

Price Formation Enhancement – Bidding Above the Soft Offer Cap Pre-Market Simulation Training

Today's Trainer

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**Customer Readiness
Trainer**

Revised 7/19/24

- Added Q&A from training session
- Updated Market sim dates
- Add clarifying details for storage DEB examples

Housekeeping



REMAIN MUTED

Keep yourself muted to minimize background noise



ASKING QUESTIONS

Unmute to ask verbal questions or write in the chat pod



RAISING HAND

Raise your hand using WebEx interactivity tools

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Q&A from training

New Slide

QUESTION: What is the bid ceiling? The energy bid ceiling tells you if the market has received either a valid bid above \$1000/MWh in a given hour from a physical system resource, or the MIBP goes above \$1000 in that hour. Valid bids must be from resource-specific, physical system resources registered in the ISO's master file to trigger an increase in the energy bid ceiling.

QUESTION: If the bid ceiling is \$1000/MWh, can you still bid above \$1000/MWh if your DEB is above \$1000/MWh? Yes, resource-specific resources can bid above \$1000/MWh depending on their specific bid cap, which for most resources (with the exception of storage) is set by the higher of \$1000/MWh or the DEB. The bid ceiling gives you information but is not a limitation.

QUESTION: When is the real-time MIBP calculated? What information will be made available to market participants, and when? The MIBP is calculated the night before the trade-day in time for the ISO update the relevant systems. The ISO does not publish the exact MIBP values, but does provide market participants with relevant information prior to the real-time market. By XXpm, SIBR will re-validate bids and update the energy bid ceiling table based on the MIBP calculated for real-time. By XXpm, the shaping factor for the MIBP will be made available in OASIS.

QUESTION: Does the DEB cap differ between DA vs RT market? Does revision to the DEB cap depend on the DEB type? No, the cap on all DEB calculations will be revised up from \$1000/MWh to \$2000/MWh in both DA and RT regardless of DEB type or timing.

QUESTION: Will my bid become invalid if it is below the DEB cap? No. It will not be considered invalid. It will be accepted as the bid.

QUESTION: Do the bidding rules differ between the DA and RT markets? Do the rules depend on DEB type or DEB value? The rules for bidding primarily depend on technology type and the value of the submitted bid. For all technology types, bids above \$2000/MWh will be rejected. For all technology types, bids below \$1000/MWh will be validated. Bids between \$1000/MWh and \$2000/MWh will be validated based on the bidding rules for the technology type. The bidding rules for storage resources (NGR-LESR) may be impacted by the resource's choice of DEB. While all DEB options can be calculated to be above \$1000/MWh, the bid cap for resources using the storage DEB option will not use the DEB as a reference to validate bids above \$1000/MWh.

QUESTION: What happens if my resource uses the storage DEB option, and the DEB is calculated to be over \$1000/MWh? The DEB can be calculated to be above \$1000/MWh, but it will not be used to validate the resource's bids above \$1000/MWh. However, the DEB will be used in the event that market power mitigation is triggered and the resource's bid is identified to be revised. If the resource's DEB is above \$1000/MWh and the resource bids above the DEB, because either the 4th highest MIBP value or highest cost verified bid is greater than \$1000/MWh and the DEB, the resource's bid will not be revised lower than the DEB.

QUESTION: If we bid above \$1000/MWh, but our DEB is below \$1000/MWh, what is the bid cap? \$1000/MWh.

QUESTION: Let's say I have a hydro resource with a negotiated DEB calculated to be \$400/MWh and in some hours we bid at \$800/MWh. Will my bid be revised to my DEB? SIBR would not revise this bid. Any bid up to \$1000/MWh will not be capped. This functionality is only important if you are submitting a bid above \$1000/MWh.

Q&A from training cont.

New Slide

QUESTION: Let's say I have a hydro resource with a negotiated DEB calculated to be \$400/MWh and in some hours we bid at \$1800/MWh. Will my bid be revised to my DEB? Bids above \$1000/MWh will be capped by the higher of \$1000/MWh and the DEB. In this case, \$1000/MWh is higher than the DEB so the bid would be revised to \$1000/MWh.

QUESTION: Would we expect to see at least 1 hour in the energy bid ceiling report to show \$2000/MWh if the 4th highest MIBP is above \$1000/MWh? Yes, if we get a MIBP above \$1000/MWh, we would see the bid ceiling go to \$2000/MWh for that hour. If the 4th highest MIBP value is above \$1000/MWh, we would expect to see the energy bid ceiling to show \$2000/MWh for at least 4 hours.

QUESTION: "The Storage DEB will set the cap so the bid becomes \$1200/MWh." and then the next slide says "Storage DEB will not set the cap. The bid will be capped at soft offer cap \$1000/MWh." These 2 sentences seem to be at odds. Could you please explain again? For the first Storage DEB, this is pointing to the NDEB or a different DEB value. The following slide is the Storage DEB option, which will not set the cap. On the slides, I can go through and ensure that is clarified.

Questions and Answers (Q&A)

QUESTION: Will the CAISO publish the 4th highest MIBP being used for the purpose of the market sim for verification purposes? Yes, the ISO will provide the value used in the market sim so that stakeholders can confirm the outcome.

QUESTION: What happens if we submit a bid of \$2000? Will SIBR automatically revise the bids and do we have time to respond to those changes? You can submit a bid up to \$2000, and SIBR will revise the bid down to the value determined by the new bidding rules. The value of the cap might change with additional information received by the market, and SIBR re-validates bids at certain times prior to the trade-day. When SIBR re-validates bids, it uses the original bid value (not the revised bid value) as the basis for validation which means bids might be revised up. SIBR will notify SCs when those rules are re-fired. For example, a storage resource might bid \$2000 into the DAM and SIBR would cap that bid at \$1000 for the DAM, but could revise the bid up should the 4th highest MIBP for the RTM be above \$1000. In this case, the SC would be notified the evening before relevant trade-day when SIBR calculates the MIBP for the RTM and revalidates bids. Some relevant market information may not be available until the close of the window for the relevant trade-hour, like the highest cost-verified bid. In this case, SIBR will revalidate bids after the close of the window and it will be too late for an SC to react to that change. However, it is expected that market participants will not submit bids above their competitive value, so market participants should not need to take action should the bid be revised up.

QUESTION: When does SIBR revise bids and do we have time to respond to those changes? SIBR re-validates bids at certain times between the DA and RT market runs and SCs will be notified through SIBR when that happens. Each time it re-validates bids, SIBR considers the original bid (not the revised bid) for the relevant trade-hour, so bids can be revised up based on new information. If a cost-verified bid comes in just before the trade window closes, SIBR could revise bids up with this information after the window closes (*please refer to example in appendix*).

Questions and Answers (Q&A) cont.

QUESTION: If soft bid cap is at 1000/MWh\$ for that hour, are we able to submit a SIBR bid in real-time above that for that hour? This has previous been a functionality. This project creates new SIBR rules to cap bids at whatever is the highest value is.

QUESTION: When there is a cost-verified bid in the DAM, does that set the cap for storage resources in all hours or just the relevant trade-hour? A cost-verified bid in DA could set the cap for storage resources only for the relevant trade-hour in RT.

QUESTION: What does the energy bid ceiling table in SIBR mean? There's a tab that shows which hours in the DA or RT the energy offer cap has been raised to the \$2000. This does not mean a storage resource can successfully bid up to \$2000 in each of those hours, but that either the MIBP or a cost-verified bid is above \$1000 in that hour.

QUESTION: When there is a cost-verified bid, does that bid set the price only for the relevant trade-hour? Is there a difference if the bid is adjusted through the automated process? It does not matter how the bid was cost-verified, a cost-verified bid will impact the offer cap only in the relevant trade-hour in which the bid is submitted.

QUESTION: Will storage be able to submit bids above \$1000 in every hour and will the ISO adjust those bids? Yes, storage resources can bid up to \$2000 no matter what the cap is, and SIBR will reduce the bid down to the applicable cap.

Our meeting agenda



Summary

Scenario 1

Scenario 2

Market
Simulation

Wrap Up

Who does this impact?

Scheduling Coordinators (SC) in the CAISO Balancing Authority Area (BAA) and Western Energy Imbalance Market (WEIM).

- **Default Energy Bid (DEB)** resources.
- Energy storage resources registered as a **Limited Energy Storage Resource (LESR)**.



Background on initiative

FERC 831

Bids can be submitted above \$1000/MWh but must be cost verified by the market operator or market monitor.

Working Group & Stakeholders

Expressed the importance of the ISO timely addressing intra-day opportunity costs in relation to the soft offer cap for energy limited resources.

Initiative timeline

Updated Market Sim Dates



To learn more about Price Formation Enhancements, check out the [policy initiative page](#)!

Rules for Bidding Above Soft Offer Cap

1

Revise the \$1000/MWh cap on Default Energy Bids (DEBs) for all resources to a value of \$2000/MWh.

2

Modify the bid cap for energy storage resources to provide bidding flexibility using a proxy opportunity cost value (real-time market).

[Market Instruments BPM Attachment D](#) for more detail on DEB calculations.

What Questions Do You Have?



Unmute yourself

or



Raise your hand



Let's review the first part for bidding above the soft offer cap

“UNCAPPING” THE DEB

1

Revise the \$1000/MWh cap on Default Energy Bids (DEBs) for all resources to a value of \$2000/MWh.



Target audience

All resources, including hydro and others, for all the DEB ranking options.

