

A Discussion on the Future of Culpeper

September 8, 2022

Julie Bolthouse, Director of Land Use

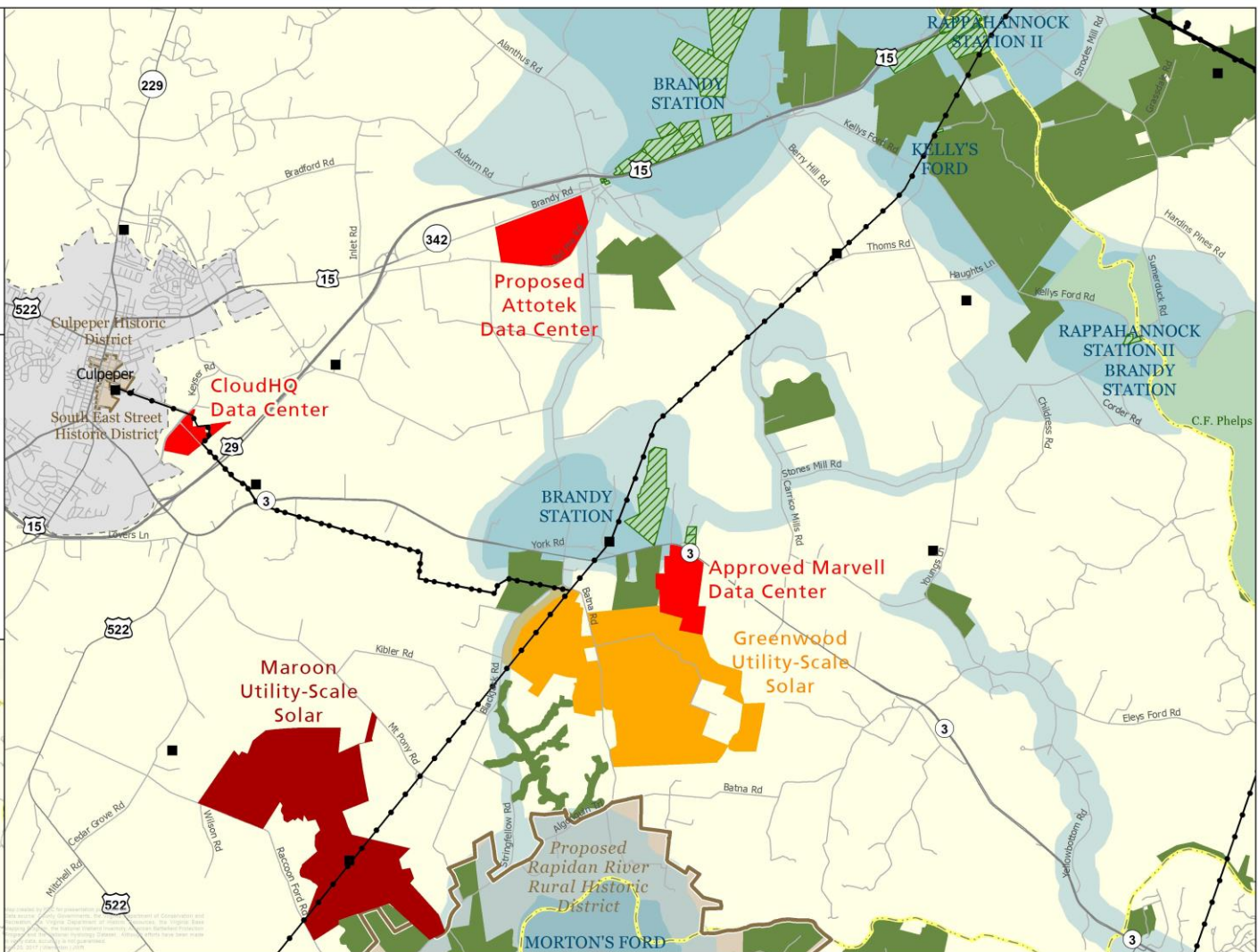


Data Centers and Utility-Scale Solar Projects - Brandy Station & Environs

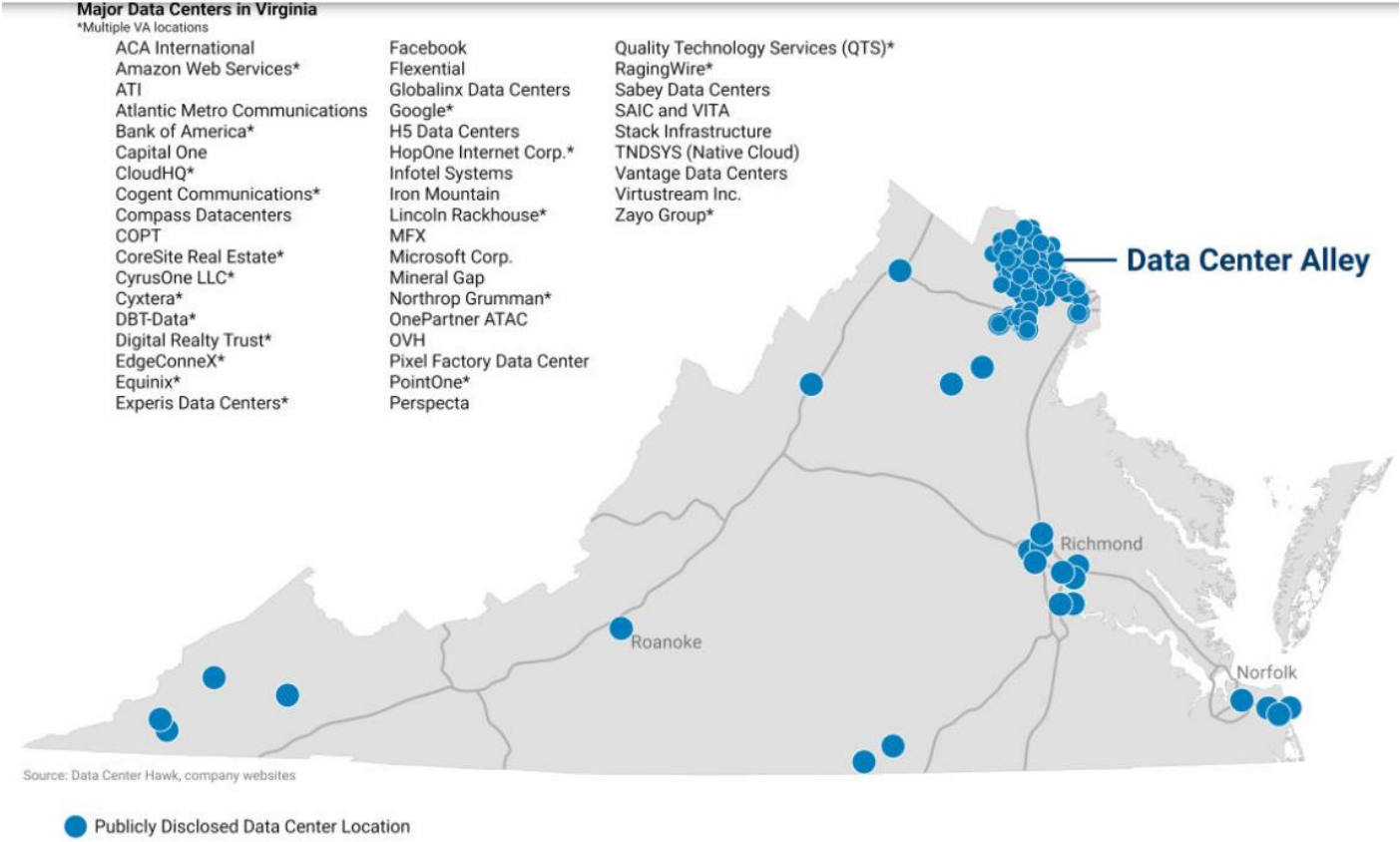


- Data Center Sites
- Greenwood Solar
- Maroon Solar
- Culpeper Battlefields State Park
- Property Lines
- Conservation Easements
- Publicly Owned Land
- Historic Districts
- Civil War Battlefields
- Electric Transmission Lines
- Electric Substations

0 0.5 1 Miles



Northern Virginia has the Largest Concentration of Data Centers in the World and the Market is Still Booming





