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Public Utility Commission of Texas

Memorandum

TO: Chairman Peter M. Lake
Commissioner Will McAdams
Commissioner Lori Cobos
Commissioner Jimmy Glotfelty
Commissioner Kathleen Jackson

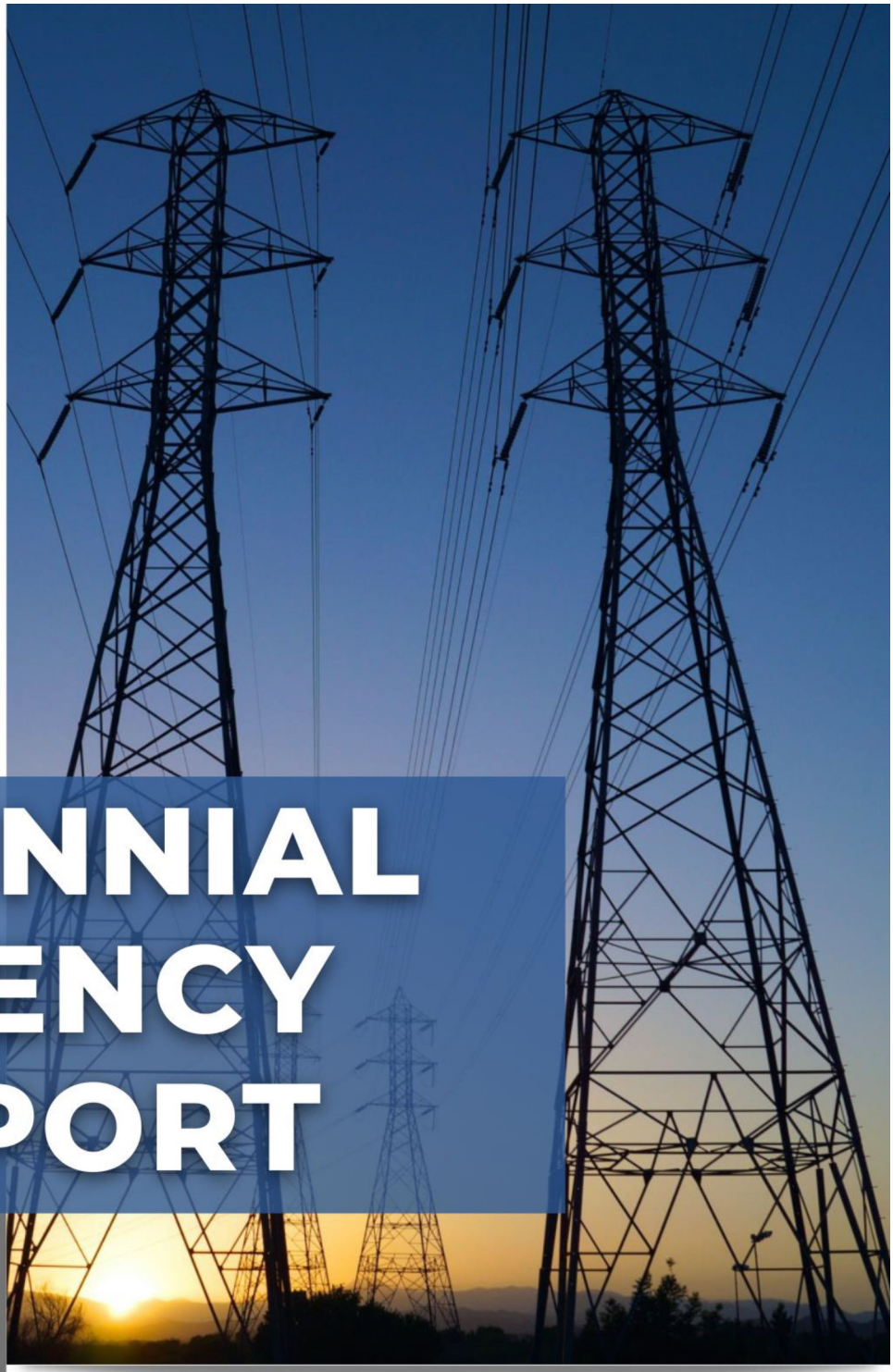
FROM: David Smeltzer, Director, Rules and Projects

DATE: January 13, 2023

RE: **Project No. 54037 – *Reports to the 88th Legislature***

Attached is the Biennial Agency Report to the 88th Legislature that was approved at the January 12, 2023 open meeting.

JANUARY 2023



BIENNIAL AGENCY REPORT

TO THE 88TH TEXAS LEGISLATURE

Introduction

What We Do

The Public Utility Commission of Texas (PUCT) regulates the state's electric, telecommunications, and water and sewer utilities, implements related legislation and helps resolve consumer complaints.

Mission

The PUCT protects customers, fosters competition, and promotes high quality and reliable infrastructure.

Purpose and History

The PUCT was established in 1975 to protect the public interest inherent in public utility rates and services. The Public Utility Regulatory Act (PURA)[1] was enacted to ensure rates and services that are just and reasonable to consumers and utilities. The Texas Legislature passed legislation in 1995 that significantly altered the PUCT's role by establishing a competitive electric wholesale market. Furthermore, the Federal Telecommunications Act of 1996 significantly impacted the PUCT's responsibilities by allowing competition in telecommunications wholesale and retail services. The Texas Legislature provided additional restructuring of the electric utility industry in 1999, opening many areas of Texas to competitive retail electric provider choice.

The PUCT's mission and focus remains on rate and service regulation, competitive market oversight and compliance enforcement of statutes and rules for the electric and telecommunications industries. Effective oversight of competitive wholesale and retail markets for electric and telecommunication companies is necessary to ensure that consumers receive the economic and reliability benefits of competition.

The PUCT initially regulated water utilities, but in 1986 jurisdiction was transferred to the Texas Water Commission. The PUCT took over economic regulation of water and sewer utilities from the Texas Commission on Environmental Quality (TCEQ) in 2013. This transfer included programs governing the regulation of water and sewer rates and services, the certification of service territories, and the ownership of water utilities.

[1] Public Utility Regulatory Act, Tex. Util. Code Ann. §§ 11.001-58.302 (West 2016 & Supp. 2018), §§ 59.001-66.016 (West 2007 & Supp. 2018) (PURA).

Guide to this Report

Statute requires several reports to the Legislature from the PUCT. For convenience, this report consolidates some of those reports into one document. Specifically, this report fulfills the following requirements:

- Legislative recommendations (PURA § 12.203), beginning on page 94;
- Scope of competition in electric markets (PURA § 31.003), beginning on page 13; and
- Scope of competition in telecommunications markets (PURA § 52.006), beginning on page 57.

Unless otherwise specified, all legislative bills discussed in this report refer to those passed by the 87th Texas Legislature, Regular Session.

Public Utility Commission of Texas

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Will McAdams, Commissioner
Lori Cobos, Commissioner
Jimmy Glotfelty, Commissioner
Kathleen Jackson, P.E., Commissioner

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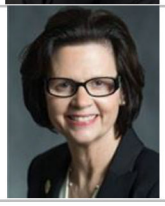
Table of Contents

Agency Highlights

During the 2021-2022 biennium, the PUCT faced significant challenges and accomplished numerous objectives in support of its mission. This chapter highlights some milestones, with more information available throughout the report.

New Commissioners

On June 18, 2021, Senate Bill (SB) 2154 was signed into law by the governor. SB 2154 amended PURA § 12.051(a) to expand the number of Commissioners serving at the PUCT from three to five. Four Commissioners were appointed in 2021, and on August 5, 2022, Kathleen Jackson was appointed as the fifth Commissioner of the PUCT.

	Peter M. Lake Chairman Appointed April 12, 2021
	Will McAdams Commissioner Appointed April 1, 2021
	Lori Cobos Commissioner Appointed June 17, 2021
	Jimmy Glotfelty Commissioner Appointed August 6, 2021
	Kathleen Jackson, P.E. Commissioner Appointed August 5, 2022

Reorganization

Since January 2021, the PUCT has undergone several changes to better serve Texans and address market, compliance, and rulemaking issues that arose after Winter Storm Uri. The following are the organizational changes:

Market Analysis

The Market Analysis division was expanded to include an attorney and an engineer to help manage the complex legal and technical issues facing the competitive Texas electricity market. This legal and engineering expertise allows Market Analysis to provide comprehensive review of topics including new technologies entering the market, complaints against the Electric Reliability Council of Texas (ERCOT), ERCOT Protocol revisions, and compliance with PUCT rules and orders.

Division of Compliance and Enforcement

In July 2020, the PUCT's enforcement staff merged into the Legal Division to make more efficient use of agency resources. At that time, the Legal Division's larger team of attorneys offered more flexibility in addressing various legal issues. After Winter Storm Uri, the PUCT determined a division solely committed to ensuring compliance with PUCT rules was appropriate. The Division of Compliance and Enforcement (DICE) was created in September 2021. DICE investigates and enforces potential violations of laws and rules regulating the electric, water, and telecommunications utility industries that have the potential to impact the broader public interest. DICE also participates directly in informal and formal proceedings related to PUCT rule violations and settlements for administrative penalties.

Rules and Projects Division

In September 2021, the Rules and Projects Division (RAP) was created to address the large number of rulemakings required to implement legislation from the 87th Legislative Session. RAP ensures consistency and compliance with the Texas Administrative Procedure Act and allows subject matter experts in other divisions to focus on substantive policy implementation.. RAP also assists in drafting agency reports, performs research on current legal issues, and supports improvements to agency processes.

Office of Public Engagement

In August 2022, the Office of Public Engagement (OPE) was created to make the PUCT more accessible for all Texans. OPE serves as a resource to explain PUCT administrative processes and instruct Texans on how to participate in rulemakings, rate cases, hearings, and other important activities the PUCT regularly performs.

New Initiative: Multi-Language Team

In February 2021, a multi-language team was created to enhance communication with Spanish-speaking consumers. The agency's Customer Protection Division (CPD) has traditionally employed bilingual staff who are focused on assisting consumers with utility-related concerns. The multi-language team adds subject matter experts in utility regulation and attorneys as a cross-divisional initiative. The team reviews PUCT documents to reflect the language diversity of the State. The multi-language team also ensures new and existing forms and notices used or received by utility consumers are in plain English and Spanish and therefore are understandable to consumers.

New Initiative: Enhanced Communications

In January 2022, the PUCT began an effort to dramatically improve its external communications with the public, regulated industries, stakeholder groups, and media by authorizing the expansion of the agency's Communications team. As of November 2022, the role has grown from a single full-time employee to four positions. The team now includes a director of communications, a web and social media content creator, a web administrator, and a press officer. The expansion of the team has significantly increased the PUCT's social media activity and outreach by directly engaging with Texans through consumer advocacy and assistance-related content, as well as real-time updates during critical events. The team has enhanced interaction with news media and initiated website upgrades to improve consumer accessibility to PUCT content.

Agency's Actions in Response to Winter Storm Uri 2021

In February 2021, Winter Storm Uri produced an extreme cold weather event across the Eastern, Central, and Southern United States. Major load centers across Texas endured sustained and severe low temperatures, dropping to -2°F in Dallas, 13°F in Houston, 12°F in San Antonio, and 6°F in Austin. On the evening of February 14th, consumers started experiencing service outages as the extreme cold, wind, ice, and snow impacted local electric infrastructure. Electric generation units also experienced forced outages as wind turbines froze and thermal generators tripped offline due to weather or limited fuel resources. On Monday, February 15th at 12:15 a.m., ERCOT declared an Energy Emergency Alert (EEA) Level I event because operating reserves were less than 2,300 Megawatts (MW) and not expected to recover within 30 minutes. The event progressed quickly. By 1:20 a.m., ERCOT had declared an EEA level 3 event and ordered firm load shed that was implemented by electric utilities with rotating outages. Rotating outages are controlled, temporary interruptions of electric service that are required in extreme circumstances to balance supply and demand on the electric system. Firm load shed is involuntary load shed that the end-user did not initiate or previously contract for to reduce load. The controlled outage orders remained in place until 12:42 a.m. on Thursday, February 18. However,

some consumers remained without power because of storm-related damage to transmission and distribution infrastructure. ERCOT did not return to normal operations until 10:35 a.m. on Friday, February 19.

Winter Storm Uri greatly impacted the electric and water industries under the PUCT's regulatory jurisdiction and the consumers it's charged to protect. The PUCT has been working to address problems that arose during and after the storm. These efforts include process improvements, policy initiatives, and increased collaboration with other state agencies and ERCOT. The PUCT has also worked to implement legislation enacted in response to the storm. Key efforts in the PUCT's response are highlighted below. Specific long-term reforms related to ERCOT reliability operations and market design are detailed in the section titled Electricity: Resiliency and Market Design.

The PUCT held five emergency open meetings to address Winter Storm Uri-related issues between February 15th and February 21st. During these meetings, the PUCT issued a series of orders focused on wholesale market pricing issues in ERCOT. The orders also granted ERCOT some discretion to resolve financial obligations resulting from the event. The PUCT took other actions including ordering transmission and distribution utilities (TDUs) to rotate consumers when subject to load shed obligations and providing enforcement discretion for load resources deployed during the event who were unable to follow standard processes for restoring operations. The PUCT also directed ERCOT to ensure, through its Protocols, that real time energy prices reflect the value of any firm load shed during energy emergencies (EEA 3) to provide effective economic signals to the market. Financial issues have been addressed through the adoption of securitization orders as required by SB 3 and contested cases before the PUCT and bankruptcy courts.

The PUCT also addressed problems faced by consumers during Winter Storm Uri through emergency orders. Good cause exceptions were granted to certain consumer protection rules to provide relief to electric, water, and sewer consumers affected by Winter Storm Uri. The PUCT suspended disconnects for nonpayment, waived late fees, and reaffirmed the requirement, established in response to the COVID-19 pandemic, to offer deferred payment plans to consumers. For electric consumers in areas open to competition, the PUCT allowed additional Retail Electric Providers (REPs) to volunteer to offer Provider of Last Resort (POLR) service. This helped provide retail market stability and guarantee competitive rates to affected consumers as financially distressed REPs were no longer able to provide service. Many of these actions have been codified in rulemakings to provide immediate relief in any future emergency events.

The PUCT opened its consumer assistance call center on Sunday, February 14, 2021, operating the phones from 2 – 7 p.m. This was the first activation of the call center on a weekend in the PUCT's history. PUCT staff took calls again on Monday, February 15th, the President's Day

holiday. Staff from across the agency filled in to triple the size of the call center. From February 14th to February 19th, the call center received 4,107 calls, or about a typical week's worth of calls each day.

Immediately following the storm, PUCT staff began evaluating ERCOT governance. The efforts looked at the PUCT's complete authority over ERCOT and focused on improvements to communications, governance, and cooperation between ERCOT, Inc. and the PUCT. Several touchpoints for increased engagement have been established, including standing calls between PUCT and ERCOT leadership. ERCOT has also dedicated specific subject matter experts to work with PUCT staff, including a Vice President of Corporate Strategy & PUCT Relations as the primary contact and facilitator. SB 2 enacted major reforms at ERCOT including establishing a new board of directors independent of market interests. SB 2 also requires the PUCT to explicitly approve all rules adopted by ERCOT before the rules may take effect. The PUCT has approved bylaws addressing the revised board composition along with 127 market rule revisions. The PUCT has also directed ERCOT to refine its roles and responsibilities at the State Operations Center when activated for an emergency event.

Additional efforts have focused on gas-electric coordination, including engagement with the Railroad Commission of Texas (RRC) and formalizing the Texas Energy Reliability Council (TERC). Prior to Winter Storm Uri, TERC was an informal body that included leadership from the PUCT, RRC, and ERCOT, as well as industry representatives. SB 3 formalized TERC to ensure that the energy and electric industries in Texas meet high priority human needs and address critical infrastructure concerns. TERC also enhances coordination and communication in the energy and electric industries. TERC is comprised of state agency leadership, including the PUCT Chairman, and energy industry leaders appointed by these state agencies. As required by SB 3, the PUCT made 8 appointments to TERC on October 19, 2021. The appointees represent numerous sectors of the electricity market, including transmission and distribution, dispatchable electricity, renewable electricity, electric storage, retail electric providers, and municipal and cooperatively owned utilities. The PUC's Chairman, staff, and appointees actively participated in the TERC process and provided valuable contributions to TERC recommendations report that was finalized in November 2022.

PUCT and RRC have also worked together on legislative implementation, including rules regarding critical natural gas facilities and the development of the Texas Electricity Supply Chain Map. PUCT has also directed ERCOT to create a firm fuel product and to ensure that a facility producing natural gas critical to electricity generation does not volunteer to reduce power usage during emergency events.

Winter 2022

Winter 2021-2022 marked the first cold weather season following Winter Storm Uri. In preparation, PUCT implemented targeted reforms and worked closely with ERCOT on a reliability-focused operating approach. ERCOT advocated for a revised 2022 Ancillary Services Methodology that increased the minimum amounts of ancillary services it would procure and moved forward the timelines for deployment. It also noticed the market of its intention to bring more generation reserves online and deploy them earlier if needed to ensure supply would meet demand. Following adoption of the PUCT's weatherization rule, ERCOT conducted 302 inspections of generating units and inspected 22 transmission facilities for weatherization compliance starting in November 2021. ERCOT also reviewed the availability of on-site fuel supplies.

The grid performed well. There were two cold weather events in February, which caused tight conditions, but no EEAs were declared. A single advisory notice was issued for a Winter Weather Watch spanning February 2 to February 6. Peak demand for Winter 2022 was 68,954 megawatts (MWs).

Summer 2022

Summer 2022 saw record demand on the ERCOT system. The all-time ERCOT system peak demand record was broken 10 times in total, ultimately hitting 80,038 MW on Wednesday, July 20. The grid also set a new unofficial weekend peak demand record of 77,359 MW on Saturday, July 9. Working with the PUCT, ERCOT managed tight conditions through reliability actions designed to better capture and mitigate risks. The PUCT amended 16 TAC § 25.507, the Emergency Response Service (ERS) rule, to provide ERCOT flexibility in the implementation and administration of the program. Other tools employed included increasing ancillary service quantities and committing more generation resources to meet Physical Responsive Capability (PRC) targets on high variability days.

The grid performed well. Despite repeated instances of tight conditions, no EEAs were declared. ERCOT did issue two watch notices along with conservation appeals on July 11 and July 13. An Advisory due to PRC below 3000 MW was also issued on July 13. Ancillary services and ERS were deployed in line with PUCT directives to utilize the programs prior to reaching emergency conditions.

ELECTRICITY

Texas is the only state served by all three major electricity interconnections in the United States: The Eastern Interconnection, the Western Interconnection, and ERCOT. Power is generated from fuel sources such as natural gas, coal, nuclear power plants, solar, wind, hydroelectric dams, and batteries. In Texas, retail consumers receive service from competitive retail electric providers (REPs); investor-owned vertically integrated utilities; electric cooperatives; and municipally owned utilities (MOUs).

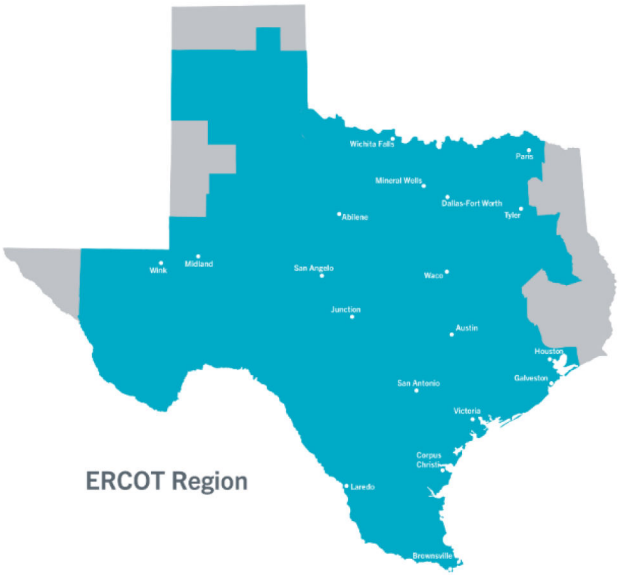


Figure 1. The area covered by the Electric Reliability Council of Texas (ERCOT)

In the El Paso area, the Panhandle, Northeast Texas, and Southeast Texas, more than 1.2 million consumers receive their power from one of four investor-owned, vertically integrated electric utilities. These utilities are outside the ERCOT grid and connect to other states. The PUCT regulates the bundled retail rates of these utilities and local reliability. The Federal Energy Regulatory Commission (FERC) has regulatory jurisdiction over interstate wholesale power sales and interstate transmission rates for these utilities.

Throughout the state, MOUs and electric cooperatives serve approximately 4.7 million homes and businesses in Texas. There are 75 member-owned electric cooperatives in Texas, governed by elected boards. Additionally, 72 municipalities own and operate utilities, including Austin Energy and CPS Energy in San Antonio. The PUCT does not have retail rate-setting jurisdiction over electric cooperatives or MOUs. However, the PUCT does have limited appellate authority for the retail rates of the MOUs. Through its authority over wholesale transmission rates, the

PUCT sets the wholesale transmission rates of MOUs and electric cooperatives in ERCOT and regulates reliability issues.

ERCOT Region

The ERCOT region features a competitive retail and wholesale market. Consumers within ERCOT that are not served by an MOU or electric cooperative have a choice of REP in the competitive retail market. REPs that serve these consumers buy power in the competitive wholesale market, in which power generation companies, MOUs, electric cooperatives, and traders in the ERCOT region all participate. Electricity delivery by transmission and distribution utilities (TDUs) remains fully regulated.

ERCOT, Inc. is the regional transmission organization (RTO) and independent system operator (ISO) for the ERCOT region, which is fully contained within the state. ERCOT manages the flow of electric power to more than 26 million end users and 90% of the electric load in Texas. ERCOT also performs the financial settlement of the wholesale electric market within its region. ERCOT is governed by an independent board of directors and subject to the oversight of the PUCT and the Legislature.

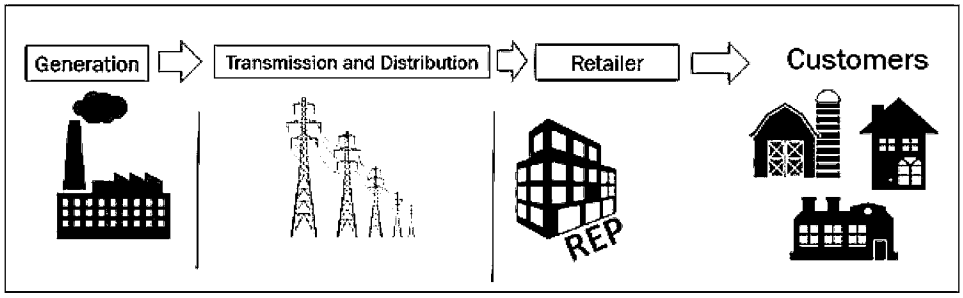


Figure 2. The path of electricity from generation to consumption.

Competitive Retail Market

Retail Electric Providers

Texans in areas open to retail competition choose electricity products from a variety of REPs. A REP buys power from power generators and sells it to its consumers. A REP also manages the retail relationship with the consumer, including billing and customer service. Nearly all eligible consumers have exercised the right to choose their electricity provider since the market opened. [2] During the 2021-22 biennium, the number of REPs and offers in the competitive market areas of

[2] *Provider of Last Resort Counts, ELECTRIC RELIABILITY COUNCIL OF TEXAS*, https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.ercot.com%2Ffiles%2Fdocs%2F2022%2F03%2F01%2FObserved_Selection_of_Electric_Providers_November_2022.pptx&wdOrigin=BROWSELINK (last updated November 2022).

ERCOT has increased. Thirty-eight new REPs have been certificated by the PUCT and 19 REPs have relinquished their certificates to operate in Texas. There are currently 138 REPs authorized to sell electricity in the Texas competitive market.

Each REP can offer a wide variety of plans to suit consumer preferences. As of September 2022, plans are available that offer 100% renewable electricity, time-of-use pricing such as free electricity on the weekends, and prepaid plans. Contract terms vary from one month up to 60 months.

The variety of plans available in the competitive retail market allows consumers to choose a plan that best fits their needs and budget. As of March 2022, REPs in the competitive market serve 6,869,461 residential premises, 1,175,922 commercial premises, and 4,715 industrial premises.[3] The average prices available on powertochoose.org for a 12-month, fixed-rate plan across the TDU service territories in November 2022 ranged from 14.83¢ per kilowatt hour (kWh) to 16.93¢ per kWh.

Electricity Brokers

Electricity brokers are relatively new entrants into the competitive market and the services that they offer continue to evolve as the market matures. These electricity brokers do not sell electricity to consumers, and a consumer does not need to have a relationship with an electricity broker to receive electric service. Most electricity brokers provide shopping services for consumers so that they may switch electricity plans among REPs. They also provide supplementary services to their customers, such as energy management services or bill management services. The PUCT gained regulatory authority over brokers with the passage of SB 1497 (86th Legislature, Regular Session). As of November 2022, there are 1,287 active brokers registered with the PUCT.

Transmission and Distribution Utilities (TDUs)

Within the ERCOT competitive market, an investor-owned TDU is responsible for maintaining the infrastructure that delivers power to the end-use consumer. This infrastructure includes high-voltage transmission lines, substations, local distribution lines, and the consumer's meter. TDU rates are regulated and set by the Commission. TDUs are responsible for managing the reliability of their transmission and distribution system. A TDU delivers electric power to the end-use consumer but does not sell power to the end-use consumer. In the ERCOT competitive market, the TDU is responsible for the physical infrastructure, and the customer relationship is managed by a REP.