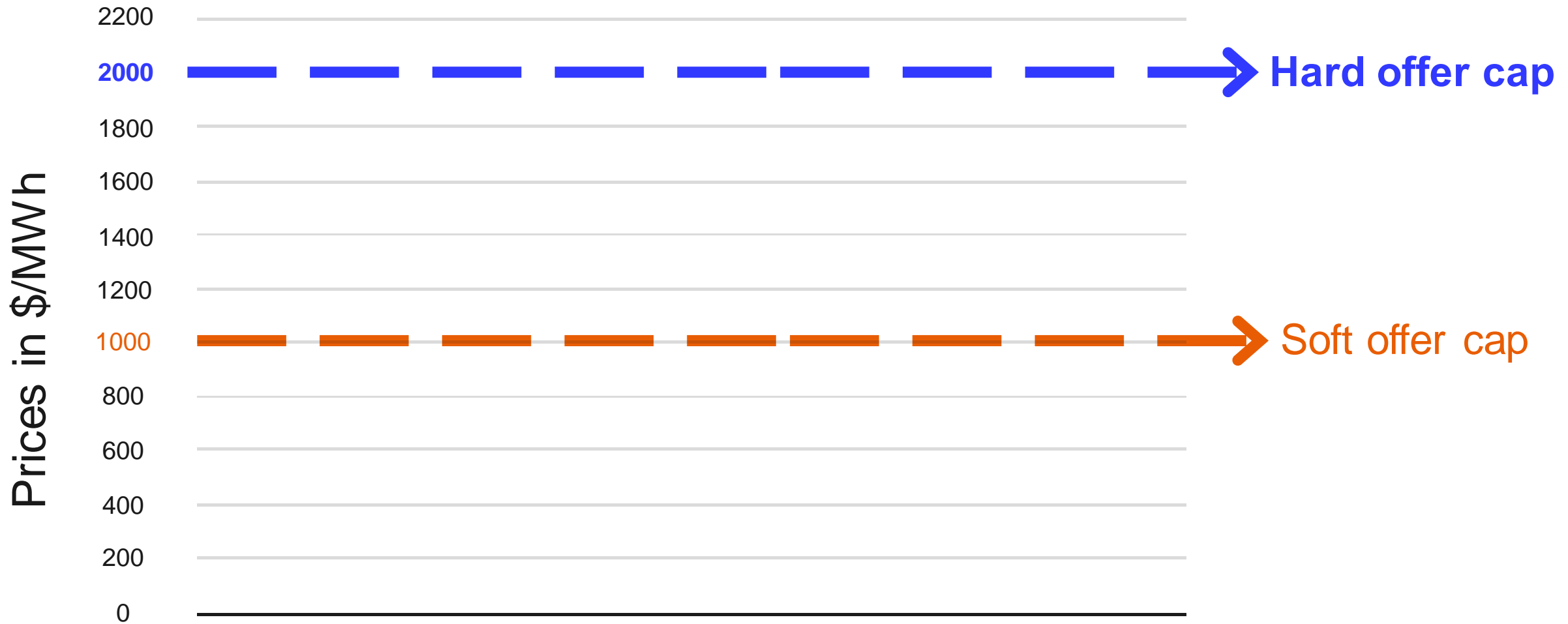


Solution

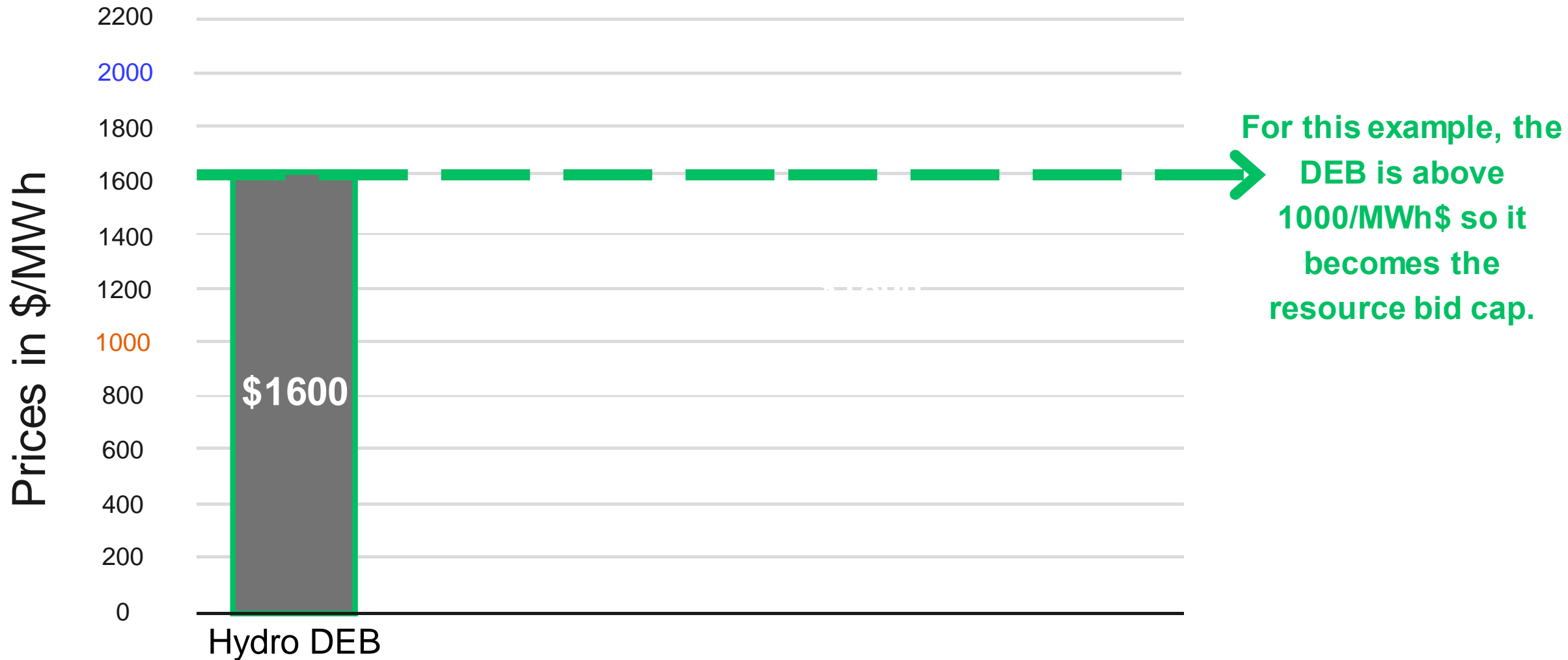
Replace the cap from \$1000/MWh to \$2000/MWh in DEB calc. resources in DA/RT.

Bidding Rules when the uncapped DEB is above \$1,000/MWh, each resource's DEB becomes its bid cap

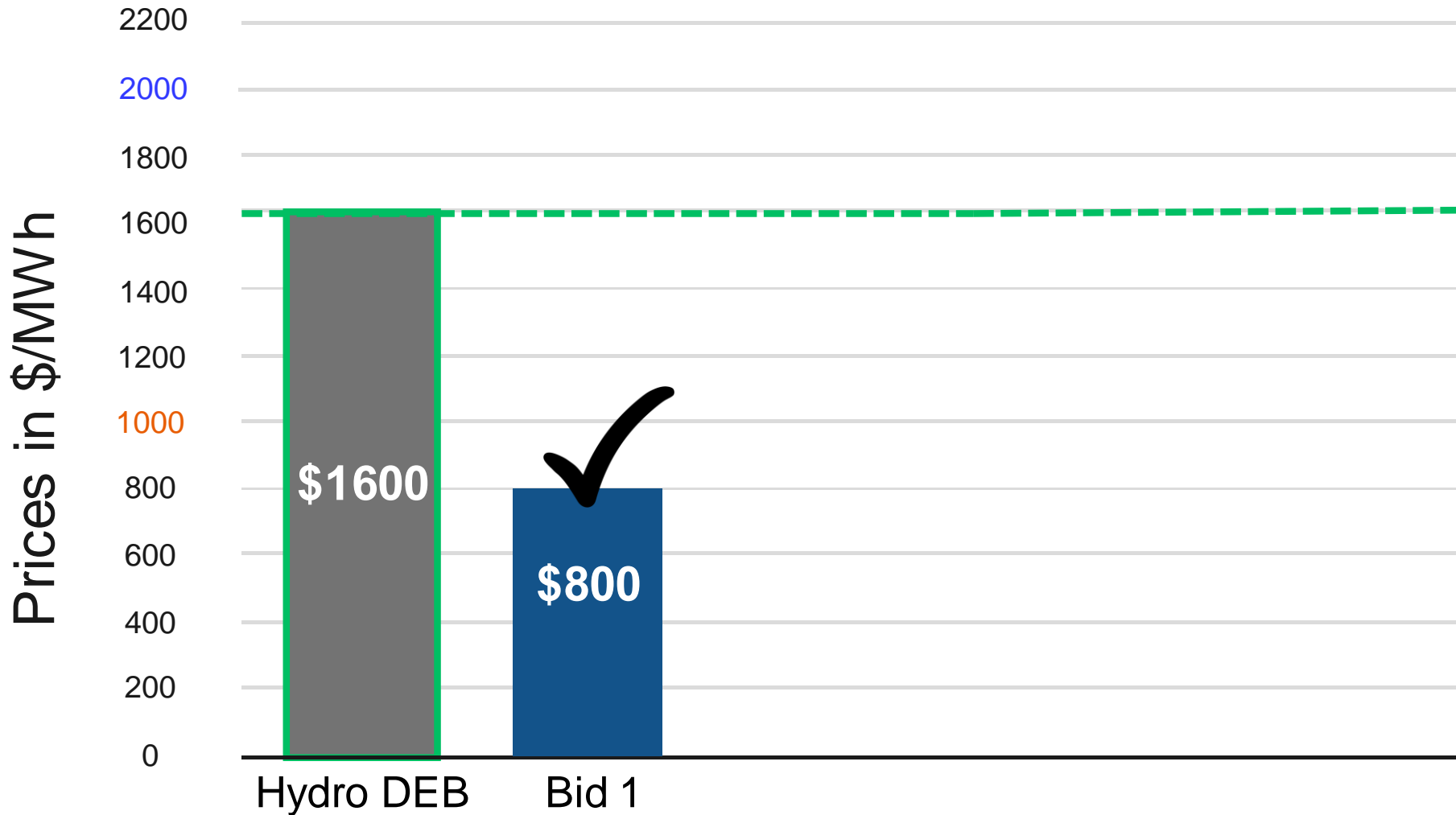
Hydro soft and hard offer cap



Hydro example – DEB cap \$1600 and becomes resource specific bid cap



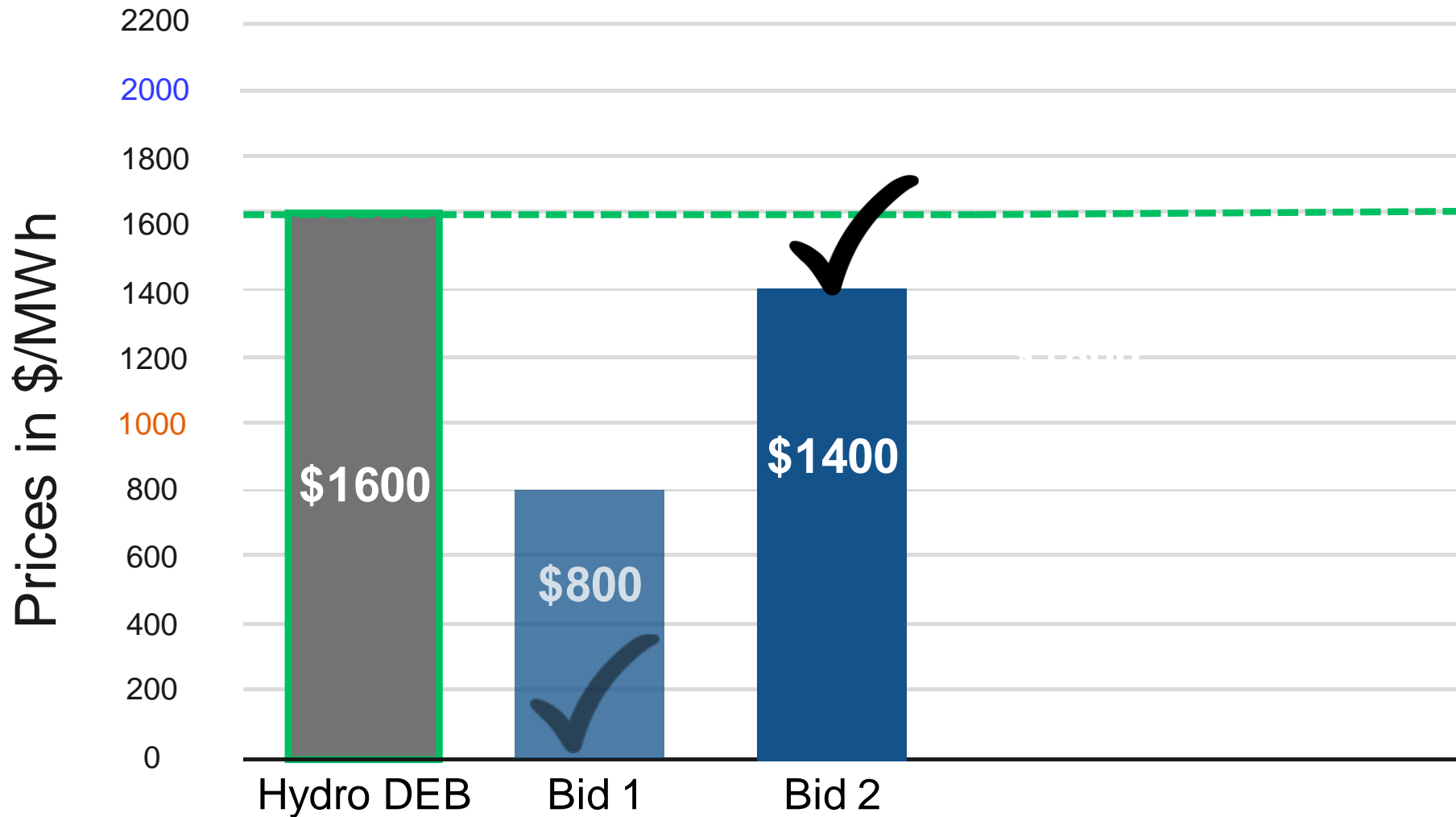
Hydro example – bid 1 of \$800 is valid and accepted



