# KTC 13 Self-Limiting issues related to Interconnection Requests for Energy Storage Resources

## KTC 13.1 Assumptions for Self-Limiting Facilities

1. The addition of energy storage to an existing generation site that is not intended to increase amount of MW that can be injected at the POI. Pmax at the POI in the IA does not change.
2. A new energy storage capacity co-located with a new generation site with Pmax in the IA lower than total installed MW capacity behind the POI. (Note that ERCOT does not currently reflect the IA limits in the network model.)
3. Installed AC/DC MW capacity behind the POI may exceed inverter rating or the IA, but the power injected into ERCOT grid will always be limited to the Pmax in the IA.
4. As a part of GINR process, Interconnecting Entity (IE) shall provide all details of the physically-limiting elements (e.g. inverters and GSUs) and/or power plant controller that will enforce the limit. TSP may install additional schemes to ensure adequate protection.
5. Self-Limiting concept only applies to Resources behind the same POI.

## KTC 13.2 Compliance and Monitoring program for Self-Limiting Resources

1. During commissioning, the IE will be required to demonstrate that they have installed a generation limiting scheme that ensures the plant’s output will not exceed their Pmax
2. Self-Limiting Pmax of the generation site shall be provided to ERCOT
3. After-the-fact review and reporting and/or “Real-time alarms” will be implemented by ERCOT to monitor generation levels against self-limiting Pmax
4. Self-Limiting generation facility that exceeds its IA Pmax (max injection) or operates below its Pmin (max withdrawal) shall have to go through the interconnection process for its total installed MW capacity.

## KTC 13.3 Real-Time Telemetry and COP requirements

1. QSEs should be responsible for limiting their combined COP HSL, Telemetered HSL, and total generation into ERCOT grid to not exceed their IA Pmax or not to operate below their Pmin
2. QSEs are responsible for bringing additional unit(s) online to provide VSS if the Energy Storage System (ESS) alone is not capable of meeting its reactive power requirement at the POI (leading/ lagging power factor of 0.95).

## KTC 13.4 GINR study Pmax for DC Coupled Resource

1. Interconnecting Entity (IE) wants to add new DC-Coupled Resource into ERCOT, by installing 250 MW of PV and 200 MW of Storage connected to ERCOT grid using shared inverters with the total rating of 250 MW
	1. Inverter rating will ensure 250 MW will be the maximum this facility can generate into ERCOT grid
	2. Under today’s rules, GINR process requires registration and studies for this facility at 450 MW Pmax
2. Interconnecting Entity should be able to register this facility at 250 MW Pmax and the GINR studies should be conducted at 250 MW.
3. Reactive obligations should be based on 250 MW Pmax

## KTC 13.5 Resource Adequacy Reporting

1. Resource Adequacy reporting should consider generation site’s self-limiting Pmax.
2. QSE shall provide ERCOT generation site’s self-limited Pmax.
3. ERCOT together with the Supply Analysis Working Group (SAWG) will develop a methodology to account for self-limiting Resource or generation site in resource adequacy reports

## KTC 13.6 **GINR Process**- Adding battery to existing PV/WGR site and sharing the existing inverter (DC-Coupled) (Column C) - **No Grid Charging**



## KTC 13.7 **GINR Process**- Adding battery to existing PV/WGR site and sharing the existing inverter (DC-Coupled)(Column B) - **With Grid Charging**



## KTC 13.8 **GINR Process**- Adding battery to existing thermal site (AC Coupled) (Column A)

## KTC 13.9 **GINR Process**- Adding battery to existing PV/WGR site (AC Coupled)(Column A)



## KTC 13.10 **GINR Process** - New **DC Coupled** Resource (Column G)



## KTC 13.11 **GINR Process** - New **AC Coupled** Resource (Column H)

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