



Intertie Deviation Settlement

NEW! - Information added after the webinar training is indicated in **red**.

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WHY ARE WE DOING THIS?

Think about this inertia scenario

Net scheduled interchange awarded in HASP	5,000 MW
Awards accepted by scheduling coordinators	4,500 MW
Awards <i>automatically</i> accepted by ADS	500 MW
Net scheduled interchange used as input to the FMM	5,000 MW

What's the problem?

The FMM assumes that 5,000 MW will be delivered, but only 4,500 MW are certain. Any undelivered (un-tagged) energy won't be recognized in the market until the 5 minute market run.

Undelivered intertie transactions adversely impact ISO grid stability and market pricing.

- Non-deliveries affect reliability because the market is counting on supply that does not materialize
 - The market cannot clear additional intertie energy until the next hour
 - The 5-minute real-time dispatch must use available supply to compensate for the delivered intertie energy
- Non-deliveries are detrimental to the market
 - Undelivered intertie transactions displace other intertie bids from the hour-ahead scheduling process that could have been delivered
 - Result in higher prices for all market participants because the 5-minute market must replace the undelivered energy
 - Undelivered exports can cause intertie congestion

E-TAGGING CHANGES

E-Tag changes for intertie scheduling coordinators:

- Submit the transmission profile of the E-Tag by 40 minutes before the hour
- Allowed to submit changes to the energy profile of the E-Tag up to 20 minutes before the hour
- If no E-Tag is submitted, the FMM schedule will be set to zero



New logic for fifteen-minute awards for hourly block resources

FMM Binding Interval	Time of Operating Hour	Time of market run	Logic Used to Determine FMM Binding schedule for Hourly Block Resources
<i>TRANSMISSION PROFILE DUE AT T-40</i>			
1	00 – 15	T-37.5 RTPD5	MIN (HASP schedule, ADS accepted amount, E-Tag transmission profile)
2	15 – 30	T-22.5 RTPD4	MIN (HASP schedule, ADS accepted amount, E-Tag transmission profile)
<i>ENERGY PROFILE DUE AT T-20</i>			
3	30 – 45	T-7.5 RTPD7	E-Tag energy profile
4	45 – 00	T+7.5 RTPD6	E-Tag energy profile

Questions

ADS CHANGES

ADS changes

- ADS will display:
 - HASP schedule
 - SC accepted value
 - The delta between the HASP schedule and the SC accepted value
- Extended timeframe - SCs will have **15 minutes after HASP publishes** to partially accept or decline awards

SC ID	Hourly Prev DOT	Prev Accept DOT	Hourly DOT Delta	Accept DOT Delta	Accept DOT	Hourly DOT	Current DOT Delta	Hourly DOT Start Time	Accept Status	Reason
	12.00	12.00	3.00	-1.50	10.50	15.00	4.50	18:00	PARTIAL	Economic
	12.00	12.00	3.00	-4.30	7.70	15.00	7.30	18:00	PARTIAL	Per Genera
	50.00	50.00	0.00	-4.65	45.35	50.00	4.65	18:00	PARTIAL	Bad Bid Su
	4.00	4.00	0.00	-2.21	1.79	4.00	2.21	18:00	PARTIAL	No Availab
	12.00	12.00	0.00	-12.00	0.00	12.00	12.00	18:00	DECLINE	Timed Out
	5.00	5.00	0.00	-2.00	3.00	5.00	2.00	18:00	PARTIAL	Per Genera
	13.00	13.00	0.00	0.00	13.00	13.00	0.00	18:00	ACCEPT	



