Question text		
Regarding PRC-029 exemption, I just want to clarify without any doubt that if firmware update (which may require update comm card, but moreover triggers extensive effort and $$ (incl. O&M cost) to plan/update/ model/implement) is needed, this can't qualify for an exemption as it's a material change.	JP	I do not speak on behalf of NERC, so cannot provide a definitive answer. However, this situation sounds like the equipment's comm's card (a piece of hardware) needs to be swapped out for a different version to accommodate for firmware changes to update the settings of other hardware. See PRC-029-1 R4.1 and its subparts.
Regarding PRC-029 implementation plan on design evaluation, will GOs be required to fix issues by the effective date of 10/1/2026 if evaluation identifies issues that can be fixed (i.e not due to hardware limitation)?	JP	See PRC-029-1 R1 that states "Each Generator Owner shall esnure the design and **operation** is such that each IBR meets or exceeds Ride-through requirements". Added bold for emphasis.
How can phasor based simulation programs be used to prove functions such as DC bus tripping or PLL trips? It seems to me that EMPTP models have to be used to model these protection functions.	Amin/**GE Vernova**	Amin: this is a very good point. However, not all inverters have DC bus tripping, but if they do, then it is important to capture it using an EMT model. I am not sure what PPL trip is referring to. GEV Answer: While phasor-based simulation programs (RMS tools), are suitable for assessing multiple requirements from PRC-029-1 and other grid codes, there are transient phenomena that can't be captured by them. Electro Magnetic Transient (EMT) tools can prove functions such as PLL trips, momentary inverter cessation, fast control dynamic interactions, switching surges and fast protection responses.
How are tap changer settings evaluated for PRC-029?	Amin	Tap changer settings impacts the power flow case setup and the voltage on the feeders when setting up the 0.95 lagging and leading PF cases. If the taps are not reset before solving each power flow case, one might see unreal over- or under-voltage on the feeders.
Is it also recommended to get withstand capabilities of equipment to verify it will ride through? For example, V/Hz withstand curves for the individual inverter GSU's?	**GE Vernova**	GEV Answer: Generally, withstanding or damage capability curves of individual equipment is not readily available to be shared as it may contain Intellectual Property information. It is advised to consult with the OEM of the equipment in question whether its electrical models properly capture all the limitations to be assessed, such as V/Hz.
Could you please clarify P/Q priority settings and requirements on active power recovery to pre-disturbance values based on PRC-029-1 standard?	JP/Amin	JP: See PRC-029-1 R2.1 and its subparts as well as R2.2. The standard allows for both P or Q prioity with a default of Q priority. P priority can be set if required through other mechanisms by a TP, PC, RC, or TOP. Amin: This is explained is detail in requirement R2 of PRC29. I would refer to the standard text as well as the Technical Rational document.
If you know the voltage schedule range, PPC Q limiters, and when the cap banks are switched in and out as governed by the PPC, shouldn't that be used in the steady-state power flow setup instead?	Amin	Absolutely, if that information is available, the power flow case can be setup around that.
To Amin Benaie (Elevate Consulting): In the PRC-029 assessment, do you assume infinite short-circuit level at POI or do you consider the prevailing short-circuit levels at the POI (max, min, and eventually absolute min)?	Amin	In our methodology, we consider an SMIB system, i.e., an IBR connected to an infinite bus.
Amin, I was curious on the automation of a dynamic run. Let's say you have 300 contingencies in psse. would you place a percentage of these on one python script or do you break them up into single contingency scripts? I have a dynamic study now and just curious on how others break this down.	Amin	Actually, you can do both depending on how long it will take for all the 300 cases to run if you put them on the same script. If the run time is long, you can use the "Prallel Dynamic Module" of PSSE that allows running multiple simulations at the same time on different CPU cores. This can significantly improve the simulation speed.
do people need to perform asymmetrical voltage disturbance simulation for R2.2? what methods need to be used?	JP/Amin	JP: NERC recommends including both EMT and PSPD techniques to evaluate very specific conditions. Amin: In my opinion, it is not necessary because a symmetrical fault captures the worst case scenario and pushes the IBR to its limits. Also, voltage and frequency based protection elements don't use negative-sequence current, so their operation is the same for both symmetrical and asymmetrical faults. However, if an EMT model is available, there is no harm to run a few asymmetrical fault scenarios.
Please clarify. I thought that each inverter had to comply with PRC-029. IF a single inverter trips, the plant is non-compliant. It seems like one would need to model at least one detailed feeder and aggregate the rest of the plant.	JP/Amin	JP: In NERC Standards, IBR is defined as "a plant/faciltiy consisting of individual devices that are capable of exporting Real Power through a power electronic interface(s) such as an inverter or converter, and that operated together as a single resource at a common point of interconnection to the electric system". In the PRC-029 context, the design and operation of each IBR (plant) remains connected and exchanging current is required. Amin: Thank you for brining this point up. My recommendation is to confirm with the GO if the aggregated model correctly represents the plant collector system. If yes, then using an aggregate model will capture tripping of a single, multiple, or all inverters because the voltage drop from the collector bus to the inverter terminal is almost the same for all inverters, so there is no need to use a detailed model.
What happens in terms of the application of PRC-029 and/or PRC-024 if an plant comprises both IBR and synchronous machines; example: WTGs and synchronous condensers -- relatively frequent in offshore wind farms.	JP	In this hybrid plant situation, the IBR portion should be reviewed under the PRC-029 design and operating settings and the PRC-024 portion. Each facility's circumstances will be unique, so I'd emphasize the role of careful study and design to ensure full plant coordination and to ensure that any interaction between these devices is captured when setting protection and designing the plant for IBR Ride-through.