



HOW TEXAS' ELECTRIC TRANSMISSION INFRASTRUCTURE HELPS GROW THE TEXAS ECONOMY

By

Bernard L. Weinstein, Ph.D. and Nicholas J. Saliba, B.S., B.A., B.B.A.
With the assistance of Lindsay Struthers, B.S.

Maguire Energy Institute
Cox School of Business
Southern Methodist University
Dallas, Texas

January 2019

A. Introduction

Texas, now America's second largest state as measured both by size and population, has been America's economic bellwether for the past several decades. No other large state comes close in terms of population growth, job creation, and business formation. Net migration to Texas has totaled nearly 2 million over the past decade and shows no signs of abating. Moreover, for years Texas has ranked first in the nation for corporate relocations and expansions.

As the state's economy has grown, it has also become much more diversified. Though energy still dominates West Texas and the Gulf Coast, high-tech manufacturing, information technology, health care, education and business services provide the bulk of employment in most other parts of the state.

It takes power to power the fast-growing Texas economy, in particular electricity. In fact, Texas uses more electricity than any other state, currently more than 400 billion kilowatt hours annually.¹ What is more, unlike many states where power demand is decreasing, electricity consumption in Texas has been rising steadily.

In the following report, we first discuss the dynamics behind Texas' superior economic performance, including affordable electric power. We then turn to a discussion of the roles of the Electric Reliability Council of Texas (ERCOT) and the state's transmission infrastructure in ensuring reliable electric delivery to households and industry, both today and in the future.

B. An overview of the Texas economy

As 2019 begins, the Texas economy is the envy of the nation. No other large state has grown as rapidly as Texas in recent years, and the state continues to be a magnet attracting people and business from across the nation and around the world. Indeed, virtually every indicator shows Texas in robust economic health.

1. Population growth

According to the U.S. Census Bureau, between July 2017 and July 2018, Texas had the largest numeric growth among the 50 states, adding 379,218 people. By contrast, California—with a population nearly 50 percent larger than Texas—added only 286,700. Texas grew both from more births than deaths and from a large net gain in movers from within and outside the United States. In percentage terms, Texas' population grew 1.3 percent last year, nearly twice the national rate of 0.7 percent. California's growth rate has been falling for nearly a decade, and just equaled the national average last year.

¹ U.S. Energy Information Administration (EIA)

The Census Bureau also recently reported that of the nation's 15 fastest-growing counties in terms of numeric population change, eight are located in Texas while California only recorded one (see Figure 1). What is more, three of the top five fastest-growing cities in numeric terms are found in Texas—San Antonio, Dallas and Fort Worth. Seven of the 15 fastest-growing cities in percentage terms last year are here in Texas. Last year, Frisco, Texas grew at 8.2 percent, 11 times faster than the national average.

As shown in Figure 2, Texas' population has grown steadily over the past decade, averaging about 1.8 percent each year. With the exception of Florida, no other large state has seen comparable gains.

2. *Interstate and international migration*

Unlike in many other states, net migration into Texas has accounted for a large share of the state's population growth over the past decade.² As indicated in Figures 3 and 4, net migration has been positive every year since 2005. *Gross* migration into Texas has been astonishing in some years. For example, in 2006 more than 628,000 people moved to Texas, while gross domestic migration averaged about 489,000 annually between 2005 and 2013. In more recent years, net migration to Texas has continued to be a major source of population gains, averaging 230,000 each year since 2013 and accounting for about half of the state's total growth.

According to the U.S. Census Bureau, California sends more migrants to Texas than to any other state. Of total net out-migration of 521,000 between 2012 and 2016, more than 114,000 Californians relocated to Texas.

Another indicator of Texas' magnetic pull is the inflow of U-Haul vehicles. In 2018, for the third year in a row, Texas led the nation in "net inflow" of trucks and trailers. Locations in Houston, Dallas-Fort Worth and Austin saw the largest influxes of U-Haul traffic. Illinois, California and Michigan saw the largest "net outflow" of U-Hauls.³

Most migrants to Texas locate in the state's large metropolitan areas. In 2017, according to an analysis of Census data by Bloomberg, Dallas-Fort Worth led the nation in net in-migration, with 246 more people moving into the region than out every day. For Austin, the number was 105 per day. By contrast, Los Angeles, Chicago and New York posted high levels of daily net out-migration in 2017 (see Figure 5).

Migration to Texas is partly due to a record number of business relocations from other states. Toyota's move from Torrance, California to Plano and PGA America's relocation from

² Net migration is the difference between people moving into Texas from other states (or countries) minus the number of people leaving Texas for other states (or countries).

³ *Dallas Morning News*, January 3, 2019.

Palm Beach Gardens, Florida to Frisco have garnered the most attention. But a steady stream of small and middle-sized companies to the state has also spurred the in-migration of people.

According to a recent analysis by Spectrum Location Solutions, Texas is the number one destination for California companies relocating to other states. In 2016 alone, 299 of these departures landed in Texas. The Dallas Regional Chamber reports that 43 of the 123 corporate headquarters that have relocated to Dallas-Fort Worth since 2010 came from California.

3. *Employment and income trends*

Job gains in Texas have been nothing short of remarkable in recent years. Over the past decade, total state employment has jumped by more than two million, or 18.3 percent, compared to a 5.6 percent increase for the nation as a whole (see Figure 6). No other large state comes close. Indeed, Pennsylvania, Illinois and Ohio actually lost jobs over the decade. Incredibly, ***one of every four U.S. jobs created over the past ten years has been in Texas.***

Not surprisingly, rapid job growth has boosted the incomes of Texas residents. The Census Bureau recently reported that Texans' median household income reached a record high of around \$59,000 in 2017, more than overcoming the losses that occurred during the Great Recession (see Figure 7). Per capita income in Texas has also grown steadily since the end of the Great Recession, hitting an all-time high of nearly \$30,000 in 2017 (see Figure 8).

4. *What makes Texas an attractive place to live and work?*

Simply put, Texas boasts the best business climate in the nation. Survey after survey over the past 40 years has reached this conclusion, including a 2018 ranking by *Chief Executive Magazine*. Illinois, New York and California—states that send myriads of people and businesses to Texas—were deemed the worst states for business. The factors used in the *Chief Executive* survey included taxes and regulation, workforce productivity, and the overall quality of life in the state. CNBC also ranked Texas number one in its “2018 America’s Top States for Business” rankings.

Texas is one of a handful of states that do not impose a personal income tax, an important inducement for high-paid professionals, managers and executives. Indeed, according to a recent analysis by *Forbes*, Texas boasts the fifth lowest state and local tax burden in the nation. *Forbes* also ranks Texas number one in growth prospects, number three in business costs, and number nine in overall quality of life among the states.

Compared with most other states, Texas imposes a comparatively light regulatory burden on people and industry, making it relatively easy to start a new business. Texas’ “right-to-work” laws also encourage new business development. Texas, unlike most other states, does

not require an employer to have workers' compensation coverage, another factor encouraging entrepreneurship by holding down the costs of starting a new business.

Land use regulations in Texas generally encourage residential, commercial, and industrial development, which is not the case in states like California and New York. Consequently, real estate costs are usually lower in Texas' metropolitan regions than they are on the east and west coasts. Though housing prices in Texas have jumped over the past decade, costs remain competitive with most parts of the country. Last year, according to *Kiplinger*, the median cost of existing homes was \$232,000 in the nation's 100 largest metropolitan areas. By contrast, median home prices were \$182,000 in Dallas and \$170,000 in Houston and San Antonio. Among Texas' large cities, only Austin, with a median price of \$251,000, was above the national median.

The overall cost of living in Texas also compares favorably with other states, according to the Council for Community and Economic Research. In the third quarter of 2018, Texas had the 11th lowest cost of living among the 50 states with an index of 91.4 (100 being the national average). By contrast, the cost of living index was 137.2 in California, 134.0 in New York, and 129.2 in Massachusetts.

5. *Is energy still the "driver" of the Texas economy?*

Forty years ago, energy accounted for more than 20 percent of overall economic activity in Texas. However, the state's \$1.8 trillion economy has become much more diversified in recent years, even as the shale boom has generated thousands of new jobs.

As Figure 9 illustrates, the oil and gas industry accounted for only 4.5 percent of the state's economy, as measured by gross state product, in 2016 and has fallen in recent years. By contrast, oil and gas accounted for 12 percent of statewide economy activity in 2008.⁴

Nonetheless, energy remains an important part of the state's employment base. According to the Texas Workforce Commission, almost 600,000 Texans work in the energy sector today, accounting for 18 percent of the nation's total energy employment. Thousands are employed in the generation and transmission of electric power.