What is a Data Center?

Big picture...



Load – Growing data center market is driving most of the increase in energy demand in Virginia

- 1 MW \cong 250 homes peak use
- Data centers = 30-90 MW
- 30 MW \cong 7,500 homes
- Town of Culpeper \cong 7,000



Transmission – According to Dominion delivering 30 MW+ of power to requires transmission lines new substations to each cluster of data centers



Generation - Additional energy usage requires new generation sources



500kV Transmission Line



230kV Transmission Line

What is a Transmission Line?



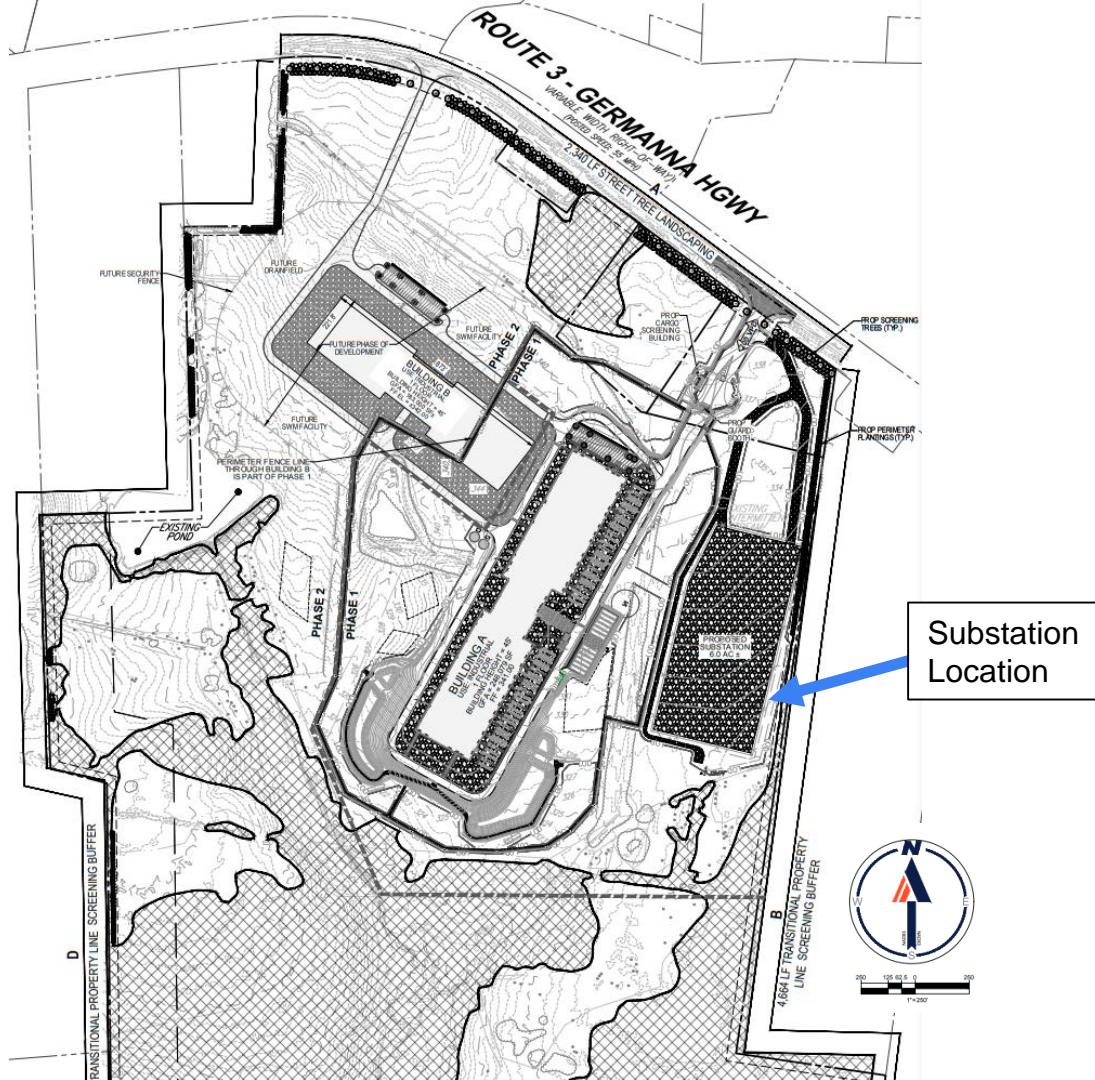
What is a Substation?



