Limited Downward Ramping Capacity

Kallie Wells
Department of Market Monitoring

Market Surveillance Committee Meeting

November 19, 2010

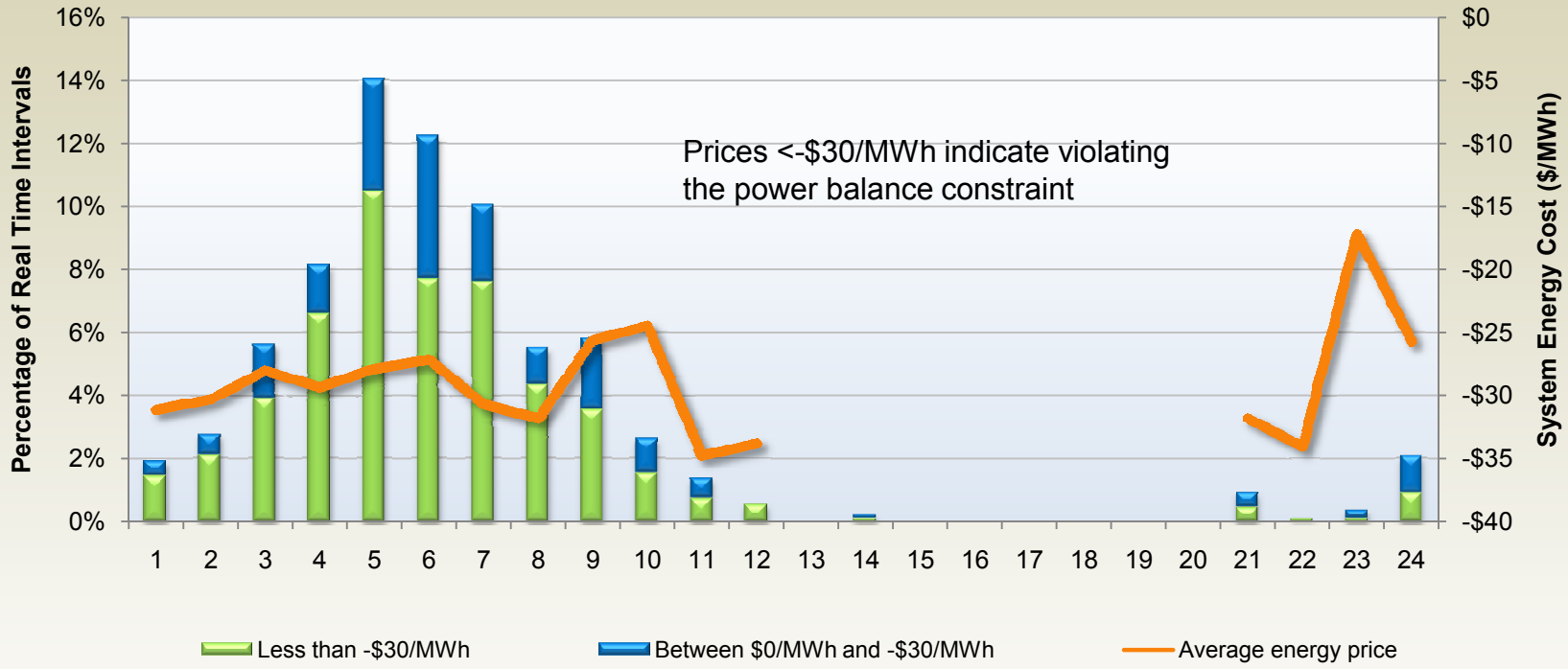
Summary

- Quantifying over supply of energy and limited downward ramping capacity in the off-peak hours
  - Small deficiencies over a short duration
  - Lower prices in real time market
- Select contributing factors
  - Conditions in 5-minute market not reflected in HASP
  - High self scheduling across resource technologies and inter-ties
- Short-term mitigation
  - Solution may already exist with MSG and reduced self scheduling
  - Improved consistency between HASP and RTD
- M&ID will discuss potential solutions

