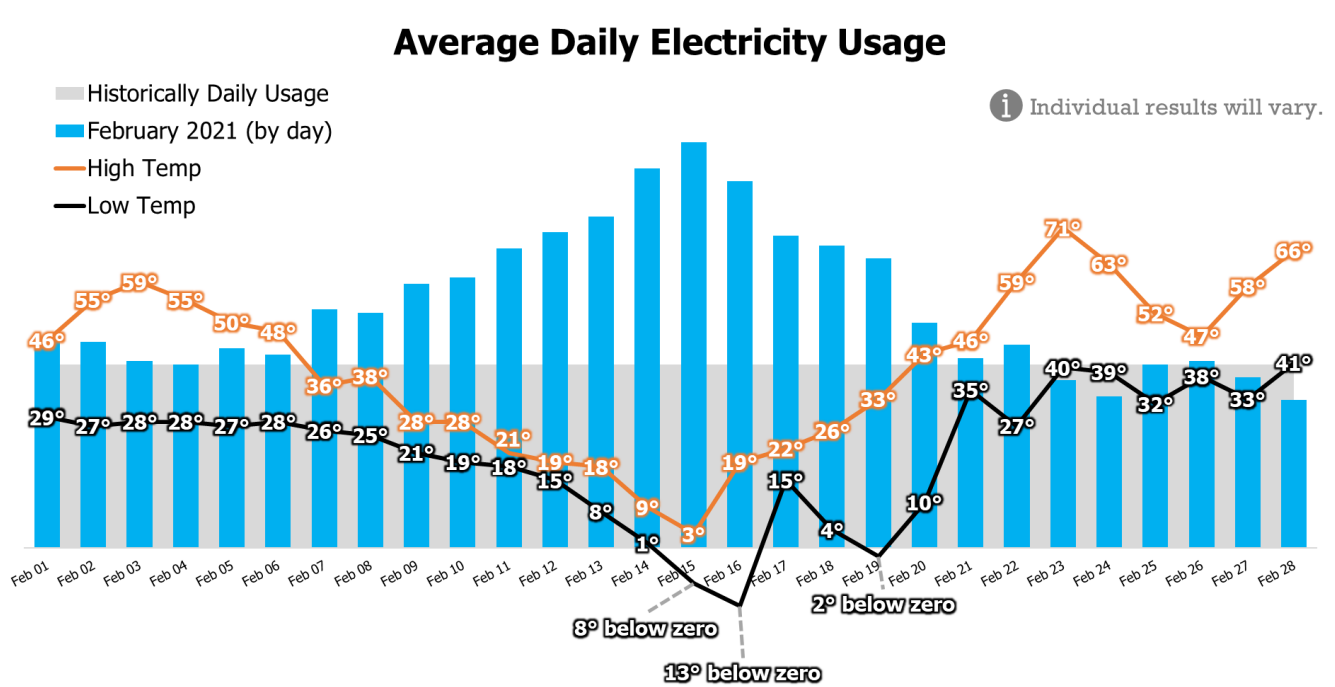




During my almost 25 years with the Cooperative, I have had the opportunity to witness many industry trends emerge. Some were successful, others were not. But never have I seen a more unique time in the electric industry. Recent events are helping to illuminate the need for change, either in *policy* or in *expectations* of the industry. Before we get into the long-term issues, let's cover what is right before us.

First, consider the consumption that includes mid-February. This consumption period will likely be the largest many consumers have ever seen! **Please contact us at 1-800-432-9720 if you need to work out a payment plan.**

This chart demonstrates how dramatically external temperatures have impacted electricity consumption. The gray area represents February's average daily consumption over the past 5 years. The blue bars show the dramatic impact recent extreme temperatures had on average daily consumption.



Assume an internal thermostat is set at 70°. During these extreme winter conditions, it is challenging to maintain internal temperatures when it is near zero outside (a 70° difference). Compare that to maintaining the same temperature in the summer when it is 95° outside (a 25° difference).

