# Discussion on full network model expansion performance

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Market Surveillance Committee Meeting

General Session

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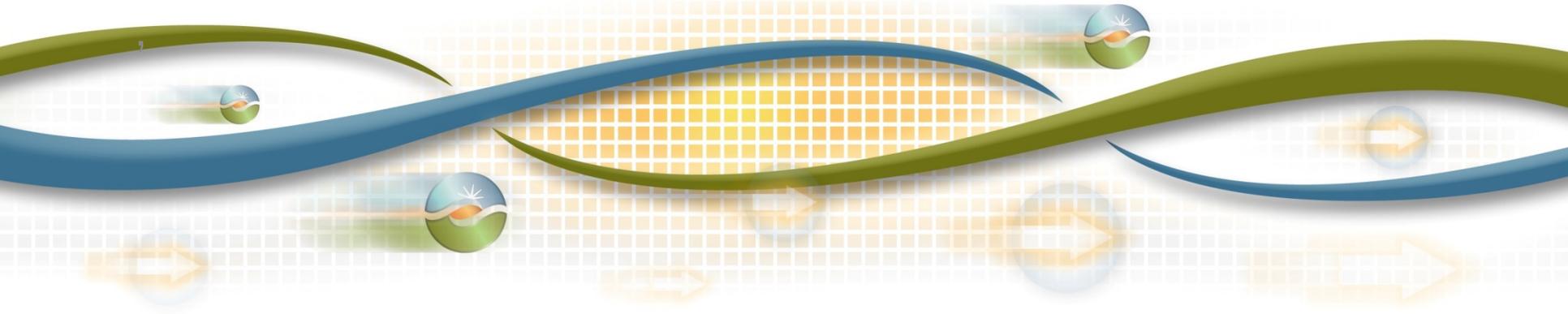
# Full network model accuracy metric

- Results

    - ISO posts the accuracy report by summarizing results on a 3-week rolling average: http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=E61CF08C-42B1-4BD9-A9B7-894FD31EEA39

    - More detailed data, hourly by constraint, available to entities that have signed WECC Universal Non-Disclosure Agreement

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# Accuracy metric: Review methodology

- Metric is calculated daily for the ISO as a whole for all the interties and compares:

  - **Scenario 1:** The ISO models external unscheduled flow impacts in the day-ahead

  - **Scenario 2**:  The ISO does <u>not</u> model external unscheduled flow impacts in the day-ahead

- ISO also analyzes the metric for internal constraints

# DA External Unscheduled Flow Calculations
## (Same input as the solved day-ahead case)

BAA Forecasted Net Schedule Interchange (no ISO schedules)

BAA Demand Forecast (no ISO forecast)

BAAs GDFs and LDFs

DA FNM Topology (Western BAAs including ISO)

Planned Outages (Western BAAs including ISO)

**Power Flow**
**(no ISO NSI, no ISO load, no ISO gen)**

DA external unscheduled flows per ISO's inter-tie, per hour ($DaExUSF_{tie,hour}$)