Description of the issue

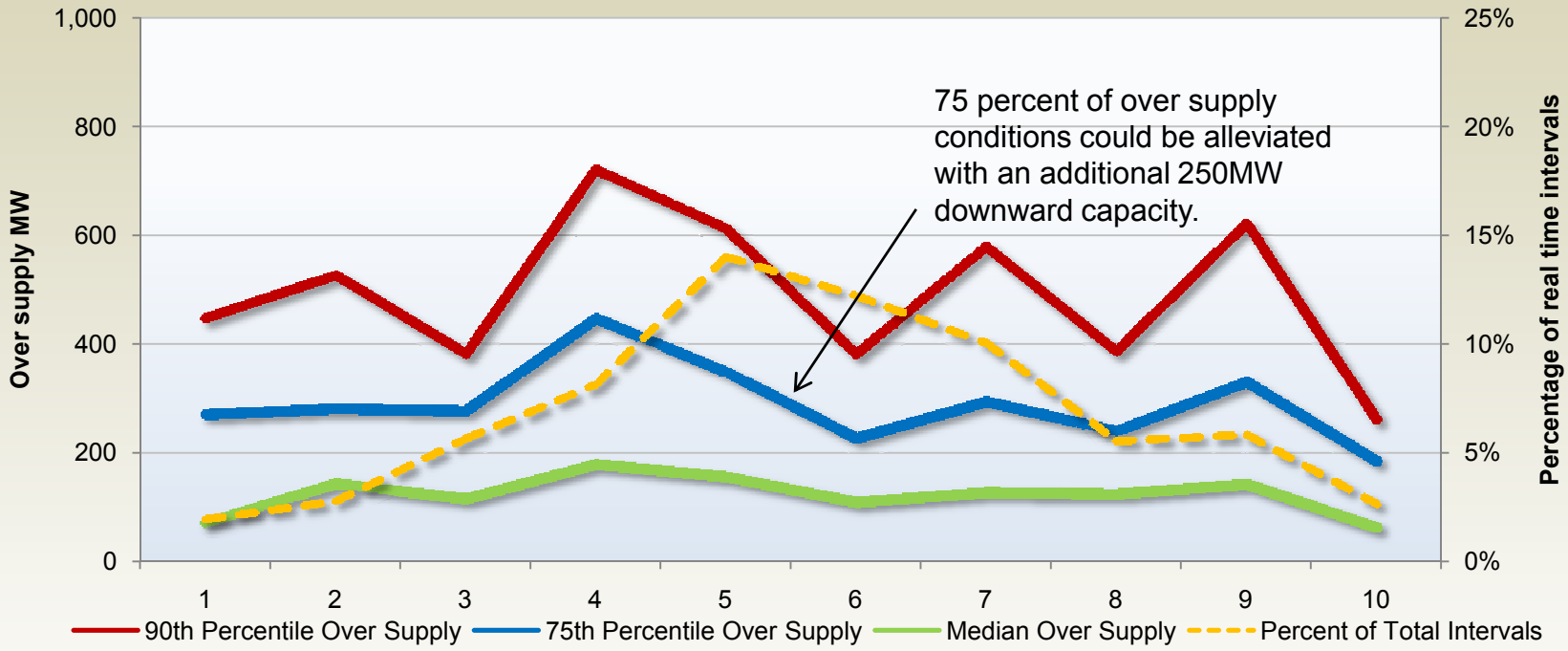
- Over supply conditions occur predominately in hours 1 to 10.
- Negative prices result when there is scarcity
  - Need internal resources and/or net intertie schedules to reduce output.
  - Negative price ➔ those who do reduce output are paid to do so.
- Current Implications:
  - Market is not able to meet operational needs.
  - Inefficient dispatch and resulting market cost.
- Implications for Future:
  - Increased need for downward dispatchable capacity as the ISO approaches 20% and 33% RPS.
  - Convergence bidding likely to smooth the pricing in these hours and reduce procurement of physical supply from the IFM.
    - Will not address over supply driven by high self-scheduling (in IFM or RT).

Over supply in morning hours results in significantly lower prices and inability to meet requirements.



