Board Report

RRGRR Number	025	RRGRR Title	Related to NPRR1005, Clarify Definition of Point of Interconnection (POI) and Add Definition Point of Interconnection Bus (POIB)
Date of Decision		August 10, 2021	
Action		Recommended Approval	
Timeline		Normal	
Proposed Effective Date		Upon system implementation of Nodal Protocol Revision Request (NPRR) 1005, Clarify Definition of Point of Interconnection (POI) and Add Definition Point of Interconnection Bus (POIB)	
Priority and Rank Assigned		Not Applicable	
Resource Registration Glossary Sections Requiring Revision		Section 2, Resource Registration Glossary – Unit Information	
Related Documents Requiring Revision/Related Revision Requests		NPRR1005 Nodal Operating Guide Revision Request (NOGRR) 210, Related to NPRR1005, Clarify Definition of Point of Interconnection (POI) and Add Definition Point of Interconnection Bus (POIB)	
Revision Description		This Resource Registration Glossary Revision Request (RRGRR) clarifies language by use of new NPRR1005-proposed defined term Point of Interconnection Bus (POIB).	
Reason for Revision		☒ Addresses current operational issues. ☐ Meets Strategic goals (tied to the ERCOT Strategic Plan or directed by the ERCOT Board). ☒ Market efficiencies or enhancements ☐ Administrative ☐ Regulatory requirements ☐ Other: (explain) *(please select all that apply)*	
Business Case		The current definition of the term Point of Interconnection (POI) requires that a POI must be at a substation (at a specified voltage level) but also that this substation must be reflected in the Standard Generation Interconnection Agreement (SGIA). This is problematic	

	not only because many Generation Resources that are either older or Non-Opt-In Entity (NOIE)-owned do not have an SGIA, but also because the SGIA in Section 1.14 defines the POI to be the point where ownership changes from the generator to the Transmission Service Provider (TSP), and in many cases, the POI designated in the SGIA is at some location other than the substation. In these cases, it is not clear what point should be considered the POI under the definition of that term. In many cases where the term POI is used in the Protocols, the meaning is material to the application of the provision. For example, in paragraph (1) of Protocol Section 10.3.2.2, Loss Compensation of EPS Meter Data, POI must be understood to refer to the point of ownership change, and not necessarily the TSP's substation, because the provision applies only when "the EPS Meter is not located at the [POI]" and would therefore have no meaning if the POI was always understood to be at the substation where the EPS Meter is located. In other cases, such as with the Voltage Support Service (VSS) requirements in Protocol Section 3.15, Voltage Support, and Protocol Section 6.5.7.7, Voltage Support Service, POI must be understood to refer to a TSP-owned substation because the TSP metering equipment used to monitor voltage is always located at the substation, and not necessarily at the point of ownership change defined in the SGIA. Given these differing uses of the term POI, ERCOT has concluded that two terms are necessary—one to refer to the point of ownership change, consistent with the definition in the SGIA, and one to refer to the substation downstream of the point of ownership change, or more precisely, to one or more buses in that substation (given that electrical differences may exist at different buses in the same substation, and that, for all instances in the Protocols where POI should be understood to refer to the downstream substation, bus-level measurements appear to be appropriate). For the sake of consistency with the SGIA, ERCOT proposes to modify the existing term POI to conform to the SGIA's conception of the POI as the point of ownership change. At the same time, ERCOT proposes to remove the reference to the SGIA in that definition, since NOIE generators and certain older generators may not have an SGIA. For the purpose of existing POI references that may be reasonably understood to refer to some point in the TSP's substation downstream of that point of ownership change, ERCOT is proposing a new term POIB.
ROS Decision	On 6/4/20, ROS voted unanimously via roll call to table RRGRR025. All Market Segments participated in the vote.

	On 9/3/20, ROS voted unanimously via roll call to recommend approval of RRGRR025 as submitted. All Market Segments participated in the vote. On 10/8/20, ROS voted unanimously via roll call to endorse and forward to TAC the 9/3/20 ROS Report and Impact Analysis for RRGRR025. All Market Segments participated in the vote.
Summary of ROS Discussion	On 6/4/20, there was no discussion. On 9/3/20, there was no discussion. On 10/8/20, there was no discussion.
TAC Decision	On 10/28/20, TAC voted unanimously via roll call to table RRGRR025. All Market Segments participated in the vote. On 6/23/21, TAC voted unanimously via roll call to recommend approval of RRGRR025 as recommended by ROS in the 10/8/20 ROS Report. All Market Segments participated in the vote.
Summary of TAC Discussion	On 10/28/20, participants discussed tabling RRGRR025 to await the related NPRR1005. On 6/23/21, there was no discussion.
ERCOT Opinion	ERCOT supports approval of RRGRR025.
ERCOT Market Impact Statement	ERCOT Staff has reviewed RRGRR025 and believes the market impact for RRGRR025 provides one or more of the following benefits: transparency, efficiency, and/or reliability; and/or aligns with current market rules.
Board Decision	On 8/10/21, the ERCOT Board voted to recommend approval of RRGRR025 as recommended by TAC in the 6/23/21 TAC Report.

Sponsor	
Name	Jay Teixeira
E-mail Address	Jay.Teixeira@ercot.com
Company	ERCOT
Phone Number	512-248-6582
Market Segment	Not Applicable

Board Report

Market Rules Staff Contact	
Name	Brittney Albracht
E-Mail Address	Brittney.Albracht@ercot.com
Phone Number	512-225-7027

Comments Received	
Comment Author	**Comment Summary**
None	

Market Rules Notes

Please note the baseline language in the following sections has been updated to reflect the incorporation of the following RRGRRs into the Resource Registration Glossary:

- RRGRR023, Related to NPRR1002, BESTF-5 Energy Storage Resource Single Model Registration and Charging Restrictions in Emergency Conditions (incorporated 1/1/21)
    - Section 2, Unit Information
- RRGRR027, Clarify Models Required to Proceed with an FIS (incorporated 3/1/21)
    - Section 2, Unit Information

Please note that the following RRGRR(s) also propose revisions to the following section(s):

- RRGRR029, Related to NPRR1077, Extension of Self-Limiting Facility Concept to Settlement Only Generators (SOGs) and Telemetry Requirements for SOGs
    - Section 2, Unit Information
- RRGRR031, Related to NPRR995, RTF-6 Create Definition and Terms for Settlement Only Energy Storage
    - Section 2, Unit Information

Proposed Guide Language Revision

SECTION 2: RESOURCE REGISTRATION GLOSSARY - Effective March 1, 2021

Resource Registration Data	Wind	Solar Photovoltaic (PV)	[RRGRR023: Insert column "Energy Storage Resource (ESR)" upon system	Conventional Generation (Gen)	Combined Cycle (CC)	Load Resources	Distributed Generation	Notes	Field Name	Definition / Detailed Description	Screening Study (SS) (R, C, O, A)	Full Interconnect Study (FIS) - Steady-State, Short Circuit, and Facility (R, C, O, A)	FIS - Stability Study (R, C, O, A)	Planning Model (R, C, O, A)	Full Registration (R, C, O, A)	
Unit Information																
Unit Information	X	X	X	X			X		Resource Site Code:	Enter the Site Code established in the General and Site Information tab of the GENERAL_SITE_ESIID_Information workbook.	R	R	R	R	R	
Unit Information	X	X	X	X	X		X	All Caps	UNIT NAME	Enter Unit Code for the	R	R	R	R	R	

										generator unit (e.g. Cedar Bayou Plant Gen 1 is "CBYG1").						
[RRGRR023: Replace "Unit Information - UNIT NAME" above with the following upon system implementation of NPRRs 1002, 1026, and 1029:]																
Unit Information	X	X	X	X	X		X	All Caps	UNIT NAME	Enter Unit Code for the generator unit (e.g. Cedar Bayou Plant Gen 1 is "CBYG1"). For ESR this is the name of the ESR while discharging.	R	R	R	R	R	
Unit Information	X	X	X	X	X		X	Automatic	Resource Name (Unit Code/Mnemonic)	Concatenated mnemonic of Resource Site Code and Unit name (e.g. CBY_CBYG1) .				A	A	
[RRGRR023: Insert "Unit Information" rows below upon system implementation of NPRRs 1002, 1026, and 1029:]																
Unit Information			X					All Caps	Energy Storage Resource (ESR) Name	This name is used to tie ESR discharging and charging, prior to single ESR model era.	R	R	R	R	R	
Unit Information			X					All Caps	Dispatch Asset Code (provided by ERCOT)	For ESR enter the Dispatch Asset Code (this code will be provided by ERCOT). This					R	

										code will be used for ESR while charging.						
Unit Information			X						ESIID assigned to meter	ESI ID number assigned to the meter. For NOIEs, the TDSP will create a non-settlement ESI ID.					R	
Unit Information			X					Y/N	Wholesale Delivery Point?	Enter Y or N, if the point of delivery is a wholesale delivery point.					R	
Unit Information	X	X	X	X				Y/N	Settlement Only Generator (SOG)	Refer to ERCOT Protocol Section 2.1, Definitions, for the definition of a Settlement Only Generator (SOG).				R	R	
Unit Information	X	X	X	X					PUC Registration Number	Enter the PUCT registration number.					O	
[RRGRR023: Insert "Unit Information" rows below upon system implementation of NPRRs 1002, 1026, and 1029:]																
Unit Information	X	X	X					Y/N	DC-Coupled Resource	Refer to ERCOT Protocol Section 2.1, Definitions, for the definition of a DC-	R	R	R	R	R	