Continuing the example, the bid is below the DEB cap, so it is accepted.

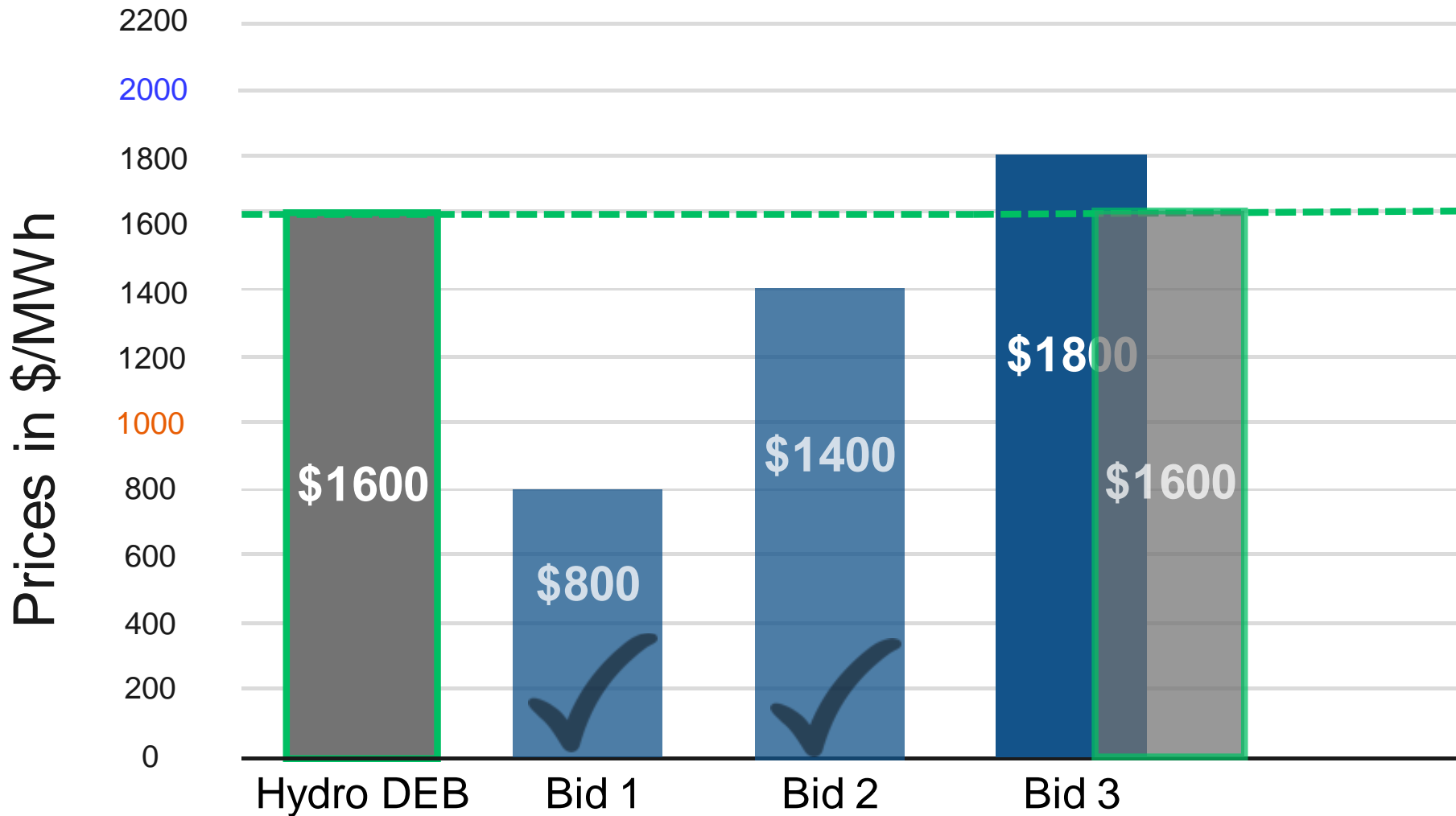
Remember: bids will not be mitigated up to the cap. Bids will only be mitigated down to the cap if it is above it.

Hydro example – bid 2 of \$1400 is valid accepted



Similar as before, the bid is below the DEB cap, so it is accepted.

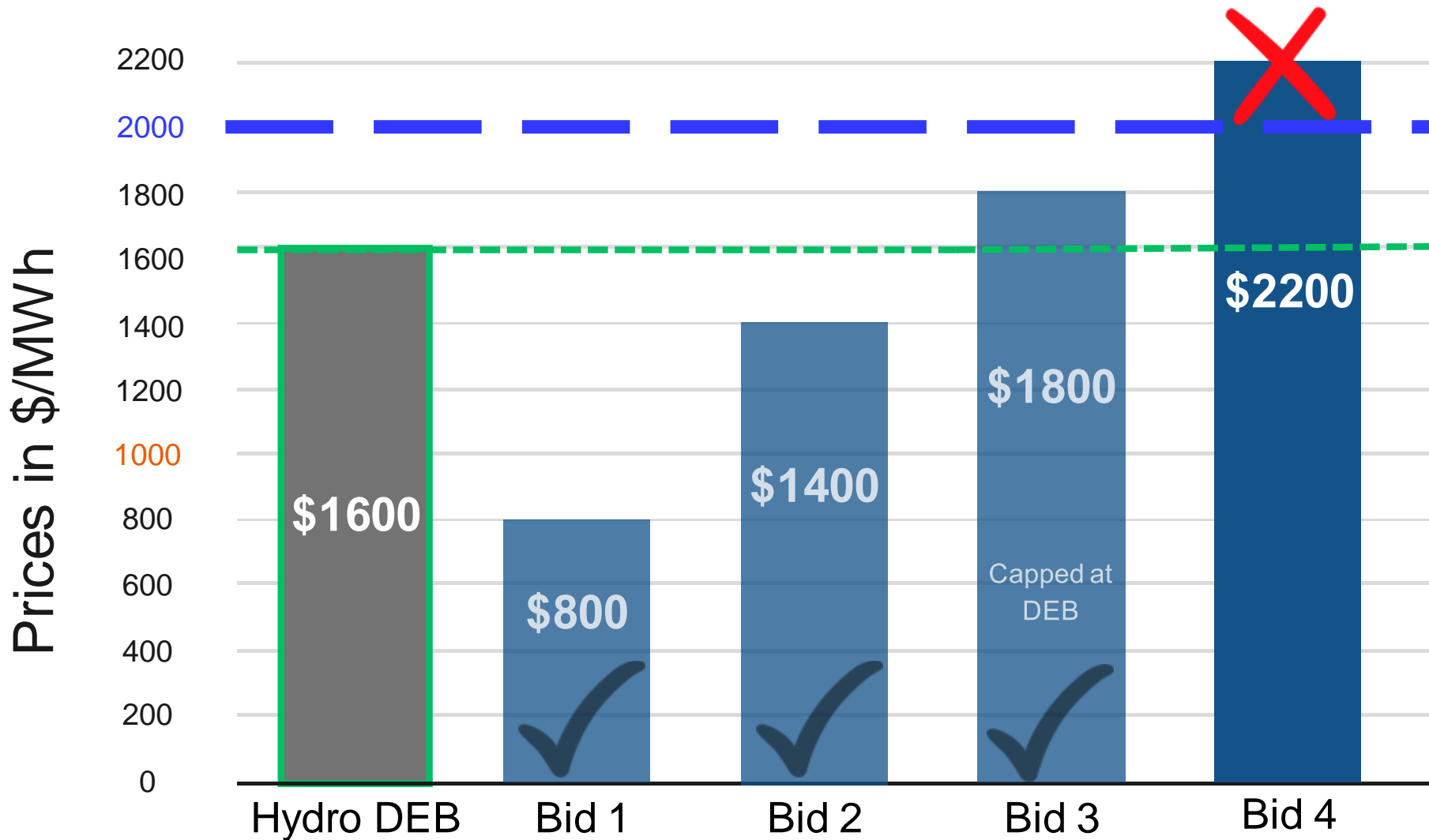
Hydro example – bid 3 is valid but capped at the DEB



Here we see an example when the Bid is above the DEB.

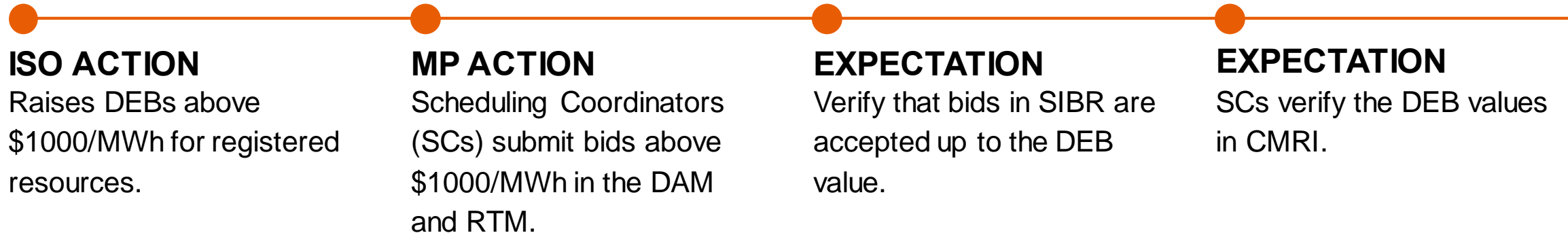
This is when that bid is mitigated to be capped at the DEB.