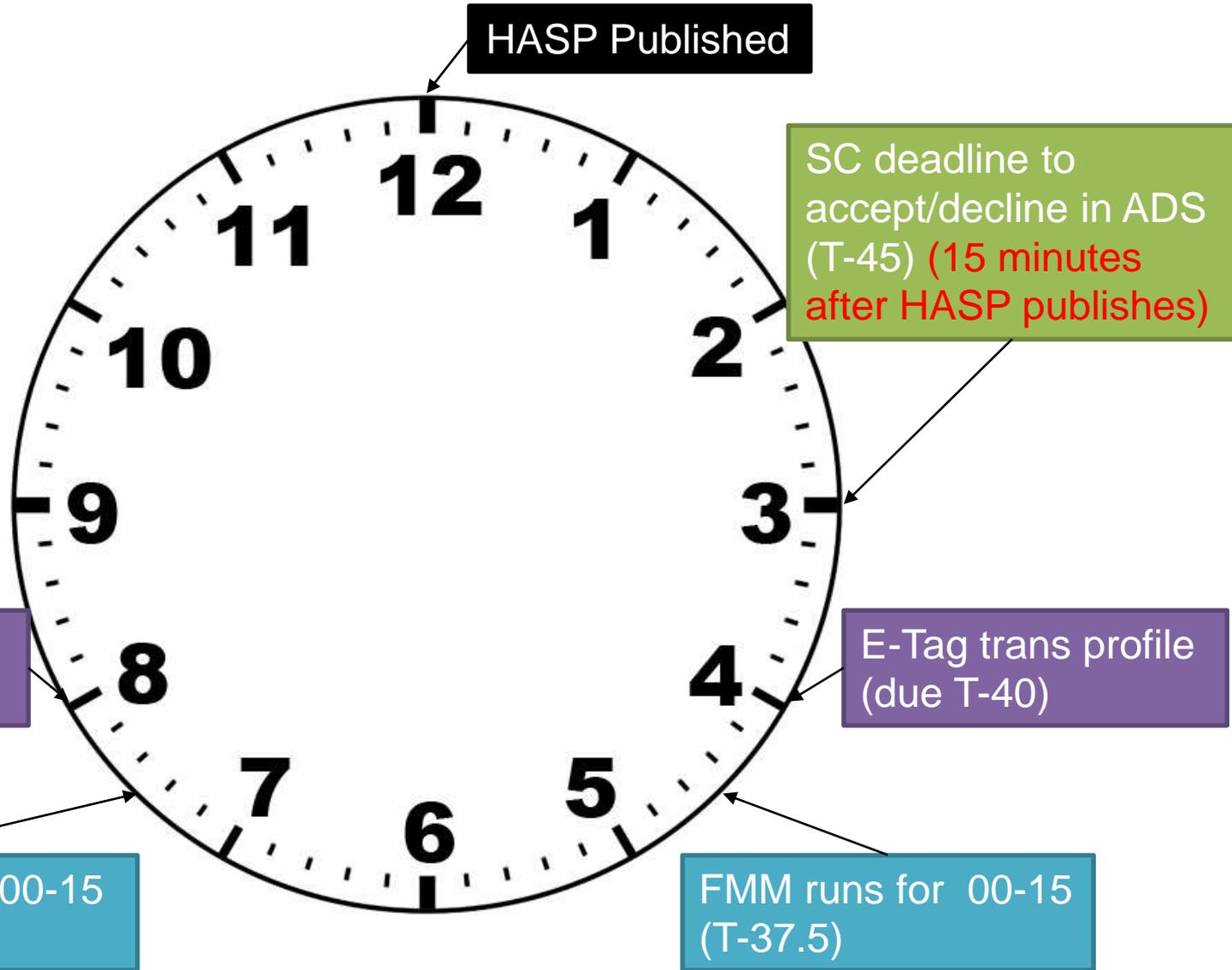
- 1) Hourly DOT received from RTM for previous hour (i.e; Hourly DOT Start time: 17:00)
- 2) Hourly DOT received from RTM for Current hour (i.e; Hourly DOT Start time: 18:00)
- 3) SC Accepted Hourly DOT for previous Hour (i.e; Hourly DOT Start time: 17:00)
- 4) SC Accepted Hourly DOT for Current Hour (i.e; Hourly DOT Start time: 18:00)

5, 6 & 7 are derived value:

- 5) 2 minus 1
- 6) 4 minus 3
- 7) 4 minus 2

4038-8A48
4038-FFE
4038-FFE
4038-FFE
4038-FFE

Scheduling Milestone Example



Questions

UNDER/OVER DELIVERY CHARGE (UODC)