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[3] *POLR Counts Energy 2020 Reporting Final,* PUBLIC UTILITY COMMISSION OF TEXAS http://www.ercot.com/mktinfo/retail (March 2022)

Competitive Wholesale Market

Participants in the ERCOT wholesale market own or operate more than 1,030 generation units producing power for 358 load serving entities (LSEs). Owners and investors in power plants decide to invest in or retire units based on expected costs and profits. A robust stakeholder process at ERCOT implements the policies set by the PUCT for the wholesale market. The ERCOT stakeholder process, with oversight by the ERCOT Board of Directors and PUCT, continues to implement changes to improve wholesale market efficiency.

Wholesale Market Prices

Wholesale market prices are charged by generators for electric power they produce. Electric power is sold in the wholesale market to buyers, who may be LSEs, like REPs, electric cooperatives, or MOUs. LSEs sell the power at a retail rate to their end-use customers. Most end-use consumers do not pay wholesale prices. Consumers pay retail prices determined by the contract with their provider before the energy purchase in the wholesale energy market. House Bill (HB) 16 banned retail rates that pass real time, wholesale prices directly to residential and small commercial consumers. Larger consumers may choose such rates but must specifically acknowledge the potential risks.

Fuel costs for generation units are a primary driver of electricity costs. Most generation units are fueled by natural gas. There are still coal-fueled plants in Texas, but the number of those plants and the megawatts they produce are steadily declining.

Transmission costs are another factor in electricity costs. Consumers must pay for the poles and wires that transport electricity from point to point. Transmission congestion, when transmission lines have reached their capacity limit to deliver power safely from one point to another, can have a significant impact on cost. If the transmission lines necessary to deliver power from the lowest cost power plant is already at maximum capacity, then electricity must be purchased from a more expensive plant where transmission capacity is available to deliver the power where it is needed. This difference in the prices is the cost of transmission congestion. The cost of transmission congestion is a signal to the market that generation should be added closer to load to increase grid efficiency and reduce the congestion.

Increases in energy from renewable resources (wind and solar in particular) also have an impact on the average wholesale price of electricity. These renewable resources have a $0 fuel cost as compared with thermal resources that purchase fossil fuels to generate electricity. The growing prevalence of energy delivered from renewable resources has driven down average wholesale prices because more electricity is being created from zero-cost fuel sources.

Unlike ERCOT, most electricity regions in the United States have capacity markets in addition to their wholesale energy markets. This means consumers, in addition to buying electricity, must

also pay generators for electricity capacity that is committed to be made available at a specified time in the future. The amount of purchased capacity is based on the estimated peak demand on the future system plus an extra amount intended to serve as a buffer. In contrast, in an energy-only market like ERCOT, generators are not paid for excess capacity beyond that reserved for reliability-related services. In ERCOT the Operating Reserves Demand Curve (ORDC) adder supplements real-time energy prices to reflect the increased value of dwindling, real-time operating reserves. The ORDC acts as another opportunity for generators to recover their costs and realize profits.

LSEs generally do not buy electricity in real-time through the ERCOT wholesale market. Instead, they enter private contracts with generators. The risk of incurring high prices in the wholesale market provides an incentive for LSEs to "hedge" by negotiating with generators to buy power in advance of real-time operations. These advance purchases are a stable source of revenue for the generators and ensure the LSE is not subject to the price volatility of the real-time market. LSEs are also incentivized to request conservation by their consumers to ensure they do not have to buy power from the real-time market when prices are high, which typically occurs when power is scarce.

Meeting Electricity Demand

ERCOT operates an energy-only market, meaning that the PUCT does not set a mandatory reserve margin. Instead, generators in ERCOT decide whether to participate in the market based on their perception of its profitability. ERCOT currently produces two reports that assist ERCOT in planning for and managing electricity demand.. These are known as the Capacity, Demand, and Reserves Report (CDR) and the Seasonal Assessment of Resource Adequacy (SARA). These reports are important because they indicate estimated new generation needed to serve future load and can be used to plan for the risk of outages going into the upcoming season. ERCOT publishes the CDR twice a year for the summer and winter seasons of the following year. The CDR details generation capacity that is either currently online or has met certain financial milestones and is expected to be online in the coming years. This amount of total electric capacity is then compared to the forecasted highest (or peak) demand for electric power by consumers. The difference between the amount of expected available capacity and the amount of forecasted peak demand is the calculated annual reserve margin (generation in excess of forecasted demand). Similarly, the SARA is published for each season, with a final report on expectations for the upcoming season and a preliminary report on the following season. The SARA is an overview of available generation capacity, demand scenarios, and weather conditions that could cause reliability events on the system.

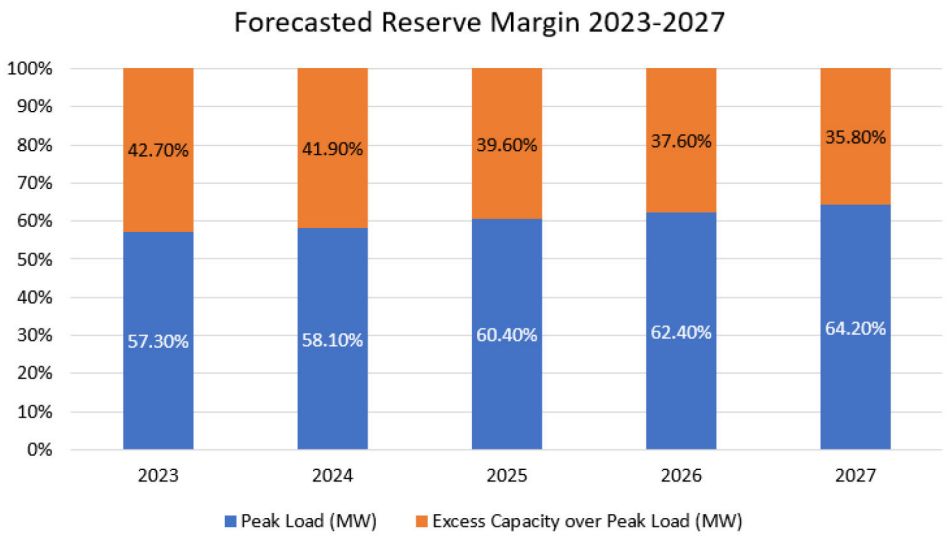

Figure 3. Forecasted Reserve Margin 2023 to 2027 from ERCOT Capacity Demand and Reserve Report May 2022

Historically, electricity demand is highest in the summer, largely due to the increased need to power air conditioning. Beginning with Summer 2021, the PUCT expanded its public communications for seasonal preparedness by holding press conferences jointly with ERCOT leadership to highlight grid reliability efforts. These events also discuss ERCOT's SARA and CDR reports. These press conferences are held before summer and winter seasons, which historically are the seasons when electricity demand is highest. These press conferences are in addition to seasonal preparedness efforts, begun in 2017 to evaluate potential electricity demand against expected unit retirements and delivery constraints in the coming summers. The PUCT works in close coordination with ERCOT and the RRC to facilitate communication among electricity market participants and fuel suppliers to protect and strengthen system reliability. ERCOT also hosts an annual summer preparedness communication workshop where LSEs, generators, TDUs, other market participants, and ERCOT discuss potential communication issues.

Finally, ERCOT has worked to improve market transparency on rescheduling of planned outages by the operator and to ensure that the market better understands its forecasting tools. The PUCT continues to monitor these issues to ensure the health of the market and system reliability.

The market continues to evolve, and the PUCT is conducting a market design review, particularly as changes in fuel sources affect system management. For example, renewable resources have grown because of growth in consumer demand for renewable energy and continued federal subsidies. The growth of intermittent renewable generation in ERCOT has added to the complexities of ERCOT's market and system operations. Peak net load, which measures consumer demand less the contribution from intermittent renewable resources, is becoming an increasingly important metric for ERCOT.

Independent Market Monitor (IMM)

PURA § 39.1515 requires the PUCT to contract with an independent entity to function as the wholesale electric market monitor. Potomac Economics, a consulting firm, currently serves as the independent market monitor, or IMM. The IMM provides PUCT staff with information on potential instances of market power abuse as they occur. The IMM also reports annually on the state of the ERCOT market. This report examines whether market power exists and whether attempts have been made to exercise it. The IMM report identifies market inefficiencies and recommends improvements. In addition, the IMM recommends changes to ERCOT Protocols and processes to improve market efficiency. In both the 2020 and 2021 *State of the Market Reports* for the ERCOT electricity market, the IMM found that the ERCOT wholesale market performed competitively.

Outside ERCOT: Vertically Integrated Utilities

Electric utilities outside of the ERCOT region remain vertically integrated. The utility is responsible for owning generation, transmission, and distribution assets and selling power to end-use consumers. Those utilities are El Paso Electric Company, Southwestern Public Service Company (SPS/Xcel), Southwestern Electric Power Company (SWEPCO), and Entergy Texas, Inc. The PUCT sets retail rates for the vertically integrated utilities. Consumers served by these utilities do not have a choice of provider.

FERC has regulatory jurisdiction over wholesale power transactions and transmission rates for vertically integrated utilities in the non-ERCOT areas of Texas. The Legislature has granted the PUCT authority to retain outside counsel and consultants to help protect the interests of Texas consumers and stakeholders. These consultants participate in a variety of activities before FERC, including rulemakings, contested cases that may affect Texas jurisdictional rights or utilities. They also represent the PUCT in court proceedings where FERC decisions affecting Texas or utilities operating in Texas are challenged. The PUCT and its counsel monitor those FERC proceedings to decide when Texas's interests call for participation. The PUCT takes part in discussions at the stakeholder level and works with other state commissions to address matters before an issue is filed at FERC.

Southwest Power Pool (SPP)

SPP is the FERC-authorized RTO and ISO for areas of Northeast Texas and the Texas Panhandle. SPP oversees the bulk electric grid and wholesale power market in the central United States on behalf of a diverse group of utilities and transmission companies. The PUCT collaborates with outside counsel and other state regulatory bodies to participate in FERC proceedings and rulemakings that impact the SPP tariff. The PUCT is primarily concerned with ensuring fairness of costs that may be allocated to Texas consumers and ensuring fair treatment of our member utilities in the SPP footprint. SPP covers 14 states, including parts of Texas,

Arkansas, Iowa, Louisiana, Minnesota, Missouri, Montana, Nebraska, New Mexico, North Dakota, South Dakota, Wyoming, and all of Kansas and Oklahoma. The SPP footprint for Texas includes SWEPCO, SPS/Xcel, several electric cooperatives, and various MOUs in parts of Northeast Texas and the Texas Panhandle.

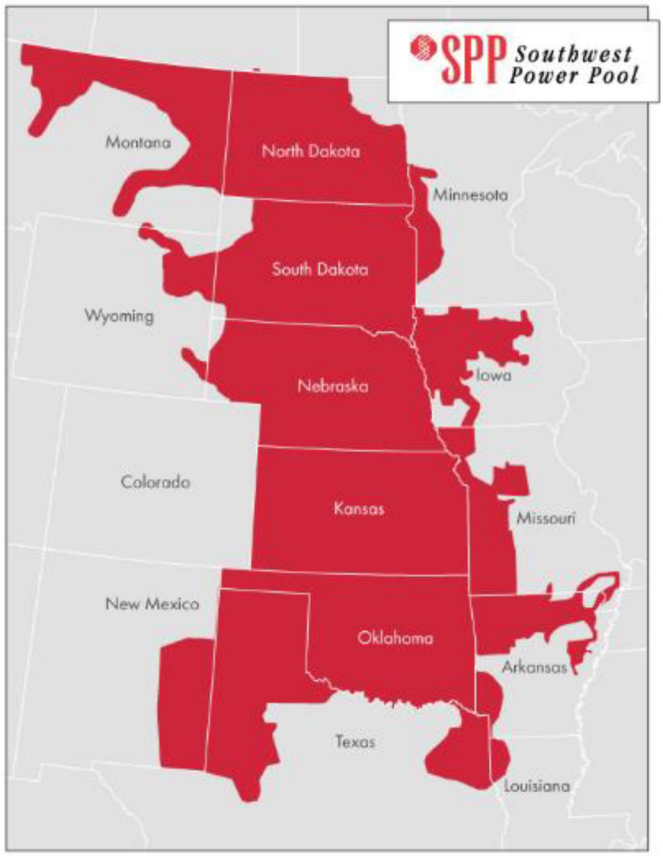

Figure 4. The area covered by the Southwest Power Pool (SPP) in the US

Commissioner Will McAdams represents the PUCT as a voting member on SPP's Regional State Committee (RSC), which consists of the state regulatory agencies in the region. The RSC meets quarterly and is the decision-making authority at SPP on issues such as allocating costs for transmission upgrades, allocation of Financial Transmission Rights, and generation resource adequacy across the SPP region. The SPP Market Monitoring Unit, its version of an IMM, has reported that SPP market results were competitive overall in 2021.[4]

[4] *State of the Market 2021* at 56, SPP MARKETING MONITORING UNIT, https://spp.org/documents/67169/2021%20annual%20state%20of%20the%20market%20presentation.pdf (May 11, 2022).

Midcontinent Independent System Operator (MISO)

MISO is an RTO and ISO that serves all or part of 15 states in the central United States and the Canadian province of Manitoba. The part of eastern Texas served by the vertically integrated utility, Entergy Texas, Inc., is within the MISO footprint. The PUCT collaborates with outside counsel on FERC proceedings about the MISO tariff. The PUCT advocates for the right to address generation resource adequacy at the state level, increased regulatory certainty, fair transmission cost allocation across MISO states, and increased market transparency and efficiency. The MISO IMM concluded that the MISO energy and ancillary services markets generally performed competitively in 2021.[5] Potomac Economics is the IMM for both MISO and ERCOT.

Figure 5. The area covered by the Midcontinent Independent System Operator (MISO) in the US

Commissioner Lori Cobos represents the PUCT as a voting member of the Organization of MISO States (OMS). The OMS meets monthly and coordinates regulatory oversight in the MISO region and makes recommendations to MISO, FERC, and other entities. Commissioner Cobos also represents the PUCT as a voting member of the Entergy Regional State Committee (ERSC). The ERSC consists of regulators from Arkansas, Louisiana, Mississippi, Texas, and the Council of the City of New Orleans. The ERSC provides retail regulator input on the Entergy transmission system, including the cost allocation for certain transmission projects and the addition of transmission projects to the Entergy construction plan.

[5] *2021 State of the Market Report for the MISO Electricity Markets*, POTOMAC ECONOMICS, June 2022. Available at: https://www.potomaceconomics.com/wp-content/uploads/2022/06/2021-MISO-SOM_Report_Body_Final.pdf

MISO-SPP Seams Issues

SPP and MISO are electrically interconnected. This connection can cause congestion as electricity flows across the lines between the two grids; thus, there is a need to coordinate power flows between SPP and MISO. This also affects transmission planning. Improved coordination between both organizations means that consumers may benefit and avoid the cost of overbuilding transmission on each side. Some states, like Texas, are in both organizations, enhancing the need for coordination.

State utility commissioners in SPP and MISO have recognized that these issues prevent efficient economic transmission planning, market and operational issues, and resource integration along the SPP-MISO "seam". In late 2018, the MISO OMS and the SPP RSC jointly formed a Seams Liaison Committee to identify issues and potential solutions to enhance the benefits to consumers from better coordinated seams policies. In 2021, the Seams Liaison Committee provided recommendations to further their goals. These recommendations touched on key policy issues, including creating a new transmission project category on the MISO-SPP seam, and prioritizing interregional transmission planning.[6]

After finalizing these recommendations, the Seams Liaison Committee shifted into a more limited, monitoring mode, with members actively working within the MISO and SPP stakeholder processes to implement these recommendations.

Western Electric Coordinating Council (WECC)

WECC is a regional entity that includes the area surrounding El Paso and extends from Canada to Mexico, including the provinces of Alberta and British Columbia, the northern part of Baja California, and all or portions of the 14 western states. WECC is the regional entity responsible for bulk electric system reliability in the western interconnection and associated compliance monitoring and enforcement. WECC connects electric utilities in the West to operate at a common, synchronized frequency, with 38 separate balancing authorities. Unlike ERCOT, SPP, and MISO, WECC does not have a single RTO or an organized wholesale energy market. El Paso Electric Company is the only electric utility in Texas that is a member of WECC.

Cybersecurity

A significant issue in the electric industry is cybersecurity. In 2019, SB 475 (86th Legislature, Regular Session) established the Texas Electric Grid Security Council. Members include the chairman of the PUCT, the chief executive officer of ERCOT, and the governor's designated

[6] OMS and RSC Seam Liaison Committee (SLC) Final Recommendations2021. Available at: https://www.misostates.org/images/stories/Filings/Board_comments/2021/RSC_Final_Recommendations_for_SLC.pdf

representative. This council serves as an advisory body to facilitate the creation, coordination, and dissemination of best security practices for the electric industry. The council has held quarterly meetings since September 2019.

The PUCT established the Critical Infrastructure Security and Risk Management Division in September 2019. The division utilizes cybersecurity and emergency management practices to facilitate collaboration between utilities and the PUCT.

The North American Electric Reliability Corporation (NERC) holds a Grid Security Exercise, or "GridEx" every two years. GridEx is a simulated operational exercise for electric utilities, governmental entities, critical infrastructure partners, and supply chain organizations to test responses to cyber and physical security threats. The objectives for GridEx include exercising incident response plans, expanding local and regional response, and improving communication. During the two-day GridEx event, participants respond with simulated internal and external operational activities as they would during an actual event, including sharing information within their organizations and externally according to their established procedures. After GridEx concludes, NERC holds an invitation-only discussion for industry executives and senior government officials. PUCT and ERCOT staff participate in the GridEx exercises.

In 2021, the PUCT conducted a cybersecurity-focused tabletop exercise with regulated electric utilities in collaboration with the Department of Energy (DOE) and the National Association of Regulatory Utility Commissioners (NARUC). The PUCT served as the pilot state regulator to test the newly developed Tabletop Exercise Guide for state commissions. In 2022, the PUCT executed two remote tabletop exercises and facilitated an in-person, two-day cybersecurity symposium and training event for utilities.

Emerging Issues

Since the end of the 87th Legislative Session, the PUCT has ordered a range of policy changes to improve reliability and resiliency during the most extreme circumstances that the electric system could face. This review is detailed in the section titled "Electricity: Resiliency and Market Design." The PUCT is monitoring emerging issues regarding specific technologies, growth areas, and events.

Energy Storage

Battery energy storage continues to grow in ERCOT due to improved technologies and decreased cost. To date, ERCOT market procedures have generally been designed to accommodate resources that either inject power onto the grid (like power plants) or solely take power from the grid (like consumers). For energy storage, both properties exist. Energy storage may act as a consumer and take electric service, while at other times it may function as a resource

to put power on the grid. Battery energy storage technology can provide benefits to consumers, but its integration must be thoughtfully managed.

In September 2022, MISO included Electric Storage Resources as a resource type in its market portfolio for the first time. This new resource type enables batteries, pumped storage facilities, and compressed air energy storage to participate in MISO's energy and operating reserves markets as supply and demand. The near-term benefits of the new Electric Storage Resource model are modest due to the small volume of storage resources in MISO. However, this new resource type will allow MISO to accommodate the expected increased storage participation in the coming years.

SPP's Electric Storage Resources Steering Committee was set up in early 2020. The committee finished its work and completed many new policies and procedures to integrate electric storage resources into the SPP grid. New policies were approved by the SPP Board throughout 2021. FERC filings are pending.

Distributed Energy Resources

Electricity markets and grids have seen an increasing number of resources on the distribution system. For example, rooftop solar panels, conventional back-up generators, small-scale batteries, and other small-scale resources are becoming more common in ERCOT and are classified as "distributed energy resources." These units are significantly smaller than traditional generation units, typically about 10 MW or less. Because these resources are smaller than traditional resources, the interconnection processes are less detailed but still require the utility to ensure the safety and reliability of the resources and the bulk power system. The Institute of Electrical and Electronic Engineers (IEEE) developed a new standard for electric grid operators to help incorporate these technologies in a way that provides system security and reliability.

The PUCT continues to discuss additional changes for incorporating distributed energy resources and advancements in technology. These include shortening timelines for interconnection, standardizing interconnection fees, standardizing information required for utility studies to ensure clear expectations, distributed energy resource aggregations, updating the cost allocation methodology for resources interconnecting on the distribution system, and moving to a grid model that accounts for the distributed energy resources that are interconnected. These changes will ensure a level playing field and provide clarity for market participants.

Demand Response

Demand response refers to consumers reducing electricity usage in response to expected high market prices or to provide reliability benefits. Structured demand response programs are

available to electricity consumers across the state. These programs are offered by investor-owned utilities (IOUs), MOUs, and electric cooperatives. In the competitive choice areas of ERCOT, REPs may also offer these programs. These programs encourage consumers to reduce electricity usage when called upon by the program provider, often in exchange for an incentive payment.

In the ERCOT market, demand response also has a key role in supporting the region's resource adequacy. Price signals encourage market participants and their consumers to reduce power consumption at key times. When electric power is most in demand, saving an additional MW of consumption is more cost effective than an additional electric power plant coming online to provide power. Demand response programs are evolving as the market becomes more sophisticated and familiar with the programs. The PUCT and ERCOT continue to discuss how to better understand the effect of demand response on the market.

The PUCT oversees the demand response programs delivered by the state's eight IOUs. While most demand response offered through the IOU programs is provided by medium to large commercial consumers, residential demand response participation is increasing. For IOUs in ERCOT, the demand response programs have traditionally been designed to operate during the summer peak period when demand for electricity is at its highest. The programs can be activated when called upon by ERCOT during an EEA 2 event or by the IOU to address a local system emergency. SB 3 granted each TDU (i.e., ERCOT IOU) the ability to design and operate a load management program outside the summer peak for nonresidential consumers to be used during an EEA2 event or when the utility has otherwise been directed to shed load. The TDUs developed programs for the 2021-2022 winter period and have provided notice that they intend to continue programs for the 2022-2023 winter period. To monitor the growth of demand response providers in the SPP and MISO footprints, in 2019 the PUCT opened a project for SPP and MISO to file a list of new demand response providers registering with those grid operators. The PUCT continues to supervise demand response development in these areas.

West Texas Transmission

Oil and gas extraction and processing in West Texas has led to record growth in electricity demand in this area. In addition to demand for electricity, West Texas continues to see growth of renewable generation resources. This added power flow must be carefully managed by ERCOT in its role as grid operator. These factors have all contributed to transmission congestion in the West Texas region.

Five of the ten most frequent transmission constraints in 2021 were in the load zone that serves West Texas.[7] The PUCT has been engaged with both utilities and consumers to ensure that

[7] 2021 State of the Market Report for the ERCOT Electricity Markets, Potomac Economics (May 2022) at p. A-49

electric service quality remains reliable and to examine options for improved load forecasting and transmission planning. Utilities that serve the West Texas region continue to build new infrastructure to serve the demand in the region.

Large Flexible Loads

Since 2021, many cryptocurrency mines and datacenters have sought interconnection to the ERCOT system. These types of consumers are often referred to as large flexible loads because of the relatively large MW demand of the facility paired with its ability to quickly ramp up or down in response to price signals. They are different from other large loads because (1) these loads are seeking to interconnect and be operational within six months of siting a location for their facilities, (2) there is no historical data available on these large flexible loads' consumption patterns, (3) the loads have the ability to start up and shut down in seconds making it easier for these loads to be price responsive, which can result in frequent large fluctuations in energy demand for ERCOT to manage,

ERCOT has created the Large Flexible Load Task Force to review new issues that could arise with the anticipated influx of these large flexible loads, which can draw as much as 2,000 MWs from the grid at a given time—equal to the output of the largest power plant in Texas. The task force is reviewing the timelines necessary for interconnecting these large flexible loads, options for including these large flexible loads in load shed plans, and new measures necessary to ensure reliability of the ERCOT system.

Aggregate Distributed Energy Resource (ADER) Pilot Project

An ADER consists of multiple homes or businesses that can combine resources and respond to ERCOT dispatch instructions as if it were one resource. This aggregated resource can be any combination of generation, energy storage, or controllable load. Each combination, known as an aggregation, must be able to provide at least 100 kW by reducing consumption or supplying power from generation or storage. The governing document for the initial phase of the ADER pilot project was approved by the PUCT on November 3, 2022. This pilot, which will initially include up to 80 MW of resources, will examine how aggregated resources can support reliability.

Lubbock Transition to Competition

In February 2022, the Electric Utility Board of the City of Lubbock passed a resolution to implement retail electric competition in the Lubbock Power and Light (LP&L) service area. LP&L is the MOU serving the City of Lubbock. It serves over 108,000 electric consumers, including Texas Tech University, and has a peak electric load of approximately 640 MW. This will be the first MOU to opt into the competitive retail electric market.

Upon the transition to competition, LP&L will cease serving retail consumers and will operate solely as a TDU. LP&L has an ongoing campaign to educate consumers on retail choice and to assist them in selecting a REP. LP&L has issued a bid for REPs to serve consumers who do not choose a REP before the date of competition. PUCT staff have been working on the terms and conditions for access that will apply in the LP&L territory and any future MOUs or cooperatives who opt into retail choice. Electric choice for LP&L is expected to begin in October 2023.

