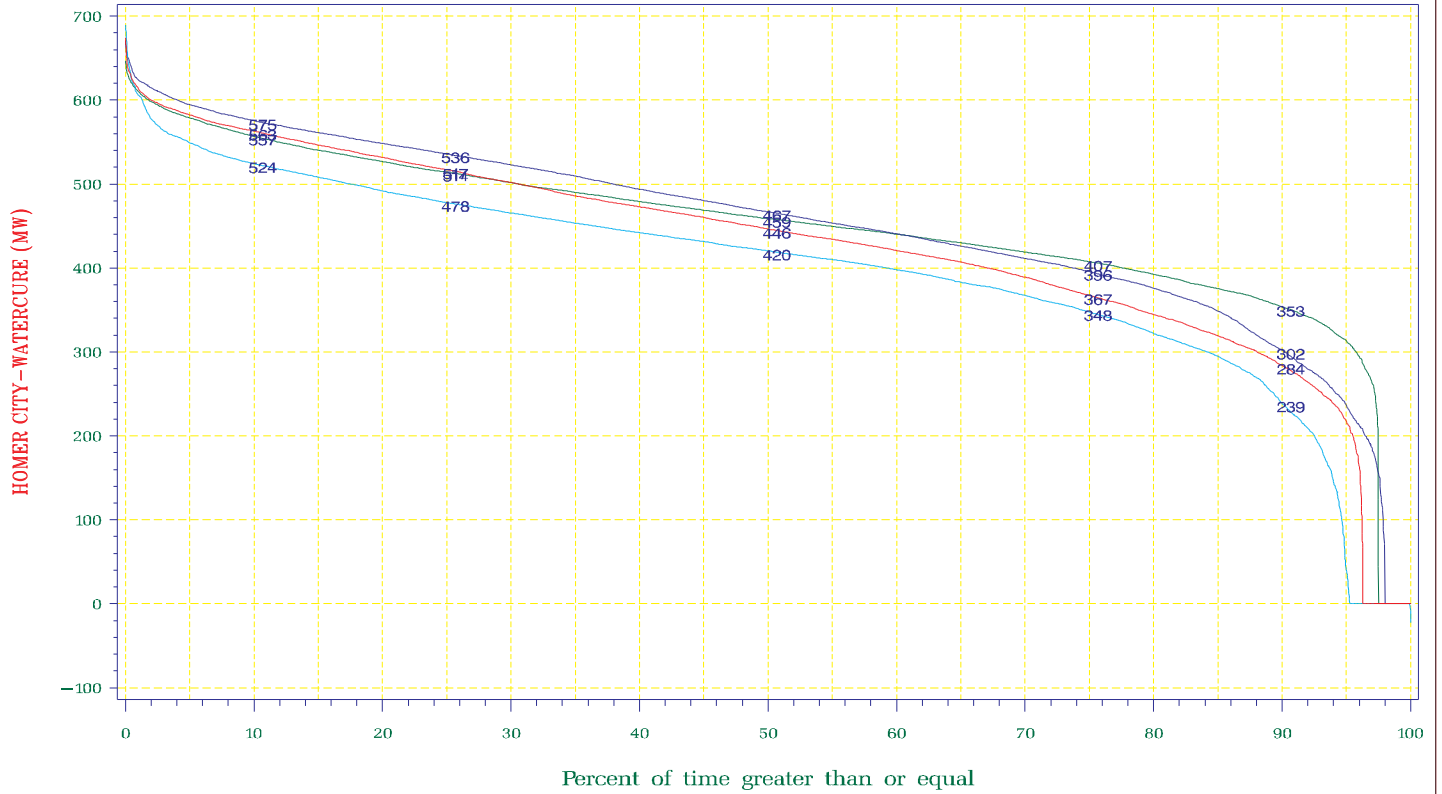
HOMER CITY – WATERCURE



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

HOMER CITY – WATERCURE



1998 1999 2000 2001

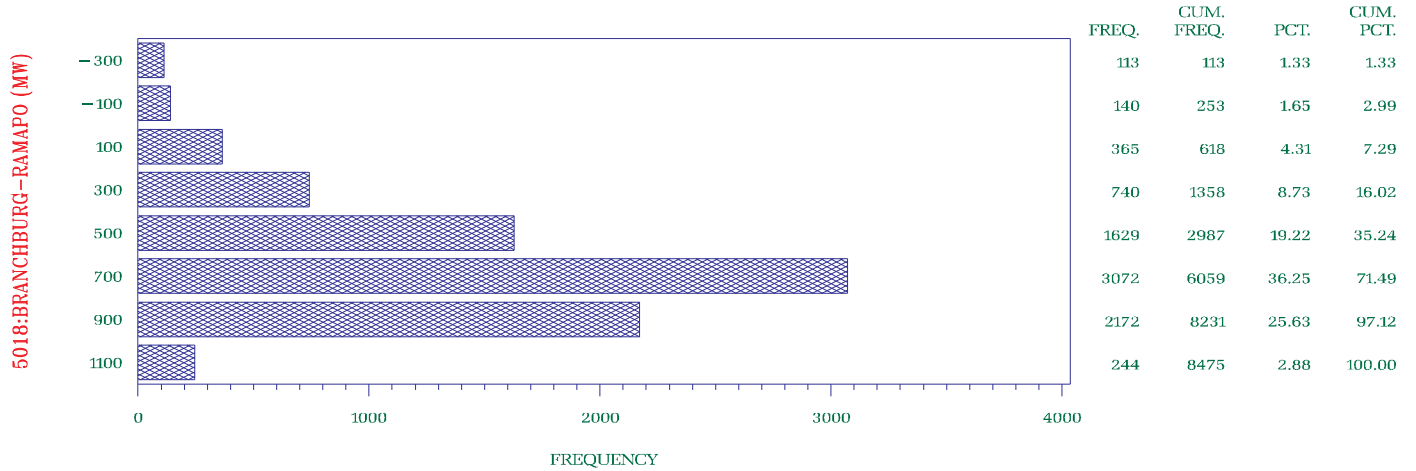
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

HOMER CITY – WATERCURE



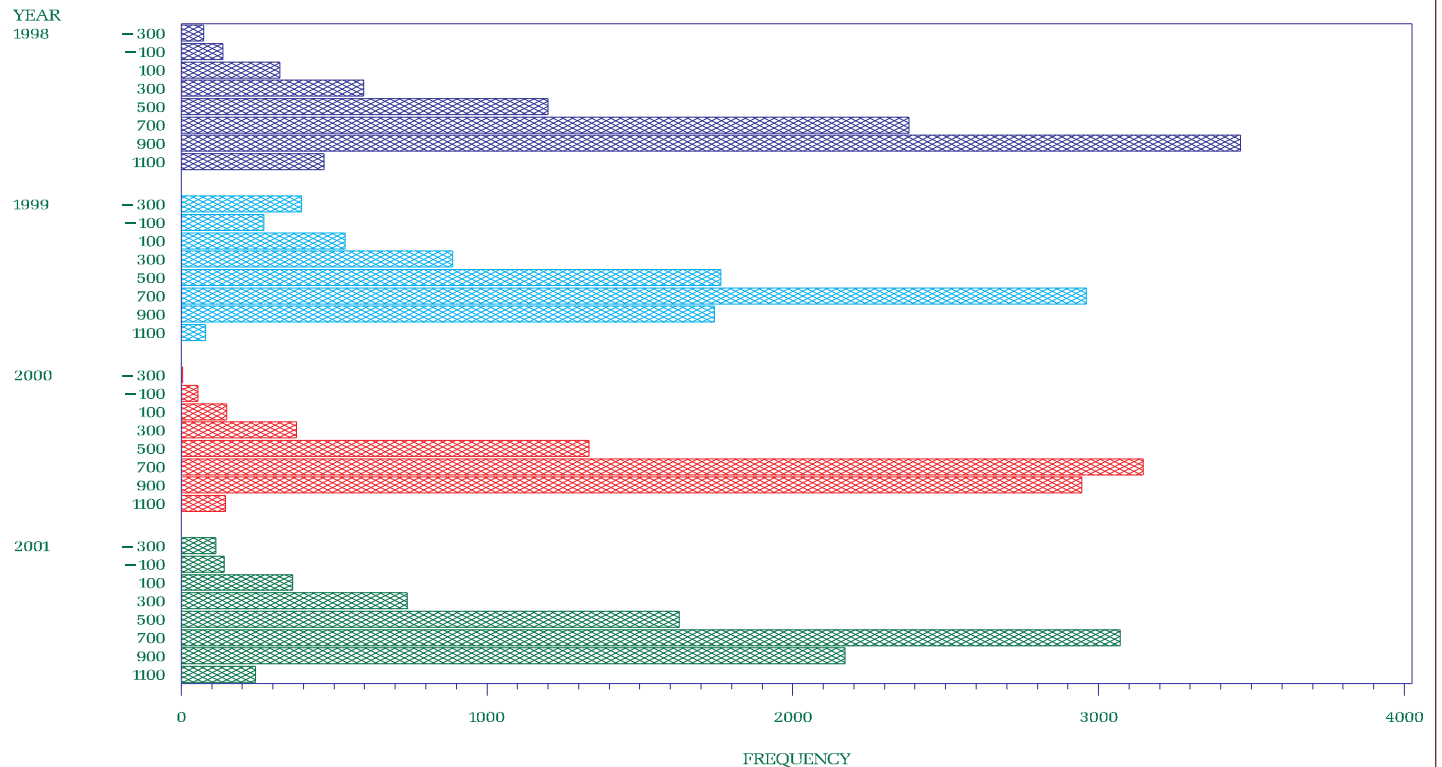
NYISO Frequency Interface Flow For January – December 2001

5018:BRANCHBURG – RAMAPO



NYISO Frequency Interface Flow For January 1998 – December 2001

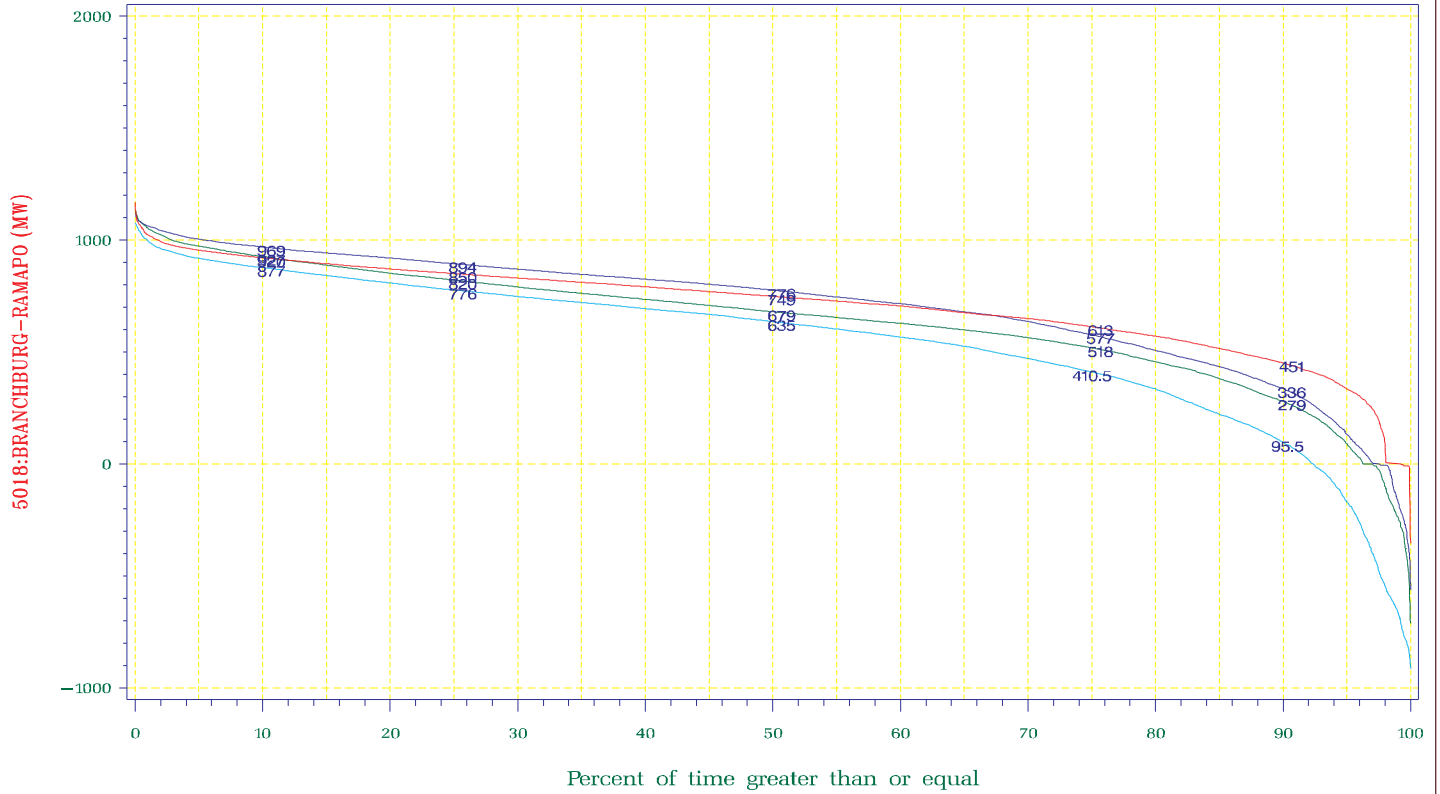
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1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

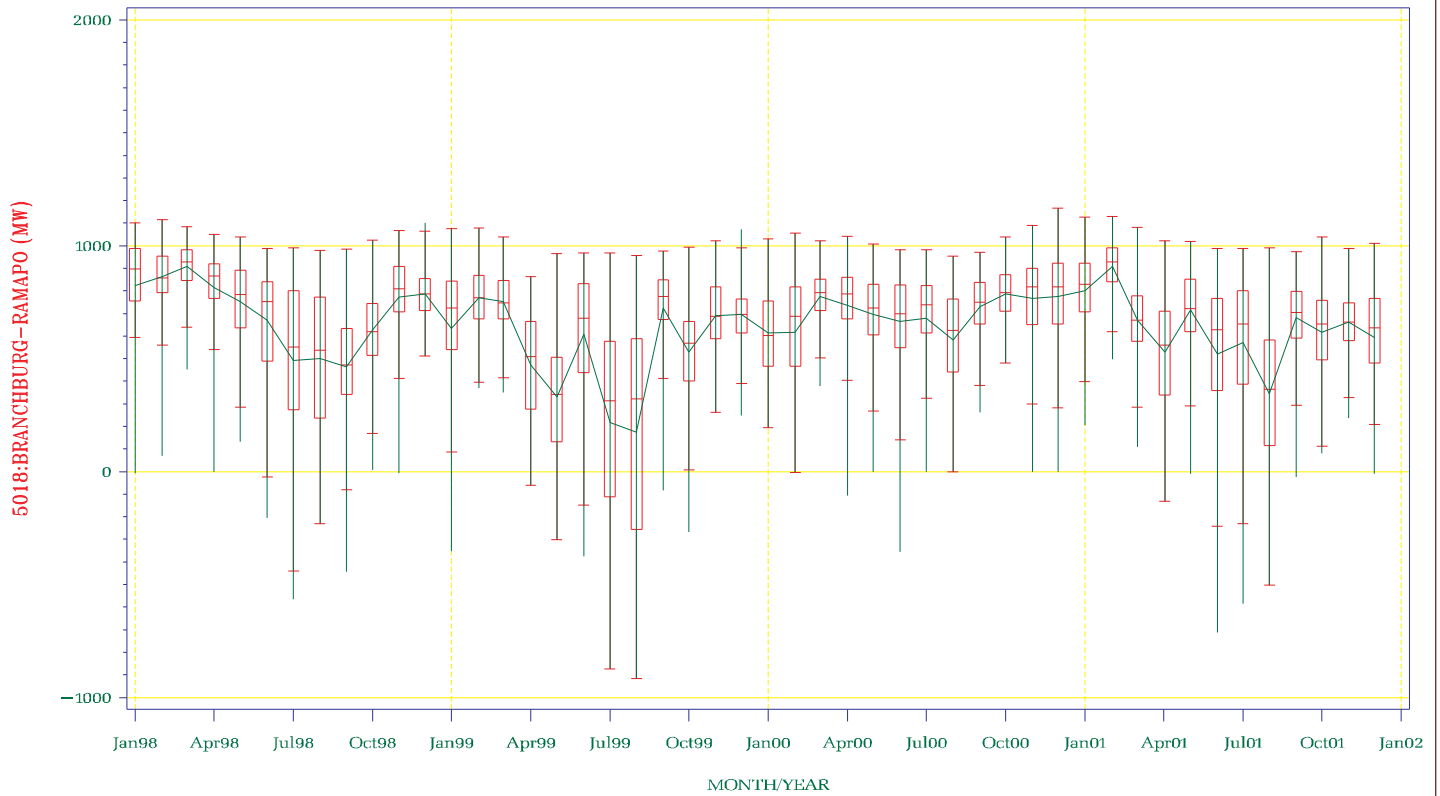
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NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

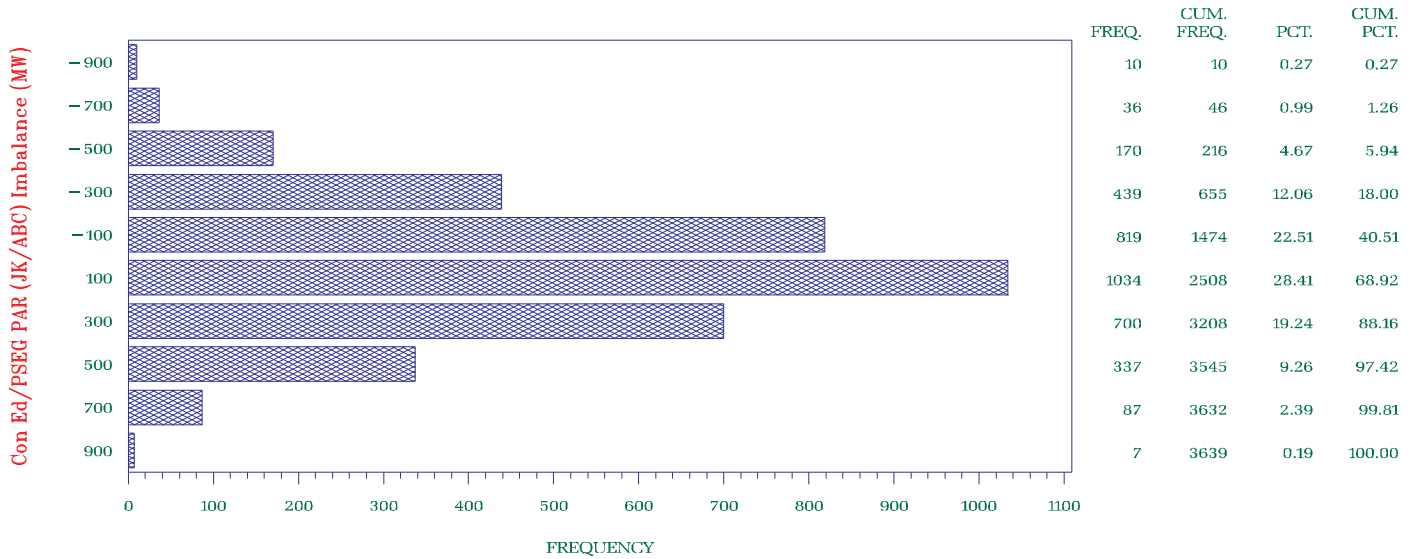
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NYISO Frequency Interface Flow For January – December 2001

Con Ed/PSEG PAR (JK/ABC) Imbalance

+ is toward PSEG



NYISO Frequency Interface Flow For January 1998 – December 2001

Con Ed/PSEG PAR (JK/ABC) Imbalance

+ is toward PSEG

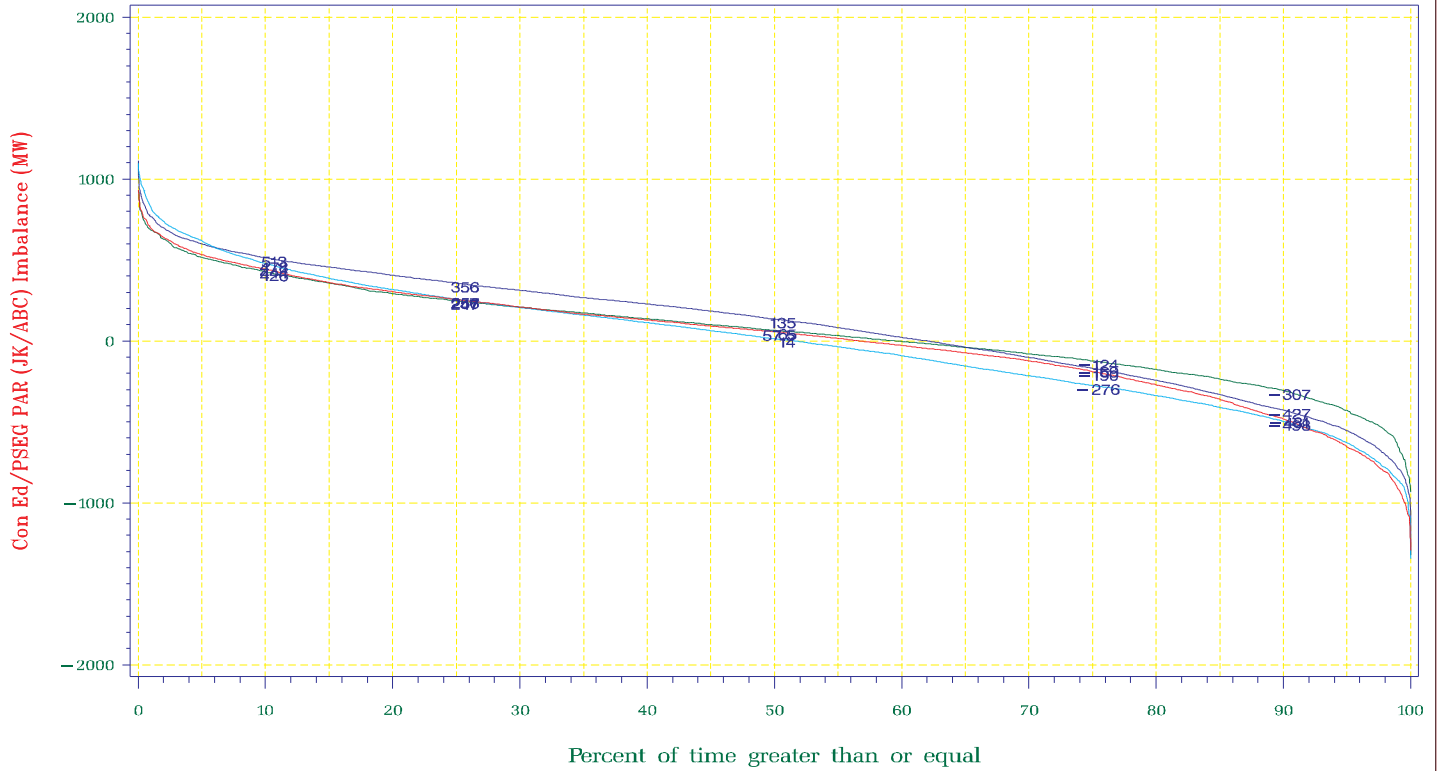


1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

Con Ed/PSEG PAR (JK/ABC) Imbalance

+ is toward PSEG

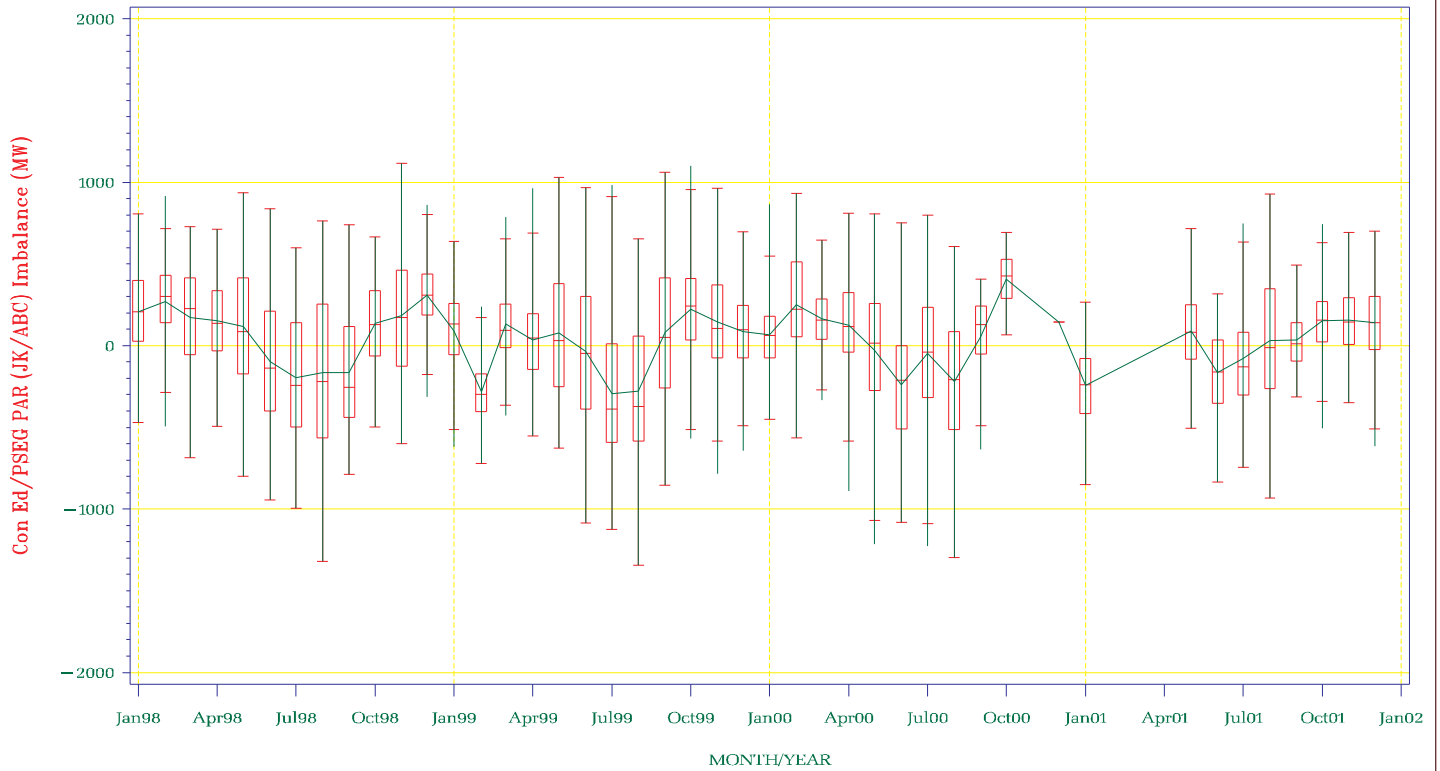


1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

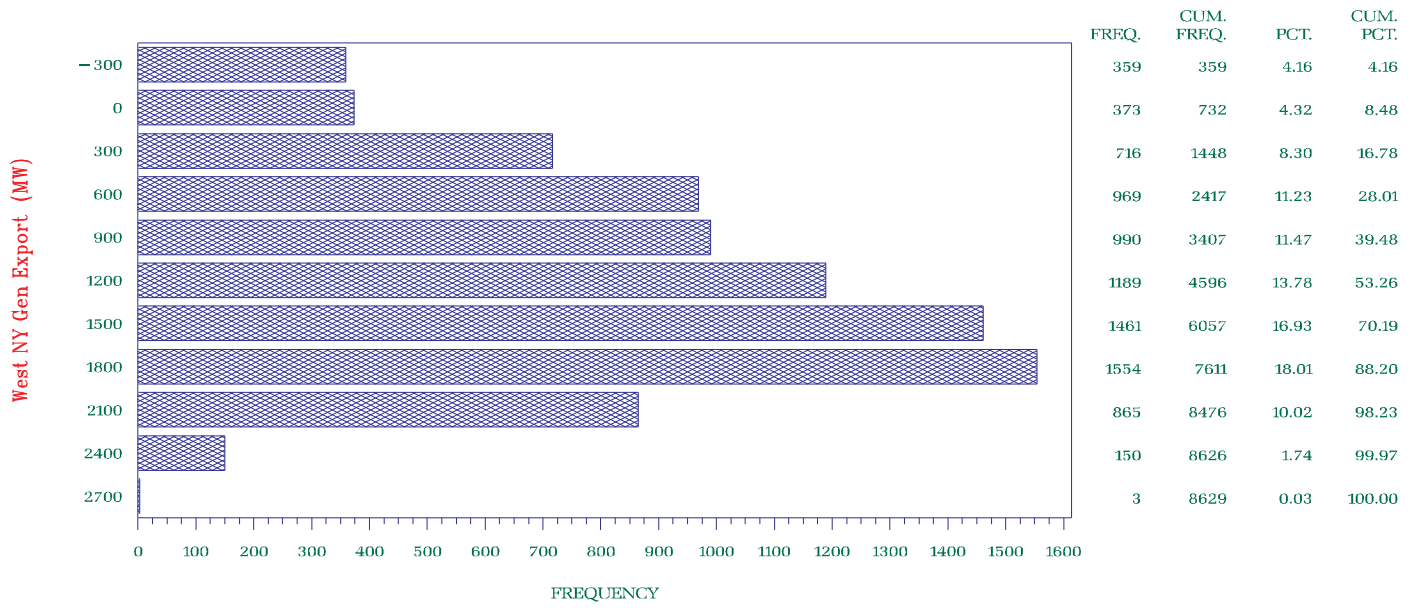
Con Ed/PSEG PAR (JK/ABC) Imbalance

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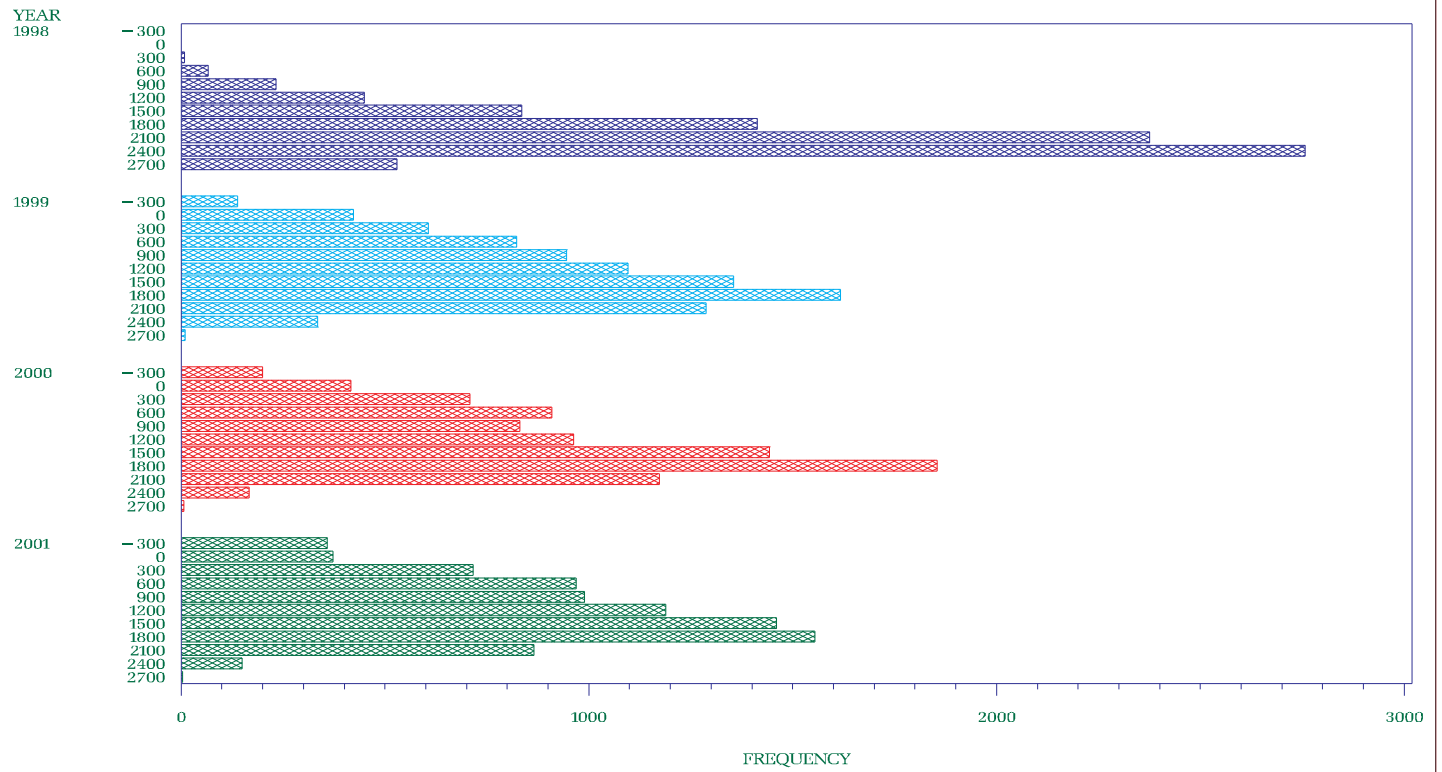
NYISO Frequency Interface Flow For January – December 2001

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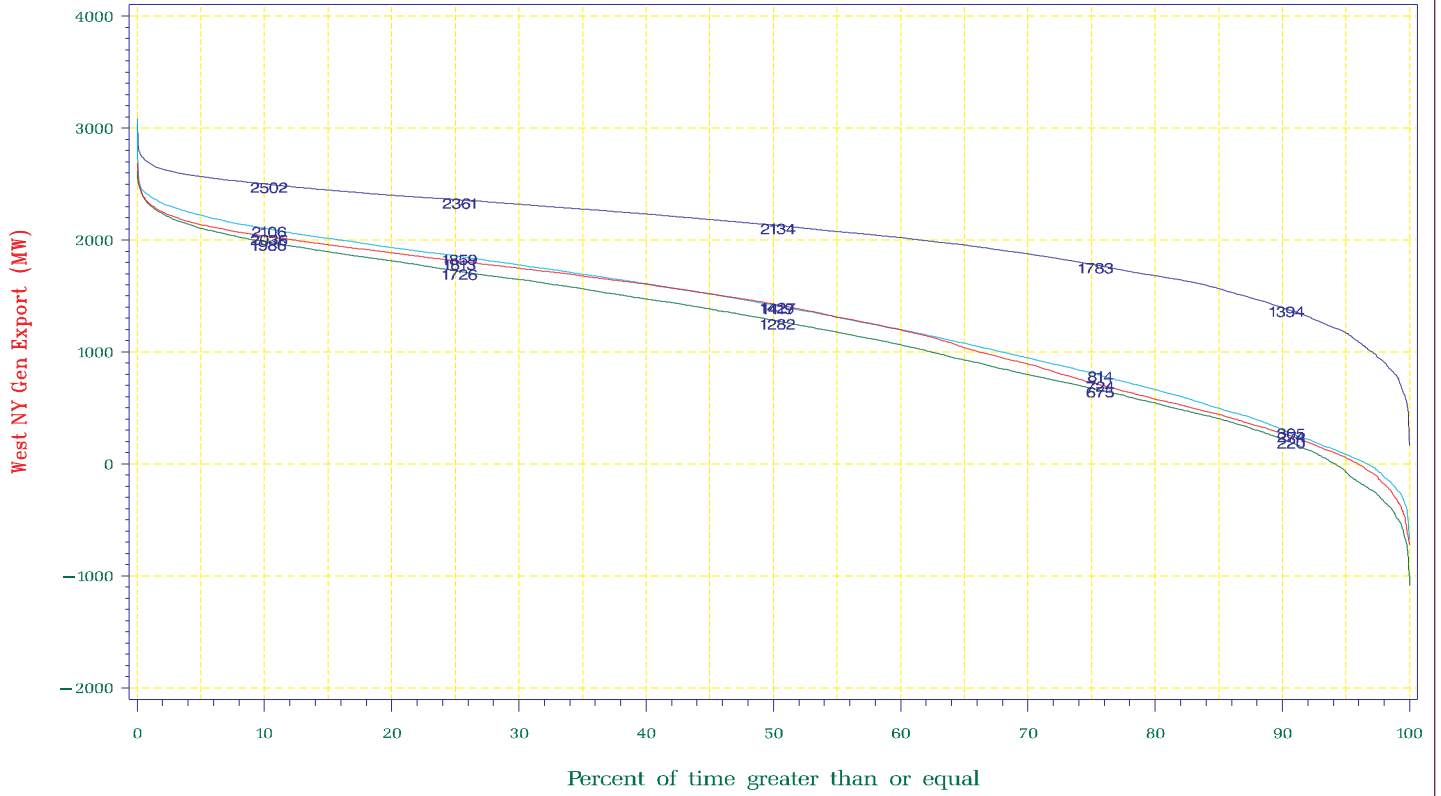
NYISO Frequency Interface Flow For January 1998 – December 2001

West NY Gen Export



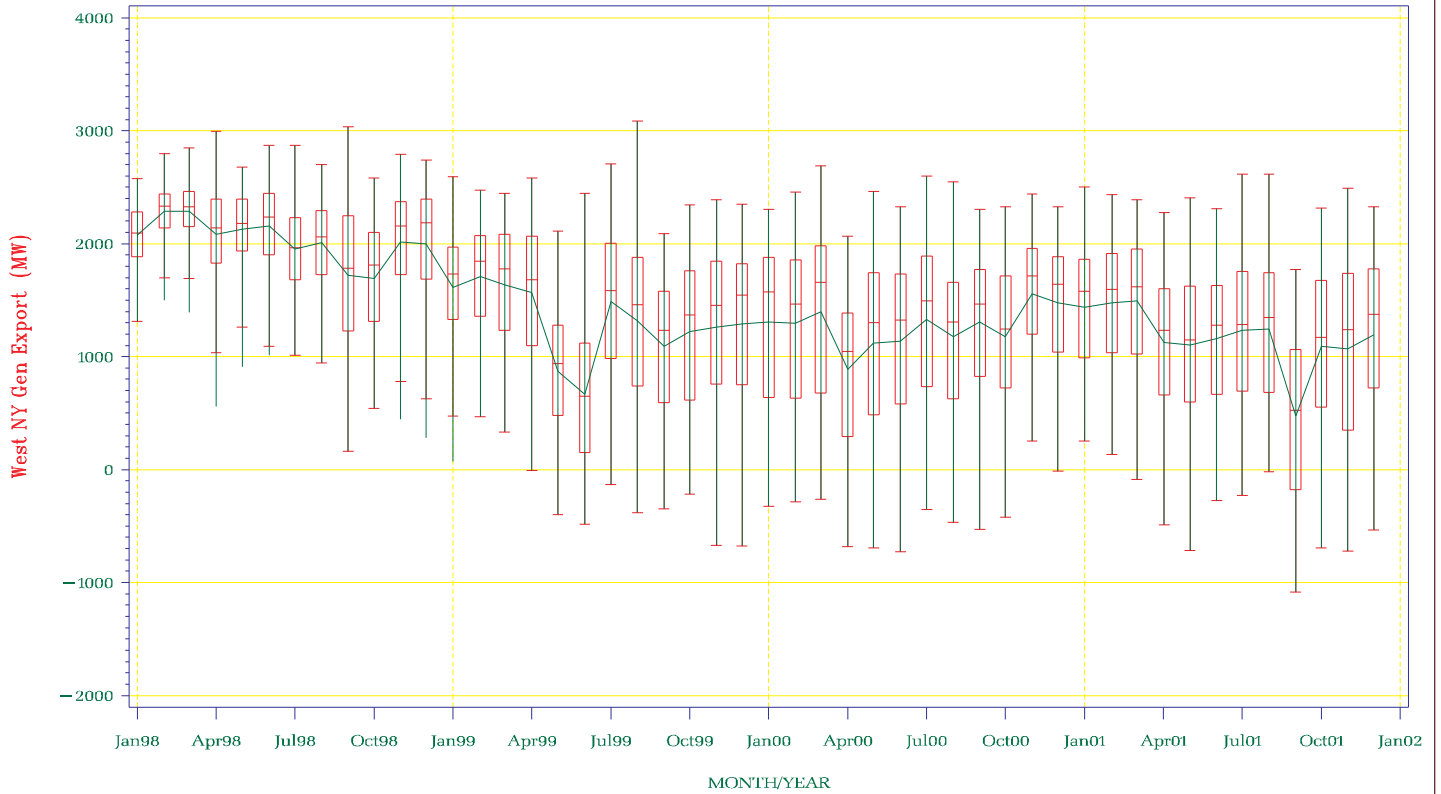
1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001
West NY Gen Export



1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001
West NY Gen Export



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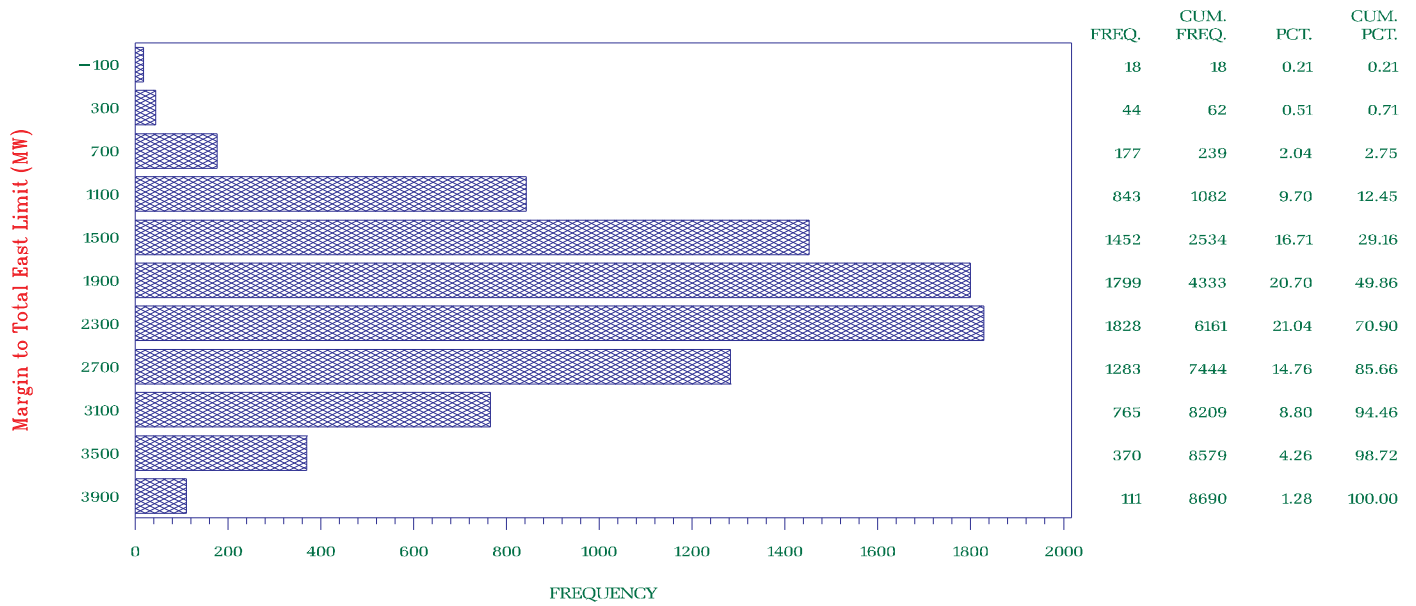
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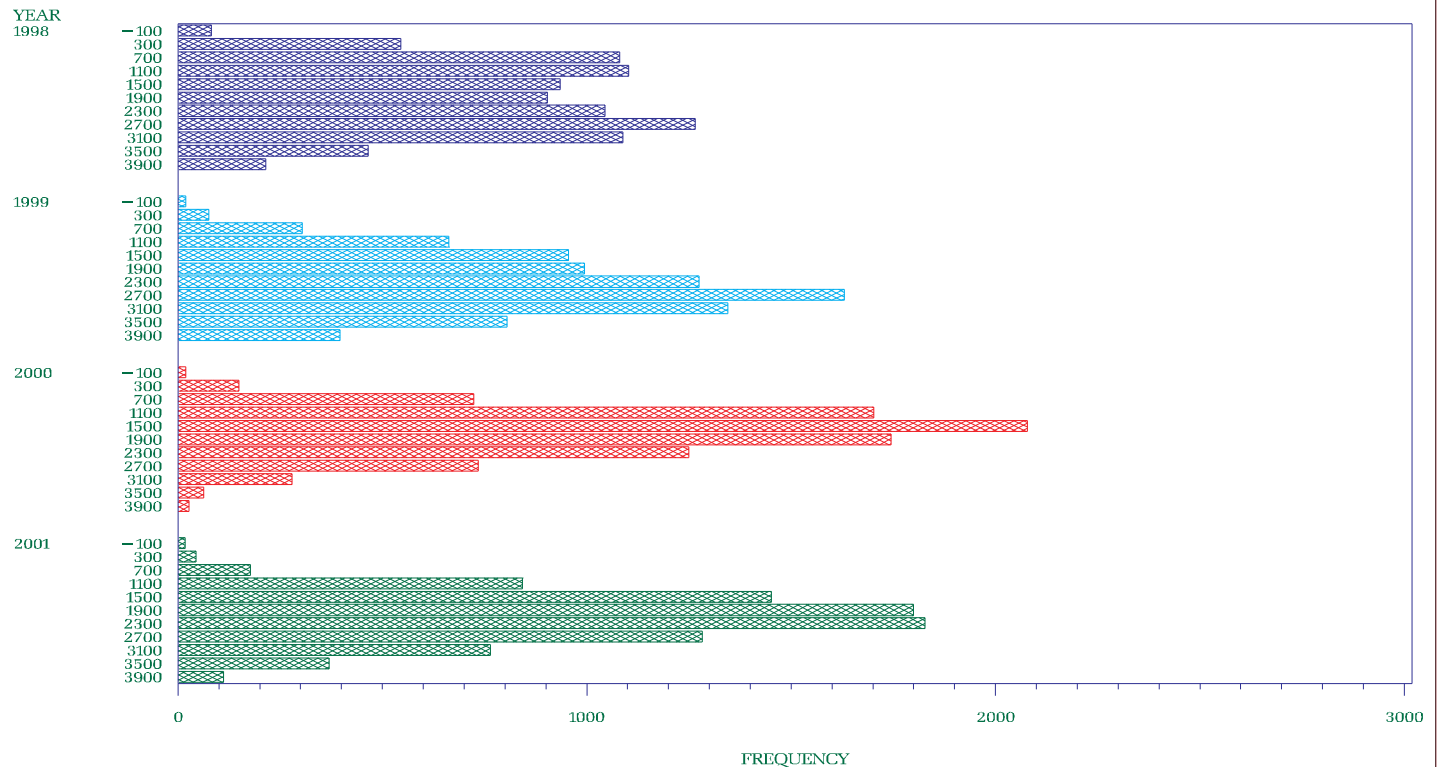
NYISO Frequency Interface Flow For January – December 2001

Margin to Total East Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

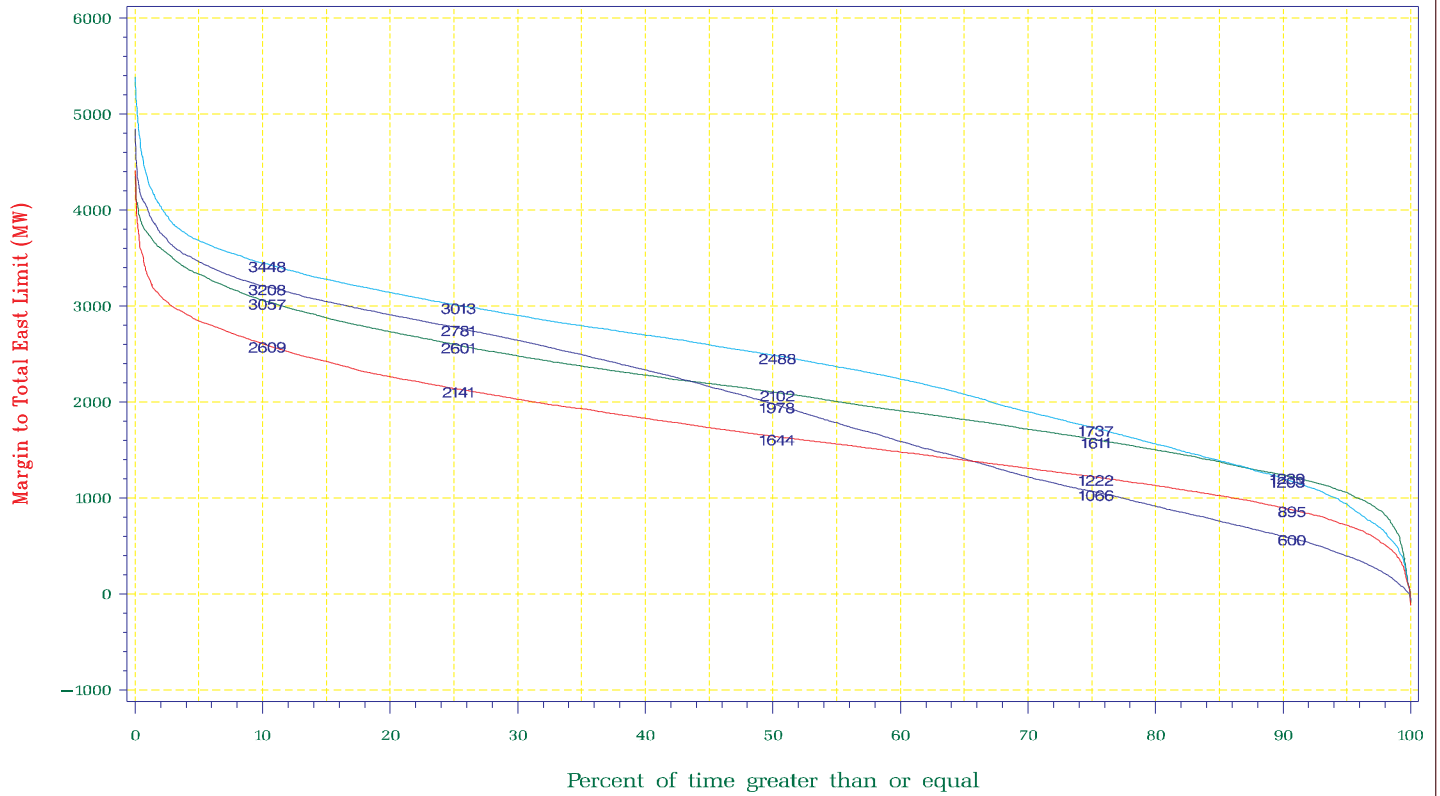
Margin to Total East Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

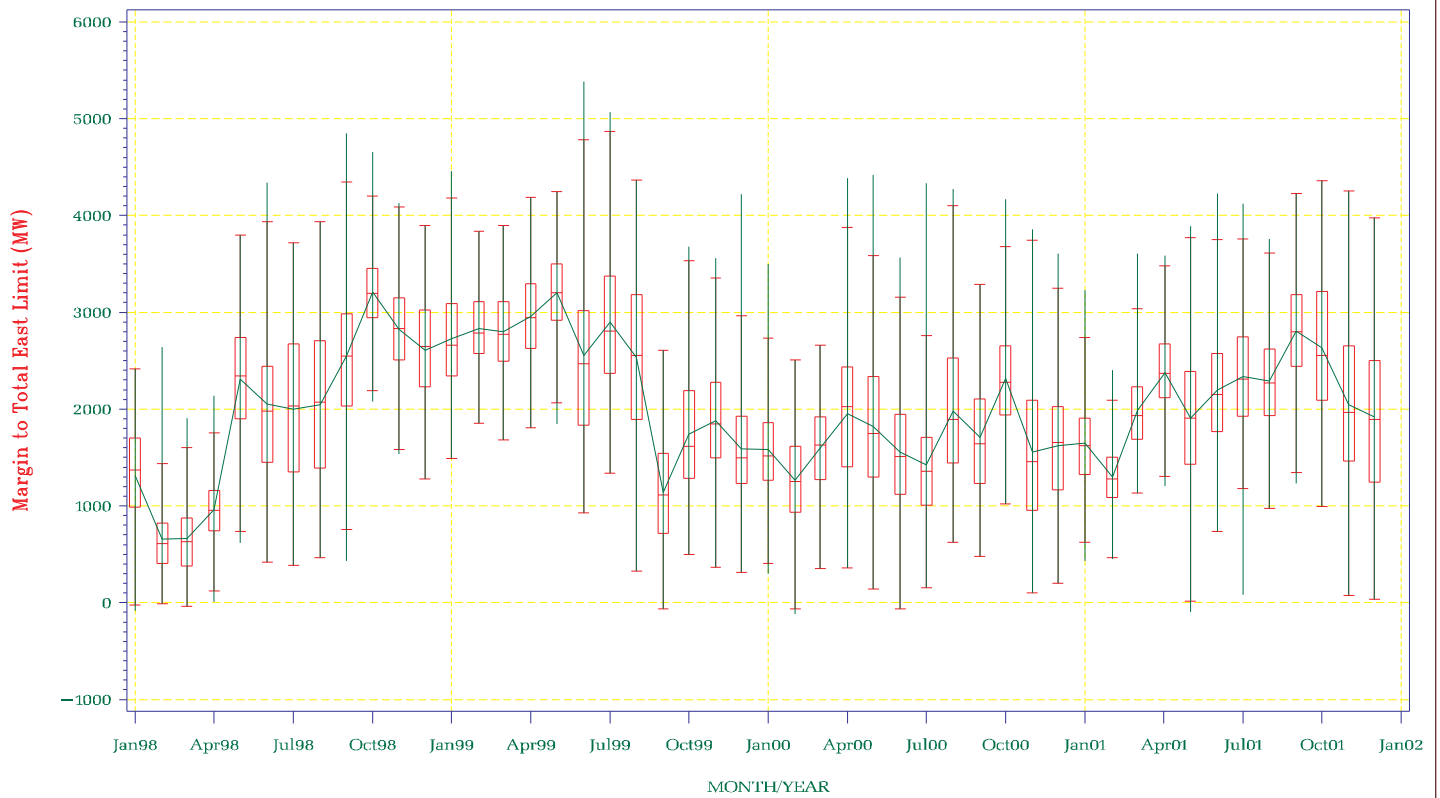
Margin to Total East Limit



1998 1999 2000 2001

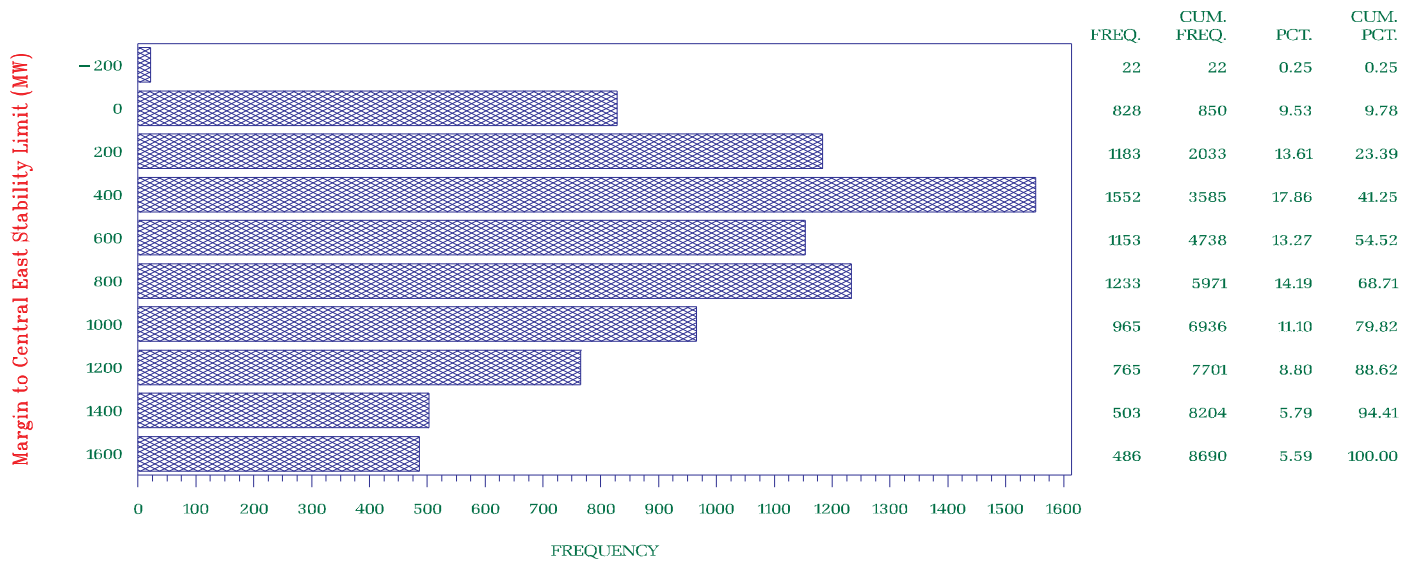
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Margin to Total East Limit



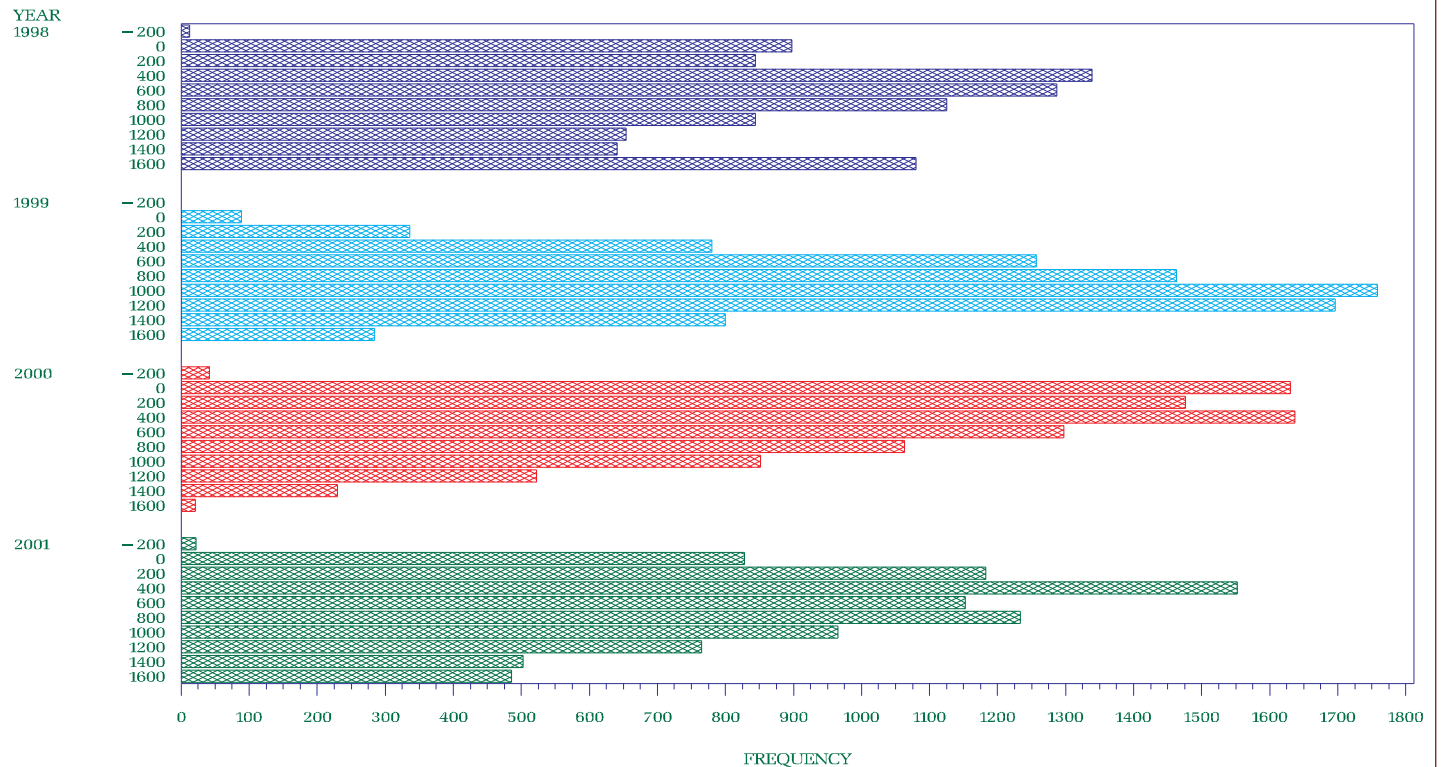
NYISO Frequency Interface Flow For January – December 2001

