

Monitoring Requirements for Integrated Balancing Authority Areas (IBAA)



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IBAA Design will Require Extensive Monitoring and Flexibility to make Design Modifications.

- Monitoring needed to assess accuracy of source/sink of hub schedules and underlying modeling approach (modeled vs. actual).
- Potential indicators of the success of multiple hub approach in terms of modeling accuracy and limiting gaming will be imperfect.
 - May be difficult to differentiate underlying modeling inaccuracies/loop flows from potential gaming/misrepresentation of actual source/sinks.
 - Difficult to specify thresholds that may warrant changes in approach.
- CAISO should have significant flexibility and discretion to quickly switch to the single hub approach if market performance and monitoring raise concerns.
- Additional data from IBAA members and participants using IBAA transmission is critical to monitoring.

IBAA Design will Require Several Monitoring Approaches.

- Potential IBAA monitoring approaches include:
 1. Analysis of aggregated market schedules, modeled flows and actual flows on interties.
 2. Statistical analysis of aggregated net import/export schedules and metered data on loads and resources from various sub-control areas (hubs).
 3. Review market schedules of individual market participants.
 4. Review of bilateral transaction data of individual market participants.
 5. Review of EMS metering data for generating resources within hubs.

1. Analysis of Aggregated Market Schedules, Modeled Flows, and Actual Flows

Data:

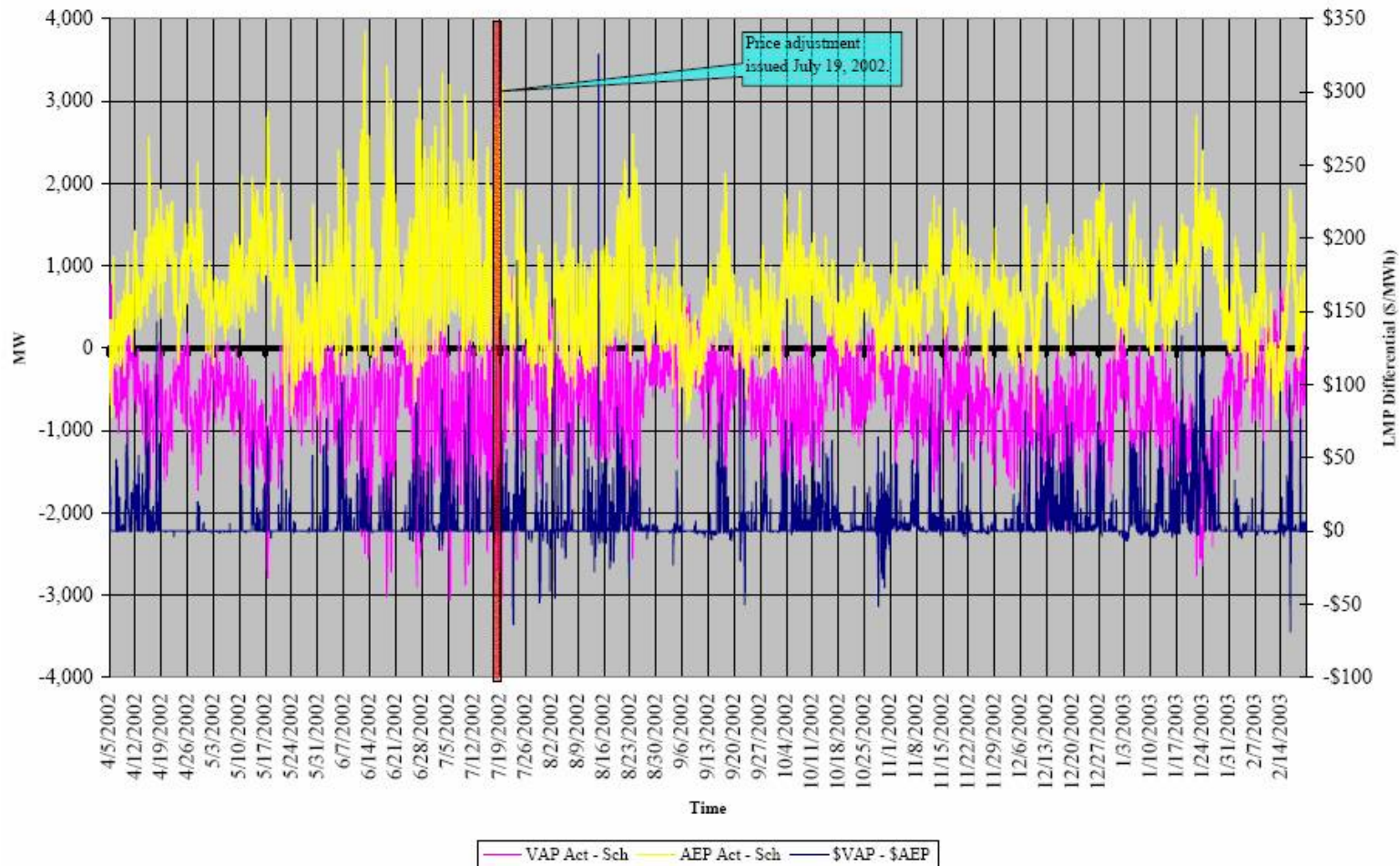
- Differences in scheduled/modeled and actual flows on the interties between BPA and the SMUD IBAA (e.g., COTP).
- Differences in prices for the various pricing hubs in the IFM and HASP markets.

