# Defending Conserved Land: The Challenge of Data Centers and Energy Infrastructure

*11/09/2022*

*Chris Miller, President*
*Piedmont Environmental Council*

CELEBRATING 50 years 1972-2022

Piedmont Environmental Council

# Promoting and protecting the natural resources, rural economy, history and beauty of the Virginia Piedmont

*11/09/2022*

*Chris Miller, President*

CELEBRATING 50 years 1972-2022

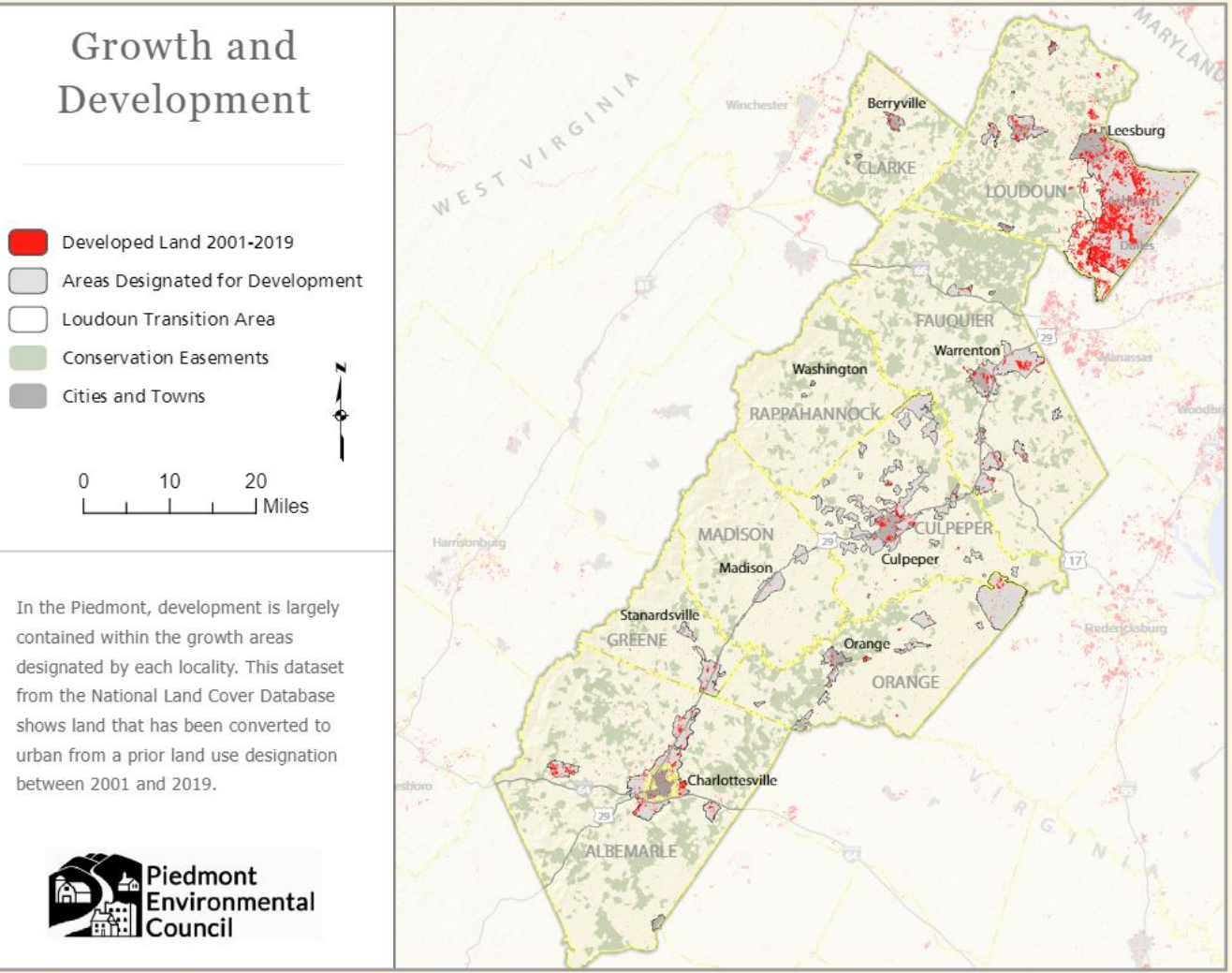
Piedmont Environmental Council


## PEC's Role

- Educate
- Empower
- Engage


PEC Service Area
0 25 50 Miles
N
PENNSYLVANIA
MARYLAND
DELAWARE
OHIO
WEST VIRGINIA
KENTUCKY
TENNESSEE
NORTH CAROLINA
VIRGINIA
Winchester
DC
Alexandria
Shenandoah River
Potomac River
Rappahannock River
Chesapeake Bay
Charlottesville
James River
Richmond
Roanoke
Roanoke River
Norfolk
Clinch River
Bristol
Danville
Piedmont Environmental Council
ACCREDITED

# Growth and Development




In the Piedmont, development is largely contained within the growth areas designated by each locality. This dataset from the National Land Cover Database shows land that has been converted to urban from a prior land use designation between 2001 and 2019.

Piedmont Environmental Council

# history and beauty

SENSE OF PLACE · SCENIC VIEWS · BATTLEFIELDS · HISTORIC DISTRICTS

THE RAPIDAN RIVER, WITH CLARK MOUNTAIN ON THE HORIZON.
*Photo by Hugh Kenny*

# better communities

CITIZEN INVOLVEMENT · GREAT PLACES TO LIVE · MANAGING TRAFFIC AND TAXES

THE TOWN OF WARRENTON.
*Photo by Hugh Kenny*

# clean water

SAFE DRINKING SOURCES · GOOD HEALTH · PLACES TO RECREATE

BOLTON BRANCH IN RAPPAHANNOCK COUNTY.
*Photo by Hugh Kenny*

# habitat restoration

WILDLIFE CORRIDORS · BIODIVERSITY · POLLINATORS · NATIVE PLANTS

SHORT-EARED OWL FLYING OVER THE PLAINS.
*Photo by Hugh Kenny*

# energy, transportation & climate

INCREASING RESILIENCY · REDUCING VEHICLE MILES TRAVELED · STORING CARBON

THE INTERCHANGE OF ROUTE 7 AND ROUTE 28 IN LOUDOUN COUNTY.
*Photo by Hugh Kenny*

# strong rural economies

THRIVING FARMS · LOCAL FOOD · INNOVATION · HEALTHY, WORKING LAND

VALENCIA'S PRODUCE AT THE LEESBURG FARMERS MARKET.
*Photo by Hugh Kenny*

# land conservation

VOLUNTARY ACTION · OUTSTANDING SUCCESS · SAVING PLACES PEOPLE LOVE

THE VIEW FROM SKY MEADOWS.
*Photo by Hugh Kenny*

# Private Land Conservation in PEC Region Last Year

| County | Acres Protected in 2021 by Conservation Easements * | Total Acres Protected by Conservation Easements * |
|---|---|---|
| Albemarle | 721 | 109,590 |
| Clarke | 305 | 26,786 |
| Culpeper | 869 | 21,275 |
| Fauquier | 339 | 109,826 |
| Greene | 0 | 10,648 |
| Loudoun | 3,507 | 66,191 |
| Madison | 250 | 16,365 |
| Orange | 340 | 38,894 |
| Rappahannock | 143 | 33,557 |
| **PEC REGION** | **6,474** | **433,132** |

# Protected Land in PEC Service Area 1976

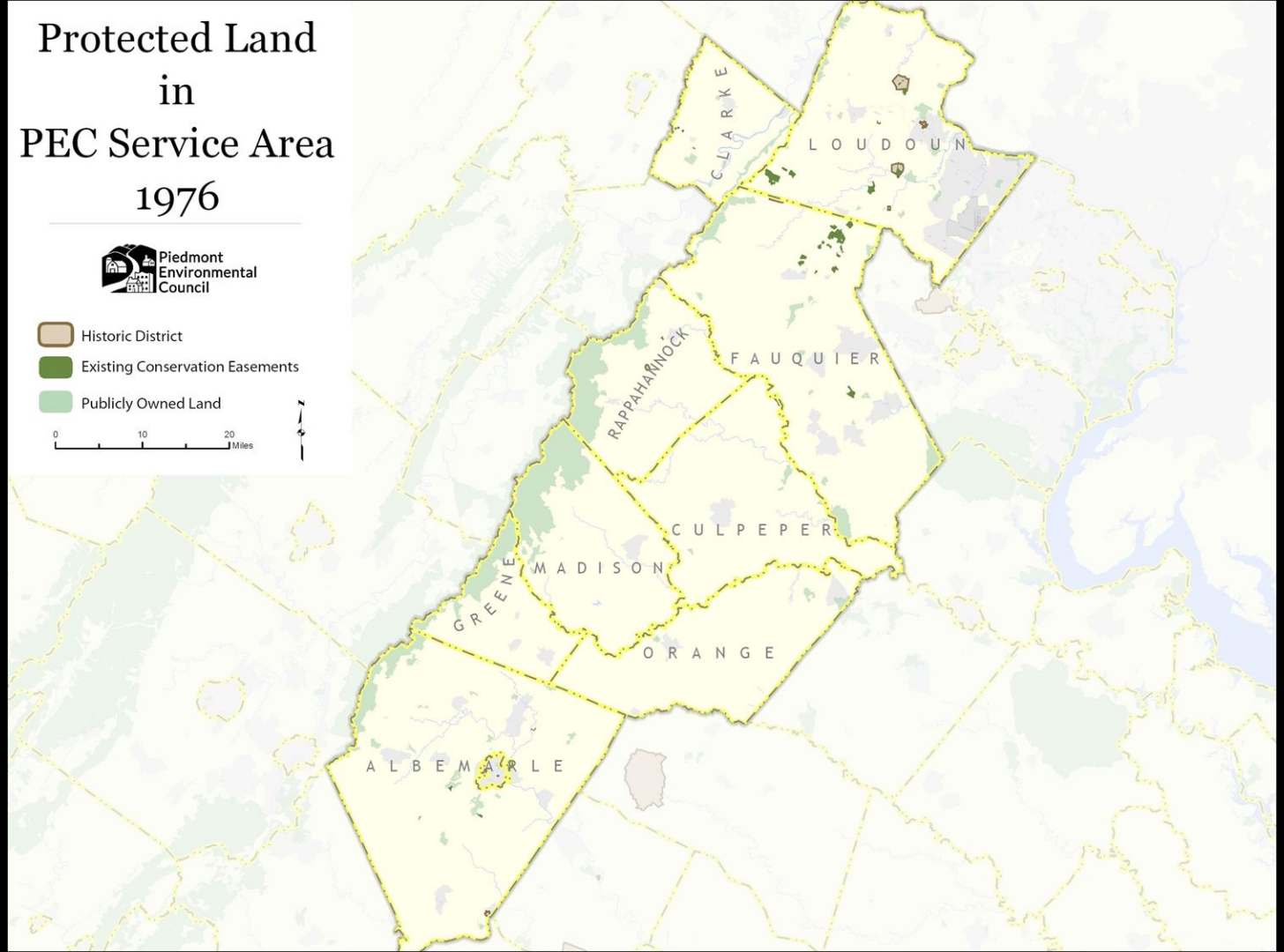
Piedmont Environmental Council

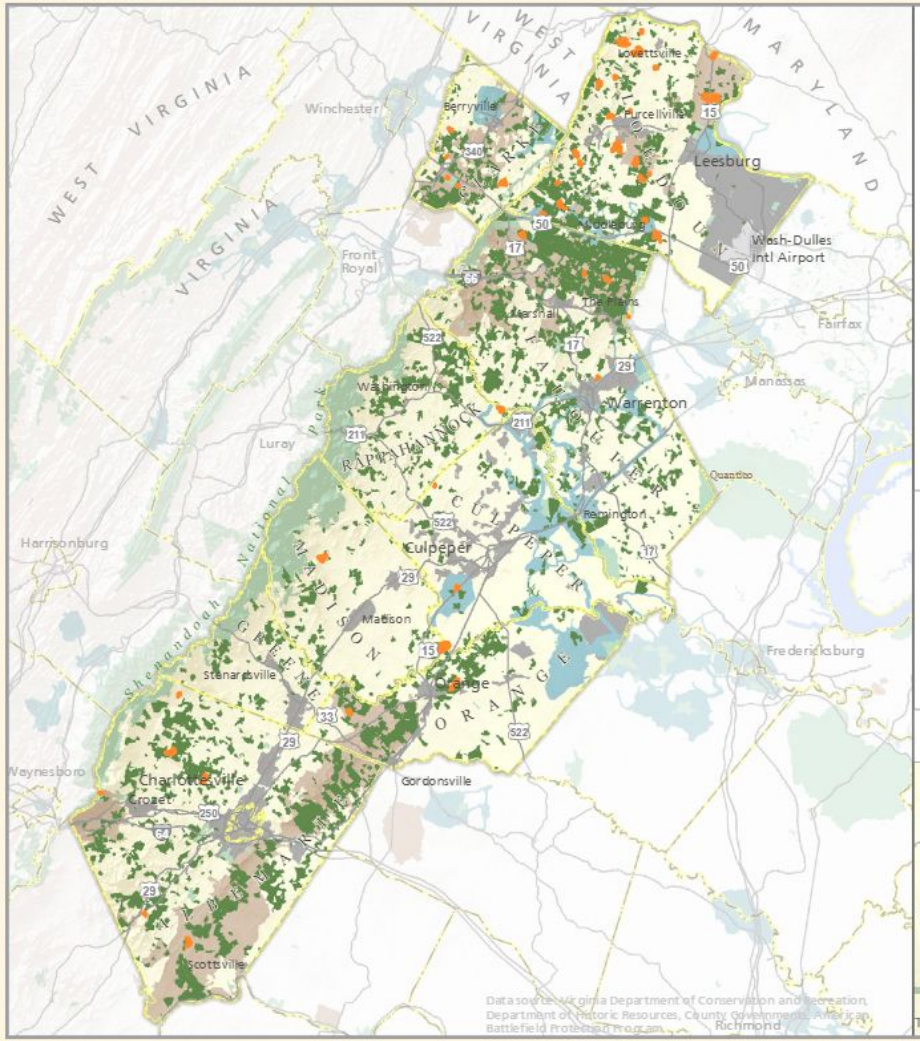
Historic District

Existing Conservation Easements

Publicly Owned Land

0 10 20 Miles






# Conservation and Preservation

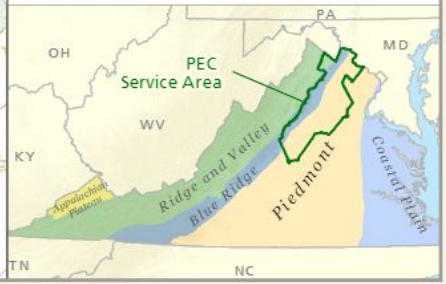
- Easements Recorded in 2021
- Conservation Easements
- Publicly Owned Lands
- Civil War Battlefields
- Historic Districts
- Areas Designated for Development

N

0 10 20 Miles

PEC's nine-county service area has more than 433,000 acres of Virginia's privately conserved land, protecting natural, cultural, historic and scenic resources including 205,000 acres of prime farm soils, 165,000 acres of historic districts and battlefields, and 114,000 acres along Scenic Byways.

