

Roland C. Dansby Power Plant Bryan, Texas

The Roland C. Dansby Power Plant, named for former Mayor Dansby, was built 5 miles north of the City of Bryan in 1978 with one steam unit, powered by natural gas with a fuel oil backup system. Lake Bryan was built as the cooling source for the plant.

Dansby Power Plant received a new environmentally sensitive, and cost-effective, generating unit in 2004 to serve the growing customer base, bringing the generation capacity of the plant to 115 MW.

In 2009, a third generating unit was installed at Dansby Power Plant, providing even more generation to the customers of BTU.



BRYAN TEXAS UTILITIES KIOSKS

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205 East 28th Street • Bryan, TX 77803
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*Lake Bryan is a favorite among
nature lovers and anglers.*

Lake Bryan has long been a popular outdoor attraction in the Brazos Valley, and BTU is working to make it the finest family-friendly venue in the area. As the only publicly accessible large body of water in Brazos County, the lake is a hub for fishing.

The Texas Department of Wildlife (TPWD) fertilizes Lake Bryan each year to foster habitat growth for various fish species. Those improvements paid off in a big way this year as an amateur angler caught a record 8lb 8oz largemouth bass at the lake. TPWD verified the record, which was last set in 2000. Lake Bryan also continues to be a local favorite for bird watchers, mountain bikers, boaters, kayakers, and those just looking for a breath of fresh air.

ELECTRICITY EXPLAINED:

Transmission

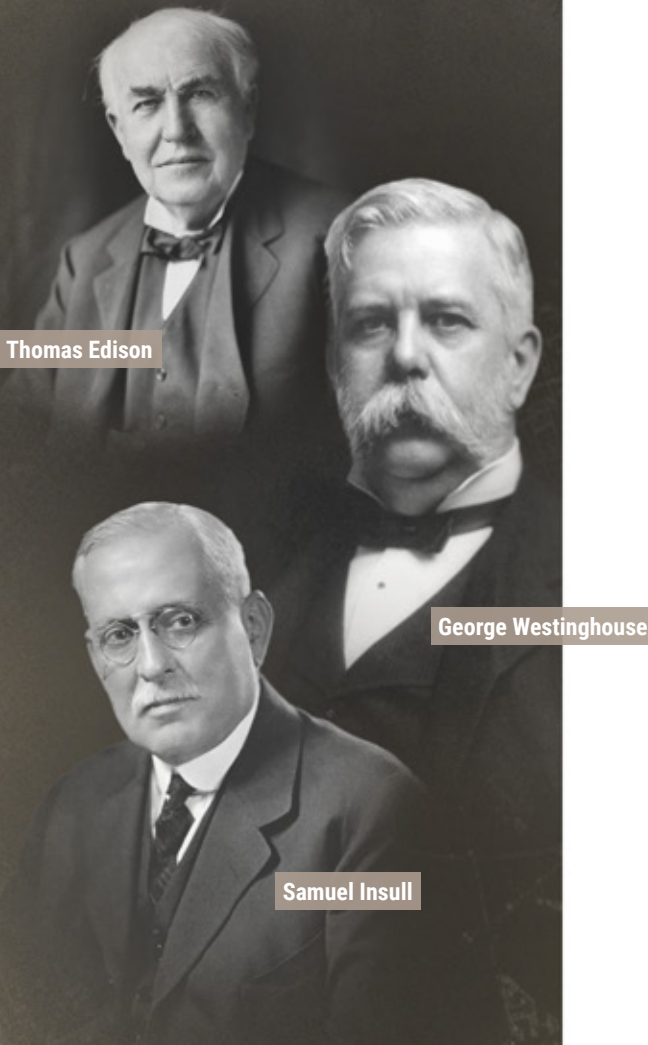
Pictured: Niagara rack and pinion control gate mechanism on an intake structure.

Photo credits: National Park Service

Flip on the lights and you are completing a circuit that connects the light to the wires that run throughout your home, to the larger distribution lines that serve your neighborhood and, ultimately, to a network of high voltage lines that transport energy over long distances. This high voltage network—the transmission system—is critical to the electric industry and our nation's economy at large. If you have been following along with the Electricity Explained series, you will know that previous issues have discussed the discovery of electricity, the inventions that made it usable, and the production of electricity. The next step in the delivery of electricity to homes and businesses is the transmission system, the avenue by which large amounts of electricity is moved from power plants to end users.

