# Energy Infrastructure and Data Centers

Piedmont Environmental Council

*January 10, 2024*

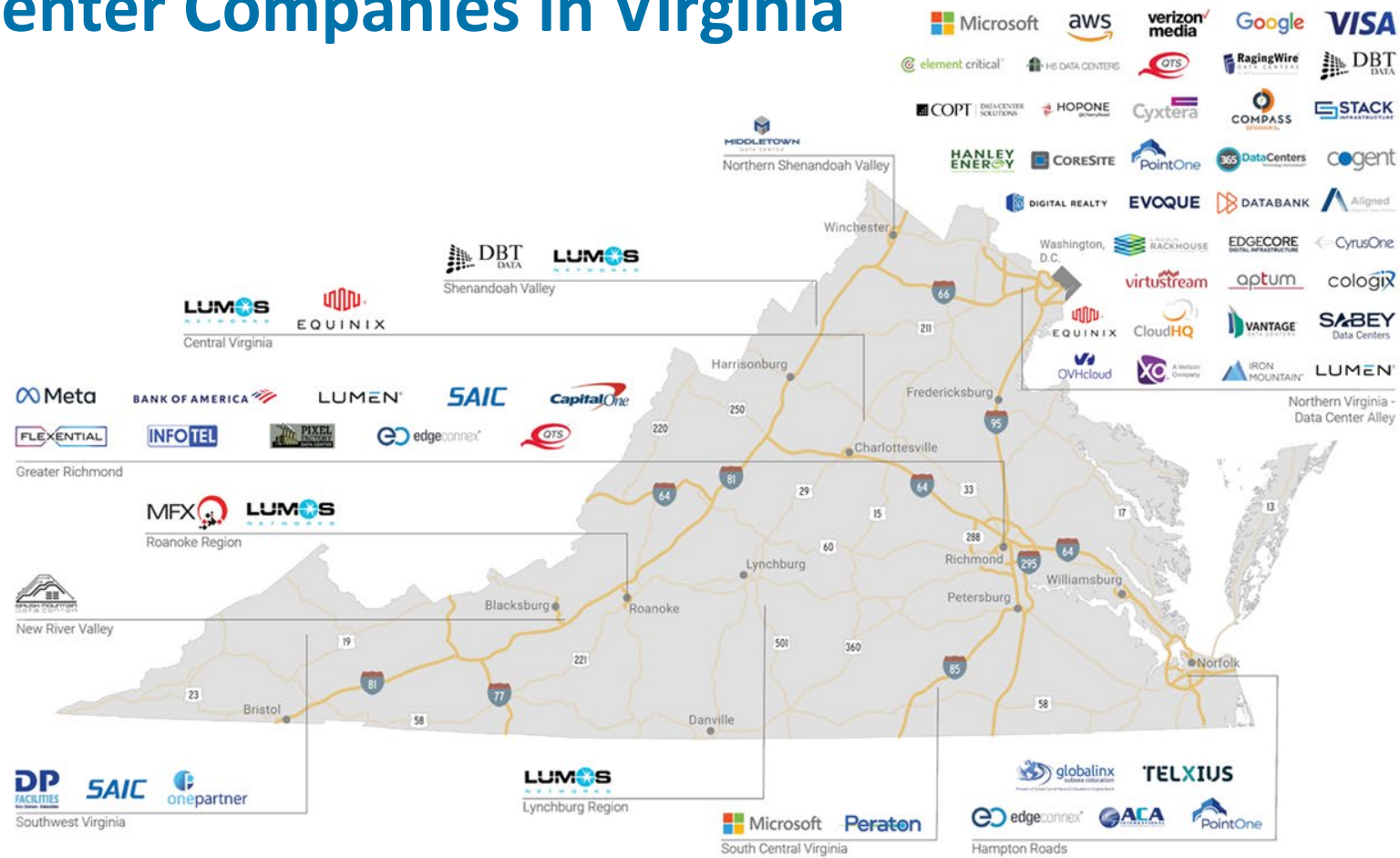
*Julie Bolthouse, Director of Land Use*

**Julie Bolthouse**

Director of Land Use

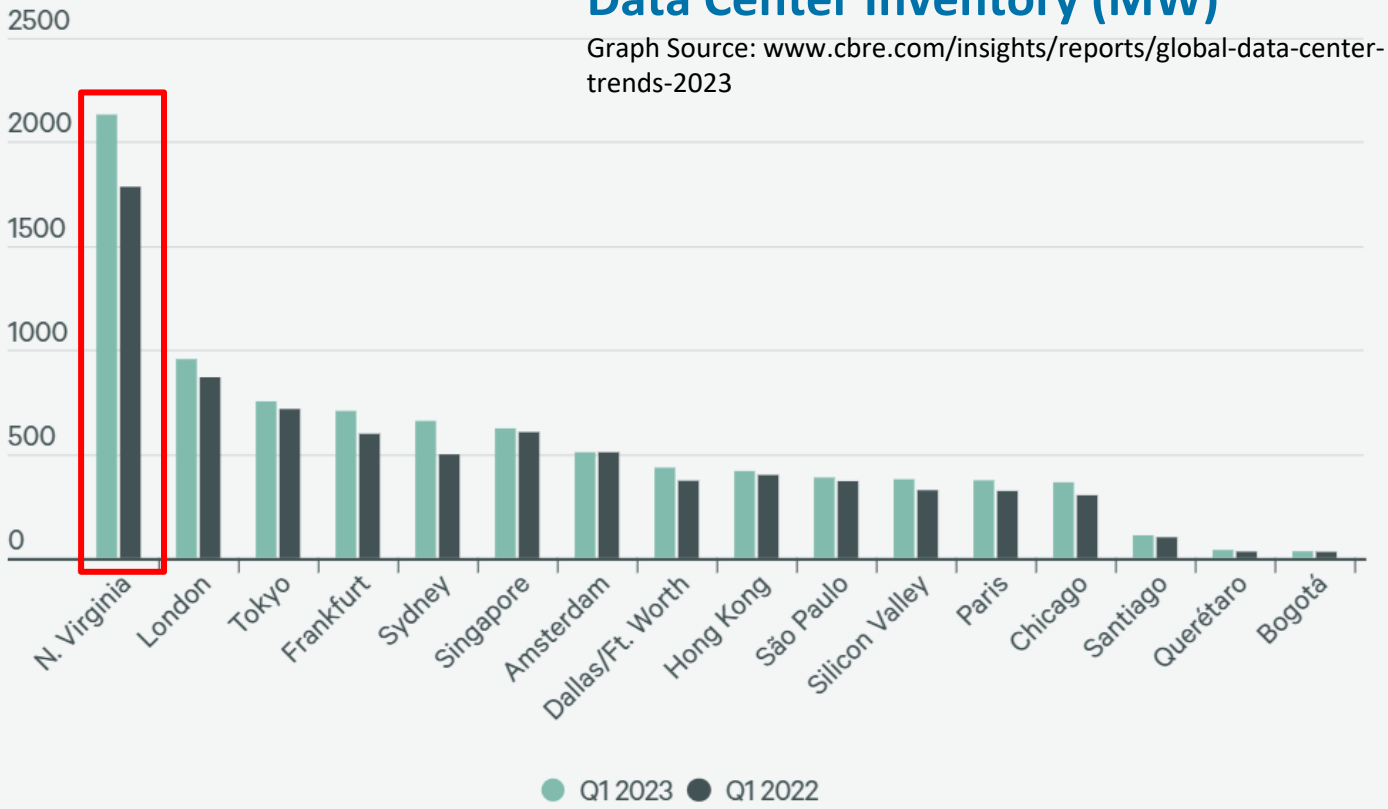
The Piedmont Environmental Council

# Data Center Companies in Virginia



# Data Center Inventory (MW)

Graph Source: www.cbre.com/insights/reports/global-data-center-trends-2023




Source: CBRE Research, Q1 2022 & Q1 2023. Figures and data for North American markets include only wholesale colocation facilities. In Europe, Latin America, and Asia-Pacific, total inventory includes both wholesale and retail colocation facilities.

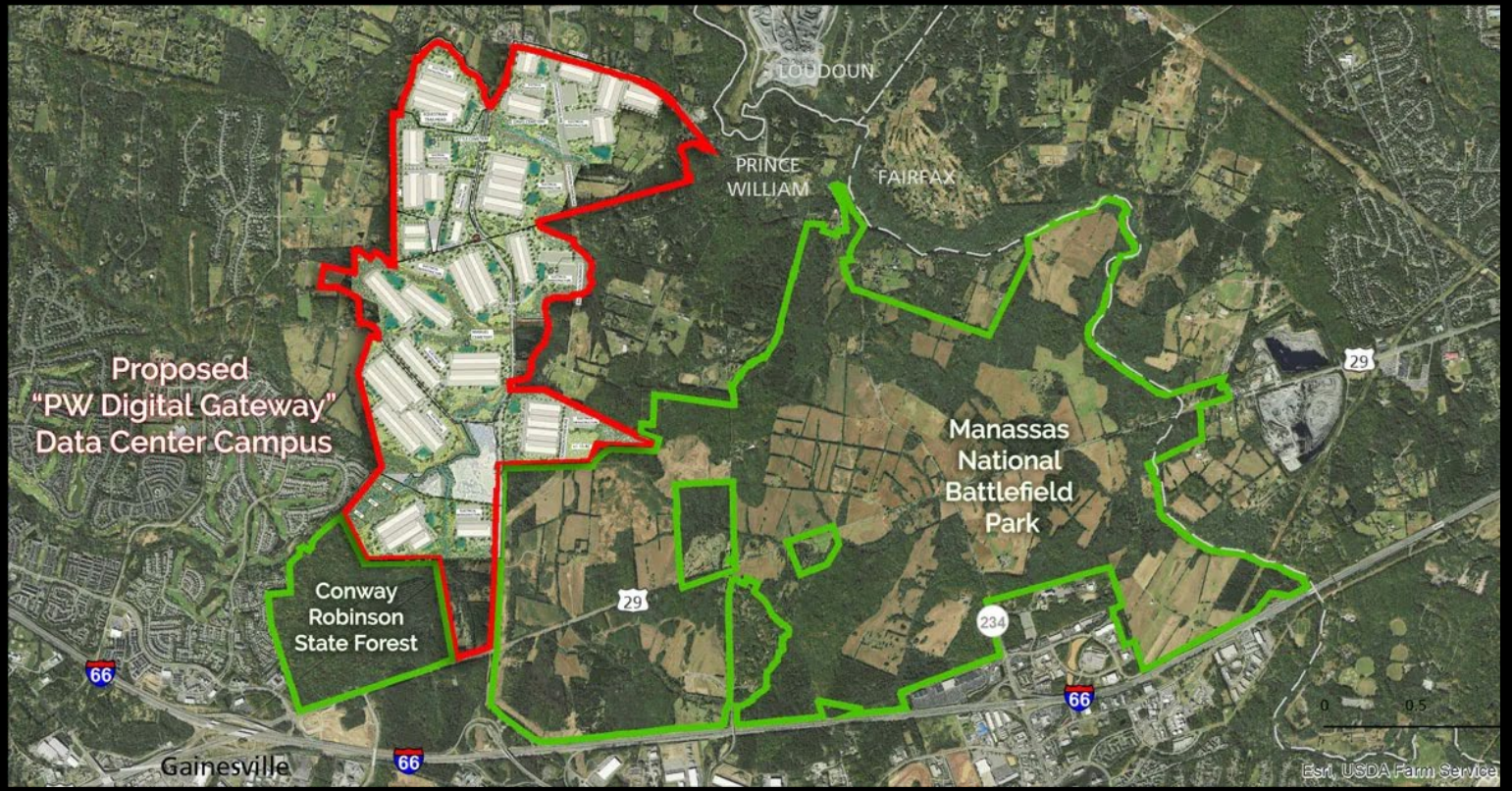
# Data centers are getting larger…

- Growth in the hyperscale market
- Over 200,000 sqft per building
- Multiple proposals for campuses over 5 million sqft
- Using much more power!

Photo Credit: Hugh Kenny, PEC

# Prince William Digital Gateway

**37 building, 15 substations, 3 gigawatts (GW), equivalent to about 750,000 homes**



# Perfect Landing Strip + Data/Energy Self Perpetuating Cycle…

Skilled Personnel
Safe Location
Available Land
Materials/Resources
Supportive Government
**<u>Power!!!</u>**

# Why Do Localities Find Data Center Attractive?

- They generally don’t usually create a lot of traffic
- They don’t require school seats
- They create some jobs (although not as much as many other forms of economic development)
- **They offer a lot of tax revenue depending on rates set by localities**
  - **Personal Property Tax (IT Equipment)**
  - **Real Estate Tax**

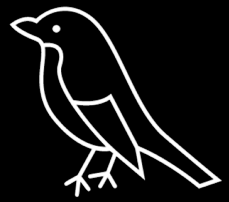
**Loudoun Now August 15, 2023**
Town Vice Mayor of Leesburg Neil Steinberg said on Leesburg’s recent decision on data centers, *"in the end, it is all about the money, and it is a lot of money...”*

