

EPFSTF Survey Results

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- Purpose of Survey:
 - Gather feedback on principles to keep in mind and possible approaches to use during the Circuit Breaker design discussion.
- Survey Dates:
 - Friday November 5 – Thursday November 11
- Total Unique Responders - 180

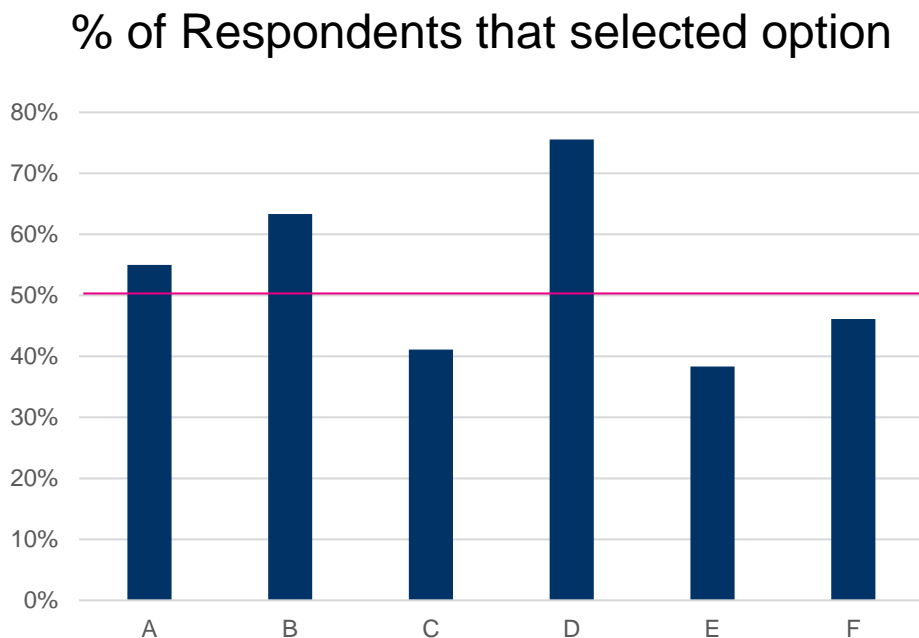
What is your objective for having a circuit breaker?

- Common Themes:
 - Reduce exposure created by ORDC related adders to Energy Market
 - Prevent unintended consequences
 - Needed when prices are inactionable
 - Protect customers in long duration events
 - Avoid defaults in long duration reliability events
 - Avoid extreme transfers of wealth during long duration events
 - Protect market integrity

What is your objective for having a circuit breaker?

- Other Themes
 - Do not support Circuit Breakers
 - Should be limited to most extreme and sustained circumstances
 - Must maintain incentives to hedge and perform during stressed system conditions

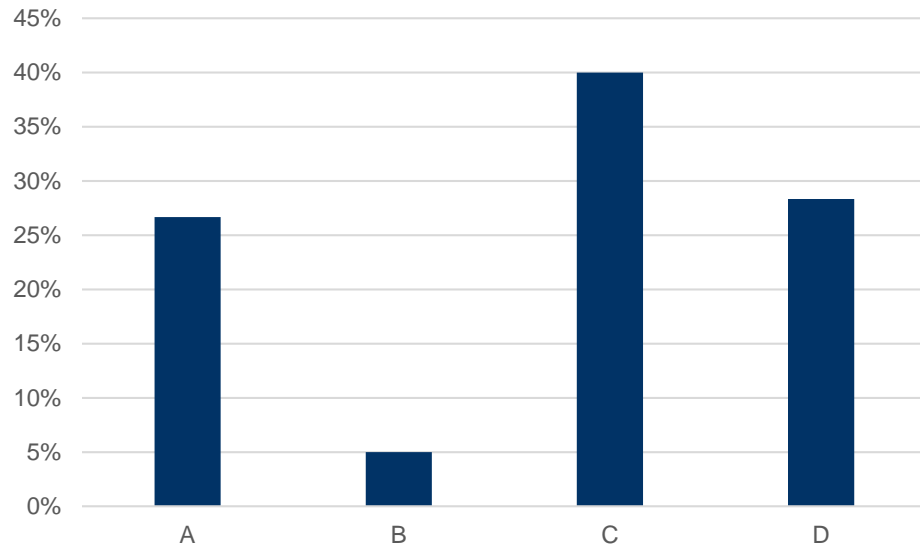
What should be included in the definition of inactionable? (Please select all that apply.)



