



Ancillary Services State of Charge Constraint Market Simulation Training

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Who should attend this training?

Market Sim Team
Settlements Team

Scheduling
Coordinators

Storage Resources

Ancillary
Services

Housekeeping



Make sure to keep yourself muted unless you have a question

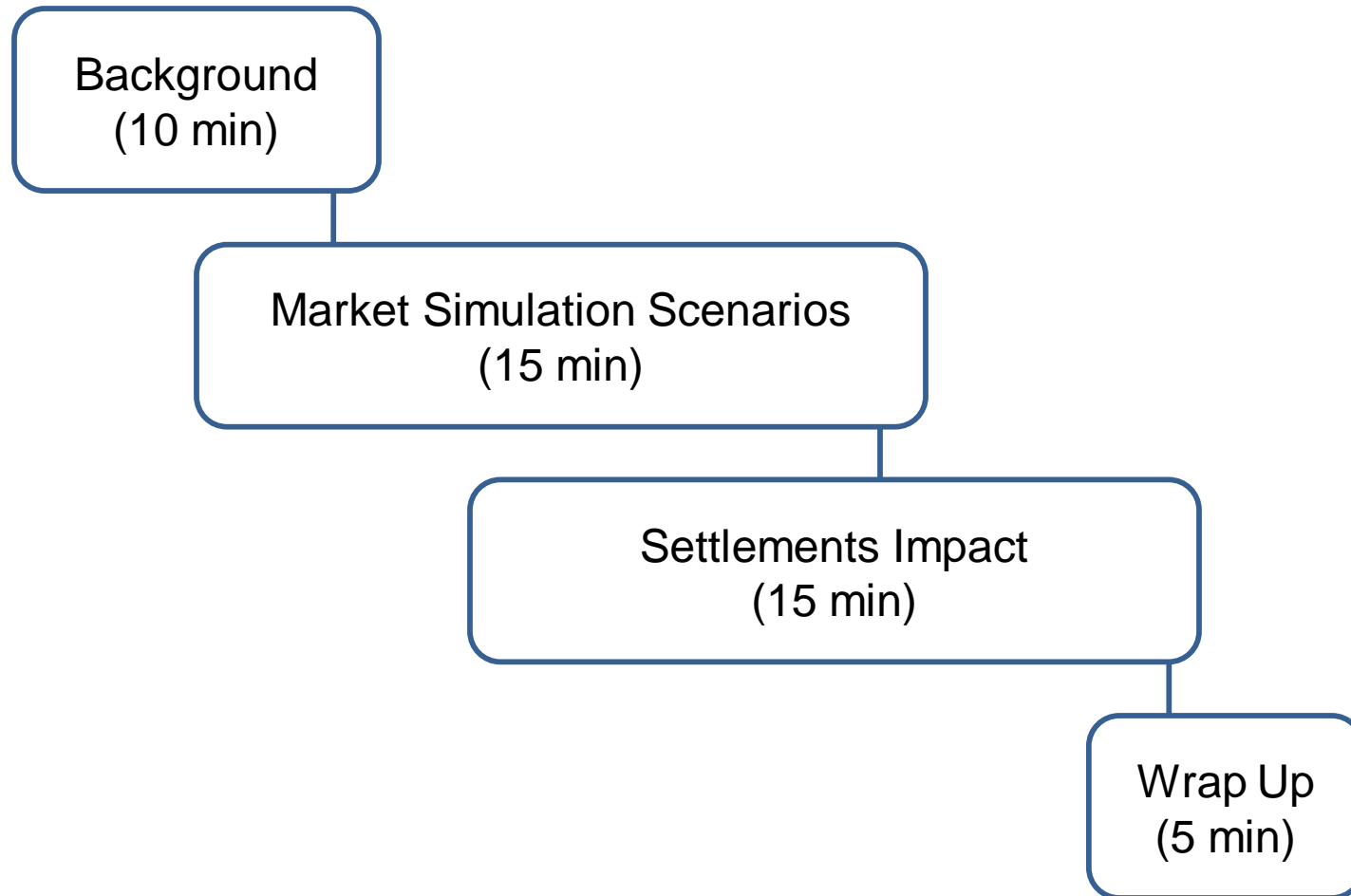


If you have a question, you may either ask over the phone or in the chat

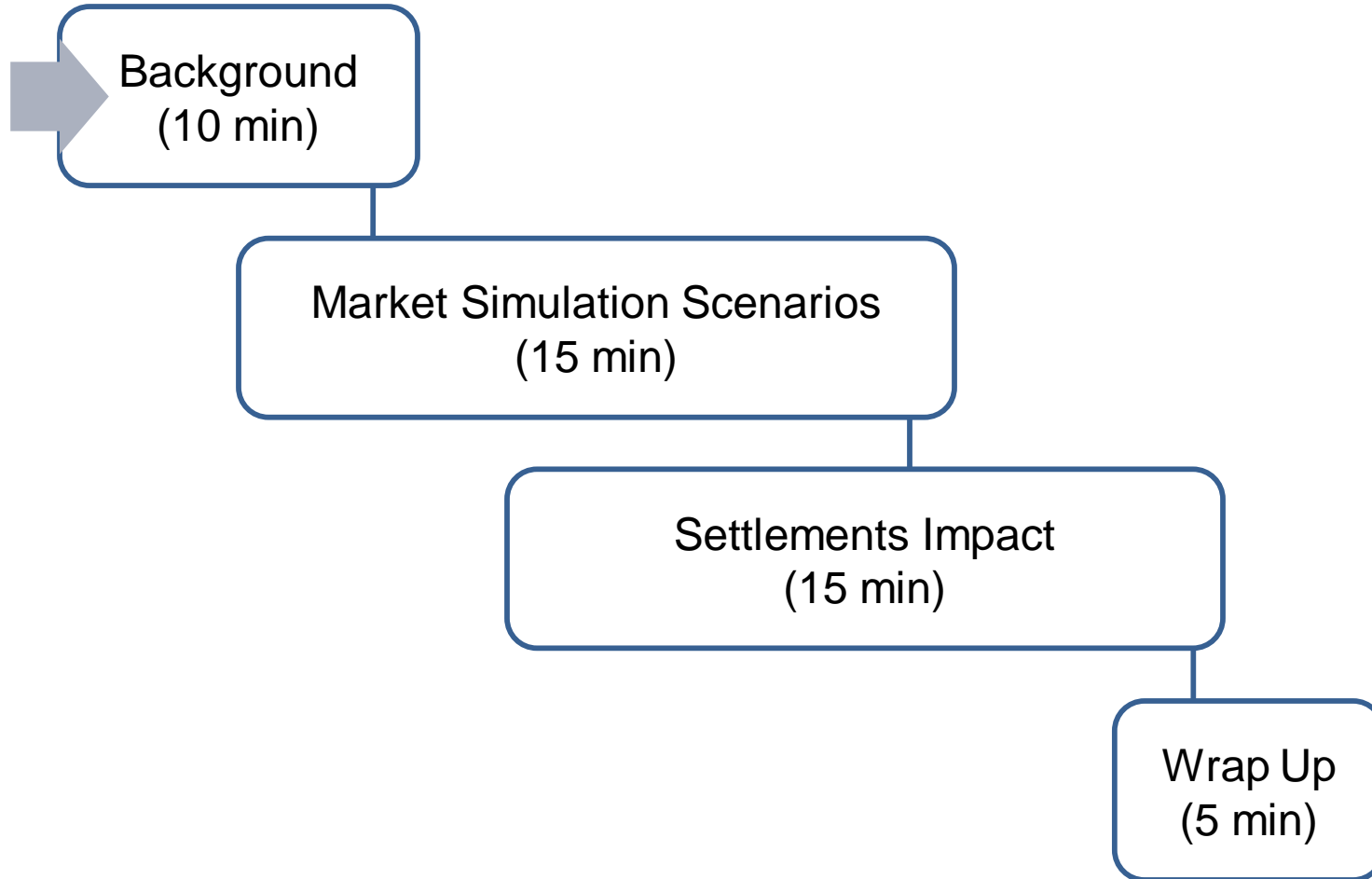


