



ERCOT Retail 101





Greetings and Introductions



• WebEx Training Tips

- Windows
- Buttons
- Attendance
- Questions / Chat



Please enable video & audio capabilities



PROTOCOL DISCLAIMER

This presentation provides a general overview of the Texas Nodal Market and is not intended to be a substitute for the ERCOT Protocols, as amended from time to time. If any conflict exists between this presentation and the ERCOT Protocols, the ERCOT Protocols shall control in all respects.

For more information, please visit:

http://www.ercot.com/mktrules/nprotocols/



Topics in this course include:





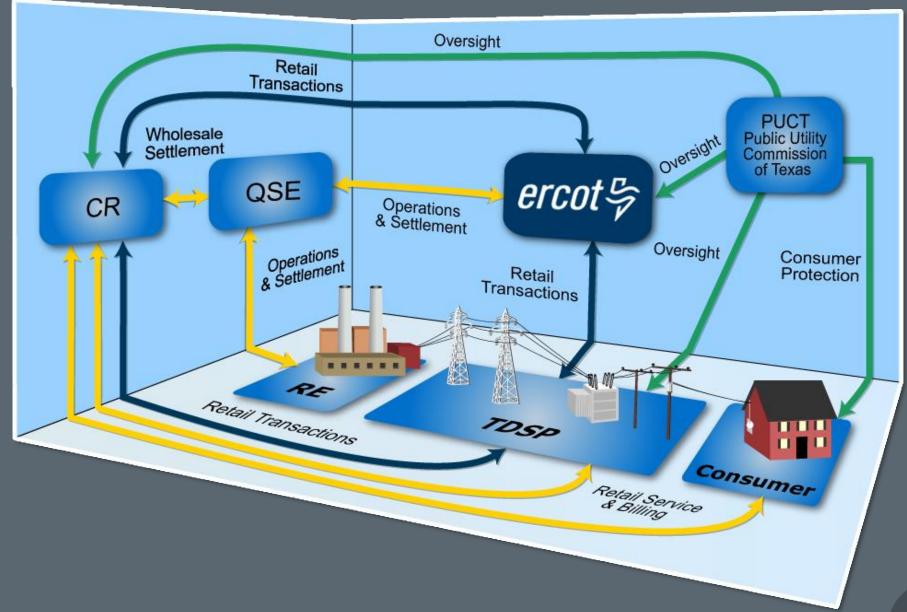


Module 1 Retail Market Responsibilities



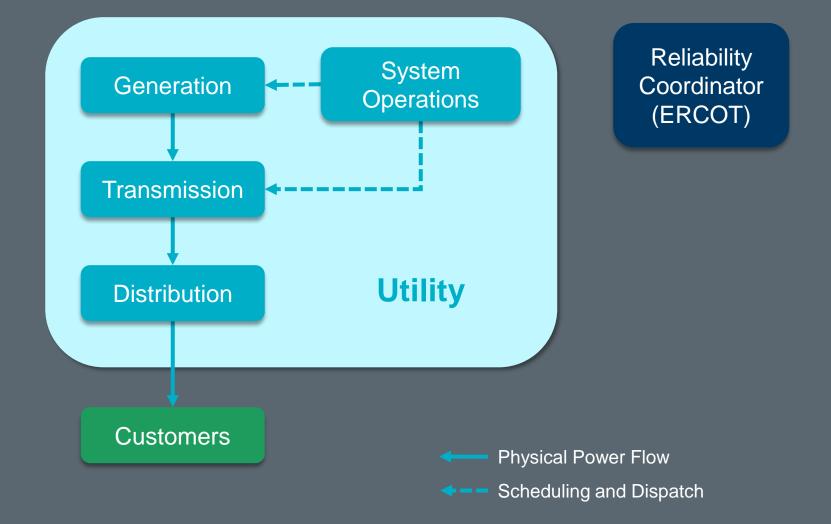
Relationships - Review



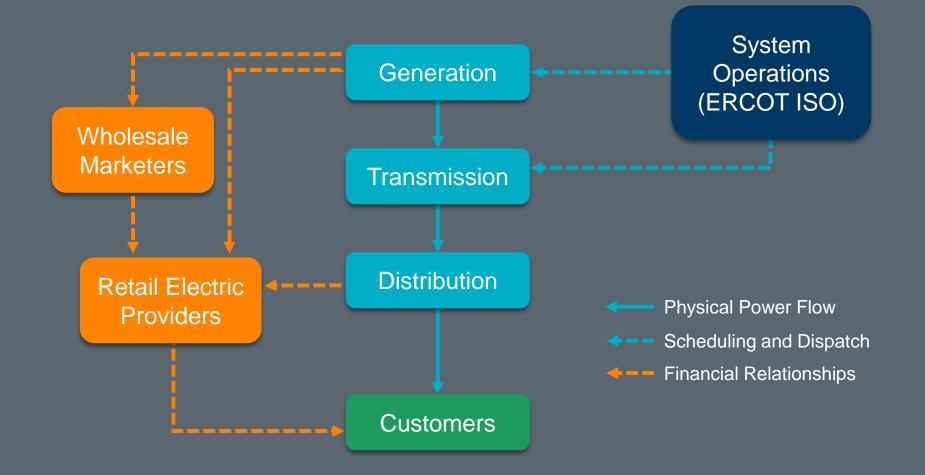


Vertically Integrated Utilities









Participants





Public Utility Commission of Texas



Electric Reliability Council of Texas



Qualified Scheduling Entity



Load Serving Entity



Competitive Retailer

Load Serving Entities (LSEs)

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An Electrical Cooperative or Municipally Owned Utility who has chosen **NOT** to opt in to retail competition.

NOIE

Opt-In

An Electrical Cooperative or Municipally Owned Utility who has chosen to opt in to retail competition.

REP

CR

Entities that sell electric energy to retail Customers in the areas of Texas where the sale of electricity is open to retail competition.

Competitive Retailer (CR) Responsibilities

CR

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Retail Electric Provider or Opt-In Entity





Service Retail Customers

Negotiate Competitive Contracts Submit Electronic Transactions



Meet Financial Responsibilities



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Investigate Customer Switching Issues

CRs work with TDSPs and other CRs to resolve inadvertent gains and losses.





A Competitive Retailer Must:



Register with ERCOT

Complete Flight Testing through FlighTrak

Be represented by a Qualified Scheduled Entity



Every CR Must Be Represented By a QSE

Choose one



OR

Become one





TDSP Responsibilities

TDSP

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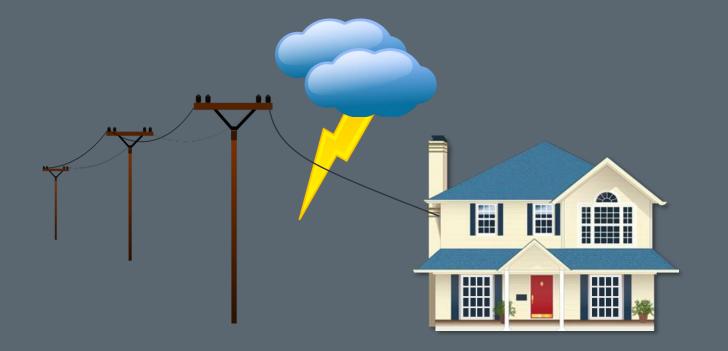


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Physical System Operations

- Maintain reliable transmission and distribution system
- Connect Customer Premise to ERCOT grid
- Resolve power outages





Retail System Operations

- Create, Manage and Maintain ESI IDs
- Facilitate Service Order Requests from CRs
- Provide usage data for Settlement billing
- Investigate customer issues





The Anatomy of an ESI ID

10 XXXXX ZZZ .. ZZ

Where			
10	Electric industry prefix		
XXXXX	Five-digit DOE code for TDSP		
ZZZ ZZ	Up to 29 alphanumeric characters assigned by TDSP		



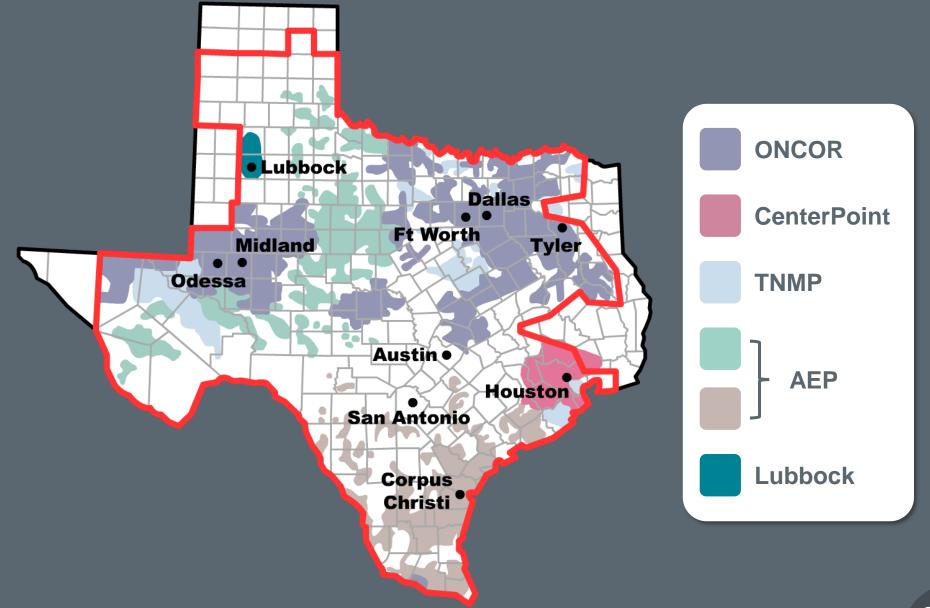
The Anatomy of an ESI ID

10 xxxxx zzz .. zz

DOE Number	TDSP Name	
20404	AEP TX North	
03278	AEP TX Central	
08901	CenterPoint	
13830	Nueces Electric Coop	
44372	Oncor Electric Delivery	
40051	Texas New Mexico Power (TNMP)	
17699	Oncor/SESCO	
11292	Lubbock Power & Light	

