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LIGHT AND LIFE

Using the Public Utility Commission of Texas Sunset Review
to Safeguard Texans' Health and Wellbeing
February 2022

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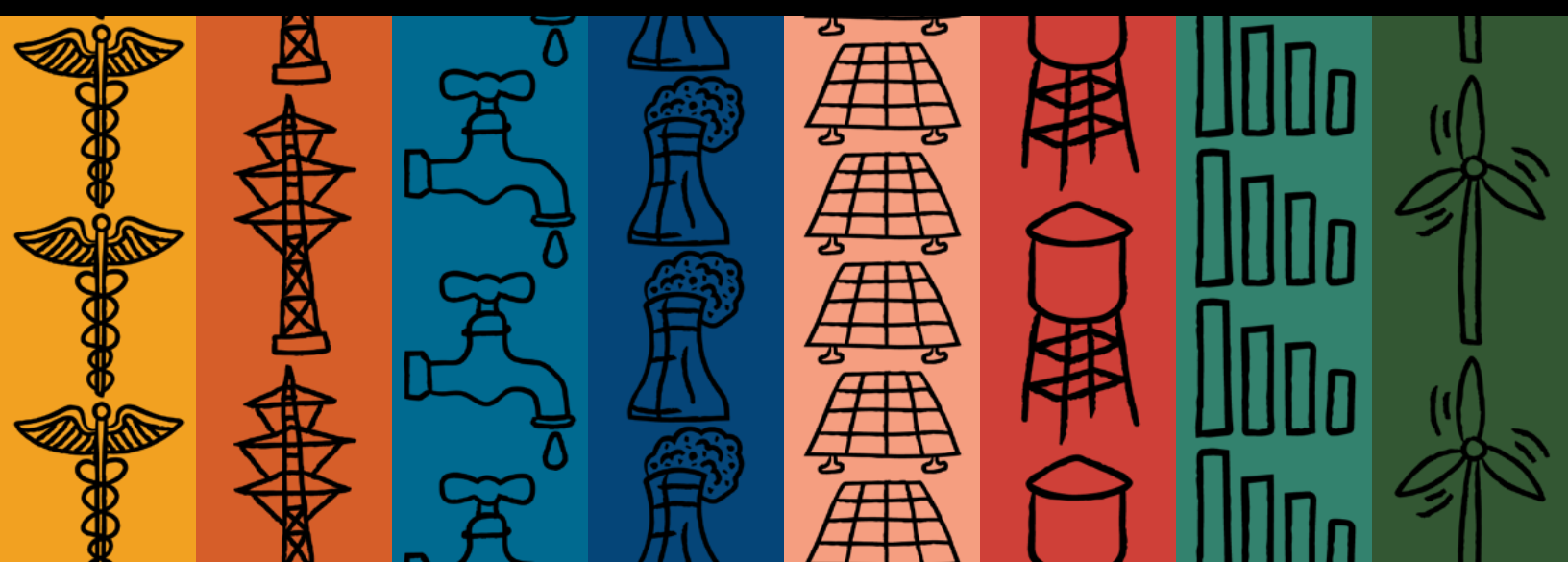

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The Alliance of Nurses for Healthy Environments is the only national nursing organization focused solely on the intersection of health and the environment. The mission of the Alliance is to promote healthy people and healthy environments by educating and leading the nursing profession, advancing research, incorporating evidence-based practice, and influencing policy. enviRN.org

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Texas Health Institute is a non-profit, non-partisan public health institute. Since 1964, THI has served as a trusted, leading voice on public health and healthcare issues in Texas and the nation. As the public health institute in Texas, THI is also a member of the National Network of Public Health Institutes which is a social, financial and information network, connecting more than 8,000 subject-matter experts with organizational partners across the nation.

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EXECUTIVE SUMMARY

The upcoming 2022-2023 Sunset review of the Public Utility Commission of Texas (PUCT), offers a unique opportunity for Texas lawmakers to advance public health in the Lone Star State. By adopting a "Health in All Policies" approach, we can build a safe, reliable, and fair utility system that can improve individual health outcomes; enhance Texans' well-being; bring savings and efficiency to hospital systems; and reduce health disparities across Texas communities.

Health in All Policies (HiAP) is a paradigm that centers the health of individuals, families, and communities. HiAP affirms that decisions about any area of public policy can impact human health, and that policies frequently have interactions that potentiate their benefit or harm to human health. According to the World Health Organization:

> *"HiAP is an approach to public policies across sectors that systematically takes into account the health implications of decisions, seeks synergies, and avoids harmful health impacts in order to improve population health and health equity. As a concept, HiAP reflects the principles of: legitimacy, accountability, transparency and access to information, participation, sustainability, and collaboration across sectors and levels of government.*
>
> *Health and health equity are values in their own right, and are also important prerequisites for achieving many other societal goals. Many of the determinants of health and health inequities in populations have social, environmental, and economic origins that extend beyond the direct influence of the health sector and health policies. Thus, public policies in all sectors and at different levels of governance can have a significant impact on population health and health equity."*

A practical way to apply the HiAP lens is through the use of Health Impact Assessments (HIAs.) The conceptual framework for HIAs flows from the older framework of Environmental Impact Assessments (EIA) that have been part of US environmental regulatory policy since 1970.[1] According to the US Environmental Protection Agency (EPA), " A Health Impact Assessment (HIA) is a systematic process for identifying the potential health effects of a new proposed action. The steps in an HIA can identify health disparities, which are a prime indicator of the existence of a disproportionate impact to minority, tribal or low–income communities."[2] Recently, the Pew Charitable Trusts, in collaboration with the Robert Wood Johnson Foundation, has established the Health Impact Project to encourage local, state, and national organizations to include HIA in their policymaking processes. The Health Impact Project focuses on resourcing state and local governments with little or no prior experience to undertake HIAs, including providing guidance on good public participation practices.[3]

Health in Utility Policy

When Texans think about health and health equity, they may think about healthcare providers like doctors and hospitals; they may think about health insurance; or they may think about personal choices like healthy eating or exercise. But particularly after 2021's Winter Storm Uri, Texans have seen that advancing health also requires attention to the state's electric, water, and broadband systems.

Typically, public utility policy has been the province of regulators; providers; businesses; and ratepayers. That framework has not included more than passing concern for the public health importance of public utilities. According to its mission statement, the PUCT's mission is to "protect customers, foster competition, and promote high quality infrastructure." While these are important objectives for utility regulation, they do not directly take into account the impact public utilities have on Texans' health.

For many Texans, the devastation of Winter Storm Uri in 2021 was their first introduction to the PUCT and the Electric Reliability Council of Texas (ERCOT). The failings of the electric industry and the actions of these entities in a time of extraordinary need pulled them out of regulatory obscurity, making them household names and easily identifiable targets for consumers, advocates, and the Texas Legislature.

Winter Storm Uri brought the kind of winter weather most Texans wistfully associate with cozy holidays and winter sports. But instead of cocoa and sledding, Uri ushered in massive power outages, broken pipes, dangerous road conditions, and a near-collapse of the Texas electric grid - escaped by four minutes – that traumatized the state for several days. Record low temperatures tested Texas' utility infrastructure, which ultimately failed to safeguard its residents leaving nearly 14 million Texans with water disruptions[4] and 69% of the state without electricity.[5] These extreme conditions threatened entire communities, especially the elderly, individuals with medical conditions, and healthcare systems. Many Texans waited in long grocery store lines outdoors in freezing temperatures[6] to secure food and water; others struggled to find necessary medications; and hundreds across the state were injured. The failure of the PUCT and ERCOT to secure a safe and reliable utility system caused thousands of Texans to suffer and some to die. The Texas Department of State Health Services has recorded a death total of 246 from the winter storm, citing extreme cold exposure, exacerbation of pre-existing illness, motor vehicle accidents, and more as causes of death.[7]

Rather than castigating utility regulators for past failings, the legislature should use the opportunity of the Texas' Sunset Advisory Commission review process to examine the alignment of the state's utility regulatory structure with Texas' high-level policy goals. In particular, as a key element of the Commission's review, the Commission should consider the impact that public utility regulation has on human health, both in catastrophes and on a daily basis, and make recommendations that ensure protecting public health is a key strategy of the PUCT and ERCOT going forward.

Numerous studies reveal public utilities negatively impact human health.
For example:

- Pollution[8] caused by thermal power generation worsens the quality of life for individuals with preexisting conditions, especially asthma.[9] In Central Texas, 1 out of every 16 children live with asthma, with approximately 13.7 annual asthma-related hospitalizations per 10,000 kids.[10]

- More than 2 million Americans lack running water and basic indoor plumbing.[11] Lack of public water systems leads to high household costs for low-income Texans in areas throughout the state, including colonias.

- A study in the American Journal of Public Health found measurable reduction in food consumption for both adults and children in poor households when those households faced increased energy costs from extreme cold.[12]

Sunset Review

Like most Texas state agencies, the PUCT is subject to Texas' "sunset" agency oversight and reauthorization process. Through this process, the Texas Sunset Commission and the legislature examine the mission and operations of an agency and reflect on the agency's strengths and challenges. While ERCOT is not a state agency in the normal sense, it is statutorily required to undergo sunset review, given its key function in the overall mission of PUCT. Both PUCT and ERCOT are under sunset review in the 2022-2023, which should include an examination of their failures to safeguard Texans' health and wellbeing both in 2021 and the past decade.

