Co-Located Storage Resource(CSR) Bidding Changes

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Agenda

- **Background**

- **Changes to Upload/Download Templates**
  - New fields being added

- **Summary**

- **Q&A**

Background

Previous Presentations on Market Design Proposal and Tariff revisions

Date	Working Group	Discussion Points and Links to Materials
01-13-20	ICAPWG/MIWG	Hybrid Storage Model Project Kick-Off https://www.nyiso.com/documents/20142/10252714/Hybrid%20Storage%20Model_MIWG_Jan%2013%202019.pdf/caf29abe-a431-a2d1-358d-43326153824a
04-14-20	ICAPWG/MIWG	Hybrid Storage Model – Initial Market Design Concept Overview https://www.nyiso.com/documents/20142/11904936/Hybrid%20Storage%20Model%20MIWG%2004142020%20Final.pdf/08841944-5251-4497-c52b-105151f150ad
05-11-20	ICAPWG/MIWG	Hybrid Storage Interconnection Proposal https://www.nyiso.com/documents/20142/12465245/Hybrid%20Storage%20Interconnection_0511%20MIWG_ICAPWG_FINAL.pdf/0740db02-ac07-e7f4-42b4-0b17da0e82eb
06-30-20	ICAPWG/MIWG	Hybrid Storage: Proposal for participation options https://www.nyiso.com/documents/20142/13434223/Hybrid%20Storage%206.30.2020%20ICAPWG_MIWG%20draft%20v5_final.pdf/176a272a-cc21-08ef-749a-c4a157fe2bc3
07-22-20	ICAPWG/MIWG	Hybrid Storage: Energy Market Participation rules for Co-located Storage Resources https://www.nyiso.com/documents/20142/13960166/Hybrid%20Storage%20ICAPWG%20MIWG%2007.22.20%20Energy%20Market%20Rules%20%20final.pdf/89700275-108e-8002-1e44-aaffe1712f0e
07-22-20	ICAPWG/MIWG	Hybrid Storage Model: Interconnection and Capacity https://www.nyiso.com/documents/20142/13960166/Hybrid%20Storage%20Interconnection%20and%20Capacity_07222020%20MIWG_FINAL.pdf/e3ba434d-a7ac-21d2-855d-c9cb249da614

Previous Presentations on Market Design Proposal and Tariff revisions(cont'd)

Date	Working Group	Discussion Points and Links to Materials
08-10-20	ICAPWG/MIWG	Hybrid Storage: Market Design for Co-located Storage Resources https://www.nyiso.com/documents/20142/14404876/Hybrid%20Storage%20ICAPWG%20MIWG%20081020%20final.pdf/f414f66a-eee0-3a3c-393d-6b075fe5a1ba
08-19-20	ICAPWG/MIWG	Hybrid Storage: Proposed Energy market tariff revisions for Co-located Storage Resources (CSR) https://www.nyiso.com/documents/20142/14617012/02_Hybrid%20Storage%20Energy%20tariff%20ICAPWG%20MIWG%2008.19.20%20draft%20final.pdf/a6b81cb1-fe9a-72cd-2a8f-75befefc4afa
08-19-20	ICAPWG/MIWG	Hybrid Storage: Proposed CRIS and Interconnections tariff revisions for Co-located Storage Resources (CSR) https://www.nyiso.com/documents/20142/14617012/03_Hybrid%20Storage%20Interconnection%20tariff%20ICAPWG%20MIWG%2008.19.20_FINAL.pdf/dbae9003-8314-e5c0-d0c3-55a7d6384cec
08-25-20	ICAPWG/MIWG	Hybrid Storage: Proposed Market design updates and energy market tariff revisions for Co-located Storage Resources (CSR) https://www.nyiso.com/documents/20142/14757023/Hybrid%20Storage_Market%20Design%20Updates%20%20Energy%20tariff%20ICAPWG%20MIWG%2008.25.20%20draft%20final.pdf/ffb01347-c4bd-24a1-6549-91cda42d8cb3
08-25-20	ICAPWG/MIWG	Hybrid Storage: Proposed Tariff Revisions for Co-located Storage Resources (CSR) https://www.nyiso.com/documents/20142/14757023/CSR%20ICAP%20Tariff%20Revisions.pdf/01796e6b-d1d8-ba86-9ab8-12c7bdf1d6f6
09-08-20	ICAPWG/MIWG	Hybrid Storage: Proposed Market design updates and energy market tariff revisions for Co-located Storage Resources (CSR) https://www.nyiso.com/documents/20142/15078529/Hybrid%20Storage_Market%20Design%20Updates%20%20Energy%20tariff%20ICAPWG%20MIWG%2009.08.20%20final.pdf/fcbb65d6-71d1-c1ac-52e9-8ecb6efb20f7

Previous Presentations on Market Design Proposal and Tariff revisions(cont'd)