## Physiographic Regions of Virginia



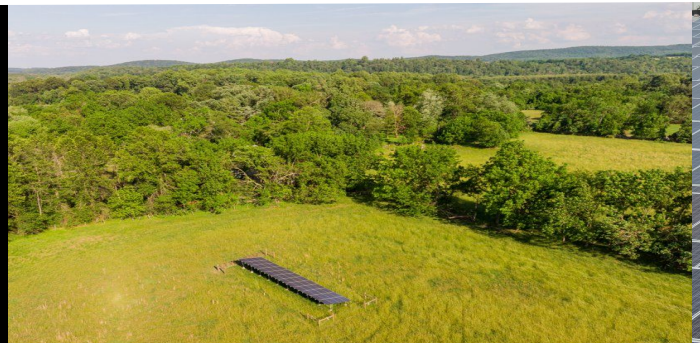
# PEC Supports Renewable Energy

- PEC supported enactment of the Virginia Clean Economy Act with goal of 100% renewable generation for electric grid
- PEC supported the siting of a 25 MW solar facility in Remington, Virginia
- PEC sponsors a program, Solarize Piedmont, to promote rooftop and farm solar, in collaboration with LEAP and the Northern Virginia Regional Commission
- PEC is engaged in efforts to improve local and state planning for solar

# When we say small-scale solar... What do we mean?

A) Rooftop or ground mounted systems, designed to meet on-site needs.

B) Community-scale solar, typically ground mounted systems of 500kW - 5MW in size, connected through the distribution grid.



# What about utility-scale solar?

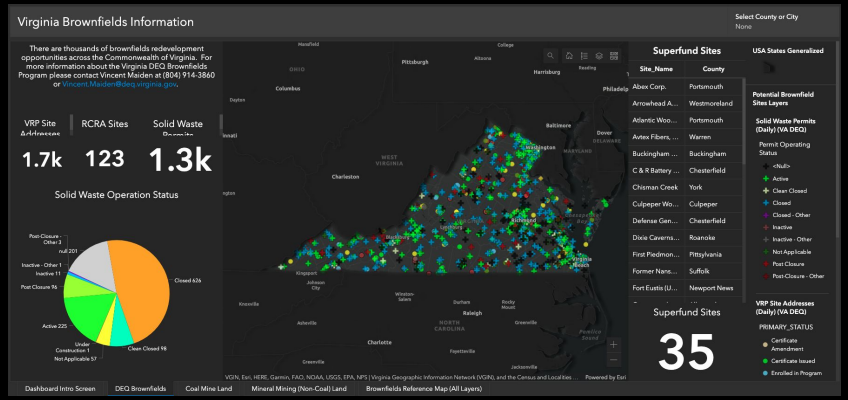
The National Renewable Energy Laboratory labels a solar project “utility-scale” if it has 5 MW or more of solar energy capacity.

For perspective on size, utility-scale solar projects need 7-10 acres to generate 1 MW of electricity.

# What’s a brownfield?

Previously developed land that is not currently in use.

Redevelopment or reuse of brownfield sites can be complicated by the presence of hazardous materials, pollution, or contaminants.



# What’s a greenfield?

Undeveloped land in an urban or rural area either used for agriculture or landscape design, or left to evolve naturally.

# What are we planning for?

IPCC recommendations

Biden Administration/IRA legislation passed 2022

Virginia Clean Economy Act

- 100% “renewable energy” by 2045
- 100% of what?
  - Current consumption in Virginia?  Current peak load?
  - Generation in Virginia?
  - Future load?
  - PJM Interconnection estimates for combined Renewable Portfolio Standard?

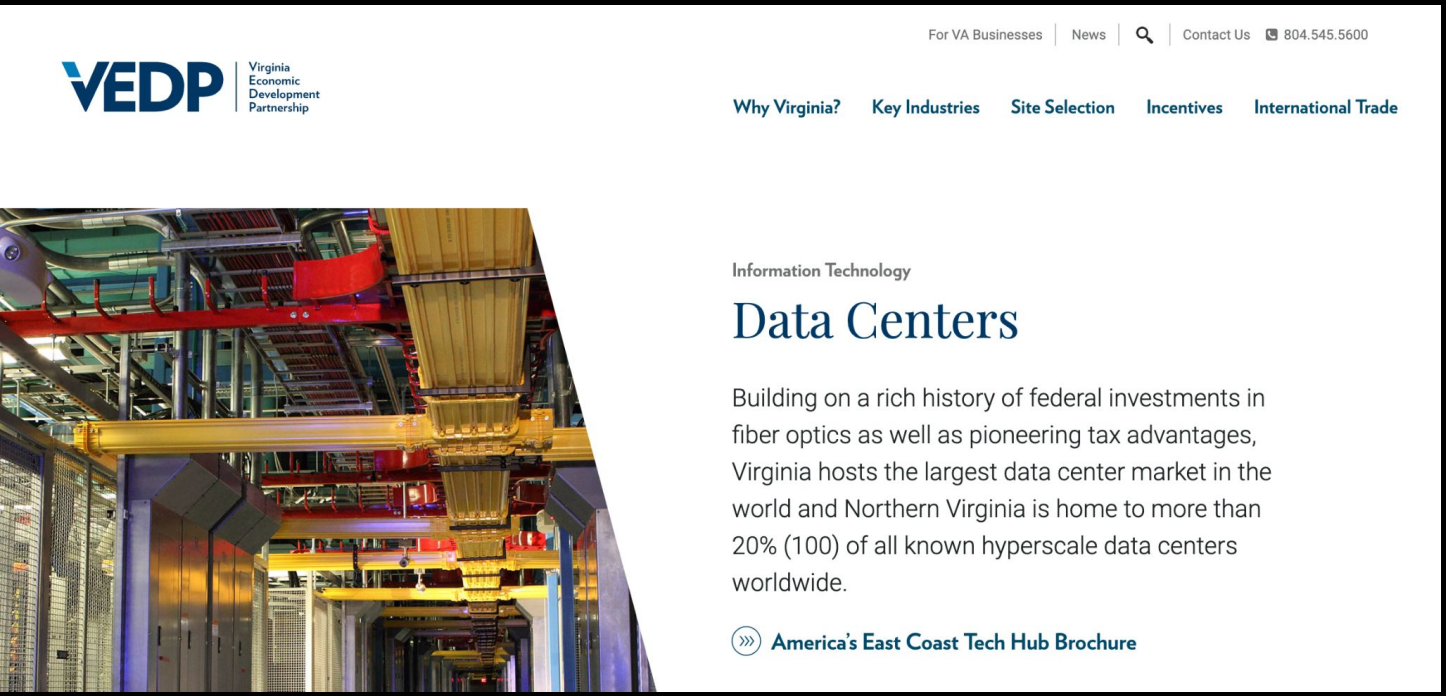
# How much are we planning for?

Enough for local demand?

State load?

What about future loads? Peak or non-peak?

# Data Center Demand Growth



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

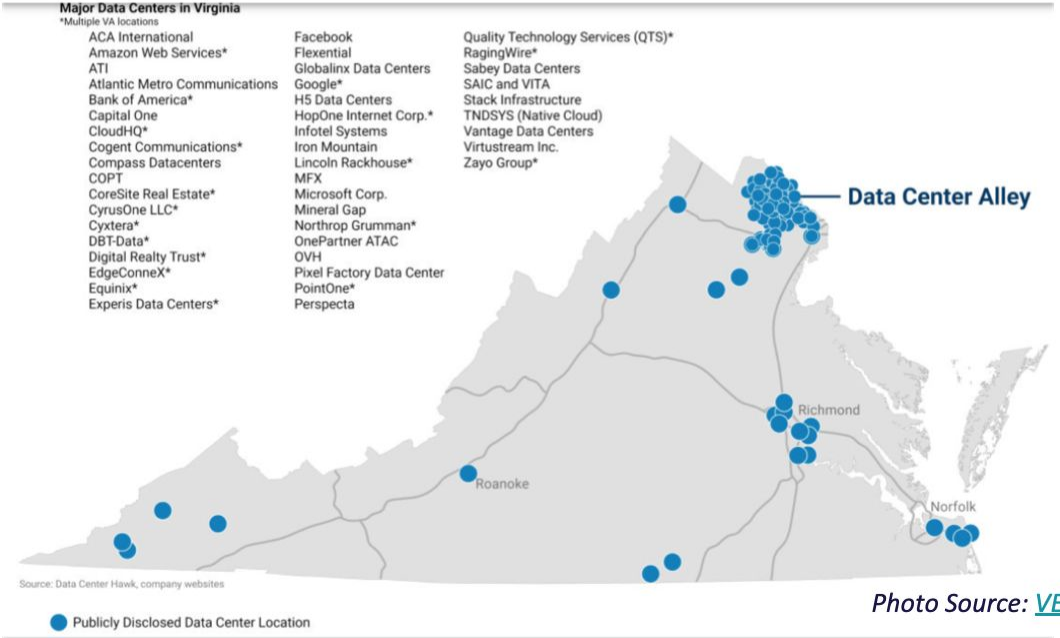
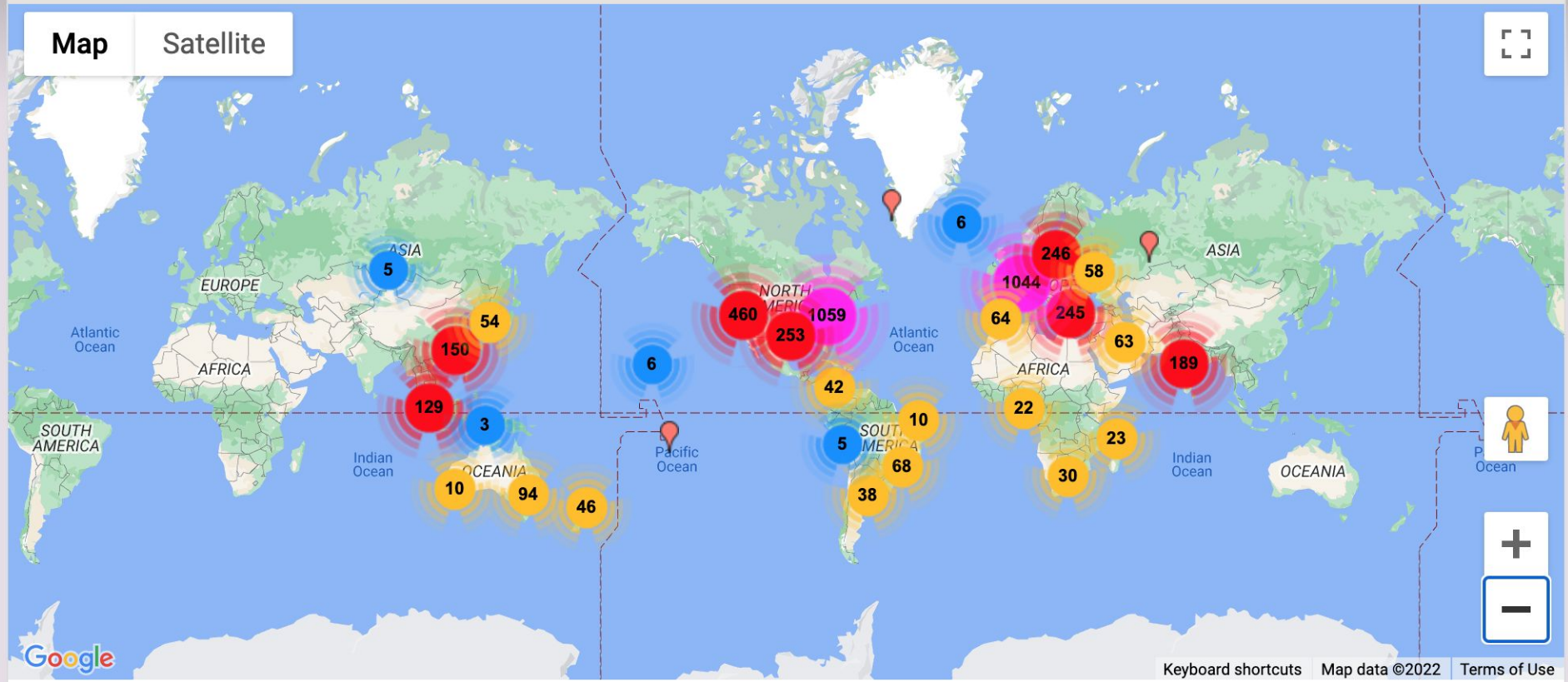



*Photo Source: [VEDP.org](VEDP.org)*

# Data Center Map

Welcome to Data Center Map - your guide to the global data center market, with focus on colocation, IP transit, cloud and various hosting services.
Navigate through the map below, browse through our text-based index, use our search function or **request a quote** via our quote service.