A	Load cannot reduce to meet price signals	55%
B	Generation cannot be dispatched economically to meet price signals	63%
C	PJM needs to take manual action (i.e. load shed directive, Voltage Reduction Action, etc.)	41%
D	PJM has exhausted all economic and emergency actions and the high price signals no longer incentivize the market to respond	76%
E	Prices are inactionable in the near term and are not reasonably expected in investment models	38%
F	“Inactionable” should be understood as indicating situations where the potential impact on supply and demand of continued high prices may be very small compared to the potential harm of continued high prices; we need not get hung up on a specific definition.	46%

Is it more desirable to have the Circuit Breaker reactively or proactively triggered?

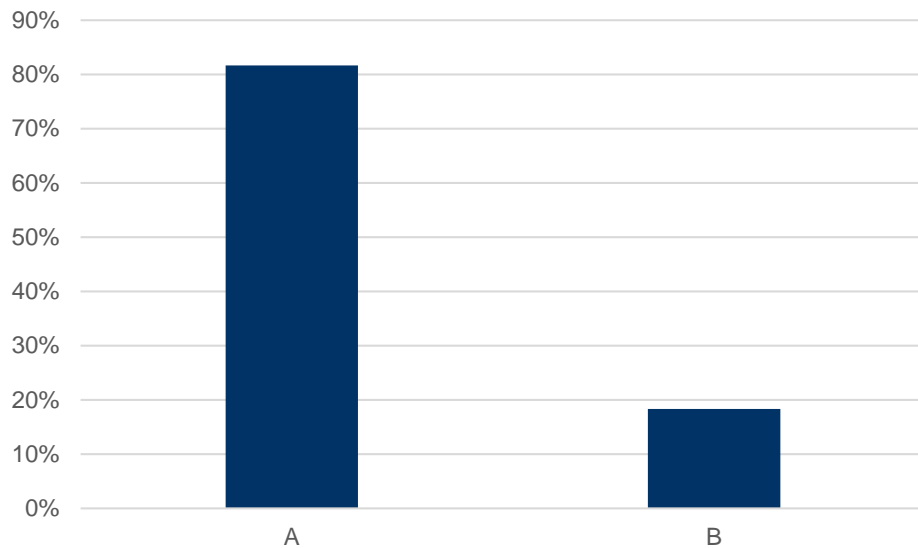
% of Respondents that selected option



A	Reactive – based on a predefined set of conditions having already occurred (hours, dollars, etc.)	27%
B	Proactive – based on forecasted conditions anticipated to persist for some threshold (hours, dollars, etc.)	5%
C	Both – based on a predefined set of conditions having already occurred (hours, dollars, etc.) and expected to persist for some threshold (hours, dollars, etc.)	40%
D	Either – the trigger rules may include a combination of either reactive or proactive triggers	28%

Do market participants want certainty around the Circuit Breaker and its triggering conditions?