Where are the competitive meters





ERCOT Responsibilities

ERCOT

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Retail System Operations

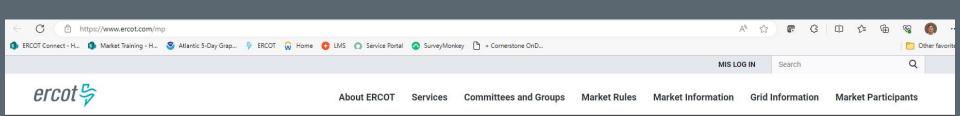


ERCOT Duties



ERCOT.com





Home > Market Participants

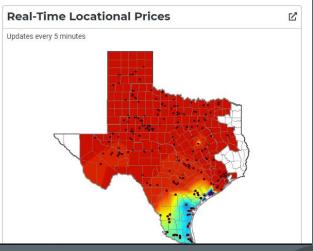
Market Participants



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100k						T •	
75k	-	-	/				••••
50k					_		
25k					_		
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		Demand Demand For Available Ca			committed Cap committed Cap		

Grid Conditi	ons
Last Updated: Aug 7, 2	023 16:06 CT
	OPERATING RESERVES:
	5,369 MW
	NORMAL CONDITIONS







Matching



Responsible for making sure customers are protected and everyone follows the rules
The participant responsible for settling with ERCOT
Services customers in competitive areas
Manages poles, wires, meter reads and ESI IDs
Owns and operates the generators
General term for entity providing power to end-use customers

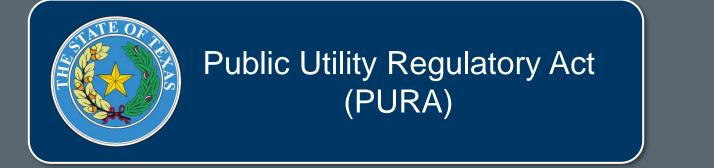




Module 2 Market Rules









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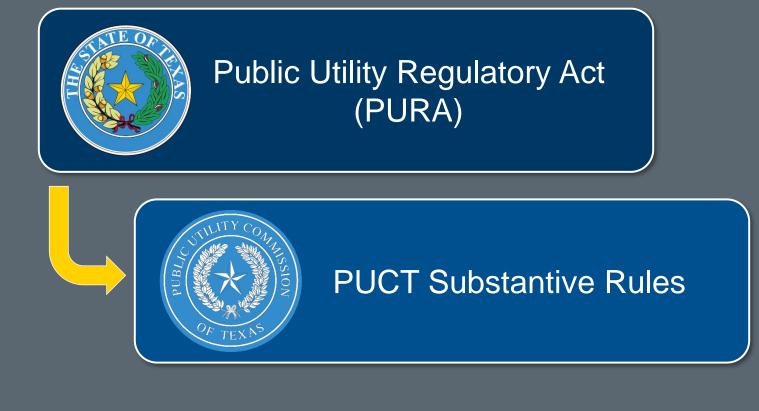
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Public Utility Regulatory Act (PURA)

- Defines the Public Utility Commission of Texas (PUCT)
- Amended by Senate Bill 7 in 1999
- PUCT and ERCOT responsible for determining specifics
- Continues to evolve





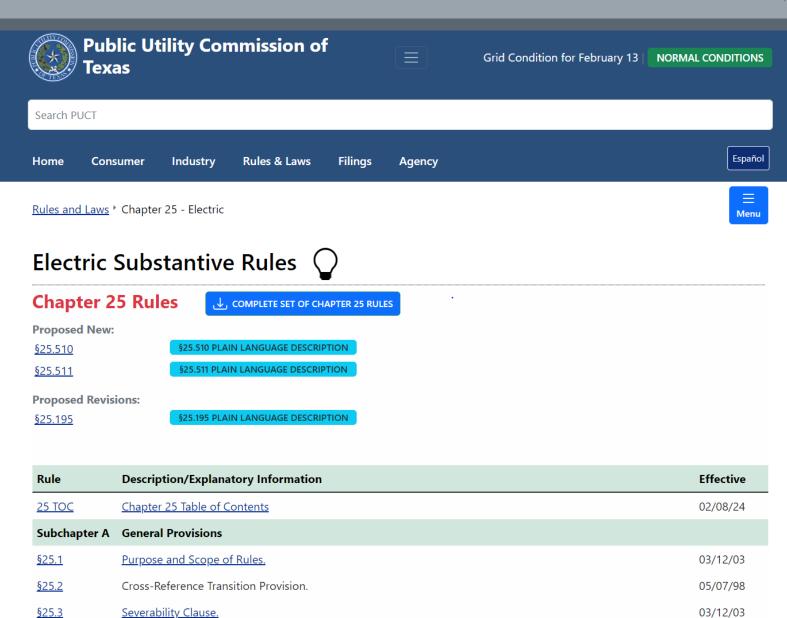
Public Utility Commission of Texas (PUCT) Rules





PUCT Substantive Rules

- Implement PURA requirements:
 - Customer protection rules
 - Standard terms and conditions (Tariffs) for utilities
- Electric Substantive Rules are contained in <u>Chapter 25</u>
- Refer to <u>PUCT Website</u> for complete rules



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Customer Protection Rules (Part 1)

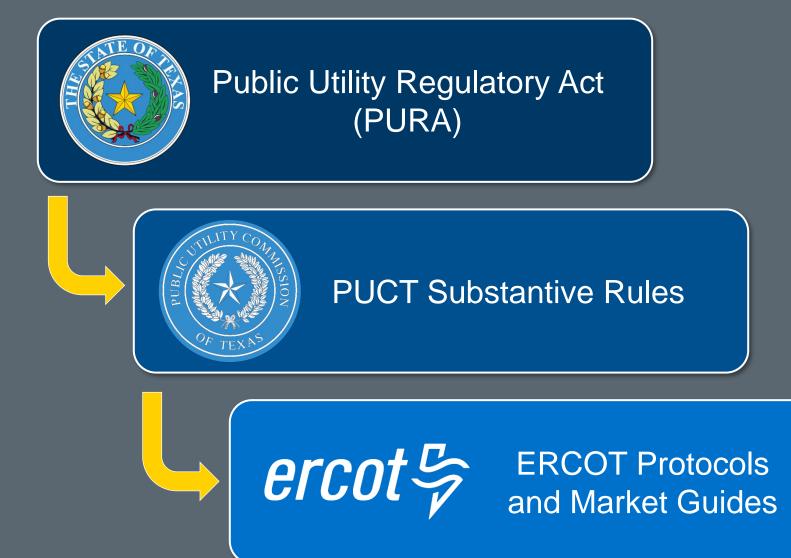
<u>§ 25.471</u>	General Provisions of Customer Protection Rules	<u>§ 25.478</u>	Credit Requirements and Deposits
<u>§ 25.472</u>	Privacy of Customer Information	<u>§ 25.479</u>	Issuance and Format of Bills
<u>§ 25.473</u>	Non-English Language Requirements	<u>§ 25.480</u>	Bill Payment and Adjustments
<u>§ 25.474</u>	Selection of REP	<u>§ 25.481</u>	Unauthorized Charges
<u>§ 25.475</u>	General REP Requirements and Information Disclosures to Customers	<u>§ 25.482</u>	Prompt Payment Act
<u>§ 25.476</u>	Renewable and Green Energy Verification	<u>§ 25.483</u>	Disconnection of Service
<u>§ 25.477</u>	Refusal of Electric Service	<u>§ 25.484</u>	Electric No-Call List

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Customer Protection Rules (Part 2)

<u>§ 25.485</u>	Customer Access and Complaint Handling	<u>§ 25.492</u>	Non-Compliance with Rules or Orders
<u>§ 25.487</u>	Obligations Related to Move-In Transactions	<u>§ 25.493</u>	Acquisition and Transfer of Customers from one REP to Another
<u>§ 25.488</u>	Procedures for a Premise with No Service Agreement	<u>§ 25.495</u>	Unauthorized Change of REP
<u>§ 25.489</u>	Treatment of Premises with No Retail Electric Provider of Record	<u>§ 25.497</u>	Critical Load, Critical Care and Chronic Condition Customers
<u>§ 25.490</u>	Moratorium on Disconnect on Move-Out	<u>§ 25.498</u>	Prepaid Service
<u>§ 25.491</u>	Record Retention and Reporting Requirements	<u>§ 25.500</u>	Privacy of Advanced Metering System Information

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ERCOT

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ERCOT is responsible for ...

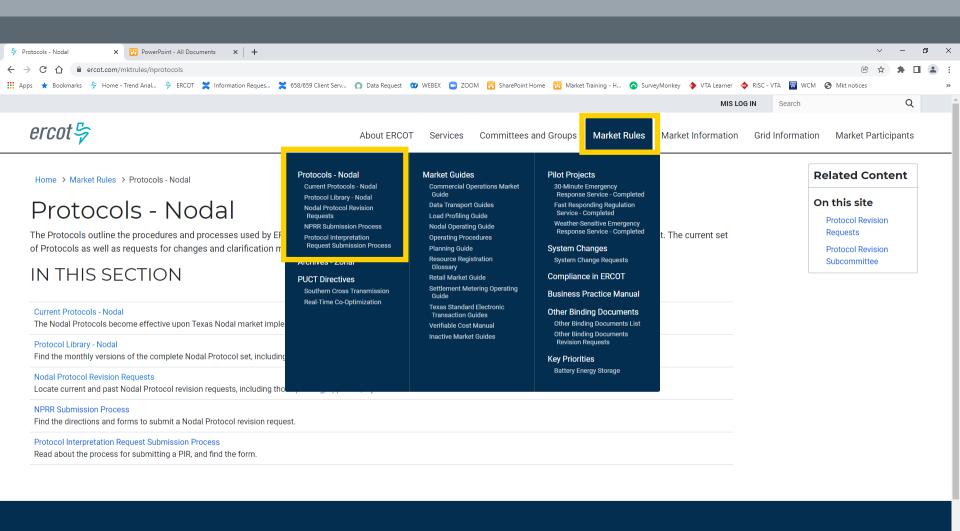
Protocols

Outline the procedures and processes used by ERCOT and Market Participants.