If you want to ask a question, you can virtually “raise your hand” in WebEx

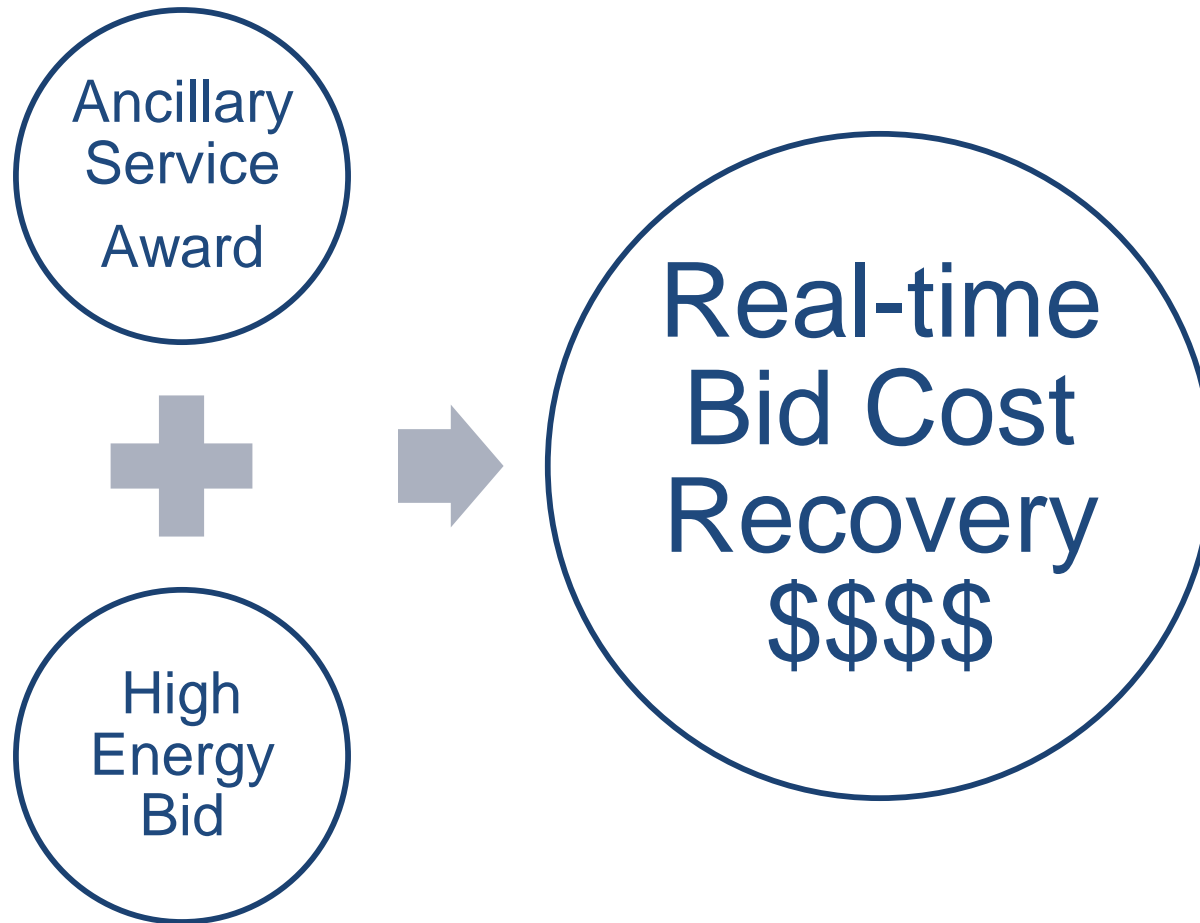
In today's session we'll cover:



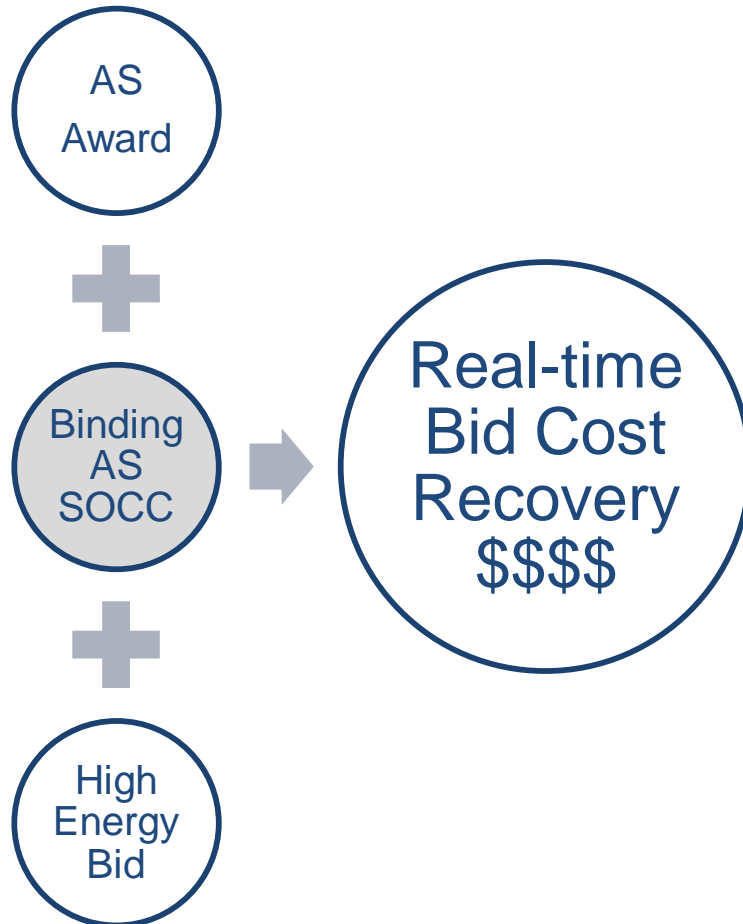
In today's session we'll cover:



The issue: Storage resources were receiving unusually large bid cost recovery payments



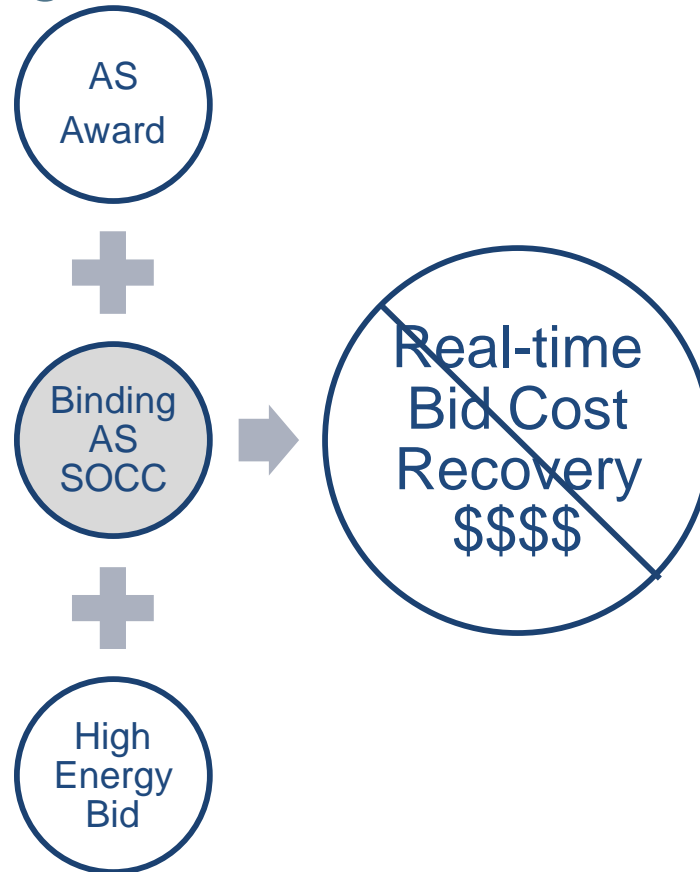
The cause: The Ancillary Service State of Charge Constraint (AS SOCC) led to storage resources being dispatched uneconomically



Ancillary Service State of Charge Constraint (AS SOCC)

Ensures that storage resources scheduled to provide AS have a sufficient state of charge to actually provide the service in real-time for at least 30 minutes.