Margin to Central East Stability Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

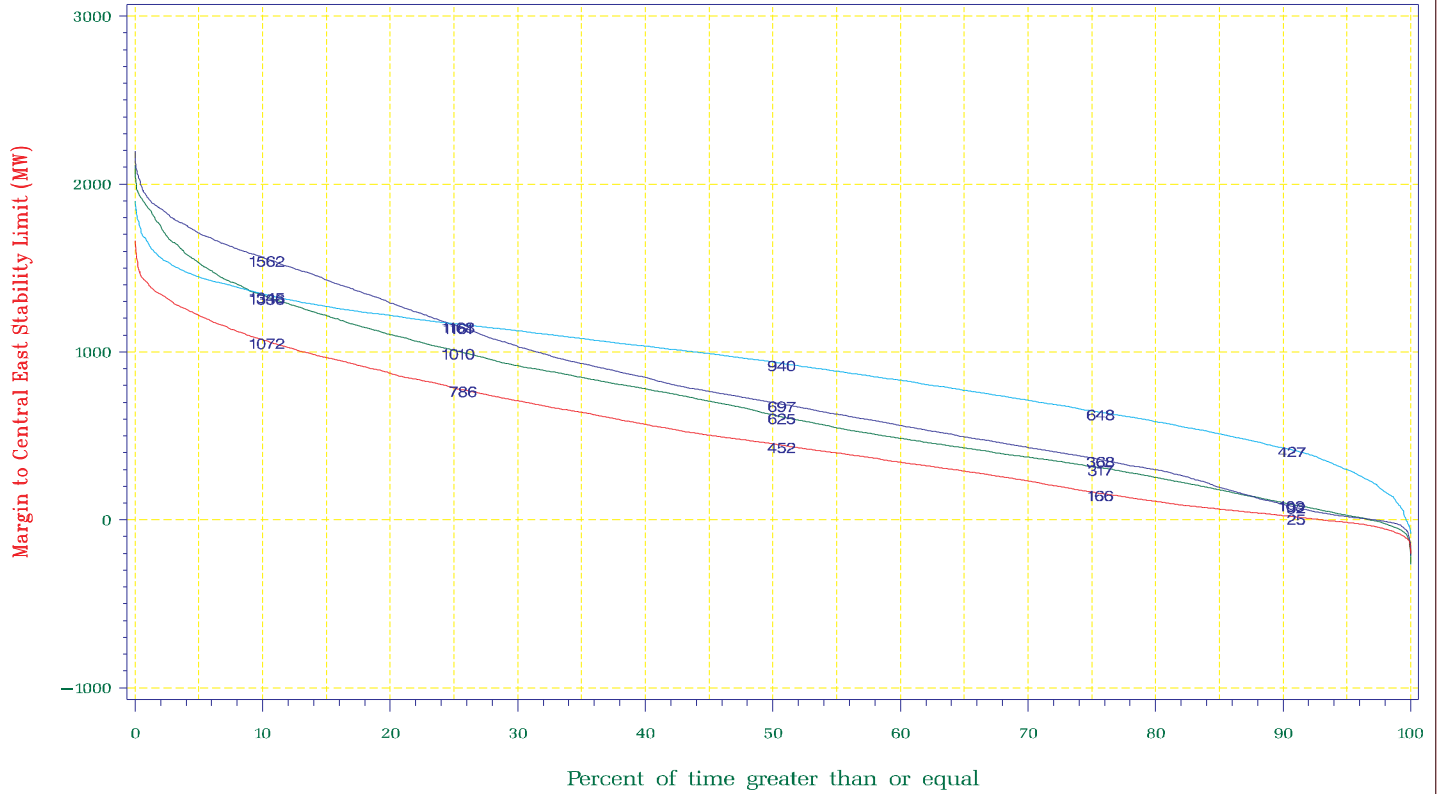
Margin to Central East Stability Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

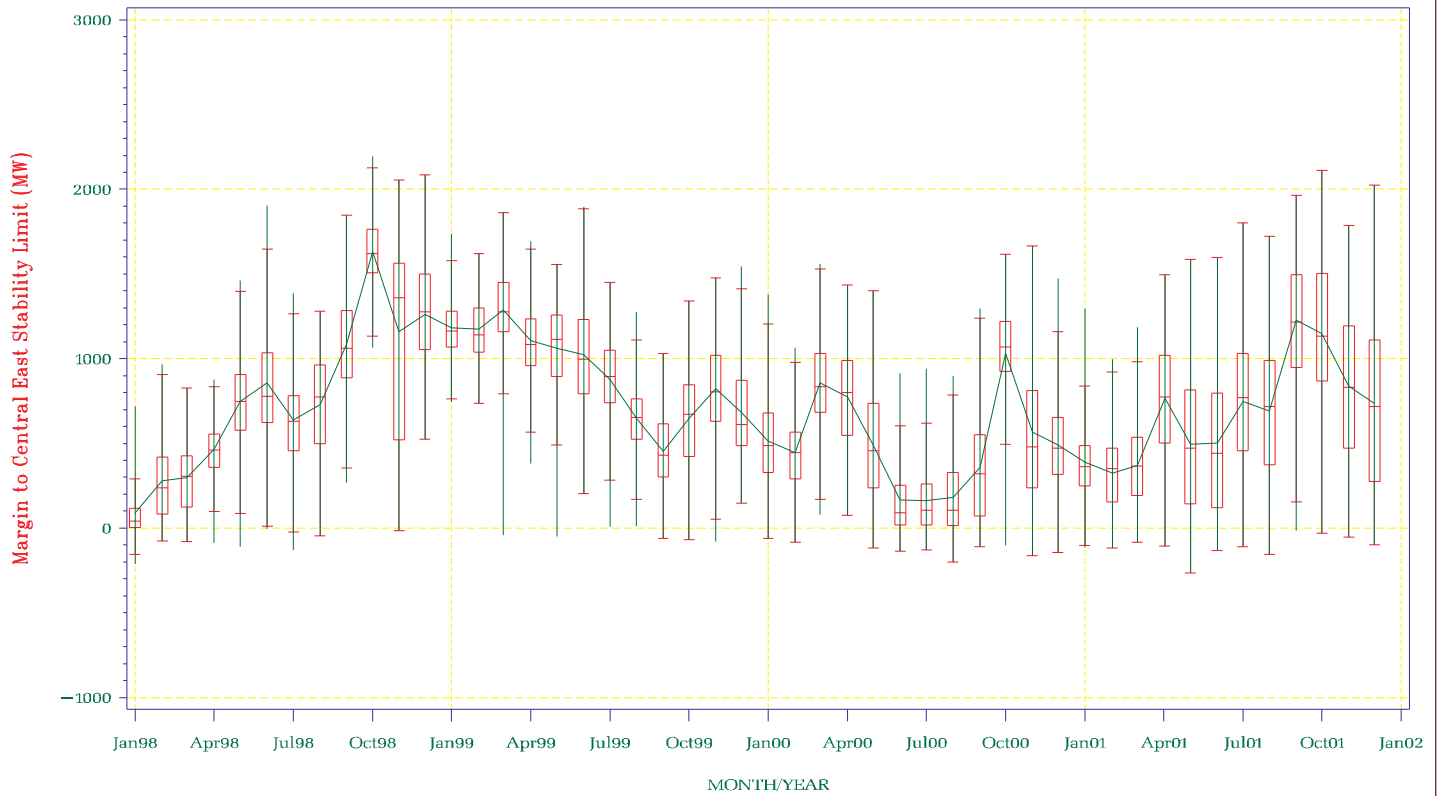
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1998 1999 2000 2001

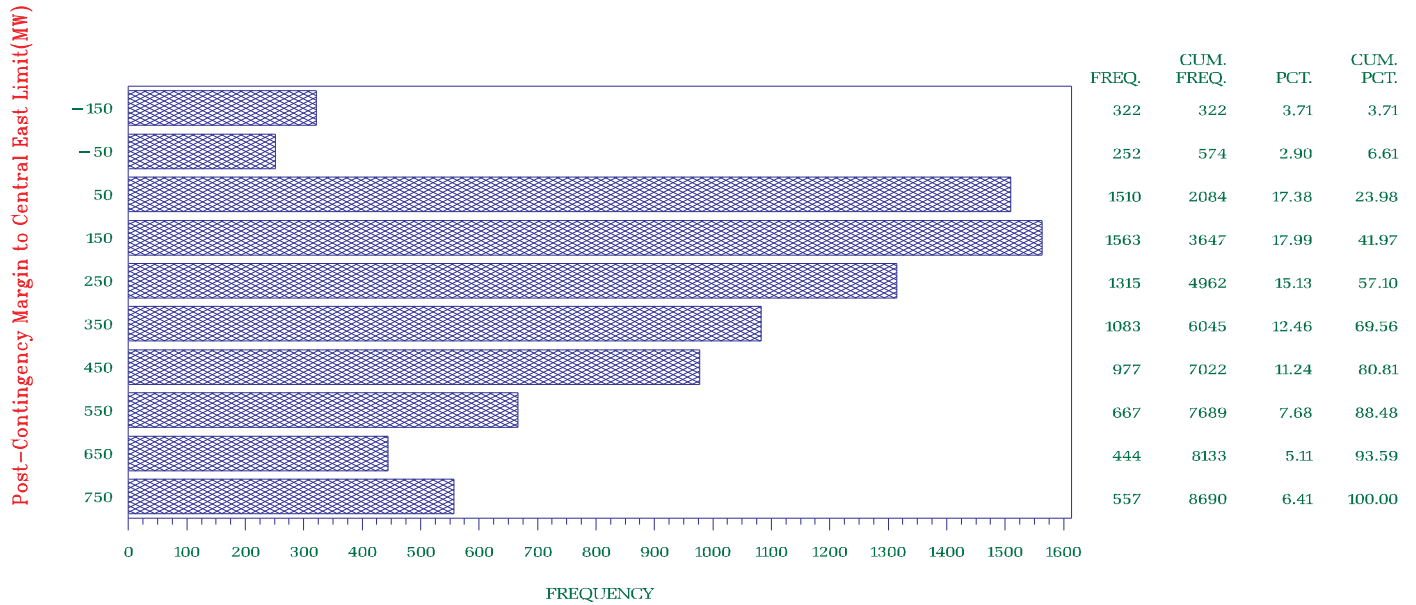
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Margin to Central East Stability Limit



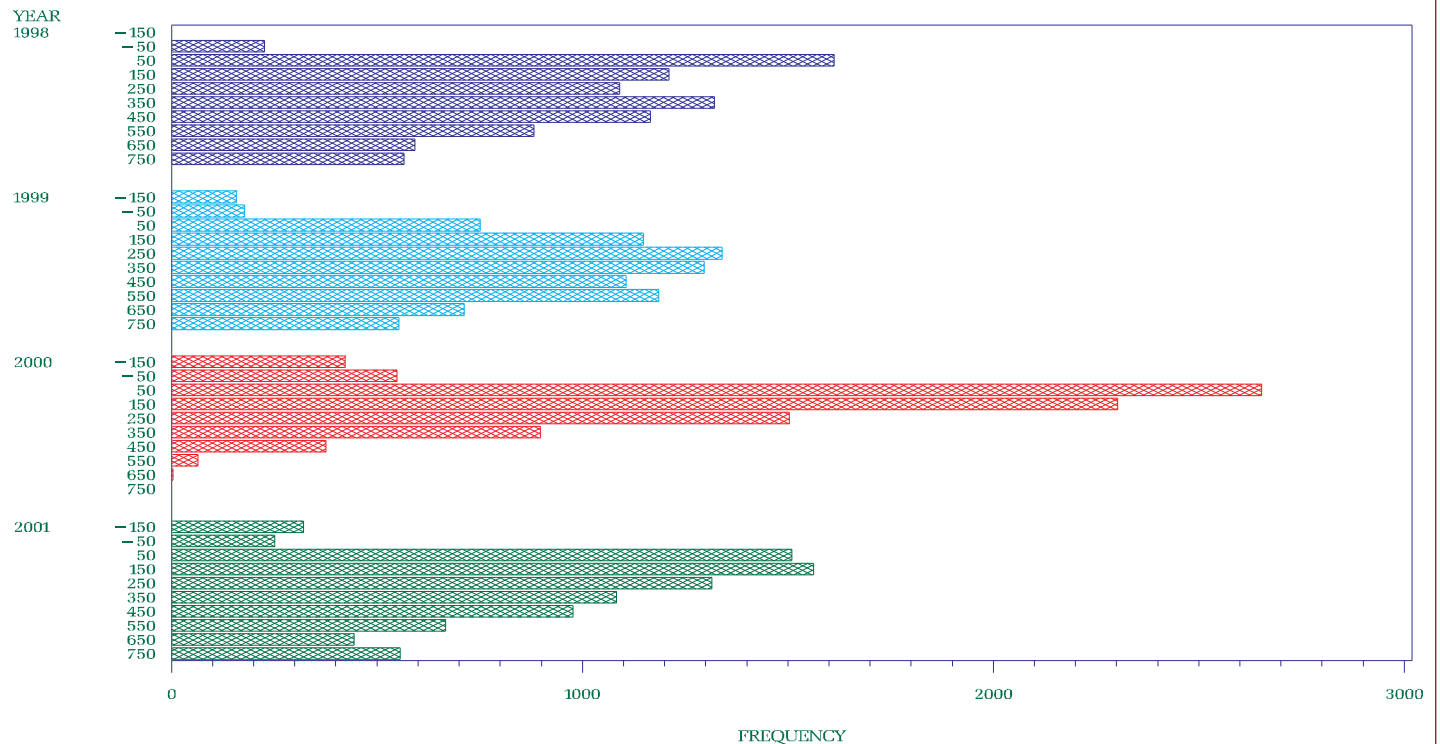
NYISO Frequency Interface Flow For January – December 2001

Post-Contingency Margin to Central East Limit
Minimum of 3 Most Limiting Voltage Collapse Limits



NYISO Frequency Interface Flow For January 1998 – December 2001

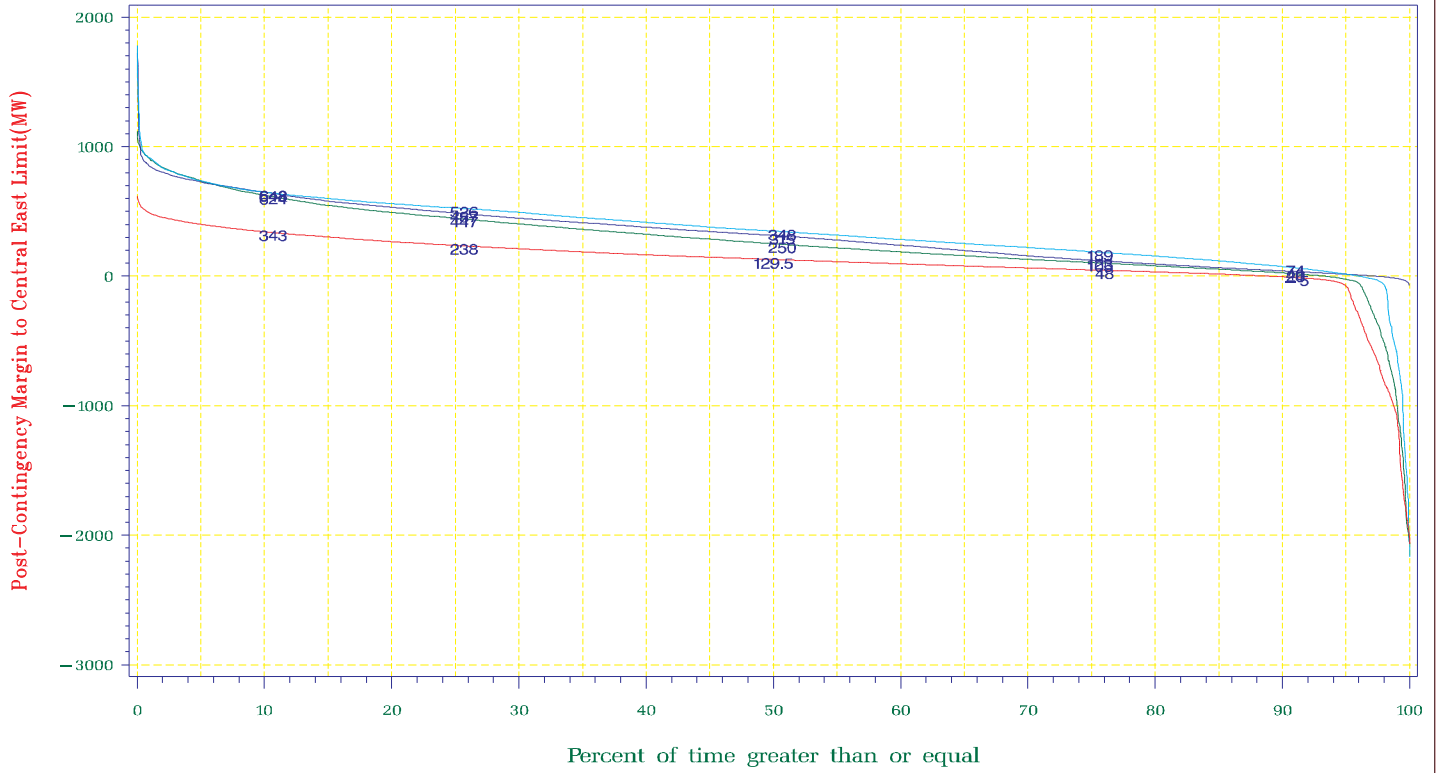
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NYISO Percent of time Interface Flow For January 1998 – December 2001

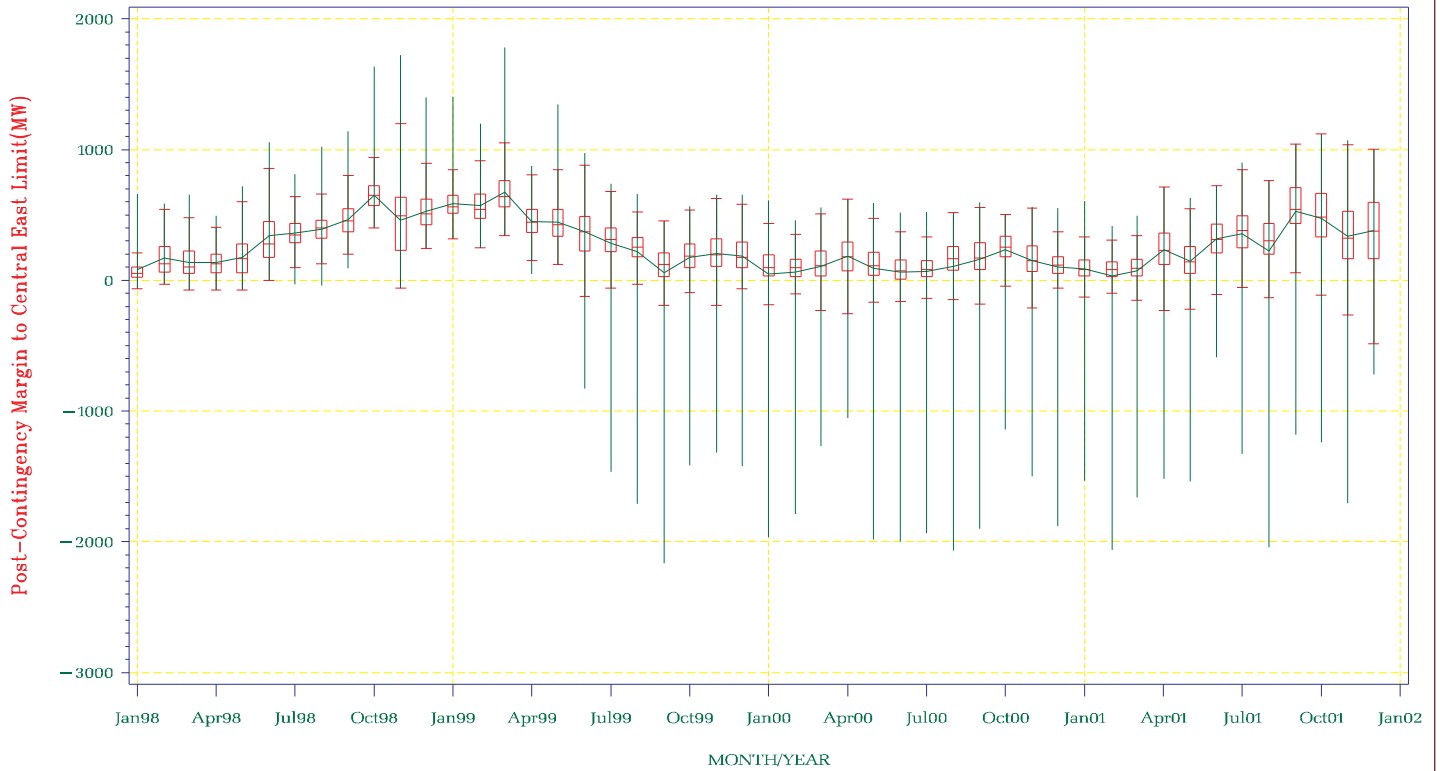
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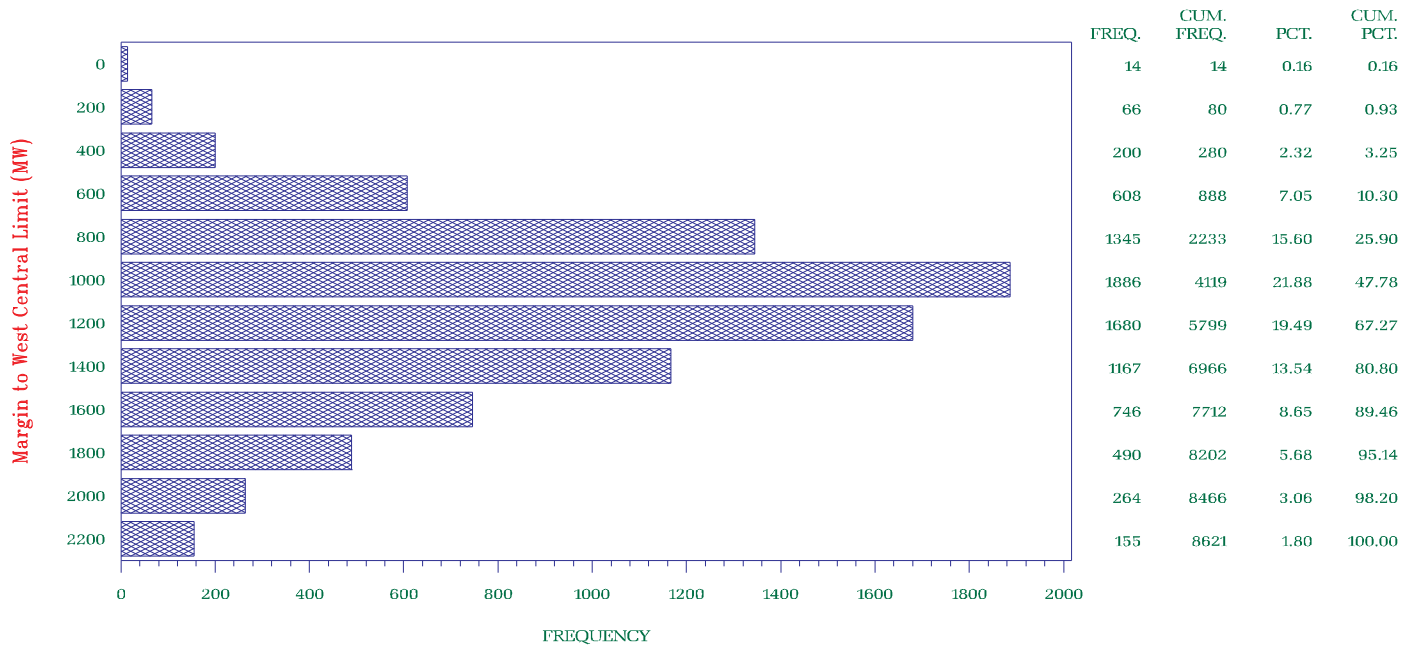
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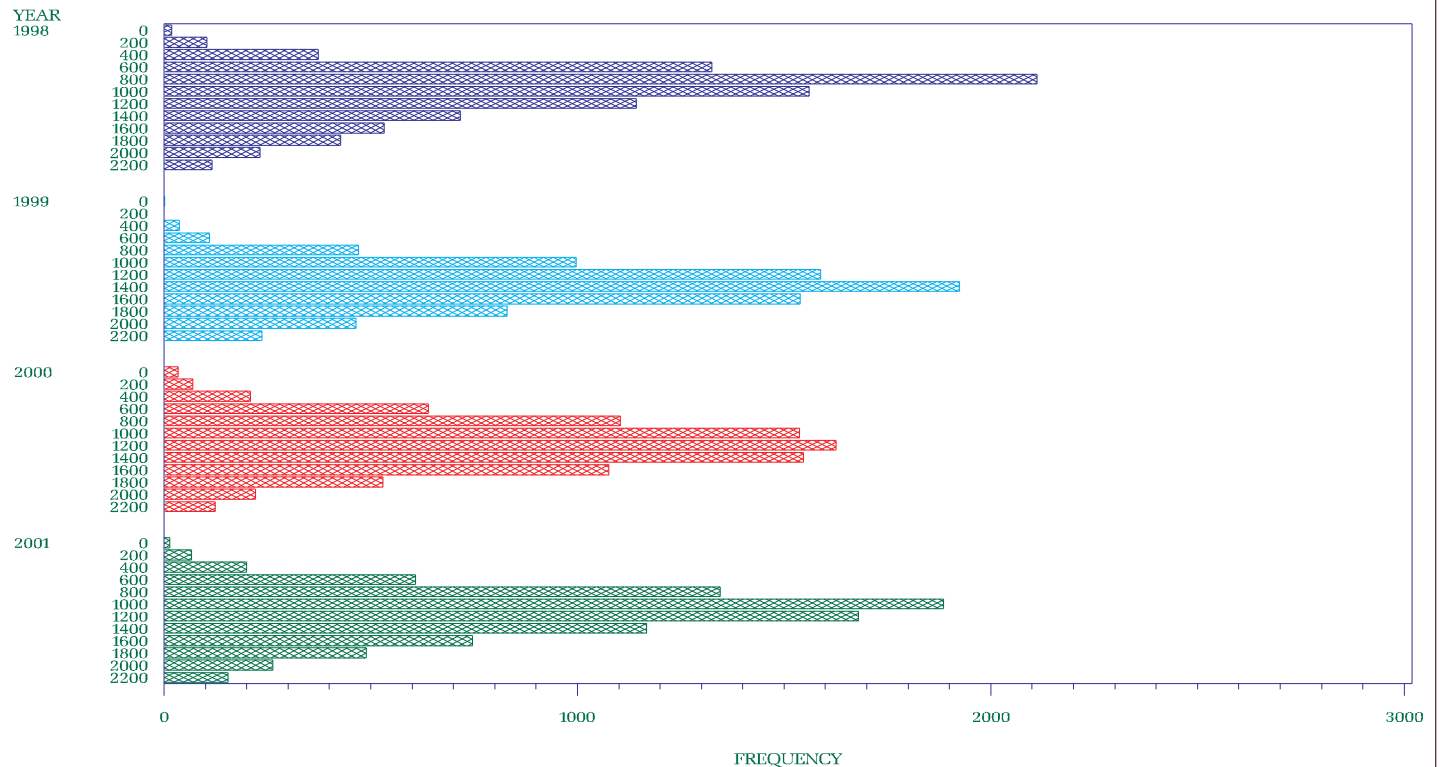
NYISO Frequency Interface Flow For January – December 2001

Margin to West Central Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

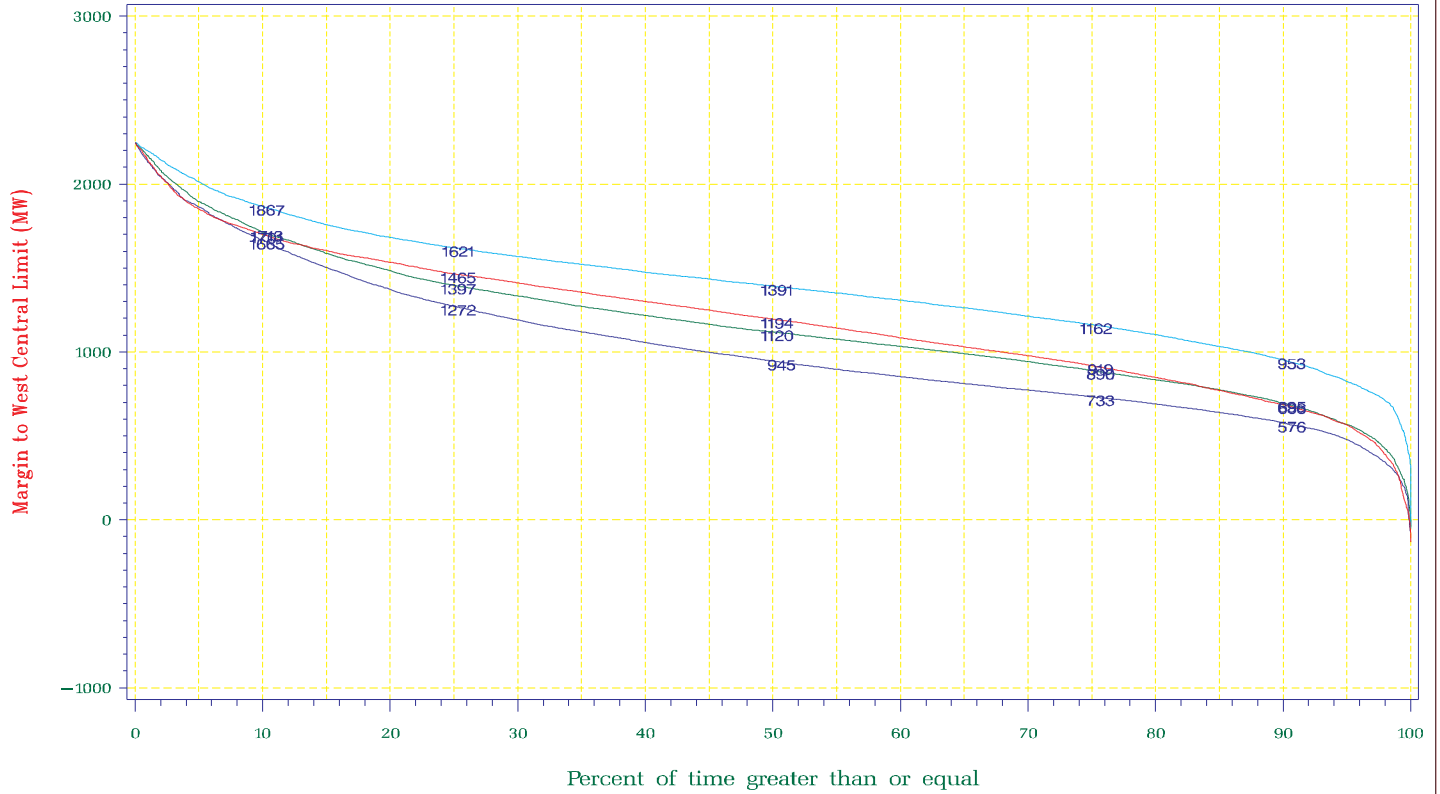
Margin to West Central Limit



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NYISO Percent of time Interface Flow For January 1998 – December 2001

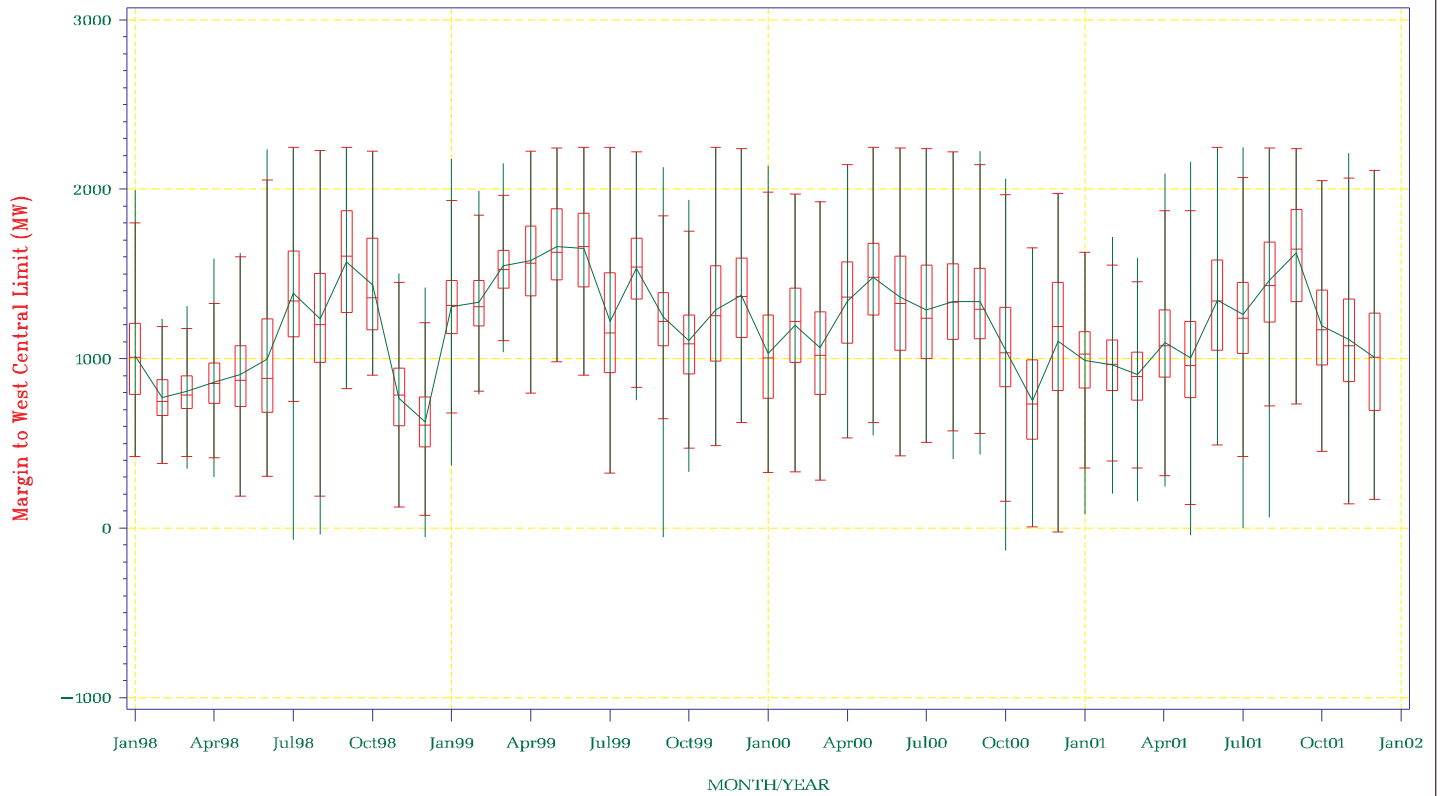
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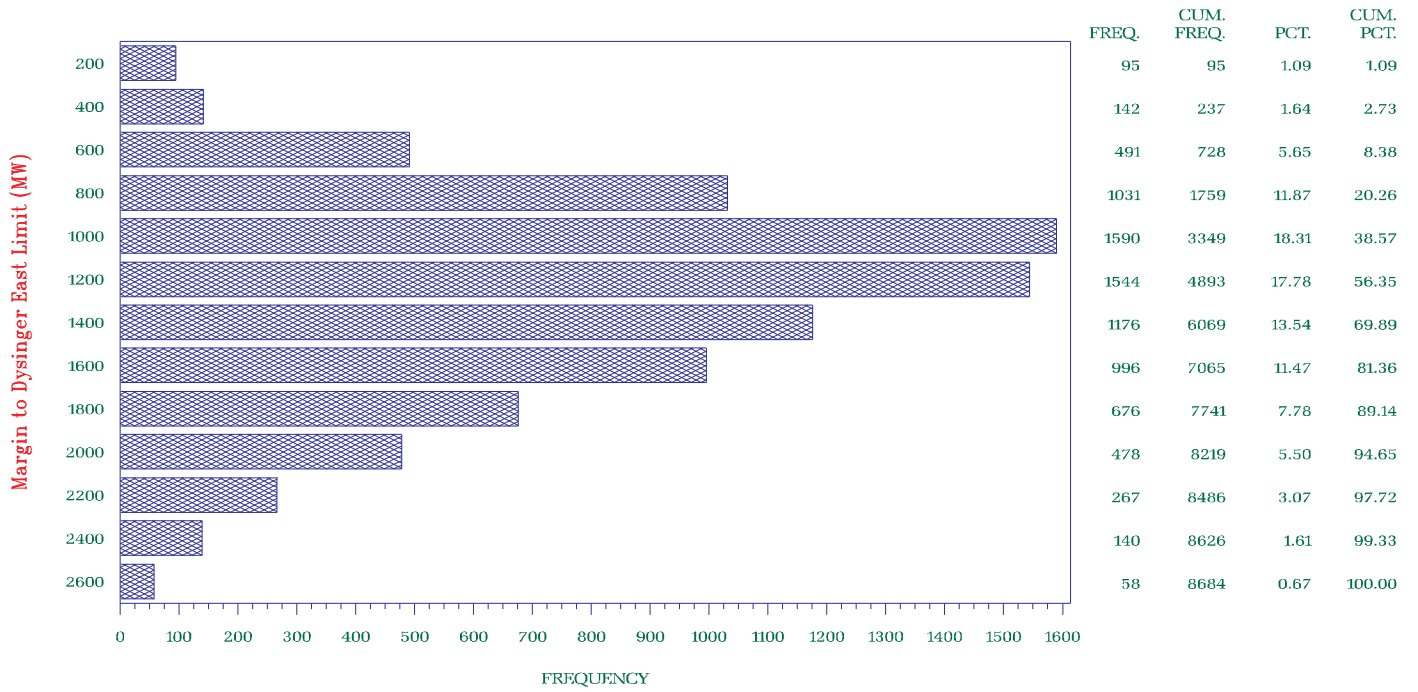
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Margin to West Central Limit



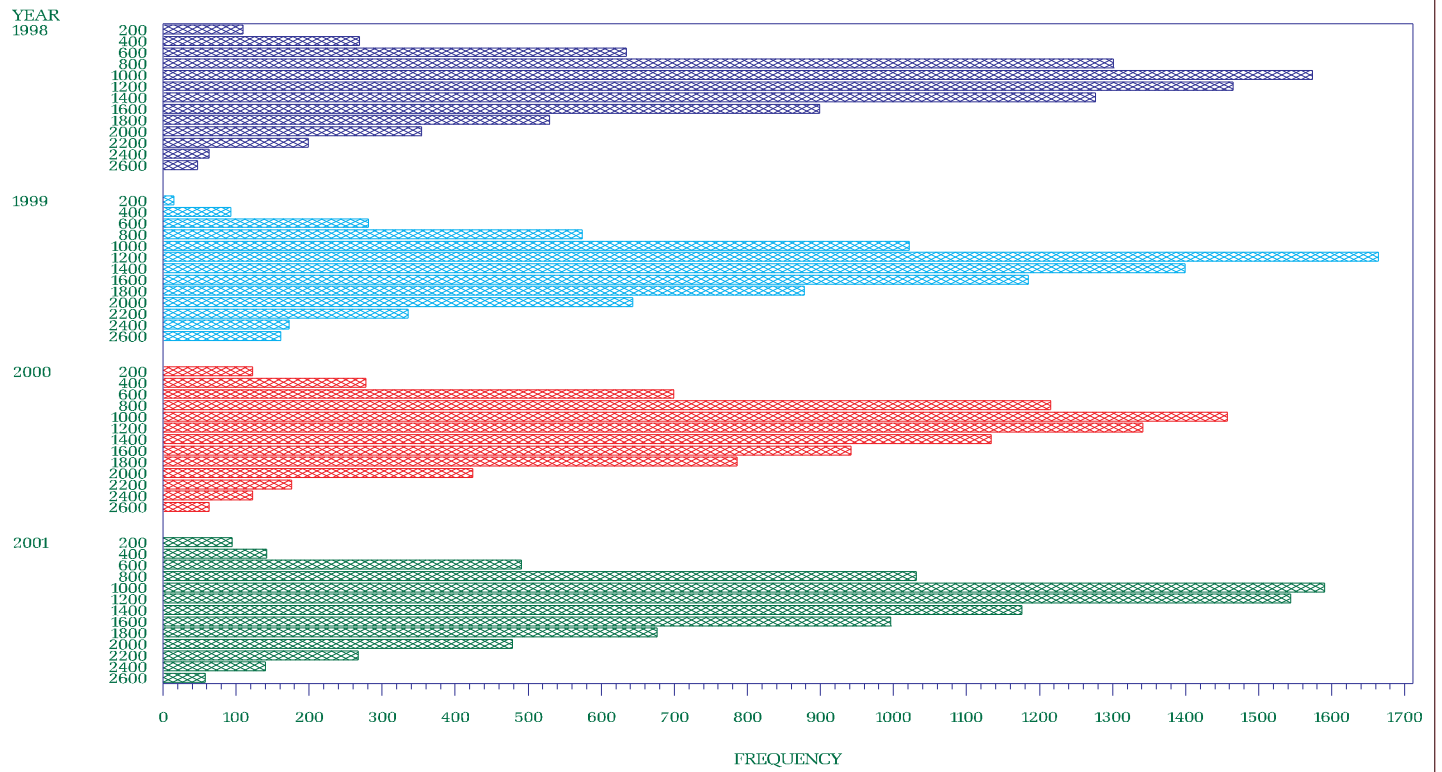
NYISO Frequency Interface Flow For January – December 2001

Margin to Dysinger East Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

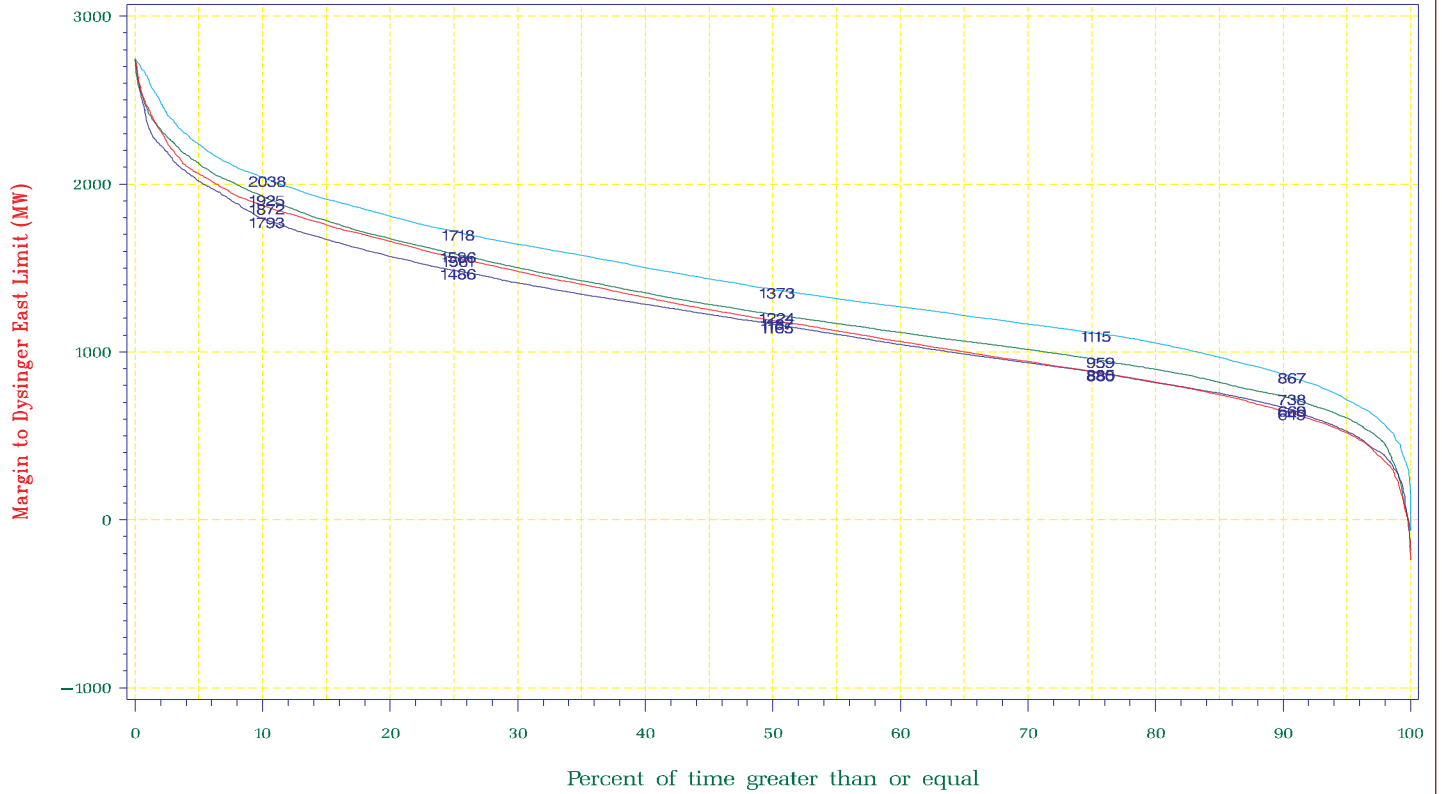
Margin to Dysinger East Limit



1998 1999 2000 2001

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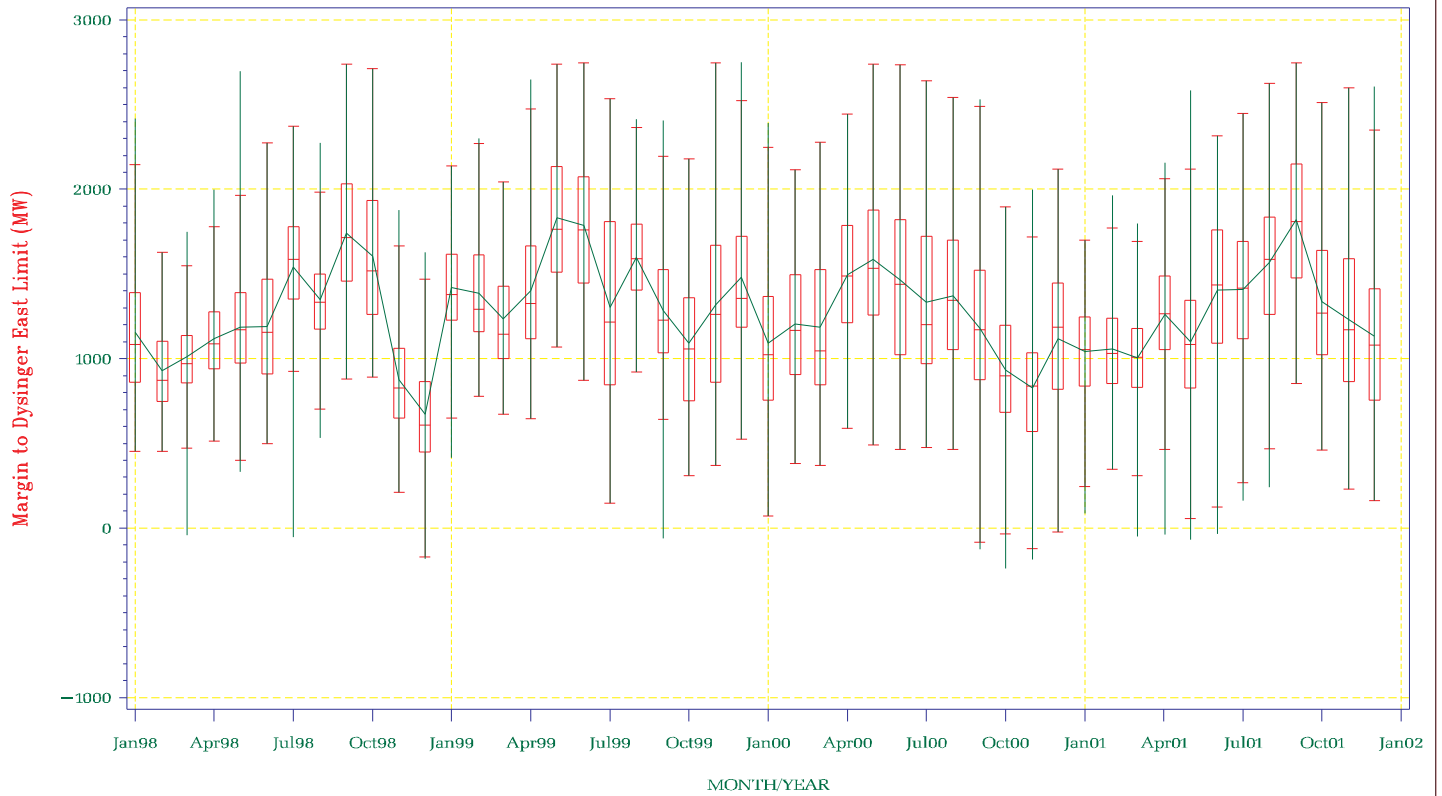
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1998 1999 2000 2001

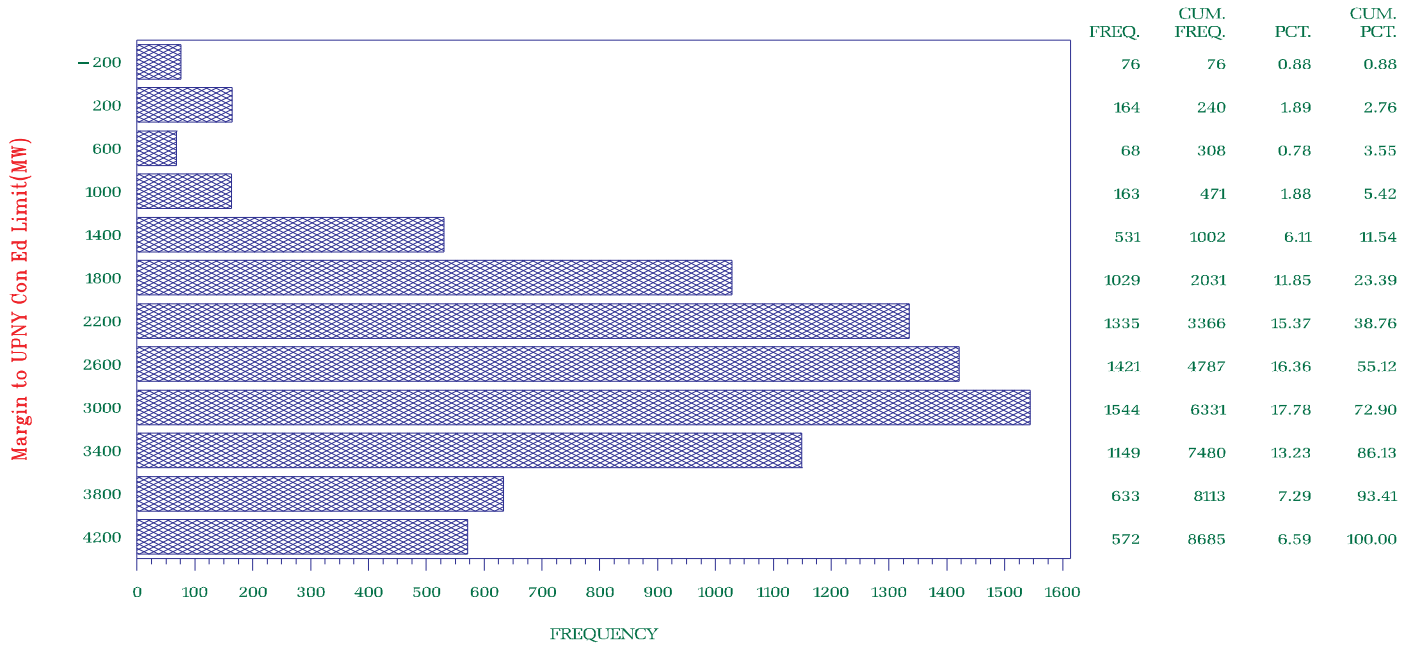
NYISO Average Monthly Interface Flow For January 01, 2001 – December 31, 2001

Margin to Dysinger East Limit



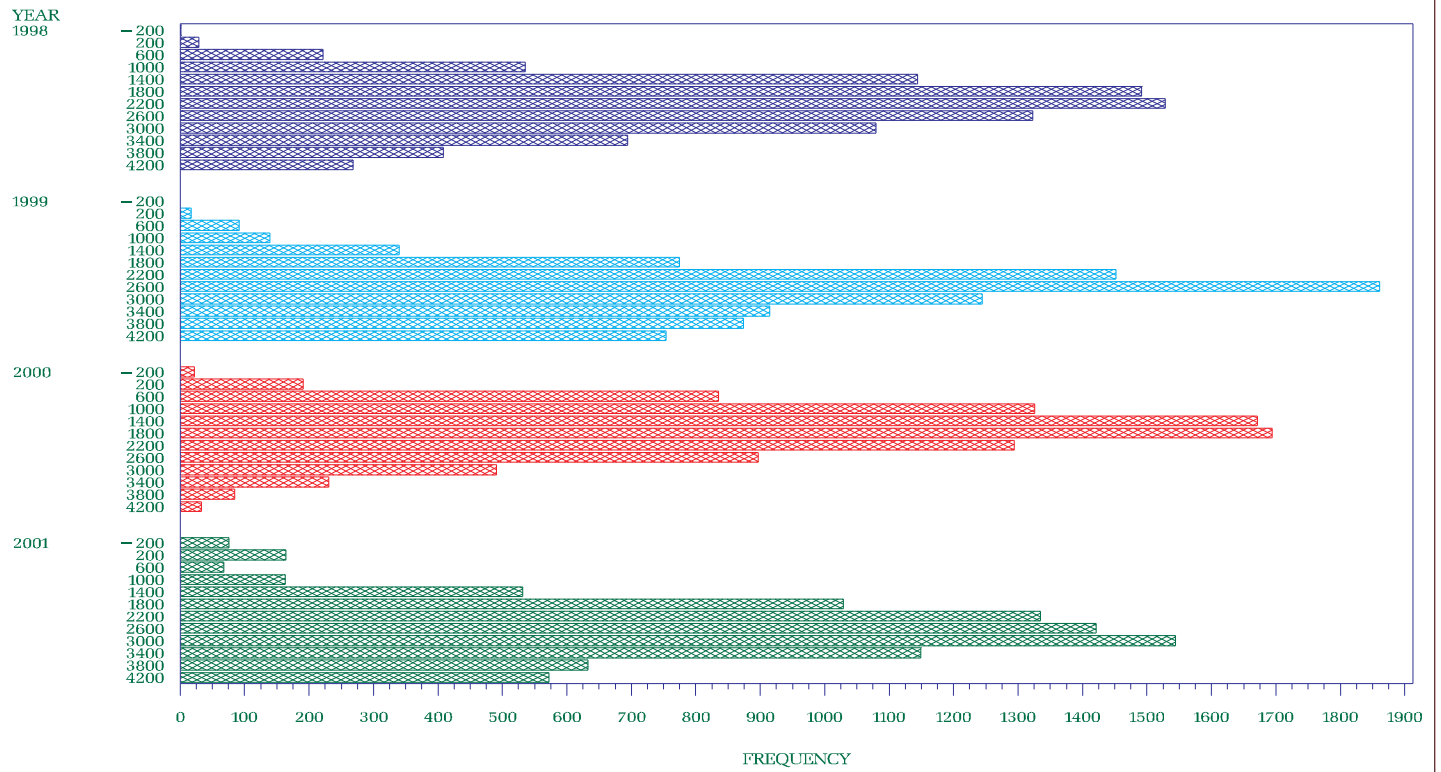
NYISO Frequency Interface Flow For January – December 2001

Margin to UPNY Con Ed Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

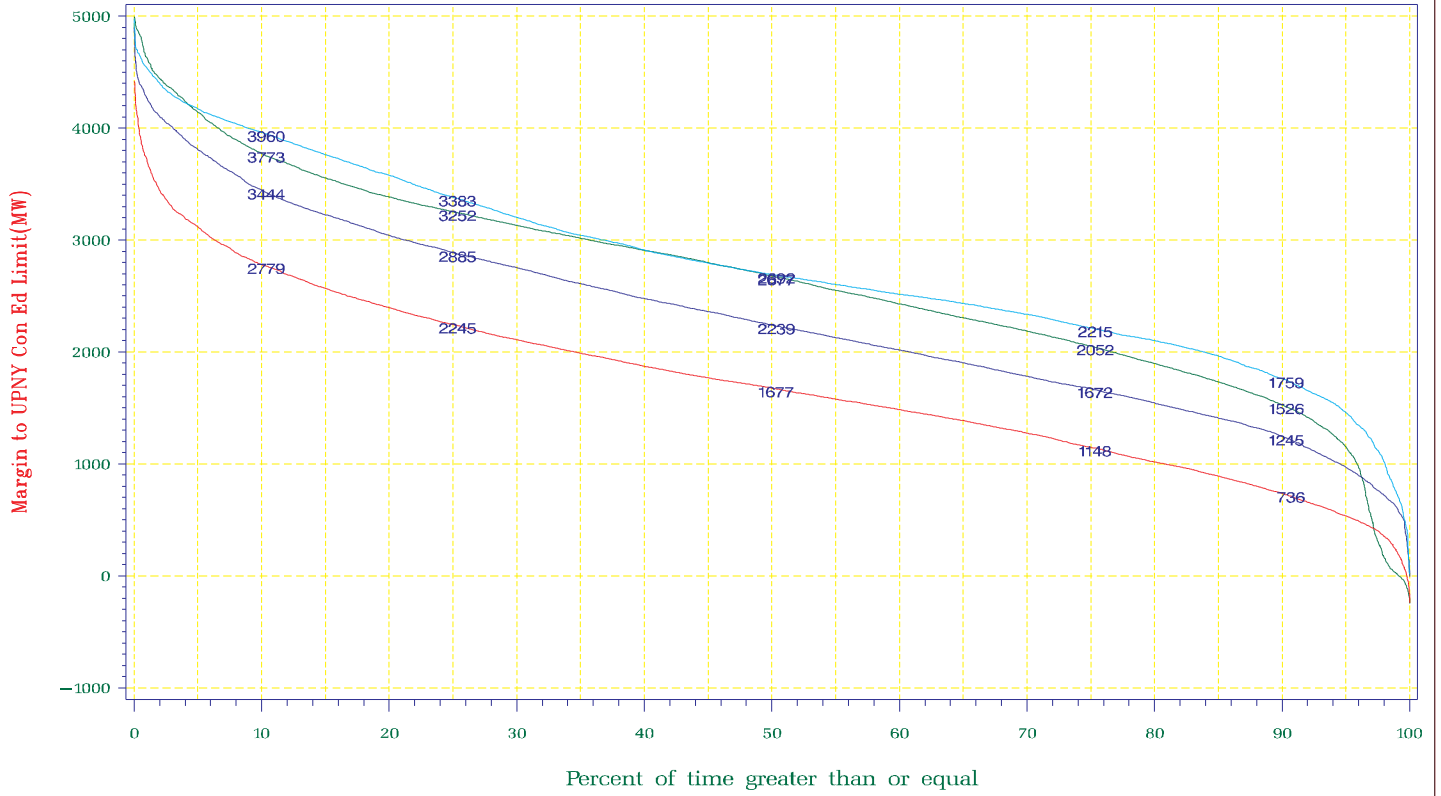
Margin to UPNY Con Ed Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