ERCOT Protocols

https://





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Market Rules Locations	Project Status	
www.ercot.com/mktrules	Service Level Aareements	NEWS & PRESS

	List of Protocols
Sections	Description
1-2	Construction and Definitions
3-8	System Operations and Wholesale Markets
9-11	Settlement & Billing; Metering; Data Aggregation
12	Market Information System (MIS)
13	Transmission & Distribution Losses
14	Renewable Energy Credit Trading Program
15	Customer Registration
16	Market Participant Registration & Qualification
18, 19	Load Profiling & TX SET
20	Alternative Dispute Resolution Process
21	Revision Request Process

ERCOT

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ERCOT is responsible for ...

Protocols

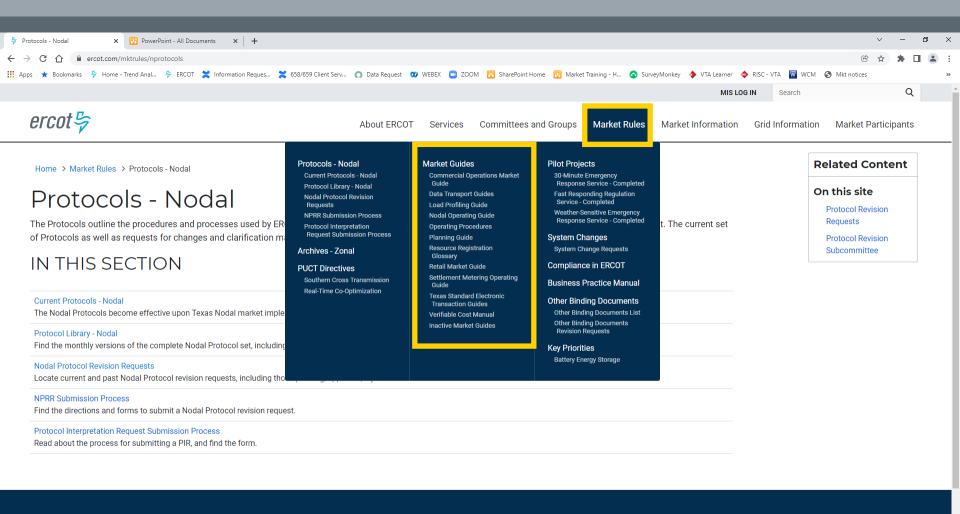
Outline the procedures and processes used by ERCOT and Market Participants.

Market Guides

- Based upon the ERCOT Protocols
- Detailed reference documents

ERCOT Market Guides





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Market Rules	Locations	Project Status	
https://www.ercot.com/mktrules		Service Level Aareements	NEWS & PRESS

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Retail Market Guide Overview				
Sections	Description			
1-2	Purpose; Definitions; Acronyms			
3	Retail Market Guide Revision Process			
4-5	PUCT & ERCOT			
6	RMS Working Groups			
7	**Market Processes**			
8	Municipally Owned Utilities & Co-ops			
9	Appendices			

Revision Requests



Protocol And Market Guide Update Process

- Created and edited by Market Participants
- Changed from timeto-time by Revision requests
- Changes approved by ERCOT Board of Directors or appropriate committee

Nodal Protocol Revision Reque	sti × +	_			_	_	_		_	_	_	
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ercot 😓					About ERCO	T Ser	vices	Committees and (Groups	Market Ri	ules Mark	et Information

Home > Market Rules > Nodal Protocol Revision Requests

Nodal Protocol Revision Requests

This section contains nodal protocol revision requests (NPRRs) now in the approval process or already approved.

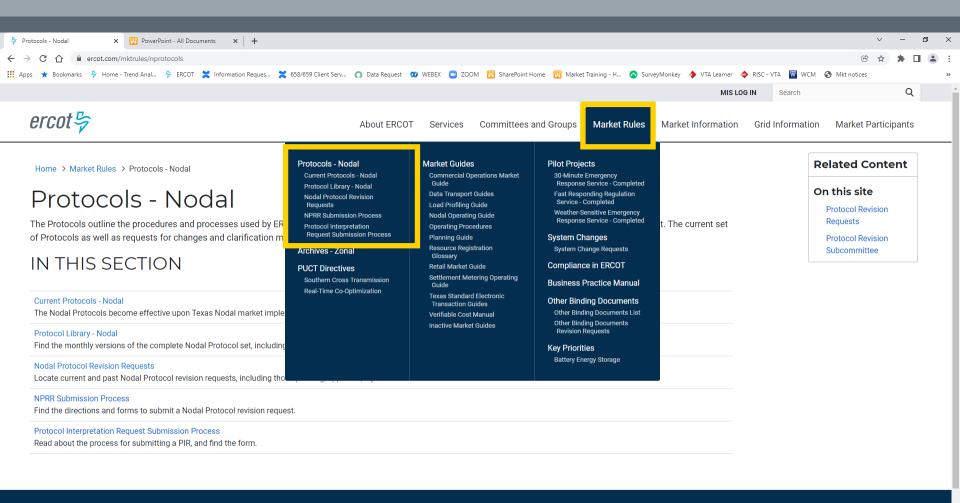
See NPRR Submission Process for access to revision request and comment forms.

Pending

Issue	Title
NPRR956	Designation of Providers of Transmission Additions
NPRR981	Day-Ahead Market Price Correction Process
NPRR1058	Resource Offer Modernization for Real-Time Co-Optimization
NPRR1067	Market Entry Qualifications, Continued Participation Requirements, and Credit Risk Assessment
NPRR1070	Planning Criteria for GTC Exit Solutions
NPRR1084	Improvements to Reporting of Resource Outages and Derates
NPRR1085	Ensuring Continuous Validity of Physical Responsive Capability (PRC) and Dispatch through Timely Changes to Resource Telemetry and Current Operating Plans (COPs)
NPRR1088	Applying Forward Adjustment Factors to Forward Market Positions and Un-applying Forward Adjustment Factors to Prior Market Positions
NPRR1089	Requiring Highest-Ranking Representative, Official, or Officer of a Resource Entity to Execute Weatherization and Natural Gas Declarations
NPRR1092	Reduce RUC Offer Floor and Remove RUC Opt-Out Provision
NPRR1095	Texas SET V5.0 Changes
NPRR1096	Require Sustained Six Hour Capability for ECRS and Non-Spin
NPRR1097	Create Resource Forced Outage Report
NPRR1098	Direct Current Tie (DC Tie) Reactive Power Capability Requirements
NPRR1099	Managing Network Operations Model Resource Nodes
NPRR1100	Emergency Switching Solutions for Energy Storage Resources
NPRR1102	ERCOT Discretion for Adjusting Non-Interval Data Recorder (NIDR) Backcasted Load Profiles

Nodal Protocol Revision Requests

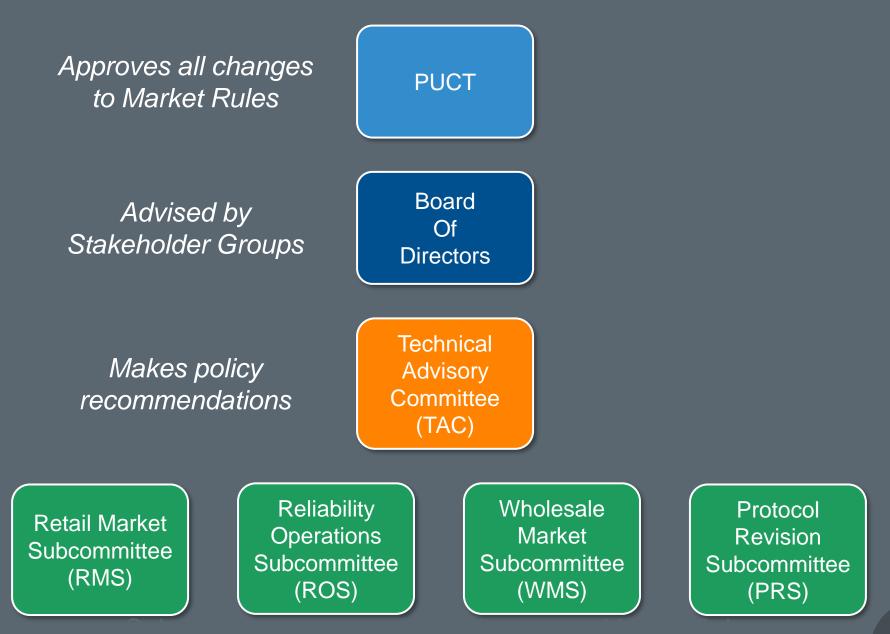




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Market Rules	Locations	Project Status		
https://www.ercot.com/mktrules		Service Level Agreements	NEWS & PRESS	

ERCOT Board and Stakeholder Groups





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Retail Market Subcommittee (RMS)

Working Groups

Profiling (PWG)

Texas Data Transport & MarkeTrak Systems (TDTMS)

Texas SET

Task Forces

Retail Market Training (RMTTF)





Module 3 Retail Operations



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Retail Transaction:

A Communication that enables and facilitates retail business processes in the deregulated Texas Electrical Market.

- Involves REPs, TDSPs and ERCOT
- Electronic Data Interchange (EDI) format, based on ANSI ASC X12 Standards



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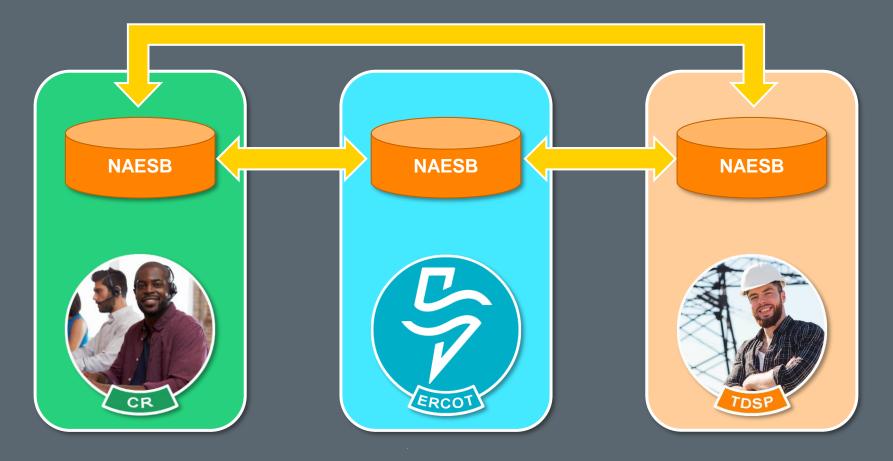
Retail Transactions Are Defined By TX SET Implementation Guides

- Developed and maintained by TX SET Working Group
- Protocol Section 19
- Implementation Guides



TxSET Communication Flow - Example





North American Energy Standards Board (NAESB) Common communications protocol

TX SET – Transaction Names & Pocket Card



Related Content

Texas SET Working Group

Market Coordination Team for Texas SET

Version Release 4.0

On this site

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Home > Market Rules > Market Guides > Texas Standard Electronic Transaction Guides

Texas Standard Electronic Transaction Guides

Information on each Texas Standard Electronic Transaction (Texas SET) used by the competitive retail electric market is available in this section. Implementation guides, retail market processes for transactions and Texas SET proposed and adopted changes can be found below.

