

Capacity Performance Unit Specific Parameter Adjustment FAQs

1. Where can I find the documentation on the Unit Specific Adjustment Process?

<http://www.pjm.com/~media/committees-groups/committees/elc/postings/20150612-june-2015-capacity-performance-parameter-limitations-informational-posting.ashx>

And OATT Attachment K Appendix Section 6.6

2. Where can I find the definitions for the Minimum Operating Parameters?

Parameter definitions can be found in Manual 11- <http://www.pjm.com/~media/documents/manuals/m11.ashx>

3. What is the deadline for submitting unit specific parameter adjustment requests?

As documented in the OATT Attachment K Appendix Section 6.6, requests must be submitted to PJM by no later than February 28 immediately preceding the first Delivery Year for which the adjusted unit-specific parameters are requested to commence.

4. Who is eligible to submit adjustments?

All CP cleared units or units used for replacement capacity may submit for adjustments and base capacity resources (DY 18/19). Please note, the PJM Unit Specific Parameter Adjustments Team will only evaluate and review re-submitted adjustments for the same parameters if there is physical change or updated/changed information or documentation.

5. What schedules in Markets Gateway do Minimum Operating Parameters under Capacity Performance apply?

PJM's default minimum operating parameter only apply to a unit's cost based and price-based PLS schedules. These parameters do not impact your price based schedule. The unit specific parameters will be utilized for make whole payments and do not excuse a unit for not performing during a CP Performance Assessment Hour.

6. What type of documentation is required by PJM to support adjustment requests?

The following list is not an exhaustive list, but provides examples of the types of information and documentation PJM would request to support unit specific adjustment requests.

PLEASE NOTE: Information pertinent to the adjustment request must be highlighted and labeled in the submitted documentation.

Adjustment Request Parameter	Required Documentation				SALI (Starting and Loading Instructions) Chart
	OEM (Original Equipment Manufacturer) Documentation	Actual Control Room Print Out or DCS/Data Logger Data	Minimum Down Time and Start-Up Sequence Template	Environmental Permit	
Start Up Time	x	x	x	If adjustment is due to environmental restrictions	x
Maximum Daily/ Weekly Starts	x	x		If adjustment is due to environmental restrictions	
Minimum Run Time	x	x	x	If adjustment is due to environmental restrictions	x
Minimum Down Time	x	x	x	If adjustment is due to environmental restrictions	
Notification Time			x	If adjustment is due to environmental restrictions	
Turn Down Ratio	x	x		If adjustment is due to environmental restrictions	

Please see below for a template to document the Minimum Down Time and Start-Up Sequence.

Minimum Down Time and Start-Up Sequence Template

PLEASE NOTE: The following information is representative of a typical start-up sequence for a Sub-Critical Coal unit. Please add steps and update hours to reflect the physical characteristics of your unit.

Unit Type: **ENTER HERE**

Minimum Down Time Sequence Template			
Hrs.	Step #	Description	
N/A	1	Open Breaker	
1	2	Turbine Coast Down and Boiler Purging	
1	3	Turning Gear	
1	4	Align for Start Permissive	
3		TOTAL	
Start-Up Sequence Template			
Cold Start (hrs.)	Hot Start (hrs.)	Step #	Description
1	0.5	1	Start Fans Start Pumps Verify Chemistry
1	0.5	2	Igniters Warm Up
1-2 hrs	0.5	3	Fire Boiler with Main Fuel
1	N/A	4	Heat Boiler
1	N/A	5	Steam to Turbine for Warm Up
1	0.5	6	Roll Turbine (Includes Hold Points - Temp Matching, Vibration)
N/A	N/A	7	Close Turbine Breaker
6-7 hrs.	2		TOTAL

7. What if my unit does not fit the unit types listed?

Select the Unit Type which most closely represents your unit type and indicate your reasons. Note that the MW limits specified in a technology type are general guidance and not fixed limits. If your unit is an Aero type CT but larger than 50 MWs you would still select Aero type CT as the technology type.