Winter Storm Uri got the public's attention with respect to electricity, but the Texas public utility system also includes two other utilities within PUCT's purview: water and broadband. While consumers became aware of the PUCT and ERCOT because of power outages, the PUCT also plays a critical role in water utility regulation, where it interacts with the Texas Water Development Board and the Texas Commission on Environmental Quality, both of which also are undergoing sunset review in 2022-2023. Historically, the PUCT has had relatively limited oversight of broadband in Texas, but legislation enacted in 2021 expanded this area of responsibility—and, as millions of families with school-aged children learned during the COVID pandemic—broadband access has become as integral to many activities of modern life as electricity and running water.

RECOMMENDATIONS

Safe, reliable, and fair utility *systems* are vital to the health of individuals and communities. In 2023, Texas lawmakers have the opportunity to refocus the PUCT and ERCOT on advancing the health and wellbeing of the ratepayers and taxpayers they are established to serve. The following recommendations would help ensure that the PUCT and ERCOT—and the markets they regulate—put the public at the center of public utility policy.

Include specific reference to public health in the PUCT mission statement, aligning with the approach of integrating human health, wellbeing, and equity in public policies across sectors.[13]

Ensure Texas' utility regulatory regime supports the state's public health goals, from the point of generation to the point of individual consumption.

Direct the PUCT to implement low-income and/or multifamily residential demand response pilot projects to identify opportunities for more residential participation in maintaining reliability through the competitive market.

Establish a PUCT consumer advisory council, as some other states have done, with dedicated seats for experts who can assist the agency in serving the people of Texas:

- A dedicated seat for a public health professional to assist the agency in achieving the public health portions of its mission.

- A dedicated seat for an independent consumer advocate specifically to represent residential and small commercial (<50kW) customers, to assist the agency in achieving the consumer protection portions of its mission.

THE TEXAS SUNSET REVIEW PROCESS

The sunset review process was one of the first state government accountability programs developed in the U.S. Colorado adopted the first sunset review legislation in 1976, and within five years, the majority of states had adopted similar legislation. Texas adopted its sunset statute in 1977. Today, only a few states maintain a sunset review system, with Texas' being one of the most robust and far-reaching.

Texas' sunset process is distinctive because of its size and scope, and because it offers the opportunity for significant public participation. The public participation component of Texas' sunset process is a vital counterpart to public participation during the legislative session: while the legislative session is short and intense, the sunset process occurs over an 18-month period with many opportunities for citizen input both at the Capitol and in local communities.

Like other public participation processes in state government, the public participation component of the sunset review process is only as valuable as Texans make it.

Sunset is the regular assessment of the need for a state agency to exist. While standard legislative oversight is concerned with agency compliance with legislative policies, Sunset asks a more basic question: Do the agency's functions continue to be needed? The Sunset process works by setting a date on which an agency will be abolished unless legislation is passed to continue its functions. This creates a unique opportunity for the Legislature to look closely at each agency and make fundamental changes to an agency's mission or operations if needed.

The Sunset process is guided by a 12-member body appointed by the Lieutenant Governor and the Speaker of the House of Representatives. Assisting the Commission is a staff whose reports provide an assessment of an agency's programs, giving the Legislature information needed to draw conclusions about program necessity and workability.

Staff of the Sunset Commission work extensively with each agency under review to evaluate the need for the agency, propose needed statutory or management changes, and develop legislation necessary to implement any proposed changes.

About 150 state agencies are subject to the Texas Sunset Act. The Sunset Act, which became effective in August 1977, specifies each agency's review date. Agencies under Sunset typically undergo review once every twelve years. Certain agencies, such as universities and courts, are not subject to the Sunset Act. Some constitutionally created agencies, such as the Board of Pardons and Paroles and the Board of Trustees of the Teacher Retirement System of Texas, are subject to Sunset review but not abolishment.

Generally, the Legislature groups and schedules agencies for review by function to allow the examination of all major state policies related to a particular function at once, such as health and human services, natural resources, and financial regulation. About 20 to 30 agencies go through the Sunset process each legislative session. The Legislature may change the review schedule to enable a closer look at certain agencies, to balance the sunset work schedule, or to respond to a critical need or event. By using the Sunset process to examine agencies that are of special legislative interest, the Legislature further strengthens the accountability of state agencies.

An agency is automatically abolished unless the Legislature passes legislation to continue the agency. If an agency is abolished, the Sunset Act provides for a one-year wind-down period to conclude its operations. The agency retains full authority and responsibility until the end of that year, when all property and records are transferred to an appropriate state agency.

--More information is available on the Sunset Commission's website at www.sunset.texas.gov
Understanding Public Utility Regulation in Texas