In March 2018, the PUCT approved LP&L's application to transfer 470 MW of load into ERCOT. The transfer was completed in May 2021. There is approximately 170 MW of LP&L load remaining in SPP. LP&L has filed a petition at the PUCT to request transfer of the remaining load to ERCOT. That docket is currently pending.

El Paso Electric Energy Imbalance Market (EIM)

In February 2021, El Paso Electric, the integrated utility serving the western tip of Texas, elected to join California ISO's (CAISO) western EIM in 2023. The EIM is an energy trading function of CAISO's broader power markets that allows entities outside of the footprint to buy and sell excess generation capacity in real-time. The EIM will benefit El Paso Electric's resource adequacy, reliability, and generation costs by allowing it to procure additional resources to balance load in short notice and at market-based prices. This is expected to lower overall costs and allow for the integration of additional renewable resources in the service territory. El Paso Electric may also sell any excess generation capacity through the EIM.

Rulemakings

Oversight of Wholesale Market Participants

Project No. 50602, Rulemaking to Review 16 TAC § 25.503, Oversight of Wholesale Market Participants. In February 2021, the PUCT approved amendments to 16 TAC § 25.503, relating *to Oversight of Wholesale Market Participants*. These amendments updated the criteria used by the PUCT to select the entity to monitor wholesale market reliability-related requirements for ERCOT.

Electric Weatherization Standards

Project No. 51840, Rulemaking to Establish Electric Weatherization Standards. In October 2021, the PUCT adopted new 16 TAC § 25.55, implementing the provisions of SB 3 related to weatherization requirements and weather emergency preparedness reports. The rule requires generators to implement winter weather readiness recommendations identified in the *2012 Quanta Technology Report on Extreme Weather Preparedness Best Practices*. Generators must also fix all known, acute issues that arose from winter weather conditions during the 2020-2021 winter weather season. The rule also requires transmission service providers to implement key recommendations contained in the *2011 Report on Outages and Curtailments During the*

Southwest Cold Weather Event on February 1-5, 2011, jointly prepared by FERC and NERC. They also must fix any known, acute issues that arose during the 2020-2021 winter weather season. Further, the rule requires all generation and transmission resource owners to file a notarized attestation from the highest-ranking representative, official, or officer with binding authority over each of the above entities attesting to the completion of all required actions.

Project No. 53401, Electric Weatherization Standards Phase II. In September 2022, the PUCT adopted new 16 TAC § 25.55, relating to Weather Emergency Preparedness. The adopted rule is the second of the two phases in the PUCT's development of robust weather emergency preparedness standards to ensure that the electric industry is prepared to provide continuously reliable electric service. Specifically, it requires generation entities and transmission service providers in ERCOT to maintain weather preparation measures for both winter and summer seasons. The new rule requires ERCOT to conduct on-site inspections of every generation resource and transmission facility in its footprint. Additionally, the new rule requires entities who do not comply with weatherization preparedness standards to undergo an independent assessment by a qualified professional engineer.

Critical Natural Gas Facilities and Entities

Project No. 52345, Critical Natural Gas Facilities and Entities. In November 2021, the PUCT adopted amendments to 16 TAC § 25.52, relating to *Reliability and Continuity of Service*. The rule was adopted in collaboration with the RRC as directed by SB 3 and HB 3648. The rule increases the coordination between the electric and gas industries during energy emergencies. A critical natural gas facility, or a "critical customer" as defined by the RRC, is required to provide specific information to the utility from which it receives electric delivery service. The utility must incorporate this information into its load-shed and power restoration planning. The RRC adopted its own new rule, § 3.65, relating to *Critical Designation of Natural Gas Infrastructure*, which will operate in conjunction with the amendments. The rule also implements SB 1876 by adding end stage renal disease facilities to the list of health facilities prioritized during system restoration following an extended power outage.

Retail Electric Customer Protection

Project No. 51830, Review of Certain Retail Electric Customer Protection Rules. In December 2021, the PUCT adopted amendments to implement SB 3 and HB 16 along with added consumer protections and disclosure requirements. The rules require REPs and electric utilities to provide clear and uniform information to consumers. They also limit the offering of wholesale indexed products by banning the sale of such products to residential or small commercial consumers and place conditions on the enrollment of larger consumer classes.

Electric Service Emergency Operations Plans

Project No. 51841, Review of 16 TAC § 25.53, relating to *Electric Service Emergency Operations Plans.* In February 2022, the PUCT adopted new 16 TAC § 25.53, relating to *Electric Service Emergency Operations Planning*. This rule implements standards for emergency operations plans for electric utilities, TDUs, power generation companies, MOUs, REPs, and ERCOT as required by Tex. Util. Code § 186.007 as amended by SB 3.

Administrative Penalty Authority

Project No. 52312, Review of Administrative Penalty Authority. In February 2022, the PUCT adopted amendments to 16 TAC § 22.246, relating to *Administrative Penalties*, and § 25.8, relating to *Classification System for Violations of Statutes, Rules, and Orders Applicable to Electric Service Providers*. These rules implement an amendment to the PURA § 15.023 enacted by SB 3 that establishes an administrative penalty not to exceed $1,000,000 for violations of PURA § 35.0021 or § 38.075, each relating to *Weather Emergency Preparedness*. In response to filed comments, these rules also clarify the application of certain statutory provisions relating to the commission's penalty authority and applicable remedy periods.

Middle Mile Broadband

Project No. 52845, Middle Mile Broadband. In March 2022, the PUCT adopted new 16 TAC § 25.218, relating to *Middle Mile Broadband*. This rule facilitates implementation of middle mile broadband service in unserved and underserved areas of Texas by allowing amenable electric utilities to lease excess fiber capacity to internet service providers so they can offer broadband service in remote areas

ERCOT Scarcity Pricing Mechanism

Project Nos. 51871, 52631, 53191, Review of the ERCOT Scarcity Pricing Mechanism. The PUCT adopted three successive amendments to 16 TAC § 25.505, relating to *Reporting Requirements and the Scarcity Pricing Mechanism in the ERCOT Power Region*, in separate proceedings from June 2021 to April 2022. In June 2021, the first set of amendments modified the value of the low system-wide offer cap (LCAP) by eliminating a provision that ties the value of the LCAP to the natural gas price index and replaced it with a provision that ensures resource entities can recover their actual marginal costs when the LCAP is in effect. In December 2021, the second rule amendment changed the value of the high system-wide offer cap (HCAP) by lowering it from $9,000 per MWh and $9,000 per MW per hour to $5,000 per MWh and $5,000 per MW per hour. In April 2022, the PUCT repealed 16 TAC § 25.505 and reorganized the provisions of repealed § 25.505 into three new rules.

- § 25.505 prescribes resource adequacy reporting requirements in the ERCOT region and requires ERCOT to give to the PUCT a biennial report on the Operating Reserve Demand Curve;
- § 25.506 sets forth the requirements for the publication of resource and load information in ERCOT; and
- § 25.509 establishes a scarcity pricing mechanism for the ERCOT market.

Additionally, the adopted new rules decouple the value of lost load from the system-wide offer cap (SWOC) in effect.

Power Outage Alert Criteria

Project No. 52287, Power Outage Alert Criteria. In May 2022, the PUCT adopted new 16 TAC § 25.57, relating to *Power Outage Alert Criteria*. This rule establishes the criteria for the content, activation, and termination of regional and statewide power outage alerts as required by SB 3. Specifically, this rule requires ERCOT to notify the PUCT Executive Director when it issues load shed instructions or if its forecasts indicate system-wide generation supply is likely to be insufficient to meet demand within the next 48 hours. The PUCT Executive Director may recommend that the Texas Department of Public Safety (DPS) issue a power outage alert after an assessment of available information. The rule also establishes similar procedures for power regions other than ERCOT.

Statutory Definitions

Project No. 52313, Statutory Definitions. In May 2022, the Commission adopted amendments to 16 TAC §25.5, relating to *Definitions for Chapter 25*. Changes to §25.5 revise definitions to comport with changes made by HB 1572 and SB 1202, passed by the (87th Legislature, Regular Session). Specifically, the Commission adopted the statutory definition of "electric generation equipment lessor or operator" and amended the definitions of "retail electric provider" and "electric utility" to clarify that a person who rents to or operates for compensation on behalf of a third party electric generation equipment for use by that third party until it is able to obtain sufficient electricity service is not, for that reason, considered a retail electric provider or electric utility. Similarly, the Commission amended the definitions of "retail electric provider" and "electric utility" to clarify that a person that owns or operates equipment used solely to provide electricity charging service for consumption by an alternatively fueled vehicle is not, for that reason, considered a retail electric provider or electric utility.

Emergency Response Service

Project No. 53493, Emergency Response Service. In August 2022, the PUCT adopted amendments to 16 TAC § 25.507, relating to *ERCOT Emergency Response Service (ERS)*. The rule increases the annual budget for ERS to $75 million and allows ERCOT to exceed this amount,

subject to PUCT approval, by up to $25 million for ERS contract term renewals. The adopted rule also provides ERCOT greater flexibility to procure ERS for longer amounts of time with a contract term from individual ERS resources to better address seasonal needs and makes other administrative changes to the program.

Transmission Planning Criteria

Project No. 53403, Transmission Certification Criteria. In November 2022, the PUCT adopted amendments to 16 TAC § 25.101, relating to *Certification Criteria* to implement the provisions of SB 1281 and HB 1510. The rule introduces a consumer economic benefit test for new transmission projects. The economic analysis test will identify transmission lines that will reduce transmission costs to consumers. The amended rule also includes a new biennial *Grid Reliability and Resiliency Assessment* conducted by ERCOT and designed to identify projects to enhance the grid's reliability and resiliency. The PUCT created new resiliency criteria for the approval of transmission projects that will reduce the impacts of extreme weather on consumers.

ERCOT Export Tariff

Project No. 53169, ERCOT Export Tariff. In November 2022, the PUCT adopted amendments to 16 TAC § 25.192, relating to *Transmission Service Rates* to modify the transmission charge for exporting power outside the ERCOT region. The amended rule implements a flat transmission charge for exporting power outside the ERCOT region and eliminates increased charges for exports during the summer. The amended rule will also provide additional transparency on transmission charges associated with DC ties by requiring ERCOT to file a monthly report with the PUCT that states the total amount of energy imported and exported over each DC tie.

ELECTRICITY: RESILIENCY AND MARKET DESIGN

The PUCT is undertaking a full-spectrum review of the ERCOT market to improve reliability and resiliency during the most extreme circumstances the electric system could face. These changes resulted from both implementing bills that the 87th Legislature passed in response to Winter Storm Uri, and a proactive effort from the newly appointed Commissioners to identify potential improvements to ERCOT Inc., the ERCOT grid, and the competitive wholesale market design. This review addressed ERCOT governance, generation resource resiliency, transmission constraints, consumer protection, transparency, and communication, stability in financial markets, and improvements to market price signals.

Market Design Blueprint

Starting in late Summer and continuing throughout Fall 2021, the PUCT held extensive public work sessions. These full-day sessions consisted of testimony from utility experts, ERCOT operators, IMM, state climatologist, former regulators, stakeholders, and market participants from every ERCOT market segment – wholesale, retail, transmission, and consumers. The newly appointed Commissioners asked questions and examined every angle of the ERCOT market to identify weaknesses and opportunities for improvement.

These sessions culminated in December 2021 with the adoption of a two-phase Blueprint for ERCOT market design that codified incremental changes adopted by the PUCT and expanded market reforms.[8] The PUCT then issued directives that spurred a range of market enhancements and a plan to explore more fundamental changes to the ERCOT market requirements that financially reward dispatchable resources for performance during times of energy scarcity.

Enhancements to the Current Market Design (Phase I)

Phase I of the Blueprint includes near-term operational market enhancements prioritized by the PUCT to improve reliability in ERCOT. The changes incentivize the utilization of dispatchable generation through market signals, give ERCOT more tools to improve reliability and avoid scarcity conditions, and enhance the participation of consumers across the system to reduce demand before reaching emergency conditions.

Improving Price Signals and Operational Reliability

The resource mix in ERCOT is constantly changing, and Texas's unique geography and load growth must be met with additional ways to enhance grid stability. The PUCT has responded by creating new operational tools for these new challenges.

[8] *See Review of Wholesale Electric Market Design*, Project No. 52373, Item No. 336

Operating Reserve Demand Curve. The PUCT directed ERCOT to modify the ORDC to improve reliability and incentivize more generation to come online sooner to meet real-time conditions. The ORDC allows prices to rise in real-time as resource scarcity occurs. As the reserve margin of additional generation resources available shrinks, the ORDC incentivizes an economic and efficient response from both generators putting power on the grid and consumers that can respond by reducing their consumption. The ORDC changes included reducing the offer cap from $9,000 per MWh to $5,000 per MWh and changing the Minimum Contingency Level (MCL) to 3,000 MWs. The reduction of the offer cap ensures that consumers will not pay the high sustained price cap that occurred during Winter Storm Uri. Changes to the MCL update the shape of the curve to signal scarcity pricing sooner. This incentivizes generation resources to come online sooner and encourages flexible consumers to reduce demand. Changes related to the ORDC were implemented January 1, 2022, in anticipation of the 2022 winter season.

Demand Response. The PUCT directed ERCOT to pursue technical upgrades and improvements to price signals that will allow more consumers of all sizes to participate in demand response such as moving from zonal to nodal pricing and consumer load aggregations (sometimes referred to as "virtual power plants").

Emergency Response Service Reform. In Fall 2021, the PUCT made critical changes to enhance ERS. ERCOT purchases megawatts from qualified loads and generators that can be used during specific scarcity conditions on the grid. Funds for ERS were reallocated to make more funding available during winter weather. The timing of ERS deployment was also changed to ensure this emergency measure can be used before the grid reaches emergency conditions. The PUCT revised the ERS rule in August 2022 to increase the ERS budget and modify the program year.

Enhancing Ancillary Services

Fast Frequency Response Service (FFRS). The ERCOT grid must maintain a constant frequency by balancing power supply and demand. The PUCT ordered ERCOT to move forward with a new ancillary service product that will serve as a regulation service able to respond quickly and predictably to changes in the grid frequency. These frequency changes can become more common as the diversity of the ERCOT fleet increases. FFRS went live in October 2022.

Loads in Non-Spinning Reserve Service. The PUCT ordered ERCOT to expand the types of resources able eligible to participate in Non-Spinning Reserve Service. The necessary ERCOT Protocol changes to allow this participation became effective in May 2022.

Firm Fuel Product. In response to directives in SB 3, the PUCT ordered the development and procurement of a Firm Fuel Supply Service (FFSS) to pre-purchase power from generators that is both dispatchable and able to operate continuously for several days during extreme winter

conditions. The initial FFSS resources will be procured for a one-year contract term while the PUCT determines future eligibility and term requirements for an expanded program. Amendments to the ERCOT Settlement and Billing system needed to facilitate FFSS were adopted in March 2022. ERCOT procured 2940.5 MW of FFSS at a clearing price of $6.10/MW/hour for the November 15, 2022 through March 15, 2023 obligation period. During the period December 22 to 25, ERCOT deployed FFSS across 22 Resources. Over the four days, ERCOT deployed 2,693 MWs of FFSS. ERCOT issued a Market Notice alerting market participants to the deployment.

Voltage Support Compensation. The PUCT ordered ERCOT to develop a product to compensate resources for voltage support services to help maintain grid stability as inverter-based resources, such as wind, solar, and storage, enter the market. Voltage support is a critical ancillary service provided by generators, storage resources, and transmission reactive devices to maintain the voltage within a narrow range for efficient and reliable operation of the transmission system. Resources in ERCOT provide voltage support service without compensation as part of their interconnection requirements.

ERCOT Contingency Reserve Service (ECRS). The PUCT ordered ERCOT to accelerate the development of the ECRS product to provide the grid operator an additional operational reliability tool. ECRS will reserve generation capability to compensate for variable output of renewable resources, such as wind and solar. ECRS will be market-ready in Spring 2023.

Market Design Proposals (Phase II)

The PUCT engaged Energy and Environmental Economics, Inc. (E3) to evaluate a range of potential new reliability mechanisms and long-term changes to the ERCOT market. New market design concepts will incentivize the retention of existing generation and investment in new dispatchable generation that has the flexible capabilities necessary to meet the full range of grid conditions. The evaluation includes analysis of the expected costs and reliability results from adopting modeled proposals

The consultants released the final report in November 2022.[9] They evaluated the following seven market proposals:

- Energy Only – Status Quo
- Load Serving Entity Reliability Obligation (LSERO)
- Forward Reliability Mechanism (FRM)
- Performance Credit Mechanism (PCM)
- Backstop Reliability Service (BRS)

[9] *See Review of Market Reform Assessment Produced by Energy and Environmental Economics Inc. (E3)*, Project No. 54335, Item No. 2. *See also Review of Wholesale Electric Market Design*, Project No. 52373, Item No. 382

- Dispatchable Energy Credits (DEC)
- DEC and BRS Hybrid

E3's analysis recommended that the PUCT implement the FRM. PUCT staff filed a memo on November 10, 2022, noting that the PCM proposal met the principles and criteria laid out in the comprehensive market design Blueprint. The PUCT requested public comment on the E3 analysis, including specific questions related to the PCM proposal.

Energy Only – Status Quo

The Energy Only proposal preserves the existing Energy-Only and ancillary service market as-is with no explicit reliability standard and incorporates the implementation of the Blueprint's Phase I enhancements.

Load Serving Entity Reliability Obligation

The LSERO proposal establishes a reliability standard and identifies the corresponding quantity of reliability credits that are needed to meet that standard. Under this proposal, ERCOT would require LSEs to procure reliability credits through bilateral contracts with resources in advance of any forecasted reliability risks. Such credits would be assigned to resources based on their contribution to system reliability, with an emphasis on a resource's capability to deliver energy during the highest periods of reliability risk, such as peak net load. This contribution-based reliability metric is commonly known as a resource's Marginal Effective Load Carrying Capability (MELCC).

Forward Reliability Mechanism

Similar to the LSERO proposal, the FRM proposal establishes a reliability standard, identifies the corresponding quantity of reliability credits that are needed to meet that standard, and assigns those credits to resources based on each resource's MELCC. However, instead of bilateral contracts between LSEs and resources, the FRM proposal would utilize a mandatory, centrally cleared forward market that is administered by ERCOT for reliability credits. This forward market would clear based on a sloped demand curve for price stability and retrospectively allocate cost to LSEs based on each LSEs share of system load during hours of highest reliability risk

Performance Credit Mechanism

The PCM proposal places a financial responsibility on the consumer-facing LSEs to ensure ERCOT market participants have procured sufficient generation for a range of scenarios to maintain a reliable grid. The PCM is a new and separate reliability service that does not impact the current competitive real-time wholesale market. The PCM proposal is a voluntary forward offer market for resources paired with a retroactive obligation for LSEs. It allocates load share requirements to LSEs based on availability during the hours of greatest scarcity in ERCOT. The

PCM seeks to ensure LSEs have secured enough power from generators that can adjust output to meet both consumer and grid reliability needs across a range of scenarios. The PCM proposal provides a forward price signal to generators to encourage commitment to the market's electricity demand and incentivizes investment in dispatchable resources, such as natural gas. The PCM proposal is designed with clear performance standards, dynamic sizing for different types of generators, and is proportional to grid reliability needs. It compensates resources based on capability and real-time availability using a backward-looking assessment.

Backstop Reliability Service

The PUCT is evaluating whether a reliability service product such as BRS should be adopted as a bridge to the longer-term grid reliability solutions. The BRS provides an additional cushion of dispatchable generation to help prevent emergency conditions. BRS would allow ERCOT to procure qualified dispatchable generation resources on a competitive basis to serve as a backstop to be deployed only after generation in the real-time energy market and ancillary services have been exhausted. The BRS would send price signals to incentivize new investment and encourage the existing dispatchable generation fleet to remain in service.

Dispatchable Energy Credits

DEC requires each load serving entity to procure dispatchable energy credits (DECs) from eligible resources at a quantity equal to 2% of its annual energy (MWh) load. DECs can be generated by resources with a five-minute startup time, below 9,000 British Thermal Units per kWh heat rate, and 48-hour duration that clear in energy and ancillary service markets between 6-10 p.m. in any day.

DEC and BRS Hybrid

This DEC and BRS Hybrid merges the DEC and BRS products by assigning to eligible LSEs a requirement to provide DECs in addition to the creation of an ERCOT-procured fleet of backstop generators. The hybrid model is intended to address any capacity deficiencies associated with the DEC proposal.

Enhanced Operational Control and Improvements to Electric Grid Reliability

Discussions between PUCT and ERCOT Inc. leadership regarding enhanced operational controls for the ERCOT grid began in May 2021 in advance of the summer season. A series of reliability actions was implemented starting in July 2021. These actions focused on increasing operating reserves, amending ERCOT Protocols to allow for the deployment of reliability tools earlier (i.e., before entering emergency conditions), and improving transparency.

ERCOT currently targets a minimum of 6,500 MW of operating reserves, known as PRC, on high variability days. ERCOT has increased the minimum quantities of ancillary services

(Responsive Reserve service and Non-Spinning Reserve services) for peak load hours on all days. The threshold for deployment of these resources has been adjusted to more accurately reflect system needs and provide grid operators the ability to deploy resources earlier, reducing the likelihood of entering emergency conditions. ERCOT is also committing more generation resources sooner and managing planned outage requests to ensure targeted levels of capacity. Systems were updated to ensure long-lead time units could receive reliability commitment instructions earlier, diversifying the resource mix eligible to be called online. ERCOT now sets the maximum allowable planned outages for maintenance at a given time. ERCOT then reviews, coordinates, and approves outage requests.

In addition to updated ancillary service methodology, procedures for ERS and certain utility-level measures were amended to allow for greater deployment flexibility. As described earlier, the PUCT increased the ERS budget and allowed ERCOT more flexibility regarding when to use ERS. The PUCT also directed ERCOT to amend its Protocols to allow it to instruct TDUs to use distribution voltage reduction measures prior to an emergency.

The PUCT has also directed ERCOT to make changes related to data transparency. Specifically, ERCOT must provide important information about resource outages to the public in a more complete and timely manner. ERCOT now posts a public report three days after each operating day with information on generation resource forced outages, maintenance outages, and forced derates. The report will include the name of the affected resource, fuel type, information regarding the outage duration, and any available information about the cause of the event. In the case of an EEA event, this information may be immediately disclosed to state governmental authorities upon request. ERCOT Protocol changes also included provisions requiring better information from resources regarding forced outages, forced derates, and start-up failures.

The PUCT has approved revision requests for all ERCOT Protocols and rules associated with these reliability enhancements.

System Wide Offer Cap

After the heat wave in 2011 forced ERCOT to declare EEAs to meet system demand, the PUCT increased the HCAP to $9,000 per MWh, over several incremental upward shifts:

- From $3,000 per MWh to $4,500 per MWh on August 1, 2012;
- Up to $5,000 per MWh on June 1, 2013;
- Up to $7,000 per MWh on June 1, 2014; and
- Up to $9,000 per MWh on June 1, 2015.

The $9,000 price cap was seldom reached after it was implemented. However, after the Winter Storm Uri in February 2021, the PUCT reevaluated the HCAP and set it to $5,000 per MWh. This revised cap strikes a balance of ensuring appropriate generation is available using market-based mechanisms and incentivizing demand response during scarcity events while limiting extraordinary financial liability for all market participants and protecting consumers.[10] This change went into effect on January 1, 2022. The PUCT also directed ERCOT to set the offer cap for ancillary services equal to the SWOC for energy and approved the subsequent ERCOT Protocol changes.

Consumer Protection

The PUCT has ordered a range of consumer-facing changes to the ERCOT market. These changes protect Texas consumers from extreme prices, alert consumers to potential outages, and designate certain facilities as critical during a rolling power outage, which prioritizes system reliability and human needs.

After the passage of HB 16, the PUCT implemented rules eliminating wholesale-indexed products for residential and small-commercial consumers, as described previously. The rules also include disclosure requirements for REPs when notifying consumers of the end of a contract. The PUCT also clarified that fixed price contracts could not be changed due to increases in ancillary service charges or other increased costs that REPs experienced.

Some residential critical care and commercial critical load consumers did not have their critical status registered with their REP or TDU. To ensure the proper designation of critical customers and to educate the public, the PUCT required electric utilities and REPs to periodically provide public service notices to consumers concerning load shed events, the eligibility requirements for critical care or critical load designation, and how to reduce electricity use at times when involuntary load shed events are implemented. Additionally, the PUCT implemented rule changes to require electric utilities and REPs to inform residential customers of any special policies or programs for designation as a chronic condition or critical care customer.

Financial Improvements

Following Winter Storm Uri, market participants left billions of dollars in unpaid invoices with ERCOT. These unpaid debts would ultimately have to be paid by consumers for decades to come and push many REPs into bankruptcy, reducing consumer choices and making the market less competitive. The PUCT has taken major steps to address credit requirements for market

[10] *See Review of the ERCOT Scarcity Pricing Mechanism,* Project No. 52631, Item No. 45.

participants. These actions protect consumers by placing financial risk on the market participants rather than consumers.

