

BACON'S REBELLION

The Op/Ed Page for Virginia's New Economy

Power Play

Northern Virginia could face blackouts by 2011. But is it necessary to run a high-voltage transmission line through Virginia's piedmont to avert them? Many questions remain unanswered.

By James A. Bacon

On the surface, the debate over the transmission line that Dominion wants to build through the Virginia piedmont is pretty easy to understand. Electric demand is rising relentlessly in fast-growing Northern Virginia and if no one does anything about it, Virginia's economic powerhouse will start suffering supply disruptions by 2011. The fastest, easiest way to deliver that electricity, says Dominion, is to build a 250-mile electric transmission line from western Pennsylvania to Virginia, 40 miles of which would run through Loudoun, Fauquier and Prince William counties.

Nobody likes 125-tall power towers in their back yard, so local landowners, many of them whom own scenic estates, are raising a ruckus. Can't blame 'em for being unhappy, but what can you do? Subjecting two million northern Virginians to rolling blackouts would be an economic disaster.

The Piedmont Environmental Council, which is leading the opposition to the transmission line, suspects that the story might not be quite so simple. Has Dominion considered any alternatives, it asks. How about conservation? How about alternate routes? How about running the transmission line under-

ground? But whenever the PEC probes for information, it hits -- appropriately enough for this rocky hill country where General Thomas J. Jackson earned his sobriquet -- a stone wall. (For details, see the [op-ed](#) in the *Times Community Newspaper*.)

Full disclosure: The PEC is a major client. It underwrites *Bacon's Rebellion's* coverage of transportation and land use issues. But no one at PEC has ever asked me to write about the transmission-line controversy. As I become increasingly interested in energy issues, I find myself drawn to the controversy.



I've written previously about the virtues of conservation, distributed generation and alternate fuels (see "[Big Grid](#)"). Borrowing the analytical framework of the futurist Alvin Toffler, I've blogged about the need to shift from the big-infrastructure energy solutions of the industrial era to the leaner, more flexible solutions of the emerging knowledge economy (see "[The Tofflers on Energy Policy](#)").

The Loudoun transmission-line controversy strikes me as a watershed case in the evolution from an industrial-era energy infrastructure to a smarter, knowledge-wave infrastructure. For the first time in Virginia his-

tory, there's a group, the PEC, with the intellectual firepower and the resources not merely to say, "No," to a high-voltage line but to articulate an alternative vision to long-distance transmission lines generally. I don't see Dominion as guys in black hats -- the company is just trying to do live up to its responsibilities as best it understands them. But it's entirely possible, I think, that decision makers at Virginia's largest power company are captive to an outmoded, industrial-wave way of looking at the world. Surely, there must be a way to supply electricity to the growing economy of Northern Virginia without running roughshod through the beautiful Virginia piedmont.

To dig deeper into the issues, I consulted a man who knows Virginia's electric power industry intimately yet is distant enough from the controversy to be dispassionate: William W. Berry, Dominion's former CEO. Berry retired from the company in 1992 and spent a few years serving on corporate boards, doing consulting work and advocating his passion: electric deregulation. In 1997, he became chairman of the board of ISO New England, the not-for-profit group that oversees wholesale electricity markets and operation of New England's power transmission system. Over a nine-year period, Berry helped guide the evolution of New England's power industry from a regulated industry into a deregulated one.

I met Berry at a small office in the west end of Richmond. He's maintained the office ever since he retired, he joked -- at least, I *think* he was joking -- because

his wife doesn't like him hanging around the house. Wearing a sweater, the former CEO was relaxed and informal. His secretary had the day off, so he poured me a cup of coffee. As we started the interview, he thoughtfully yielded his desk so I could set up my laptop. Later, amidst a discussion about electricity pricing, my battery ran low and I had to plug in an electric cord. Berry didn't miss a beat: "I ought to charge you for that!"

