

PJM Proxy Bus Pricing Enhancements - Post-Implementation Review -

**MIWG
October 17, 2007**

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Outline

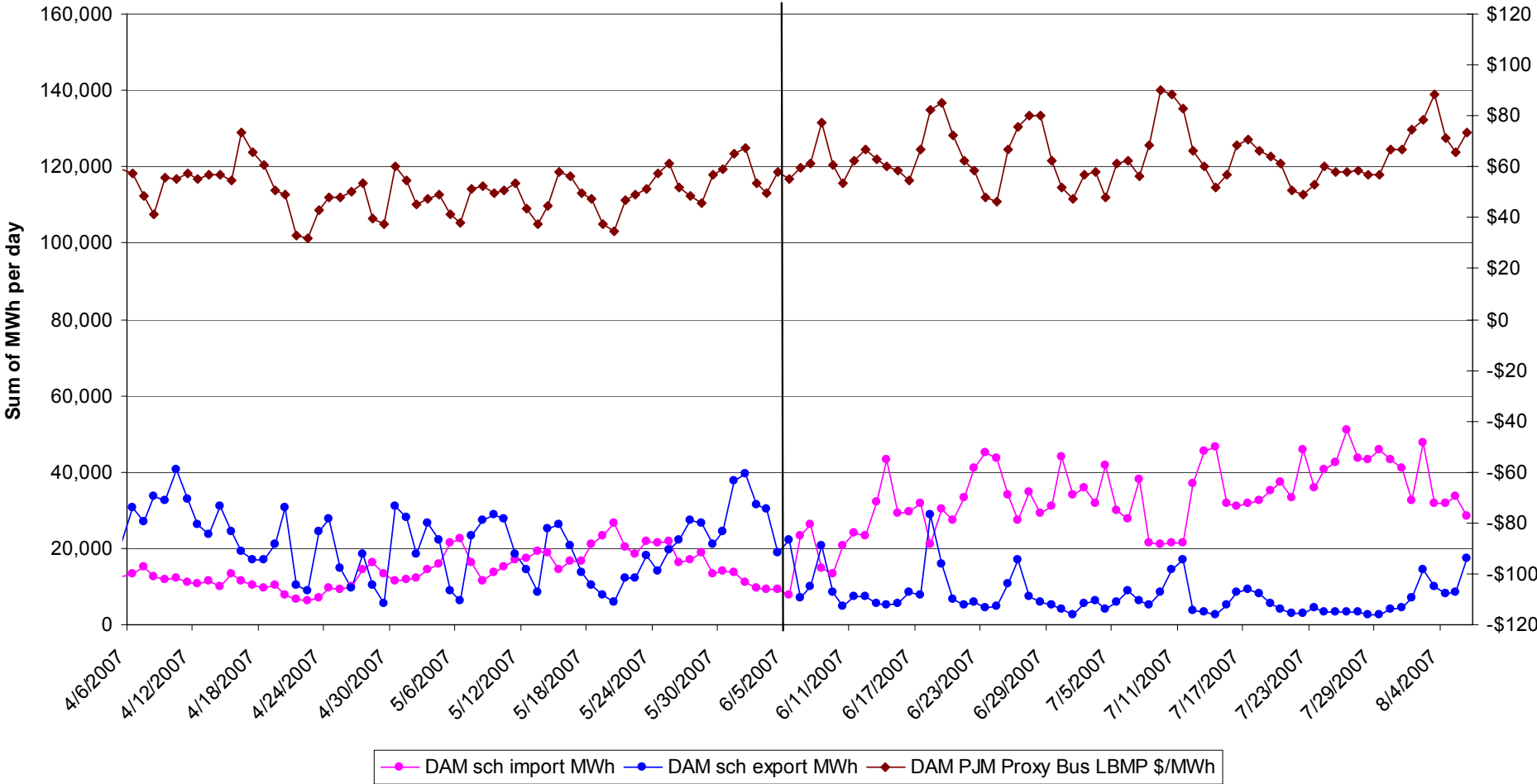
- Background
- Review of Schedules and Prices
- Statistical Analysis
- Conclusions

Background

- Enhanced scheduling and pricing logic for the PJM Proxy Bus was activated on June 6, 2007
- In early conceptual discussions (11/21/06 SPWG) the NYISO outlined a number of expected benefits of this change, including:
 - *“Enable SCUC/RTC/RTD to better represent any incremental impacts that PJM-NYISO transaction schedules have on exacerbating or relieving internal NY transmission constraints.”*
 - *“More accurately reflect the impact that PJM-NYISO transaction schedules have on NY transmission constraints.”*
 - NYISO provided an example to illustrate how reflecting the impact of PJM schedules on an active constraint might change the PJM Proxy Bus clearing price.