SUNSET REVIEW PROCESS

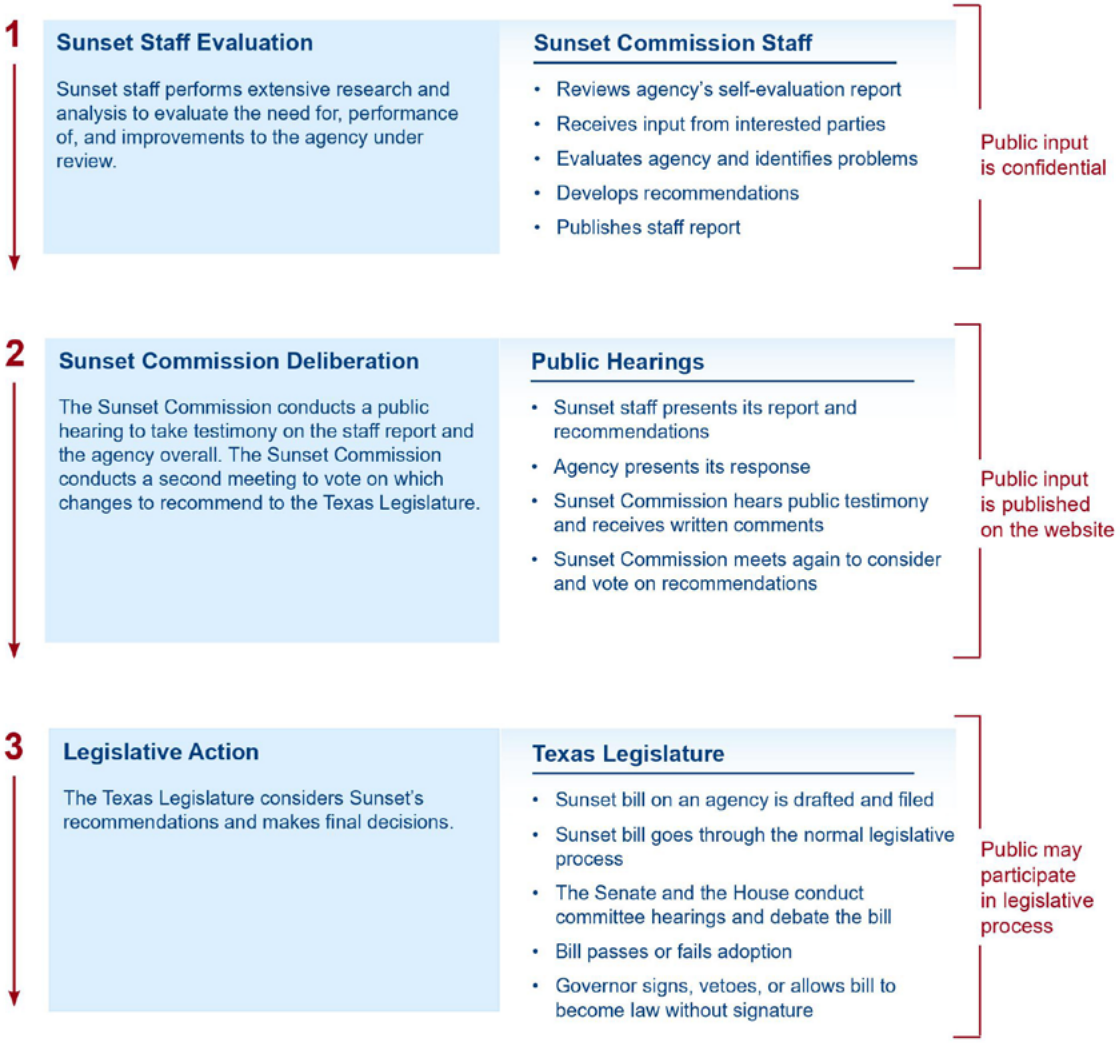


Image via Texas Sunset Advisory Commission

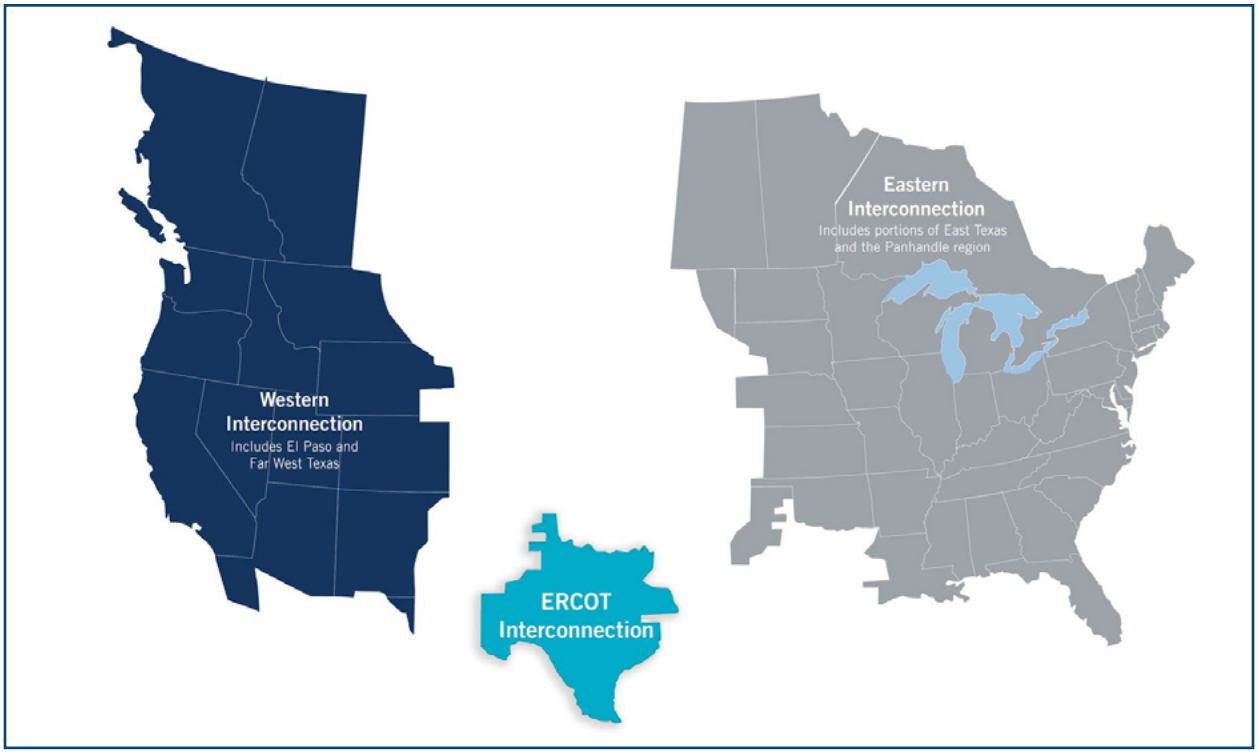
1. UNDERSTANDING PUBLIC UTILITY REGULATION IN TEXAS

"To ask for a decent grid with reliable power seems little to ask."
-Becky S., Kerrville, TX

In 1975, the 64th Legislature created the Public Utility Commission of Texas with the primary mission of protecting customers, fostering competition, and promoting high-quality infrastructure.[14] The PUCT is the state agency that regulates the Texas electric market, determining rates and service quality at the policy level.

The Energy Reliability Council of Texas (ERCOT) handles the technical aspects of the Texas grid. It is a nonprofit corporation that was originally founded in 1970 to oversee, coordinate, and safeguard the transmission of electricity through Texas' electric grid. As the Legislature established first wholesale electric competition, and then retail electric competition, ERCOT became the platform to enable these transitions. The ERCOT region serves approximately 90% of the state's electric load.[15] Texas is the only state in the U.S. that is not interconnected to either the Eastern Interconnect or the Western Electric Coordinating Council. The PUCT manages ERCOT.

The PUCT and ERCOT have previously undergone legislative 'sunset.' The upcoming legislative review will be the PUCT's 6th review since its first in 1983.[16]



North American Electric Reliability Corporation Interconnections[17]

In 1999, the Texas Legislature enacted sweeping changes to the state's energy policy. The result was a newly deregulated energy market, creating a retail market designed to lower rates and increase retail competition. Those living in areas that had been opened to competition now had the power to choose their electricity provider with the opportunity to pay lower electricity rates and, as competition evolved, the opportunity to procure new services and even choose to purchase clean energy. Texas continues to operate in a deregulated energy market in 2022.

In the two decades of Texas' competitive electricity market, results have been mixed. Data from the US Energy Information Administration (EIA) show that Texas retail electric rates have fallen below the national average consistently throughout the period. However, a Wall Street Journal analysis of EIA data showed that customers in areas of the state subject to electric competition—about 60 percent of Texans—consistently paid more for electricity than their counterparts in the areas not subject to competition. According to the analysis, these Texans collectively paid $28 billion more from 2004-2021 than they would have paid had they been in traditional plans.[18]

At least some of these consumers probably have paid more because they find the competitive market confusing. Despite the PUCT's efforts over the years to design a website where Texans could find all the information they need to make informed electric choice decisions, a 2019

report in the Houston Chronicle showed that fewer residential customers were switching plans than in the market's early years, even as the number of offerings in the market burgeoned.[19]

Also during the two decades, the energy industry changed dramatically, including with the growth of renewable energy. As part of the 1999 regulatory restructuring, the legislature established a Renewable Portfolio Standard (RPS), which required retail electric providers to obtain a certain percentage of their power from renewable energy sources. The RPS required 10,000 megawatts of renewable capacity by 2025, including 500 megawatts from resources other than wind. Texas surpassed the overall 2025 goal in 2009, largely because of the growth of wind power,[20] and today leads the nation in wind power.[21] In 2020, the state had more than 6,000 megawatts of renewable capacity from sources other than wind.[22]

In 2021, during the 87th legislature, Governor Greg Abbott signed two bills into law in response to Winter Storm Uri - Senate Bill 2 and Senate Bill 3. Senate Bill 2 focused on various structural and operational changes to the PUCT and ERCOT. Senate Bill 3 included: requirements to strengthen utility system weatherization; increased internal communication between state agencies; and the identification of critical resources to ensure reliable electric generation, and changes to services ERCOT procures to support reliable grid operations. The PUCT and other affected agencies are in the process of implementing the requirements of this legislation.

With this legislative guidance, the PUCT finalized a weatherization rule requiring electricity generators and utilities to comply with winter weather readiness requirements.[23] This rule is being considered in two phases. Phase one was requiring generators and transmission and distribution utilities to implement winterization requirements based on recommendations following prior winter storms. Phase 2 will consider additional weatherization requirements based on a comprehensive evaluation through ERCOT and the Office of the Texas State Climatologist.[24]

To reduce financial risk in the wholesale market, the PUCT lowered the high-cap price ceiling from $9,000/MWh to $5,000/MWh while modifying other wholesale pricing rules.[25] Additionally, at the end of 2021, the PUCT adopted a two-phase market redesign plan geared toward increasing the grids' reliability.[26] Phase I focuses on improving current market reliability strategies while Phase II will consider broader potential changes to the ERCOT wholesale market design that could span several years.[27]

The PUCT's efforts to improve grid reliability are significantly impacted by the ability of the natural gas industry to improve fuel delivery during extreme weather, either by regulation at the RRC, or through voluntary action. Natural gas generation accounts for 45.5% of electricity generated in ERCOT, and based on winter performance in 2022, natural gas suppliers continue to be weather dependent.[28] [29] [30]

Public utilities are entities providing various goods or services to the general public, like electricity, gas, telecommunications, and water.[31]

Public health is concerned with protecting the health of entire populations. These populations can be as small as a local neighborhood, or as big as an entire country or region of the world.[32]

"Lawmakers should have known an event like this could happen and they have ignored it."
- Sharon C., Georgetown, TX

2. ELECTRICITY AND HUMAN HEALTH

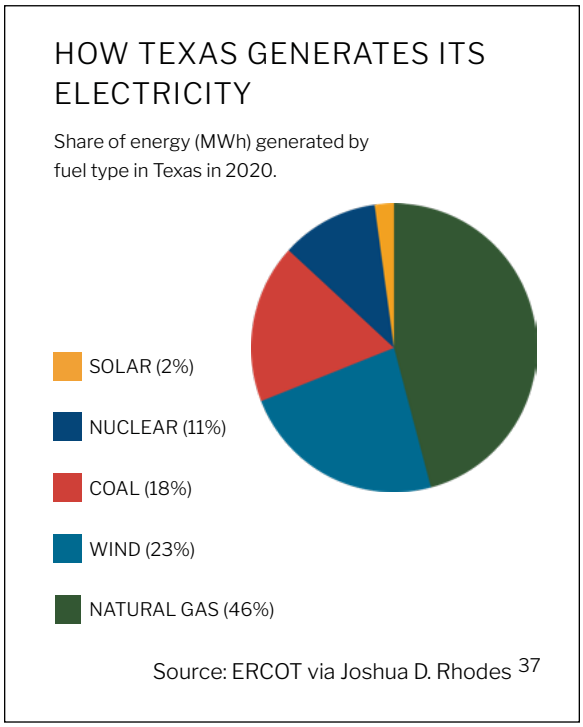
According to the World Health Organization, *"Energy is inextricably linked to most of the global challenges now and in the future, including gender, food security, clean water, public health, education, economic growth, youth's and women's empowerment, and climate change. The absence of* ***clean and sustainable*** *energy has a significant adverse impact on the* ***health and livelihoods*** *of the poorest populations."*[33]

SAFETY: EXTRACTION AND GENERATION

Human health risks from extraction and energy generation include: toxins; particulate matter; degradation of arable land; degradation of water supplies; nuclear waste; climate change.

The connection between air pollution and human health is well-established. People have known for at least the past 700 years that the fumes from burning coal make us sick. England's King Edward I attempted to ban the burning of specific types of coal, and Shakespeare's characters make reference to the noxious fumes.[34] More recently, burning coal and other kinds of combustion used to generate electricity have come under fire from the global public health community as contributors to a wide range of diseases.[35]

In Texas, the majority of energy generation comes from combustion of natural gas, followed by wind power; coal combustion; nuclear power, solar; and hydroelectric power.[36] Each source of electricity generation has its own benefits and challenges, some of which relate to their impact on human health.



Natural Gas

Natural gas is extracted from deep underground the earth's surface, producing electricity after the gas is burned to create either hot air or steam to turn turbines.[38] In Texas, natural gas combustion is the primary source of electricity, accounting for 46% of the total energy generated.[39]

While market forces can cause the price of natural gas to fluctuate,[40] it generally has been a relatively affordable and clean burning fossil fuel.[41] However, the extraction and generation of natural gas is a particularly hazardous process in terms of impact on human health. This is so for several reasons.