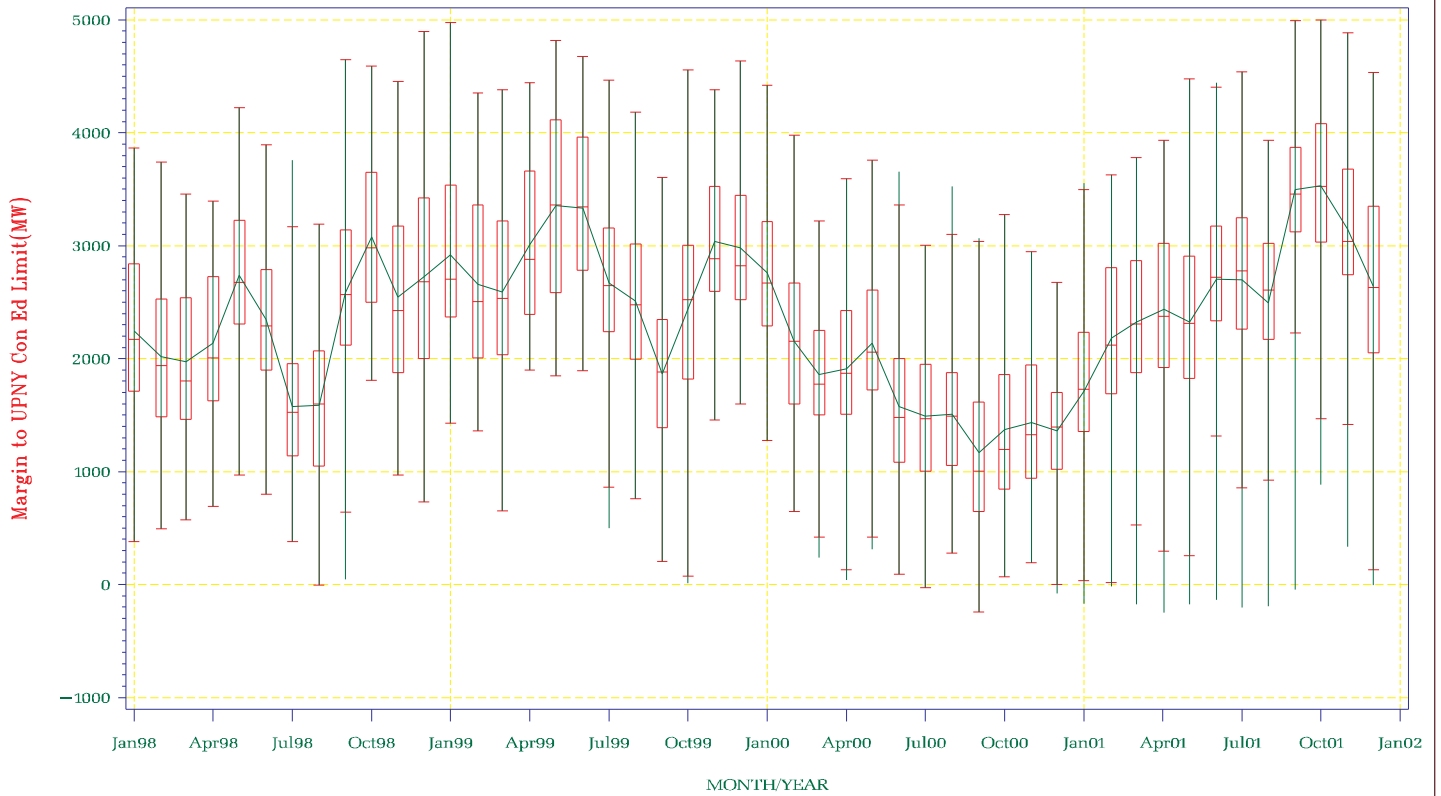
Margin to UPNY Con Ed Limit



1998 1999 2000 2001

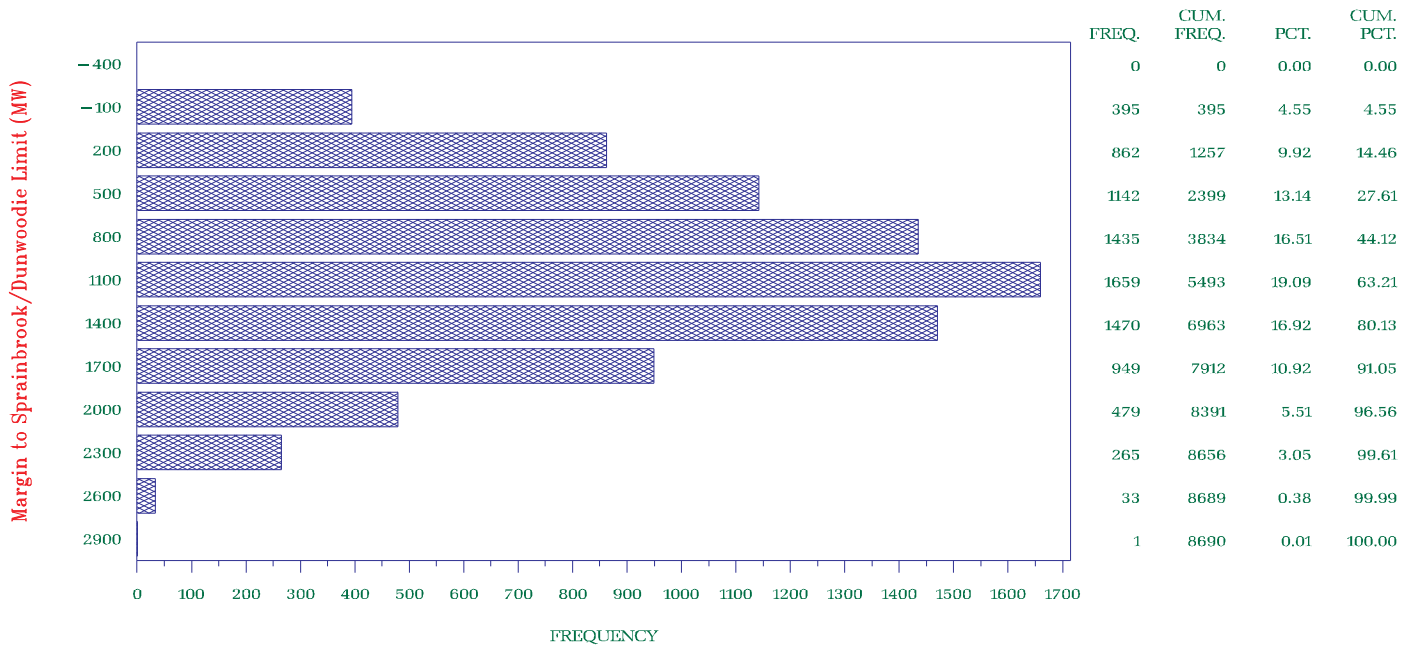
NYISO Average Monthly Interface Flow For January 01, 2001 – December 31, 2001

Margin to UPNY Con Ed Limit



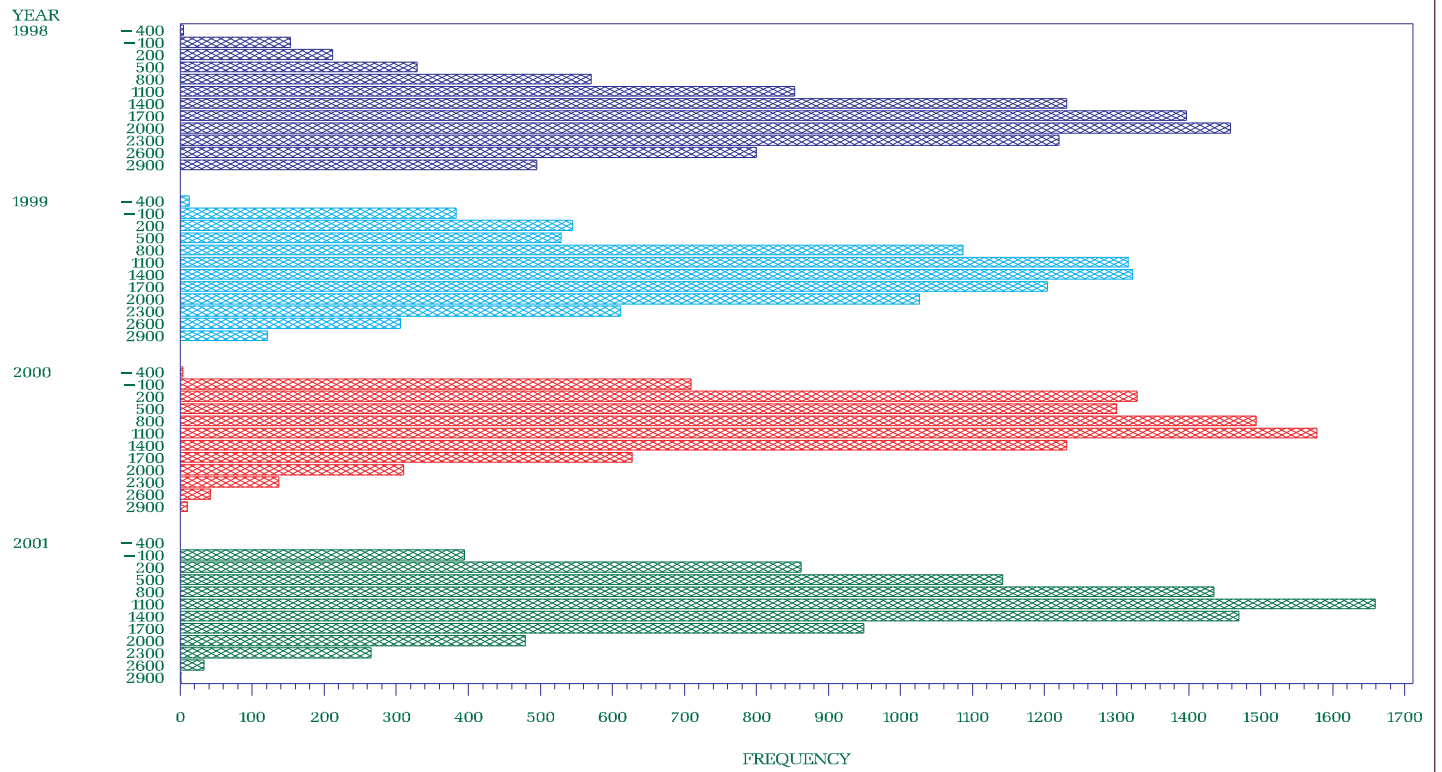
NYISO Frequency Interface Flow For January – December 2001

Margin to Sprainbrook/Dunwoodie Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

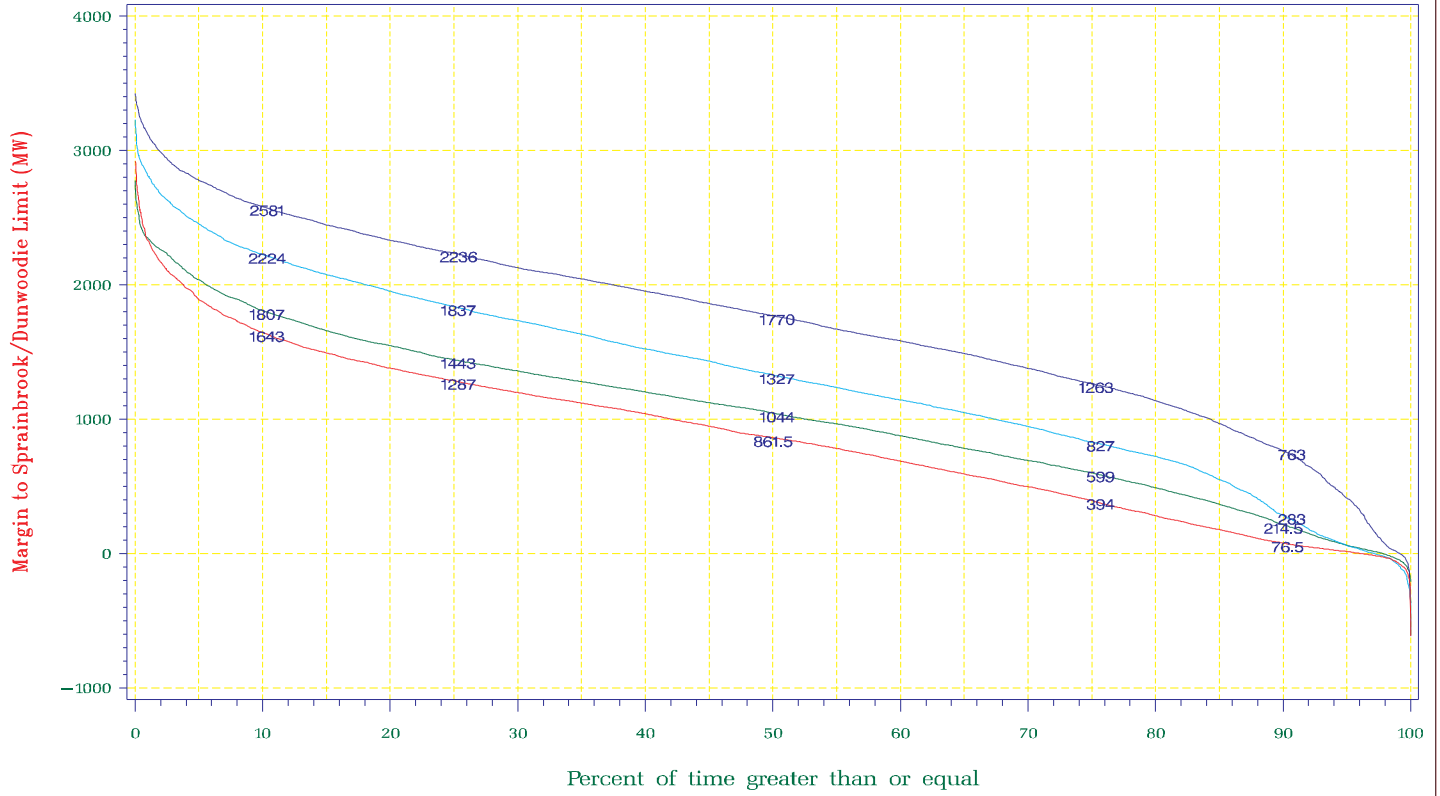
Margin to Sprainbrook/Dunwoodie Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

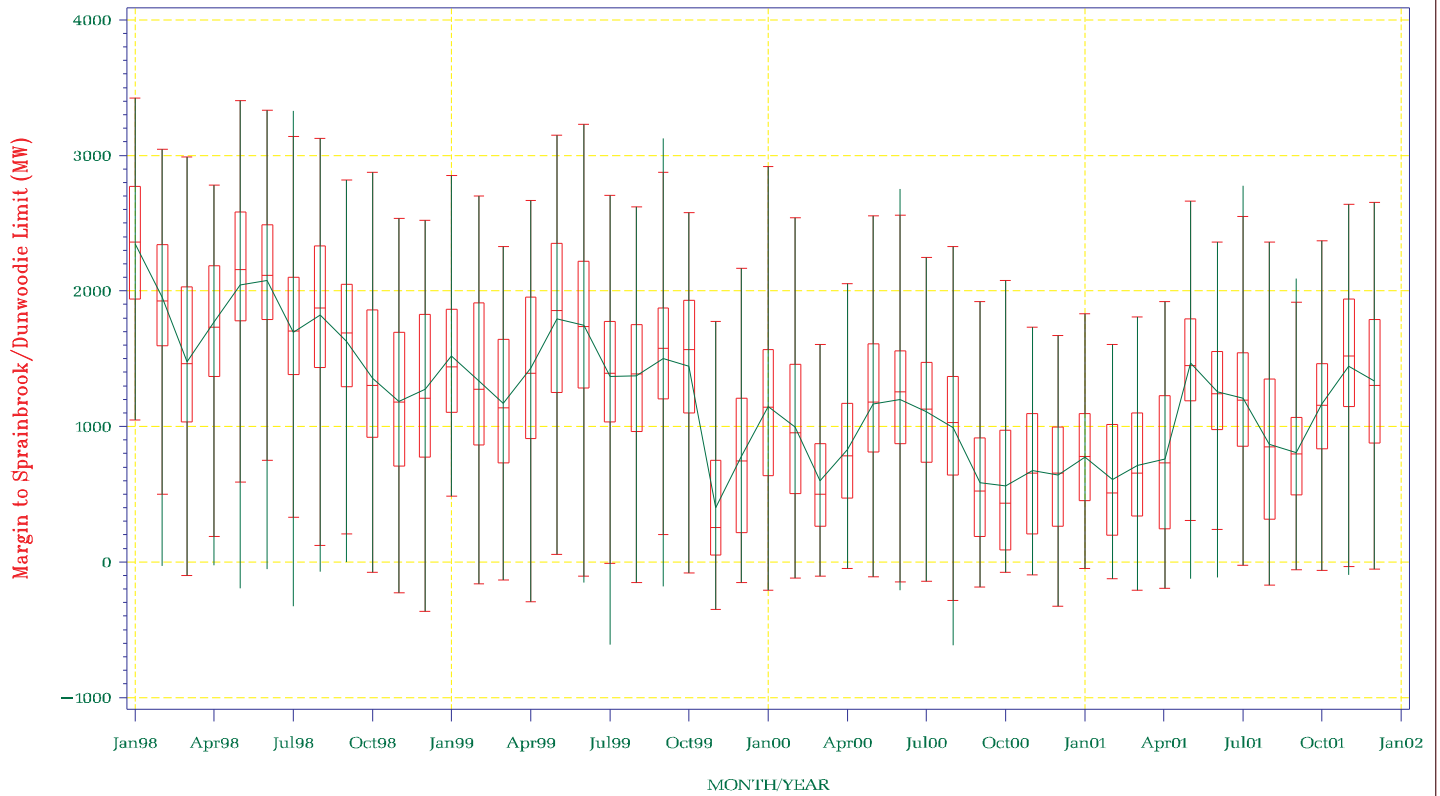
Margin to Sprainbrook/Dunwoodie Limit



1998 1999 2000 2001

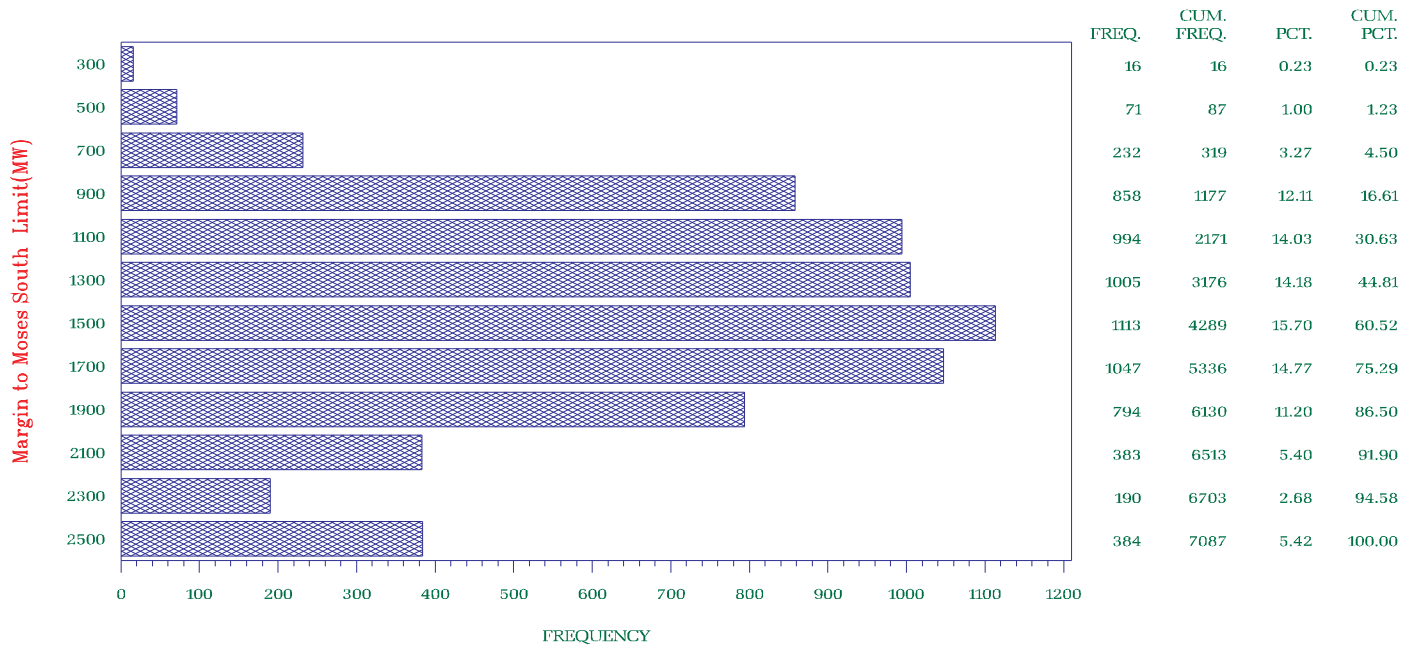
NYISO Average Monthly Interface Flow For January 01, 2001 – December 31, 2001

Margin to Sprainbrook/Dunwoodie Limit



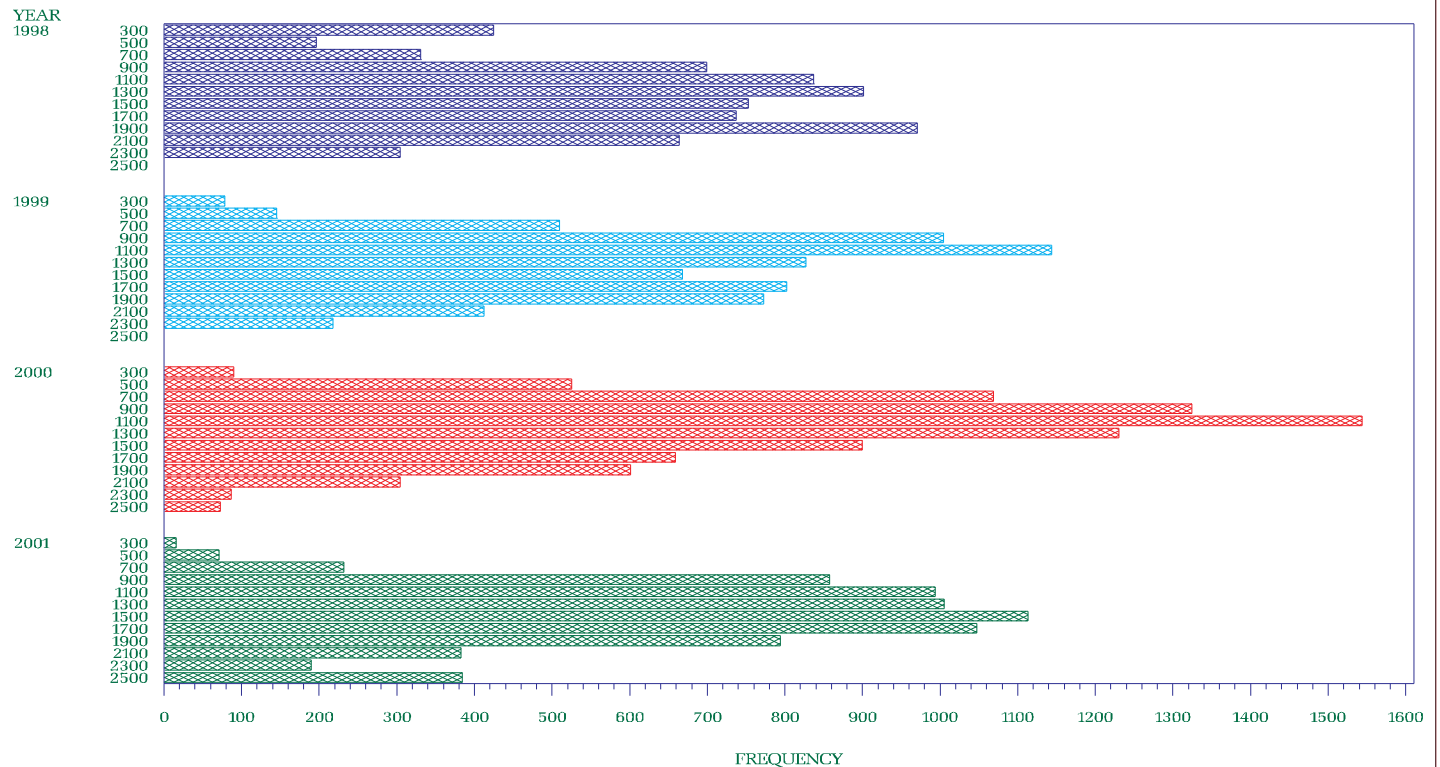
NYISO Frequency Interface Flow For January – December 2001

Margin to Moses South Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

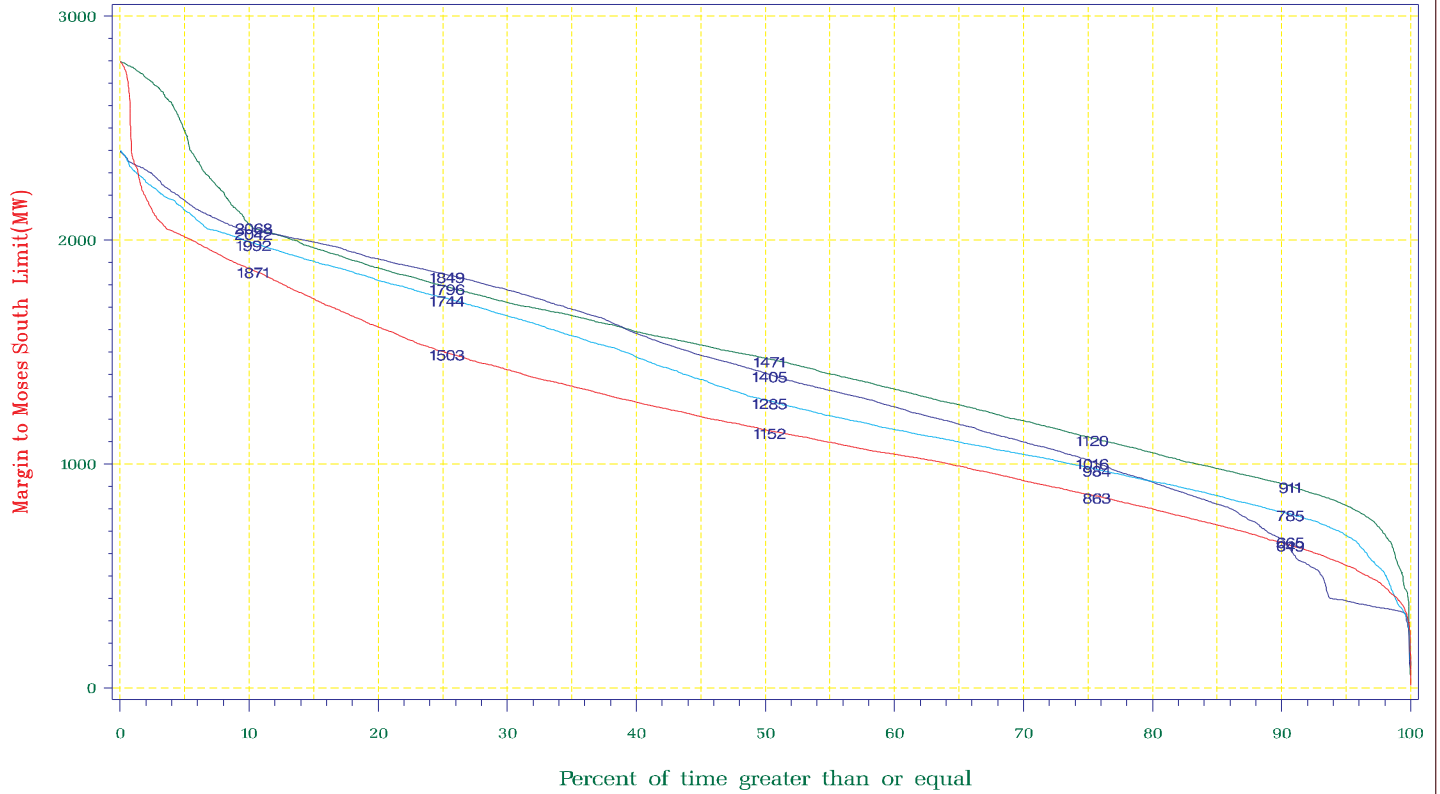
Margin to Moses South Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

Margin to Moses South Limit



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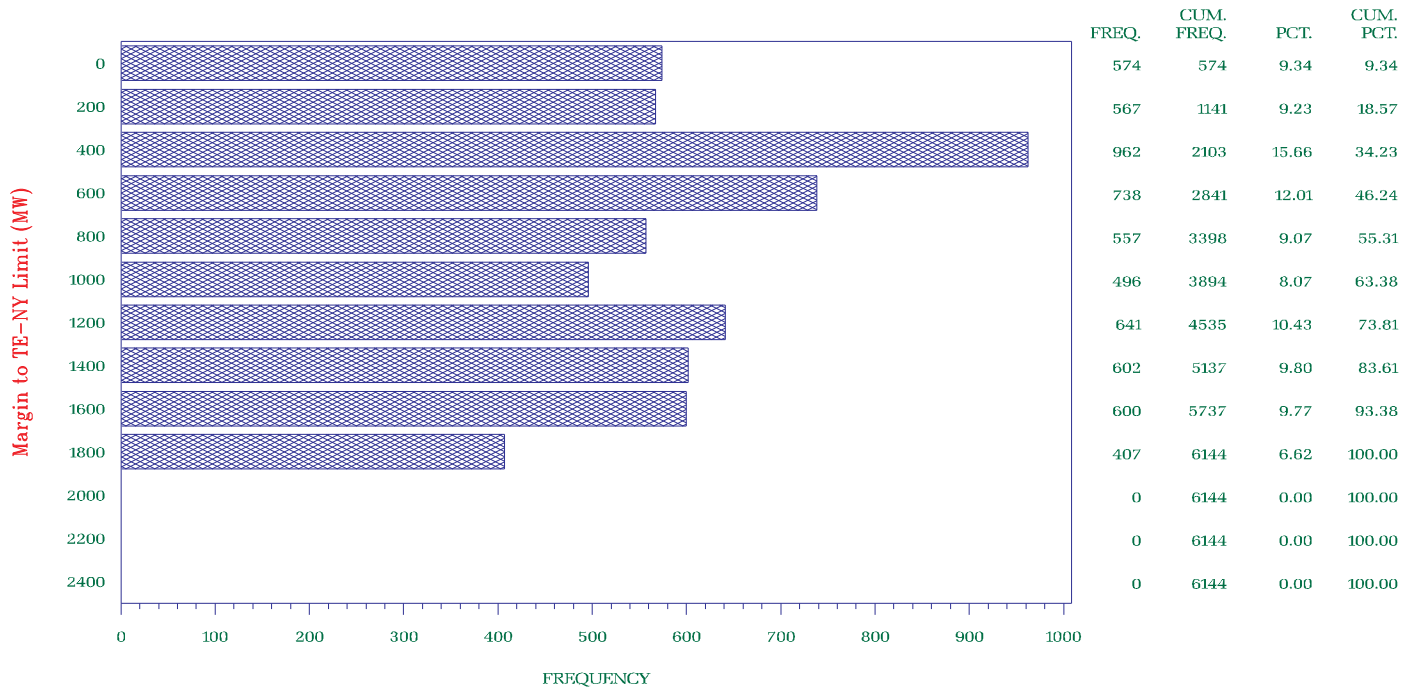
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Margin to Moses South Limit



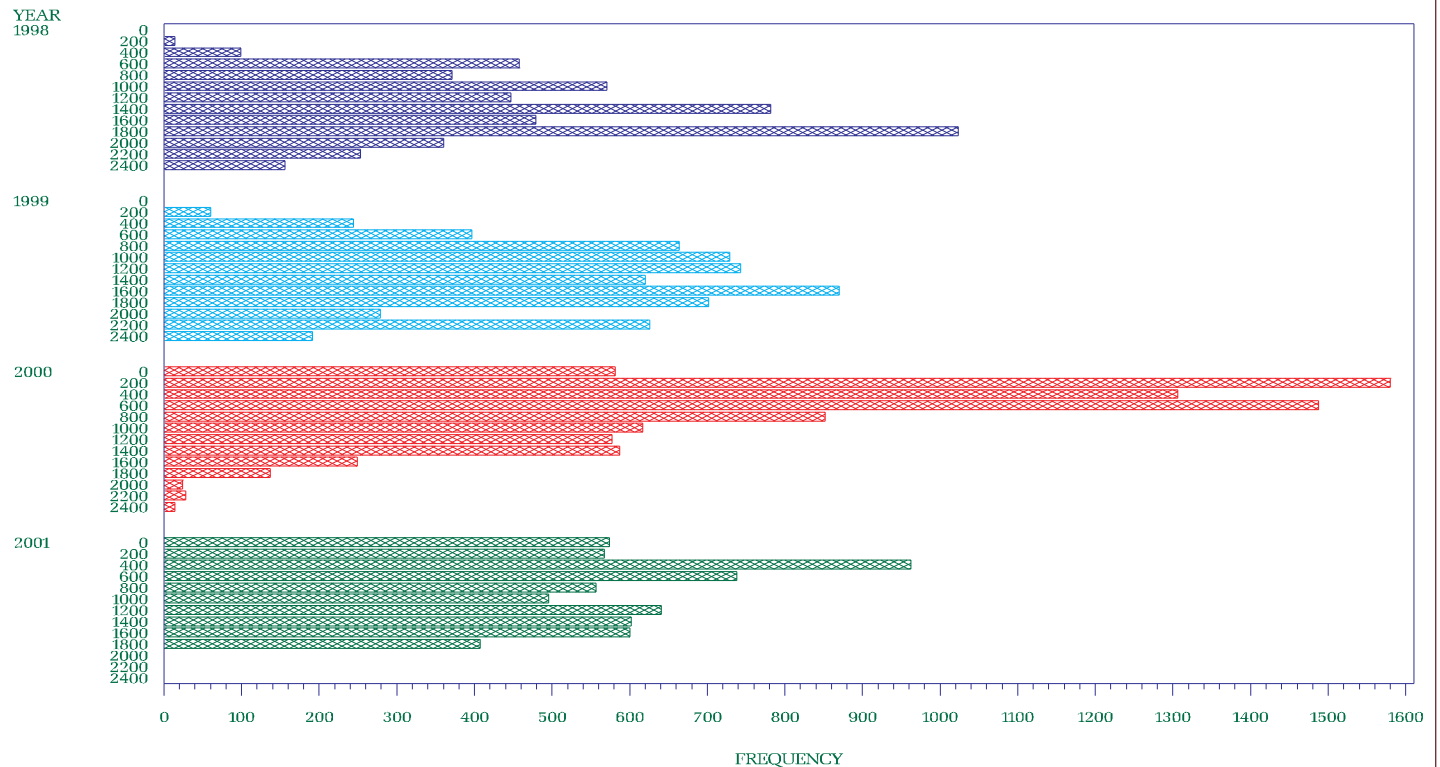
NYISO Frequency Interface Flow For January – December 2001

Margin to TE-NY Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

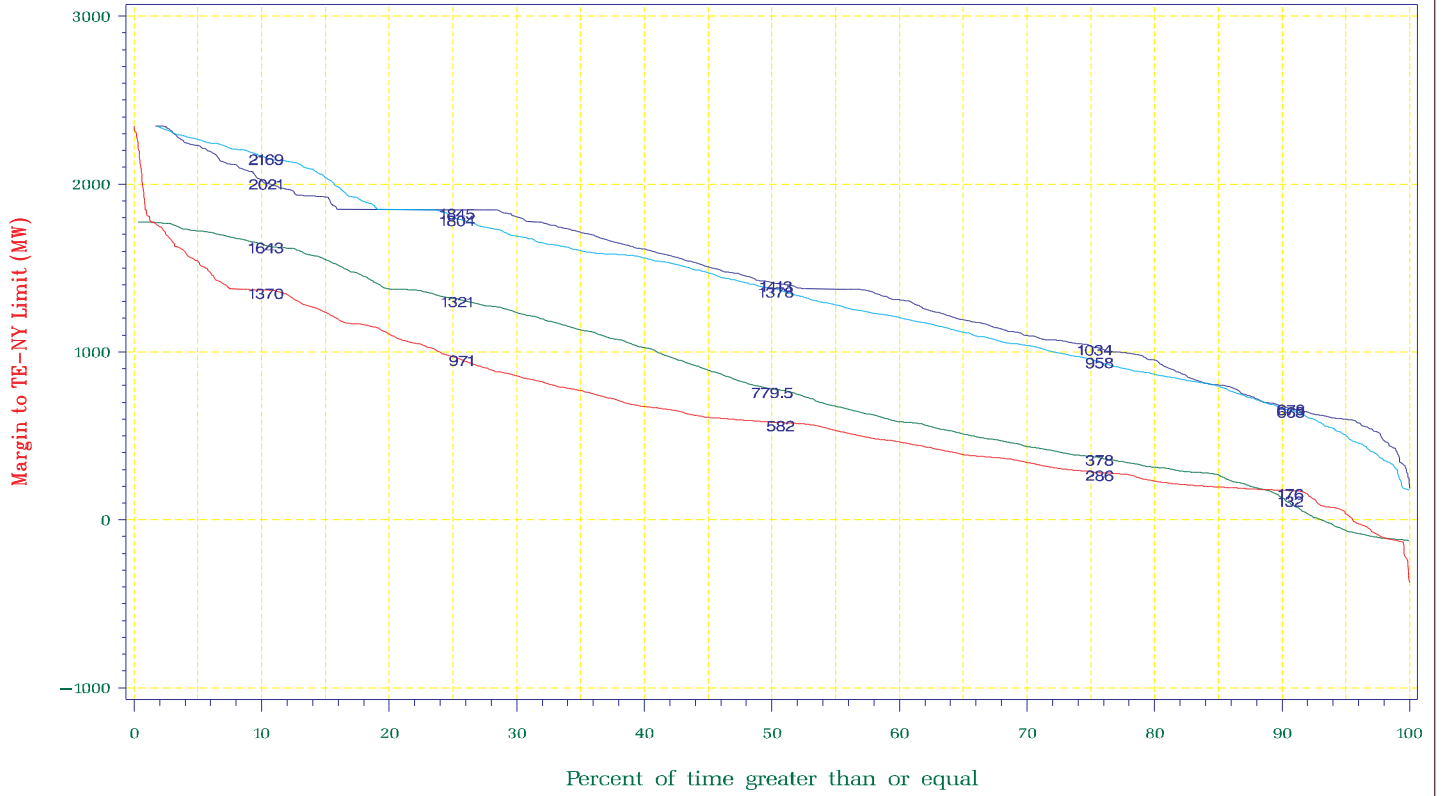
Margin to TE-NY Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

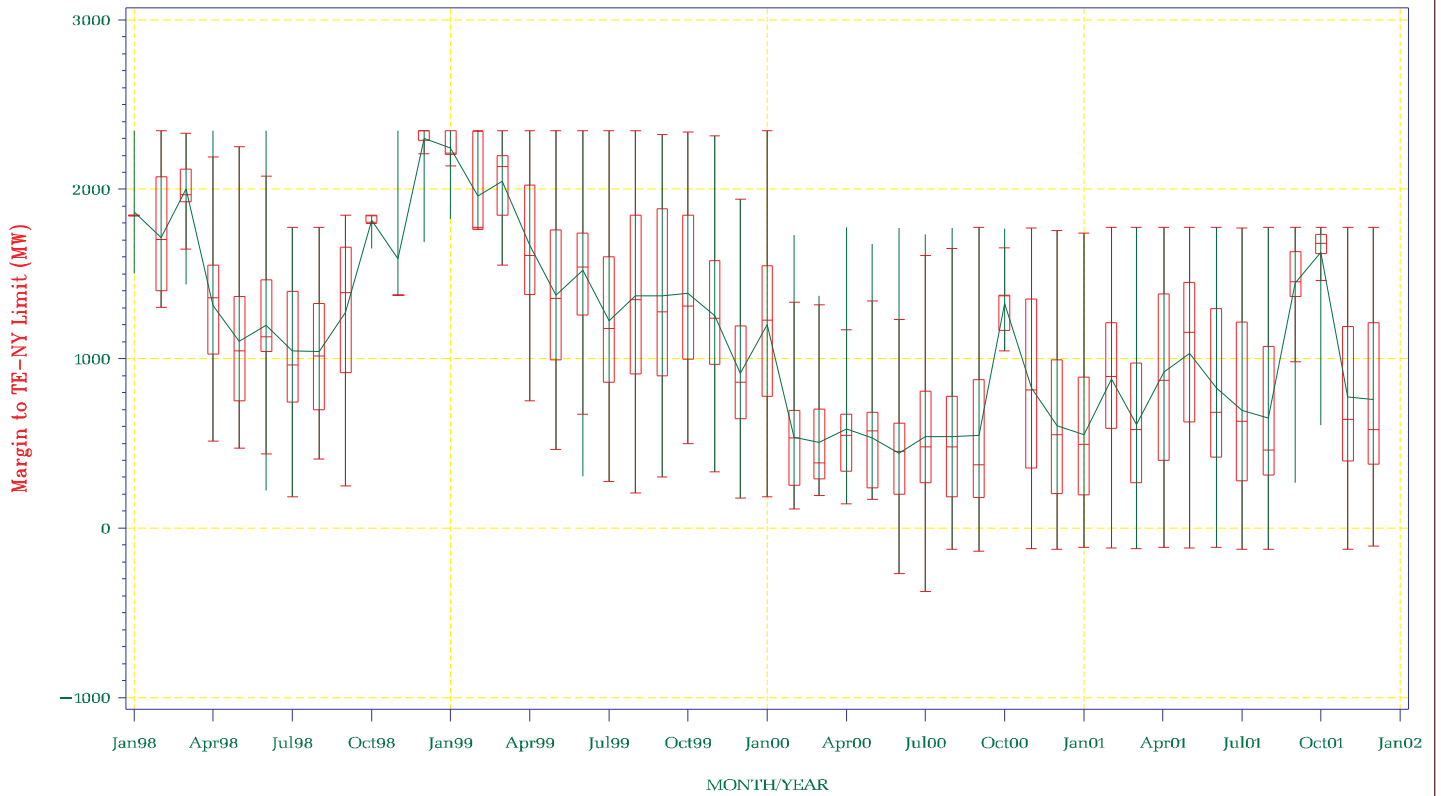
Margin to TE-NY Limit



1998 1999 2000 2001

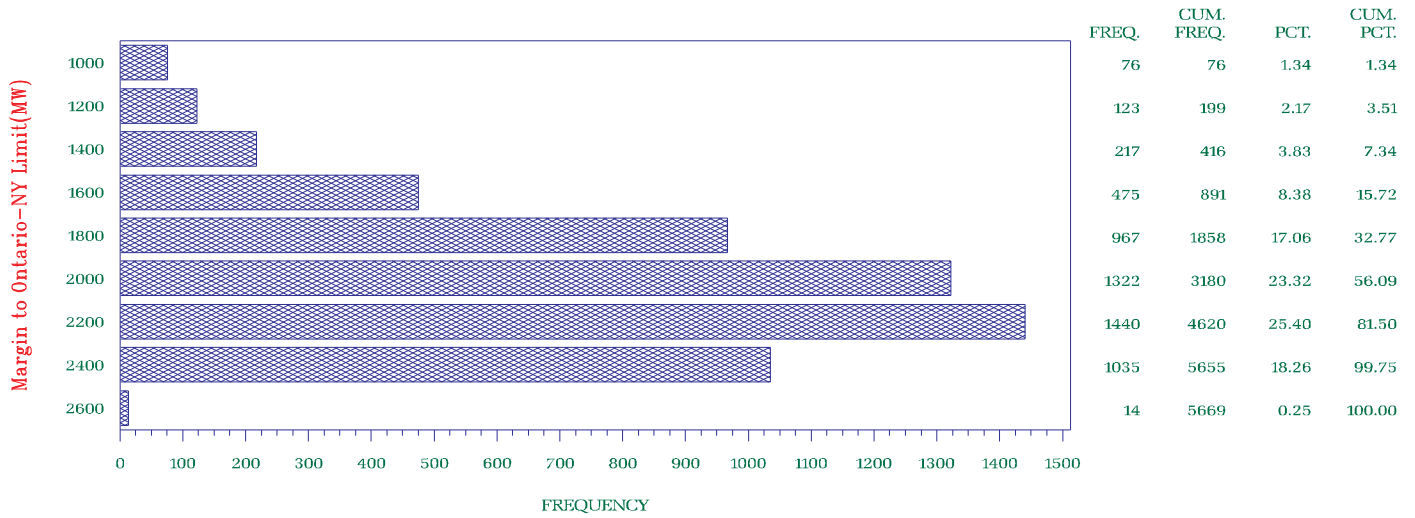
NYISO Average Monthly Interface Flow For January 01, 2001 – December 31, 2001

Margin to TE-NY Limit



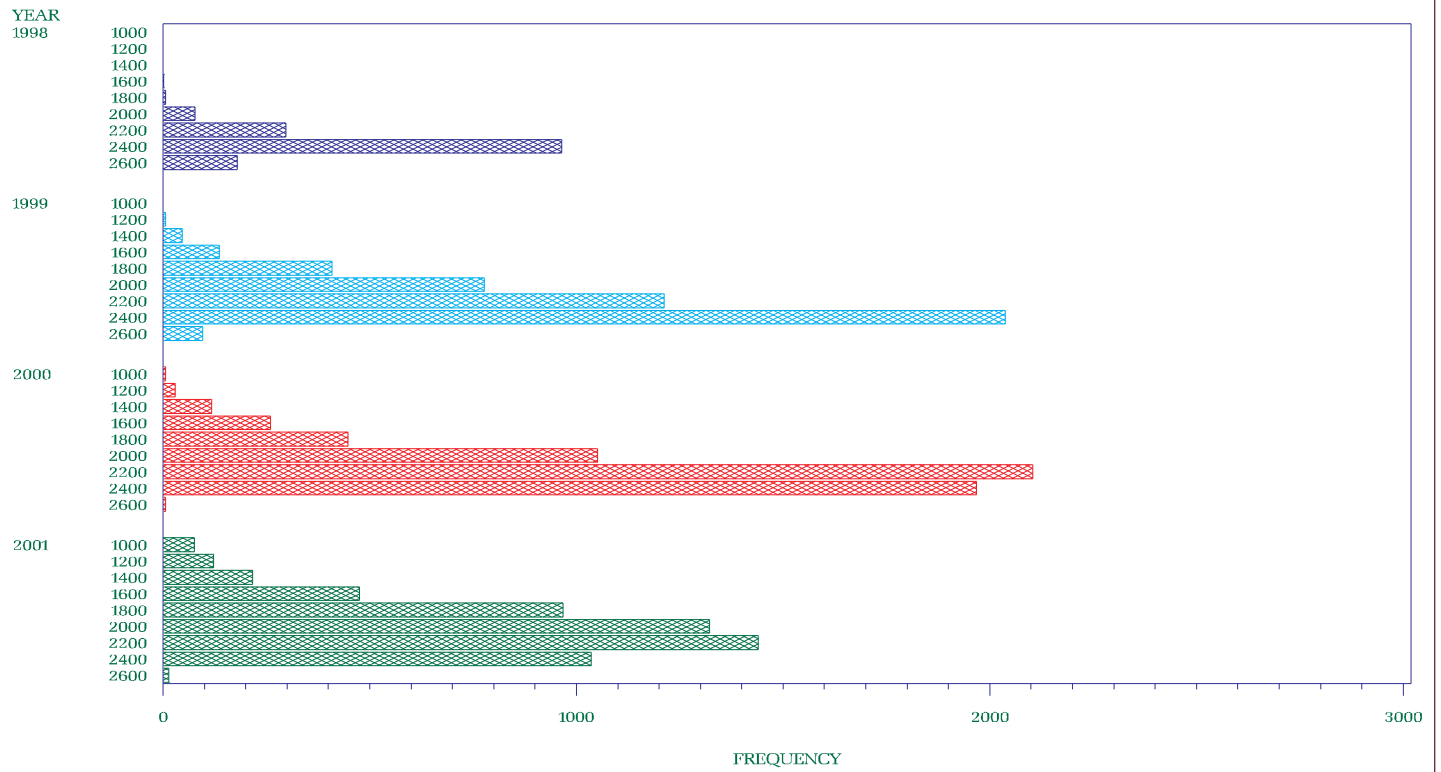
NYISO Frequency Interface Flow For January – December 2001

Margin to Ontario – NY Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

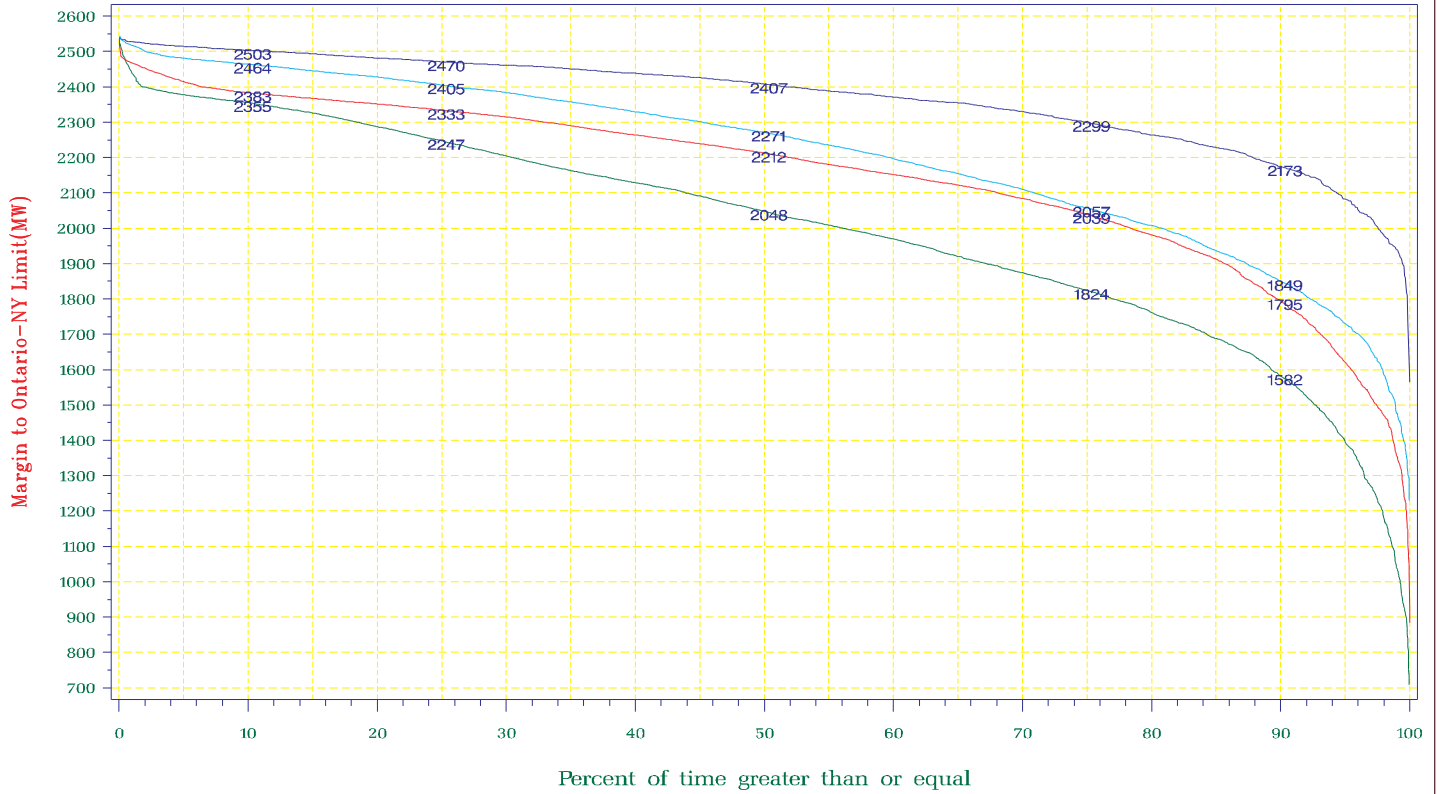
Margin to Ontario – NY Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

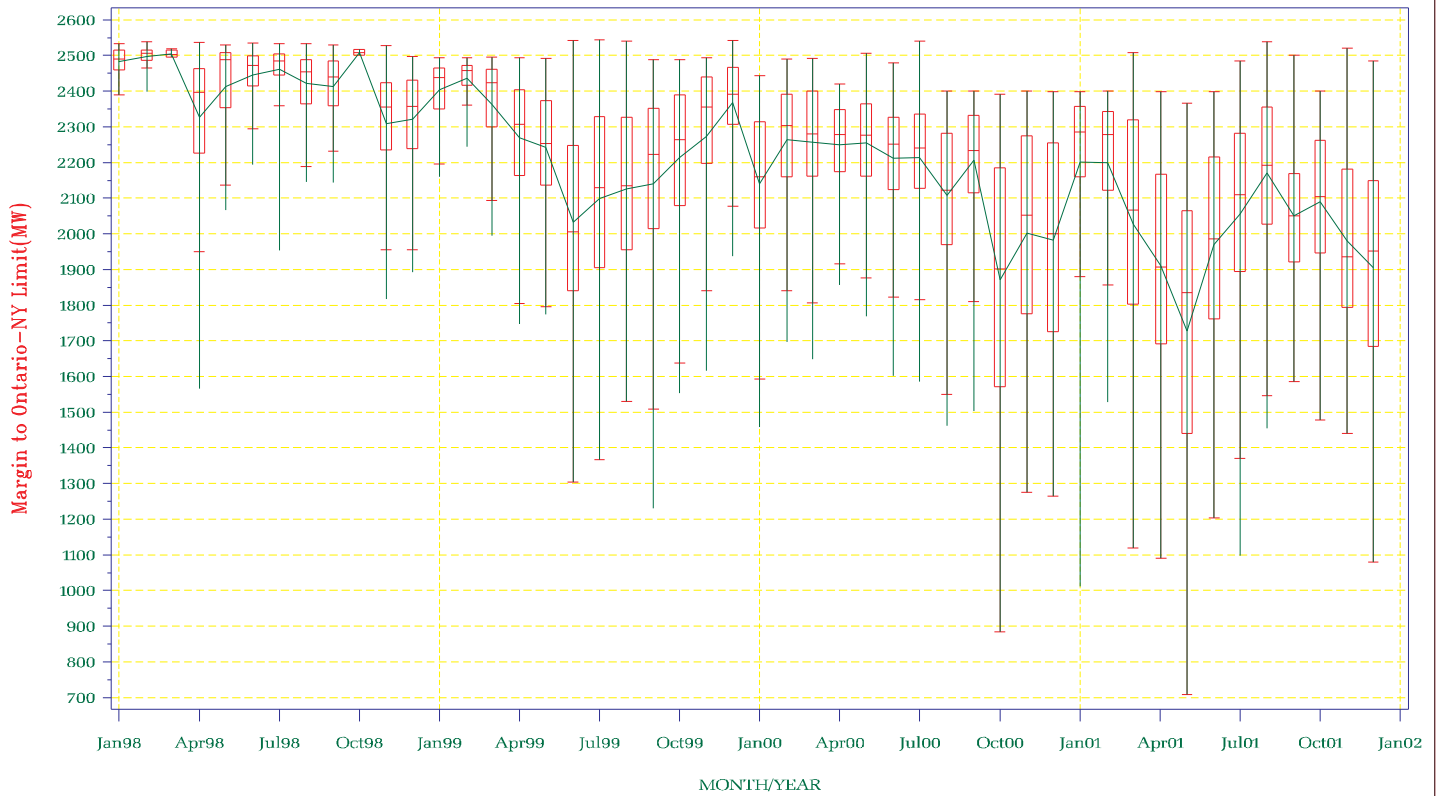
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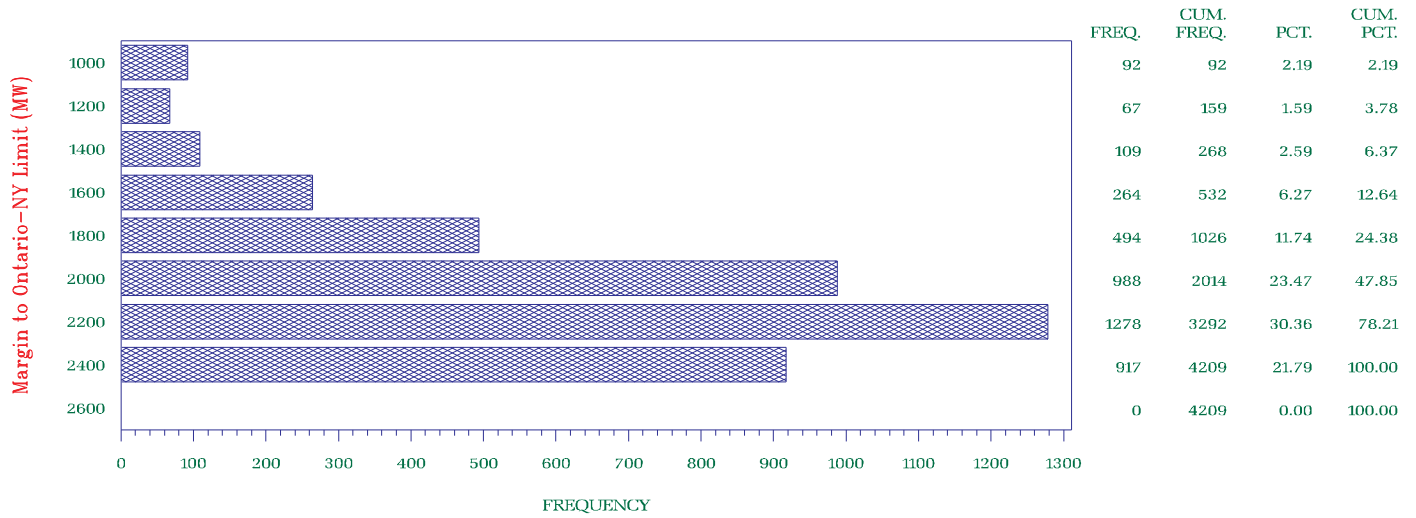
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Margin to Ontario – NY Limit