IN THIS SECTION

Texas SET Swimlanes

Find the current swimlanes, which outline the business process lifecycle for retail transactions.

Texas Standard Electronic Transaction Issues Locate current and past Texas SET issues, including those new, under review or closed.

Texas SET Change Controls

New and Pending (Under Review) Change Controls, those that have been Approved for future Texas SET versions, as well as all Withdrawn and already Implemented Change Controls.

Current Texas SET Implementation Guides

Find the latest Texas SET guides, which provide information on the electronic transactions in the Texas retail electric market.

Key Documents

Change Control Log	Oct 5, 2021 -
This contains a log of all change controls submitted	
TXSET Change Control Dispute Form	Jul 23, 2015 -
Texas SET Change Control Form	Feb 11, 2011 -
Form to be completed only by Texas SET Working Group	
Texas SET Issue Form	Sep 30, 2010 -
Form to submit a request regarding an issue to ERCOT	
Transaction Names Inventory V5.0	Oct 21, 2021 -
Texas SET Transactions - Version 5.0	

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Transaction Families	
Request, Response, Maintenance for Enrollments, Drops, Switches, Maintenance & Request Consumption	814_XX
Interval, Non Interval, Reads & Usage Data Historical and Monthly Activity	867_XX
Reject Response to 810 or 867 Data	824_XX

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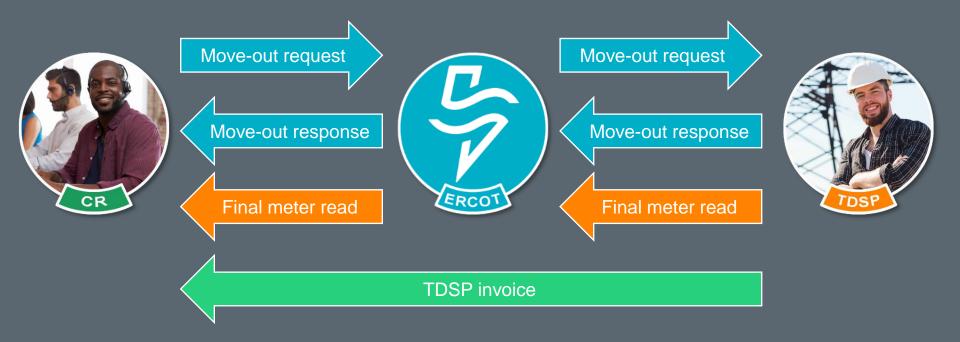
Transaction Families				
Statement, Settlement, Wire Charge Invoices	810_XX			
Payment and Advice through Bank	820_XX			
Maintenance Service Order - Work Orders, Meter Config. Details, Outage Notification	650_XX			
Reject Response to 810 or 867 Data	824_XX			

More detailed description in Protocol Section 19



Market Process

A series of retail transactions that must occur in a particular sequence



Swimlanes



On this site

Texas SET Working Group

Market Coordination Team for Texas SET

Version Release 4.0

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Home > Market Rules > Market Guides > Texas Standard Electronic Transaction Guides	Related Cont	tent		

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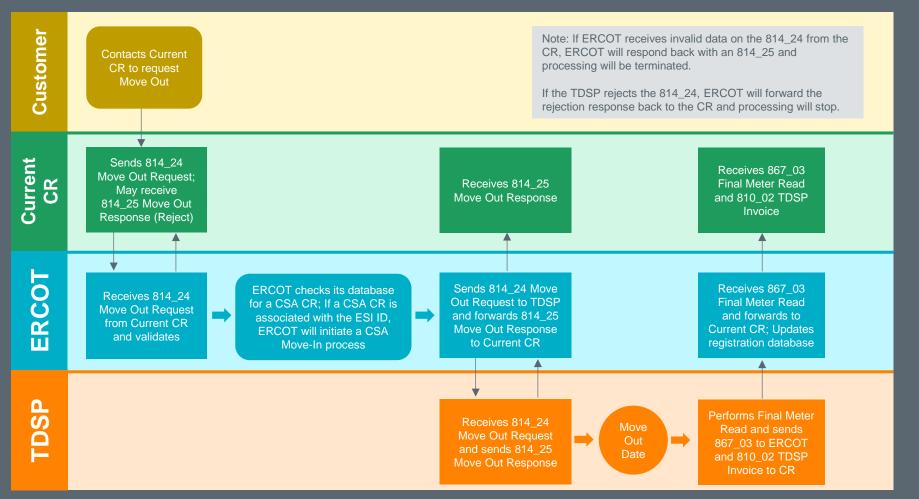
Change Control Log	Oct 5, 2021 - xlsx - 176.8 KB
This contains a log of all change controls submitted	
TXSET Change Control Dispute Form	Jul 23, 2015 - doc - 38.5 KB
Texas SET Change Control Form	Feb 11, 2011 - doc - 36.5 KB
Form to be completed only by Texas SET Working Group	
Texas SET Issue Form	Sep 30, 2010 - doc - 43.5 KB
Form to submit a request regarding an issue to ERCOT	
Transaction Names Inventory V5.0	Oct 21, 2021 - xls - 57 KB
Texas SET Transactions - Version 5.0	

Swimlane - Example

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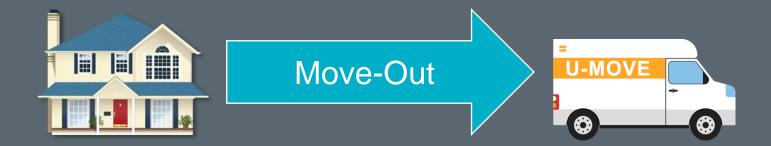
Move Out

Scenario: Customer Initiated Move Out No CSA Associate with ESI ID Transactions: 814_24, 814_25, 867_03, 810_02



Three Main Processes

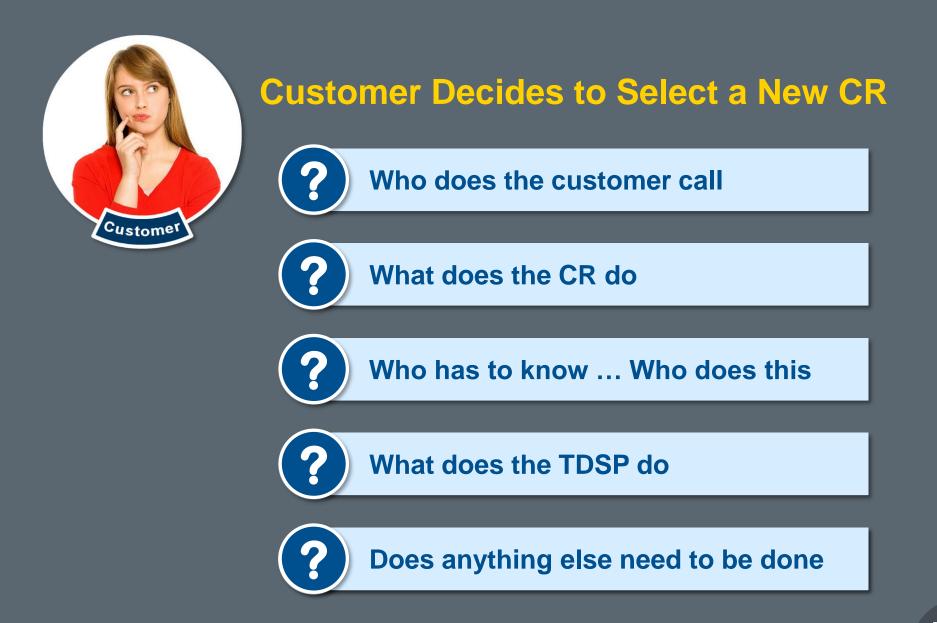














Scenario – Retail Process

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		From			То			
Transaction Type	ERCOT	Old CR	TDSP	New CR	ERCOT	Old CR	TDSP	New CR
Switch Request								
Enrollment Notification Request								
Enrollment Notification Response								
CR Enrollment Notification Response								
Loss Notification								
Final Usage								
Initial Meter Read								

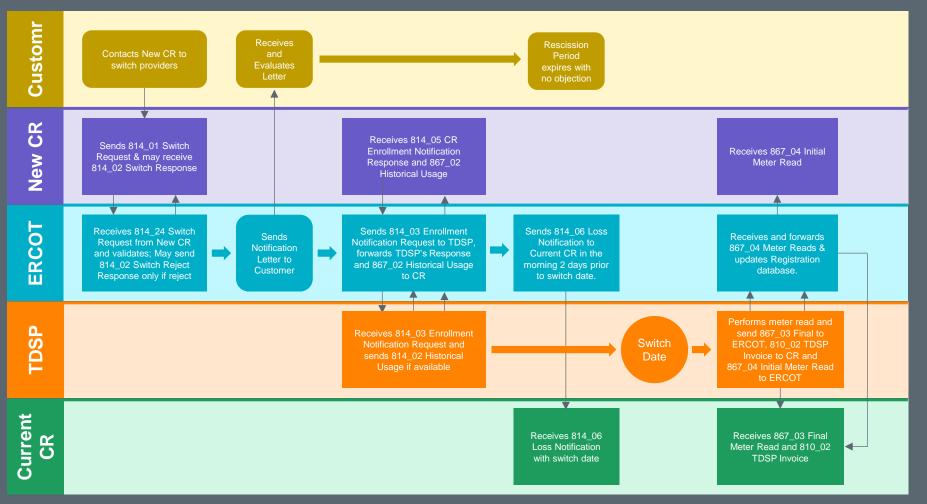


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Switch

Scenario: Customer Switch, No Customer Objection

Transactions: 814_01, 814_02 (Reject Only), 814_03, 814_04, 814_05, 814_06, 867_02, 867_03, 810_02, 867_04