Analysis of correlation between differences in (a) prices and (b) modeled vs. actual flows. For example:

- Assess whether actual flows on the COTP tend to exceed scheduled/modeled flows during hours when prices at the WAPA or SMUD hubs exceed the price at Captain Jack.
- Such evidence may indicate that imports via the COTP represent the actual incremental source of imports from the WAPA or SMUD hubs.

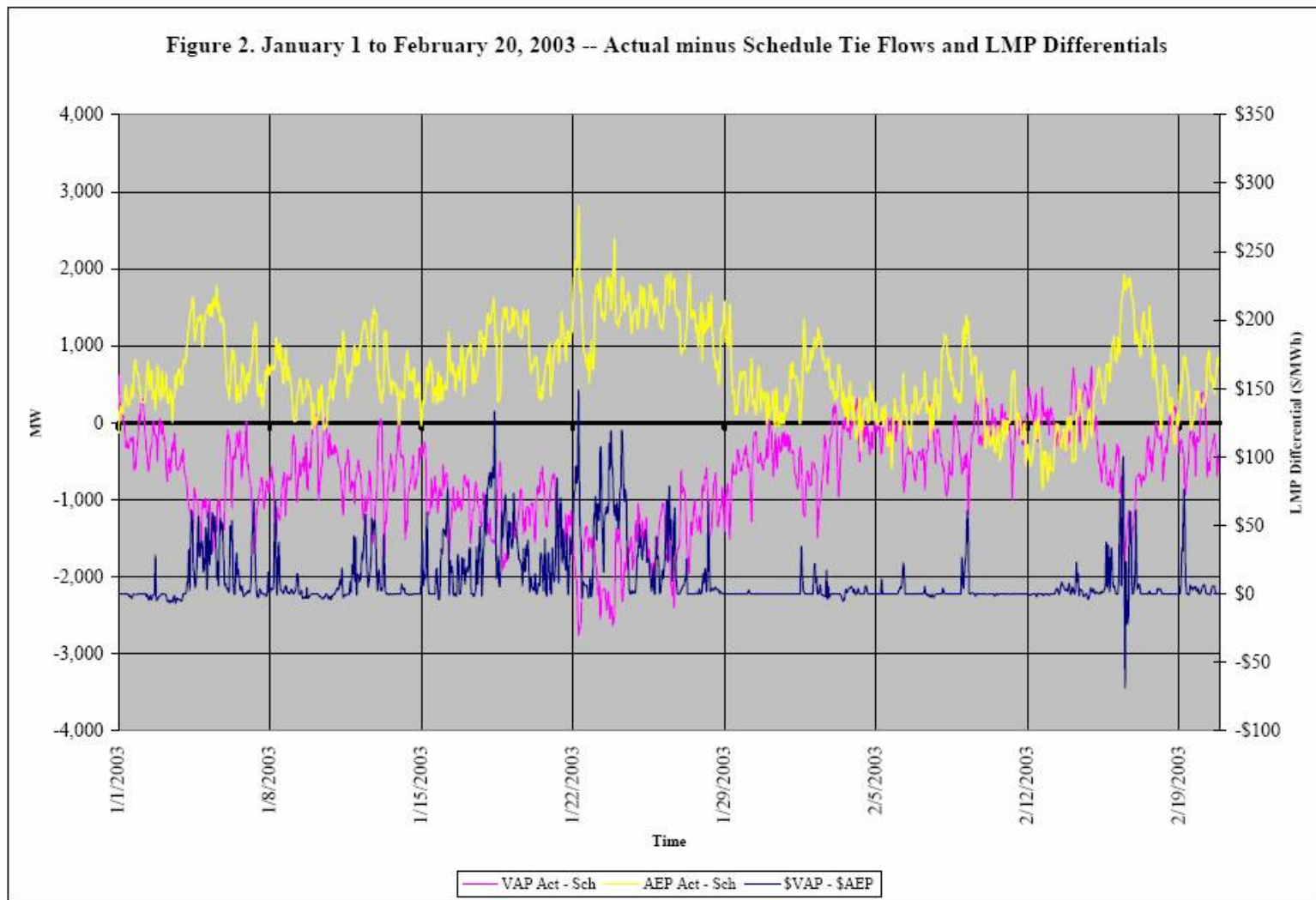
Example from PJM

Figure 1. April 2002 to Date, 2003 -- Actual minus Schedule Tie Flows and LMP Differentials



See Report on *Interface Pricing Policy*, PJM Market Monitoring Unit, February 28, 2003,
<http://www.pjm.com/markets/market-monitor/downloads/mmu-reports/20030301-interface-pricing.pdf>

Example from PJM (Continued)



See Report on *Interface Pricing Policy*, PJM Market Monitoring Unit, February 28, 2003,
<http://www.pjm.com/markets/market-monitor/downloads/mmu-reports/20030301-interface-pricing.pdf>

2. Statistical Analysis of Sub-control Area Data

- Statistical analysis of aggregated net import/export schedules and metered data on loads and resources from various sub-control areas (hubs)
 - EMS data on loads/resources within each hub should be available.
 - Regression analysis could be used to assess the marginal increase/decrease in net generation from different hubs associated with net imports/exports between the SMUD area to the CAISO.
- This approach may need to be supplemented with additional data, such as scheduled flows/transactions between various sub-control areas (hubs) within the SMUD/TID IBAA.

3. Review of Market Schedules

Review of market schedules to identify:

- Entities that *simultaneously* import and export from different hubs with price differential that may be indicative of gaming or arbitrage (e.g. export from CAISO at low priced hub combined with import to CAISO at high priced hub).
- Imports/exports by entities that do not control generation resources or serve load within the SMUD/TID IBAA.

Data currently available to CAISO for this approach should be supplemented with additional schedules:

- Scheduled flows by specific entities on the COTP into the SMUD/TID IBAA.
- Schedules between various sub-control areas (hubs) within the SMUD/TID system.
- Access to E-tags for additional schedules with source/sink in SMUD/TID IBAA also needed.

Additional Monitoring Approaches (4 & 5)

4. Review of bilateral transaction data of individual market participants.

- Sales by non-public entities filed at FERC and publicly available on quarterly basis (by hour, price, quantity, source/sink).
- Non-public entities not subject to FERC EQR requirements

5. Review of EMS metering data for generating resources within hubs designated as source of imports/export to the CAISO.

- May be applicable only in limited cases when result of HASP dispatch can be observed in hub-wide generation data.

Summary of Key Additional Data Requirements

- Schedules flows by participant on COTP into SMUD/TID IBAA and associated e-tags.
- Scheduled flows between various sub-control areas (hubs) within the SMUD/TID IBAA (access to e-tags, if applicable).
- Disclosure of load served and generation resources controlled by SCs scheduling imports/exports at each hub.
- Reporting of bilateral transactions by public entities (not subject to FERC EQR protocols).
- Other data available upon request by SCs pursuant to CAISO Market Monitoring authority.