Methane is a primary component of natural gas and can be leaked into the atmosphere from natural gas wells, storage tanks, pipelines, and processing plants.[42] In rural areas of Texas such as the Permian Basin, natural gas wells and their production sites burn off large fumes through a process called flaring. Flaring alongside venting – the direct release of natural gas into the air[43] – are direct sources of methane. Hazardous pollutants are then expelled into the air, increasing tropospheric ozone causing over 1 million premature deaths annually – for which methane is responsible for half.[44]

The carcinogenic compound benzene is released alongside methane, which has been linked to increased respiratory illness and heart diseases.[45] A ten-year study by Physicians, Scientists, and Engineers for Healthy Energy (PSE) concluded reducing methane from natural gas infrastructure, near where populations live and work, is an undervalued and essential strategy to protect public health.[46]

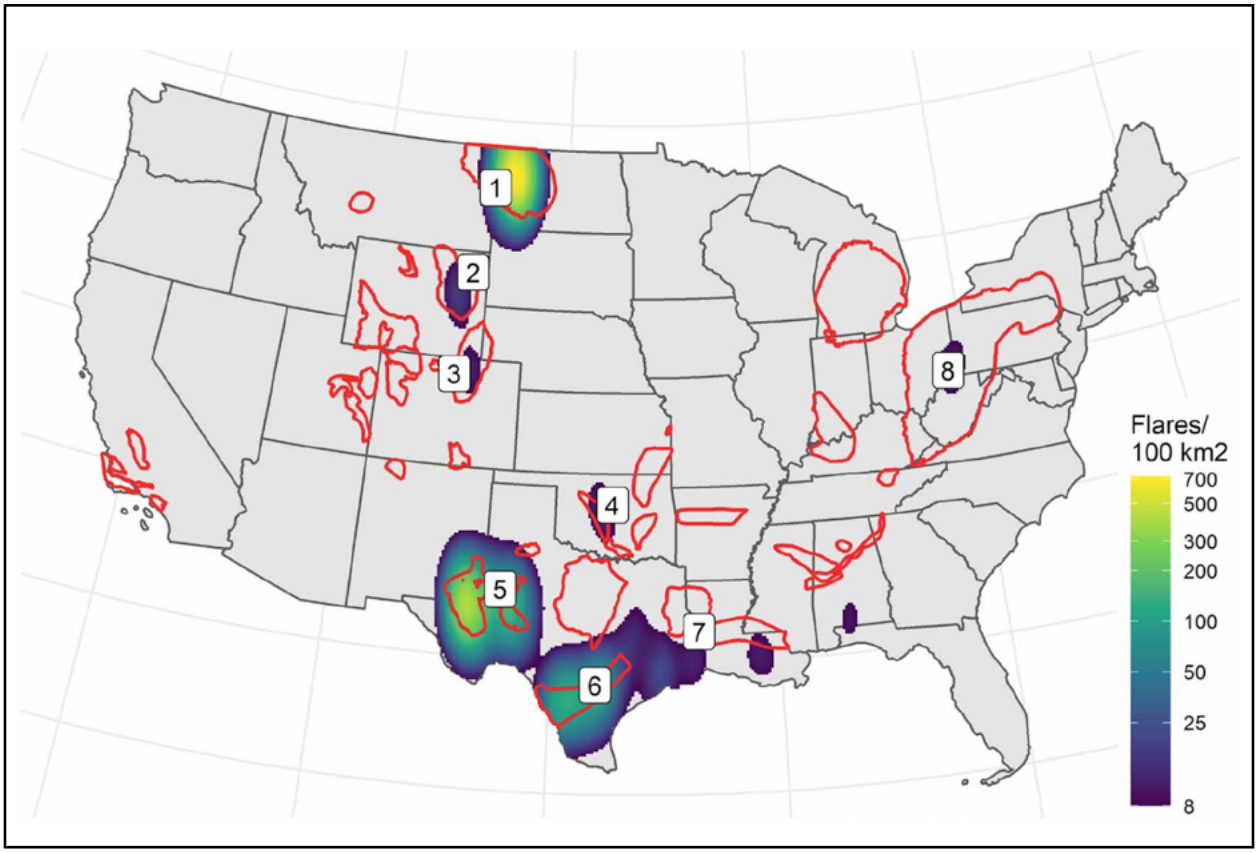
Human health also is put at risk by the hydraulic fracturing process or "fracking"—a drilling technology used for extracting oil and natural gas from subterranean rocks.[47] Additionally, the chemicals involved in fracking can leak into groundwater resources and even surface waters. The fluids that natural gas and oil drillers utilize are not regulated by the EPA, leaving

consumers subject to unchecked hazardous chemicals.[48]

Hydraulic fracking poses a significant threat to drinking water. A 2016 EPA Report identified that there are certain instances where hydraulic fracturing has impacted the quality of drinking water through wastewater spills or direct injection into underground wells.[49]

> *In Arlington, Texas, a local child care facility faced the development of three new well sites located only 600 feet from the garden area their children play in.[50] The Arlington City Council initially approved Total Energies' drilling permit but rescinded that decision with a close 5-4 council vote. Although this was a win against the development of natural gas sites, it demonstrates the continuous fight toward securing a community's safety.[51]*

Natural gas generation affects public health and certain communities are more inclined to feel its consequences. Through environmental racism - the unequal access to a clean environment and basic environmental resources based on race - communities of color are more likely to live in areas of heavy pollution.[52] An 8-year study by IOP Science discovered that over 8 million Americans live just within 3.1 miles of flaring from natural gas wells, disproportionately affecting Black, Indigenous, and People of Color (BIPOC).[53]



Density of flares near UOG wells across shale plays in the (1) Williston, (2) Powder River, (3) Denver, (4) Anadarko, (5) Permian, (6) Western Gulf, (7) TX-LA-MS Salt, and (8) Appalachian basins (N =493839). Areas with <8 flares/100 km2 are not shown.[54]

There are many pathways available to reduce flaring during natural gas production. However, these strategies can be costly and require new monetization strategies, business models, and more stringent enforced regulations.[55] However advocates in Texas like the Sierra Club are calling for a phase out of the entire flaring process.[56]

Coal

Coal is a combustible sedimentary rock which is burned to produce heat that converts water into steam driving turbines that produce electricity.[57] In Texas, coal combustion produces 18% of Texas' total electricity generated.

Public health impacts stem from the extraction of coal, its processing, combustion, and the disposal of its waste.[58] Surface coal mining -the extraction process- exposes those living near mining sites to higher rates of morbidity from cardiovascular disease, respiratory disease, and cancer.[59]

The combustion of coal is a major source of fine airborne particulate matter which is a key

contributor to global mortality and disease.[60] Additionally, coal-fired power plants are responsible for almost a third of the industrial toxic pollutants leaking into rivers and streams across the U.S. This wastewater contains harmful toxins – arsenic, mercury, and selenium – which are damaging to wildlife, the planet, and humans.[61]

Over the last decade, the U.S. has seen a 40% decline in coal-fired generation.[62] The U.S. Energy Information Administration in 2019 recorded for the first time that monthly electricity generation from renewable sources exceeded coal-fired generation, 23% to coal generation's 20%.[63] Texas' reliance on coal combustion for electricity has also declined, making up an original 40% of Texas' fuel mix to its current makeup of 18%.[64]

Nuclear

Nuclear power is generated by the splitting of atoms in a reactor that heats water spinning a turbine to generate electricity.[65] Uranium is the material most often used in nuclear power generation. A total of four nuclear power plants currently exist in Texas, producing roughly 11% of Texas' total electricity.[66]

Nuclear power is the only carbon-free electricity source that is available 24/7.[67] Additionally, nuclear power is non-polluting to the air, releasing zero-trace pollutants of nitrogen oxide, sulfur dioxide, and particulate matter that can be harmful to human health.[68] Although nuclear power is not classified as a form of renewable energy, it does not emit greenhouse gases and thus is often cited as a potential climate change solution.

Nevertheless, despite its merits, nuclear power presents significant threats to human health. The waste produced from nuclear generation is radioactive, causing skin burns and increasing the risk of cancer, blood diseases, and bone decay in individuals who are exposed to it.[69] Radiological and nuclear accidents, although not common, have very high risk and can be detrimental to an entire community if a power plant leaks or erupts.

The "Chernobyl Accident of 1986" in Ukraine killed 30 people from the explosion and acute radiation. A 2021 report by the United Nations Scientific Committee on the Effects of Atomic Radiation attributes more than 5,000 thyroid cancers to longer-term radiation exposure from the Chernobyl accident.[70]

Nuclear waste disposal is problematic, since high-level nuclear waste must be stored for at least 50 years before disposal.[71] Additionally, the uranium used to generate nuclear power is non-renewable and cannot be replaced once depleted.

Wind

Wind power, unlike natural gas, coal, and nuclear power, does not depend on "thermal generation." Instead wind turbines generate mechanical power.[72] Wind is the leading source of renewable energy in Texas and makes up a total of 23% of Texas' total electricity generation.[73] Texas leads the nation in wind power, producing 25% of the U.S. national total. If Texas were a country, it would rank 5th in the world in wind energy generation.[74]

Wind power is a renewable, non-polluting fuel source that emits no toxic fumes or chemicals that are harmful to human health. While it has been suggested that the audible noise/low-frequency noise from wind turbines can impact human wellbeing, available evidence suggests that noise from wind turbines is not likely to affect human health, although it may annoy some individuals.[75]

Texas' Renewable Portfolio Standard, established in 1999, required the state to install 5,000 megawatts of new renewable energy capacity by 2015 and 10,000 MW by 2025.[76] Texas has already surpassed both of these goals, largely by tapping in to the state's abundance of wind generation potential.[77]

Solar

Solar power captures sunlight rays and converts it into electricity through solar panels or mirrors concentrating solar radiation.[78] Solar energy can then be used for electricity generation or stored in batteries for later usage. Although solar energy is a beneficial renewable and non-polluting source of energy, it only accounts for 2% of Texas' total electricity generation.[79]

Texas utility-scale solar capacity is likely to increase within the next couple of years due to features such as the solar investment tax credit, low solar technology costs, and plentiful sunlight in areas like the Permian Basin.

