



Application of Max. Emergency in Day-ahead and Real-time Markets

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Offer Unit with Emergency Max > Eco Max

- Market Seller can offer Emergency Max greater than Eco Max on several pages in Markets Gateway.
- On Schedules Detail page, Emergency Max value can be entered for any schedule for the whole day.

<ul style="list-style-type: none"> Generator Unit Schedules Dispatch Lambda Market Results Regulation Market Synchronized Reserve Mar Day-Ahead Scheduling Res Resource Limitations Interface Pricing Opportunity Cost Calculator Parameter Limits Price Responsive Demand 	Offers	Offer Updates	Detail	Detail Updates	Manager	Selection	Availability Update	Restriction Information	TPS Schedule Switch	Fuel Price Exceptions	Composite Offer Verification	
	Cold Soak Time	<input type="text"/>						Intermediate Soak Time	<input type="text"/>			
	Hot Soak Time	<input type="text"/>										
	Economic & Emergency											
	Economic Min	<input type="text" value="50"/>						Emergency Min	<input type="text" value="40"/>			
	Economic Min Default	<input type="text" value="50"/>						Emergency Min Default	<input type="text" value="40"/>			
	Economic Max	<input type="text" value="85"/>						Emergency Max	<input type="text" value="100"/>			
	Economic Max Default	<input type="text" value="100"/>						Emergency Max Default	<input type="text" value="100"/>			

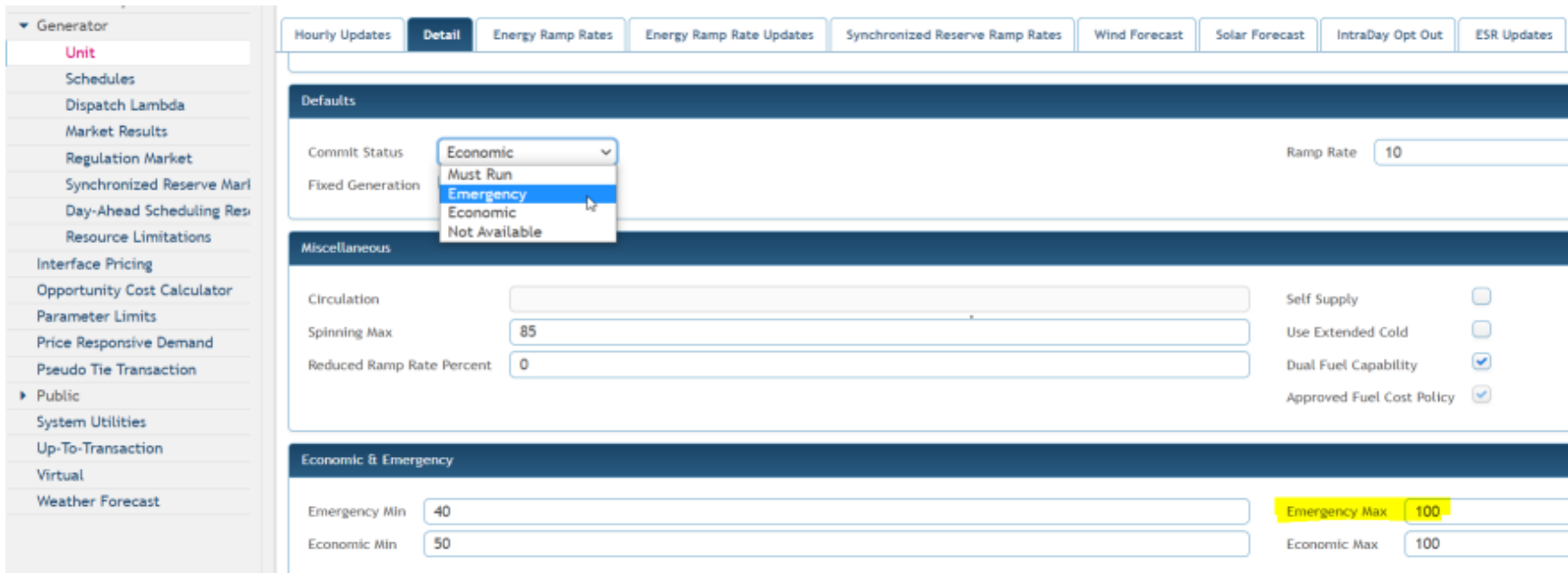


Offer Unit with Emergency Max > Eco Max

- Market Seller can offer Emergency Max greater than Eco Max for some hours during the day on Hourly Updates page.