										Coupled Resource						
Unit Information			X					Y/N	Self-Limiting Resource	Refer to ERCOT Protocol Section 2.1, Definitions, for the definition of a Self-Limiting Resource	R	R	R	R	R	
Unit Information	X	X	X	X	X			Y/N	Part of Self-Limiting Resource Facility	Refer to ERCOT Protocol Section 2.1, Definitions, for the definition of a Self-Limiting Resource Facility	R	R	R	R	R	
Unit Information	X	X	X	X	X			#	Self-Limiting Facility #	Self-Limiting Facility # 1, 2, 3….Leave blank if not Self-Limiting Facility. Refer to definition of Self-Limiting Facility in Protocol Section 2.1, Definitions.	R	R	R	R	R	
Unit Information	X	X	X	X	X			Automatic	Site_Self-Limiting Facility#	Automatic field. All Resources that are part of the same Self-Limiting Facility will	R	R	R	R	R	

										have same code						
Unit Information	X	X	X	X	X				ERCOT Interconnection Project Number - Only New Units	Enter the ERCOT INR number. Required for new or upgraded units.		C	C	C	C	
Unit Information	X	X	X	X					NERC Number	Enter NERC NCR number.					O	
Unit Information	X	X	X	X	-			Y/N	Qualifying Facility	Refer to ERCOT Protocol Section 2 for the definition of Qualifying Facility.					R	
Unit Information	X	X	X	X	X			mm/dd/yyyy	Transmission Only MRD	Proposed model load date for RE-owned transmission equipment.					O	
Unit Information	X	X	X	X	X			mm/dd/yyyy	Standard Generation Interconnection Agreement (SGIA) Signature Date	Enter the date the Resource signed SGIA. For NOIEs, use MOU date.					R	
Unit Information	X	X	X	X	X		X	mm/dd/yyyy	Unit Start Date (Model Ready Date)	Proposed model load date for unit. Required for new units only.					O	

Unit Information	X	X	X	X	X			mm/dd/yyyy	Commercial Operations Date	Enter the unit's planned Commercial Operations Date. After the unit completes operational performance testing, this field should be updated by the RE with the actual Commercial Operations Date.	R	R	R	R	R	
Unit Information	X	X	X	X	X		X	mm/dd/yyyy	Unit End Date	Entry of a date in this field will result in the unit being removed from the ERCOT model. Enter the model ready date of expected or actual retirement. Leave blank if not known/applicable.					O	

Unit Information	X	X	X	X	X			All Caps	SubStation Code/SubStation Mnemonic	Enter the interconnecting transmission station code. If you need assistance in determining the corresponding ERCOT Substation Code\Mnemonic, please consult your TDSP, or ERCOT. For the SS/FIS, if a substation code cannot be identified, leave field blank and enter the expected electrical connection point as text in the comment section.	O	O	O	R	R	
Unit Information	X	X	X	X	X			kV	Voltage Level	Enter the nominal voltage level at the Point of Interconnection Bus (e.g. 69kV, 138kV, 345kV). If you need assistance in determining	R	R	R	R	R	

										the corresponding Voltage Level, please consult your TDSP, or ERCOT.						
Unit Information	X	X	X	X	X			#	PTI Bus Number	Enter the PTI Bus Number at the Point of Interconnection Bus in the planning model. If you need assistance in determining the corresponding PTI Bus Number, please consult your TDSP, or ERCOT.	O	O	O	R	R	
[RRGRR023: Insert "Unit Information - Transmission Station Load Name in Network Operations Model" below upon system implementation of NPRRs 1002, 1026, and 1029:]																
Unit Information			X					All Caps	Transmission Station Load Name in Network Operations Model	Enter the Load Name as listed in the ERCOT model as provided by the TDSP to be used by the ESR while charging.					R	

Unit Information	X	X	X	X	X		X	List	Primary Fuel Type	AB -- Agriculture Byproducts (bagasse, straw, energy crops) BFG -- Blast-Furnace Gas BIT -- Bituminous Coal BL -- Black liquor DFO -- Distillate Fuel Oil (diesel, No1 fuel oil, No 2 fuel oil, No 4 fuel oil) GEO -- Geothermal JF -- Jet Fuel KER -- Kerosene LFG -- Landfill Gas LIG -- Lignite MSW -- Municipal Solid Waste (refuse) NA -- Not Applicable NG -- Natural Gas (use this fuel type for steam turbines which are part of a Combined Cycle Train)	R	R	R	R	R	

										NUC -- Nuclear (uranium, plutonium, thorium) OBG -- Other - Biomass Gas (methane, digester gas) OBL -- Other - Biomass Liquids (ethanol, fish oil, waste alcohol, other gases) OBS -- Other - Biomass Solids (animal manure/waste r, medical waste, paper pellets, paper derived fuel) OG -- Other - Gas (butane, coal processes, coke-oven coal, methanol, refinery gas) OO -- Other - Oil (butane, crude, liquid byproducts, oil waste, propane) OTH -- Other (batteries,						

										chemicals, hydrogen pitch sulfur, misc. technologies) PC -- Petroleum Coke PG -- Propane RFO -- Residual Fuel Oil (No 5 and No 6 fuel oil) STM -- Steam from other units SLW -- Sludge Waste SUB -- Sub-bituminous Coal SUN -- Solar (photovoltaic, thermal) TDF -- Tires T -- Tidal WAT -- Water (conventional, pumped storage) WDL -- Wood/Wood Waste - Liquids (red liquor, sludge wood spent sulfite liquor, other liquors) WDS -- Wood/Wood Waste - Solids						

										(peat, railroad ties, utility poles, wood chips, other solids) WH -- Waste heat WND -- Wind WOC -- Waste / Other Coal						

[RRGRR023: Replace "Unit Information - Primary Fuel Type" above with the following upon system implementation of NPRRs 1002, 1026, and 1029:]

Unit Information	X	X	X	X	X		X	List	Primary Fuel Type	AB -- Agriculture Byproducts (bagasse, straw, energy crops) BFG -- Blast-Furnace Gas BIT -- Bituminous Coal BL -- Black liquor DFO -- Distillate Fuel Oil (diesel, No1 fuel oil, No 2 fuel oil, No 4 fuel oil) GEO -- Geothermal JF -- Jet Fuel KER -- Kerosene LFG -- Landfill Gas LIG -- Lignite MSW -- Municipal Solid Waste (refuse) MWH – Electricity (use this fuel type for battery energy storage) NA -- Not Applicable NG -- Natural	R	R	R	R	R	

										Gas (use this fuel type for steam turbines which are part of a Combined Cycle Train) NUC -- Nuclear (uranium, plutonium, thorium) OBG -- Other - Biomass Gas (methane, digester gas) OBL -- Other - Biomass Liquids (ethanol, fish oil, waste alcohol, other gases) OBS -- Other - Biomass Solids (animal manure/waste r, medical waste, paper pellets, paper derived fuel) OG -- Other - Gas (butane, coal processes, coke-oven coal, methanol, refinery gas) OO -- Other - Oil (butane,						

										crude, liquid byproducts, oil waste, propane) OTH -- Other (chemicals, hydrogen pitch sulfur, misc. technologies) PC -- Petroleum Coke PG -- Propane RFO -- Residual Fuel Oil (No 5 and No 6 fuel oil) STM -- Steam from other units SLW -- Sludge Waste SUB -- Sub-bituminous Coal SUN -- Solar (photovoltaic, thermal) or DC-Coupled Resources combining photovoltaic and battery energy storage TDF -- Tires T -- Tidal WAT -- Water (conventional, pumped						

										storage) WDL -- Wood/Wood Waste - Liquids (red liquor, sludge wood spent sulfite liquor, other liquors) WDS -- Wood/Wood Waste - Solids (peat, railroad ties, utility poles, wood chips, other solids) WH -- Waste heat WND -- Wind and DC-Coupled Resources combining wind and battery energy storage WOC -- Waste / Other Coal WND_SUN – DC-Coupled Resources combining wind, photovoltaic and battery energy storage						
Unit Information	X	X	X	X	X			List	Secondary Fuel Type	Same data entry elements	R	R	R	R	R	

										as primary fuel type, but for secondary or start-up fuel.						
[RRGRR023: Replace "Unit Information - Secondary Fuel Type" above with the following upon system implementation of NPRRs 1002, 1026, and 1029:]																
Unit Information	X	X	X	X	X			List	Secondary Fuel Type	Same data entry elements as primary fuel type, but for secondary or start-up fuel. For DC-Coupled Resource use MWH	R	R	R	R	R	
Unit Information	X	X		X				List	Fuel Transportation Type	CV -- Conveyor PL -- Pipeline RR -- Railroad TK -- Truck NA -- Not Applicable					R	

U/nit Information	X	X	X	X			X	List	Resource Category	Nuclear Hydro Coal and Lignite Combined Cycle ≤ 90 MW* Combined Cycle > 90 MW* Gas Steam - Supercritical Boiler Gas Steam - Reheat Boiler Gas Steam - Non-reheat or Boiler without air-preheater Simple Cycle ≤ 90 MW Simple Cycle > 90 MW Diesel Renewable Reciprocating Engine Solar Power Storage Other				R	R	
[RRGRR023: Replace "Unit Information - Resource Category" above with the following upon system implementation of NPRRs 1002, 1026, and 1029:]																

Unit Information	X	X	X	X			X	List	Resource Category	Nuclear Hydro Coal and Lignite Combined Cycle ≤ 90 MW* Combined Cycle > 90 MW* Gas Steam - Supercritical Boiler Gas Steam - Reheat Boiler Gas Steam - Non-reheat or Boiler without air-preheater Simple Cycle ≤ 90 MW Simple Cycle > 90 MW Diesel Renewable Reciprocating Engine Solar Battery Energy Storage DC-Coupled Battery Energy Storage and Solar DC-Coupled Battery Energy Storage and				R	R	

										Wind DC-Coupled Battery Energy Storage and Solar and Wind Other						
Unit Information	X	X		X			X	Y/N	Renewable	Indicate if the unit is a Renewable Energy Credit (REC) generator, as certified with the PUCT.					R	
Unit Information	X	X		X			X	Y/N	Renewable/Offset	REC offset generators that produce generation to cover offsets they have					R	

										been approved to provide, as certified with the PUCT.						
Unit Information	X	X	X	X	X		X	List	Physical Unit Type	CA -- Combined cycle steam turbine part (includes steam part of integrated coal gasification combined cycle) CC -- Combined cycle total unit (use only for plants/generators that are in planning stage, for which specific generator details cannot be provided) CE -- Compressed air energy storage CS -- Combined cycle single shaft (combustion turbine and steam turbine share a single generator)	R	R	R	R	R	

