On the Record

March 2022 | Issue 2

Rob Boaz, President/CEO
Carroll Electric Cooperative Corp.

"Starting" this second issue of **On the Record** is a very difficult task. This publication is about being authentic with the concerns we hold for the *bulk power system*. The February 2021 Arctic Blast was a tipping point that convinced me **Issue 1** was necessary. Without understanding that background, you might wonder what **Issue 2** is about. You can learn more at Carroll Electric's website[1] www.carrollecc.com/on-the-record or by scanning the QR Code here.

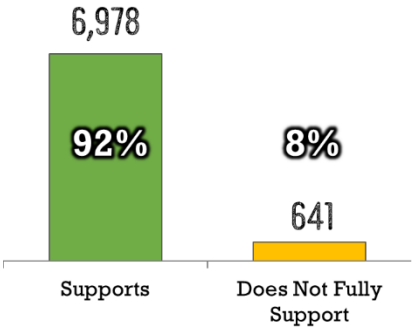
My wife and I have three children. Two are married, with the youngest about to start college to study electrical engineering. We have great anticipation about their futures. Starting in this industry over 25 years ago as an accountant, I remain a student of it. I still marvel at the brilliance of how electricity was discovered and harnessed, especially without modern technology. I am sad for the 1 billion people in the world who live still without its power. I never want you to be without the power it holds - even briefly.

Before we dive into supporting details, which only a committed reader will explore, please know this. **On the Record** is NOT intended to scare people or insult anyone. It is intended to illuminate our concerns with a hope of harnessing a diverse power generation mix and enabling a better future for everyone. Regardless of your views on how electricity should be generated, **Issue 1** revealed some common agreement. This topic is important. We received 7,619 member responses to the goals of **On the Record**.

Goal 1. Protect DISPATCHABLE power sources. A diverse mix of dispatchable resources that includes **nuclear**, **coal**, and **natural gas** will help minimize the various risks associated with becoming completely dependent on natural gas for dispatchable power generation.

Goal 2. End unfair subsidies to NON-DISPATCHABLE forms of power generation.

Goal 3. Advocate for CONSUMER-FOCUSED wholesale markets that place value on continuous reliability.



To meet the **EVER-CHANGING demand for electricity** "DISPATCHABLE" power generation on the *bulk power system* must be **INCREASED** or **DECREASED** as needed.

Carroll Electric does NOT *control* power generation. It *distributes* the power purchased from Arkansas Electric Cooperative Corporation (AECC). In 1949, AECC was formed by electric cooperatives in Arkansas. At the time, for-profit utilities in Arkansas would not *distribute* power to rural communities. However, newly formed rural electric cooperatives still had to purchase wholesale power from these companies.

From 1949 to 1962 AECC had to battle for its right to generate its own power. That success gave birth to the Thomas B. Fitzhugh Generating Station at Ozark, Arkansas. By today's standards, Fitzhugh is a relatively small power plant (170.6 megawatts). For comparison, Carroll Electric *alone* hit a peak demand of 624 megawatts during the 2021 Arctic Blast.

However, **Fitzhugh played a vital role in keeping the lights on last year**. Fitzhugh generally uses natural gas **but** can also use no. 2 fuel oil (which is essentially diesel fuel). During the February 2021 Arctic Blast, natural gas prices spiked so high[2] AECC brought in tractor trailer loads of no. 2 fuel oil – keeping power flowing to retail customers **and** saving those customers millions of dollars in days.

[1] Reading from the website will allow you to easily access any links within this document.

[2] See spikes in natural gas prices at https://fred.stlouisfed.org/series/DHHNGSP

It is important to note, that even AECC does not *control* when plants generate power. We will come back to that in a moment. A bit more history is in order.