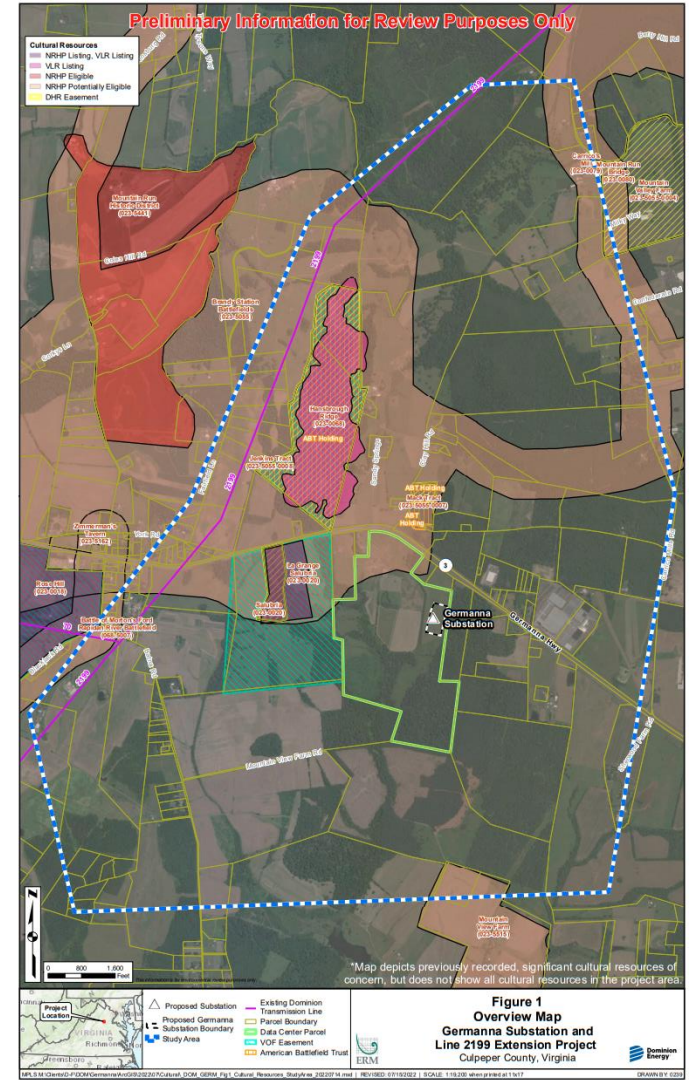
485 MW USS Spotsylvania County

What is Utility-Scale Solar?

Amazon Site
Approved in
April 2022



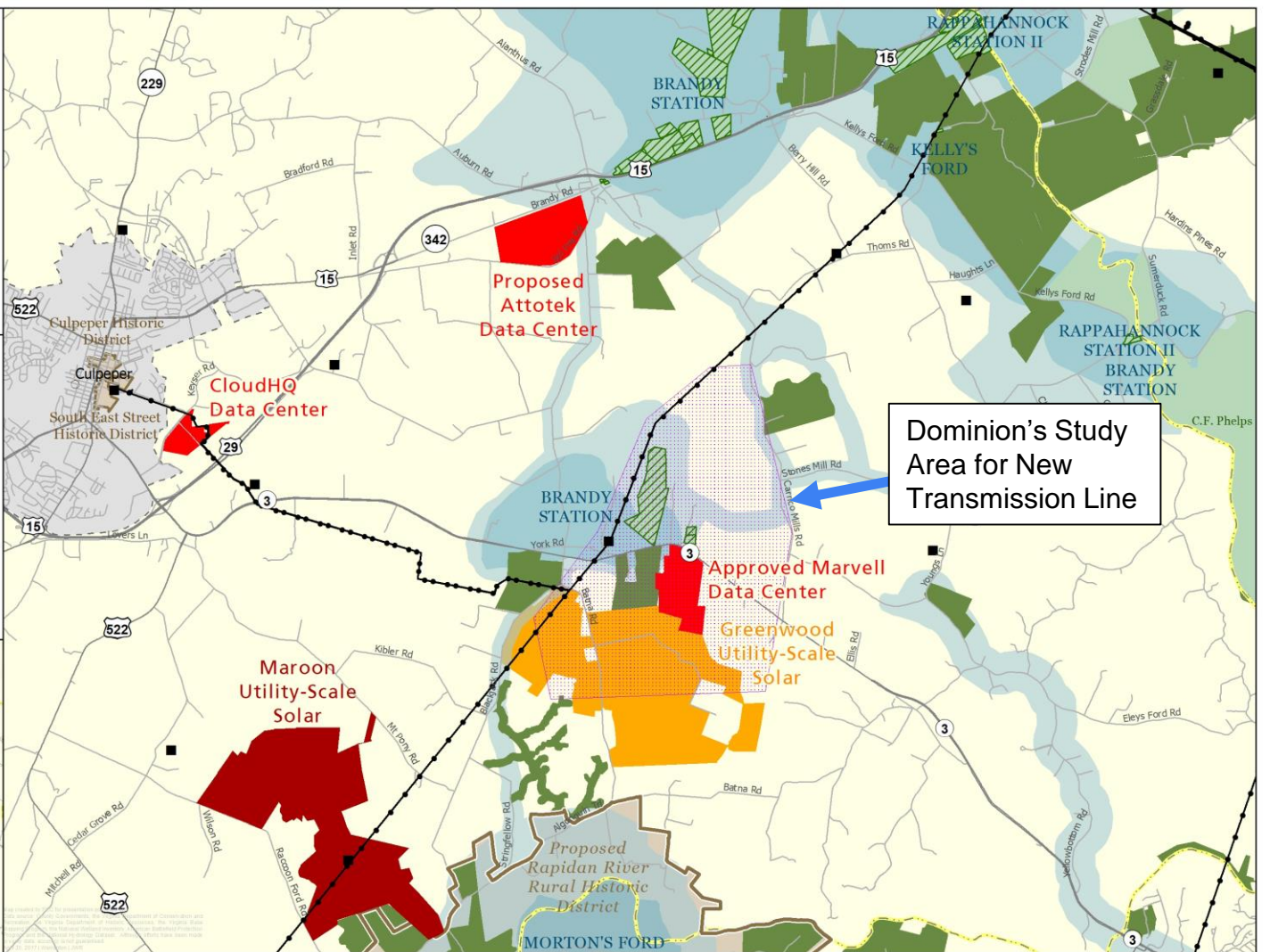
Study Area for Amazon's Transmission Line