The transmission system in the United States crisscrosses the country with hundreds of thousands of miles of lines interconnected in the lower 48 states. Power transformers in transmission substations convert the electricity generated at power plants to higher voltages. Transmission lines then transport the energy across great distances before it goes through a second transformer at another substation that steps the electricity down in voltage before finally being distributed to the customer. Modern transmission lines are typically alternating current (AC) lines with voltages ranging from 69 kilovolts (kV) to 765 kV. A robust transmission network allows many different types of power plants in many locations to supply electricity to customers. The transmission system provides the ability to draw from a diverse set of power plants in different locations with different operating characteristics. This flexibility also provides redundancy. In case some lines fail, the grid can remain intact and still deliver electricity to customers.

Thomas Edison laid the modern transmission system's groundwork in 1882 when he began distributing electricity to homes in New York via a radial direct current (DC) line. These first lines only covered short distances; customers had to be located within a mile or two of the generation facility. As you may know, AC power won the "war of the currents," because it transports electricity more efficiently over greater distances. The first notable transmission line, an 11,000 volt AC line constructed in 1896 by George Westinghouse, connected the hydropower



Thomas Edison

George Westinghouse

Samuel Insull

Photo credits:

Thomas Edison by Louis Bachrach
George Westinghouse by Joseph G. Gessford
Samuel Insull by William L. Koehne



Photo/Map courtesy of ERCOT

Photo courtesy of NASA

generating facility at Niagara Falls to Buffalo, New York, about twenty miles away. In just twenty years from 1907 to 1927, kilowatt-hour (kWh) production increased nearly 1,200 percent in the United States while the average cost per kWh decreased 55 percent. This rapid growth, especially after World War II, prompted average length and voltage of transmission lines to grow to serve the ever-hungry American electric consumers.

Many of the newborn electric networks comprised small, homegrown systems, leaving them vulnerable to reliability difficulties. Samuel Insull introduced the idea of interconnecting small transmission systems to increase reliability. By 1907, Insull had consolidated twenty individual companies. That same year, states began realizing the need for governmental oversight of the growing industry. By 1914, forty-three states had regulatory bodies supervising electric utilities. Today, there are federal oversight entities such as the North American Electric Reliability Corporation (NERC) and the Federal Energy Regulatory Commission (FERC), state entities such as the Public Utility Commission of Texas (PUCT), and sometimes, local oversight such as the City of Bryan City Council and BTU Board of Directors overseeing BTU.

Three major grid interconnections serve the contiguous United States and extend into Canada. The Eastern Interconnection includes all of the area east of the Rocky Mountains. The Western Interconnection includes the Rockies and continues to the Pacific Ocean. The Electric Reliability Council of Texas (ERCOT) covers approximately 75% of the land area in Texas. Within the interconnections, there are balancing authorities that maintain the equilibrium of energy supply and demand in their respective regions. They consist of Independent System Operators (ISO) and Regional Transmission Operators (RTO). ISOs and RTOs also often operate wholesale electricity markets where counterparties buy and sell energy. ERCOT uniquely serves as the interconnection, balancing authority, and the regional transmission organization all in the same entity and physical system.

Transmission lines act as interstate highways. Electrons flowing on lines are the vehicles moving along roads, and both electrons and vehicles can experience congestion or “traffic jams” when

too many of either come together on the same “route.” Grid congestion occurs when there is not enough transmission capacity to deliver electricity to an area without exceeding stability limits. This congestion can be costly in a couple of ways. First, cheaper generation may be available from one area, but the lack of transmission line capabilities prevent the power from reaching regions where it is most needed. For example, much of Texas’ renewable generation facilities are located in rural areas, far from the urban regions that require the most power. Secondly, as the lines approach physical stability parameters, more energy is dissipated as “line losses.” These energy losses increase electricity prices as a whole. To combat transmission congestion, entities like ERCOT evaluate areas that experience this bottleneck and predict areas that might be vulnerable to the issue in the future. New transmission infrastructure is strategically planned to alleviate congestion-prone areas. However, the process of permitting and constructing new lines can be time-prohibitive, lasting two to three years or more.

At any given time, transmission operators must ensure that there is adequate power available to serve the demand across its service territory. While this may sound simple, the balancing of electricity supply and demand is quite difficult. Weather patterns, differing demand for energy, power congestion, physical maintenance of power plants and transmission lines all impact the grid, and in turn, wholesale market pricing. ERCOT market prices adjust in fifteen-minute intervals based on these variables.

The transmission of energy is one of the most important pieces of the electric system in the United States. Since power must be used near simultaneously from when it is produced, the efficiency, reliability, and resiliency of its transportation is essential. The next time you are driving down the road and see the enormous steel transmission line towers, recall the complexity and effort that goes into keeping the lights on every day. Join us in our next issue to explore distribution lines, the next step in delivering energy to customers.

