Midwest Market Initiative

Inadvertent and Settlement

CMWG
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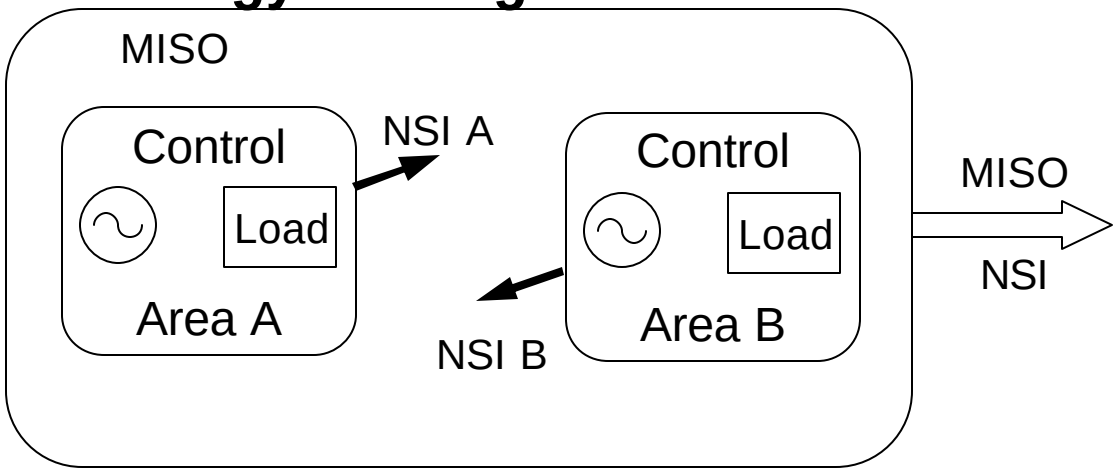
Overview

- Review - Two control area model
- What is inadvertent in the market?
- Managing and Accounting for Inadvertent
- Managing Financial Settlement - What is Inadvertent Worth?

Two Control Area Model

- Simple two control area model
- Generation dispatched to meet forecast demand and MISO NSI
- Generation Dispatch and Scheduled NSI sent to each CA
- Losses and Constraints ignored in this example
- Rounding off Energy to Integers not shown in example



Two Control Area Model

What causes Inadvertent?

- Actual dispatch differs from 5 minute signal - Regulation does not always make it up

- Actual CA interchange differs from signal in Real-time

- Frequency deviates from Scheduled Frequency and generators respond

- Actual MISO interchange differs from schedule

Inadvertent Interchange:

Hour	A MW	B MW	MISO
1	-0.59	2.59	2
2	11.32	-8.32	3
3	3.67	-5.67	-2

Two Control Area Model

- Financial settlement is calculated from metered generation, calculated load and scheduled external transactions (physical schedules).

- The net MISO Inadvertent causes a revenue surplus or shortfall in financial settlement.

Settlement Surplus:

Hour	MISO
1	-$25.66
2	-$43.74
3	$22.30

- Key Point: No revenue surplus or shortfall for control areas - I.e. the Control Area Inadvertent is financially settled

Options for Managing Inadvertent Energy

Options for Managing Inadvertent Accounting:

1. **Maintain each Control Area account separately**
2. **Net between Control Areas to the extent possible**
3. **Assign to Single Control Area within MISO**
4. **Assign to MISO**

Various Payback Methodologies exist as well

Current Plan: MISO is currently proceeding down the Option 4 route, with Option 3 as a back-up

Calculating Net Settlement Totals

Two Policy Questions to answer:

- **Valuing Inadvertent - What is it worth?**
- **Valuing Inadvertent - Where does the surplus/deficit go?**

Calculating Net Settlement Totals

Managing Financial Settlement - What is the Inadvertent Worth?

- **Inadvertent energy external to MISO results in a revenue shortage or surplus to MISO via settlement process**
- **Value of inadvertent revenue is calculated from MISO inadvertent energy**
- **Must be calculated in order to separate these $$$'s from excess loss $$$'s and congestion $$$'s.**
- **Smallest granularity Inadvertent is known is at the Control Area level**

Calculating Net Settlement

Valuing Inadvertent - What is it worth?

Inadvertent is known at the CA level, but it is not known which generator was the cause.

Recommendation:

- Value inadvertent at a value that represents something close to where the inadvertent occurred.
- Uses data already available
  - LMP at Generator Nodes
  - Inadvertent for each hour by Control Area

- **Calculation Recommendation:**
  - On an hourly basis, Calculate Average LMP at Generation nodes and multiply this by the Inadvertent for a CA.
  - Multiply this by the inadvertent for the CA.
  - Add these resultant revenues in order to determine the MISO-wide revenue surplus/deficit for the hour assigned to inadvertent.

Managing Inadvertent Revenue

Valuing Inadvertent - Where does the surplus/deficit go?

- **As indicated previously, Inadvertent energy external to MISO results in a revenue shortage or surplus to MISO settlements**
- **Revenue must be distributed out of MISO accounts at some periodicity that keeps MISO Revenue neutral**
- **Recommendation:**
  - Inadvertent revenue is accumulated by MISO each hour
  - Inadvertent revenue account is distributed to participants each hour on basis of same determinants as Schedule 17

Managing Inadvertent Revenue

Motion:

The CMWG recommends that Inadvertent should be valued at a Control Area level as described previously in this presentation. The CMWG also recommends that the resulting value be distributed to participants on an hourly basis in accordance with Schedule 17 billing determinants.