Data Center Map | Cloud Server Map



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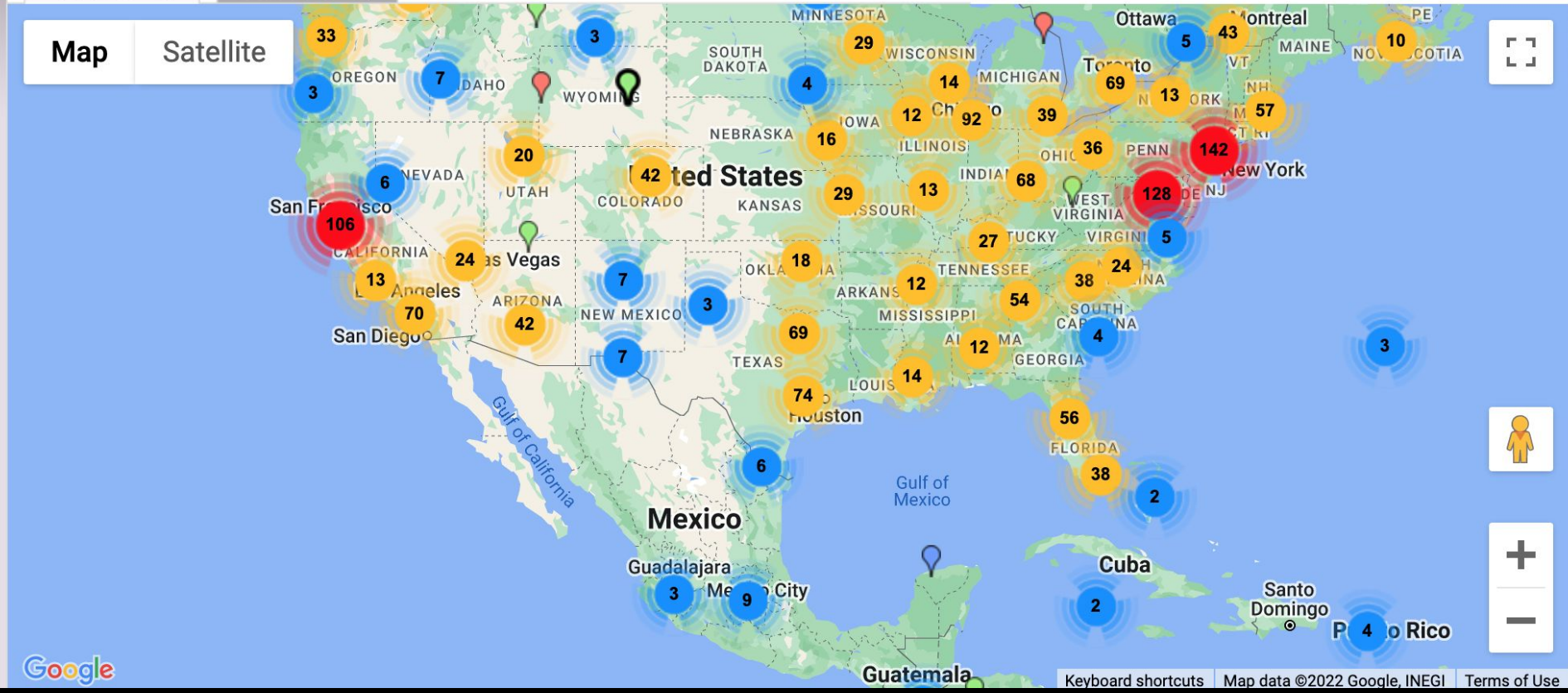

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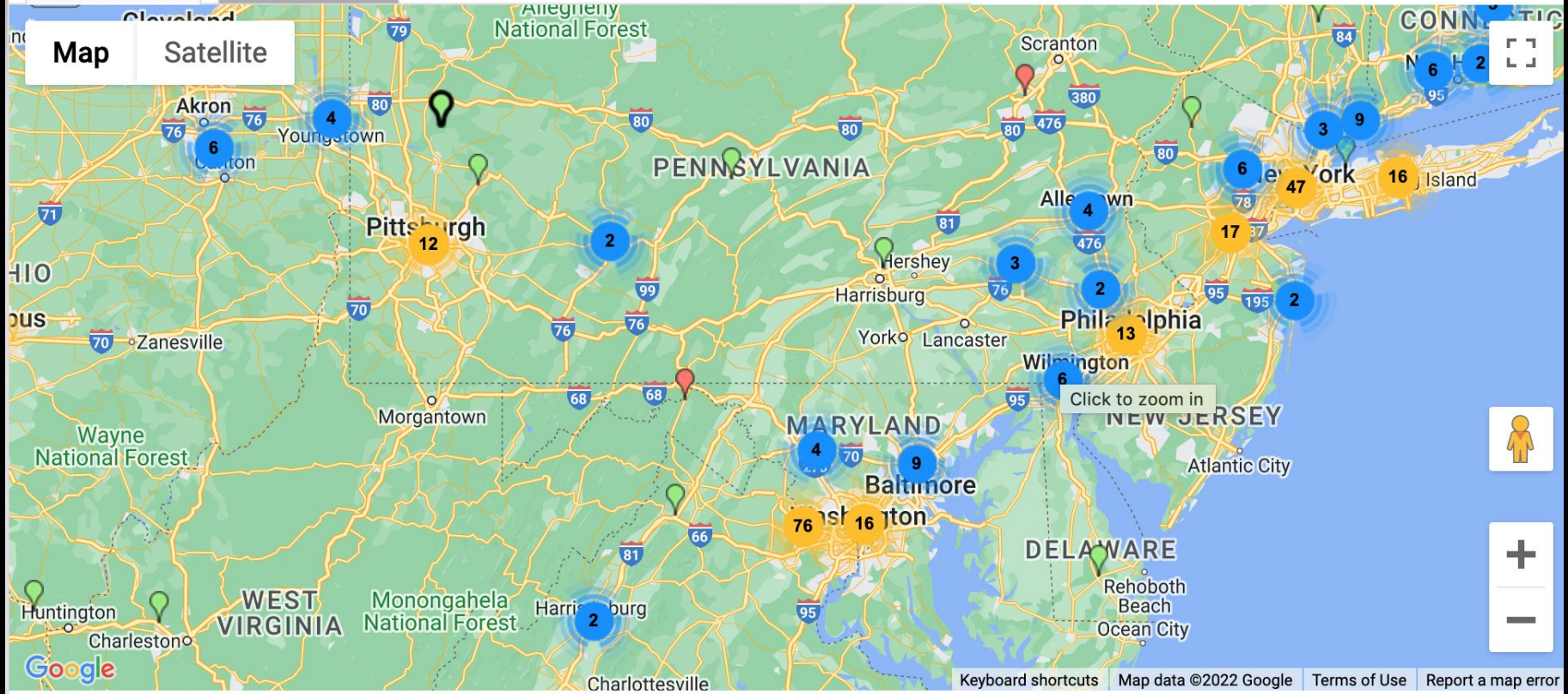
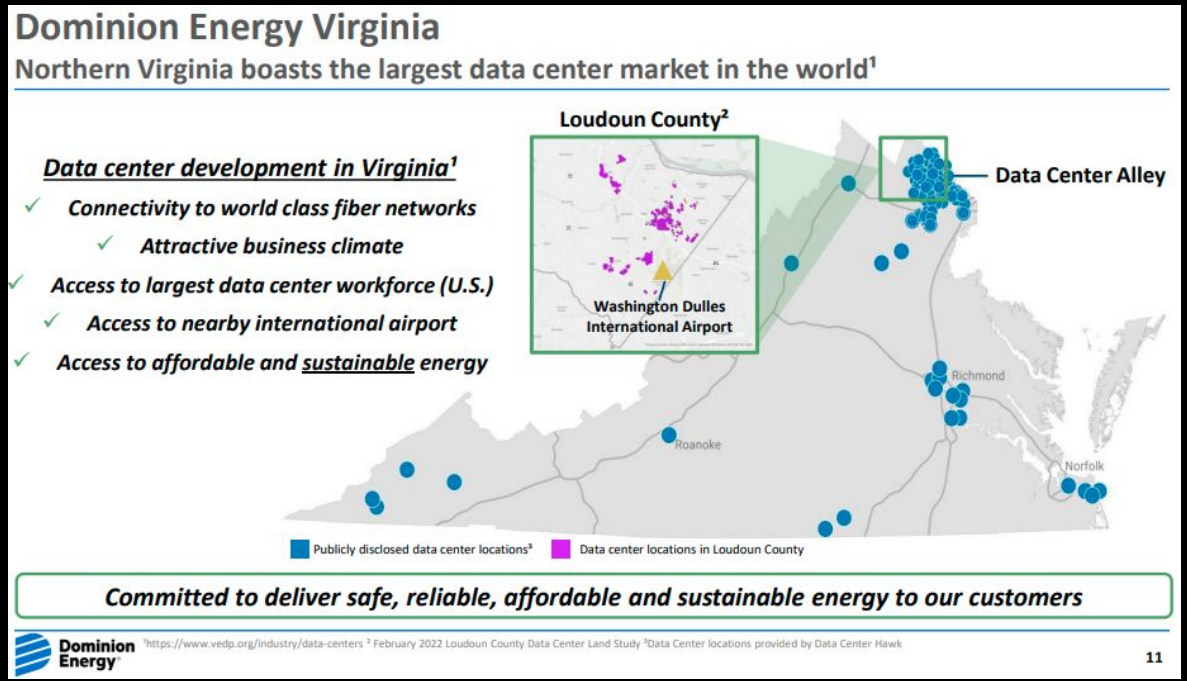



*Non-neutral DC's* *Carrier neutral DC's* *Building with multiple DC's*

Zoom to area: Zoom to country:

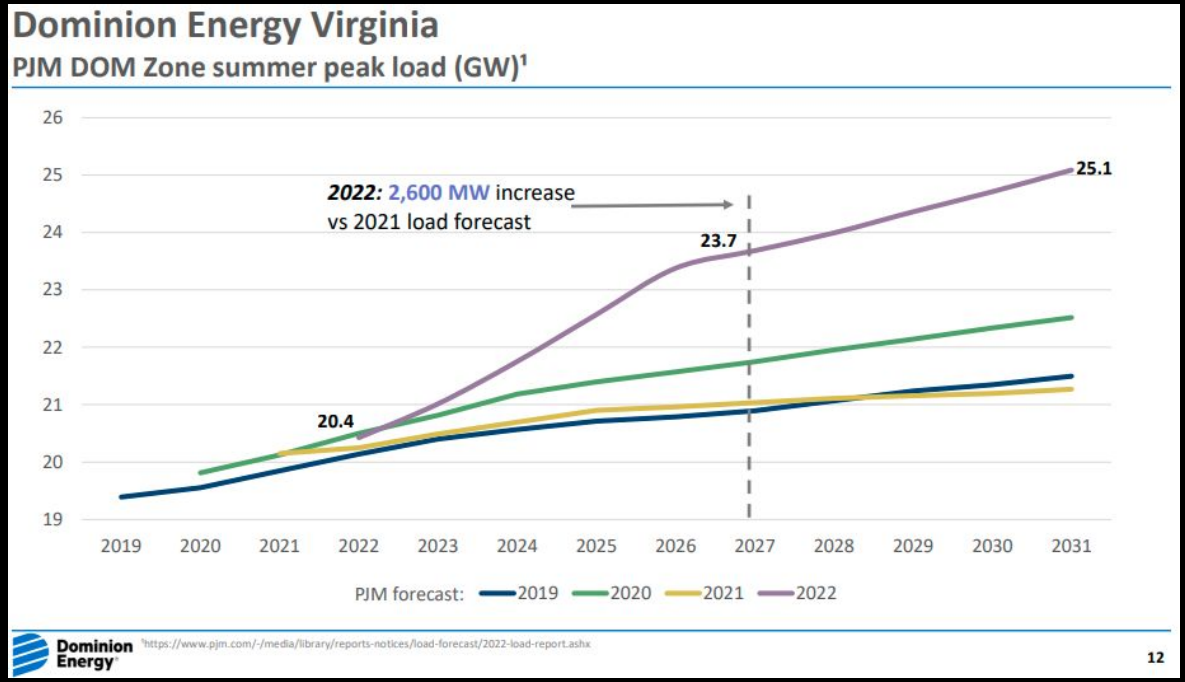
# Data and Energy Mutually Beneficial Relationsh

## Booming Data Center Market is Key to Dominion Growth Projections



# Data and Energy Mutually Beneficial Relationshi

Booming data center sector requires mirrored growth in generation and transmission