											CT -- Combined cycle combustion/gas turbine part (includes comb. turbine part of integrated coal gasification combined cycle) FC -- Fuel Cell GT -- Simple-cycle Combustion (gas) turbine (includes jet engine design) HY -- Hydraulic turbine (includes turbines associated with delivery of water by pipeline) IC -- Internal combustion (diesel, piston) engine NA -- Unknown at this time (planned units only) OT -- Other PS -- Hydraulic						

										Turbine - Reversible (pumped storage) PV -- Photovoltaic ST -- Steam Turbine including nuclear, geothermal and solar. Does not include combined cycle. WT -- Wind Turbine							

[RRGRR023: Replace "Unit Information - Physical Unit Type" above with the following upon system implementation of NPRRs 1002, 1026, and 1029:]

Unit Information	X	X	X	X	X		X	List	Physical Unit Type	BA – Battery Energy Storage BA-PV – DC-Coupled Battery Energy Storage and Photovoltaic BA-WT – DC-Coupled Battery Energy Storage and Wind Turbine BA-PV-WT – DC-Coupled Battery Energy Storage, Photovoltaic and Wind Turbine CA -- Combined cycle steam turbine part (includes steam part of integrated coal gasification combined cycle) CC -- Combined cycle total unit (use only for plants/generators that are in planning	R	R	R	R	R	

										stage, for which specific generator details cannot be provided) CE -- Compressed air energy storage CS -- Combined cycle single shaft (combustion turbine and steam turbine share a single generator) CT -- Combined cycle combustion/gas turbine part (includes comb. turbine part of integrated coal gasification combined cycle) FC -- Fuel Cell GT -- Simple-cycle Combustion (gas) turbine (includes jet engine design) HY -- Hydraulic turbine						

										(includes turbines associated with delivery of water by pipeline) IC -- Internal combustion (diesel, piston) engine NA -- Unknown at this time (planned units only) OT -- Other PS -- Hydraulic Turbine - Reversible (pumped storage) PV -- Photovoltaic ST -- Steam Turbine including nuclear, geothermal and solar. Does not include combined cycle. WT -- Wind Turbine						
Unit Information	X	X	X	X	X		X	MVA	Name Plate Rating	Manufacturer designed MVA Rating of this unit at its rated	R	R	R	R	R	

										power factor (gross).						
Unit Information	X	X	X	X	X			MW	Real Power Rating	Manufacturer designed MW at rated power factor (gross).	R	R	R	R	R	
Unit Information	X	X	X	X	X			MVAR	Reactive Power Rating	Manufacturer designed MVAr at rated power factor (gross)	R	R	R	R	R	
Unit Information	X	X		X	X			MW	Turbine Rating	Manufacturer designed MW of the turbine (gross)	C	C	C	R	C	
Unit Information	X	X	X	X	X			kV	Unit Generating Voltage	Terminal voltage of generating unit, as modeled (typically equivalent to low side of GSU)	R	R	R	R	R	
Unit Information	X	X	X	X	X				Governor Droop Setting	The percent change in frequency that will cause generator output to change from no Load to full Load. (e.g. for 5%, use .05)					C	
Unit Information	X	X	X	X	X			Hz	Governor Dead-band	The range of deviations of system frequency (+/-) that produces no Primary					R	

										Frequency Response.						
Unit Information	X	X	X	X	X			degree F	Design Max Ambient Temperature	This is the plant design maximum (high) air temperature.					O	
Unit Information	X	X	X	X	X			degree F	Design Min Ambient Temperature	This is the plant design minimum (low) air temperature.					O	
[RRGRR019 and RRGRR023: Insert applicable portions of "Unit Information - Switchable Generation Resource" below upon system implementation of RRGRR019 or NPRRs 1002, 1026, and 1029 respectively:]																
Unit Information	X	X	X	X	X			Y/N	Switchable Generation Resource	Is the unit able to switch between the ERCOT Control Area and a non-ERCOT Control Area?	R	R	R	R	R	

ERCOT Impact Analysis Report

RRGRR Number	025	RRGRR Title	Related to NPRR1005, Clarify Definition of Point of Interconnection (POI) and Add Definition Point of Interconnection Bus (POIB)
Impact Analysis Date		February 26, 2020	
Estimated Cost/Budgetary Impact		None.	
Estimated Time Requirements		No project required. This Resource Registration Glossary Revision Request (RRGRR) can take effect upon implementation of Nodal Protocol Revision Request (NPRR) 1005, Clarify Definition of Point of Interconnection (POI) and Add Definition Point of Interconnection Bus (POIB).	
ERCOT Staffing Impacts (across all areas)		Ongoing Requirements: No impacts to ERCOT staffing.	
ERCOT Computer System Impacts		No impacts to ERCOT computer systems.	
ERCOT Business Function Impacts		No impacts to ERCOT business functions.	
Grid Operations & Practices Impacts		No impacts to ERCOT grid operations and practices.	

Evaluation of Interim Solutions or Alternatives for a More Efficient Implementation
None offered.

Comments
There are no additional impacts to this RRGRR beyond what was captured in the Impact Analysis for NPRR1005.

Board Report

RRGRR Number	028	RRGRR Title	Transformer Impedance Clarifications
Date of Decision		August 10, 2021	
Action		Recommended Approval	
Timeline		Normal	
Proposed Effective Date		Upon system implementation	
Priority and Rank Assigned		Priority – 2022; Rank – 3520	
Resource Registration Glossary Sections Requiring Revision		Section 2, Resource Registration Glossary – Unit Info - Turbine Details Section 2, Resource Registration Glossary – Inverter Details Section 2, Resource Registration Glossary – Transformer Data (as applicable) Section 2, Resource Registration Glossary – Miscellaneous	
Related Documents Requiring Revision/Related Revision Requests		None	
Revision Description		This Resource Registration Glossary Revision Request (RRGRR) adds transformer manufacturer test reports to the data collection requirements and clarifies the required transformer information.	
Reason for Revision		[X] Addresses current operational issues. [ ] Meets Strategic goals (tied to the ERCOT Strategic Plan or directed by the ERCOT Board). [X] Market efficiencies or enhancements [ ] Administrative [ ] Regulatory requirements [ ] Other: (explain) *(please select all that apply)*	
Business Case		The System Protection Working Group (SPWG) proposes these changes to address current deficiencies in the data collection process, specifically with the transformer data collected. The proposed changes will increase data transparency and improve the	

	overall modeling process of Resource connections to the ERCOT System. Inclusion of transformer Factory Acceptance Test (FAT) reports along with the clarification of required information will provide a consistent approach to the data collected and improve the short circuit modeling of the Resources.
ROS Decision	On 1/7/21, ROS voted unanimously via roll call to recommend approval of RRGRR028 as submitted. All Market Segments participated in the vote. On 2/4/21, ROS voted unanimously via roll call to table RRGRR028. All Market Segments participated in the vote. On 4/29/21, ROS voted unanimously via roll call to recommend approval of RRGRR028 as amended by the 3/4/21 SPWG comments. All Market Segments participated in the vote. On 6/3/21, ROS voted unanimously via roll call to endorse and forward to TAC the 4/29/21 ROS Report and the Impact Analysis for RRGRR028 with a recommended priority of 2022 and rank of 3520. All Market Segments participated in the vote.
Summary of ROS Discussion	On 1/7/21, the sponsor provided an overview of RRGRR028. On 2/4/21, participants acknowledged the proposal for an alternative schedule for development of the Impact Analysis noted in the 2/1/21 ERCOT comments. On 4/29/21, participants reviewed the history of comments and discussions regarding RRGRR028. On 6/3/21, participants reviewed the Impact Analysis and considered assignment of priority and rank.
TAC Decision	On 6/23/21, TAC voted unanimously via roll call to recommend approval of RRGRR028 as recommended by ROS in the 6/3/21 ROS Report. All Market Segments participated in the vote.
Summary of TAC Discussion	On 6/23/21, there was no discussion.
ERCOT Opinion	ERCOT supports approval of RRGRR028.
ERCOT Market Impact Statement	ERCOT Staff has reviewed RRGRR028 and believes the market impact for RRGRR028 provides one or more of the following benefits: transparency, efficiency, and/or reliability; and/or aligns with current market rules.
Board Decision	On 8/10/21, the ERCOT Board recommended approval of RRGRR028 as recommended by TAC in the 6/23/21 TAC Report

	and the Revised Impact Analysis.

Sponsor	
Name	Glenn Callaghan on behalf of the SPWG
E-mail Address	Glenn.callaghan@centerpointenergy.commailto:
Company	CenterPoint Energy
Phone Number	713-207-6469
Cell Number	281-935-0336
Market Segment	Not applicable

Market Rules Staff Contact	
Name	Phillip Bracy
E-Mail Address	Phillip.Bracy@ercot.com
Phone Number	512-248-6917

Comments Received	
Comment Author	**Comment Summary**
SPWG 011921	Addressed new baseline following the 1/1/21 incorporation of RRGRR023, Related to NPRR1002, BESTF-5 Energy Storage Resource Single Model Registration and Charging Restrictions in Emergency Conditions, into the Resource Registration Glossary
ERCOT 020121	Proposed alternative schedule for development of the Impact Analysis pursuant to Section 1.2.3.5, Resource Registration Glossary Revision Request Impact Analysis
ERCOT 030321	Proposed alternative solution to language
ERCOT 030321	Noted that additional changes to the RRGRR language recommended for approval by ROS in the 2/4/21 ROS Report could reduce the implementation cost, and proposed an alternative schedule for the development of an Impact Analysis for RRGRR028
SPWG 030421	Modified to allow Resources to enter appropriate information for 2-winding or 3-winding transformer modeling in a similar format/tab as the existing process

ERCOT 040721	Proposed an alternative schedule for the development of an Impact Analysis pending a recommendation for approval of language at the April 29, 2021 ROS meeting
PRS 061621	Endorsed the proposed priority of 2022 and rank of 3520

Market Rules Notes

Please note that the baseline language in this RRGRR has been updated due to the incorporation of the following RRGRR(s) into the Resource Registration Glossary:

- RRGRR023, Related to NPRR1002, BESTF-5 Energy Storage Resource Single Model Registration and Charging Restrictions in Emergency Conditions (incorporated 1/1/21)
- RRGRR027, Clarify Models Required to Proceed with an FIS (incorporated 3/1/21)

Please note that the following RRGRR(s) also propose revisions to the following section(s):

- RRGRR030, Allow New Voltage Levels in Resource Registration Information
  - Section 2, Transformer Data (as applicable)

Proposed Guide Language Revision

SECTION 2: RESOURCE REGISTRATION GLOSSARY - Effective March 1, 2021																
Resource Registration Data	Wind	Solar Photovoltaic (PV)	[RRGRR023: Insert column "Energy Storage Resource	Conventional Generation (Gen)	Combined Cycle (CC)	Load Resources	Distributed Generation	Notes	Field Name	Definition / Detailed Description	Screening Study (SS) (R, C, O, A)	Full Interconnect Study (FIS) -Steady-State, Short Circuit, and Facility	FIS - Stability Study (R, C, O, A)	Planning Model (R, C, O, A)	Full Registration (R, C, O, A)	
Unit Info - Turbine Details																
Turbine Details	X							List	Resource Name (Unit Code/Mnemonic)	Concatenated mnemonic of Resource Site Code and Unit name (e.g. CBY_CBYG1).				A	A	
Turbine Details	X							#	WGR Group	WGR Group # 1,2,3… only if grouping two or more WGRs. Leave blank if not grouping. Refer to definition of Wind-powered Generation Resource Group in Protocol Section 2.					O	
Turbine Details	X							Automatic	Site_Group	Automatic field					A	
Turbine Details	X							All Caps	Turbine Manufacturer and Model	From name-plate or manufacturer data sheet	R	R	R	R	R	
Turbine Details	X							MW	MW Rating for this model of Turbine	From name-plate or manufacturer data sheet	R	R	R	R	R	
Turbine Details	X							#	Number of Turbine Manufacturer/Model	Count of wind turbines in this WGR of the specified Manufacturer/Model	R	R	R	R	R	

Turbine Details	X							1,2,3,4,5	Turbine Type	Indicate the type of Turbine (eg. Type 1, 2, 3, 4, 5) Type 1 Conventional induction generator Type 2 Variable Rotar-Resistance Induction generator Type 3 WTG – Doubly fed asynchronous generator Type 4 WTG – Full-converter unit Type 5 WTG – Variable Ratio Converter Coupled Synchronous Generator				R	R	
Turbine Details	X							MVA	What Is The MVA Base That The Following Data Is Based On?	The MVA Base for stated impedances.		R	R	R	R	
Turbine Details	X							kV	What Is The kV Base That The Following Data is Based On?	The kV Base for stated impedances.		R	R	R	R	
Turbine Details	X							p.u.	Subtransient Reactance X",(Instantaneous Fault Current Period) (unsaturated)	Enter the instantaneous subtransient reactance (unsaturated) for the fault.		R	R	R	R	
Turbine Details	X							p.u.	Transient Reactance, X' (First 2-3 cycles of the Fault) (unsaturated)	Enter the transient reactance (unsaturated) for the first 2-3 cycles of the fault.		R	R	R	R	
Turbine Details	X							R in p.u.	Positive Sequence Resistance (unsaturated)	Enter the positive sequence resistance (unsaturated) for system models.		R	R	R	R	
Turbine Details	X							X in p.u.	Synchronous Reactance X (After 4 cycles of the fault) (unsaturated)	Enter the synchronous reactance (unsaturated) after 4 cycles of the fault.		R	R	R	R	
Turbine Details	X							R in p.u.	Negative Sequence Z (unsaturated)	Enter the negative sequence resistance (unsaturated) for system models.		R	R	R	R	

Turbine Details	X							X in p.u.	Negative Sequence Z (unsaturated)	Enter the negative sequence reactance (unsaturated) for system models.		R	R	R	R
Turbine Details	X							R in p.u.	Zero Sequence Z (unsaturated)	Enter the zero sequence resistance (unsaturated) for system models.		R	R	R	R
Turbine Details	X							X in p.u.	Zero Sequence Z (unsaturated)	Enter the zero sequence reactance (unsaturated) for system models.		R	R	R	R
Turbine Details	X							p.u.	Subtransient Reactance X",(Instantaneous Fault Current Period) (saturated	Enter the instantaneous subtransient reactance (saturated) for the fault.		R	R	R	R
Turbine Details	X							p.u.	Transient Reactance, X' (First 2-3 cycles of the Fault) (saturated)	Enter the transient reactance (saturated) for the first 2-3 cycles of the fault.		R	R	R	R
Turbine Details	X							R in p.u.	Positive Sequence Resistance (saturated)	Enter the positive sequence resistance (saturated) for system models.		R	R	R	R
Turbine Details	X							X in p.u.	Synchronous Reactance X (After 4 cycles of the fault) (saturated)	Enter the synchronous reactance (saturated) after 4 cycles of the fault.		R	R	R	R
Turbine Details	X							R in p.u.	Negative Sequence Z (saturated)	Enter the negative sequence resistance (saturated) for system models.		R	R	R	R
Turbine Details	X							X in p.u.	Negative Sequence Z (saturated)	Enter the negative sequence reactance (saturated) for system models.		R	R	R	R
Turbine Details	X							R in p.u.	Zero Sequence Z (saturated)	Enter the zero sequence resistance (saturated) for system models.		R	R	R	R
Turbine Details	X							X in p.u.	Zero Sequence Z (saturated)	Enter the zero sequence reactance (saturated) for system models.		R	R	R	R

Turbine Details	X							p.u.	Grounding Resistance For An Impedance Grounded Generator In p.u. (100 MVA Base)	Zero sequence resistance value of the generator grounding impedance is required. The value must be specified on a 100 MVA base.		R	R	R	R	
Turbine Details	X							p.u.	Grounding Reactance For An Impedance Grounded Generator In p.u. (100 MVA Base)	Zero sequence reactance value of the generator grounding impedance is required. The value must be specified on a 100 MVA base.		R	R	R	R	
Turbine Details	X							p.u.	Instantaneous Controlled Fault Current Magnitude (Multiple of full Load current) for Turbine Types 3 & 4	Wind turbine instantaneous fault current magnitude for Type 4 and Type 3, if the controls operate (no crowbar operation) as a percent of full Load current, expressed in per unit.				C	C	
Turbine Details	X							p.u.	Controlled Fault Current Magnitude At 2 to 3 cycles after fault (Multiple of full Load current) for Turbine Types 3 & 4	Wind turbine fault current magnitude at 2 – 3 cycles after a fault for Type 4 and Type 3, if the controls operate (no crowbar operation) as a percent of full Load current, expressed in per unit.				C	C	
Turbine Details	X							p.u.	Controlled Fault Current Magnitude At 4 plus cycles after fault (Multiple of full Load current) for Turbine Types 3 & 4	Wind turbine fault current magnitude at 4+ cycles after a fault for Type 4 and Type 3, if the controls operate (no crowbar operation) as a percent of full Load current, expressed in per unit.				C	C	
Turbine Details	X							MVA	Continuous Rating	Rating that the Pad Mount Transformer can operate at indefinitely without damage		R	R	R	R	-
Turbine Details	X							kV	High Side Voltage Level (nominal)	Enter the voltage level (in kV) on the high-voltage side				R	R	

										of the wind generator pad-mount transformer.						
Turbine Details	X							kV	Low Side Voltage Level (nominal)	Enter the voltage level (in kV) on the low-voltage side of the wind generator pad-mount transformer.				R	R	
Turbine Details	X							List	High Side Voltage Connection	Identify the type of connection used for the windings (Wye/Delta and Neutral Grounding) on the high-voltage side of the transformer.				R	R	
Turbine Details	X							List	Low Side Voltage Connection	Identify the type of connection used for the windings (Wye/Delta and Neutral Grounding) on the low-voltage side of the transformer.				R	R	
Turbine Details	X							p.u.	Impedance Z	Enter the impedance of the transformer.				R	R	
Turbine Details	X								X/R Ratio	Enter the ratio of the reactance to the resistance of the transformer.				R	R	
Turbine Details	X							p.u.	Zero Sequence Z	Enter the zero sequence impedance of the transformer.				R	R	
Turbine Details	X								Zero Sequence X/R Ratio	Enter the ratio of the zero sequence reactance to the zero sequence resistance of the transformer.				R	R	
Turbine Details	X							MVA	Base MVA For Transformer Data	Enter the base MVA upon which the per unit transformer data is provided.				R	R	
Turbine Details	X							Y/N	Manufacturer's Transformer Test Reports?	Have the pad-mount transformer manufacturer test reports been submitted to ERCOT? If not, please attach the test reports in a zip file. Manufacturer test					R	

										report (also known as Factory Acceptance Test or FAT, not to be confused with Transformer Commissioning Test Report) must be attached before energization.						
Inverter Details																
Inverter Details	-	X	X					Automatic All Caps	Site Name	-		A	A	A	A	
Inverter Details	-	X	X					Automatic	Skid/Array Configuration Identifier	Unique identifier to use for a given inverter model and skid transformer combination		A	A	A	A	
Inverter Details		X	X					All Caps	Inverter Manufacturer	From name-plate or manufacturer data sheet		R	R	R	R	
Inverter Details		X	X					All Caps	Inverter Model	From name-plate or manufacturer data sheet		R	R	R	R	
Inverter Details		X	X					MW	MW Rating for this Model of Inverter	Nameplate AC capacity of inverter output.		R	R	R	R	
[RRGRR023: Insert "Inverter Details - Bi-directional Inverter?" below upon system implementation of NPRRs 1002, 1026, and 1029:]																
Inverter Details		X	X					Y/N	Bi-directional Inverter?	Enter Y if inverter is capable of exporting power into and import from ERCOT grid. Enter N if inverter is only capable of exporting into ERCOT grid.	R	R	R	R	R	
Inverter Details		X	X					#	Number of Inverters per Skid/Array Transformer	Enter how many inverters share the same Skid/Array Transformer		R	R	R	R	
Inverter Details		X	X					#	Inverter Efficiency Curve	Attach efficiency curve supplied by inverter manufacturer.					R	
Inverter Details		X	X					MVA	What is the MVA base that the following data is based on?	The MVA Base of the inverter for stated impedances.		R	R	R	R	
Inverter Details		X	X					kV	What is the kV base that the following data is based on?	The kV Base of the inverter for stated impedances.		R	R	R	R	