Solar energy doesn't produce greenhouse gasses or other pollution. It is safe for people to live near solar plants and to generate their own electricity using solar panels.

Hydroelectric

Hydroelectric power is generated by the force of moving water, spinning a turbine that produces electricity—often by dams or the natural flow of river systems. Texas has 28 dams spread across the state, collectively accounting for less than .5% of Texas' total energy.[80]

Hydropower is a zero-carbon, renewable energy source. Although it is non-polluting, it does pose certain environmental risks such as flooding land for a hydroelectric reservoirs and wildlife damage. Hydroelectric power is a leading clean energy source in the U.S., making up 40% of renewable energy production nationwide, however, terrain constraints and environmental stressors—like droughts—limit the use of hydroelectric generation in Texas.[81]

RELIABILITY: DISTRIBUTION AND ACCESS

"An 89 year old friend of mine lost her power on February 16. Three days later at about 4am, she backed into her fireplace, which was her only source of heat, and caught herself on fire. Luckily the ambulance was able to maneuver the icy roads and get her to the burn center where she underwent a skin graft."
—Barbara, San Antonio, TX

Human health risks from insufficient distribution systems and lack of access include: jeopardizing health care infrastructure; inability to administer at-home medical care or medicines; failure of telemedicine; failure of sanitation and food preservation systems; failure of heating, ventilating, and cooling systems; failure of water distribution systems caused by failure of electric distribution systems.

The 2021 winter storm demonstrated the risks to human health of unreliable electric distribution: millions of Texans were left without power, exposing them to extreme indoor cold, leading to hypothermia and frostbite-related deaths. The Texas Department of State Health Services found that deaths related to the winter storm were caused by extreme cold exposure; exacerbation of preexisting conditions; motor vehicle accidents; carbon monoxide exposure; fire; and fall trauma.[82] These unfortunate circumstances resulted, not from toxins or hazards posed by electric generation, but rather from the failure of the statewide electric system—the "grid"—to deliver power to people and places where it was expected.

> *The "grid" refers to electricity generated from power plants that moves through a complex system of electricity substations, transformers, and power lines that connect electricity producers and consumers.*[83]

Emergency physician Dr. Samuel Prater reported to NPR that the Memorial-Hermann Health System in Houston saw upwards of 100 carbon monoxide cases within two days of the winter storm.[84] Extreme temperatures and a lack of adequate heating led to the improper use of stoves, propane heaters, and cars in an attempt to stay warm. And in a state that doesn't require carbon monoxide detectors to be installed in homes, these individuals had no carbon monoxide warnings.[85] Gas stoves and propane heaters can, in certain scenarios, leak carbon

monoxide filling a home with the poisonous gas. In addition, cars left running in closed garages will accumulate the noxious fumes and swiftly envelop the home with carbon monoxide.

Impacts of unreliable electricity on people with medical conditions

Vulnerable individuals were unable to operate life-saving medical devices due to the lack of running water, electricity, or gas. In particular, the elderly and medically dependent were in danger because of extreme temperatures. Additionally, those circumstance can become increasingly more dangerous if those individuals were left without broadband - a public health intersection discussed later in this report.

Medically dependent individuals are some of the most vulnerable populations that face this public health crisis. They struggle with energy stability even with available utility disconnection programs. As stated by the PUCT, having a chronic condition or critical care status doesn't guarantee reliable and uninterrupted power. The Commission recommends the consumer make additional arrangements to secure their safety through on-site backup power.[86] This places the burden of safety back on the communities' most vulnerable populations. According to a Disability Rights Texas (DRTx) survey, on the impacts of Winter Storm Uri in disabled communities, only 6% of respondents, reported even being registered for the "critical care registry."[87]

Additionally, the DRTx survey reported that 45% of respondents with disabilities felt in danger due to power loss during the winter storm.[88] Individuals medically dependent on electricity–backed devices, such as durable medical equipment (DMEs), face life-or-death scenarios when prolonged blackouts occur.[89] With the absence of power, these individuals must rely on additional batteries, generators or seek outside assistance to use their medical equipment. However, these alternatives can be unaffordable, inaccessible, and rely on individuals to conduct their own emergency plans.[90]

While the total number of electricity-dependent individuals in the U.S. is unavailable, it's reported that over 2.7 million Medicare beneficiaries rely on DMEs and assistive equipment devices, such as ventilators, to live in their homes.[91] With such a large sector of the population needing electricity to survive, it's urgent that equitable protections are in place to prevent the shut-off of their power.

Impacts of unreliable electricity on the healthcare system

The healthcare system - hospitals, healthcare workers, and medical supplies - are the backbone of a community during emergencies. However, during Winter Storm Uri, hospital systems had to function without reliable power threatening the safety of their patients and employees. Without reliable electricity, healthcare facilities may require evacuation which can be dangerous for individuals with limited mobility and/or in critical condition.[92] Although stand-by power generators can be used, those systems are susceptible to design, capacity, and maintenance issues as stated by the Federal Emergency Management Agency (FEMA).

In addition to power outages, several hospitals faced water shortages due to frozen and broken pipes caused by a lack of sufficiently insulated water infrastructure. The 48-bed Dimmit Regional Hospital in South Texas had no running water and resorted to bottled water for drinking during Uri.[93] Another Texas hospital outside of Houston had staffers rushing to fill a 275-gallon storage tank three times from a nearby wellness pool to flush their facility's toilets.[94]

As dialysis centers in the community closed due to power and water outages, many people scrambled to find care services to receive this life-sustaining treatment. Hospitals were caring for an influx of people requiring this therapy that could otherwise receive care on an outpatient basis. This can quickly overwhelm a hospital and was exacerbated by the water shortages experienced by some facilities which impacted their ability to deliver this care. Additionally, these facilities faced these challenges on top of increased capacity from cold-weather-related injuries, employee burnout, and COVID-19.

Unreliable electricity is detrimental to the healthcare system. Healthcare facilities have varying access to resources, funding, trained staff, and operational capacity. These differences can result in inadequate preparedness to handle extreme weather scenarios like Winter Storm Uri.

"The county and state seemed ill-prepared for a storm they knew were coming. They seemed to sacrifice the most vulnerable population."
- Crystal B., Huntsville, TX

"The repeated trauma of powerlessness from repeated institutional failures such as this one adds emotional suffering on top of the economic and physical suffering. In addition, the lack of compassion and attention given to the needs of our lower-income citizens, many of whom provide the essential duties of construction and operation of community services, along with hands-on care for the elderly and children is unconscionable. I have always been a proud Texan but in recent years I am embarrassed by the way our state hoards its profits, fails to plan adequately for the needs of ALL our citizens, and seems determined to allow selfishness, greed, and short-sightedness to be the most obvious characteristics of the Lone Star State."
-Gary R., Austin, TX

FAIRNESS: AFFORDABILITY AND ACCESSIBILITY

Human health risks from unfair utility systems include: communicable disease penetration; lost productivity; wasted potential; gratuitous health care expenditures; diminished labor force participation; social system degradation; crime.

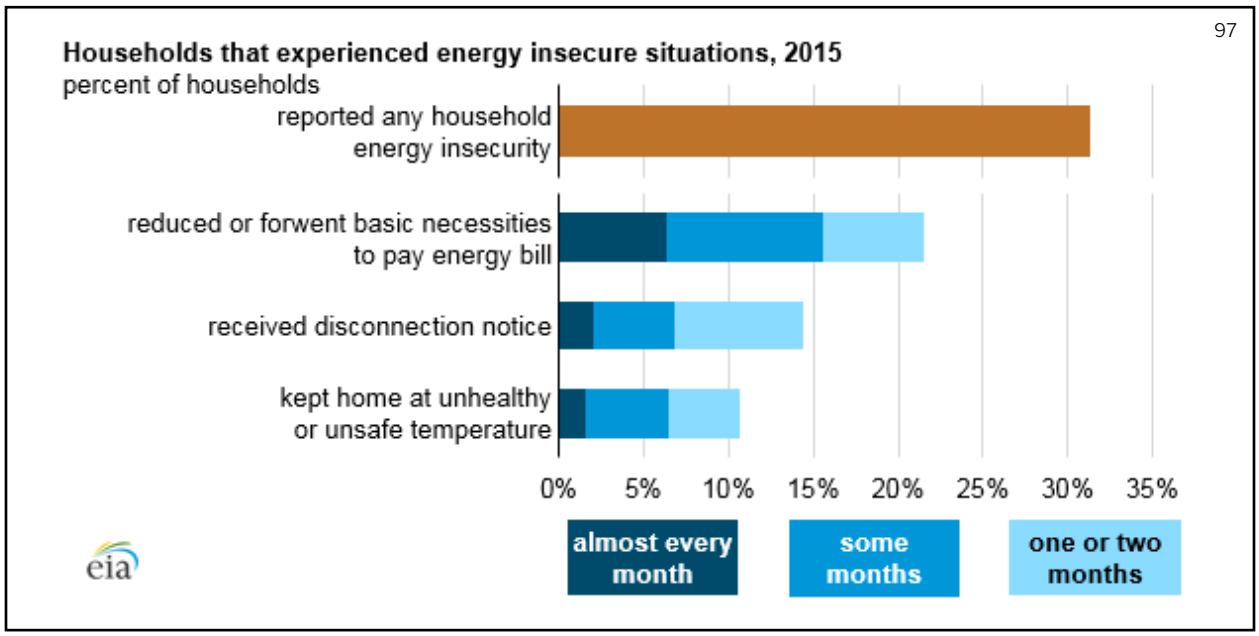
Electric customers in Texas generally pay their bill as a combination of two factors: monthly charges from transmission and other infrastructure costs, and a power charge based on an electricity rate and the amount of energy consumed. In recent years the transmission and other fixed costs have grown ~4% annually, and in 2021 the cost grew roughly 8%. The PUCT oversees and approves the transmission and distribution system investments that ultimately are rolled into the cost of transmission passed on to customers. At the same time, the PUCT has undertaken significant changes to the market for electric power that are certain to impact Texan's electric power charge.