Piedmont Environmental Council

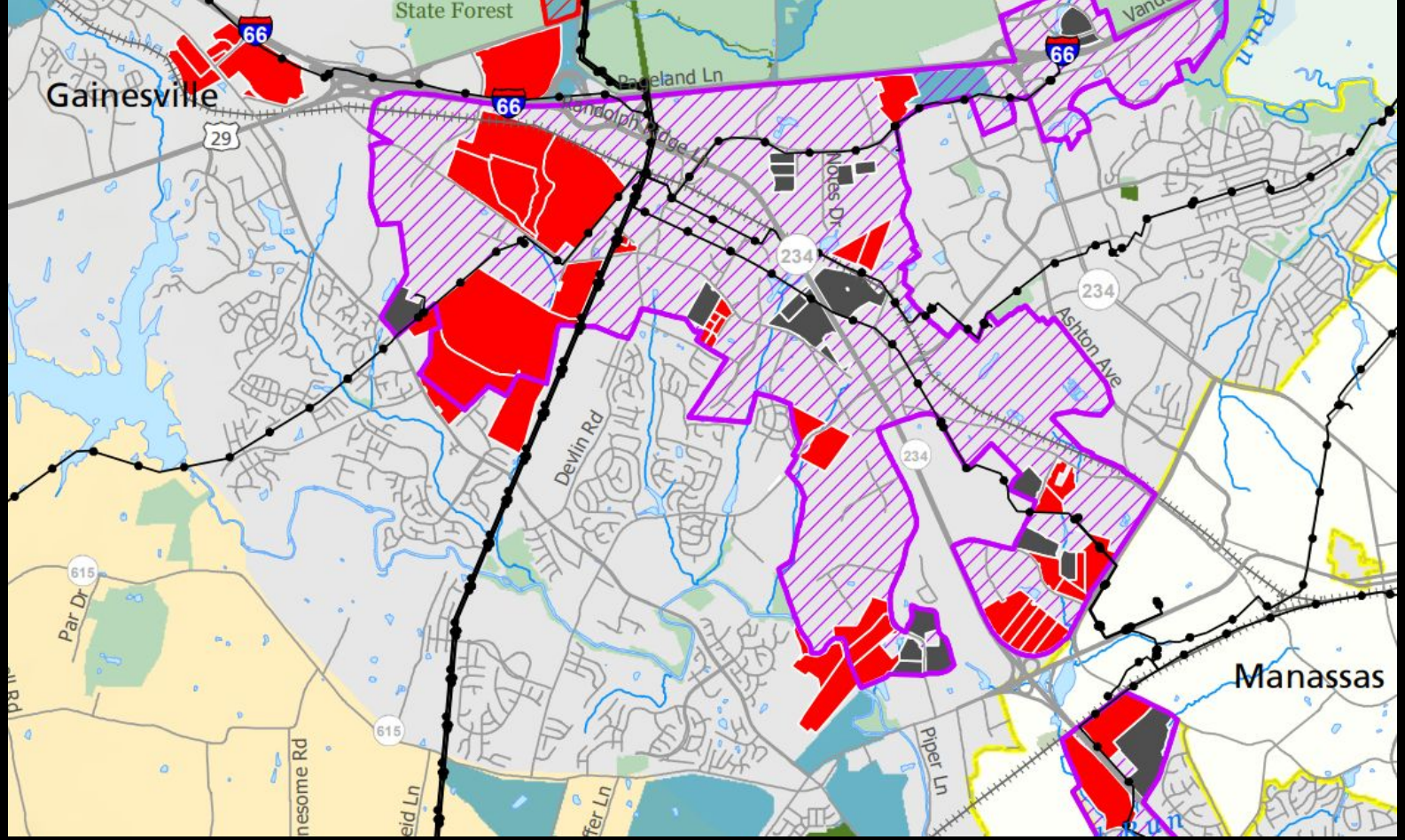
# The Big Picture - Data and Energy

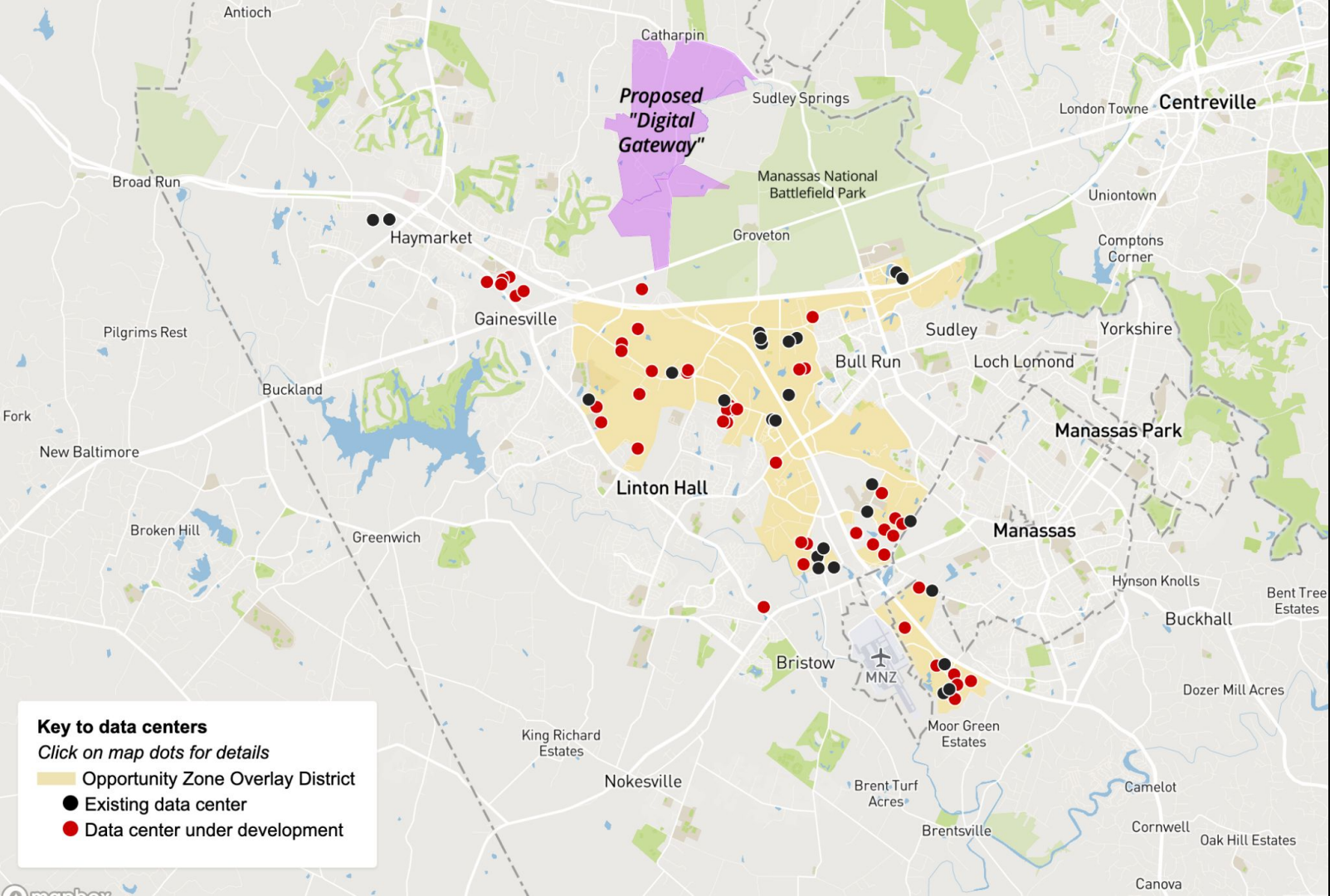
Load - Growing data center market is driving most of the increase in energy demand in Virginia

- Data centers = 30-90 MW
- 1 MW ≅ 250 homes peak use
- 30 MW data center ≅ 2x the # of homes in Warrenton

Transmission - As the grid grows and data centers request more electric service, the utility upgrades or extends transmission line infrastructure.

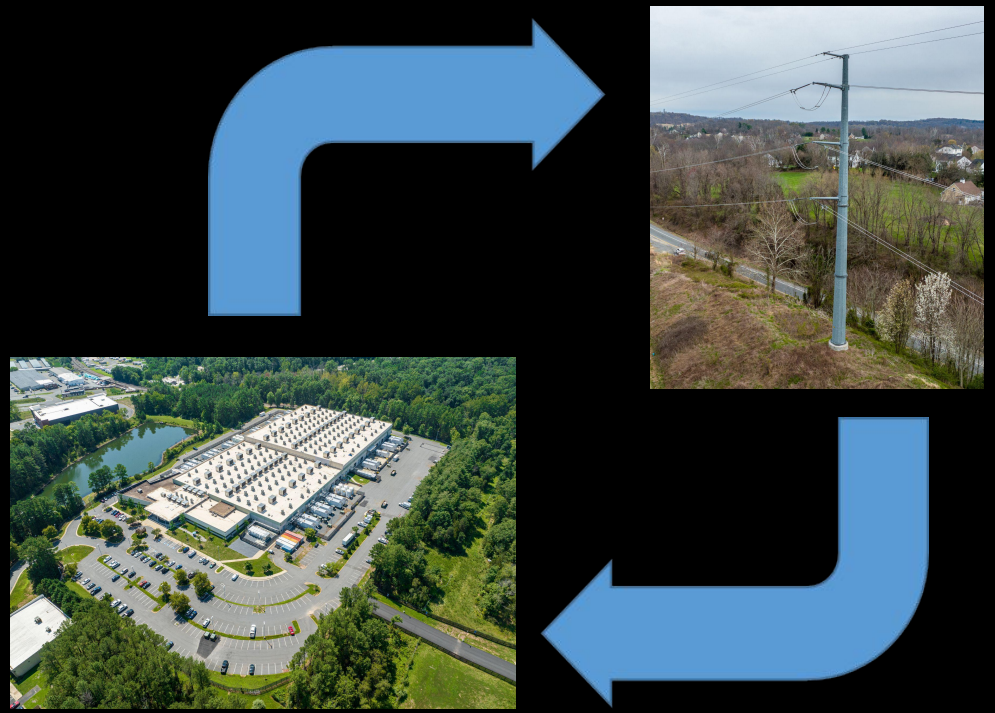
Generation - Additional energy required by data centers requires massive expansion in power generation.

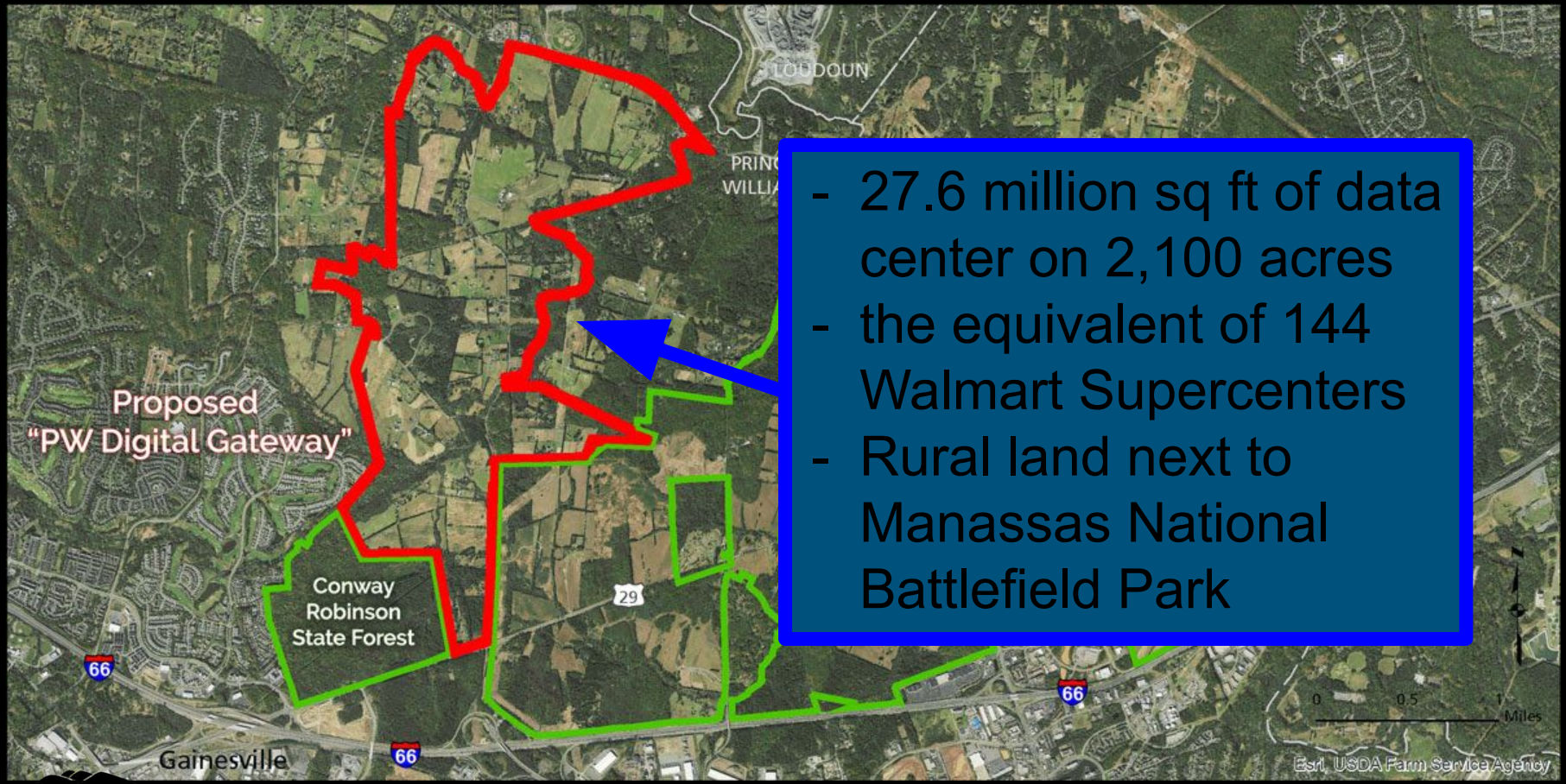

State Forest
Gainesville
66
29
Pageland Ln
Notes Dr
234
Ashton Ave
Devlin Rd
615
Par Dr
Piper Ln
Manassas




https://www.princewilliamtimes.com/tracking-the-spread-of-data-centers-in-prince-william-county/image_d04c809e-5543-11ed-a424-e7812f295525.html