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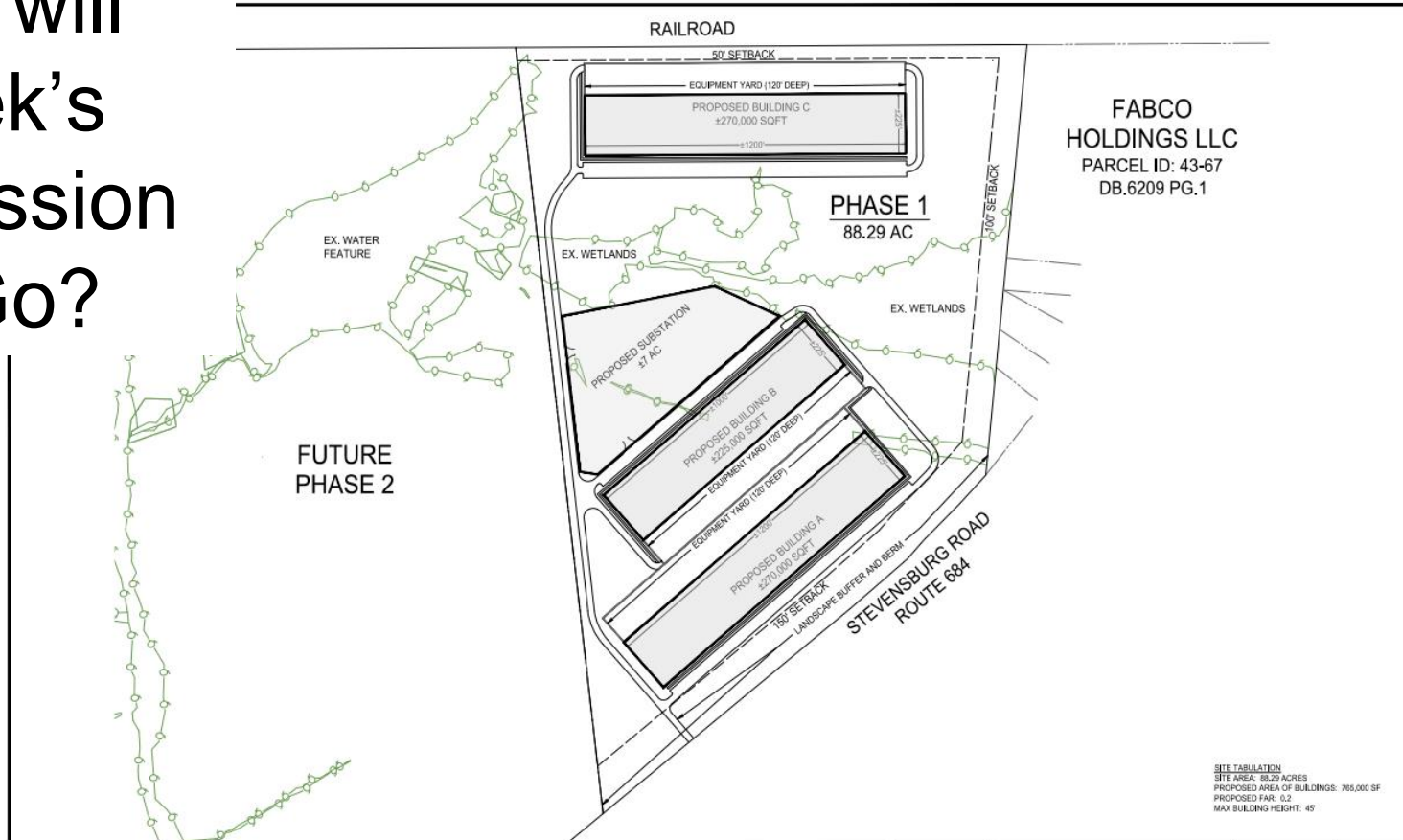


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Dominion's Study Area for New Transmission Line

Where will AttoTek's Transmission Line Go?



FABCO
HOLDINGS LLC
PARCEL ID: 43-67
DB.6209 PG.1

SITE TABULATION
SITE AREA: 88.29 ACRES
PROPOSED AREA OF BUILDINGS: 765,000 SF
PROPOSED FAR: 0.2
MAX BUILDING HEIGHT: 49'



CONCEPTUAL LAYOUT FOR PHASE 1
Brandy Station Technology Zone
Brandy Station, Culpeper County, VA