Hydro example – bid 4 is invalid and must be corrected



Example here shows how when a bid is above the hard cap, the bid will receive an error message (invalid bid). Participants will be asked to resubmit.

SCENARIO 1 TIME *LINE*



Reminder: NGR-LESR storage DEB resources will be tested according to scenario 2.

Existing CMRI report – verifying DEBs & SIBR impacts

CMRI > Default Bids > Default Energy Bid Curves


↓
 Customer Market Results Interface
 ↔ ↻ 🔍 🗑️

[Day-Ahead](#)
[Real-Time](#)
[Post-Market](#)
[Default Bids](#)
[Convergence Bidding](#)
[Forecast](#)
[Reference](#)
[LSE](#)
[Energy Imbalance Market](#)
[Phase Shifter](#)
[Gas Burn](#)
[Reliability Coordination](#)

Start Date:
 Entity:
 Resource:
 Default Bid Type:
 End Date:
 Market:
 Peak:

Default Energy Bid Curves		Interval Start Time	Interval End Time	SC ID	Resource	Configuration Market	Peak	Adder	Default Bid Type	Bid Segment 1 Type	Bid Segment 1 [MW]	Bid Segment 1 [\$]	Bid Segment 2 Type	Bid Segment 2 [MW]	Bid Segment 2 [\$]	Bid Segment 3 Type	Bid Segment 3 [MW]	Bid Segment 3 [\$]
07/09/2024 00:00:00	07/10/2024 00:00:00					Day-Ahead		No	Storage									
07/09/2024 00:00:00	07/10/2024 00:00:00					Real-Time		No	Storage									
07/09/2024 00:00:00	07/10/2024 00:00:00					Day-Ahead		No	Storage									
07/09/2024 00:00:00	07/10/2024 00:00:00					Real-Time		No	Storage									
07/09/2024 00:00:00	07/10/2024 00:00:00					Day-Ahead		No	Storage									
07/09/2024 00:00:00	07/10/2024 00:00:00					Real-Time		No	Storage									
07/09/2024 00:00:00	07/10/2024 00:00:00					Day-Ahead		No	Storage									
07/09/2024 00:00:00	07/10/2024 00:00:00					Real-Time		No	Storage									

SIBR: No User Interface (UI) or Application Program Interface (API) changes. Validation rules for bidding can be found [here!](#)

What Questions Do You Have?



Unmute yourself

or



Raise your hand



Let's review the second part for bidding above the soft offer cap

STORAGE RESOURCES (NGR-LESR)

2

Modify the bid cap for energy storage resources to provide bidding flexibility using a proxy opportunity cost value (real-time market).



Target audience

Battery storage resource registered as a Limited Energy Storage Resource (LESR) with DEBs in RTM.



Solution

Bidding rules to cap bids over \$1000/MWh by the higher of:

- **DEB** (if available to SIBR)
- **\$1000/MWh** (soft offer cap)
- **4th Highest Maximum Import Bid Price (MIBP)** (across the day)
- **Highest cost-verified bid** (relevant trade hour)

Note: Resource the energy bid plus GHG bid in RTM shall be capped by the bid ceiling \$2000

Maximum Import Bid Price (MIBP)

To learn more, check out the [business requirement specification](#).

What's the calculation?



$(\text{Electric Hub Price} * \text{Hourly Energy Price Shaping Factor}) * 1.1$

- Electric Hub = max(Mid-C, PV DA bilateral price)
- Hourly Energy Price Shaping Factor = based on SMEC

When is it calculated?



- All the hours of trading day prior to DAM.
- Re-calculated prior to the first hour of RTM.
- Static 24 hour curve, no intra-day changes.

When/where is it published?



- It contains proprietary data, so it is not published
- Publish shaping factor on OASIS

Welcome to the California ISO OASIS site. On OASIS you will find real-time data and its Market, such as system status, market prices and market

Standards Information















- [North American Energy Standards Board \(NAESB\)](#)
- [ISO Business Practice Manuals](#)
- [Available Transfer Capability Information](#)

Transmission Information

- [Base Case Data](#)
- [Interconnection Study Statistics](#)

System Help

- All technical specifications and artifacts for OASIS are available on the [ISO Developer site](#). **Self-registration is required to access the site.**
- To download data without using the OASIS interface, see [How to use report URLs to download OASIS data](#) on the [ISO Developer site](#).
- Access non-technical OASIS reference documents on www.caiso.com

Energy Prices ▶	Locational Marginal Prices	
Shadow Prices ▶	Scheduling Point/Tie Combination Locational Marginal Prices	
Ancillary Services Prices ▶	Interval Locational Marginal Prices	
Index Prices ▶	Interval Scheduling Point/Tie Combination Locational Marginal Prices	
Market Power Mitigation ▶	HASP Locational Marginal Prices	
	FMM Locational Marginal Prices	
	FMM Scheduling Point/Tie Combination Locational Marginal Prices	
	Reference Prices	
	Contingency Dispatch Locational Marginal Prices	
	Contingency Dispatch Scheduling Point/Tie Combination Locational Marginal Prices	
	Hourly RTM LAP Prices	
	Hourly Energy Price Shaping Factor	
	Flexible Ramping Nodal Prices	
	Flexible Ramping Scheduling Point/Tie Nodal Prices	



Existing report

[Open Access Same-Time System \(OASIS\) link](#)

How to use this data to validate if the MIBP was used to cap storage bids

OASIS > Prices > Energy Prices > Hourly Energy Shaping Factor

ATLAS REFERENCE REPORT DEFINITION **PRICES** TRANSMISSION SYSTEM DEMAND ENERGY ANCILLARY SERVICES CONGESTION REVENUE RIGHTS PUBLIC BIDS RESOURCE ADEQUACY

Date From: 07/09/2024 To: 07/09/2024 Market: **RTM** Apply Reset

Download XML

Download CSV

Hourly Energy Price Shaping Factor

1 - 1 of ???

Market	Opr Date	HE01	HE02	HE03	HE04	HE05	HE06	HE07	HE08	HE09	HE10	HE11	HE12	HE13	HE14	HE15	HE16	HE17	HE18	HE19	HE20	HE21	HE22	HE23	HE24	HE25
RTM	07/09/2024	0.90771	0.88223	0.86730	0.85898	0.90833	0.98098	0.63580	0.49160	0.48079	0.47535	0.48155	0.50027	0.51339	0.55972	0.65799	0.79064	0.86042	0.99134	1.52602	3.39718	2.34320	1.29473	1.40403	1.19045	

ATLAS REFERENCE REPORT DEFINITION **PRICES** TRANSMISSION SYSTEM DEMAND ENERGY ANCILLARY SERVICES CONGESTION REVENUE RIGHTS PUBLIC BIDS RESOURCE ADEQUACY

Date From: 07/09/2024 To: 07/09/2024 Market: **DAM** Apply Reset

Download XML

Download CSV

Hourly Energy Price Shaping Factor

1 - 1 of ???

Market	Opr Date	HE01	HE02	HE03	HE04	HE05	HE06	HE07	HE08	HE09	HE10	HE11	HE12	HE13	HE14	HE15	HE16	HE17	HE18	HE19	HE20	HE21	HE22	HE23	HE24	HE25
DAM	07/09/2024	0.46985	0.45541	0.43593	0.43065	0.43073	0.45123	0.31838	0.27154	0.26917	0.27080	0.27274	0.28323	0.28959	0.32373	0.34392	0.45303	0.50718	0.55694	0.72116	1.23316	1.05239	0.64423	0.73254	0.59811	

Using MIBP calculation and this report, users can identify the approx. MIBP value. The index price that the ISO uses is Intercontinental Exchange (ICE).

SIBR > Messages > Energy Bid Ceiling



Bids
Trades
Convergence Bids
Energy Forecast
Export Priority Report
Ind Viewer
OTC View
Messages
Dynamic Limit
Admin

Date:

Messages

1 - 25 of 33

Hour	Rule#	Level	Message	Timestamp
01h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
01h	50011	6	Real-Time Energy Bid Ceiling have been verified in the post close.	07/08/2024 22:45
02h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
02h	50011	6	Real-Time Energy Bid Ceiling have been verified in the post close.	07/08/2024 23:45
03h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
03h	50011	6	Real-Time Energy Bid Ceiling have been verified in the post close.	07/09/2024 00:45
04h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
04h	50011	6	Real-Time Energy Bid Ceiling have been verified in the post close.	07/09/2024 01:48
05h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
05h	50011	6	Real-Time Energy Bid Ceiling have been verified in the post close.	07/09/2024 02:48
06h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
06h	50011	6	Real-Time Energy Bid Ceiling have been verified in the post close.	07/09/2024 03:46
07h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
07h	50011	6	Real-Time Energy Bid Ceiling have been verified in the post close.	07/09/2024 04:46
08h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
08h	50011	6	Real-Time Energy Bid Ceiling have been verified in the post close.	07/09/2024 05:45
09h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
09h	50011	6	Real-Time Energy Bid Ceiling have been verified in the post close.	07/09/2024 06:45
10h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
11h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
12h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
13h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
14h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
15h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00
16h	50010	6	Day-Ahead Energy Bid Ceiling have been verified in the post close.	07/08/2024 11:00

Energy bid ceiling

Hour	Day-Ahead	Real-Time	Timestamp
01h	1000	1000	07/08/2024 22:45
02h	1000	1000	07/08/2024 23:45
03h	1000	1000	07/09/2024 00:45
04h	1000	1000	07/09/2024 01:48
05h	1000	1000	07/09/2024 02:47
06h	1000	1000	07/09/2024 03:46
07h	1000	1000	07/09/2024 04:46
08h	1000	1000	07/09/2024 05:45
09h	1000	1000	07/09/2024 06:45
10h	1000	1000	07/09/2024 06:56
11h	1000	1000	07/09/2024 06:56
12h	1000	1000	07/09/2024 06:55
13h	1000	1000	07/09/2024 06:55
14h	1000	1000	07/09/2024 06:55
15h	1000	1000	07/09/2024 06:55
16h	1000	1000	07/09/2024 06:55
17h	1000	1000	07/09/2024 06:55
18h	1000	1000	07/09/2024 06:55
19h	1000	1000	07/09/2024 06:55
20h	1000	1000	07/09/2024 06:55
21h	1000	1000	07/09/2024 06:55
22h	1000	1000	07/09/2024 06:55
23h	1000	1000	07/09/2024 06:55
24h	1000	1000	07/09/2024 06:55

Example of energy bid ceiling with \$2000/MWh cap

SIBR > Messages > Energy bid ceiling



Hour	Day-Ahead	Real-Time	Timestamp
01h	1000	1000	07/08/2024 22:45
02h	1000	1000	07/08/2024 23:45
03h	1000	1000	07/09/2024 00:45
04h	1000	1000	07/09/2024 01:48
05h	1000	1000	07/09/2024 02:47
06h	1000	1000	07/09/2024 03:46
07h	1000	1000	07/09/2024 04:46
08h	1000	1000	07/09/2024 05:45
09h	1000	1000	07/09/2024 06:45
10h	1000	1000	07/09/2024 07:13
11h	1000	1000	07/09/2024 07:13
12h	1000	1000	07/09/2024 07:13
13h	1000	1000	07/09/2024 07:13
14h	1000	1000	07/09/2024 07:13
15h	1000	1000	07/09/2024 07:13
16h	1000	1000	07/09/2024 07:13
17h	1000	1000	07/09/2024 07:13
18h	1000	1000	07/09/2024 07:13
19h	1000	1000	07/09/2024 07:10
20h	1000	2000	07/09/2024 07:10
21h	1000	2000	07/09/2024 07:10
22h	1000	2000	07/09/2024 07:10
23h	1000	2000	07/09/2024 07:10
24h	1000	1000	07/09/2024 07:10

- Energy bid ceiling may be raised because MIBP or cost verified bid
- When the bid ceiling is raised to \$2000/MWh, that does not mean your resources bid cap is \$2000/MWh.