Moreover, other sectors of the Texas economy have been boosted by the huge increases in oil, gas, and electricity production. As Figure 10 illustrates, jobs in the extraction of oil and gas have been declining in recent years, mainly due to productivity gains, while employment in support activities has grown. Billions are being spent to build new pipelines and to upgrade refineries and petrochemical plants. Most of America's exports of crude oil, refined

⁴ Energy's relative share jumped in 2008 partly because other sectors of the Texas economy were contracting. If not for the ongoing shale revolution, the state's economy would have been hit much harder by the Great Recession.

products, and natural gas emanate from Texas, inducing new investments in the Houston Ship Channel and the Ports of Corpus Christi and Beaumont. Dallas, Fort Worth, and Houston are major locations for energy company headquarters as well as financial institutions serving the energy industry.

6. *Reliable and affordable electric power helps grow the Texas economy*

It almost goes without saying that a large, fast-growing state like Texas consumes a lot of energy, especially electricity. In fact, Texas uses more electricity than any other state, currently more than 400 billion kilowatt hours annually. What is more, unlike many states where power demand is actually decreasing, power demand in Texas has been rising steadily (see Figure 11).

Thanks to the diversity of the state's generation mix, and a highly reliable power grid and transmission network, electricity prices are well below the national average—another factor making Texas attractive to people and industry (see Figure 12). What is more, retail power prices in Texas are 54 percent lower than in Massachusetts, 50 percent lower than in California, and 45 percent lower than in New York.

Three examples help illustrate how available and reliable power have spurred economic growth in Texas:

a. *The Permian Basin*

Though not generally understood or appreciated, it takes energy to make energy. Oil and gas extraction, pushing oil and gas through pipelines, and operating refineries and petrochemical plants all require large volumes of electric power.

Over the past decade, thanks to what is sometimes referred to as the “shale revolution,” oil and natural gas production in the Permian Basin of West Texas has doubled. Currently pumping more than 3.7 million barrels per day,⁵ the Permian alone accounts for nearly one-third of all U.S. oil output.⁶ About thirty percent of the workforce in Midland-Odessa, the heart of the Permian, is employed by companies in the energy sector, including thousands engaged in oil and gas extraction, pipeline construction, and downstream activities such as petrochemical manufacturing.⁷

Texas utilities have faced a herculean task in meeting the electricity needs of the oil and gas industry. This task has required building hundreds of miles of new transmission lines across the Delaware and Permian Basins to ensure that reliable power is available to serve one of the

⁵ U.S. Energy Information Administration

⁶ The Permian Basin also includes some areas of eastern New Mexico.

⁷ Texas Workforce Commission

engines of the Texas economy, oil and gas production and transportation. Servicing this industry has been particularly challenging, since oil and gas customers are not able to accurately project their electricity needs more than one or two years ahead of time. Transmission improvements, on the other hand, can take two to six years to progress through the phases of planning, approval, design and construction.

Driven primarily by oil and gas industry development, peak electricity demand in West Texas has more than doubled over the past decade.⁸ This growth far outpaces the ERCOT system-wide average growth of 1.7 percent per year over the same time.⁹ Of the \$3.9 billion of transmission improvements planned to be in service in 2019 and 2020 across the ERCOT system, \$966 million is located in West Texas.¹⁰ Although the demand in West Texas has been staggering, power has been available when and where needed. This success story is based largely upon Texas' efficient process for building transmission infrastructure.

A good example of Texas' efforts to streamline the process for needed infrastructure is the Competitive Reviewable Energy Projects ("CREZ"). Beginning in the mid-2000s, ERCOT, the state's grid operator, embarked on a more than \$6 billion transmission build-out to connect wind resources in West Texas to load centers in the eastern part of the state, such as the DFW Metroplex. ERCOT and the Public Utility Commission (PUC) created new approval processes to facilitate getting this needed infrastructure in place faster and with sufficient capacity to meet Texas' current and future power needs.

The CREZ lines were built to deliver power from West Texas to large metropolitan areas in the eastern part of the state. However, given the oil and gas industry's power needs in west Texas, electricity actually flows from east to west at times to support the drilling boom in the Permian Basin. This is just one of many examples that illustrate how a robust system of transmission infrastructure can facilitate the needs of the dynamic and growing Texas economy. Absent the availability of critical infrastructure, including access to reliable electricity, the Permian boom would not have become a reality.

b. Frisco, Texas: America's fastest-growing city

In 2000, the City of Frisco, located 10 miles north of Dallas, had a population of around 44,000. Today, its population exceeds 177,000, making it the fastest growing city in America among places with a population of 50,000 or more. Last year alone, the city's population grew 8.2 percent, a growth rate 11 times faster than the national average.

⁸ "Report on Existing and Potential Electric System Constraints and Needs." ERCOT. December 2018.

http://www.ercot.com/content/wcm/lists/144927/2018_Constraints_and_Needs_Report.pdf.

⁹ Ibid.

¹⁰ Ibid.

Frisco has also been adding jobs at a rapid clip as a large number of businesses and corporate headquarters have relocated to the city. According to the U.S. Bureau of Labor Statistics, just in the past eight years Frisco's employment jumped from 64,000 to almost 93,000. That's about two-thirds the number of jobs located in downtown Dallas.

While new substations and electric infrastructure have been required to serve the meteoric rise of the City of Frisco, power availability has clearly not been a constraint on Frisco's development. The city's torrid pace of economic growth, including new office buildings, retail centers, sports and entertainment venues, and housing, has been facilitated by the incumbent utility's planning and build process that, in turn, has made electricity readily available for new businesses and households.

c. The Texas Gulf Coast Crescent

The Gulf Coast Crescent, which includes Corpus Christi, the Houston-Galveston Ship Channel, and Beaumont-Port Arthur, is one of the most heavily industrialized regions in the nation. Refineries, petrochemical plants, aluminum smelters, metal fabricators, cement kilns, and liquefied natural gas trains dot the landscape. The Ship Channel alone has recorded more than \$50 billion in new and expanded manufacturing facilities over the past decade¹¹, while major investments have also occurred in Corpus Christi and Beaumont. As a result, the U.S. has shifted from being a net importer of petrochemicals to a net exporter. Thanks to recent and planned investments in liquefaction facilities and terminals, we're rapidly becoming a major exporter of natural gas. What is more, within a few years America is projected to become a net exporter of crude oil as well.

Importantly, all of these industries are "power intensive," meaning they rely on huge amounts of electricity around the clock for their operations. As with the boom in the Permian Basin, the Gulf Coast Crescent would not be nearly as vibrant absent the foresight, planning, and build-out by the region's public utilities, who are delivering reliable and affordable power to the region's burgeoning industries.

In sum, ensuring reliable transmission and energy delivery to new and existing industrial, commercial and residential customers has been a signal achievement for Texas. Without the foresight, planning and investments made by the utilities, Texas would not be the economic powerhouse it is today.

¹¹ James Ritchie. "Billions Planned in Ship Channel Projects Due to Shale Boom." Houston Business Journal. <https://www.ci.la-porte.tx.us/ArchiveCenter/ViewFile/Item/1376>.

C. The role of the Electric Reliability Council of Texas (ERCOT) and the Texas power grid

1. The resiliency of the ERCOT power grid

As discussed below, ERCOT is a unique grid system operator in that it has extremely limited interconnects with other states and Mexico. That means reserve margins are more critical in Texas than in other states. Nonetheless, ERCOT has had no difficulty meeting power demands, even during summer and winter peaks. For example, during the summer of 2018, the second warmest on record, Texas' power consumers experienced no brownouts or blackouts, a testimony to ERCOT's ability to balance supply with demand in the face of weather extremes. ERCOT has also proved agile in integrating more than 22 gigawatts of installed wind capacity into the grid.

In practice, the "reserve" margin varies year-to-year as older power plants are retired and new capacity comes on line. But, as discussed below, ERCOT's transmission build process has adapted easily to Texas' changing generation mix.

Because the state's economy and population are projected to continue growing much faster than the nation as a whole in the foreseeable future, the Texas power grid will face challenges in the years ahead. ERCOT estimates we will need more than 16 gigawatts of new power over the next 10 years just to keep up with expected peak demand (see Figure 19). If past is prologue, however, new generation will be installed and the state's regulated utility companies will ensure that the requisite infrastructure is in place to deliver power to new Texas businesses and households.

2. What makes Texas' electric grid unique?

The Electric Reliability Council of Texas (ERCOT) independently manages the flow of electric power to more than 25 million electric customers in Texas, representing about 90 percent of the state's electric load (see Figure 14). The ERCOT grid connects more than 46,500 miles of transmission lines and over 600 generation units.