# Data/Energy Self Perpetuating Cycle…



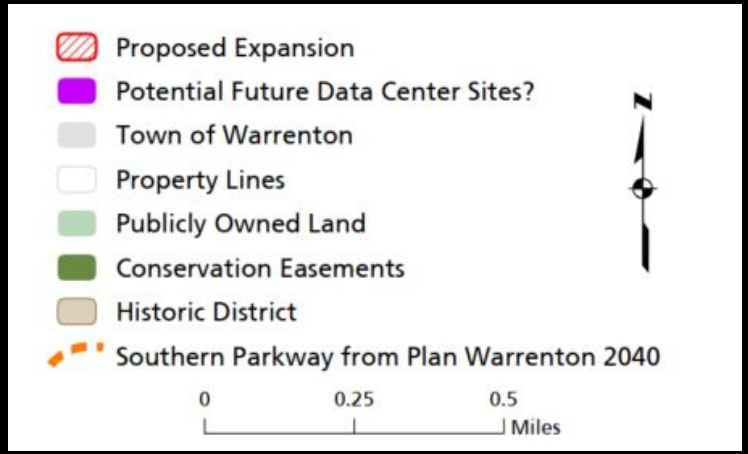


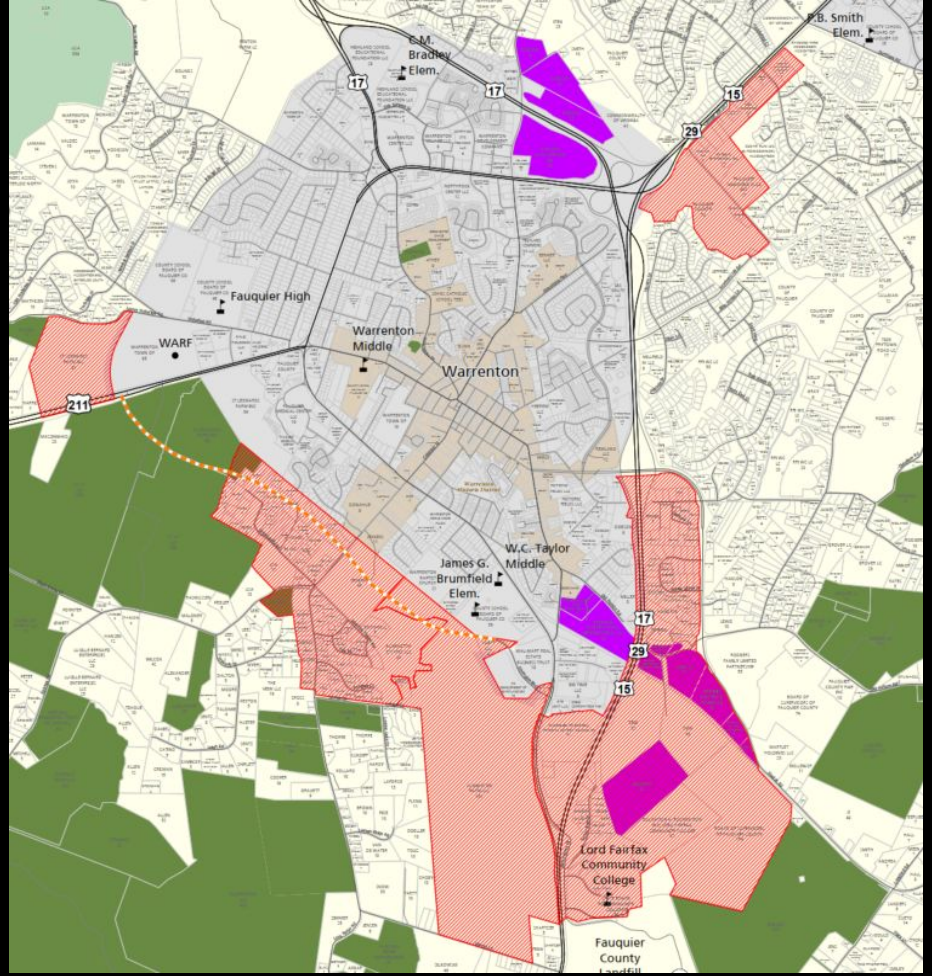

Piedmont Environmental Council

# Digital Gateway's Primary Justification is the Existing Transmission Lines

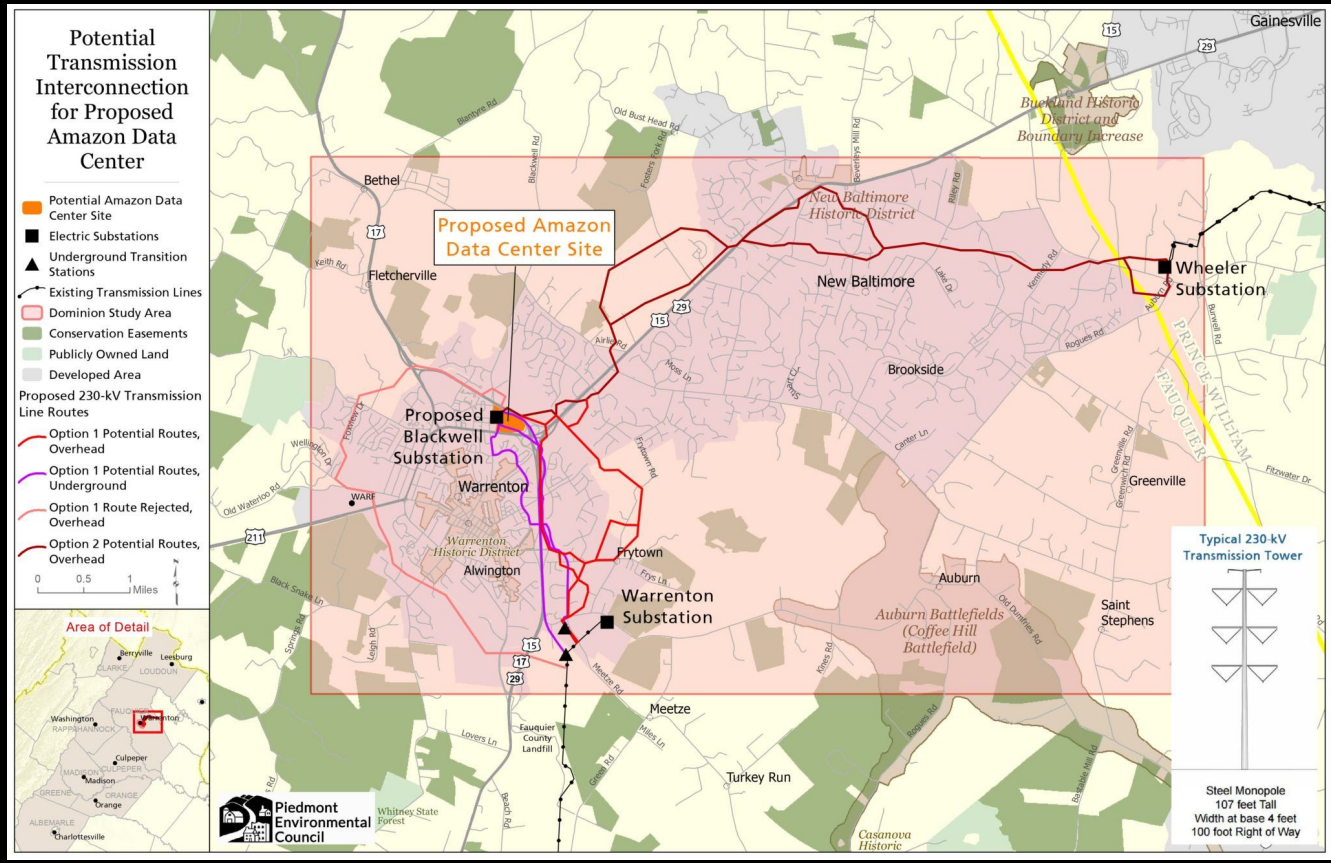
But Data Center expansion may require even more transmission investment

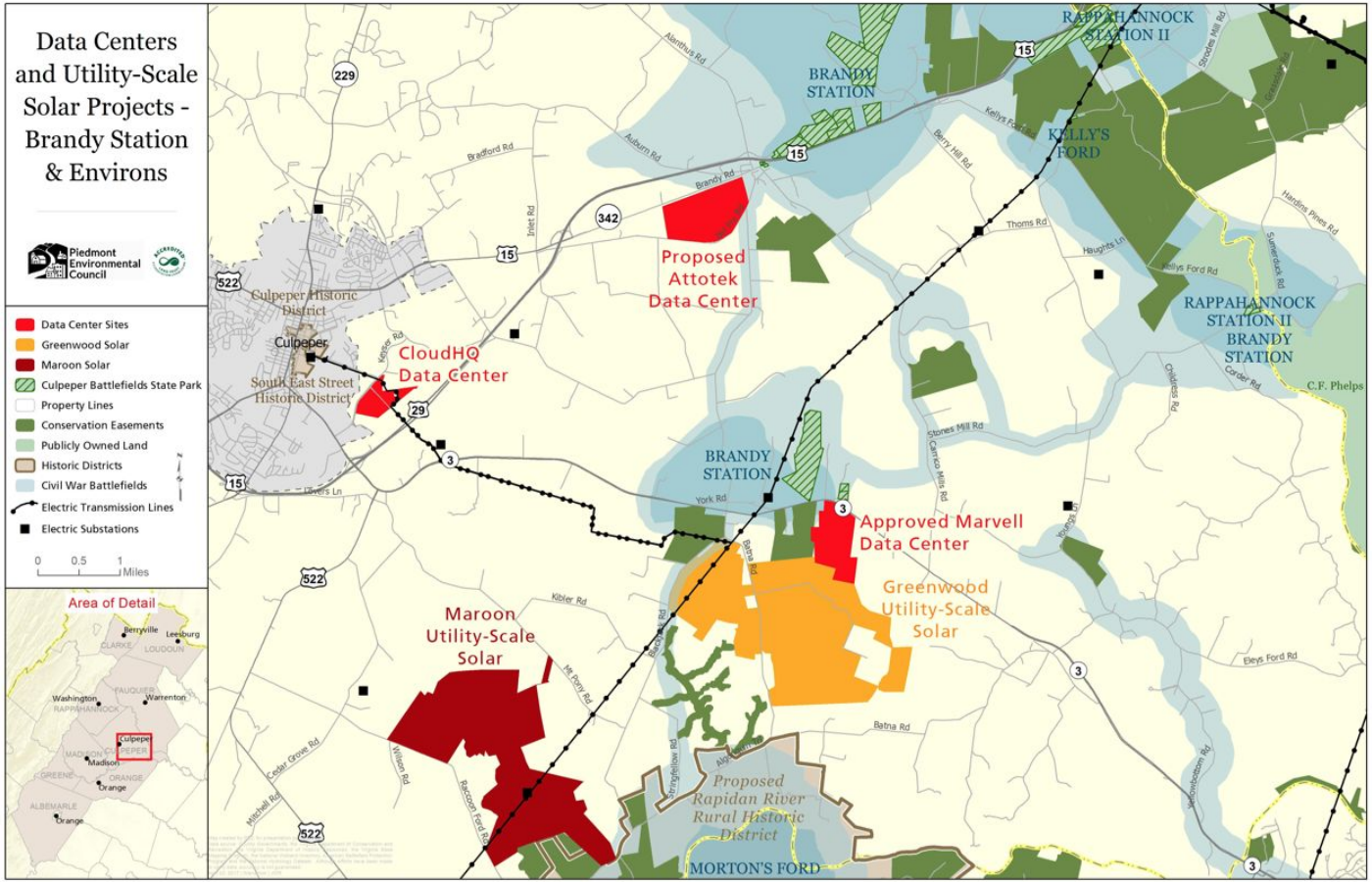
# Will Warrenton Get Multiple Data Centers?

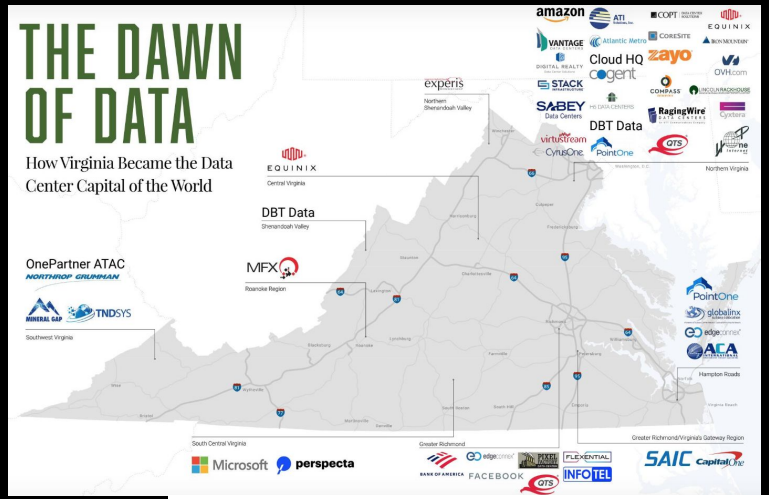


Dominion has stated *both lines* could be needed if more data centers were approved in Warrenton.

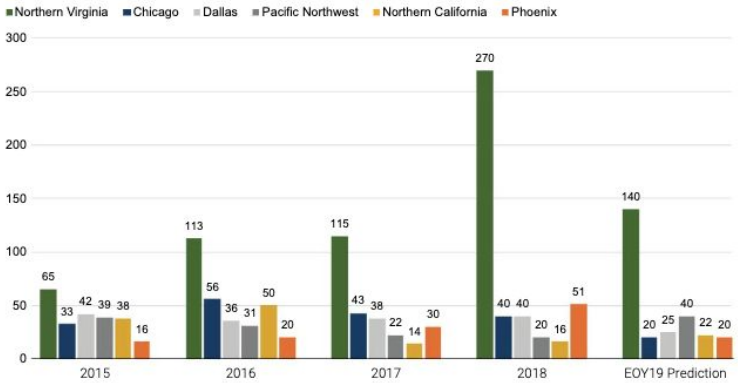



Data Centers and Utility-Scale Solar Projects - Brandy Station & Environs
Piedmont Environmental Council
Data Center Sites
Greenwood Solar
Maroon Solar
Culpeper Battlefields State Park
Property Lines
Conservation Easements
Publicly Owned Land
Historic Districts
Civil War Battlefields
Electric Transmission Lines
Electric Substations
0 0.5 1 Miles
Area of Detail
Proposed Attotek Data Center
CloudHQ Data Center
Approved Marvell Data Center
Greenwood Utility-Scale Solar
Maroon Utility-Scale Solar
Proposed Rapidan River Rural Historic District
BRANDY STATION
RAPPAHANNOCK STATION II
KELLY'S FORD
MORTON'S FORD
Culpeper Historic District
South East Street Historic District
Culpeper
C.F. Phelps




## NET ABSORPTION IN THE TOP SIX DATA CENTER MARKETS

MWs




Source: Allen Tucker, real estate strategist

### SUSTAINABLE GREEN ENERGY

Hyperscale companies are finding willing partners in Virginia's energy utilities, which have been responsive to demands for renewable energy. Dominion Energy and AWS have partnered on six projects totaling 260MW in Virginia that involve long-term power purchase agreements to provide solar energy to support AWS's renewable energy goals, while Facebook's data center will run entirely on renewable energy.

In March 2018, Microsoft announced the purchase of 315MW of energy from two new solar projects in Virginia. This represents the single largest corporate purchase of solar energy ever in the U.S. Dominion's solar capacity has increased by more than 630% since 2015, with nearly 745MW in operation or under development.

That's not the only renewable energy source where the Commonwealth is leading the way. In September 2019, Dominion announced its ambitious Coastal Virginia Offshore Wind project, the first wind project in the United States built by an electric utility company. The company estimates the project will generate more than 2,600MW of energy by 2026.

### A DATA-READY WORKFORCE

A rapidly growing data center industry requires an educated workforce with proper skills to support the hyperscale growth, the digital transformation of businesses, and numerous government agencies and contractors with significant operations in Virginia. Amazon Web Services launched its first cloud associate's degree with Northern Virginia Community College in 2018.

REPORT OF THE VIRGINIA SECRETARY OF NATURAL AND HISTORIC RESOURCES AND VIRGINIA SECRETARY OF COMMERCE AND TRADE

# Modeling Decarbonization: Report Summary and Policy Brief for Virginia Governor's Office Administration and Policymakers (Chapter 1194, 2020)

TO THE GENERAL ASSEMBLY OF VIRGINIA

## SENATE DOCUMENT NO. 17

COMMONWEALTH OF VIRGINIA
RICHMOND
2021

Demand for electricity has grown relatively slowly since 2007 due to moderating population growth and improved energy efficiency in the residential and commercial sectors. Sales of electricity to data centers has been the only growing sector of electricity sales in recent years, and these sales can be expected to continue to grow for the next several years. Increasing sales for electric vehicles (EVs) should begin have an effect on growth rates even as early as 2022.[4] Even with the recent growth of data center sales, the electricity intensity of economic activity in Virginia has continued to fall. A dollar of gross state product now requires half as much electricity as it did in the year 2000.