Inverter Details		X	X					p.u.	Subtransient Reactance X"d,(Instantaneous Fault Current Period) (unsaturated)	Enter the instantaneous subtransient reactance (unsaturated) for the inverter. It may be calculated as X"d = 1/Imax, where Imax is the maximum instantaneous fault current contribution in per unit of full load current.		R	R	R	R	
Inverter Details		X	X					p.u.	Transient Reactance, X' (First 2-3 cycles of the Fault) (unsaturated)	Enter the transient reactance (unsaturated) of the inverter for the first 2-3 cycles of the fault. Fault current contribution in per unit of full load current between 2-3 cycles may be used to calculate X'd = 1/I fault current contribution at 2-3 cycles		R	R	R	R	
Inverter Details		X	X					R in p.u.	Positive Sequence Resistance (unsaturated)	Enter the positive sequence resistance (unsaturated) for system models. For inverter-based systems, R can be entered as zero if the net effect of reflecting the short circuit current is already in the reactance		R	R	R	R	
Inverter Details		X	X					X in p.u.	Synchronous Reactance X (After 4 cycles of the fault) (unsaturated)	Enter the synchronous reactance (unsaturated) of the inverter after 4 cycles of the fault. Fault current contribution in per unit of full load current after 4 cycles may be used to calculate Xd = 1/I fault current contribution after 4 cycles.		R	R	R	R	

Inverter Details		X	X					R in p.u.	Negative Sequence Z (unsaturated)	Enter the negative sequence resistance (unsaturated) of the inverter for system models. R may be entered as zero if the net effect of reflecting the short circuit current is already in the reactance.		R	R	R	R	
Inverter Details		X	X					X in p.u.	Negative Sequence Z (unsaturated)	Enter the negative sequence reactance (unsaturated) for system models. For inverter-based systems can calculate X negative sequence = 1/I negative sequence fault current contribution, where I negative sequence fault current contribution is in per unit of full load current. If negative sequence fault current contribution is zero, then enter 99999. This is normally a very high impedance		R	R	R	R	
Inverter Details		X	X					R in p.u.	Zero Sequence Z (unsaturated)	Enter the zero sequence resistance (unsaturated) for system models. For inverter-based systems, R may be entered as zero if the net effect of reflecting the short circuit current is already in the reactance.		R	R	R	R	
Inverter Details		X	X					X in p.u.	Zero Sequence Z (unsaturated)	Enter the zero sequence reactance (unsaturated) of the inverter for system models. You may calculate X = 1/I zero sequence fault current contribution, where I zero sequence fault current contribution is in per unit of		R	R	R	R	

									full load current. If zero sequence fault current contribution is zero, then enter 99999.						
Inverter Details		X	X					p.u.	Subtransient Reactance X",(Instantaneous Fault Current Period) (saturated)	Enter the instantaneous subtransient reactance (saturated). (Can enter the same as the unsaturated value.) For inverter-based systems, can calculate X"d = 1/Imax, where Imax is the maximum instantaneous fault current contribution in per unit of full load current .		R	R	R	R	
Inverter Details		X	X					p.u.	Transient Reactance, X' (First 2-3 cycles of the Fault) (saturated)	Enter the transient reactance (saturated) of the inverter for the first 2-3 cycles of the fault. (You may enter the same as the unsaturated value.) Fault current contribution in per unit of full load current between 2 - 3 cycles may be used to calculate X'd = 1/I fault current contribution at 2-3 cycles		R	R	R	R	
Inverter Details		X	X					R in p.u.	Positive Sequence Resistance (saturated)	Enter the positive sequence resistance (saturated) of the inverter for system models. R may be entered as zero if the net effect of reflecting the short circuit current is already in the reactance.		R	R	R	R	

Inverter Details		X	X					X in p.u.	Synchronous Reactance X (After 4 cycles of the fault) (saturated)	Enter the synchronous reactance (saturated) after 4 cycles of the fault. (Can enter the same as the unsaturated value.) For inverter-based systems, fault current contribution in per unit of full load current after 4 cycles can be used to calculate Xd = 1/I fault current contribution after 4 cycles.		R	R	R	R	
Inverter Details		X	X					R in p.u.	Negative Sequence Z (saturated)	Enter the negative sequence resistance (saturated) for system models. For inverter-based systems, R may be entered as zero if the net effect of reflecting the short circuit current is already in the reactance.		R	R	R	R	
Inverter Details		X	X					X in p.u.	Negative Sequence Z (saturated)	Enter the negative sequence reactance (saturated) of the inverter for system models. (You may enter the same as the unsaturated value.) You may calculate X = 1/I negative sequence fault current contribution, where I negative sequence fault current contribution is in per unit of full load current. If negative sequence fault current contribution is zero, then enter 99999.		R	R	R	R	
Inverter Details		X	X					R in p.u.	Zero Sequence Z (saturated)	Enter the zero sequence resistance (saturated) for system models. For inverter-based systems, R		R	R	R	R	

									can be entered as zero if the net effect of reflecting the short circuit current is already in the reactance.							
Inverter Details		X	X					X in p.u.	Zero Sequence Z (saturated)	Enter the zero sequence reactance (saturated) of the inverter for system models. (You may enter the same as the unsaturated value.) You may calculate X = 1/I zero sequence fault current contribution, where I zero sequence fault current contribution is in per unit of full load current. If zero sequence fault current contribution is zero, then enter 99999.		R	R	R	R	
Inverter Details		X	X					p.u.	Zero Sequence Grounding Resistance For An Impedance Grounded Inverter in p.u. (100 MVA Base)	The value must be specified on a 100 MVA base. For inverter-based systems that are ungrounded, enter Grounding Resistance R = 99999.		R	R	R	R	
Inverter Details		X	X					p.u.	Grounding Reactance For An Impedance Grounded Inverter in p.u. (100 MVA Base)	The value must be specified on a 100 MVA base. For inverter-based systems that are ungrounded, enter Grounding Reactance X = 99999.		R	R	R	R	
Inverter Details		X	X					p.u.	Instantaneous Controlled Fault Current Magnitude (Multiple of full Load current)	Inverter instantaneous fault current magnitude in per unit of full load current.		R	R	R	R	
Inverter Details		X	X					p.u.	Controlled Fault Current Magnitude At 2 to 3 cycles after fault	Inverter fault current magnitude at 2 – 3 cycles after a fault in per unit of full		R	R	R	R	

								(Multiple of full Load current)	Load current.							
Inverter Details		X	X					p.u.	Controlled Fault Current Magnitude At 4 plus cycles after fault (Multiple of full Load current)	Inverter fault current magnitude at 4+ cycles after a fault in per unit of full Load current.		R	R	R	R	
Inverter Details		X	X					MVA	Skid/Array Transformer Rating	Continuous rating of the Skid/Array Transformer		R	R	R	R	
Inverter Details		X	X					MVA	Base MVA for Skid/Array Transformer Data	Enter the base MVA upon which the per unit Skid/Array Transformer data is provided.		R	R	R	R	
Inverter Details		X	X					kV	High Side Voltage Level (nominal)	Enter the voltage level (in kV) on the high-voltage side of the Skid/Array Transformer.		R	R	R	R	
Inverter Details		X	X					kV	Low Side Voltage Level (nominal)	Enter the voltage level (in kV) on the low-voltage side of the Skid/Array Transformer.		R	R	R	R	
Inverter Details		X	X					List	High Side Voltage Connection	Identify the type of connection used for the transformer windings on the high-voltage side of the Skid/Array Transformer		R	R	R	R	
Inverter Details		X	X					List	Low Side Voltage Connection	Identify the type of connection used for the windings on the low-voltage side of the Skid/Array Transformer		R	R	R	R	
Inverter Details		X	X					p.u.	Positive Sequence Impedance Z	Enter the positive sequence impedance of the Skid/Array Transformer.		R	R	R	R	
Inverter Details		X	X						Positive Sequence X/R Ratio	Enter the ratio of the positive sequence reactance to the positive sequence resistance of the Skid/Array Transformer		R	R	R	R	

Inverter Details		X	X					p.u.	Zero Sequence Impedance Z	Enter the zero sequence impedance of the Skid/Array Transformer		R	R	R	R	
Inverter Details		X	X						Zero Sequence X/R Ratio	Enter the ratio of the zero sequence reactance to the zero sequence resistance of the Skid/Array Transformer		R	R	R	R	
Inverter Details		X	X					Y/N	Manufacturer's Transformer Test Reports?	Have the Skid/Array transformer manufacturer test reports been submitted to ERCOT? If not, please attach the test reports in a zip file. Manufacturer test report (also known as Factory Acceptance Test or FAT, not to be confused with Transformer Commissioning Test Report) must be attached before energization.					R	
Transformer Data (as applicable)																
Transformer Data	X	X	X	X	X			List	Description of Change	Select: description of change from drop down list: Add, Change or Delete					C	
Transformer Data	X	X	X	X	X			enter all caps	Transformer Name	Transformer name must be 14 characters or less and contain no special characters other than an underscore "_".				R	R	
Transformer Data	X	X	X	X	X			enter all caps	ERCOT Station Name (Station Code or Station Mnemonic)	ERCOT Station Code/Mnemonic where the transformer is located.				R	R	
Transformer Data	X	X	X	X	X			Automatic	Transformer Code	Concatenated code automatically provided				A	A	