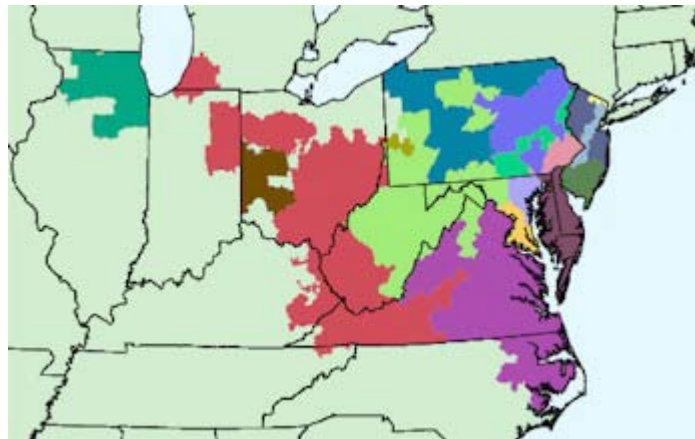
To decipher how Dominion approaches the Loudoun transmission line, Berry explains, you have to understand the company's role in PJM Interconnection, the most important organization most Virginians have never heard of. A Mid-Atlantic coun-

terpart to ISO New England, PJM manages the competitive wholesale electricity market in a 11-state region of 51 million people running from Indiana to New Jersey and down to Virginia and Dominion's territory in North Carolina.

PJM's members, some 400 entities, buy and sell electricity with one another and arrange transmission over each others' lines. The arrangement is beneficial because power generators have more potential buyers of their electricity, and buyers have more potential suppliers to choose from. The key to opening up competition is electric transmission capacity. Limited capacity reduces opportunities to transfer power between buyers and sellers over long distances.

Berry spreads a map of the PJM transmission grid on his desk.

"The low cost power is over here," he says, indicating Ohio and other Midwest locations. "The high cost power is over here," he says, circling New Jersey, eastern Pennsylvania and northern Delaware. There are only four major transmission lines linking the regions. That constrains the volume of cheap energy in the west that can be delivered to buyers in the east.



The PJM system: Purple demarcates Dominion's territory, red American Electric Power's, light green Allegheny Power's.

"They have a congestion problem," Berry says. "They (the eastern utilities) have to run high-cost power to maintain reliability."

Electricity demand is increasing faster in Dominion's territory faster than anywhere else in the PJM system -- about 1.9 percent annually compared to 1.6 percent for the system as a whole. Berry runs his finger around the Washington, D.C., metro area, tracing the transmission loop around the region. A new transmission line connecting the cheap, surplus generating capacity in the Midwest to Virginia would do two things. It would help meet the growing demand in Virginia, he explains, and it would deliver cheaper electricity to the high-cost zone in the Jersey-Pennsylvania area.

Here's the beauty of the Loudoun line from Dominion's point of view: It would meet the needs of the growing Virginia market. It also would allow the company to serve as an intermediary between Ohio and New Jersey.

What's unclear to the Piedmont Environmental Council is how central the electric-trading op-

portunity is to Dominion's internal business case for building the transmission line. It's one thing to use eminent domain to condemn land along the route in order to prevent rolling blackouts in Northern Virginia, a legitimate public necessity. It's quite another to use it to reap electricity trading opportunities outside the state, a

private purpose.

The power company told the *Times Community Newspapers* that the transmission line, in the newspaper's words, "constitutes the only answer to Northern Virginia's long-term electricity demands." So far, the PEC says, it has offered little concrete evidence to back up that assertion.

Berry is not in a position to confirm or dispute the claim, but he lists a number of possible alternatives to building the Loudoun line. The least attractive option that has been floated is burying the transmission line underground. It *can* be done: ISO New England has an underground in Boston. But the cost would be prohibitively expensive. Dominion contends it would cost \$1.6 billion to run the 40-mile Virginia leg under-

ground and connect both ends with substations.

There are other pros and cons to underground lines. An advantage is that they require less routine maintenance -- they don't get knocked out by ice storms, for instance. But when there *is* a problem, Berry warns, they're harder to fix. Outdoor lines are more easily accessible and much easier to repair.