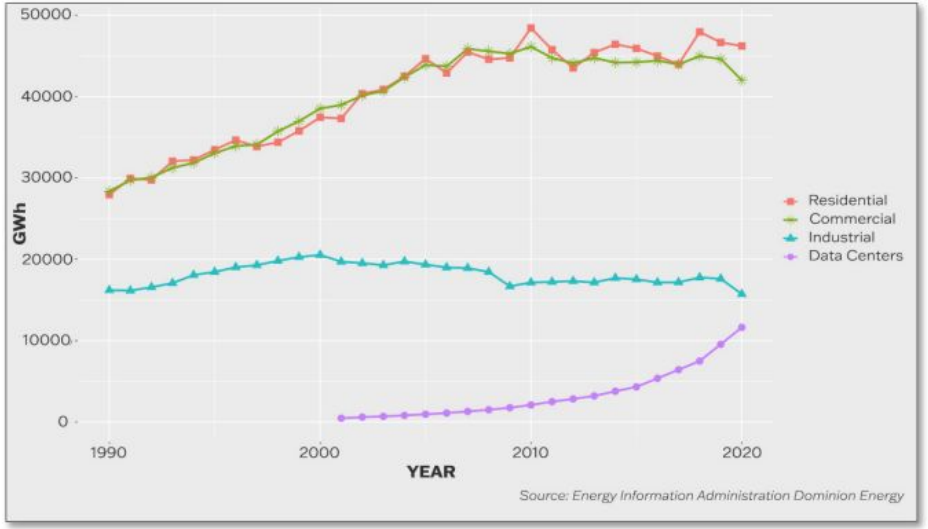



*Figure 2: Annual Virginia Electricity Sales by End Use*

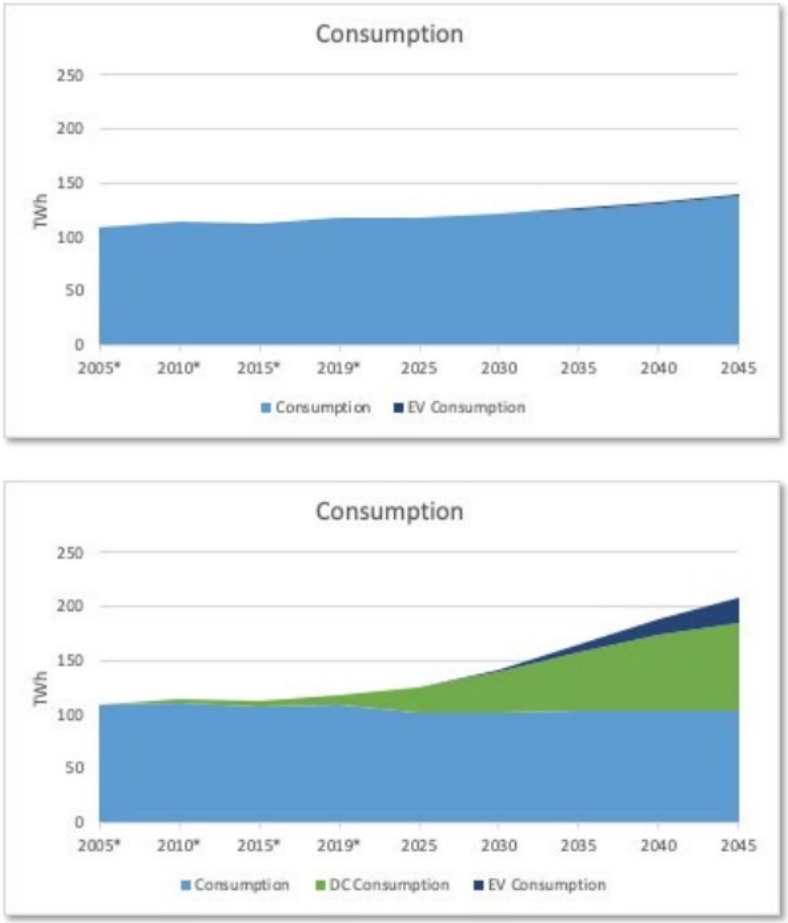
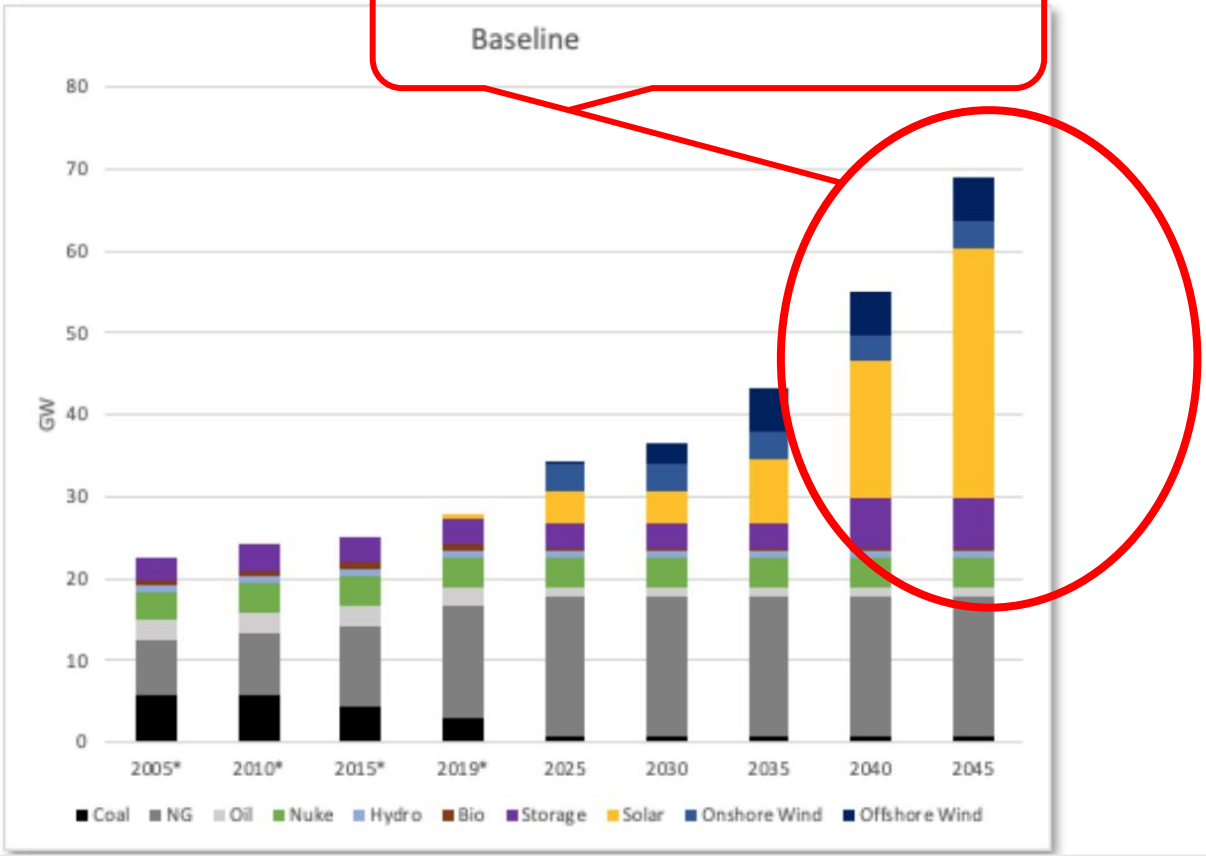
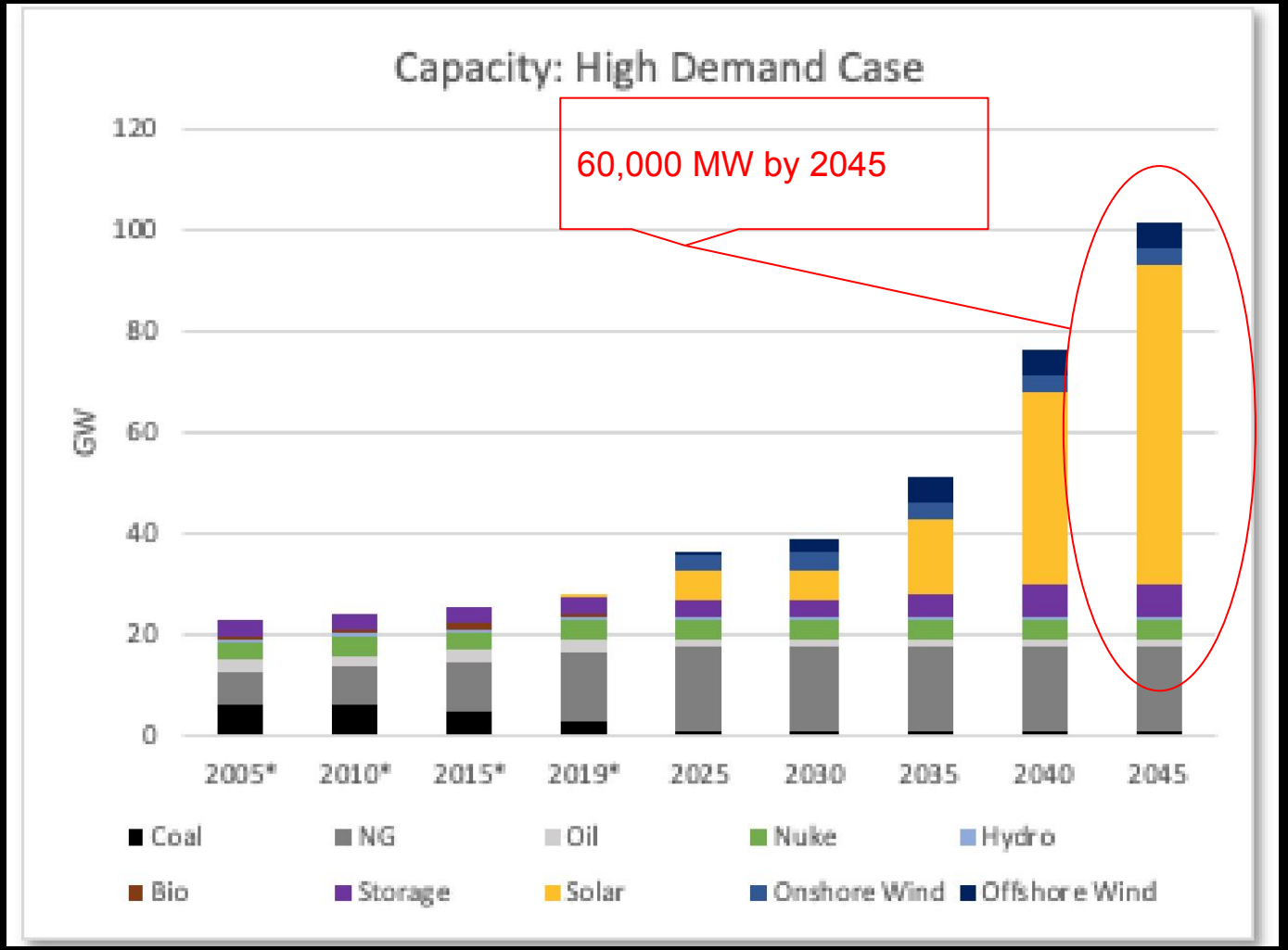



*Figure 6: Electricity Sales - Baseline and High Demand Scenarios*

# MODELING RESULTS

30,000 GW Solar by 2045




Capacity: High Demand Case
60,000 MW by 2045
GW
120
100
80
60
40
20
0
2005*
2010*
2015*
2019*
2025
2030
2035
2040
2045
Coal
NG
Oil
Nuke
Hydro
Bio
Storage
Solar
Onshore Wind
Offshore Wind

# What are we planning for?

In a high consumption case where only *in-state* solar resources count towards our zero carbon goal, the land required would be ~5 percent of the total land area of the state.

VIRGINIA TOTAL LAND AREA:  27,360,000  ACRES

5% OF VIRGINIA TOTAL LAND AREA:  1,368,000 ACRES

Many discussions focus on next 10 years,  100,000-300,000 acres

West Virginia, Delaware, New Jersey and Ohio, as well as parts of Kentucky, Tennessee, Illinois, Indiana, Michigan and North Carolina.

But its review staff of engineers and other specialists couldn't keep up as new proposals were filed — with applications tripling in three years. PJM has been expanding staff and hiring consultants to aid with reviews.

**Solar projects waiting for review**

- **Maryland:** 48 projects, potential power capacity of 2,502 megawatts (enough to power 410,000 homes)
- **Pennsylvania:** 443 projects, potential power capacity of 8,854 megawatts (enough to power 1.4 million homes)
- **Virginia:** 416 projects, potential power capacity of 22,679 megawatts (enough to power 3.7 million homes)

# What's actually happening?

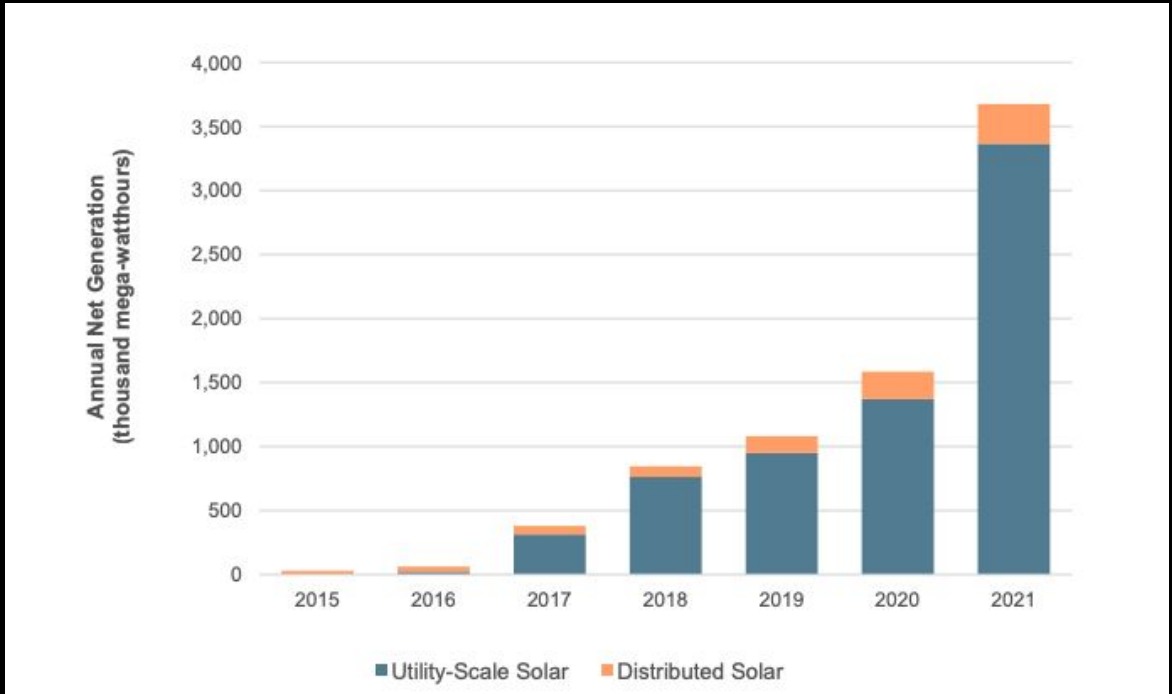
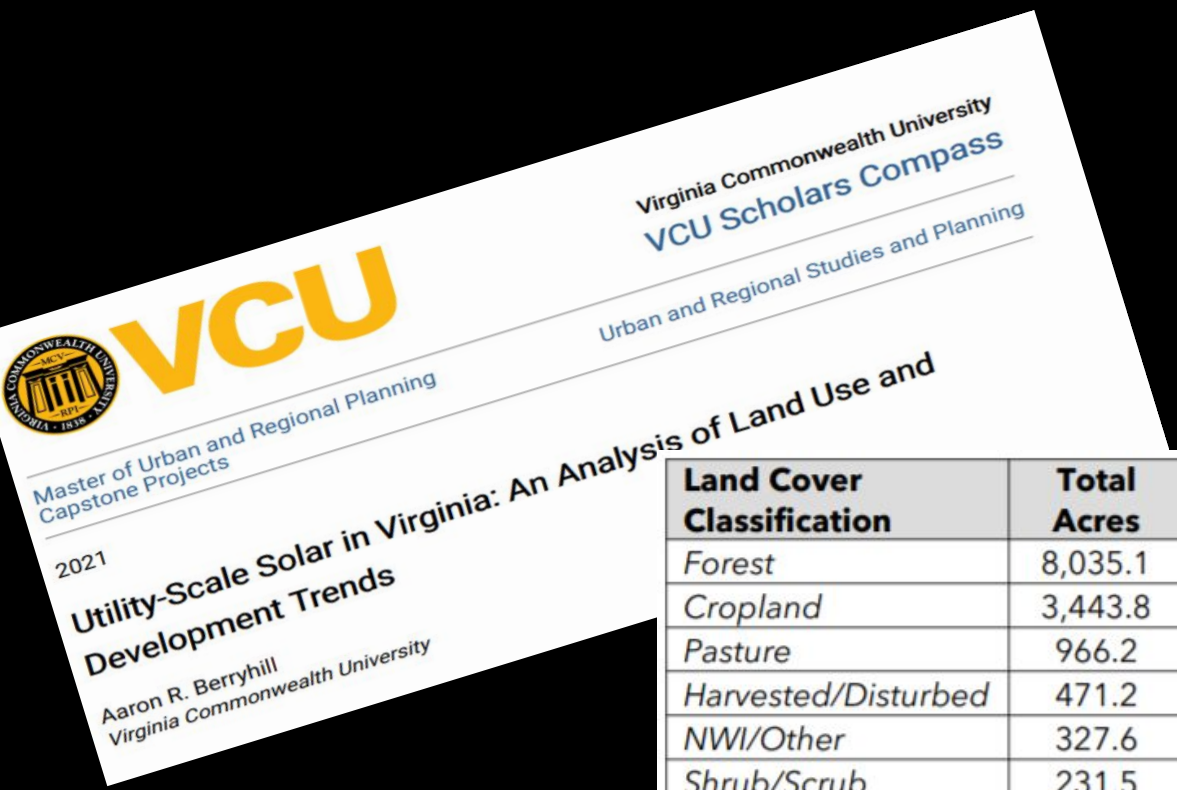



