

An Alternative to Another Electrical Transmission Line Across Baltimore and Carroll Counties

by State Senator Chris West

As the following report is quite lengthy, I am providing my readers with a short executive summary, as follows:

As many of my constituents are aware, an organization known as PSEG is proposing to construct a new electrical transmission line across Baltimore and Carroll Counties to provide electricity for several Artificial Intelligence facilities under development in Frederick County and Loudoun County, Virginia. The proposed new line would compromise thousands of acres of productive farmland, much of it in permanent conservation easements and would adversely impact innumerable homeowners. I have received literally hundreds of impassioned e-mailed messages and phone calls imploring me to block the proposed new transmission line.

I believe there is a viable alternative, known as “reconductoring” the existing transmission line across Baltimore and Carroll Counties. “Reconductoring” is the replacement of a transmission line’s existing cables (known as “conductors”) with either larger-diameter conductors or a different type of conductor. Reconductoring would enable the existing transmission line to transmit roughly twice as much electricity as at present. It would eliminate the need for a second, newly-constructed transmission line.

Reconductoring is not a novel concept. Over 90,000 miles of advanced conductors have been deployed globally, including in Texas, Nevada and Minnesota. The total cost of a reconductoring project has been computed as being less than half as expensive as a new transmission line because it does not entail right of way acquisition costs or the costs of hundreds of new transmission towers. A reconductoring project can also be completed quickly compared to the time involved in acquiring land by eminent domain and then constructing an entirely new transmission line. Before any application is filed by PSEG with the Maryland Public Service Commission, a series of meetings should be convened between PJM, PSEG and representatives of the affected communities. In particular, the possibility of reconductoring the existing, many decades-old electrical transmission line needs to be on the table and should be the subject of responsible and fact-based dialogue.

The full report follows:

When I was just ten years old, one of my best friends lived on a farm in northern Baltimore County, and I loved to spend the night at his house because his family kept horses in a stable and on the farm was a big old barn with a hayloft, perfect for hay fights. Next door to the farm were a series of high, steel towers bearing electrical transmission cables. These made quite an impression on me as they were so jarring in what was otherwise a peaceful, verdant environment.

Today, that farm is the Basignani Vineyards and Winery, and the towers are still there carrying electricity from the Coniston substation in Harford County to the Reisterstown substation and then across southern Carroll County to the Doubs substation near Point of Rocks in Frederick County. That electrical transmission line is therefore at least 65 years old.

Now, an organization named PJM Interconnection, which is responsible for coordinating the movement of electricity for this region of the country, has engaged Public Service Enterprise Group ("PSEG") to plan for much more electricity to be transmitted from Coniston to Doubs. There are several reasons why more electricity is needed.

First, in recent years not only has Maryland not facilitated the construction of additional electrical generating facilities in this State but in fact has blocked pipelines which could bring natural gas to Maryland that could be used to create electricity in repurposed, now-shuttered electrical generating facilities. The thinking behind such decisions is that Maryland should instead invest in solar and wind generating facilities. The simple fact, however, is that the only consistent wind in Maryland is located in the Atlantic Ocean, where the long-promised wind farm remains stillborn, and the only way to generate significant electricity from solar arrays would entail covering our productive farmland with solar panels. As a result, Maryland doesn't generate nearly enough electricity to meet its current, much less future, needs.

Second, due to recent technological developments, new industries are growing up that require massive amounts of electricity. The most significant of these new industries is artificial intelligence. Several AI facilities are under development in Frederick County and on the south side of the Potomac River in Loudoun County, Virginia. And of course, Maryland is embarked on a mission to require all new car sales in Maryland to be electric by 2035 as well as to induce folks to replace their oil and gas furnaces, stoves and other appliances with electric ones.

Put all this together, and there is an increasing need to import more electricity to Maryland from other states.

The PSEG solution to this situation is another interstate electrical transmittal line across Baltimore and Carroll Counties from the Coniston substation in Harford County to the Doubs substation in Frederick County. PSEG has presented maps showing two possible routes for a new transmission line across Baltimore County and eastern Carroll County. One would proceed westward, passing north of Prettyboy Reservoir and Manchester and then either diving southward so as to pass Westminster on the east and south sides of town or, alternatively, continuing west so as to pass Westminster on the north and west sides of town. The other would take a more southern route, passing just to the north of Parkton and to the south of Prettyboy Reservoir until it enters Carroll County just south of Hampstead and then continues to the east and south of Westminster.

Either of these routes would compromise thousands of acres of productive farmland, much of which has been placed into permanent conservation easements and would detrimentally impact innumerable rural homes. Either of these routes would involve using the eminent domain process to acquire hundreds of private properties in face of the staunch opposition of the property owners. PSEG pledges to only use eminent domain as a last resort, but, given the strong opposition from the affected property owners, it is hard to imagine that PSEG will be able to move forward with its plans without resorting to eminent domain.