Hourly Updates												
Hourly Updates Detail Energy Ramp Rates Energy Ramp Rate Updates Synchronized Reserve Ramp Rates Wind Forecast Solar Forecast IntraDay Opt Out ESR Updates												
		Emer. Min. : 40.0				Econ. Min. : 50.0		Econ. Max. : 100.0		Emer. Max. : 100.0		
<input type="checkbox"/>	Hour ^	Emer. Min. (Default)	Emer. Min. (MW)	Econ. Min. (Default)	Econ. Min. (MW)	CIR	Econ. Max. (Default)	Econ. Max. (MW)	Emer. Max. (Default)	Emer. Max. (MW)	Commit Status	Fixed Gen.?
<input type="checkbox"/>	1	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No
<input type="checkbox"/>	2	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No
<input type="checkbox"/>	3	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No
<input type="checkbox"/>	4	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No
<input type="checkbox"/>	5	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No
<input checked="" type="checkbox"/>	6	40.0	40.0	50.0	40.0		100.0	85.0	100.0	100.0	Economic	No
<input checked="" type="checkbox"/>	7	40.0	<input type="text" value="40"/>	50.0	<input type="text" value="40"/>		100.0	<input type="text" value="85"/>	100.0	<input type="text" value="100"/>	Economic	No
<input type="checkbox"/>	8	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No
<input type="checkbox"/>	9	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No

- Market Seller can offer a unit as “Max Emergency” for whole day by changing its default commit status to “Emergency” on Unit Detail page in Markets Gateway.
- Market Seller can change Emergency Max, which can be equal to or greater than Economic Max on the same page.

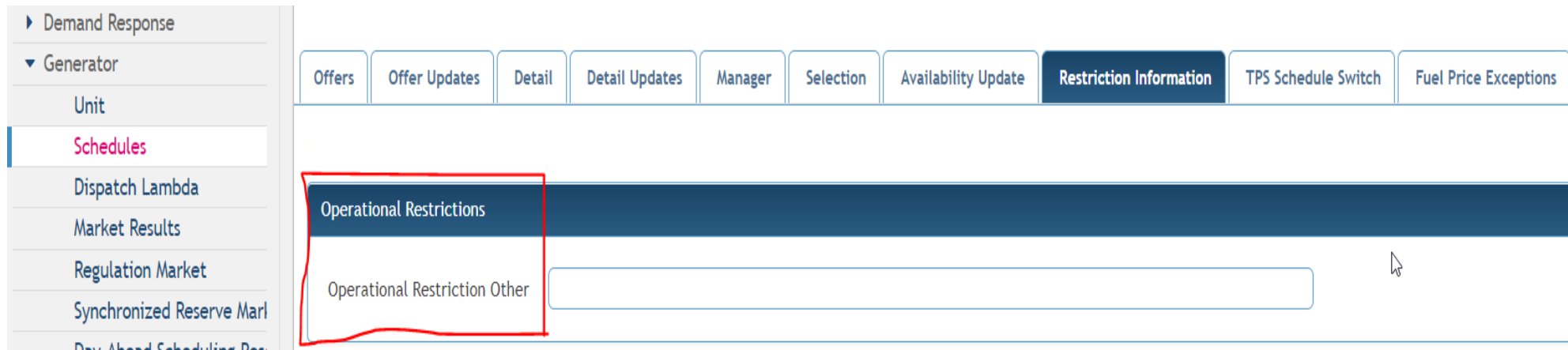


The screenshot shows the 'Unit Detail' page in the PJM Markets Gateway. The left sidebar contains a navigation menu with categories like 'Generator', 'Public', and 'Weather Forecast'. The main content area has tabs for 'Hourly Updates', 'Detail', 'Energy Ramp Rates', etc. The 'Detail' tab is active, showing sections for 'Defaults', 'Miscellaneous', and 'Economic & Emergency'. In the 'Defaults' section, the 'Commit Status' dropdown menu is open, with 'Emergency' selected. In the 'Economic & Emergency' section, the 'Emergency Max' field is highlighted in yellow and set to 100, while the 'Economic Max' is set to 100 and the 'Emergency Min' is set to 40.