Electricity deregulation in Texas, ordered by the Legislature in 1999, created deregulated and fully competitive markets within the generation and retail portions of the industry, while the "poles and wires" of the transmission and distribution portion remain the regulated foundation on which those competitive markets rely. As a result, Texas has been at the vanguard of creating fully competitive retail and generation markets that allow innovation and customer savings as they evolve.

As any proud Texan will tell you, Texas was once its own republic. When it comes to electric transmission, most of Texas still remains independent from the rest of the United States. ERCOT, the state's primary grid, has very few links with grids in other states. This means Texas generates its own electricity and is not reliant on trading large amounts of power with

other states to balance supply and demand. Further, because ERCOT does not have major connections to other states, decisions on the direction of the ERCOT market are almost exclusively regulated by the Texas Legislature and the Public Utility Commission of Texas (PUCT), not federal authorities. This Texas focus allows the state and ERCOT to provide efficient solutions to the state's infrastructure needs. It also shields ERCOT from the push-and-pull of vying state interests – a push-and-pull that is common in other grids that serve multiple states. Among the contiguous 48 states, Texas is the only one with a stand-alone electricity grid, and the only one removed from the comprehensive jurisdiction of the Federal Energy Regulatory Commission (FERC).

3. Transmission planning within ERCOT – how does it compare to FERC Order 1000?

Effective regulation is key to enabling the Texas electric transmission grid to grow to serve the Texas economy. Although ERCOT is not subject to comprehensive regulation by the FERC, it is still useful to compare the processes in ERCOT to those in the rest of the country.

With respect to transmission specifically, in July 2011, FERC issued Order 1000 with the intent of improving several dysfunctional aspects of the markets that are under FERC jurisdiction. The order contains numerous provisions to address the failings identified in those markets, including:

- Transmission plans that were not reflecting the best, most comprehensive solutions;
- Transmission cost allocation decisions—and disputes—that were not productive;
- Transmission delays and disputes that were hindering public-policy goals; and
- Inefficient and overly costly transmission-planning processes.¹²

So far, the controversial order has produced few tangible results because of its overly broad and bureaucratic mandates and the difficulties that various regions have had in settling on transparent and successful implementation processes. But regardless of one's opinion on FERC Order 1000, it is hard to argue that the order would be anything other than duplicative and unnecessary in ERCOT.

One of the top-line objectives of FERC Order 1000 is to encourage more strategic planning among grid operators. Each transmission provider must participate in a process that produces a regional transmission plan, taking into account state and federal public policy objectives. Furthermore, transmission providers in neighboring planning regions must coordinate to determine if there are more efficient or cost-effective solutions to their mutual transmission needs.

¹² Cristin Lyons and Brian Messick. "FERC Order No. 1000: Five Years On." ScottMadden. April 01, 2018. Accessed January 11, 2019. <https://www.scottmadden.com/insight/ferc-order-no-1000-five-years/>.

In Texas, the ERCOT-led regional planning group (RPG) process already functions quite well to study future demand and reliability issues and consider new projects on an ongoing basis. This is one of the main advantages of having a transmission grid dedicated to serving the needs of just one state. Transmission improvement projects estimated to cost more than \$25 million or requiring a Certificate of Convenience and Necessity from the PUCT are reviewed by the RPG prior to implementation. For the largest projects, RPG consideration is followed by an evaluation and endorsement by the ERCOT Board of Directors. The RPG is a non-voting forum comprising ERCOT, PUCT Staff, transmission service providers, various market participants, and any other interested stakeholders.

Unlike many independent system operators (ISOs) around the country, ERCOT has been able to continue to build the transmission infrastructure necessary to feed the electric needs of the Texas economy. In 2018, \$611.9 million of transmission improvement projects was reviewed and endorsed through the RPG process.¹³ This is in addition to the countless smaller projects that have been planned, designed and constructed to serve customers' needs that did not require RPG review.¹⁴ In addition to the RPG, ERCOT (with stakeholder input) performs annual assessments of the transmission system, along with a biennial Long-Term System Assessment (LTSA) to evaluate the potential transmission needs of the ERCOT system up to 15 years in the future.

FERC Order 1000 also establishes new procedures in regard to cost allocation. It requires a regional planning process to allocate transmission construction costs between vying geographic areas and entities roughly in proportion to the benefit received by the entity or region. In contrast, the PUCT provides a uniform system-wide Transmission Cost of Service Charge (TCOS) on all consumers of electricity to recover the cost of infrastructure investment in ERCOT. This is based on the theory that the benefits of new transmission, including reliability and lower generation costs, extend to all consumers on the ERCOT grid. In practice, this cost allocation method is much simpler and far more cost-effective than the cost allocation methods used in FERC jurisdictions.

In January 2019, electric generation companies Calpine and NRG issued a white paper arguing ERCOT should adopt a cost allocation method similar to that required by FERC Order 1000.¹⁵ In theory, assigning costs proportionately to those who benefit may seem the best approach. However, experiences in other transmission organizations, such as the Southwest

¹³ "Report on Existing and Potential Electric System Constraints and Needs." ERCOT. December 2018. http://www.ercot.com/content/wcm/lists/144927/2018_Constraints_and_Needs_Report.pdf.

¹⁴ See Appendix Figures 17 and 18 for past and projected ERCOT transmission improvement costs by in-service year.

¹⁵ Gavin Bade. "NRG, Calpine Propose Market Fixes to Avoid 'subversion' of ERCOT Model." Utility Dive. May 11, 2017. Accessed January 18, 2019. <https://www.utilitydive.com/news/nrg-calpine-propose-market-fixes-to-avoid-subversion-of-ercot-model/442530/>.

Power Pool (SPP) and Independent System Operator (ISO) New England, suggest that such a method becomes highly complex, time-consuming, litigious, inefficient, and expensive. The sheer amount of time and labor required to determine benefits and settle disputes between tariff zones would add significant costs for ERCOT – costs ultimately borne by the ratepayers of Texas. In addition, new transmission projects that add diversity to the ERCOT grid provide statewide benefits, including improved reliability and cleaner air across Texas.

There is also a cyclical nature to transmission investment, meaning that even if a zone receives less benefit than another zone from a particular project, it may receive more benefit from the next project. What is more, beneficiaries can shift over time, making it even more difficult to accurately allocate costs at the onset of a project. For example, the CREZ project was originally intended to benefit the large load centers of central and east Texas. However, as oil and gas production has boomed, the CREZ lines have increasingly been used to feed electrical needs in the western part of the state. Over time, costs and benefits level out, even if the benefits are not itemized for individual projects.

Yet another stated goal of FERC Order 1000 is to support state or federal “public policy requirements.” In reality, this often means encouraging more infrastructure to connect renewable energy generation to existing load centers in major cities. Again, this would be a solution in search of a problem within ERCOT, as the current planning and build-out process has already made Texas the nation’s largest wind-generation state by far.

Lastly, FERC Order 1000 requires ERCOT’s peers to run competitive bidding processes for some transmission projects, in the hope that this will lower costs to ratepayers. Despite the order being in place since 2011, zero projects under this new “competitive” bid process have been completed, making outcomes difficult to gauge. But some projects have amassed enough of a regulatory track record to be worth examining, and a January 2015 substation award in California makes an excellent case study as to why claims of cost savings should be viewed with skepticism.

The Suncrest Reactive Power Project was awarded to NextEra Energy West, LLP (NEET West) on January 6, 2015.¹⁶ The NEET West bid included a cost cap on construction items of \$42.3MM,¹⁷ but at the time that cost cap commitment was made it already excluded scope changes occurring through later regulatory processes, “uncontrollable force” events, and the costs of connecting NEET West’s facilities to the existing utility in the region.¹⁸ NEET West later

¹⁶ Suncrest Reactive Power Project: Project Sponsor Selection Report, California Independent System Operator, Jan. 6, 2015 (Suncrest Sponsor Selection Report) (available online at <http://www.caiso.com/Documents/SuncrestProjectSponsorSelectionReport.pdf#search=suncrest>).

¹⁷ Decision Approving Certificate of Public Convenience and Necessity for the Suncrest Dynamic Reactive Power Support Project, California Public Utilities Commission Docket A-15-08-027, issued Oct 2., 2018, at 38 (Suncrest CPCN Decision) (available online at <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M230/K615/230615861.PDF>).

¹⁸ Suncrest Sponsor Selection Report at 36.

sought and received a 15.87% “contingency” increase to the cap from the California Public Utilities Commission¹⁹ and even urged federal regulators to increase its returns because the cost caps NEET West chose to offer “may result in unrecoverable costs,” creating “considerable risks for investors compared to the traditional cost-of-service model.”²⁰ Thus, the original “cap” has already inflated considerably, and the new utility created by this project will be collecting revenue for decades after initial cost “cap” promises have expired.