During the 1970s, the United States faced an oil embargo from the Organization of Petroleum Exporting Countries (OPEC). This led to *Government Policy*[3] that, *ironically*, shifted power generation *from petroleum* products *to coal*. To gain economies of scale following the embargo, AECC partnered with other Arkansas utilities to build five coal units at three different sites that affordably produce 3,865 megawatts of power. Today, AECC has three hydroelectric generating stations on the Arkansas River, three natural gas/oil-fired plants, four natural gas-fired plants, and various purchase power agreements for additional hydroelectric energy from the Southwestern Power Administration, as well as a growing portfolio of wind and solar. And just so no one gets the wrong impression, renewables do have a part to play in producing electricity.

Question 1: If AECC does not *control* when plants generate power, who does?

Most of the answer lies with Regional Transmission Organizations (*RTOs*) established by the Federal Energy Regulatory Commission (FERC) through the North American Reliability Corporation[4] (NERC). The *rest* of the answer lies with *Government Policy*…we will come back to that later.

To make the complex more understandable, RTOs are often referred to as the "air-traffic controller" of the *bulk power system*. It is not a perfect analogy, but RTOs and their underlying "daily market auctions" for bulk power ultimately determine which of AECC's plants run and for how long. The goal is for the most affordable plants to be on-line at any given moment. When RTOs have abundant generation resources available, this concept works effectively to optimize pricing.

When RTOs do NOT have abundant generation resources available, prices skyrocket, or worse. The Texas power crisis in February 2021 reportedly was linked to the deaths[5] of 246 people. Both government officials and leaders in the industry, are diagnosing the root cause(s). Extreme weather, power plant readiness, and a reliance on "non-dispatchable" resources such as wind and solar, each had a role in creating a power shortage. The resulting *bulk power system* shortage caused "RTO market" prices to skyrocket at a time when people needed power most.

Question 2: What does the future hold?

In December, **NERC released[6] the following** in its 2021 Long-Term Reliability Assessment (**LTRA**).

> "The findings indicate there is a high probability of insufficient resources and energy to serve electricity demand, as early as Summer 2022, in many parts of the Western Interconnection. Extreme weather-related events and performance issues associated with some inverter-based resources, such as solar, wind and new battery or hybrid generation, may also have a potential negative impact on reliability. The LTRA identifies a significant projected increase in variable generation and emphasizes the criticality of the role of natural gas as a balancing resource. More transmission is also needed to deliver renewable energy from remote locations to load centers, but the LTRA acknowledges that build-time and siting are additional constraints that need to be considered in planning and policy setting."
>
> "The LTRA does not predict future generator retirements but instead reports on confirmed retirements. Additional retirements beyond what is reported as confirmed in this 2021 LTRA are to be expected and will continue to alter

[3] See *Energy Policy and Conservation Act* https://www.congress.gov/94/statute/STATUTE-89/STATUTE-89-Pg871.pdf

[4] The North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid. NERC develops and enforces Reliability Standards; annually assesses seasonal and long-term reliability; monitors the *bulk power system* through system awareness; and educates, trains, and certifies industry personnel. NERC's area of responsibility spans the continental United States, Canada, and the northern portion of Baja California, Mexico. NERC is the Electric Reliability Organization (ERO) for North America, subject to oversight by the Federal Energy Regulatory Commission (FERC) and governmental authorities in Canada. NERC's jurisdiction includes users, owners, and operators of the *bulk power system*, which serves nearly 400 million people.

[5] See https://www.tpr.org/texas/2022-01-03/texas-puts-final-estimate-of-winter-storm-death-toll-at-246.