# They create a host of community impacts

Parks and Trails

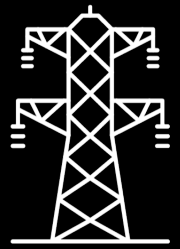
Wate
r

Air Quality



Wildlife Habitat

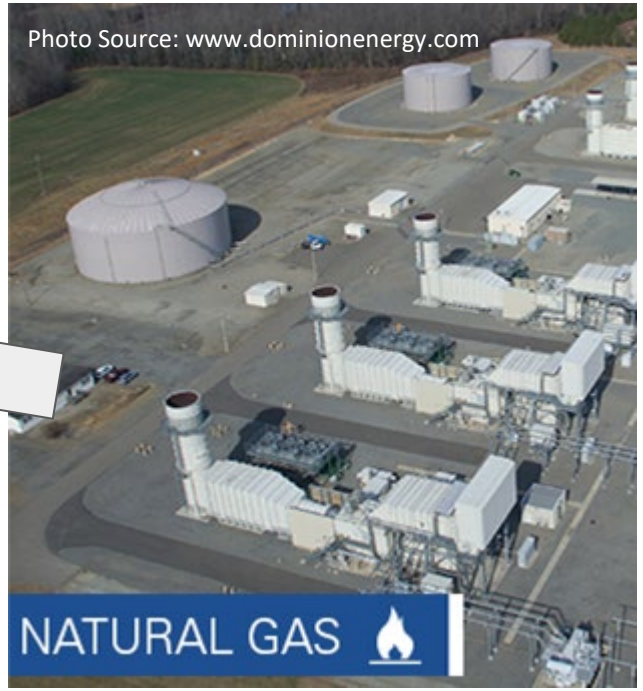
Design



Transmission

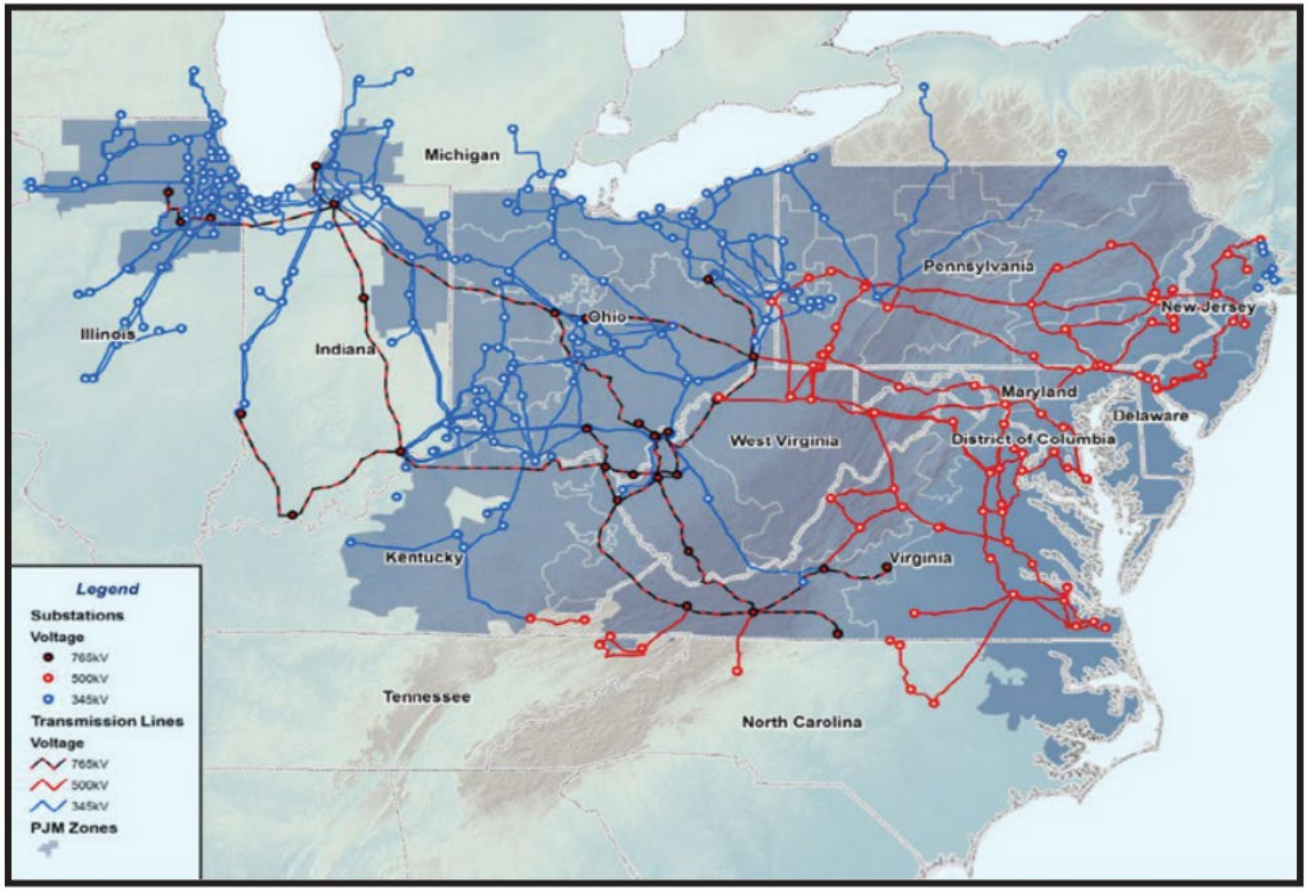
# Data Centers Consume a Huge Amount of Electricity





# Role of RTO

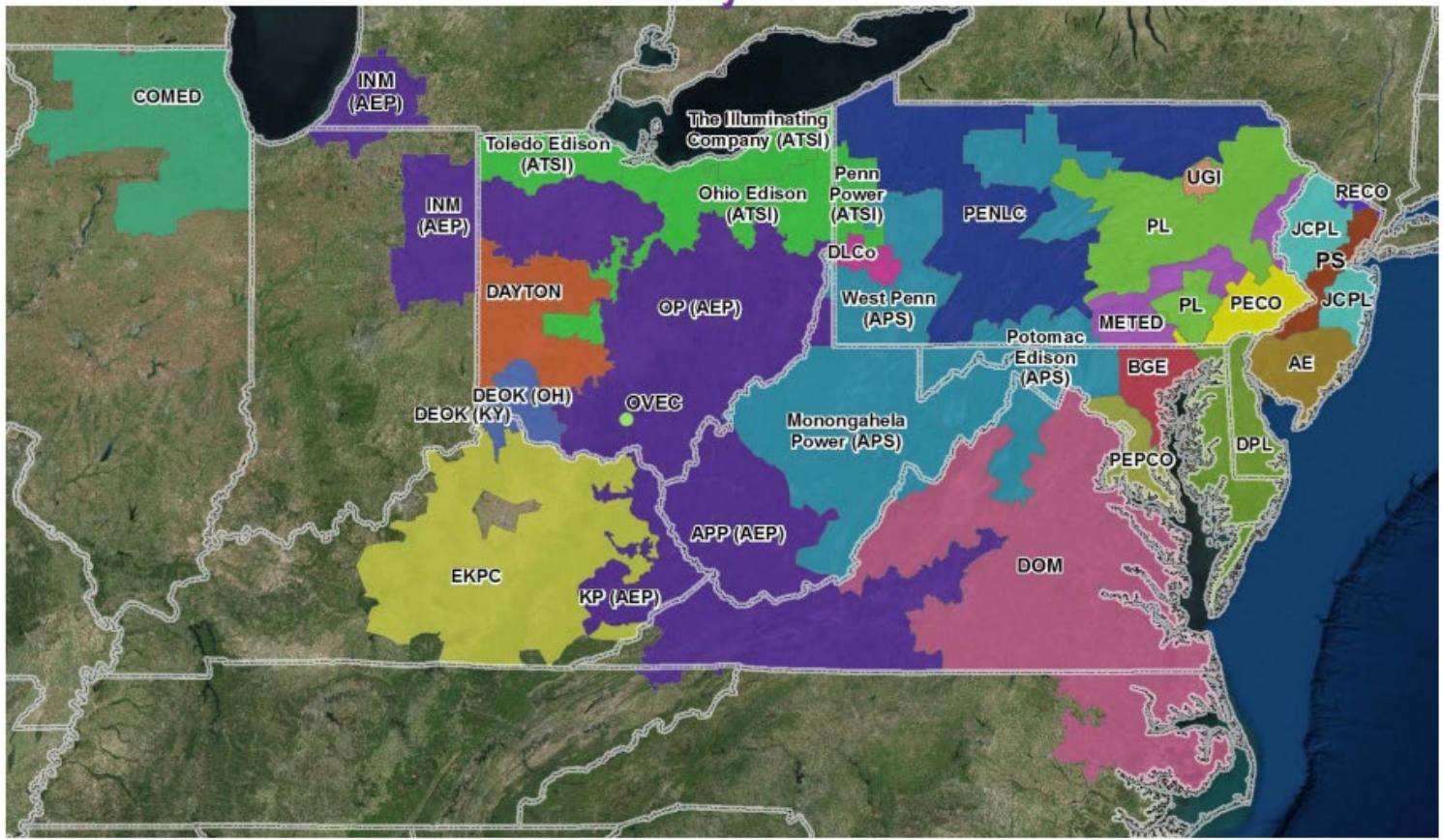
Acting as a neutral, independent party, PJM operates a competitive wholesale electricity market and manages the high-voltage electricity grid to ensure reliability for more than 65 million people.