BRYAN TEXAS UTILITIES **SPOTLIGHT****CADILLAC RANCH
BAR & GRILL**

One of Bryan/College Station's newest entertainment venues has opened at Lake Bryan. The Cadillac Ranch Bar & Grill began operations in October 2021, and the venue features live music, DJs, delicious eats, and cold drinks overlooking lakeside sunset views. The newly renovated bar is veteran-owned by Derek Emola and Chris Batten. Friends since primary school, Derek and Chris are native Bryan residents both graduating from Bryan High School in 1989.

After graduation, their paths parted leading Chris to attend Sam Houston State University where he played college football and was part of the 1991 championship team. He graduated in 1994 and began his career with Nationwide Insurance. He has received accolades such as being recognized as a Hall of Fame Agent and receiving the Presidents Conference Award. Chris is a proud father to Nathan (21), Brandon (20), and Jackson (17). Today, he owns twelve insurance locations, and is thrilled to further his local business interests with the Cadillac Ranch Bar & Grill.

Derek went on to serve his country in the United States Army in the 7th Infantry Division. During his active duty, he was awarded the National Defense Service, Army Achievement, and Good Conduct Medals. He also earned Expert Infantry, Air Assault,

Airborne, and Expert Rifleman Badges. In 1996, Derek returned home to become the General Manager of the Texas Hall of Fame, co-owned by his father, the late Paul Emola. In 2000, he struck out on his own to open and operate a series of bars including The Canyon Country Night Club in College Station, TX, Bo's Barn Dance Hall in Salado, TX, Rockin' E Bar & Grill in Decatur, TX, and the Wild West Saloon in the Fort Worth Stockyards. Derek is a proud father to daughter, Taylor (25) and son, Parker (22). Derek decided to serve his country once more and re-entered the Army in 2008. He met his lovely wife, Karen, and they moved across the U.S. for work before deciding to settle back down in Bryan when their first grandson, Canten, arrived.

Chris and Derek reconnected while sharing memories about old times. Regardless of their time apart, they always fall right back into lockstep with one another. Over the course of their 45-year friendship, their entrepreneurial ways led them to dreaming up the Cadillac Ranch concept. After discussing at length, they began a search for the prime location. Lake Bryan seemed like the perfect spot to open a bar and grill with fun entertainment, dancing, and great food overlooking picturesque views. After working with BTU to renovate and improve the building, the Cadillac Ranch Bar & Grill opened last fall.



CLEM ONOJEGHUO ©



ISRAEL PALACIO ©



JOSH DUKE ©

The venue features a fully stocked bar, serving handcrafted signature cocktails and ice-cold 30°F draft beer. There is a large indoor bar and an outdoor bar on the deck so your next drink is never far away. Catch a glimpse of nostalgia by ordering the “Hall of Fame Punch”, the original recipe of the late Paul Emola, Derek’s father. Cadillac Ranch Bar & Grill also offers friendly competition entertainment with outdoor games of Cornhole, Washers, and Jenga! There is plenty of indoor and outdoor seating available to view the hottest seasonal lineup of sports (Gig’Em Aggies!). Design aspects from the color palette to the furniture give a rustic, industrial vibe that is reminiscent of a classic Cadillac and takes you back in time to when pink was the trendiest color for the classic car.

Looking forward to the upcoming spring and summer, Cadillac Ranch Bar & Grill has an amazing lineup of country and western

bands scheduled every Saturday night beginning in March. Open every Thursday evening through Sunday, patrons can wind down from their workweek. Begin the weekend with Cadillac Ranch Bar & Grill’s Happy Hour and all-you-can-eat catfish, and end it with Sunday Fun-day Brunch sharing mimosas by the water. Stay in the “know” by following Cadillac Ranch Bar & Grill on Facebook (@CadillacRanchLakeBryan) for weekly updates, special offerings, and events. If you are inspired during your visit, the restaurant is also available to rent for private events seven days a week during January and February, and Monday through Wednesday beginning in March. Derek Emola and Chris Batten are grateful for this opportunity and are excited to serve their hometown community for years to come!