Settlement Changes - Under/Over Delivery Charge (UODC)

Decline Charge

FMM binding award for interval 1 & 2 of operating hour = ADS accepted value*

Curtailments included

10% monthly threshold

Compares HASP schedule to FMM award

Applies to hourly block resources

Applies to under scheduling

Charged at 50% of FMM LMP

Allocated to monthly measured demand less ETCs and TORs

Under/Over Delivery Charge

FMM binding award for interval 1 & 2 of operating hour = $\min(\text{HASP dispatch, ADS accepted value, E-Tag transmission profile})$

Curtailments excluded

No threshold - applied per 15-min interval

Compares HASP schedule to E-Tag (hourly block resources) or Transmission profile (FMM resources)

Applies to all intertie resources**

Applies to under and over scheduling

Charged at 50% of $\text{MAX}(\text{FMM, RTD})$ LMP with \$10 floor

Allocated to measured demand less ETCs and TORs

*for hourly block resources

**excluding dynamic resources

ISO proposes to exclude curtailments from counting towards under/over delivery charge

- Deviations that occur due to the actions of the scheduling coordinator will be subject to the UODC
- Deviations that occur for reliability reasons will be excluded from the under/over delivery penalty
- Individual resources that are curtailed by the ISO because the E-Tag exceeds the market award will still be subject to the UODC
 - The curtailment will be automated and requires fifteen-minute curtailments of hourly block resources

UODC details

- The intertie deviation settlement provides incentives for SCs to produce the MW that they have scheduled
- Applicable to every settlement interval, not just monthly
- Non-delivery will be subject to a charge equal to 50% of the maximum of the FMM or the RTD LMP, with a \$10/MWh minimum, plus any imbalance energy charges
- Additional 25% charge at the greater of the FMM or RTD LMP when the scheduling coordinator accepts an award in ADS but fails to deliver the energy

Under/Over Delivery Quantity

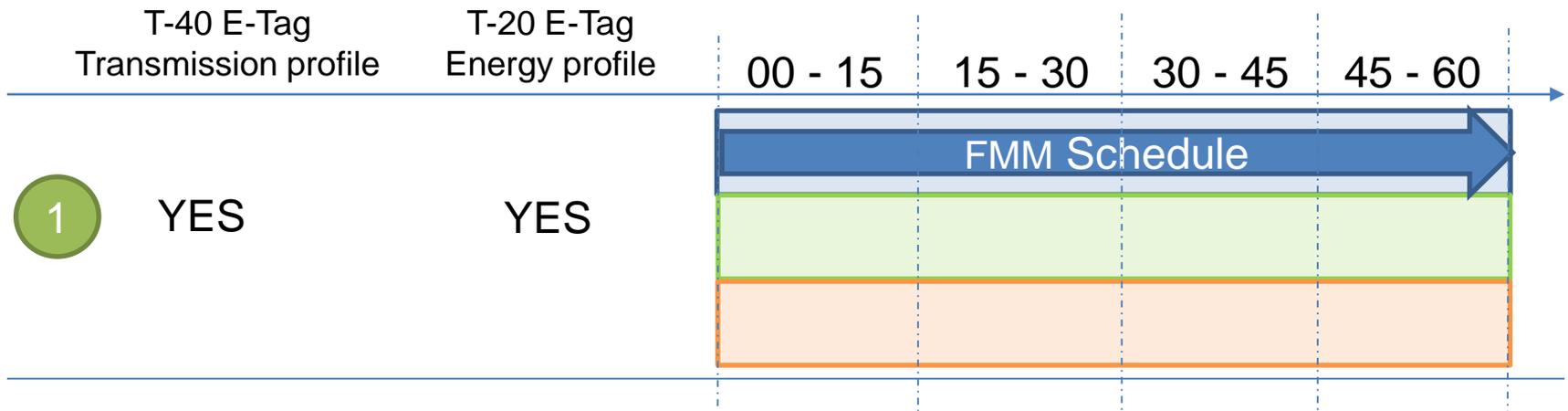
Bid Option	Determination of Under/Over Delivery Quantity
Self-Schedule Hourly Block	Absolute Value (HASP Schedule – after the fact E-Tag Energy Profile)
Economic Hourly Block	Absolute Value (HASP Schedule – after the fact E-Tag Energy Profile)
Economic (fifteen-minute dispatchable)	E-Tag transmission profile – HASP schedule, If < 0 , charge applies to amount of deviation If ≥ 0 , charge does not apply
Economic Variable Energy Resource	E-Tag transmission profile – HASP schedule, If < 0 , charge applies to amount of deviation If ≥ 0 , charge does not apply
Additional Assessment Rule	
Undelivered Accepted Intertie Schedule	Additional 25% penalty applied
Curtailed Intertie Schedules	Reliability curtailed intertie schedules will be exempt from penalty