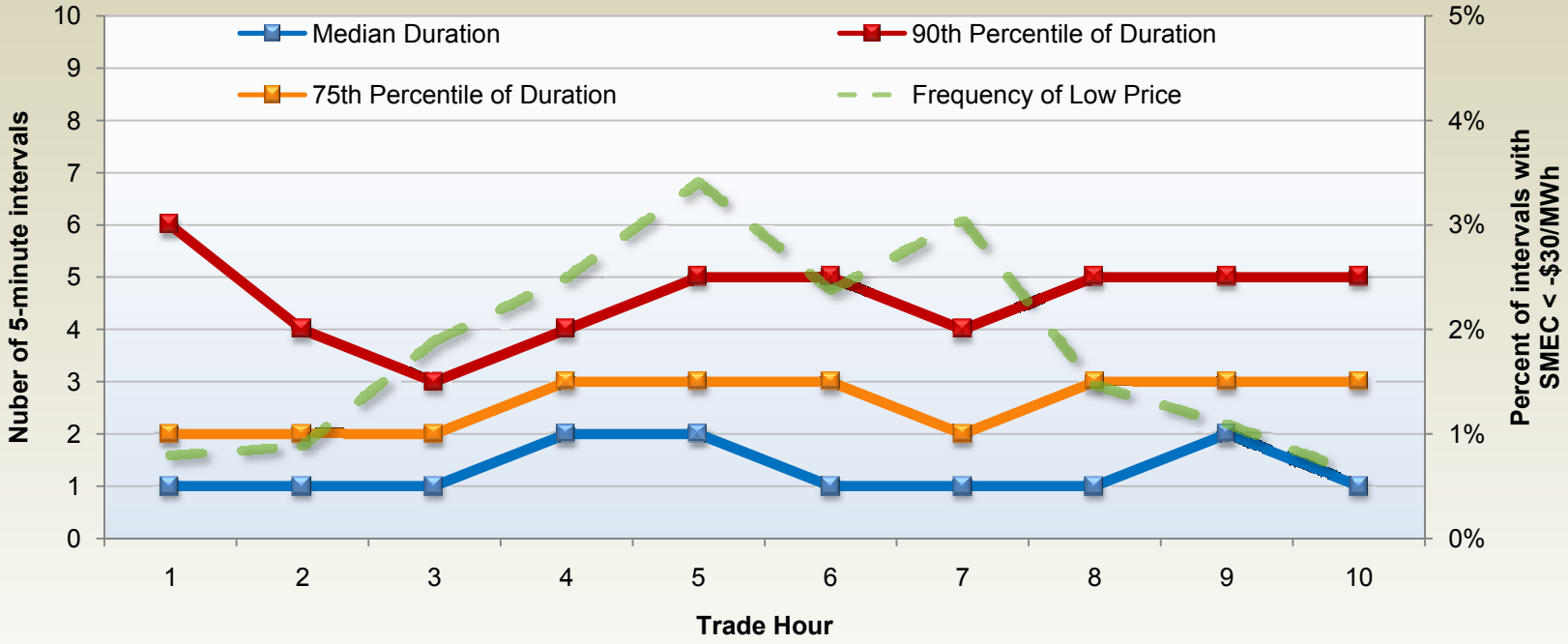
- Over supply is concentrated in early morning hours.
- Prices <-$30/MWh (green bars) indicate the market is not able to meet imbalance requirements.
- Chart shows results for 2010 Q3.

An additional 250 MW of downward ramping would have resolved 75% over supply instances.



