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Is 'Green' Energy Really 'Clean' Energy?

PA STATE SEN. GENE YAW

I recently read a commentary titled "*Threat of Fossil Fuels.*" This is one of many pieces I have seen in which the authors cite the use of fossil fuels as a detriment to our environment. Of course, these articles fail to reference clean coal technologies or the fact that as Pennsylvania's natural gas power generation has increased 34 percent since 2005, greenhouse gas emissions across the state have dropped 39 percent from electric power generation. Our air is cleaner today than at any time since the dawn of the industrial revolution over 200 years ago.

In fact, America has led the world in reducing greenhouse gas emissions over that same time period. These reductions are having a demonstrable impact on air quality, with Pennsylvania's DEP forecasting fewer and fewer severe air quality alerts each year — a fact which Governor Wolf neglects to tell the public as he unilaterally pushes for Pennsylvania to join with New York, New Jersey and other states in the Regional Greenhouse Gas Initiative (RGGI). This edict will have drastic consequences for every ratepayer, business and industry in Pennsylvania.

I do not question that the debate over climate change and global warming is a significant and worthwhile environmental public policy debate taking place in our nation and around the globe. Unfortunately, most of the commentary is based on a superficial discussion of "*clean*" energy, which translates into a solution based on eliminating fossil fuels.

As chairman of the state Senate Environmental Resources and Energy Committee, I take this issue very seriously and strive to protect our environment with sound public policy, which includes balancing the policy's impact on our local and state economies.

For some time, there has been discussion in Harrisburg about the positive attributes of so called "*clean*" or "*green*" energy, but what is the true environmental cost of renewable energy?

Anyone who thinks that windmills and solar panels miraculously appear on the mountain side clearly ignore and misunderstand the manufacturing process. Let's not forget for a minute that the components of windmills and solar panels are manufactured. According to a recent Wall Street Journal article, each windmill is composed of 900 tons of steel, 2,500 tons of concrete and 45 tons of nonrecyclable plastic. Additionally, each windmill uses roughly 500 gallons of oil, which must be changed regularly. Five rare earth elements — dysprosium, terbium, europium,

neodymium and yttrium — are used in magnets for wind turbines. How are turbine blades recycled? They're not. According to NPR, more than 720,000 tons of blade material, which can span up to 260 feet and weigh an average of 36 tons, will be disposed of over the next 20 years. Waste from wind turbines is an issue that cannot be ignored. When considering environmental impact, remember we have no national or state policy regarding recycling or disposal of wind turbines at the end of their useful life.

For many homeowners, one of the primary motives for going solar is to have a positive impact on our environment, which is commendable. Yet, solar panels harbor their share of toxic chemicals including lead, cadmium telluride, copper indium selenide, polyvinyl fluoride, just to name a few. The first round of solar panels are approaching the end of their lifespan, and the International Renewable Energy Agency, itself, acknowledges that more solar deployments will also result in a huge amount of electronic waste. Aside from the harmful components, the vast majority of solar panels consist of glass, which often cannot be recycled because of the impurities. We do not have the knowledge nor facilities at the federal or state level to deal with recycling or disposal of solar panels.

In addition to wind and solar, electric car batteries pose even more challenges. Take for example a Tesla car battery, which weighs approximately 1,200 pounds and contains 7,104 lithium-ion battery cells, nickel, cobalt, and more components. For a Tesla semi-truck, the average weight is estimated between 4.7 and 7.9 tons. What does this mean for our roads and transportation infrastructure if more people are buying and using electric vehicles?

Demand for cobalt, nickel, lithium, and graphite is projected to rise dramatically to meet demand for batteries. The majority of these materials is not produced in the United States but imported from around the world. According to testimony at a recent U.S. Senate Environmental hearing, China has established a near-stranglehold on the cobalt market, refining an estimated 70 percent of the world's cobalt chemical products. Further, most cobalt is mined in the Democratic Republic of Congo, a weak country in which the mining industry uses children as young as 6 years of age and other laborers in "*artisanal mining*," i.e., mining and washing the ore by hand.

Nuclear energy is promoted as "*clean*" from an emissions perspective. That may be the end result, but what about the emissions associated with the manufacturing of millions of tons of concrete and steel needed to construct the facilities? And, we cannot overlook the fact that Pennsylvania is required to de facto house four nuclear waste sites because there is no common disposal site in the United States. Moreover, if all of the state's nuclear sites closed today, the land on which the sites are located would be contaminated for at least one million years. How

can anyone realistically and rationally ignore the environmental impacts of the manufacturing and disposal issues associated with this industry and just label it as “*clean*”?

The concept of looking at the big picture is simple. For every so-called “*clean*” energy process, whether it involves nuclear, wind, solar, hydroelectric or other, there is one common denominator. That common denominator is mining. Pick any material or element needed for one of the “*clean*” energy discussions. Whatever is involved, it was produced by mining, which leaves gaping holes in the earth. Mining involves the use of heavy equipment. That equipment is made from steel. Steel, in turn, is made from iron ore and coal, both of which are extracted from the earth by mining. And so, the circle continues with each step having its own environmental impact and emissions. This is a clear explanation of why Tesla is looking to get into the mining industry. If you want “*clean*” energy, get ready to dig.

I say that the Regional Greenhouse Gas Initiative is superficial because it only deals with one small aspect of energy production and emissions. It does not look at the whole picture. Supposedly, RGGI will improve Pennsylvania emissions. Considering the significant reduction, which has already occurred without RGGI, I seriously doubt the validity of that position. RGGI ignores the multitude of ramifications it generates and encourages, while focusing on the very limited point of emissions. Ignored are questions and considerations regarding: The increase in mining activity in the U.S. to provide the raw materials needed to produce “*clean*” energy; the effect of increased mining in Third World countries to support our “*clean*” energy goals; the geopolitical effects of the demand for rare earth minerals to support “*clean*” energy; are we going to sanction the use of child labor to support our “*clean*” energy goals; are we going to accept being dependent on foreign governments for our “*clean*” energy materials?

While the goal of addressing climate change is desirable, targeting one part of our energy portfolio as proposed by RGGI is shortsighted. Every energy source has an environmental impact. Frankly, where we are apparently headed is to put the environmental burden on Third World countries and those which are less developed than the U.S., so that we can ride in an electric car and say we are a “*clean*” energy nation. Our energy mix needs to encompass all of our resources, which includes fossil fuels. It is impossible to build any “*clean*” energy facility without fossil fuels.

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