Price - will equal $0.5 \times \text{MAX}(\text{FMM LMP}, \text{RTD LMP})$,
with a \$10/MWh minimum

- Use of the greater of the FMM or RTD provides the strongest incentive to deliver awarded energy
 - This is necessary because at times the FMM price is higher than the RTD price
- Floor of \$10 for under/over delivery charge will ensure the incentive still applies even if pricing is low
- Additional 25% penalty if an SC accepts a HASP schedule in ADS by T-45 but does not submit an E-Tag
 - Accepting an award but failing to submit an E-Tag results in operational challenges for ISO operators

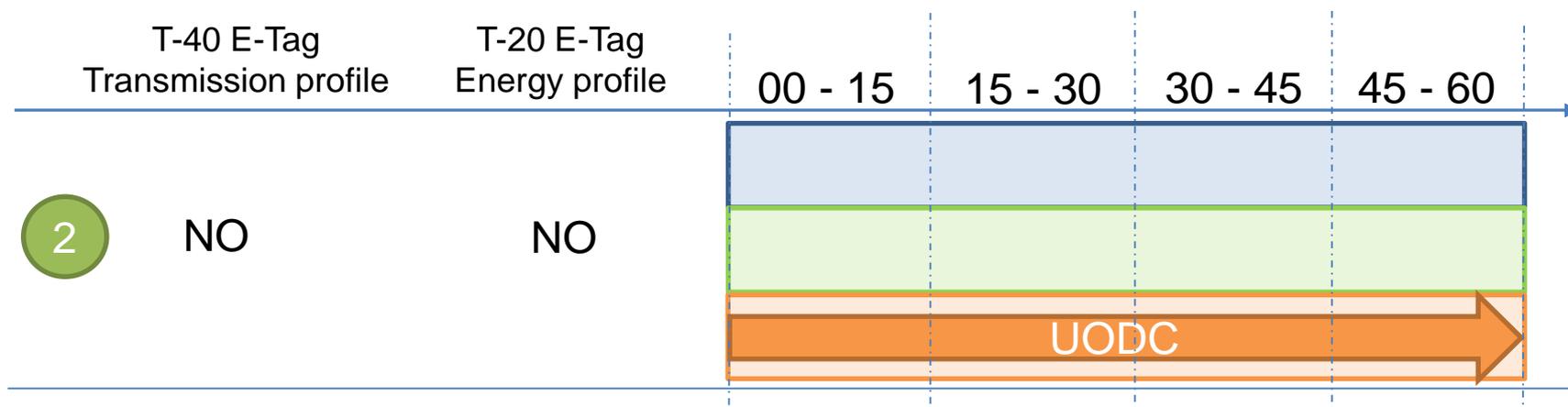
SCENARIOS

Scenario 1