LESR's Storage DEB v. Storage DEB Option

DEBs have a hard cap of \$2000/MWh.

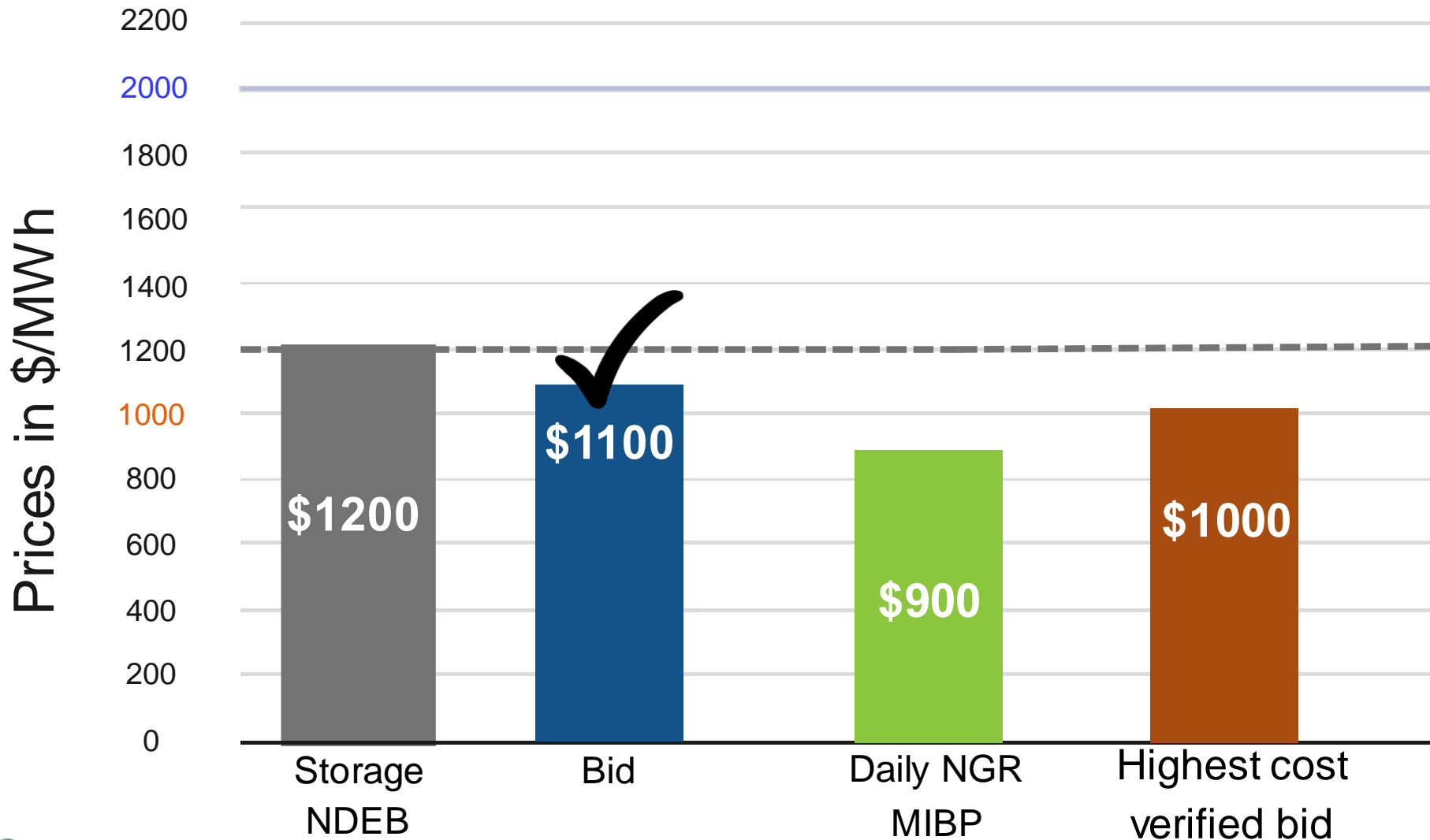
Storage DEB option will not set the bid cap for those resources.

- Storage DEB will be used in market power mitigation. So if you bid above the DEB, which is above \$1000/MWh, you may be mitigated down to an uncapped DEB value.

Other DEB options like NDEB, Variable, LMP DEB options, etc., will be used to set the cap.

LESR example – Storage DEB sets cap (bid accepted)

Added clarification on what DEB is used in example

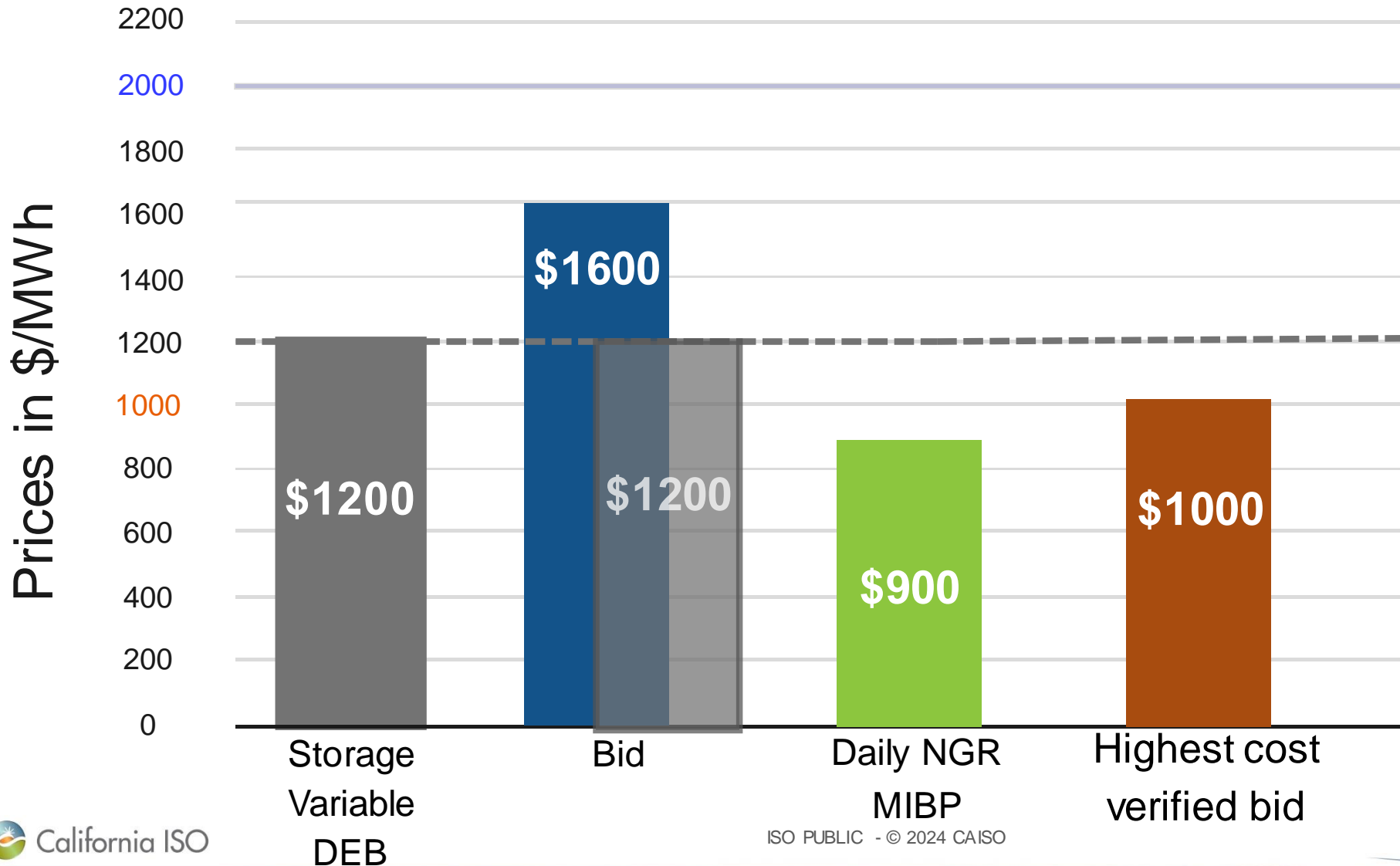


The Storage DEB in this scenario is an NDEB, therefore, it will set the cap.

Bid is accepted which sets the new cost verified bid to \$1100/MWh.