The solution: Implement a rule limiting BCR when AS SOCC is binding

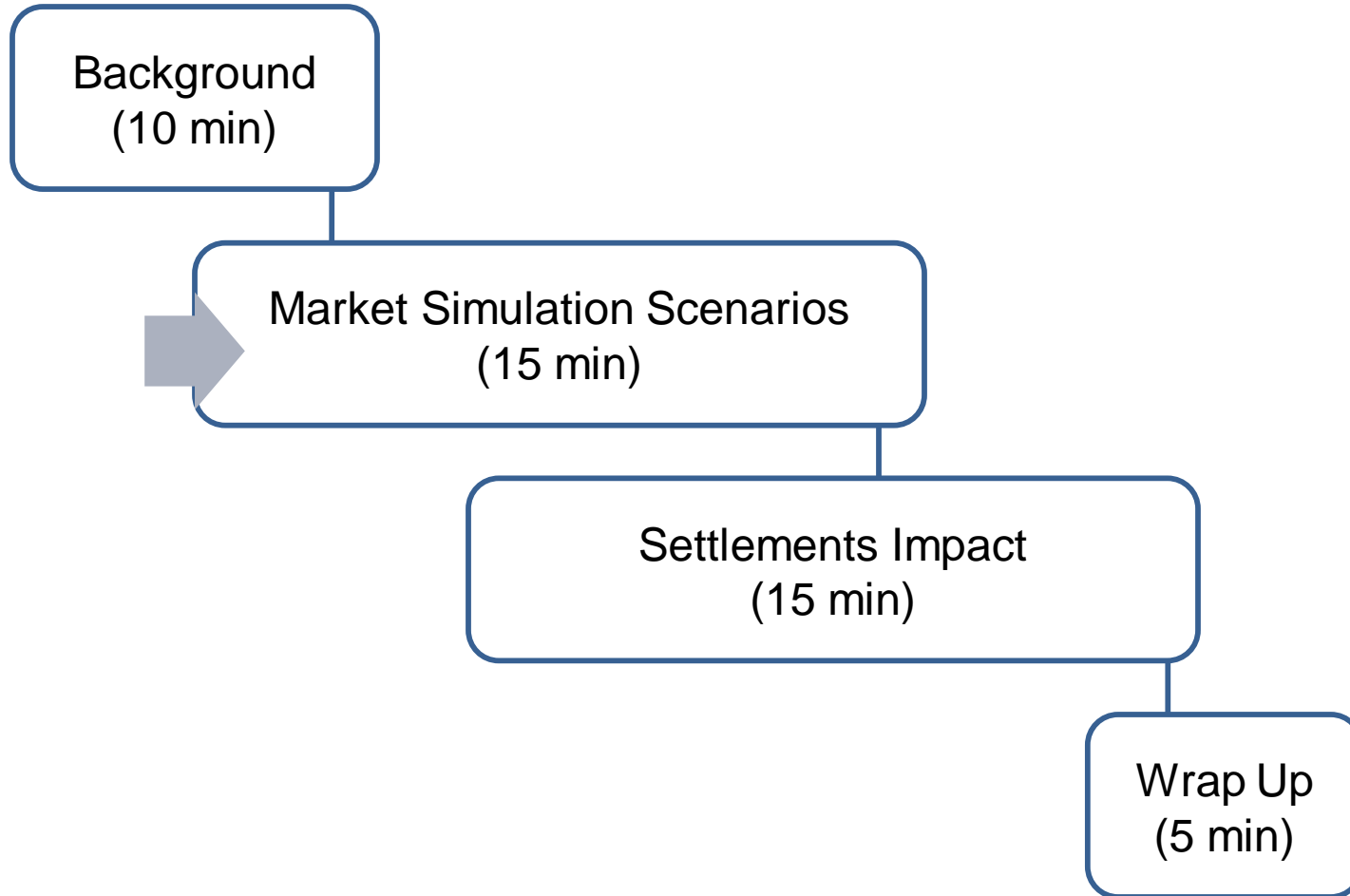


Link to Energy Storage Bid Cost Recovery FERC Order:

[Nov18-2022-OrderAccepting-EnergyStorageBidCostRecovery-ER22-2881.pdf \(caiso.com\)](https://www.ferc.gov/finance/energy-storage-bid-cost-recovery-er22-2881.pdf)

Q&A

In today's session we'll cover:



Market Simulation Scenario

4.4.1 Business Requirements

ID#	Guidance on Market Participant Impacts	Source System	Sink System	Reason for Potential Scenario
ASSOC-MSIM001	<p>Storage resource SCs shall submit energy bids and competitive regulation bids (to receive regulation awards) to trigger AS SOC constraint to be binding in RTPD, RTD</p> <p>Potential scenarios include: Energy bids to bid cap</p> <p>Both regulation up and regulation down bids</p>	SIBR	RTM Settlements CMRI	Confirm AS SOC constraint binds



Link to Release Planning page with AS SOCC Business Requirements Specification:
<http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx>

Suggested scenario in DA –Modify storage resource bid so its “lower” AS SOC constraint becomes binding

- HE01 to HE08
 - Submit energy (EN) bids covering the positive EN range (0 to Pmax) at a bid price of $-\$150/\text{MWh}$ (No bid on EN negative range)
 - No Ancillary Service (AS) bid
 - Reason: Depletes the SOC
- HE09 to HE24
 - Submit EN bids from $P_{\min}/2$ to 0 with a bid price of $+\$1000/\text{MWh}$ (No bid on EN positive range)
 - Bid Reg Up for $-P_{\min}$ MW at $\$0/\text{MW}$.
 - Reason: Help the resource get awarded Reg Up in DA

Suggested scenario in RT –Modify storage resource bid so its “lower” AS SOC constraint becomes binding

- HE01 to HE08
 - Submit energy (EN) bids covering the positive EN range (0 to Pmax) at a bid price of $-\$150/\text{MWh}$ (No bid on EN negative range)
 - No Ancillary Service (AS) bid
 - Reason: Depletes the SOC
- HE09 to HE24
 - Submit EN bids from Pmin/2 to Pmax with a bid price of $-\$150/\text{MWh}$
 - Bid Reg Up for maximum possible amount at $\$0/\text{MW}$.
 - Reason: Enables the lower AS SOC constraint to bind