Each of the State legislators representing constituents living in the impacted areas has come out against the proposed new electrical transmission lines. We have taken the position that PSEG should prioritize using current infrastructure footprints and corridors.

In recent weeks, I have done a deep dive into electrical infrastructure and believe I have identified a viable alternative to the new transmission line proposed by PSEG.

Just as developments in the extraction of natural gas in the past twenty years, such as fracking, have transformed the nation's energy environment so have developments in power transmission transformed the nation's electrical transmission environment. In particular, the concept of "reconductoring", which wasn't heard of 20 years ago, promises to make the interstate transmission of electricity much easier and much cheaper.

"Reconductoring" is the replacement of a transmission line's existing cables (known as "conductors") with either larger-diameter conductors or a different type of conductor and is increasingly being used by utilities to increase ampacity within existing rights of way, thus eliminating the need to acquire new rights of way.

While most of the electrical transmission grid today, including those towers that I saw as a child marching across northern Baltimore County, is wired with a century-old technology known as Aluminum Conductor Steel Reinforced, which features aluminum strands around a steel core, the modern advanced conductors swap the steel for a stronger yet smaller composite-based core. According to a report issued earlier this year by the Energy Institute at HAAS, the modern conductors enable higher operating temperatures and allow the conductors to carry **approximately twice as much power** as the old conductors.

This means that the existing electrical transmission line across Baltimore and Carroll Counties, which is over 65 years old, could be "reconducted", replacing the old conductors with the modern advanced conductors, and then could transmit twice as much electricity between the Coniston substation and the Doubs substation. There would not be a need for a second transmission line. The existing towers could remain in place. Only the conductors stretching between the towers would need replacement.

Although the reconductoring technology was developed in recent years, over 90,000 miles of advanced conductors have been deployed globally. For example, the Netherlands and

Belgium have embarked on a project of reconductoring most of their high-voltage transmission lines by 2035. In Texas, the Lower Rio Grande Valley reconductoring project was completed in 2016 and came in millions of dollars under budget. Nevada's NV Energy has installed 125 miles of advanced conductors and has planned another 18 projects. In Minnesota, a reconductoring project was completed in just eight weeks because there was no need to acquire new land through eminent domain or to construct an entirely new transmission line.

Manufacturers of the advanced conductors include 3M, Southwire and CTC Global. The most widely deployed advanced conductor to date is CTC Global's Aluminum Conductor Composite Core. Although advanced conductors currently cost up to four times more than conventional conductors, the total cost of a reconductoring project has been computed as being less than half as expensive as a new transmission line because it does not entail right of way acquisition costs or the costs of hundreds of new transmission towers.

Of course, those advocating reconductoring instead of constructing a new electrical transmission line should expect pushback. Let's consider what sort of pushback is likely.

First, advanced reconductoring would entail lower capital investment than a new transmission line. Utilities that earn a return on investment can earn more by building new transmission lines. So, a new transmission line would probably result in higher electrical bills each year for ratepayers. The utilities can be counted on to fight for the alternative that will net them higher income each year as opposed to the cheaper alternative.

Second, State regulators don't have much experience with reconductoring and may be apprehensive about embarking on a program not previously used in Maryland. Those advocating for the reconductoring alternative will need to present testimony from acknowledged experts in the electrical transmission field in order to assuage these concerns.

Third, PSEG might argue that the reconductoring process would mean that the existing electrical transmission line would need to be taken out of service during the reconductoring process and that the grid could not survive such a loss of transmission capacity. With respect to such an argument, the devil of course would be in the details, but it is hard to imagine that our electrical grid in the mid-Atlantic states is so perilously close to failing that the loss for a short period of time of a single transmission line would plunge the region into darkness. If that were true, the United States is absurdly susceptible to sabotage by our enemies.

Fourth, the proponents of a new electrical transmission line may argue that the doubling of electrical transmission that would come with reconductoring is not enough, that more electricity is needed to power the AI facilities in Frederick and Loudoun Counties. One response to this is to argue that the businesses in the AI field should locate their electricity-intensive facilities close to electrical generating plants, not many miles away. Is it reasonable for the agricultural sector of northern Maryland to suffer irreversible degradation simply because several

firms have decided to build their AI facilities in remote locations instead of near where the electricity is being generated?

The purpose of this report is to run the reconductoring flag up the flagpole and to let my constituents know that there may be a viable alternative to a new electrical transmission line across Baltimore and Carroll Counties. I think it essential that, before any application is filed by PSEG with the Maryland Public Service Commission, a series of meetings be convened between PJM, PSEG and representatives of the affected communities. In particular, the possibility of reconductoring of the existing, many decades-old electrical transmission line needs to be on the table and should be the subject of responsible and fact-based dialogue.

If you are not currently receiving my infrequent e-mail messages about public policy issues that I am dealing with and would like to stay informed, please send a message to chris.west@senate.state.md.us and ask me to add you to my list.

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