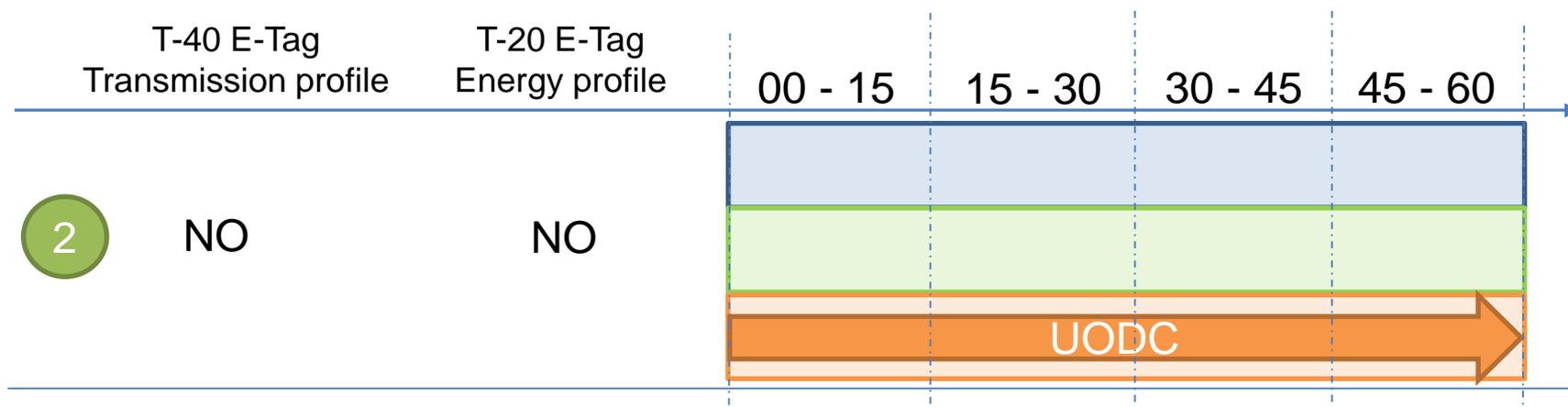
- E-Tag energy profile = FMM schedule
 - no imbalance energy settlement
- E-Tag energy profile = HASP schedule
 - no under/over delivery charge

Scenario 2a – award declined in ADS



- E-Tag energy profile = FMM schedule
 - no real-time imbalance energy settlement
- E-Tag energy profile \neq HASP schedule
 - subject to under/over delivery charge

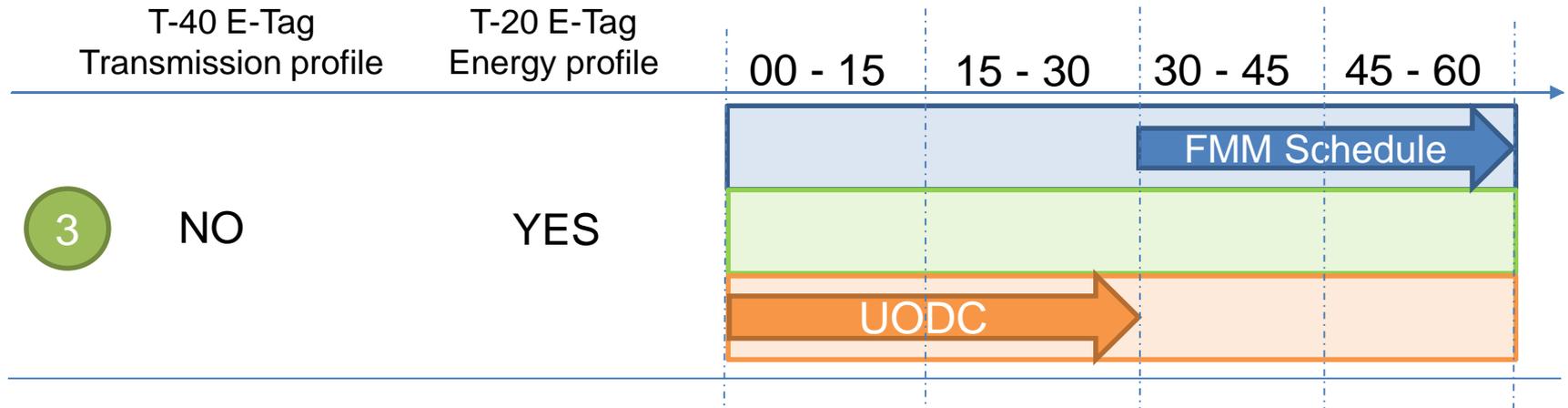
Scenario 2b – E-Tag not submitted



- E-Tag energy profile = FMM schedule
 - no real-time imbalance energy settlement
- E-Tag energy profile \neq HASP schedule
 - subject to under/over delivery charge with additional 25% for not tagging