Credit Requirements for Market Participants

Many market participants were unable to pay counterparties for the power that they procured from ERCOT to serve their consumers during Winter Storm Uri. Many of the payment defaults were by market participants with unsecured credit limits. This increased the overall costs to other market participants such as load (e.g., consumers). Before Winter Storm Uri, certain market participants could transact in the market with unsecured credit limits based on agency credit ratings, equity, or net worth. The PUCT and ERCOT determined that unsecured credit limits are inconsistent with actual creditworthiness. Accordingly, subsequent ERCPT Protocol changes require market participants operating in the ERCOT market to provide additional financial collateral to prevent widespread defaults from being shifted to consumers.

Securitization

Any debts left on ERCOT's balance sheet must ultimately be paid by market participants. Because companies may generally pass such costs along to consumers, the Legislature enacted law to securitize debts accrued due to Winter Storm Uri through debt-obligation bonds. This allows affected companies to spread the repayment of these debts over time, rather than bill consumers in one lump sum. This method of repayment stabilizes the financial foundation of the ERCOT market while dampening the high cost to consumers.

In October 2021, the PUCT approved two debt obligation orders to stabilize the wholesale energy market after the economic impacts of Winter Storm Uri, pursuant to HB 4492.[11] The first debt obligation order authorized approximately $800 million that was used to compensate short-paid wholesale market participants and reimburse ERCOT for money that it used to partially fund these short-paid wholesale market participants. Proceeds of this debt obligation order were distributed in November 2021. The second debt obligation order authorized approximately $2.1 billion that was used to prevent defaults and maintain competition in the wholesale energy market by providing liquidity to wholesale market participants that were subjected to extraordinary costs. Proceeds of this debt obligation order were distributed in June 2022.[12]

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[11] *See Application of Electric Reliability Council of Texas Inc. for a Debt Obligation Order pursuant to Chapter 39, Subchapter M, of the Public Utility Regulatory Act*, Project No. 52321, Item No. 214; and *Application of Electric Reliability Council of Texas Inc. for a Debt Obligation Order pursuant to Chapter 39, Subchapter N, of the Public Utility Regulatory Act*, Project No. 52322, Item No. 312

[12] *See generally HB 4492 Securitization*, Electric Reliability Council of Texas, https://www.ercot.com/about/hb4492securitization/.

ERCOT worked with the PUCT to develop Protocols regarding the collection and distribution methods of the funds.

Power Outage Alert system

The PUCT adopted a rule to establish criteria for alerting Texans prior to potential regional and statewide power outages, as described previously.[13] Notice to the public may include information alerting consumers to the possibility of outages in their region, locations to receive assistance in the power region if an outage occurs, and other relevant information regarding the present outage.

Transmission

The PUCT took historic steps to fortify the transmission system in the Rio Grande Valley. This area of Texas has been a challenge to service geographically, but recent population and load growth has made connecting it a priority. The PUCT ordered a second circuit to be built in an existing right of way to send additional power to the region. Additionally, the PUCT identified and accelerated new reliability lines across the region so that the most affordable power can reach consumers in the region.

The PUCT passed rules to implement SB 1281, which introduces a consumer economic benefit test for new transmission projects.[14] The economic analysis test will identify transmission lines that will reduce transmission costs to consumers. Congestion costs occur when transmission lines reach their capacity to transfer power, and more expensive energy must be dispatched from plants where transmission capacity is available to reach the area. Introducing the consumer economic benefit test will identify lines where the construction cost will be offset by congestion cost savings.

[13] *See Power Outage Alert Criteria*, Project No. 53403, Item No. 35.
[14] *See Review of Chapter 25.101*, Project No. 53403, Item No. 86.

ERCOT Governance

The Legislature reaffirmed the Commission's complete authority over ERCOT and made fundamental changes to ERCOT Inc. governance in SB 2. Specifically, SB 2 restructured the ERCOT Board of Directors to be comprised only of independent board members appointed by a selection committee and subject to specific qualifications. The first new board members were announced October 11, 2021, including the appointment of a new chair. The Board approved amendments conforming the ERCOT Bylaws to the legal requirements imposed by SB 2 on October 12, 2021. The PUCT approved the ERCOT Bylaws changes on October 20, 2021.

ERCOT Board of Directors

Paul Foster, Chair
Bill Flores, Vice Chair
Carlos Aguilar, Director
Julie England, Director
Robert "Bob" Flexon, Director
Peggy Heeg, Director
Courtney Hjaltman, Public Counsel (ex officio)
Peter Lake, Chairman of PUCT (ex officio)
John Swainson, Director
Pablo Vegas, President and CEO of ERCOT (ex officio)

The final new board members were announced on December 28, 2021. Since that time, the Board, including the PUCT Chair as an ex-officio member, continues to review ERCOT governing documents and processes considering SB 2. On September 9, 2022, ERCOT opened public comment on additional proposed amendment to the ERCOT Bylaws. These amendments would clarify the role of ERCOT's corporate members, expand the ability of board to fully participate by teleconference, add a requirement for minimum qualifications and a certification process for corporate members' Technical Advisory Committee representatives, and other changes to better align with the intent of SB 2. Additional discussion has centered on the role of the Technical Advisory Committee and stakeholders in the ERCOT rule development processes and how items requested by the PUCT, or board can be expedited or otherwise prioritized. The PUCT must approve any changes to the bylaws or ERCOT Protocols.

SB 2 requires the PUCT to explicitly approve any rules adopted by ERCOT before they may take effect. Previously, changes to ERCOT Protocols and guides took effect after approval by the Board and only ERCOT Bylaw changes required explicit approval by the Commission. PUCT staff has developed a process of evaluating and recommending action on each new ERCOT rule passed by either the Technical Advisory Committee or the ERCOT Board. A staff memo is filed before an open meeting and the PUCT can deliberate on the rule changes. Based on a staff memo recommending approval, the PUCT approved the first set of ERCOT rules on July 15, 2021. To date, the PUCT has approved 125 ERCOT rule changes, including 63 Nodal Protocol Revision Requests (NPRRs).

ELECTRICITY: INTERCONNECTION

Senate Bill 1 (SB1)[15] requires the PUCT to report on whether the interconnection of the ERCOT power region to neighboring grids would protect and further the interest of the public. PUCT staff has reviewed data regarding the direct-current (DC) tie interconnections between ERCOT and neighboring grids. This report discusses legal considerations regarding further interconnections and Federal Energy Regulatory Commission (FERC) jurisdiction over ERCOT and details policy matters that may warrant further consideration. Public comments related to this report were received October 21, 2022.[16]

Current ERCOT Interconnections

Currently the ERCOT power region has three DC ties and one Variable Frequency Transformer (VFT) that connect ERCOT to adjacent grids. For simplicity, all four facilities are collectively referred to as "DC ties." However, the Laredo interconnection is a VFT, not technically a DC tie.

The existing ERCOT-connected DC ties are back-to-back facilities – the power transfer occurs at a single point on the "seam" between two adjacent bulk electricity systems. Another conventional use for DC ties is to space the two AC/DC converter stations a great distance apart, connected by a high-voltage direct current (HVDC) transmission line.

VFTs do not convert Alternating Current (AC) to DC but connect asynchronous AC systems together by converting electric energy at one frequency to electric energy at another frequency. Unlike AC interconnections, DC ties and VFTs can be directly controlled to achieve a specified MW level of flow, resulting in an injection from one region and a corresponding withdrawal from the adjacent region. While DC ties and VFTs allow the transfer of real power from one region to another, they also insulate the adjacent power systems from certain undesirable electrical phenomena, such as inter-area oscillations.

Two DC ties connect ERCOT to the Southwest Power Pool (SPP) in the North American Eastern Interconnect (Eastern Interconnect). One DC Tie and one VFT connect ERCOT to the Mexican

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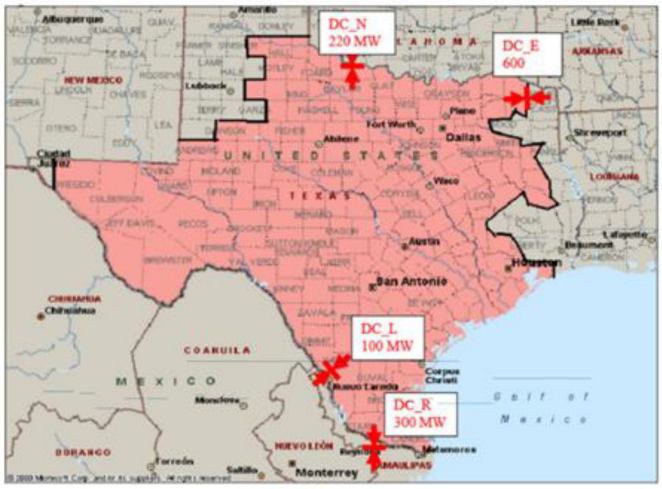
[15] SB 1 (General Appropriations Act) Public Utility Commission Biennial Report. " *Detail in the Biennial Report required under Sec. 12.203, Utilities Code, whether ERCOT interconnection to Eastern and/or Western Interconnects and/or Mexico would protect and further the interest of the public. It is the intent of the Legislature that the commission, out of the funds appropriated above to the Public Utility Commission, and to the extent permitted under general law, detail within its Biennial Report the benefits and costs associated with interconnecting ERCOT to other grids, including Eastern and Western Interconnects, and Mexico. The Report must determine: if reliability could be increased; the impact on customers' energy costs; the potential for economic development benefits to the state from exporting energy to other interconnects; and if ERCOT could remain independent of federal regulation if and when larger direct current ties are established than those that currently exist.*"

[16] See *PUC Project No. 54163, ERCOT Interconnection Study for 2023 Biennial Report.*

power grid Comision Federal de Electricidad (CFE), operated by Centro Nacional de Control de Energia (CENACE).

The four existing DC Ties and the locations are provided in the figure below:

DC Tie Name	Transfer Capability	Adjacent Grid Operator	Technology	DC Tie Operator
East	600 MW	SPP	HVDC Converter	AEP
Laredo	100 MW	CENACE	VFT	AEP
North	220 MW	SPP	HVDC Converter	AEP
Railroad	300 MW	CENACE	HVDC Converter	Oncor



Two additional DC ties are pending regulatory approval at the PUCT. In 2017, the PUCT issued a Certificate of Convenience and Necessity (CCN) to interconnect a fifth asynchronous interconnection, the Southern Cross DC Tie, to link East Texas to the Southeastern United States through a 2,000 MW HVDC transmission line.[17] The project received FERC approval in 2014. Energization of the Southern Cross CCN is contingent upon ERCOT's completion of tasks list tied to specific directives determined by the PUCT. ERCOT has developed rules to address many of

[17] Order on-rehearing, PUC Docket No. 45614, *Application for the City of Garland to Amend a Certificate of Convenience and Necessity for the Rusk to Panola Double-Circuit 345-KV Transmission Line in Rusk and Panola Counties* (May 23, 2017).

the reliability risks associated with connecting such a large facility to the ERCOT region.[18] Construction and energization of the Southern Cross project is pending.

In 2022, Grid United Texas LLC filed an application for a CCN for a 1500 MW DC Tie that would connect ERCOT to the Western Interconnection via El Paso.[19] The application raises questions regarding the method of establishing the need for such a facility and the regulatory considerations for constructing and operating the DC tie. Grid United's CCN application is pending before the PUCT. The Southern Cross and Grid United cases are further discussed in the Legal Considerations section of the report.

Historic DC Tie Operations

DC ties are used as open-access transmission facilities and are an important tool available to ERCOT to ensure the reliable operation of the grid. Under normal operations, ERCOT does not control flows over the ties. Rather, Qualified Scheduling Entities (QSEs) schedule transactions over the ties on a first-come, first-served basis, subject to approval by the operators of the adjacent grids. The Transmission Service Provider (TSP) that operates each DC tie aggregates the approved schedules for each hour and then controls the flow on the DC tie to achieve the aggregate scheduled flow value for that hour. As a general principle, DC ties allow QSEs to schedule power transfers such that less expensive power from one region can be used to serve load in another region.

While imports and exports occur throughout every month of the year, the two DC ties between ERCOT and SPP (North and East) tend to import more energy in the summer and export more in the winter. The two DC ties between ERCOT and CENACE (Railroad and Laredo) generally export more energy from the ERCOT region than they import. The tables below provide information on DC tie imports and exports for the years 2019-2021.

[18] See *Southern Cross Transmission - Electric Reliability Council of Texas* https://www.ercot.com/mktrules/puctDirectives/southernCross

[19] Application, PUC Docket-No. 53758, *Application of Grid United Texas LLC for Partial Certificate of Convenience and Necessity Rights Under PURA § 37.051(c-1) and 37.056(b)(2)* (Jul.5, 2022).

East DC Tie (2019-2021)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Average Hourly DC Tie Flow(MW)	67	128	135	102	91	160	144	253	201	112	105	86
Max Hourly DC Tie Flow(MW)	611	611	598	598	611	598	598	598	599	598	611	607
Min Hourly DC Tie Flow (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Average Monthly Import Energy (MWh)	(23,695)	(69,730)	(88,639)	(66,373)	(44,798)	(113,846)	(105,943)	(186,222)	(145,031)	(71,105)	(57,552)	(23,520)
Average Monthly Export Energy (MWh)	25,901	25,247	12,120	9,757	22,737	5,185	1,087	1,953	4,802	12,227	20,243	40,625

Laredo DC Tie (2019-2021)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Average (MW)	15	28	32	18	26	24	20	19	23	23	9	11
Max (MW)	101	101	105	100	101	91	91	91	95	94	97	105
Min (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Average Monthly Import Energy (MWh)	(1,390)	(2,723)	(3,400)	(3,515)	(1,934)	(950)	(407)	(1,322)	(1,902)	(3,055)	(457)	(1,838)
Average Monthly Export Energy (MWh)	9,519	18,063	20,422	9,623	17,326	16,851	14,800	12,559	15,560	13,888	5,901	6,704

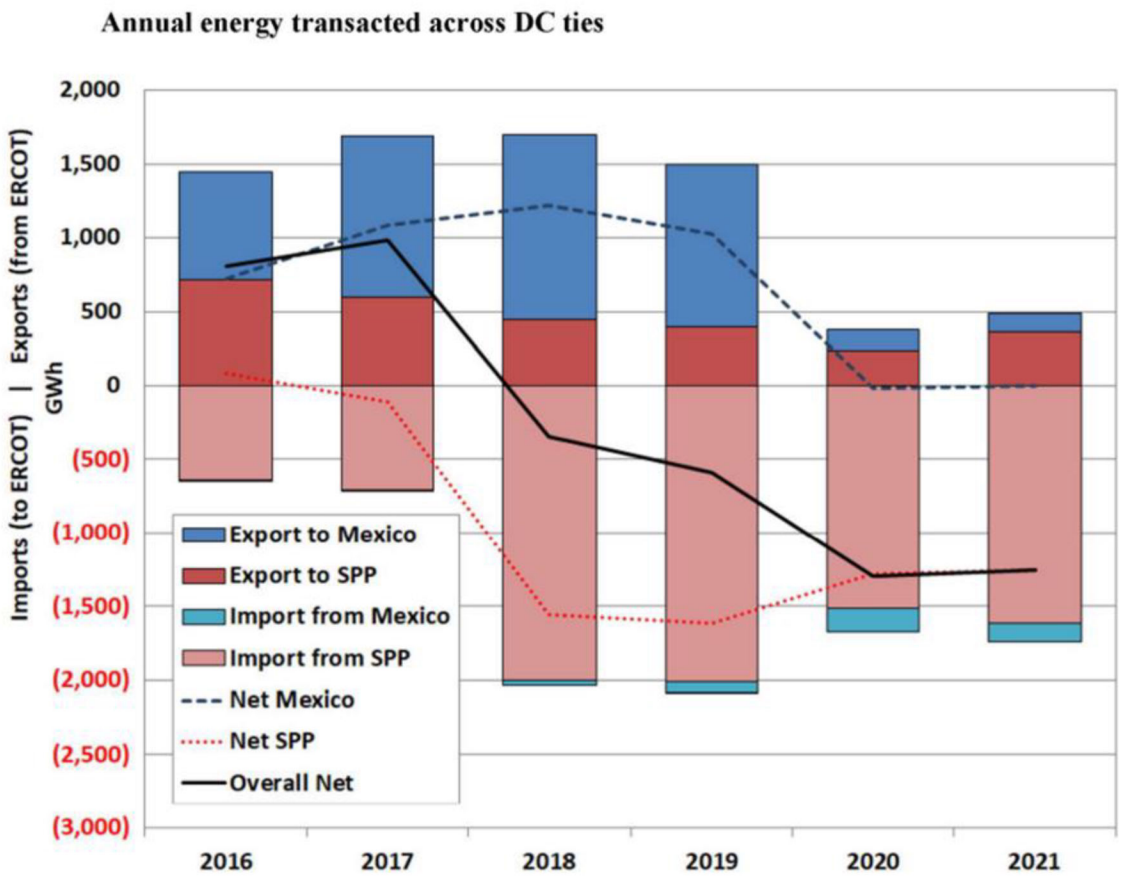
North DC Tie (2019-2021)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Average (MW)	82	96	71	65	77	108	99	123	117	122	122	98
Max (MW)	225	225	225	225	225	226	225	225	225	225	225	225
Min (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Average Monthly Import Energy (MWh)	(44,024)	(52,845)	(41,200)	(38,227)	(43,217)	(73,280)	(65,624)	(86,314)	(81,676)	(66,611)	(79,240)	(58,666)
Average Monthly Export Energy (MWh)	16,939	18,885	11,917	10,154	14,340	7,025	7,826	5,043	5,361	23,987	11,303	13,993

Railroad DC Tie (2019-2021)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Average (MW)	33	52	23	45	51	46	42	62	54	35	29	17
Max (MW)	291	292	292	292	293	292	291	294	292	292	292	303
Min (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Average Monthly Import Energy (MWh)	(3,212)	(8,922)	(2,869)	(16,288)	(11,124)	(5,203)	(5,816)	(6,350)	(5,387)	(13,625)	(8,374)	(6,906)
Average Monthly Export Energy (MWh)	21,055	30,009	14,287	17,378	27,087	29,119	25,321	39,777	34,947	12,455	13,532	5,893

The graph below shows the aggregated flows for the most recent six years for both the DC ties interconnected to SPP and those interconnected to CENACE. Even in the two years in which ERCOT was a net exporter, there were still over 500,000 megawatt-hours (MWh) of energy imported into ERCOT. Similarly, even though ERCOT was a net importer in both 2018 and 2019, there were still 1,500,000 MWh or more of energy exported from ERCOT in each of those years.



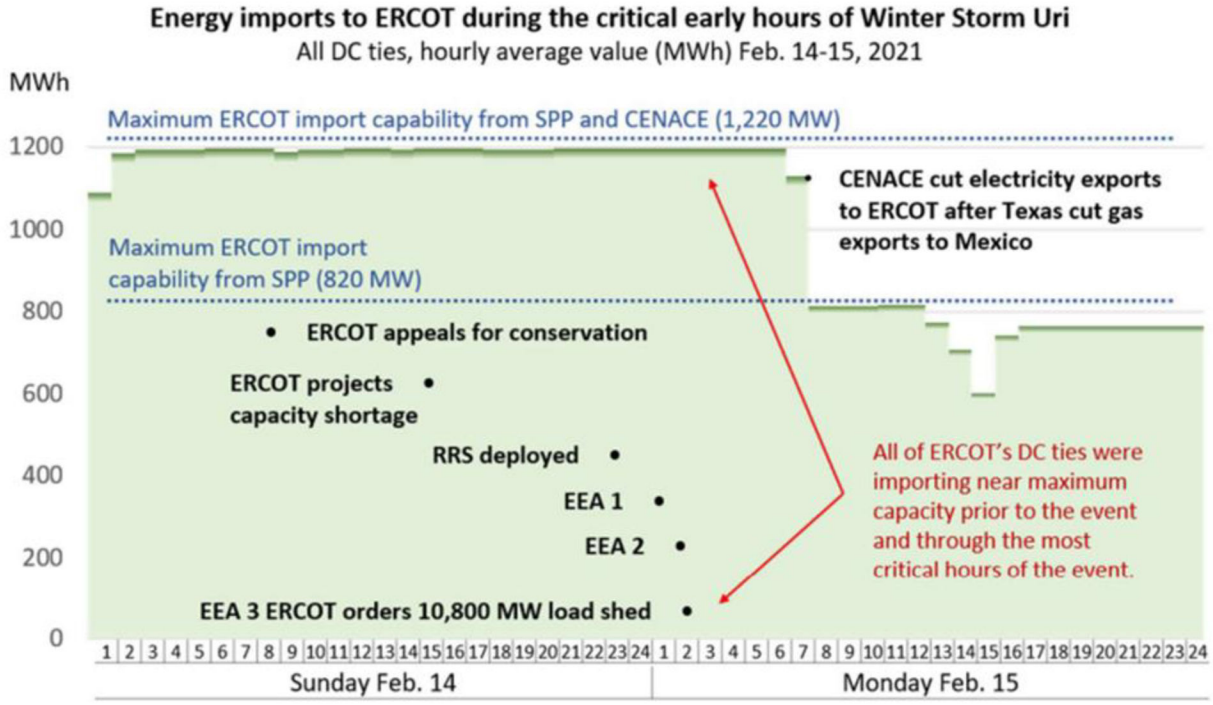
Potomac Economics, *2021 State of the Market Report for the ERCOT Electricity Markets*, Fig. 23, p. 34.

DC ties can provide reliability benefits during certain emergency situations. For example, ERCOT could request that a DC tie operator schedule emergency imports from the neighboring region into an energy-deficient region. By avoiding or mitigating the need to shed firm load, DC ties can provide a reliability benefit to grid operators.

During Winter Storm Uri, both of the grid operators on either end of the southern DC ties were experiencing an energy emergency. Therefore, the flows on these DC ties were limited-or entirely curtailed-because of a lack of available power to export from one region to another. The two DC ties between ERCOT and CENACE (Railroad and Laredo) provided no import capability for most of the period from early February 15 until mid-morning February 19 when firm load was being shed in ERCOT as part of the Level 3 Energy Emergency Alert (EEA). This is because Winter Storm Uri also impacted northern Mexico, leading CENACE to curtail exports on the interconnections with ERCOT.

The two DC ties between ERCOT and SPP (North and East) did import for most of the event. However, SPP partially or fully curtailed flows on those ties for several hours on February 16 and

17, 2021, due to an energy deficiency in its own region. All ERCOT-connected DC ties were importing near maximum capacity for the entire day prior to ERCOT's order to shed firm load during the emergency. All of these ties maintained maximum import during the critical hours of the onset of the storm and for several more hours after the ERCOT system had stabilized.



In the past, DC ties have also provided some imports during intervals with relative scarcity of generation supply, though they have not always imported at full capacity during these periods. The table below illustrates the level of imports for all 529 hours of scarcity when the Physical Responsive Capability (PRC) was less than 3,000 MW from 2019 through 2021. ERCOT observed full imports on the East DC tie for 36% of those hours, on the North DC tie for 54% of those hours, and on the Laredo and Railroad DC ties for 0% of the hours.

Scarcity hours statistics – 529 hours PRC < 3000 MW from 2019 to 2021

	East DC Tie		North DC Tie		Laredo DC Tie		Railroad DC Tie	
	Number of Hours	% of hours	Number of Hours	% of hours	Number of Hours	% of hours	Number of Hours	% of hours
Import at full capacity	192	36%	286	54%	0	0%	0	0%
Import >= 75%	293	55%	333	63%	12	2%	14	3%
Import >= 50%	349	66%	367	69%	29	5%	27	5%
Import >= 25%	407	77%	391	74%	58	11%	70	13%

Recent changes affecting ERCOT pricing could change the incentives for imports, but this historical data suggests that scarcity does not necessarily result in imports over the ties—especially the DC ties with Mexico.

ERCOT Alternating Current (AC) Tie Studies

Currently, ERCOT does not maintain any ongoing AC interconnections to neighboring power systems. Permanent AC interconnections would introduce a number of technical and operational complexities that are avoided by using DC interconnections. However, transmission utilities in the ERCOT region have previously constructed transmission facilities that enable temporary AC interconnections during an emergency in which consumers in either ERCOT or a neighboring region have become disconnected from their native power grid. These arrangements can ensure service to a limited part of the grid during a weather event that impacts transmission lines, such as a hurricane or tornado, or during a grid-wide emergency requiring an extended period of firm load shed.

Interim ERCOT CEO Brad Jones testified at the joint hearing of the House State Affairs and House Energy Resources Committees on September 13, 2022, regarding the possibility of AC tie interconnections with ERCOT and other interconnections.[20] ERCOT is currently collaborating with

[20] The archived video broadcast of this hearing is available at the following link: https://tlchouse.granicus.com/MediaPlayer.php?view_id=46&clip_id=23529

Baylor University and Texas A&M University to identify any benefits or risks of interconnecting with an external electric grid for support during a black start event. These are targeted studies reviewing the specific potential of projects for an identified system need. A broader cost-benefit analysis of interconnection as a whole is not underway at this time.

Texas A&M was asked to study interconnection points with the Eastern Interconnect that could provide frequency support during a black start event, identify potential risks and associated benefits. The objective of this study is to explore the technical requirements of incorporating support from the Eastern Interconnect at specific locations during recovery from a black start event. The study should identify which location or locations would provide appropriate support, and whether there are any risks associated with using support from an external grid.

