FERC Order 2222: New HDERA Type to support underlying DERs and DCRs Questions and Answers

General

Q: What is the purpose of FERC Order 2222?
A: CAISO's Tariff must comply with FERC 2222, which requires all RTOs/ISOs to allow DCRs that can provide a minimum qualified aggregate Pmax value of at least 100kW to participate in all markets in addition to introducing a new Masterfile HDERA resource aggregate with underlying DCR. Note: The CAISO already allows for DER participation but will have to make some adjustments to ensure compliance with FERC 2222.

Q: What is HDERA?
A: Heterogeneous Distributed Energy Resource Aggregation (HDERA) is an aggregate resource type that must have at least one underlying DCR (Distributed Curtailment Resource). DCR would behave similar demand response, providing its supply as the amount of demand curtailment below baseline, while DER injects energy directly onto the grid.

Q: What is a DERA?
A: A Distributed Energy Resource Aggregation (DERA) is a resource comprised of one or more Distributed Energy Resources (DERs).

Q: What is a DER?
A: A Distributed Energy Resource (DER) is any resource located on the distribution system, any subsystem thereof, or behind a customer meter in a Utility Distribution Company or a Metered Subsystem.

Q: What is a DCR?
A: A Distributed Curtailment Resource (DCR) is a DER that provides demand curtailment in a Heterogeneous Distributed Energy Resource Aggregation (HDERA).

Q: What are some examples of HDERA resource types?
A: HDERA resources may include either DCR + DER (battery storage, rooftop solar) or DCR (no DER).

Q: Who does the new Masterfile HDERA resource type impact?
A: It impacts the distributed resource developers, aggregators, and associated Scheduling Coordinator Metered Entities (SCMEs) that are participating in the day-ahead and real-time markets.

Q: What are the HDERA data CAISO is referring to from the FERC 2222 Business Requirements Specification document?
A: "HDERA Data" refers to resource attributes defined in Master File and the GRDT that are applicable to HDERA resources. Master File contains the following DERA/HDERA resource attributes to downstream systems (as applicable) Resource data may include (but is not limited to):

- Scheduling Coordinator ID
- Resource ID
- HDERA_YN flag
- Baseline Methodology
- Pnode(s)
- Default GDF(s)

- SubLAP

Q: What kind of impact will this new Masterfile HDERA resource type have on customers?
A: This new change will impact the NRI process, bid submission, meter & monitoring data submission, settlement, & Masterfile reporting (only through external MF Report UI).

Q: What ISO applications will be impacted because of the changes from FERC 2222?
A: RIMS, MRI-S, SIBR, and Masterfile will be impacted. There are no physical updates to these applications.

Q: How come the baseline methodology is defined in the GRDT (as read only) but customers cannot submit the baseline methodology selection via Masterfile's GRDT?
A: While both the GRDT and the Masterfile are impacted by supporting the new HDERA resource attributes, we would consider the GRDT as derivative of Masterfile and an extension of the same impacted system. The baseline methodology selection will need to follow the existing process as detailed in the Demand Response BPM under section 5. The baseline methodology must go through the NRI process for review and approval before it can flow into Masterfile for tracking. Once in Masterfile, the baseline methodology will be available as read-only for GRDT retrieval via UI or API.

Q: Do I submit the HDERA resource type request through the Masterfile GRDT if I want to participate?
A: No. There are specific requirements for customers to follow should they decide to participate with an HDERA resource. The requirements are documented in the New Resource Implementation Guide, multiple BPMs, and Tariffs, etc.

Q: What happens if I submit a request for HDERA participation through the GRDT spreadsheet via UI or API?
A: Your request will be rejected. The request must go through the NRI process and Regulatory Contracts for approval.

Q: For the DCR in the example on training slide 9, if it must be conventional curtailment (not associated with onsite generation or have PDR as a storage device), is this an alternative or is this saying it is a separate option?
A: This is not replacing the PDR option. We are assuming that those participating under the PDR model will continue to participate under that model. The FERC Order required the CAISO to include demand curtailment and recognized it as a certain type of DER that could participate in a DERA. The main difference is that the DCR would be measured (not directly metered) by a baseline methodology and could be comprised of aggregation demand below that DCR.