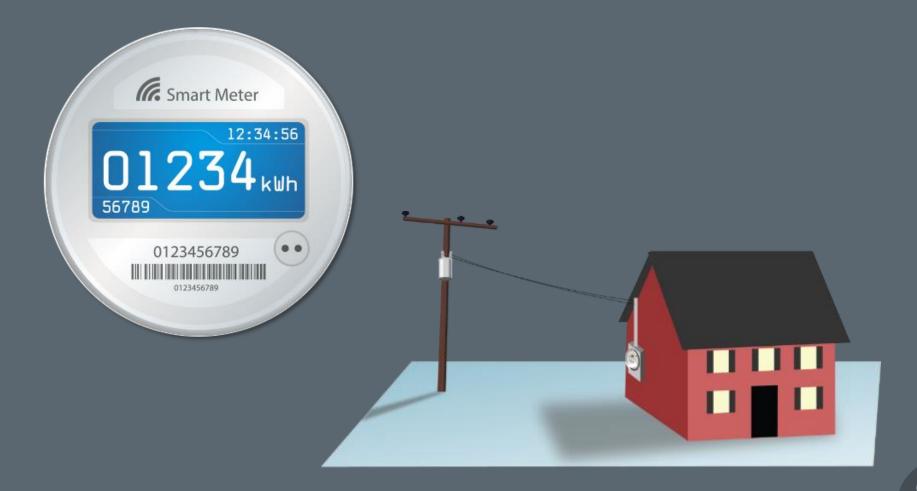
Module 4 Metering





Meter:

A device that measures electrical usage over a period of time.



Meter Math



What are we measuring?

WATTS = (Current) x (Voltage)

Ex: 100 W Light bulb

Energy = Watt-Hours Ex: (10) x (100 W Light bulbs for 1 Hour) = 1000 WHr (or 1 kWH)



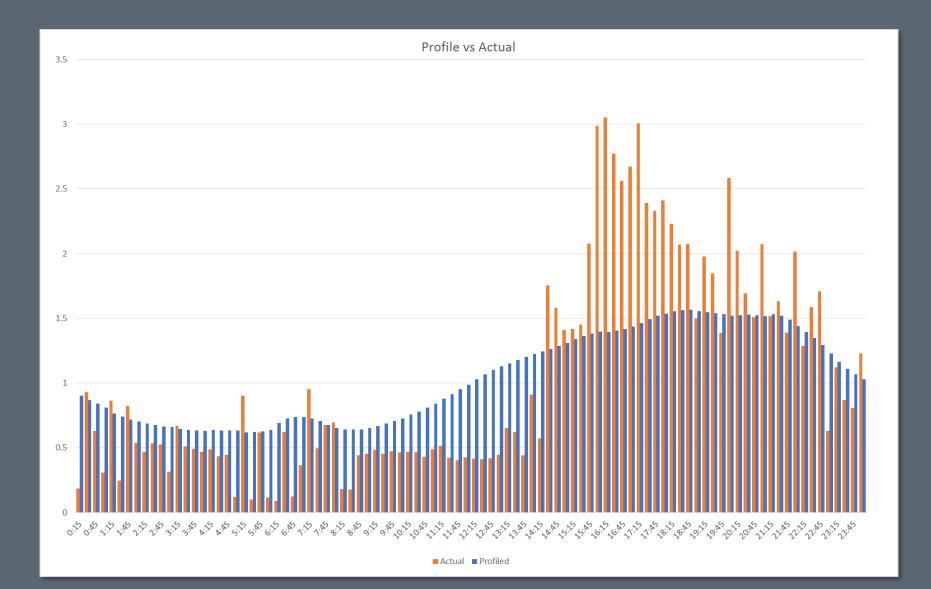


Non-IDR/Scalar/Analog Meter Characteristics

- "Traditional" Meter
- Scalar measurement for an entire month
- Data must be shaped for Wholesale Settlement
- Manual field activities











Non-Interval Data

VS

- Usage is recorded in ~30 day intervals
- Data must be shaped for 15 minute Wholesale Settlement



Interval Data

- Usage is recorded in 15 minute intervals (96 intervals per 24 hrs)
- Data is already shaped for 15 minute Wholesale Settlement

Characteristics

- Wholesale Settlement ready
- Remotely read



AMSR (≤ 200 amp) Remote connect / disconnect



Manual connect / disconnect

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Interval Data Recorder (IDR) Meter Characteristics

- Wholesale Settlement ready
- Typically reported monthly
- Predominantly on large customers
 > 700 kW/kVA demand
- May require manual field activities



AMS Benefits



AMS benefits to the market

- 99.5% competitive load using interval data
- REP and Customer can see actual usage
- More accurate CR Settlement with QSE



AMS Benefits



AMS benefits to the market

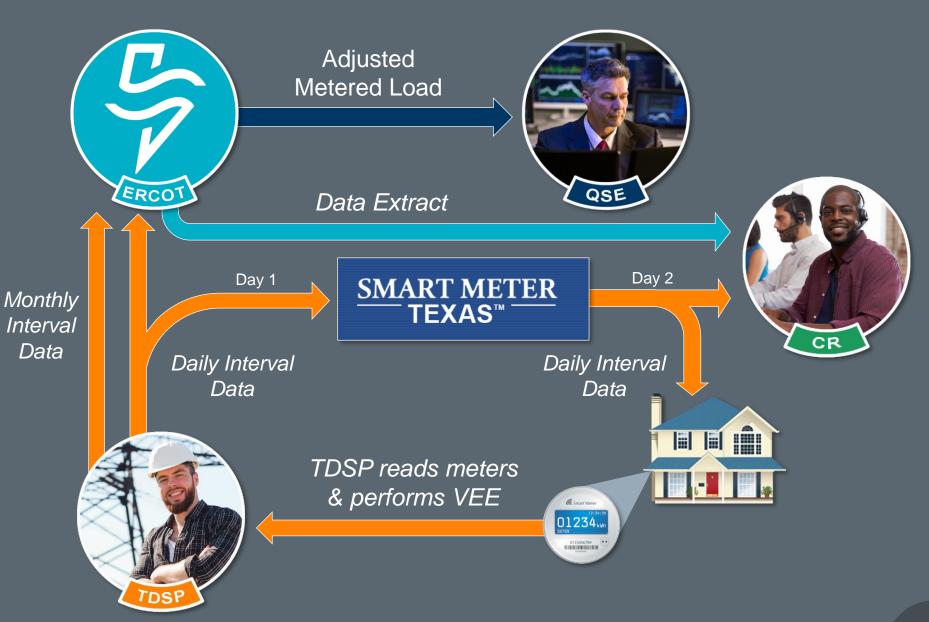
- 73% actual data used on Initial Settlement
- Faster execution of retail market processes



Enrollment type Initiating Transaction	AMS Remote (AMSR)	<u>AMS Manual</u> (AMSM)	<u>Non-AMS</u>
Move-In 814_16	Same Day	2 Business Days	2 Business Days
Standard Switch 814_01	Same Day	Same Day	Within Next 4 Business Days
Self Selected Switch 814_01	Same Day	Same Day	At Least 2 Business Days
Move-Out 814_24	Same Day	2 Business Days	2 Business Days

AMS Data Flow

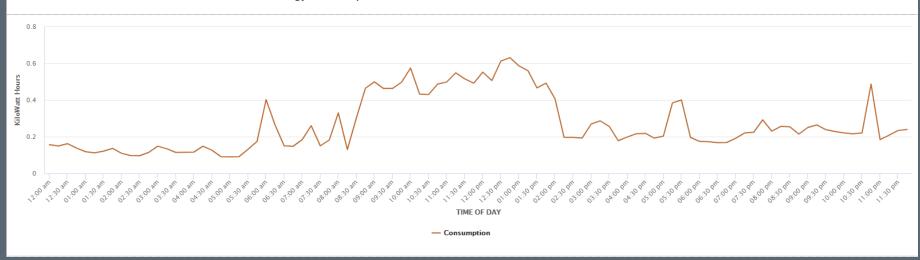




Smart Meter Texas





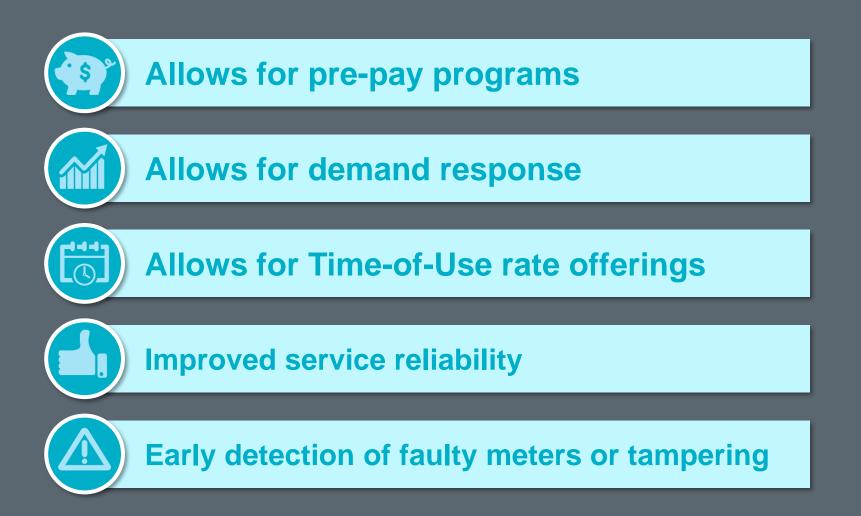


Energy Data Table (15 Minute Intervals) - Kilowatt Hours for 03/29/2021

Consumption = Consumption in excess of Generation ; Surplus Generation = Generation in excess of Consumption						
View in Excel						
Start Time	End Time	Consumption(Kwh)	Act./Est.	Surplus Generation(KwH)	Act./Est.	
01:00 am	01:15 am	0.118	Actual	0	NA	
01:15 am	01:30 am	0.112	Actual	0	NA	
01:30 am	01:45 am	0.121	Actual	0	NA	
01:45 am	02:00 am	0.136	Actual	0	NA	
02:00 am	02:15 am	0.109	Actual	0	NA	
02:15 am	02:30 am	0.097	Actual	0	NA	
02:30 am	02:45 am	0.096	Actual	0	NA	
02:45 am	03:00 am	0.114	Actual	0	NA	
03:00 am	03:15 am	0.148	Actual	0	NA	
03:15 am	03:30 am	0.134	Actual	0	NA	
03:30 am	03:45 am	0.114	Actual	0	NA	
03:45 am	04:00 am	0.115	Actual	0	NA	