The second, and bit more complicated subject, has to do with pricing. The wholesale power purchased by Carroll Electric (and other regulated utilities) *rises* and *falls* based on the prevailing cost of generation fuels. The fuel prices for natural gas increased substantially during this unprecedented inclement weather event. Thankfully, our wholesale provider is not totally reliant on natural gas or purchases from regional power markets, which were most vulnerable to higher prices.

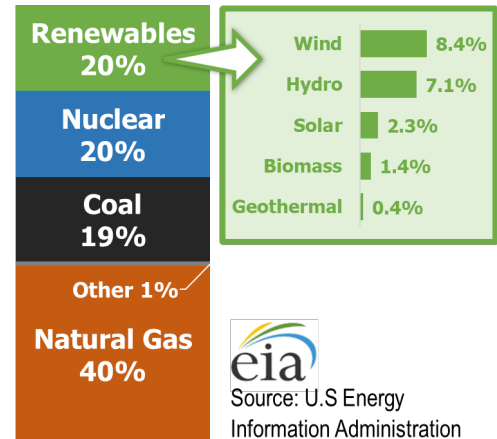
In response to a 2019 survey, Carroll Electric's membership favored spreading monthly fluctuations in fuel costs over a longer 12-month period. Following approval by the Arkansas Public Service Commission, this smoothing process began later in 2019. **While February's events have triggered much higher fuel costs, Carroll's wholesale costs will not be increased until later in March.** Instead of recovering this increase in April, this 12-month recovery process will help to minimize the impact on your electric bill.

On a longer-term basis, what should we make of the rolling blackouts and market prices reported in Texas, and to a lesser degree in Arkansas? Some might correctly say...well, it is *generally* not this **COLD!**

A better question for everyone to ask: "Is this *generally* the U.S. energy policy we want?"

i RENEWABLE (GREEN) ENERGY is a good idea. In 2020, renewables accounted for 20% of power production. *Generally*, renewable sources are *non-dispatchable*¹ sources of power. This means the power grid must accept their generation, even when the demand for electricity is low...but cannot call upon or ramp up these resources when the demand for electricity is high. Even without *dispatchable* control by grid operators, investors in wind and solar continue to receive significant government subsidies.

Sources of U.S. Electricity Generation (2020)



The remaining 80% of 2020's power production primarily came from three **dispatchable** sources of power:

- Even with CO₂ emissions driving our nation's energy policy, and **NUCLEAR** energy having zero emissions, the perceptions surrounding nuclear energy prevent it from being considered as a viable means to reduce CO₂. Litigation and regulatory constraints have *generally* made construction of new nuclear power plants risky to downright impossible. Keep in mind nuclear power is the most efficient source of electricity.
- Power generation from **COAL** is *generally* considered undesirable – so much so, that people stand to cheer every time a coal plant closes. Litigation and regulation have put coal in the same situation as nuclear. Four coal units in Arkansas are scheduled to close between 2028 and 2030. Another plant in Arkansas is being targeted for possible closure. Coal plants are not immune from lower efficiency during extreme weather conditions. However, like nuclear, the fuel source is on-site.
- Current U.S. energy policy makes **NATURAL GAS** the only realistic opportunity for new **dispatchable** power generation. Understanding that this is an **off-site fuel source**, you can *generally* have it delivered...ASSUMING the broader demand for natural gas is not too high...and ASSUMING the plant's gas pipeline is not too congested...and ASSUMING no one cares about how much it costs.

i RENEWABLE ENERGY

- Across a wide region, *generally*, you can count on a certain amount of **WIND** power. Unusually low wind speeds and frozen turbines prevent this from always being true.
- The capacity of **HYDROELECTRIC** power generation has *generally* plateaued and has a limited run time that must be scheduled in harmony with competing water needs and uses. Ice build-up on turbines and intake valves are also a hindrance to generation in cold temperatures.
- *Generally*, the public views **SOLAR** energy as an appealing solution to future energy needs. However, solar panels do not produce much energy when its cloudy or when they are covered with snow or ice. Without some form of battery storage (which is costly and inefficient), solar panels cannot power us through the night.
- **BIOMASS** is *generally* the burning of trees, wood byproducts, or other forms of waste to produce power. Despite being deemed a "renewable" source of energy, biomass still releases CO₂ emissions into the atmosphere when it's combusted.
- **GEOTHERMAL** *generally* uses steam created from the earth's magma and water sources underground. High initial costs, surface instability, and suitable locations are all limitations.