PJM Interconnection

# PJM Load Forecast Report

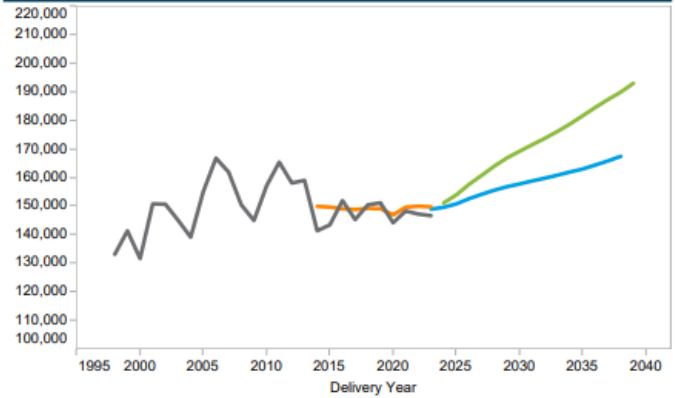
## January 2024




Prepared by PJM Resource Adequacy Planning Department

# PJM RTO

## Summer Peak



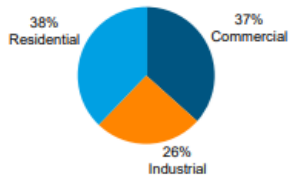

## Weather - Annual Average 1994-2022

| | |
|---|---|
| **Avg Summer Daily Temp** | *74.25* |
| **Avg Summer Max Temp** | *95.13* |
| **Avg Winter Daily Temp** | *34.06* |
| **Avg Winter Min Temp** | *3.93* |

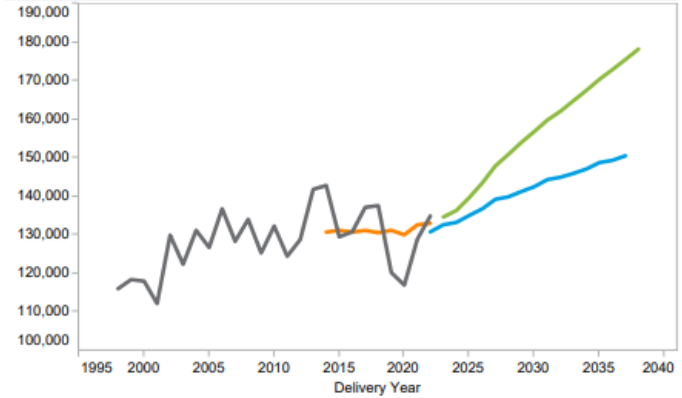
## Zonal 10/15 Year Load Growth

| | | |
|---|---|---|
| SUMMER | 1.7% | 1.6% |
| WINTER | 2.0% | 1.9% |

## RCI Makeup




## Winter Peak




## LDAs

| | |
|---|---|
| PJM Mid-Atlantic | Central MAAC |
| Eastern MAAC | Western MAAC |
| Southern MAAC | PJM West |

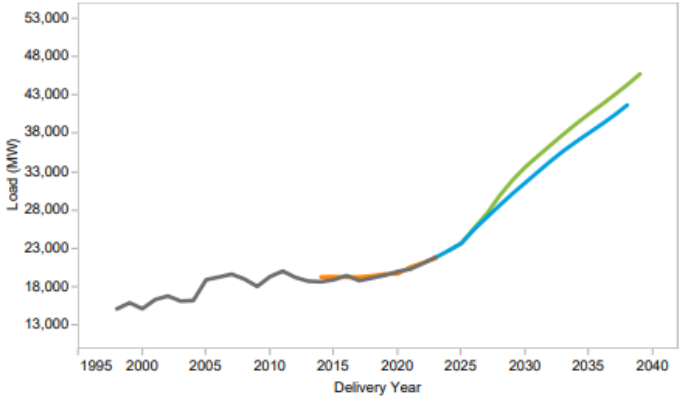
## Zones

| | | | |
|---|---|---|---|
| AE | DAYTON | JCPL | PEPCO |
| AEP | DEOK | METED | PL |
| APS | DLCO | OVEC | PS |
| ATSI | DOM | PECO | RECO |
| BGE | DPL | PENLC | UGI |
| COMED | EKPC | | |

Peak  WN peak  Forecast 2023  Forecast 2024

# Dominion (DOM)

## Summer Peak



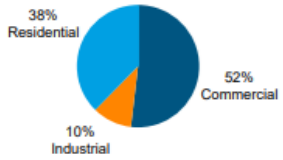

## Weather - Annual Average 1994-2022

| | |
|---|---|
| **Avg Summer Daily Temp** | *76.9* |
| **Avg Summer Max Temp** | *96.9* |
| **Avg Winter Daily Temp** | *40.3* |
| **Avg Winter Min Temp** | *12.3* |

