



ELECTRICITY GRID

The Carbon Neutral Coalition (CNC) is advocating for energy sources to be carbon neutral by 2050. While all energy sources and emitters should drive toward carbon neutrality, one key area that will be pivotal in this effort is the electricity grid in Texas. In this area, that objective can be met in a reasonable, rational manner, where energy made and consumed is: (1) available and reliable to all consumers; (2) affordable and cost competitive; and (3) with a carbon neutral future as the mission.

Establishing a more reliable electric grid is an issue critical to the state, as significant effects from unexpected weather extremes exposed our need for more dispatchable energy. At the same time, Washington and Wall Street have increased demand for energy that is carbon neutral, if not carbon free. The ability to meet carbon neutral goals, while ensuring thermal baseload and dispatchable generation on the grid, will be challenged by the need to effectively integrate and effectively utilize our mix of coal, natural gas, wind, solar, nuclear and other sources. The answer to the issues exposed by weather events is far beyond simply “weatherization,” but rather requires a fundamental ability to integrate fuel sources, storage options, and reliability. The ultimate goal of the CNC is increasing grid reliability, including looking to possible transmission solutions, along with carbon neutrality.

In response to Winter Storm Uri and the Texas legislature’s response, ERCOT and PUC have made several important steps toward improving reliability, including creating an Electricity Supply Chain Map, locating critical electric and natural gas facilities throughout the state, along with emergency contact information, in order to respond more efficiently in case of emergency. The PUC plans to update the map two times per year. The map is meant to provide advance warning to ERCOT when there are failures in the natural gas transportation system. There are also new weatherization requirements, and the Legislature created an advisory council, the Texas Energy Reliability Council to encourage communication and address planning for emergency preparedness. The Legislature also created the State Energy Plan Advisory Committee and charged the committee with preparing a state energy plan to evaluate and make recommendations to improve reliability, stability, and affordability of electric service in the state.

Beyond weatherization, the system management to assure reliability, and Electric Reliability Council of Texas (ERCOT)’s operational strategy, will both be central to the discussion and also the fundamental construct of the manner in which electricity providers make and sell power into the grid. Costs for generation should include installed capital, necessary infrastructure for wires and distribution, complete life cycle analysis (LCA) of technology options, and consideration of the impact to the emissions profile of the system in Texas.



The market demand for low carbon energy must also be considered, as dispatchable power will be increasingly required to be carbon neutral. It is essential that Texas meet the objective of carbon neutrality so that our industries remain competitive and that the jobs and industrial growth in Texas are expanded. The demand for lower carbon emissions will drive the marketplace. One recent announcement points in that direction:

“Google’s parent company, Alphabet, and Microsoft and Salesforce have collectively promised to spend \$500 million on technology to capture and store carbon emissions. Three other companies — AES, an electric power distribution company headquartered in Virginia; Mitsui O.S.K. Lines, a Japanese transport company; and Swiss Re, a reinsurance company based in Switzerland — each committed to removing 50,000 tons of carbon from the atmosphere by 2030. The governments of India, Japan, Sweden, Denmark, Italy, Norway, Singapore and Britain have also joined the coalition.”¹

Consequently, taking no action to reduce or capture carbon emissions can drive industries elsewhere if the state continues to produce high intensity carbon electricity that will then contribute to high carbon intensity goods produced.

However, there is a counterbalancing threat that reducing emissions produces an outcome that makes our grid less reliable and less resilient, or non-competitive, from a cost perspective. There are a number of barriers to making the electricity grid reliable and sustainable. The system requires the continued implementation of carbon neutral options that includes nuclear and geothermal, but the state must consider the use of Carbon Capture, Utilization and Storage (CCUS) as the necessary option as a means of reducing emissions while providing reliable energy.