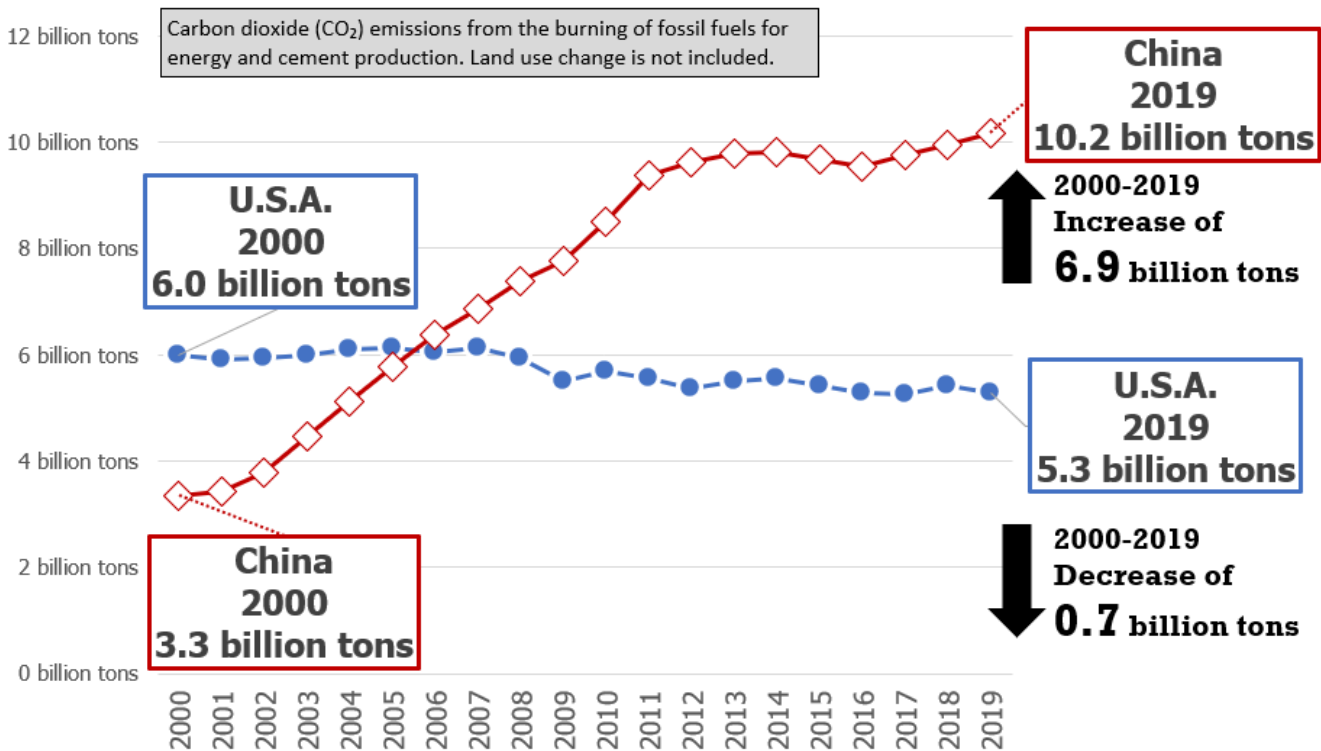
¹ A "dispatchable" source of power generation refers to a source that can be turned **ON** or **OFF** to meet the ever-changing demand for electricity. Without widespread utility-scale batteries, which is an expensive, inefficient, and developing technology, **GRID OPERATORS** must be able to **MATCH available power generation** with instantaneous demand.