## Zonal 10/15 Year Load Growth

| | | |
|---|---|---|
| SUMMER | 5.6% | 4.8% |
| WINTER | 5.1% | 4.3% |

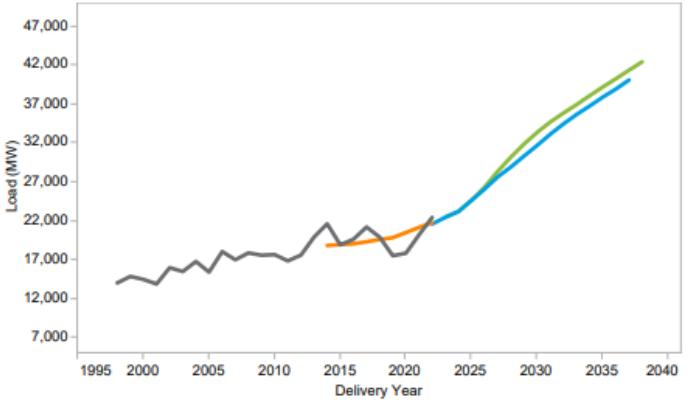
## RCI Makeup



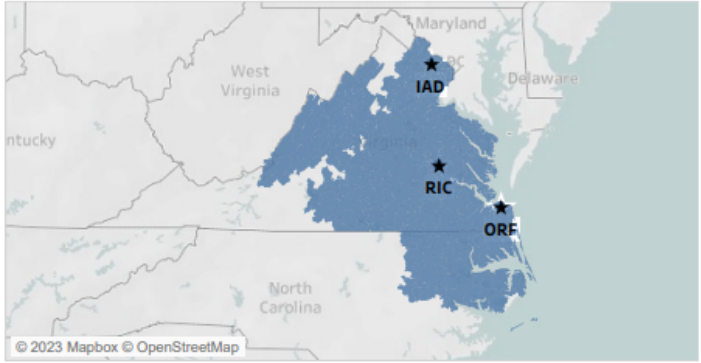

## LDAs

PJM RTO

## Winter Peak




## Metropolitan Statistical Areas and Weather Stations

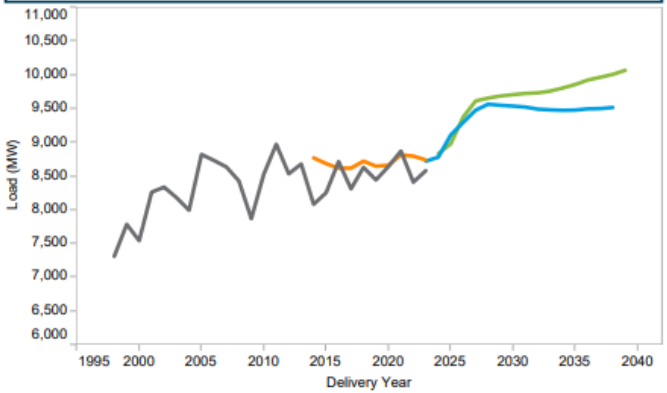



Virginia Commonwealth Economics

Peak WN peak Forecast 2023 Forecast 2024

# Allegheny Power Systems (APS)

## Summer Peak



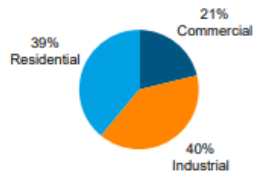

## Weather - Annual Average 1994-2022

| | |
|---|---|
| **Avg Summer Daily Temp** | *72.8* |
| **Avg Summer Max Temp** | *92.5* |
| **Avg Winter Daily Temp** | *32.9* |
| **Avg Winter Min Temp** | *2.2* |

## Zonal 10/15 Year Load Growth

| | | |
|---|---|---|
| SUMMER | 1.1% | 0.9% |
| WINTER | 1.2% | 0.9% |

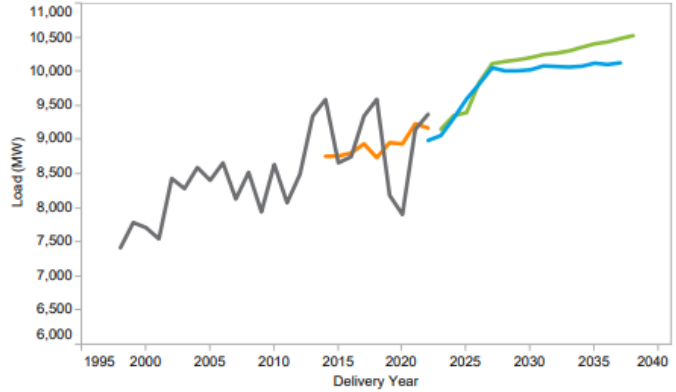
## RCI Makeup




## LDAs

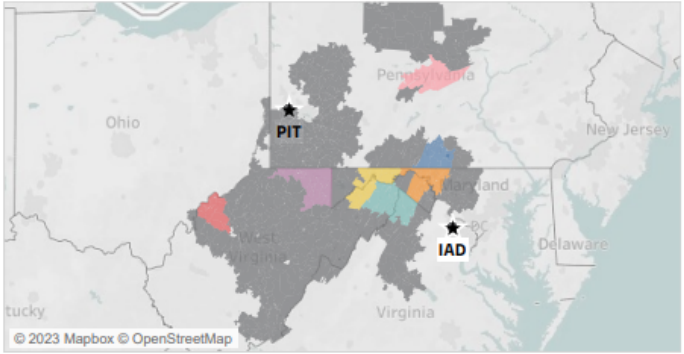
PJM RTO PJM WESTERN

## Winter Peak




Peak WN peak Forecast 2023 Forecast 2024

## Metropolitan Statistical Areas and Weather Stations




- APS - Non-metro
- Chambersburg-Waynesboro, PA
- Cumberland, MD-WV
- Hagerstown-Martinsburg, MD-WV
- Morgantown, WV
- Parkersburg-Vienna, WV
- State College, PA
- Winchester, VA-WV

DIVE BRIEF

# PJM triples annual load growth forecast to 2.4% driven by data centers, electrification

The PJM Interconnection's fastest-growing zones include ones served by Dominion Energy and FirstEnergy's Metropolitan Edison and Jersey Central Power & Light utilities.