For this effort ERCOT provided grid models (power flow and dynamics), and black start procedures to the Texas A&M team. The Texas A&M team also had access to Eastern Interconnect models that were used for a previous study performed in 2020 for SPP which evaluated the dynamic aspects of a potential AC interconnection of the Eastern Interconnect with the Western Electricity Coordinating Council.

The study is nearing completion as of December 2022. Deliverables for Texas A&M team are:

- Identify the substations in the existing black start plans that could interface with the Eastern Interconnect as potential connection points.
- Identify additional substations that could be the possible connection points between ERCOT and the Eastern Interconnect – based on distance and voltage levels.
- Identify the temporary cranking path switching sequences.
- Perform a transient stability analysis to evaluate the restoration of the system using the cranking paths identified.

Baylor was asked to identify potential interconnection points with other external grids that could be used during a black start event. In response to this request Baylor developed a black start simulation program that has been completed and is currently being tested by university students.

The tool uses load-flow data to identify cranking paths after a starting point is entered into the program. A cranking path is a portion of the electric system that can be isolated and then energized to deliver electric power from a generation source to enable the start-up of one or more other generating units. The program then creates specific load-flow data cases, one at a time, that represent portions of the grid. Each case must be solved with a load-flow analysis. This iteration continues until the entire grid is restored.

Legal and Jurisdictional Concerns

ERCOT and its market participants are not presently subject to the plenary regulatory authority of FERC, which regulates wholesale power markets in other regions of the United States. Under the Federal Power Act (FPA), FERC's jurisdiction over the electric industry is limited to "to the transmission of electric energy in interstate commerce and to the sale of electric energy at wholesale in interstate commerce."[21] The ability of ERCOT to remain independent of federal regulation if and when larger direct current ties are established than those that currently exist is a threshold issue when contemplating further interconnecting of ERCOT to other grids and the benefit of such interconnections to the state. In response to PUCT Staff's request for public comment, a number of parties explained the legal and procedural history of the existing DC ties to ERCOT. This history is discussed briefly below.

ERCOT is located entirely within the State of Texas and is not synchronously interconnected with either the Eastern or Western Interconnections. Beginning in 1981, FERC has ordered construction of DC ties under the Federal Power Act (FPA) to create asynchronous connections between ERCOT and other parts of the country. The transmission of electricity in interstate commerce is subject to regulation by FERC under the FPA. Under the FPA, FERC has jurisdiction over the rates and conditions for the interstate sale and transmission of wholesale electricity. Under sections 210 and 211 of the FPA, FERC can order transmission interconnections and transmission of electricity in interstate commerce. However, orders issued under FPA sections 210 and 211 do not subject entities complying with these orders to FERC's plenary jurisdiction. Section 201(b)(2) of the FPA also provides that "[c]ompliance with any order of the Commission [FERC] under the provisions of section 203(a)(2), 206(e), 210, 211, 211A, 212,215, 215A, 216, 217, 218, 219, 220, 221, or 222, shall not make an electric utility or other entity subject to the jurisdiction of the Commission for any purposes other than "ensuring compliance with such an order."[22]

FERC 210 and 211 Authorization

As discussed in the overview above, Texas currently has three DC ties and one Variable Frequency Transformer (VFT) that are used to import power to and export power from ERCOT with an aggregate transfer capability of 1,220 MW.[23] Each existing interconnection and the related transmission service has been authorized by FERC under Sections 210 and 211. A fourth DC tie, the Southern Cross tie, connecting ERCOT to a DC converter station in Louisiana, was

[21] 16 U. S.C. § 824(b)(1)

[22] 16 U.S.C. § 824(b)(2).

[23] *Central Power and Light Co.,* 17 FERC para 61,078 (1981) (North DC Tie); *Central Power and Light Co.*, 40 FERC para 61,077 (1987) (East DC Tie).

approved by FERC in 2014 with an interconnection order under FPA sections 210 and 211.[24] This is the most recent consideration of a new ERCOT interconnection by FERC.

The PUCT approved the City of Garland's application for a CCN to build a new 38-mile 345kV transmission line connecting ERCOT to the Southern Cross DC converter station just over the Texas border in Louisiana.[25] The PUCT later used authority granted under the Public Utility Regulatory Act (PURA) § 37.051(c-2) and issued an order directing ERCOT to complete 14 directives that the PUCT concluded were necessary to accommodate the new DC ties.[26] In September 2022, the PUCT issued an order stating that it agreed with ERCOT's solutions to the 14 PUCT directives.[27]

The PUCT has intervened and actively participated in most of the previous FPA section 210-211 proceedings at FERC. The PUCT has an ongoing interest in maintaining and protecting the independence of ERCOT that is codified in the FPA. In the Southern Cross Transmission case before FERC, the PUCT intervened and filed comments on the application.[28] The FERC order approving the Southern Cross Transmission application provided as follows:

> (A) Garland is hereby directed to interconnect with Southern Cross pursuant to section 210 of the FPA under the applicable tariff and rate schedules, as discussed in the body of this order.
>
> (B) Oncor and CenterPoint are hereby directed to provide transmission service pursuant to section 211 of the FPA under the applicable tariff and rate schedules, as discussed in the body of this order.
>
> (C) Offer of Settlement is hereby approved, and its terms incorporated by reference, as discussed in the body of this order.

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[24] 147 FERC para 61,113, *Southern Cross Transmission LLC and Pattern Power Marketing LLC*, FERC Docket No. TX11-1-001, *Final Order Directing Interconnection and Transmission Service* at page 8 (May 15, 2014).

[25] *Application of the City of Garland to Amend a Certificate of Convenience and Necessity for the Rusk to Panola Double-Circuit 345-KV Transmission Line in Rusk and Panola Counties*, Docket No. 45624, Order on Rehearing (May 23, 2017).

[26] *Oversight Proceeding Regarding ERCOT Matters Arising Out of Docket No. 45624 (Application of the City of Garland to Amend a Certificate of Convenience and Necessity for the Rusk to Panola Double-Circuit 345 -KV Transmission Line in Rusk and Panola Counties*), Project No. 46304, Revised Order Creating and Scoping Project (May 23, 2017).

[27] *Oversight Proceeding Regarding ERCOT Matters Arising Out of Docket No. 45624 (Application of the City of Garland to Amend a Certificate of Convenience and Necessity for the Rusk to Panola Double-Circuit 345 -KV Transmission Line in Rusk and Panola Counties*), Project No. 46304, Order Closing Project, (Sept. 30, 2022).

[28] 137 FERC para 61,206, *Southern Cross Transmission LLC and Pattern Power Marketing, LLC, Proposed Order Directing Interconnection and Transmission Services and Conditionally Approving Settlement Agreement* at paragraphs 13 & 15 (Dec 15, 2011).

(D) Compliance with this order and the Offer of Settlement shall not cause ERCOT, Oncor, CenterPoint, or any other ERCOT utility or other entity that is not already a public utility to become a "public utility" as that term is defined by section 201 of the FPA and subject to the jurisdiction of the Commission for any purpose other than for the purpose of carrying out the provisions of sections 210 and 211 of the FPA.[29]

The key provision of the Southern Cross Transmission FERC order is paragraph (D) which preserves the jurisdictional independence of ERCOT and ERCOT market participants that were the subject of the FERC order. All other FERC FPA section 210-211 orders contain similar language preserving the jurisdictional status quo for ERCOT and ERCOT market participants.[30]

FERC Emergency-Use Authorization

FERC has also granted emergency-use only interconnections and related transmission service to the Eastern Interconnection. In the City of College Station[31] case, FERC directed Entergy Texas, Inc. to provide interconnection and transmission service to the City of College Station in certain declared emergency conditions that enable block load transfers of power between ERCOT and the Southeastern Electric Reliability Council (SERC). FERC's directive in this case was issued under sections 210-211 of the FPA. This interconnection, like the DC tie connections discussed above, does not establish a synchronous interconnection between ERCOT and the Eastern Interconnect and thus will not subject ERCOT or entities within ERCOT to FERC jurisdiction under the FPA.[32]

Continued FERC Independence

Under current federal law, additional DC ties into ERCOT, provided they are constructed under FPA sections 210-211, would not subject ERCOT or entities within ERCOT to FERC jurisdiction for any reason other than compliance with FPA sections 210 and 211. However, as noted by ERCOT in its comments on this report, "the growth in DC tie transfer capacity between ERCOT and other regions could lead some to argue that optimal use of the ties requires coordination through greater federal oversight. Consequently, it is plausible the addition of new DC ties could create some long-term risk to the independence of the ERCOT region from FERC jurisdiction."[33]

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[29] 147 FERC para 61,113, *Southern Cross Transmission LLC and Pattern Power Marketing LLC*, FERC Docket No. TX11-1-001, *Final Order Directing Interconnection and Transmission Service* at page 8 (May 15, 2014).

[30] *See Id*. at paragraph 2. ("To date, the only interconnections between ERCOT and facilities in the United States outside of Texas, and the transmission of power over those interconnections have been made pursuant to Commission orders under sections 21 and 211 of the FPA." (citations omitted).

[31] *City of College Station*, 137 FERC Para. 61,230 (2011).

[32] *City of College Station,* 137 FERC Para 61, 230 at p. 30.

[33] PUCT Project No. 54163, *ERCOT Interconnection Study for 2023 Biennial Report*, Comments of ERCOT, Inc. at 9.

In 2018, FERC also raised the possibility that ERCOT's jurisdictional independence could be jeopardized under certain circumstances. In the *AEP Energy Partners, Inc.*[34] case, FERC considered electric service to be provided over DC ties between ERCOT and Mexico. The ERCOT entities involved in these projects were Sharyland Utilities, LP, AEP Texas, Inc. and Electric Transmission Texas, LLC. The first project was a DC tie connecting the Comision Federal de Electricidad (CFE) national grid in Sonora, Mexico, to Nogales, Arizona in the Western Interconnect. The second project considered as part of the AEP Energy Partners, Inc. case was a transmission connection between CFE and the CFE Baha California system, which is also connected to the Western Interconnect in California.[35]

Grid United

In July 2022, Grid United Texas LLC filed an application for a CCN for a DC Tie to connect ERCOT to the Western Interconnection through El Paso Electric Company. The initial size of this proposed DC tie would be 1,500 MW, but Grid United's application indicates that this tie could be expanded to 3,000 MW. This application remains pending at the PUCT. Grid United has stated its intention to seek an appropriate order from FERC under FPA section 210-212 to interconnect this project with the Western Interconnect.

Under PURA § 37.051(c-1), the PUCT is required to review a proposed DC tie project under the same standards by which it reviews electric transmission lines. Under § 37.051(c-1), a person, including an electric utility or MOU, may not interconnect a facility to the ERCOT transmission grid that enables additional power to be imported into or exported out of the ERCOT power grid unless the person obtains a certificated from the commission state that public convenience and necessity requires or will require the interconnection.

The PUCT is required to apply the standards of PURA § 37.056 in assessing the need for a proposed DC tie under § 37.051(c-1). The factors of § 37.056 include the need for additional service and the probable improvement of service or lowering of economic cost to consumers affected by the proposed project. In its order approving the Southern Cross DC tie project, the PUCT included a number of conditions to protect ERCOT and ERCOT consumers.[36] Among the conditions imposed by the PUCT on the Southern Cross DC tie project were that ERCOT ratepayers should not bear the costs to "construct, operate, maintain or upgrade or decommission the facilities."[37] The PUCT further found that Southern Cross should be required

[34] 164 FERC Para 61,056 (2018)

[35] *Id.* at paragraph 4.

[36] *See Application of the City of Garland to Amend a Certificate of Convenience and Necessity for Rusk to Panola Double Circuit 345 kV Transmission Line in Rusk and Panola Counties*, Docket No. 45624, Order on Rehearing (May 23, 2017).

[37] *City of Garland* at 10.

to "back down or temporarily terminate exports if ERCOT determines that such is necessary to avoid or mitigate a potential reliability issue."[38] The PUCT will review the proposed Grid United DC tie application under the requirements of § 37.051(c-1).

Policy Considerations

Interconnecting ERCOT to other grids presents unique policy considerations given its independence from FERC jurisdiction and competitive market construct.

Interconnections present distinct reliability implications for the grid. Impacts may vary based on location, technology type, and whether the tie is operating as a load or resource at the time. Like any transmission facility, DC or AC tie projects must be evaluated on a case-by-case basis in order to be granted a CCN.[39] In addition to the standard CCN criteria, an application for an interconnection tie must also include a study of the tie line by ERCOT including an ERCOT-approved reliability assessment of the proposed facility.[40] Any directive looking to further expanded interconnection capacity will need to evaluate if the current CCN process for tie lines identifies and fully evaluates the impacts of the proposed facility.

ERCOT is a competitive wholesale electric market where prices are charged by generators for the electric power they produce. The impact of expanded interconnections on wholesale electric prices would be largely dependent on overall market conditions on both sides of the tie line and regulatory constructs for how and when the tie facilities are operated. The impact on consumers' overall energy costs for additional ERCOT interconnections will largely be determined by how costs for the transmission facilities need to enable the interconnections are borne by the market and allocated to consumers by their utility.

These regulatory determinations may warrant further consideration when determining if and how additional interconnections with ERCOT should be established.

Current Related Proceedings

There have been other activities that could affect interconnection issues within ERCOT. Several recent proceedings at a national level have addressed these issues as highlighted below.

For example, in 2022, Congress considered a bill that would have amended the FPA in significant ways. The Energy Independence and Security Act of 2022 (EISA) would have amended FPA § 216 to allow the DOE Secretary to designate areas as "national interested transmission corridors." The EISA would have allowed the DOE Secretary to designate proposed transmission facilities "in the national interest" without first conducting a study to identify such national

[38] *Id.* at 11.

[39] See *16 TAC § 25.101. Certification Criteria*.

[40] *Id.*

transmission corridors. The EISA also would have removed existing language from FPA §216 related to state permitting authority and would have allowed FERC to issue permits for facilities designated by the Energy Secretary as "in the national interest." While the EISA amendments would not have directly affected ERCOT's current exemption from FERC jurisdiction, the amendments could possibly have allowed FERC to issue a permit to build a transmission line into ERCOT in apparent violation of FPA §216(k) which states that FPA § 216 does not apply within ERCOT. Congress did not pass EISA, but these proposed amendments could be considered by Congress again in the near future.

Additionally, the Department of Energy (DOE) has issued a proposed National Transmission Needs Study. Under section 216 of the FPA, DOE is required to study electric transmission capacity constraints every three years. The DOE Needs Study implements this provision. The current DOE Needs Study includes both historic and anticipated future transmission needs as required by Congress as part of the Infrastructure Investment and Jobs Act (IIJA), Section 40105, (Pub. L. 117-58). The IIJA requires DOE to study transmission needs, congestion, and capacity constraints. DOE issued a consultation draft of the Needs Study on October 21, 2022, and requested comments from state, tribal and regional entities. On November 23, 2022, ERCOT submitted comments on the consultation draft of the Needs Study. ERCOT pointed out a number of concerns with and questions about the draft Needs Study and its possible effect on the ERCOT region. After consideration of comments on the consultation draft, DOE is expected to publish a draft Needs Study in the Federal Register for general public comment.

The joint FERC/NARUC Task Force on Electric Transmission has also discussed the possible establishment of a minimum level of interregional transfer capability. This idea was discussed at the Task Force meeting in July 2022.

In evaluating current PUCT rules and ERCOT Protocols and reviewing public comment, Staff has identified a number of policy matters that may need to be reviewed should interconnection capacity with ERCOT be expanded.

ERCOT DC Tie Line Study

The ERCOT study required in 16 TAC §25.101 regarding potential new DC tie lines should be evaluated to determine if the appropriate criteria are being considered as well as the initiation and timing of the study. This should also consider if DC tie lines should be subject to ERCOT' s Regional Planning Group Project Review Process.

ERCOT Operations in Emergency and Scarcity Conditions

ERCOT Protocols and policies surrounding DC tie interconnections were reviewed following the Southern Cross proceeding. These Protocols should be reviewed further given the potential

impacts of expanded DC tie interconnections and AC ties to facilitate specific reliability needs. All expansion of ties should ensure that ERCOT loads and generation are adequately protected from the impacts of tie line operations.

Economic Dispatch of Ties

If DC tie capacity is expanded, the ability for real-time dispatch of the ties may be considered. Such dispatch has been implemented in other markets and may provide savings in reduced ancillary service costs and reduce the reliance on Reliability Unit Commitments.

TELECOMMUNICATIONS

The telecommunications market in Texas is made up of voice, broadband, and cable and video services. Wireless technology continues to dominate the voice market. Using Voice over Internet Protocol (VoIP) technology, any broadband internet connection can also provide voice service. The PUCT regulates the intrastate rates and services of some providers of traditional voice service that use facilities that are largely wired and are commonly referred to as landline or wireline services.

Voice Service

Landline Service

Intrastate landline service, including basic local telephone service (BLTS), was historically provided over copper-wired facilities. Today this service is often provided via a combination of copper-wired, fiber-wired, and fixed wireless facilities. These facilities may be used in providing other telecommunication services, such as interstate calling, and information services. The PUCT regulates some aspects of the companies that provide intrastate landline service under PURA.

Voice over Internet Protocol

VoIP enables voice communications over a broadband connection and allows users to both place and receive calls. Copper, fiber, fixed wireless, and coaxial cable can provide broadband for VoIP services. VoIP continues to be a popular alternative to landline services as broadband subscribership increases. For a consumer who is a broadband subscriber, VoIP can be a less expensive alternative to landline services. The PUCT does not have regulatory authority over VoIP.

Wireless

Many Texans use wireless service as a replacement for landline service. Wireless service is made up of mobile phone service technologies that include non-smart mobile phones, smartphones, and satellite phones. While calls can be placed and received wirelessly, at some point, wireless phone calls travel over wired infrastructure to reach their destination. The PUCT does not have regulatory authority over the provision of wireless service.

Market Share of Voice Services

The voice services market is no longer dominated by companies using landline infrastructure. Some consumers keep wireline service for additional applications such as a backup to wireless service or for alarm systems. National data shows that 68.7% of households rely solely on wireless service for voice telecommunications, while only 1.7% of households rely exclusively on landline

service.[41] For households with children, reliance on wireless service is even more pronounced, with only 0.4% of households relying exclusively on landline service. This suggests that the preference for wireline reliance skews to an older demographic and that the trend toward wireless service can be expected to continue.

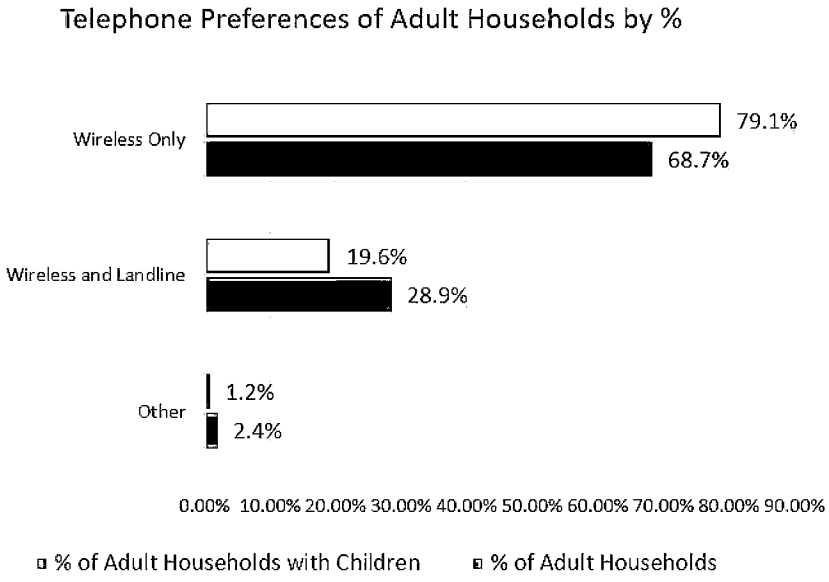


Figure 6. Percentage based telephone status of adult households and households with children in the US

Jurisdiction

Incumbent Local Exchange Carriers (ILECs)

ILECs are entities that held a certificate of convenience and necessity (CCN) for landline service as of September 1, 1995. Through multiple chapters, PURA allows for five distinct classifications of the 61 Texas ILECs as shown on Table 1 below.

[41] *Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December 2021*, NATIONAL CENTER FOR HEALTH STATISTICS, https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless202205.pdf (last updated May 2022).

Table 1. Summary of PURA ILEC Regulation

PURA Chapter	Type of Regulation	General Description of ILEC	Universal Service Support	Average Residential Single-Line Rate	Average Business Single-Line Rate	Number of ILECs
52	**Rate-of-return (fully regulated)** must maintain tariff with the PUCT; must request PUCT review to change rates.	≤ 31,000 lines usually serve rural parts of Texas	eligible for support	**$18.29**	**$23.33**	**44** *Examples:* Big Bend Telephone Company; Hill Country Telephone Cooperative
53	**Rate-of-return (partially deregulated; cooperatives only)** must maintain tariff with the PUCT; can change rates with formal notice	≤ 31,000 lines usually serve rural parts of Texas	eligible for support	**$21.48**	**$26.77**	**3** *Examples:* Valley Telephone Cooperative; Colorado Valley Telephone Cooperative
58	**Incentive** met multiple infrastructure milestones as of January 1, 2000; pricing flexibility for existing services only; can change rates with informal notice	≥ 31,000 lines serving off-shoots of urban areas	eligible for support	**$15.99**	**$31.28**	**11** *Examples:* CenturyTel; Windstream
59	**Incentive (new services)** met multiple infrastructure milestones as of January 1, 2000; pricing flexibility for new and existing services; can change rates with informal notice.	No ILECs currently choose Ch. 59 regulation	eligible for support	--	--	**0**
65	**Deregulated** do not maintain a tariff with PUCT; can change rates at own discretion Note: If an entire ILEC territory is not deemed competitive, the ILEC is considered "transitioning."	Large ILECs that serve areas deemed competitive typically serve populated urban areas	**NOT eligible** for high-cost support, but **are eligible** for social service support (transitioning companies can receive high-cost support for areas still regulated)	**$30.75**	**$143.57**	**3** *Examples:* AT&T; Frontier Communications; CenturyLink (Transitioning)

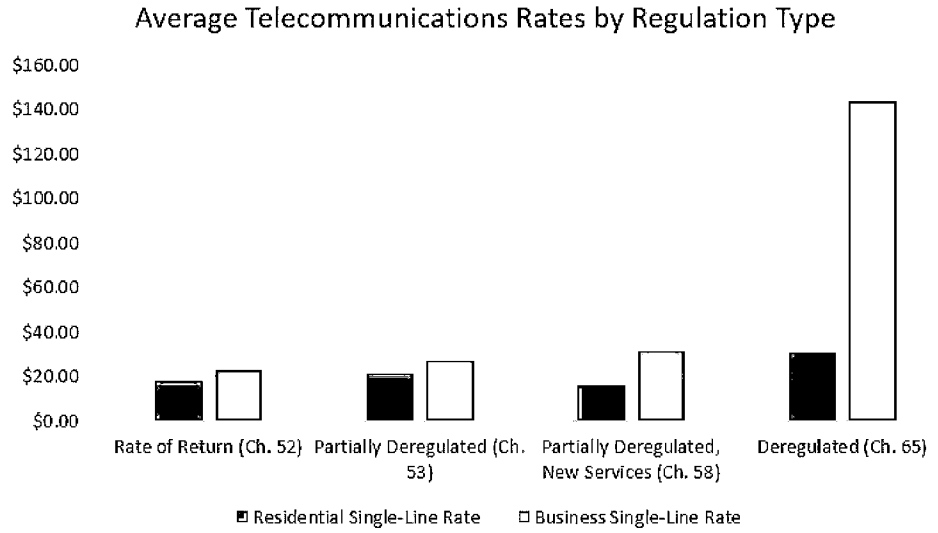
ILECs and Competitive Local Exchange Carrier (CLEC) Affiliates

Many regulated ILECs provide non-regulated services through their ILEC designation or a CLEC affiliate. CLECs are providers that entered the market after September 1, 1995. As of November 2022, the PUCT has 291 registered CLECs and 61 registered ILECs.

For an ILEC to provide landline services outside of its service area, it must obtain a certificate from the PUCT unless certain exceptions apply. A CLEC affiliate similarly cannot offer landline service to consumers within an ILEC's territory. However, a CLEC may offer broadband and video services within an ILEC's territory, including VoIP service as an alternative to the ILEC's landline services. Many of the facilities that CLECs use (for voice, broadband, and video services) are leased from an ILEC. These are the same facilities being used to serve the ILEC's customers and the services may be in direct competition with the ILEC.

Rates Around the State

Local telephone rates for business consumers are typically higher than those charged to residential consumers. In most cases, rates in rural areas served by small companies are less than the rates charged by larger ILECs serving consumers in more urban areas. For example, Eastex Telephone Cooperative, Inc., an ILEC serving consumers in small and rural areas in East Texas, offers residential landline service at a rate of $22.50. Conversely, AT&T provides service in most large urban areas throughout Texas and offers residential landline service at a rate of $44.00 per month. AT&T is a fully deregulated company, and their rate exchanges, except for certain grandfathered rates, are uniform throughout AT&T Texas' deregulated service territory.