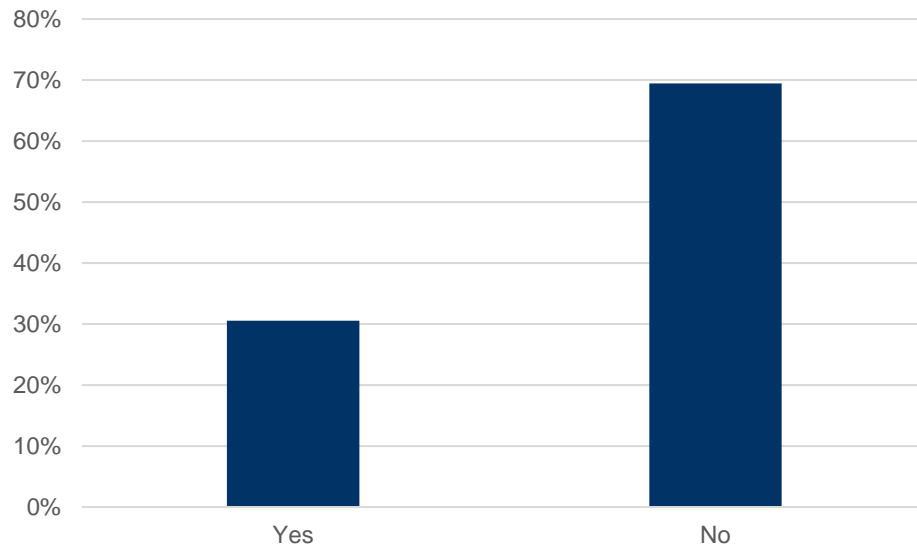
% of Respondents that selected option



A	Want clearly defined rules that specify when circuit breaker is triggered	82%
B	Want some flexibility in when a circuit breaker can be triggered (ex/ unforeseen cyber attack, anticipation of degraded system conditions)	18%

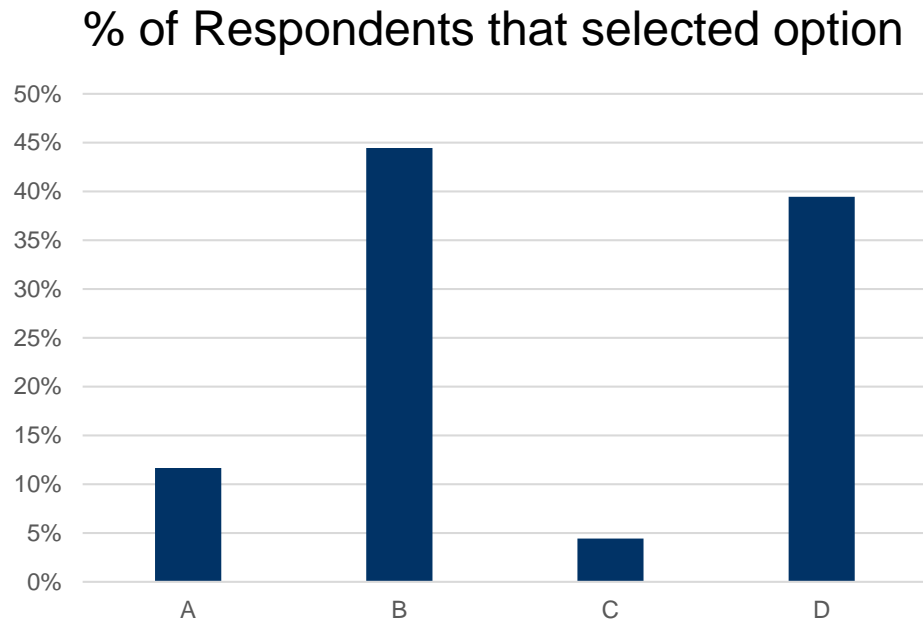
Do market participants want PJM to be able to subjectively trigger a circuit breaker based on anticipated conditions not expressly defined (i.e. cyber attack, etc.)?

% of Respondents that selected option



Yes	31%
No	69%

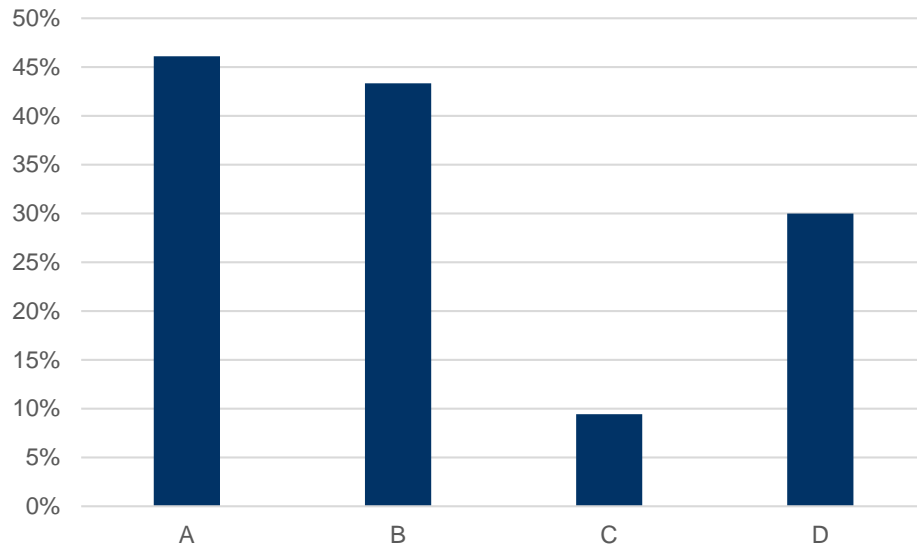
Is there a desire to have a firm cap on prices? I.e. Energy component of LMP cannot exceed \$X



