**TIEC Comments on Voltage Ride Through Requirements\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

As noted in prior comments, TIEC maintains that ERCOT does not have the authority to impose operational requirements on pure retail loads. Regardless of the substance of the requirement, ERCOT is not authorized under PURA to regulate the operations of pure retail loads. TIEC intends to continue pursuing appropriate legal remedies if protocols are ultimately adopted that purport to apply to retail customers. With that caveat, TIEC provides the following technical comments on the voltage ride-through (VRT) requirements:

* **The proposal is unnecessary for industrial companies due to existing incentives**.Most industrial companies take aggressive measures to avoid an unexpected loss of power. Losing power can create health and safety risks, and can be extremely costly. Even a momentary interruption of power can cause an industrial site to be down for an entire day, or longer, in order to safely and systematically restore operations. This can easily cost tens of millions of dollars in lost production, plus equipment damage, which can be substantial. As a result, industrial customers who are manufacturing products to be sold in competitive markets already have every incentive to minimize the potential for disruptions, including maximizing tolerance for voltage fluctuations consistent with site safety needs. An administrative fine for failing to follow an ERCOT protocol will create immense regulatory uncertainty and is unnecessary when the business consequences of these types of outages already incentivize prudent design and operation. As a result, it is not necessary to impose this type of requirement for industrials as they already have a strong incentive to avoid these types of disruptions. Accordingly, TIEC recommends a complete carve-out for industrial and manufacturing facilities, including facilities for producing, processing, or transporting oil and gas (including natural gas liquefaction facilities).
* **The proposal lacks a technical basis**. As TIEC has previously explained, the information that ERCOT has provided to date does not support a need to impose a VRT requirement on every large load (over 75 MW). The events that ERCOT has identified as VRT concerns appear to be limited to (a) West Texas events that are caused by a weak transmission system and predominantly inverter-based local generation resources, (b) slow clearance of faults, and (c) a single anomalous situation at one industrial site on the Gulf Coast that is mostly attributable to local problems on the utility system. This “anecdata” does not support a conclusion that these VRT problems will grow just because industrial load grows. ERCOT should better define the actual reliability risk and more narrowly tailor the solution to that risk.
* **The proposed VRT standards are inappropriate for non-computing loads.** The voltage ride-through standards in the proposed NPRR are based on IEEE standards for low-voltage equipment, such as computing equipment. The voltage ride-through standards do not take into consideration the latest technology capabilities for large manufacturing loads and are set at a level that is unachievable for the newest technologies. The standards appear to be designed for cryptocurrency assets and data centers. They are not meant, nor are they appropriate for medium or high-voltage loads, which comprise the majority of loads at industrial sites. Industrial facilities cannot meet these low-voltage standards while protecting their equipment and the safety of their employees. Because industrial sites are not homogenous, and because each site has multiple types of equipment that have distinct VRT requirements for safe operation, imposing a single VRT requirement for all industrial sites is most likely infeasible. Further, were an industrial site to attempt to comply with VRT requirements where it would not be feasible, they would likely be putting their equipment at risk of severe damage and putting on-site personnel and the public in harm’s way.
* **Industrials cannot realistically comply with VRT standards that go beyond substation design at the point of interconnection.**
* Industrial load-serving substations must be designed to meet the interconnecting utility’s VRT requirements. Sometimes the utility owns the substation, and sometimes the customer owns it but in either scenario it is constructed to utility specifications. If ERCOT is seeking a VRT setting requirement for interconnecting transmission-voltage substations, this is already addressed through utility substation design requirements, which vary by utility. These design requirements can be provided to ERCOT for situational awareness, but industrial customers should not be subject to competing design requirements imposed by ERCOT, nor can customers comply with broad-brush VRT requirements for equipment back behind the interconnecting substation as discussed below.
* *Within* an industrial site there are many distinct types of processes and equipment, which vary substantially by industry, by company, and by site. These pieces of equipment each have their own voltage ride-through requirements, and they are not uniform. For example, a site may have medium- as well as high-voltage motors, and these motors will have different VRT characteristics depending on their design and function. It is not feasible for a single VRT standard to apply to all of the equipment at all industrial sites or to somehow apply an “aggregate” VRT standard to an entire site. Even attempting to understand what needs to be done to comply with such a VRT requirement would take extensive resources for industrial companies, and even then, it is likely a futile exercise.
* Further, attempting to comply with these standards for existing equipment is infeasible and cost-prohibitive. For example, older relays only allow one trip setting, and to convert older relays to newer models with multiple settings for each piece of equipment could take an industrial customer years to complete with substantial cost burden. The effort to implement a VRT requirement would be time-intensive, requiring five or more years to bring existing facilities into compliance. Again, it would take extensive resources for a company to even evaluate the scope and extent of the project due to the large variety of mechanical equipment behind many interconnections. To avoid creating significant economic impacts for large retail customers trying to do business in Texas, ERCOT should exempt industrial facilities and oil and gas/pipeline facilities from these requirements.
* Attempting to comply with these standards could present a safety risk for operating personnel. Due to the uncertainty of how a VRT event would unfold, electric machine responses cannot be exactly predicted and there is increased risk of machinery failure and process upsets that may result in harm to operating personnel nearby.
* **Grandfathering**. As noted above, attempting to comply with this requirement is infeasible and cost-prohibitive for most existing industrial sites. If ERCOT is unwilling to completely exclude traditional industrial sites and oil, gas, and pipeline facilities from these requirements, then all existing sites should be completely grandfathered. The grandfathering should not lapse if there are “material changes” as proposed relative to ramp restrictions but should be a complete exemption for existing interconnections.
* **Cooperation with ERCOT**. Based on conversations with ERCOT, it appears that the VRT concerns stem largely from a lack of knowledge about what is causing load to disappear from the grid in certain instances, and it is not even clear that VRT settings are the problem. TIEC is under the impression that with greater situational awareness, ERCOT could better anticipate and react to these types of events. For example, if ERCOT knows that certain disturbances are likely to cause a loss of load at certain sites, they can anticipate and manage around that. As a result, TIEC recommends focusing on ways to get the necessary data to ERCOT to better understand these events rather than front-running diligent analysis by imposing uniform VRT settings that cannot be satisfied. It would also be prudent to evaluate more traditional options for mitigating these concerns, such evaluating whether there are improvements that would clear faults more quickly rather than asking retail customers to withstand more significant voltage excursions. TIEC continues to be willing to work with ERCOT, TDSPs and REPs to identify the specific information ERCOT needs for situational awareness and modeling, and to provide this information within reason.