8. Which types of units are excluded from unit specific parameters?

The following unit types are excluded and do not require adjustments to be submitted: Nuclear, Run of River Hydro, Solar, and Wind.

9. How are parameters applied to Joint Owned Units and Partial Capacity Performance Resources?

The same parameters will be applied to the all of the MWs of a generation resource. If a unit is partial CP, all MWs for that unit will be considered CP.

10. Do I need to submit the same Unit Specific Adjustment every year?

No, the PJM approved adjustments will continue to be used unless there is a change to the unit's operational capability. Please notify PJM with these types of changes.

11. How does PJM calculate Max Daily and Max Weekly starts when an adjustment is granted for notification, cold start time, min down, and min run times?

The following equations are used to determine the max daily and max weekly starts when an adjustment is granted for notification, cold start time, min down, and min run times.

The calculation used for Max Daily Starts is: $[(24 \text{ hrs} - \text{Notification Time} - \text{Cold Start Time}) / (\text{Minimum Down Time} + \text{Minimum Run Time})] + 1$

The calculation used for Max Weekly Starts is $[(168 \text{ hrs} - \text{Notification Time} - \text{Cold Start Time}) / (\text{Minimum Down Time} + \text{Minimum Run Time})] + 1$

12. What is the difference between Unit Specific Parameters and the Parameter Limited Schedule Exceptions?

Please see the chart below and OATT Attachment K Appendix Section 6.6 for details.

Unit Specific Operating Parameter Adjustment Process

- Parameters are based on the resource's operating design characteristics
- Parameters will be used to establish the base operating values

ADJUSTMENTS:

May be submitted due to physical operational limitations

CP Resources (2016/2017 and Beyond)

Base Capacity Resources (2018/2019 and 2019/2020)

Turn Down Ratio, Minimum Down Time, Minimum Run Time, Maximum Daily Starts, Maximum Weekly Starts, *Hot Start, *Warm Start, *Cold Start, *Notification Time, and *Maximum Run Time

Parameter Limited Schedule Exception

- Exceptions are based on a changed physical condition
- Exceptions are short term and based on a temporary change in the resource's physical condition

EXCEPTIONS:

- Temporary - 30 days or less
- Period - 31 days to no more than 1 year
- Persistent - at least 1 year

CP and Non CP Resources

Turn Down Ratio, Minimum Down Time, Minimum Run Time, Maximum Daily Starts, Maximum Weekly Starts

13. Is there a required template to provide adjustment requests?

The PJM supplied template must be used when submitting an adjustment request. Please see the Enhanced Liaison Committee - Capacity Performance page for the document labeled: Unit Specific Parameter Adjustment Request Template DY 18/19. Please use one tab for each unit request submitted.

<http://www.pjm.com/committees-and-groups/committees/elc.aspx>

14. What type of gas service is required?

PJM requires the unit specific parameters that relate to fuel procurement contracts to reflect the most flexible supply contract available to the resource, as these costs can be included in your CP offer. If you submit an adjustment request due to fuel procurement contracts, please specify the most flexible fuel supply service available to the unit.

Please Note: The May 10, 2016 FERC Order (at P 352) instructed PJM to revise its Tariff to add a clarification it proposed in its August 6, 2015 Answer (at p. 10). As PJM clarified in its August 6, 2015 Answer, in considering whether the terms of a commercial contract constitute an actual physical constraint that would make the

Market Seller's unit eligible for a unit-specific parameter adjustment, the Market Seller must demonstrate that the contractual terms are "not simply an economic decision but a physical restriction that could not be rectified among any commercial alternatives actually available to it."