Unfortunately, to date the PUCT has not undertaken an in-depth analysis of how the changes made will impact Texan's electric bills, or for that matter whether they are cost-effective measures that will meaningfully improve reliability. Unlike larger customers, residential and smaller commercial customers are effectively unable to participate directly in the ERCOT marketplace today. Such participation could in potential reduce customers' transmission costs and could even provide them with payments for providing reliability services to the system.

While this separation of customer rights made sense in the 1970's and even the early 2000's before the onset of the digital information age, in today's world this approach is outdated. Effectively prohibiting some customers from participating directly in the market means that some (i.e. large industrial) customers can access the benefits of the competitive market while other, smaller customers are left to cobble together affordable rates without that benefit.

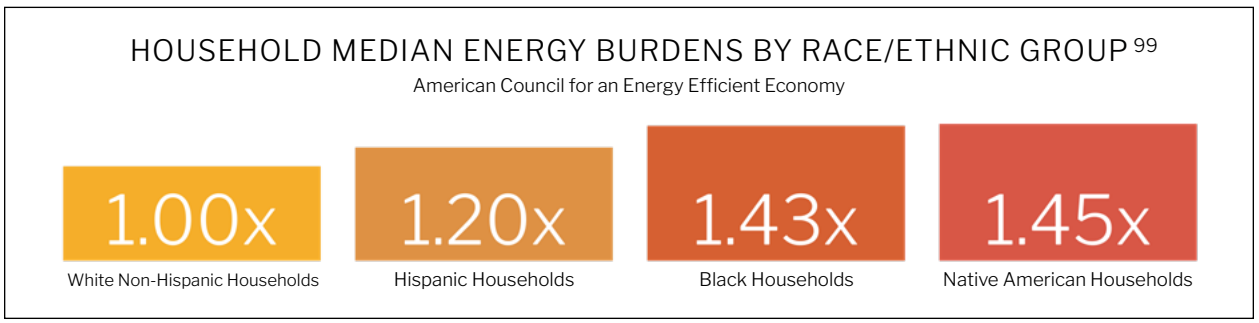
Energy Insecurity

Texans are battling energy insecurity daily, and not just during extreme weather. A 2015 household report by the federal Energy Information Agency found that 31% of Americans face challenges paying their energy bills or sustaining adequate heating or cooling in their homes.[95] Additionally, 7 million households report forgoing their additional necessities to afford their energy bills on a recurring monthly basis.[96]



U.S. Energy Information Administration

While energy burdens can impact everyone, certain communities are found to suffer these consequences at a higher rate. Research by the American Council for an Energy-Efficient Economy examining the energy burden studied the disparity in energy burdens faced by varying racial classes in America. Through their research, the ACEE found that Black, Hispanic, and Native Americans face higher energy burdens that are correlated with increased stress, respiratory disease, and economic burdens.[98]



Impacts of unreliable electricity on low-income individuals

The Energy Information Administration reports that nearly one-third of U.S. households struggle to pay their energy bills.[100] These households may make dangerous economic and physical choices to power their homes. For instance, some ratepayers choose high-interest payday loans to pay utility bills.[101] Some utilize space heaters and ovens to stay warm.[102] Some forgo necessities like food and medicine, to afford their energy needs.[103]

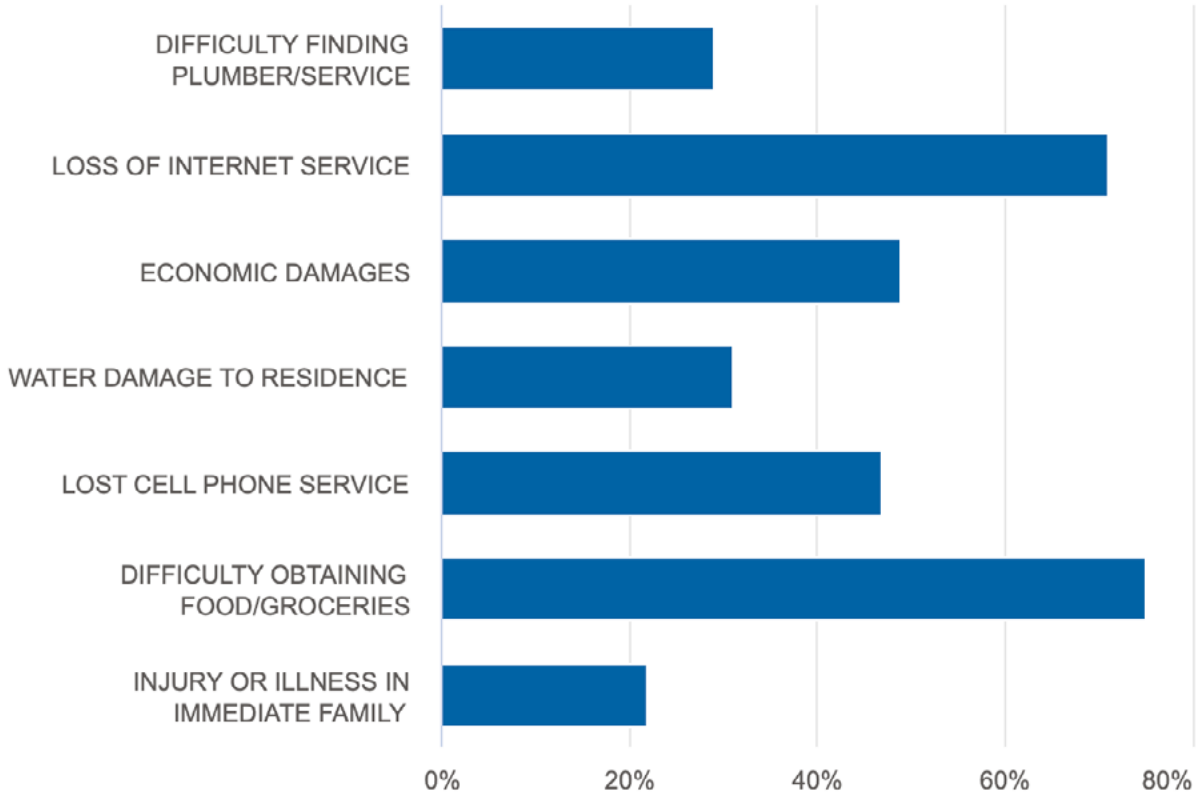
Additionally, energy insecure households are at 150%-200% greater risk of extending the duration of their economic poverty.[104] Without affordable electricity, vulnerable ratepayers face heightened risk of remaining in a cycle of poverty. A 2018 national survey by Energy Efficiency for All, reported that individuals making less than $40,000 a year made sacrifices such as forgoing educational opportunities and healthcare to afford their energy bills. Of the respondents in the survey, one in five reported making "serious sacrifices."[105]

"A health care provider I know lives in an all-electric, poorly weatherized apartment in East Austin. She works for minimum wage raising 2 grandchildren. They all huddled together in one bed to try to stay warm and when getting up in the early morning of 2/15, discovered a neighbor's pipes had broken on the second floor and their apartment was flooded with freezing cold water. They lived in the dark, mostly in the bed, with little food and having to walk through freezing water to get to the bathroom which wouldn't flush for 3 days. Disgusting and preventable and unconscionable for a modern society to allow to happen to good and kind people who spend their lives caring for others."
- Bernice K., Austin, TX

3. LESSONS FROM WINTER STORM URI

Even if consumers can afford utilities and have access to them, they will be left in the dark if the Texas electric grid fails. That's what happened during Winter Storm Uri, when 69% of Texans lost power and 49% had water disruptions throughout the storm.[106]

EXHIBIT 4: PERCENTAGE OF TEXANS EXPERIENCING OTHER NEGATIVE EFFECTS OF WINTER STORM URI



Source: University of Houston, Hobby School of Public Affairs, "The Winter Storm of 2021" survey[107]

Natural gas plays an integral part in keeping Texas electric generation facilities running. However, the natural gas system failed to provide the full amounts of fuel demanded by the power plants during Winter Storm Uri.[108] These failures resulted from the lack of preparation to withstand extreme weather conditions, leading to intensive equipment failures.