Review of Schedules and Prices

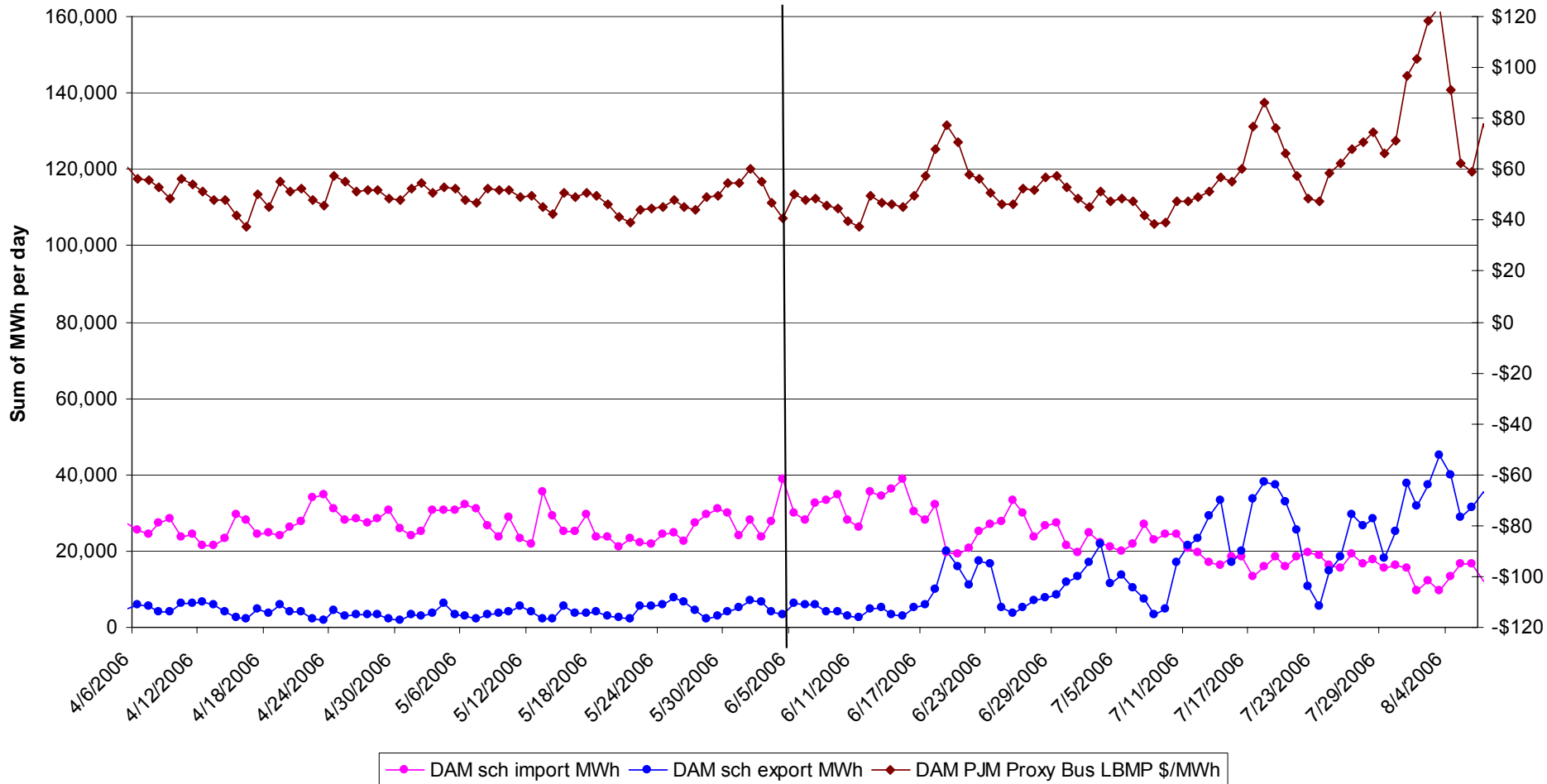
DAM '07
PJM Proxy Bus Scheduling and Pricing on the Day Ahead Market
Pre and Post June Deployment



