



OASIS and IDC Metrics for DOE Congestion Study Overview and Results

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Overview

- Study Goals
 - *Collect and analyze publically available data to identify congestion During 2007*
- Study Data Sources
 - *OASIS*
 - *Market Systems*
 - *IDC*
- Study Approach
 - *Develop Set of metrics for congestion*
 - *Data Collection*
 - *Analysis*
 - *Industry Advisor Review*
 - *Reporting*
- Study Process
 - *Three parallel work: OASIS, Market, IDC*



Congestion as Defined for the Study

- Temporal Nature of Congestion
 - *Planning : Limitations to make reservations to transfer energy is congestion during planning. (OASIS)*
 - *Scheduling: Limitations to schedule energy transfer during day ahead to hour ahead, is congestion during scheduling. (Markets/Tags)*
 - *Real-time: During the hour of operation limitations that cause schedules to be curtailed is real-time congestion. (IDC and Real-Time market operations)*



Presentations

- OASIS & IDC Results
- Market Results
- Overall Conclusions



OASIS & IDC Results

- Metrics and Limitations
- Data Collection/Availability
- Results
- Conclusions



OASIS Metrics

- ATC/AFC Metrics
 - *Hourly AFC/ATC ≤ 0 (Firm and Non-Firm)*
 - Count done for each month, Ranked by Yearly count
 - AFC metrics calculated for flowgates
 - ATC metrics calculated for TP/TP interfaces
- Reservations
 - *Total MWHs for each month, Ranked by Yearly total*
 - *Only reservations sinking into the TP Control Area considered for these calculations*
 - *Reservations source and sink to be same TP/BA was also included in the analysis*



OASIS Metrics Limitations

- ATC/AFC Metrics
 - *This metrics only provides information regarding limitation faced by market participants to make reservations and plan for long-term (one year to one hour before actual operation) delivery of power. For ISO/RTO markets this planning impacts only deliveries in and out of the market at the boundary*
- Reservations Metrics
 - *This provides only the reservations to deliver energy*
 - *Should be only considered as reserved capacity to schedules energy*
 - *For ISO/RTOs only provides the maximum planned transmission capacity in and out of the market at the boundary*



IDC Metrics and Limitations

- Metrics
 - *Number for TLRs (above level 3), Ranked by Yearly count*
 - *Total Number of Hours in TLR (above level 3), Ranked by Yearly count (Not yet reported)*
 - *Total Curtailed MWHs for the year (Not yet Reported)*
- IDC Metric Limitations
 - *The data does not provide the impact on individual schedules, to identify the generation/load zones being impacted, as that information is not available*



Data Collection/Assumptions

- Table 5 Section 3.2 has the complete list
 - *AFC*
 - PJM (no data, MAPP (missing some time periods)
 - NYISO and ISONE do not operate OASIS
 - *ATC*
 - Sometimes it is posted as part of system data, which is easier to work with. Otherwise Transmission Service Offers were used to deduce ATC
 - Only TP to TP interfaces were considered for this report. Any internal path posting was not considered
 - NYISO and ISONE provided data on interfaces
 - *Reservations*
 - Reservations sinking into each TP Control are considered to avoid double counting



Data Collection/Assumptions (Continued)

- Table 5 Section 3.2 has the complete list
 - *Location Data*
 - MISO provided flowgate location mapping. We are still in the process of getting this data from others
 - Source Sink to “Zone” mapping (Table 6, Section 3.2) was used for reservation results. Still some recommendations for changes are pending to be applied)
 - OASIS posted flowgate names to IDC name mapping is still being sought. MISO provided this data



Results -- AFC

- Metrics for Firm AFC/ATC is Higher than the Non Firm AFC/ATC
- Number of flowgates/Interfaces that were more than 50% subscribed

OASIS NODE	Firm	Non-Firm
SWPP	24	1
VCAR	16	11
TVA	13	10
MISO	13	1
SOCO	2	1

- PJM, EES No data, MAPP, FRCC Partial data
- NYISO and ISONE had 0 over 50% subscription on interfaces



Results - AFC

- Location Results
 - *MN-WI tie within MISO was most subscribed region*
 - *Location based results for other OASIS has not been done.*
 - *Florida has limited connection outside primarily with SOCO*
- Mostly Firm services are offered for daily and higher increments
- Mostly Non-Firm service is offered for hourly and higher increments