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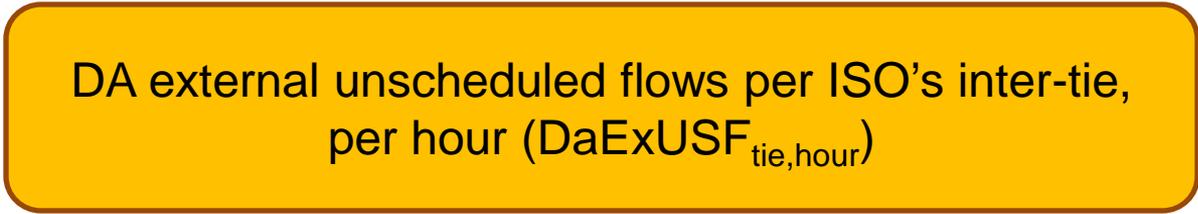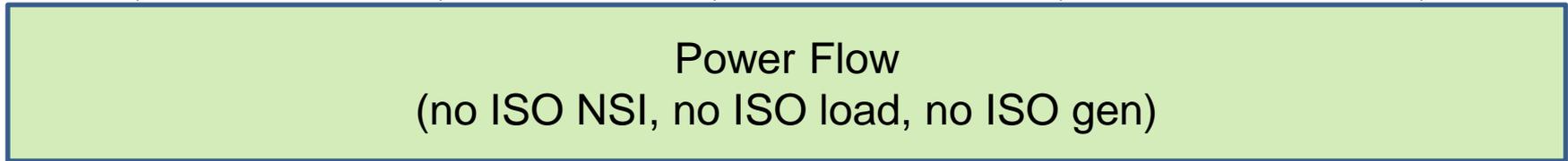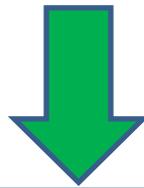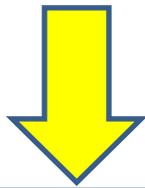
# Actual External Unscheduled Flow Calculations

BAAs Avg Actual Net Schedule Interchange (no ISO schedules)

BAAs Avg Actual Load (no ISO load)
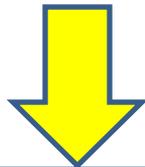
BAAs GDFs and LDFs

State Estimator FNM Topology (Western BAAs including ISO)

**Power Flow**
**(no ISO NSI, no ISO load, no ISO gen)**
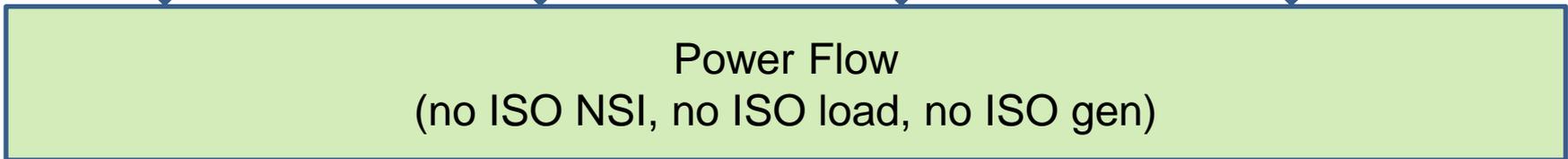
Average Actual external unscheduled flows per ISO's inter-tie per hour ($ActExUSF_{tie,hour}$)

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# Accuracy Metric Calculations

- Two scenarios:

  1) ISO models external unscheduled flow impacts in the day-ahead: $|DaExUSF_{tie,hour} - ActExUSF_{tie, hour}|$

  2) ISO does not model external unscheduled flow impacts in the day-ahead, ($DaExUSF_{tie,hour}=0$): $|0 - ActExUSF_{tie,hour}|$

- The metric compares the sum over all ties and hours of the absolute value of the difference between the day-ahead and actual external unscheduled flows under the two scenarios

- The accuracy metric passes if the magnitude of the difference with modeling is less than without: $\sum|DaExUSF_{tie,hour} - ActExUSF_{tie,hour}| < \sum|0 - ActExUSF_{tie,hour}| \rightarrow$ **PASS**