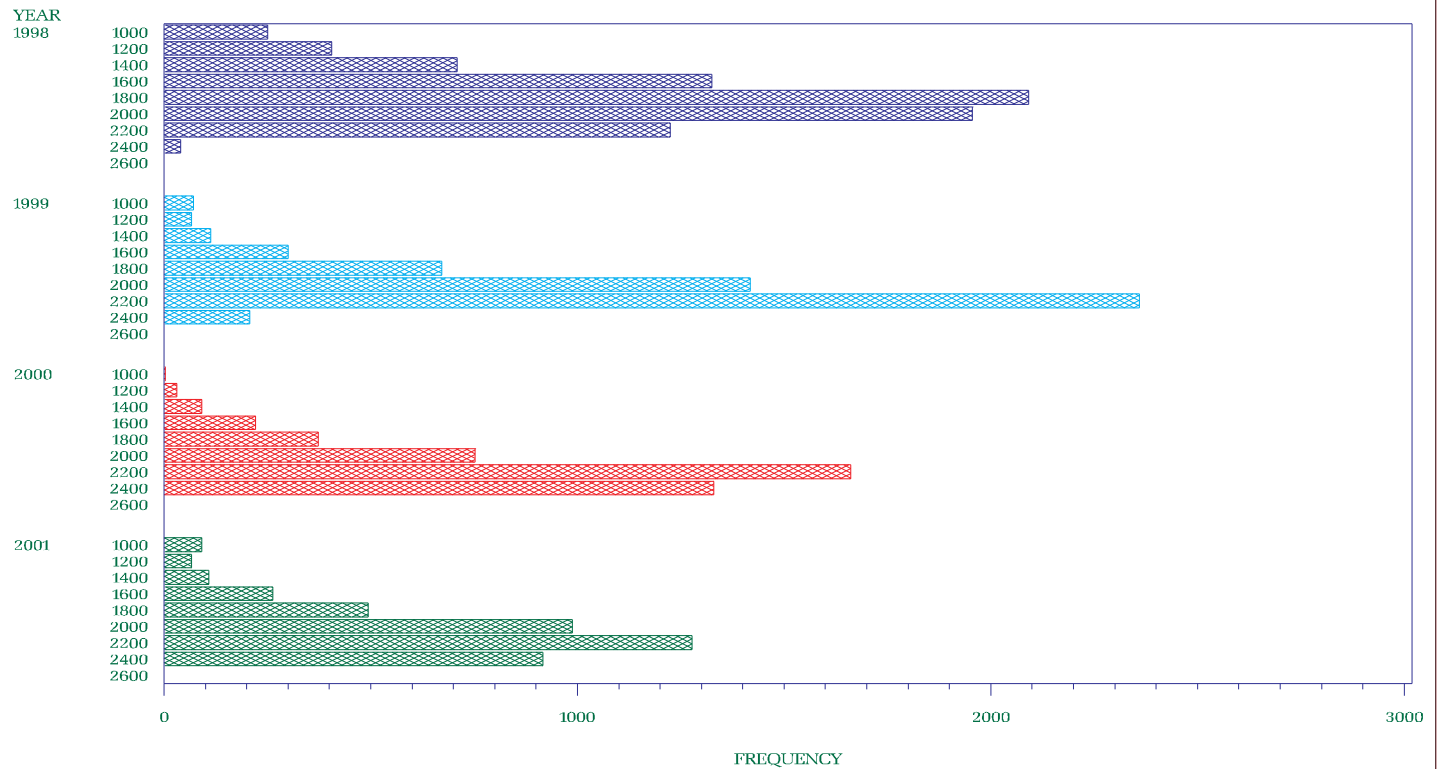
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Margin to NY–Ontario Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

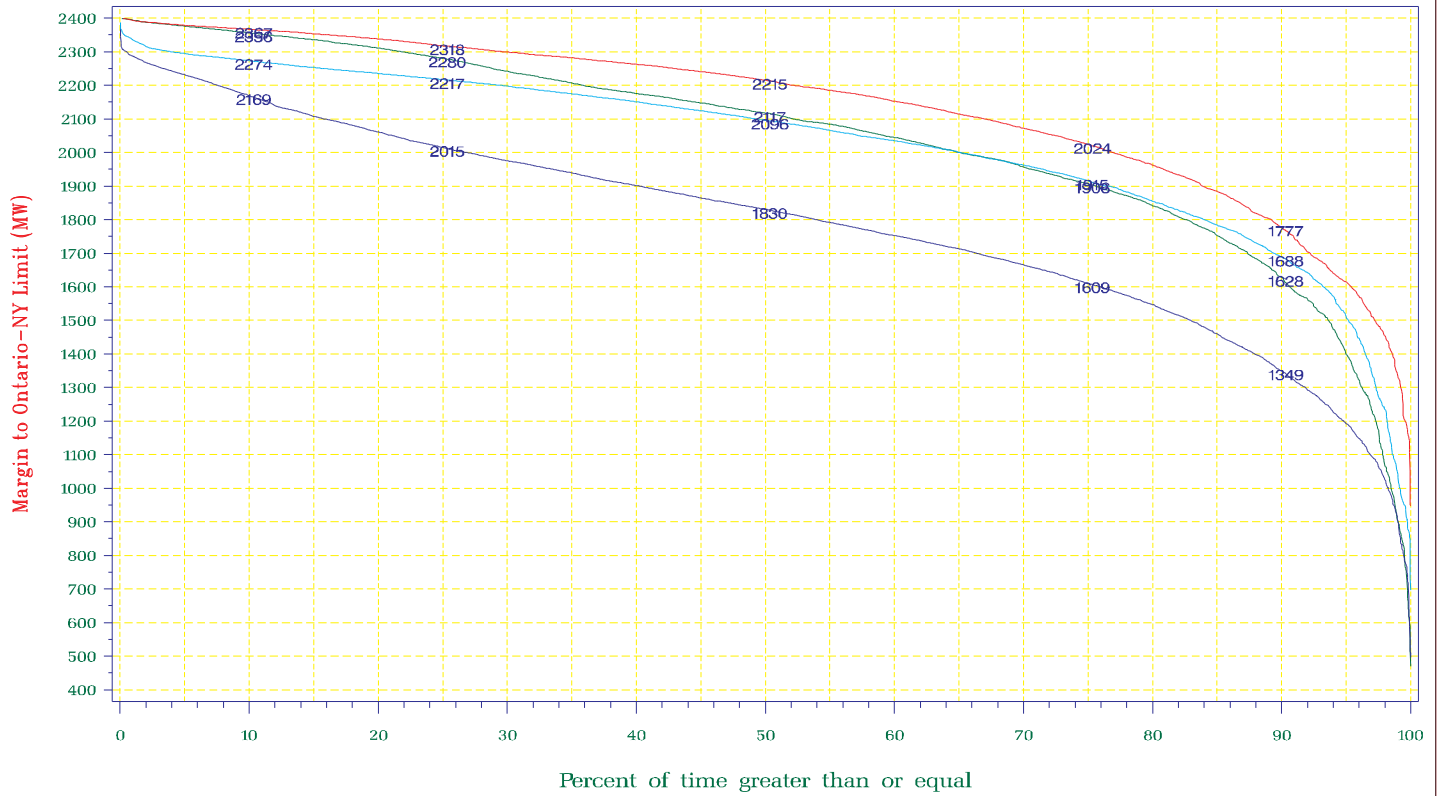
Margin to NY–Ontario Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

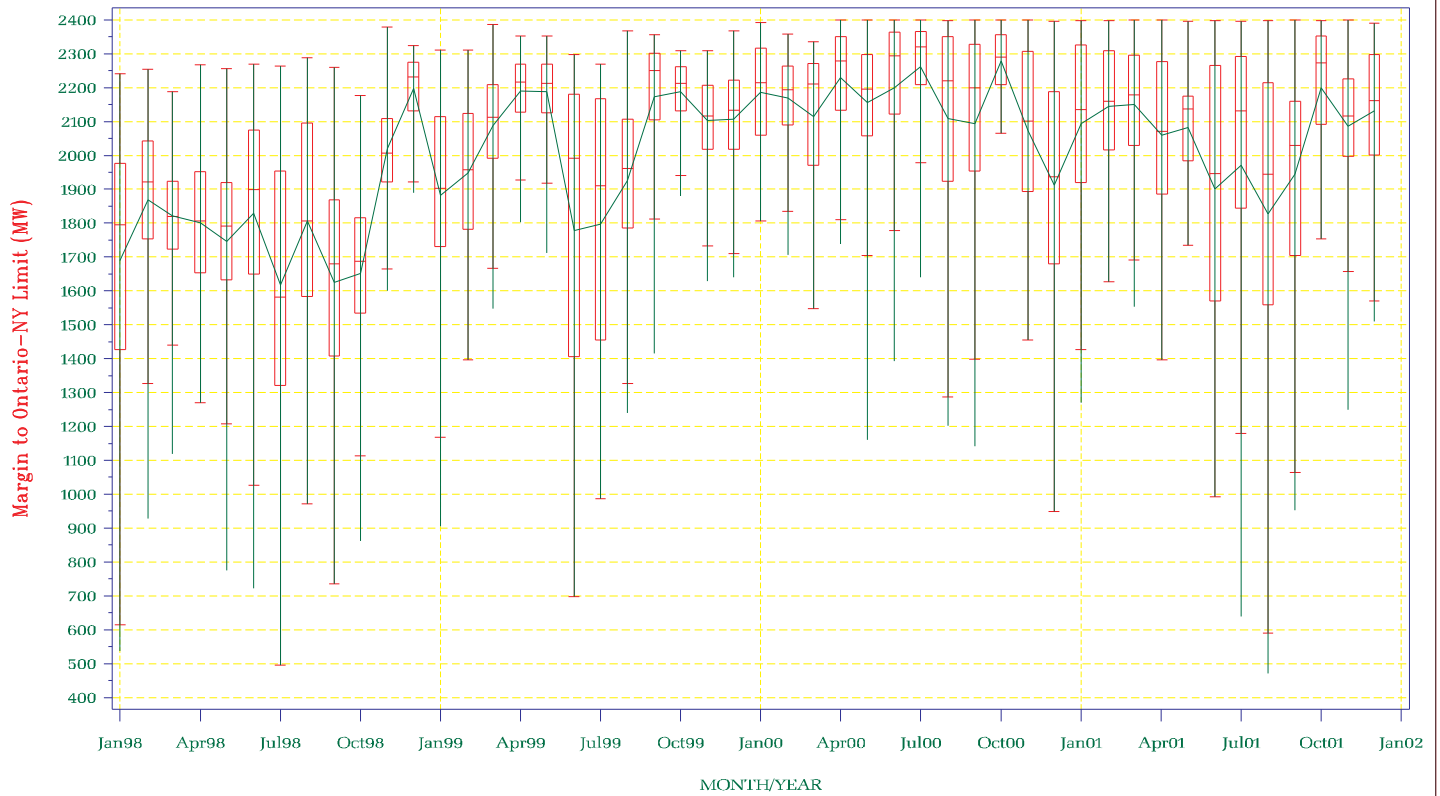
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1998 1999 2000 2001

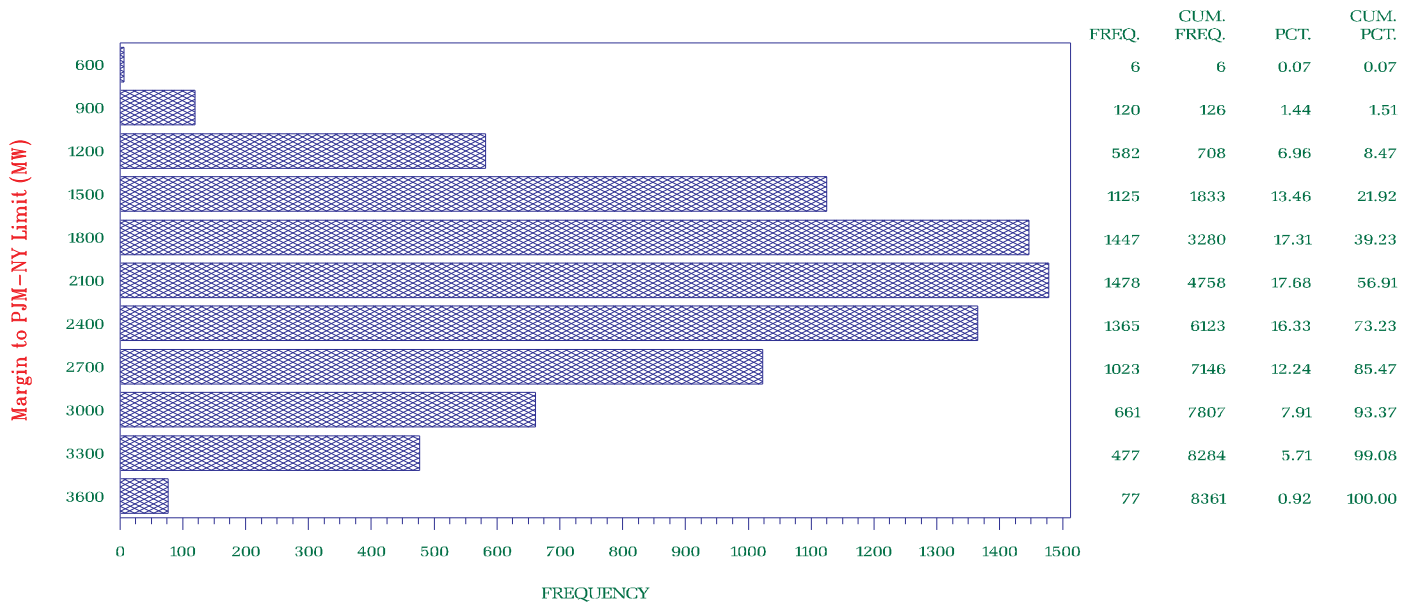
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Margin to NY–Ontario Limit



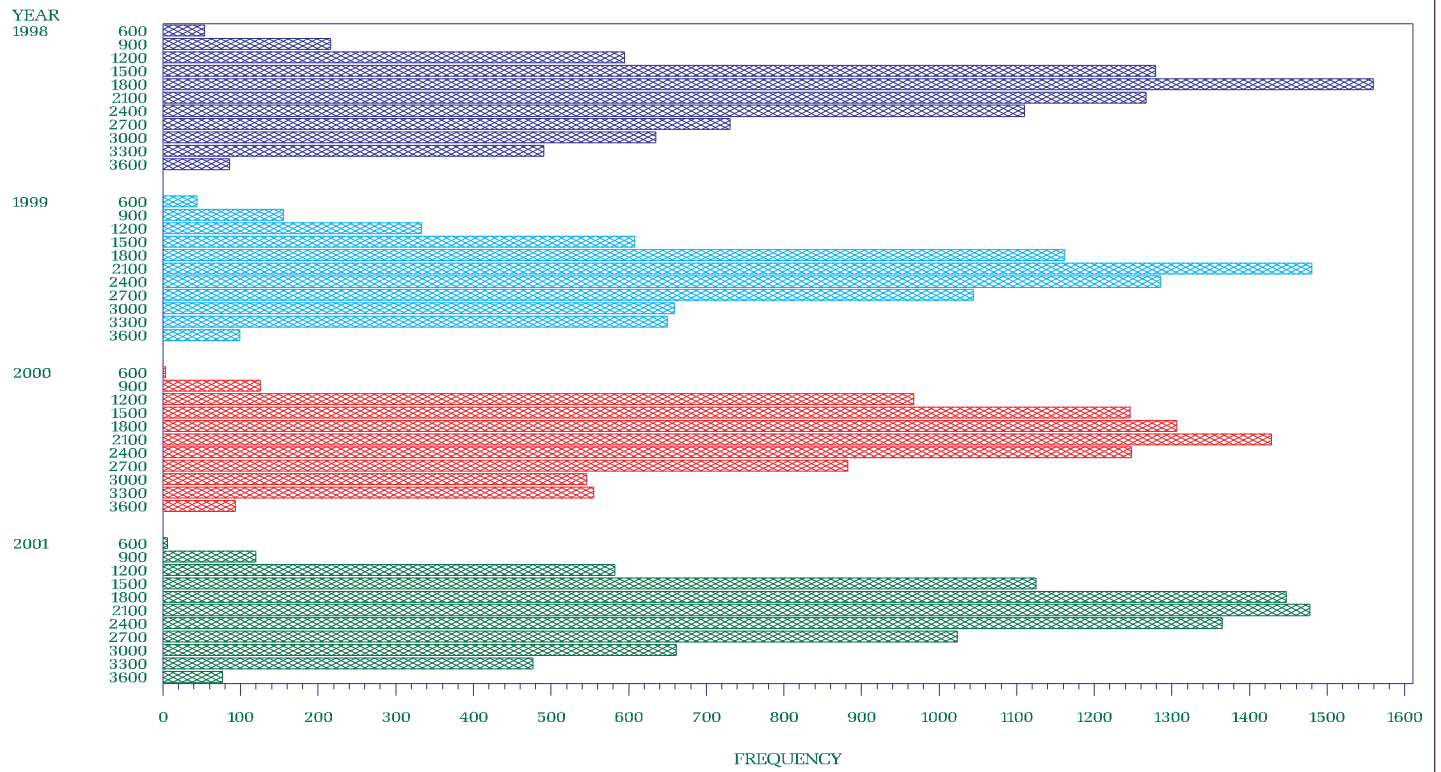
NYISO Frequency Interface Flow For January – December 2001

Margin to PJM – NY Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

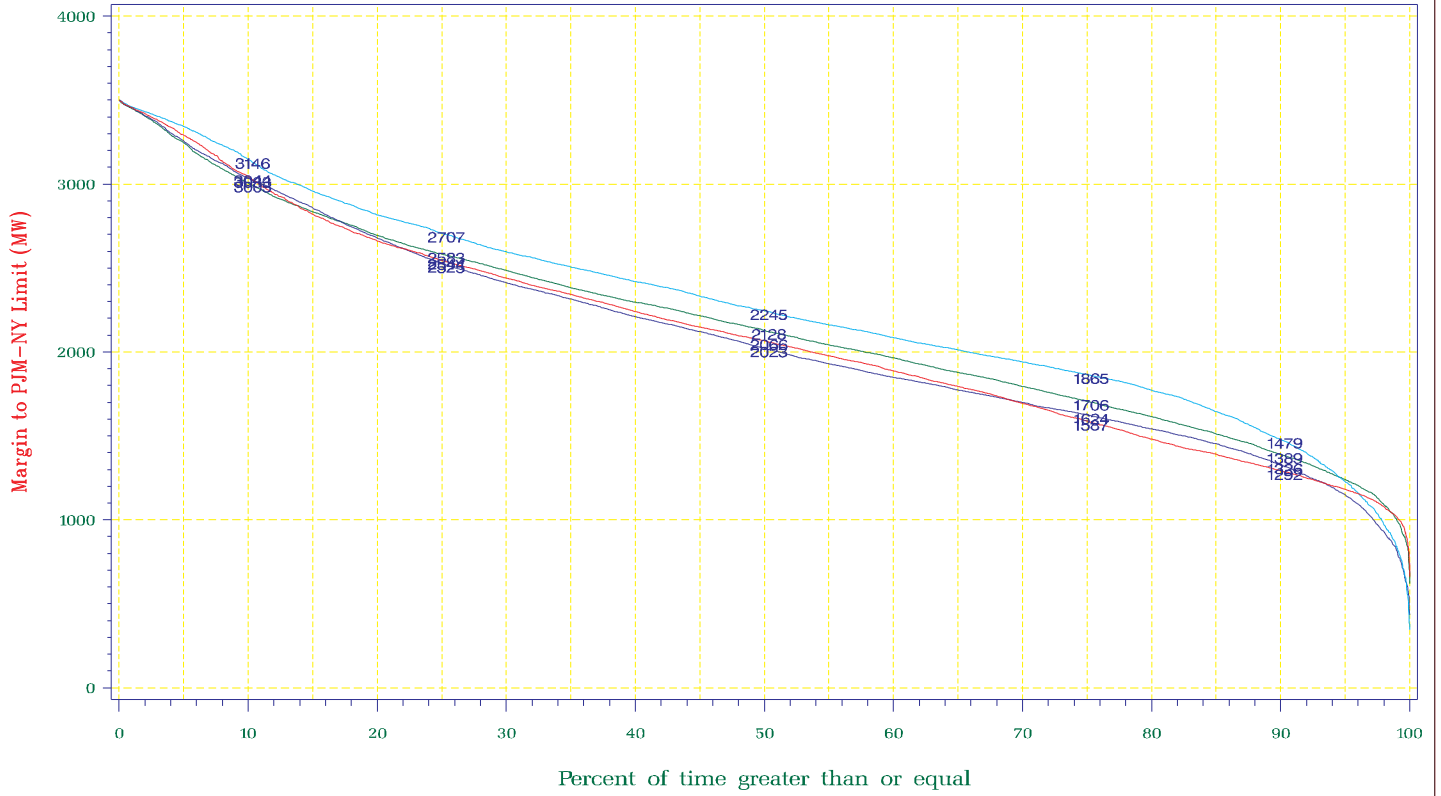
Margin to PJM – NY Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

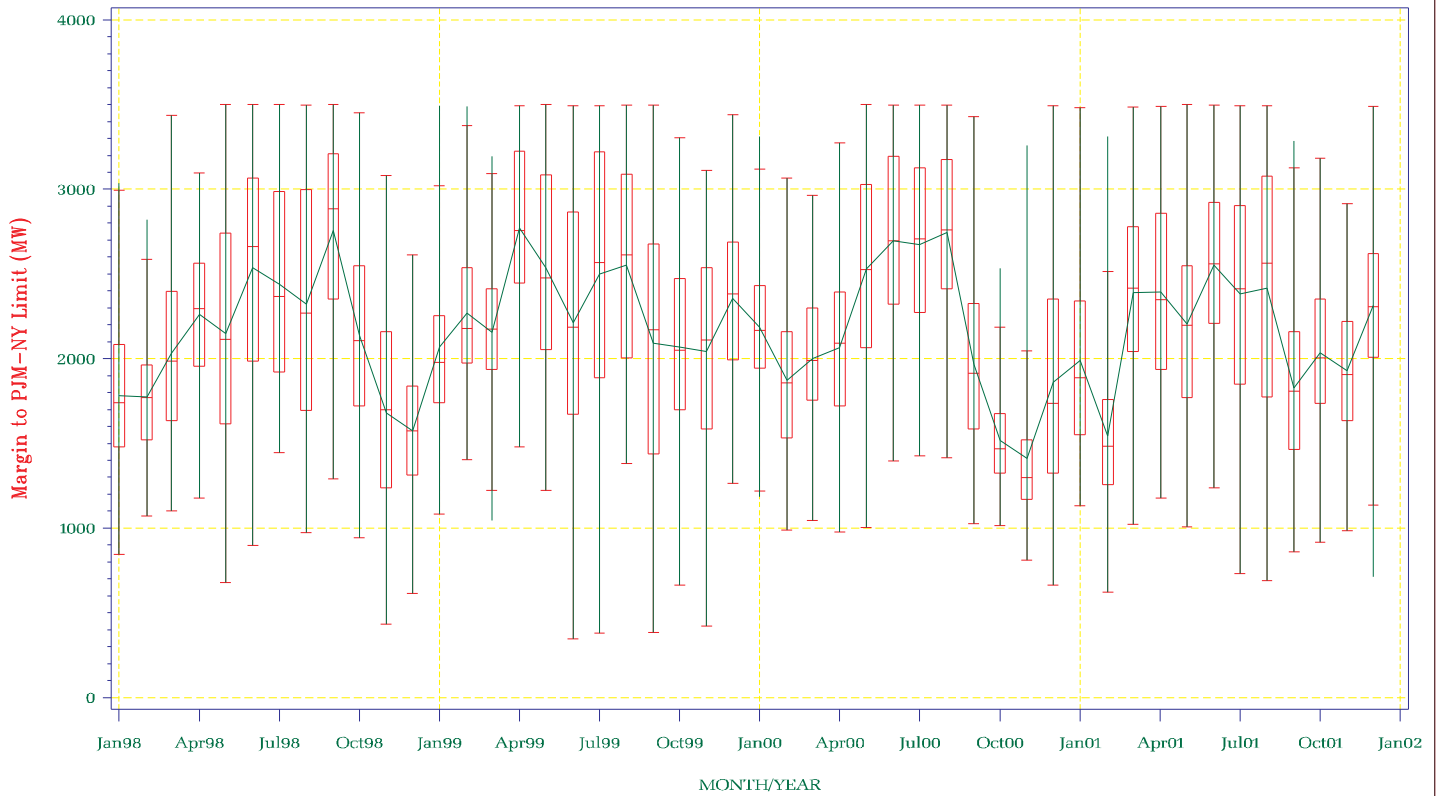
Margin to PJM–NY Limit



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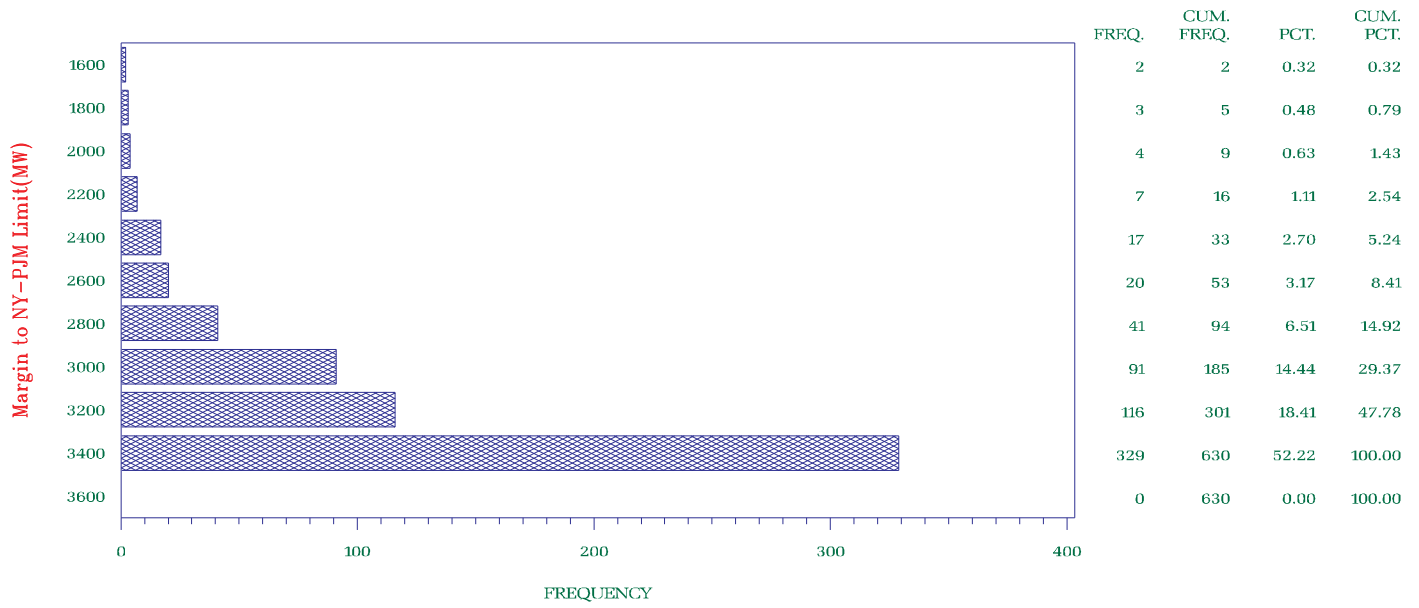
NYISO Average Monthly Interface Flow For January 01, 2001 – December 31, 2001

Margin to PJM–NY Limit



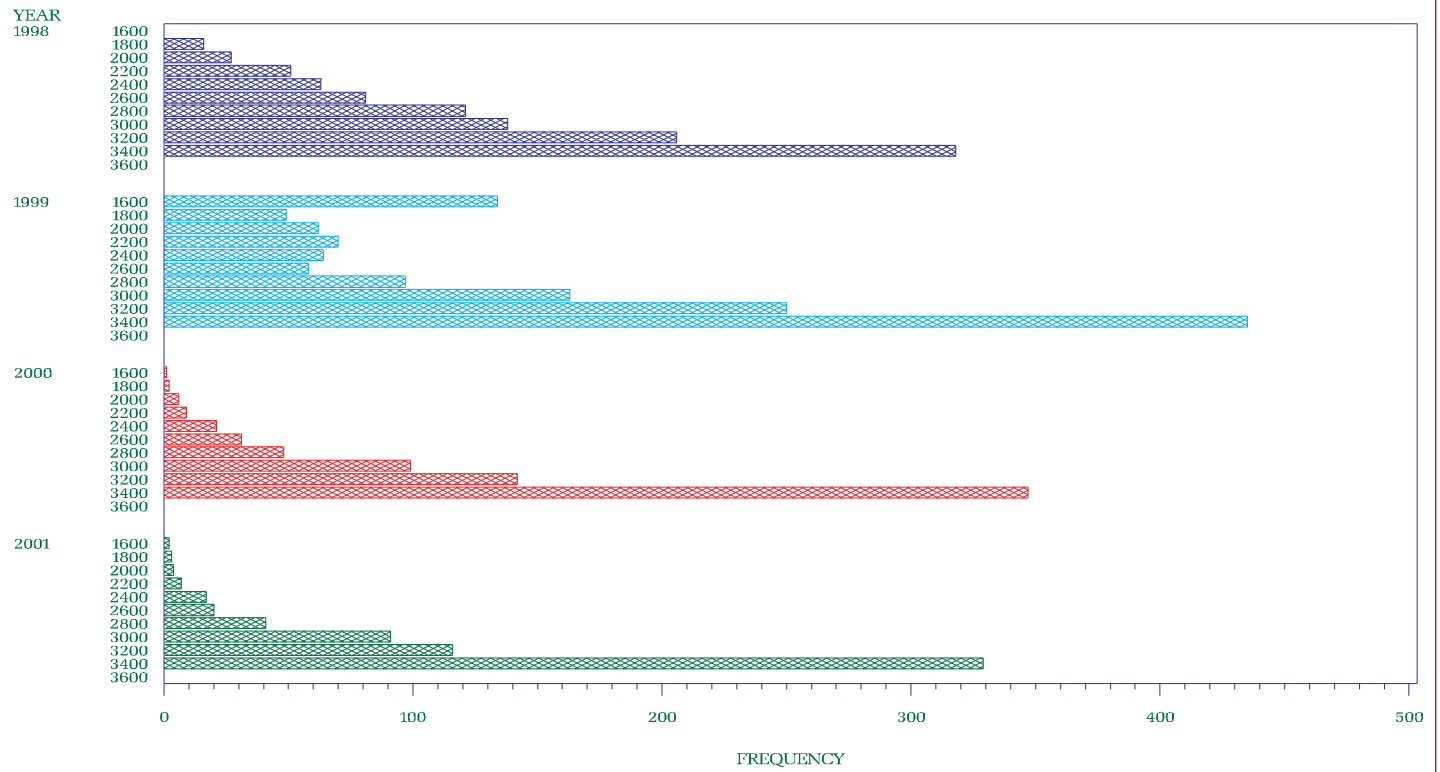
NYISO Frequency Interface Flow For January – December 2001

Margin to NY – PJM Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

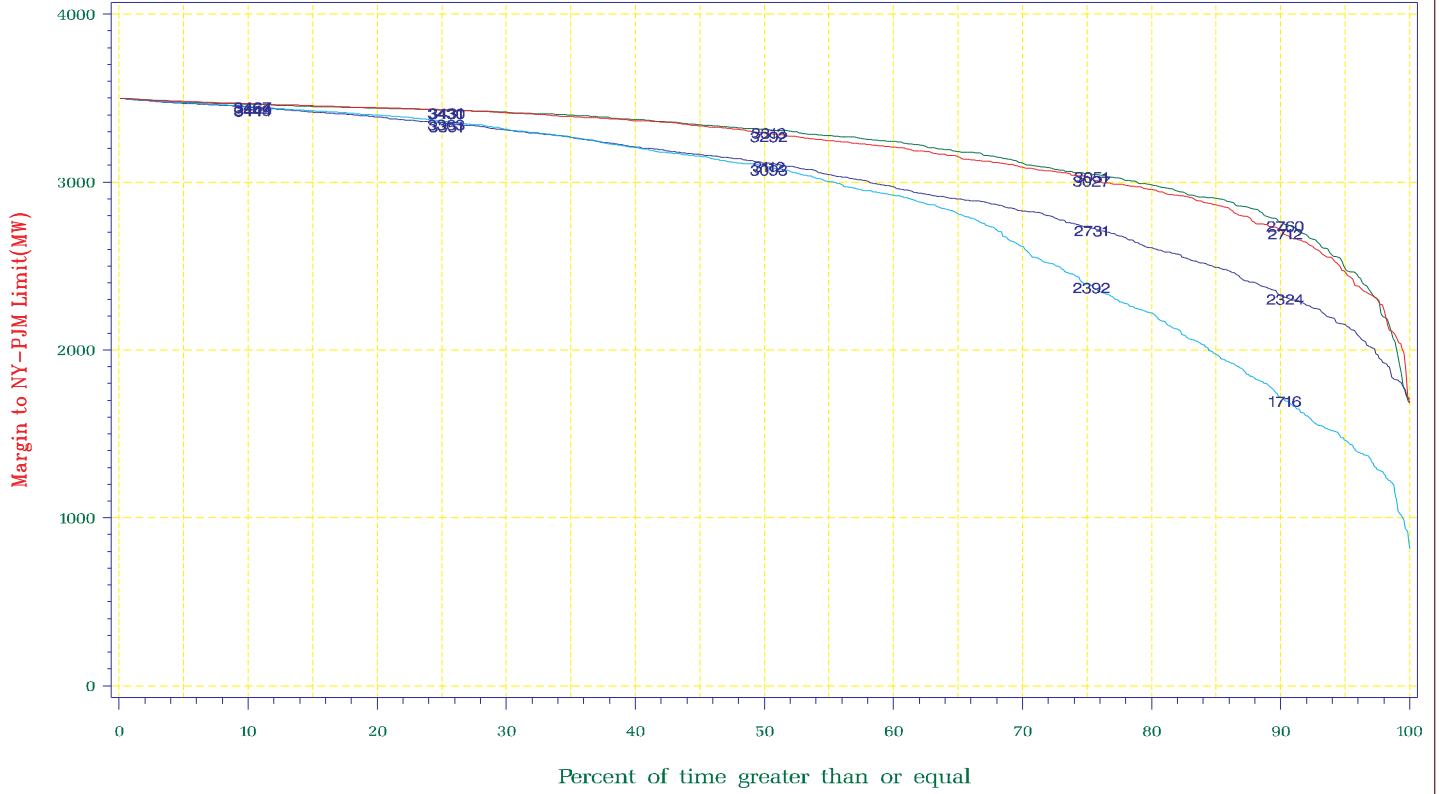
Margin to NY – PJM Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

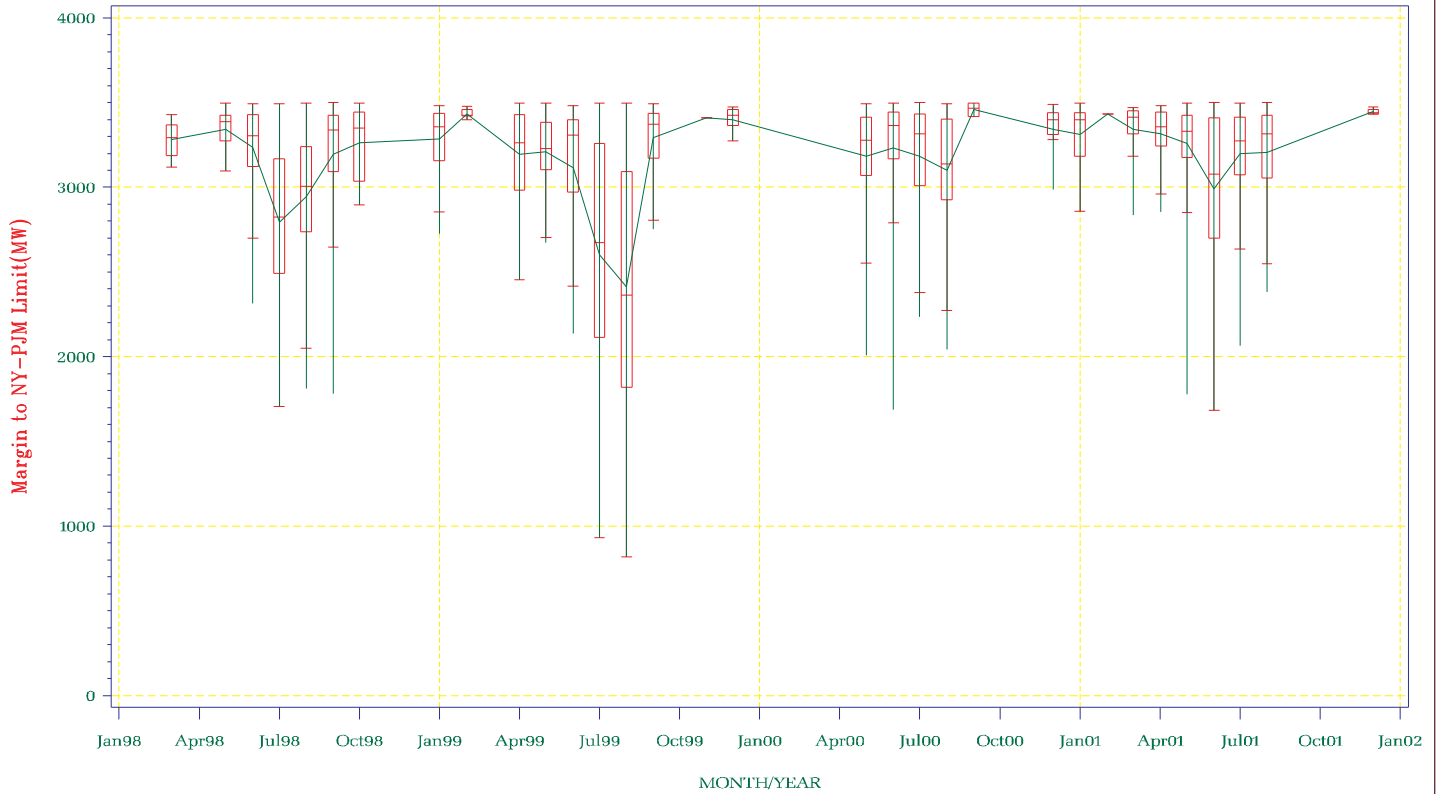
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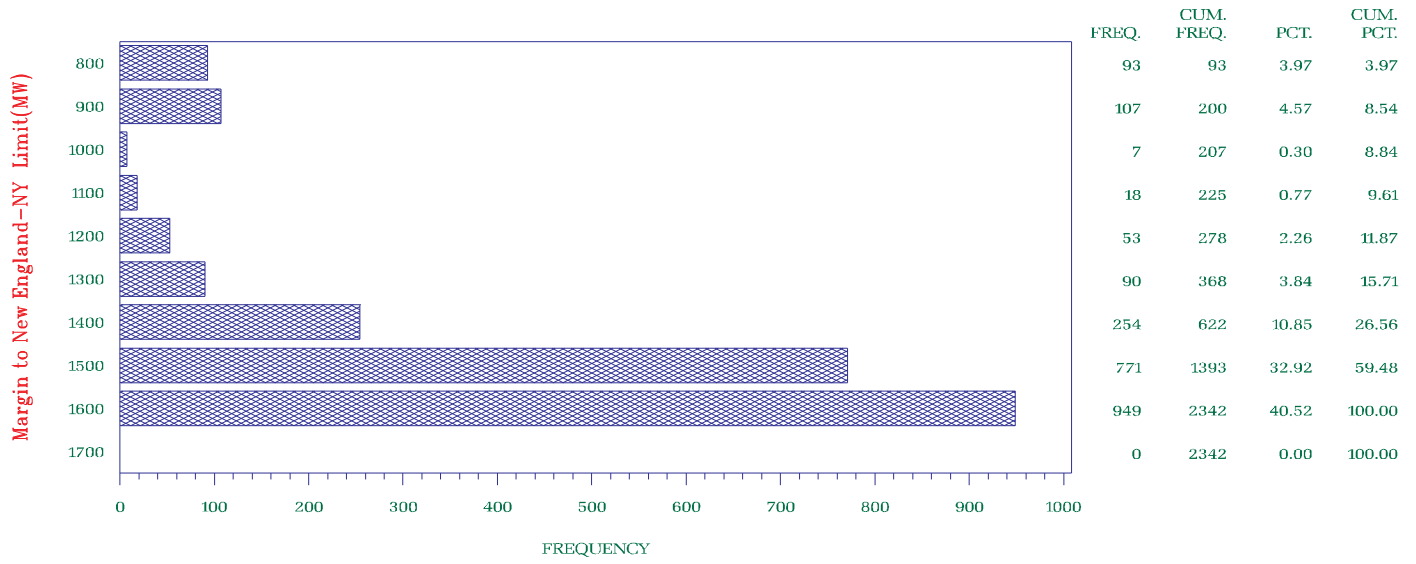
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Margin to NY-PJM Limit



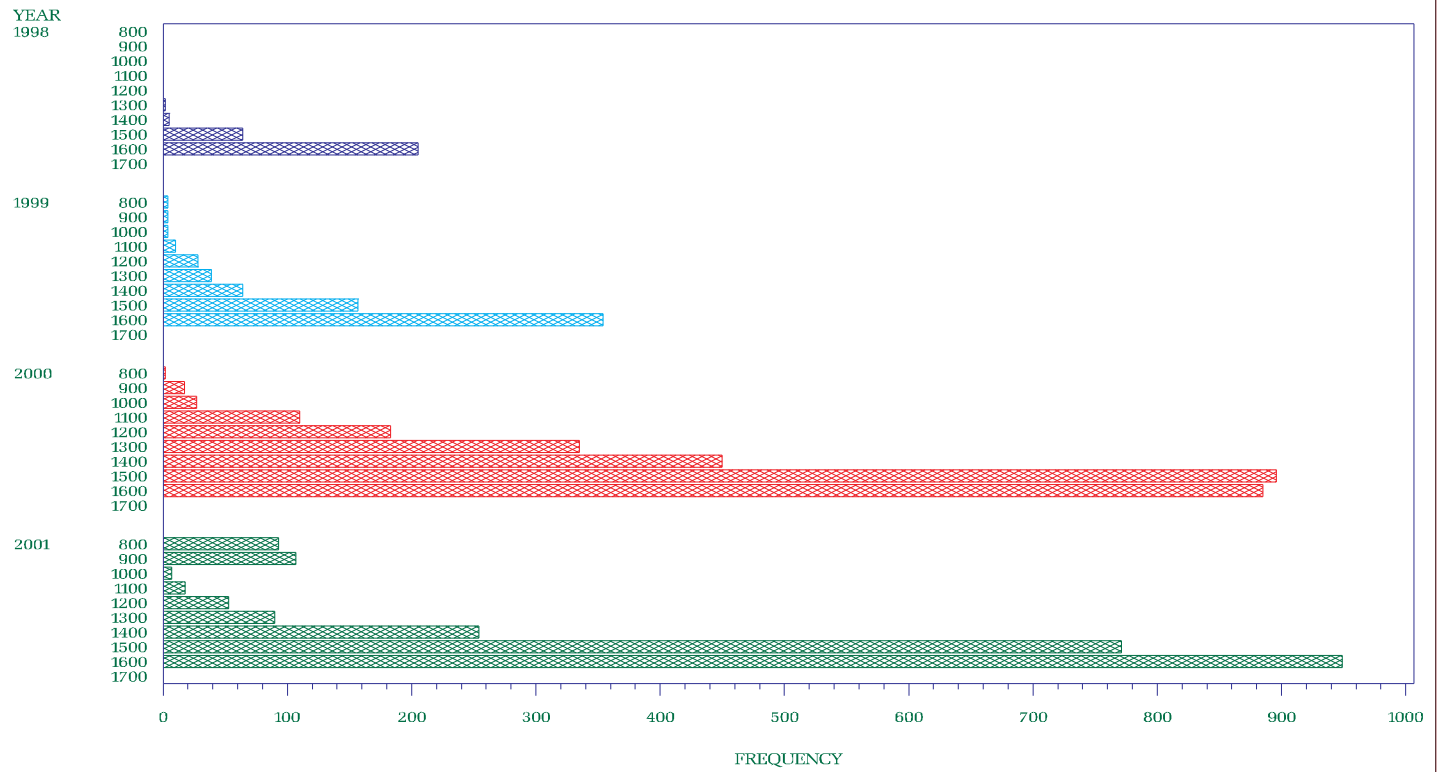
NYISO Frequency Interface Flow For January – December 2001

Margin to New England – NY Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

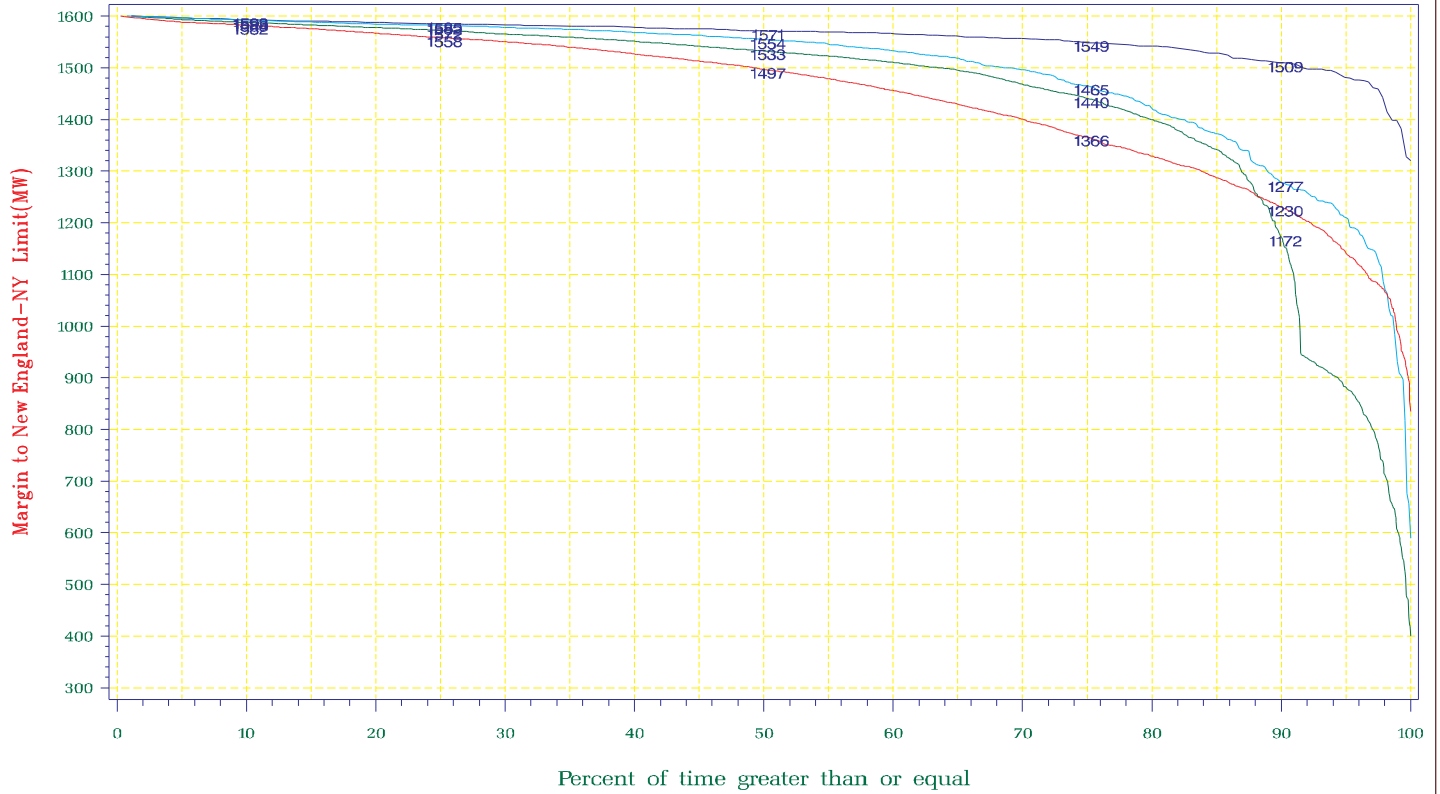
Margin to New England – NY Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

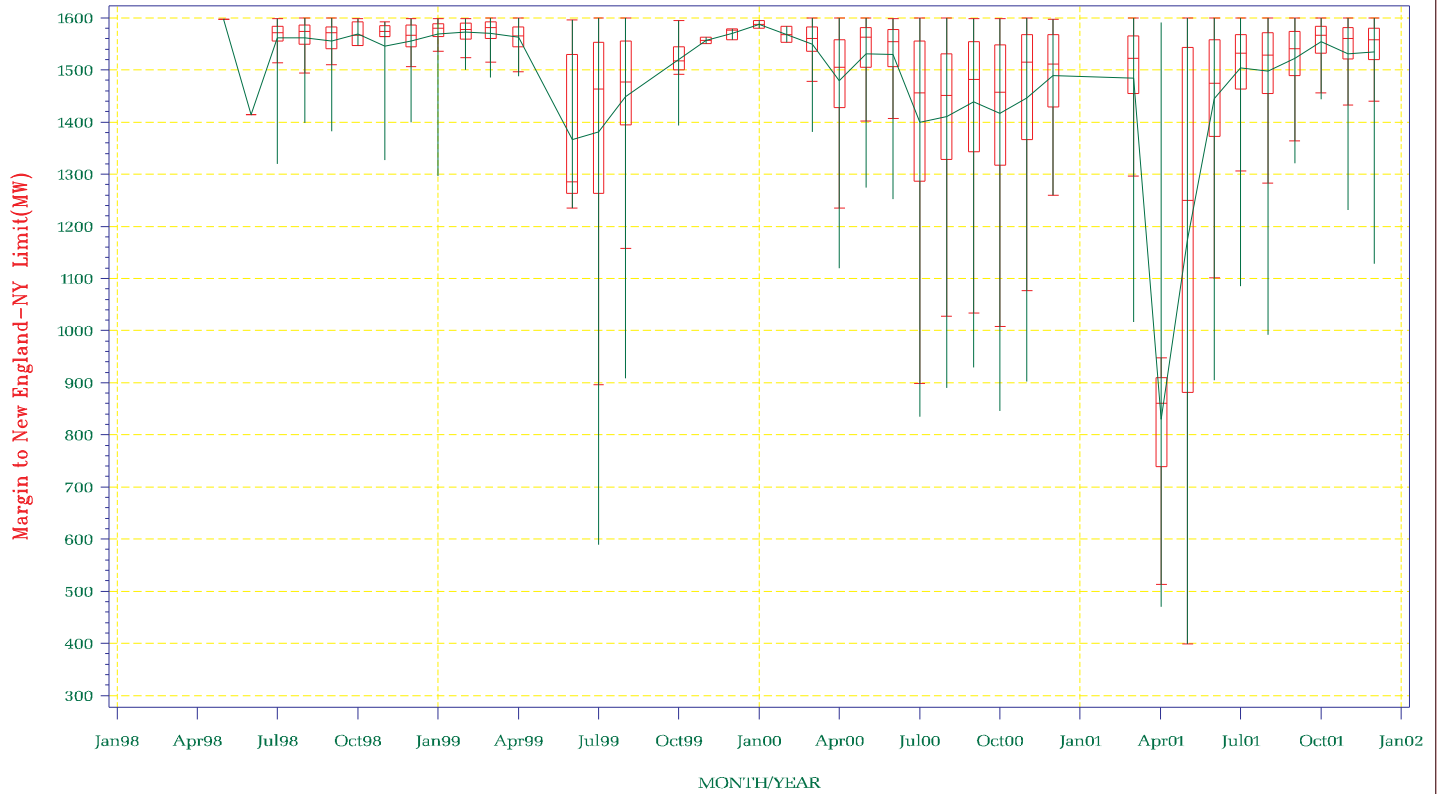
Margin to New England – NY Limit



1998 1999 2000 2001

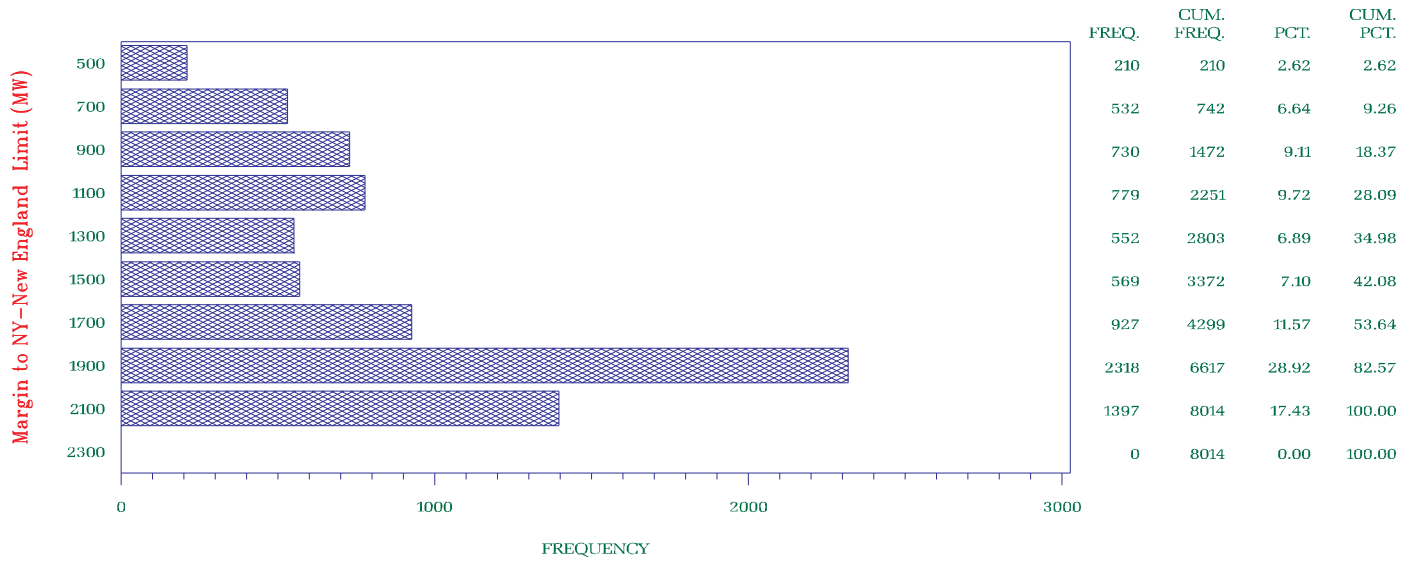
NYISO Average Monthly Interface Flow For January 01, 2001 – December 31, 2001

Margin to New England – NY Limit



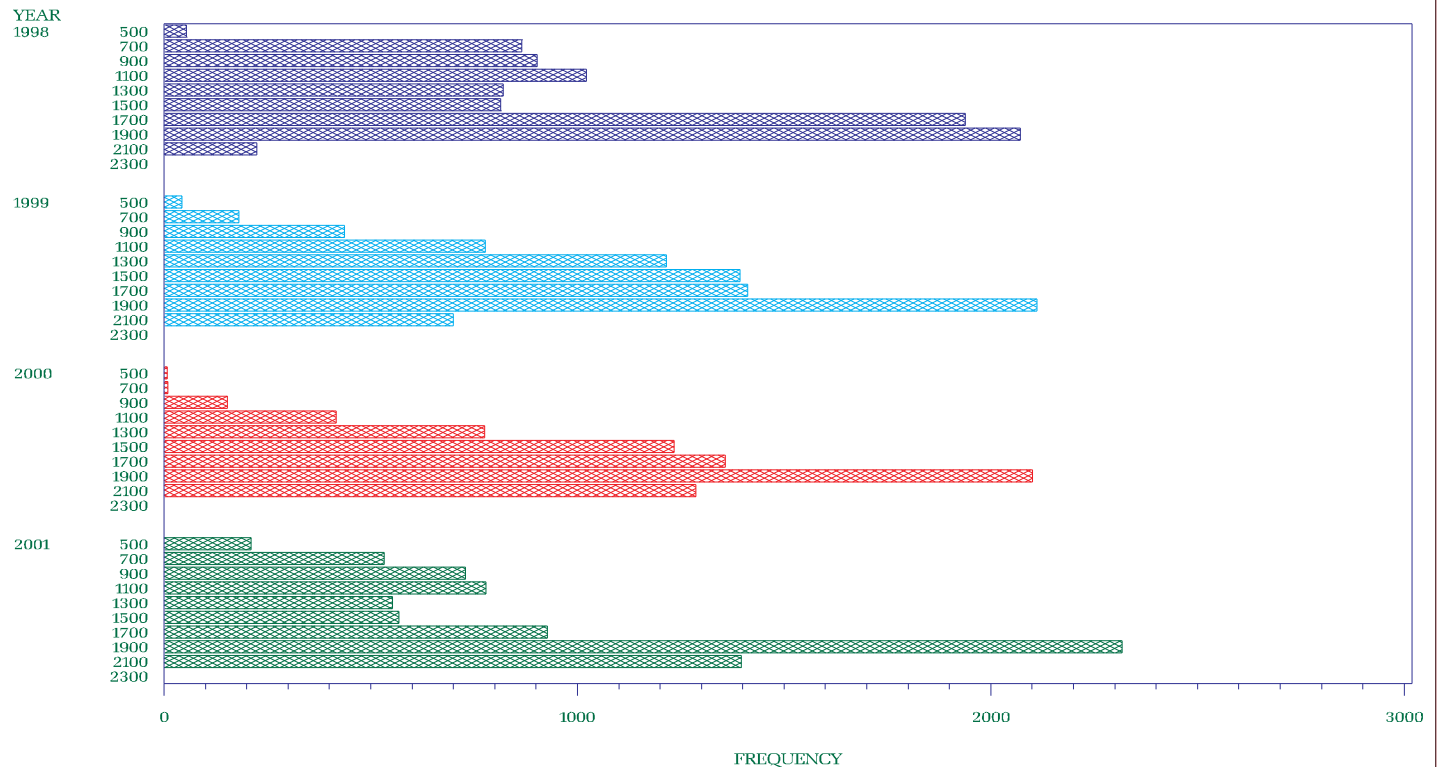
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Margin to NY–New England Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