As the above example shows, the FERC competitive bidding process does not always produce “apples-to-apples” comparisons. Competitive bidding tends to incentivize a myopic view of costs, with some bidders only considering the immediate costs to build a transmission project. Often, bids do not equally reflect the lifecycle costs of a project, including costs for maintenance, upgrades, regulatory approvals, rights-of-way, and even litigation. In contrast, the ERCOT planning process has a proven track record of accurately predicting lifecycle costs and producing on-time, on-budget transmission builds.

In Texas, there is simply no need for FERC Order 1000. The ERCOT region has independently resolved issues that FERC Order 1000 regions continue to struggle with, all while achieving the order’s goal of effective and efficient transmission investment.

4. Future developments for the ERCOT transmission system

Even though poles and wires will remain the backbone of the ERCOT electric transmission system for the foreseeable future, new technology applied at both the transmission and distribution level has increased the reliability of the grid, lowered prices for consumers, and allowed ERCOT to incorporate intermittent renewable resources like wind and distributed solar.

Adapting to a changing fuel mix will remain at the forefront of ERCOT transmission investment decisions. So far, transmission providers have stayed out in front of investments by generators and industry, allowing near-seamless integration of new fuel sources, factories, and petrochemical plants. If recent trends continue, ERCOT will need to bring online more generation from natural gas, wind and solar to replace decommissioned coal plants (see Figure 16). Regardless of generation trends, Texas’ transmission providers must remain responsive to the needs of power producers and users. If the PUCT and the Texas Legislature continue to provide even-handed regulation, utilities will have no problem satisfying the soaring power demand of the fastest-growing large state in the U.S.

¹⁹ Suncrest CPCN Decision at 38.

²⁰ NextEra Energy Transmission West, LLC Order on Participating Transmission Owner Tariff and Rate Incentives Proposal, and Establishing Hearing and Settlement Judge Procedures, Federal Energy Regulatory Commission Docket Nos. ER-15-2239-000, ER-15-2239-001, 154 FERC ¶160,009 (Jan. 8, 2016), at 10 (para. 22).

D. Summary and conclusions

With a nickname like the “Lone Star State,” it is appropriate that Texas is the only U.S. state with its own electricity grid. Mostly independent of the federal government, Texas is responsible for regulating its own transmission system and planning to ensure reliable service for households, businesses and factories. This is a major responsibility for any state, especially one as fast-growing as Texas.

Insufficient investment in transmission creates congestion and jeopardizes reliability, ultimately leading to higher electricity costs for consumers. Fortunately for Texas, the state’s grid operator, ERCOT, has consistently shown the ability to accurately project demand and adequately construct the infrastructure necessary to keep the lights on throughout the state. On top of that, Texans enjoy some of the lowest electricity prices in the nation, thanks in no small part to a robust transmission network that incorporates a diverse mix of fuel sources.

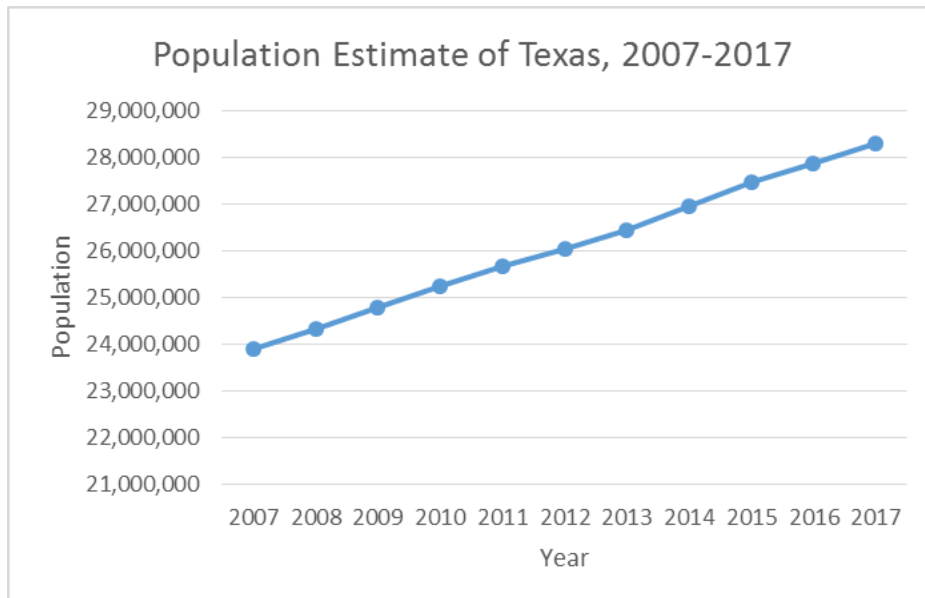
While people and businesses continue to flock to Texas, the state’s electric grid must remain responsive and adaptive to their power demands. If the past is any indication, ERCOT and the state’s utilities are well prepared to meet the challenge.