Q: What are some eligible technology types of resource for DER that are associated with either DERA/HDERA?
A: Eligible technologies could include any technology capable of injecting energy into the grid. Certain technology types may be restricted by your local regulatory authorities (LRAs) and may be ineligible to participate as a DCR.

Q: Why doesn't the CAISO track ineligible technologies for HDERA?
A: CAISO does not have the ability to track all the technologies that may or may not be restricted by the customer's Local Regulatory Authorities (LRAs). However, CAISO does review all HDERA resource type submissions prior to approving the resource. For example, there is a Concurrence letter review that is required prior to entering the ISO's new resource implementation. Utilities must ensure that any type of DER associated with a DERA is eligible to participate in that DERA.

Q: What is a DERPA UDC/MSS Concurrence Letter and who do I contact if I have questions?

A: A Distributed Energy Resource Provider Agreement (DERPA) UDC/MSS Concurrence Letter is a confirmation that the UDC/MSS has reviewed the DERs listed in Attachment A of the letter, including the DERA for the Distributed Energy Resource Provider (DERP). This is detailed under CAISO tariff section 4.17.4. If you have any questions, you can contact Contracts team at RegulatoryContracts@caiso.com.

SAMPLE BELOW

1) Distributed Energy Resource Aggregation Name (DERA): NorCalEVtransportaion									
List of DERs in the aggregation	UDC or MSS	SubLAP	Type of Resource	Net Capacity[1]	Location Address	Location City	Location Zip	Effective Date	Service Account # (Not used by ISO)
Location A	NorthUDC	PGSF	Storage	.75MW[1]	123 First Blvd	San Bruno	94066	7/1/16 – ()	NoABC-1234
Location B	NorthUDC	PGSF	PV	.25MW[1]	ABC Bay Street	San Francisco	94114	7/1/16 – 7/1/17	NoDEF-5678

Master File

Q: Is there a way for customers to view the Generation Distribution Factor (GDF) info via Masterfile since the info is not submitted/available via GRDT?

A: Any updates to the GDFs must be updated through the Project Details form and uploaded into RIMS for review by the NRI team. Once the request has been processed, the information will be sent to the Masterfile team to update in the Masterfile database. Note: The GDF info will not be available for download via GRDT; however, customers can submit a request in through the Customer Inquiry Dispute and Information (CIDI) application to confirm the GDF value in Masterfile. If you do not have access to CIDI, please coordinate with your User Access Administrator (UAA) to obtain access.

Q: In the Generator Resource Data Template (GRDT) spreadsheet, what is changing?

A: There will be two new fields/columns (MF flags) on the GRDT 'RESOURCE' tab, which are displayed as Reference-only data. The 'Distributed Resource Type' column flag will indicate if the resource is a HDERA resource. If the flag is 'N', it means the resource type is a DERA. If the flag is 'Y', it means the resource type is HDERA. If the flag is null, the resource type is not a DERA or HDERA. For the second column, it will display the Baseline Methodology for HDERA. This selection is done through the NRI process and will be displayed in the GRDT spreadsheet as read-only.

Q: Can I submit DERA/HDERA resource data changes to Masterfile?

A: No. For DERA/HDERA resource types, Masterfile can only receive DERA and HDERA resource attributes through the existing New Resource Implementation (NRI) process. Please contact NRI@caiso.com if you have any questions.

Q: How will DERA/HDERA resource be modeled in Masterfile?

A: DERA/HDERA resource will be modeled as entity type Generic (GNRC) NRG (non-generating resources). The sub-entity type will be non-regulation energy management (NREM)

- /RegisteredGenerator/fuelSource (= 'GNRC')
- /RegisteredGenerator/REMFlag (= 'NO')

Q: What is the next step in the GRDT revision process and what needs to happen next before CAISO completes and publishes the final version for GRDT 18.1?

A: The final GRDT version will be published once the project is implemented in production. The date is currently planned for 11/1.

Q: We see the draft GRDT (published on 8/16/24) on the CAISO Release Planning website, does CAISO send out a Customer Service Notification email regarding GRDT activity, such as revisions?

