

# Real Time Values Q&A

Version: 01.00 as of 03/03/2020

**Q1** Where are Real Time Values (RTV) documented?

**A1** PJM Manual 11: Energy and Ancillary Service Market Operations. Specific citing can be found here: <https://www.pjm.com/-/media/committees-groups/committees/mic/2020/20200131-special/20200131-item-03b-rtv-m11.ashx>

**Q2** Where can I find education on RTVs?

**A2** Initial Education can be found here: <https://www.pjm.com/-/media/committees-groups/committees/mic/2020/20200131-special/20200131-item-03a-rtv-overview.ashx>

**Q3** What are all the ways a resource can communicate parameters to PJM?

**A3** A participant may verbally communicate a parameter change to PJM Dispatch, and PJM staff will manually enter the value into the Dispatch Management Tool (DMT). These overrides are temporary, and are intended for use during Manual Dispatch scenarios.

Under normal operating conditions, a participant can electronically communicate resource parameters to PJM through Markets Gateway. Values can be entered via the user interface, or programmatically uploaded through the web service. The Markets Gateway User Guide can be found here: <https://www.pjm.com/-/media/etools/markets-gateway/markets-gateway-user-guide.ashx>

The parameter hierarchy is Manual Overrides supersede Unit Hourly Updates, Unit Hourly Updates override Weather-sensitive Adjustments, Weather-sensitive Adjustments override Hourly Schedules, Hourly Schedules override Daily Schedules and Daily Schedules override Unit Parameter defaults.

Parameter Set	UH	WA	USH	USD	UPD
Minimum Down Time				X	
Minimum Run Time			X	X	
Maximum Daily Starts				X	
Maximum Weekly Starts				X	
Startup Time (Cold, Inter, Hot)				X	
Notification Time (Cold, Inter, Hot)	X		X	X	

Turn Down Ratio (Eco Limits)	X	X	X	X	X
Maximum Run Time				X	
Energy Offer	UH	WA	USH	USD	UPD
Incremental (Price, MW)			X	X	
NoLoad Cost			X	X	X
Startup Costs			X	X	X

UH= Unit Hourly Update  
 WA= Weather Sensitive Adjustments  
 USH= Unit Schedule Hourly  
 USD= Unit Schedule Daily  
 UPD= Unit Parameter Defaults

**Q4** What are the processes similar to RTVs in other ISOs?

**A4** In CAISO, (CAISO Business Practice Manual Section B.B.1)The Master File (MF) contains data for resources participating in CAISO markets. The data is used by CAISO market systems for bidding, operation, and settlement. The authorized Scheduling Coordinator (SC) can submit a request to update specific operating parameters for existing generator or intertie resources.

Section 4.6.4 of the tariff requires resource information submitted to master file to “be an accurate reflection of the design capabilities of the resource and its constituent equipment when operating at maximum sustainable performance over Minimum Run Time, recognizing that resource performance may degrade over time.” The design capability refers to how the resource and its equipment was designed to operate under normal conditions, subject to whatever performance degradation the resource has experienced over its lifespan.

Updates can be made by submitting a revised Resource Data Template (RDT) via the Master File User Interface (UI) or the Master File Application Programming Interface (API). This can be done for Generator resources on the Generating Resource Data Template (GRDT) or Intertie resources on the Intertie Resource Data Template (IRDT). Some data elements in the RDT are updateable via the UI, while others must be updated through some other process. Details are provided in the following tables.

Once the SC has submitted a request, the Master File analyst reviews the request and determines if the updates comply with stated MF business rules. Requests must include an explanation for the change sent via email to [rdt@caiso.com](mailto:rdt@caiso.com). The explanation should include details about how the resource’s design capabilities, as potentially adjusted for age, have changed and how those changes in turn justify changes to the existing data element values. The CAISO may request additional supporting materials, such as test

results, manufacturer recommendations, historical data, resource operating procedures, engineering studies, etc., with citations to specific page numbers or section numbers to allow the ISO to validate that the new values reflect the age-adjusted design capabilities of the resource. These materials should be submitted to the Master File team via CIDI. The CAISO will treat any submitted supporting CAISO Business Practice Manual BPM for Market Instruments Page 187 of 406 materials as confidential information protected under section 20 of the CAISO tariff and will only disclose the materials pursuant to the restrictions of section 20.4.

If the updates pass the initial review by the Master File analyst, the request is presented for further review and approval by representatives of other affected CAISO systems. The changes must be fully approved prior to them being made effective within the Master File database. If there are questions regarding the requested updates, the CAISO will contact the SC to coordinate modifications to the requested updates or request additional information.

Master File change requests require at least five (5) and up to eleven (11) business days, depending on the complexity of the change, from receipt of the request to implementation into the Master File database (except as otherwise prescribed, such as to accommodate a high volume of requests.) The RDT will not be accepted if any of the following occurs:

- The RDT fails a business rule
- The request is not accompanied by an explanation for the change
- If requested, appropriate supporting materials are not submitted via CIDI
- The ISO needs additional time to review the supporting materials
- The ISO requests additional information from the SC
- The SC chooses to recall their RDT request and make a different change

The change request timeline will start over again upon submission of requested items.