Transformer Data	X	X	X	X	X			Y/N	Transformer Test Report Attached?	Is the Transformer test report attached to this Resource Registration? Submit the Transformer Test Report via the approved Resource Registration process. NOTE: Official transformer manufacturer test report (also known as Factory Acceptance Test or FAT, not to be confused with Transformer Commissioning Test Report) must be attached before energization.					R	
Transformer Data	X	X	X	X	X			enter all caps	Transformer Manufacturer	Name of the transformer manufacturer					R	
Transformer Data	X	X	X	X	X			Y/N	Is This Transformer In a Master-follower Current Balancing Configuration?	Select Y or N whether this transformer is part of a master - following configuration				R	R	
Transformer Data	X	X	X	X	X			enter all caps	Master Name (can Be Same As this transformer)	The registered name of the transformer designated as the master in a parallel transformer control system scheme.					C	
Transformer Data	X	X	X	X	X			enter all caps	Follower Name (can Be Same As this transformer)	The registered name of the transformer designated as the follower in a parallel transformer control system scheme.					C	
Transformer Data	X	X	X	X	X			Y/N	Generator Step up Transformer?	Select Y or N whether this transformer is a generator step up transformer		R	R	R	R	

[RRGRR022 and RRGRR023: Replace applicable portions of "Transformer Data" above upon system implementation of NPRR973, or NPRRs 1002,

1026, and 1029:]															
Transformer Data	X	X	X	X	X			Y/N	Main Power Transformer (MPT)?	Select Y or N whether this transformer is a Main Power Transformer (MPT)		R	R	R	R
Transformer Data	X	X	X	X	X				Zero Sequence Data Winding Connect code (1-5)	Enter zero sequence data winding connect code 1 - 5 as noted below. Transformer Connection Codes: Two Winding Transformers (in order of Voltage highest first) 1 -- Wye-Wye Bank Both Neutrals Grounded 2 -- Wye - Delta Bank Grounded Wye 3 -- Delta - Wye Bank Grounded Wye 4 -- Delta - Delta Bank; Wye-Delta Bank Ungrounded Wye; Delta-Wye Bank Ungrounded Wye; Wye-Wye Bank Either Wye Grounded 5 -- Three Winding only		R	R	R	R
Transformer Data	X	X	X	X	X			List	Winding location of neutral ground impedance	Select the Winding that the neutral ground impedance is connected to: Primary (high voltage side), Secondary (low voltage side), or Tertiary (tertiary voltage side if applicable).		R	R	R	R

Transformer Data	X	X	X	X	X			p.u.	Zero Sequence Grounding Resistance For An Impedance Grounded Transformer in P.u. (100 MVA Base at nominal system voltage)	Zero Sequence Grounding Resistance For An Impedance Grounded Transformer in p.u. (100 MVA Base) and the nominal system voltage (69, 138 or 345 kV)		R	R	R	R	
Transformer Data	X	X	X	X	X			p.u.	Zero Sequence Grounding Reactance For An Impedance Grounded Transformer In P.u. (100 MVA Base at nominal system voltage)	Zero Sequence Grounding Reactance For An Impedance Grounded Transformer In P.u. (100 MVA Base) and the nominal system voltage (69, 138 or 345 kV)		R	R	R	R	
Transformer Data	X	X	X	X	X			Y/N	Zero Sequence Grounding (Neutral Grounding) Impedance Manufacturer Test Report Submitted	Has the zero sequence grounding (neutral grounding impedance) manufacturer test report been submitted to ERCOT? If not, please attach.					R	
Transformer Data	X	X	X	X	X			p.u.	Primary to Secondary Zero Sequence Resistance In p.u. (100 MVA Base at nominal system voltage)	Zero Sequence Resistance Primary-Secondary (resistive component of Z1Ns) In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal system voltage (69, 138 or 345 kV) base.		R	R	R	R	
Transformer Data	X	X	X	X	X			p.u.	Primary to Secondary Zero Sequence Reactance In p.u. (100 MVA Base at nominal system voltage)	Zero Sequence Reactance Primary-Secondary (reactive component of Z1Ns) In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal system voltage (69, 138 or 345 kV) base.		R	R	R	R	
Transformer Data	X	X	X	X	X			p.u.	Primary to Secondary Positive Sequence	Positive Sequence Resistance Primary-		R	R	R	R	

								Resistance In p.u. (100 MVA Base at nominal system voltage)	Secondary In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal system voltage (69, 138 or 345 kV) base.							
Transformer Data	X	X	X	X	X			p.u.	Primary to Secondary Positive Sequence Reactance In p.u. (100 MVA Base at nominal system voltage)	Positive Sequence Reactance Primary-Secondary In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal system voltage (69, 138 or 345 kV) base.		R	R	R	R	
Transformer Data	X	X	X	X	X			MVA	Primary Normal Rating	The continuous MVA rating of the primary winding of the transformer, including substation terminal equipment in series with the transformer, at the applicable ambient temperature. The Transmission Element can operate at this rating indefinitely without damage, or violation of NESC clearances.		R	R	R	R	
Transformer Data	X	X	X	X	X			MVA	Primary 2-hr Emergency Rating	The two-hour MVA rating of the primary winding of the transformer, including substation terminal equipment in series with the transformer, at the applicable ambient temperature. The Transmission Element can operate at this rating for two hours without violation of NESC clearances or equipment failure.		R	R	R	R	

Transformer Data	X	X	X	X	X			MVA	Primary 15-min Rating	The 15-minute MVA rating of the primary winding of the transformer, including substation terminal equipment in series with the transformer, at the applicable ambient temperature and with a step increase from a prior loading up to 90% of the Normal Rating. The transformer can operate at this rating for 15 minutes, assuming its pre-contingency loading up to 90% of the Normal Rating limit at the applicable ambient temperature, without violation of NESC clearances or equipment failure. This rating takes advantage of the time delay associated with heating of the transformer following a sudden increase in current.		R	R	R	R	
Transformer Data	X	X	X	X	X			MVA	Primary Relay loadability limit	Enter the rating in MVA that would cause the transformer to trip within 15 minutes of exceeding that value on the primary. If no overload trip relay exists, enter "99999"				R	R	
Transformer Data	X	X	X	X	X			enter all caps	Unit(s) Associated With This Transformer (Must be entered as SITECODE_UNITNAME)	Enter the Unit(s) Associated With This Transformer (name must match unit names provided on the unit info tab)					C	
Transformer Data	X	X	X	X	X			kV	Primary Winding Voltage Level (no-Load)	Enter the voltage level of the primary winding for this transformer system nominal				R	R	

									voltage (69, 138, 345 kV)							
Transformer Data	X	X	X	X	X			#	Primary Winding PTI Bus Number	Enter the PTI bus number for the primary winding of this transformer				O	O	
Transformer Data	X	X	X	X	X			List	Primary Winding Voltage Connection - Wye or Delta	Select whether this primary winding connection is a Wye or Delta connection		R	R	R	R	
Transformer Data	X	X	X	X	X			Device 1	Primary Winding Voltage Connected Devices	Enter a device connected to the primary winding of this transformer					R	
Transformer Data	X	X	X	X	X			kV	Primary Winding Manufactured Nominal Voltage	Enter the primary winding manufactured nominal voltage for this transformer		R	R	R	R	
Transformer Data	X	X	X	X	X			kV	Secondary Winding Voltage level (no-Load)	Enter the voltage level of the secondary winding for this transformer				R	R	
Transformer Data	X	X	X	X	X			#	Secondary Winding PTI Bus Number	Enter the PTI bus number for the secondary winding of this transformer				O	O	
Transformer Data	X	X	X	X	X			List	Secondary Winding Voltage Connection - Wye or Delta	Select whether this secondary winding connection is a Wye or Delta connection		R	R	R	R	
Transformer Data	X	X	X	X	X			Device 1	Secondary Winding Voltage Connected Devices	Enter a device connected to the secondary winding of this transformer					R	
Transformer Data	X	X	X	X	X			kV	Secondary Winding Manufactured Nominal Voltage	Enter the secondary winding manufactured nominal voltage for this transformer		R	R	R	R	
Transformer Data	X	X	X	X	X			Y/N	On-Load Voltage Regulation	Select Y or N whether this transformer will change tap settings automatically while online to control voltage.		R	R	R	R	
Transformer Data	X	X	X	X	X			Y/N	Does Transformer have an On-Load Tap Changer?	Select Y or N whether this transformer has an On-Load Tap changer		R	R	R	R	

Transformer Data	X	X	X	X	X			List	Location of On-Load Tap Changer - Primary (High) or Secondary (Low) side	If this transformer has an On-Load Tap changer, select whether it is on Primary (High) or Secondary (Low) side.		C	C	C	C	
Transformer Data	X	X	X	X	X			kV	Base kV of Regulated Side	Base kV of Regulated Side				C	C	
Transformer Data	X	X	X	X	X			kV	Target kV of Regulated Side	Target kV of Regulated Side				C	C	
Transformer Data	X	X	X	X	X			%	Acceptable Deviation of Target Voltage	Acceptable Deviation from Target Voltage before tap change, in percent (enter 1% as 0.01).				C	C	
Transformer Data	X	X	X	X	X				Comments	Enter any comments regarding this transformer data					O	
Transformer Data	X	X	X	X	X			Ohms/Phase	DC Resistance of Winding 1	Using manufacturer's data, enter the DC resistance of the Primary/high voltage winding (or for autotransformers, the series winding).				R	R	
Transformer Data	X	X	X	X	X			Ohms/Phase	DC Resistance of Winding 2	Using manufacturer's data, enter the DC resistance of the Secondary/low voltage winding (or for autotransformers, the common winding). For physical three-winding transformers modeled as three 2-winding transformers, enter "99999"for each transformer row.				R	R	
Transformer Data	X	X	X	X	X			Y/N	GIC Blocking device on Winding 1	Answer Yes or No whether a Geomagnetic Induced Current blocking device exists on the Primary/high				R	R	