Scenario 3

FMM Schedule
RTD IIE Settlement
UODC



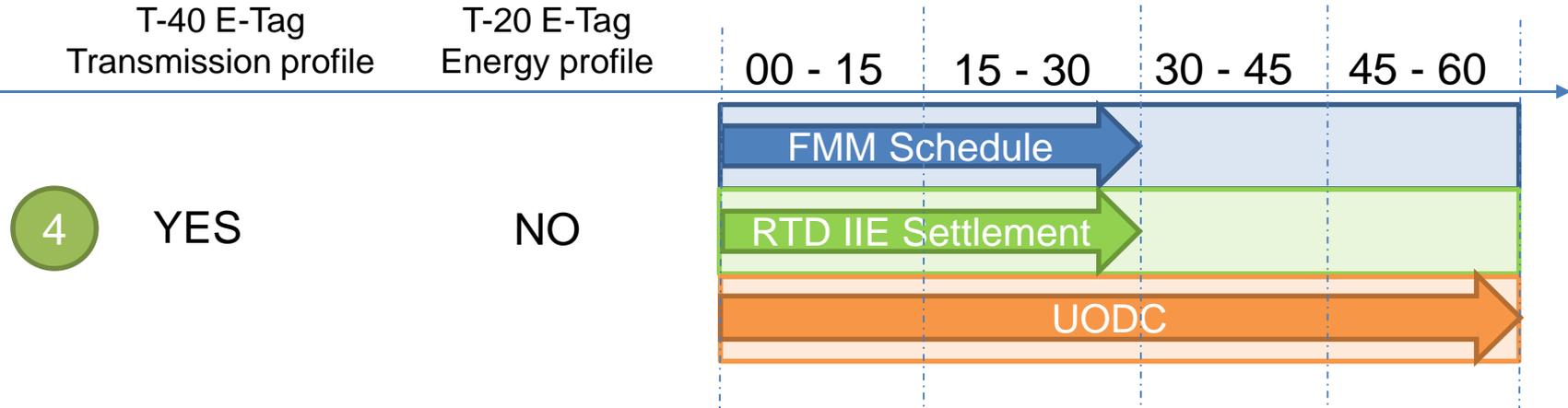
- E-Tag energy profile \neq FMM schedule for interval 1 & 2
 - E-Tag must be curtailed
- E-Tag energy profile \neq HASP schedule for interval 1 & 2
 - subject to under/over delivery charge

Scenario 3, cont.

- Consistent with the current scheduling policy, the ISO will not allow energy to flow if the energy profile exceeds the market award
 - This will result in a curtailment for scenario 3
 - Prevents over-scheduling on interties
- ISO will automate curtailments at approximately T-15
 - E-Tag energy profiles will be curtailed to match FMM award
 - Curtailments may occur for 15-min intervals
 - These resources will be subject to the UODC

FMM Schedule
RTD IIE Settlement
UODC

Scenario 4



4

YES

NO

- E-Tag energy profile \neq FMM schedule for interval 1 & 2 – real-time imbalance energy settlement
- E-Tag energy profile \neq HASP schedule – subject to under/over delivery charge

Questions

Charge Code Overview

- New Charge Codes
 - Intertie Deviation Settlement (CC 6456)
 - Intertie Deviation Settlement Allocation (CC 6458)
- Updated Pre-Calculations
 - System Resource Deemed Delivered Energy Quantity
 - ETC TOR CVR Quantity
- Terminated Charge Codes
 - Intertie Schedules Declined (CC 6455)
 - Intertie Schedules Declined Allocation (CC 6457)

SOME SETTLEMENT EXAMPLES

Example - Fifteen Minute Economic Bid Resource

Fifteen Minute Economic Bid Resource
w/o ED

HASP Schedule	100
Transmission Profile	90
Energy Profile	80
ADS Accept MW	100
Reliability Curtailment	10
FMM LMP	\$15
RTD LMP	\$10