E. Appendix

Figure 1

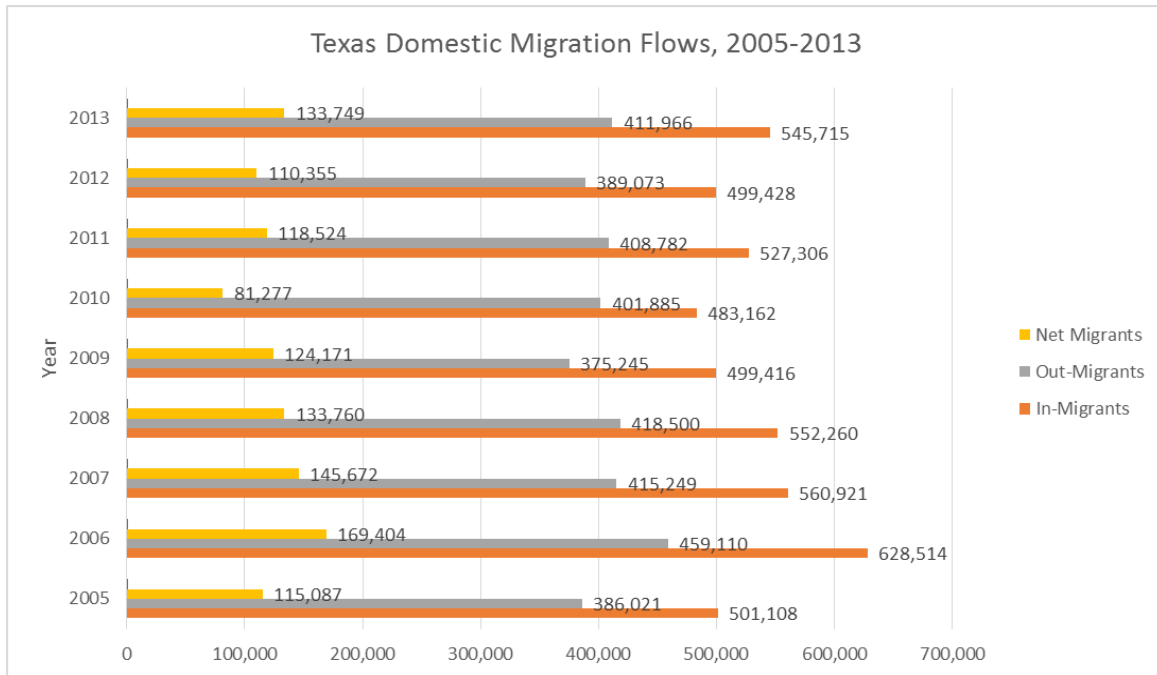


Figure 2



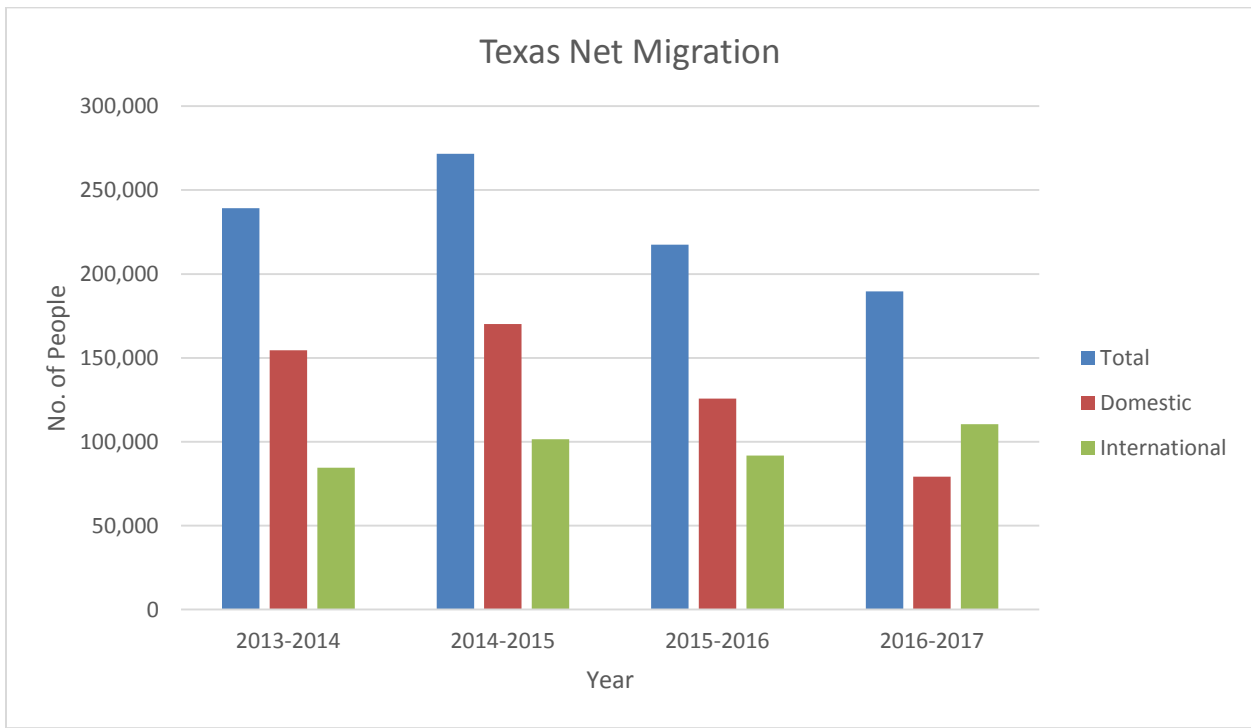
Source: U.S. Census Bureau

Figure 3



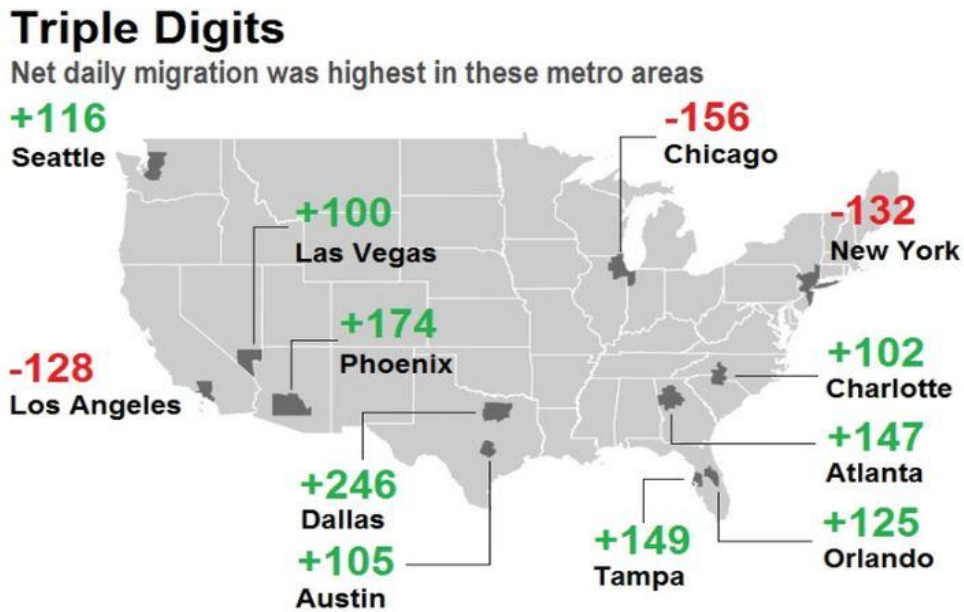
Source: U.S. Census Bureau

Figure 4



Source: U.S. Census Bureau

Figure 5



Source: Bloomberg analysis of U.S. Census data

Bloomberg

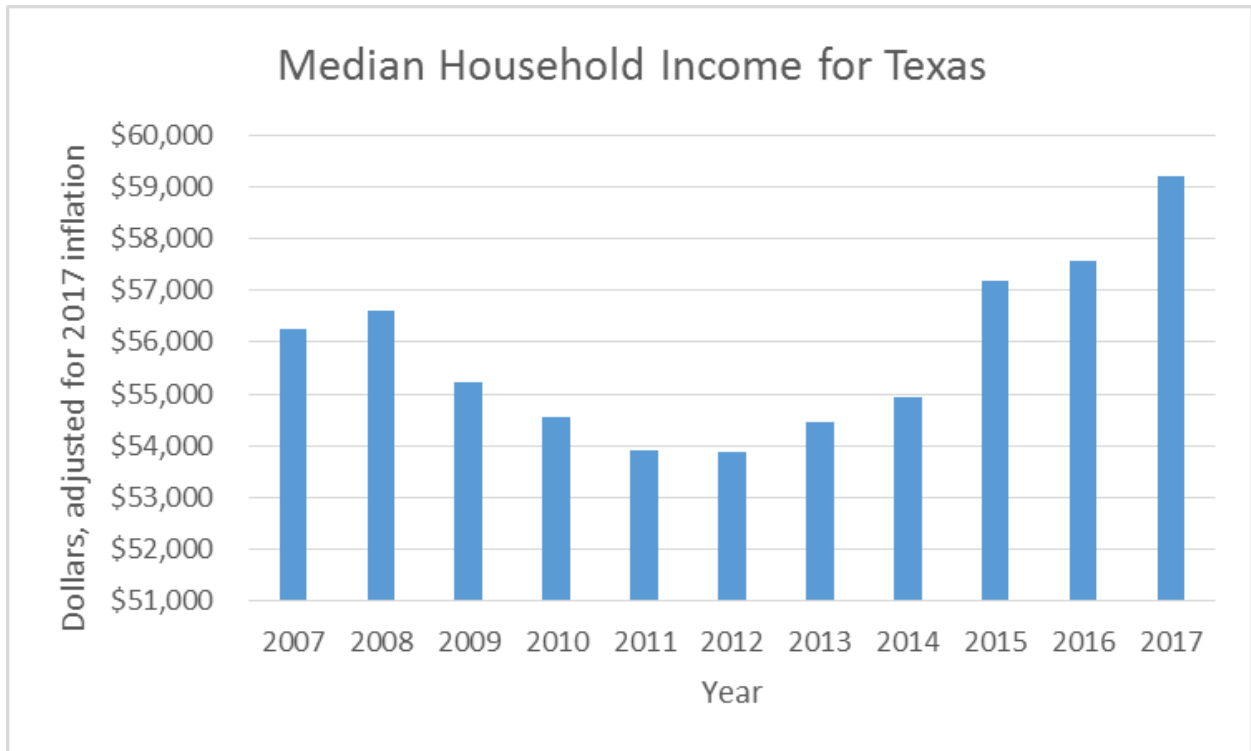
Figure 6

Employment – Top Ten Most Populous U.S. States

Name	2008 Employment	2018 Employment	Numerical Change	Percent Change
California	16,959,230	18,536,734	1,577,504	9.30%
Texas	11,049,576	13,074,211	2,024,635	18.32%
Florida	8,756,660	9,754,409	997,749	11.39%
New York	9,134,103	9,249,282	115,179	1.26%
Pennsylvania	6,104,281	6,103,687	-594	-0.01%
Illinois	6,353,880	6,180,403	-173,477	-2.73%
Ohio	5,647,182	5,497,444	-149,738	-2.65%
Georgia	4,639,668	4,872,477	232,809	5.02%
North Carolina	4,312,336	4,747,637	435,301	10.09%
Michigan	4,612,986	4,665,379	52,393	1.14%
United States	146,248,000	154,430,000	8,182,000	5.59%