									voltage winding (or for autotransformers, the series winding).							
Transformer Data	X	X	X	X	X			Y/N	GIC Blocking device on Winding 2	Answer Yes or No whether a Geomagnetic Induced Current blocking device exists on the Secondary/low voltage winding, (or for autotransformers, the common winding). For physical three-winding transformers modeled as three 2-winding transformers, select "N" for each transformer row.				R	R	
Transformer Data	X	X	X	X	X			List	Vector Group Identifier	Manufacturer-supplied alphanumeric identifier specifying vector group based on transformer winding connections and grounding. For physical three-winding transformers modeled as three 2-winding transformers, enter the same Vector Group Identifier for each transformer row.				R	R	
Transformer Data	X	X	X	X	X			List	Transformer Core Design Type	Manufacturer-supplied Transformer Core Design Type (Three Phase shell Form, Unknown, 3@Single Phase (separate cores), Three Phase 3-Legged Core Design, Three Phase 5-Legged Core Design, Three Phase 7-Legged Core Design). For physical three-winding transformers modeled as three 2-winding				R	R	

										transformers, enter the same Transformer Core Design Type for each transformer row.						
Transformer Data	X	X	X	X	X			Number	K Factor	Value supplied by transformer manufacturer. If data is unavailable from the manufacturer, enter 0. For physical three-winding transformers modeled as three 2-winding transformers, enter the same K Factor for each transformer row.				R	R	
Transformer Data	X	X	X	X	X			Ohms	Winding 1 Grounding DC Resistance	Enter the Primary/high voltage winding Grounding DC Resistance in Ohms for any grounding device, (for a solidly grounded winding, enter 0, enter "99999" for ungrounded).				R	R	
Transformer Data	X	X	X	X	X			Ohms	Winding 2 Grounding DC Resistance	Enter the Secondary/low voltage winding Grounding DC Resistance in Ohms for any grounding device, (for a solidly grounded winding, enter 0, enter "99999" for ungrounded). For physical three-winding transformers modeled as three 2-winding transformers, enter "99999" for each transformer row.				R	R	

Transformer Data	X	X	X	X	X			List	Transformer Model	Enter 0 except for a phase-shifting transformer, which should be entered as a 1. For physical three-winding transformers modeled as three 2-winding transformers, enter the same model for each transformer row.				R	R	
Transformer Data	X	X	X	X	X			mm/dd/yyyy	Effective Date:	Date this transformer was added, removed or updated in the model					R	
Transformer Data	X	X	X	X	X			p.u.	Primary to Tertiary Zero Sequence Resistance In p.u. (100 MVA Base at nominal system voltage)	Zero Sequence Resistance Primary-Tertiary (resistive component of Z1No) In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal system voltage (69, 138 or 345 kV) base. (Applicable for three-winding transformers, code 5).		R	R	R	R	
Transformer Data	X	X	X	X	X			p.u.	Primary to Tertiary Zero Sequence Reactance In p.u. (100 MVA Base at nominal system voltage)	Zero Sequence Reactance Primary-Tertiary (reactive component of Z1No) In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal system voltage (69, 138 or 345 kV) base. (Applicable for three-winding transformers, code 5).		R	R	R	R	
Transformer Data	X	X	X	X	X			p.u.	Primary to Tertiary Positive Sequence Resistance In p.u. (100 MVA Base at nominal system voltage)	Positive Sequence Resistance Primary-Tertiary In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal		R	R	R	R	

									system voltage (69, 138 or 345 kV) base. (Applicable for three-winding transformers, code 5).							
Transformer Data	X	X	X	X	X			p.u.	Primary to Tertiary Positive Sequence Reactance In p.u. (100 MVA Base at nominal system voltage)	Positive Sequence Reactance Primary-Tertiary In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal system voltage (69, 138 or 345 kV) base. (Applicable for three-winding transformers, code 5).		R	R	R	R	
Transformer Data	X	X	X	X	X			MVA	Tertiary Normal Rating	The continuous MVA rating of the tertiary windings of the transformer, including substation terminal equipment in series with the transformer, at the applicable ambient temperature. The Transmission Element can operate at this rating indefinitely without damage, or violation of NESC clearances.		R	R	R	R	
Transformer Data	X	X	X	X	X			MVA	Tertiary 2-hr Emergency Rating	The two-hour MVA rating of the tertiary windings of the transformer, including substation terminal equipment in series with the transformer, at the applicable ambient temperature. The Transmission Element can operate at this rating for two hours without violation of NESC clearances or equipment failure.		R	R	R	R	

Transformer Data	X	X	X	X	X			MVA	Tertiary 15-min Rating	The 15-minute MVA rating of the tertiary windings of the transformer, including substation terminal equipment in series with the transformer, at the applicable ambient temperature and with a step increase from a prior loading up to 90% of the Normal Rating. The transformer can operate at this rating for 15 minutes, assuming its pre-contingency loading up to 90% of the Normal Rating limit at the applicable ambient temperature, without violation of NESC clearances or equipment failure. This rating takes advantage of the time delay associated with heating of the transformer following a sudden increase in current.		R	R	R	R	
Transformer Data	X	X	X	X	X			MVA	Tertiary Relay loadability Limit	Enter the rating in MVA that would cause the transformer to trip within 15 minutes of exceeding that value on the tertiary. If no overload trip relay exists, enter "99999"				R	R	
Transformer Data	X	X	X	X	X			p.u.	Secondary to Tertiary Zero Sequence Resistance In p.u. (100 MVA Base at nominal system voltage)	Zero Sequence Resistance Secondary-Tertiary (resistive component of Z2No) In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal system voltage (69, 138 or		R	R	R	R	

									345 kV) base. (Applicable for three-winding transformers, code 5).						
Transformer Data	X	X	X	X	X			p.u.	Secondary to Tertiary Zero Sequence Reactance In p.u. (100 MVA Base at nominal system voltage)	Zero Sequence Reactance Secondary-Tertiary (reactive component of Z2No) In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal system voltage (69, 138 or 345 kV) base. (Applicable for three-winding transformers, code 5).		R	R	R	R	
Transformer Data	X	X	X	X	X			p.u.	Secondary to Tertiary Positive Sequence Resistance In p.u. (100 MVA Base at nominal system voltage)	Positive Sequence Resistance Secondary-Tertiary In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal system voltage (69, 138 or 345 kV) base. (Applicable for three-winding transformers, code 5).		R	R	R	R	
Transformer Data	X	X	X	X	X			p.u.	Secondary to Tertiary Positive Sequence Reactance In p.u. (100 MVA Base at nominal system voltage)	Positive Sequence Reactance Secondary-Tertiary In p.u. on 100 MVA Base and adjusted from Manufactured Nominal Voltage to the nominal system voltage (69, 138 or 345 kV) base. (Applicable for three-winding transformers, code 5).		R	R	R	R	
Transformer Data	X	X	X	X	X			MVA	Secondary Winding Normal Rating	The continuous MVA rating of the secondary winding of the transformer, including substation terminal equipment in series with the transformer, at the		R	R	R	R	

									applicable ambient temperature. The Transmission Element can operate at this rating indefinitely without damage, or violation of NESC clearances.							
Transformer Data	X	X	X	X	X			MVA	Secondary 2-hr Emergency Rating	The two-hour MVA rating of the secondary winding of the transformer, including substation terminal equipment in series with the transformer, at the applicable ambient temperature. The Transmission Element can operate at this rating for two hours without violation of NESC clearances or equipment failure.		R	R	R	R	
Transformer Data	X	X	X	X	X			MVA	Secondary 15-min Rating	The 15-minute MVA rating of the secondary windings of the transformer, including substation terminal equipment in series with the transformer, at the applicable ambient temperature and with a step increase from a prior loading up to 90% of the Normal Rating. The transformer can operate at this rating for 15 minutes, assuming its pre-contingency loading up to 90% of the Normal Rating limit at the applicable ambient temperature, without violation of NESC clearances or equipment		R	R	R	R	

									failure. This rating takes advantage of the time delay associated with heating of the transformer following a sudden increase in current.							
Transformer Data	X	X	X	X	X			MVA	Secondary Relay loadability Limit	Enter the rating in MVA that would cause the transformer to trip within 15 minutes of exceeding that value on the secondary. If no overload trip relay exists, enter "99999"				R	R	
Transformer Data	X	X	X	X	X			kV	Tertiary Winding Voltage level (no-Load)	Enter the voltage level of the tertiary winding for this transformer				R	R	
Transformer Data	X	X	X	X	X			#	Tertiary Winding PTI Bus Number	Enter the PTI bus number for the tertiary of this transformer (Required if tertiary exists, with or without external connections.)				R	R	
Transformer Data	X	X	X	X	X			List	Tertiary Winding Voltage Connection - Wye or Delta	Select whether this tertiary connection is a Wye or Delta connection		R	R	R	R	
Transformer Data	X	X	X	X	X			Device 1	Tertiary Winding Voltage Connected Devices	Enter a device connected to the tertiary winding of this transformer					R	
Transformer Data	X	X	X	X	X			kV	Tertiary Winding Manufactured Nominal Voltage (applicable for transformers code 5)	Enter the tertiary manufactured nominal voltage for this transformer (Applicable for three-winding transformers, code 5).		R	R	R	R	

Board Report

Miscellaneous															
One Line	X	X	X	X	X	X	X		Embed a PDF or CAD One Line Diagram	Include a PDF or CAD One Line Diagram of the site		R	R	R	R	
One Line	X	X	X	X	X	X	X		Date One-Line Diagram last Updated	Date One-Line Diagram last Updated		R	R	R	R	
Transformer Test Data	X	X	X	X	X		X		Transformer Test Data	Include the Transformer Test Data Report attached to the service request for the submission of this Resource Registration data, stating transformer type, positive and zero sequence resistance and reactance data for each winding in p.u. (100 MVA Base at nominal system voltage), winding voltages, tap information, on-load tap changing capability, ratings and winding DC resistance in Ohms per phase.					R	
Transformer Test Data	X	X	X	X	X		X	mm/dd/yyyy	Date transformer test Data last Updated	Date transformer test Data last Updated					R	
PSCAD Model	X	X	X	X	X				Embed a PSCAD Model (if applicable)	PSCAD Model for SSO studies as may be required by ERCOT.				C	C	
PSCAD Model	X	X	X	X	X				Date PSCAD Model last Updated	Date PSCAD Model last Updated				C	C	