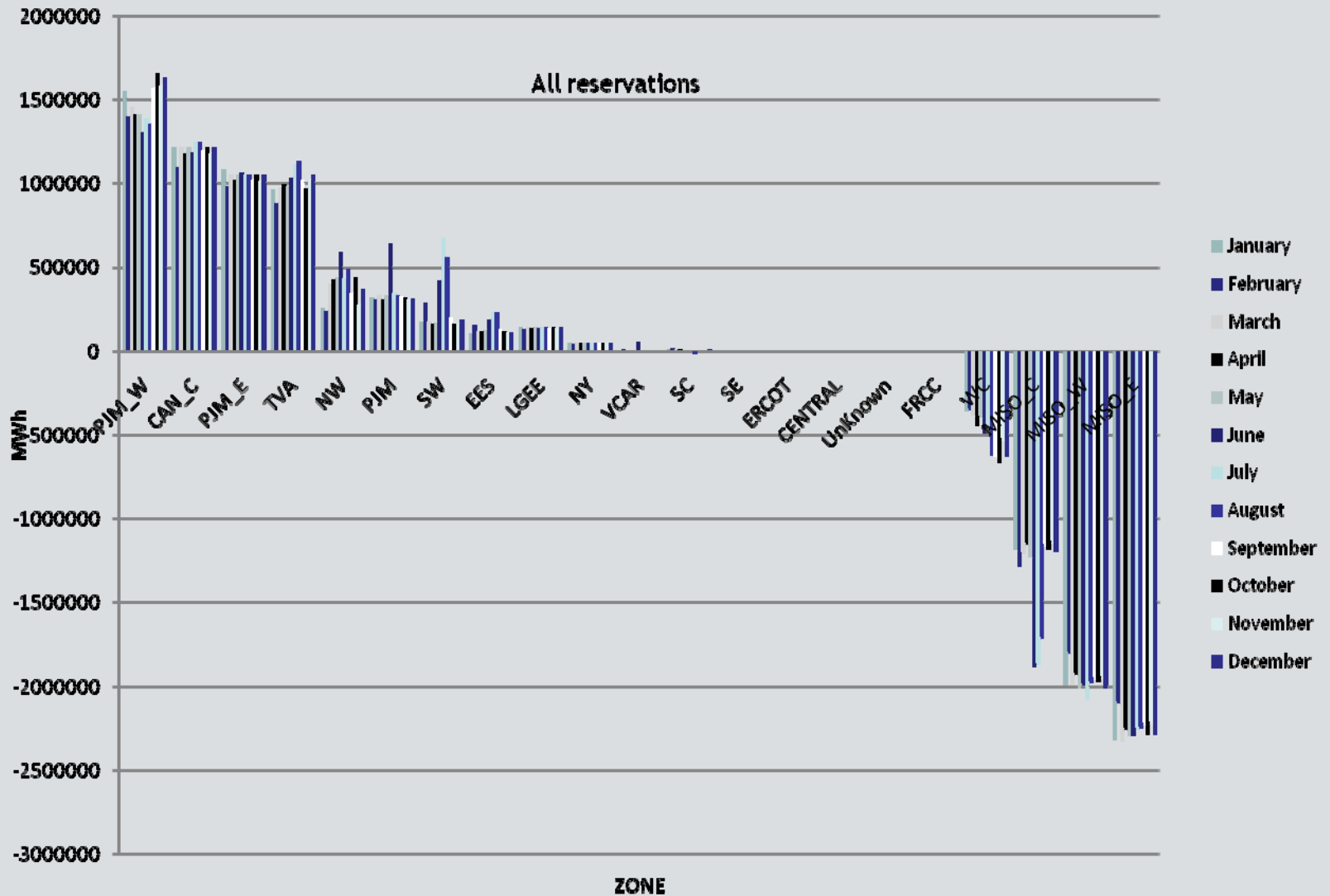
Results - Reservations (Continued)

- Total MWhs for Firm reservations is significantly higher than Non-Firm, except in case of PJM where Non-Firm MWhs are greater than Firm MWhs
- There is a change in direction of over all reservations between Firm and Non-Firm
 - *Firm Source from PJM and Canada and Sink in MISO*
 - *Non-Firm Source from MISO and NYISO and sink into PJM east and some in Entergy and MAPP. This could be due to the spot market conditions during 2007*
- Reservations only indicate planning for schedules, actual schedules or “e-Tags” would be better reflective of deliveries



Results - Reservations (Continued)