 @CadillacRanchLakeBryan



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BREAKFAST & EGG HUNT

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Egg Hunt Ages: 0 – 3 years / 4 – 6 years / 7 – 9 years

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Presented by the Bryan Police Department and Bryan Parks & Recreation Department



ERCOT: Prioritizing Resilience & Reliability

Bill Flores

Vice Chair, Electric Reliability Council of Texas (ERCOT)
Board of Directors

"You are on a tightrope. One misstep and you fall off." That is how Bill Flores, the new Vice Chair of the Electric Reliability Council of Texas (ERCOT) Board of Directors, described the delicate balance the electric grid maintains daily. As an independent system operator, ERCOT manages the flow of electricity from 710 generating units over more than 46,500 miles of transmission lines to 26 million consumers; equating to about 90 percent of Texas' electrical load. "A lot to say grace over," according to Flores.

William H. "Bill" Flores was raised in the panhandle in small-town Stratford, Texas. He married his high school sweetheart, Gina, and they have two sons and four grandchildren. A member of the Texas A&M Aggie Class of 1976, Flores graduated with a degree in accounting. He went on to receive his Master of Business Administration (MBA) from Houston Baptist University. Flores began his career in the energy industry, primarily oil and gas. He also worked in a Big Four accounting firm (the four largest public accounting firms in the United States are recognized as the "Big Four") and has held many C-level (executive) leadership positions with public and private businesses throughout his career.

In 2009, Flores became concerned with the direction of the United States, and decided to run for public office. Voters elected him to serve as the Representative for the 17th Congressional District of Texas, which includes the Brazos Valley. During his tenure in office, Flores served on many committees including the House Budget Committee, the House Natural Resources Committee, the House Veterans Affairs Committee, and the House Energy & Commerce Committee. The House Energy & Commerce Committee oversees everything from healthcare, telecommunications, automotive safety, to energy and the electric grid. As a self-described "geek at heart," Flores took a particular interest in the electricity industry, chiefly the generation and delivery of power and its impact on the environment.

When running for office, Flores committed himself to a self-imposed term limit. After a decade of service in Washington D.C., he decided to retire to spend more time with his family. His term concluded in January 2021, and he settled back down in his home in Bryan. Just a month later, the devastating Winter Storm Uri ripped through Texas. As a concerned public figure, and Texas citizen, Flores read everything he could get his hands on about the unprecedented impacts to the electric grid and oil and gas supplies.

"I testified in front of the Texas State Legislature about my views of what worked and what didn't, and most importantly about what we need to do in the future to make sure it doesn't happen again," Flores said.

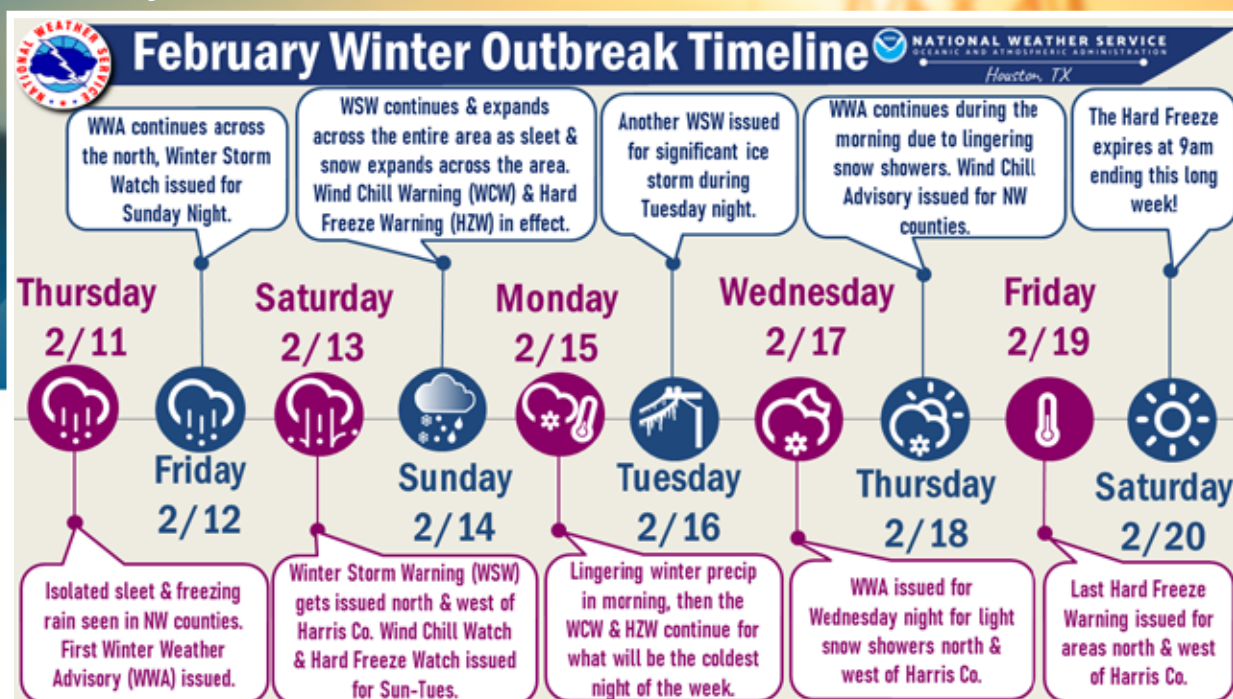
After the storm, the Legislature, the Railroad Commission of Texas (RRC), the Public Utility Commission of Texas (PUC), and ERCOT began an intense evaluation of the event. This led to the restructuring of the governance of the PUC and ERCOT. ERCOT began a search for eight new independent board members, particularly citizens of Texas that did not stand to gain from the electric industry. The selection committee sought out Flores to serve on the board. In November 2021, the PUC appointed Flores as the Vice Chair of the ERCOT Board of Directors.