Dynamic Data	X	X	X	X	X				Embed Dynamic Data	Model data (in current PSS/E format utilized by the DWG), with appropriate values provided for all model parameters, test reports that support the model data based on field/commissioning tests (if available), model libraries in .dll or .obj file format (if using user defined models not included in the PSS/E standard model library), and model documentation/user guides (if using user defined models not included in the PSS/E standard model library). Refer to DWG Procedure Manual for requirements.			R	R	R	
Dynamic Data	X	X	X	X	X				Date Dynamic Data last Updated	Date Dynamic Data last Updated			R	R	R	
Dynamic Data	X	X	X	X	X				Embed TSAT Dynamic Data	Model data (in current standard PSS/E library model format utilized by the DWG and supported by TSAT), with appropriate values provided for all model parameters, test reports that support the model data based on field/commissioning tests (if available), model libraries in TSAT UDM or .dll file format if using user defined models not included in the TSAT standard model library - the TSAT UDM or .dll shall be able to read the				R	R	

										PSS/E format data, and model documentation/user guides if using user defined models not included in the TSAT standard model library.							
Dynamic Data	X	X	X	X	X				Date TSAT Dynamic Data last Updated	Date TSAT Dynamic Data last Updated				R	R	

Revised ERCOT Impact Analysis Report

RRGRR Number	028	RRGRR Title	Transformer Impedance Clarifications
Impact Analysis Date		July 27, 2021	
Estimated Cost/Budgetary Impact		Between $100k and $150k Additional Cost to Implement in Passport: N/A	
Estimated Time Requirements		The timeline for implementing this Resource Registration Glossary Revision Request (RRGRR) is dependent upon Public Utility Commission of Texas (PUCT) prioritization and approval. Please see the Project Priority List (PPL) for additional information. Estimated project duration: 7 to 10 months in current systems Passport Schedule Risk Assessment: No Risk to Schedule	
ERCOT Staffing Impacts (across all areas)		Implementation Labor: 100% ERCOT; 0% Vendor Ongoing Requirements: No impacts to ERCOT staffing.	
ERCOT Computer System Impacts		The following ERCOT systems would be impacted: • Resource Integration and Ongoing Operations (RIOO) 93% • Data Management & Analytic Systems 8%	
ERCOT Business Function Impacts		No impacts to ERCOT business functions.	
Grid Operations & Practices Impacts		No impacts to ERCOT grid operations and practices.	

Evaluation of Interim Solutions or Alternatives for a More Efficient Implementation
None offered.

Comments
Implementation of this RRGRR is expected to take place after the completion of the in-flight RIOO project.

Board Report

SCR Number	815	SCR Title	MarkeTrak Administrative Enhancements
Date of Decision		August 10, 2021	
Action		Recommended Approval	
Timeline		Urgent – Urgent status is necessary to align resources on the scheduled technical refresh/upgrade for the MarkeTrak tool.	
Proposed Effective Date		Upon system implementation	
Priority and Rank Assigned		Priority – 2021; Rank – 3340	
Supporting Protocol or Guide Sections/Related Documents		Retail Market Guide, Section 7, Market Processes MarkeTrak Users Guide	
System Change Description		This System Change Request (SCR) proposes administrative revisions/enhancements that will align current market guides, streamline processes, increase transparency and tracking, and improve communication among Market Participants in the MarkeTrak tool which is utilized for issue resolution in the retail market.	
Reason for Revision		[X] Addresses current operational issues. [ ] Meets Strategic goals (tied to the ERCOT Strategic Plan or directed by the ERCOT Board). [X] Market efficiencies or enhancements [X] Administrative [ ] Regulatory requirements [ ] Other: (explain) *(please select all that apply)*	
Business Case		Texas Data Transport and MarkeTrak Systems (TDTMS) Working Group has identified multiple improvement opportunities for the current MarkeTrak system. MarkeTrak functionality is being reviewed for an upgrade and some of the proposed enhancements may already be considered and possibly coordinated with this upgrade to best utilize resources.	

Board Report

PRS Decision	On 7/15/21, PRS voted unanimously via roll call to grant SCR815 Urgent status; to recommend approval of SCR815 as amended by the 7/8/21 ERCOT comments; and to forward to TAC SCR815. All Market Segments participated in the vote.
Summary of PRS Discussion	On 7/15/21, the sponsor explained the reason for urgency; and the 7/8/21 ERCOT comments were reviewed.
TAC Decision	On 7/28/21, TAC voted unanimously via roll call to recommend approval of SCR815 as recommended by PRS in the 7/15/21 PRS Report, with a recommended priority of 2021 and rank of 3340; and the Revised Impact Analysis. All Market Segments participated in the vote.
Summary of TAC Discussion	On 7/28/21, ERCOT staff reviewed the Revised Impact Analysis stating that combining the implementation of SCR815 with a planned technical refresh project would result in efficiencies.
ERCOT Opinion	ERCOT supports approval of SCR815.
ERCOT Market Impact Statement	ERCOT Staff has reviewed SCR815 and believes the market impact for SCR815 provides one or more of the following benefits: transparency, efficiency, and/or reliability; and/or aligns with current market rules.
Board Decision	On 8/10/21, the ERCOT Board voted to recommend approval of SCR815 as recommended by TAC in the 7/28/21 TAC Report.

Sponsor	
Name	Sheri Wiegand on behalf of the TDTMS Working Group
E-mail Address	Sheri.wiegand@vistracorp.com
Company	Vistra Corp
Phone Number	972-979-5225
Cell Number	972-979-5225
Market Segment	Not Applicable

Market Rules Staff Contact	
Name	Jordan Troublefield
E-Mail Address	Jordan.Troublefield@ercot.com

Board Report

Phone Number	512-248-6521

Comments Received	
Comment Author	**Comment Summary**
ERCOT 070821	Codified the scope of changes requested by Market Participants and removed outdated references to the associated application vendor
RMS 071321	Endorsed Urgent status for SCR815 and the 7/8/21 ERCOT comments

Market Rules Notes

None

Proposed System Change

The below matrix outlines the proposed administrative revisions/enhancements.

	ISSUE/OPPORTUNITY	PROPOSED RESOLUTION
1.	Drop down choices for attributes within subtypes such as Inadvertent situation Unexecutable reasons do not align with the current market guides	Revise drop down choices for Inadvertent Gain (IAG)/Inadvertent Loss (IAL)/Customer Rescission Unexecutable reasons to match the Retail Market Guide (RMG) and MarkeTrak Users Guide
2.	Inability to monitor or track common unexecutable reasons for following subtypes: • Usage & Billing • Missing Enrollment Transactions • Switch Hold • Cancel w/ Approval	Develop a list of the following common unexecutable reasons for each subtype and create a drop down attribute when a MarkeTrak is unexecuted: • Move Out Cancelled • Issue submitted prior to next scheduled cycle read • Invalid data • Duplicate issue • Move Out order still pending • Invalid date and/or time stamp • Send transaction (650, EDI) • Other, requiring comments Common unexecutable reasons will improve the resolution time and reduce unnecessary comments. Attributes on subtypes may be queried and tracked for monitoring purposes providing additional insight into market activity.

3.	Current Rolodex is not maintained by Market Participants due to cumbersome process and multiple inputs. Escalation contact emails bounce back or go unanswered.	Downsize escalation contacts from the current 96 total categories (24 categories with 4 contacts for each: primary/secondary and escalation primary/secondary) down to 4 categories as listed below: 1. Inadvertent Situations/Customer Rescission/Redirect Fees 2. Service/Transactional Issues 3. Usage & Billing 4. DEVs
4.	Improving the performance of Retail Electric Providers (REPs) in Inadvertent situations to reach resolution ('unexecutable' or 'agree') within 7 days once an Inadvertent situation MarkeTrak is transitioned to 'begin working'	Creation of an automated escalation email if Inadvertent situation is not transitioned within 7 days after 'begin working' when under review. Based on 2020 MarkeTrak analysis, 95% of MarkeTraks reach agreement within 7 days once touched.
5.	Improve the performance of REPs in Customer Rescission situations to reach resolution as aligned in the RMG: 2 days to 'agree' and 2 days to submit Backdated Move-In (BDMVI) once Transmission and/or Distribution Service Provider (TDSP) is 'ready to receive'	Creation of an automated escalation email if a Customer Rescission issue is not transitioned to 'agree' or 'unexecutable' within 2 days of 'begin working' AND Creation of an automated escalation email if a BDMVI is not submitted within 2 days of 'ready to receive'
6.	Escalation Email Report only lists MarkeTrak number and not Electric Service Identifier (ESI) associated	Revise automated report to include ESI and MarkeTrak number
7.	Auto-complete date is used for the default Close Date in reports which impacts any analysis to determine timelines and Service Level Agreements (SLAs) to resolve an issue	For reporting only, use the Last Modified Date as the Close Date if the issue auto-completed.
8.	Unused subtypes	Recommend archiving 14 subtypes not utilized since 2018

Revised ERCOT Impact Analysis Report

SCR Number	815	SCR Title	MarkeTrak Administrative Enhancements
Impact Analysis Date		July 27, 2021	
Estimated Cost/Budgetary Impact		Between $75k and $95k See Comments	
Estimated Time Requirements		The timeline for implementing this System Change Request (SCR) is dependent upon Public Utility Commission of Texas (PUCT) prioritization and approval. Please see the Project Priority List (PPL) for additional information. Estimated project duration: 6 to 9 months	
ERCOT Staffing Impacts (across all areas)		Implementation Labor: 100% ERCOT; 0% Vendor Ongoing Requirements: No impacts to ERCOT staffing.	
ERCOT Computer System Impacts		The following ERCOT systems would be impacted: • Retail Systems 98% • Integration Systems 2%	
ERCOT Business Function Impacts		No impacts to ERCOT business functions.	
Grid Operations & Practices Impacts		No impacts to ERCOT grid operations and practices.	

Evaluation of Interim Solutions or Alternatives for a More Efficient Implementation
None offered.

Comments
If approved, ERCOT plans to combine SCR815 with a planned technical refresh project for increased efficiency. In order to meet software upgrade deadlines, the combined effort is expected to have an initial technical refresh phase which will be immediately followed by an enhancement phase that includes the requirements of SCR815.