Other AMS Benefits





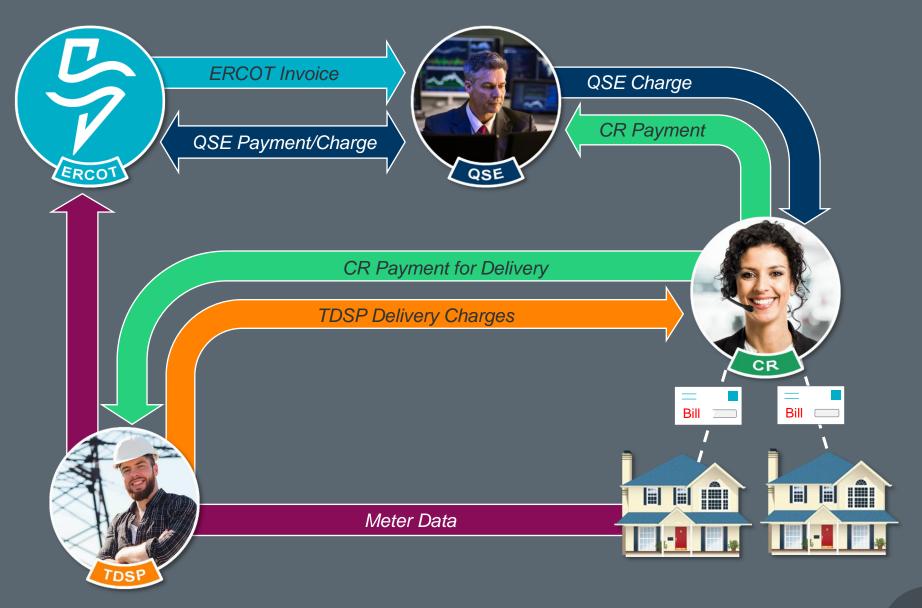


Module 5 Settlement of Retail Load



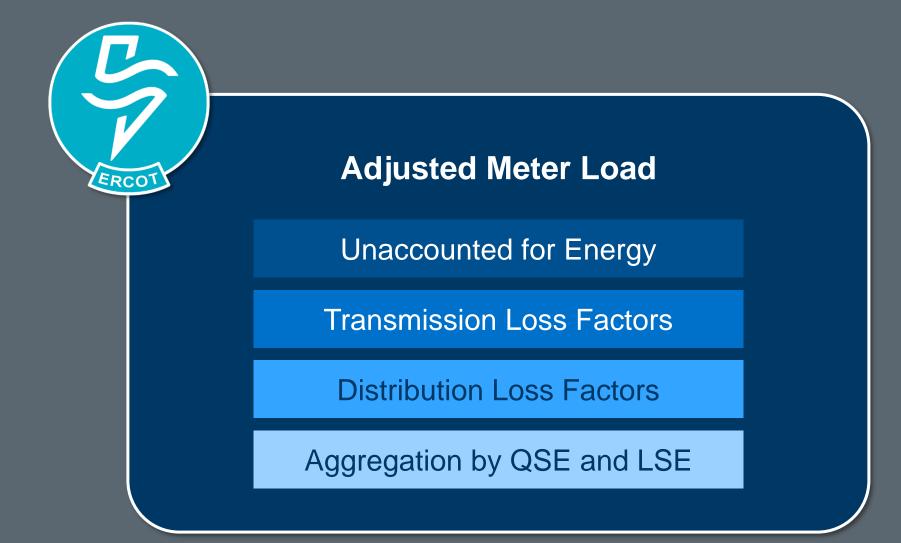
Settlement Processes

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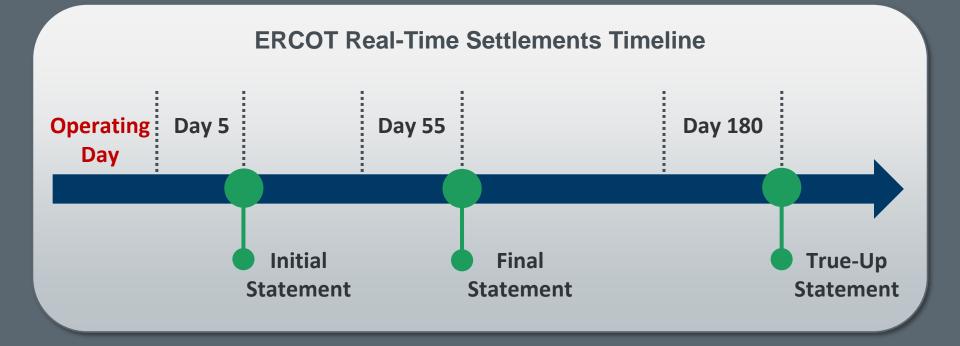


ERCOT Settles with QSE based on Adjusted Metered Load





- Each Operating day is settled a minimum of three times
- Most settlement is transacted on the Initial Settlement









Important Questions





Module 6 Data Transparency & Availability







Also available on ercot.com



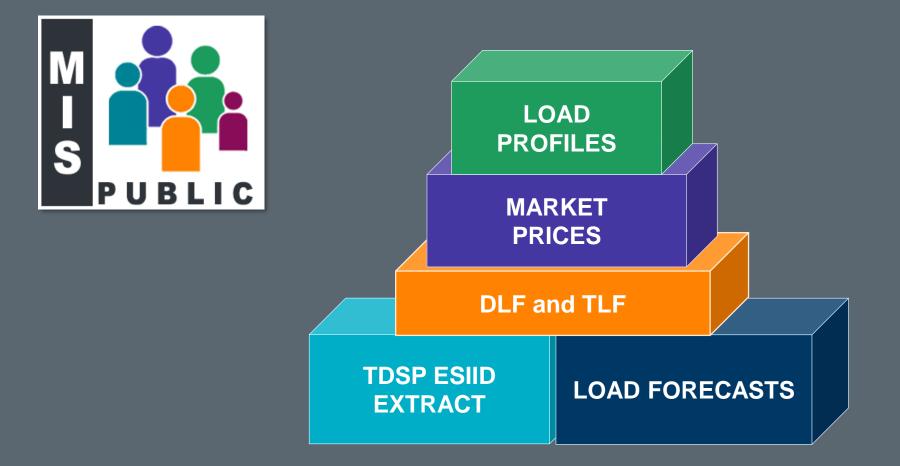
Available to all Market Participants



Only available to a specific Market Participant

Access managed by assigned roles

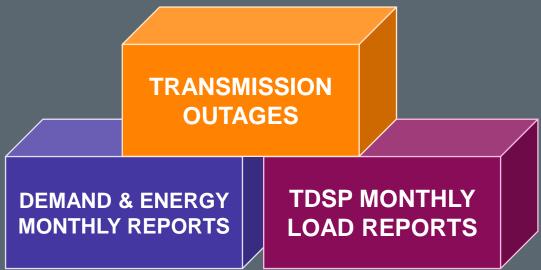




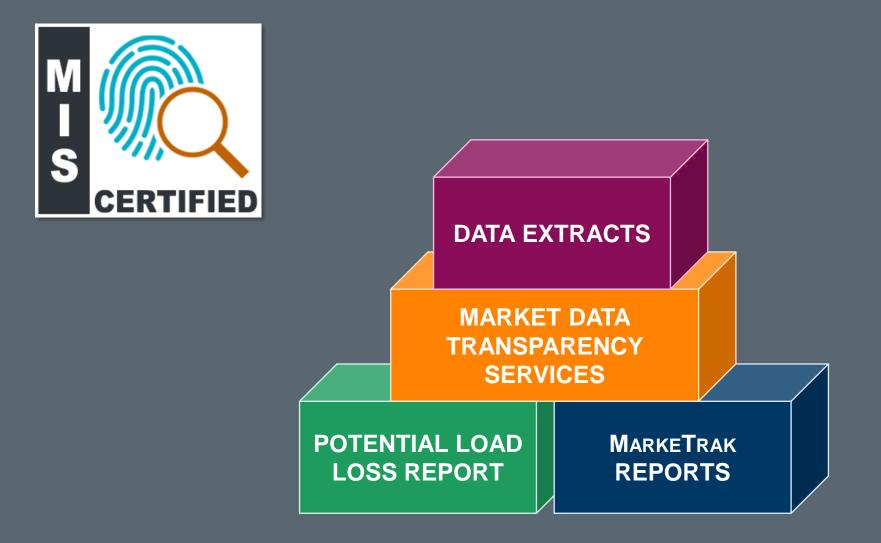
Public Data is also available on ercot.com