# Accuracy Metric (3 – week rolling average) for Interties



Accuracy Metric (3 - week rolling)
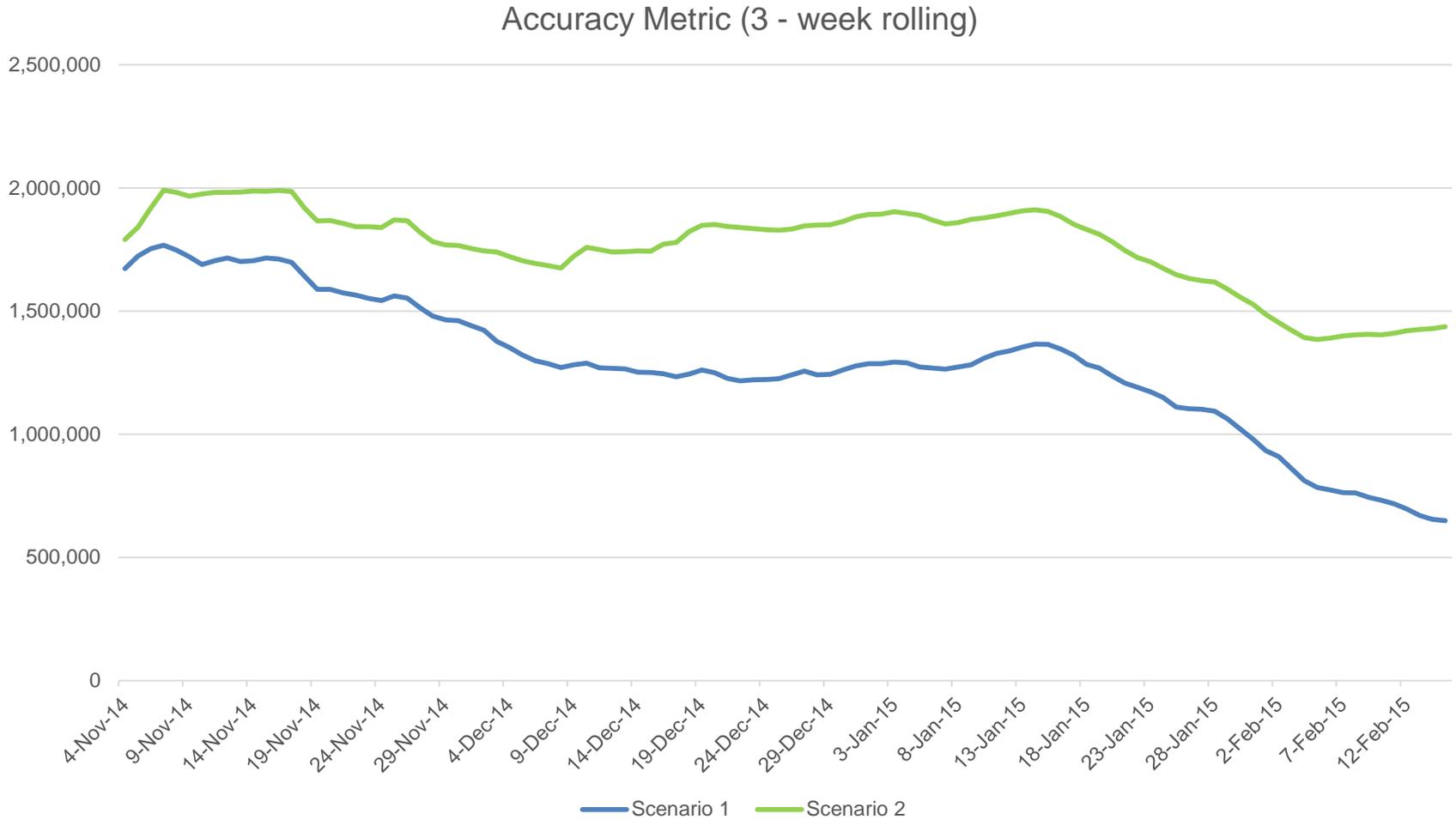
# Accuracy Metric (3 – week rolling average) for Internal Constraints for last month
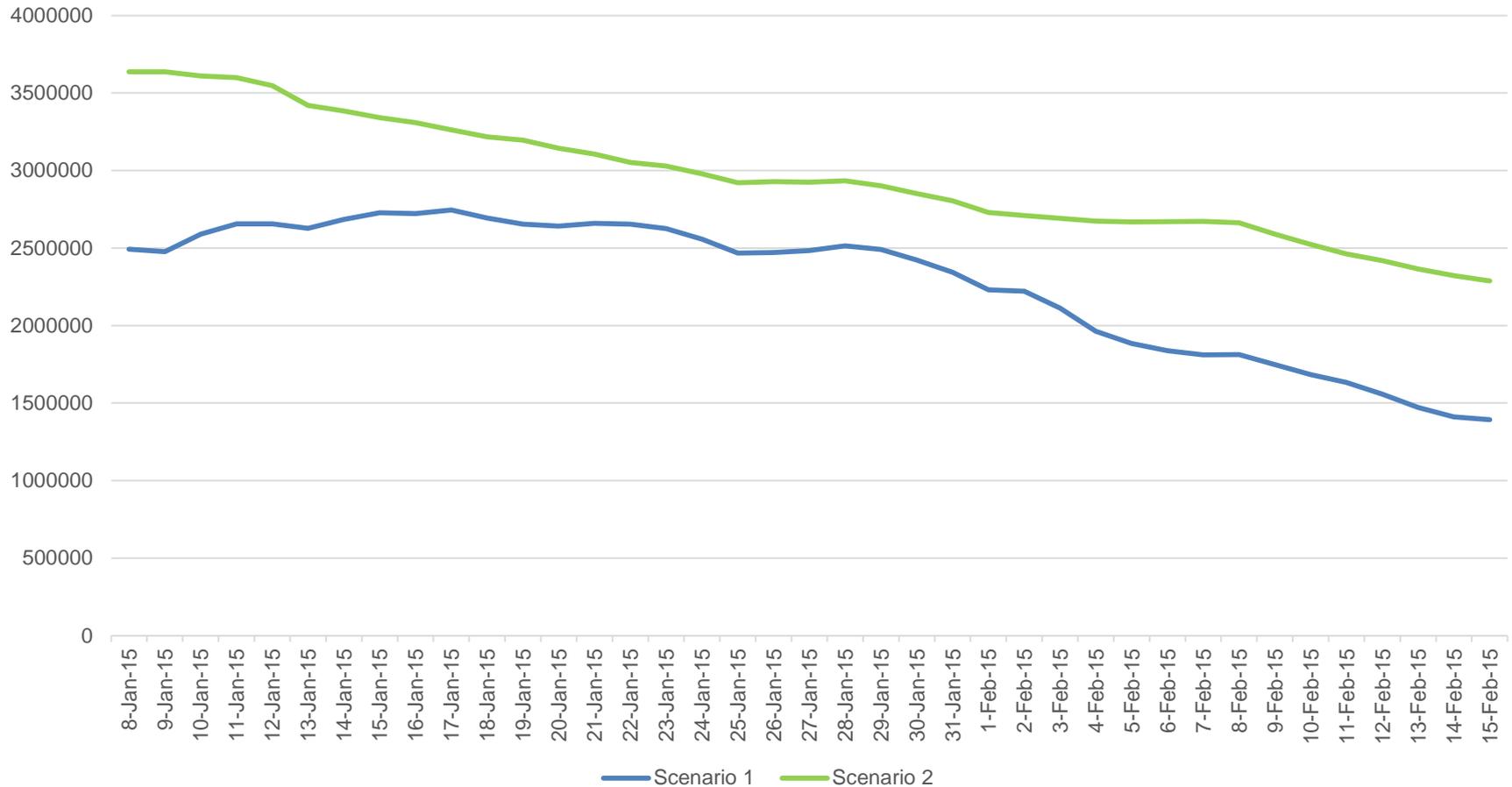
# Accuracy Metric: Update

- FNM Metric has passed on all the days except first few days of FNM implementation

- Some interties in the north such as PACI failed the individual metric occasionally during first few weeks of implementation, however passing the metric since last month

- The main drivers for the FNM metric:
  - Load Forecast in DA for external BAAs
  - Net Schedule Interchange (NSI) forecast in DA

- Load Forecast: ISO forecasting for 8 external BAAs

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# Next Steps

- Better load forecast for all other BAAs

- NSI forecast in DA: forecast formulation using a similar day approach

- Analyze the individual interties when they fail the metric

# Thank you