

Dominion Virginia Power sets plan for emergency blackouts

Vital maintenance work on Dominion Virginia Power transmission towers that cross the James River from Isle of Wight County to Newport News — and supplies most of the power to the Peninsula.



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Dominion Virginia Power has taken the unusual step of planning for an emergency blackout, with a plan to cut power to 150,000 customers on the Peninsula in the extremely rare event of faults at two components of its high-voltage network occurring at a time when demand for power is high.

Dominion has been worrying about such failures because it will shut down the two coal-fired units at its Yorktown power station in April, when its special exemption from new toxic emission standards lapses. Those plants have been the backstop that ensures lightning strikes, failures of transformers or breakers or falling trees along the Peninsula's high-voltage transmission lines don't spark the kind of blackouts that can spiral out of control.



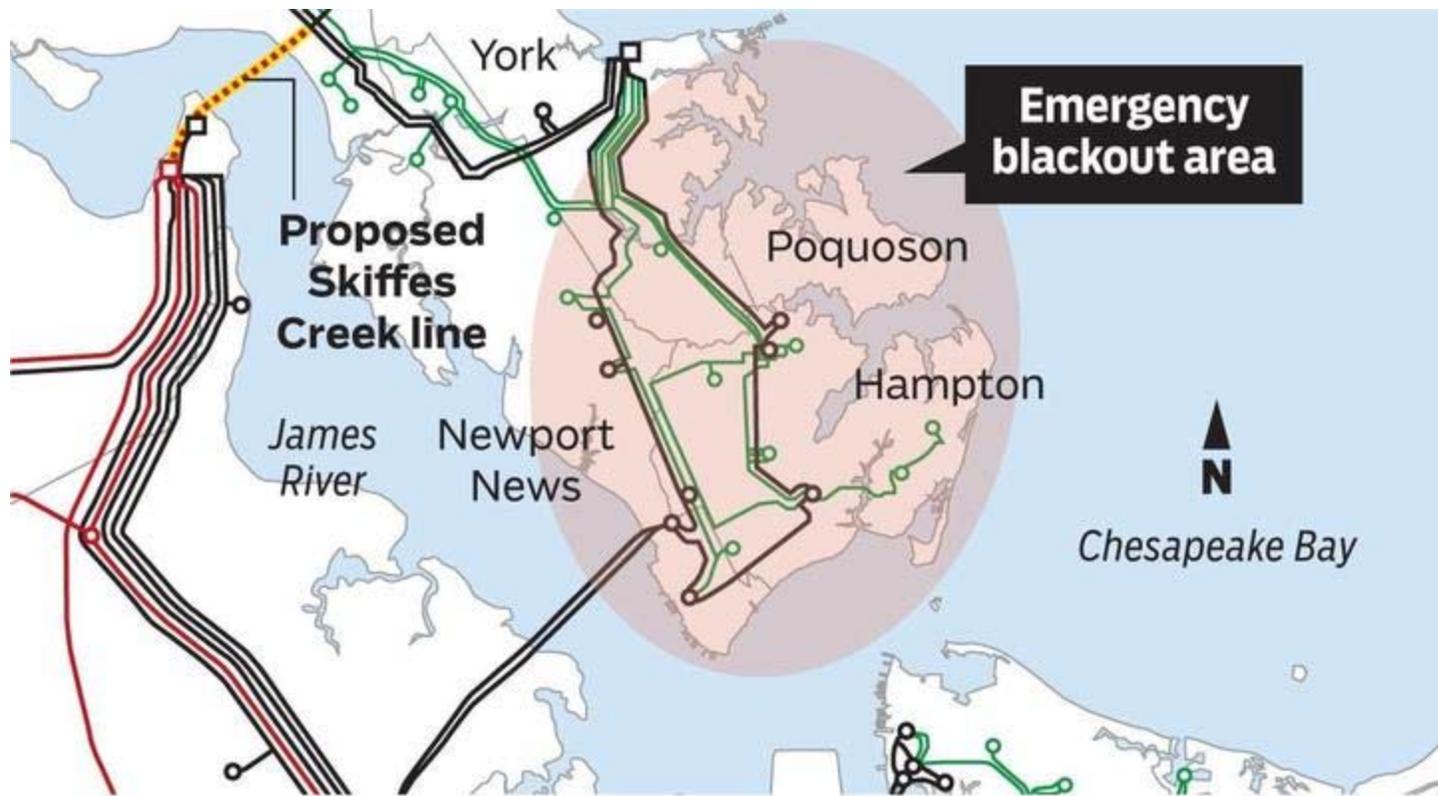
The new Woodland Solar Dominion Virginia's 100+ acres 19.7 megawatts Isle of Wight solar facility, this is one of three new facilities in Virginia Powhatan, Louisa and Isle of Wight Counties.

The so-called remedial action scheme Dominion prepared and presented this week to PJM Interconnection, the operator of the 13-state electrical grid Virginia is plugged into, would cut power to Hampton, two-thirds of Newport News, Poquoson and eastern York County if there are faults on two of the dozens of components in the Peninsula's high transmission network.

That kind of two-component fault hasn't happened often here — just twice in the past decade, said Steven Chafin, Dominion's director of transmission planning.

But the failure of a single component — a section of high-voltage line, a breaker or substation transformer — could trigger rolling blackouts in the region, including areas not affected by the remedial action scheme, he said.