Similarly, the rates for single-line business service by small and rural ILECs are often less than those charged by ILECs providing single-line business service in urban areas. For example,

Frontier Communications charges a single-line business rate of $49.99 in its exchanges found in larger urban areas. Conversely, West Plains Telecommunications, Inc. offers single-line business service in small and rural areas, subsidized by the Texas Universal Service Fund (TUSF), at a rate of $22.18. Frontier Communications is a deregulated company with pricing flexibility not available to Chapter 52 companies like West Plains Telecommunications, Inc. The rates for companies that provide multi-line business service are also generally higher than the rates charged for single-line business service. The general pricing scheme for this service also follows the pattern described above. A deregulated company offering service under Chapter 58 or 65 can offer business service at a higher rate because the company is deregulated (Chapter 65) or has greater pricing flexibility (Chapter 58). Small and rural ILECs remain fully regulated and are thus limited in their ability to offer higher rates.

Registration with the Commission

To provide local exchange telephone service, BLTS, or switched access service in the State of Texas, a person must obtain a CCN, a Certificate of Operating Authority (COA), or a Service Provider Certificate of Operating Authority (SPCOA) from the PUCT. Since the deregulation of the local exchange market in 1996, all certifications for telephone service are either COAs or SPCOAs. For fiscal year 2022, the PUCT processed a total of 40 COA and SPCOA dockets.

Similarly, to provide cable or video service in the State of Texas, a person must obtain a State-Issued Certificate of Franchise Authority (SICFA) from the PUCT. As of November 2022, there are 79 active SICFAs in Texas

Texas Universal Service Fund (TUSF)

The Federal Communications Act of 1934, as amended by the Telecommunications Act of 1996[42], designated interstate landline service as a universal service that all Americans are entitled to access at just, reasonable, and affordable rates.[43] This act also created the federal universal service fund (FUSF) to offer support to aid companies providing landline service. Federal universal service was later expanded to include VoIP data and wireless/broadband data.[44]

Established in 1987 and revised in 1995, the TUSF was created to implement a competitively[45] neutral mechanism to enable all residents of the state to obtain BLTS. The PUCT is charged with

[42] 1934 and 1996 Acts: 1934 Communications Act, ch. 652, 48 Stat. 1064. (1934) (codified as amended at 47 USC 254 (1996)). See also 1996 Telecommunications Act, ch. 652, 110 Stat. 71. (1996).
[43] See generally FCC 97-157.
[44] *See* FCC 11-103, ¶4 at 24-25
[45] See *Review of TUSF Rate*, Project No. 50796, Item No. 60.

adopting and enforcing rules requiring local exchange companies to establish universal service and administering the TUSF in a way that ensures reasonable rates for BLTS.

The TUSF is funded through a surcharge based on an estimate of ILEC and CLEC consumers' intrastate telecommunications service usage. Typically, ILECs and CLECs pass through the surcharge costs to consumers on their bills. The PUCT reviews the fund requirements and may change the TUSF rate to meet the obligations of the fund.

The TUSF surcharge is only assessed on the estimated intrastate voice service portion of Texas ILECs' and CLECs' taxable receipts. The TUSF surcharge is not assessed on data services. In FY 2019, wireless service providers (including Texas ILECs and CLECs) reevaluated their service packages to determine how much of the package was devoted to voice service compared to data services. When those studies were completed, the companies determined that a much smaller part of service packages were devoted to providing voice service than previously estimated. The companies adjusted accounting practices to collect the TUSF surcharge only from the portion of the customer's bill devoted to voice service. Since the accounting change, a smaller amount of taxable receipts is eligible for TUSF surcharge assessment. As a result, funds into the TUSF program have been reduced. This created a significant unanticipated shortfall in TUSF revenues, as shown below.

Programs Funded by TUSF

TUSF funds eleven programs separated into two major categories: high-cost programs (Table 2) and social service programs (Table 3). The high-cost programs mainly help telecommunications providers offer landline service at reasonable rates in high-cost-to-serve rural areas of Texas. The social service programs provide financial assistance for voice services for low-income consumers and support programs for Texans with disabilities such as relay services for hearing-impaired consumers. Expenses for the High-Cost Support programs include approximately 90% of the total TUSF expenditure. On the following pages are breakdowns of the programs that fall under high-cost or social service support.

December 2020 was the last fully funded monthly TUSF obligation. From January 2021 to September 2022, the fund paid 15% - 35% of high-cost expenditures. On July 14, 2022, the PUCT raised the TUSF assessment from 3.3% to 24%, effective August 1, 2022. The increase in the TUSF assessment rate will allow the PUCT to pay current obligations each month along with obligations in arrears. It is estimated that it will take 12 months to fully pay down the obligations in arrears, at which time the PUCT can lower the assessment to a rate sufficient to meet current obligations.

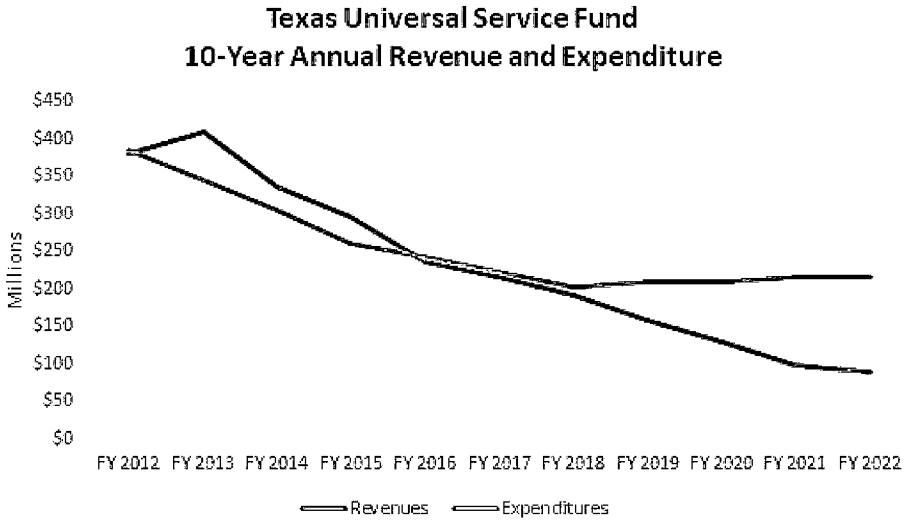
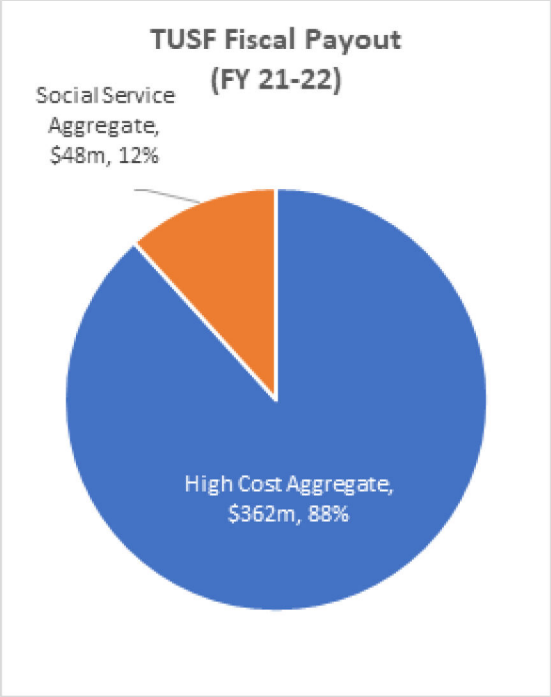

Texas Universal Service Fund
10-Year Annual Revenue and Expenditure
$450
$400
$350
$300
$250
$200
$150
$100
$50
$0
Millions
FY 2012
FY 2013
FY 2014
FY 2015
FY 2016
FY 2017
FY 2018
FY 2019
FY 2020
FY 2021
FY 2022
Revenues
Expenditures

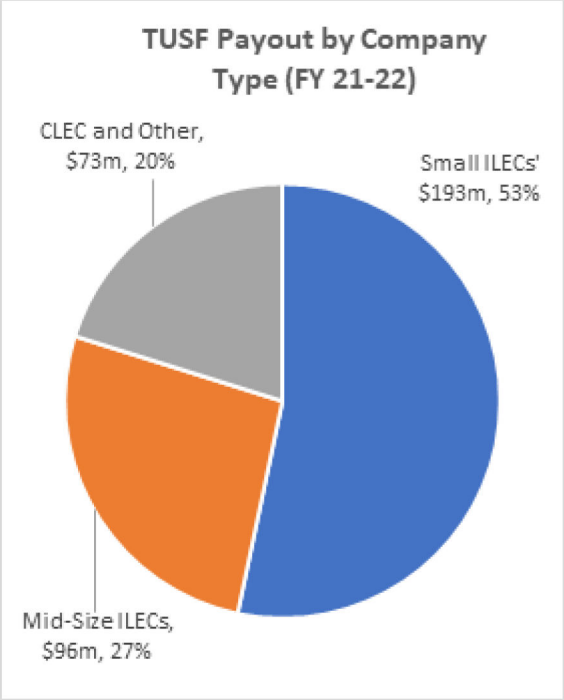
Table 2. High-Cost Programs

Program	Description	2021 Payout	FY 2022 Payout
Texas High-cost Universal Service Plan (THCUSP)	Support for **large** phone companies offering landline service in **high-cost-to-serve areas and rural areas**.	$85,027,341	$80,876,913
Small and Rural ILEC Universal Service Plan (SRIUSP)	Support for **small and rural** companies offering landline service in **high-cost-to-serve and rural areas**.	$89,391,493	$87,611,349
Additional Financial Assistance	Additional revenue for ILECs drawing funds from the THCUSP or SRIUSP under certain conditions (see PURA §§ 53.105, 53.151, and 53.406). Has never been used to seek additional support.	$0.00	$0.00
PURA § 56.025 Make-Whole Provision	Support for ILECs that serve **< 31,000** access lines to maintain reasonable rates for landline service. ILECs can request additional support from the **TUSF to match projected funding loss from changes to federal or state legislation**.	$4,360,782	$13,922,230
IntraLATA Support	Universal Service Fund Reimbursement for Certain IntraLATA Service. Reduces certain rates for **schools, libraries, nonprofit telemedicine centers, not-for-profit hospitals, and health centers**.	$192,885	$135,950
High-cost Uncertified	High-cost Universal Service Plan for Uncertificated Areas where an **Eligible Telecommunications Provider volunteers** to -provide BLTS. Financial assistance for ILECs that serve uncertificated areas of the state and have volunteered to provide landline service to residential and single-line business premises.	$200,632	$200,138
	Total:	**$179,173,133**	**$182,746,580**

Table 3. Social Service Programs

Program	Description	2021 Payout	FY 2022 Payout	FY 2022 Participation
Lifeline	Reduces monthly voice rates **for low-income consumers**.	$8,967,809	$4,633,902	764,456
Texas Relay Service	Allows Texans with speech or hearing disabilities to communicate using **specialized devices and operator translations**.	$1,010,395	$824,878	32,042 (completed calls)
Specialized Telecommunications Assistance Program (STAP)	Reduces the costs **of telephone equipment** for consumers with speech or hearing disabilities.	$16,137,996	$15,879,662	15,072 vouchers
Audio Newspaper Program	Free telephone service that allows blind and visually impaired persons access to the text of newspapers by using **synthetic speech**.	$427,585	$514,704	54,801 Registered users
Tel-Assistance Support	Reduces monthly voice rates **for low-income consumers**. No longer an active program. Only consumers who were receiving it prior to its discontinuation and did not want to switch to Lifeline still receive support through Tel-Assistance.	$1,225	$939	122
	Total	**$26,545,010**	**$21,854,085**	





Emerging Issues

Continued Need for POLR Designation

A telecommunications POLR is an ILEC or CLEC obligated to provide landline service at a reasonable cost to requesting consumers throughout its service territory. Through POLR obligations, ILECs and some CLECs must provide facilities and services to any consumers within their service territories, even if this requires building infrastructure for a single consumer to use.

Since POLR requirements were established, the telecommunications market has changed remarkably. The availability of alternative voice services (predominantly wireless) and continued buildout of facilities means consumers in competitive areas of Texas may be able to access voice services from a variety of providers at a reasonable cost. Beginning in 2015, companies serving competitive areas could request to be relieved of their POLR obligation. Companies have also started to contemplate the use of alternate technologies to meet POLR obligations.

Definitions of "Universal Service," "High Cost," and "Rural"

When the concept of universal service was established, landline voice service over copper-wire access lines was the primary telecommunications method. As a result, landline service was the technology supported by the FUSF and state universal service funds (for Texas, the TUSF). Since that time, technology and facilities have evolved. In 2011, the FCC began amending the FUSF programs to support wireless and broadband service.[46] Changes have included retiring programs that support landline service and creating new programs to support wireless and broadband.

As standard telecommunications service shifts away from landline to broadband service, the question of what constitutes meaningful "universal service" is evolving.

In Texas, broadband is now the primary communication method, and wireless voice services are now more prominent than landline services using voice data.[47] The PUCT does not have regulatory authority over the provision of wireless or VoIP services. However, the PUCT has authority over "voice data" for TUSF funding. "Voice data" is becoming increasingly merged into and indistinguishable from "wireless data," making the basis for funding universal service difficult to determine.

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[46] See generally FCC 17-166. The FCC is authorized to regulate all aspects of telecommunications and carriers providing "interstate telecommunications." Companies providing interstate voice data, VoIP data, and wireless/broadband data are required to contribute to the FUSF.

[47] The Texas Legislature has specifically defined "broadband service" under PURA § 43.003 as "retail Internet service…with the capability of providing a download speed of at least 25 megabits per second and an upload speed of at least 3 megabits per second." See PURA § 43.003. See also Tex. Gov't Code 4901.0101. The Legislature's definition of "broadband service" is consistent with the FCC's definition. See FCC 15-10, ¶3 at 3.

In 2021, Texas was the fastest growing state according to U.S. Census statistics and had an estimated population of 29,527,941.[48] The significant growth in population poses questions to what the term "rural" means in the context of TUSF program funding. Some areas of the state that were previously rural with low population density are transitioning into suburban and urban centers as Texas grows but are still deemed "rural" for purposes of TUSF. Neither "high-cost," nor "rural" is defined for this purpose in PURA or PUCT rules.

Sustainability of the Texas Universal Service Fund

As discussed under the "Texas Universal Service Fund" header, the global transition from voice data to wireless data is a solvency issue for the TUSF.

Since Q1 of FY 2018, the TUSF balance has decreased. Beginning in Q3 of FY 2019, the ending balance of the TUSF began to precipitously decline year over year, starting with losses of approximately 10-20% of the total fund balance and ending with losses of approximately 20-33% annually.

Historically, the PUCT collects approximately $100 million for the TUSF annually, however, this amount is decreasing every year.[49] In FY 2020, approximately $198 million was disbursed from the TUSF. Therefore, to maintain the solvency of the TUSF, the PUCT would have to either dramatically reduce TUSF support or collect an additional $100 million (for a total of $200 million) annually.

In June 2020, the PUCT considered whether to raise the assessment rate to maintain support for all TUSF programs. It was determined that increasing the assessment fee from 3.3% to 6.4% as proposed by PUCT staff would not sustain funding for all the programs in the long term. Additional increases to the assessment would be needed as revenue continued to decline. As a result, the PUCT chose not to increase the TUSF assessment rate at that time given the COVID-19 pandemic and resulting economic crisis, particularly since the increase would not have guaranteed long-term solvency.[50] As of Q2 of FY 2021, the PUCT had reduced TUSF disbursements by 60-70% of actual amounts to prevent insolvency of the fund.

PURA § 56.025(c) requires the PUCT to use TUSF funds to make companies whole for reductions in federal USF support due to an order, rule or policy of the Federal Communications

[48] "With a population of 29,527,941 in 2021, Texas had the largest annual and cumulative numeric gain, increasing by 310,288 (1.1%) and 382,436 (1.3%), respectively." *See* https://www.census.gov/newsroom/press-releases/2021/2021-population-estimates.html

[49] For FY 2021, the PUCT collected approximately $98 million for the TUSF.

[50] At the June 12, 2020, Open Meeting, the then-Commissioners declined to adopt PUCT staff's recommendation and did not increase the § 26.420(f)(6) assessment from 3.3%. *See Review of TUSF Rate*, Project No. 50796, Item Nos. 2 and 15.

Commissions. The requirements of PURA § 56.025(c) could worsen the already precarious financial condition of the TUSF.

TUSF Litigation

On January 20, 2021, the Texas Telephone Association (TTA), on behalf of and with its participating members, filed a lawsuit in Travis County against the Commission. The suit alleged that, in reducing the disbursements to TUSF participants in Q2 of FY 2021, the PUCT acted without authority and violated state law.[51]

Summary Judgment was issued by the 200th District Court of Travis County on June 7, 2021, in favor of the PUCT.[52] On June 25, 2021, the case was appealed by TTA, and on June 30, 2022, the Third Court of Appeals rendered judgment in favor of the appellants, reversed the District Court, voided the PUCT actions in 2020, and enjoined the Commissioners from not fully funding or reducing disbursements to the TUSF.[53] On July 14, 2022, the PUCT raised the TUSF assessment from 3.3% to 24%, effective August 1, 2022, in accordance with the judgment from the Third Court of Appeals.[54] The PUCT began paying current months' requests for reimbursements for eligible carriers beginning in October 2022.

A separate matter was initiated on August 30, 2021, when AMA TechTel filed a lawsuit in Travis County against the Commission.[55] On November 17, 2021, the district judge granted the injunction, and on November 18, 2021, the PUCT appealed the case to the Third Court of Appeals.[56] The Third Court of Appeals granted injunctive relief requiring the PUCT to reimburse AMA TechTel past due TUSF disbursements. As of October 2022, the PUCT has paid all past due TUSF disbursements to AMA TechTel.

On November 10, 2021, Alenco Communications, Inc. (Alenco) filed an application at the PUCT to recover funds from the TUSF. The application requests a prorated, monthly distribution of TUSF funds from the current TUSF balance and seeks to prioritize disbursements to Alenco over other TUSF funding recipients. The PUCT dismissed this case on July 14, 2022.[57]

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[51] *See Plaintiff's Original Petition*, Cause No. D-1-GN-21-000311, TRAVIS COUNTY DISTRICT COURT, 200th District.

[52] *See* Cause No. D-1-GN-21-000311*, Case Summary*, Travis County.

[53] Cause No. 03-21-00294-CV. *Judgement of Texas Court of Appeals, Third District,* THIRD COURT OF APPEALS.

[54] *See Review of TUSF Rate*, Project No. 50796, Item No. 60.

[55] See Cause No. D-1-GN-21-004498, Case Summary, TRAVIS COUNTY

[56] See Cause No. 03-21-00597-CV, Case Summary, THIRD COURT OF APPEALS.

[57] See Applications…to Recover Funds from the TUSF… Project No. 52808, Item No. 39.

WATER AND SEWER

The PUCT is charged with overseeing the financial and managerial aspects of water and sewer utility services in Texas. The PUCT regulates the retail rates of water and sewer IOUs. The PUCT has limited appellate jurisdiction over the rates of MOUs, districts and river authorities, water supply corporations (WSCs), and certain counties' wholesale and retail water and sewer rates. The PUCT issues and regulates any amendment or change in control of CCNs for water and sewer service providers. The PUCT also appoints temporary managers for abandoned or non-functioning IOUs to ensure that consumers receive continuous and adequate service. PUCT staff assist the utilities in staying in compliance by answering compliance-related questions and raising awareness about the rules and regulations. TCEQ regulates the health and safety standards of water and sewer utility services in the state. The PUCT and TCEQ coordinate on temporary managers and receiverships to ensure continuous service for Texans.

There are 3,989 water and sewer service providers holding CCNs under the PUCT's jurisdiction. As of the end of FY 2022, these CCNs encompass 10,744,157 water connections serving residences and businesses in the state. A CCN grants its holder the exclusive right to provide retail water or sewer utility service to an identified geographic area. Texas Water Code (TWC) Chapter 13 requires a CCN holder to provide continuous and adequate service to the area within its CCN boundary. Most Texans are served by large and medium-sized retail public utilities, including municipalities, districts, river authorities, and water supply and sewer service corporations. Small retail public utilities, typically serving fewer than 2,300 connections, serve the rest of the population. Counties that meet certain economic criteria or are within 100 miles of the US-Mexico border (Affected Counties) and all IOUs, WSCs, and sewer service corporations must hold a CCN to provide water and sewer services. Municipalities, districts, and counties other than Affected Counties are not required to have a CCN to serve in areas that are not already being lawfully served by another retail public utility. However, some municipalities and districts choose to obtain a CCN to protect their service area from encroachment. Figure 7 depicts the percentage of the CCNs by type of retail water and sewer providers.

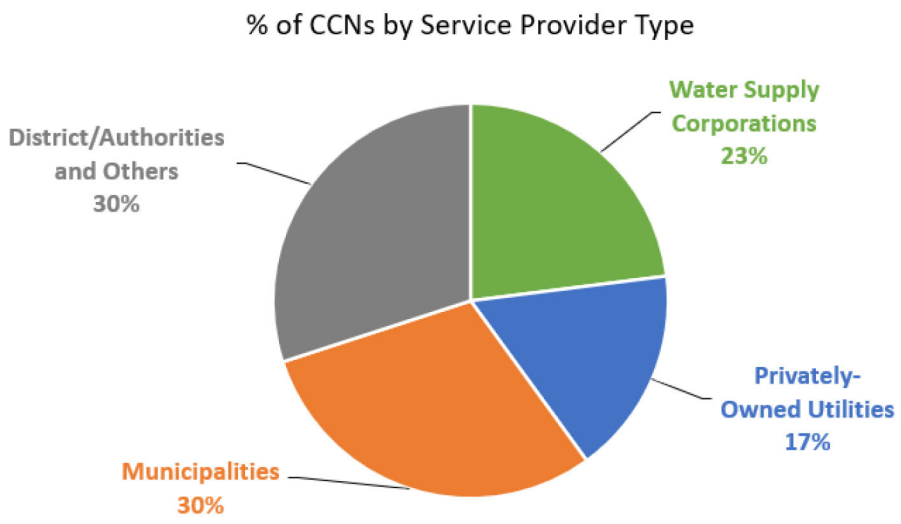

Figure 7. Percentage of water and sewer CCNs by service provider type

Primary Service Provider Types

Investor-Owned Utilities

Private companies offering sewer or potable water services are called IOUs. IOUs provide service for profit and range in size from small sole proprietorships or partnerships to large corporations. IOUs must hold a CCN to provide water or sewer services. As of the end of FY 2022, the PUCT regulated 553 active CCNs held by IOUs.

Water Supply Corporations

WSCs are member-owned, member-controlled nonprofit businesses that offer sewer or potable water services. Each entity sets up bylaws and articles of incorporation that govern how it operates. WSCs that only provide sewer service are also referred to as sewer service corporations. A WSC must hold a CCN to provide the public retail water or sewer service. As of the end of FY 2022, the PUCT regulated 758 WSCs.

Exempt Retail Public Water Utilities

Certain IOUs and WSCs are exempt from the requirement to hold a CCN to provide retail water utility service. Exemptions are available for utilities serving fewer than 15 service connections and are not owned or affiliated with a retail public water utility or any other entity that provides potable water service. This exemption is not available for utilities that provide sewer service. If the exempt utility is a MOU, it must register with the PUCT and declare its existence. The PUCT has appellate jurisdiction over exempt utilities' rates. If 50% or more of consumers request intervention, the PUCT will review a utility's rates. As of the end of FY 2022, 39 exempt retail public water utilities were registered with the PUCT.

Districts

A district is a local governmental entity that provides water, sewer, or both services to its consumers and residents.[58] A district does not have to hold a CCN to provide retail water or sewer service to its consumers unless it intends to provide service in an area already served by a retail public utility.[59] The most common types of districts are municipal utility districts, water control and improvement districts, and special utility districts.

River authorities are a type of district.[60] As political subdivisions of the state, river authorities operate major reservoirs and are granted authority to control and distribute the waters of a specific geographic region. River authorities may provide water, sewer, or both services, along with other services such as water conservation, irrigation, flood control, firefighting, garbage collection, and recreation facilities. Like districts, river authorities do not have to hold a CCN.[61]

The number of districts, including river authorities, that opted to obtain a CCN from the PUCT was 960 in FY 2022.

Municipally Owned Utilities

Many Texans receive water and sewer service from a MOU. A MOU includes any retail public utility owned, operated, and controlled by a municipality or by a nonprofit corporation with directors appointed by one or more municipalities. Like districts, MOUs do not have to hold a CCN to provide retail water or sewer service inside or outside their extraterritorial jurisdiction. However, a MOU must obtain a CCN if it wishes to serve consumers in an area already served by another retail public utility. In FY 2022, 990 MOUs held CCNs.

Certificates of Convenience and Necessity

The PUCT has sole jurisdiction over water and sewer CCN regulations. The PUCT must ensure that a CCN applicant has the financial, managerial, and technical capability to run a utility. Any overlaps in a proposed service area with neighboring utilities, cities, or districts must be resolved before the CCN is granted. If the service area requires the construction of a new water or sewer system, the CCN applicant must also obtain engineering plan approval from TCEQ.

Utilities seeking to obtain a new CCN or amend an existing CCN to change the boundaries of its certified service area must file an application with the PUCT. Decertification, expedited release, and streamlined expedited release proceedings remove all or a part of a certificated service area from a CCN. A utility that receives a request to provide service to an area outside its

[58] Tex. Government Code Ann. § 49.001(1).
[59] Tex. Government Code Ann. § 49.215(d).
[60] Tex. Government Code Ann. § 49.001(8).
[61] Tex. Government Code Ann. § 49.215(d).