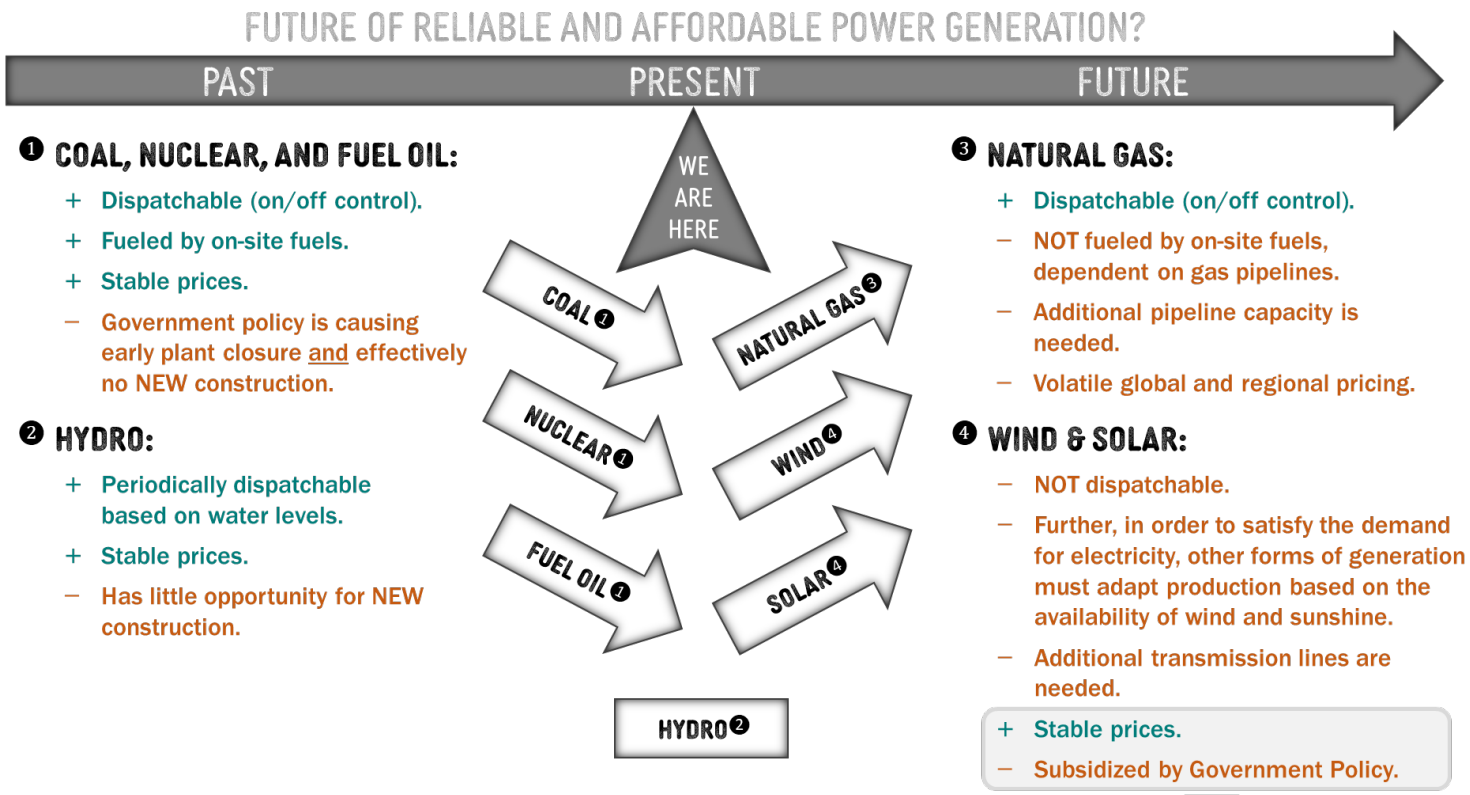
[6] See https://www.nerc.com/news/Headlines%20DL/2021%20LTRA%20Release.pdf

the resource mix. Since the 2020 LTRA, confirmed coal-fired, nuclear, and natural-gas-fired generation retirements through the year 2026 have increased by over 27 GW (126%)."

"Across the North American *bulk power system*, existing natural-gas-fired on-peak generation has increased from 280 GW in 2009 to 463 GW today (with the addition of 17 GW in natural-gas-fired generating capacity since publication of the 2020 LTRA)."