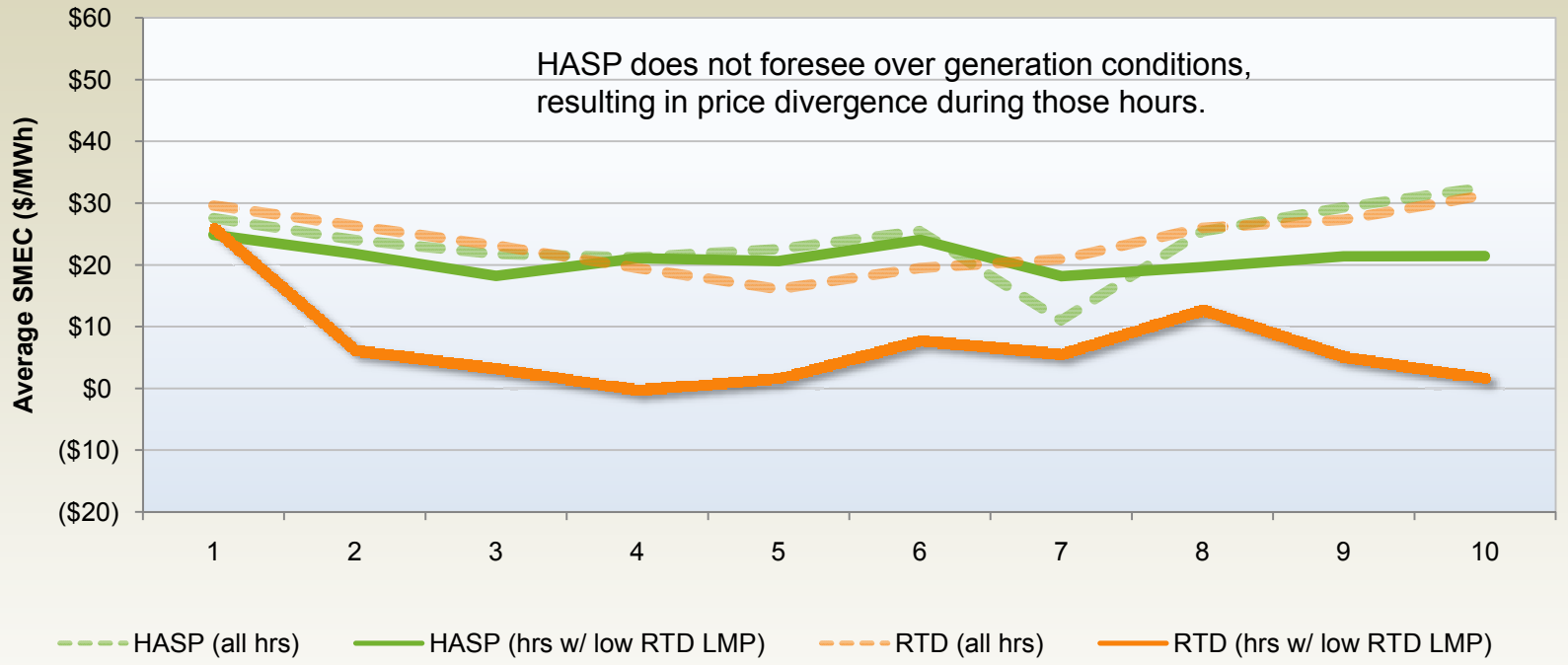
- Over supply occurs, on average, less than 10% of real time intervals in hours 1 to 10.
- Deficiency of 100 MW in 50 percent of instances and 250 MW in 75 percent of instances.
- Chart shows results for 2010 Q3.

Most extreme over supply conditions occur for 10 minutes or less.



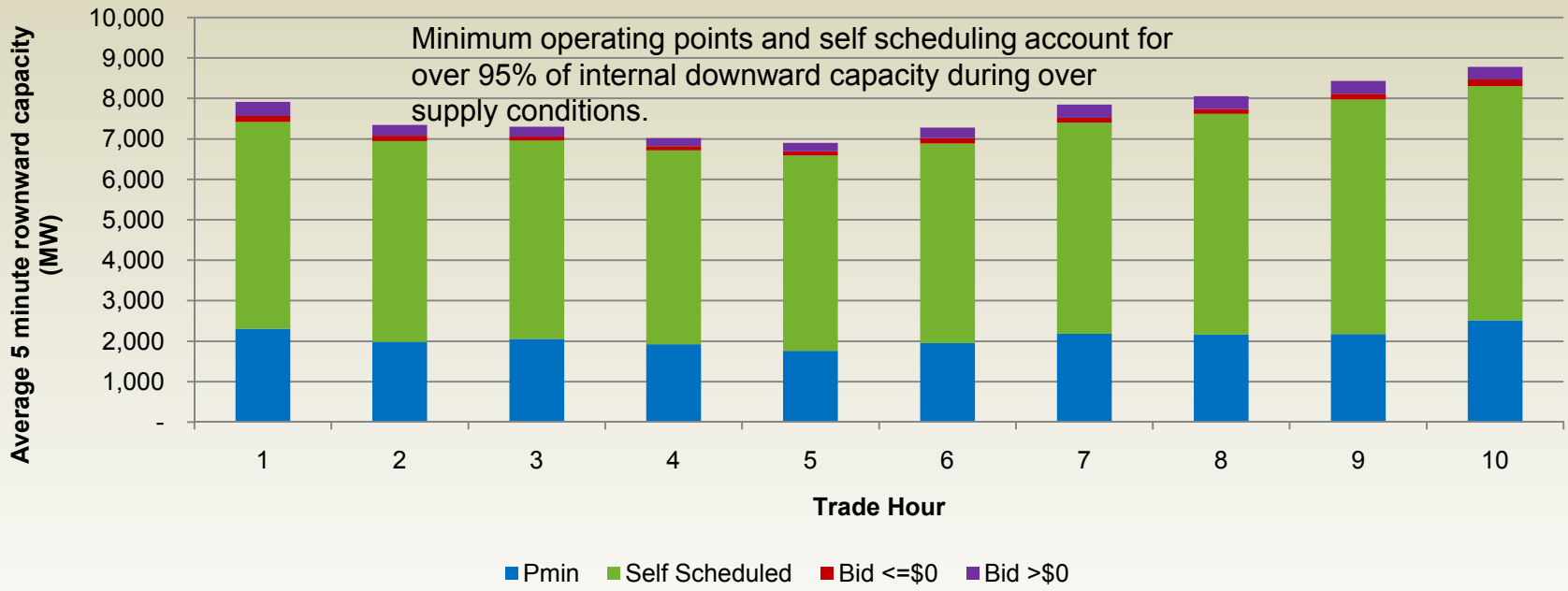
- Half of the over supply conditions last for 10 minutes or less.
- Indicates ramping issue, not systematic over supply
- Chart shows results for 2010 Q3.