Date	Working Group	Discussion Points and Links to Materials
09-22-20	ICAPWG/MIWG	Hybrid Storage: Participation Examples and Energy Market Tariff Revisions for Co-located Storage Resources (CSR) https://www.nyiso.com/documents/20142/15473217/Hybrid%20Storage_CSR%20examples_%20%20Energy%20tariff%20ICAPWG%20MIWG%2009.22.20%20draft%20final.pdf/944fc9aa-edfb-a77a-3d77-b94c82e74b2c
10-02-20	ICAPWG/MIWG	Hybrid Storage: Market Design Updates and Tariff Revisions for Co-located Storage Resources (CSR) https://www.nyiso.com/documents/20142/15773723/4%20Hybrid%20Storage_Energy%20tariff%20ICAPWG%20MIWG%2010.02.20%20final.pdf/856b5bb8-175c-cd27-e972-b72c34e58a19
10-06-20	ICAPWG/MIWG/TPAS	Hybrid Storage Model: Interconnection Tariff Changes https://www.nyiso.com/documents/20142/15824617/2%20Hybrid%20Storage%20Incremental%20Interconnection%20Tariff%20Changes_100620_FINAL.pdf/f5fd38fc-20fb-b669-66ef-6c9a8d0d15ef
10-06-20	ICAPWG/MIWG	Hybrid Storage Model: MST Attachment H Tariff Changes https://www.nyiso.com/documents/20142/15824617/3%20Hybrid%20Storage%20Attachment%20H%20Tariff%20Changes_100620_FINAL.pdf/edea54b2-d8f8-16cb-3aab-31622215a08f
10-16-20	ICAPWG/MIWG	Hybrid Storage Model: MST Energy Market Tariff Changes https://www.nyiso.com/documents/20142/16124862/2%20Hybrid%20Storage_Energy%20tariff%20ICAPWG%20MIWG%20101620.pdf/fcc7cf12-efe1-9c41-a09b-1921da66ebbf
10-27-20	ICAPWG/MIWG	Hybrid Storage Mitigation Tariff Revisions and Model Updates https://www.nyiso.com/documents/20142/16364783/8%20Hybrid%20Storage%20Mitigation%20Tariff%20Revisions%20and%20Model%20Updates_10272020%20MIWG_FINAL.pdf/90b53974-e404-63d6-7f5a-1e9d7a93fb85
10-27-20	ICAPWG/MIWG	Hybrid Storage Model: Comprehensive CSR Market Design Proposal https://www.nyiso.com/documents/20142/16364783/Hybrid%20Storage_CSR%20proposal%20overview%20ICAPWG%20MIWG%2010.27.20%20final.pdf/c48cc0e0-c1da-d89c-7f15-6929e590db63

Bid Parameters

Bid Parameters

- Existing rules apply for the IPR (Wind/Solar) and ESR Units. In addition, the Units must submit values for the following parameters with their economic offers:

- CSR Injection Limit
- CSR Withdrawal Limit
- Normal Upper Operating Limit (MW)
- Emergency Upper Operating Limit (MW)
- Lower Operating Limit (MW)
- Upper Storage Limit(MWh)
- Lower Storage Limit(MWh)

- Incremental Bid Curve
- Market Choice(DAM/RTM)
- Unit Operation
- Beginning Energy Level (DAM Only) (MWh)
- ESR Energy Management Mode (ISO/Self)
- ESR Outage Type ("N", "P" or "F")
- CSR Outage Type ("N", "P" or "F")
- Opportunity Cost
  - Up to 11 points
  - Optional for all Generators
  - Corresponds to the $/MWh on the bid curve

Where **BLACK = Existing Generator parameter** and BLUE = New parameter available only to CSRs

Submitting CSR Bids

- CSR bids will be managed using same bidding screens and templates as existing Generator Bids

Submitting CSR Bids

CSR Bids – CSR Injection Limit and CSR Withdrawal Limit

- When submitting a bid the user must specify:
  - CSR Injection Limit
  - CSR Withdrawal Limit
- The Bids submitted for the IPR Unit and the ESR Unit must supply the same values for the Injection and Withdrawal Limits

CSR Bids – CSR Injection Limit and CSR Withdrawal Limit

- ▪ Example:
- • ESR1 and IPR1 participate in CSR1
- • ESR1 submits bids for the market day – 08/20/2021 all 24 hours with Injection limit = 100 and withdrawal limit = (-50)
- • Next, IPR1 tries to submit bids for the same market day – 08/20/2021 all 24 hours with Injection limit = 80 and Withdrawal limit = (-50)
- • The IPR1 bids would fail validation (would be in validation failed state). To address the failed validation, either of the following of the two corrective actions could be taken:
  - • Resubmit ESR1 bids with Injection limit = 80 followed by resubmitting IPR1 bids with same Injection limit

  OR

  - • Resubmit IPR1 bids with Injection limit = 100 (to match with its peer member unit bids)
- • CSR injection and withdrawal Scheduling Limits are expected to be consistent with the physical capability of the relevant interconnection facilities