"Unlike other conventional generation with on-site storage, natural gas generation uses the natural gas pipeline system to receive "just-in-time" fuel to burn for its electricity production. Pipeline transportation service is subject to interruption and curtailment depending on the generator's level of service. In constrained natural gas markets, generation without firm transportation may not be served during peak pipeline conditions (more prevalent in winter), and industry should make arrangements for alternative fuels. Some plants no longer have the option of burning a liquid fuel, limiting their fuel alternative when natural gas cannot be supplied. Furthermore, regardless of fuel service arrangements, natural gas generation is subject to curtailment during a force majeure event."

By 2030, 3,337 megawatts of coal resources will be closed in Arkansas. The current trend towards completely replacing this generation with less stable alternatives deserves serious contemplation.



While it is true all forms of energy receive subsidies, consider a report on "Federal Energy Subsidies and Support from 2010 to 2019[7]." For perspective, Carroll's "wholesale rate" over the same period averaged 5.17¢.

Government subsidies distort RTO "markets" by granting solar and wind tremendous competitive advantage in the daily bidding process. This is the *rest* of the answer to who *controls* which plants run.

[7] See https://www.texaspolicy.com/wp-content/uploads/2020/04/Bennett-LP-Federal-Energy-Subsidies.pdf.

Government Policy creates great uncertainty, unfair competition, and places serious financial risk on traditional generation resources. This increasingly leaves RTOs, utilities, and their consumers at the mercy of short-term prices for natural gas, *if it is even available*. **Both the reliability and affordability we have all come to expect from the *bulk power system* is very much at risk**.

Question 3: What can be done?

AECC has embarked on the "Balance of Power" campaign which aims at educating government leaders and the public about *bulk power system* concerns. AECC will consider all available options for future power generation with the goal of preserving reliability and affordability.

Beyond that, we all will have a role in the future of reliable and affordable power generation. That role must consider both short-term and long-term perspectives.

SHORT-TERM: The gloom and doom forecast offered by NERC seems to have garnered little public attention. It is possible that NERC is offering a "worst-case" scenario and that you as a member of Carroll Electric will see little impact. Still, based on what our region faced last year (see **Issue 1** of **On the Record)** it is only responsible for us to prepare for the worst.

If Carroll Electric is ordered by RTOs to deenergize power in a certain area, interruptions will most likely occur in one-hour increments to circuits which are easily recoverable. The goal will be to minimize restoration times, based on conditions at the time of the order.

Carroll Electric's overall reliability has set records 9 times in the past 10 years. Even with these improvements, we are never immune from equipment failures, tornados, ice-storms, or other major outage events that last considerably longer than one-hour. Our advice is to **always be prepared** and **know Carroll Electric's website will contain up-to-date information** including any power-supply advisements from RTOs.

Please keep your contact information (including email and text message number) with us current so we can pass along any public appeal from RTOs to reduce electricity consumption. Your cooperation with these appeals really does matter.

LONG-TERM: Basic logic and reasoning highlights that without intervention, a power supply crisis looms on the horizon. Correcting course must begin with recognition. While *Government Policy* does not yet seem to recognize the warnings offered by NERC, more and more groups (within and outside the industry) are raising concerns. We did not get into this situation all at once, and we cannot change course quickly.

Carroll Electric will continue to advocate for the following goals:

Goal 1. 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.

Goal 2. End unfair subsidies to NON-DISPATCHABLE forms of power generation.

Goal 3. Advocate for CONSUMER-FOCUSED wholesale markets that place value on continuous reliability.

We will continue to share these goals and this issue of *On the Record* with government and industry leaders. If you would like to make your voice heard by joining me *On the Record*, return the enclosed form or visit our website. If you cannot fully support these efforts, your views are welcome as well.

☐ **I support these goals.**

Goal 1. Protect DISPATCHABLE power sources. A diverse mix of dispatchable resources that includes nuclear, coal, and natural gas will help minimize the various risks associated with becoming completely dependent on natural gas for dispatchable power generation.

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☐ **I cannot fully support these goals.**

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