Suggested scenario in DA – Modify storage resource bid so its “upper” AS SOC constraint becomes binding

- HE01 to HE08
 - Submit EN bids covering the negative EN range (P_{min} to 0) at a bid price of +\$1,000/MWh. (No bid on EN positive range)
 - No AS bid
 - Reason: Charges the SOC
- HE09 to HE24
 - Submit EN bids from 0 to $P_{max}/2$ with a bid price of \$150/MWh (No bid on EN negative range)
 - Bid Reg Down for P_{max} MW at \$0/MW
 - Reason: Helps the resource get awarded Reg Down in DA

Suggested scenario in RT – Modify storage resource bid so its “upper” AS SOC constraint becomes binding

- HE01 to HE08
 - Submit EN bids covering the negative EN range (P_{min} to 0) at a bid price of +\$1,000/MWh. (No bid on EN positive range)
 - No AS bid
 - Reason: Charges the SOC
- HE09 to HE24
 - Submit EN bids from P_{min} to $P_{max}/2$ with a bid price of +\$300/MWh
 - Bid Reg Down for maximum possible amount at \$0/MW
 - Reason: Enables the upper AS SOC constraint to bind

CMRI screenshot

Day-Ahead Real-Time Post-Market Default Bids Convergence Bidding Forecast Reference Energy Imbalance Market Gas Burn Reliability Coordination

Trade Date: Entity: Resource: Execution Type:

RTD or RTUC

Y = HE with constraint

Market Active Resource Constraints

1 - 20 of ???

Trade Date	SC ID	Resource	Constraint Name	Execution Type	Interval	HE01	HE02	HE03	HE04	HE05	HE06	HE07	HE08	HE09
04/19/2023			ASSOC	RTD	1						Y			
04/19/2023			ASSOC	RTD	2						Y	Y		
04/19/2023			ASSOC	RTD	3					Y		Y		
04/19/2023			ASSOC	RTD	4					Y	Y			
04/19/2023			ASSOC	RTD	5					Y	Y			
04/19/2023			ASSOC	RTD	6					Y	Y			
04/19/2023			ASSOC	RTD	7					Y	Y			
04/19/2023			ASSOC	RTD	8					Y	Y			
04/19/2023			ASSOC	RTD	9					Y				
04/19/2023			ASSOC	RTD	10					Y				
04/19/2023			ASSOC	RTD	11					Y				
04/19/2023			ASSOC	RTD	12					Y				

Type of constraint

There is a new flag in the RTM Net Amount Pre-calculation. Use the billing determinants to verify the settlement

RTM Net Amount Pre-calculation Version 5.37

3.6.1.2.6 Resource5minutelyRTMASSOCFlag mdhcif =

If

((Resource5mAncillaryServiceSOCConstraintFlag mdhcif = 1

Or

Resource15mAncillaryServiceSOCConstraintFlag mdhc = 1)

And

RTMNetLESREligibilityAmount mdhcif > 0)