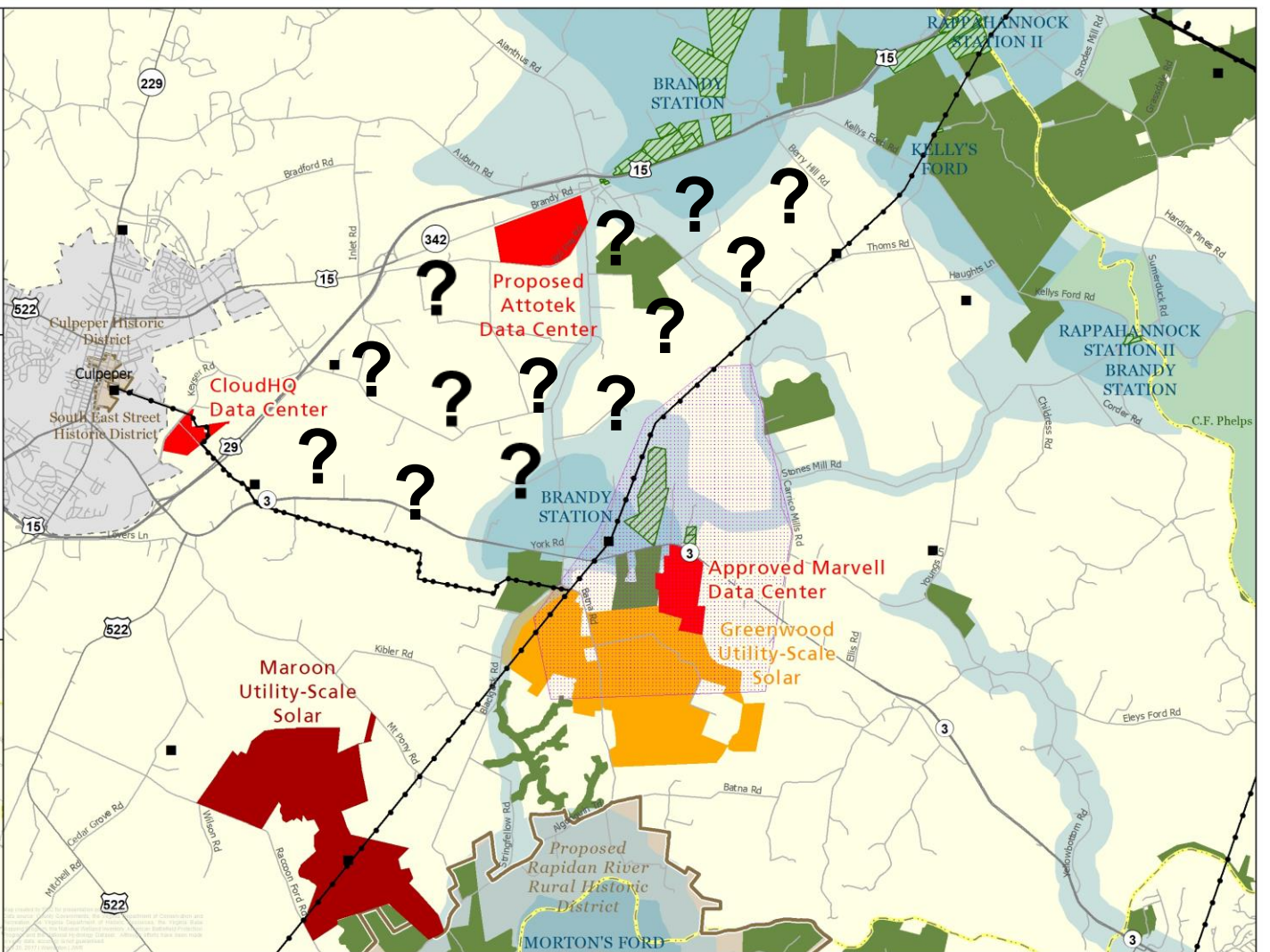
Notes/Disclaimer:
1. This effort is for illustrative purposes only.
2. Western portion of the site quantity and associated network is approximate and obtained from adjacent county GIS. Eastern portion of the area is based on Repeating Control Mark by VA Surveying Association, LLC, dated March 14, 2022.
3. Vertical alignment was done by APTEX Corporation.

Date: 07-05-2022
Project #: 21050/001/00
Drawing #: 111890

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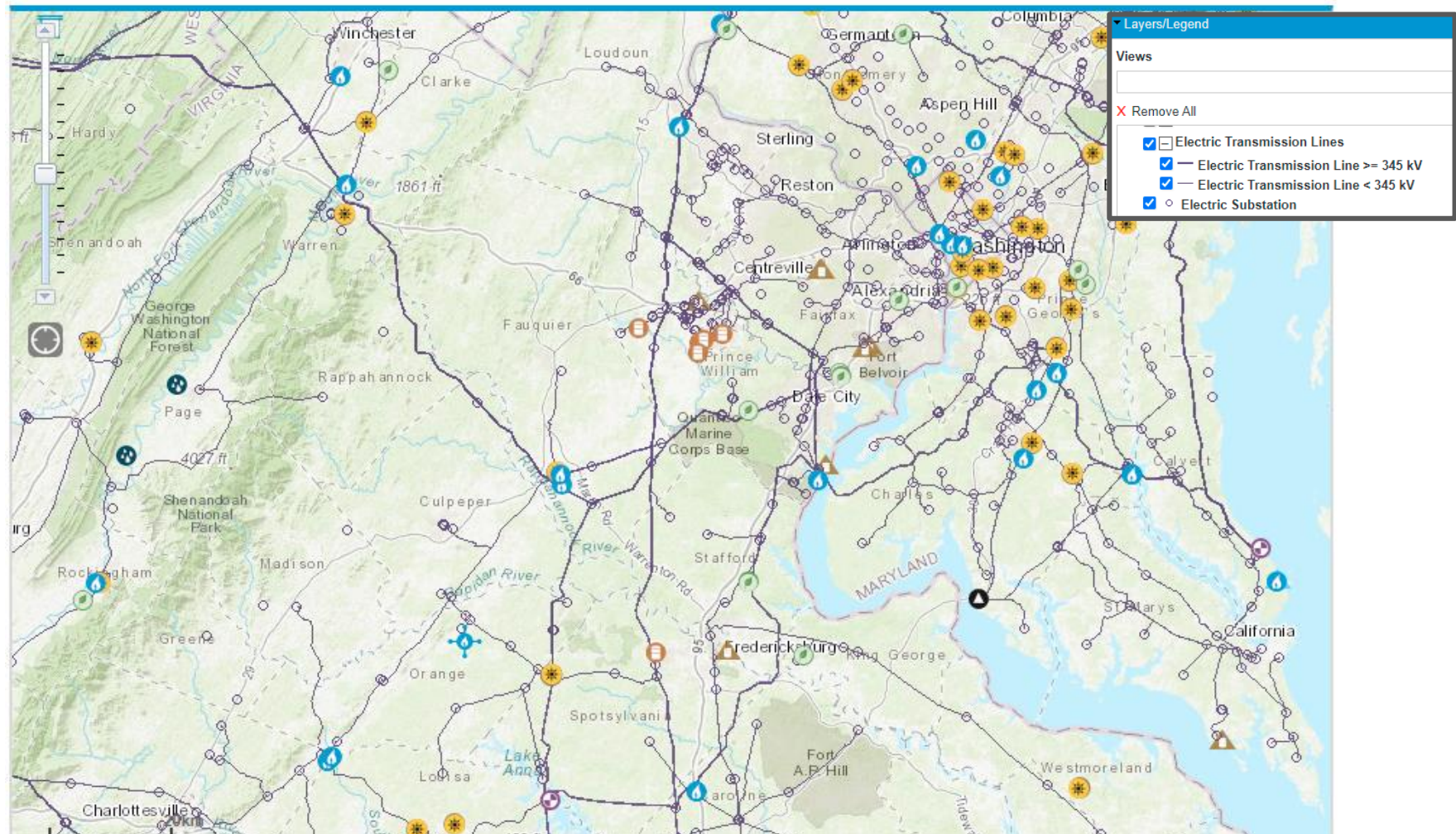
Who decides where the line goes?

Once a data center is approved, who pays for the extension cord?

Dominion ratepayers in Virginia pay for it, not Amazon!

Who decides where the line goes?