**Figure 4. Annual Net Generation from Solar in Virginia**
*Source: U.S. EIA*

*"Distributed solar" includes small-scale and community-scale projects*




| 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*

# Cricket Solar Project & Conserve VA Priority Areas

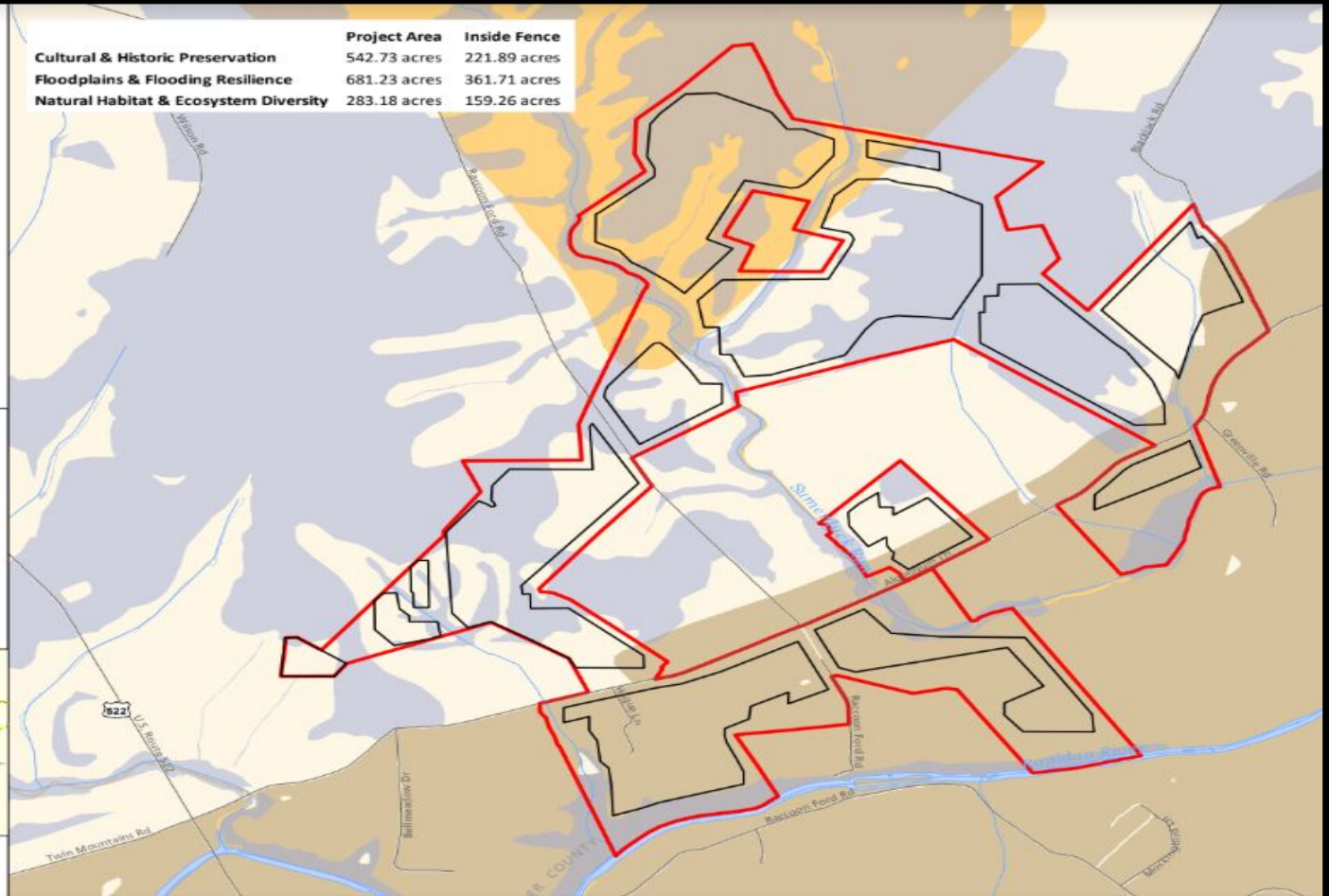
Piedmont Environmental Council

| | Project Area | Inside Fence |
|---|---|---|
| Cultural & Historic Preservation | 542.73 acres | 221.89 acres |
| Floodplains & Flooding Resilience | 681.23 acres | 361.71 acres |
| Natural Habitat & Ecosystem Diversity | 283.18 acres | 159.26 acres |

- Cricket Project Area
- Fenced Area
- Floodplains & Flood Resilience
- Natural Habitat & Ecosystem Diversity
- Cultural & Historic Preservation

0 0.25 0.5 Miles


Map created by PEC for presentation purposes only. Data sources: Culpeper County, the Commonwealth of Virginia, and the United States of America. Although efforts have been made to verify data, accuracy is not guaranteed.
9/11/2019 | Warrenton | MR



AES/Amazon in Spottsylvania County, VA

AES/Amazon in Spottsylvania County, VA

# Potential Utility Scale Solar Facilities

## Charlotte County


- Solar projects: Conditional Use Permit Obtained or Pending
- Solar projects: Recorded Options
- Publicly Owned Land
- Conservation Easements
- Historic Districts
- Civil War Battlefield
- Electric Transmission
- State Scenic Rivers
- State Scenic Roads
- Virginia Birding and Wildlife Trail Stops

0 2.5 5 Miles

Piedmont Environmental Council

Pumplin City
High Bridge Trail State Park
APPOMATTOX
CHARLOTTE
Spring Creek Lake
Briery Creek
PRINCE EDWARD
CAMPBELL
Phenix
Charlotte Court House
Brookneal Park
Brookneal
Keysville
Drakes Branch
WBWF Preserve
Nathalie
LUNENBURG
MECKLENBURG
Staunton River Battlefield State Park
Clover
Fairview
Halifax
Scottsburg
Difficult Creek
John H. Kerr Reservoir
Wolf Trap
Banister River South Unit
DCR Holding
Dan River WMA
Staunton River State Park
Logan Creek WMA - Kerr Reservoir
Buggs Island Lake
Buffalo WMA Kerr Reservoir
Riverdale
Upper Butcher Creek
John H. Kerr Reservoir
Buggs Island Lake

The New York Times

OPINION
GUEST ESSAY

# Are There Better Places to Put Large Solar Farms Than These Forests?

# What are next steps?

Assuming high level of deployment, somewhere on the order of 5% of land area in the Bay region, how do we plan and incentivise best practices on siting and site development to minimize impacts on stormwater and conservation lands?

Currently, we are in a reactive mode, responding to individual applications and relying on local and state land use planning and permitting; how do we incorporate broader regional/Chesapeake watershed impacts?

- Chesapeake Bay model
- State agency analysis of cumulative impacts
- Encourage development of best practices for Chesapeake region

Is there a role for mitigation and offsets?

# What’s the alternative?

## Utility-Scale Solar Siting Principles:

Avoid
Minimize
Mitigate
Restore

# The How and Where Matters

1) Former industrial sites or brownfields
2) Abandoned mine sites
3) Marginal lands
4) DG and community solar as a means of offset
5) Construction techniques and best practices
6) Decommissioning plan and restoration

Rural sites never intended for industrial development need to be recognized as such. Construction techniques should be designed to reduce the impact to resources to the maximum extent possible.

VIRGINIA MERCURY



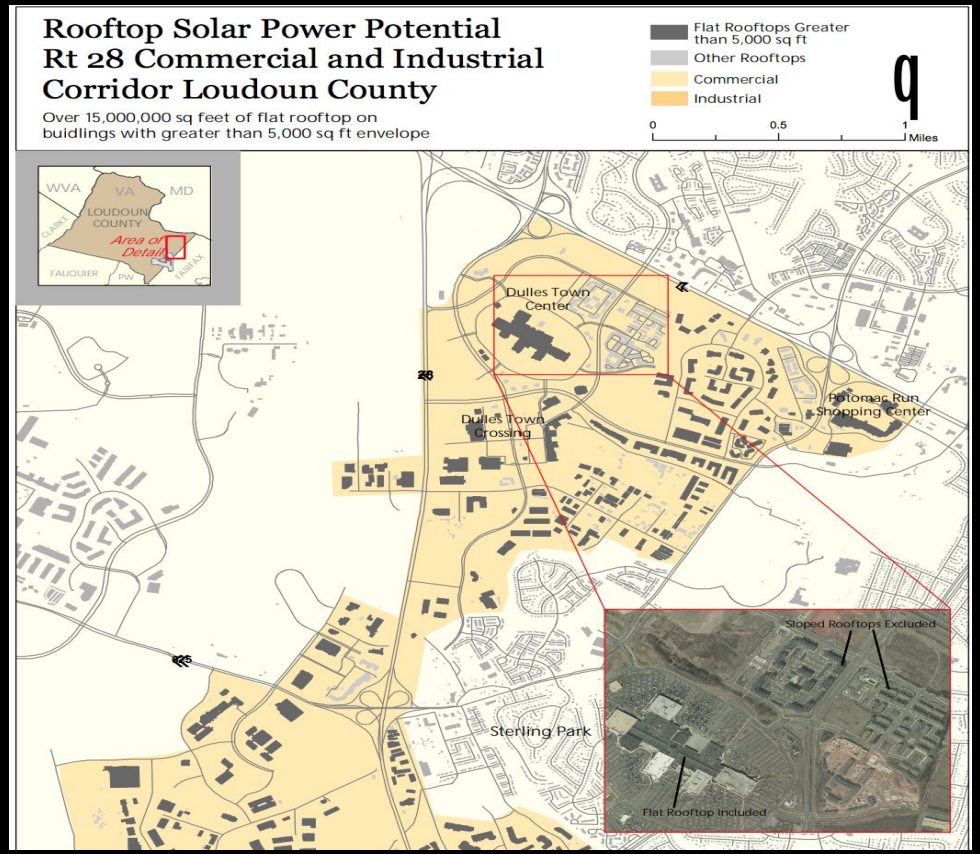
ENERGY + ENVIRONMENT

# Panel says Virginia should do more to promote solar development on brownfields

## Despite tensions over solar land use, state has few mechanisms to encourage 'brightfields'

BY: **SARAH VOGELSONG** - MAY 2, 2022 12:02 AM

# Look to previously developed or disturbed sites




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.

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# Optimal Solar Siting for Maryland

## A Pilot for Baltimore County and City

Susan Minnemeyer and Emily Wiggans
ChesapeakeConservancy.org

October 2020

**Table 2.** Baltimore City and County share of solar carve-out calculated as share of Maryland total by electricity consumption (the method chosen for study goals), land area, and population

### Electricity consumption (EIA, BGE)

| | Consumption (GWh/yr) | % of state consumption | Solar carve-out share (GWh/yr) |
|---|---|---|---|
| Baltimore City | 6,271.5 | 10.1% | 909.1 |
| Baltimore County | 7,295.5 | 11.8% | 1,057.5 |
| Baltimore City and County combined | 13,567.0 | 21.9% | 1,966.6 |
| Maryland | 62,086.5 | 100.0% | 9,000.0 |

### Land Area (Maryland Geological Survey)

| | Land area (square miles) | % of state land area | Solar carve-out share (GWh/yr) |
|---|---|---|---|
| Baltimore City | 80.3 | 0.8% | 73.5 |
| Baltimore County | 597.6 | 6.1% | 546.4 |
| Baltimore City and County combined | 677.9 | 6.9% | 619.9 |
| Maryland | 9,844.0 | 100.0% | 9,000.0 |

### Population 2018 (US Census)

| | Population | % of state population | Solar carve-out share (GWh/yr) |
|---|---|---|---|
| Baltimore City | 602,495 | 10.0% | 897.4 |
| Baltimore County | 828,431 | 13.7% | 1,233.9 |
| Baltimore City and County combined | 1,430,926 | 23.7% | 2,131.3 |
| Maryland | 6,042,718 | 100.0% | 9,000.0 |

**Source:** "Final Report Concerning the Maryland Renewable Portfolio Standard..." Maryland Department of Natural Resources. https://dnr.maryland.gov/pprp/Documents/FinalRPSReportDecember2019.pdf. Accessed 8 Mar. 2020.

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# Optimal Solar Siting for Mary

## A Pilot for Baltimore County and City

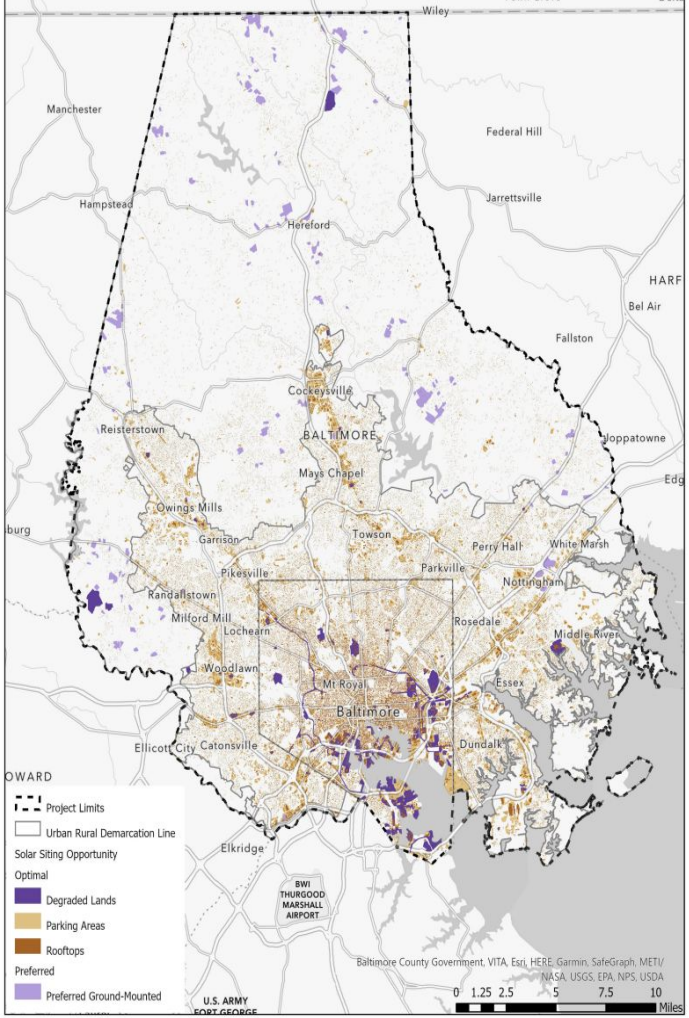
Susan Minnemeyer and Emily Wiggans
ChesapeakeConservancy.org

October 2020

Of the potential optimal and preferred ground-mounted sites identified, only a portion will prove to be viable sites for solar energy development. In Table 2, we estimated Baltimore County and City's respective shares of Maryland's solar carve-out as 1,058 GWh/yr of electricity generated from solar for Baltimore County and 909 GWh/yr for Baltimore City. Table 4 shows the percentage of optimal and preferred ground-mounted sites that would be needed to meet Maryland's solar energy goals. Even if the region restricted solar energy development only to optimal sites, just 8.6 percent of these would need to be developed to meet the regional share of the state's RPS goal.