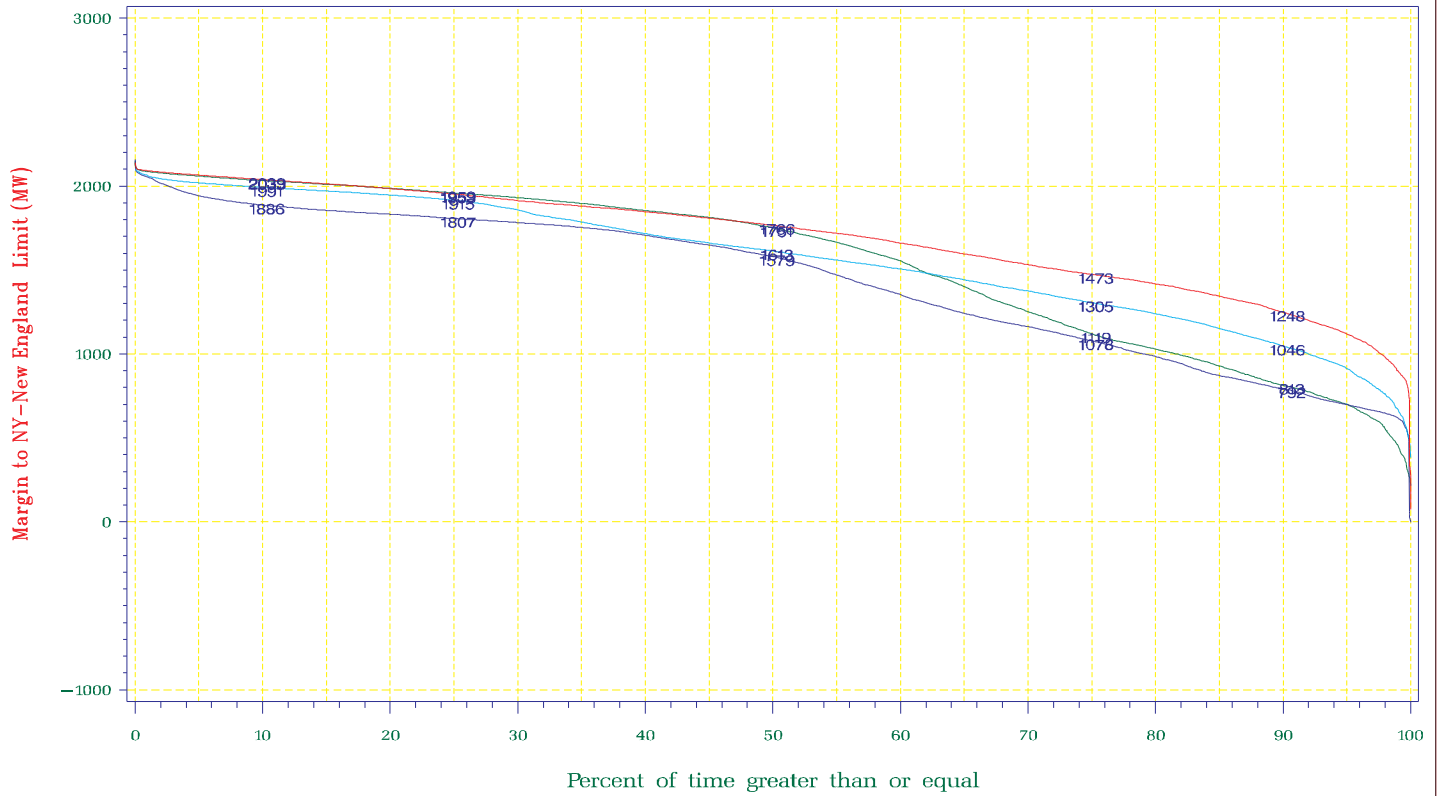
Margin to NY–New England Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

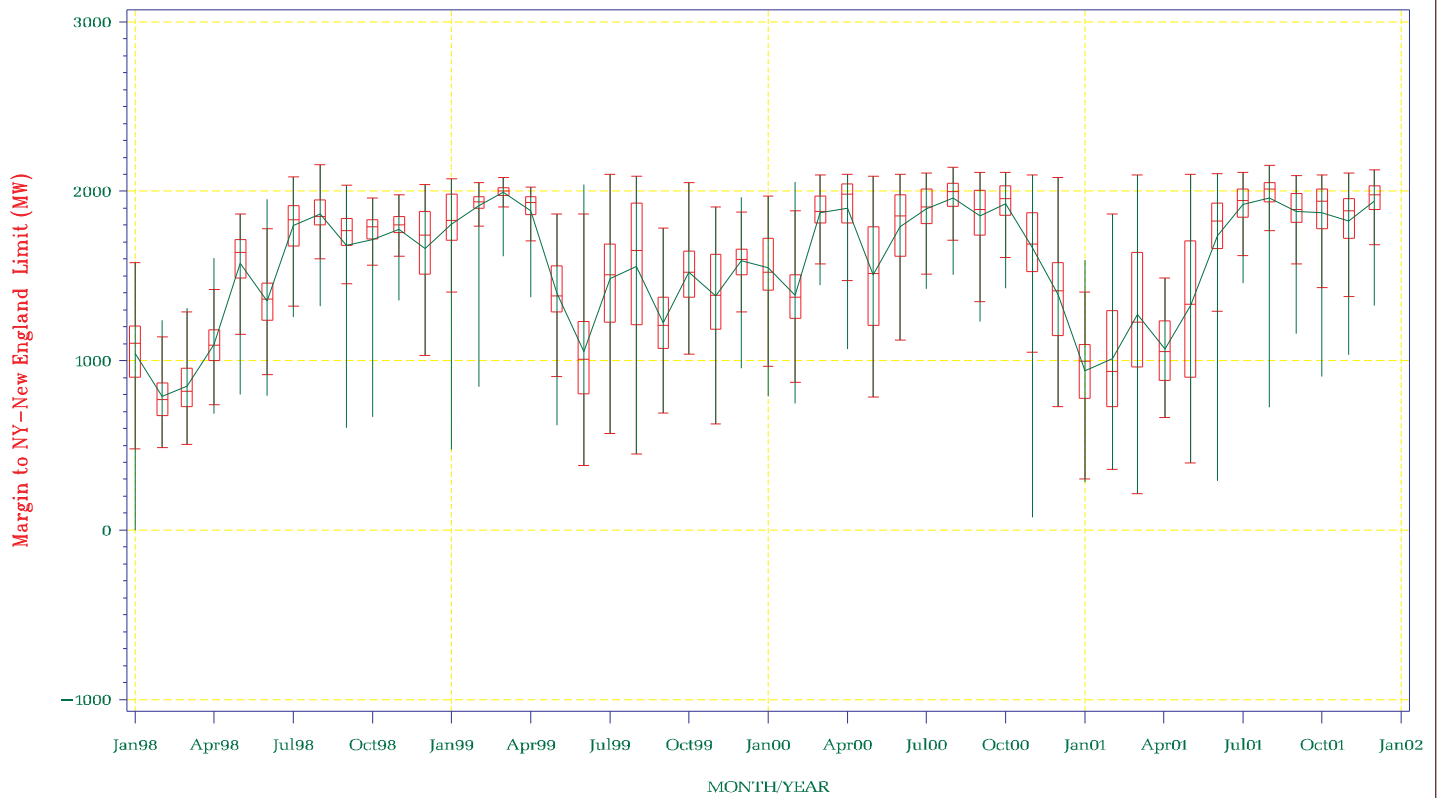
Margin to NY–New England Limit



1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 2001 – December 31, 2001

Margin to NY–New England Limit



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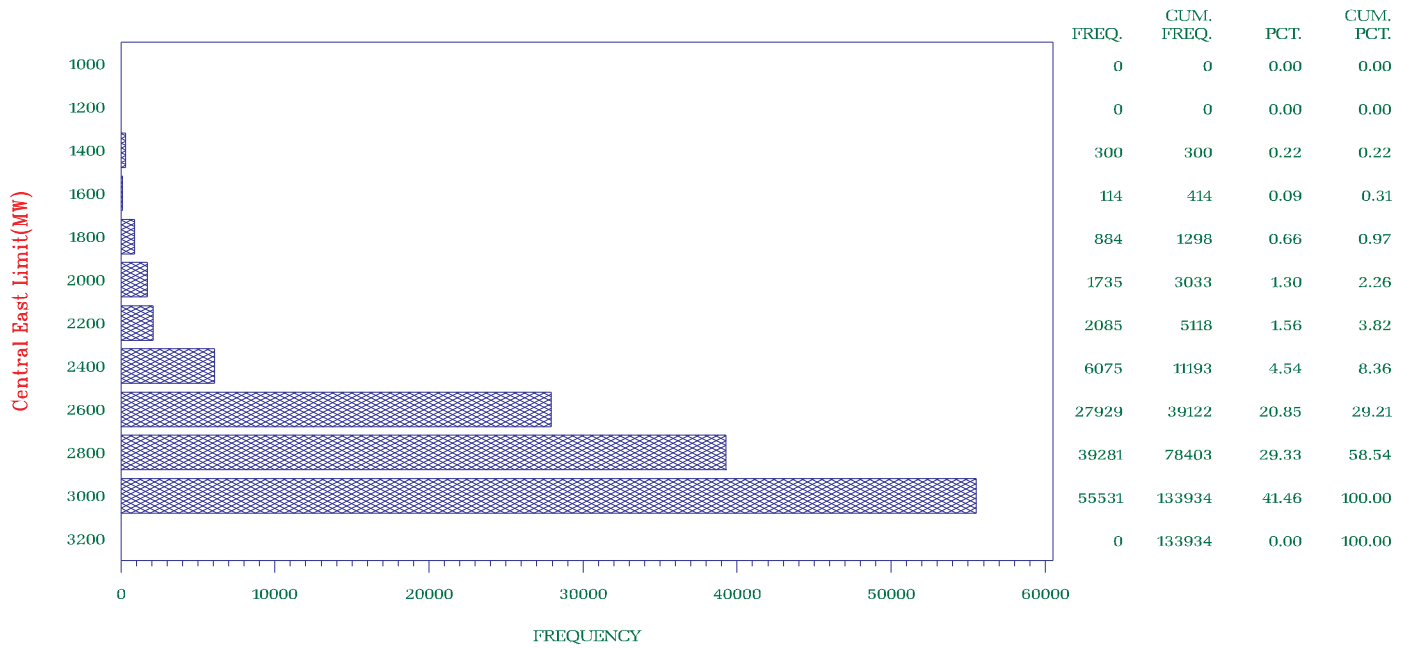
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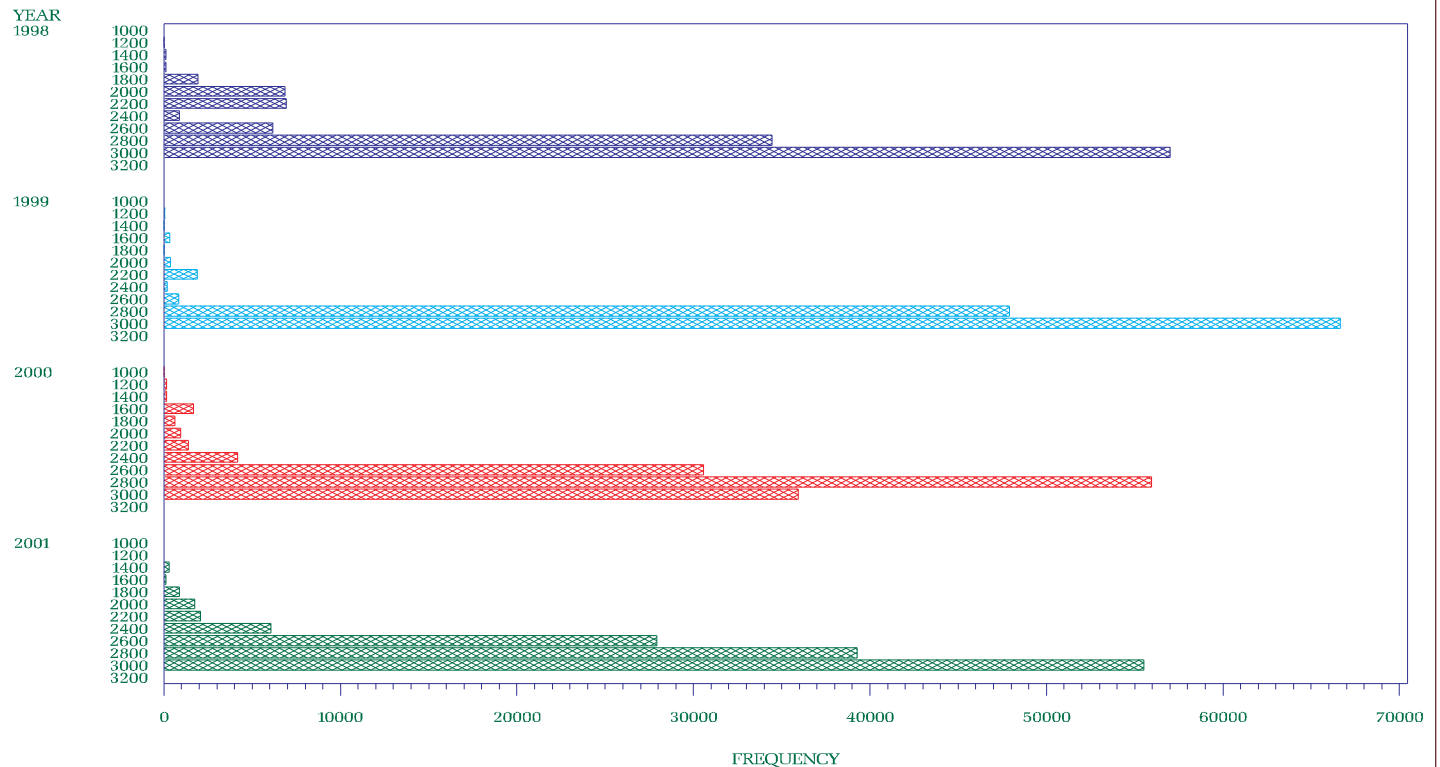
NYISO Frequency Interface Flow For January – December 2001

Central East Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

Central East Limit

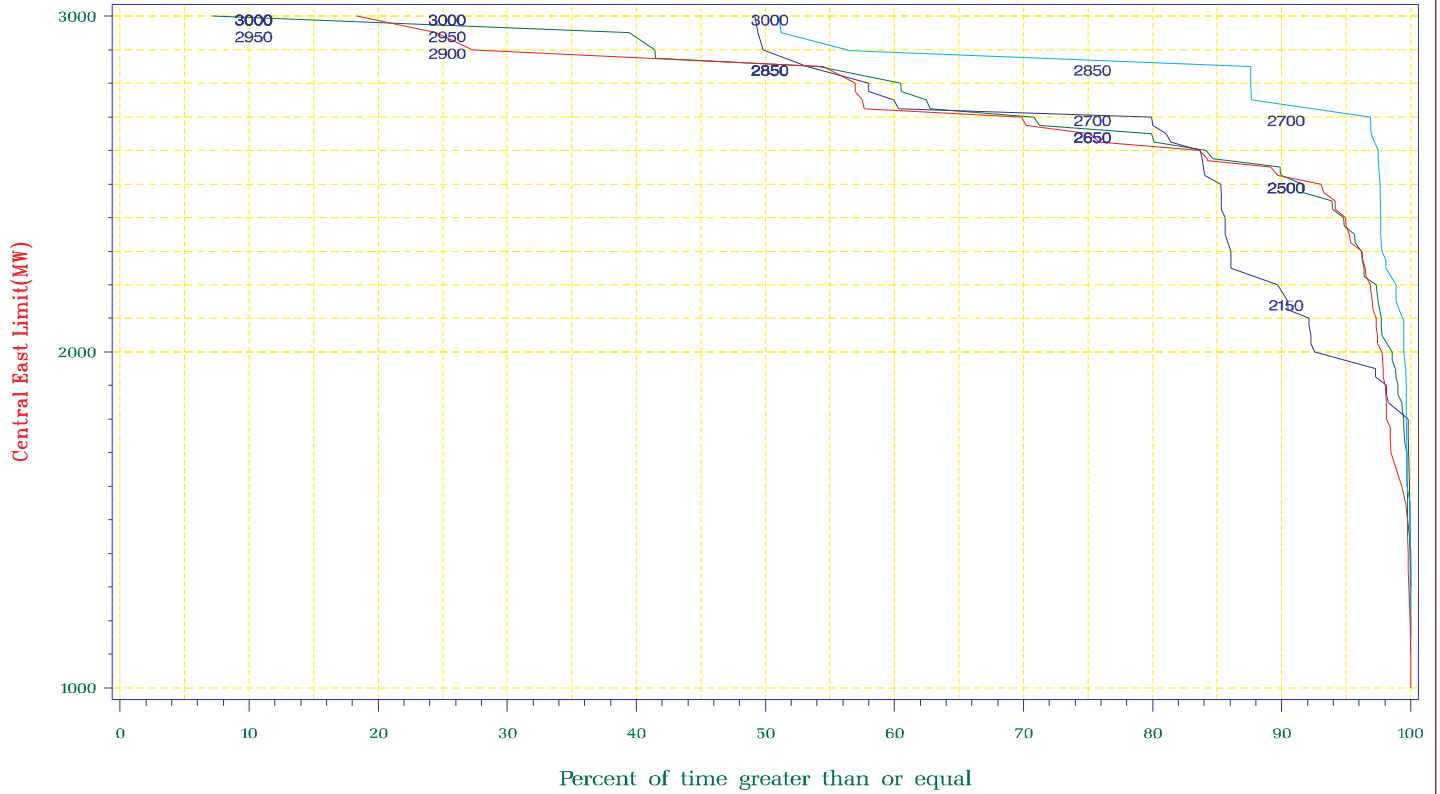


1998 1999 2000 2001

- C2 -

NYISO Percent of time Interface Flow For January 1998 – December 2001

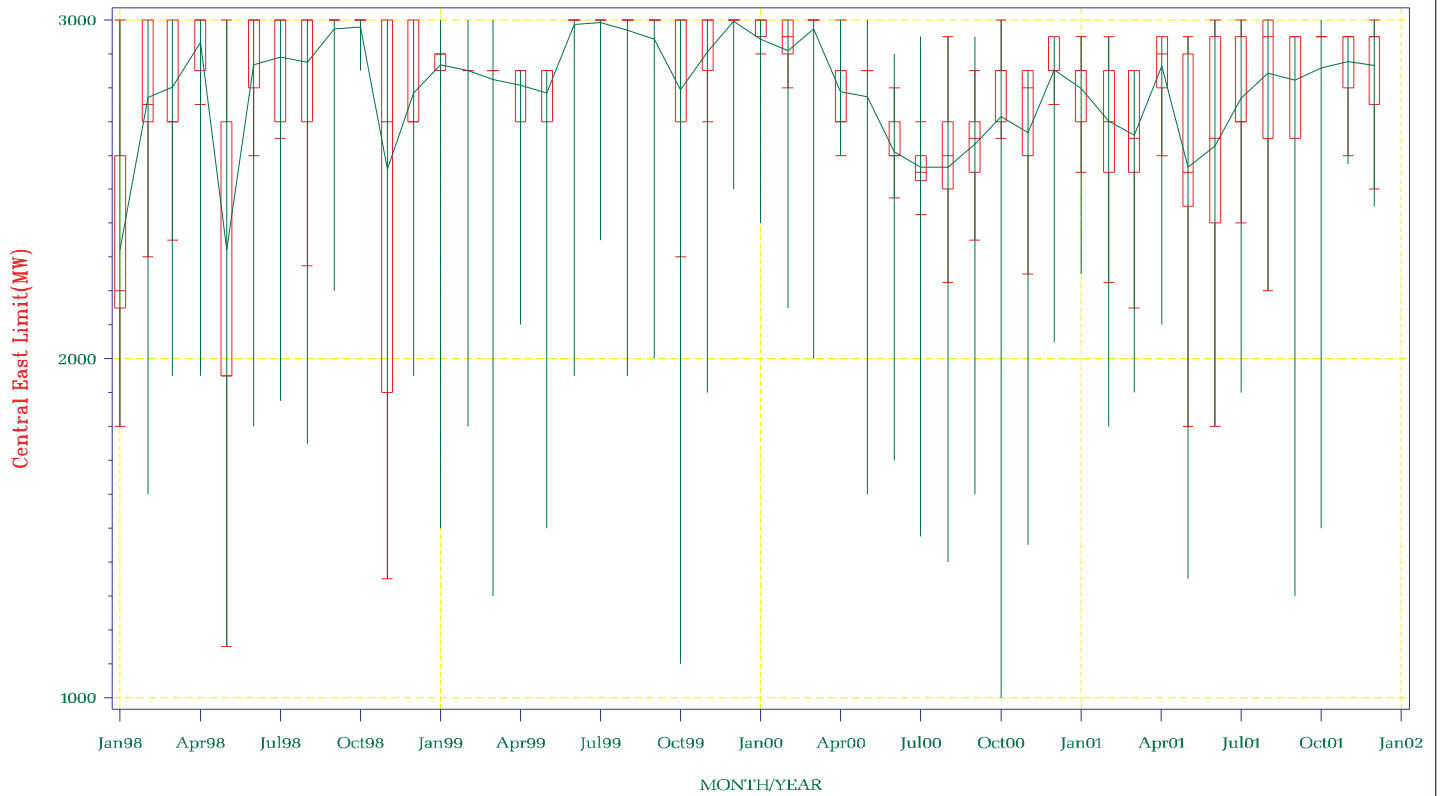
Central East Limit



1998 1999 2000 2001

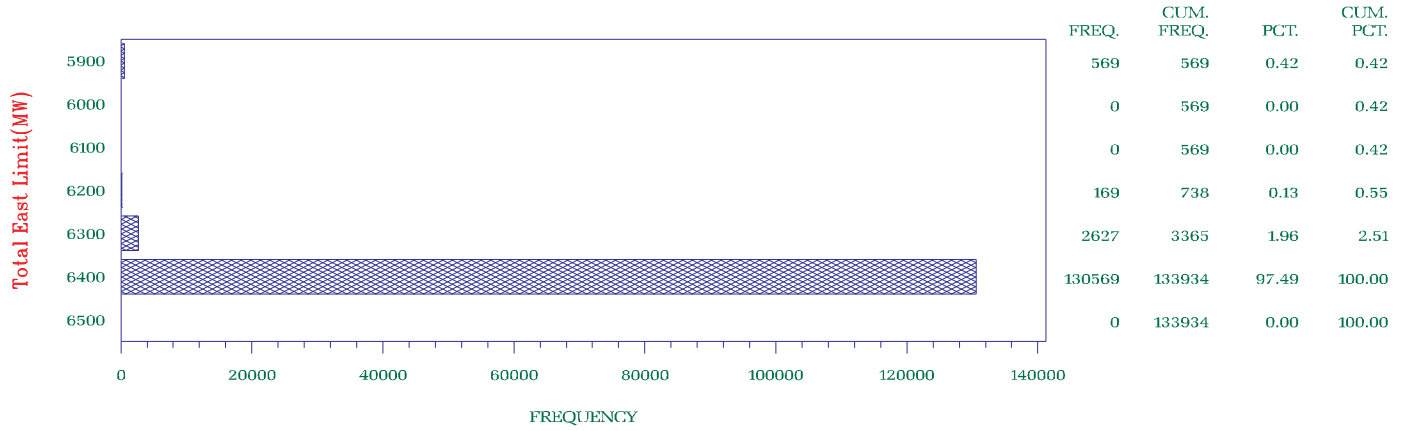
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Central East Limit



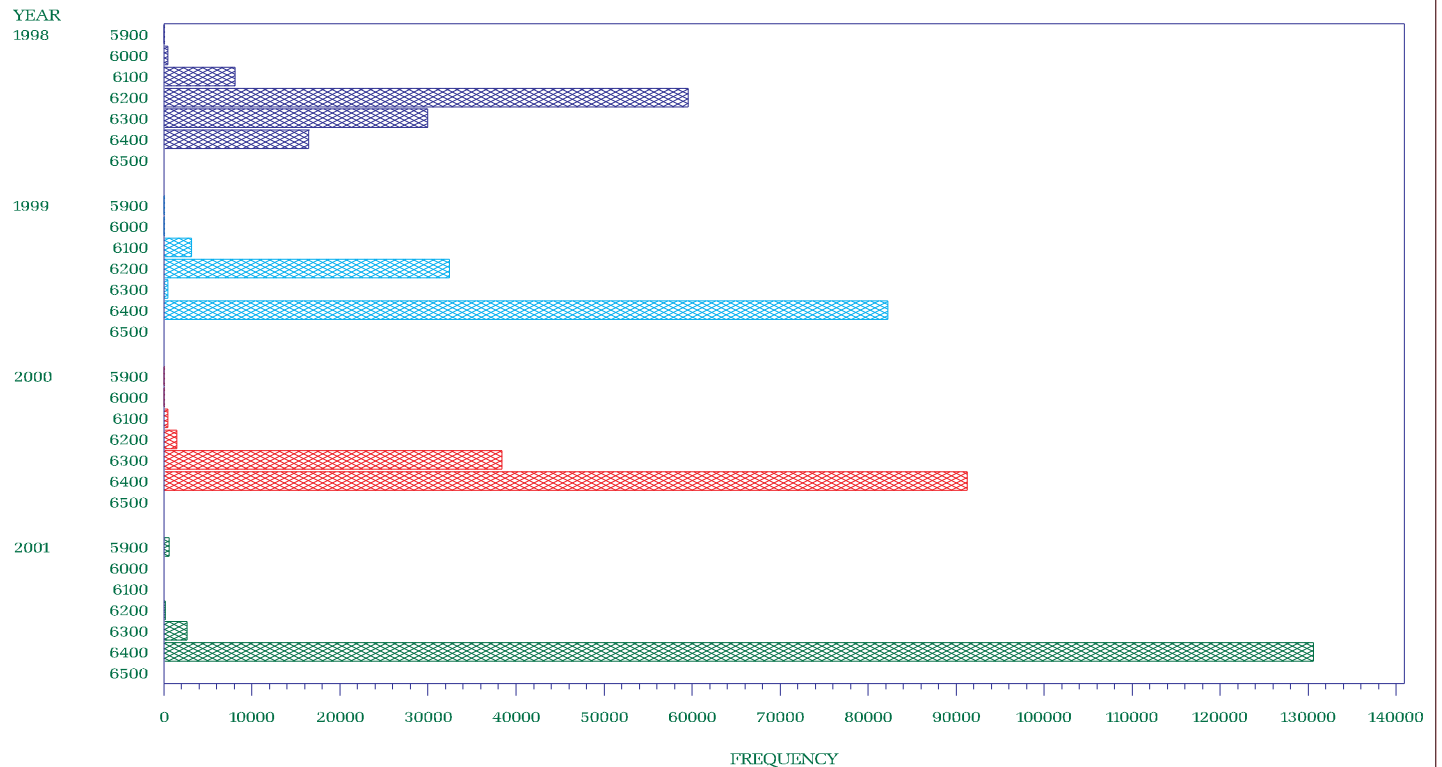
NYISO Frequency Interface Flow For January – December 2001

Total East Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

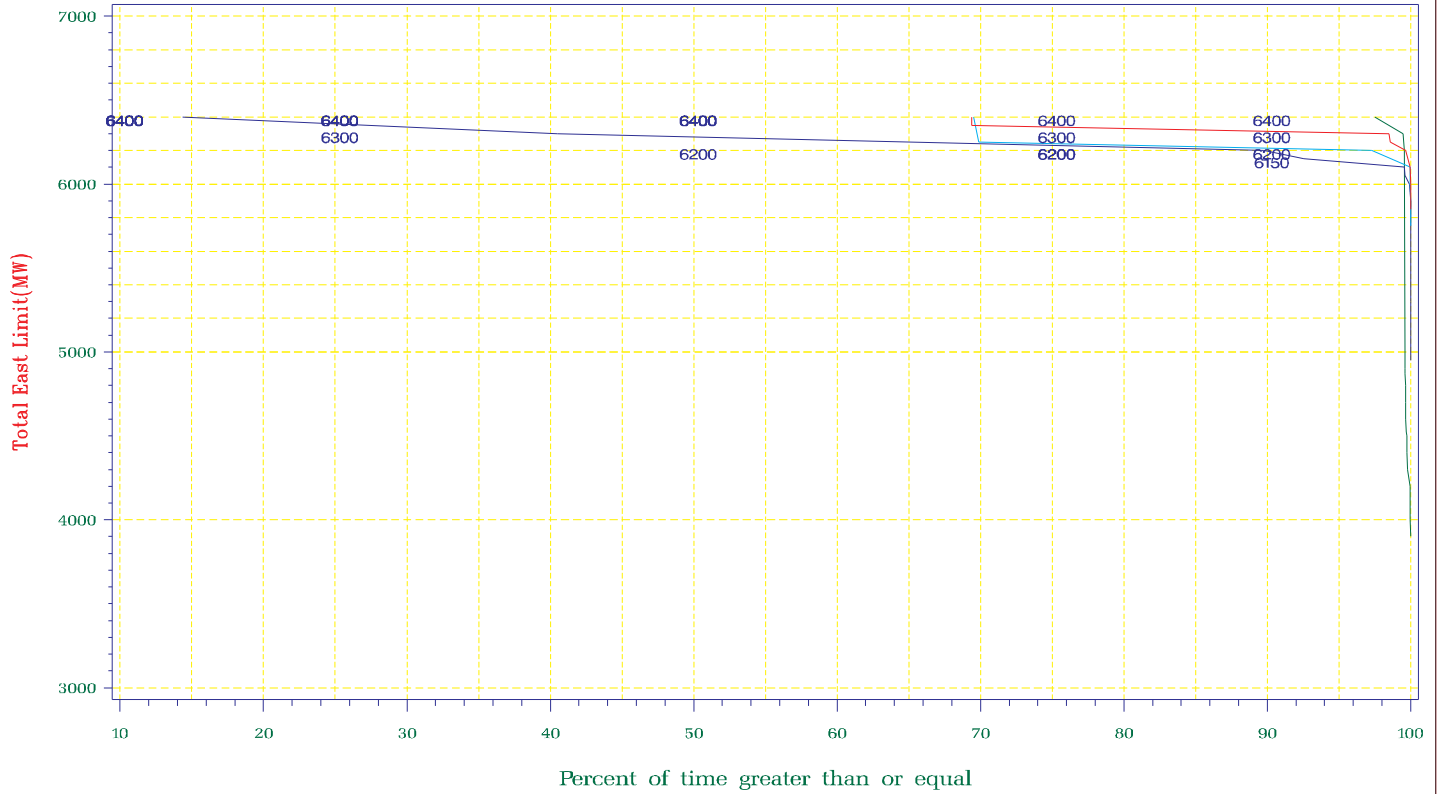
Total East Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

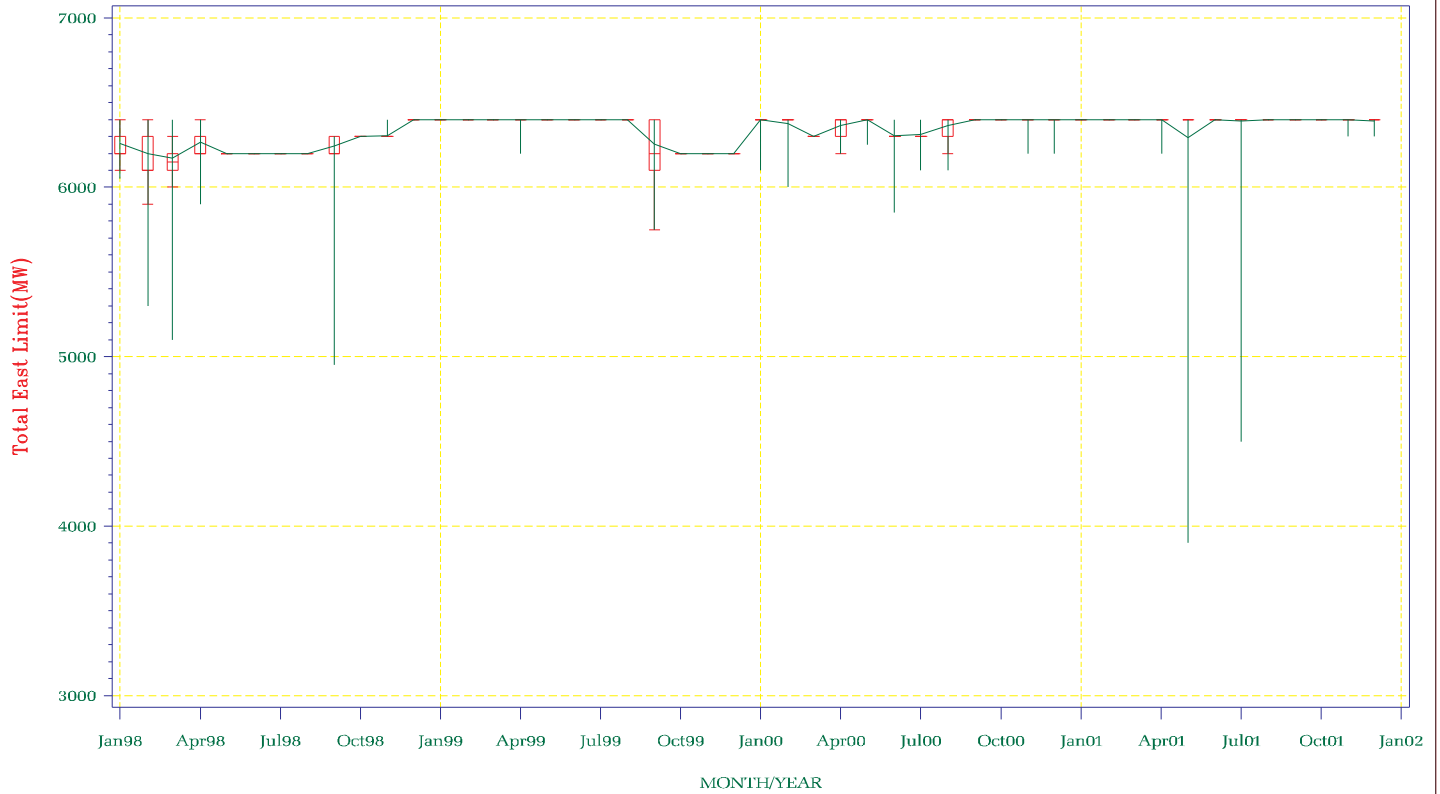
Total East Limit



1998 1999 2000 2001

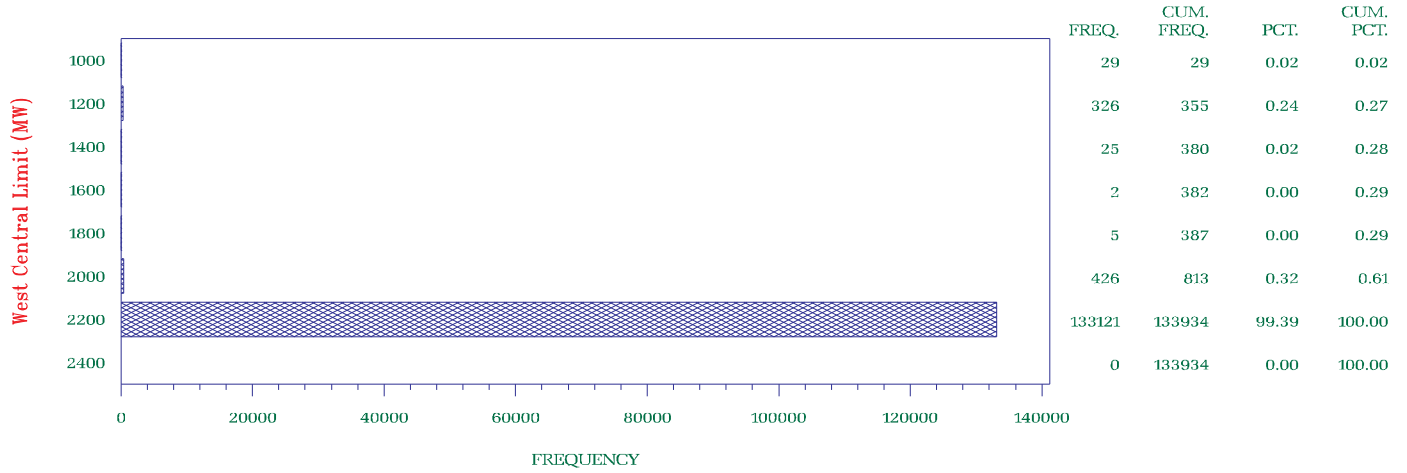
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Total East Limit



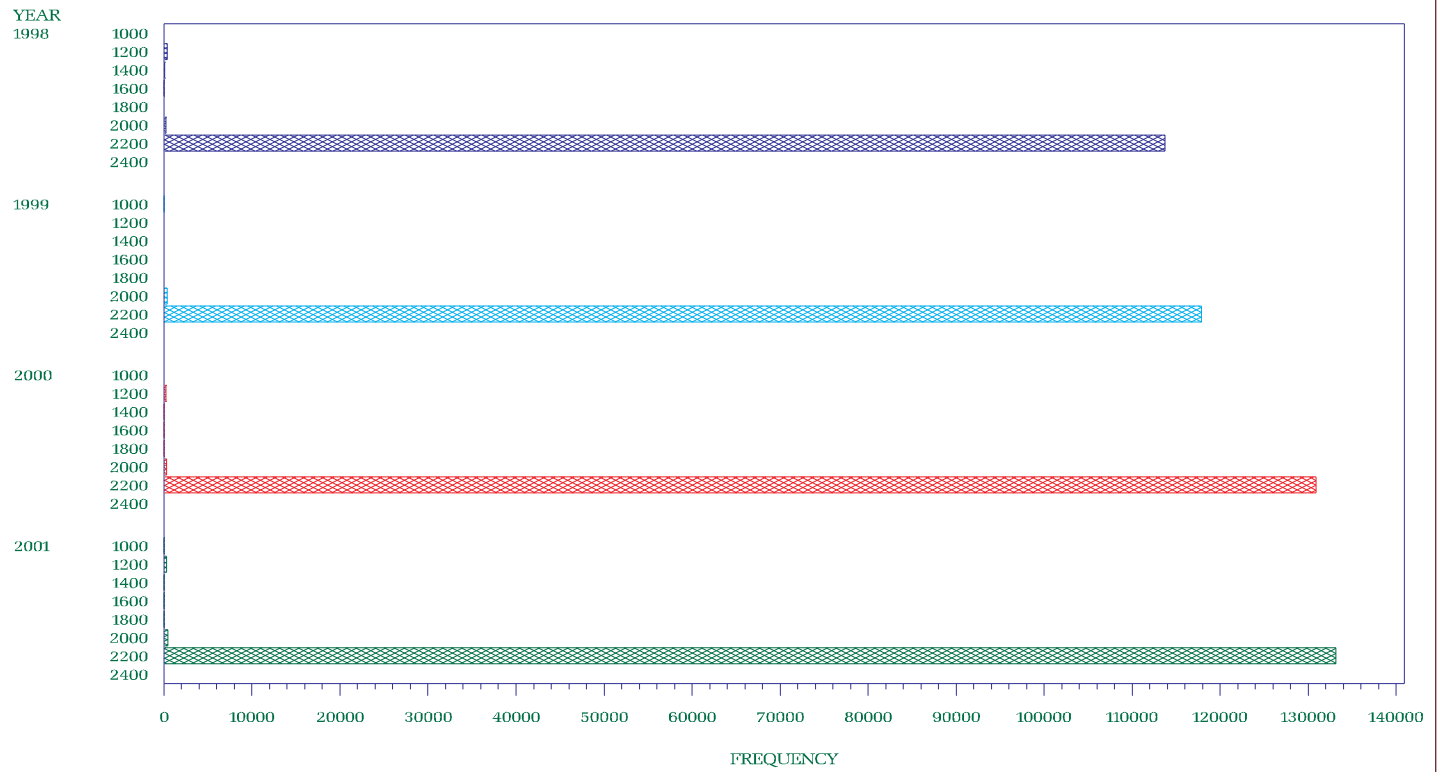
NYISO Frequency Interface Flow For January – December 2001

West Central Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

West Central Limit



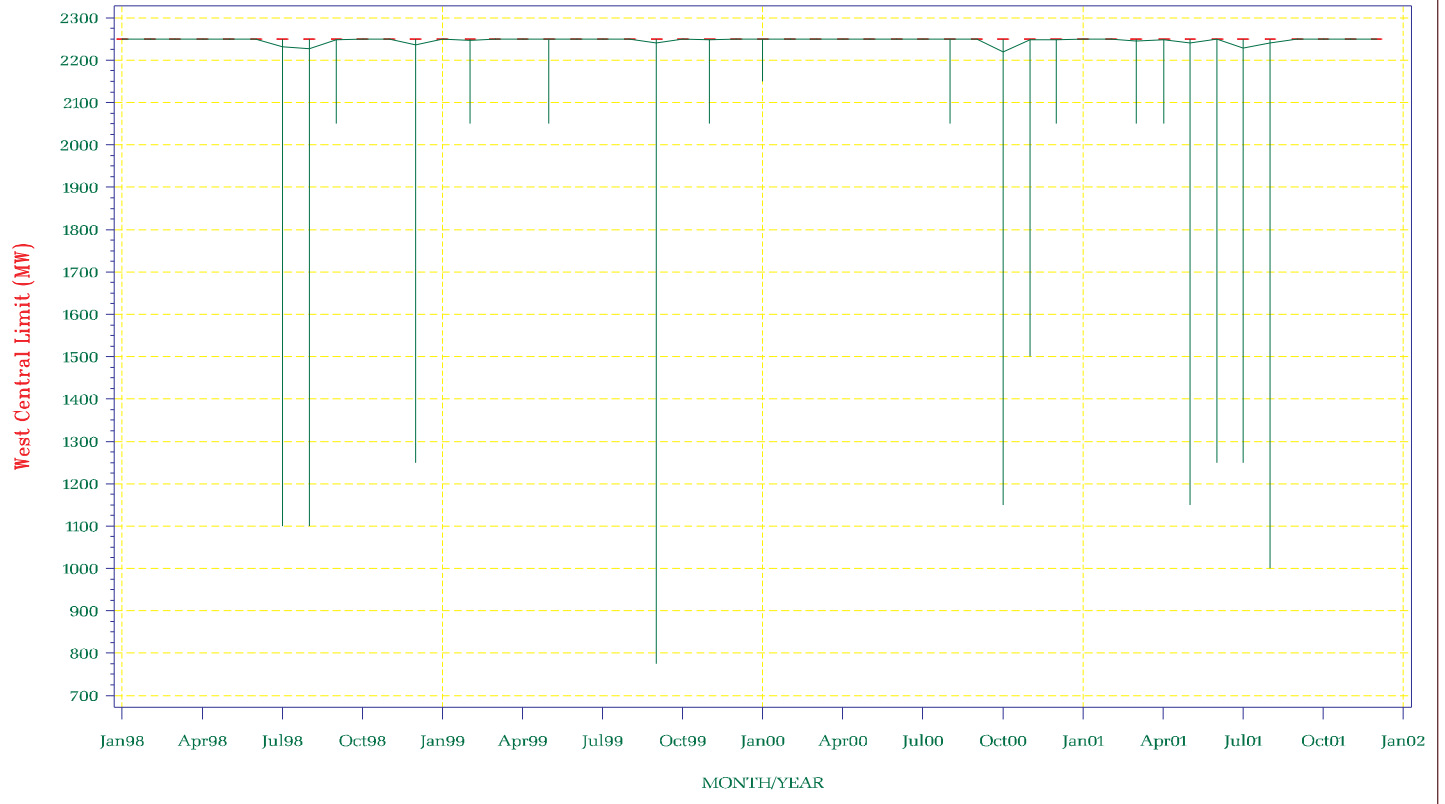
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NYISO Percent of time Interface Flow For January 1998 – December 2001
West Central Limit



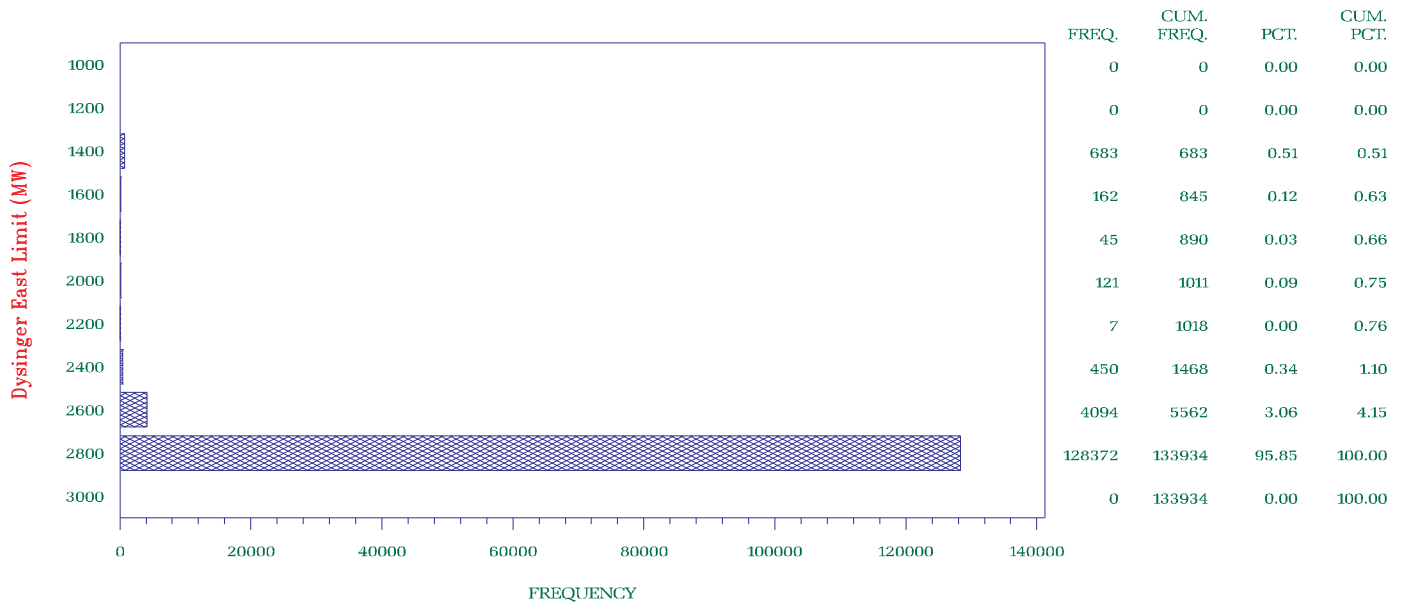
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NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001
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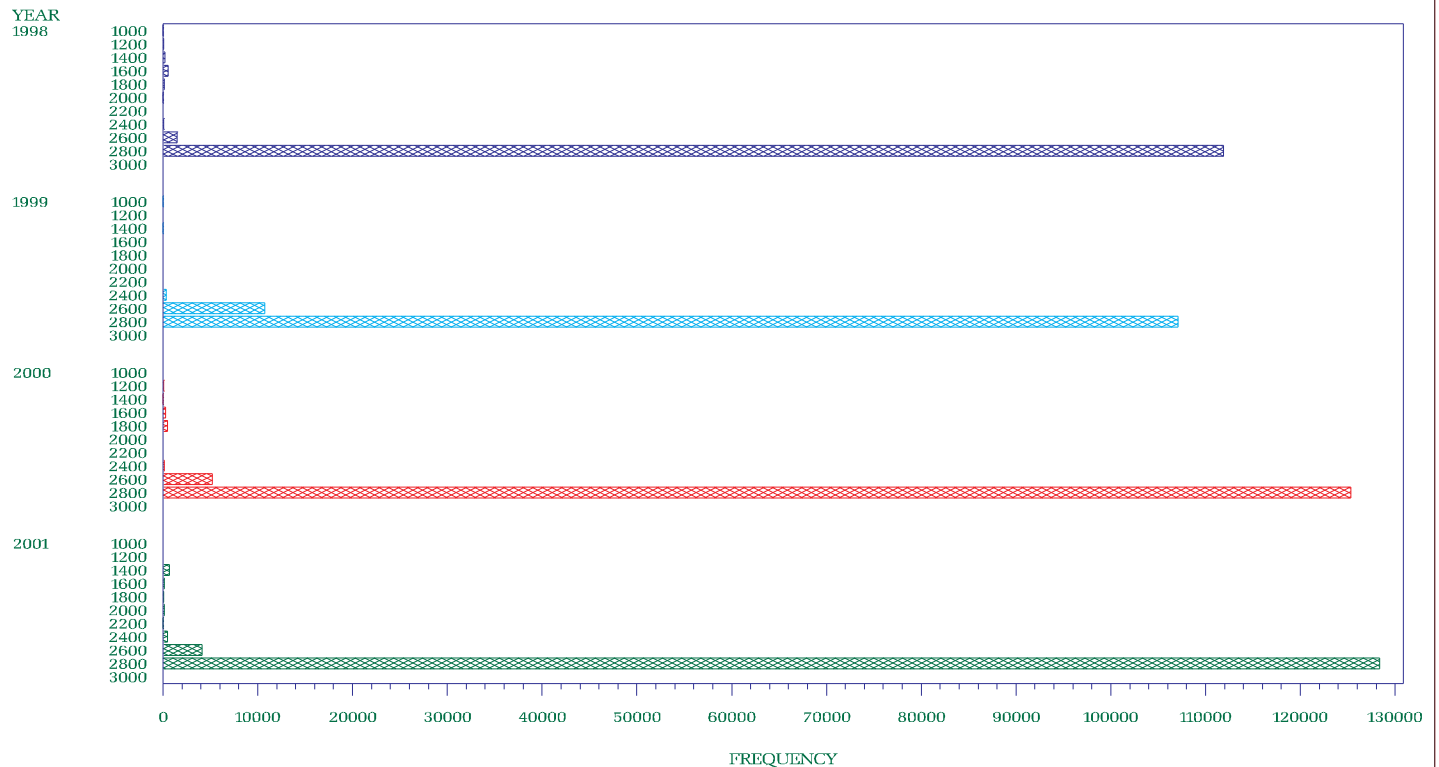
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Dysinger East Limit



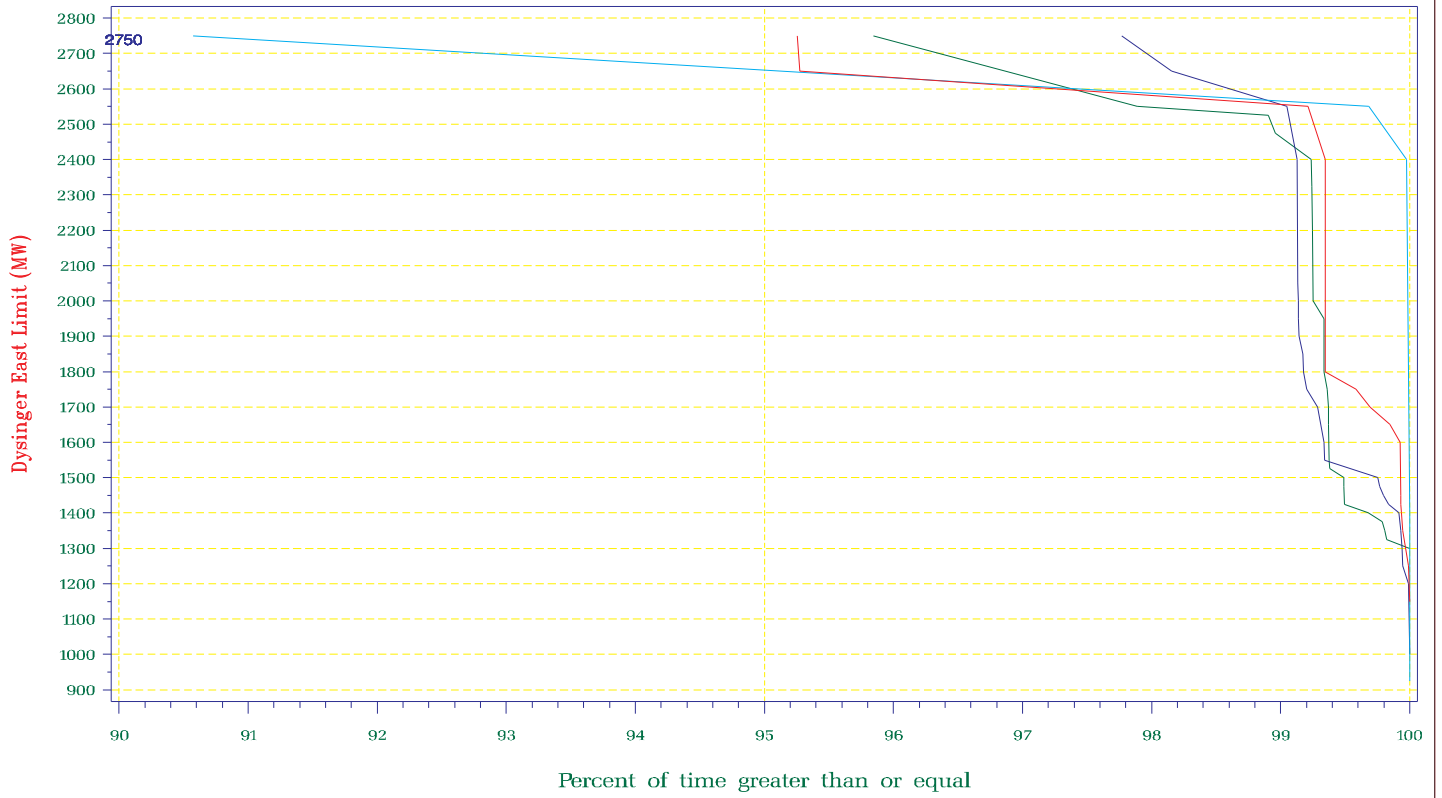
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Dysinger East Limit



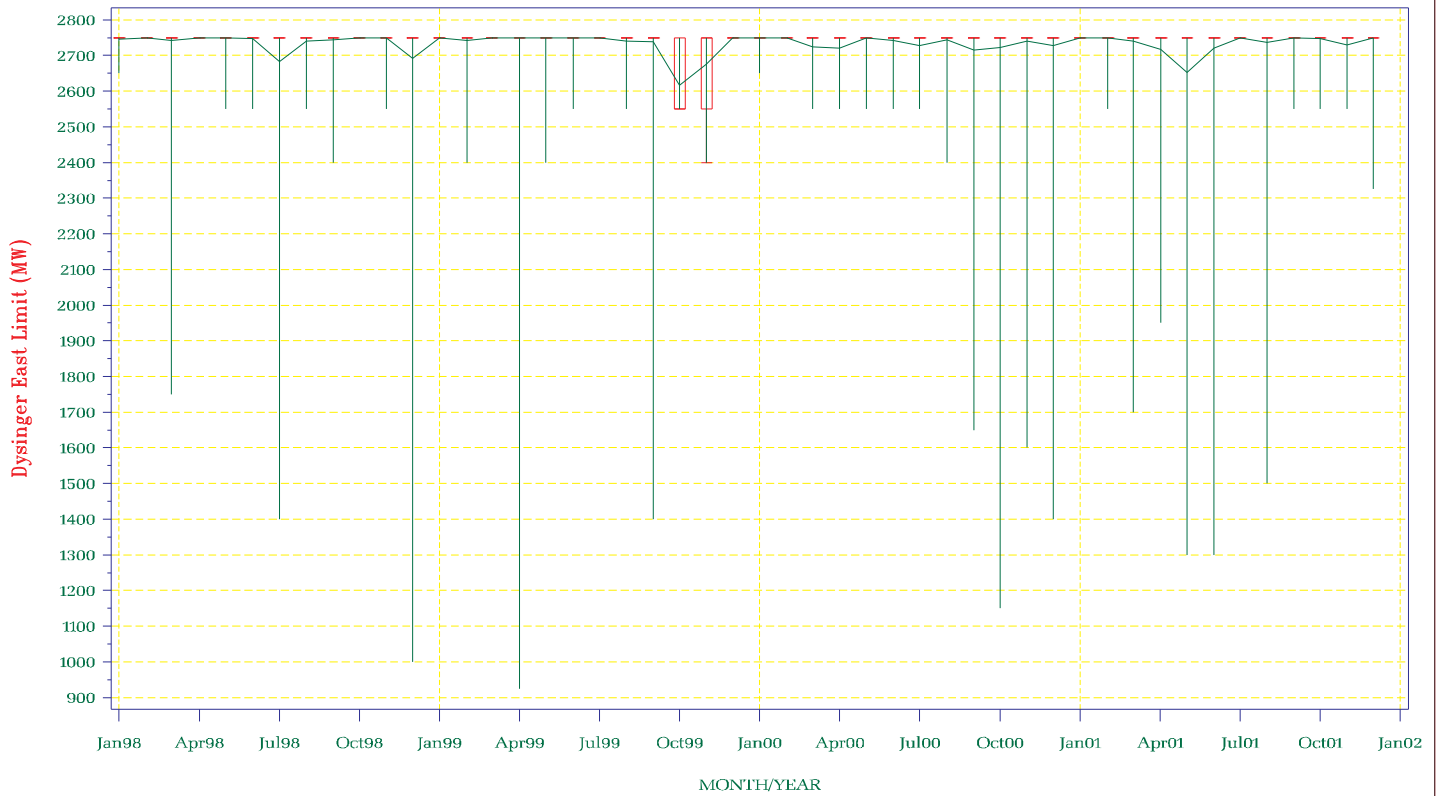
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NYISO Percent of time Interface Flow For January 1998 – December 2001
Dysinger East Limit



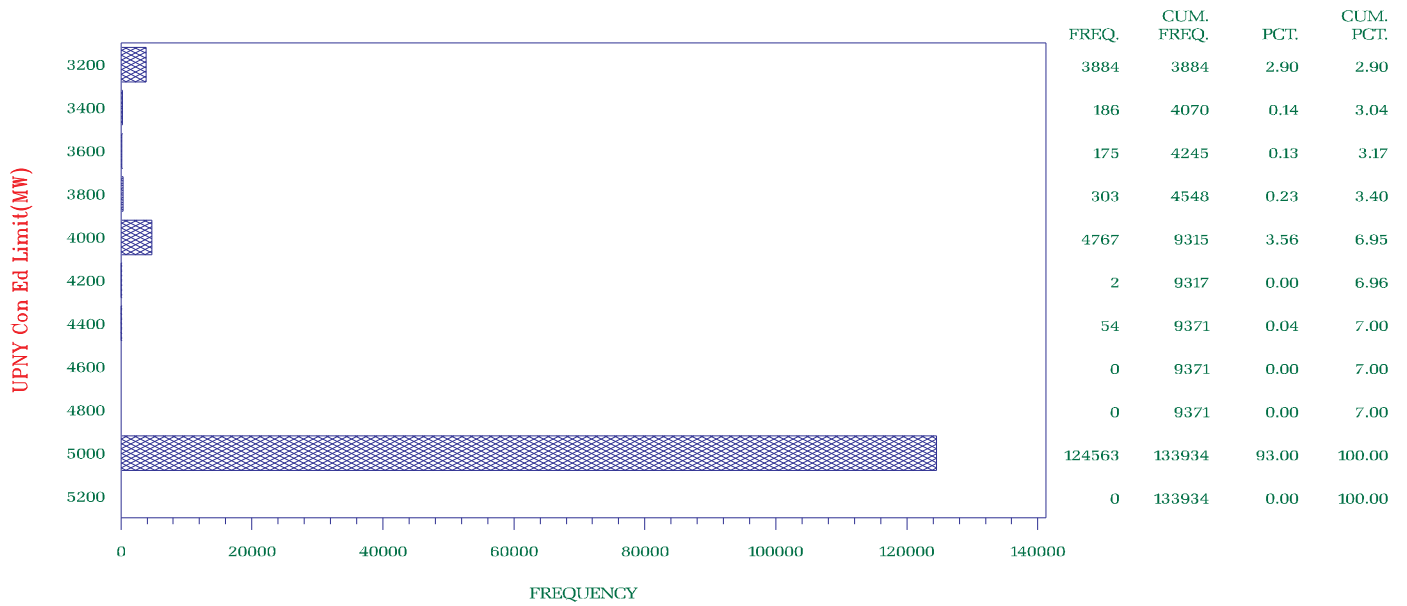
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Dysinger East Limit