- Market Seller can offer a unit as “Max Emergency” for partial day by changing its commit status to “Emergency” on Hourly Updates page for particular hours in Markets Gateway.
- The hourly Emergency Max can be updated as well.

Hourly Updates													
Emer. Min. : 40.0 Econ. Min. : 50.0 Econ. Max. : 100.0 Emer. Max. : 100.0													
<input type="checkbox"/>	Hour	Emer. Min. (Default)	Emer. Min. (MW)	Econ. Min. (Default)	Econ. Min. (MW)	CIR	Econ. Max. (Default)	Econ. Max. (MW)	Emer. Max. (Default)	Emer. Max. (MW)	Commit Status	Fixed Gen.?	
<input type="checkbox"/>	1	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input type="checkbox"/>	2	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input type="checkbox"/>	3	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input type="checkbox"/>	4	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input type="checkbox"/>	5	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input type="checkbox"/>	6	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input type="checkbox"/>	7	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input checked="" type="checkbox"/>	8	40.0	<input type="text" value="40"/>	50.0	<input type="text" value="40"/>		100.0	<input type="text" value="85"/>	100.0	<input type="text" value="85"/>	<input type="text" value="Economic"/>	No	
<input type="checkbox"/>	9	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input type="checkbox"/>	10	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input type="checkbox"/>	11	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input type="checkbox"/>	12	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input type="checkbox"/>	13	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	
<input type="checkbox"/>	14	40.0	40.0	50.0	40.0		100.0	85.0	100.0	85.0	Economic	No	

- Market Seller can give the reason noting why the unit is in Max Emergency on “Operational Restrictions” section on the Schedules Restriction Information page in Markets Gateway



The screenshot displays the PJM Markets Gateway interface. On the left is a navigation menu with categories like Demand Response and Generator, and sub-items like Unit, Schedules, Dispatch Lambda, Market Results, Regulation Market, Synchronized Reserve Mar, and Day Ahead Scheduling. The main content area has a top navigation bar with tabs: Offers, Offer Updates, Detail, Detail Updates, Manager, Selection, Availability Update, Restriction Information (which is active), TPS Schedule Switch, and Fuel Price Exceptions. Below this, the 'Operational Restrictions' section is highlighted with a red box. It contains a dark blue header bar labeled 'Operational Restrictions' and a text input field labeled 'Operational Restriction Other'.

- Since the inception of the Day-ahead Market, Max Emergency has not been activated in the Day-ahead Market
- Given this history, Emergency Max values of units are unlikely to be used. It is even less probable that units offered as Max Emergency will be scheduled for energy
- In the Day-ahead Market, Max Emergency unit and units' Emergency Max values are not eligible to provide reserves

- Resources offered into the energy market with commit status not set to Emergency and $\text{Emergency Max} > \text{Economic Max}$ (Emergency Segment):
 - Under normal operating conditions economic energy dispatch will be up to the bid in Economic Max
 - Reserves will NOT be cleared in the emergency segment
 - Under a Max Generation event, online resources with an Emergency segment may be dispatched into the emergency segment based on the economics of the system
 - Emergency Max replaces Economic Max
 - Reserves can be cleared up to Emergency Max

Resources offered into the energy market with commit status set to Emergency:

- Under normal operating conditions these resources are not scheduled for energy or reserves
- Under a Max Generation event these resources can be called on for energy by the ITSCED market clearing engine
- Once online these resources can be dispatched for energy up to Emergency Max based on the economics of the system
- Reserves can be cleared up to Emergency Max

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Application of Max. Emergency in Day-ahead and Real-time Markets

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