State Corporation Commission (SCC) has final say, and in the past, has determined completely different routes than Dominion or other local groups have recommended



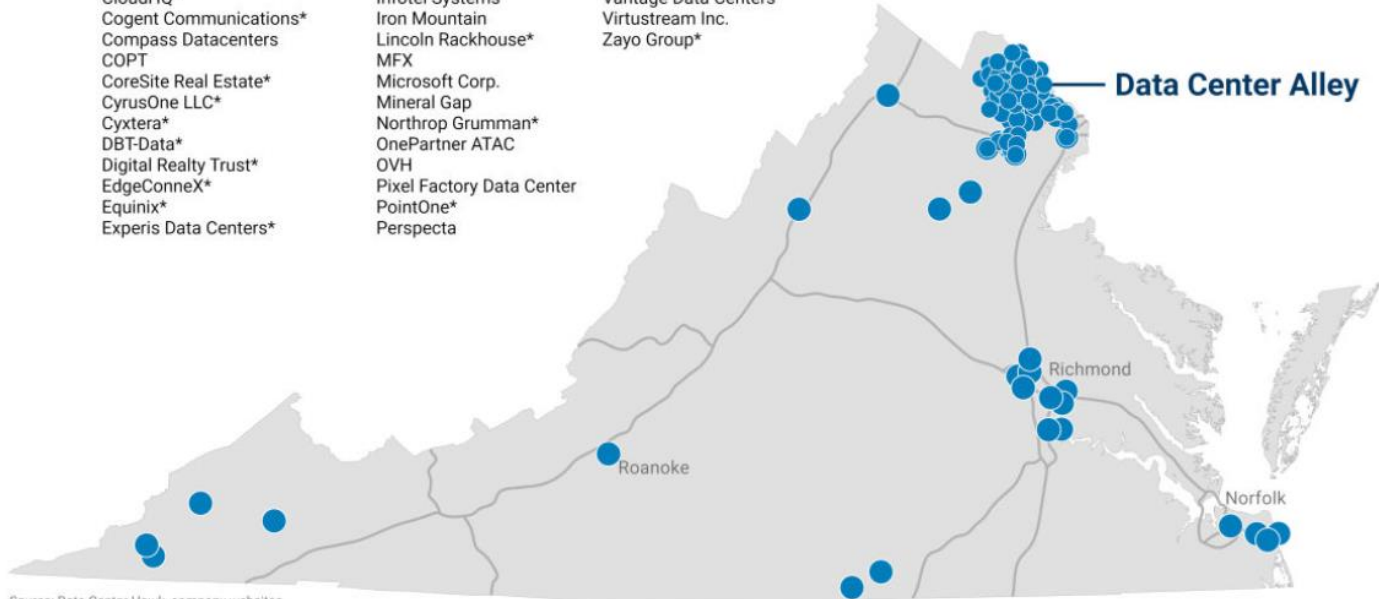
Major Data Centers in Virginia

*Multiple VA locations

ACA International
Amazon Web Services*
ATI
Atlantic Metro Communications
Bank of America*
Capital One
CloudHQ*
Cogent Communications*
Compass Datacenters
COPT
CoreSite Real Estate*
CyrusOne LLC*
Cyxtera*
DBT-Data*
Digital Realty Trust*
EdgeConneX*
Equinix*
Experis Data Centers*

Facebook
Flexential
Globalinx Data Centers
Google*
H5 Data Centers
HopOne Internet Corp.*
Infotel Systems
Iron Mountain
Lincoln Rackhouse*
MFX
Microsoft Corp.
Mineral Gap
Northrop Grumman*
OnePartner ATAC
OVH
Pixel Factory Data Center
PointOne*
Perspecta

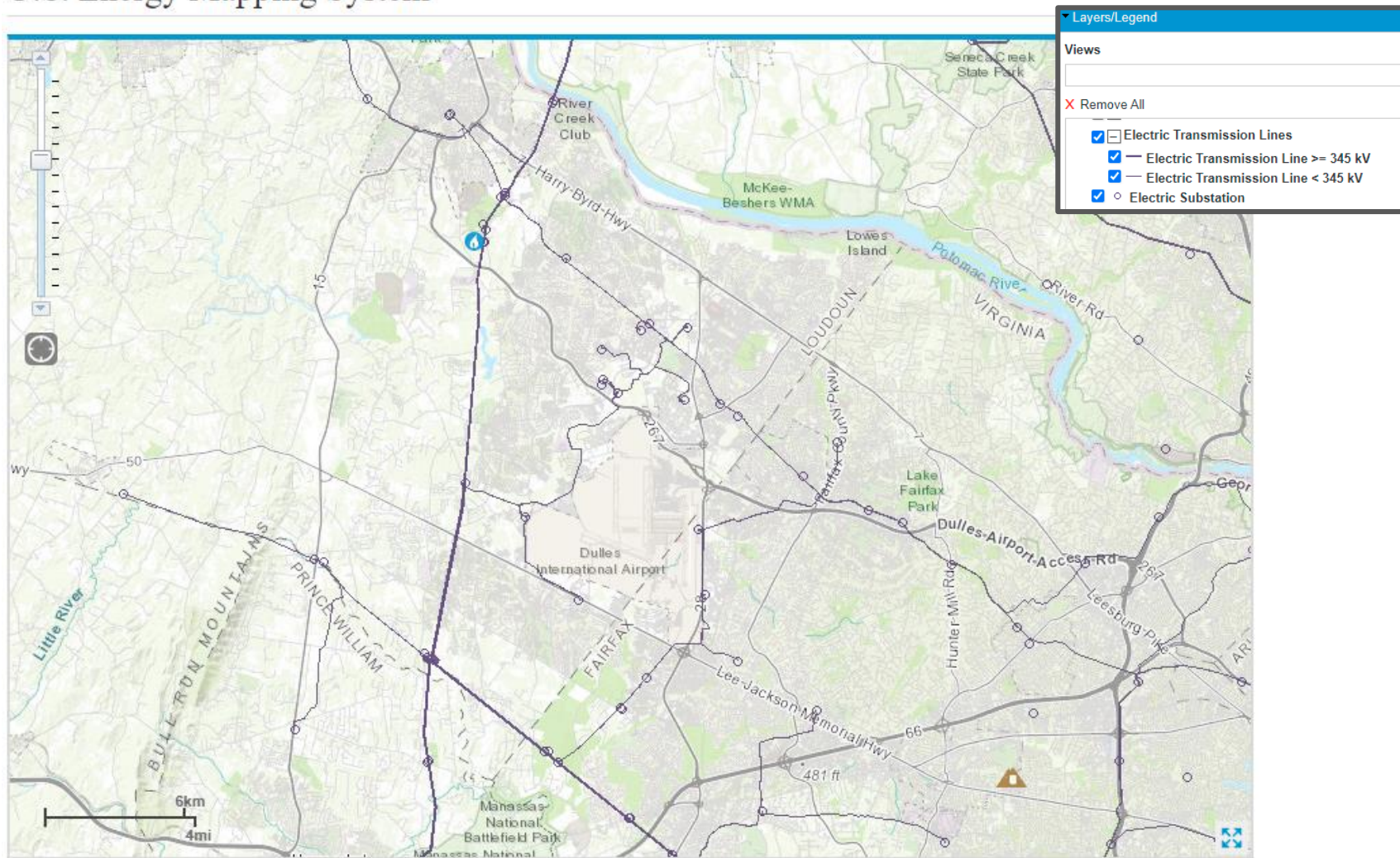
Quality Technology Services (QTS)*
RagingWire*
Sabey Data Centers
SAIC and VITA
Stack Infrastructure
TNSYS (Native Cloud)
Vantage Data Centers
Virtustream Inc.
Zayo Group*