With CCUS, the carbon that is captured is the carbon dioxide that is emitted from producing facilities such as oil and gas refineries, petrochemical plants, electric power plants, cement, steel and other manufacturing facilities. The combustion of fossil fuels produces this CO₂ emission, and it represents a significant portion of these industrial process plants’ “carbon footprint.” The process of CCUS is where the CO₂ captured or removed from the plant emissions streams and is then purified and compressed into a concentrated stream. The CO₂ is then introduced to a pipeline or other transportation media such as ships or rail vessels, and ultimately utilized for value or injected into geologic formations to assure safe and permanent long-term storage.

¹ <https://www.nytimes.com/2022/05/25/climate/corporate-climate-pledges-davos.html?referringSource=articleShare>



Technologies and approaches such as CCUS provide a way for increased energy production with reduced emissions. In LaPorte, Texas, a company called NET Power has successfully executed a process to generate zero-emission electricity from natural gas, delivering that electricity onto the ERCOT grid. The technology burns natural gas with pure oxygen, and recycles the resulting CO₂ through the combustor, turbine, heat exchanger, and compressor, creating lower-cost power with zero emissions. NET Power now seeks to accelerate development of more commercial projects to “help achieve aggressive climate targets at an affordable price.”² While the NET Power achievement is promising, a key consideration is that as the state seeks ways to build dispatchable energy that is carbon neutral, building new commercial technologies and plants will often be cost prohibitive. CCUS, however, is not limited to new plants, but can be applied by retrofitting currently operating plants, lowering costs and bringing older technology in line with new regulations on emissions.

The electric power grid must grow and meet the increased demand for electricity that is projected to increase globally by 50% in the next 30 years³, and move towards carbon neutrality, making CCUS essential. Not only must we add capacity to generate more electricity, but those electrons must be reliable and available such that the baseload needs of 24/7 operations be met. Gas and coal powered generation can be made carbon-free by deployment of CCUS and represent the key pathway to delivering this capability. Engaging in all aspects of CCUS, with support from industry and through incentives, results in positive market signals for growth of industry, promoting more investment, and providing more dispatchable energy.

Incentives in Texas to promote wind and solar have led to much broader deployment in our state than anywhere else in the United States⁴, but renewables still do not provide close to the amount of energy needed in the state.

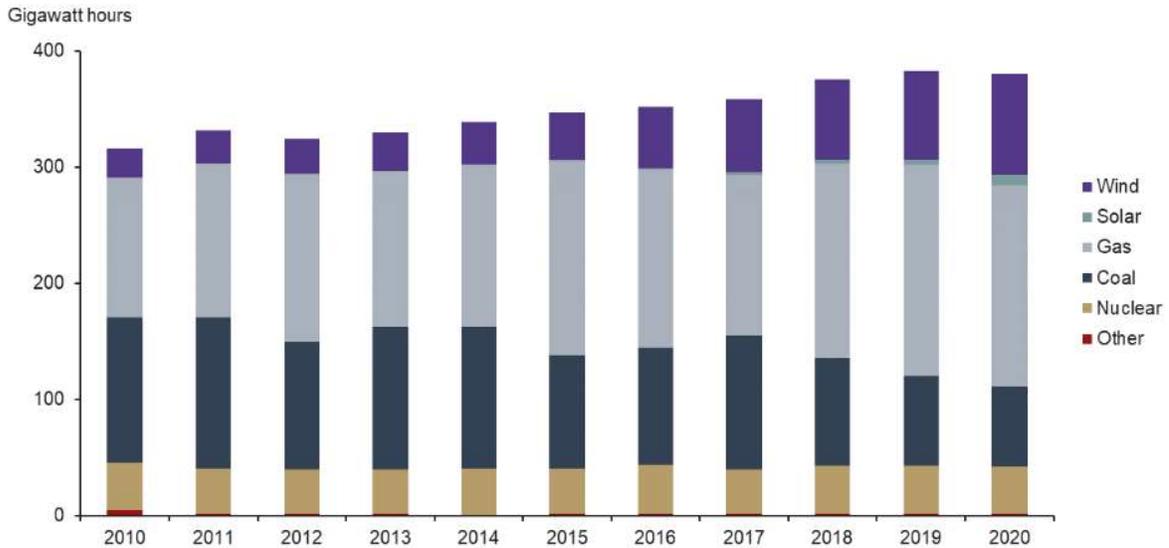
² <https://netpower.com/press-release-nov-16-2021/>