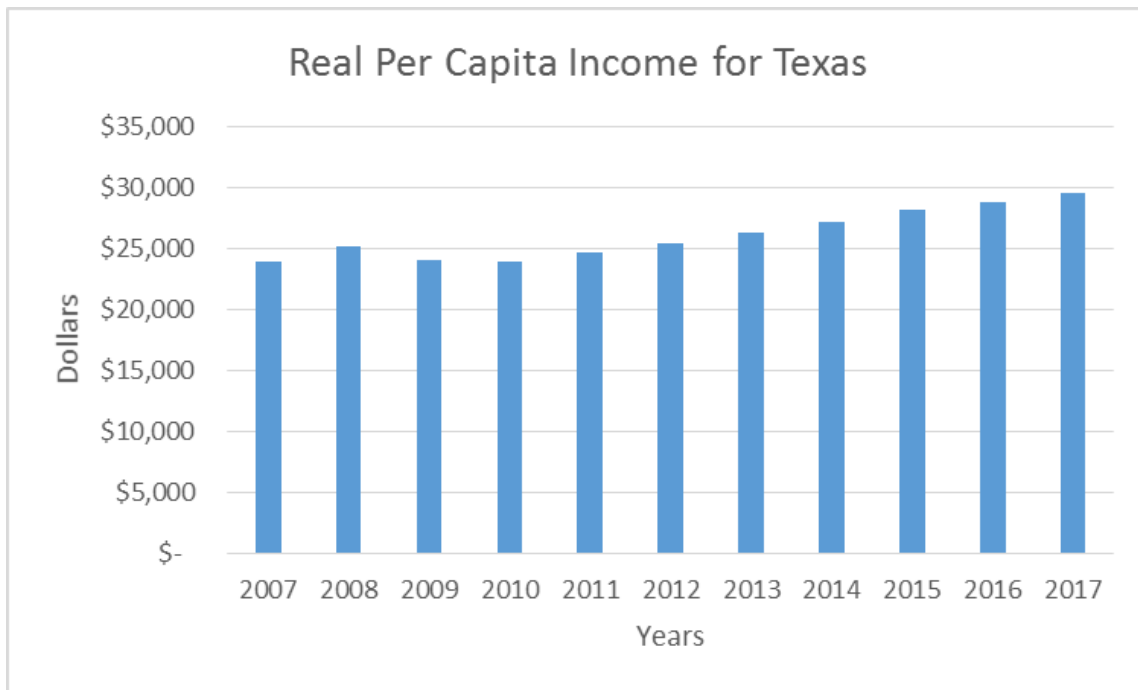
Source: U.S. Census Bureau

Figure 7



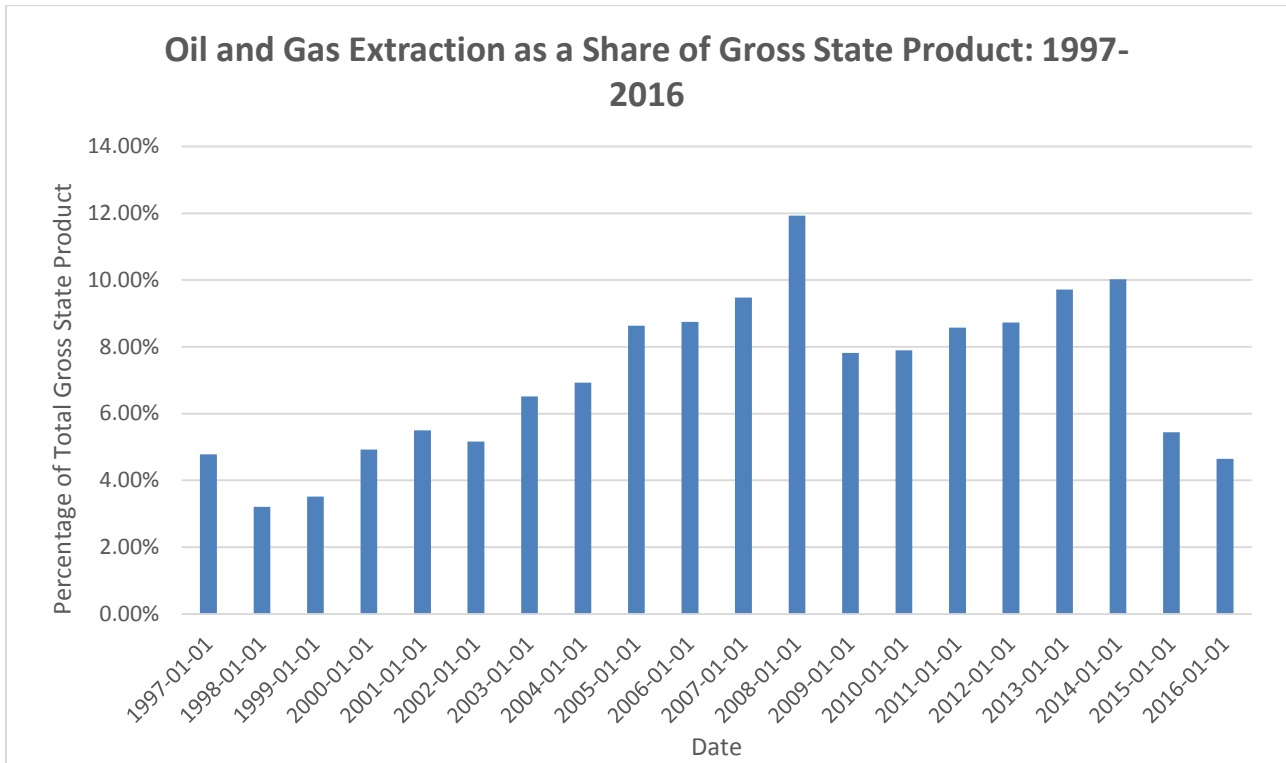
Source: U.S. Census Bureau

Figure 8



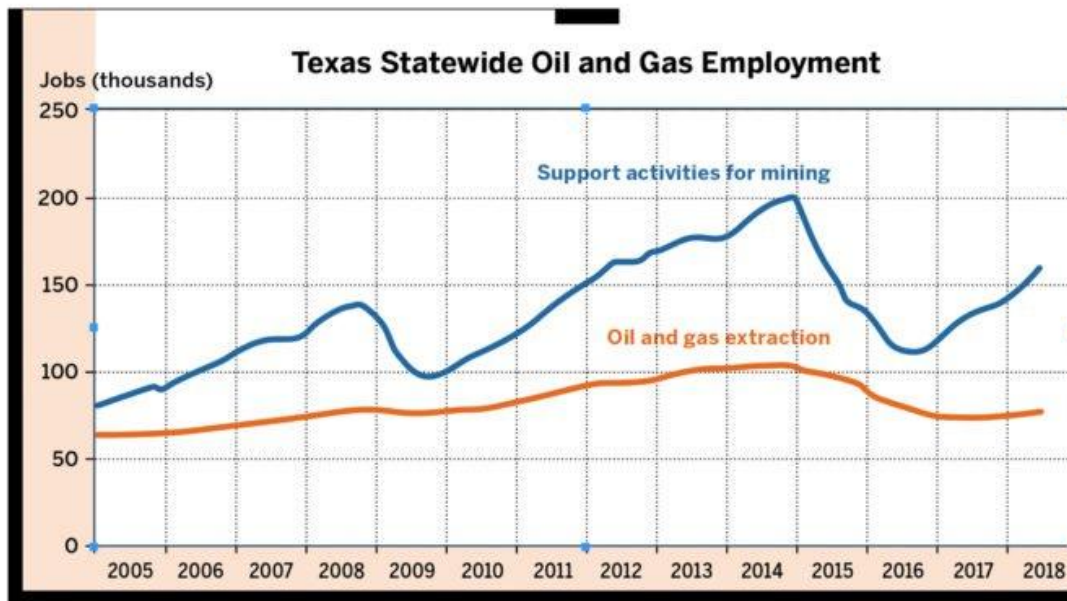
Source: U.S. Census Bureau

Figure 9



Source: U.S. Bureau of Economic Analysis

Figure 10



Sources: Federal Reserve Bank of Dallas, Bureau of Labor Statistics

Figure 11

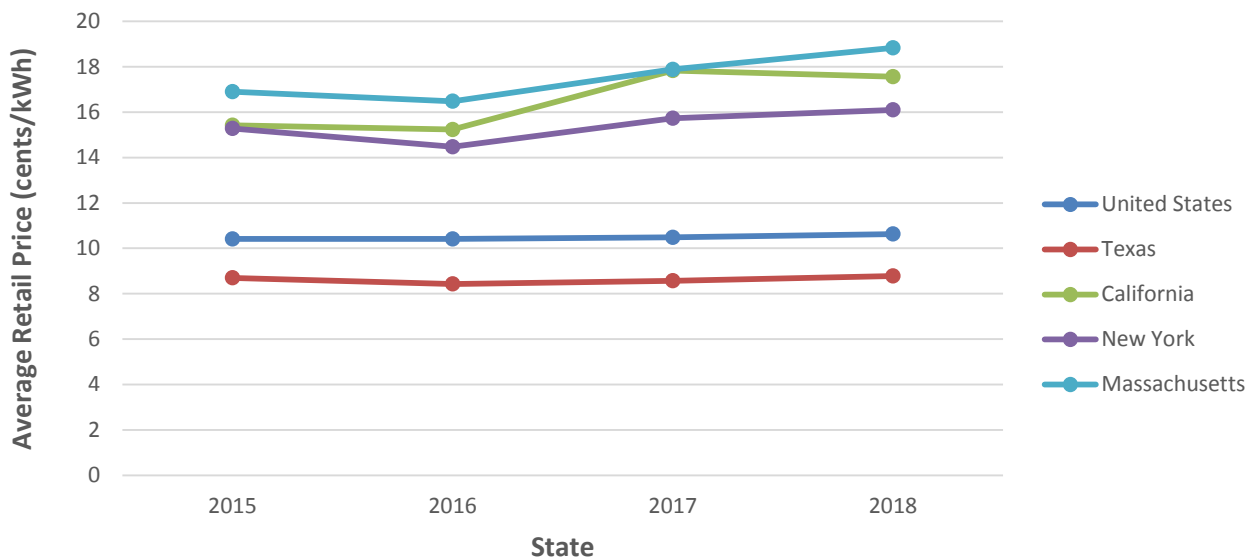
Annual energy and peak demand 2006-2017



Source: Electric Reliability Council of Texas (ERCOT)