Source: Data Center Hawk, company websites

● Publicly Disclosed Data Center Location

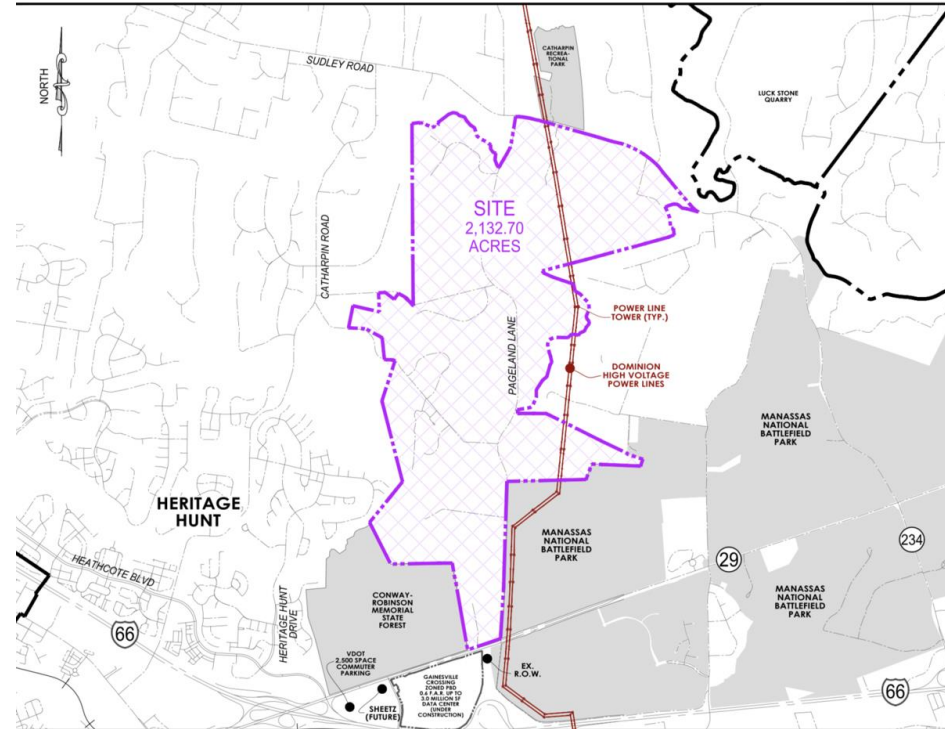
U.S. Energy Mapping System



If you build it they will come...

The combination of rezoning agricultural land for data center development and ad hoc transmission line routing results in industrial sprawl that self perpetuates with each new transmission line spur built. Those new lines provide excess capacity that more landowners might want to tie into for more data centers development.