15. What is an operational limitation for which a unit specific adjustment request may be submitted?

Please see below for examples of limitations below:

Physical Operational Limitations

Examples of what PJM would consider to be physical operational limitations include:

- An OEM documented limitation based on engineering calculations
- A state mandated regulation
- A federal, state, or local jurisdiction mandated Emissions, Environmental permit, or safety requirement

Examples of what PJM would NOT consider to be physical operational limitations include:

- Lack of available staffing or remote operations capability
- Economic Decisions on how to operate a unit to meet a unit specific parameter
- Outdated or degraded technology or lack of enhancements to bring the unit or equipment to modern operating standards
- A conservative operations approach to operating the unit or equipment to reduce equipment maintenance
- Marketing strategies to limit unit flexibility and maximize operating times during uneconomic periods.

Contractual or Other Actual Constraints

Examples of what PJM would consider to be contractual or other actual constraints include:

- Fuel supply contract limitations such as notification time required by gas pipelines to nominate and procure gas

Examples of what PJM would **NOT** consider to be contractual or other actual constraints include:

- Failure to procure the most flexible fuel contract available even if it requires another supplier or additional lead time
- Tolling agreements with limitation related to starts times, number of starts, minimum run time, and turn down ratio
- Operating limitations to limit maintenance expenses due to long term service agreements
- Operating limitations due to other marketing contracts

Please Note: The May 10, 2016 FERC Order (at P 352) instructed PJM to revise its Tariff to add a clarification it proposed in its August 6, 2015 Answer (at p. 10). As PJM clarified in its August 6, 2015 Answer, in considering whether the terms of a commercial contract constitute an actual physical constraint that would make the

Market Seller's unit eligible for a unit-specific parameter adjustment, the Market Seller must demonstrate that the contractual terms are "not simply an economic decision but a physical restriction that could not be rectified among any commercial alternatives actually available to it."

16. What parameters will be applied to CP cleared resources for the current delivery year or for resources which will be used as replacement resources if an adjustment request is not submitted by the deadline?

The proxy values by technology classification for each resource will be applied. The proxy values table can be found in the informational posting at <http://www.pjm.com/~media/committees-groups/committees/elc/postings/20150612-june-2015-capacity-performance-parameter-limitations-informational-posting.ashx>.

Please note: once parameters are applied, they will remain in place until a change in operational capabilities is communicated to PJM

17. How do unit specific parameters apply to self- scheduled units?

Unit specific parameters will not apply for scheduling and dispatch when units are self- scheduled. If a self- scheduled unit did not submitted a unit specific adjustment request, anytime the unit is not self-scheduled, PJM will use the proxy unit specific parameters for scheduling and dispatch.

The deadlines for submitting unit specific adjustments will apply for all units. Please see FAQ #3 for deadline details.

18. When are unit specific parameters applied to Base Resources for DY 18/19?

Unit Specific Parameters will be applied to Base Resources (DY 18/19) - effective June 1, 2018 based on the following criteria:

	Base Resources	Capacity Performance
Emergency Level Triggers	Hot Weather Alert Max Generation Emergency Alert Max Generation Emergency Action	Hot Weather Alert Max Generation Emergency Alert Max Generation Emergency Action Cold Weather Alert
Months USP is Applied	Hot Weather Operations: June 1- September 30	All Year: Jan 1- December 31
Tariff Reference	OATT Attachment K Appendix Section 6.6	OATT Attachment K Appendix Section 6.6

19. What are Real Time Values?

Market Sellers can communicate the resource’s current operating capability based on a physical constraint to PJM before and after Day-ahead Energy Market closes through ‘Real Time Values’ functions on Markets Gateway. Real Time Values should be utilized when a resource cannot operate according to the unit specific parameters (Capacity Performance and Base Capacity resources), default Parameter Limited Schedules (non-Capacity Performance resources), or approved Parameter Limit exceptions. Please see Manual 11 Section 2.3.4 Minimum Generator Operating Parameters – Parameter Limited Schedules for further details.

20. When are Unit Specific Parameters Evaluated and Applied?

Per the Tariff (OATT Attachment K Appendix Section 6.6) the parameters will be evaluated for use of the unit specific parameters during hot and cold weather alerts and maximum generation emergency alerts. Please see the tariff for detailed information on when the parameters are applied for Capacity Performance and Base Capacity Resources. Please Note: The Unit Specific Parameters are NOT only applied during CP Emergency Actions.