BA5MResourceFifteenMinuteIntertieDeviationSettlementQuantity

=

100-90

10

BA5MResourceIntertieDeviationSettlementPrice

1/2 * \$15

\$ 7.50

BA5MFifteenMinuteIntertieTotalDeviationSettlementAmount

10 * \$7.5

\$75

Example – Hourly Block Resource

Hourly Block Resources
w/o ED

HASP Schedule	100
Transmission Profile	90
Energy Profile	80
ADS Accept MW	100
Reliability Curtailment	10
FMM LMP	\$15
RTD LMP	\$10

BA5MResourceHourlyBlockIntertieDeviationSettlementQuantity

$$= \frac{100 - (80 + 10)}{10}$$

BA5MResourceUndeliveredADSAcceptAdditionalPenaltyQuantity

$$= \frac{100 - (80 + 10)}{10}$$

BA5MResourceIntertieDeviationSettlementPrice

$$\frac{1}{2} * \$15$$

\$ 7.50

BA5MResourceHourlyBlockIntertieDeviationSettlementAmount

\$ 75.00

BA5MResourceUndeliveredADSAcceptAdditionalPenaltyAmount

$$10 * (\frac{1}{4} * \$7.5)$$

\$ 18.75

BA5MHourlyBlockIntertieTotalDeviationSettlementAmount

$$\$75 + \$18.75$$

93.75

Questions

Intertie Deviation Settlement Summary

- Purpose – provides incentive for intertie scheduling coordinators to deliver in alignment with awarded energy
- **Does not apply to EIM participants**
- E-tagging rule changes – provide ISO operator with a better assurance of the amount of MW that will be delivered
- ADS changes – provides the ISO and the scheduling coordinator with more information about intertie deliveries
- Settlements changes – provides additional incentive for delivering intertie MW

A word on exports

- The decline and/or failure to deliver awarded exports can impact the ISO.
- When an export award is declined, the ISO ends up with more energy than the market awarded
- This can cause transmission limits to be exceeded, impacting importers and not exporters.
- Export declines can result in decreased prices, making it more expensive to dispatch internal generation down in the real-time dispatch.
- The ISO is exploring potential solutions to this problem but it is not currently resolved in this initiative.

Wrap Up



Market Simulation Structured Scenario #1

Scenario	Expected Outcome
<p>Accept a tagging value different from the resource awards and submit through ITS the tagged value different than the ADS accept value.</p> <p>This scenario is applicable to the hourly and 15-minute resources.</p>	<p>Participants should expect to see deviation penalty settlement in CC 6456. For hourly resources, an additional 25% penalty will be applied due to deviation between the ADS accepted value and final tagged value. All collected charges will be allocated to measured demand through CC 6458.</p>

Market Simulation Structured Scenario #2

Scenario	Expected Outcome
<p>Scheduling Coordinator fails to submit a transmission profile by T-40. This is to test that the market does not give FMM resource in absence of the transmission profile.</p>	<p>For hourly resources, participants should expect to see deviation penalty settlement in CC 6456 if their final tagged (energy profile) value is different from their HASP award.</p> <p>For 15 minute resources participants should expect to see deviation penalty settlement in CC 6456 on the difference between their HASP schedule and 0 (transmission profile). All collected charges will be allocated to measured demand through CC 6458.</p>

BPM Changes

BPM	Description
Market Operations	E-Tag rule changes
Settlements	Remove decline charge; Add under/over delivery charge

Resources – Stakeholder Process Page

- Draft Final Proposal and presentation
- Board of Governors Decision
- Draft Tariff Language

Home>Stay Informed>Stakeholder Processes>Intertie Deviation Settlement

<https://stakeholdercenter.caiso.com/StakeholderInitiatives/Intertie-deviation-settlement>

Resources - Release Planning Page

- Business Requirements (BRS)
- Settlement Details

Home>Stay Informed>Release Planning>Intertie Deviation Settlement

<http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx>

Final Questions



For more detailed information on anything presented, please
visit our website at:

www.caiso.com

Or send an email to:
CustomerReadiness@caiso.com