LESR example – Storage DEB sets cap (bid adjusted)

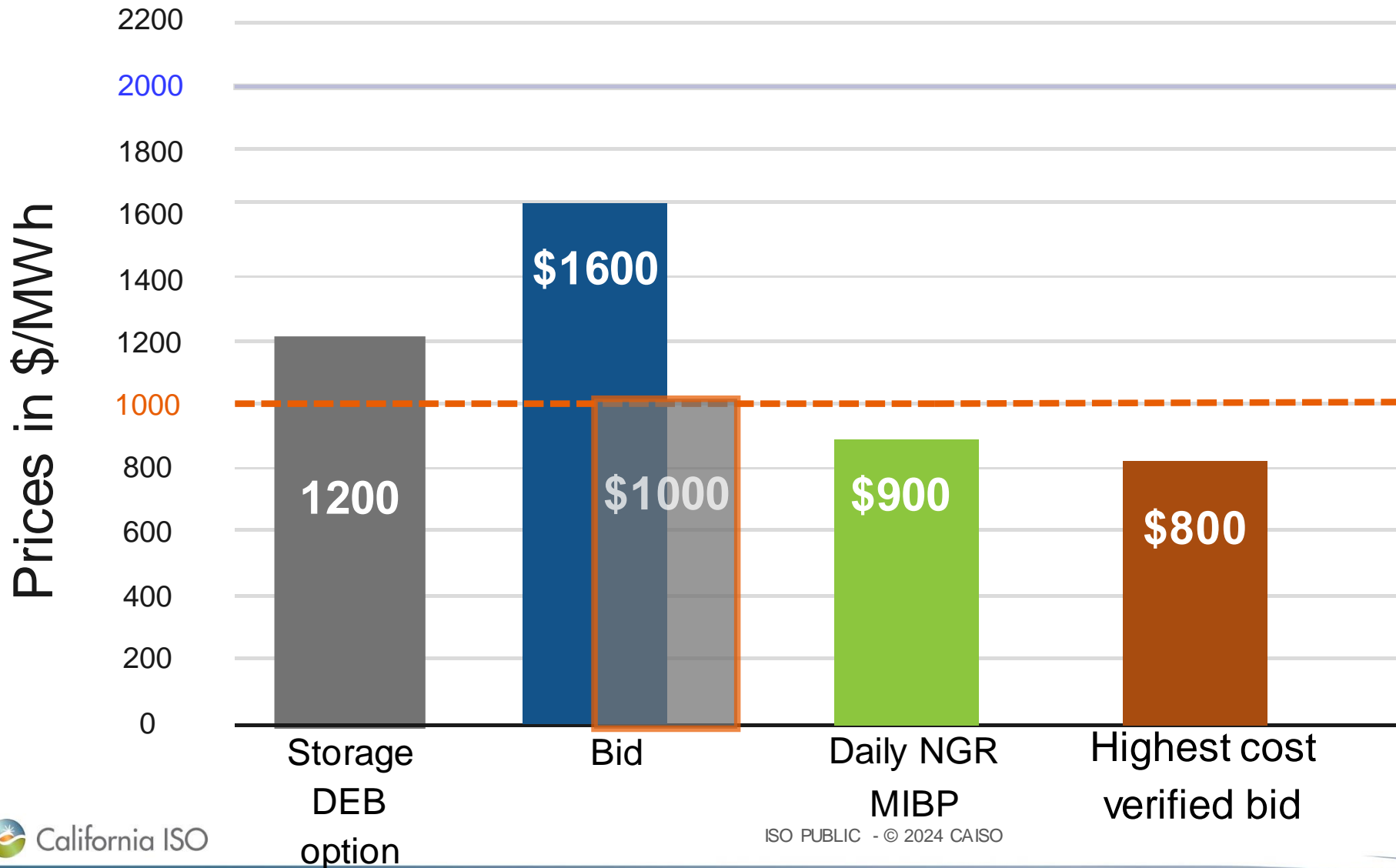
Added clarification on what DEB is used in example



The Storage DEB is a Variable DEB, therefore, it will set the cap so the bid becomes \$1200/MWh.

LESR example – Storage DEB option does not set the cap

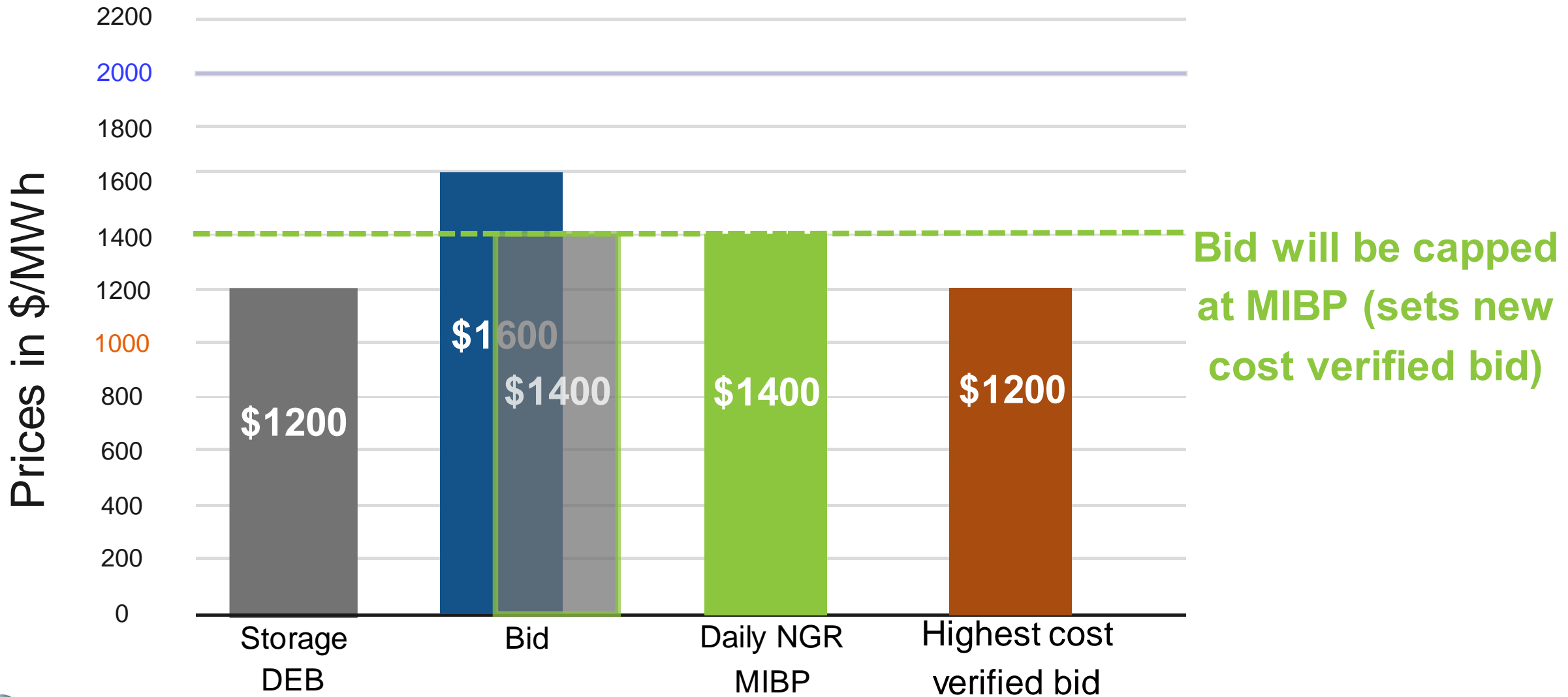
Added clarification on what DEB is used in example



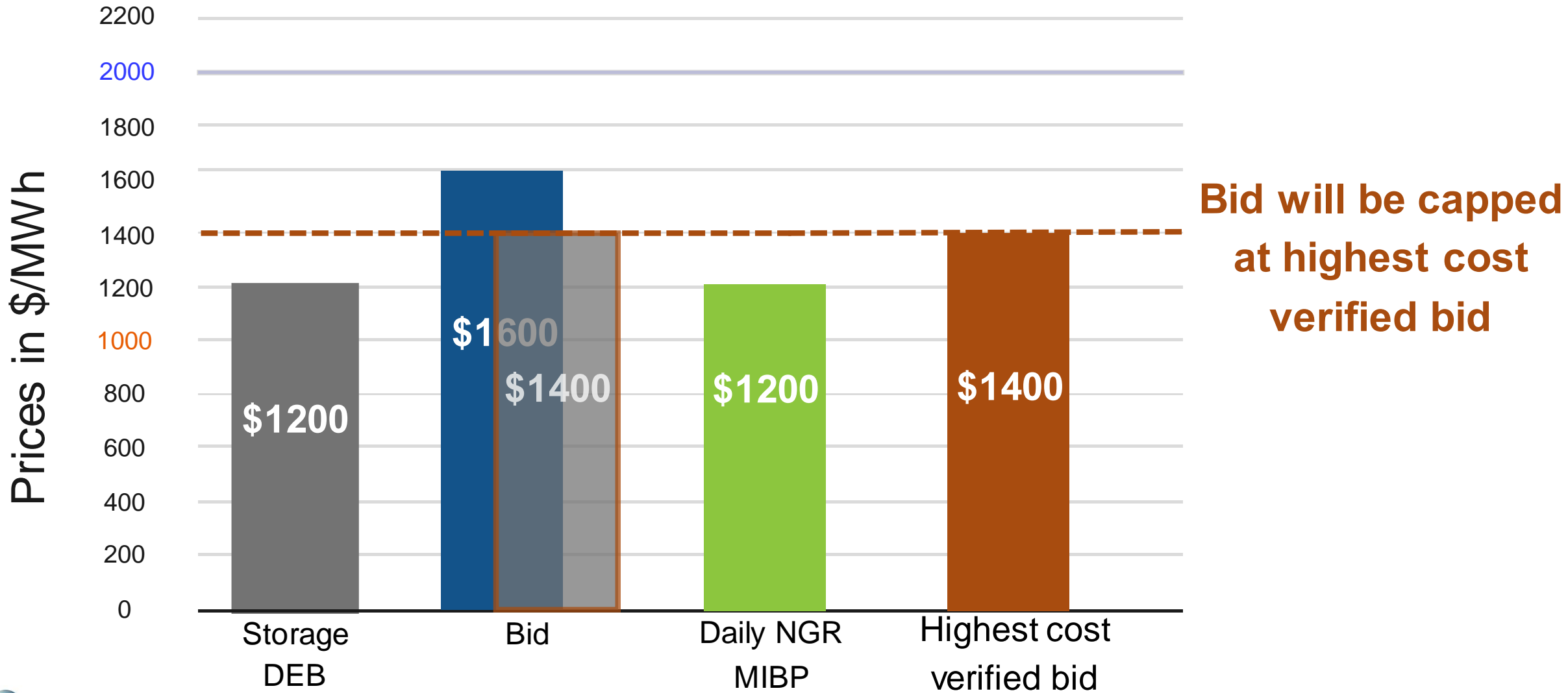
Storage DEB is the Storage DEB option, therefore, it will not set the cap.

The bid will be capped at soft offer cap \$1000/MWh (which is the highest value).

LESR example – MIBP sets the cap



LESR example – Highest cost verified bid sets the cap



SCENARIO 2 TIMELINE

ISO ACTION

Raise MIBP and submit cost-verified bids above \$1000/MWh to enable NGR-LESR to submit bids above \$1000/MWh.

MP ACTION

SCs to submit NGR-LESR bids above \$1000/MWh in real time.

EXPECTATION

Verify that real time bids above \$1000/MWh in SIBR are accepted up to the higher of the 4th highest MIBP and highest cost-verified bid.

4TH HIGHEST MIBP

For testing only, the ISO will email registered MPs with the 4th highest MIBP information.

Reminder: NGR-LESR storage DEB resources will be tested during this scenario.

What Questions Do You Have?



Unmute yourself

or



Raise your hand

Participate in Market Simulation

Register to participate in the simulation at MarketSim@caiso.com mailbox by July 11, 2024

Attend Market Simulation Forum calls to stay informed on timing of activities for this and other release

- Monday and Thursday 2pm PPT

Submit questions and additional scenario requests to the ISO via the CIDI application

CONTACT CUSTOMER SUPPORT
TELL US HOW WE CAN HELP

*SCID

*Functional Environment
--None--
--None--
Production
Market Simulation
Release
RC Integration
RC Shadow Operations
Parallel Operations
Request

i Review for Price Correction

i Manual Reference Level Change Request

*Subject



Wrap Up

Summary, Q&A

- What's happening next.