HASP does not foresee real time over supply conditions resulting in price divergence



- When all hours are considered, HASP and RTD energy prices track together.
- During over supply conditions HASP and RTD system LMPs diverge by $10/MWh.
- Chart shows results for 2010 Q3.

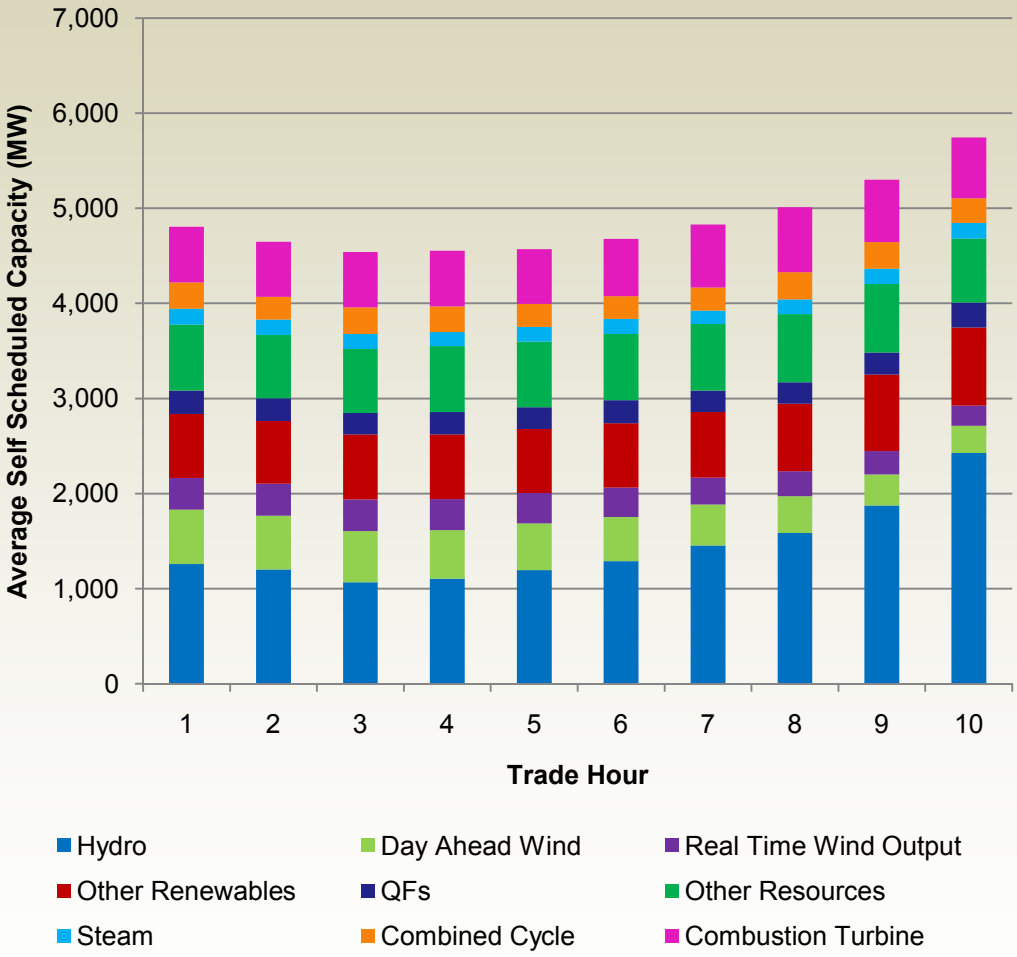
Internal downward dispatchable capacity during over supply conditions is limited by self schedules