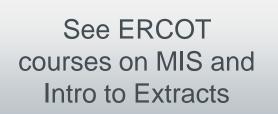
Data Extracts



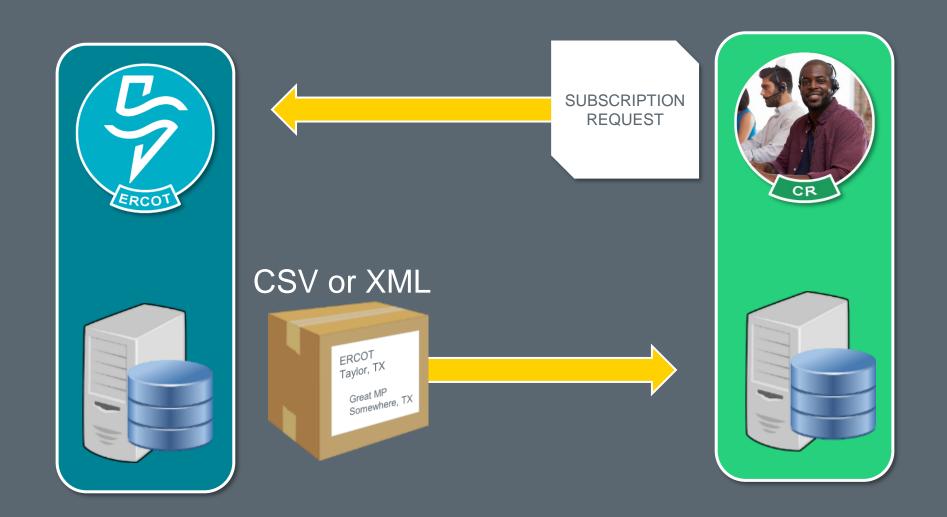
ESIID Service History and Usage Extract

- ESI ID Relationships and Characteristics
- Provides data needed to perform shadow settlements of Retail load.
 - Supplemental IDR Required Interval Data Extract
 - Supplemental AMS Interval Data Extract

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2-Day DAM and SCED Energy Curves Reports	a











1. Construct a Database

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Home > Services > Market Data Transparency Market Data Transparency As a service to the market, ERCOT publishes helpful guides on how to use data extract IN THIS SECTION	Market Notice Archives Operations Messages Power Operations Bulletins Public Notices	Registration and Qualification Congestion Revenue Rights Account Holder Credit Independent Market Information System Registered Entity Load Serving Entities Qualified Scheduling Entities Resource Entities Resource Integration	Training Course Catalog Course Recommendations ERCOT System Operator Certification Exam Market Data Transparency DDLs User Guides Digital Certificate Security Information	ormation List (EMIL).		
DDLs Data Definition Language (DDL) files are provided to Market Participants from ERCOT in order t User Guides Find helpful ERCOT guides on how to use various data extracts and applications. Digital Certificate Security Information	system Outage Notices Programs Texas Cybersecurity Monitor Program Demand Response QSE Services Available on Short Notice Renewable Energy Credit	Transmission/Distribution Service Providers Service Level Agreements	XSDs			
This page contains root and intermediate certificates and public key information needed to inte XSDs XML Schema Definitions (XSD) files are used to define extracts provided in an Extensible Marke	erface with Ef Projects					

Key Documents

MDT Missed Posting Archive 2021

Jan 3, 2022 - xlsx - 23.9 KB

MDT Missed Posting Archive 2020

Jan 4, 2021 - xlsx - 26.4 KB



2. Subscribe

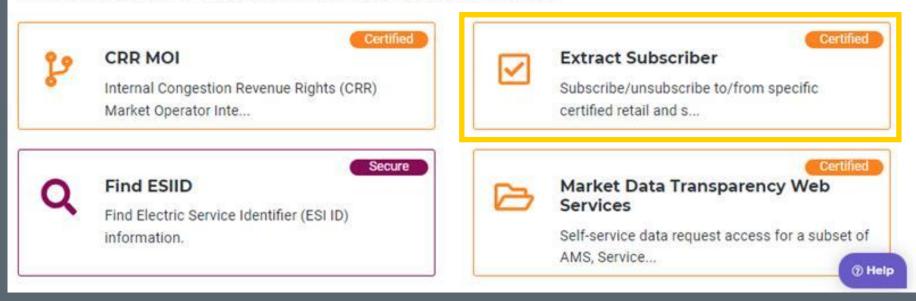
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EMIL Applications Notices

Home > Applications

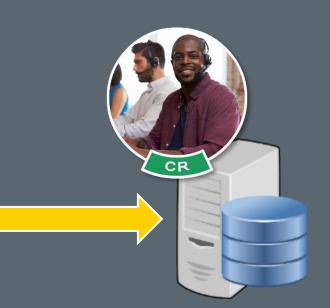
Application Library

These are the applications available based on your Digital Certificate's permissions.



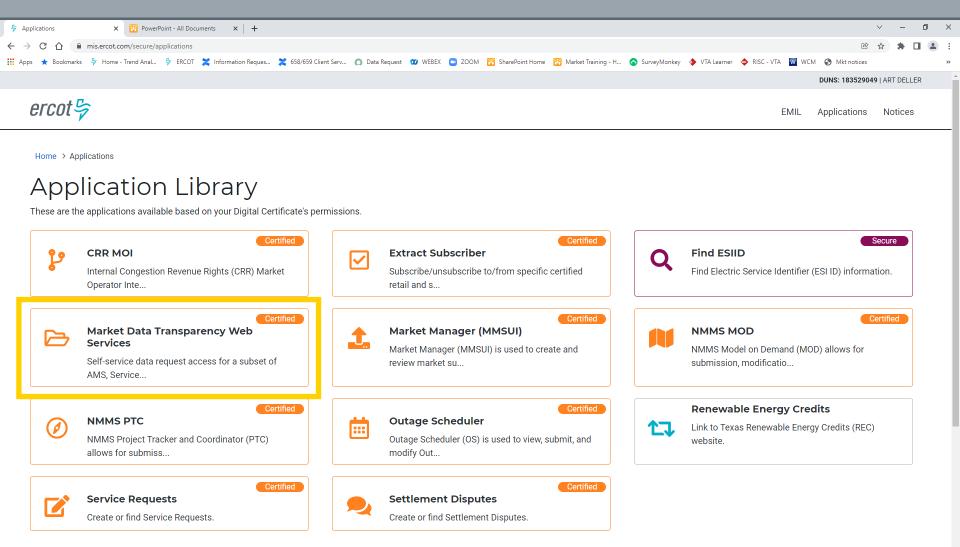
3. Download and import data

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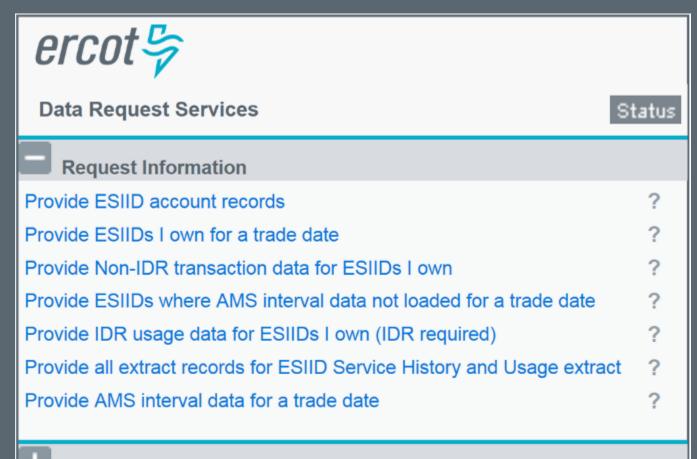
Market Data Transparency Application





⑦ Help

Provides Similar Information on Ad Hoc Basis



Transaction Information

ERCOT Market Information List



Home > EMIL

ERCOT Market Information List (EMIL)

EMIL shows all ERCOT market products required to be supplied by Protocols or other binding documents (OBDs) and details about each product, including the Report Type ID, target audience, MIS posting location, and required access roles. You can filter the products using the buttons below. You can also enter keywords in the search bar. Items that can be searched using keywords are the Product Name, Product Description, EMIL ID, Report Type ID, or applicable Rules.

Mimic		
Select a Market Participant		
View as MP		
Availability Audience Channel Posting Type Status Keyword Q		
To search for an exact keyword string, enclose search terms in quotation marks. Example: "State Estimator Load Report"		
Applied Filters None Applied		
3,512 Products ය Export the full EMIL	25 per page V Previous 1	2 3 4 5 Next
2-Day Ancillary Services Reports		
This report will contain all 48 Hour disclosure data related to DAM. The following individual files are included in the report:NP3-959-EX 48-hour Aggregate AS Offers; NI hour Self-Arranged AS; NP3-961-EX 48-hour Cleared DAM AS (previously named 48 Hour Ancillary Services Reports)	>3-960-EX 48-	
Search for Related Topic(s): Day-Ahead Market(DAM) Ancillary Services Market Results		
2-Day DAM Bids and Offers Reports		
This report will contain all 48 Hour disclosure data related to DAM. The following individual files are included in the report: NP3-954-EX 48-hour Total Cleared Energy Bi Only Offers; NP3-955-EX 48-hour Total Cleared Energy Bids and Energy-Only Offers by Disclosure Areas; NP3-962-EX 48-hour Point-to-Point Obligation Bids; NP3-963-E to-Point Obligation Bids by Disclosure Areas (previously named 48 Hour DAM Bids and Offers Reports)		
Search for Related Topic(s): Day-Ahead Market(DAM) Disclosure Reports Market Results		

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What does a CR do with all this data?





Module 7 Issue Resolution



Issue Resolution

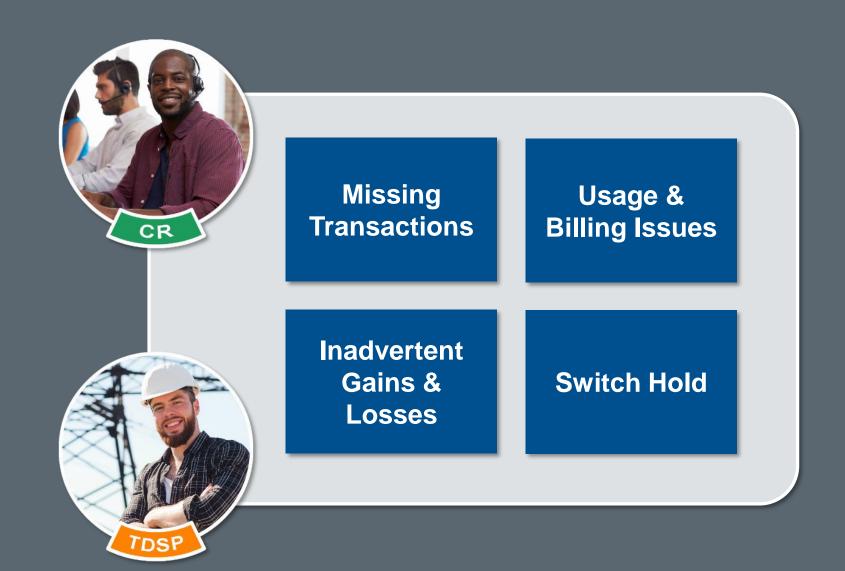
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Retail responsibilities

- Investigate customer issues
- Maintain customer records
- Verify billing accuracy

Common Issues

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What tools are available to identify & resolve issues?