—●— DAM sch import MWh —●— DAM sch export MWh —●— DAM PJM Proxy Bus LBMP \$/MWh

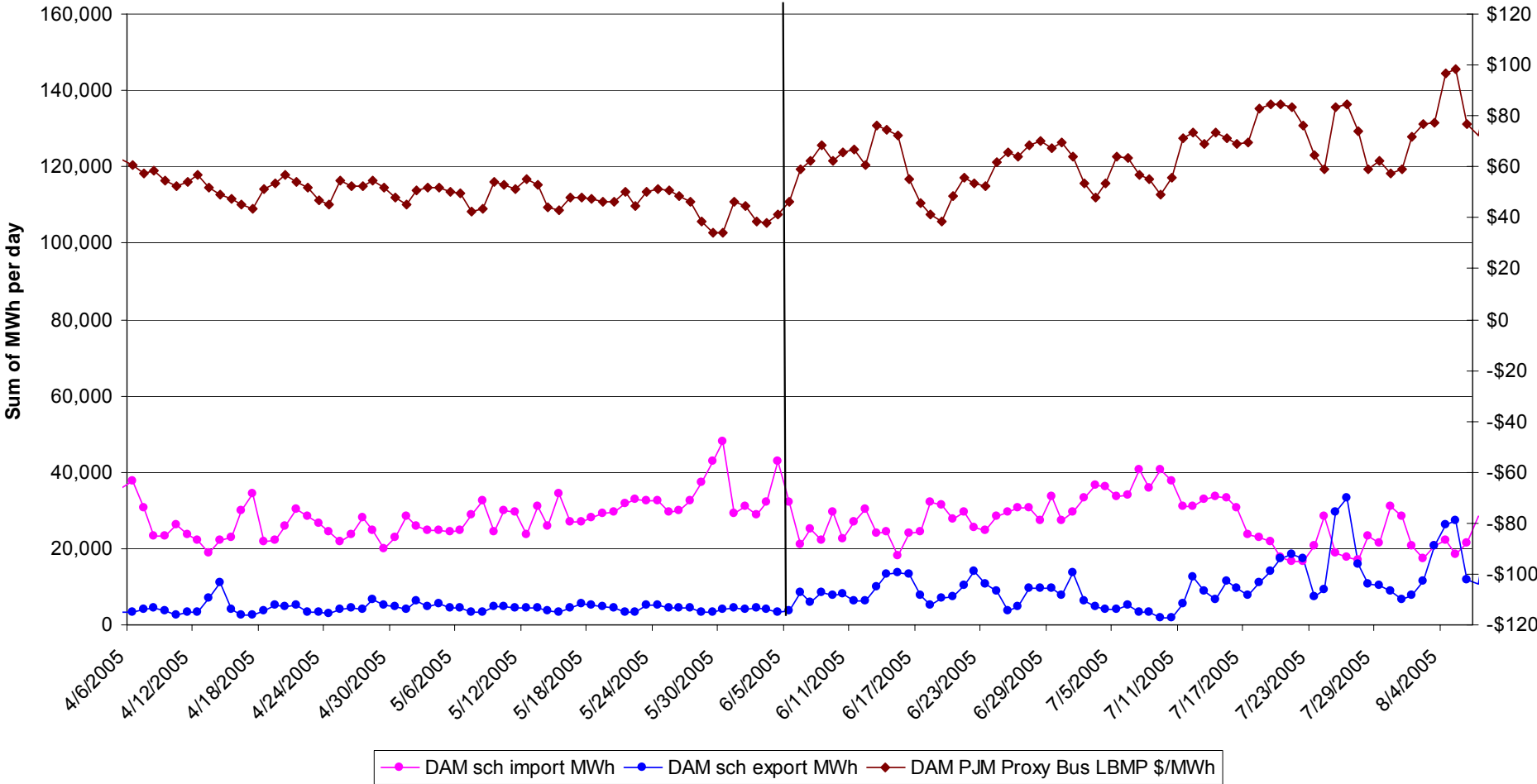
Review of Schedules and Prices (ctd.)

DAM '06
PJM Proxy Bus Scheduling and Pricing on the Day Ahead Market
Pre and Post June Deployment



Review of Schedules and Prices (ctd.)