Sadly, other sources of “steam” that will not generate electricity are emerging in Texas and elsewhere. As a result of events during mid-February of 2021, many people are “steamed” that our country’s energy policy is crafted on so many *generalities*. Are we really ok with “it is *generally*...not this **COLD!**” as being the reason so many others experienced rolling blackouts? Personally, I’m not.

Rewind to the summer of 2020. California had multiple rolling blackouts because it was too **HOT!** Some say that this “heat storm” was brought on by GLOBAL WARMING.

And yes, some will say February was so **COLD** not because of GLOBAL WARMING, but because of CLIMATE CHANGE. If both “heat storms” and “cold storms” are indeed triggered by manmade CO₂ emissions, someone needs to tell China. China’s annual CO₂ emissions is almost twice that of the United States and continues to grow.

Annual CO₂ Emissions



Data obtained from <https://ourworldindata.org/co2-emissions#global-co2-emissions>.
 Source: Global Carbon Project; Carbon Dioxide Information Analysis Centre (CDIAC).
 Note: CO₂ emissions are measured on a production basis, meaning they do not correct for emissions embedded in traded goods.

If it were *somehow* possible for the United States to attain a “net zero carbon” position, it still does not offset China’s recent increases. Further, China is not the only country with rapidly increasing CO₂ emissions. Another good question to ask is, are the power plants going up around the world cleaner than the ones being closed in the United States?

I respect those who hold heartfelt convictions that the United States must show leadership on CLIMATE CHANGE policies. Convictions are a good thing. So is having a plan to reliably power the United States into the future.

My heartfelt conviction is that rolling blackouts in 2020 and 2021 would not be happening if our nation had protected and preserved many (certainly not all) of our traditional generation resources. Only the

future can determine if abandoning these investments, which were funded by U.S. ratepayers, in exchange for less reliable power will be worth the sacrifice.

The Federal Energy Regulatory Commission (FERC) established the Regional Transmission Organizations² (RTOs) like ERCOT (Electric Reliability Council of Texas), SPP (Southwest Power Pool), and MISO (Midcontinent Independent System Operator) who are taking a lot of criticism for rolling blackouts. FERC and the North American Reliability Corporation³ (NERC) are looking into the 2020 rolling blackouts in California and the rolling blackouts in February 2021 that occurred across multiple states. Hopefully, these investigations will produce answers that will lead to real solutions.

I believe the people who work at the RTOs care about what they do and the people they serve. They too are working within U.S. energy policy.

Conclusion: If United States energy policy is on the desired trajectory, it seems like we will need to prepare for more rolling blackouts and volatile price swings. Alternatively, if we all work together, some positive changes are possible.

Here is a start:

- Protect dispatchable power. A diverse mix of dispatchable resources that includes **nuclear, coal, and natural gas** will help avoid the various risks associated with becoming completely dependent on natural gas for dispatchable power generation.
- End unfair subsidies to unreliable forms of power generation.
- Advocate for consumer-focused wholesale MARKETs that place value on continuous reliability.

I'll share this issue of *On the Record* with our government and industry leaders as part of an ongoing dialogue.

If you would like to make your voice heard by joining me *On the Record*, return the enclosed form or visit our website at carrollecc.com. If you cannot fully support this effort, we invite you to make your views known as well.

² The Federal Energy Regulatory Commission formed RTOs to “administer the transmission grid on a regional basis throughout North America (including Canada).” Additionally, RTOs are responsible for scheduling power generation for every moment of every day and are often an unsung hero in helping to provide affordable electricity to end consumers.

³ NERC’s 2020 Long Term Reliability Assessment acknowledged a growing risk related to high penetration of renewables in some regional energy markets. <https://www.utilitydive.com/news/rising-renewables-penetration-is-a-threat-to-grid-reliability-in-some-regio/592356/>