"We have been digging in ever since to make sure the lights stay on this winter as well as the next twenty winters and summers," Flores said.

Senate Bills 2 and 3 from the Legislature provided direction and gave more authority to the PUC and ERCOT to ensure electric utilities and generators in Texas are in compliance with regulations regarding protection for weather events. In response, ERCOT launched a 60-point roadmap to help ensure reliability of the Texas grid. This guide identifies action items that detail ways to accomplish this undertaking. Since February 2021, ERCOT has inspected more than 300 generation units, including 85 percent of the production that was offline during the winter storm. In December 2021, the PUC levied over \$7 million in fines to those generators that did not comply with newly imposed weatherization and reporting standards. The RRC mandated that oil and gas entities winterize their equipment and register as critical infrastructure with electric utilities to ensure they receive power during scarcity events.

"Nobody is standing still. All three of the big players in energy in Texas – the Railroad Commission, the Public Utility Commission, and ERCOT – are working on this," Flores said. "Texans can feel confident that the plants that were offline in the last storm have been weatherized, so the chances of them being offline or failure is much lower than it was a year ago."

February 11-20, 2021



Graphic: NOAA / National Weather Service

While Winter Storm Uri made ERCOT a household name in Texas, the system operator performs a tightrope-balancing act on a daily basis. At any given moment, the grid must maintain equilibrium between supply and demand, growth and grid stability, and generation fuel sources. The PUC and ERCOT are looking at both short-term and long-term challenges facing the grid.

"The key thing we have learned is that reliability and resilience have a cost. Also, the lack thereof can have a huge cost," Flores said. "If we want reliability through thick or thin, we will have to pay for that."

The Texas population, and its resulting energy needs, are growing at an astronomical rate. As more people and businesses relocate to Texas, ERCOT must adequately serve current high-growth areas and anticipate which areas may need more power supply in the future. Construction of new transmission lines and generation units are necessary to match this expected growth.

"Texas has one of the, if not the, best grid in the world. However, we are challenged by high growth and a huge influx of interruptible generation, think wind and solar," Flores said.

Interruptible generation, or sometimes referred to as renewable generation, is energy produced from sources such as wind or solar. Due to certain market forces, power companies are building more new interruptible generation than traditional base load generation fueled by coal, nuclear, or natural gas. However, due to variabilities in weather, renewable generation is less predictable and less reliable. There must be traditional sources of generation, or new technologies, to replace the absence of renewables when they are not available.

"The PUC is coming up with innovative and thoughtful ways to deal with this issue," Flores said. "We are seeing a renaissance of renewed interest in nuclear energy. There are lots of new and exciting technologies."

Mr. Flores was an early adopter of solar energy. Having installed rooftop solar panels on his home several years ago, he knows its benefits and shortcomings firsthand. While the technology transforms virtually free energy into electricity, renewable energy sources need storage mechanisms, or batteries, to become more practical. Flores identified three issues with battery storage. The first is energy density. Batteries require an enormous amount of space to store relatively little energy. The second is the high cost. While batteries have seen falling prices, they must fall farther still to become an everyday appliance. Thirdly, the production of batteries involves mining rare earth metals, which threatens the environment.

Flores has taken the task of meeting the state's electric grid challenges head on. He looks forward to continuing his work with fellow ERCOT board members, the PUC, the RRC, and all Texans to ensure a prosperous and reliable electric grid for years to come. He encourages BTU customers and Texans in general to download the ERCOT smartphone app, follow ERCOT on social media, and visit their website to learn more about efforts to ensure resiliency and stay up to date with the latest information.

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