"Please fix our broken power structure. Prepare our grid. Winterize. Cooperate with the rest of the country. Look to the past, this isn't the first time. Look to the future, this will happen again. We can no longer depend on fossil fuels. Even the oil companies know this. We can no longer take the cheap way out. Texas needs to take care of its residents."
- Martha G., Austin, TX

In 1989 and 2011, Texans experienced similar extreme weather events, leading to significant power outages and utility disruptions. Dallas alone had $25 million in damages caused by broken water pipes and production loss in 1989.[109] The winter storm of 2011, similarly, resulted in sweeping blackouts because of coal and natural gas plants failing.[110]

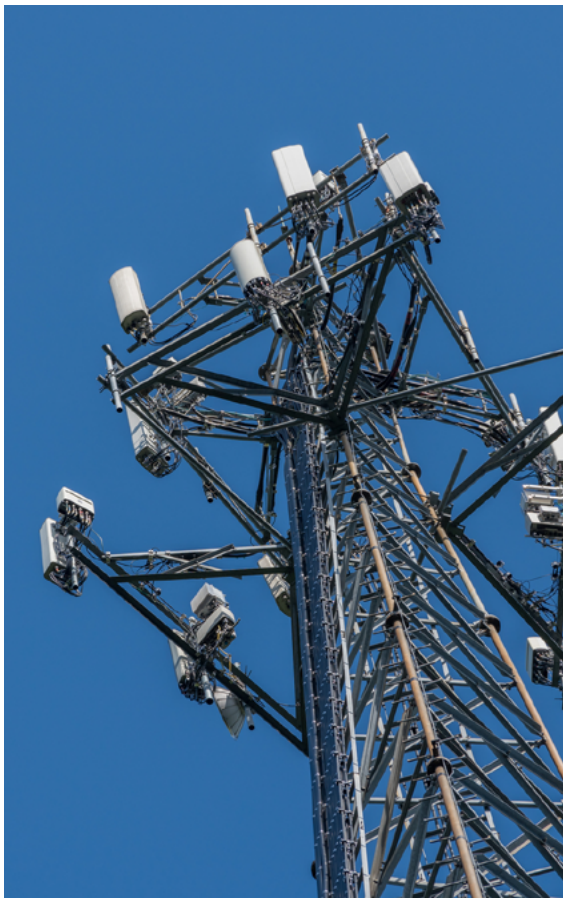
After the 2011 event, the Federal Energy Regulatory Commission and the North American Electric Reliability Corporation recommended 26 action items to ERCOT on how to prepare for winter weather emergency events.[111] Neither ERCOT nor the PUCT made these winterization recommendations mandatory for power generators in Texas.[112] Instead, ERCOT developed a "best practice" list that was largely unenforceable, leaving millions of Texans vulnerable to another severe winter event.[113] A survey by the Texas Energy Poverty Research Institute reported that 75% of respondents were "outraged that Texas was not better prepared for the storm."[114]

"My main concern is the privatization and deregulation in the state of Texas which was the cause of millions of Texans suffering. If the PUC would have mandated Winterization of all energy-producing sources then perhaps Texans would not have suffered as much or frozen to death."
- Vicki V., Hunt, TX

4. OTHER PUBLIC UTILITIES AND HUMAN HEALTH

Water and broadband utilities, in addition to electricity, deserve to be safe, reliable, affordable, and fair. These utilities are interconnected and rely upon the efficiency and reliability of one another to properly function. For instance, municipalities' drinking water and wastewater plants are large energy consumers spending 40% of operating costs - for drinking water systems - on energy.[115] During emergency scenarios, broadband services play an integral role in informing the public with real-time information and live updates. The boil water notices of Winter Storm Uri highlight this intersection.

At Winter Storm Uri's peak disruption, 12 million Texans were under a boil-water notice.[116] Water companies were required to issue these boil-water notices due to loss of power, damaged equipment, low psi pressure, and dangerous road conditions.[117] Additionally, these boil water notices needed only to be issued in one of the following ways: through local radio and television stations; a daily newspaper; or in conspicuous places in the affected area.[118] However due to power outages, consumers were not able to access this information until the power turned back on or access to an internet connection was established. In these emergency situations, reliable and accessible broadband ensures a safe and connected community that has equitable access to vital public health information.



WATER

The quality and accessibility of water affect the health of a community, especially in areas that lack sufficient utility infrastructure to secure its quality. In the U.S. alone, the Centers for Disease Control and Prevention (CDC) estimated that 477,000 people became ill and 6,900 died from 13 of the most common waterborne infectious diseases from 2003 to 2009.[119] These documented waterborne disease cases are only the beginning of how various water sources can become contaminated and scarce. Through climate change, fossil fuel extraction, and inadequate infrastructure, the public is threatened with water shortages, insecurity, and pollution.

Methods of electricity generation – from natural gas and coal – are some ways that water sources can be contaminated. Big oil spills, acid runoff from coal mining, fracking fluid, and inadequate wastewater storage are examples of common types of pollution.[120] Communities living near natural gas and coal generation facilities face the brunt of these contaminants incurring additional public health risks such as asthma, respiratory illness, and heart disease.

Additionally, climate change can increase the intensity of storms and extreme weather – as global temperatures rise – resulting in increased stormwater runoff, intense droughts, and land erosion. Increased stormwater runoff, for instance, will pick up various pollutants on its way into waterways contaminating rivers and creeks such as the Potomac and Anacostia rivers - that suffer from poor water quality due to large amounts of stormwater runoff.[121] As temperatures rise so does the threat to our water system.

Surface waters, reservoirs, and aquifers can be contaminated by industrial agriculture, human and animal waste, treatment and distribution, and natural sources.[122] The EPA has identified these as common sources of drinking water contaminants. Although water contamination can vary by cause, each contaminant can be detrimental to human health, especially with long term exposure.

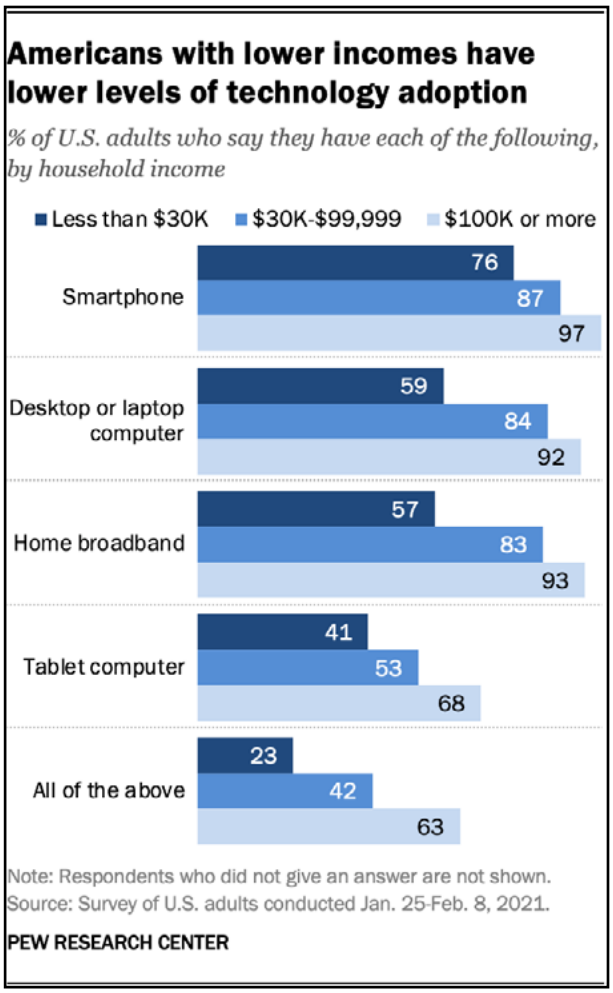
An EPA investigation in 2020 discovered Delfasco Forge, a former ammunition manufacturing forge, contaminated the soil and groundwater with trichloroethylene (TCE), a human carcinogen, affecting 80 residential homes in Grand Prairie, Texas.[123] This highly toxic chemical was used to clean machinery and has since affected the lives of many Grand Prairie residents, such as the Beltrán family, who stockpiles bottled water because of this.[124] This is a public health risk because of the toxicity of TCE, but also exposes the social injustice issue that is industrial facilities dominating residential areas of communities of color. All Texas residents should be able to use their faucets without fear of being exposed to contaminated water.

Although thousands of chemicals have been found to pose potential health risks to a community's drinking water, certain populations are more susceptible to illness and death. Infants, children, immunosuppressed individuals, pregnant women, and the elderly are populations of a community who face increased risk of water contamination and waterborne diseases.[125] For example, newborn children are especially at risk to enteroviruses, lead, mercury, nitrites, and nitrates resulting from water contamination.[126]

ChemCal Water Treatment at the JJ Pickle Research Facility in Austin, TX

BROADBAND

Broadband refers to a range of technologies providing high-speed internet connectivity across the United States. Broadband accessibility, however, impacts public health due to the lack of access to telehealth, health education, and online information. Approximately 24 million people in the U.S. live in "digital deserts: – the absence of broadband access – including 19 million rural Americans and 1.4 million Americans on tribal lands.[129] In Texas, over 1.6 million households are without internet access, making up 16.9% of all Texas households.[130] These rural and urban communities are without broadband access because of either the absence of adequate infrastructure or the inability to afford an internet subscription.



Broadband access has been recognized as a "super-determinant" of health because of its connection to other social determinants of health, such as education, employment, and healthcare access.[127] Without an internet connection individuals are disconnected from modern necessities that are vital for educational opportunities, employment, telehealth, and emergency awareness.

As highlighted by the COVID-19 pandemic, online platforms dominated the way communities connected from student education, healthcare, and the workforce. However those living in digital deserts were not able to adjust to this quick transition. In addition, rural communities may be unable to access government services from FAFSA, social security, and tax forms and services.[128] And as society continues to modernize, the transition from in-person to online services will be more abrupt and harder to access for those without broadband.