A more promising alternative might be to build a power line through Pennsylvania rather than Virginia. There is no self-evident reason why the Virginia route is superior, Berry says. "There may be good reasons for it, but I don't know them. ... Someone should ask [Dominion] the question, why not put the transmission line farther north?"

A third option is to build new power-generating capacity right where it's needed -- in New Jersey, which could benefit from cheaper electricity, and in Northern Virginia, where demand is growing. That would save the capital expense of the transmission line, about \$10 million per mile for 250 miles, and the leakage of electricity along the route. Someone should ask Dominion if it has examined those alternatives, Berry says, and what the numbers look like.

There's another good reason for locating generating capacity near the source of demand: It reduces risks inherent in relying upon transmission lines. Simply put: the longer the line, the greater the risk of disruption, whether by ice storm, hurricane, tornado or natural catastrophe. For the stability of the regional power grid, wouldn't it make sense for the Washington metro area to maintain a portion of its generating capacity within the

region itself instead of importing nearly all of its electricity from outside?

Other than an independent power producer in Alexandria, there is little generating capacity in northern Virginia. But surely there are other suitable sites. Even if Dominion hasn't identified any, that doesn't mean they don't exist. Has the company even looked? Has it put out a Request for Proposal?

Finally, Berry says, Dominion could consider the conservation option -- an idea pushed aggressively by the Piedmont Environmental Council. New England has a program called "load response." It wasn't easy to get up and running, and it still isn't as big as it could be, but it works pretty well, Berry says. Under the load response program, voluntary participants, usually businesses, hospitals or other large customers, feed an electric meter into a computer, which monitors the line all the time and shares the information with ISO real-time. Everybody knows exactly what the electric usage is and the current market price in New England's deregulated market.

"There are trigger points," Berry explains. "When prices reach a certain level, people reduce their load." That enables the local utility to avoid the cost of running generators that burn high-cost natural gas to meet spikes in electricity demand. The program has shaved about 600 megawatts of peak demand out of the 26,000 megawatt system, he says. "That's about two or three percent. We'd like to get that up to 10 percent."

If Dominion could shave 10 percent off its peak demand, it could delay building the transmission line by years. If it also instituted retail conservation

programs like a Potomac Electric Power Co. pilot project in Washington, D.C., in which 2,250 homes will be equipped with smart meters that report consumption levels every 15 minutes, it could stave off the need for new capacity even longer.

According to Richmond Federal Reserve Bank's *Region Focus* magazine, half the participants in the Pepco program will receive a "smart thermostat" that can remotely raise or lower the temperature of an air conditioner or central heating system during exceptionally cold or hot days, periods of peak demand when the power company fires up its most costly generating capacity. Customers can reset the temperature to a more comfortable level, but they will be warned by real-time electricity prices displayed on the thermostat that doing so will raise their bill.

As the PEC has observed, retail consumers could conserve considerable electricity if they were given incentives to do so: from ENERGY STAR refrigerators to compact fluorescent light bulbs, from tankless water heaters to front-load washing machines that wring out water before clothes go into the drier. Why isn't Dominion aggressively pursuing conservation programs comparable to Pepco's and ISO New England's?

Setting up conservation programs in tandem with adding incremental capacity such as cogeneration plants, which generate electricity then sell the waste steam to commercial customers, might provide a solution that doesn't require building a \$2.5 billion transmission line that destroys economic value across its 250-mile length. Who knows. If we can stave off the need for a transmission line for a decade, solar energy might

become economically competitive. Then businesses and homeowners will be installing solar panels on every roof -- obviating the need to ever build a transmission line.

Instead of clamming up tight, Dominion should share information with the public, issue Requests for Proposals and endeavor to earnestly examine all the options. The idea of sharing knowledge rather than hoarding it is a very Toffleresque concept, and it very much goes against the grain of industrial America. But Dominion just might find that it works.

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