A	Yes, establish firm cap via price cutting, not cutting penalty factors (Harder to implement but more certain results. Cutting method would need discussion.)	12%
B	No, limit the price via reducing penalty factors. (Easier to implement. Number of transmission constraints creates uncertainty in max price.)	44%
C	Both, price cutting and cutting penalty factors.	4%
D	I don't have a preference at this time, it depends on the specific proposal	39%

- Which of these factors should be considered when determining a price cap? (Please select all that apply.)

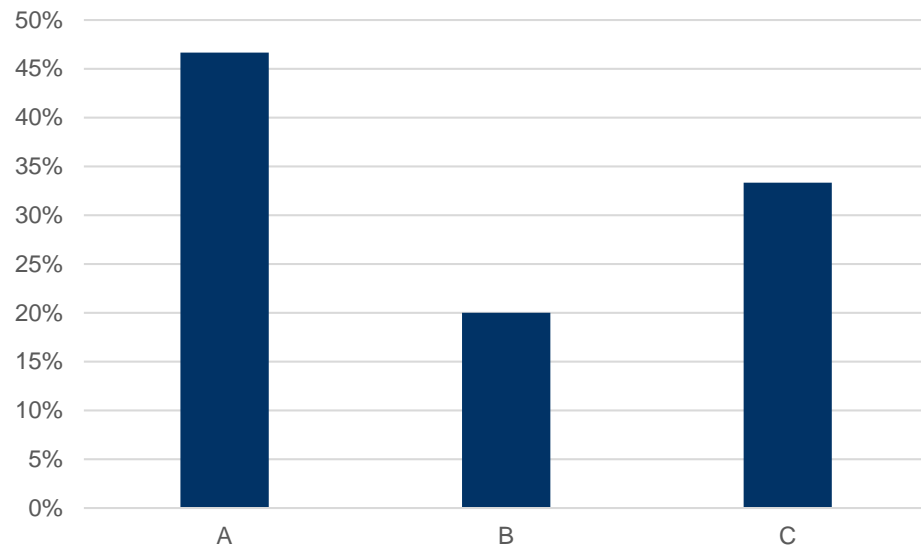
% of Respondents that selected option



A	The cost of fuel plus emissions, subject to the current rules (i.e. capping offer at \$2,000/MWh)	46%
B	Scarcity prices in neighboring RTOs	43%
C	Net CONE	9%
D	None of the Above	30%

If a monetary trigger is desired, do the market participants prefer the circuit breaker protection over:

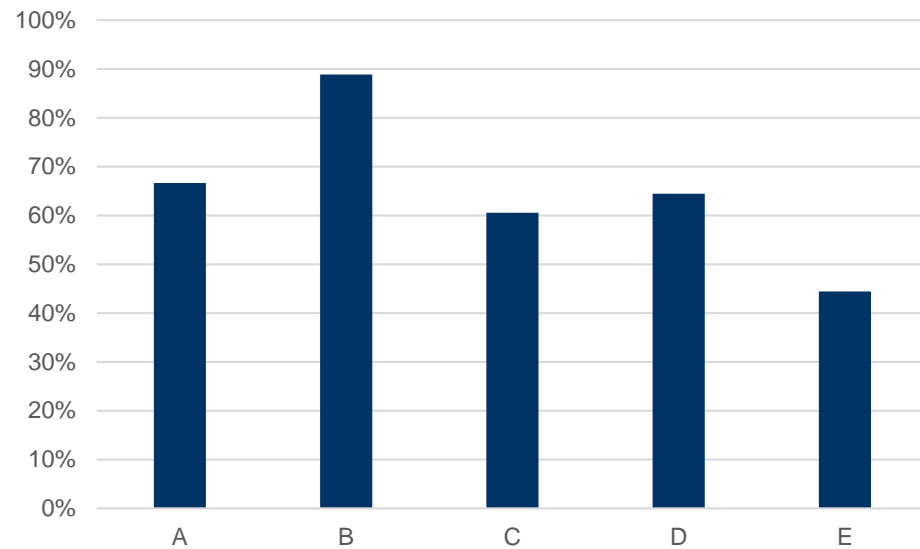
% of Respondents that selected option



A	Short term events (hours, days) that may lead to payment default risk	47%
B	Over a longer term accrual (weeks, months, year) similar to ERCOT (3 * Net CONE for the year)	20%
C	All of the above	33%

- Please choose which of the below scenarios you believe could potentially become serious enough that a Circuit Breaker should apply: (Please select all that apply.)

% of Respondents that selected option



A	Locational Shortages	67%
B	System Wide Shortages	89%
C	Long Duration Shortages being Forecast	61%
D	Fuel Security Issues	64%
E	Other: Please describe a specific scenario that you believe should trigger a circuit breaker:	44%

- 9A: Please describe a specific scenario that you believe should trigger a circuit breaker:
 - When reserves cannot be maintained and PJM has to choose between load shed and maintaining reserves.
 - Conservative Operations
 - Prolonged period of load shed
 - Implementation of involuntary load shed beyond X% threshold of load
 - Long duration shortages not forecast but actually occurring
 - Congestion where no generation can respond to the price signals to relieve the constraint; expected to continue for a period longer than 5 days.

- 9A: Please describe a specific scenario that you believe should trigger a circuit breaker:
 - Generation Outages due to Cyberattack
 - Two major pipelines announce that they must shut down, beginning within days, for weeks for some reason
 - Loss of several nuclear plants for days or weeks, perhaps due to a flaw identified in a common component.
 - Locational as long as not too small
 - Only locational Shortages to the extent that they are isolated due to constraints and cannot be served by sources outside that location.
 - Local catastrophe, not simply a shortage

- 10. Please describe a specific scenario of system conditions that while perhaps extreme, you believe should **not** trigger a circuit breaker (and perhaps explain why not).
 - Prices are extraordinarily high but actionable
 - Transient or forecasted conditions
 - Load shed in and of itself
 - Extended localized outage
 - Fuel Supply/Delivery resulting from Economics

- 10. Please describe a specific scenario of system conditions that while perhaps extreme, you believe should **not** trigger a circuit breaker (and perhaps explain why not).
 - Conditions within a single day
 - An extreme week-long heat or cold that breaks load records during the day, but load decreases at during the night such that the system is no longer in emergency
 - Not sure it makes sense to explicitly rule out (or in) any particular scenario. Focus should be on impact to system, not the particular event that is the source of the impact.

- 11. Is there any additional feedback you wish to provide?
 - Implementation Timing:
 - We think that it is imperative to have a circuit breaker in place before leaving the present reserve pricing structure
 - Need a flexible circuit breaker, not one necessarily tethered to a specific FERC order. It is more critical as the caps increase, but an inactionable price signal at any level should have a mechanism to be tripped.
 - PJM should not get ahead of this issue too much. Really need FERC guidance on ORDC remand.
 - Stakeholders should continue to work towards a circuit breaker that address issues raised by the reserve pricing construct set to take effect in October 2022, while allowing for changes to be made should that construct materially change. Any transition between circuit break mechanisms should be done in a way that there is no "gap" in coverage.

- 11. Is there any additional feedback you wish to provide?
 - PJM Subjectivity:
 - PJM will need to have some ability to consider forecasted events for how long or when to end circuit breaker
 - While some discretion may be necessary it is important to balance it such that there is not too much discretion that may result in unintended consequences.

- 11. Is there any additional feedback you wish to provide?
 - Additional Design Objectives:
 - We prefer a circuit breaker that is designed to operate based on system conditions and a loss of market participant response capabilities.
 - Transparency in operations is of the utmost importance in this exercise
 - Generators must be made whole to at least their costs if CB is enacted.

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