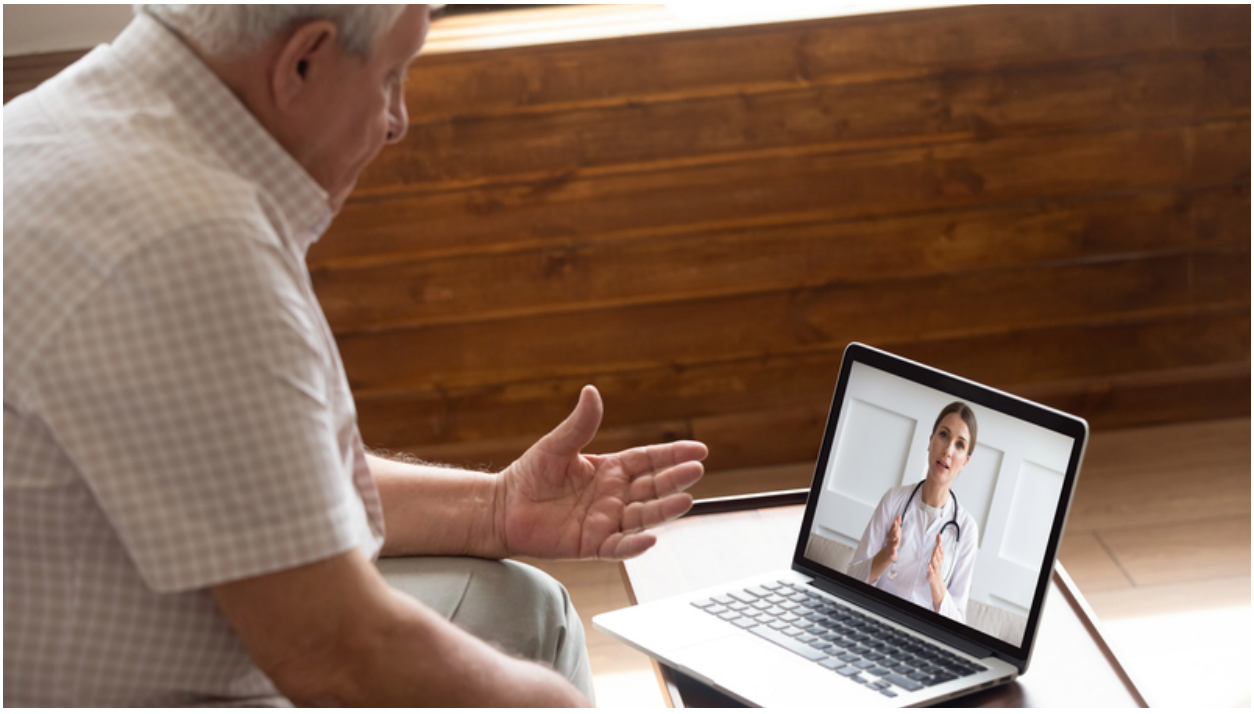
Telemedicine has now become an integral part of how society interacts with healthcare providers, changing the dynamics of public health. For some residents, connecting

over the internet is more accessible than physically going to a regular medical provider because of medical disabilities, travel times, or affordability. Consumers can now access a multitude of clinical services online - through telehealth- from dermatology services, dentistry, and chronic condition monitoring.[131]

> *Programs such as the University of New Mexico's ground-breaking Project ECHO (Extension for Community Healthcare Outcomes) take advantage of telehealth services to expand rural communities' access to primary care providers. ECHO is a collaborative model of medical education and care management helping clinicians provide expert-level care to patients regardless of their location.[132] These projects help increase access to specialty treatment in rural and underserved regions to optimize healthcare services within their communities.*

However, without broadband, these beneficial services are unavailable. Winter Storm Uri and COVID-19 have already showcased the necessity of staying connected and informed especially during extreme events where real-time information can be life-saving.

Although broadband is not regulated by the PUCT,[133] an 2021 executive order by President Biden (Promoting Competition in American Economy) urges the Federal Communications Commission, that regulates broadband, to reclassify broadband as a telecommunication service - providing the PUCT with regulatory authority of that utility.



Additionally, the Texas Legislature passed HB5 or "The Texas Broadband Bill", in 2021, as a part of bipartisan legislation creating a Broadband Development Office within the Texas Comptroller of Public Accounts.[134] The Texas Broadband Bill develops the necessary budget to begin building comprehensive solutions that work toward improving broadband access.

Connected Nation Texas, an independent, public & private initiative working to ensure that all can experience the benefits of broadband, has created Texas maps to help state broadband leaders analyze and, where necessary, challenge the new federal broadband map in development by the Federal Communications Commission (FCC). The FCC has established a formal process to receive input from states and other stakeholders, and those states that have their own robust data collection and mapping programs will be best positioned to help the FCC refine its data. This will ultimately influence how much federal funding Texas receives for expanding broadband, as the National Telecommunications and Information Administration (NTIA) will be required to utilize the FCC's map to allocate funding.[135]

"I look to you to address this situation with something other than knee-jerk reactions and actually order changes necessary to prevent this from happening again. I am convinced that it will happen again, it has happened before. I used to work at a chemical plant that lost power in the 1983 cold snap. We felt as a result we should have shut the site down before the event happened. That is not an option for electrical power, that utility must be 100% reliable. It was not last week. Make changes to compel it to be 100% reliable with clearly defined consequences."
- Robert S., Houston, TX

5. UTILITY SYSTEM REFORM IN THE SUNSET PROCESS

Sunset staff uses specific standards set by the Legislature to evaluate each of the programs and functions of a state agency placed under Sunset review. These standards are located at §325.011 of the Government Code. The staff review of an agency typically takes from three to eight months depending on the size and complexity of the agency. Sunset staff gathers information from a broad range of sources.

As a part of the review process, each agency submits a Self- Evaluation Report (SER) to the Sunset Commission, which can be found on the Sunset Commission's website. PUCT, TWDB, ERCOT. The SER identifies problems, opportunities, and issues that the agency feels should be considered in the Sunset review. Sunset staff also solicits input from interest groups and professional organizations and encourages public input and discussion of agency functions. Once the evaluation phase of the review is completed, Sunset staff publishes a report containing statutory and management recommendations.

The Sunset Commission conducts a public hearing on each agency under review after publication of the staff report. The public hearing provides an opportunity for Sunset staff to discuss its recommendations, for the agency to formally respond to the staff recommendations, and for the public to comment on the report and agency operations and policies. This allows for broad public input into the Sunset process and begins the Commission's consideration of potential changes to recommend to the Legislature in the form of Sunset legislation.

All information presented to the Commission at the public hearing, whether submitted orally or in writing, is reviewed and compiled. The Commission meets to review the input received and to make decisions on whether to abolish an agency or continue it with changes. Persons interested in being placed on Sunset's mailing list and receiving the review schedule, meeting schedule, meeting agendas, staff reports, or decision materials should contact the Sunset Commission staff.

The Commission's report on an agency must include a recommendation to abolish or continue the agency, and may also contain recommendations. If the Commission recommends continuation of an agency, the Commission must provide draft legislation to the Legislature to continue for up to 12 years, and correct other problems identified during the Sunset review. Although not required by law, the Commission's legislative members traditionally are the authors of sunset legislation.

The Sunset Commission has developed a set of standard recommendations that are applied to agencies. These Across-the-Board recommendations (ATBs) reflect an effort by the legislature to place policy directives on agencies to prevent problems from occurring, instead of reacting to problems after the fact. The Commission's ATBs are an outgrowth of review standards contained in the Sunset Act and are designed to ensure open, responsive, and effective government. Examples of ATBs include increasing public representation on the agency's policy board; improving responsiveness to complaints filed by the public; and implementing a standard approach to equal employment opportunity.

RECOMMENDATIONS:

Clearly, public utilities are closely connected to community wellbeing and have profound impact on human health. The confluence of the PUCT Sunset review and the ongoing fallout from Winter Storm Uri create a unique set of circumstances in which state leaders will consider new ideas to strengthen Texas' resilience to future disasters. Policymakers would be wise to put human health at the center of their deliberations. The following recommendations would align the PUCT's work with the work of many other state agencies working to promote human flourishing. They also would help to set Texas on the path of Health in All Policies.

Include specific reference to public health in the PUCT mission statement, aligning with the approach of integrating human health, wellbeing, and equity in public policies across sectors.

Ensure Texas' utility regulatory regime supports the state's public health goals, from the point of generation to the point of individual consumption.

Direct the PUCT to implement low-income and/or multifamily residential demand response pilot projects to identify opportunities for more residential participation in maintaining reliability through the competitive market.

Establish a PUCT consumer advisory council, as some other states have done, with dedicated seats for experts who can assist the agency in serving the people of Texas:

- A dedicated seat for a public health professional to assist the agency in achieving the public health portions of its mission.

- A dedicated seat for an independent consumer advocate specifically to represent residential and small commercial (<50kW) customers, to assist the agency in achieving the consumer protection portions of its mission.

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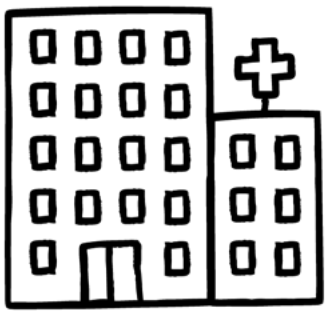

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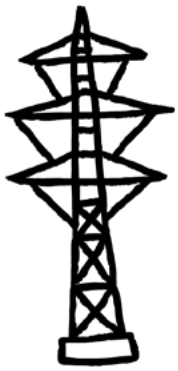

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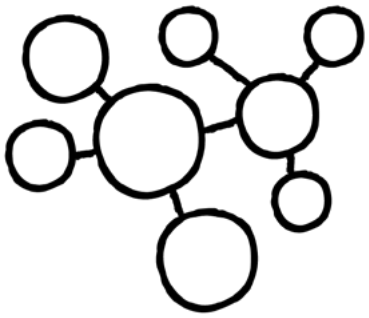

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