A: As far as customer service notifications, these revisions are typically covered in the Release User Group (RUG) and Technical User Group (TUG) meetings. For GRDT revisions, you can find this on the Release Planning page > scroll down to 'Master File documents'.

Q: Is there a specific CAISO Resource (i.e. Tariff Section or BPM) where I can learn more about CAISO's GRDT/IRDT process?
A: Yes, we have several locations that references the CAISO GRRT/IRDT process:

- Market Operations discusses the GRDT/IRDT related to processes and Master File Market Operations Appendix BPM section A.3 - https://bpmcm.caiso.com/BPM%20Document%20Library/Market%20Operations/Appendices_Market%20Operations_V62_Redline.pdf
- Market Operations BPM scattered throughout: https://bpmcm.caiso.com/BPM%20Document%20Library/Market%20Operations/BPM_for_Market%20Operations_V97_Redline.pdf
- Network and resource modeling page: https://www.caiso.com/market-operations/network-resource-modeling
- Master File application landing page: https://www.caiso.com/systems-applications/portals-applications/master-file Note: This page has the User Guide, calendar, GRDT and IRDT definitions, etc.
- Master File computer-based training (CBT): https://www.caiso.com/content/cbt/master-file-process/masterfileprocess.html

New Resource Implementation

Q: Does the Scheduling Coordinator (SC) acting as a Scheduling Coordinator Metering Entity (SCME) for DCRs need an ISO approval for the identified DCR's baseline methodology on Attachment A before they can start participating?
A: Yes. An ISO approval is required for HDERA before they can participate.

Q: For DERA and HDERA resource attributes, if there are any modifications to the baseline methodology, GDF, or DCR/DER locations, etc., do I submit a request to Masterfile or NRI?
A: If there are any modifications to the baseline methodology, GDF, or DCR/DER locations, etc., the request must go through NRI to be processed and approved. Do not submit the changes to Masterfile as it will be rejected. Any other changes after the ISO have processed and approved the resource attribute info must be updated via GRDT.

Q: If I need to modify the information for the HDERA resource type, do I terminate the existing resource and start over or can I submit a revision for the existing resource?
A: If you need to modify the existing resource attribute, you do not have to terminate your existing HDERA resource. You would have to re-submit an updated Concurrence letter to RegulatoryContracts@caiso.com and an updated Project Details form to RIMS for the NRI team to review and approve. If you change/modify your baseline methodology, you will also need to submit the required documentations detailed in the Demand Response BPM under section 5 to pdr@caiso.com to review and approve.

Q: Is the process for submitting a request to modify existing HDERA resource info different from the normal NRI process?
A: Yes. How the CAISO views the tracking vs. the assessment technology is different. When there are changes for the DCR, DER, baseline methodology, or ownership, we need to reassess. It is not a full restart, but we need that Concurrence letter to provide those important details to be re-evaluated.

Q: How will underlying DERA/HDERA customers/locations be verified if they are not registered in more than one resource? For example, for Proxy Demand Resource (PDR) and Reliability Demand Response Resource (RDRR) the Demand Response Registration System (DRRS) handles the creation and registration of locations.
A: It goes back to the process that was put in place with the DER aggregation policy. It is part of the Concurrence letter review process. If there is an adjustment to the Concurrent letter template, the updates will need to be submitted to the Investor-Owned Utilities (IOUs) of the distribution companies to review the DCRs

in which the DERs are located. This review does is not performed in DRRS. There is a separate process performed by the Regulatory Contracts team to identify locations within the distributed curtailment resource.

Q: What happens when the HDERA aggregator/SCME initiates a request for participation?
A: The request is submitted through a Concurrence Letter, which requires an 'Attachment A' that includes details for each underlying DCR/DER component for the proposed HDERA resource. In addition to the existing DER, 'Attachment A' will now support DCR. Customers with outdated 'Attachment A' documents should be aware of this update.

Q: What happens to the GDF values that are submitted through the NRI process?
A: The GDF value provided on the Project Details form via RIMS will feed into Masterfile and become the default GDF value unless the SC assigns a new GDF with the hourly bid submission via SIBR. The only time the NRI process would need to be re-initiated is if the HDERA is modified (e.g. removal or addition of underlying DER/DCR, changes to HDERA or DER/DCR capacities, changes in ownership or SC, modified baseline methodology, etc.).