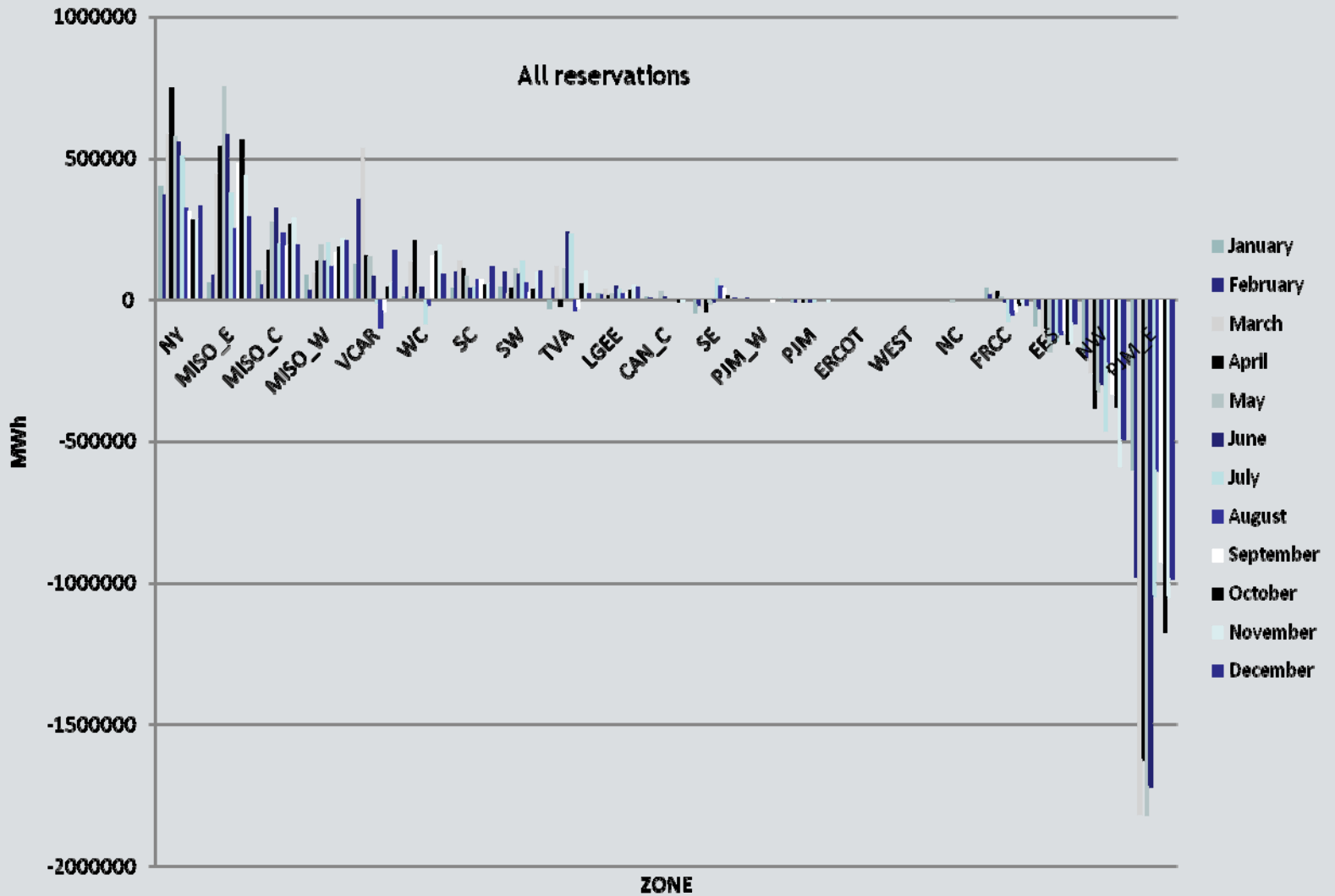
Net Firm MWh for All Reservations by Zones





Results - Reservations (Continued)

Net NF MWh for All Reservations by Zones





Results - IDC

Region	# of TLRs	Hours in TLR	MWhs Curtailed
SPP	14817	14895	To be added Later
MISO	7494	12552	
ICTE	2519	3809	
TVA	692	852	
PJM	502	1692	
ONT	466	1052	
VACS	21	51	

Flowgate names in AFC data were not same as the IDC names except for MISO. For MISO flowgates, as expected, no correlation between as AFC count rank and Number of TLR rank could be found. This is because outages and limitations in real-time operation cause the TLRs and AFC limitations are based on planning models



Overall Conclusions

- OASIS data only provides limitations in making reservations. The study did not look at the schedules (either posted on OASIS or as e-Tags). This may be considered for future work
- Not all public data was easily available. Missing data needs to be collected with the help of Node operators to complete the analysis
- Better naming convention to correlate data from different sources would help develop results across the three sources
- Flowgate location and geographic representation is being developed for the final report



THANK YOU

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