In ERCOT, When a Generation Resource or Load Resource first registers with ERCOT, they must provide resource parameters. Subsequently, they can modify the following at any time with documented reasons (nodal protocols section 3.7.1) for immediate use. Updates to parameters are reviewed by compliance after events to determine root cause and if applicable can be reported.

3.7.1 Resource Parameter Criteria

3.7.1.1 Generation Resource Parameters

- (1) Generation Resource Parameters that may be modified, with documented reason for change, by the QSE for immediate use upon ERCOT validation include:
  - (a) Normal Ramp Rate curve;
  - (b) Emergency Ramp Rate curve;
  - (c) Minimum On-Line time;
  - (d) Minimum Off-Line time;
  - (e) Maximum On-Line time;

- (f) Maximum daily starts;
- (g) Maximum weekly starts;
- (h) Maximum weekly energy;
- (i) Hot start time;
- (j) Intermediate start time;
- (k) Cold start time;
- (l) Hot to intermediate time; and
- (m) Intermediate to cold time.

3.7.1.2 Load Resource Parameters

(1) Resource Parameters that may be modified, with documented reason for change, by the QSE for immediate use upon ERCOT validation, which may be adjusted to reflect Distribution Losses in accordance with Section 8.1.1.2, General Capacity Testing Requirements, include the following for each of its Load Resources that is a non-Controllable Load Resource:

- (a) Maximum interruption time;
- (b) Maximum daily deployments;
- (c) Maximum weekly deployments;
- (d) Maximum weekly energy;
- (e) Minimum notice time;
- (f) Minimum interruption time; and
- (g) Minimum restoration time.

(2) Resource Parameters that may be modified, with documented reason for change, by the QSE for immediate use upon ERCOT validation, which may be adjusted to reflect Distribution Losses in accordance with Section 8.1.1.2, include the following for each of its Controllable Load Resources, including Aggregate Load Resources (ALRs):

- (a) Normal Ramp Rate curve;
- (b) Emergency Ramp Rate curve;
- (c) Maximum deployment time; and
- (d) Maximum weekly energy.

(3) Resource Parameters submitted by a Resource Entity must also include, for each of its ALRs, mapping between the ALR and the individually metered Loads, by Electric Service Identifier (ESI ID) or, in the case of a Non-Opt-In Entity (NOIE), equivalent unique meter identifier, comprising the ALR.

In addition, Real-Time operational conditions can be reflected in telemetered values of resource status, upper and lower MW limits, ramp rates, current MW output. These telemetered values are used in the Real-Time SCED for dispatching Resources. Exceptional fuel costs (in form of a fuel index price) can be submitted one hour prior to the start of the operating hour. This cost will be used in determining the mitigated offer used in Real-Time SCED. Submissions of exceptional fuel cost must have supporting documentation.

In MISO, all information on consequences of incorrect parameter use can be found here:

[https://cdn.misoenergy.org/Module%20D%20\(For%20Posting\)108025.pdf](https://cdn.misoenergy.org/Module%20D%20(For%20Posting)108025.pdf) In order to prevent and/or discern the exercise of market power by certain Generation Resources, including Stored Energy Resources, Stored Energy Resources – Type II, and Electric Storage Resources, through Physical Withholding, the IMM shall audit Generator Forced Outages, Generator deratings; changes in physical offer parameters which reduce resource availability including, but not limited to, changes in Ramp Rates, Hourly Emergency Minimum Limits, Hourly Economic Minimum Limits, Hourly Economic Maximum Limits, Forecast Maximum Limits, and Hourly Emergency Maximum Limits, as well as changes to time-based Offer parameters, including, but not

limited to, changes to Start Up Times, Minimum Run Times, and Minimum Down Times, Planning Resource designations; and other changes in offer parameters that the IMM reasonably believes may have the potential to reduce the available supply and raise the prices for Energy, Ancillary Services or Capacity. Time-based Offer parameters: An increase of three (3) hours, or an increase of six (6) hours in total for multiple time-based Offer parameters. Time-based Offer parameters include, but are not limited to, Start-Up Times, Minimum Run Times and Minimum Down Times.

NYISO has reference levels for parameters and offers to which they compare generator offers. Mitigation related to parameters would be done ex-post. If the unit's offer exceeded the allowed threshold, and impacted market clearing or generator payments due to parameter that is not aligned with reference parameters, an evaluation by NYISO's Market Mitigation and Analysis department would occur. If the unit is found not to have a reasonable justification for the offer/parameters the result is capping the unit at a reference level for a pre-determined period of time. Additionally NYISO's Market Mitigation and Analysis department could escalate the issue to FERC.

In SPP, most parameters can be updated hourly. SPP will also engage the MMU to determine if the offer is rational and fairly representative of the generator capabilities