- 60 percent of online internal capacity is inflexible due to self scheduling.
- 35 percent is physically unavailable due to minimum operating limits.
- Real time market does not have enough downward flexibility to meet imbalance requirement.
- Self scheduled MW may provide solution to over supply in RTD…

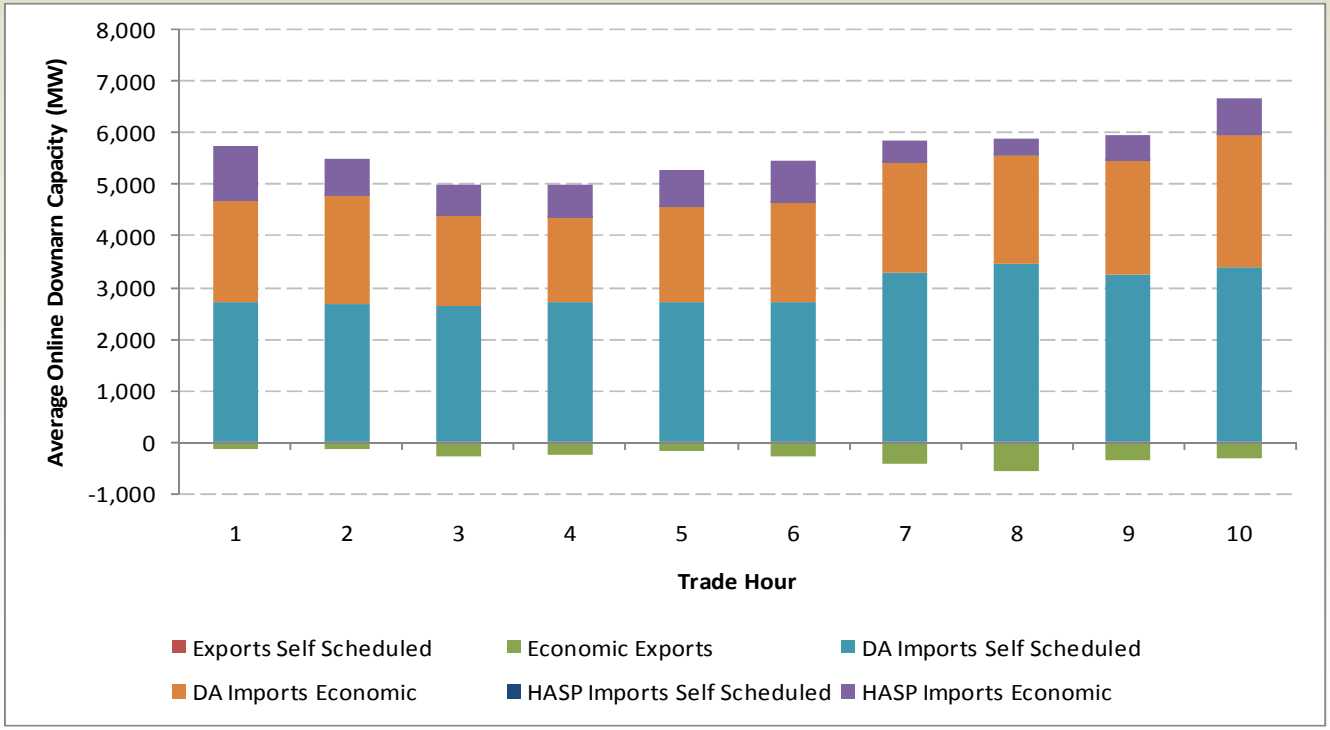
Self scheduling by resource type indicates a short term solution may already exist

- MSG implementation has the ability to reduce approximately 1,000MW.
- Hydro accounts for, on average 30% or 1,450MW, of self scheduled capacity.
- Renewable resources (wind, QFs, and other renewables) account for approximately 35%, or 1,700MW, of self scheduled capacity.
- On average, there is a 200MW difference between DA and RT wind schedules.



Self scheduling on interties comes predominately from day ahead schedules not re-bid in real time

- Day ahead import schedules not re-bid into HASP account for 90 percent of potential import capacity from ties.



Potential Solutions – Short Term

- Improve HASP to better reflect real time conditions
  - Additional 500 MW from reduced imports
  - Additional 200 MW from additional exports
  - Would alleviate 90% of over supply conditions.
- Require active re-bid of IFM intertie schedules into HASP.
- MSG may reduce self scheduling of combined cycle units and CTs by up to 1,000 MW.
- M&ID Alternatives…