Then

1

Else

0

Billing Determinants

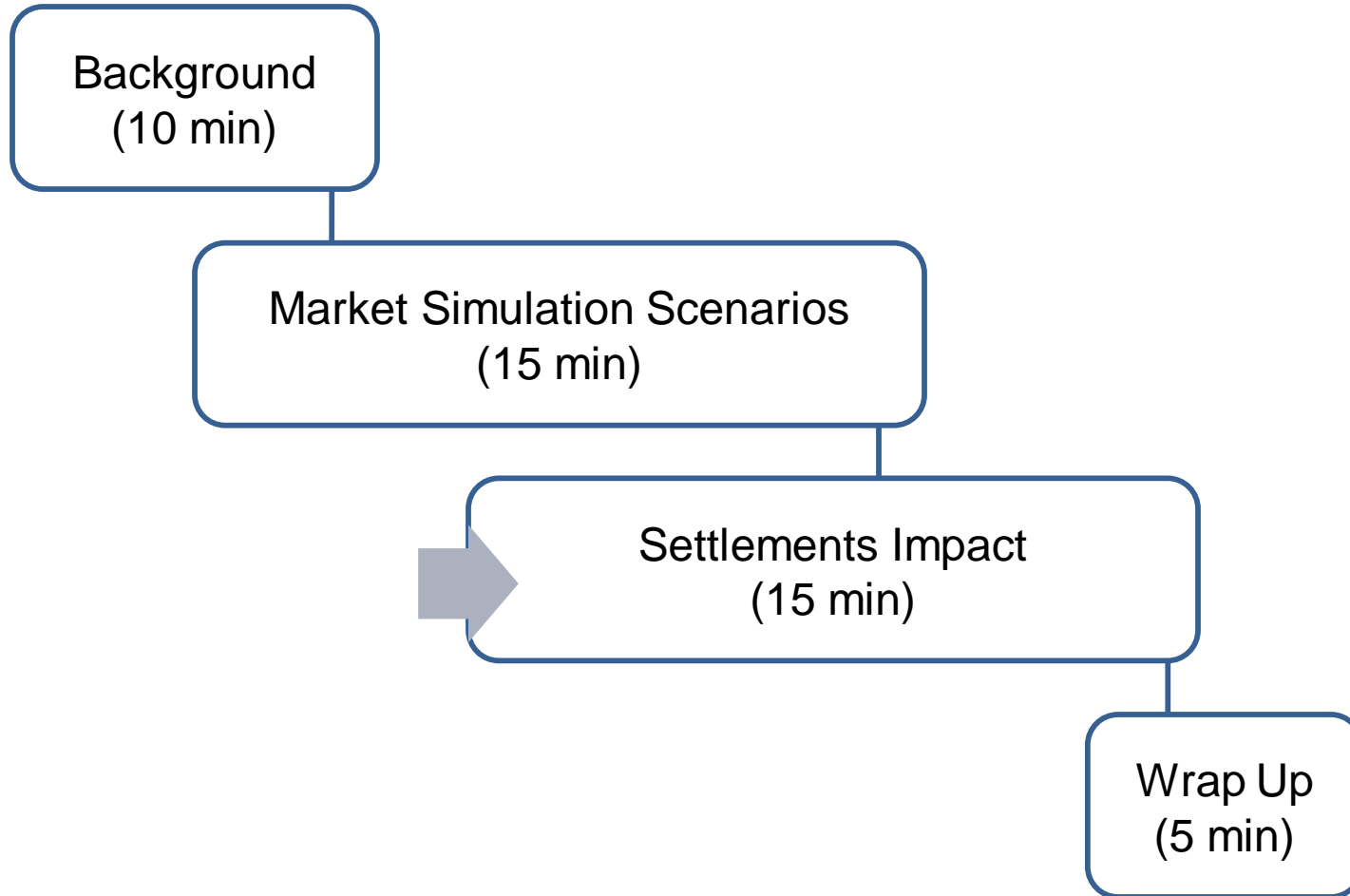
RSRC_5M_AS_SOC_CONST_FLAG

RSRC_15M_AS_SOC_CONST_FLAG

If either of these = 1, then constraint is binding

Q&A

In today's session we'll cover:



Retroactive settlements will begin with trade date 9/20/2022

- Impacts the RTM Net Amount Pre-calculation
- ISO will resettle trade dates using the new AS SOC Constraint flags
- Resettlement will be run on the next available settlement statement meaning:
 - Trade date 9/20/22 resettlement will appear T+11M statement
 - Other resettlements could occur on T+70B statements
- Validation
 - Review new CMRI report against BRS settlements to validate that AS SOC Constraint was triggered
 - Submit disputes on incremental changes, if necessary