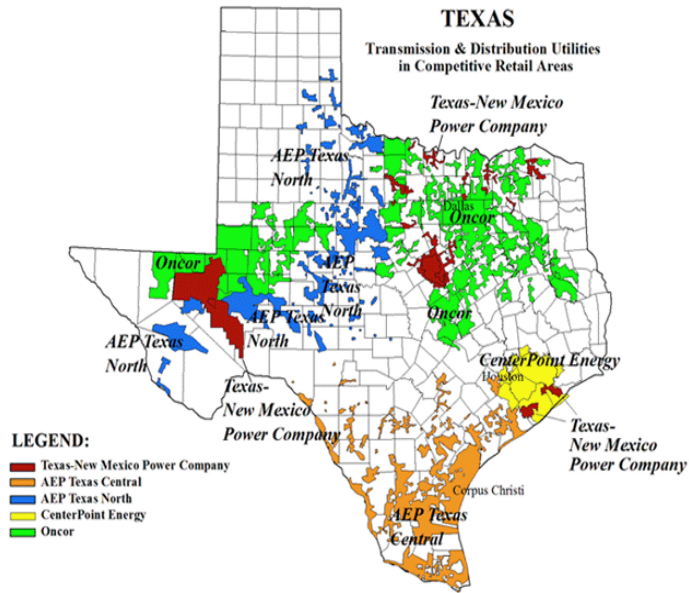
Figure 12

Electric Power Industry Average Rate by State, 2015-2018



Source: U.S. Energy Information Administration (EIA)

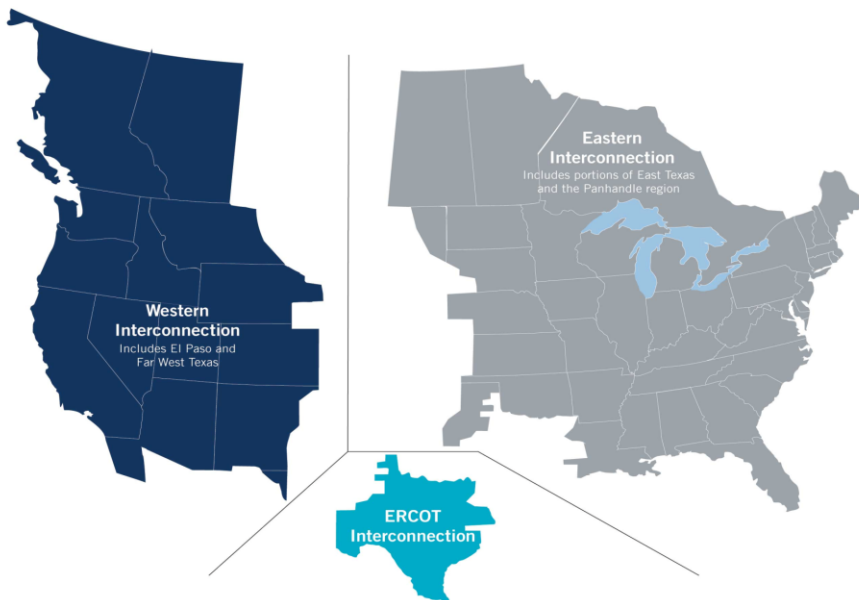
Figure 13



Source: Public Utility Commission of Texas (PUCT)

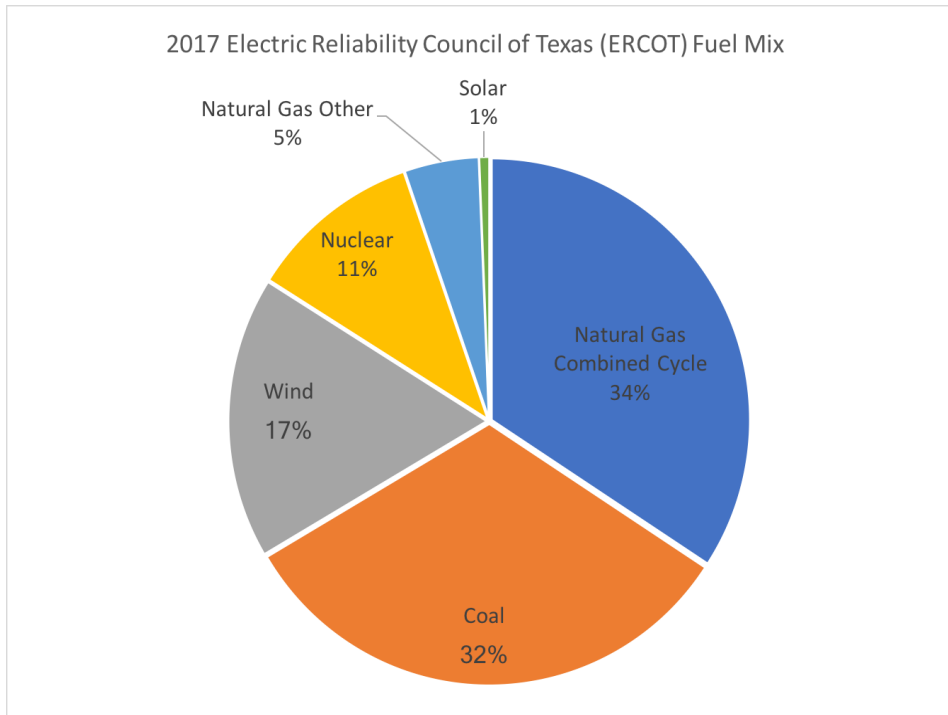
Figure 14

U.S. Electricity Interconnections



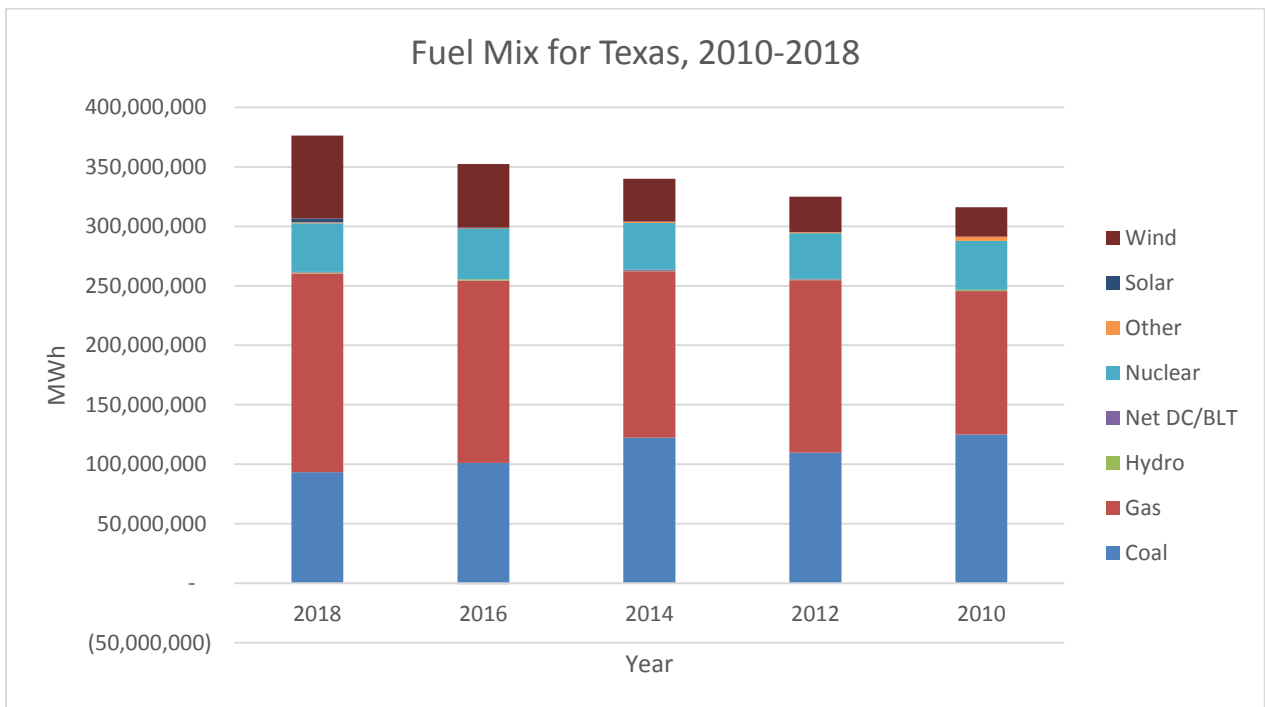
Source: Electric Reliability Council of Texas (ERCOT)