Published Jan. 9, 2024

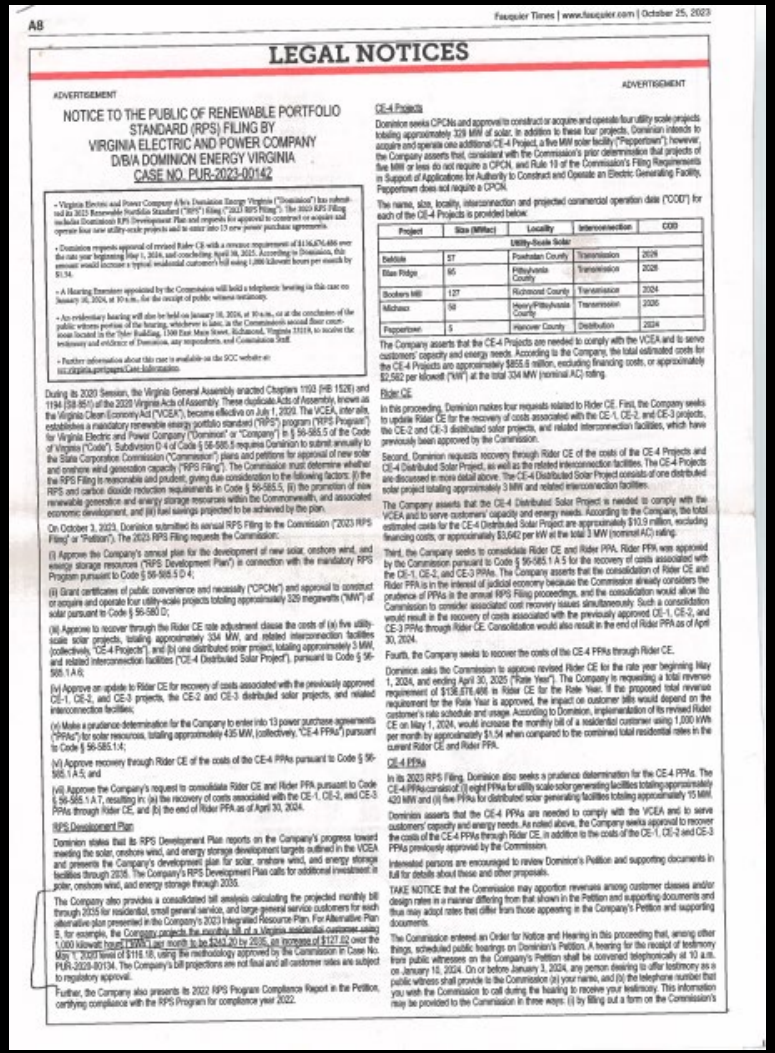
## Executive Summary Table: 2023 Plan Results

| | Plan A | Plan B | Plan C | Plan D | Plan E |
|---|---|---|---|---|---|
| NPV Total ($B) | $109.70 | $127.70 | $127.20 | $140.90 | $138.00 |
| Approximate $CO_2$ Emissions from Company in 2048 (Metric Tons) | 43.8 M | 35.9 M | 36 M | 0 M | 0 M |
| Solar (MW) | 10,800 15 yr.<br>19,800 25 yr. | 10,875 15 yr.<br>19,875 25 yr. | 10,800 15 yr.<br>19,800 25 yr. | 10,875 15 yr.<br>23,955 25 yr. | 11,094 15 yr.<br>24,294 25 yr. |
| Wind (MW) | 3,040 15 yr.<br>3,220 25 yr. | 3,040 15 yr.<br>3,220 25 yr. | 3,040 15 yr.<br>3,220 25 yr. | 3,040 15 yr.<br>3,220 25 yr. | 3,040 15 yr.<br>3,220 25 yr. |
| Storage (MW) | 1,050 15 yr.<br>3,960 25 yr. | 2,370 15 yr.<br>5,190 25 yr. | 2,220 15 yr.<br>5,220 25 yr. | 2,370 15 yr.<br>9,780 25 yr. | 2,910 15 yr.<br>10,350 25 yr. |
| Nuclear (MW) | — 15 yr.<br>— 25 yr. | 804 15 yr.<br>1,608 25 yr. | 804 15 yr.<br>1,608 25 yr. | 1,608 15 yr.<br>4,824 25 yr. | 1,072 15 yr.<br>4,288 25 yr. |
| Natural Gas-Fired (MW) | 5,905 15 yr.<br>9,300 25 yr. | 2,910 15 yr.<br>2,910 25 yr. | 2,910 15 yr.<br>2,910 25 yr. | 970 15 yr.<br>970 25 yr. | 970 15 yr.<br>970 25 yr. |
| Retirements (MW) | — 15 yr.<br>— 25 yr. | — 15 yr.<br>— 25 yr. | — 15 yr.<br>— 25 yr. | — 15 yr.<br>11,399 25 yr. | — 15 yr.<br>11,399 25 yr. |

# This cost will be passed on to ratepayers

"For Alternative Plan B… the Company projects the monthly bill of a Virginia residential customer using 1,000 kilowatt hours ("kWh") per month to be $243.20 by 2035, **an increase of $127.02** over the May 1, 2020 level…"

- Dominion legal notice Oct. 25, 2023



A8 Fauquier Times | www.fauquier.com | October 25, 2023

# LEGAL NOTICES

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## NOTICE TO THE PUBLIC OF RENEWABLE PORTFOLIO STANDARD (RPS) FILING BY VIRGINIA ELECTRIC AND POWER COMPANY D/B/A DOMINION ENERGY VIRGINIA
CASE NO. PUR-2023-00142

- Virginia Electric and Power Company d/b/a Dominion Energy Virginia ("Dominion") has submitted its 2023 Renewable Portfolio Standard ("RPS") filing ("2023 RPS Filing"). The 2023 RPS Filing includes Dominion's RPS Development Plan and requests for approval to construct or acquire and operate four new utility-scale projects and to enter into 15 new power purchase agreements.
- Dominion requests approval of revised Rider CE with a revenue requirement of $138,676,486 over the rate year beginning May 1, 2024, and concluding April 30, 2025. According to Dominion, this amount would increase a typical residential customer's bill using 1,000 kilowatt hours per month by $1.54.
- A Hearing Examiner appointed by the Commission will hold a telephonic hearing in this case on January 16, 2024, at 10 a.m., for the receipt of public witness testimony.
- An evidentiary hearing will also be held on January 16, 2024, at 10 a.m., or at the conclusion of the public witness portion of the hearing, whichever is later, in the Commission's second floor courtroom located in the Tyler Building, 1300 East Main Street, Richmond, Virginia 23219, to receive the testimony and evidence of Dominion, any respondents, and Commission Staff.
- Further information about this case is available on the SCC website at: scc.virginia.gov/pages/Case-Information.

During its 2020 Session, the Virginia General Assembly enacted Chapters 1193 (HB 1526) and 1194 (SB 851) of the 2020 Virginia Acts of Assembly. These duplicate Acts of Assembly, known as the Virginia Clean Economy Act ("VCEA"), became effective on July 1, 2020. The VCEA, inter alia, establishes a mandatory renewable energy portfolio standard ("RPS") program ("RPS Program") for Virginia Electric and Power Company ("Dominion" or "Company") in § 56-585.5 of the Code of Virginia ("Code"). Subdivision D 4 of Code § 56-585.5 requires Dominion to submit annually to the State Corporation Commission ("Commission") plans and petitions for approval of new solar and onshore wind generation capacity ("RPS Filing"). The Commission must determine whether the RPS Filing is reasonable and prudent, giving due consideration to the following factors: (i) the RPS and carbon dioxide reduction requirements in Code § 56-585.5, (ii) the promotion of new renewable generation and energy storage resources within the Commonwealth, and associated economic development, and (iii) fuel savings projected to be achieved by the plan.

