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Column: Be curious about how to solve the big energy questions

Sarah C. Miller
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Petroleum storage tanks are shown in Cushing. Since the early 20th century, Cushing has been one of the world's leading pipeline junctions. Tulsa World File

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Although science wasn't my favorite subject, I loved my high school and college biology classes. I was fascinated to learn new facts relevant to my everyday experience, and I couldn't help but share my discoveries with family and friends, pestering them with the frequent "Did you know ... ?!"

Flash forward to my first few days on the job as an attorney for an energy company. A kind, experienced engineer sat down with me to explain the natural gas life cycle, knowledge necessary for me to draft the company's contracts.

He patiently described each step: the exploration for gas reserves, the drilling of wells, the spider web of pipelines gathering such gas produced from wells for delivery to gas processing plants, and the processing — where gas (primarily methane) is separated from natural gas liquids or NGLs (including ethane, propane, butanes and pentanes).

He further explained how “dry” gas, without NGLs, then moves around the country through larger interstate pipelines, destined for utilities that transport it to homes for use in our stoves, heaters and dryers or for manufacturers to fuel operations or for power plants to generate electricity.

He then doubled-back to explain that the NGLs are fractionated into component parts and possibly even further processed or “cracked.” In the end, such NGLs or their derivatives are used directly to heat homes or fuel gas grills or indirectly as ingredients for items like shopping bags, detergents, carpeting, disposable diapers, clothing, toothbrush bristles, latex paints, shoes, hoses, tires, etc.

Again, I was fascinated and peppered those who would listen with my new-found knowledge, eager that they, too, understand just how much of our everyday life is supported by natural gas.

We all recognize that knowledge is power. Yet many enjoy the use of products made possible by natural gas without realizing their origin. For example, I have chuckled at the irony of kayakers floating around a drilling ship in protest against the fossil fuels used in the manufacture of their canoes.

I continue to be impressed with the engineers who recognized the practical uses for natural gas and figured out the science to make such concepts reality.

Rather than joining those who may vilify the oil and gas industry, I see innovators who recognized how natural gas could improve our lives. I also recognize the oil and gas industry to be composed of everyday folks, just like me, who want the best for our kids, our communities and our future.

It seems to me that the scientific curiosity and engineering genius that developed the conveniences we enjoy today have not been exhausted.

You have probably anticipated that as electrification increases, U.S. electricity consumption will increase. According to the U.S. Department of Energy's National Renewable Energy Laboratory, we could consume as much as 38% more electricity by 2050. How can we meet the growing demand for electricity generation?

That electricity doesn't just magically generate behind the outlet.

In 2021 about 38% of electricity generation was from natural gas, 22% from coal, 19% from nuclear energy and 20% from renewable energy sources including wind, hydropower and solar (as reported by the U.S. Energy Information Administration).

That brings us back to innovative scientists and engineers, including from the oil and gas industry, who are working now to find the solutions to the next challenges.

For example, how can we reduce carbon and methane emissions and capture and sequester carbon already in the air? How can we make better use of renewable energy sources without exacerbating other environmental issues?

How do we solve the renewable energy storage problem? How do we manage energy costs for families and communities? How do we juggle the global politics complicating these already difficult challenges? We need as many smart brains working on the issues as possible.

Despite the challenges, I am hopeful for the results, which I expect will affect our everyday lives, and our future, for the good.

I look forward to being fascinated by the successful resolution of these questions, which I can then excitedly share as topics for my future "Did you know ...?!"

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