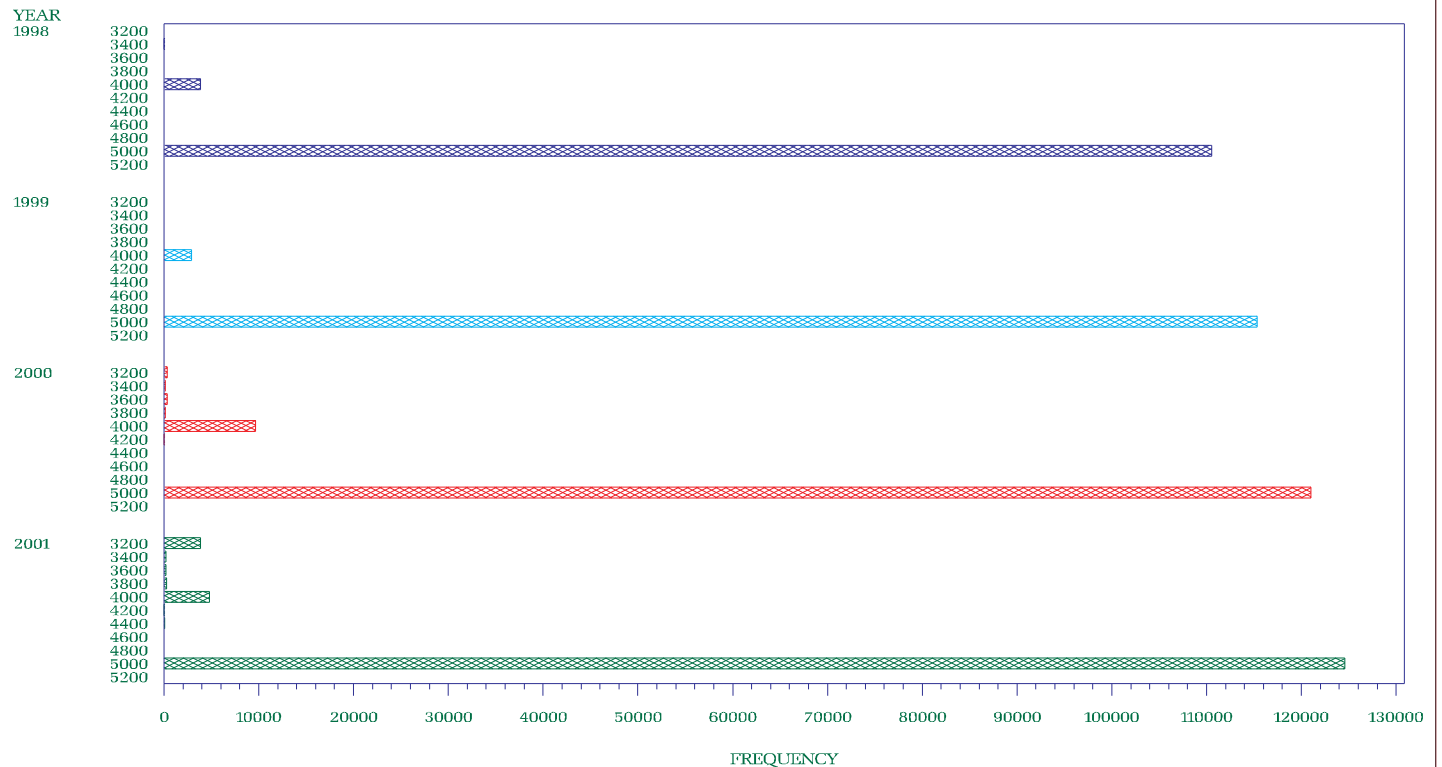
NYISO Frequency Interface Flow For January – December 2001

UPNY Con Ed Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

UPNY Con Ed Limit

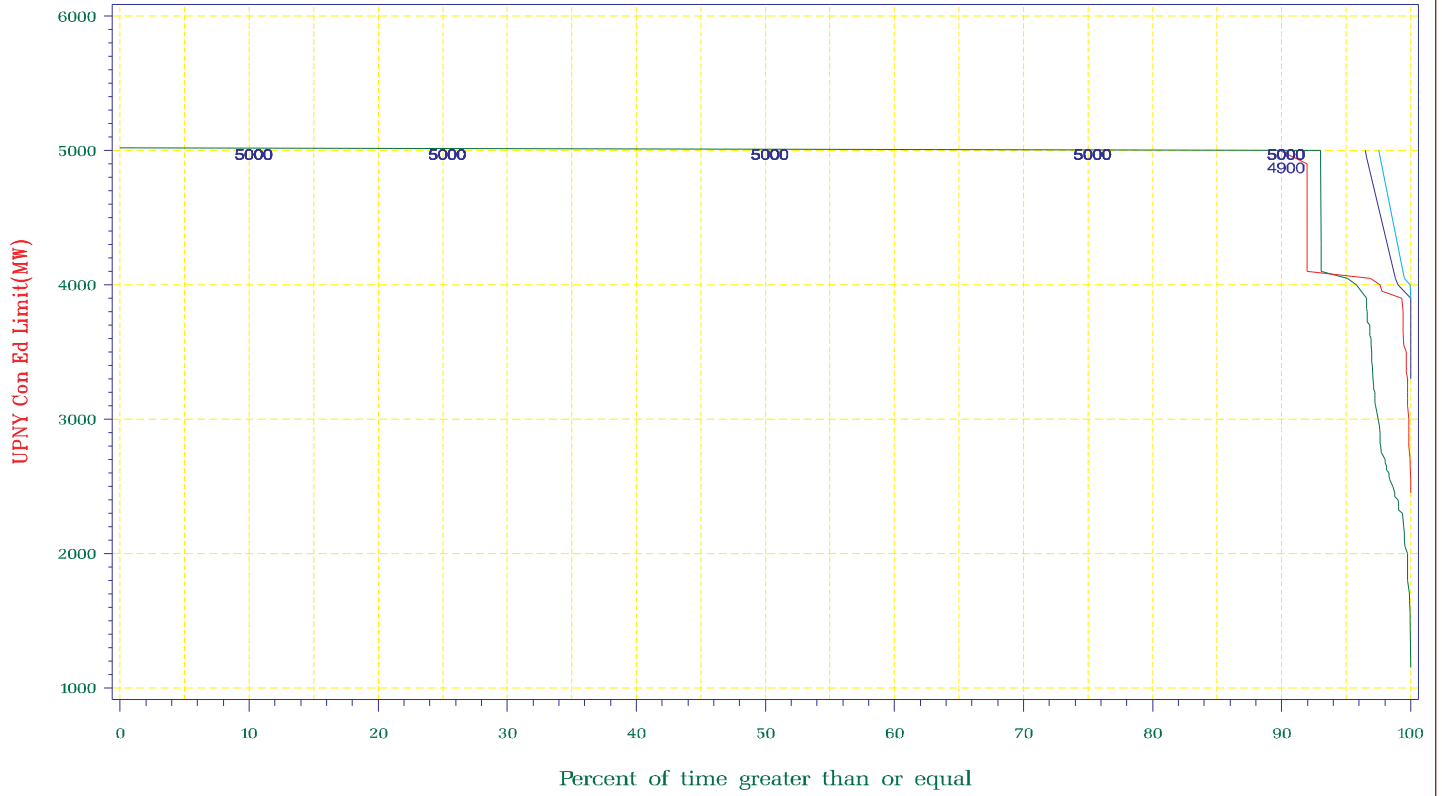


1998 1999 2000 2001

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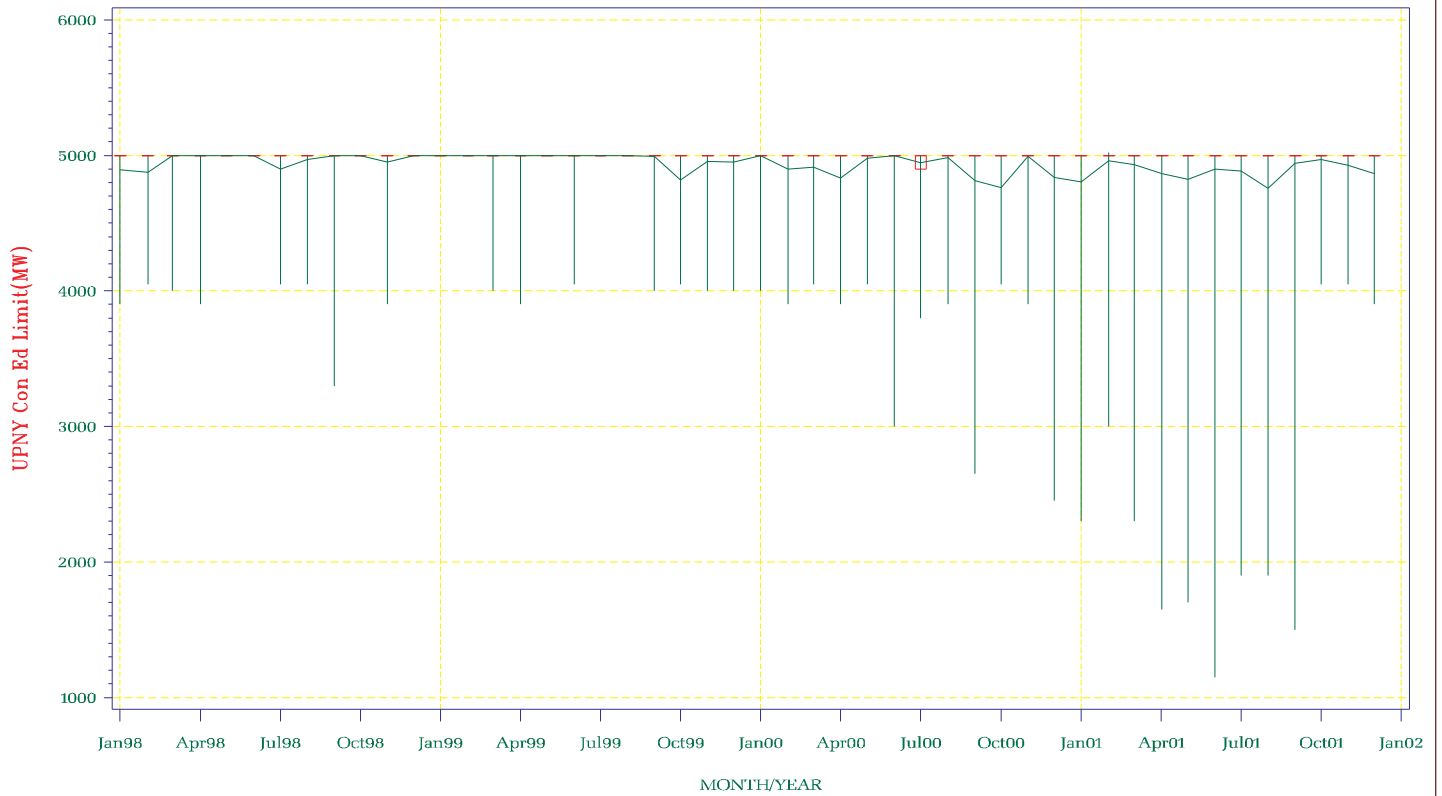
UPNY Con Ed Limit



1998 1999 2000 2001

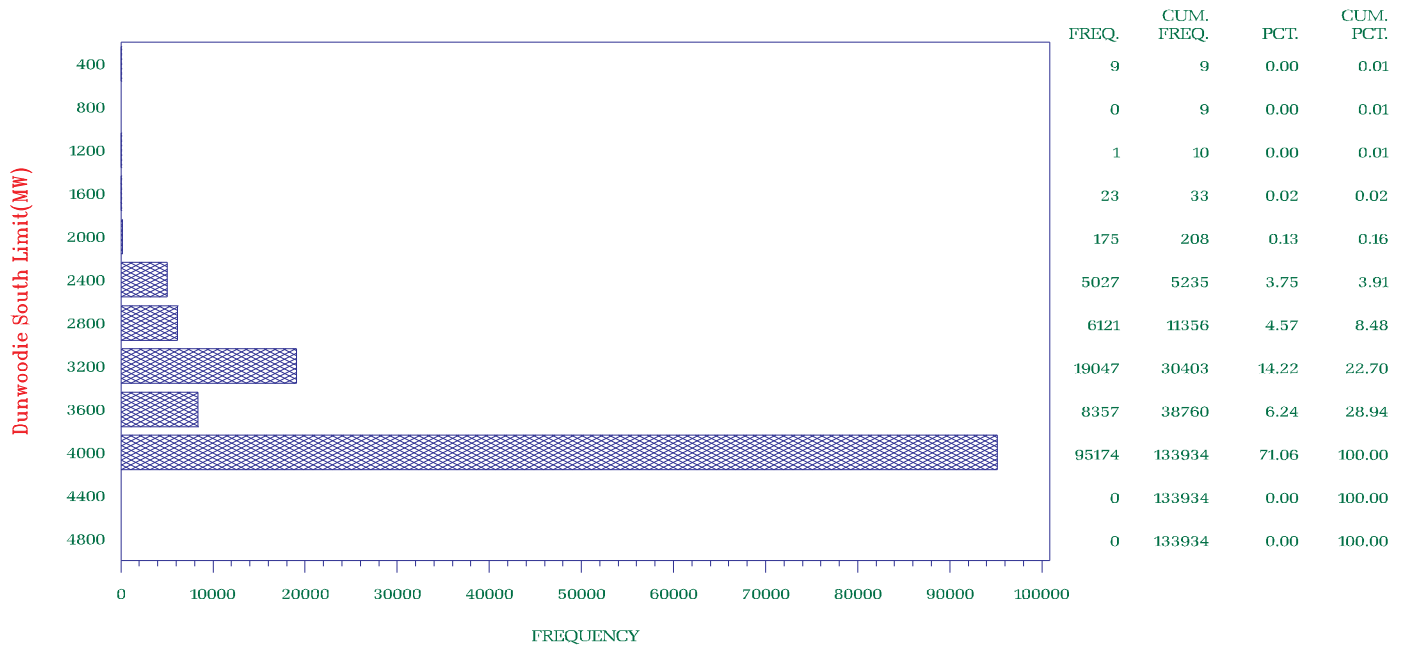
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UPNY Con Ed Limit



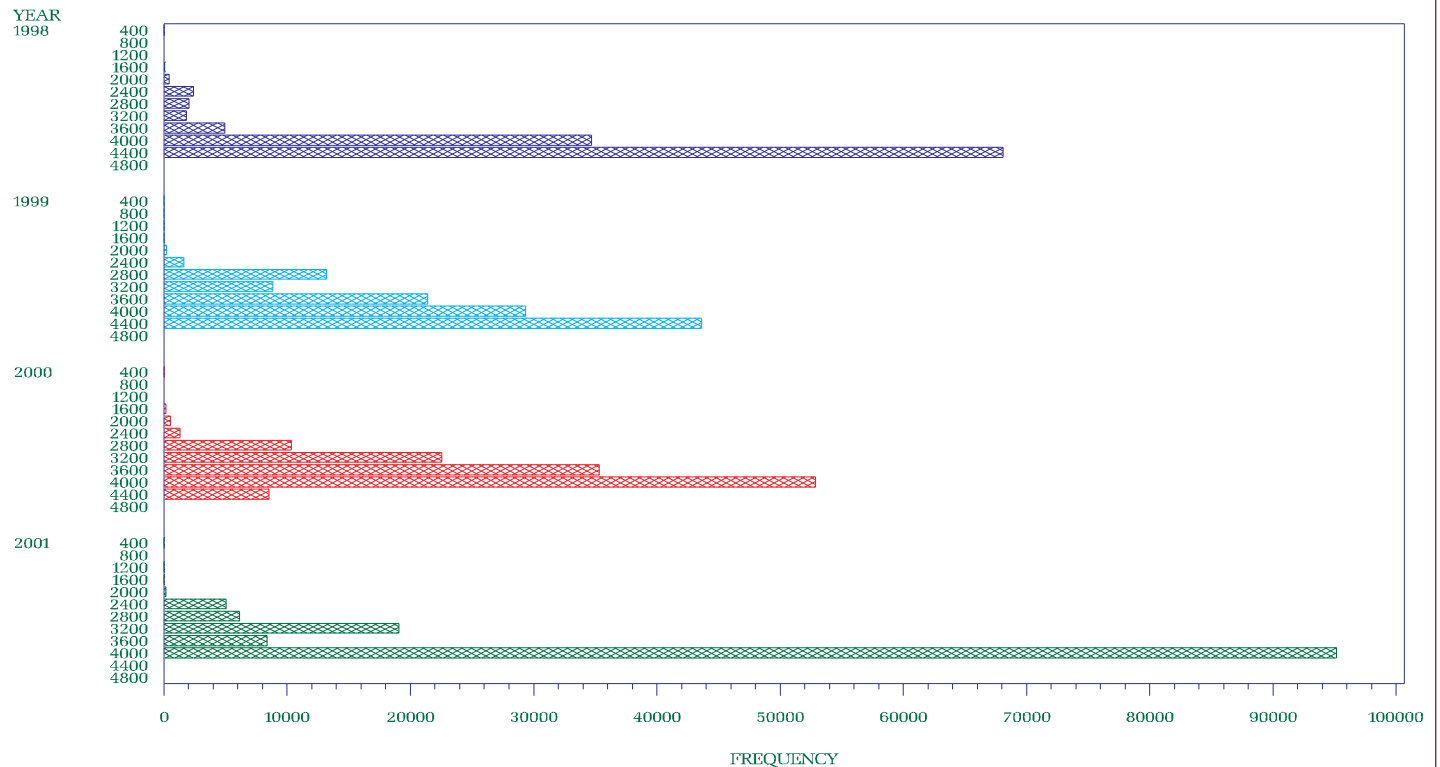
NYISO Frequency Interface Flow For January – December 2001

Dunwoodie South Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

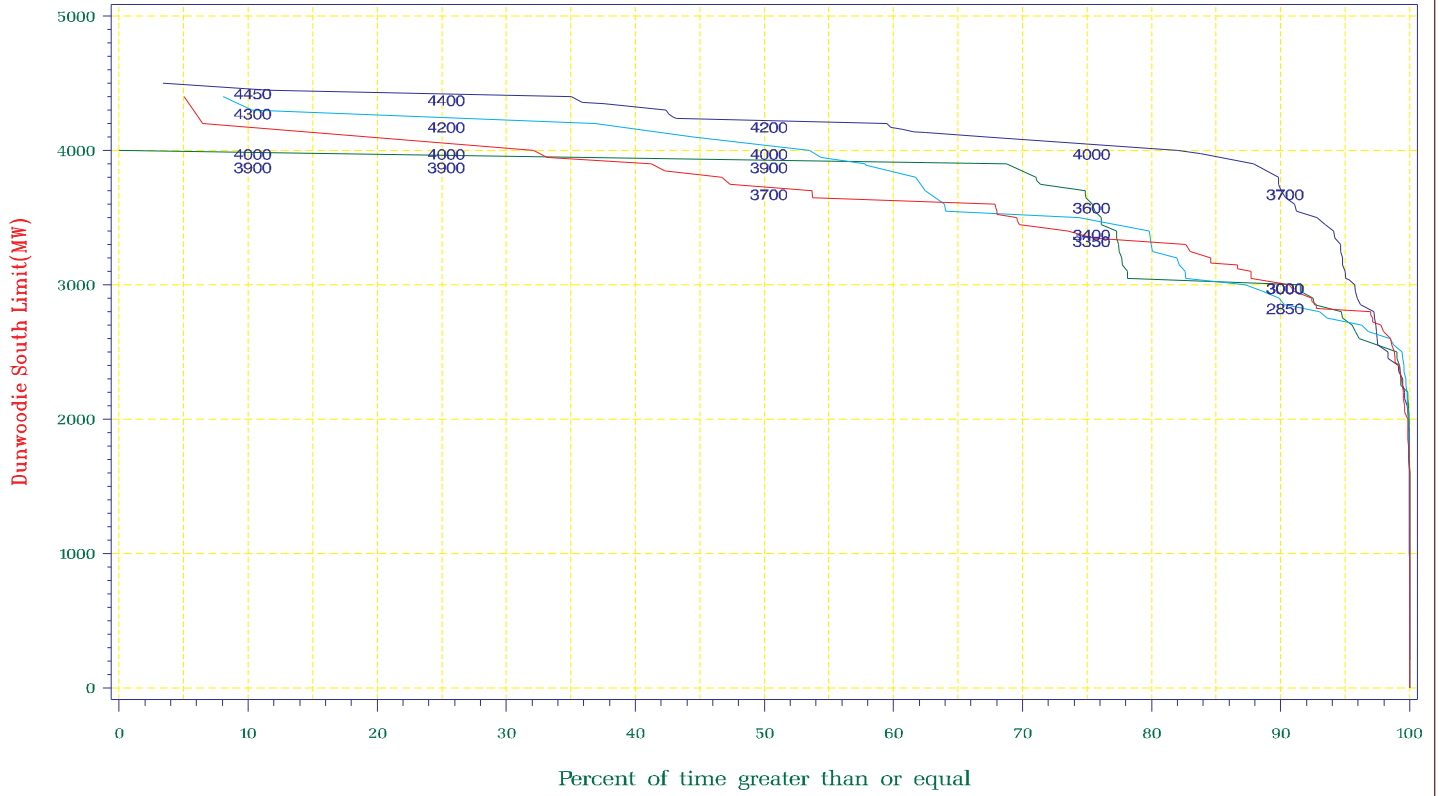
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1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

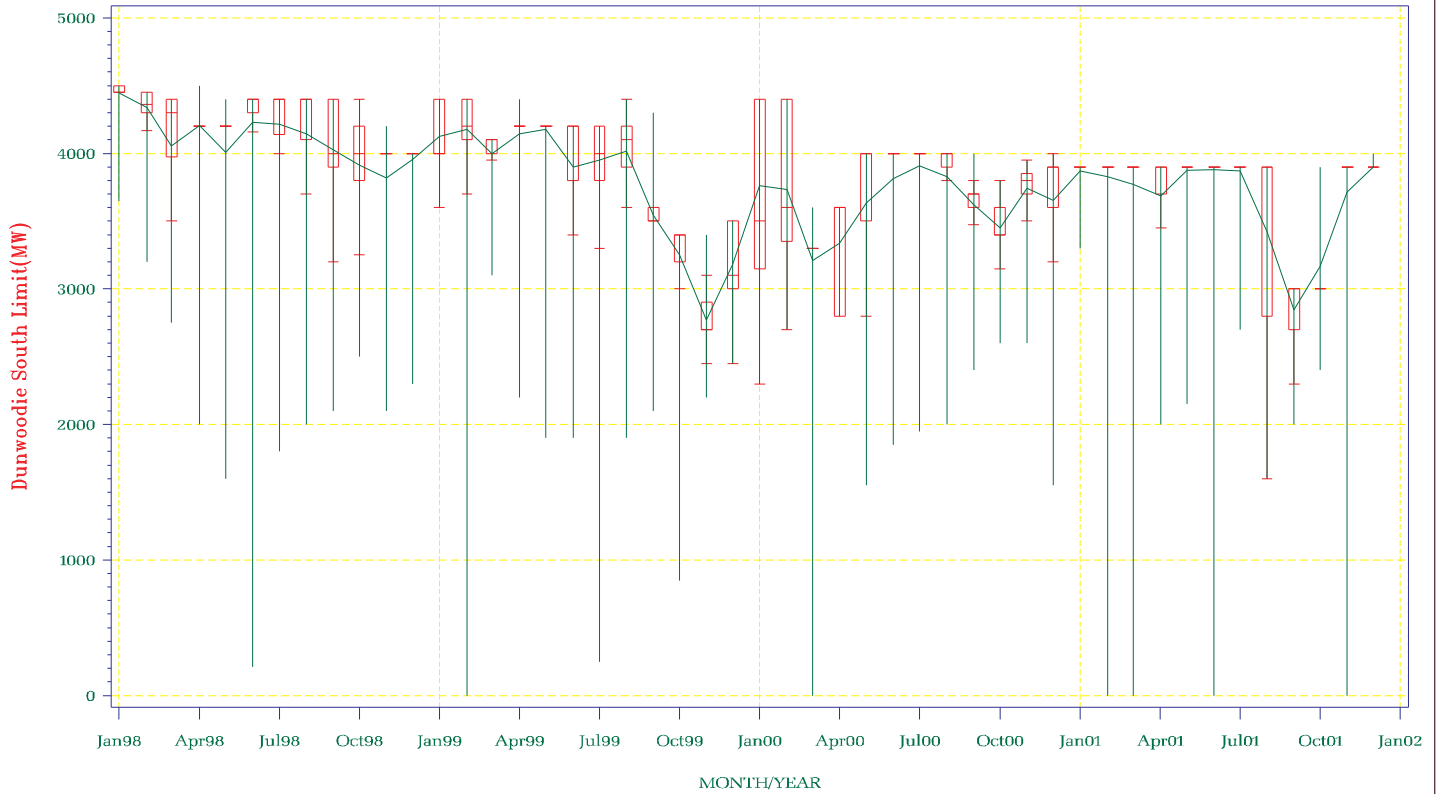
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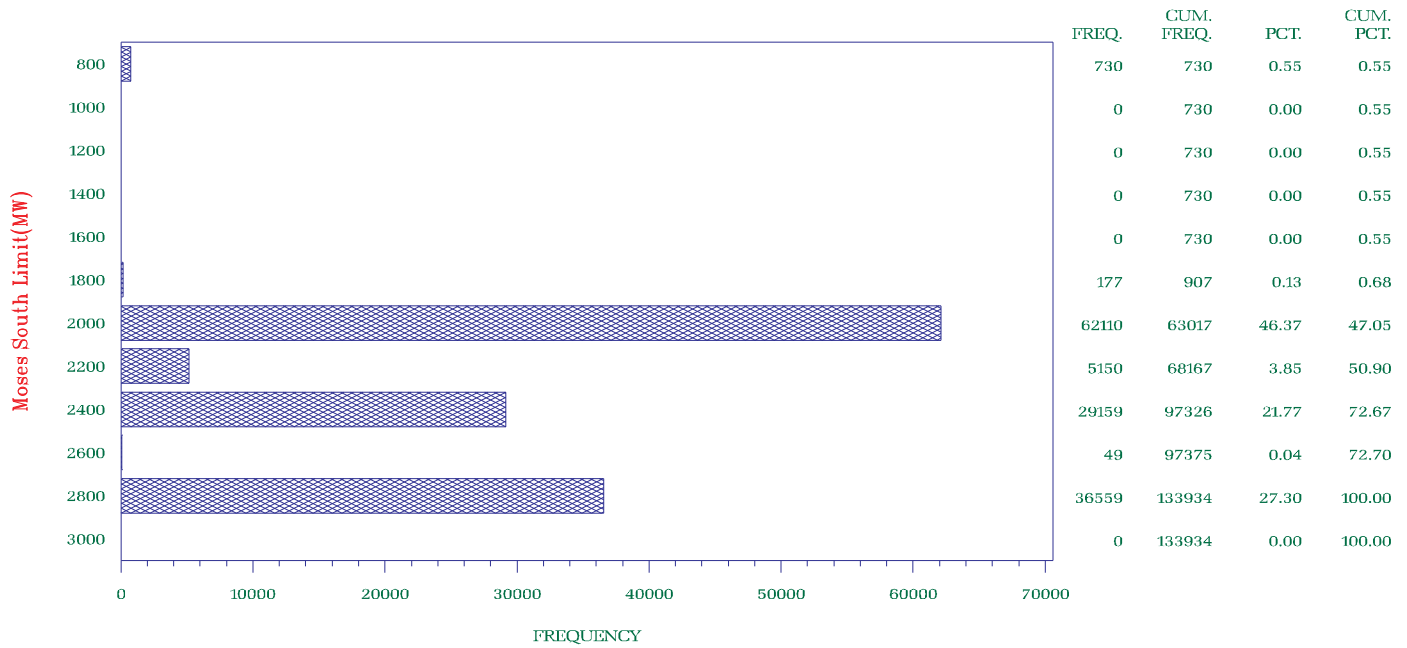
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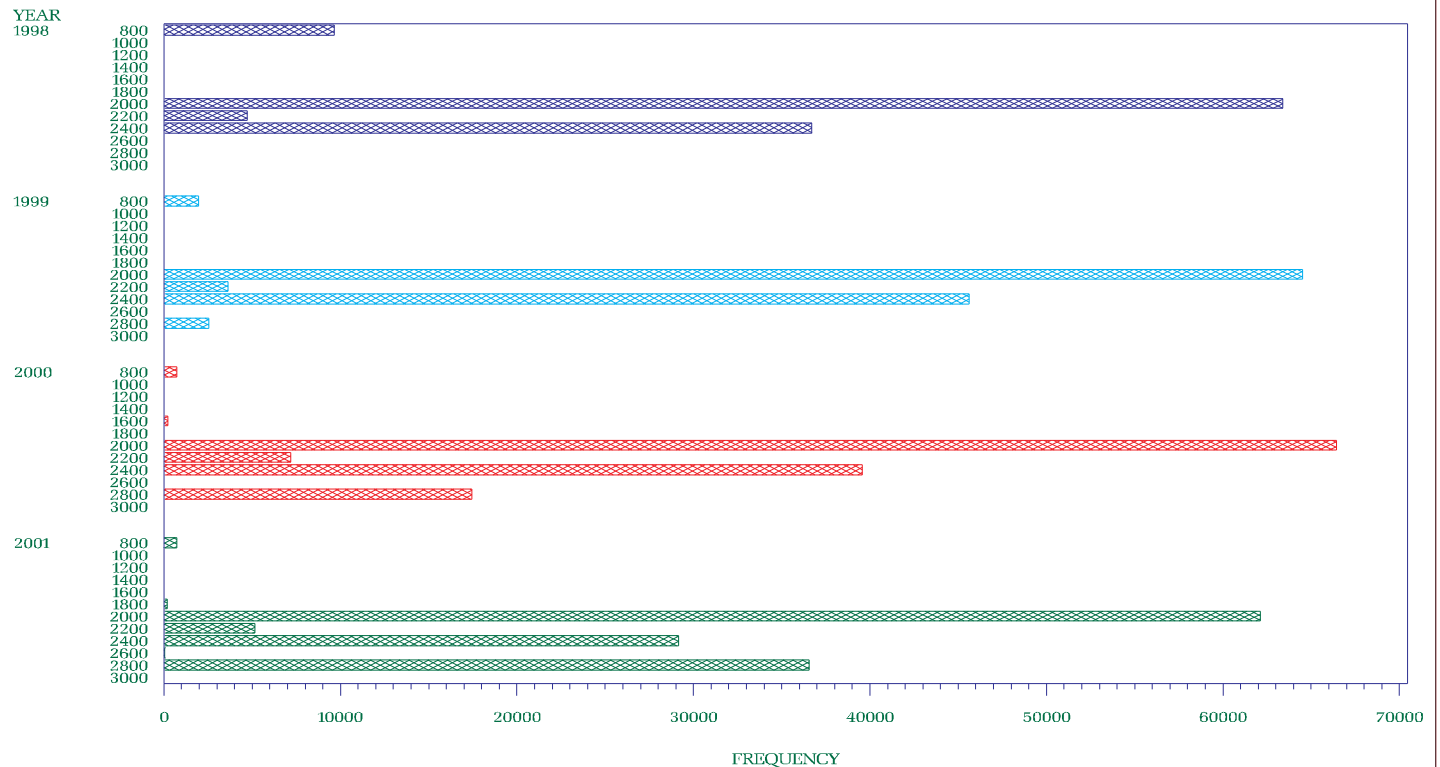
NYISO Frequency Interface Flow For January – December 2001

Moses South Limit



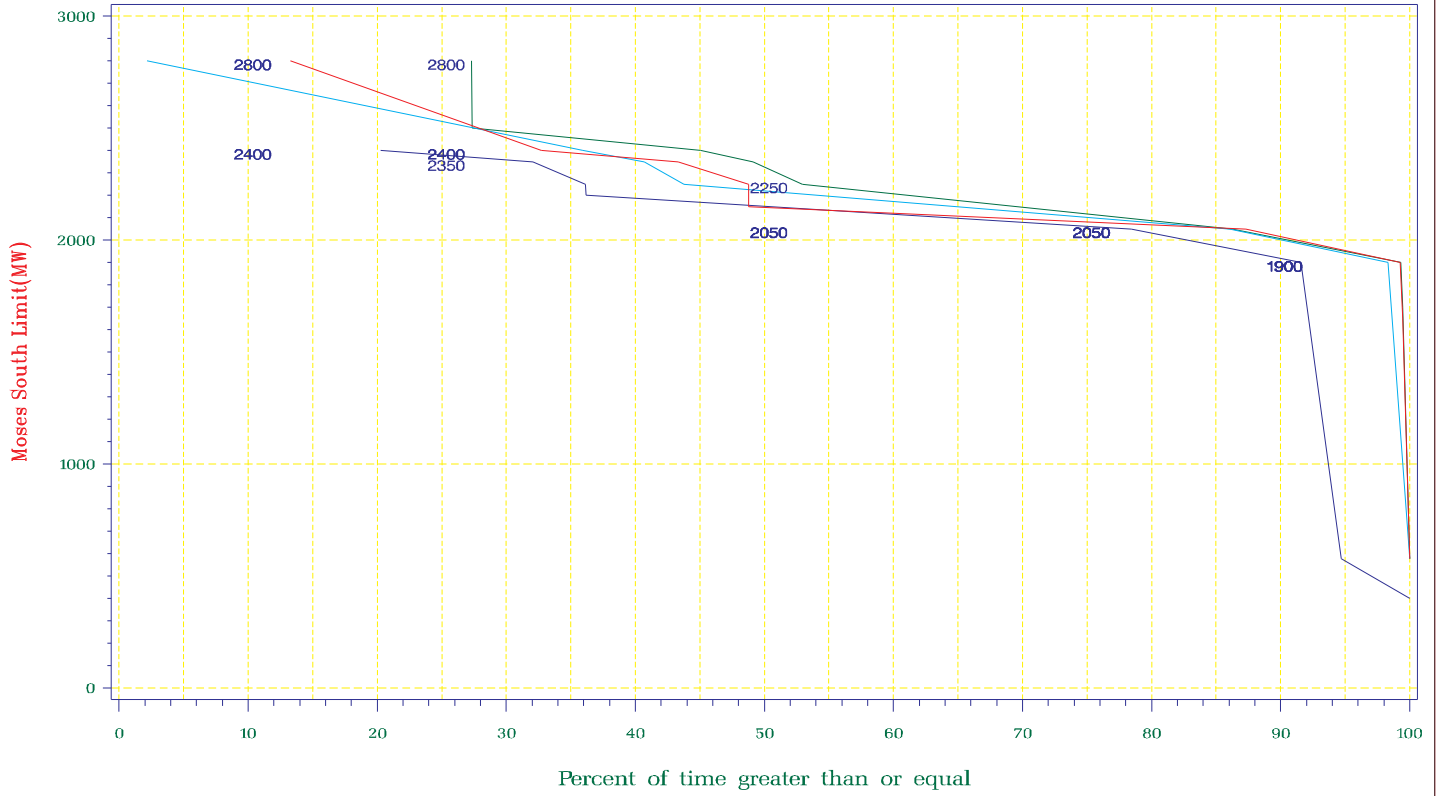
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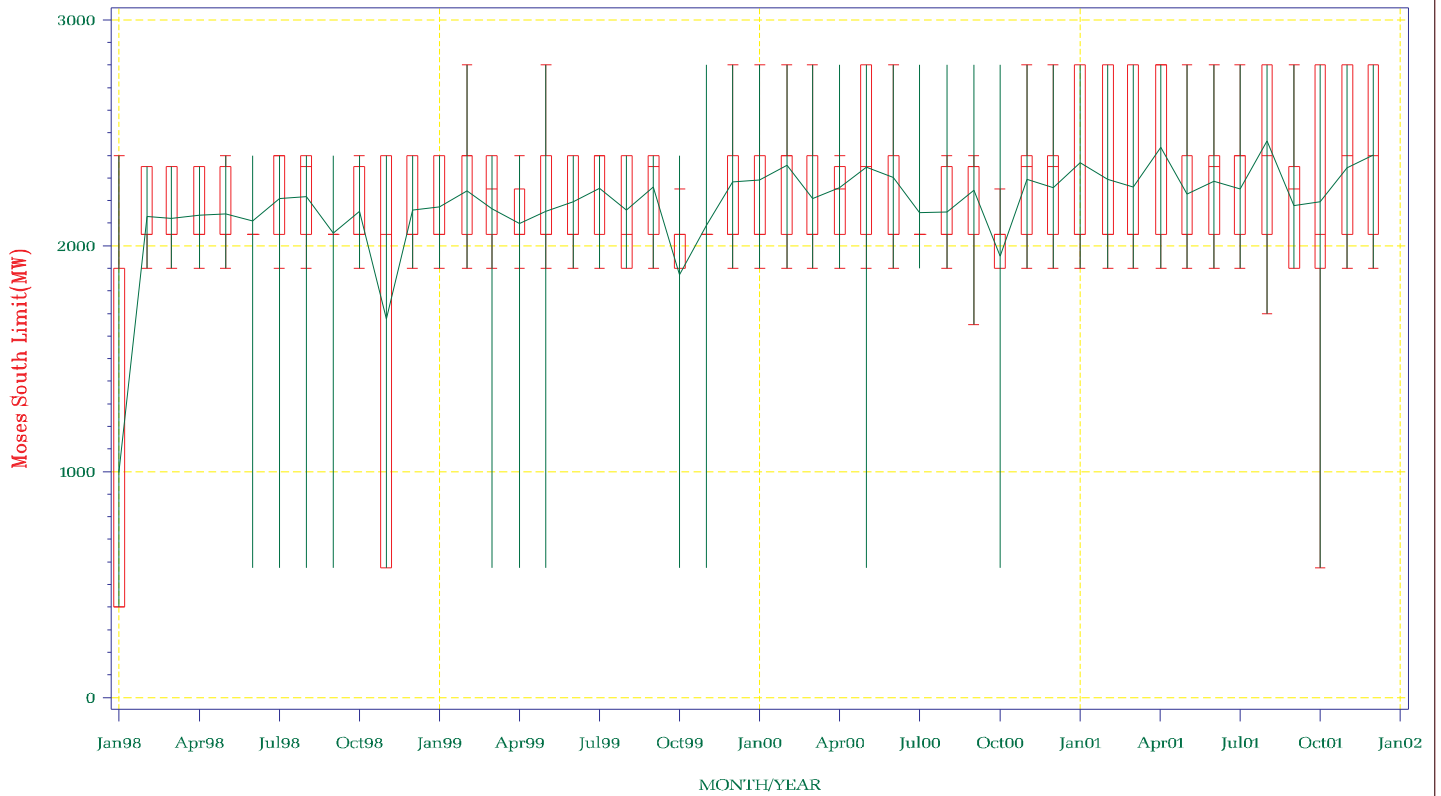
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NYISO Percent of time Interface Flow For January 1998 – December 2001
Moses South Limit



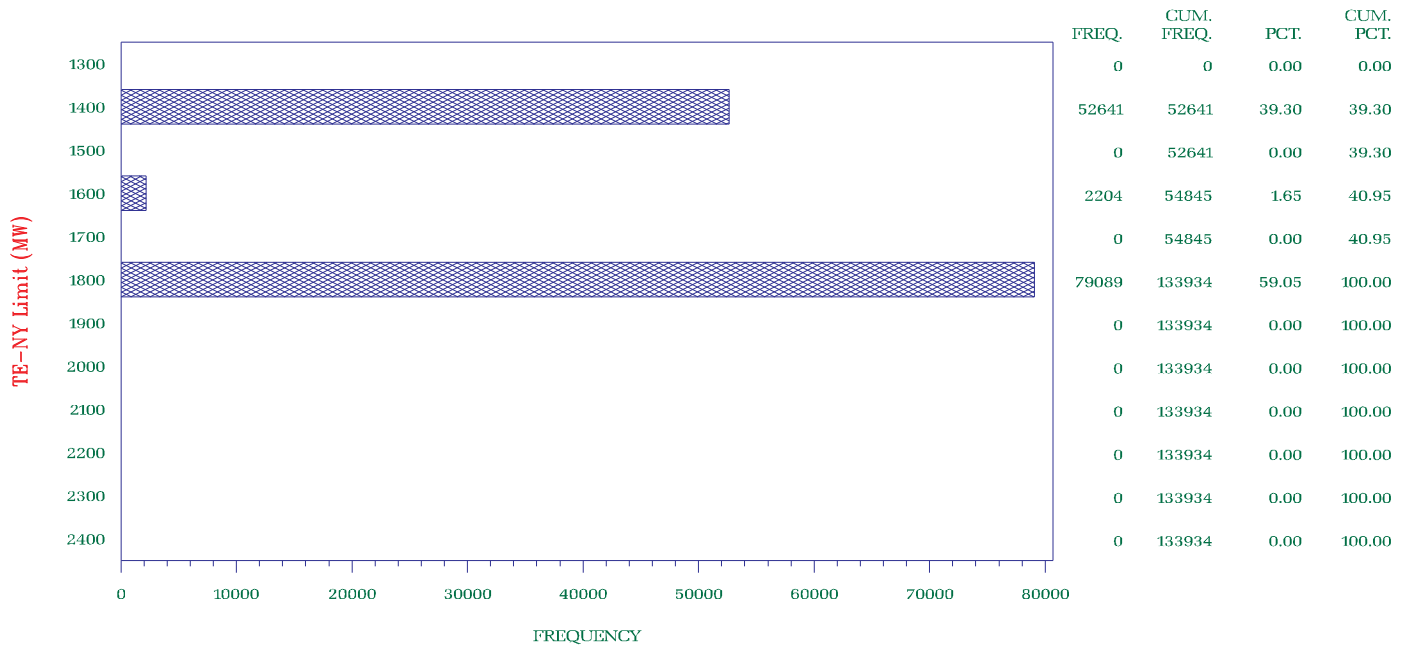
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NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001
Moses South Limit



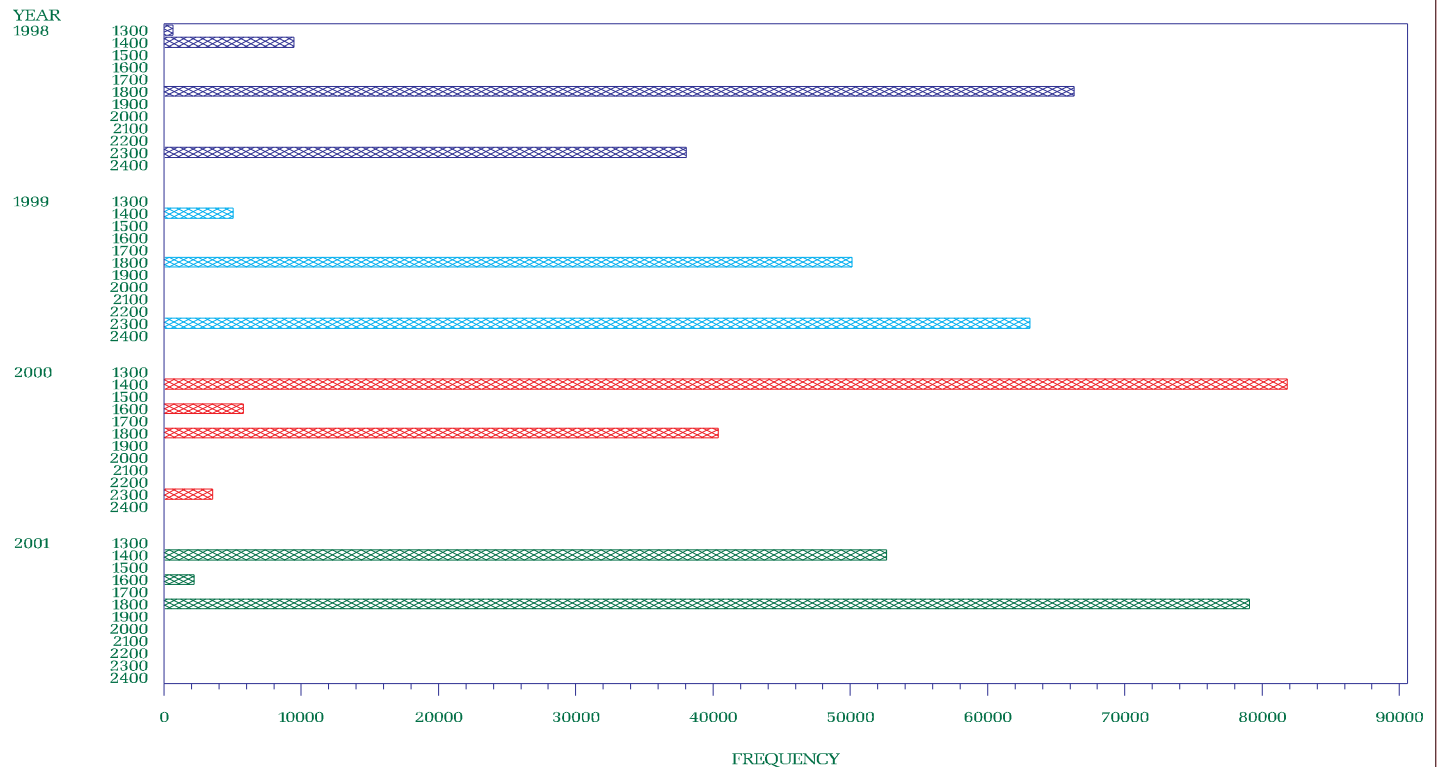
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

TE – NY Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

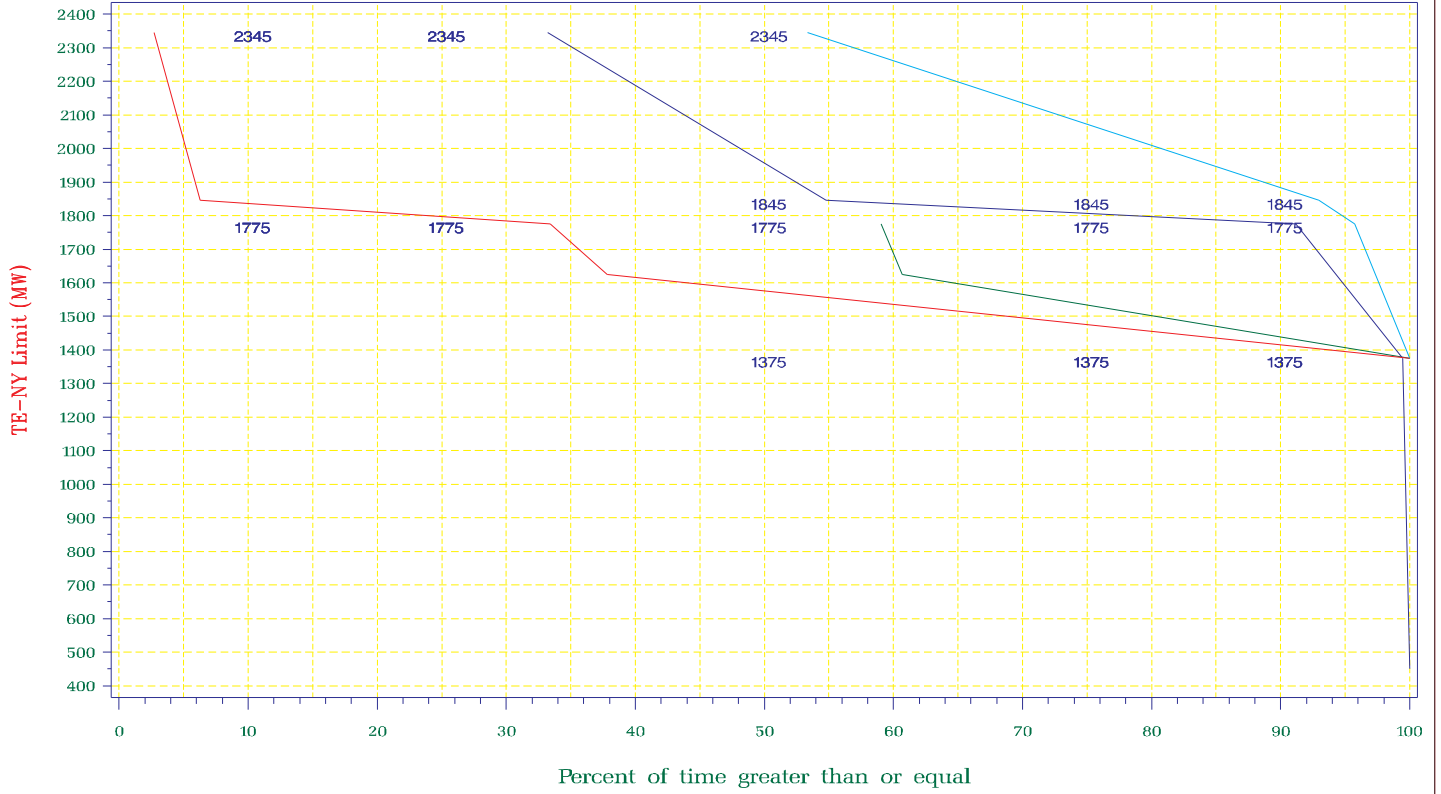
TE – NY Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

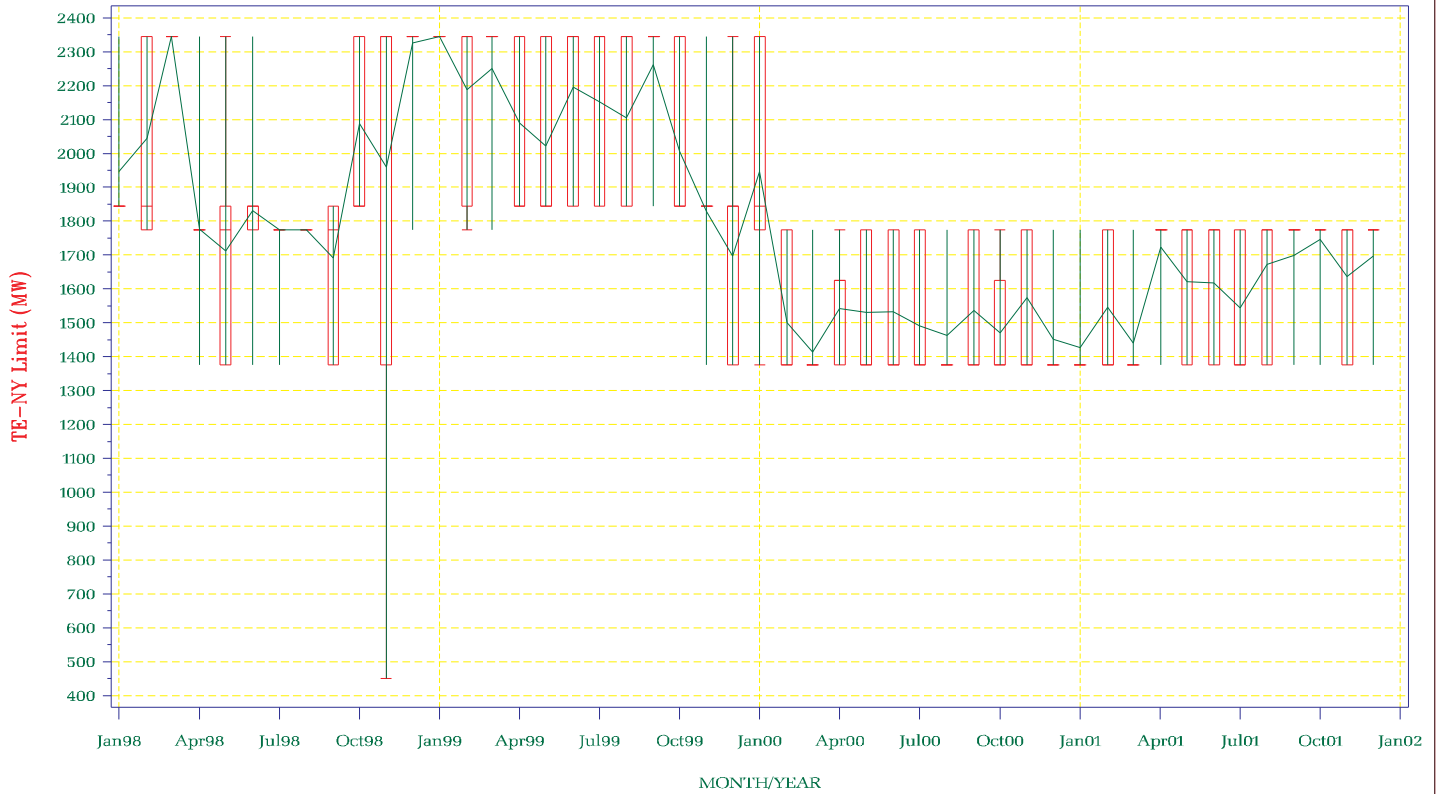
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1998 1999 2000 2001

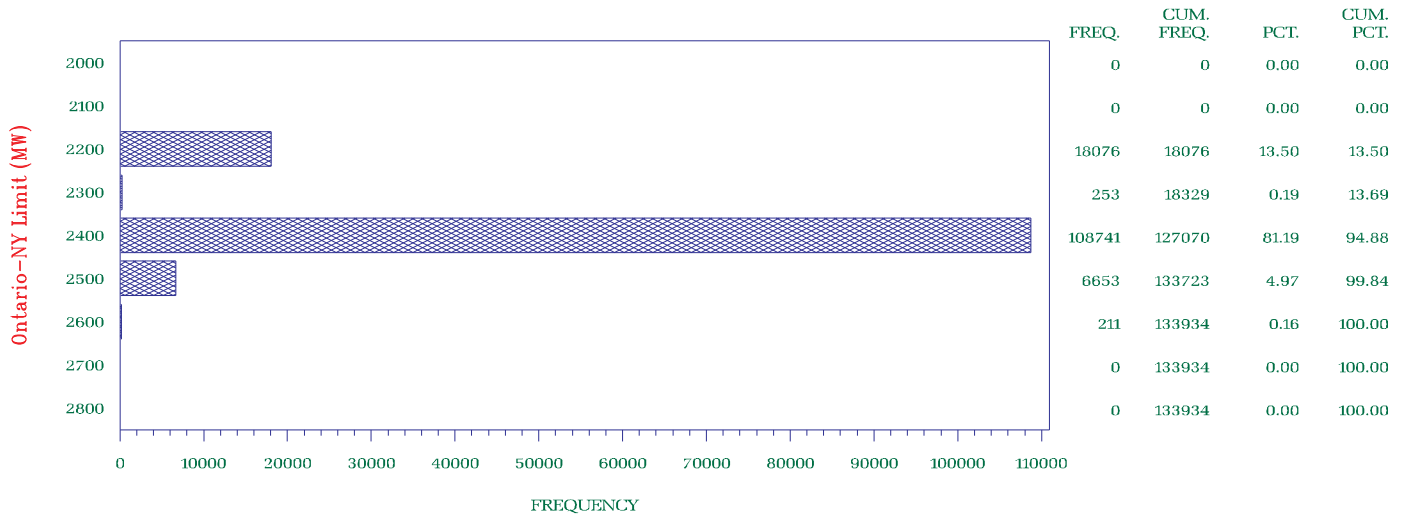
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TE-NY Limit



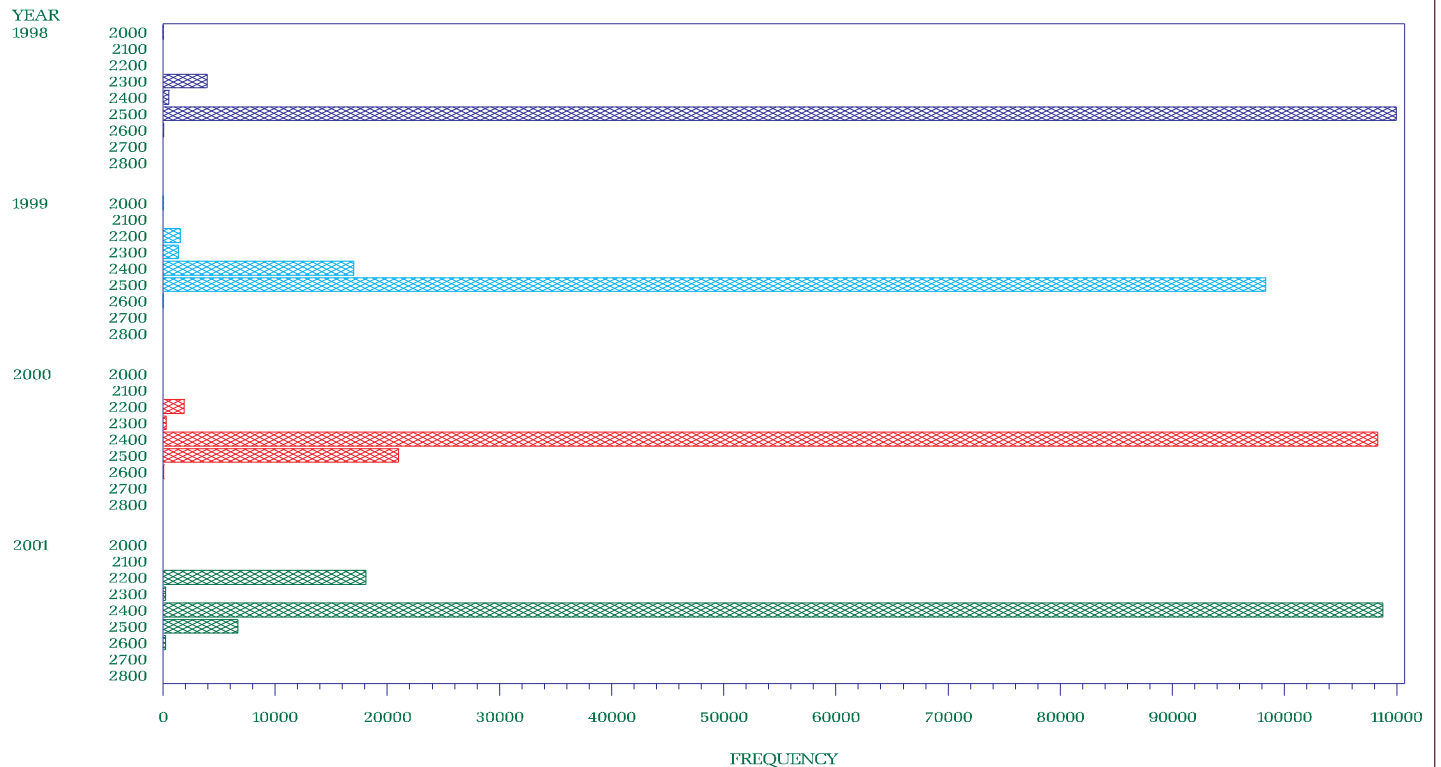
NYISO Frequency Interface Flow For January – December 2001