On October 3, 2023, Dominion submitted its annual RPS Filing to the Commission ("2023 RPS Filing" or "Petition"). The 2023 RPS Filing requests the Commission:

(i) Approve the Company's annual plan for the development of new solar, onshore wind, and energy storage resources ("RPS Development Plan") in connection with the mandatory RPS Program pursuant to Code § 56-585.5 D 4;

(ii) Grant certificates of public convenience and necessity ("CPCNs") and approval to construct or acquire and operate four utility-scale projects totaling approximately 329 megawatts ("MW") of solar pursuant to Code § 56-580 D;

(iii) Approve to recover through the Rider CE rate adjustment clause the costs of (a) five utility-scale solar projects, totaling approximately 334 MW, and related interconnection facilities (collectively, "CE-4 Projects"), and (b) one distributed solar project, totaling approximately 5 MW, and related interconnection facilities ("CE-4 Distributed Solar Project"), pursuant to Code § 56-585.1 A 6;

(iv) Approve an update to Rider CE for recovery of costs associated with the previously approved CE-1, CE-2, and CE-3 projects, the CE-2 and CE-3 distributed solar projects, and related interconnection facilities;

(v) Make a prudence determination for the Company to enter into 13 power purchase agreements ("PPAs") for solar resources, totaling approximately 435 MW, (collectively, "CE-4 PPAs") pursuant to Code § 56-585.1:4;

(vi) Approve recovery through Rider CE of the costs of the CE-4 PPAs pursuant to Code § 56-585.1 A 5; and

(vii) Approve the Company's request to consolidate Rider CE and Rider PPA pursuant to Code § 56-585.1 A 7, resulting in: (a) the recovery of costs associated with the CE-1, CE-2, and CE-3 PPAs through Rider CE, and (b) the end of Rider PPA as of April 30, 2024.

RPS Development Plan

Dominion states that its RPS Development Plan reports on the Company's progress toward meeting the solar, onshore wind, and energy storage development targets outlined in the VCEA and presents the Company's development plan for solar, onshore wind, and energy storage facilities through 2035. The Company's RPS Development Plan calls for additional investment in solar, onshore wind, and energy storage through 2035.

The Company also provides a consolidated bill analysis calculating the projected monthly bill through 2035 for residential, small general service, and large general service customers for each alternative plan presented in the Company's 2023 Integrated Resource Plan. For Alternative Plan B, for example, the Company projects the monthly bill of a Virginia residential customer using 1,000 kilowatt hours ("kWh") per month to be $243.20 by 2035, an increase of $127.02 over the May 1, 2020 level of $116.18, using the methodology approved by the Commission in Case No. PUR-2020-80134. The Company's bill projections are not final and all customer rates are subject to regulatory approval.

Further, the Company also presents its 2022 RPS Program Compliance Report in the Petition, certifying compliance with the RPS Program for compliance year 2022.

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CE-4 Projects

Dominion seeks CPCNs and approval to construct or acquire and operate four utility scale projects totaling approximately 329 MW of solar. In addition to these four projects, Dominion intends to acquire and operate one additional CE-4 Project, a five MW solar facility ("Peppertown"); however, the Company asserts that, consistent with the Commission's prior determination that projects of five MW or less do not require a CPCN, and Rule 19 of the Commission's Filing Requirements in Support of Applications for Authority to Construct and Operate an Electric Generating Facility, Peppertown does not require a CPCN.

The name, size, locality, interconnection and projected commercial operation date ("COD") for each of the CE-4 Projects is provided below:

| Project | Size (MWac) | Locality | Interconnection | COD |
|---|---|---|---|---|
| Utility-Scale Solar | | | | |
| Bellisle | 57 | Powhatan County | Transmission | 2026 |
| Blue Ridge | 95 | Pittsylvania County | Transmission | 2028 |
| Bookers Mill | 127 | Richmond County | Transmission | 2024 |
| Milkhaus | 56 | Henry/Pittsylvania County | Transmission | 2026 |
| Peppertown | 5 | Hanover County | Distribution | 2024 |

The Company asserts that the CE-4 Projects are needed to comply with the VCEA and to serve customers' capacity and energy needs. According to the Company, the total estimated costs for the CE-4 Projects are approximately $855.6 million, excluding financing costs, or approximately $2,582 per kilowatt ("kW") at the total 334 MW (nominal AC) rating.

Rider CE

In this proceeding, Dominion makes four requests related to Rider CE. First, the Company seeks to update Rider CE for the recovery of costs associated with the CE-1, CE-2, and CE-3 projects, the CE-2 and CE-3 distributed solar projects, and related interconnection facilities, which have previously been approved by the Commission.

Second, Dominion requests recovery through Rider CE of the costs of the CE-4 Projects and CE-4 Distributed Solar Project, as well as the related interconnection facilities. The CE-4 Projects are discussed in more detail above. The CE-4 Distributed Solar Project consists of one distributed solar project totaling approximately 3 MW and related interconnection facilities.

The Company asserts that the CE-4 Distributed Solar Project is needed to comply with the VCEA and to serve customers' capacity and energy needs. According to the Company, the total estimated costs for the CE-4 Distributed Solar Project are approximately $10.9 million, excluding financing costs, or approximately $3,642 per kW at the total 3 MW (nominal AC) rating.

Third, the Company seeks to consolidate Rider CE and Rider PPA. Rider PPA was approved by the Commission pursuant to Code § 56-585.1 A 5 for the recovery of costs associated with the CE-1, CE-2, and CE-3 PPAs. The Company asserts that the consolidation of Rider CE and Rider PPA is in the interest of judicial economy because the Commission already considers the prudence of PPAs in the annual RPS Filing proceedings, and the consolidation would allow the Commission to consider associated cost recovery issues simultaneously. Such a consolidation would result in the recovery of costs associated with the previously approved CE-1, CE-2, and CE-3 PPAs through Rider CE. Consolidation would also result in the end of Rider PPA as of April 30, 2024.

Fourth, the Company seeks to recover the costs of the CE-4 PPAs through Rider CE.

Dominion asks the Commission to approve revised Rider CE for the rate year beginning May 1, 2024, and ending April 30, 2025 ("Rate Year"). The Company is requesting a total revenue requirement of $138,676,486 in Rider CE for the Rate Year. If the proposed total revenue requirement for the Rate Year is approved, the impact on customer bills would depend on the customer's rate schedule and usage. According to Dominion, implementation of its revised Rider CE on May 1, 2024, would increase the monthly bill of a residential customer using 1,000 kWh per month by approximately $1.54 when compared to the combined total residential rates in the current Rider CE and Rider PPA.

CE-4 PPAs

In its 2023 RPS Filing, Dominion also seeks a prudence determination for the CE-4 PPAs. The CE-4 PPAs consist of: (i) eight PPAs for utility scale solar generating facilities totaling approximately 429 MW and (ii) five PPAs for distributed solar generating facilities totaling approximately 15 MW.

Dominion asserts that the CE-4 PPAs are needed to comply with the VCEA and to serve customers' capacity and energy needs. As noted above, the Company seeks approval to recover the costs of the CE-4 PPAs through Rider CE, in addition to the costs of the CE-1, CE-2 and CE-3 PPAs previously approved by the Commission.

Interested persons are encouraged to review Dominion's Petition and supporting documents in full for details about these and other proposals.