Metering

Q: Does the Market Participant submit meter data, or will CAISO be handling the metering?
A: To participate using the HDERA resource type, SC entities would have to register as a Scheduling Coordinator Metered Entity (SCME) as the SCME is responsible for submitting the meter data into MRI-S. Since you have an underlying curtailment DCR type, you would have to submit monitoring data as well. To view the measurement types, you can refer to Appendix B of the Demand Response BPM.

Q: Is CAISO expecting the meter data file to indicate HDERA resource type or a generation resource type as of now like the demand response resource? If so, what field in the meter data file (MDEF)/CSV will be modified?
A: Meter data file should indicate the measurement type of "Generation" for DERA and HDERA resources. For example: MSMT_TYPE = GEN.

Q: Can CAISO provide an example of the mathematical equation on how the HDERAs' combined baseline is calculated?
A: An HDERA's demand curtailment resource DCR has multiple baseline calculation options. These are exampled in the Demand Response BPM in Section 5 and explained in the CAISO tariff section 4.13.4 Performance Evaluation Methodologies for PDRs and RDRRs. Link to DR BPM: https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Demand%20Response

Q: How does the capacity of the storage (Pmin and Pmax) combined with the baseline consumption (baseline of the demand response) work? Should it be the net energy?
A: HDERA Pmin only represents the metered DER load. The DCR baseline load is not considered in developing a HDERA Pmin. HDERA Pmax of the HDERA would be the DER energy injection and DCR load reduction capabilities combined.

Q: Currently the RDRR and PDR resource level baseline methodology and technical characteristics have been submitted via DRRS. How come the HDERAs resources need to be submitted to another different application (i.e. RIMS)?
A: In addition to underlying DCR, HDERA resources may include DER components, which do not behave with the DRRS application and its processes as they strictly apply to demand response only. Consistent with DERA resources, the tariff requires a new DERP Agreement whenever HDERA resources adds/removes/modifies their underlying DCR/DER components. Such modifications will require the HDERA to undergo the NRI process through RIMS.

Q: Are there any changes to the process for uploading meter data values for DERA and HDERA in MRI-S?
A: The current meter data submission upload process remains the same. Upon successful upload, data can be viewed under the Meter Data tab. The HEDRA resource data will also appear under Monitoring Data tab in MRI-S.

Q: For monitoring data submissions in MRI-S, how should the data be submitted for the baseline methodologies?
A: User must submit **one** value for each measurement type required (i.e. LOAD, MBMA, CBL, TMNT, BASE). Data is submitted in aggregate for (1) all DCR(s) and (2) to the HDERA resource ID. GEN data is submitted as a single value to the HDERA resources for all responses from DERs and DCRs combined.

SIBR

Q: Since part of the HDERAs (e.g. DER-Storage) is not a demand response resource, is it appropriate for CAISO to apply the Net Benefits Test Results to the HDERA as a whole resource?
A: Yes, this was expressly discussed and ordered in the FERC proceeding. SIBR will apply Net Benefit Test to all HDERA resource bid submissions using the same price threshold as for PDRs. This was expressly discussed in the FERC proceeding. SIBR rule will only accept bids at or above the Net Benefits Test price for these resources. If a resource is flagged as HDERA they are subject to the price in the bid to be above the Net Benefit floor price for On or Off Peak.

Settlement

Q: Can CAISO provide an example of the mathematical equation for the HDERA settlement energy quantity as how it determines the aggregate the sum of net energy from both DER and DCR?
A: Please reference Appendix A in the FERC Order 2222 BRS for the following scenarios/examples:

HDERA net energy > 0 MWh: (where net positive supply occurs due to the aggregate DER charging MWh being exceeded by the aggregate HDERA supply MWh)
= MWhDER (DG) + MWhDCR1 + MWhDCR2 + MWhDCR3 + MWhDER (ES1) + MWhDER (ES2)
= 1.2 + 0.5 + 0.2 + 0.2 + 0.8 + (-0.4)
= 2.5 MWh