Ontario – NY Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

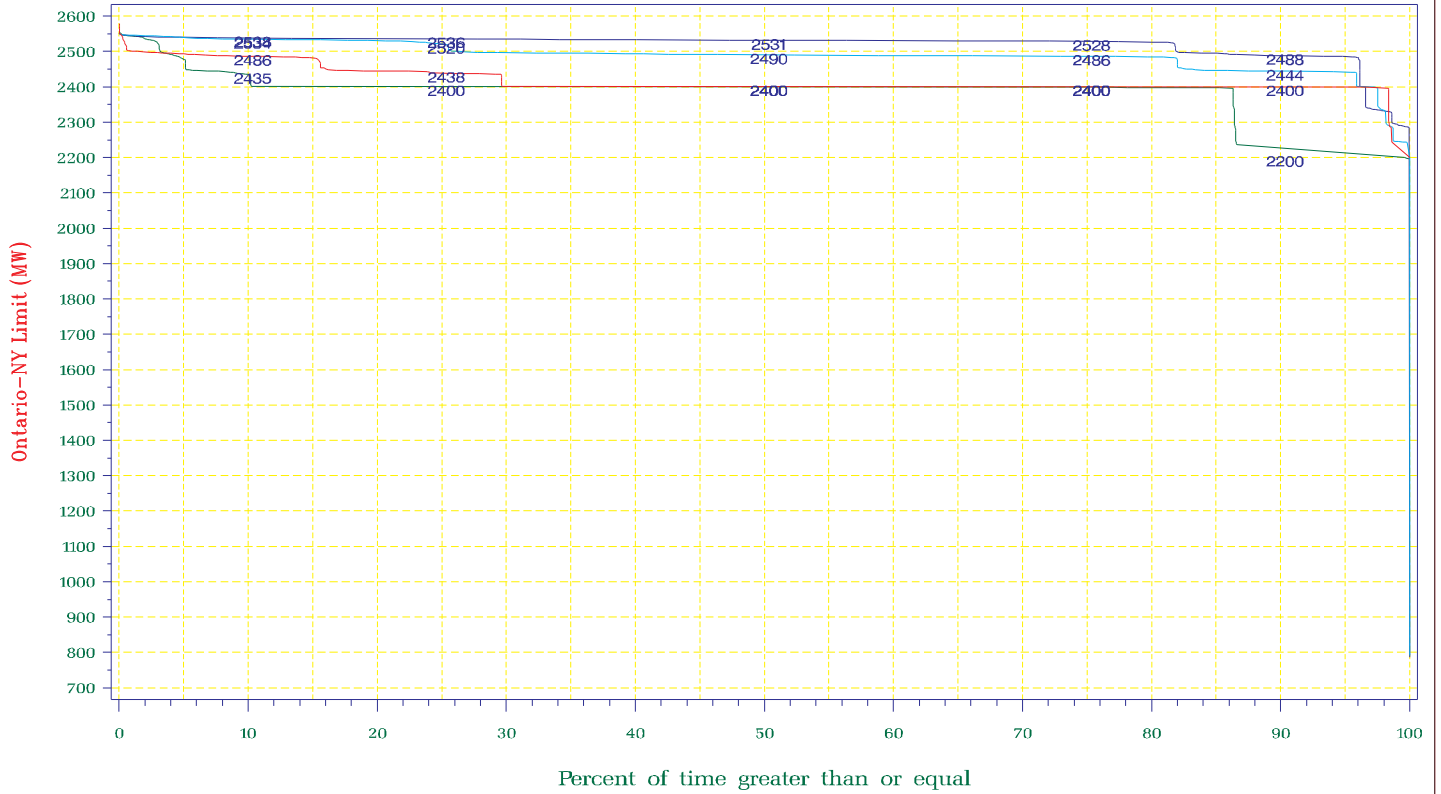
Ontario – NY Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

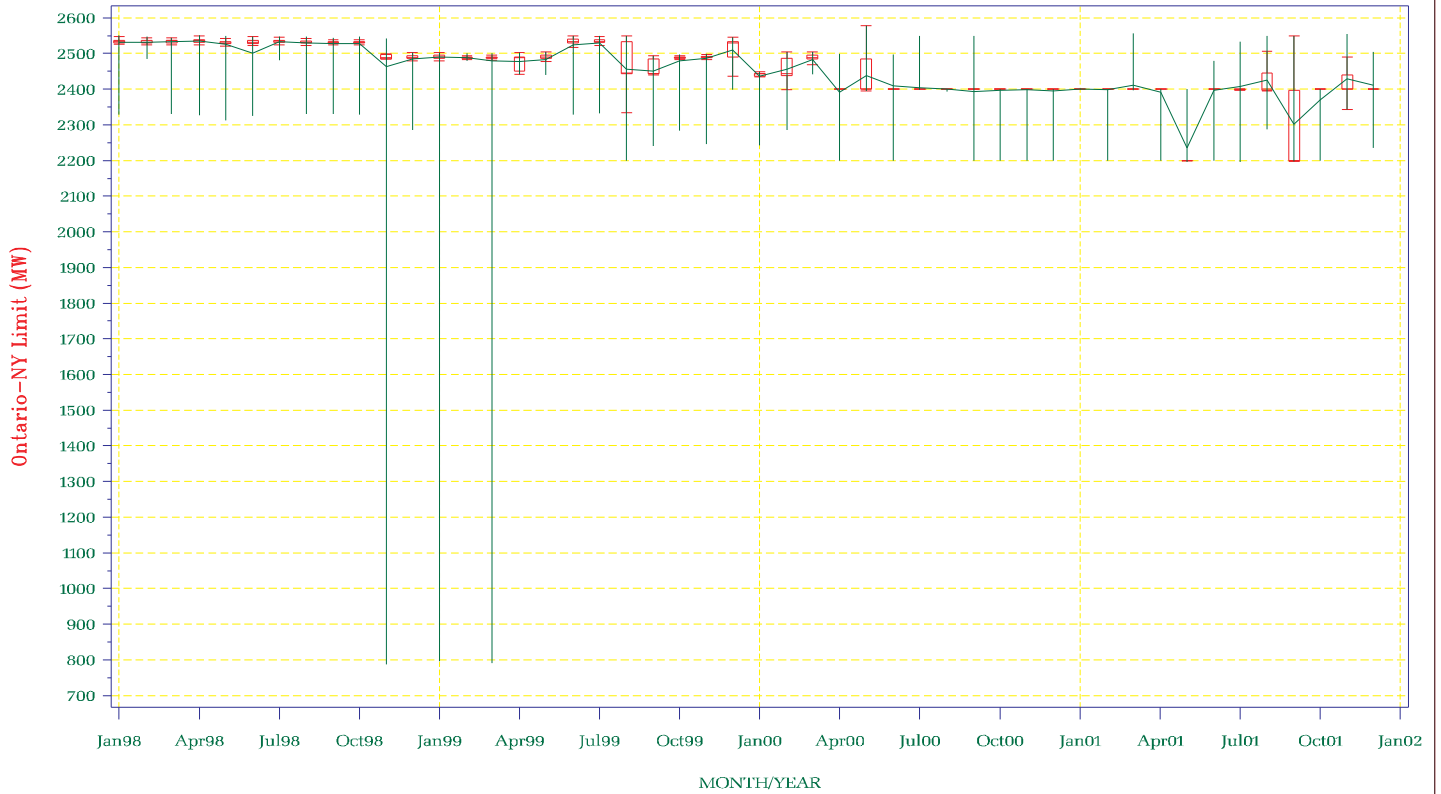
Ontario – NY Limit



1998 1999 2000 2001

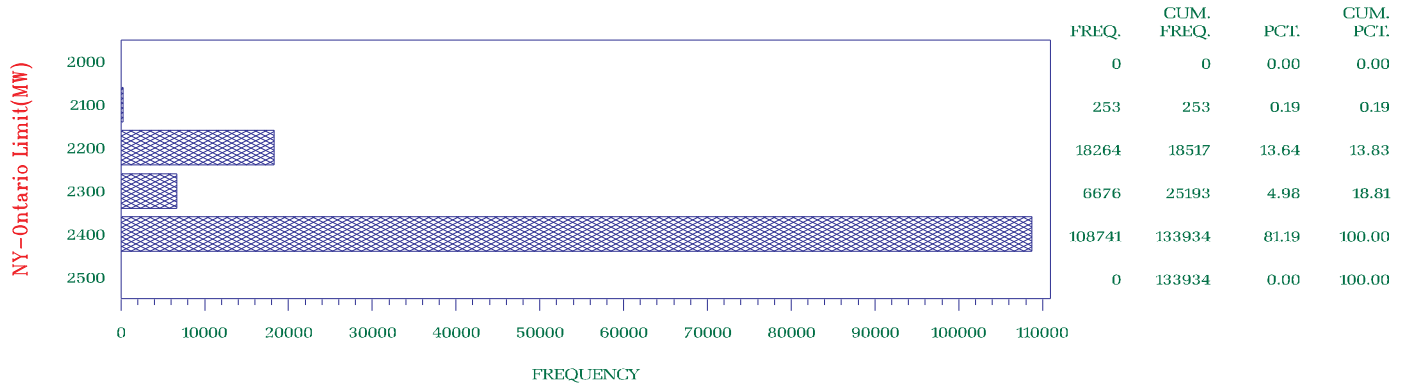
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

Ontario – NY Limit



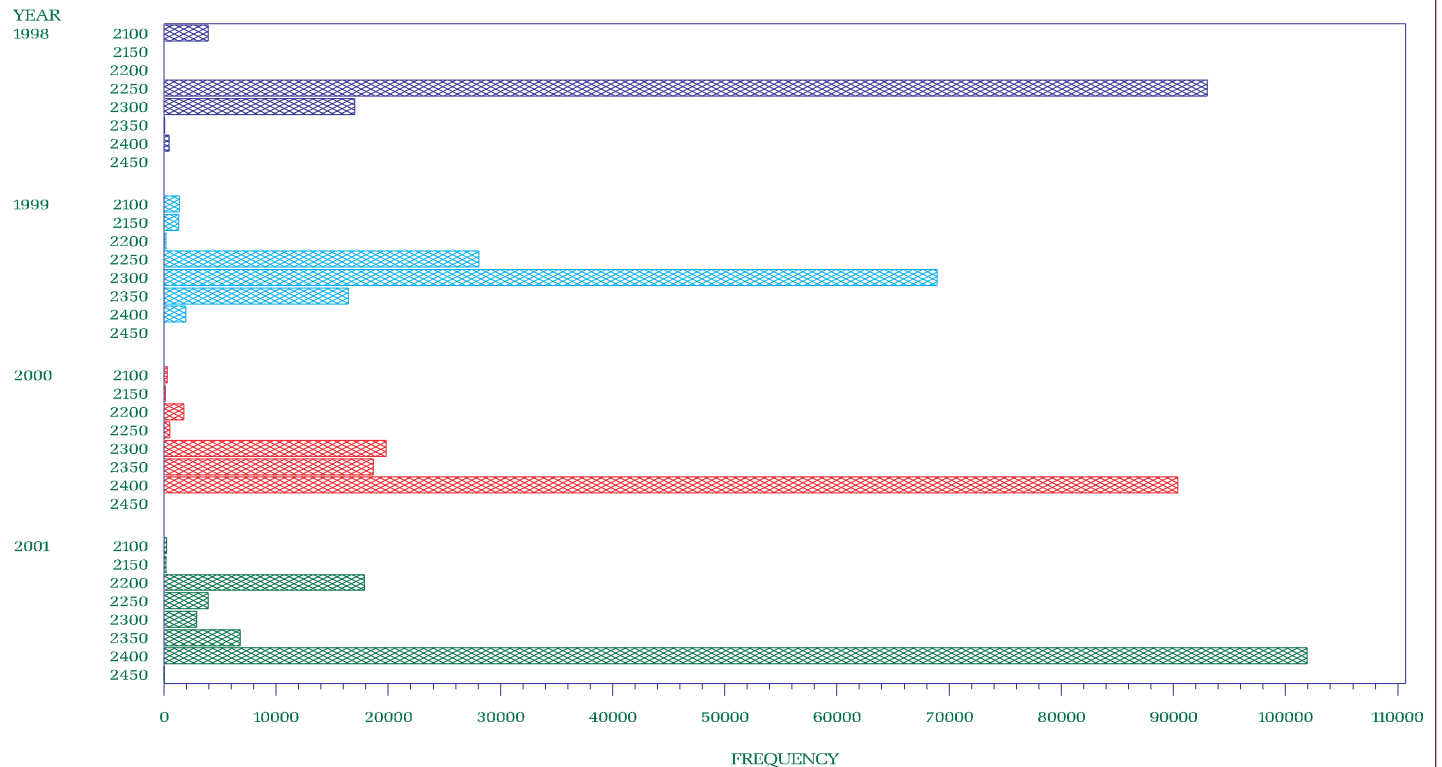
NYISO Frequency Interface Flow For January – December 2001

NY – Ontario Limit



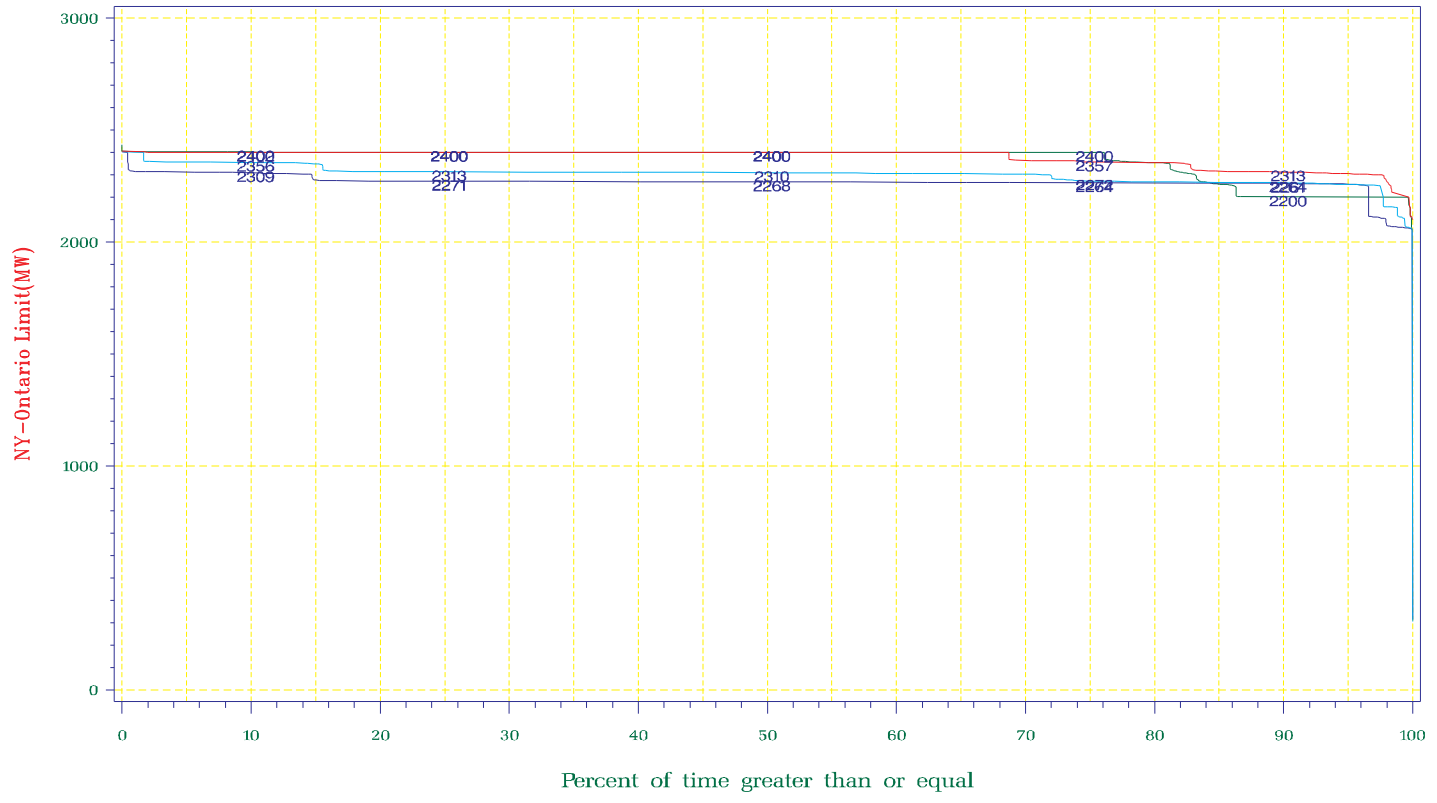
NYISO Frequency Interface Flow For January 1998 – December 2001

NY – Ontario Limit



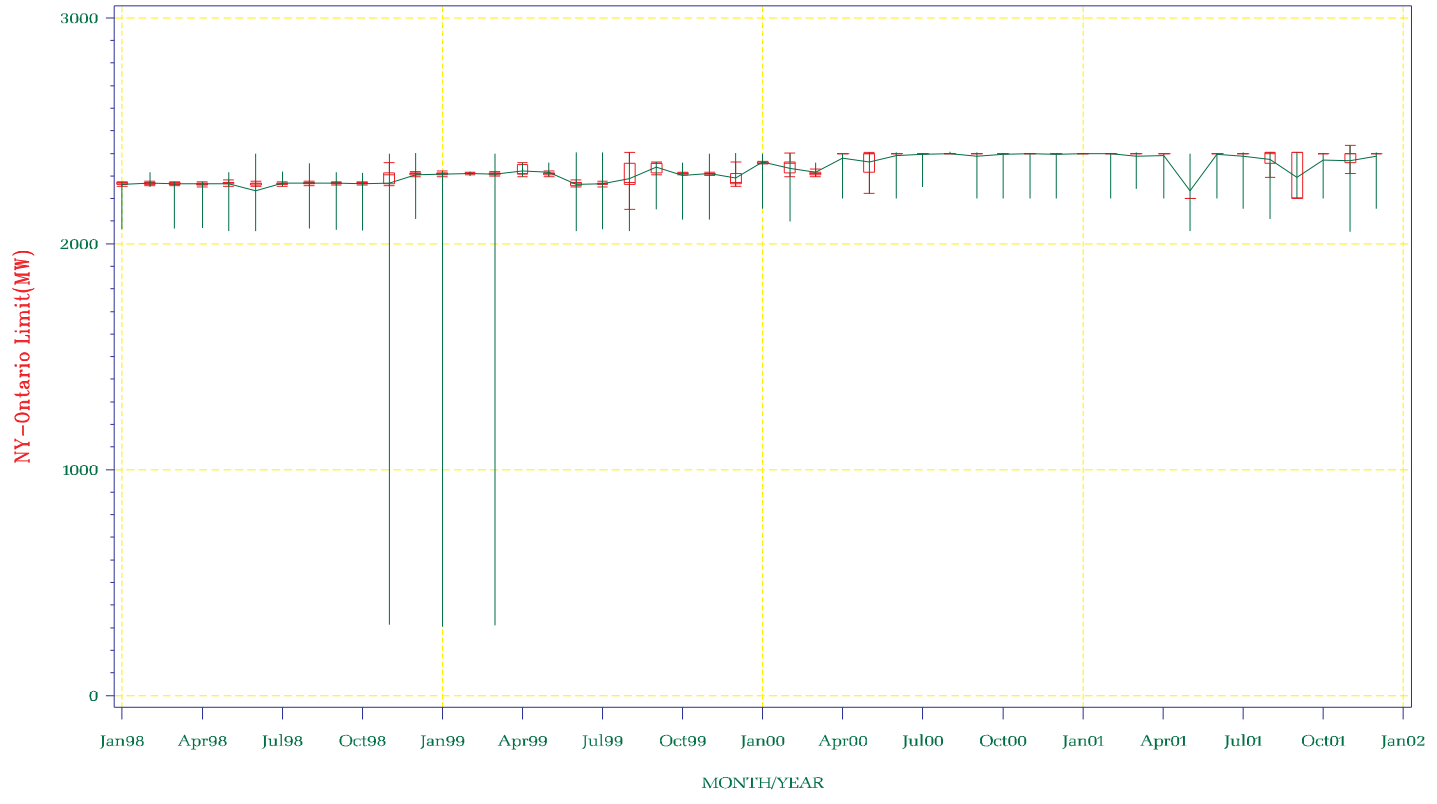
1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001
NY-Ontario Limit



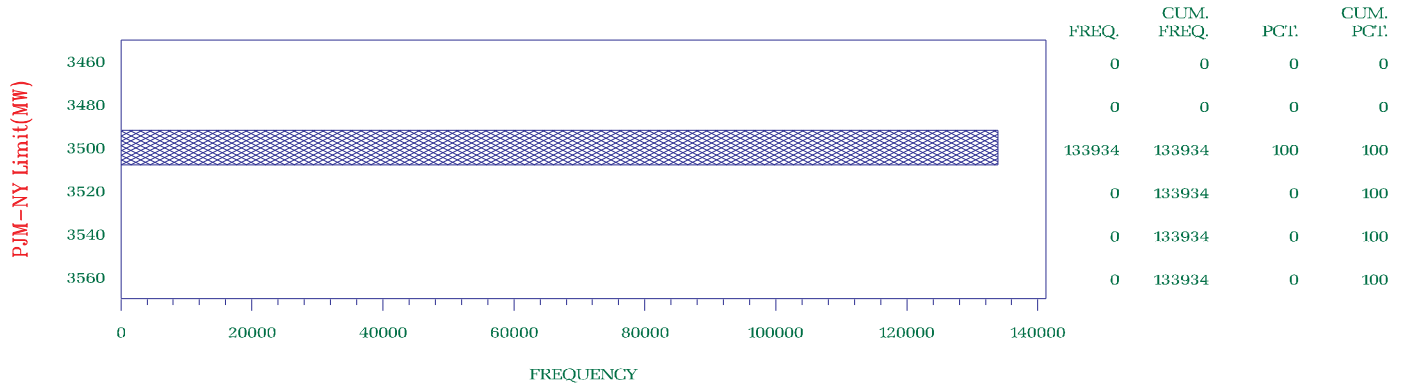
1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001
NY-Ontario Limit



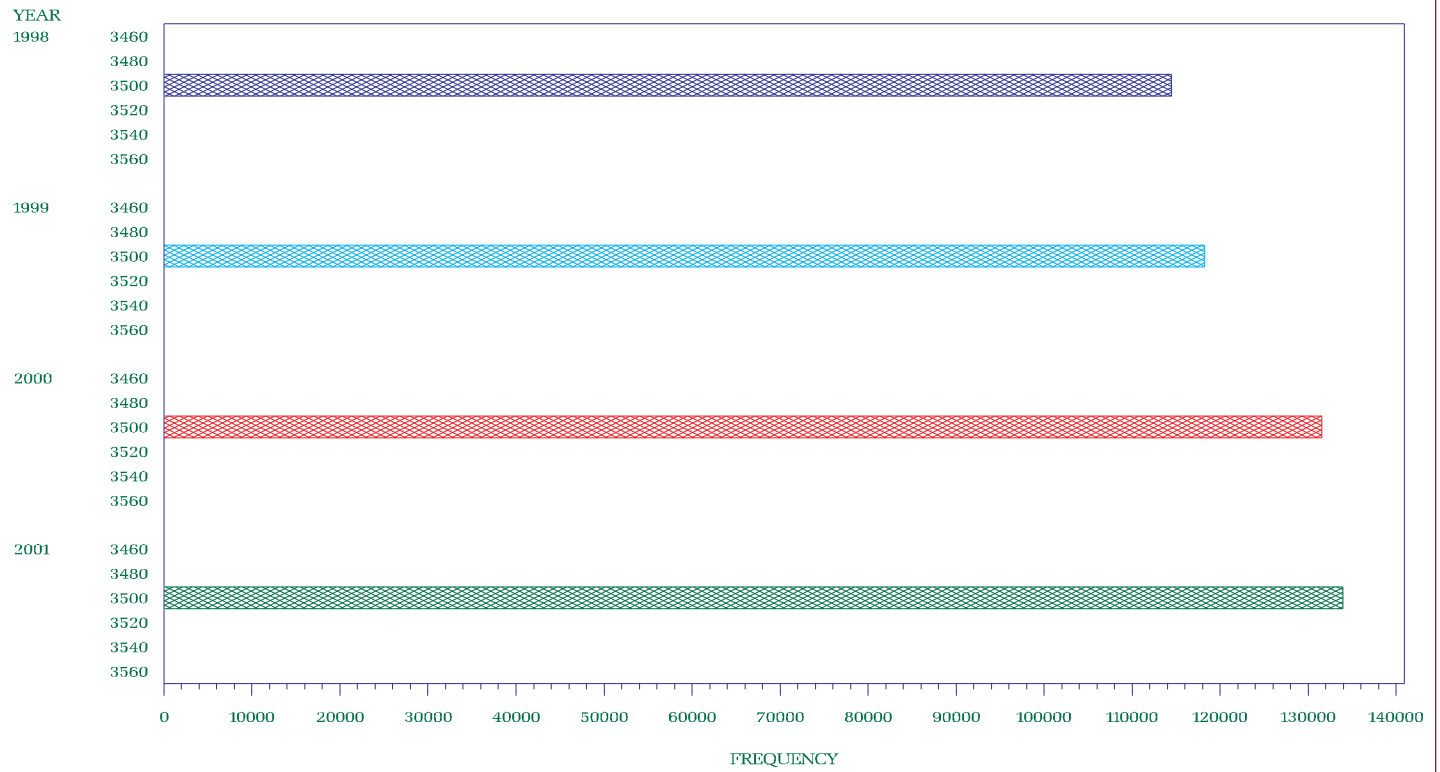
NYISO Frequency Interface Flow For January – December 2001

PJM – NY Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

PJM – NY Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

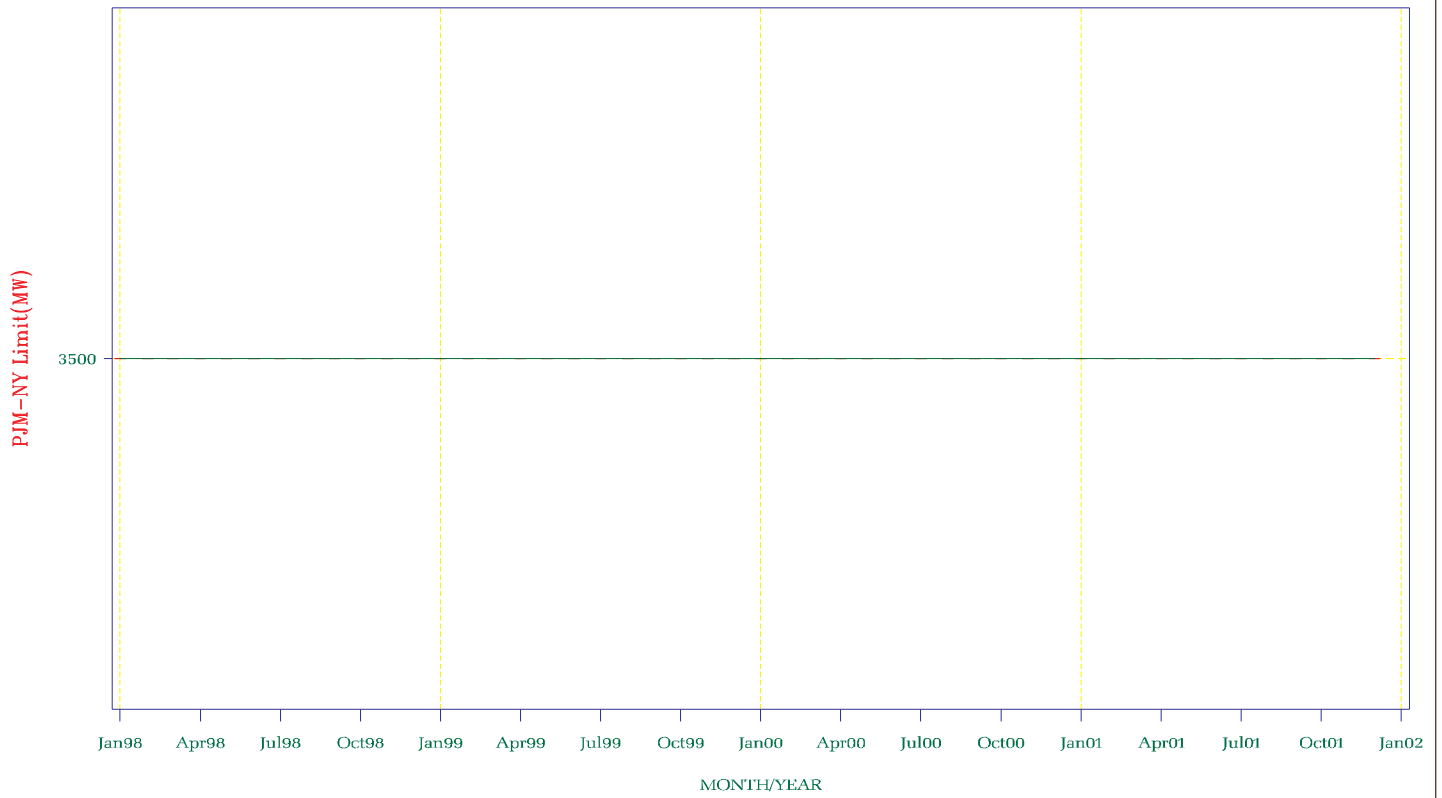
PJM – NY Limit



1998 1999 2000 2001

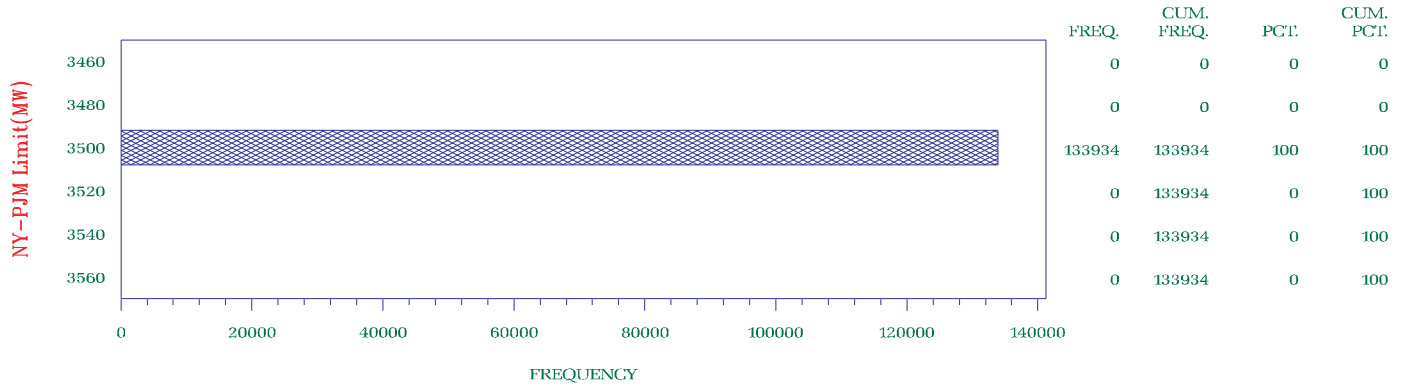
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

PJM – NY Limit



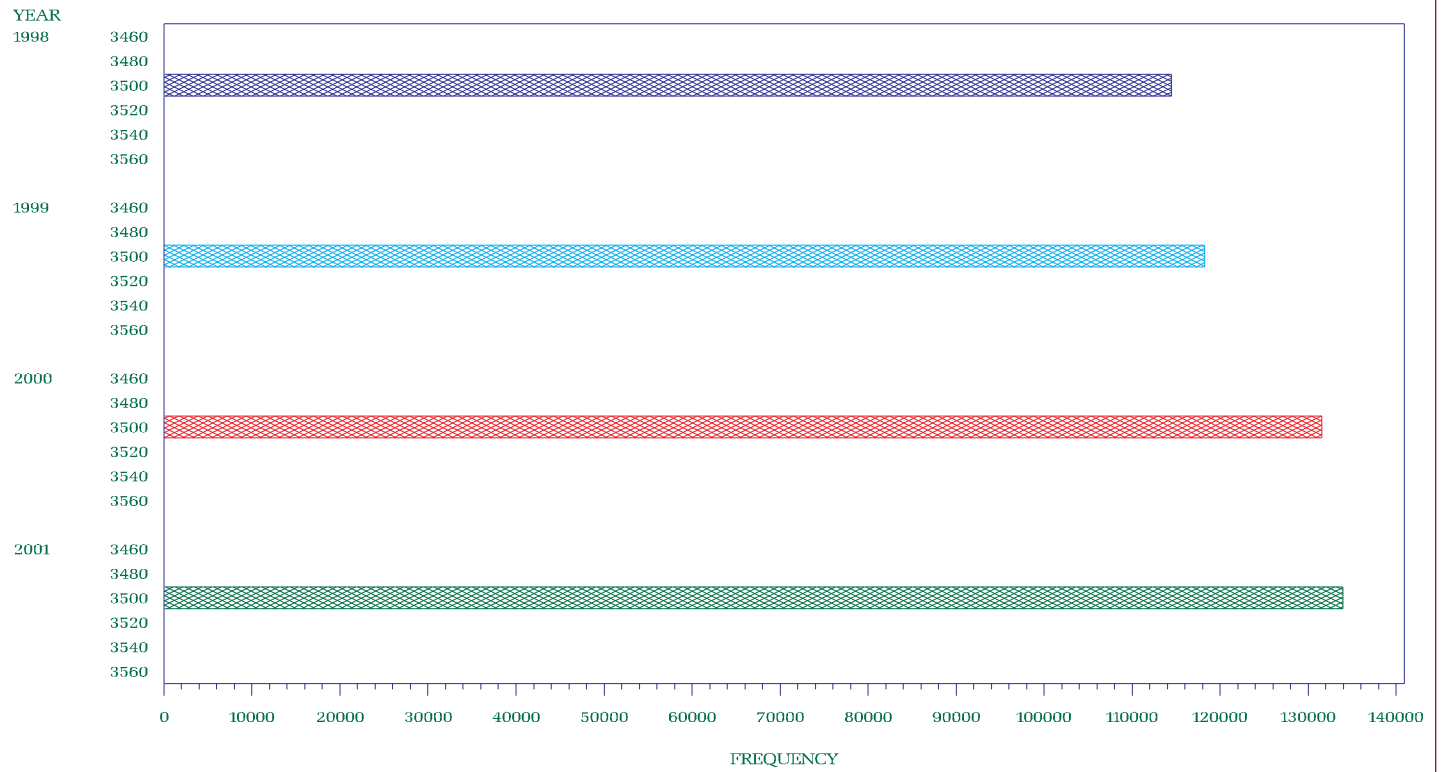
NYISO Frequency Interface Flow For January – December 2001

NY – PJM Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

NY – PJM Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

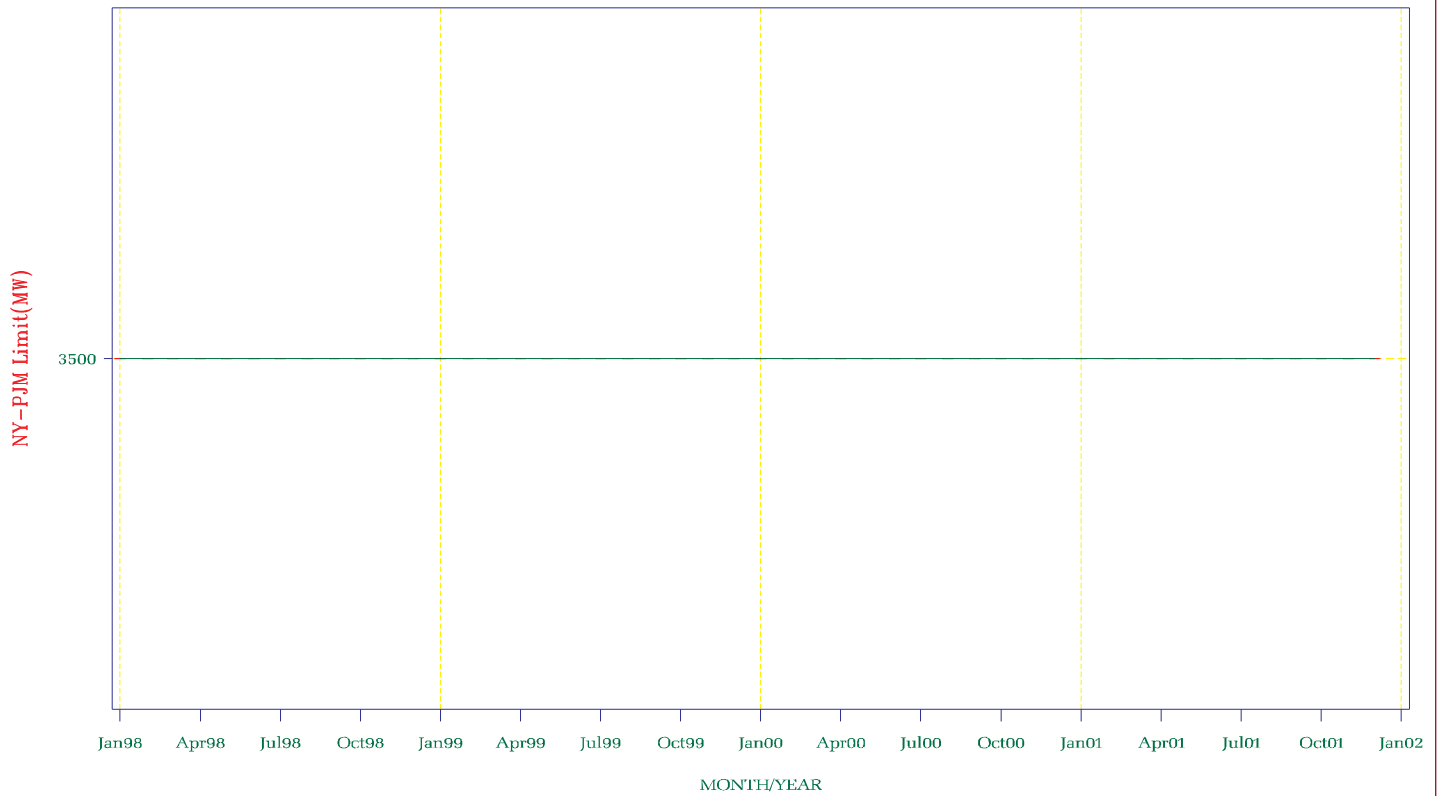
NY – PJM Limit



1998 1999 2000 2001

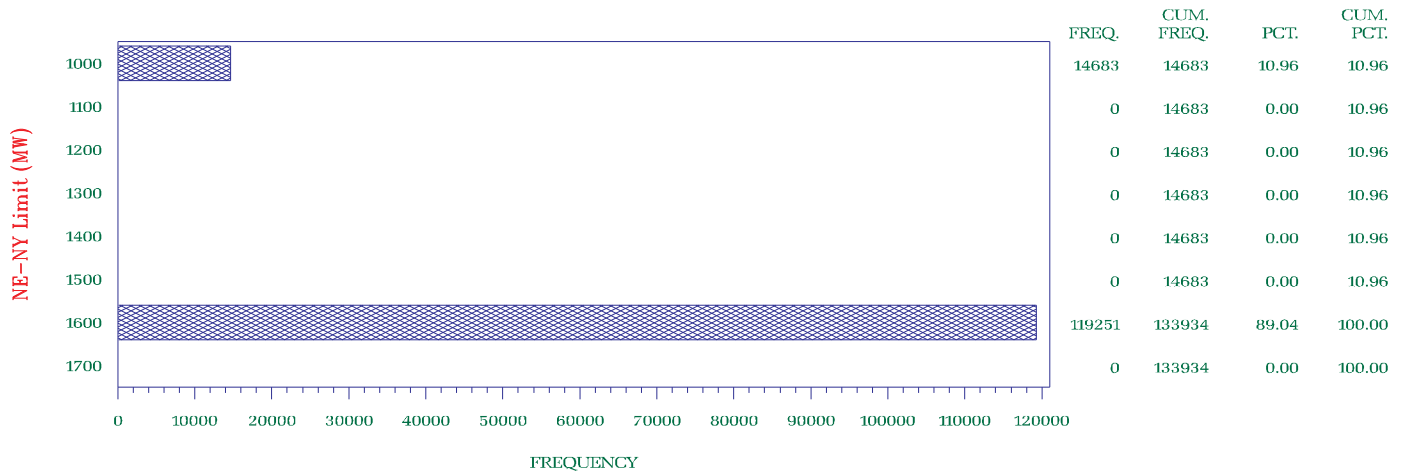
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

NY – PJM Limit



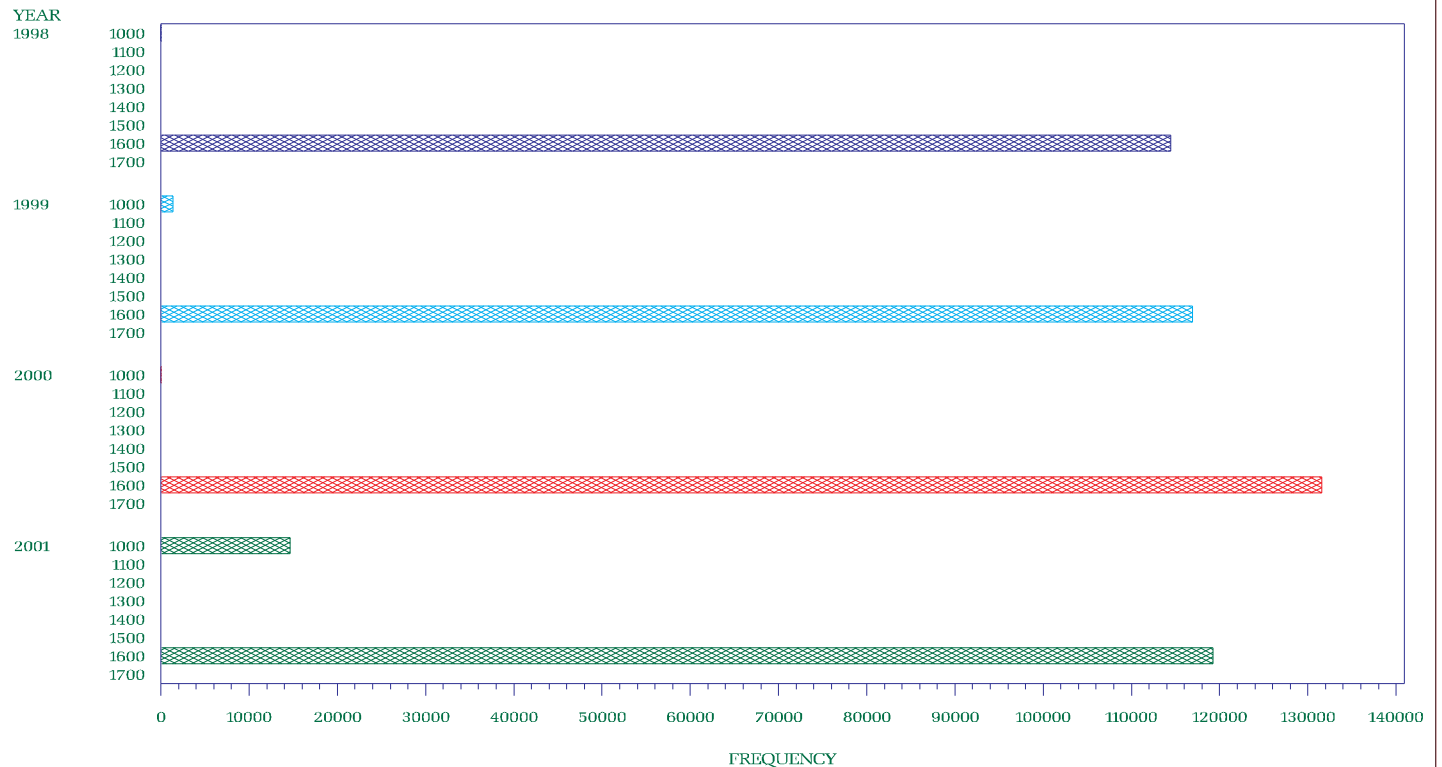
NYISO Frequency Interface Flow For January – December 2001

NE – NY Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

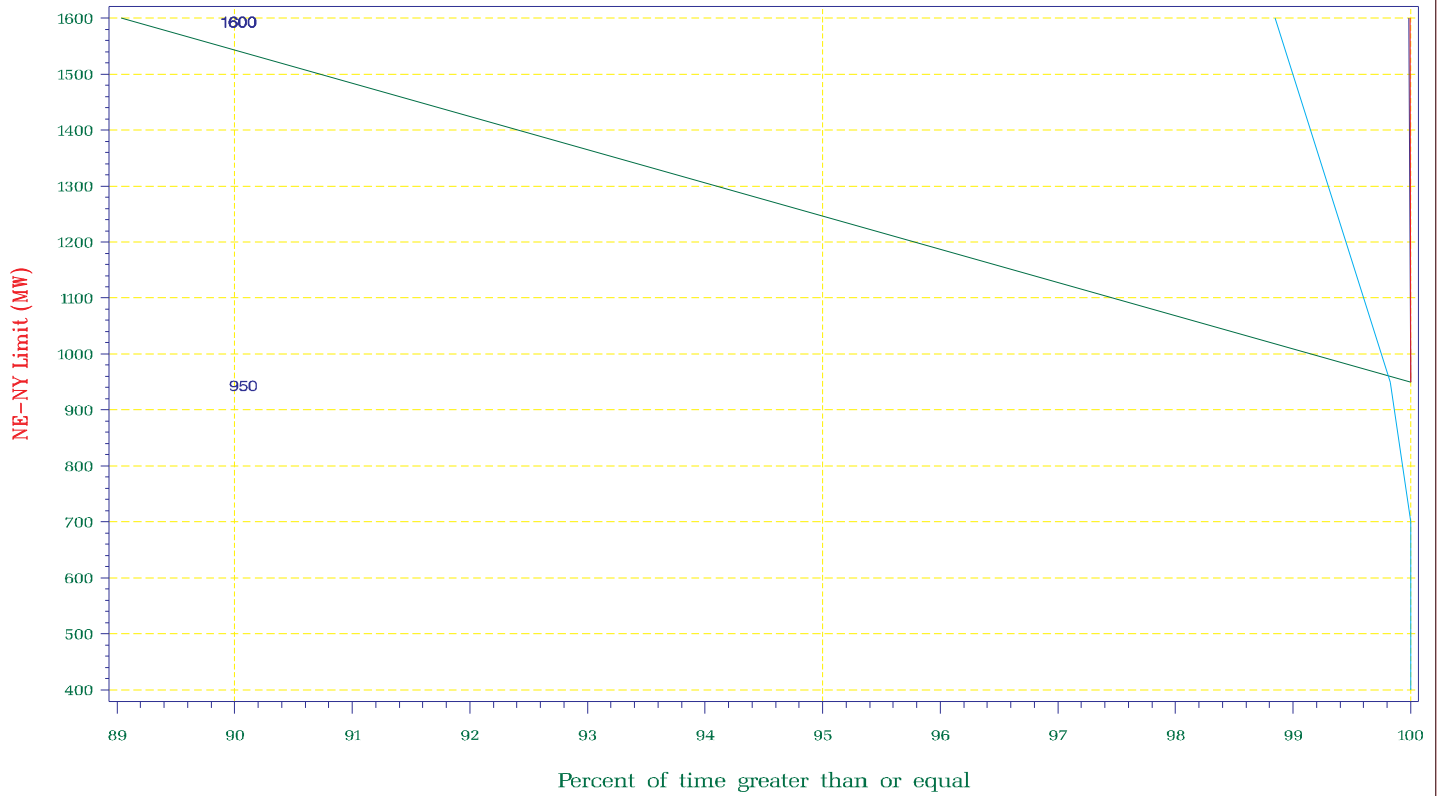
NE – NY Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

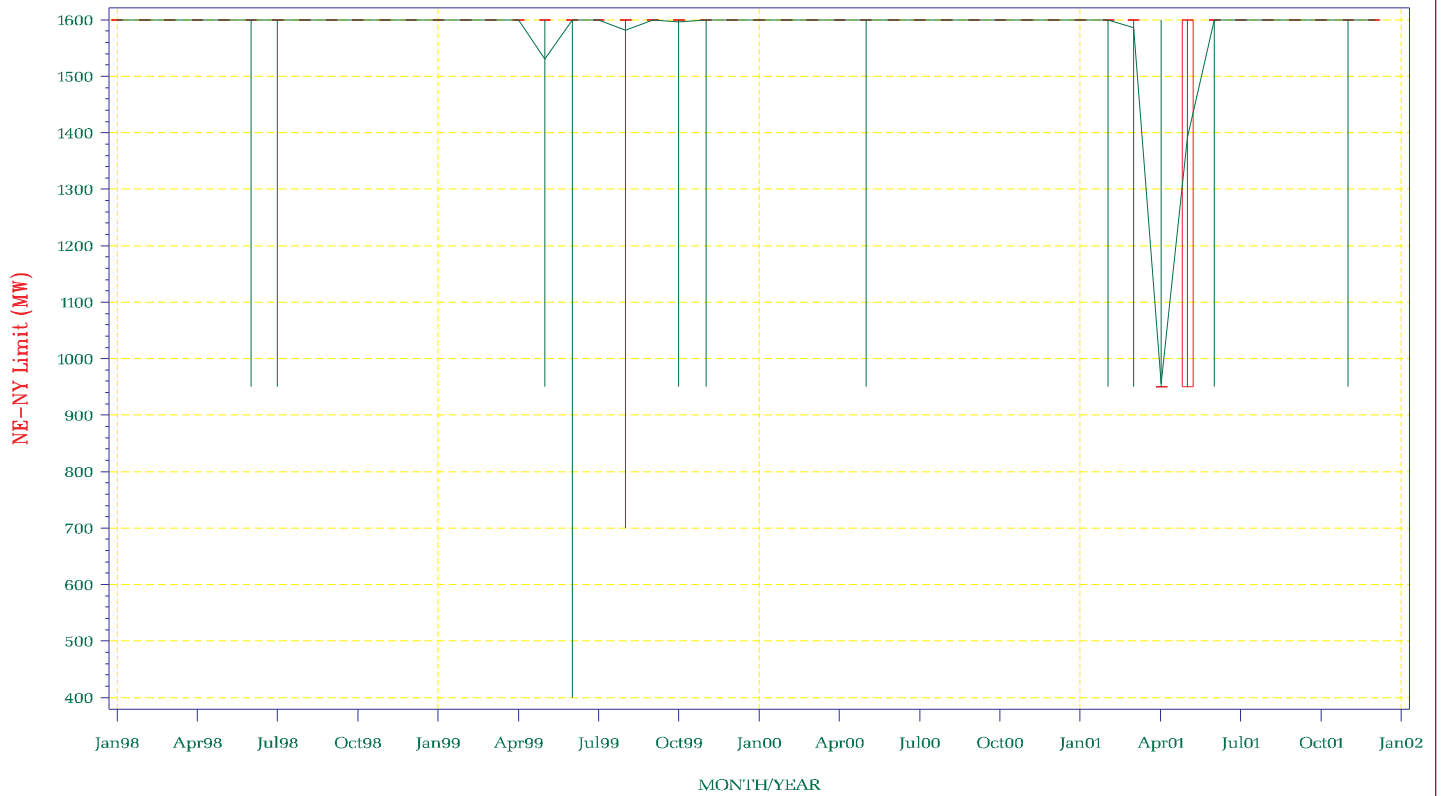
NE – NY Limit



1998 1999 2000 2001

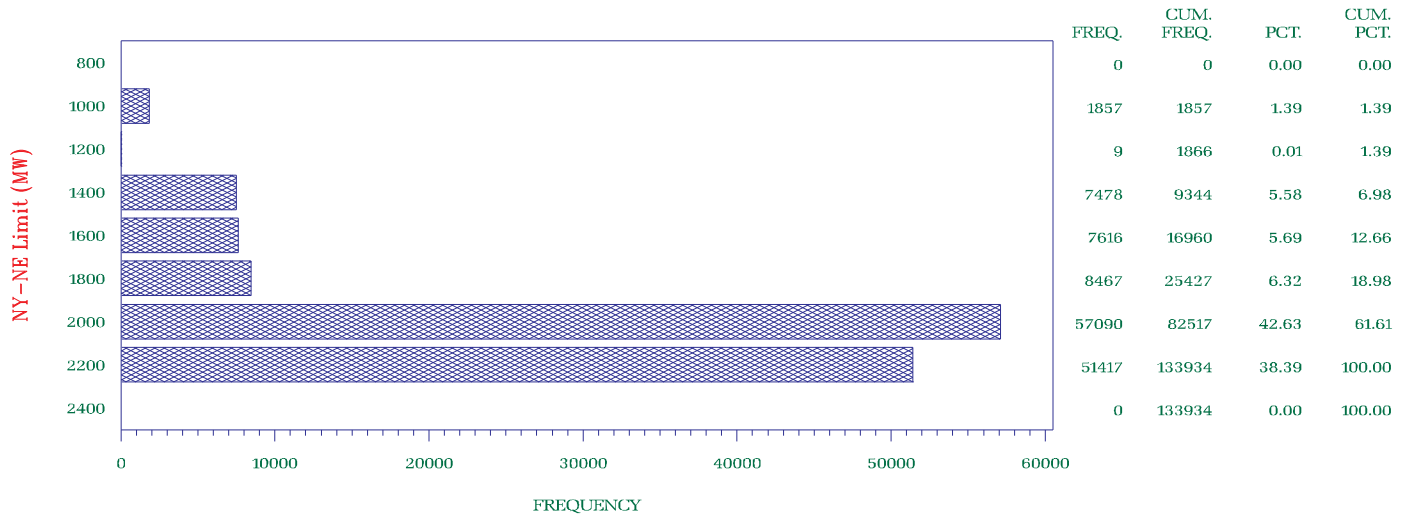
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

NE – NY Limit



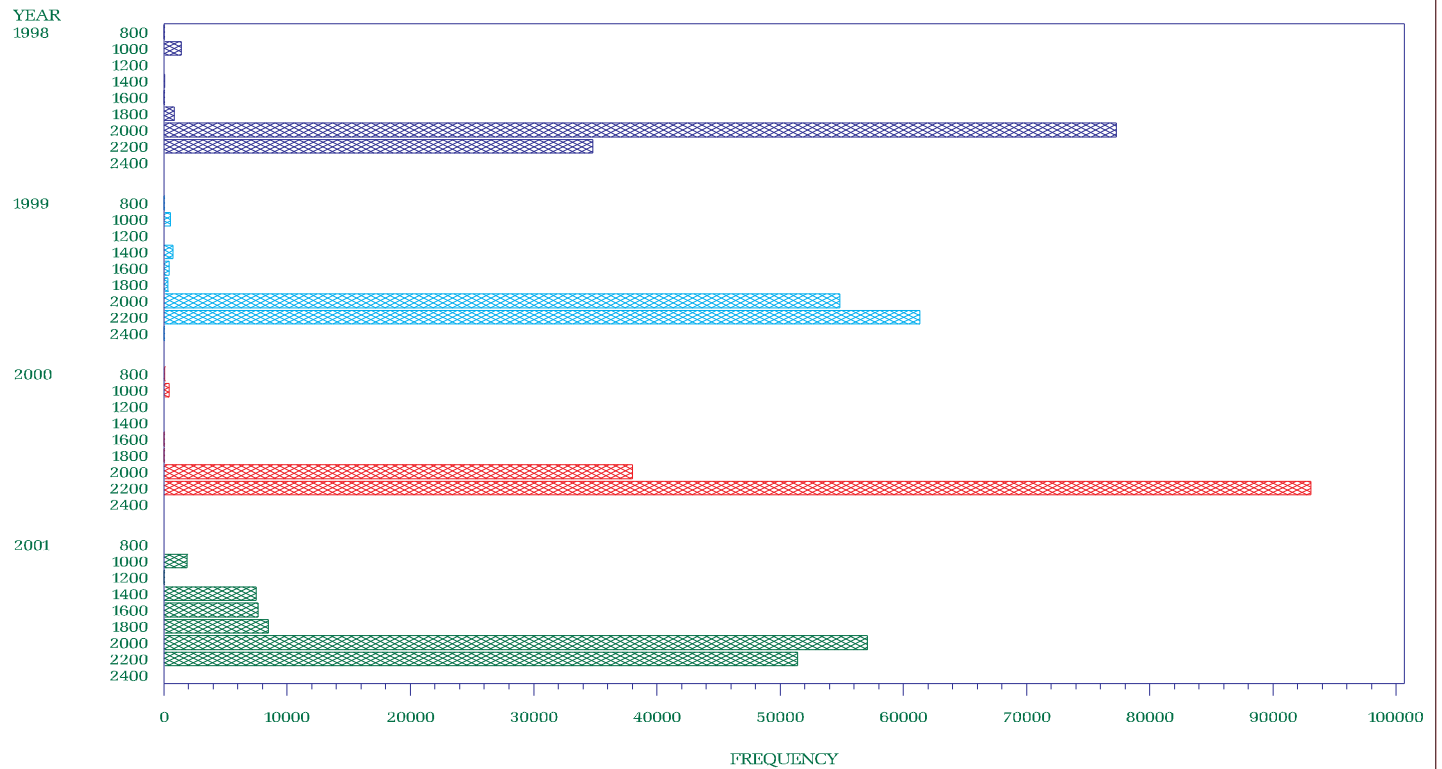
NYISO Frequency Interface Flow For January – December 2001