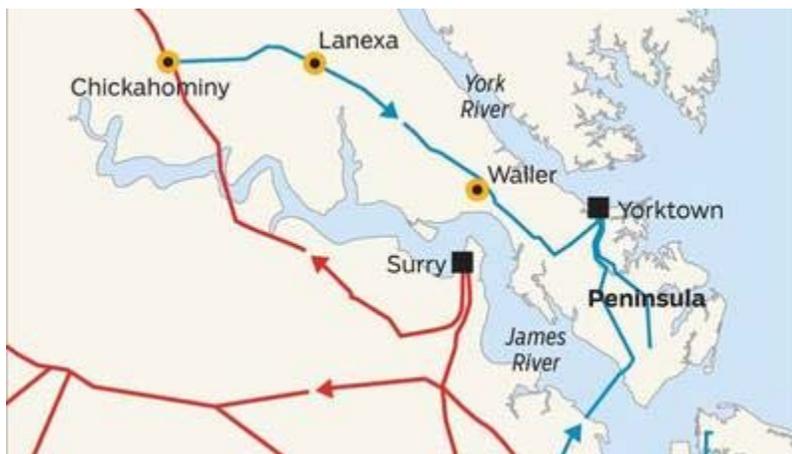
The utility has seen six such single component failures in the area over the past decade.



Source: Dominion Virginia Power

"In an ideal world, you wouldn't need an RAS because the system should be able to handle two faults. But it looks like their plan to deal with shutting the power plant has been taking longer than they expected," said Leonard Bohmann, a professor of electrical engineering at Michigan Technological University, who lives in one of the few other regions of the country where a similar plan is in place, Michigan's Upper Peninsula.

It can be a challenge ensuring that any peninsula has enough alternative sources of electricity to cope with two faults on the system, he said. But that ability to cope with two simultaneous faults without interrupting the flow of electricity is a basic requirement for transmission systems in North America. In Upper Michigan, where two faults could put the local grid at risk, the remedial scheme calls for cuts in the power flowing to a large iron ore mine if there are faults on the connection to Wisconsin. It hasn't been invoked.



South Hampton Roads as well as Richmond and points west and north along the I-95 and I-64 corridors are all linked to Dominion Virginia Power's network of high voltage, 500,000 volt wires, as is the Roanoke area. The Peninsula is the only major population center in Virginia that is not. Source:... (Daily Press Graphics)

Dominion's plan to improve the reliability of the Peninsula's power supply is to build a 500-kilovolt line across the James River, between Surry County and Skiffes Creek in James City County. Its request for permission to build the line has been pending before the Army Corps of Engineers since August 2013 and has sparked strong opposition from historic preservationists who say it will destroy a view of the James River that's barely changed since the founding of Jamestown, four centuries ago.

They say Dominion's been using scare tactics when it has said there could be as many as 80 days a year in which rolling blackouts are possible. Dominion says that's the number of days when demand is so heavy that faults in the system could force it to cut some customers off in order to avoid a widespread blackout.

"It appears that Dominion Virginia Power would rather continue their campaign to frighten consumers and threaten to close their Yorktown power plants," said James Zinn, a trustee with the Save the James Alliance, who argues that federal law allows the U.S. Department of Energy to order a power plant to operate in an emergency. Dominion says it would be illegal to keep operating the Yorktown plants once its special permission from the U.S. Environmental Protection Agency expires in April.

"If nothing else, this is consistent with their continued inflexibility to consider less intrusive alternatives for their construction of towers over the historic James River," he said.

The company has said it decided the Skiffes Creek line was the best answer for the Peninsula's long-term needs back in 2012, and in 2013, the State Corporation Commission ruled that the line was the best option, and the one that would hit ratepayers' wallets least hard.

The need for the line, the company says, grew more immediate when tough new standards to limit emissions of mercury and toxic gases from power plants took effect in 2015. Dominion has won special permission to keep operating the Yorktown units, which emit more toxins than the new standards ordinarily permit, through April of this year.

"The Skiffes Creek line is about making a robust transmission system for decades to come," Chafin said.



Strengthening the foundations of the transmission line towers by the James River Bridge signals a more intense focus on preventive maintenance on the Peninsula, Dominion Virginia Power says.

(Joe Fudge)

Dominion's plan has been approved by the SERC Reliability Corp., the regional regulatory body that enforces standards that are intended to prevent cascading blackouts.

The issue with the remedial scheme, said Michigan Tech's Bohmann, isn't really about power supply to a peninsula like his own or the Virginia Peninsula, as it is making sure power supply problems don't spread, as they did, notoriously, in August 2003, when a transmission line in Ohio touched some overgrown trees and shut down. That fault spread so fast that it eventually shut down power to 50 million people in eight states and in Canada.

"It's more to prevent things from cascading," Bohmann said.



On a good day, the divers working on the power line towers next to the James River bridge can see about 1 foot ahead — so they work by touch, assembling new 3-foot-diameter, steel-reinforced concrete footings on the river bottom.

They're moving ahead with a \$25 million project that foreshadows...

(Dave Ress)

If the remedial action scheme were ever triggered to prevent such a cascade, it could affect 150,000 Peninsula customers at first, but the idea is that eventually "power interruptions would be rotated among consumers in the affected area," said Ray Dotter, a spokesman for PJM Interconnection. "This process would continue until the system could deliver power to everyone. For example, when equipment was restored or temperatures decreased. The outage duration would depend upon the outage scenario and the repair times to restore service."

He said PJM agrees with the plan.

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