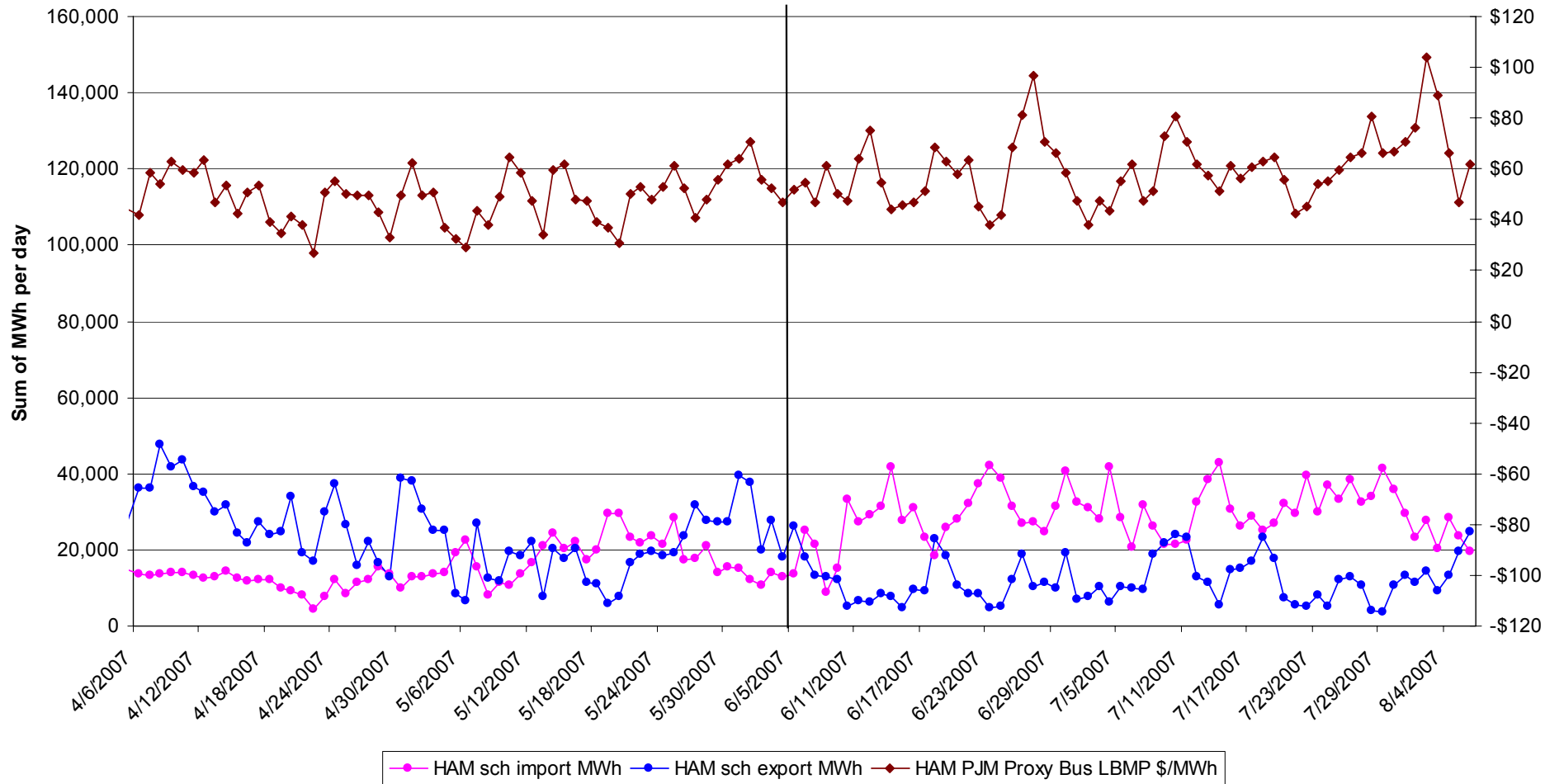
DAM '05
 PJM Proxy Bus Scheduling and Pricing on the Day Ahead Market
 Pre and Post June Deployment