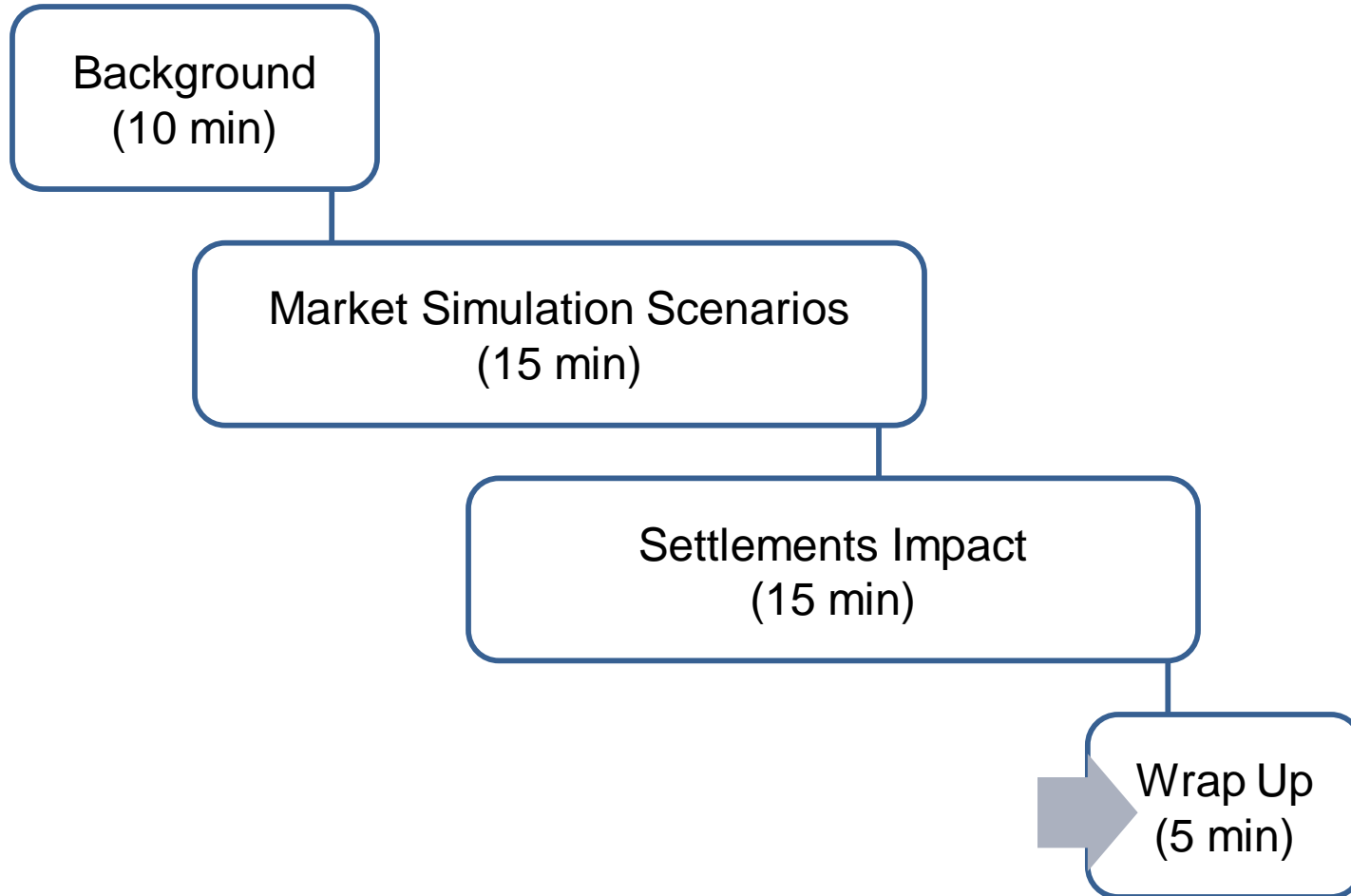
Link to BPM Change Management (search for PRR 1491):
[BPM CM - Home \(caiso.com\)](#)

Prospective settlements are scheduled to begin with the 6/1/23 trade date

- The AS SOC Constraint flag will be in place and will be used to calculate the real-time BCR settlement beginning with the T+9B initial statement
- Use CMRI to validate the AS SOCC and submit disputes via CIDI if necessary

Q&A

In today's session we'll cover:



AS SOCC – Action Items

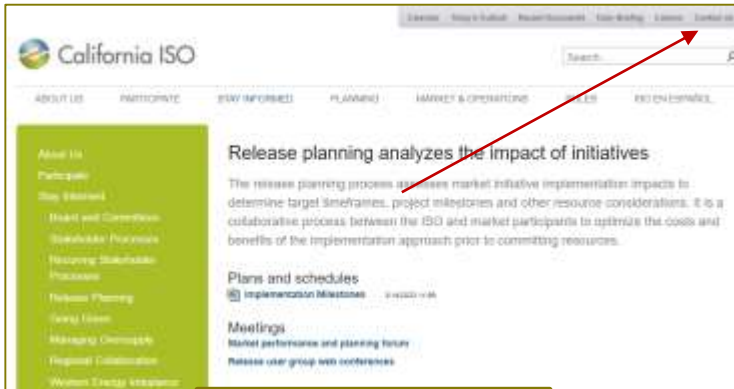
- Register for market sim as soon as possible
- Attend the Settlements User Group meetings
- Market sim starts on 05/01/23
 - Attend market sim meetings (started 04/27/23)
 - Run market sim scenarios and validate results
 - Submit questions and concerns in CIDI
- Validate retroactive BCR settlements starting beginning with trade date 9/20/22
 - Refer to ISO Payment Calendar for schedule
 - Submit disputes in CIDI, as necessary
- Validate BCR settlements going forward



Link to the [CaliforniaISOPaymentsCalendar2023.pdf \(caiso.com\)](https://www.caiso.com/CaliforniaISOPaymentsCalendar2023.pdf)

Final Q&A

Still have questions?



www.caiso.com

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Cc:

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Subject: Question about Training

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Thank you for your participation!