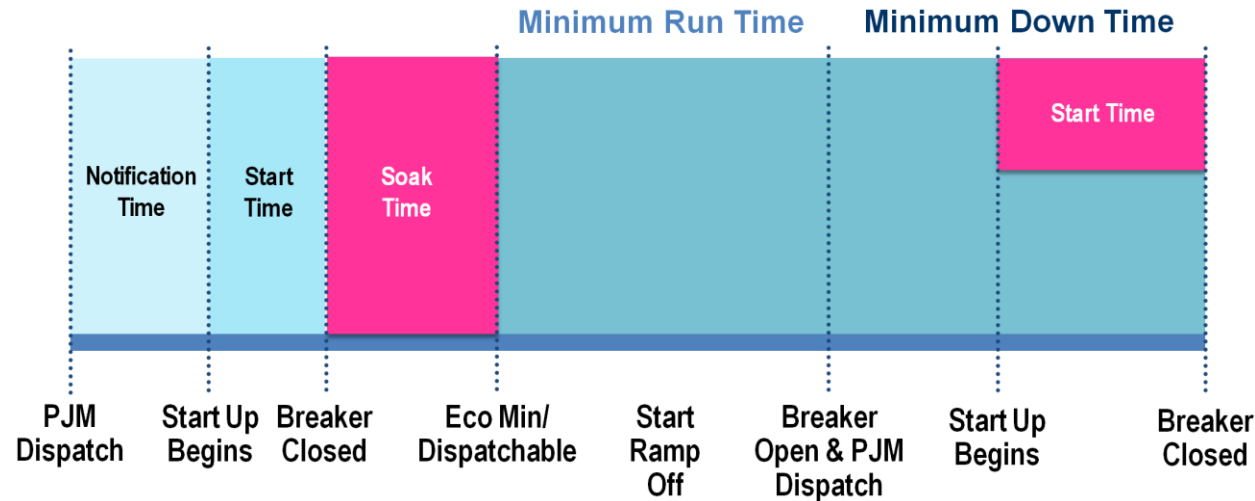
The Tariff can be found at the following link: <https://www.pjm.com/directory/merged-tariffs/oatt.pdf>

21. What are the applicable parameter limits for different resource types and when are they applied for the 18/19 DY?

DY 2018/2019	Applicable Limits	Consideration of Price PLS in DA/Dispatch
Capacity Performance	USP	Max Gen Emer/Max Gen Emer Alert/HWA/CWA/ Anticipated Actions*
Base Capacity	USP	<i>June – September</i> Max Gen Emer/Max Gen Emer Alert/HWA/ Anticipated Actions*
Fixed Resource Requirement (FRR)	PLS Default	Max Gen Emer/Max Gen Emer Alert/ Anticipated Actions*
Energy Only	N/A	N/A

*Please refer to OATT, Attachment K Appendix, Sec. 6.6 Minimum Generator Operating Parameters

22. Operating Parameters Definition Timeline



The Operating Parameter Definitions can be referenced in Manual 11 Section 2.3.10 at <http://www.pjm.com/~media/documents/manuals/m11.ashx>

23. When are the unit specific parameters applicable for units with a FRR plan?

Units listed in a FRR plan that have not cleared excess capacity in a RPM auction as CP or Base, are not subject to unit specific parameter rules until the start of the 19/20 DY.

The Tariff can be found at the following link: <https://www.pjm.com/directory/merged-tariffs/oatt.pdf>

24. What is the cold/warm/hot soak time parameter?

Cold/Warm/Hot Soak Time is defined in Manual 11 Section 2.3.10 Operating Parameter Definitions. Soak Time will be used for only informational and awareness purposes by DA Operators and Dispatch until the parameter is integrated with the Day-Ahead (DA) engine.