CCN boundaries must first amend its CCN and add the requested area to lawfully provide service to the new area. Political subdivisions such as municipalities, districts, and counties may obtain a CCN but are not required to do so unless they plan to provide service in an area where another utility is already lawfully serving.

During FY 2021 and FY 2022, the PUCT finalized 317 CCN-related applications, including requests for new CCNs, amendments, decertification, and expedited release cases. Figure 8 shows the quarterly number of finalized CCN-related applications in FY 2021 and FY 2022.

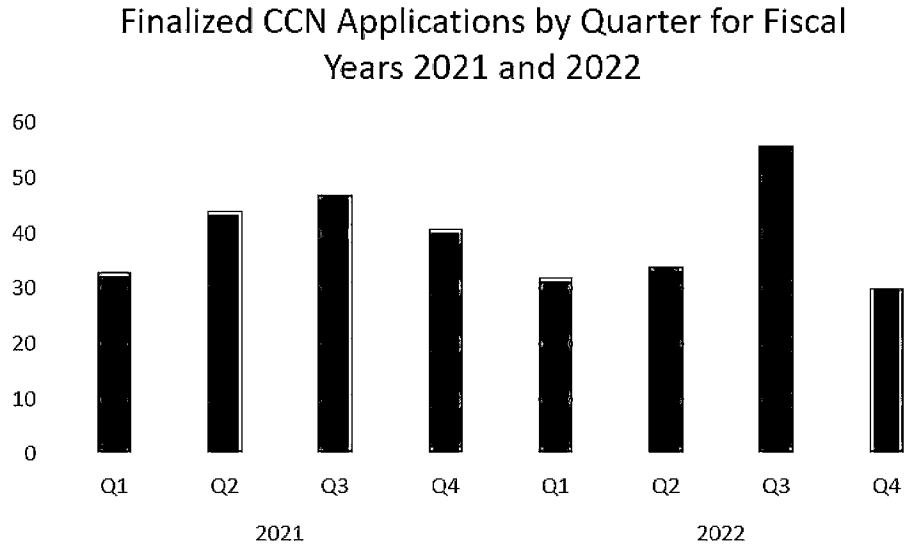

Figure 8. The number of finalized CCN-related applications in each quarter of the 2021 and 2022 fiscal years.

Utility Acquisitions

Any change of control, such as a sale or acquisition of a CCN holder's water or sewer system, requires notice to consumers and neighboring utilities and approval from the Commission. A sale may also require the transfer of the CCN to the purchaser. The transfer and related sale of facilities is commonly known as a sale, transfer, or merger (STM). The acquiring entity may be either an existing utility or a new market entrant. Like the process for granting a new CCN, during a STM proceeding the PUCT examines the financial, managerial, and technical capability of the acquiring entity to provide continuous and adequate service to the service area defined by the CCN, plus any areas already served by the acquiring entity. The applicant's financial health, compliance history with TCEQ's health and safety standards, and any consumer complaint history are considered in the proceeding. To obtain PUCT approval, the applicant must also show that the proposed STM is in the public interest.

There has been an increase in acquisitions of smaller water and sewer utilities by larger IOUs during the past few years. With the continued growth of the Texas economy, several IOUs, including those based in other states or countries, are actively pursuing acquisition and

consolidation of smaller utilities in Texas. Economies of scale gained through acquisitions provide value to IOUs along with regulatory and operational efficiencies. In addition, new regulatory processes, such as fair market value and filed rate doctrine help facilitate transactions.

Expedited Release

The owner of a tract of land of at least 50 acres can petition the PUCT to receive service from a different retail public utility through an expedited release proceeding. The petition can include all or a part of the tract. The landowner may initiate such a petition requesting service from another provider if the CCN holder for its geographic area is either not providing service or if the service cost is so prohibitively expensive as to constitute a denial of service. Petitions for expedited release must identify an alternative provider that can provide service in the level and manner requested by the landowner. The CCN holder can oppose the expedited release and may refute any information submitted by the petitioner. The landowner requesting the expedited release must provide adequate and just compensation to the CCN holder for release. An expedited release can occur anywhere in the state, except within cities with a population

Streamlined Expedited Release (SER)

The owner of a tract of land of at least 25 acres that is not receiving water or sewer service may petition for a streamlined expedited release from the current CCN holder for its geographic area. The landowner must provide adequate and just compensation to the CCN holder for such a release. Streamlined expedited release is available in the following 33 counties under TWC § 13.2541: Atascosa, Bandera, Bastrop, Bexar, Blanco, Brazoria, Burnet, Caldwell, Chambers, Collin, Comal, Dallas, Denton, Ellis, Fort Bend, Galveston, Guadalupe, Harris, Hays, Johnson, Kaufman, Kendall, Liberty, Montgomery, Parker, Rockwall, Smith, Tarrant, Travis, Waller, Williamson, Wilson, or Wise Counties.

CCN Revocations

Revocation of a CCN is necessary when the CCN holder does not provide or is incapable of providing continuous and adequate retail water or sewer service. This failure could be the result of the utility's insolvency, the dissolution of the company that owns the CCN or the death of the CCN holder. A revocation may also be necessary if the utility has never provided service and has no active plans to do so in the future. Because a CCN grants the holder an exclusive right to provide utility service to a defined geographic area, other potential service providers are prevented from providing water sewer service to consumers in the area. DICE conducts investigations and initiates proceedings to revoke the CCNs of failing utilities. The CCN must be revoked to limit harm to consumers and ensure a quality provider may instead serve the area.

Ratemaking

Water and sewer utilities must have sufficient revenues to cover daily operations, repair and replace equipment, and repay debts. A utility must maintain a strong balance sheet and sufficient cash flows to attract investors or lenders and raise the funds necessary to invest in capital-intensive water and sewer systems. A utility must also generate enough annual cash flow to repay any accrued debt and to pay for operating expenses.

A utility's primary revenue source is the payment of consumers' bills. The rates charged to consumers must be established to recover the utility's reasonable and necessary cost of providing service. These include the costs for production, treatment, storage, collection, and distribution.

Rates must be periodically reviewed and, if necessary, reset to reflect a utility's change in costs. Stagnant rates can result in a utility collecting insufficient revenues over time and may prevent investment in system repairs or improvements necessary to maintain service or increase efficiency. This is particularly true for smaller utilities with limited access to capital markets to fund investment. Conversely, a utility could over-earn if its rates are not reviewed in a timely manner. Over-earning allows benefits to accrue for shareholders or owners at the expense of the consumers.

PUCT rate cases establish just and reasonable rates for water and sewer utilities. During FY 2021 and FY 2022, the PUCT finalized 121 water and sewer utility rate applications. Figure 9 shows the quarterly numbers of completed rate applications in FY 2021 and FY 2022.

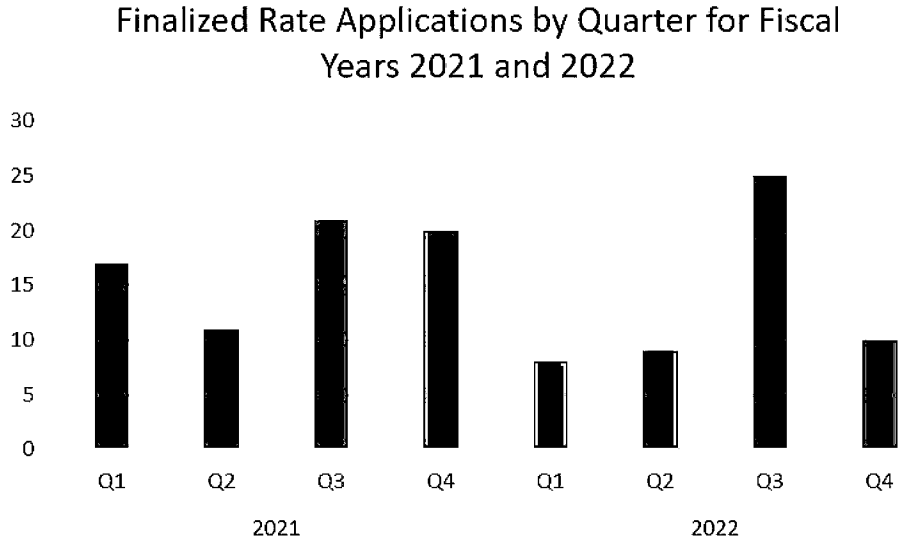

Figure 9. The number of finalized rate applications in each quarter of the 2021 and 2022 fiscal years

Jurisdiction

Original jurisdiction over fees charged by water and sewer providers depends on the utility's type and location.

The PUCT has original jurisdiction over IOUs' retail water and sewer rates in most cases. The PUCT has appellate jurisdiction over the rates of IOUs where the service area is within a municipality's corporate boundaries. In this case, the municipality has original jurisdiction over the retail rates unless the city surrenders its rate jurisdiction to the PUCT. The following cities have surrendered to the PUCT jurisdiction over IOUs' rates within its corporate boundaries:

- City of Coffee City – effective 12/4/1993
- City of Nolanville – effective 04/18/1996
- City of Aurora – effective 04/04/1997
- City of Arcola – effective 05/05/1998
- City of Waco – effective 02/07/2012
- City of San Antonio – effective 01/30/2014
- Village of Jones Creek – effective 12/04/2014 and
- City of Hideaway – effective 09/26/2016.

The PUCT has limited appellate jurisdiction over the retail rates of WSCs, Affected Counties, and districts, including river authorities. The governing board of a WSC or a district sets retail water and sewer rates for its consumers. After the board approves a rate change, if 10% or more of the consumers protest, the rates can be appealed to the Commission. The PUCT also has limited appellate jurisdiction over the rates of consumers served by MOU but residing outside of the governing city's territorial limits. The city council or a separate board established for consumers may set rates for services provided by MOUs. Consumers that reside outside of the city limits and are therefore not represented by the MOU's governing body may appeal these ratemaking decisions to the PUCT. To date the PUCT has not received an appeal regarding the retail rates of an Affected County. Figure 10 shows the percentage of service connections over which the PUCT has appellate or original jurisdiction.

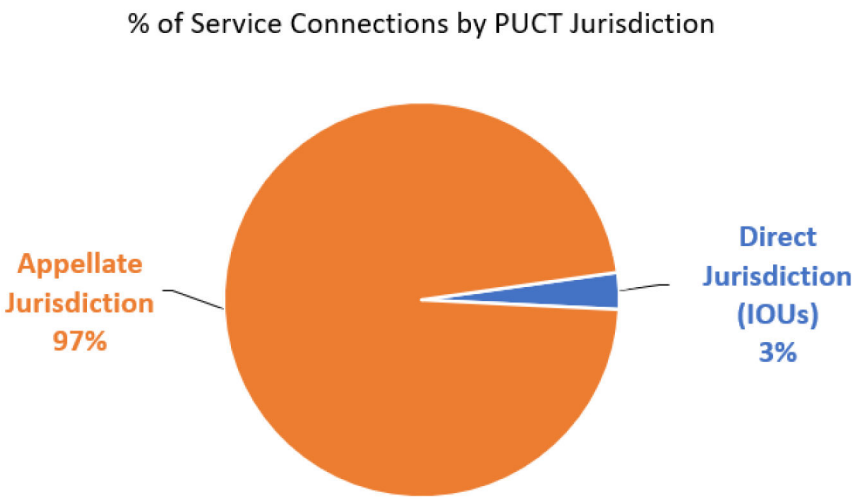

Figure 10. Percentage of service connections by PUCT Jurisdiction

Formal Ratemaking Proceedings

A utility must file its rate case with the regulatory authority with original jurisdiction over its water or sewer rates. Although homeowner associations, property owners' associations, and cooperatives are nonprofit entities, TWC treats them as utilities for ratemaking purposes. Utilities can file for a rate change no more than once in a 12-month period.

Rate-filing requirements for IOUs under PUCT jurisdiction vary depending on the utility's classification. TWC classifies water or sewer utilities by the number of active connections served. Sewer utility connections are not counted for classification purposes unless the utility only provides sewer service. The number of connections determines the classification as either a Class A, B, C, or D utility, as shown in Table 1. The percentages of the number of utilities and the total connections served by each utility class are shown in Figure 11.

Table 4. IOU Classification is based on the number of connections.

IOU Classification	Number of Connections
Class A	10,000 - greater
Class B	2,300 - 9,999
Class C	500 - 2,299
Class D	0 - 499

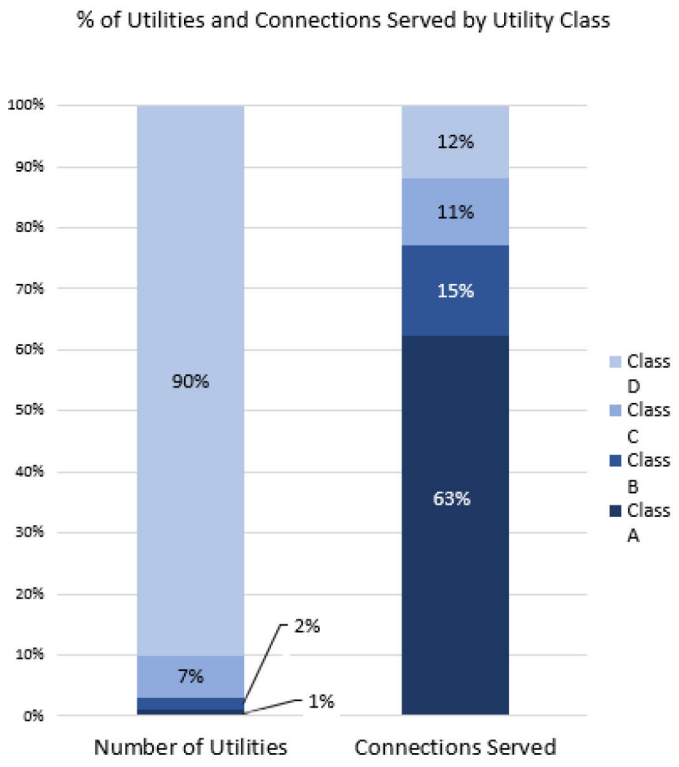

Figure 11. Percentage of utilities and connections by utility class.

Class A utilities have the most stringent rate-filing requirements. A Class A utility must show cost information, provide rate schedules, and include written testimony supporting the requested rates. The utility must also provide all information regarding affiliate charges. The rate application must include a notice to affected consumers and the regulatory authority with jurisdiction over its rates.

Class B and Class C utilities have simplified filing requirements that require fewer rate schedules and less detailed financial information. Written testimony is not required unless a formal hearing is requested. Class B and Class C utilities must also provide all information regarding affiliate charges and comply with notice requirements for affected consumers and the regulatory authority with jurisdiction over its rates.

Class D utilities have the simplest rate filing requirements. A Class D utility may apply to implement an annual rate adjustment of up to five percent without a hearing. The utility must provide notice to its consumers at least 30 days before the effective date of the proposed change. This simplified rate adjustment treatment may be utilized up to four times before a comprehensive base rate proceeding is required. A Class D utility must file the more detailed Class C utility application for a comprehensive base rate proceeding or a rate increase over five percent.

Pass-Through Adjustments

A pass-through adjustment is a minor rate change that allows a retail public utility to obtain a rate increase or decrease to account for changes in costs imposed by governmental entities and wholesale water providers. These costs are typically outside the utility's control and are not reflected in the utility's cost of service. Pass-through rate adjustments are typically processed within 60 days and provide timely recovery of a utility's costs. A utility can apply for an update to the pass-through rate each time the governmental entity increases or decreases the rates to the utility. These changes may happen several times a year. To recover the adjusted rate and meet the revenue requirement, the utility must separate the costs of a pass-through rate from the other charges.

Alternative Ratemaking

SB 700 (86th Legislature, Regular Session) established alternative ratemaking methodologies for water and sewer rates and established a system improvement charge (SIC). These methodologies include the use of multi-step rates, the cash needs method, and the ability to request the addition of a new customer class. Alternative ratemaking provides utilities and the PUCT additional tools to implement rate changes outside intensive base rate proceedings.

Multi-step rates allow the utility to implement rates over time without filing multiple rate applications. Once established in a comprehensive base rate proceeding, multi-step rates allow a tiered approach to raise rates over time and reduce rate shock on consumers. The cash needs method enables a utility to recover operating expenses, debt service costs, and an additional margin consisting of either an operating margin or an incremental revenue amount. The cash needs method is only available to a Class C or Class D utility and the utility must support its use. Specifically, the method must be deemed necessary for the utility to provide continuous and adequate service or other good cause exists. Generally, a utility may request the addition of a new customer class or classes in its tariff and extend the timeline for a comprehensive rate case. The utility's application must demonstrate that the rates are based on standard cost-of-service and rate design principles. Revenues to be recovered from the new class must be a limited percentage of the utility's total annual revenue.

A SIC allows a utility to seek recovery of the cost of eligible facilities through a rider instead of a comprehensive base rate case. Unless a hearing is requested or the filing is deemed insufficient, an SIC application can be processed within 120 days after filing. SIC helps ensure the timely recovery of utility infrastructure investments. Costs recovered through a SIC are subject to reconciliation in the utility's next comprehensive rate case, required within four to eight years, depending on the utility's size.

Submetering and Allocation

Businesses such as apartments, condominiums, manufactured home communities, office parks, and marinas may provide water or sewer service to their tenants. These businesses obtain water and sewer services from a utility and may choose to pass the bills on to tenants through submetering or allocation. For submetering, the business is responsible for installing and maintaining individual meters, so consumers are billed for actual usage. If allocating, the business must use specific formulas based on characteristics such as the number of occupants and size of the unit to charge the tenants an equitable share of the total usage. The PUCT has jurisdiction over business owners, operators, or managers who submeter or allocate their units. Businesses are responsible for following the PUCT's rules which provide safeguards for tenets and ensure just and reasonable rates.

Property owners that submeter or allocate utility charges must register with the PUCT. There are currently 3,689 entities registered to submeter and 7,071 registered to allocate the water or sewer utility service charges to tenants. The high number of entities submetering and allocating services presents challenges for ensuring consumers are properly informed and billed. Many property owners are unaware of the legal requirements surrounding submetering and allocation. Submetering and allocated bills complaints typically include disputes regarding billing or allocation methods, lack of communication, limited notice of billing changes, or billing changes made without update to the tenant's lease agreement. There are also frequent changes in ownership and owners changing billing procedures without approval by the Commission. Many underlying noncompliance issues appear to stem from ignorance of the rules rather than intentional noncompliance.

Distressed Utilities

While health and safety issues fall within TCEQ's jurisdiction, the PUCT is responsible for ensuring that utilities provide continuous and adequate service to their consumers. A healthy rate structure is necessary for the sustainability of a utility's operation. The PUCT is responsible for ensuring that utilities have rates that generate enough funds to safely maintain and operate the system.

While a utility must demonstrate the financial, managerial, and technical capability to provide continuous and adequate service to obtain a CCN, these capabilities can diminish over time. This is especially true with smaller utilities that may have their financial, managerial, and technical capability tied to a single person. Additionally, lack of access to financial resources is a significant challenge for smaller utilities. It is difficult to generate sufficient revenues through rate increases, given the limited number of consumers. Inadequate revenues and insufficient access to capital can make it difficult or impossible for a utility to make necessary improvements to its system.

Utilities in financial distress may fail to perform basic business tasks such as answering consumer calls, reading meters, billing according to the utility's tariff, maintaining adequate records, or paying electricity and wholesale water supply bills. TWC provides temporary management, supervision, and receivership as tools to assist these utilities. These tools can help utilities get the qualified management they need to provide continuous and adequate service in compliance with PUCT and TCEQ regulations. The PUCT can assist these utilities in finding new ownership.

Temporary Management

A temporary manager may be appointed to operate a nonfunctioning water or sewer utility that has discontinued or abandoned operations. Both TCEQ and the PUCT have jurisdiction to appoint a willing person, municipality, or political subdivision to temporarily manage a utility. Only IOUs may be placed in temporary management.

A temporary manager has the power and duty to ensure the continued operation of the utility and the provision of continuous and adequate water or sewer service to consumers. This includes reading meters, billing consumers and collecting revenues, making necessary repairs to the system, and conducting required sampling. Temporary managers must meet detailed reporting requirements including monthly reports on the utility's properties, business transactions, the status of systems, significant events, and consumer complaints. PUCT staff monitor each filing for compliance with the rules throughout the temporary manager's tenure.

In the case of an abandoned utility, immediate action may be needed to protect consumers and ensure public safety. The PUCT's Division of Utility Outreach (DUO) oversees identifying abandoned utilities, finding suitable and willing temporary managers, referring the utilities for temporary management or receivership, and coordinating with other state agencies. DICE provides legal and investigative support during the appointment process and, upon referral from DUO, prepares the petition to appoint a temporary manager. The PUCT's executive director can issue an emergency order and appoint a temporary manager for an abandoned utility. The PUCT must ultimately approve, modify, or set aside the emergency order. Appointments can also be made by order of the PUCT after a hearing.

When the temporary manager is appointed, the PUCT sets a compensation fee for the manager's time and services that will be added to the consumers' bills. The temporary manager can also apply for temporary rates to cover the reasonable costs associated with the utility's operations and maintenance. This rate may cover the costs the temporary manager incurs to make service available or to bring the nonfunctioning system into compliance with PUCT and TCEQ's requirements. Upon filing notice, the temporary manager may immediately begin imposing the temporary rates. The PUCT must approve or adjust the temporary rates within 90

days of implementation. Temporary rates may continue after a nonfunctioning utility is acquired by another utility for a period determined by the Commission.

Since the beginning of FY 2021, the PUCT has appointed nine temporary managers to abandoned water utilities encompassing 14 public water systems. As of the end of FY 2022, there were 11 utilities encompassing 16 active public water systems under temporary management.

Receivership

The PUCT and TCEQ each have the authority to refer a water or sewer utility to the Office of the Attorney General (OAG) to seek the appointment of a receiver for a nonfunctioning system. The OAG may seek a court-ordered appointment of a receiver to manage and operate a nonfunctioning water or sewer utility. A receiver has more power over a utility than a temporary manager, including the ability to seek court approval to sell the utility. A receiver is also authorized to charge temporary rates; however, the Commission PUCT must set those rates. Table 5 summarizes and compares the authorities and responsibilities of temporary managers and receivers according to TWC.

Table 5. Comparison of authorities and responsibilities between temporary managers and receivers.

	Temporary Manager	Receiver
Eligibility	May be a natural person, partnership, water supply or sewer service corporation, or corporation.	Must be an individual – not an entity, group, or organization. A receiver is accountable to the state district court.
Process to appoint	Appointed by order of the PUCT or TCEQ and accountable to the appointing agency.	Appointed by the court with Commission's referral and accountable to the state district court and the appointing agency.
Reporting	Must submit monthly reports to both TCEQ and PUCT.	Must submit monthly reports to the Court, TCEQ, and PUCT.
Authority to sell	Cannot sell the system.	May file a motion at the court and seek authorization to submit an STM to the PUCT and sell the system.
Compensation	The PUCT sets a temporary manager's fee which is added to the consumer's bills.	The court sets a receiver's fee which is added to the consumer's bills.
Rates	May apply to the PUCT to charge temporary rates.	May apply to the PUCT to charge temporary rates.

As of the end of FY 2022, eight utilities were in receivership, four of which had STMs either in progress or completed.

Supervision

The PUCT is the only agency with the authority to place a utility under supervision. A utility may be placed under supervision if it has exhibited gross or continued mismanagement, gross or continued noncompliance with TWC Chapter 13, or has exhibited noncompliance with PUCT orders.

When a utility is placed under supervision, the PUCT may require the utility to abide by specific conditions and requirements. This could include placing restrictions on hiring, salary or benefit increases, capital investments, borrowing, issuance of stocks, and the use of funds. The PUCT may also impose conditions on the priority of payments and other financial obligations. Currently, the PUCT lacks the resources to utilize this tool and there are no utilities under supervision.

PUCT Resources

Working with utilities in temporary management or receivership situations requires significant agency resources. PUCT staff spends considerable time helping temporary managers through temporary rate applications and, if necessary, helping them obtain or amend a CCN. Staff also assist the temporary manager or receiver with coordination between local, state, and federal

agencies and explain reporting requirements. Staff often hold consumer meetings and contact neighboring utilities and other entities to facilitate the acquisition of the nonfunctioning utility.

In some cases, the period of temporary management must be extended, or a new temporary manager must be found. This can occur because the existing temporary manager is no longer willing to continue with the appointment or the purchasing party is no longer interested in buying the nonfunctioning utility. The average time a nonfunctioning utility remains in temporary management, supervision, or receivership is between two and four years.

During the 2021-22 biennium, the PUCT has closed four temporary management appointments, with three systems having finalized STMs and one returning to the original owner. The PUCT has completed processing the transfer of four utilities in receivership and worked closely with the OAG and TCEQ to dismiss the receivers. All these utilities were abandoned, and consumers were experiencing substantial issues with their services. With new owners, the systems have restarted regular operations.

Emerging Issues

Consolidation and Regionalization of Retail Public Utilities

As federal health and safety regulations on public water and sewer systems increase, many retail public utilities must make large capital investments to stay in compliance with revised standards. Without a substantial rate increase, these utilities are unable to make these needed investments. In lieu of increasing their rates, many utilities contact the PUCT to express an interest in selling their systems. Some entities have already found a potential buyer, while others need help finding a purchaser. In some instances, the utility has already been sold, but because the sale was not approved through the STM process required by TWC § 13.301, the sale is rendered void.