Initiative timeline Reminder

Updated Market Sim Dates



Functional Environment Options for CIDI Cases

CONTACT CUSTOMER SUPPORT
TELL US HOW WE CAN HELP

* SCID

* Functional Environment
--None--
--None--
Production
Market Simulation
Release
RC Integration
RC Shadow Operations
Parallel Operations
Request

Review for Price Correction

Manual Reference Level Change Request

* Subject

- Inquiries are not directly related to Market Simulation issues & when there is no environment impact
 - Ex. Business Requirements Specifications (BRS) comments, implementation questions, feedback, etc.
- Contact: release@caiso.com

CONTACT CUSTOMER SUPPORT
TELL US HOW WE CAN HELP

* SCID

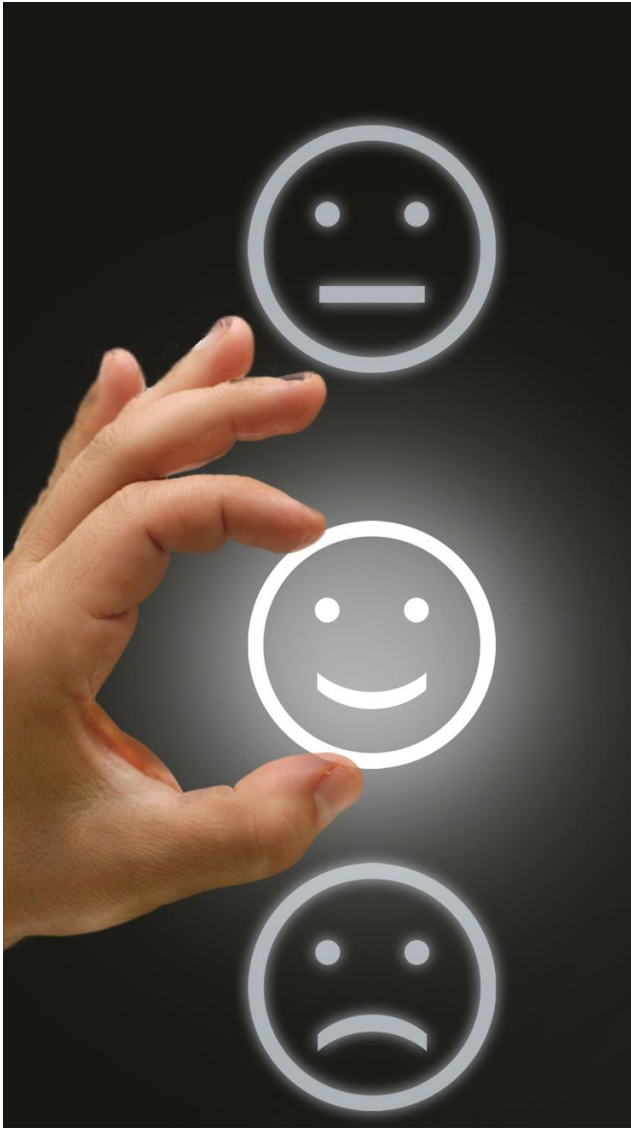
* Functional Environment
--None--
--None--
Production
Market Simulation
Release
RC Integration
RC Shadow Operations
Parallel Operations
Request

Review for Price Correction

Manual Reference Level Change Request

* Subject

- Inquires that are related to the MAP-Stage Environments (non-production)
 - Ex. Connectivity, unanticipated simulation results, etc.
- Contact: MarketSim@caiso.com



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Takes 3-5 minutes to complete

Helps us improve future training

Link: <https://www.surveymonkey.com/r/caisocoursesurvey>

Instructor Dottie

Training course Other: Price Formation Enhancement



REGISTRATION IS OPEN

2024 STAKEHOLDER SYMPOSIUM

Welcome reception - Oct. 29
at Kimpton Sawyer Hotel, Sacramento, CA

Symposium program - Oct. 30
SAFE Credit Union Convention Center
Sacramento, CA

Visit the event website: www.reg.eventmobi.com/2024stakeholdersymposium

SPONSORSHIP OPPORTUNITIES AVAILABLE

Thank you for your participation!



For clarification on anything presented in this training, send an email to:
CustomerReadiness@caiso.com

For other questions or stakeholder specific questions or concerns use one of these methods:

- Submit a [CIDI ticket](#)
- Contact your Scheduling Coordinator
- Use the “[Contact us](#)” page on caiso.com to submit questions



Reference Links

Market Sim Scenarios: <https://www.caiso.com/documents/market-simulation-structured-scenarios-price-formation-enhancement-rules-for-bidding-above-the-soft-offer-cap.pdf>

FERC Order 831 – Emergency, Compliance and Enhancements Initiatives presentation from 2021: <https://www.caiso.com/Documents/Presentation-FERC-Order-831-Import-Bidding-Market-Parameters-Training-Apr-28-2021.pdf>

PFE Draft Final Proposal:
<https://stakeholdercenter.caiso.com/InitiativeDocuments/Presentation-PriceFormationEnhancements-May2-2024.pdf>

PFE Final Proposal:
<https://stakeholdercenter.caiso.com/InitiativeDocuments/Final-Proposal-Price-Formation-Enhancements-May17-2024.pdf>

FERC Transmittal Letter: <https://www.caiso.com/documents/may-31-2024-tariff-amendment-price-formation-enhancements-er24-2168.pdf>



Reference Links

ISO Board of Governors and WEIM Governing Body Memo:

<https://www.caiso.com/documents/decision-on-rules-for-bidding-above-the-soft-offer-cap-price-formation-enhancements-memo-may-2024.pdf>

Price Formation Enhancements Policy Initiatives:

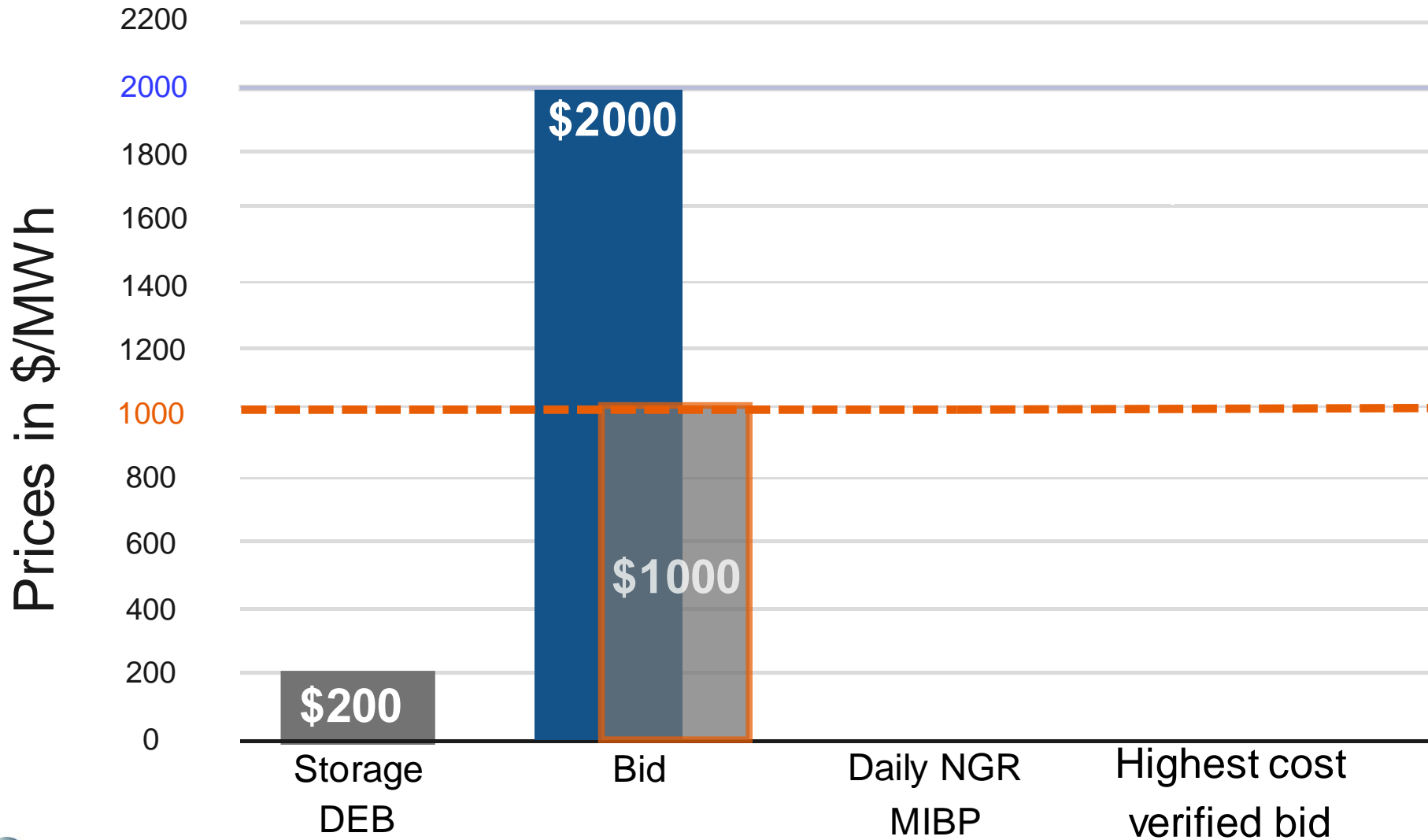
<https://stakeholdercenter.caiso.com/StakeholderInitiatives/Price-formation-enhancements>