Draft – For Discussion Purposes Only

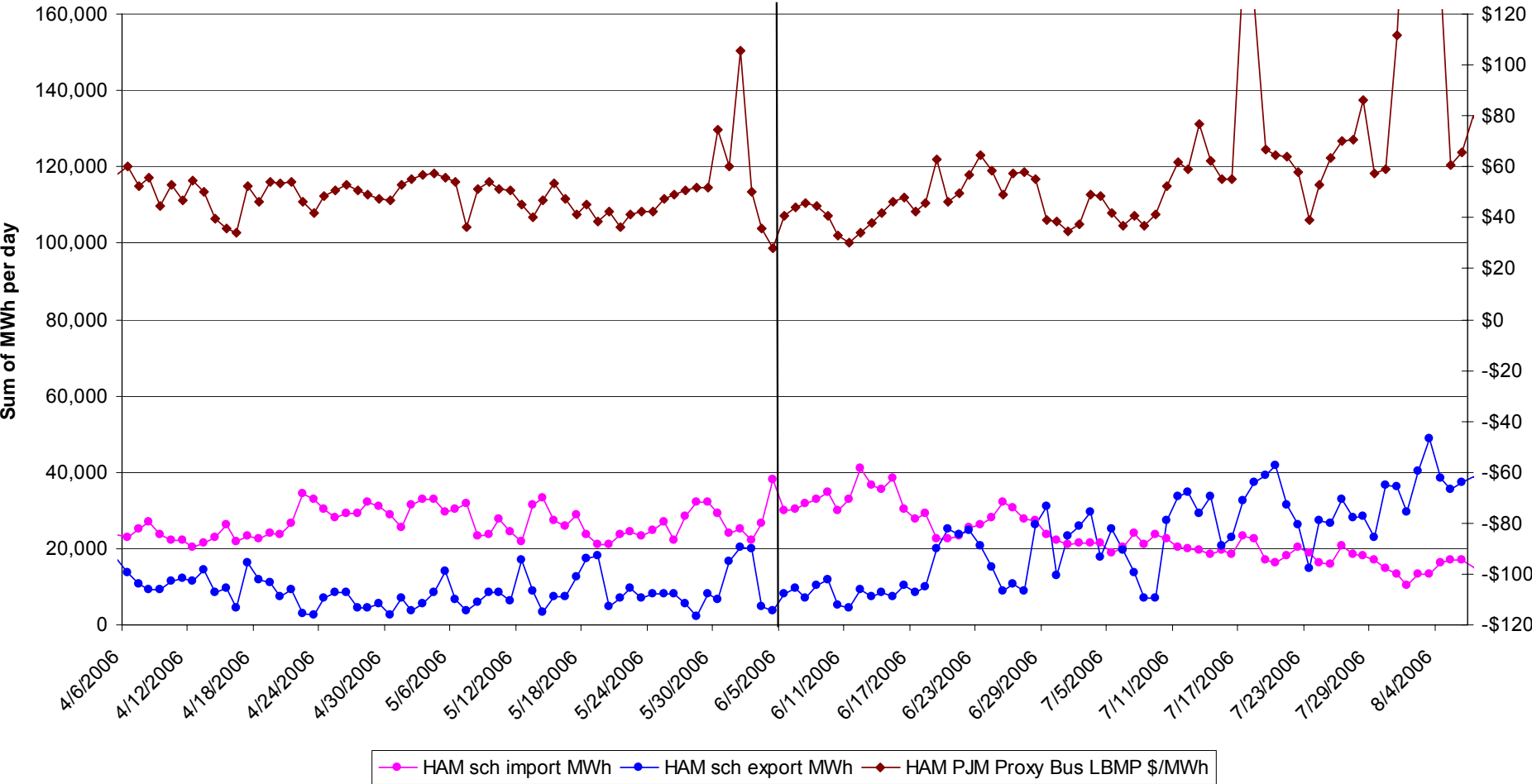
Review of Schedules and Prices (ctd.)

HAM '07
PJM Proxy Bus Scheduling and Pricing on the Hour Ahead Market
Pre and Post June Deployment