The PUCT's DUO works closely with retail public utilities seeking to find a viable entity to acquire, purchase, or consolidate their systems with another utility. DUO also works with entities that have acquired or sold systems without first going through the required regulatory approvals to become compliant, by helping them navigate the regulatory process and understand applicable rules.

Assisting Utilities During and After Winter Storm Uri

Winter Storm Uri affected water systems across Texas were affected and many consumers experienced the loss of water service. The PUCT worked with water and electric utilities to identify affected water facilities and help restore and maintain electric service. The PUCT worked with TCEQ to identify water utilities without power and required boil water notices to safely

restore service. The PUCT also implemented a temporary moratorium on water utility disconnections during recovery from Winter Storm Uri.

In the aftermath of Winter Storm Uri, some utilities had difficulty paying their electric bills due to insufficient revenue from water sales and the inability to disconnect for nonpayment. PUCT staff worked with the water and sewer utilities' electric providers to ensure continuous electricity for the utility. Electric providers set up payment plans to help affected water and sewer utilities have the time necessary to pay their bills in full.

Critical Water Facilities

SB 3 requires entities that meet the new definition of "affected utility" under TWC § 13.1394 to file specific information to help identify emergency contacts and facility locations in an emergency event. The term "affected utility" is defined as a retail public utility, exempt utility, or provider or conveyor of potable or raw water service that furnishes water service to more than one consumer and is not in Fort Bend or Harris Counties. Utilities must identify the location and provide a written description of all water and sewer facilities that qualify for critical load status, emergency contact information for a primary and an alternate point of contact, and the utility's address. In addition to filing this information at the PUCT, the utility must provide a copy to each TDU that provides electric service to the affected utility, each REP that sells power to the utility, the office of emergency management of each county where the utility has water and sewer facilities that qualify for critical load status, and the Texas Division of Emergency Management (TDEM) of the Governor. November 1, 2021 was the initial deadline for affected utilities to provide the required information. As of September 2022, the PUCT has received more than 1,500 critical water filings in the project created as a repository for the filings. Since 2021, PUCT staff has conducted extensive SB3-related outreach activities. DUO has given 13 presentations regarding the critical facilities requirement at conferences and trade associations, created a new Utili-Facts document, and conducted educational campaigns, including both mass email and regular mail, to inform the affected utilities about the requirement.

Rulemakings

Alternative Ratemaking

Project No. 50322, Alternative Ratemaking Mechanisms for Water and Sewer Utilities. In December 2021, the PUCT repealed 16 TAC § 24.75 and adopted new 16 TAC § 24.75, relating to *Alternative Ratemaking Methodologies*. The rule implemented specific provisions of TWC § 13.183(c) enacted by SB 700 (86th Legislature, Regular Session) by establishing alternative ratemaking methodologies for determining water and sewer utility rates. New 16 TAC § 24.76, relating to *System Improvement Charge* implements a method for a utility to ensure the timely recovery of infrastructure investment between comprehensive rate cases.

Customer Protection

Project No. 52405, Review of Certain Water Customer Protection Rules. SB 3 provides for consumer protection during extreme weather events. The law applies to retail public utilities that must possess a CCN, districts, and affected counties that furnish retail water or sewer utility service. In October 2022, the PUCT adopted new rules 16 TAC § 24.173, relating to *Late Fees and Disconnections During an Extreme Weather Emergency for Nonpayment* and 16 TAC § 24.364, relating to *Civil Penalties for Late Fees and Disconnections During an Extreme Weather Emergency for Nonpayment*, to implement the statute. The rules prohibit a utility from charging a consumer late fee or disconnecting the consumer for nonpayment during a defined extreme weather emergency. Utilities must offer payment plans for bills due during an extreme weather emergency and adopt a civil penalty classification system to be used by the OAG and the courts for violations of the requirements.

Class D Water and Sewer Utility Rate Adjustments

Project No. 54062, Class D Water and Sewer Utility Rate Adjustments. In November 2022, the PUCT adopted amendments to 16 TAC § 24.49, relating to *Application for a Rate Adjustment by a Class D Utility Under Texas Water Code § 13.1872*. The amendments simplify the application process for a Class D water utility rate adjustment and provide the utility with PUCT resources to aid with regulatory compliance. The PUCT also adopted amendments to the corresponding Class D utility rate adjustment application form.

ENFORCEMENT

The PUCT's enforcement efforts focus on violations of PUCT rules and statutes, such as PURA and TWC. Wholesale electric market and grid reliability investigations also involve the ERCOT Protocols, operating guides, and other documents. Ensuring compliance protects consumers, the electric markets, and the reliability of the grid. Compliance ensures quality of service to all Texans who rely on regulated electric, water, sewer or telecommunications services.

Other PUCT divisions oversee the informal and formal complaints of individual consumers. DICE was created in August 2021. DICE focuses on larger, systemic violations of law and rules and on those violations which have the most significant impact on the public interest. Enforcement matters were managed by the Legal Division from September 1, 2020, through July 31, 2021.

The PUCT's compliance and enforcement program goals are accomplished through investigations, audits, and enforcement actions. Throughout the process, DICE's enforcement analysts and lawyers collaborate with subject matter experts across the agency. The Customer Protection, Infrastructure, Legal, and Market Analysis divisions work closely with DICE. Experts from ERCOT, the IMM, and the ERCOT Reliability Monitor also provide critical expertise to inform and support DICE investigations. Analysts provide technical and factual expertise while attorneys provide legal analysis and litigation management. Experts advise DICE attorneys on fact-based issues to help develop effective legal enforcement strategies.

Investigations

The PUCT has statutory authority to investigate regulated electric, water, and telecommunications entities. DICE monitors consumer complaints filed with CPD and will open an investigation if the issue appears to have systemic or broad implications for a group of consumers. Additionally, DICE launches investigations in response to self-reporting by entities, press reports, and legislative inquiries. For the wholesale electric market, ERCOT, the ERCOT Reliability Monitor, and IMM can also inform DICE of potential violations for investigation. Most investigations are resolved through settlement rather than litigation of contested cases.

During the 2021-22 biennium, PUCT staff closed 104 investigations into the electric industry, five investigations into the telecommunications industry, 20 investigations into the retail water and sewer industries. Ten investigations related to apartment complex billing matters were investigated. An investigation can be closed by determining no violation occurred, issuing a warning letter, gaining approval of an order imposing monetary penalties, or revoking a license or certificate.

Penalties, Refunds, and Donations

In the 2021-2022 biennium, the PUCT assessed $1,785,250 in penalties against regulated entities. These penalties are remitted to the state's general revenue fund. The distribution of the penalties based on the industry is shown in Figure 12. In addition, DICE has started tracking refunds to consumers and donations to consumer assistance agencies that resulted from enforcement proceedings. In FY 2022, the PUCT secured $385,973.10 in refunds to consumers and donations to consumer assistance agencies.

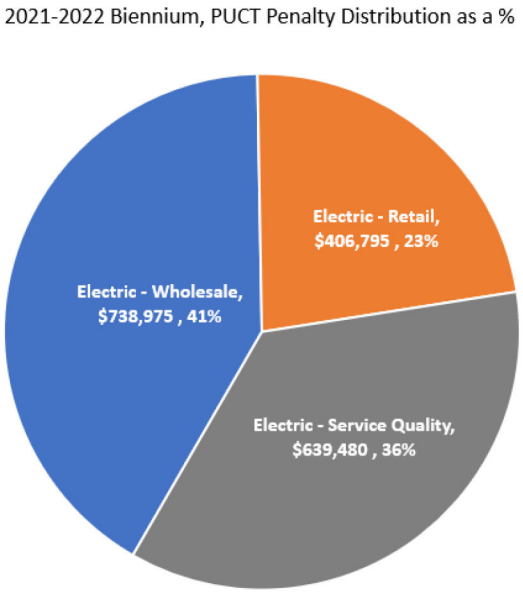

Figure 12. Penalty distribution

Winter Weather Preparation Reporting

Following SB 3, the PUCT adopted a new rule governing the winter preparedness of generation resources and transmission voltage substations and switchyards.[62] SB 3 also increased the PUCT's administrative penalty authority to $1 million per violation, per day for violations related to weather preparation regulations. DICE was tasked with ensuring compliance with these new, first-in-the-country regulations. PUCT and ERCOT subject matter experts worked together to develop a compliance and enforcement regime. Detailed technical filings were received from more than 800 entities and reviewed by PUCT and ERCOT staff. More than 90% of power generation entities and 95% of transmission companies complied with the new regulations. DICE launched compliance investigations or enforcement proceedings against the

[62] 16 TAC § 25.55, *Weather Emergency Preparedness*.

remaining entities. Enforcement cases were filed against eight entities specifically for failing to follow the detailed regulations. These cases are pending.

SB 3 also added new provisions to TWC enhancing the PUCT's ability to safeguard retail water or sewer consumers from disconnection for nonpayment during winter weather emergencies. Among other provisions, TWC § 13.414 enables the PUCT to refer violating utilities to the Office of the Attorney General for the collection of enhanced administrative penalties. The PUCT has adopted rules codifying this enhanced enforcement ability.

Loss of Certificates

In addition to financial penalties, the PUCT has other enforcement tools, such as revoking a company's certificate to operate. Some companies may be required to relinquish a certificate as part of a settlement after enforcement action has concluded. Notably, DICE revoked seven REP certificates and settled on an agreed relinquishment for an additional REP certificate following the financial fallout from Winter Storm Uri. Two REP certificate revocation proceedings have been filed and are pending action by the Commission.

Warning Letters

DICE issues warning letters to companies for minor infractions or where no administrative penalty is necessary. DICE may issue a warning letter when an entity proactively works to resolve violations early in an investigation. The warning letters remain on file and can be referenced by DICE to demonstrate patterns of violation over time. During the 2021-2022 biennium, DICE issued 55 warning letters to entities found not in compliance with PUCT rules.

Power Line Inspection and Safety

HB 4180 (86th Legislature, Regular Session) established the Power Line Inspection and Safety program. All overhead distribution and transmission voltage equipment that crosses one of the 178 lakes identified in PURA § 38.004 must comply with vertical clearance standards in effect at the time the equipment was built. Noncompliance must be remedied, or the equipment rebuilt to meet today's standards.

Electric utilities with overhead distribution or transmission voltage facilities must file reports documenting adherence to vertical line clearance standards. PURA § 38.102 requires utilities to file an annual report, a five-year report, and a one-time training report. DICE monitors these reports for compliance with filing deadlines and for required compliance disclosures.

Following an investigation in March 2022, DICE determined that 13 utilities were not in compliance with vertical clearance standards. As of the date of this report, eight utilities remain

out of compliance. DICE has required each of these entities to file monthly progress reports detailing the activities each are taking to bring the affected facilities into compliance.

Reliability Monitor Function

The PUCT is required to adopt and enforce rules related to the reliability of the ERCOT transmission network. PURA allows the PUCT to delegate some or all this responsibility to an independent organization. ERCOT, Inc., under complete authority and oversight by the PUCT, is charged with adopting rules related to the reliable operation of the transmission system in the ERCOT power region.

From 2010 to 2020, the PUCT contracted with the Texas Reliability Entity to provide monitoring services related to ERCOT's reliability rules and to assist the PUCT with its obligation to enforce those rules. Since 2020, PUCT staff have worked closely with ERCOT staff to continue monitoring industry adherence to these reliability rules. In November 2022, the PUCT directed ERCOT, Inc. to formally assume the duties of the reliability monitor for the ERCOT power region. This action will enable the PUCT to put safeguards in place to prevent conflicts of interest and ensure the independence of the ERCOT personnel working on reliability monitoring activities.[63]

[63] Project No. 54248.

RESOURCES FOR TEXANS

The PUCT's Customer Protection Division assists electric, water and telephone utility consumers with complaints against utilities and answering general questions about consumer issues.

The PUCT's CPD Intake Center answers various questions from consumers received via phone, mail, email, and the PUCT website. CPD investigators analyze and respond to complaints. Licensing and Compliance oversees the registration of various market participants.

Consumer Assistance

The Intake Center is most consumers' only interaction with PUCT staff. Common inquiries include how to read one's bill, what to do if service is disconnected, information on outages, and how to file a complaint. For the competitive electric market, the Intake Center answers questions about the PUCT's Power to Choose website and provides consumers with information to help them select a REP. Additionally, the Intake Center responds to inquiries and takes complaints regarding the Texas No Call list. During the 2021 to 2022 biennium, CPD answered over 63,500 calls.

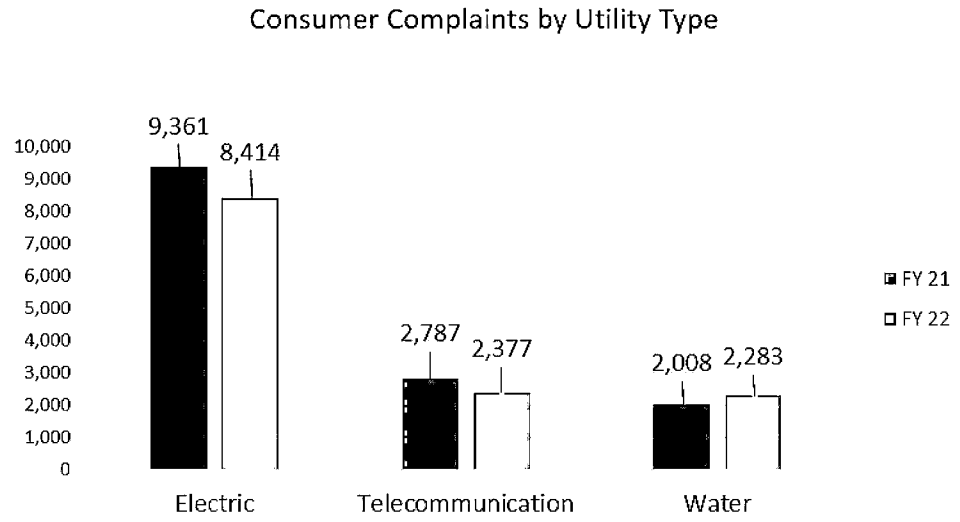

Figure 13. The number of consumer complaints for Electric, Telecommunication, and Water utility services received in FY 2021 and FY 2022.

A Texan who has a dispute with a provider of electric, telecommunications, or water and wastewater services can make an informal complaint to CPD. Once an informal complaint is filed, the utility is asked to show compliance with PURA or TWC and with PUCT rules. Water and sewer providers must respond within 15 days. Electric and telecommunications providers must respond

within 21 days. A CPD investigator then reviews all information received from both the consumer and the provider to determine whether the provider's actions are consistent with applicable regulations. The investigator's conclusion regarding the complaint is sent to both the consumer and the provider. The investigator identifies any potential compliance issues and may recommend corrective action. A consumer dissatisfied with the investigation's results may file a formal, docketed complaint with the PUCT.

Social media accounts

The PUCT engages directly with Texans every day through multiple social media accounts. We regularly inform the public about the agency's activities, responsibilities, rules, and regulations, consumer tips and emergency information, when necessary. The agency's active social media accounts include:

- Public Utility Commission of Texas–Facebook
- PUC of Texas–Twitter
- Public Utility Commission of Texas–LinkedIn
- PUCTX– Instagram
- Power to Choose–Facebook
- powertochoosetx–Twitter

Social media engagement by the public can vary widely from month to month, based on several factors, including weather, electricity demand, fluctuations in the cost of electricity and others. For example, the number of social media impressions, or times content was seen by users in June 2022, was 34,000 times. In August 2022, during periods of record heat and demand, it was 138,000 times. We continue to experience steady growth in engagement since adding an FTE dedicated to social media engagement in May 2022 and expect that trend to continue.

Websites

puc.texas.gov

Our external website serves as the "virtual front door" of the agency and provides several tools to assist Texas utility consumers, utility providers, and industry leaders with matters and information relating to the PUCT. The PUCT's website averages more than 255,000 page views per month. Data shows beyond the home page, the most-visited pages include Paying Your Bill, Industry Filings, Rules pages and Know Your Rights. Additional resources and tools include:

- Online informal complaint filing for electric, telecommunications, water, and wastewater issues
- An outage resource section with contact information to report local electric utility outages to providers and links to local outage maps to monitor outages

- Access to information about electric, telecommunications, water, and wastewater providers
- Links to live internet broadcasts and calendar for open meetings
- News releases and updates from the PUCT

PUCT Interchange (interchange.puc.texas.gov)

The Interchange is a web-based application for submitting and accessing documents filed with the PUCT. The Interchange Filer system is used to file documents with the PUCT electronically. The public can use the PUCT Interchange to locate information officially filed with the PUCT in Central Records, including projects, dockets, and tariff applications. Documents can be searched for by Case Style (the Docket Description), Utility Type, Utility Name, Filing Party, Item Type, Filing Description, and date range. Central Records staff can be reached via email (centralrecords@puc.texas.gov) to answer any questions about filing documents or locating documents that have been filed with the PUC including hard copies of utility tariffs.

Power to Choose (powertochoose.org)

The PUCT's consumer education website for the competitive retail electric market is known as Power to Choose. It's an educational tool for consumers about the evolving marketplace. Power To Choose (and its Spanish language counterpart, Poder De Escoger) provides a portal for Texans who live in an area open to retail electric choice to browse electricity plans offered by REPs. Information on the shopping process, plan options, and questions to ask when shopping is also available. REPs are not required to post prices or rate plans on the site, but most choose to use it to reach consumers directly. The site is free for both consumers and REPs.

Power to Save (powertosavetexas.com)

The PUCT promotes smart energy use through the Power to Save Texas website (and its Spanish language counterpart, Poder de Ahorrar). The website educates Texans about conserving energy, especially during the summer peak times of 3 pm to 7 pm, when demand for electricity tends to be the highest. The site includes links to additional resources for Texas to learn how to manage their electric use.

Map Viewers

The PUCT's Water and Sewer CCN Viewer gives users access to retail public water and sewer CCNs.[64] Users can search by address to find a water or sewer service provider. Utilities can

[64] *Public Utility Commission Water and Sewer CCN Viewer*, PUBLIC UTILITY COMMISSION OF TEXAS, https://www.puc.texas.gov/industry/water/utilities/map.aspx

prepare map filings for applications to obtain a CCN and amend or transfer a CCN. By giving the public direct access to this information, it reduces the call volume at the PUCT.

The PUCT's website links to electric utility outage maps.[65] This feature is highlighted on the PUCT's Storm Resources page and is used by the PUCT's Emergency Management Response Team to prepare for, respond to and recover from disasters and conduct emergency management activities. It's also used by the public to report and monitor local outages.

[65] *Outage Maps*, PUBLIC UTILITY COMMISSION OF TEXAS, https://www.puc.texas.gov/storm/contact.html.

LEGISLATIVE RECOMMENDATIONS

Administrative

Improve Consumer Response Time on Small Claims

Currently, only one process is available for a consumer to get a binding resolution of a complaint against a regulated service provider. A consumer can get informal assistance from the PUCT's Customer Protection Division, but that resolution cannot be enforced by the PUCT. A binding resolution, which the PUCT can enforce, is accomplished through a contested case under the Administrative Procedures Act. A contested case is a trial-type procedure presided over by an administrative law judge at the PUCT or State Office of Administrative Hearings (SOAH), and any hearing generally is conducted by SOAH. This process is often expensive and time-consuming for the consumer, the PUCT and SOAH. When considering the salaries of state employees assigned to such a proceeding, the cost to resolve such a proceeding can greatly exceed the amount in dispute. To ensure the best use of resources and decrease the time taken to resolve these claims, the PUCT recommends a streamlined process that does not require a contested case for claims under a certain dollar amount, such as $500.

Background Checks for PUCT Personnel

PUCT personnel have access to critical information related to Texas' electric grid. Currently, the PUCT is not required to and does not have the ability to conduct background checks on PUCT employees. A background check is a simple tool to ensure that PUCT staff does not immediately present a safety risk to Texas' electric grid. To conduct background checks on state employees, state agencies must have explicit authority from the Legislature. To protect Texas' electric grid, the PUCT recommends that it be granted statutory authority to conduct background checks on employees.

Electricity

Establish a Texas Energy Efficiency Council (TEEC)

In addition to building more electric generation, reducing energy consumption is a tool for Texans and Texas businesses to meet current demand and demonstrate how Texas will be able to maintain future grid stability. Presently, there is no single entity tasked with evaluating potential opportunities in energy efficiency to ensure a reliable, dependable, and affordable power supply for Texas.

An Energy Efficiency Council comprised of State Agencies and industry representatives appointed by those agencies would serve as a central repository and resource for all the energy efficiency measures that are ongoing throughout the state. This Council would strategically position Texas to utilize all the resources available, including identifying cost saving measures for Texas ratepayers. The PUCT recommends the Legislature create parameters around the scope and make-up of the Texas Energy Efficiency Council.

Require Registration of Large Flexible Loads

The number of large flexible loads interconnecting to ERCOT is increasing. Unlike other large loads, these consumers can be turned on or off within seconds of receiving an instruction to do so. There is a significant risk to the ERCOT region if large loads, almost instantly, have the ability to go on or off the grid. To limit the reliability risk created by these large flexible loads, the PUCT recommends that ERCOT have the authority to require large flexible loads register and follow standards on allowable behaviors.

Aggregate Distributed Energy Resources

An aggregate distributed energy resource (ADER) consists of multiple homes or businesses that can combine resources and respond to ERCOT dispatch instructions as if one resource. The PUCT is currently overseeing the implementation of an ADER pilot project in the ERCOT power region. The design of this pilot project has given rise to areas of statute that bear clarification. To facilitate development of such resources, the PUCT recommends the Legislature consider clarifying that:

- the owner of a distributed energy resource (i.e., the owner of the home or business) need not be registered if an aggregator has registered the resource.
- the PUCT may establish simplified registration requirements for ADERs similar to those for distributed natural gas generation facilities
- A REP that aggregates distributed energy resources does not become a power generation company simply by doing so.
- the PUCT's rules, including customer protection rules, jurisdiction, and authority extends to market participants' and consumers' participation in an ADER.

Electricity Supply Chain Map

The Texas Legislature mandated the creation of an electricity supply chain map as part of SB 3 passed during the 87th Legislature. The map was created by the Texas Electricity Supply Chain Security and Mapping Committee. This important tool has created better coordinated preparedness and faster response time during weather emergencies. The PUCT has identified several additions to bolster the map.

Add Water Facilities

Currently water facilities are not included in the Electricity Supply Chain Map. Water is a key component to the production of electricity in Texas. In emergency situations, location transparency for all critical infrastructure is essential. To provide decision makers with the information needed to coordinate between electric, gas, and water industries, water facilities should be added to the Electricity Supply Chain Map.

Add Texas Department of Transportation (TXDOT) to the mapping committee and give them access to the Electric Supply Chain Map.

During Winter Storm Uri, road crews were unable to reach critical infrastructure facilities due to inclement weather and there was no visibility into which roads were inaccessible. To ensure road crews have pertinent information needed during disasters or weather emergencies, TXDOT should be added to the mapping committee and have access to the Electricity Supply Chain Map.

Allow Transmission Distribution Service Providers (TDSPs) access to their specific portion of the Electric Supply Chain Map.

To verify the accuracy of information for critical natural gas facilities needed to serve black start generating units, the TDSPs need access the Electricity Supply Chain Map. A black start unit is one that can start its own power without support from the grid in the event of a collapse or blackout. The PUCT recommends that each TDSPs be allowed access to its specific portion of the Electricity Supply Chain Map to prioritize service to critical natural gas facilities needed to serve black start generating units in times of emergencies.

ACRONYMS

- Aggregate Distributed Energy Resource (ADER)
- Alenco Communications, Inc. (Alenco)
- Backstop Reliability Service (BRS)
- Basic local telecommunications service (BLTS)
- California ISO (CAISO)
- Capacity, Demand, and Reserves Report (CDR Report)
- Certificate of Convenience and Necessity (CCN)
- Certificate of Operating Authority (COA)
- Competitive Local Exchange Carrier (CLEC)
- Customer Protection Division (CPD)
- Department of Energy (DoE)
- Direct Current (DC)
- Dispatchable Energy Credits (DEC)
- Division of Compliance and Enforcement (DICE)
- Division of Utility Outreach (DUO)
- Emergency Response Service (ERS)
- Energy and Environmental Economics, Inc. (E3)
- Energy Emergency Alerts (EEAs)
- Energy Imbalance Market (EIM)
- Entergy Regional State Committee (ERSC)
- ERCOT Contingency Reserve Service (ECRS)
- Fast Frequency Response Service (FFRS)
- Federal Energy Regulatory Commission (FERC)
- Federal Universal Service Fund (FUSF)
- Firm Fuel Supply Service (FFSS)
- Forward Reliability Mechanism (FRM)
- Full-Time Employee (FTE)
- High system-wide offer cap (HCAP)
- House Bill (HB)
- Incumbent Local Exchange Carriers (ILECs)
- Independent Market Monitor (IMM)
- Independent system operator (ISO)
- Internet service providers (ISPs)
- Investor-owned utilities (IOUs)
- Kilowatt-hour (kWh)
- Load Serving Entities (LSEs)
- Load Serving Entity Reliability Obligation (LSERO)