Digital Gateway in Prince William County

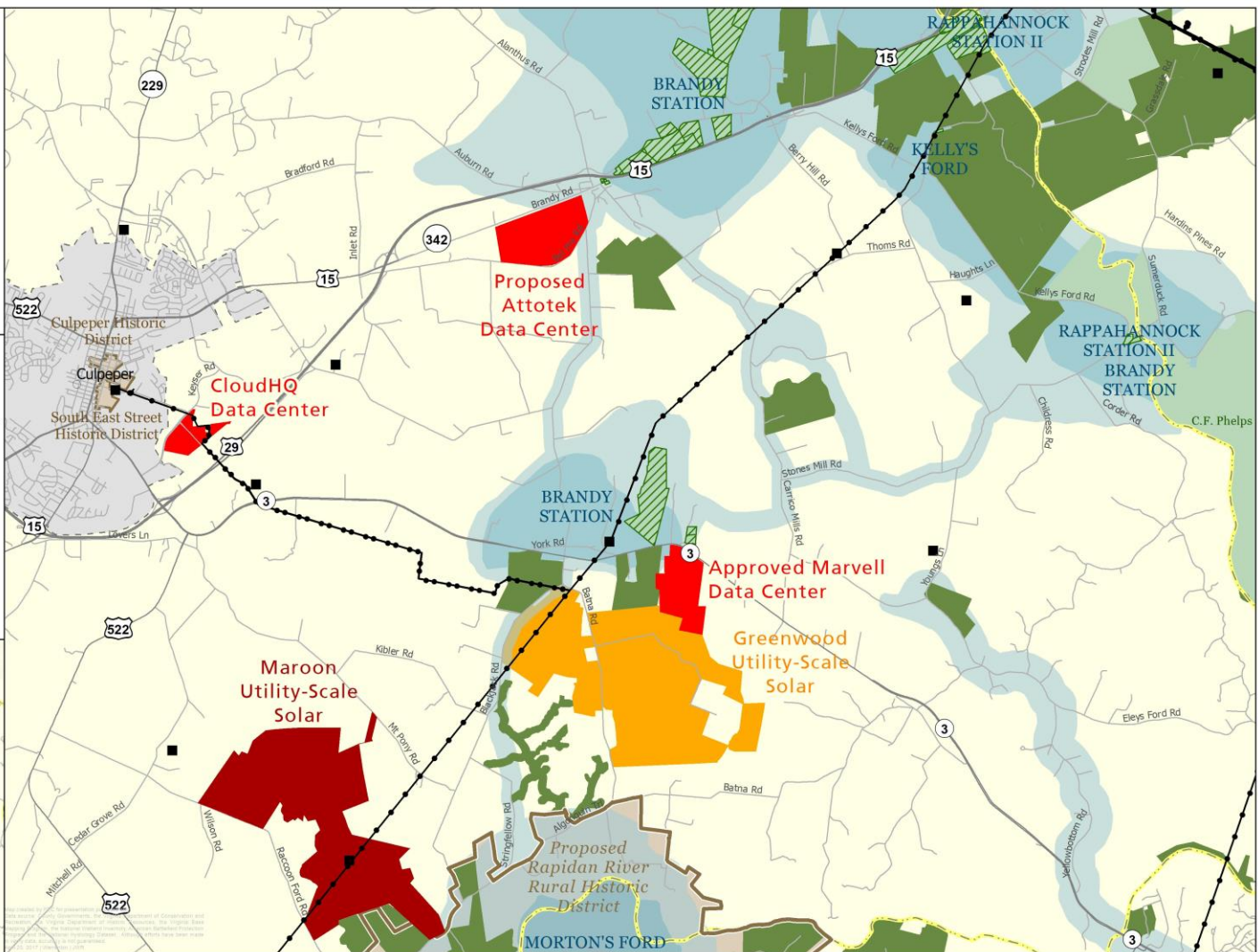


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0 0.5 1 Miles



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Generation: Utility-Scale Solar



Virginia Commonwealth University
VCU Scholars Compass

Master of Urban and Regional Planning
Capstone Projects

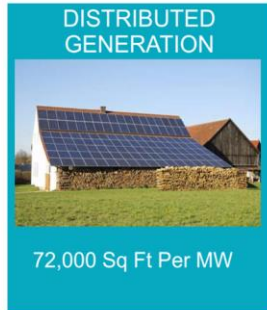
Urban and Regional Studies and Planning

2021

Utility-Scale Solar in Virginia: An Analysis of Land Use and Development Trends

Aaron R. Berryhill
Virginia Commonwealth University

SOLAR LAND USE FOOTPRINTS



Note: Approximately 26% total area of small building rooftops are suitable for solar deployment

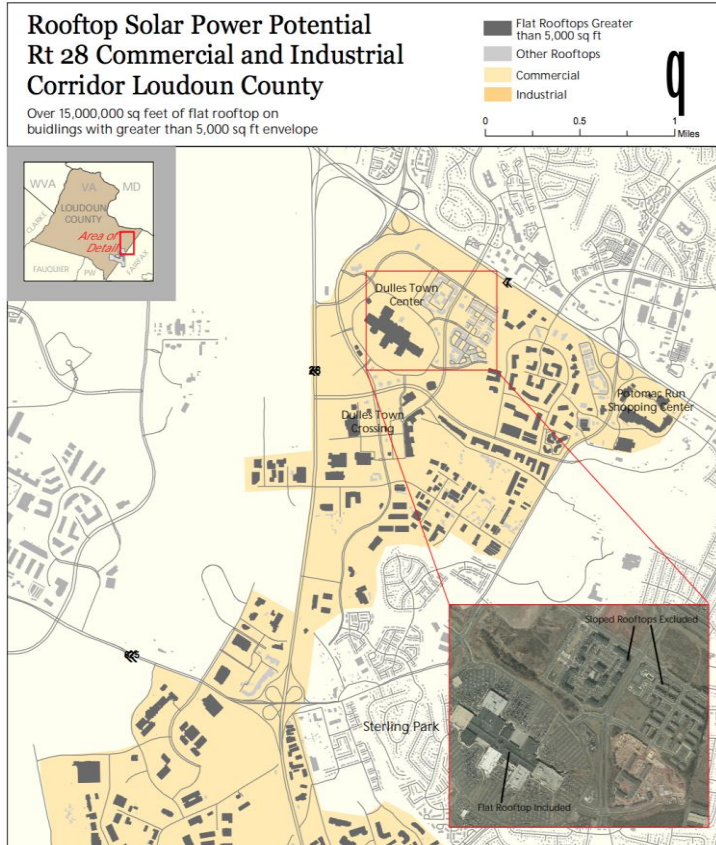


Source: National Renewable Energy Laboratory (NREL), *Rooftop Solar Technical Potential in the U.S., Land Use Requirements for Solar Power Plants in the U.S.*

Land Cover Classification	Total Acres	Total Percent	Facility Average
Forest	8,035.1	58.1%	38.0%
Cropland	3,443.8	24.9%	45.9%
Pasture	966.2	7.0%	5.7%
Harvested/Disturbed	471.2	3.4%	3.0%
NWI/Other	327.6	2.4%	0.7%
Shrub/Scrub	231.5	1.7%	0.6%
Tree	194.6	1.4%	2.6%
Turf/Grass	134.0	1.0%	3.1%
Impervious	30.9	0.2%	0.5%
Open Water	6.7	0.0%	0.1%
Barren	0.0	0.0%	0.0%

Virginia Land Cover Dataset

There's a better way...



Siting solar facilities on rooftops, parking areas, landfills or other previously disturbed land like “greyfields” or “brownfields” is preferable to development on valuable open space or agricultural land.



The Plains, Photo Credit Bri West

Utility-Scale Projects - The How and Where Matters

- Distributed Solar and Community Solar
- Former industrial sites or brownfields
- Abandoned mine sites
- Marginal lands
- Construction techniques and best practices
- Decommissioning plan and restoration

Rural sites never intended for industrial development need to be evaluated based on scale and the potential impact on agricultural land availability, soils, forest resources, habitat loss and fragmentation, water resources, tourism, and historic, cultural, and scenic resources.

Is there anything you can do?

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Yes!

Actions to Take - Be Respectful!

- Get involved in the Comprehensive Plan update!
- Call, email and/or meet with Board of Supervisors
- Inform to your neighbors of these proposals
- Attend Board of Supervisor meetings
- Write a letter to the local papers

There is a lot going on, we will need endurance...

Upcoming Dates:

Community Meeting on County Comprehensive Plan tomorrow night!

Lenn Park Pavilion
19206 Edwin Way, Culpeper, VA 22701

Planning Commission September 14 Meeting

Board of Supervisors Meeting Room
302 North Main Street, Culpeper, VA 22701

What to Watch For:

Dominion's Community Meetings on the Transmission Line Routing for Amazon

Questions?