Figure 15



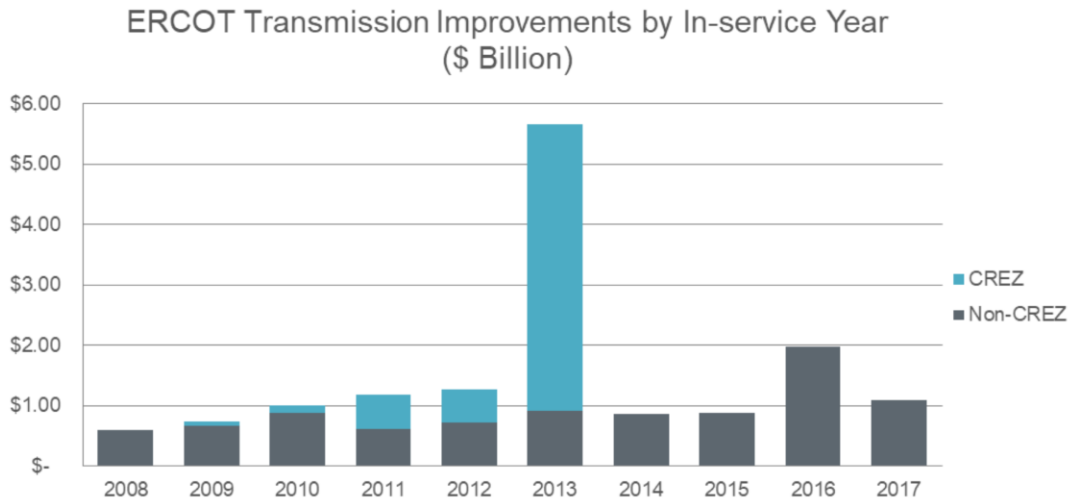
Source: Electric Reliability Council of Texas (ERCOT)

Figure 16



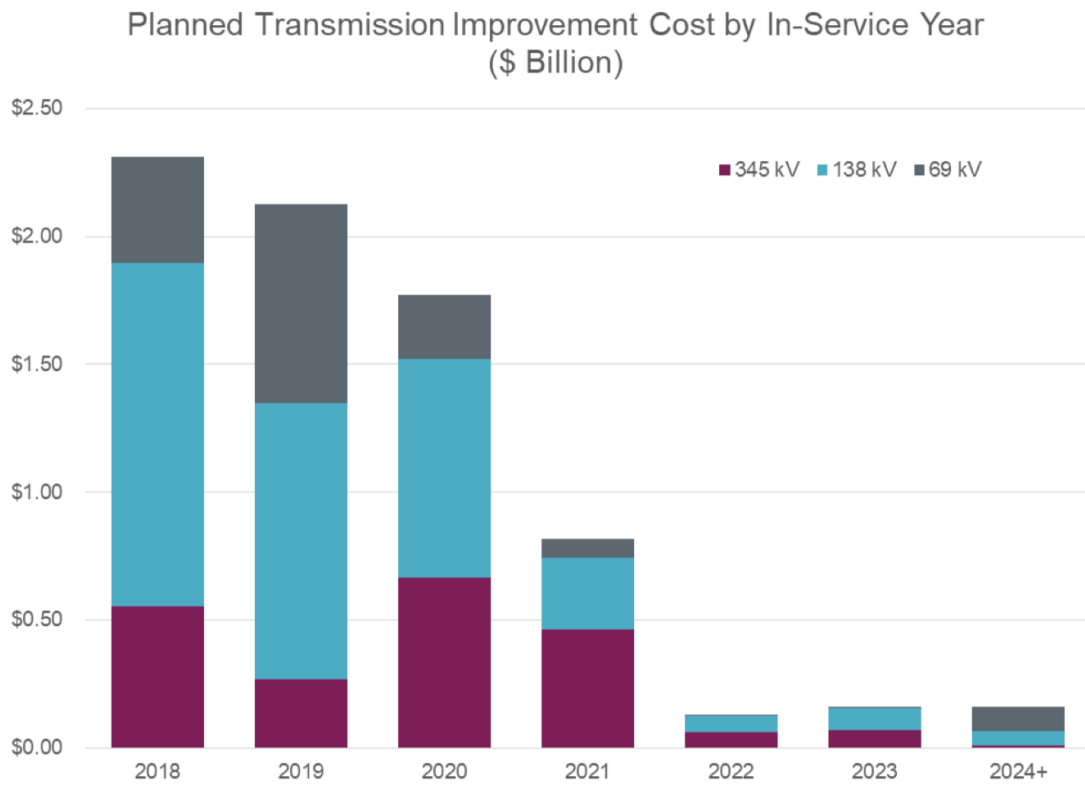
Source: Electric Reliability Council of Texas (ERCOT)

Figure 17



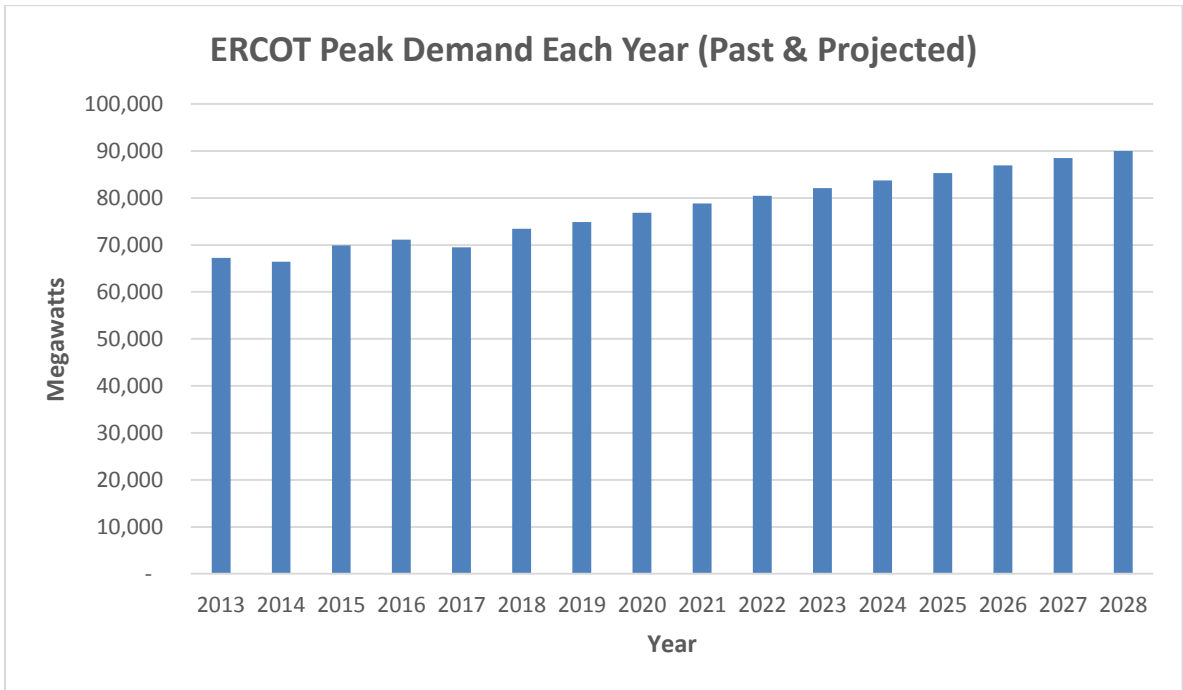
Source: Electric Reliability Council of Texas (ERCOT)

Figure 18



Source: Electric Reliability Council of Texas (ERCOT)

Figure 19



Source: Electric Reliability Council of Texas (ERCOT) Long-Term Load Forecast