³ <https://www.eia.gov/todayinenergy/detail.php?id=49876>

⁴ <https://www.puc.texas.gov/industry/electric/business/rec/Rec.aspx>



Chart 1
Renewables' Share of Annual Power Generation in Texas Grew Steadily in Past Decade



NOTE: "Other" includes hydroelectric and biomass.
 SOURCE: Electric Reliability Council of Texas (ERCOT).

Federal Reserve Bank of Dallas

Incentives to promote all forms of carbon-neutral electricity will be necessary through technology investments, direct incentives and in the creation of a system strengthened underpinned with baseload power, that is carbon neutral, and operated with the full range of technology and fuels to optimize performance. Therefore, creating an economic framework to encourage the adoption and deployment of CCUS is critical.

The Texas Emissions Reduction Program (TERP) presents one opportunity for state incentives. The TERP program offers financial incentives to eligible businesses and others for the reduction of emissions from vehicles and equipment. The Texas Commission on Environmental Quality (TCEQ) administers the program, and it is funded by revenues from fees and surcharges relating to certain off-road equipment and on-road vehicles. CCUS could be considered eligible for several current grant programs in TERP, such as the New Technology Implementation Grant Program (NTIG) or the Emissions Reduction Incentive Grants (ERIG).⁵ In 2021, TCEQ granted TERP funds to one carbon capture project by Vistra Energy, for the installation of a carbon capture facility next to an existing facility, with the end use for enhanced oil recovery (EOR). CNC's goal is to expand the use to carbon capture projects for uses beyond EOR, particularly more dispatchable energy for the grid that is carbon neutral.

⁵ <https://www.tceq.texas.gov/airquality/terp/ntig.html>



Another incentive proposal is to utilize a tax credit already in statute, the Tax Credit for Clean Energy.⁶ Initially created in 2009, this tax incentive was modified in the 83rd legislative session. Though expired in 2018, this program provides the framework needed to create a tax incentive for CCUS projects. The value of the tax credit was equal to the lesser of 10% of capital costs or \$100 million, limited to three projects. If this program were to be extended to all thermal generating facilities, there would have to be some limiting principle, such as basing eligibility on plants in non-attainment areas otherwise the fiscal cost could be prohibitive in the near term. With an updated incentive, combined with federal tax incentives such as the Section 45Q incentive⁷ and other state incentives, Texas could become the preeminent space for CCUS technology and advancement, providing reliable, low-carbon energy to the grid.

The market signals and technical goals are clear: (1) Reliability and baseload capacity with 24/7 carbon neutral electricity; (2) CCUS must be recognized as necessary for both coal and natural gas fired units, in order to product a 24/7 carbon neutral source of electricity; (3) CCUS must be incentivized in Texas to become viable; and (4) There must be policy parity across all technologies and fuels to achieve carbon neutrality.

The impact we can make with a more reliable electric grid is also clear. Texas can continue to attract investment and industrial growth. Workforce, economic growth and gains, and an attractive place for global investment are all hallmarks of the Texas energy industry, and bolstering the grid with reliable, low-carbon energy will support further growth. That electricity, coupled with other energy sources, can meet future demands while also meeting new goals on carbon. Consumer and industry satisfaction can help attract new industries and population and dissuade business migration away from Texas. Finally, emissions reductions can be realized here in Texas unmatched globally, and can have a massive, positive impact on U.S. emissions.

⁶ <https://capitol.texas.gov/BillLookup/History.aspx?LegSess=81R&Bill=HB469>

⁷ <https://www.law.cornell.edu/uscode/text/26/45Q>