LESR Storage Resource Timing Example; DEB Explanation

APPENDIX

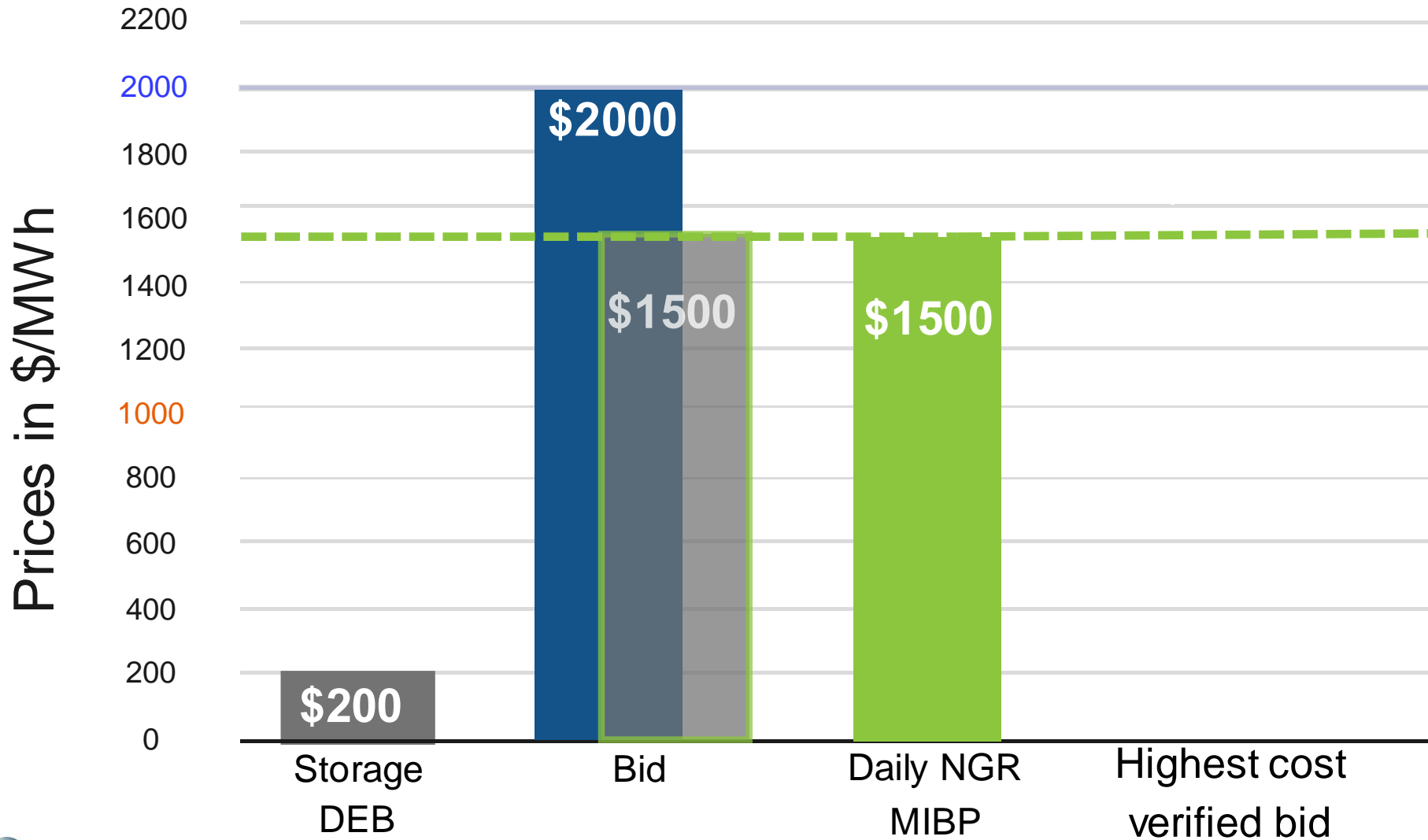
LESR storage resource example of timing



SC submits bid into DAM.

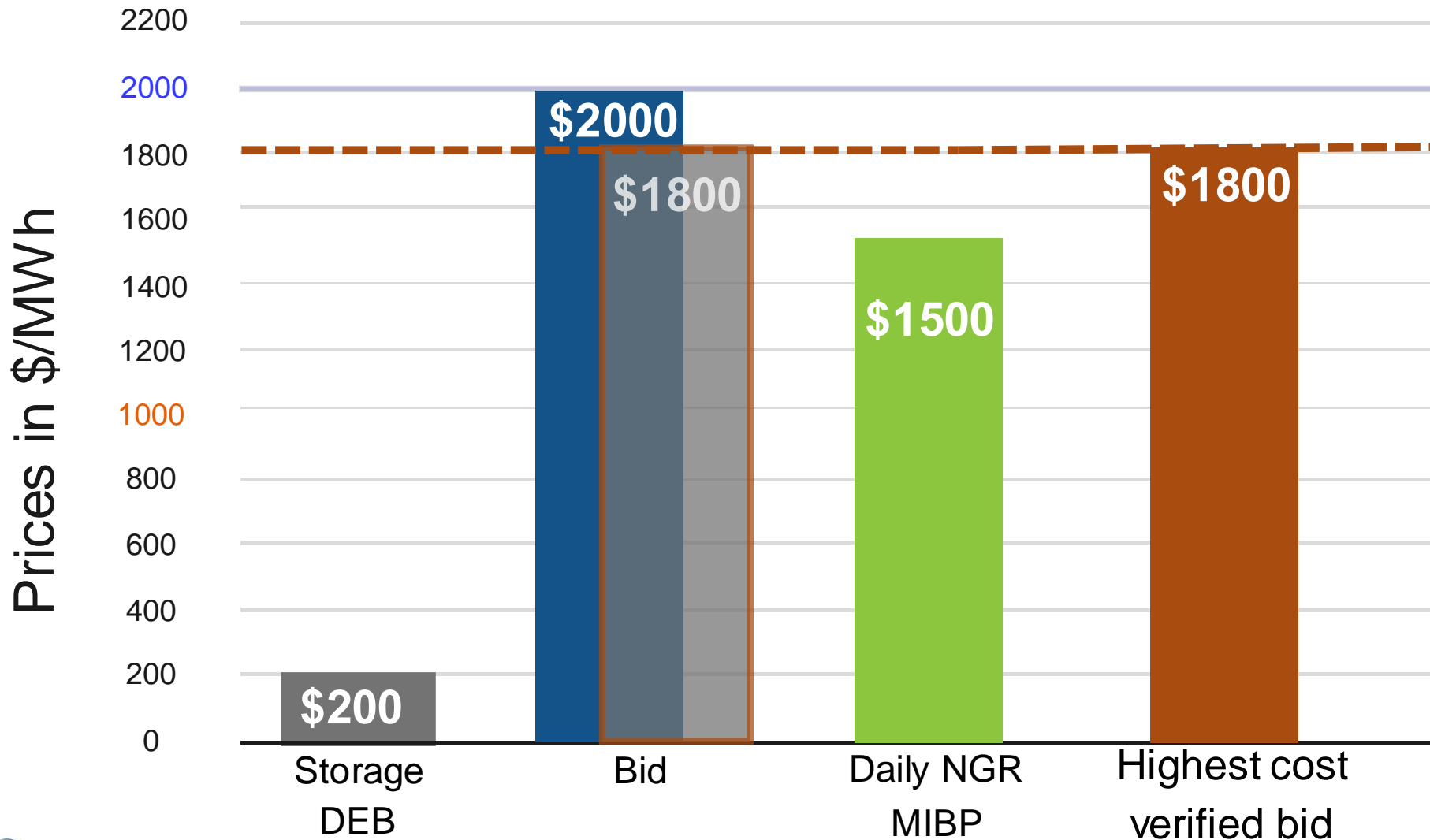
SIBR revises it to \$1000/MWh (soft offer cap).

LESR storage resource example of timing cont.



After the real-time MIBP is calculated, SIBR revised bid to the 4th highest MIBP \$1500/MWh.

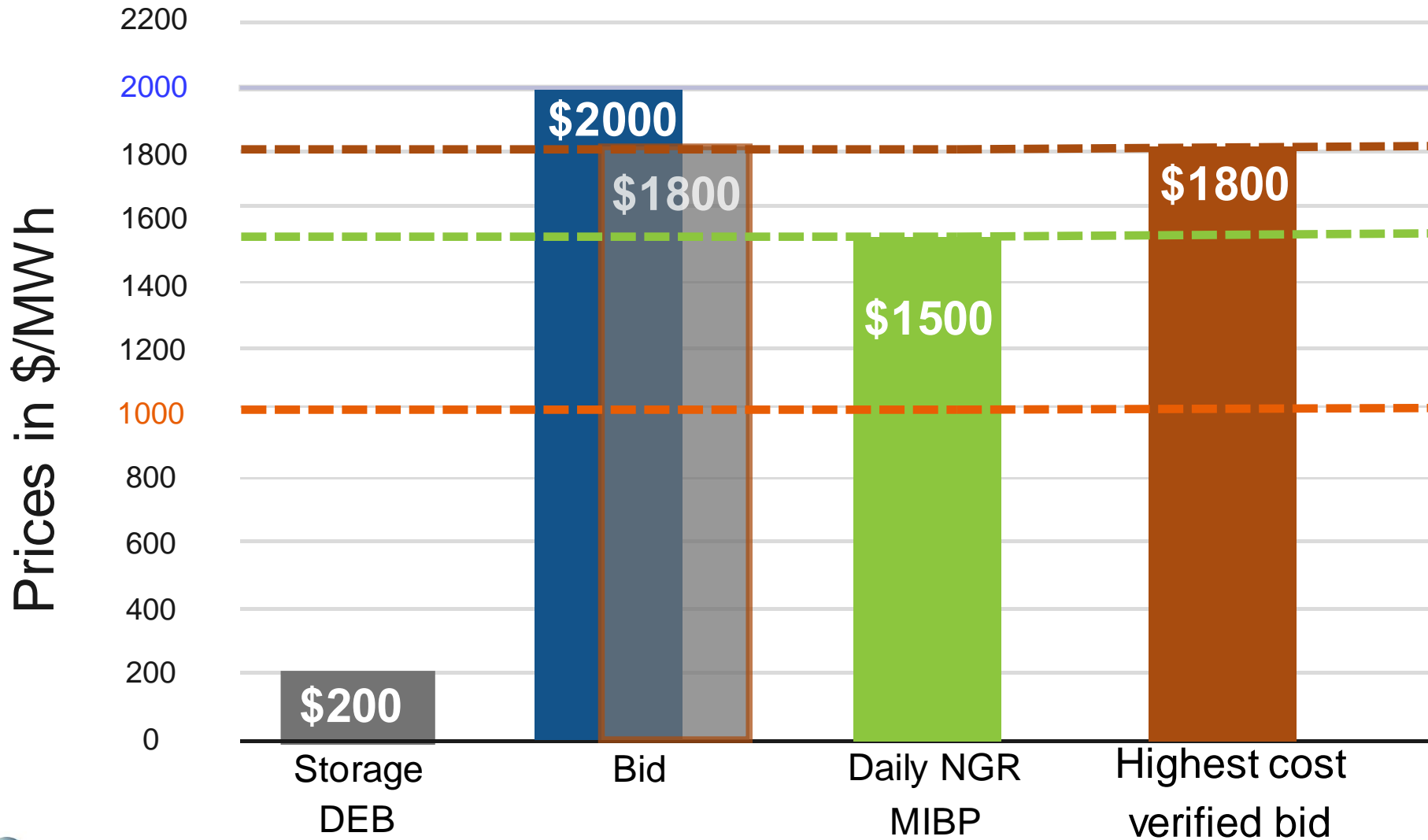
LESR storage resource example of timing cont.



SIBR checks every 5 minutes and may revise bids up to the close of the relevant trade window.

We see here that a highest cost verified bid of \$1800/MWh was accepted and is now the cap.

LESR storage resource example of timing cont.



Hypothetically, this could continue to be raised, up until that hard cap of \$2000/MWh for this window.

This example shows you how bids can change, depending on the bids submitted and when.

Default Energy Bid (DEB)? Mirrors a resource's specific competitive marginal costs in the market in conditions when participants might have market power.
(differs resource to resource)



CALCULATED

Internal ISO system calculates.

Separate calculations for DA/RT & peak and off-peak hours.



ADDITIONAL INFO.

[Market Instruments BPM Attachment D](#) for more detail on DEB calculations.

LESR example – Soft offer cap sets the cap