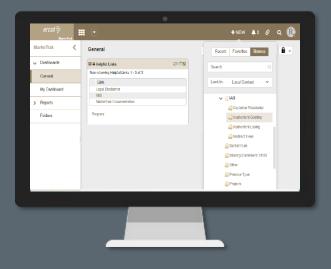


Market Participants turn to ...

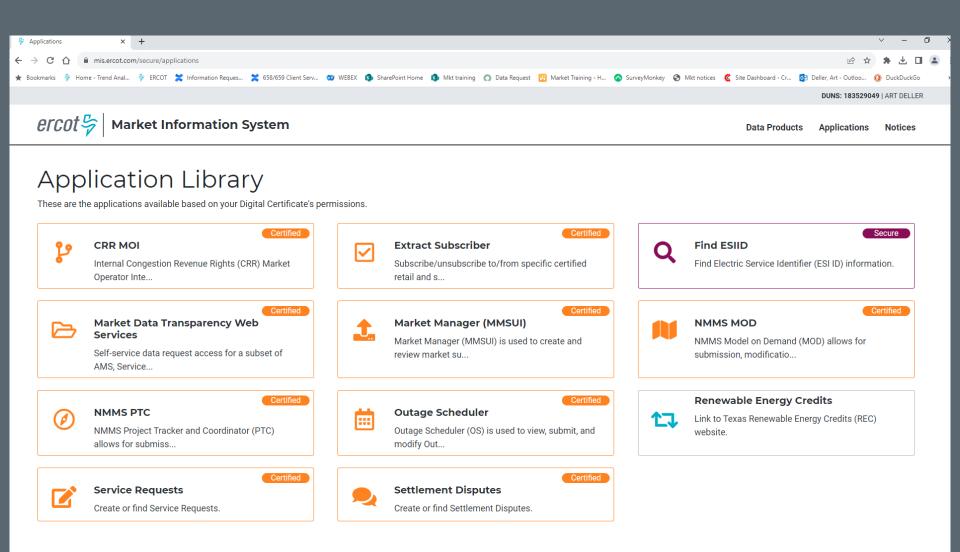
MarkeTrak

The Market issue resolution tool











Goals of MarkeTrak

• Facilitate resolution of issues between Market Participants

- Discovery and visibility
- Tracking and status
- Enable historical reporting of issues











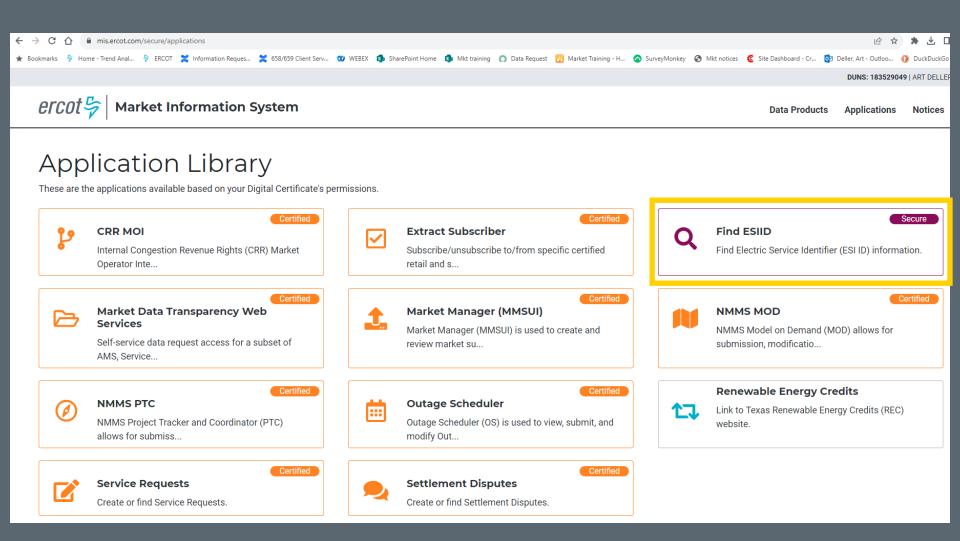
What Happened?

- Customer should be with CR #1
- Customer is now receiving bills from CR #2













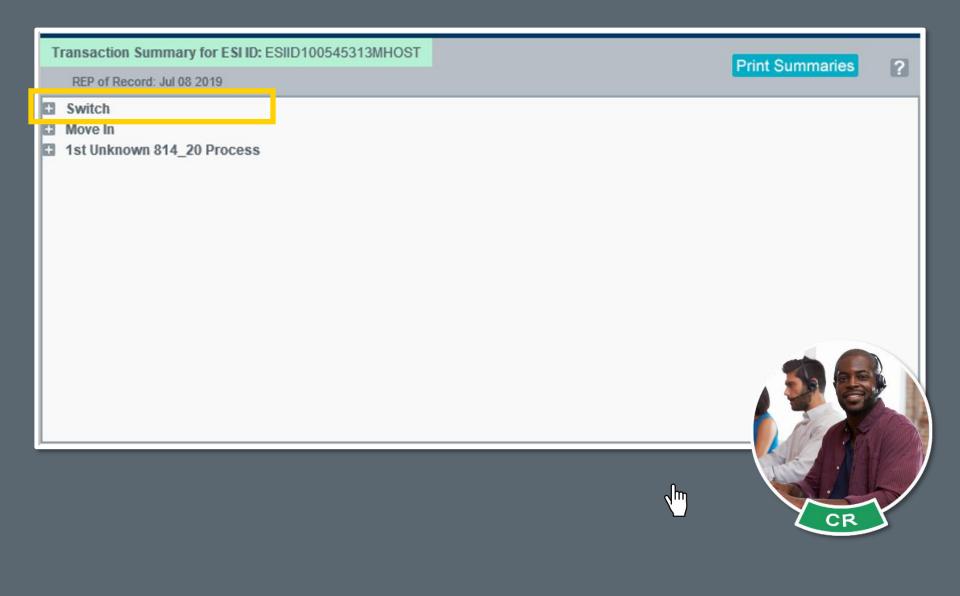
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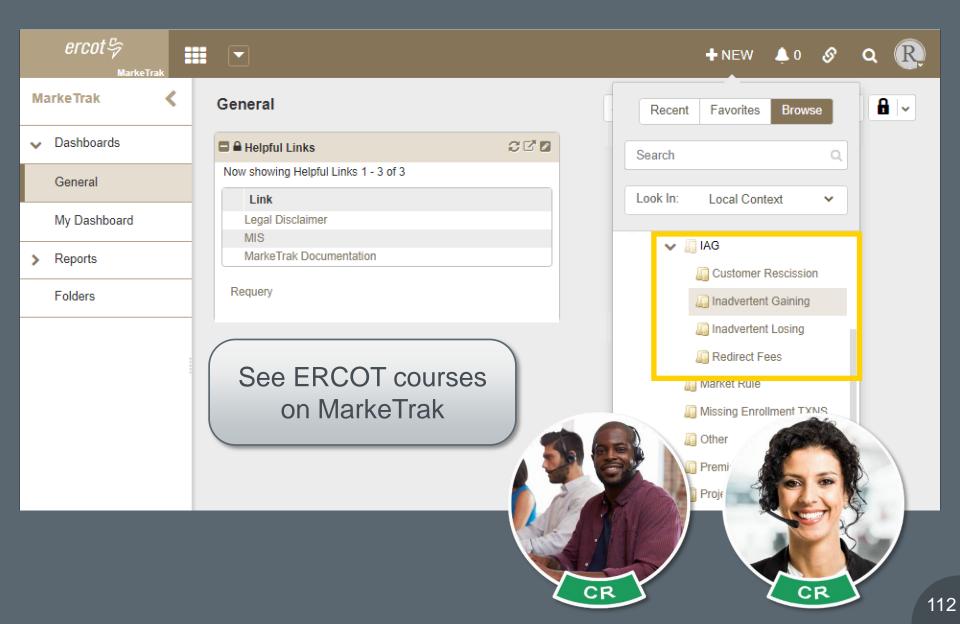






What Happened? How Is It Fixed?







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Course Conclusion



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Pre-requisites

- ERCOT Foundations WBT
- Market Participant Relationships WBT

For more info, see ...

- TxSET ILT
- MarkeTrak WBT
- LSE 201 ILT and WBT

Next Steps



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Home > Services > Training > Course Recommendations

Course Recommendations

- QSE
 Qualified Scheduling Entity

 QSE-L
 Qualified Scheduling Entity Serving Load

 QSE-R
 Qualified Scheduling Entity Serving Resources

 RE
 Resource Entity

 CR
 Competitive Retailer (Includes Retail Electric Provider and Opt-In)

 NOIE
 Municipal or Cooperative Entity serving load

 CRR
 Congestion Revenue Rights Account Holder
- TDSP Transmission and/or Distribution Service Provider

- Foundational Market Courses

	QSE	QSE-L	QSE-R	RE	CR	NOIE	CRR	TDSP
ERCOT Foundations WBT			V			✓		
Market Participant Relationships WBT			V					
Locational Marginal Pricing WBT	<			~				

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- ERCOT Client Services
 <u>Clientservices@ercot.com</u>
- ERCOT Mailing Lists http://lists.ercot.com/
- ERCOT Nodal Market Protocols
 <u>http://www.ercot.com/mktrules/nprotocols/</u>
- ERCOT Training <u>http://www.ercot.com/services/training/</u>
- Market Education Contact
 <u>Training@ercot.com</u>



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