

# Market Suspension

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## Definition of Market Suspension – Approved at 6/9/2021 MIC

- Defined for suspensions  $\leq 6$  hours and  $> 6$  hours
- For Day-Ahead: Status Quo, as currently defined in Tariff section 1.10.8(d)
- For Real-Time: Inability by Dispatch to provide Markets with Economic (Zonal) Dispatch results where at least a total of seven 5-minute intervals are missing within a market hour
  - For  $\leq 6$  hours: substitute missing hours with available DA or RT LMPs or average of adjacent hours
  - For  $> 6$  hours: \$0/MWh LMPs and make whole to lesser of Dispatch MW or actual MW using cost-based offers

- At 9/29/2021 MRC, stakeholders proposed returning to MIC to define rules for long-term suspensions
  - Compensate resources beyond their short-run marginal costs
  - Suspensions > 168 hours (7 days)
  - New proposed market clearing mechanism

- Construct aggregate supply curve and price hourly at the intersection of supply and demand
  - Ignores constraints
  - Energy & Ancillary Services still calculated at 5-min intervals per Tariff
- Aggregate supply curve would be established from available offers (including available resources not running)
  - Use actual generation MW as proxy for demand
  - Find intersection of supply and demand
- Under existing rules, self-scheduled resources will still count towards supply stack but with \$0 price, and will not be eligible to set price
  - Resources that have been directed to not operate will not be eligible to set price



# Market Suspension Scenarios

*Grey Italics – Existing provisions*

**Black non-Italics – Approved at 6/9/2021 MIC**

**Green – New Proposed**

#	Design Components	<= 6 hours	> 6 but <= 168 hours	> 168 hours
1	Determination of DA clearing prices during market suspension	<i>Status Quo - Use RT</i>	<i>Status Quo - Use RT</i>	<i>Status Quo - Use RT</i>
2	Determination of RT clearing prices during market suspension	<p>If DA is available, use DA.</p> <p>If DA &amp; RT unavailable, avg. of RT preceding and subsequent hour</p>	<p>If DA is available, use DA.</p> <p>If DA &amp; RT unavailable, \$0/MWh LMPs (make resources whole to lesser of Dispatch MW or actual MW)</p>	<p>If DA is available, use DA.</p> <p><b>If DA &amp; RT unavailable, LMPs priced hourly based on aggregate supply curve (Energy LMP determined from supply curve, Loss LMP &amp; Congestion LMP will be set to \$0)</b></p>



# Market Suspension Scenarios (cont.)

*Grey Italics – Existing provisions*

**Black non-Italics – Approved at 6/9/2021 MIC**

**Green – New Proposed**

#	Design Components	<= 6 hours	> 6 but <= 168 hours	> 168 hours
3	Determination of Regulation clearing prices during market suspension	Avg. of MCP preceding and subsequent hour	\$0/MWh MCPs (make resources whole to their actual MW, determine LOC)	<p>If PJM is assigning Regulation, resources will be compensated based on regulation clearing cost (determine aggregate price, where every online resource gets paid the clearing price based on the supply curve [using regulation offers plus opportunity cost], where the highest cost resource providing Regulation will set price).</p> <p>Performance Score: use 100-day rolling avg.</p> <p>Mileage Ratio: set to 1</p> <p>Marginal Benefits Factor: MBF would be based on the historical avg. MBF over past hours that shared the same penetration of batteries that exist for the given hour in question</p>
4	<i>Regulation Charges</i>	<i>Status Quo (no special logic needed to account for a market suspension)</i>	<i>Status Quo (no special logic needed to account for a market suspension)</i>	<i>Status Quo (no special logic needed to account for a market suspension)</i>



# Market Suspension Scenarios (cont.)

*Grey Italics – Existing provisions*

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**Green – New Proposed**

#	Design Components	<= 6 hours	> 6 but <= 168 hours	> 168 hours
5	Determination of Reserves clearing prices during market suspension	Avg. of MCP preceding and subsequent hour	\$0/MWh MCPs (make resources whole to their actual MW, determine LOC)	If PJM is assigning Reserves, resources will be paid the difference between energy price and offer price for the amount of reserves resources can supply. Otherwise, resources get paid the clearing price for their output (unless PJM asks resource to back down because it's not needed).
6	Synchronized Reserve Charges	N/A	N/A	Allocate all reserve costs to the RTO reserve zone and calculate charges as normal
7	Non-Synchronized Reserve Charges	N/A	N/A	Allocate all reserve costs to the RTO reserve zone and calculate charges as normal
8	Determination of relevant offers	If DA is unavailable, use RT offers only  If RT is unavailable, use last available offers	If DA is available, use DA offers.  If DA & RT unavailable, use Cost-based offers	Cost-based offers