NY – NE Limit



NYISO Frequency Interface Flow For January 1998 – December 2001

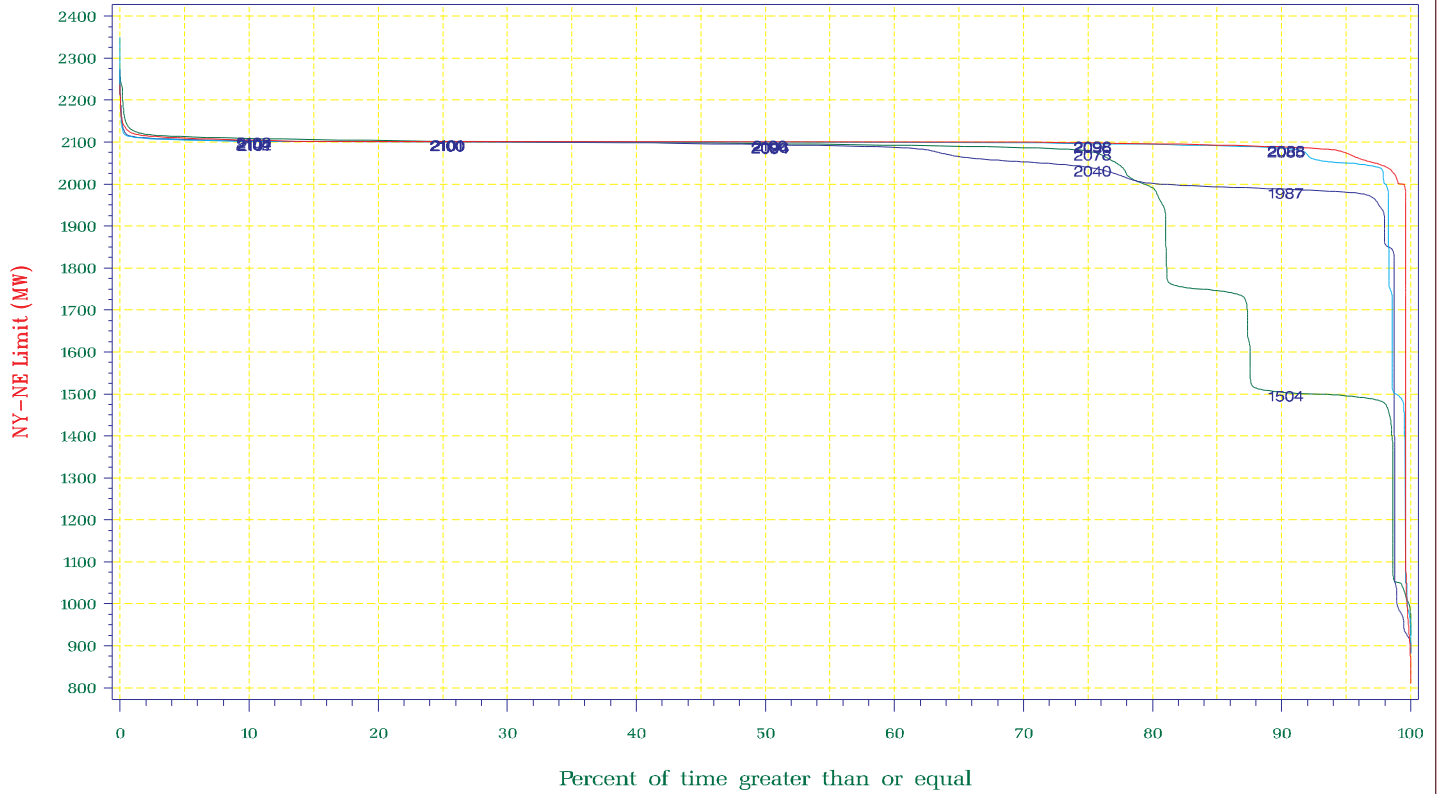
NY – NE Limit



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

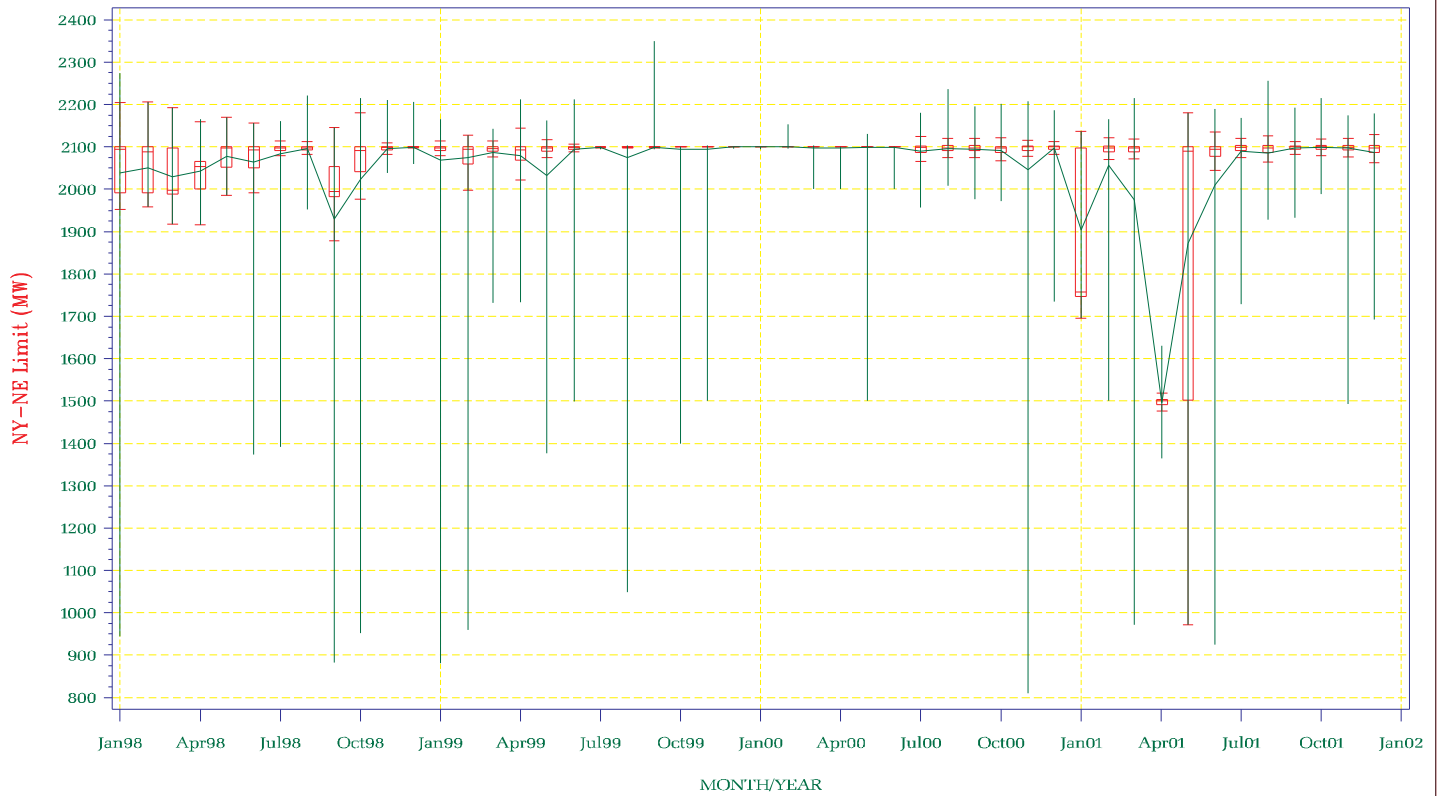
NY – NE Limit



1998 1999 2000 2001

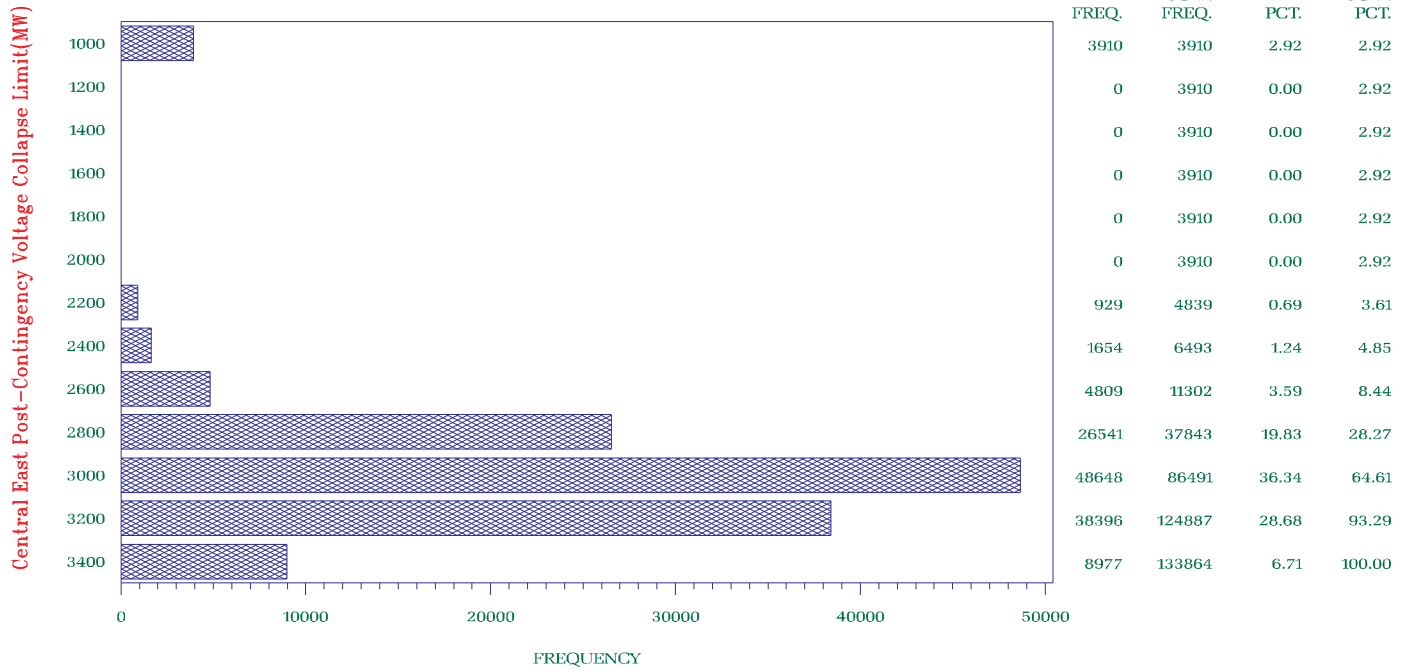
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

NY – NE Limit



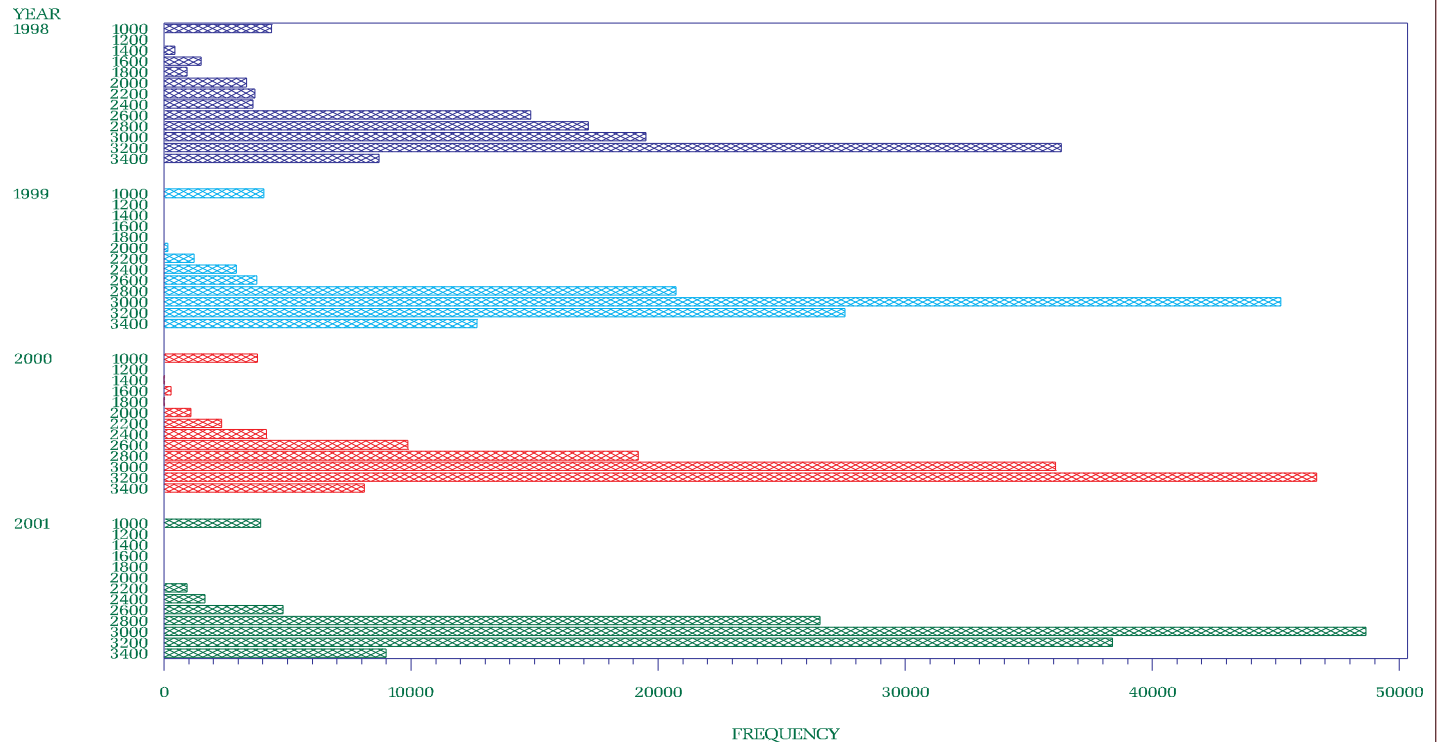
NYISO Frequency Interface Flow For January – December 2001

Central East Post–Contingency Voltage Collapse Limit
/o New England Generation



NYISO Frequency Interface Flow For January 1998 – December 2001

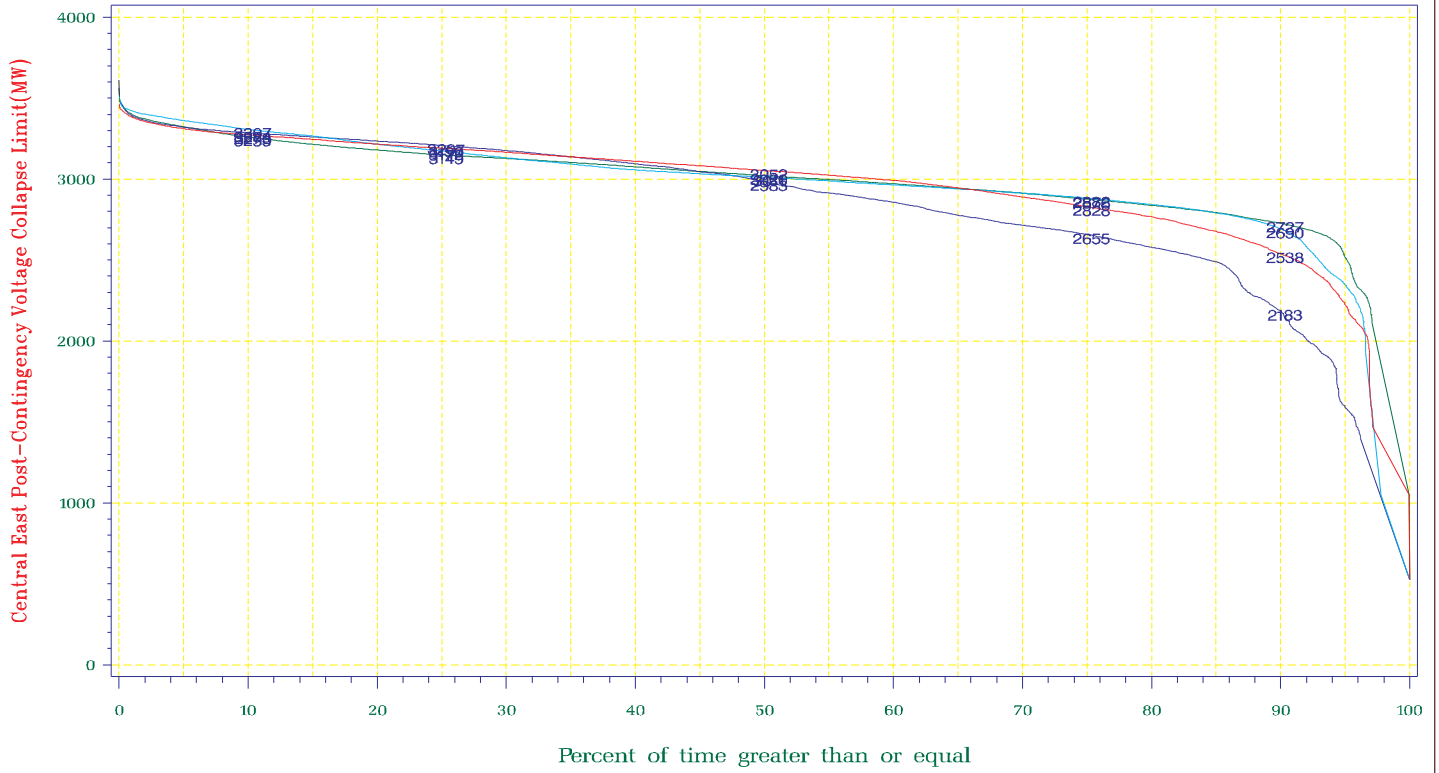
Central East Post–Contingency Voltage Collapse Limit
/o New England Generation



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

Central East Post–Contingency Voltage Collapse Limit
 I/o New England Generation



1998 1999 2000 2001

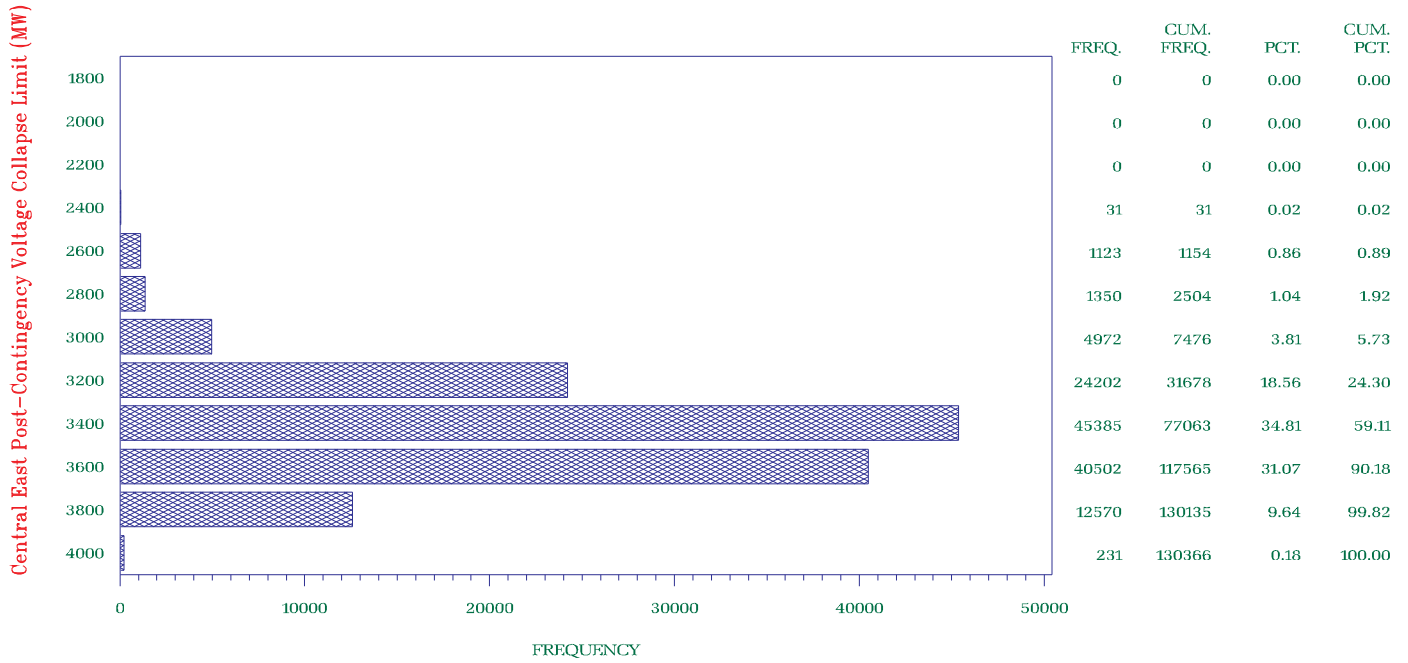
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

Central East Post–Contingency Voltage Collapse Limit
 I/o New England Generation



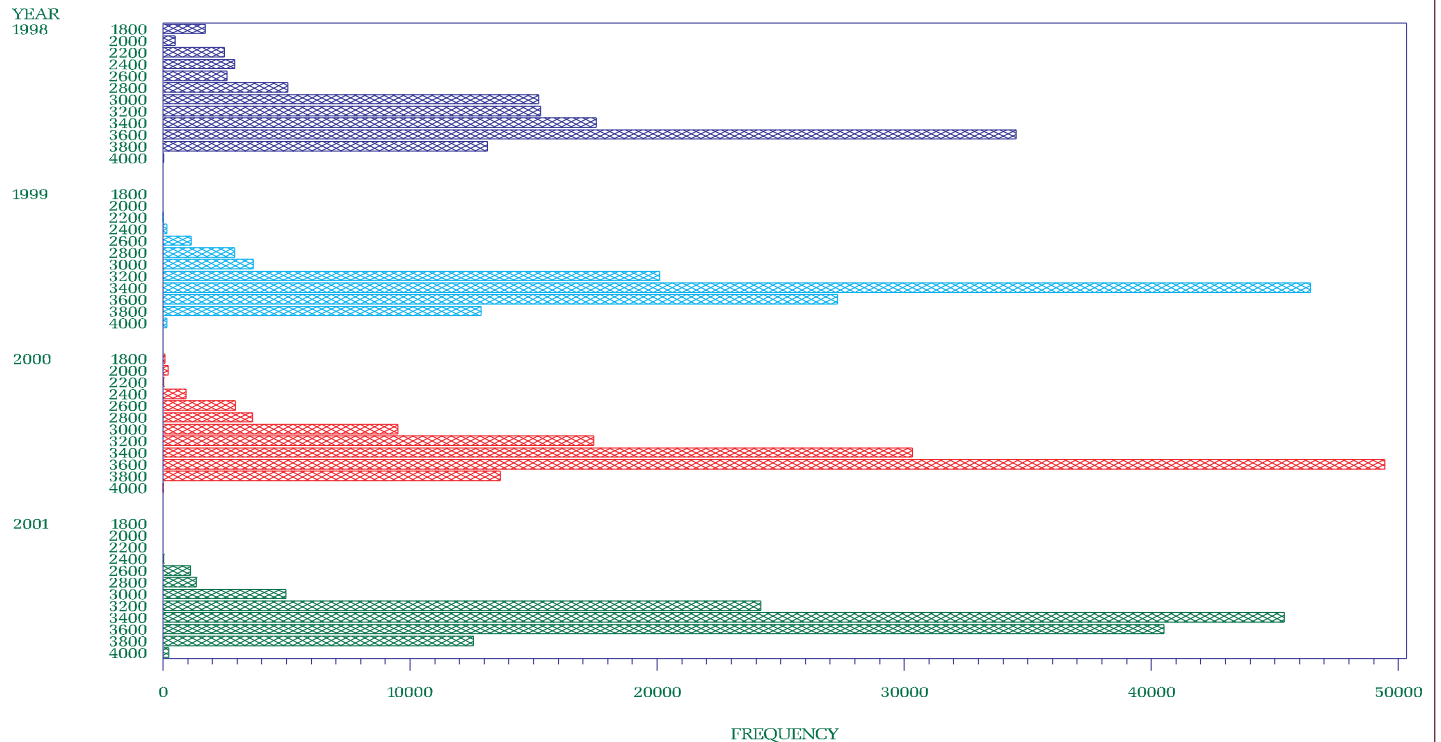
NYISO Frequency Interface Flow For January – December 2001

Central East Post – Contingency Voltage Collapse Limit
l/o Marcy South Tower



NYISO Frequency Interface Flow For January 1998 – December 2001

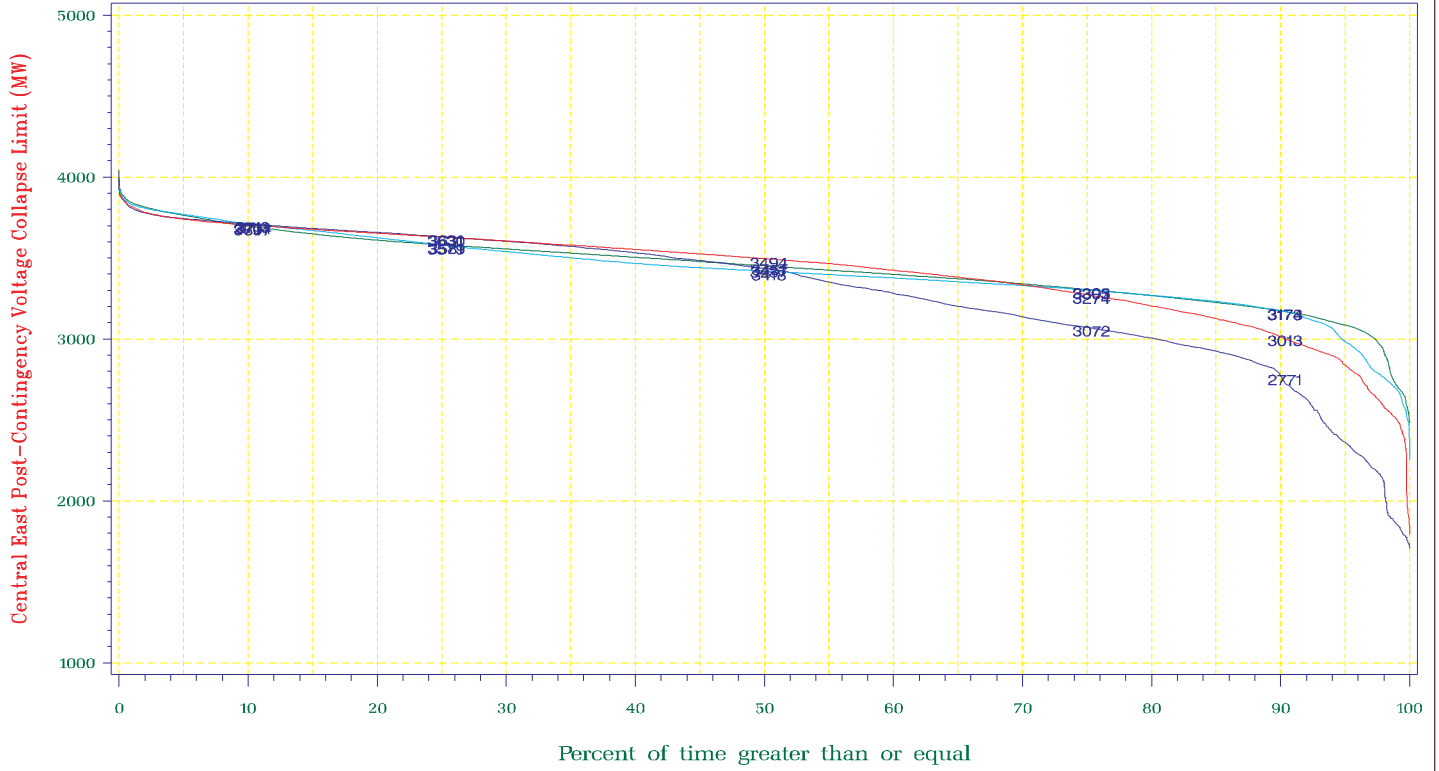
Central East Post – Contingency Voltage Collapse Limit
l/o Marcy South Tower



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

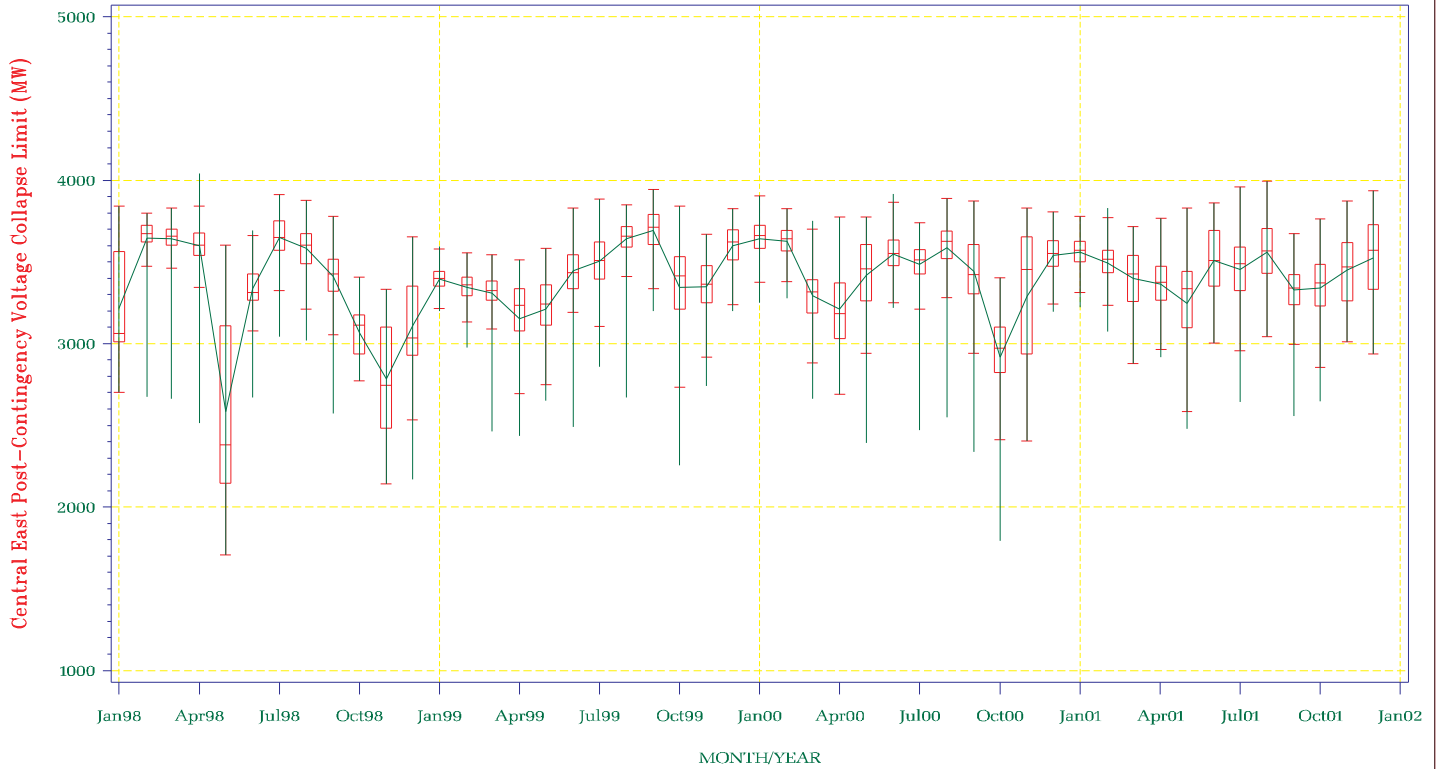
Central East Post – Contingency Voltage Collapse Limit
l/o Marcy South Tower



1998 1999 2000 2001

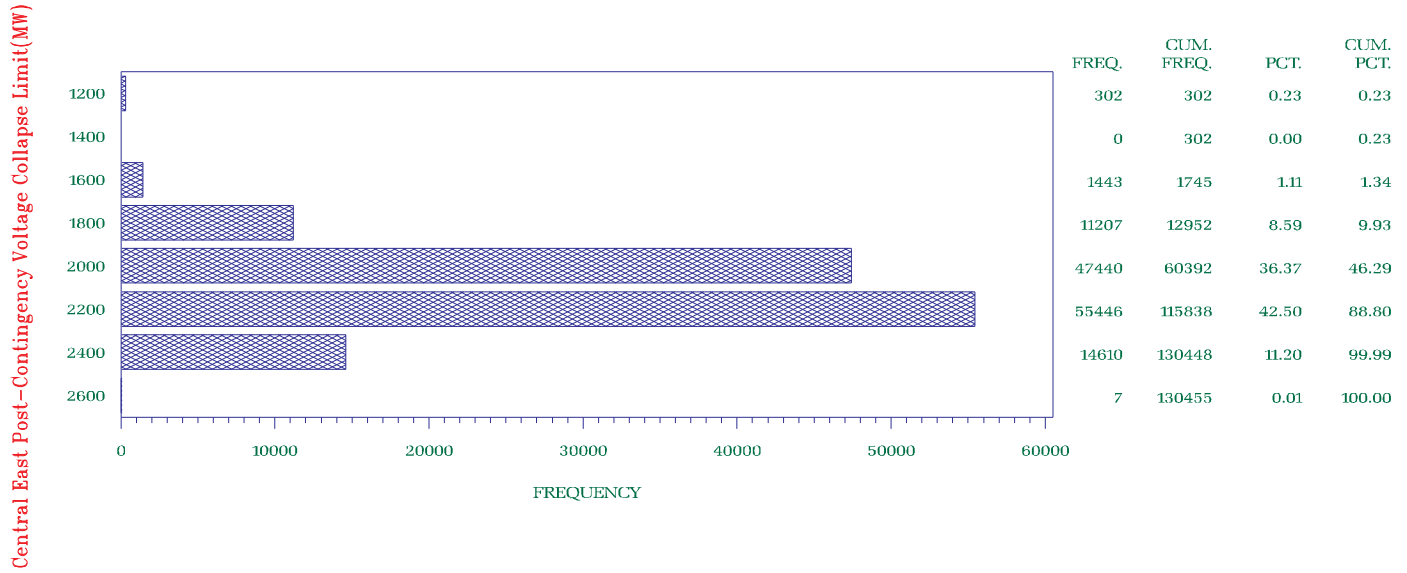
NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

Central East Post – Contingency Voltage Collapse Limit
l/o Marcy South Tower



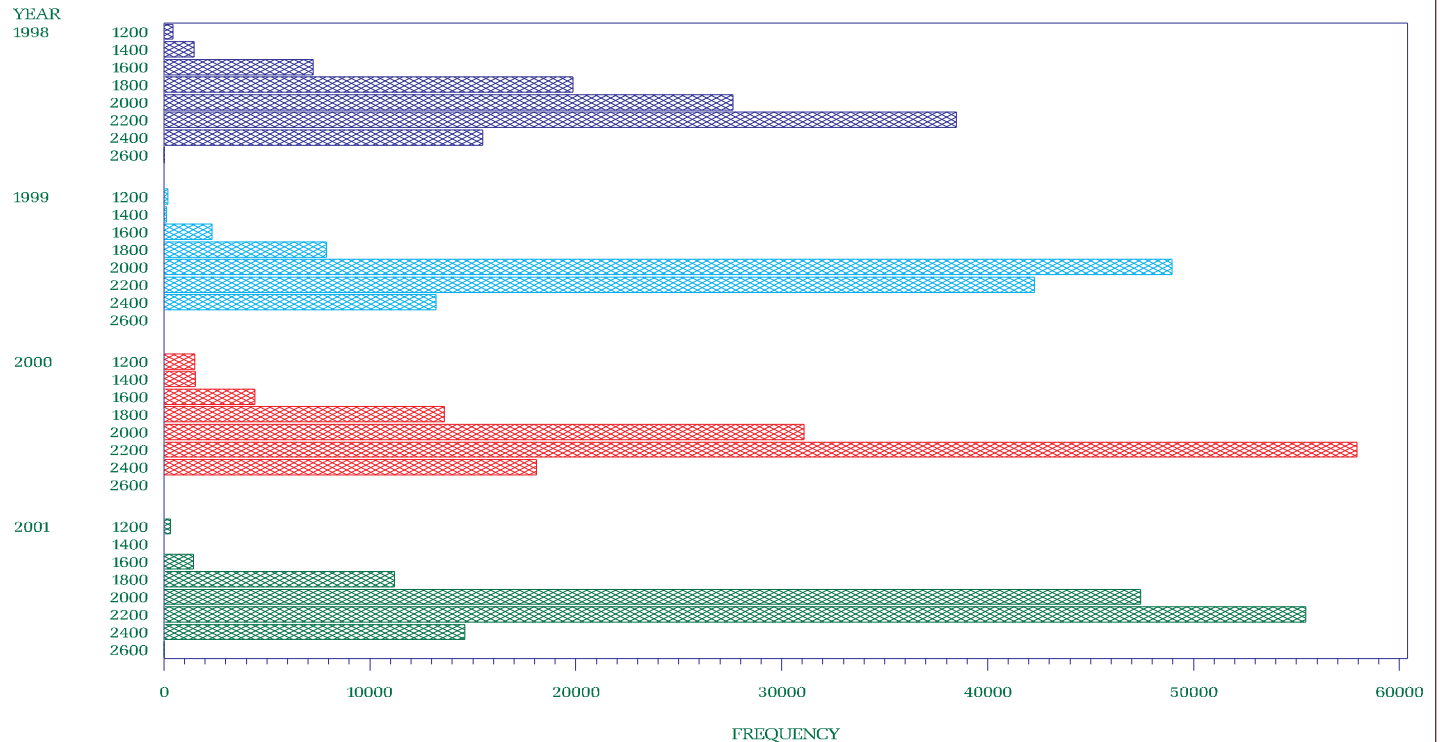
NYISO Frequency Interface Flow For January – December 2001

Central East Post – Contingency Voltage Collapse Limit
/o New Scotland 99 Bus



NYISO Frequency Interface Flow For January 1998 – December 2001

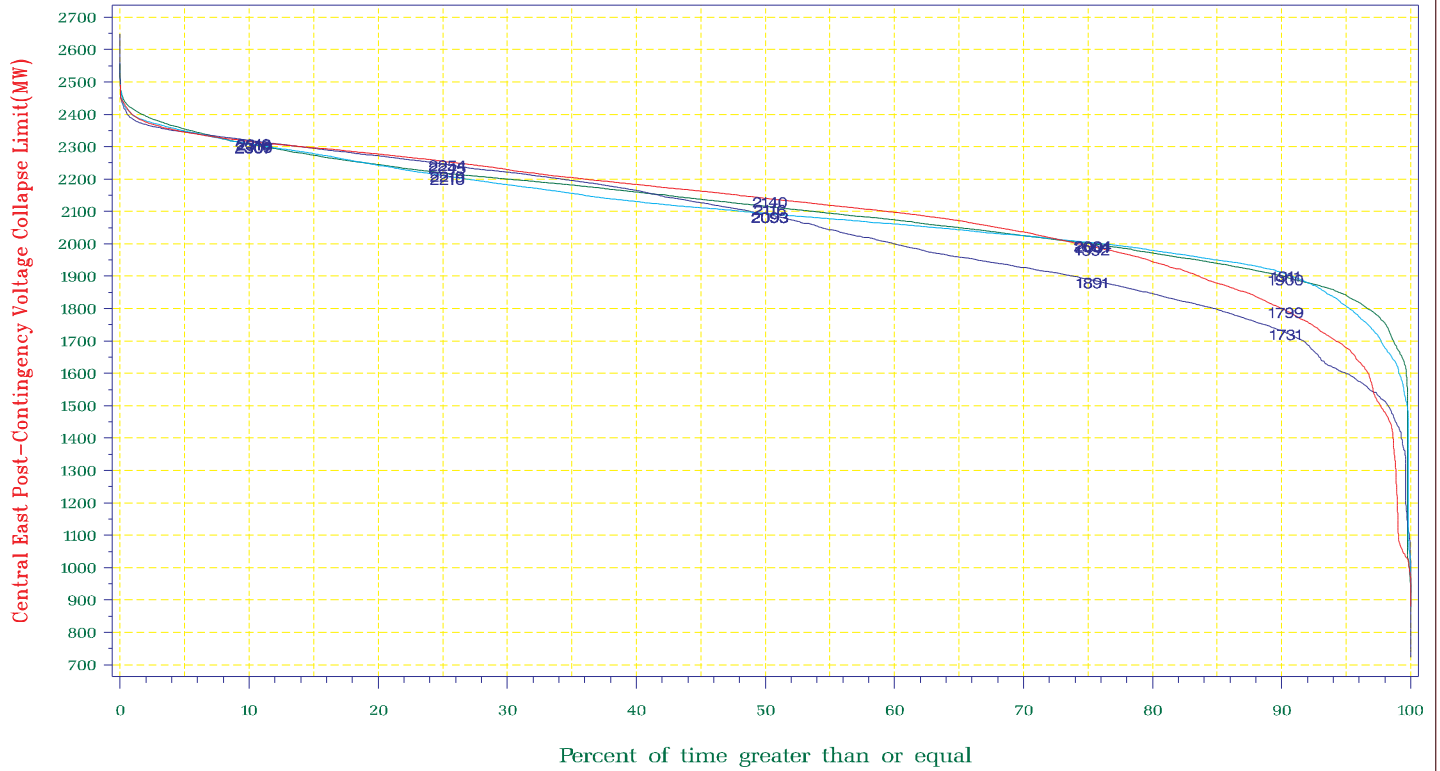
Central East Post – Contingency Voltage Collapse Limit
/o New Scotland 99 Bus



1998 1999 2000 2001

NYISO Percent of time Interface Flow For January 1998 – December 2001

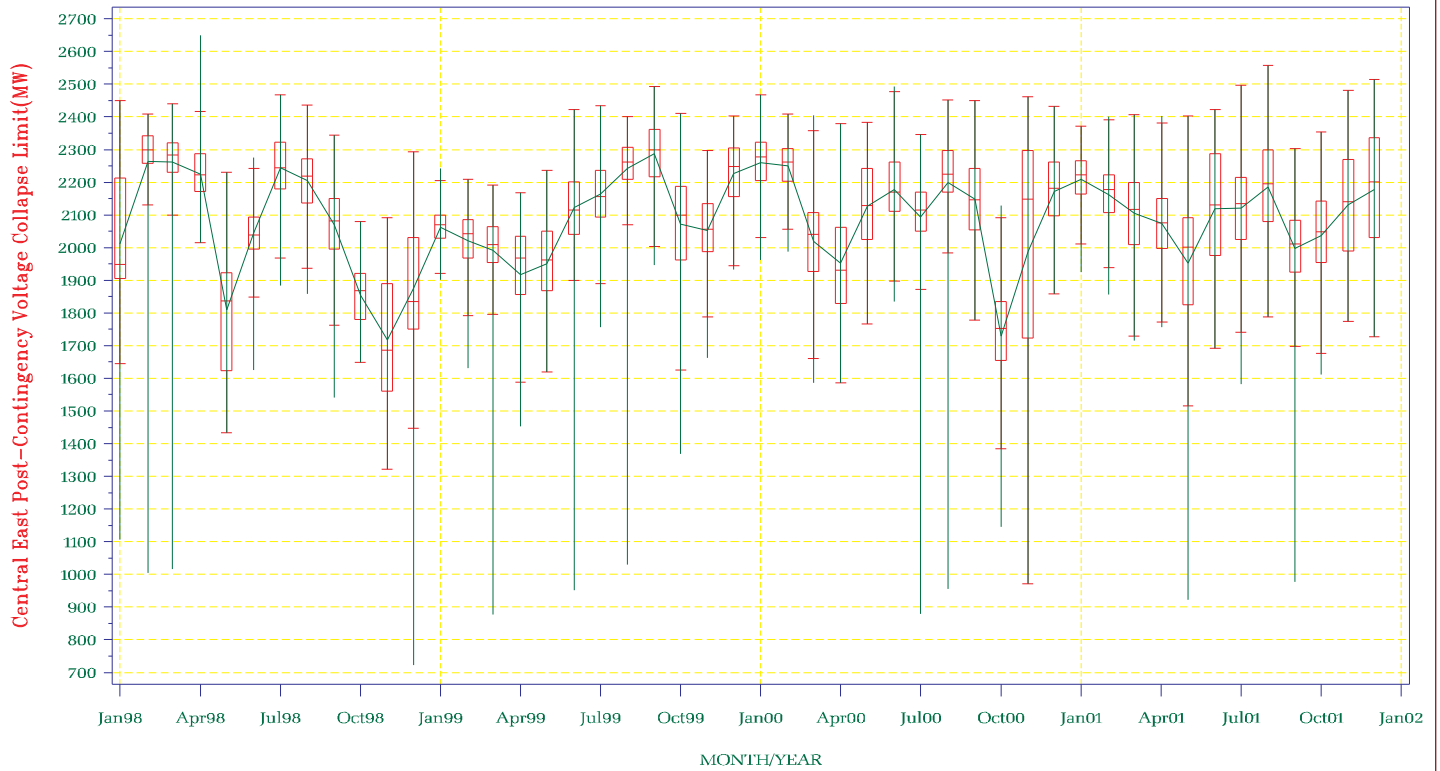
Central East Post – Contingency Voltage Collapse Limit
/o New Scotland 99 Bus



1998 1999 2000 2001

NYISO Average Monthly Interface Flow For January 01, 1998 – December 31, 2001

Central East Post – Contingency Voltage Collapse Limit
/o New Scotland 99 Bus



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Appendix D

Interfaces Simultaneously Constraining

Interfaces Simultaneously Constraining	1998		1999		2000		2001	
	Nr.of	% of	Nr.of	% of	Nr.of	% of	Nr.of	% of
	Hour	Year	Hour	Year	Hour	Year	Hour	Year
C EAST DYS EAST	4	0.00%	.	.	8	0.10%	1	0.00%
C EAST TE-NYISO	.	.	.	.	96	1%	99	1%
C EAST SP_DUN_W_DIE	2	0.00%	8	0.10%	109	1%	30	0.30%
C EAST SP_DUN_W_DIE DYS EAST	.	.	.	.	4	0.00%	.	.
C EAST SP_DUN_W_DIE TE-NYISO	.	.	.	.	18	0.20%	21	0.20%
C EAST MOSES SOUTH	9	0.10%	2	0.00%	.	.	.	.
C EAST MOSES SOUTH SP_DUN_W_DIE TE-NYISO	.	.	.	.	1	0.00%	.	.
C EAST UPNY CON ED	.	.	.	.	10	0.10%	20	0.20%
C EAST UPNY CON ED DYS EAST	.	.	.	.	3	0.00%	.	.
C EAST UPNY CON ED TE-NYISO	.	.	.	.	3	0.00%	6	0.10%
C EAST UPNY CON ED SP_DUN_W_DIE	.	.	.	.	7	0.10%	3	0.00%
C EAST UPNY CON ED SP_DUN_W_DIE DYS EAST	.	.	.	.	4	0.00%	.	.
C EAST UPNY CON ED SP_DUN_W_DIE TE-NYISO	.	.	.	.	.	.	3	0.00%
C EAST TO EAST	35	0.40%	.	.	3	0.00%	1	0.00%
C EAST C EAST NET P/C	960	11%	94	1%	1440	16%	694	8%
C EAST C EAST NET P/C DYS EAST	.	.	.	.	.	.	6	0.10%
C EAST C EAST NET P/C TE-NYISO	.	.	.	.	235	3%	128	1%
C EAST C EAST NET P/C SP_DUN_W_DIE	27	0.30%	19	0.20%	192	2%	61	0.70%
C EAST C EAST NET P/C SP_DUN_W_DIE DYS EAST	.	.	.	.	1	0.00%	1	0.00%
C EAST C EAST NET P/C SP_DUN_W_DIE TE-NYISO	.	.	.	.	47	0.50%	24	0.30%
C EAST C EAST NET P/C MOSES SOUTH	1	0.00%	2	0.00%	2	0.00%	.	.
C EAST C EAST NET P/C MOSES SOUTH TE-NYISO	.	.	.	.	2	0.00%	.	.
C EAST C EAST NET P/C MOSES SOUTH SP_DUN_W_DIE	.	.	1	0.00%	.	.	.	.
C EAST C EAST NET P/C MOSES SOUTH SP_DUN_W_DIE TE-NYISO	.	.	.	.	1	0.00%	.	.
C EAST C EAST NET P/C UPNY CON ED	.	.	1	0.00%	18	0.20%	42	0.50%
C EAST C EAST NET P/C UPNY CON ED TE-NYISO	.	.	.	.	6	0.10%	4	0.00%
C EAST C EAST NET P/C UPNY CON ED SP_DUN_W_DIE	.	.	.	.	.	.	1	0.00%
C EAST C EAST NET P/C UPNY CON ED SP_DUN_W_DIE TE-NYISO	.	.	.	.	.	.	2	0.00%
C EAST C EAST NET P/C TO EAST	113	1%	2	0.00%	22	0.30%	4	0.00%
C EAST C EAST NET P/C TO EAST DYS EAST	.	.	.	.	1	0.00%	.	.
C EAST C EAST NET P/C TO EAST SP_DUN_W_DIE	4	0.00%	.	.	4	0.00%	.	.
C EAST NET P/C DYS EAST	4	0.00%	1	0.00%	8	0.10%	16	0.20%
C EAST NET P/C TE-NYISO	.	.	.	.	233	3%	210	2%
C EAST NET P/C TE-NYISO DYS EAST	.	.	.	.	2	0.00%	.	.
C EAST NET P/C SP_DUN_W_DIE	37	0.40%	312	4%	599	7%	277	3%
C EAST NET P/C SP_DUN_W_DIE DYS EAST	.	.	.	.	2	0.00%	5	0.10%
C EAST NET P/C SP_DUN_W_DIE TE-NYISO	.	.	.	.	55	0.60%	43	0.50%
C EAST NET P/C SP_DUN_W_DIE TE-NYISO DYS EAST	.	.	.	.	1	0.00%	.	.
C EAST NET P/C MOSES SOUTH	1	0.00%	.	.	.	.	.	.
C EAST NET P/C MOSES SOUTH TE-NYISO	.	.	.	.	1	0.00%	.	.
C EAST NET P/C UPNY CON ED	2	0.00%	9	0.10%	19	0.20%	83	0.90%
C EAST NET P/C UPNY CON ED TE-NYISO	.	.	.	.	5	0.10%	1	0.00%
C EAST NET P/C UPNY CON ED SP_DUN_W_DIE	.	.	.	.	3	0.00%	3	0.00%
C EAST NET P/C UPNY CON ED SP_DUN_W_DIE TE-NYISO	.	.	.	.	1	0.00%	.	.
C EAST NET P/C TO EAST	79	0.90%	20	0.20%	22	0.30%	4	0.00%
C EAST NET P/C TO EAST SP_DUN_W_DIE	2	0.00%	1	0.00%	.	.	.	.
TE-NYISO DYS EAST	.	.	.	.	1	0.00%	.	.
MOSES SOUTH TE-NYISO	.	.	.	.	1	0.00%	5	0.10%
MOSES SOUTH SP_DUN_W_DIE TE-NYISO	.	.	.	.	.	.	1	0.00%
SP_DUN_W_DIE DYS EAST	.	.	.	.	14	0.20%	5	0.10%
SP_DUN_W_DIE TE-NYISO	.	.	.	.	68	0.80%	67	0.80%
TO EAST DYS EAST	2	0.00%	.	.	.	.	.	.
TO EAST SP_DUN_W_DIE	3	0.00%	.	.	.	.	.	.
UPNY CON ED DYS EAST	3	0.00%	1	0.00%
UPNY CON ED TE-NYISO	11	0.10%	17	0.20%
UPNY CON ED SP_DUN_W_DIE	3	0.00%	.	.	16	0.20%	31	0.40%

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Appendix E – NYISO Operating

Interfaces & OASIS Transmission Paths

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Operating Interface and Transmission Path Definitions	E-1
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NYISO OPERATING INTERFACES & OASIS TRANSMISSION PATHS

CENTRAL EAST			
	Name	Line ID	Voltage(kV)
	Edic-New Scotland*	14	345
	Marcy-New Scotland*	UNS-18	345
	Porter-Rotterdam*	30	230
	Porter-Rotterdam*	31	230
	Plattsburgh- Grand Isle	PV-20	115
	Inghams-East Springfield	942	115
	Inghams CD-ED bus tie	PAR	115
	Inghams CD-ED bus tie	R81 (N.O.)	115
TOTAL EAST			
Central-Capital/MidHudson			
	Name	Line ID	Voltage(kV)
	Coopers Corners-Rock Tavern*	CCRT-34	345
	Coopers Corners-Rock Tavern*	CCRT-42	345
	Edic-New Scotland*	14	345
	*Fraser-Gilboa	35	345
	Marcy-New Scotland*	UNS-18	345
	Porter-Rotterdam*	30	230
	Porter-Rotterdam*	31	230
	*Inghams-East Springfield	941	115
	Inghams CD-ED bus tie	PAR	115
	West Woodbourne* 115/69	T152	BK
PJM East-Capital/MidHudson			
	Branchburg-Ramapo*	5018	500
	S. Mahwah-Waldwick*	J3410	345
	S. Mahwah-Waldwick*	K3411	345
PJM East-New York City			
	Hudson-Farragut*	C3403	345
	Hudson-Farragut*	B3402	345
	Linden-Goethals*	A2253	230
Adirondack-NE VT N			
	*Plattsburgh-Grand Isle	PV-20	115

NYISO OPERATING INTERFACES & OASIS TRANSMISSION PATHS

MOSES SOUTH		
Adirondack-Central		
Name	Line ID	Voltage (kV)
*Massena-Marcy	MSU-1	765
*Moses Adirondack	MA-1	230
*Moses Adirondack	MA-2	230
*Dennison-Colton	4	115
*Dennison-Colton	5	115
*Alcoa-N. Ogdensburg	13	115
*Colton-Malone	3	115

DYSINGER EAST		
Frontier-Genessee		
Name	Line ID	Voltage (kV)
*Kintigh-Rochester (Sta 80)	SR-1/39	345
Niagara-Rochester*	NR-2	345
*Stolle Road-Meyer	67	230
*Andover-Palmiter	932	115
*Lockport-Batavia	107	115
*Lockport-N. Akron	108	115
*Lockport-Oakfield	112	115
*Lockport-Sweden 1	111	115
*Lockport-Sweden 3	113	115
*Lockport-Telegraph	114	115

WEST CENTRAL		
Genessee-Central		
Name	Line ID	Voltage(kV)
*Pannell Road-Clay	PC-1	345
Pannell Road-Clay*	PC-2	345
*Stolle-Meyer	67	230
*Andover-Palmiter	932	115
Macedon-Quaker*	930	115
*Mortimer-Elbridge	1	115
*Mortimer-Elbridge	2	115
*Pannell Road-Farmington	4	115
*Quaker Road-Sleigh Road	980	115
Station 82-South Perry	906	115
*Clyde 199(RG&E) – Sleigh Rd. (NYS)		115
Clyde199 – Clinton Corn		115
*Farmington (RG&E) NMPC		115
Farmington #1		34.5/115
Farmington-#4		34.5/115

NYISO OPERATING INTERFACES & OASIS TRANSMISSION PATHS

UPNY-CONED			
Capital/MidHudson-Westchester			
Name	Line ID	Voltage(kV)	
Ladentown-Buchanan South*	Y88	345	
*Pleasant Valley-Wood St.	F30	345	
*Pleasant Valley-E. Fishkill	F36	345	
*Pleasant Valley-E. Fishkill	F37	345	
*Pleasant Valley-Wood St.	W81	345	
*Ramapo-Buchanan North	Y94	345	
Roseton-E. Fishkill*	305	345	
*Fishkill Plains-Sylvan Lake	A/990	115	
East Fishkill *115/345		345/115	
SPRAINBROOK-DUNWOODIE SOUTH			
Name	Line ID	Voltage(kV)	
*Dunwoodie-Rainey	71	345	
*Dunwoodie-Rainey	72	345	
Sprain Brook-Tremont*	28	345	
*Sprain Brook-West 49th Street	M51	345	
*Sprain Brook-West 49th Street	M52	345	
Lake Success - Jamaica	903	138	
Valley Stream - Jamaica	901	138	
*Dunwoodie-Sherman Creek	99031	138	
Dunwoodie-Sherman Creek*	99032	138	
*Dunwoodie-East 179th Street	99153	138	
NEW ENGLAND - NEW YORK			
Adirondack-NE VT N			
Name	Line ID	Voltage (kV)	
*Plattsburg-Grand Isle	PV-20	115	
Capital/MidHudson-NE NU S			
*Pleasant Valley-Long Mtn.	398	345	
Capital/MidHudson-NE VT/NE/NU			
*Alps-Berkshire	393	345	
Rotterdam-Bear Swamp*	E205W	230	
North Troy-*Hoosick-Bennington	6	115	
*Whitehall-No. Rutland	7/K37	115	
Long Island-NE NU			
*Northport-Norwalk Harbor	1385	138	

NYISO OPERATING INTERFACES & OASIS TRANSMISSION PATHS

PJM-NY			
PJM East-New York City			
Name	Line ID	Voltage (kV)	
Hudson-Farragut*	C3403	345	
Hudson-Farragut*	B3402	345	
Linden-Goethals*	A2253	230	
PJM West-Central			
*Homer City-Watercure	30	345	
E. Towanda-Hillside*	70	230	
Tiffany-Goudey	952	115	
*E. Sayre-N. Waverly	956	115	
PJM West-Frontier			
*Homer City-Stolle Road	37	345	
Erie South-South Ripley*	69	230	
Falconer-Warren*	171	115	
PJM East-Capital/MidHudson			
Branchburg-Ramapo*	5018	500	
S. Mahwah-Waldwick*	J3410	345	
S. Mahwah-Waldwick*	K3411	345	

TE-NY *note: TE-NYISO is MSC7040 line flow alone*

TE-Adirondack			
Name	Line ID	Voltage(kV)	
*Chateauguay-Massena	MSC7040	765	
Rosemont-Dennison*	1	115	
Rosemont-Dennison*	2	115	

Ontario (IMO)-NY

Ontario East-Adirondack			
Name	Line ID	Voltage (kV)	
Saunders – St.Lawrence/FDR*	L33P	240	
Saunders – St.Lawrence/FDR*	L34P	230	
Ontario South-Frontier			
Beck-Niagara*	PA301	345	
Beck-Niagara*	PA302	345	
Beck-Niagara*	PA27	230	
*Beck-Packard	BP76	230	

Westchester - Long Island			
Name	Line ID	Voltage (kV)	
*Dunwoodie-Shore Road	Y50	345	
*Sprain Brook-East Garden City	Y49	345	
New York City - Long Island			
Name	Line ID	Voltage (kV)	
Jamaica-Valley Stream*	901L&M	138	
Jamaica-Lake Success*	903	138	

NYISO NON-OPERATING INTERFACES & MISC. FLOWS

NY-Ontario Circulation
NAME
Ontario (IMO)-NY Schedule
Ontario (IMO)-NY Actual (Negative)
*Beck-TSC 105 (Negative)
*Beck-TSC 106 (Negative)

UPNY-SENY - (not an operating interface)		
NAME	LINE ID	VOLTAGE (kV)
*Leeds-Pleasant Valley	91	345
*Leeds-Pleasant Valley	92	345
*Leeds-Hurley	301	345
Long Mtn-Pleasant Valley*	398	345
Unionville-N. Catskill*	2	115
Hudson-Pleasant Valley *	12	115
Blue Stores-Pl Valley*	8	115
Blue Stores-Pl Valley*	13	115
W. Woodbourne	115/69*	115/69
Branchburg-Ramapo*	5018	500
*Coopers Corners-Rock Tavern	CCRT-34	345
*Coopers Corners-Rock Tavern	CCRT-42	345

SENY - IMPORT/UPNY - SENY CLOSED - (not an operating interface)		
NAME	LINE ID	VOLTAGE (kV)
UPNY-SENY Plus the following:		
*Waldwick-South Mahwah	K3411	345
*Waldwick-South Mahwah	J3410	345
Hudson-Farragut*	B3402	345
Hudson-Farragut*	C3403	345
Linden-Goethals*	A2253	230
*Norwalk-Northport	1385	138

NYISO NON-OPERATING INTERFACES & MISC. FLOWS

WEST-CENTRAL CLOSED - (not an operating interface)		
NAME	LINE ID	VOLTAGE (kV)
All West-Central Ties plus the following:		
Saunders – St.Lawrence/FDR*	L33P*	230
Saunders – St.Lawrence/FDR*	L34P*	230
All PJM - NYISO Ties except:		
*Homer City - Stolle Road	37	345
Erie South-South Ripley*	69	230
*Warren-Falconer	171	115

SPRAIN BROOK -DUNWOODIE SOUTH CLOSED -(not an operating interface)		
NAME	LINE ID	VOLTAGE (kV)
All Sprain Brook-Dunwoodie South Ties plus the following:		
Hudson - Farragut	B3402	345
Hudson - Farragut	C3403	345
Linden - Goethals	A2253	230

VOLNEY EAST OPEN		
NAME	LINE ID	VOLTAGE (kV)
Oakdale - Fraser	32	345
Oakdale -Delhi	919	115
Willets - E. Norwich	945	115
Katelville - Jennison	943	115
Clay - Edic	1-16	345
Clay - Edic	2-15	345
JA Fitzpatrick - Edic	FE-1	345
Lighthouse Hill - Black River	6	115
Lighthouse Hill - E. Watertown	5	115
Teall Ave - Oneida	2	115
Teall Ave - Bridgeport	5	115
Whitman - Oneida	5	115
Volney - Marcy	VU-19	345

NYISO NON-OPERATING INTERFACES & MISC. FLOWS

VOLNEY EAST CLOSED		
NAME	LINE ID	VOLTAGE (kV)
All Volney East Open Ties plus the following:		
Branchburg - Ramapo	5018	500
Hudson - Farragut	B-3402	345
Hudson – Farragut	C-3403	345
Linden - Goethals	A-2253	230
Waldwick – So. Mahwah	K-3411	345
Waldwick – So. Mahwah	J-3410	345
Saunders – St.Lawrence/FDR*	L34P	230
Saunders – St.Lawrence/FDR*	L33P	230

Sprainbrook/Dunwoodie South - Con Ed Cable Interface Definitions

Line Name	Id	Voltage	I	II	III
Dunwoodie - Rainey	71	345	X	X	X
Dunwoodie - Rainey	72	345	X	X	X
Sprainbrook - W. 49 St.	M51	345	X	X	X
Sprainbrook - W. 49 St.	M52	345	X	X	X
Sprainbrook - Tremont	X28	345	X	X	X
Dunwoodie So. - E. 179 St.	99153	138	X	X	X
Dunwoodie No. - Sherman Creek	99031	138	X	X	X
Dunwoodie No. - Sherman Creek	99032	138	X	X	X
Lake Success - Jamaica	903	138	X	X	
Valley Stream - Jamaica	901	138	X	X	
Hudson - Farragut	B2402	345		X	X
Hudson - Farragut	C3403	345		X	X
Linden - Goethals	A2253	230		X	X
Sprainbrook - E.G.C.	Y49	345			X
Dunwoodie - Shore Rd.	Y50	345			X
Norwalk - Northport	1385	138			X

	Interface Definitions	Dept.
I	Sprainbrook/Dunwoodie So. and Con Edison Cable Interface	Oper
II	Con Edison NYC Cable Interface - Closed	ConEd Oper
III	Sprainbrook/Dunwoodie So. - Closed	Plan