CSR Bid – CSR Outage Type

- When submitting DAM Bid, the user must specify a "CSR Outage Type" of "N" Normal, "P" for Planned Outage and "F" for Forced Outage
  - CSR Outages (including derates) must be reported through the bidding platform
  - CSR Outage Type states the reason for reductions to the CSR Scheduling Limits, it does not apply to outages affecting either of the participating Generators
  - The Bids submitted for the IPR Unit and the ESR Unit must supply the same value for CSR Outage Type

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Upload/Download Templates

- Format of the upload/download templates is being revised to accommodate new fields for CSR

Submit Generator Bids Upload – Upload Request Data

- The data format for each row is as follows:
    - Generator, date & time, duration, market, expiration, upper operating limit, emergency upper operation limit, fuel type, Burdened Fuel Price, start up cost ($), bid schedule type id, self committed MWs 00, self committed MWs 15, self committed MWs 30, self committed MWs 45, fixed min gen MW, fixed min gen cost, dispatch curve MW 1, dispatch curve MW 2, dispatch curve MW 3, dispatch curve MW 4, dispatch curve MW 5, dispatch curve MW 6, dispatch curve MW 7, dispatch curve MW 8, dispatch curve MW 9, dispatch curve MW 10, dispatch curve MW 11, dispatch curve $/MW 1, dispatch curve $/MW 2, dispatch curve $/MW 3, dispatch curve $/MW 4, dispatch curve $/MW 5, dispatch curve $/MW 6, dispatch curve $/MW 7, dispatch curve $/MW 8, dispatch curve $/MW 9, dispatch curve $/MW 10, dispatch curve $/MW 11, 10 min non-synch cost, 10 min spinning cost, 30 min non-synch cost, 30 min spinning cost, regulation capacity MWs, regulation capacity cost, regulation movement cost, Opportunity curve $/MW 1, Opportunity curve $/MW 2, Opportunity curve $/MW 3, Opportunity curve $/MW 4, Opportunity curve $/MW 5, Opportunity curve $/MW 6, Opportunity curve $/MW 7, Opportunity curve $/MW 8, Opportunity curve $/MW 9, Opportunity curve $/MW 10, Opportunity curve $/MW 11, Opportunity curve $/MW 12, ESR Beginning Energy Level, Lower Storage Limit, Lower Storage Limit, Energy Management Mode, Lower Operating Limit, ESR Outage Type, Host Load, CSR Outage Type, CSR Injection Limit, CSR Withdrawal Limit

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Submit Generator Bids Upload – Upload Response Data

- Response files will contain the following data
  - Generator name, Generator PTID, date & time, market, expiration, upper operating limit, emergency upper operating limit, fuel type, Burdened Fuel Price, start-up cost ($), bid schedule type id, self committed MWs 00, self committed MWs 15, self committed MWs 30, self committed MWs 45, fixed min gen (MW) fixed min gen cost ($), dispatch curve MW 1, dispatch curve MW 2, dispatch curve MW 3, dispatch curve MW 4, dispatch curve MW 5, dispatch curve MW 6, dispatch curve MW 7, dispatch curve MW 8, dispatch curve MW 9, dispatch curve MW 10, dispatch curve MW 11, dispatch curve MW 12, dispatch curve $/MW 1, dispatch curve $/MW 2, dispatch curve $/MW 3, dispatch curve $/MW 4, dispatch curve $/MW 5, dispatch curve $/MW 6, dispatch curve $/MW 7, dispatch curve $/MW 8, dispatch curve $/MW 9, dispatch curve $/MW 10, dispatch curve $/MW 11, dispatch curve $/MW 12, 10 min non-synch cost, 10 min spinning cost, 30 min non-synch cost, 30 min spinning cost, regulation capacity MWs, regulation capacity cost, regulation movement cost, bid id, bid status, message, Opportunity curve $/MW 1, Opportunity curve $/MW 2, Opportunity curve $/MW 3, Opportunity curve $/MW 4, Opportunity curve $/MW 5, Opportunity curve $/MW 6, Opportunity curve $/MW 7, Opportunity curve $/MW 8, Opportunity curve $/MW 9, Opportunity curve $/MW 10, Opportunity curve $/MW 11, Opportunity curve $/MW 12, ESR Beginning Energy Level, Lower Storage Limit, Lower Storage Limit, Energy Management Mode, Lower Operating Limit, ESR Outage Type, Host Load, CSR outage Type, CSR injection Limit, CSR Withdrawal Limit

Summary

Summary

- CSR will have the following new Bidding Parameters
  - CSR Injection Limit (MW)
  - CSR Withdrawal Limit (MW)
  - CSR Outage Type (Normal - "N" , Planned - "P" or Forced - "F")

Questions?

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The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits to consumers by:

- Maintaining and enhancing regional reliability

- Operating open, fair and competitive wholesale electricity markets

- Planning the power system for the future

- Providing factual information to policy makers, stakeholders and investors in the power system

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