# Market Suspension Scenarios (cont.)

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Green – New Proposed

#	Design Components	<= 6 hours	> 6 but <= 168 hours	> 168 hours
9	Make-Whole / Settlements (Balancing Operating Reserve Credits)	<p><i>Status Quo - Make resources whole to lesser of Dispatch MW (if Dispatch information is available to the generator) or Actual MW.</i></p> <p>PJM will determine LOC based on best available data.</p>	<p>Per current rules, but make resources whole to lesser of Dispatch MW (if Dispatch information is available to the generator) or Actual MW based on cost-based offers (\$0/MWh LMPs).</p> <p>PJM will determine LOC based on best available data.</p>	<p>Default to current uplift rules where applicable. No LOC will be paid through Balancing Operating Reserve.</p> <p>Resources directed to not operate would not be eligible to receive uplift. For all resources operating other than those directed to not operate, current uplift eligibility rules would apply.</p>
10	Balancing Operating Reserve Charges	N/A	N/A	Assign all Operating Reserves to Reliability bucket and allocate to Load plus Exports (per current rules).



# Market Suspension Scenarios (cont.)

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Green – New Proposed

#	Components	<= 6 hours	> 6 but <= 168 hours	> 168 hours
11	Treatment of FTR Settlements during Market Suspension	<p><i>Status Quo - If DA unavailable, use RT</i></p> <p><i>Status Quo - If RT unavailable, use DA</i></p> <p>If DA &amp; RT unavailable, avg. of RT preceding and subsequent hour</p>	<p>Zero value (no congestion LMPs). Both the original FTR auction costs and the DA FTR target allocation value would be equal to zero for that hour.</p>	<p>Zero value (no congestion LMPs). Both the original FTR auction costs and the DA FTR target allocation value would be equal to zero for that hour.</p>

Red text = change from first read

#	Design Components	<= 6 hours	> 6 but <= 168 hours	> 168 hours
12	Treatment of Exports	N/A	<p>Per Design Component #8, where LMPs are set to \$0/MWh, there cannot be exports. Must be resource specific exports, subject to approval by Dispatchers for reliability (PJM &amp; Interregional reliability). <b>resources being exported to meet external capacity obligations will not be eligible for make-whole for such MW.</b></p> <p>Capacity resources can continue to export energy in their respective ISO if they have a capacity obligation in that ISO.</p>	<p><del>Per Design Component #8, where LMPs are set to \$0/MWh, there cannot be exports. Must be resource specific exports, subject to approval by Dispatchers for reliability (PJM &amp; Interregional reliability).</del></p> <p>Capacity resources can continue to export energy in their respective ISO if they have a capacity obligation in that ISO.</p> <p>N/A</p>

**Red text = change from first read**

#	Design Components	<= 6 hours	> 6 but <= 168 hours	> 168 hours
13	Treatment of Imports	N/A	<p><del>Per Design Component #8, where LMPs are set to \$0/MWh, resource-specific imports would be paid after the fact.</del></p> <p>Dispatchable transaction products would be suspended. All other imports would be compensated at LMP, per current rules.</p>	<p>N/A</p> <p>Dispatchable transaction products would be suspended. All other imports would be compensated at LMP, per current rules.</p>

**Red text = change from first read**

#	Design Components	<= 6 hours	> 6 but <= 168 hours	> 168 hours
14	Clarify lag in which settlements are billed	<p><del>Bill activity by 3 months following the trade date (earlier if possible)</del></p> <p>Bill all activity according to the existing timelines dictated in the operating agreement.</p>	<p><del>Bill activity by 3 months following the trade date (earlier if possible)</del></p> <p>Bill all activity according to the existing timelines dictated in the operating agreement.</p>	<p><del>Bill activity by 3 months following the trade date (earlier if possible)</del></p> <p>For those line items included in the weekly billing statement (generally energy, capacity and transmission service), activity will be billed no later than in the next weekly billing statement that is billing activity for the month in question and which is issued at least 5 business days from the date on which PJM Settlements Inc receives all data necessary to calculate billing for such line items. If there are no remaining weekly bills which fit this criteria, the activity will be billed no later than the next monthly bill that goes out at least 5 business days from the date on which PJM Settlements Inc receives all data necessary to calculate billing for such billing line items.</p> <p>All other billing line items will be billed within three calendar months after the calendar month that included such market suspension.</p>

- MIC
  - First Read: 4/13/2022 (solution package)
  - Endorsement: 5/11/2022 (solution package)
- MRC
  - First Read: 6/29/2022 (OA revisions)
  - Endorsement: 7/27/2022 (OA revisions)
- MC
  - Approval: 7/27/2022

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## **Market Suspension**



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