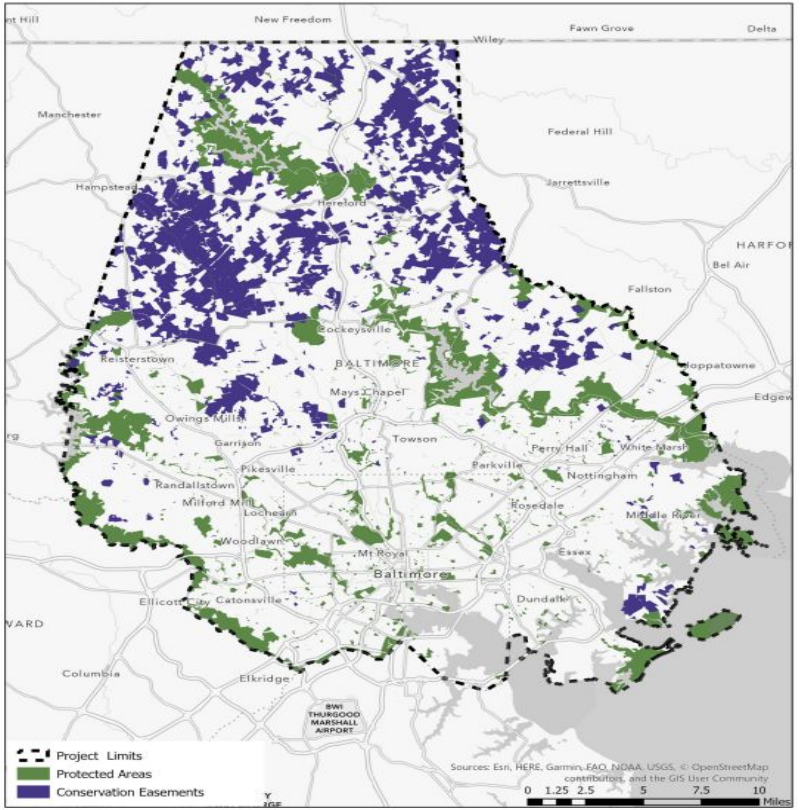
**Table 3.** Potential energy generation from preferred and optimal sites

| | Total area (acres) | Potential electricity generation (GWh/yr) |
|---|---|---|
| **Baltimore County** | | |
| **Optimal** | | |
| Parking | 6,904 | 3,949 |
| Rooftop | 14,405 | 9,762 |
| Degraded lands | 1,116 | 1,719 |
| **Total optimal** | **22,425** | **15,430** |
| **Preferred ground-mounted** | **3,400** | **5,237** |
| **Baltimore City** | | |
| **Optimal** | | |
| Parking | 3,611 | 2,066 |
| Rooftop | 7,809 | 5,292 |
| Degraded lands | — | — |
| **Total optimal** | **11,420** | **7,358** |
| **Preferred ground-mounted** | **—** | **—** |
| **Baltimore County and City (combined)** | | |
| **Optimal** | | |
| Parking | 10,515 | 6,015 |
| Rooftop | 22,214 | 15,054 |
| Degraded lands | 1,116 | 1,719 |
| **Total optimal** | **33,845** | **22,788** |
| **Preferred ground-mounted** | **3,400** | **5,237** |
| **Total optimal and preferred** | **37,245** | **28,025** |




**Sources:** Chesapeake Conservancy analysis results displayed using Baltimore City and County parcel and building footprints data

**Map 1.** Protected areas and conservation easements




**Data:** Federal, state, and local protected areas, State Scenic Rivers, State Scenic Byways, publicly manag conservation lands, Maryland Environmental Trust Easements, other conservation easements

**Sources:** Maryland Department of Natural Resources (DNR), Chesapeake Conservation Partnership

# Utility Scale Solar Project Evaluation

1) Scale - cumulative impacts
2) Impacts to conservation values
3) Construction practices:
    - Phasing - Minimal Disturbance/compaction
    - Continued Agricultural Use or Habitat
    - BMPs
    - Screening/Buffers
    - Mitigation
4) Interconnection - Transmission Impacts
5) Decommissioning Plan and Restoration

# Resource Considerations

Soils

- Avoid best soils - soils cannot recreated
- Minimize disturbance and compaction. Site treatment determines future uses

Forestal impacts

- Type of forest and underlying conditions determines level of impact
- Accounting for the true value vs carbon.

Hydrological Impacts

- Stormwater considerations - accurate measurements
- Pre and post monitoring

Ecological Impact

- Habitat, wildlife movement, impact to cores/connectivity
- Other

Historic, Cultural and Scenic Resources

- Primarily visual
- Screening needs to be designed for project, exterior buffer may not be sufficient

# Other Resources

Piedmont Environmental Council

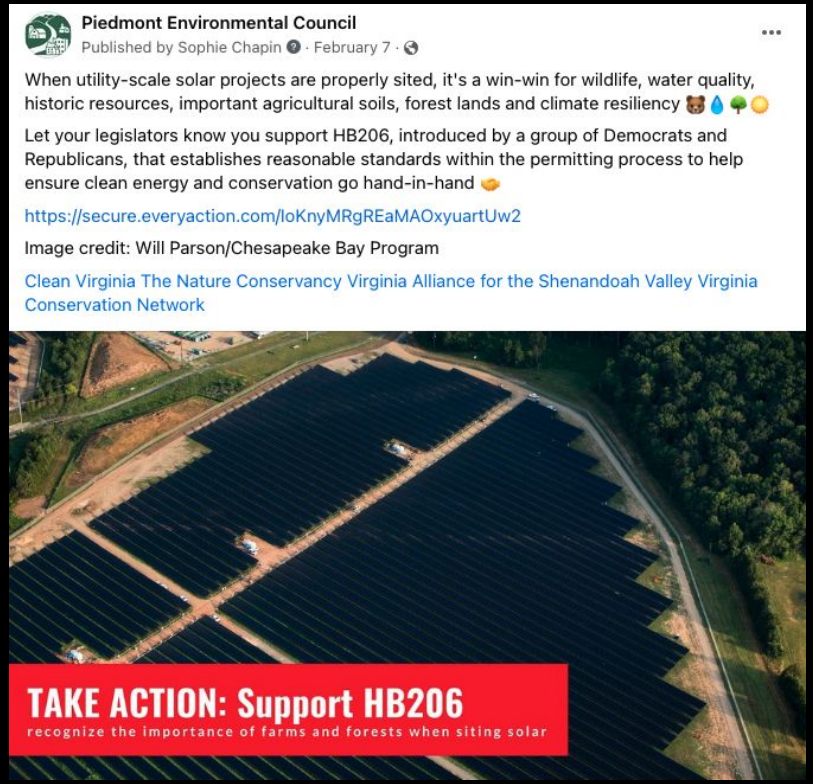
American Farmland Trust

Great Plains Institute

The Nature Conservancy

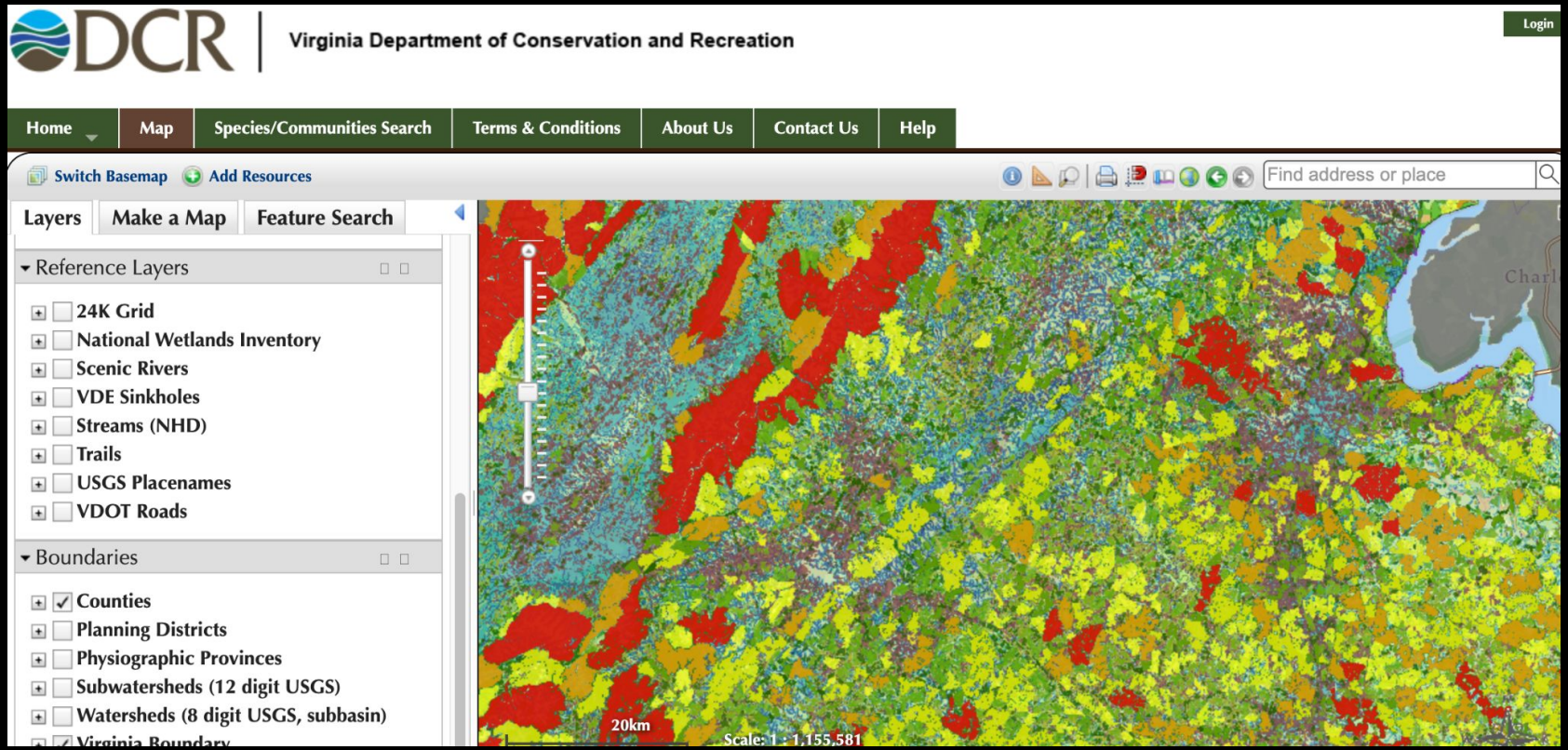
Land Trust Alliance

# Passed in 2022 - HB 206




"...we are working with a bipartisan group of legislators, as well as partners like The Nature Conservancy, Alliance for the Shenandoah Valley, and the Virginia Conservation Network, among many others, on House Bill 206, which would establish reasonable standards within the state's solar "permit by rule" process to require mitigation when significant impacts occur to our farms and forests."

# Conserve Virginia Resource Map



AFT has developed ***Smart Solar*** principles to help shape solar development across America. These principles can be applied broadly recognizing that Smart Solar will look different across the country due to differences in landscapes, agricultural production systems and other characteristics.

**Principle 1: Prioritize Solar Siting on Buildings and Land Not Well Suited for Farming**

Emphasize solar energy development on rooftops, carports, irrigation ditches, brownfields or other land not well suited for agriculture to help minimize the impacts of solar energy on our nation's best agricultural land and farm businesses.

**Principle 2: Safeguard the Ability for Land to Be Used for Agriculture**

If solar energy is developed on farmland or ranchland, policies and practices should protect soil health, especially during construction and decommissioning, to ensure opportunities for farming in the future.

**Principle 3: Grow Agrivoltaics for Agricultural Production & Solar Energy**

Agriculture and solar energy can coexist if appropriate planning is undertaken. Agrivoltaic projects sustain agricultural production underneath solar panels and/or between rows of solar panels throughout the life of the project.

pressure on costs for solar developments.

The *PV-SMaRT Barriers and Best Practices* document provides the first available strategies for designing for stormwater management and water quality goals based on solar-specific field research and modeling for ground-mounted PV. Before this project, the available data to permit officials was based on runoff standards and management practices for non-solar land uses. GPI's Brian Ross led the development of the barriers and best practices within the PV-SMaRT project.

The best practices are a living document that will be modified over the next year as validation is completed on the foundational research and feedback is provided by stakeholders. A final version will be published in 2022 along with the complete research. In the interim, we invite community leaders, project developers, regulators, and other interested stakeholders to use and comment on the best practices. Comments can be sent to Brian Ross: bross@gpisd.net

**Download the PV-SMaRT resources:**

- PV-SMaRT Potential Stormwater Barriers and Opportunities
- PV-SMaRT Barriers and Best Practices

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# Solar Siting in Virginia

http://conservationgateway.org/Documents/3_VA_SolarSiting_Model_Degraded.pdf.

# Energy infrastructure siting

Increasing pressure to locate energy infrastructure — including renewable energy — on conserved lands is putting our community's land conservation work in jeopardy. The Alliance is coordinating with our members to educate decisionmakers on the importance of energy infrastructure location as guided by regional perspectives and without undermining the essential conservation values the land trust community works hard to protect. To learn more about conservation and energy infrastructure siting, read our publication "**Reshaping the Energy Future**."

# Biden Administration Announcement 11/8/2022

Combining solar energy and nature-based solutions: The Department of Energy Solar Energy Technology Office (SETO) is investing in combined development of ground mounted solar systems and pollinator habitat. In fiscal year 2022, SETO selected projects worth $14 million for Deploying Solar with Wildlife and Ecosystem Services Benefits, developing innovative strategies that maximize benefits and minimize impacts to wildlife and ecosystems from solar energy infrastructure.