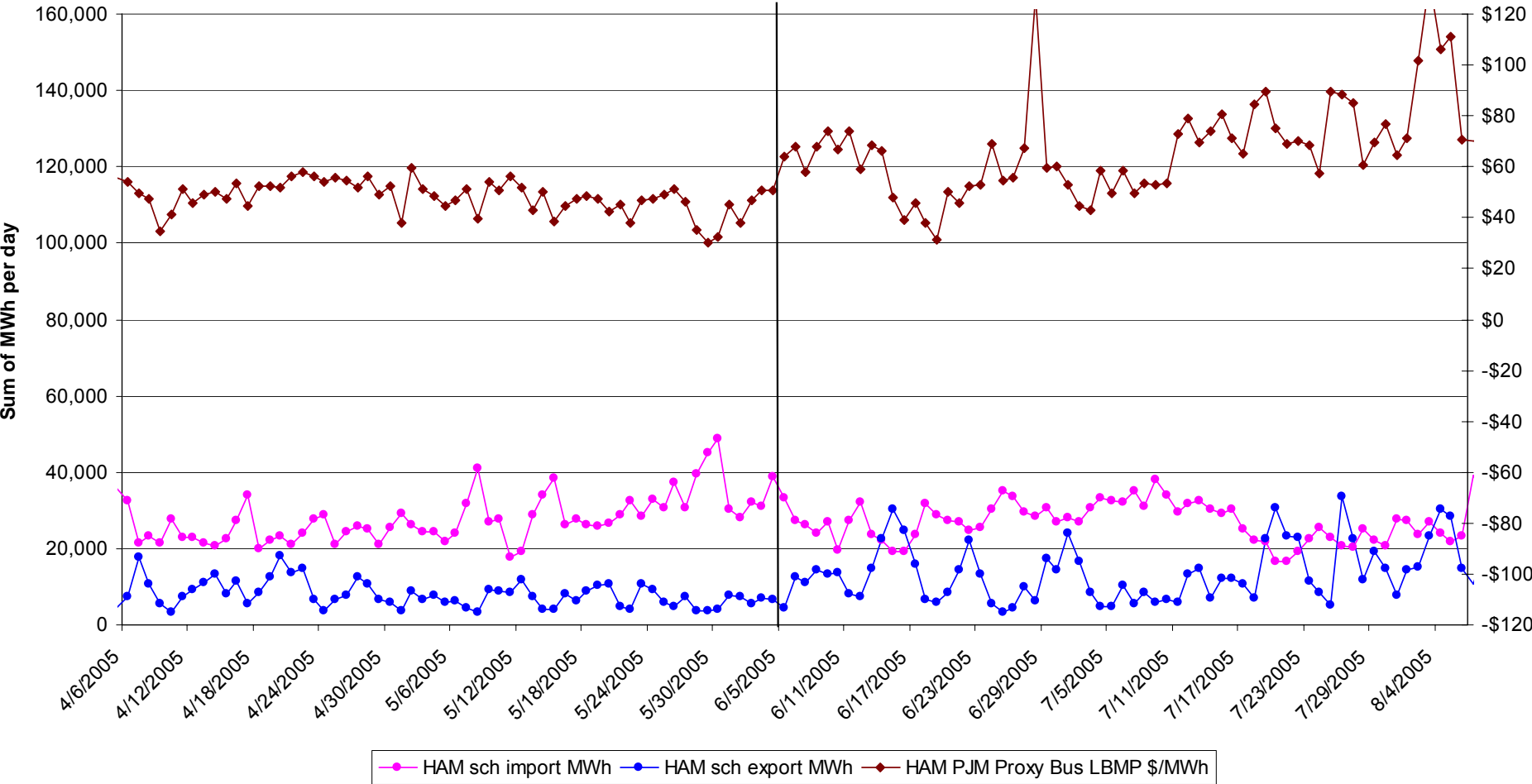
Review of Schedules and Prices (ctd.)

HAM '06
PJM Proxy Bus Scheduling and Pricing on the Hour Ahead Market
Pre and Post June Deployment



Review of Schedules and Prices (ctd.)

HAM '05
 PJM Proxy Bus Scheduling and Pricing on the Hour Ahead Market
 Pre and Post June Deployment



Statistical Analysis

- Empirical Evidence: Two Sample T-test comparing average schedules pre- and post-PJM Proxy Bus Implementation
- Data: HAM and DAM imports and exports
- Test Intervals: 2005, 2006 and 2007
- Ho: $\mu(\text{pre-}) \geq \mu(\text{post})$ [one-tailed T-test]
- Sample Size: 3 month pre- + 2 month post
- Significance level 90%

Statistical Analysis (ctd.)

Year	DAM Sched Import MWh	HAM Sched Import MWh	DAM Sched Export MWh	HAM Sched Export MWh
2007	reject	reject	do not reject	do not reject
2006	do not reject	do not reject	reject	reject
2005	do not reject	do not reject	reject	reject

Intuition:

- On average, **Imports increased after PJM Proxy Bus implementation** on both DAM and HAM. During the same time frame in 2006 and 2005 average Imports decreased.
- On average, **Exports decreased after PJM Proxy Bus implementation** on both DAM and HAM. During the same timeframe in 2006 and 2005 average Exports increased.

Conclusions

- The PJM Proxy Bus changes, activated on June 6, appear to be functioning as expected
 - Statistically significant increases in import schedules
 - Intuitive pricing observations