HDERA net energy = 0 MWh: (Scenario where net zero supply occurs due to the aggregate DER charging MWh matching the aggregate HDERA supply MWh)
= MWhDER (DG) + MWhDCR1 + MWhDCR2 + MWhDCR3 + MWhDER (ES1) + MWhDER (ES2)
= 0.8 + 0.1 + 0 + 0.1 + (-0.6) + (-0.4)
= 0 MWh

HDERA net energy < 0 MWh: (where net negative supply occurs due to the aggregate DER battery charging MWh exceeding aggregate HDERA supply MWh):
= MWhDER (DG) + MWhDCR1 + MWhDCR2 + MWhDCR3 + MWh DER (ES1) + MWhDER (ES2)
= 0 + 0 + 0.2 + 0 + (-0.3) + (-0.1)
= -0.2 MWh

Note: The DCR curtailment amounts (i.e. MWh reduction below the calculated baseline) are reflected as positive supply to the grid in both the market instruction and metering measurement. Settlements do not have visibility to the underlying resources [DER (DG), DCR1, DCR2, DCR3, DER (ES1), and DER (ES2)] within an HDERA. CAISO will settle based on the aggregated meter submitted by market participants.

Market Simulation

Q: When does Market Simulation start?

A: Market Sim registration began on September 11, 2024. The unstructured Market Sim window opened for testing from 09/16/24 through 10/11/24. The market sim window includes a two-week connectivity period, so the 9/16 will kick off the two-week connectivity period where the ISO will conduct their end to end. Customers will begin the actual submission on 9/30/24.

Helpful links

Business Requirements Specification FERC Order 2222
https://www.caiso.com/documents/business-requirements-specification-ferc-order-2222.pdf

Market Sim Scenarios
https://www.caiso.com/documents/market-simulation-scenarios-ferc-order-2222.pdf

Pending Tariff Language – Compliance Filing – FERC Order No. 2222 (ER21-2455)
https://www.caiso.com/documents/pendingtarifflanguage-compliancefiling-ferc-order-no-2222-er21-2455-4-11-30-a-b21.pdf

Pending Tariff Language - Amendment regarding Compliance with FERC Order No. 2222 (ER21-2455)
https://www.caiso.com/documents/pendingtarifflanguage-amendment-regarding-compliance-ferc-order-no-2222-er21-2455.pdf

Impacted Tariffs - https://www.caiso.com/legal-regulatory/tariff

- Roles & Responsibilities (Tariff Section 4.17.7 & 4.6.3.2)
- Settlements & Billing (Tariff Section 11.6.5.1)
- Bid and Self-Schedule Submission (Tariff Section 30.5.2.6)

Impacted Business Practice Manuals - https://bpmcm.caiso.com/Pages/BPMLibrary.aspx

- Definitions and Acronyms
- Distributed Generation for Deliverability
- Generator Management
- Market Instruments
- Demand Response
- Market Operations
- Metering

PRR 1588 (Demand Response)
https://bpmcm.caiso.com/Pages/ViewPRR.aspx?PRRID=1588&IsDlg=0

PRR 1586 (Market Instruments)
https://bpmcm.caiso.com/Pages/ViewPRR.aspx?PRRID=1586&IsDlg=0

Generator Resource Data Template Version 18.1 – draft
https://www.caiso.com/documents/generator-resource-data-template-version-18-1-draft.xlsx

New Resource Implementation page
https://www.caiso.com/generation-transmission/generation/new-resource-implementation

Project Details form
https://www.caiso.com/documents/projectdetailsform.docx

GRDT and IRDT Definitions V18.1 – draft
https://www.caiso.com/documents/grdt-and-irdt-definitions-v18-1-draft.xls

Distributed Energy Resource Provided UDC/MSS Concurrence Letter Template
https://www.caiso.com/documents/distributedenergyresourceproviderudc_mssconcurrencelettertemplate.doc

Demand response net benefits test results reports
https://www.caiso.com/library/demand-response-net-benefits-test-results

Presentation - ESDER Phase 3B
https://www.caiso.com/documents/energystorage_distributedenergyresources_phase3b.pdf

Presentation - ESDER Phase 4
https://www.caiso.com/documents/presentation-energy-storage-distributed-energy-resources-phase-4-training.pdf