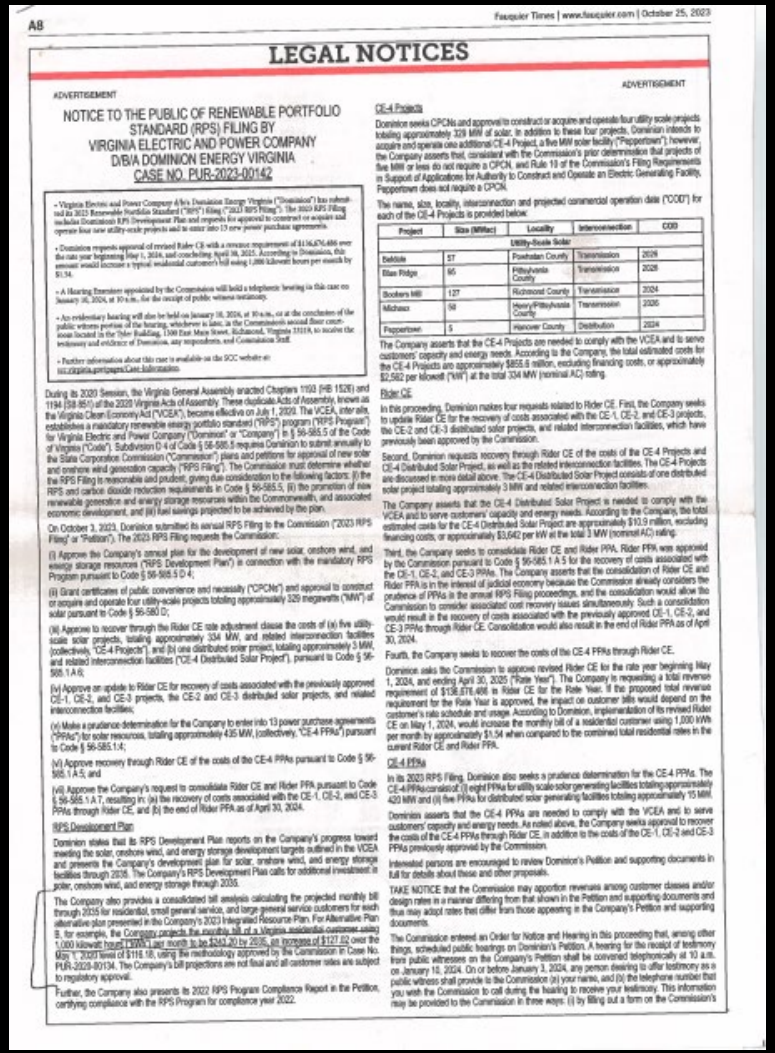
TAKE NOTICE that the Commission may apportion revenues among customer classes and/or design rates in a manner differing from that shown in the Petition and supporting documents and thus may adopt rates that differ from those appearing in the Company's Petition and supporting documents.

The Commission entered an Order for Notice and Hearing in this proceeding that, among other things, scheduled public hearings on Dominion's Petition. A hearing for the receipt of testimony from public witnesses on the Company's Petition shall be convened telephonically at 10 a.m. on January 16, 2024. On or before January 3, 2024, any person desiring to offer testimony as a public witness shall provide to the Commission (a) your name, and (b) the telephone number that you wish the Commission to call during the hearing to receive your testimony. This information may be provided to the Commission in three ways: (i) by filling out a form on the Commission's

"For Alternative Plan B… the Company projects the monthly bill of a Virginia residential customer using 1,000 kilowatt hours ("kWh") per month to be $243.20 by 2035, **an increase of $127.02** over the May 1, 2020 level…"

- Dominion legal notice Oct. 25, 2023

That's a 100% increase by 2035!



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- A Hearing Examiner appointed by the Commission will hold a telephonic hearing in this case on January 16, 2024, at 10 a.m., for the receipt of public witness testimony.
- An evidentiary hearing will also be held on January 16, 2024, at 10 a.m., or at the conclusion of the public witness portion of the hearing, whichever is later, in the Commission's second floor courtroom located in the Tyler Building, 1300 East Main Street, Richmond, Virginia 23219, to receive the testimony and evidence of Dominion, any respondents, and Commission Staff.
- Further information about this case is available on the SCC website at: scc.virginia.gov/pages/Case-Information.

During its 2020 Session, the Virginia General Assembly enacted Chapters 1193 (HB 1526) and 1194 (SB 851) of the 2020 Virginia Acts of Assembly. These duplicate Acts of Assembly, known as the Virginia Clean Economy Act ("VCEA"), became effective on July 1, 2020. The VCEA, inter alia, establishes a mandatory renewable energy portfolio standard ("RPS") program ("RPS Program") for Virginia Electric and Power Company ("Dominion" or "Company"). In § 56-585.5 of the Code of Virginia ("Code"), Subdivision D 4 of Code § 56-585.5 requires Dominion to submit annually to the State Corporation Commission ("Commission") plans and petitions for approval of new solar and onshore wind generation capacity ("RPS Filing"). The Commission must determine whether the RPS Filing is reasonable and prudent, giving due consideration to the following factors: (i) the RPS and carbon dioxide reduction requirements in Code § 56-585.5, (ii) the promotion of new renewable generation and energy storage resources within the Commonwealth, and associated economic development, and (iii) fuel savings projected to be achieved by the plan.

On October 3, 2023, Dominion submitted its annual RPS Filing to the Commission ("2023 RPS Filing" or "Petition"). The 2023 RPS Filing requests the Commission:

(i) Approve the Company's annual plan for the development of new solar, onshore wind, and energy storage resources ("RPS Development Plan") in connection with the mandatory RPS Program pursuant to Code § 56-585.5 D 4;

(ii) Grant certificates of public convenience and necessity ("CPCNs") and approval to construct or acquire and operate four utility-scale projects totaling approximately 329 megawatts ("MW") of solar pursuant to Code § 56-580 D;

(iii) Approve to recover through the Rider CE rate adjustment clause the costs of (a) five utility-scale solar projects, totaling approximately 334 MW, and related interconnection facilities (collectively, "CE-4 Projects"), and (b) one distributed solar project, totaling approximately 5 MW, and related interconnection facilities ("CE-4 Distributed Solar Project"), pursuant to Code § 56-585.1 A 6;

(iv) Approve an update to Rider CE for recovery of costs associated with the previously approved CE-1, CE-2, and CE-3 projects, the CE-2 and CE-3 distributed solar projects, and related interconnection facilities;

(v) Make a prudence determination for the Company to enter into 13 power purchase agreements ("PPAs") for solar resources, totaling approximately 435 MW, (collectively, "CE-4 PPAs") pursuant to Code § 56-585.1:4;

(vi) Approve recovery through Rider CE of the costs of the CE-4 PPAs pursuant to Code § 56-585.1 A 5; and

(vii) Approve the Company's request to consolidate Rider CE and Rider PPA pursuant to Code § 56-585.1 A 7, resulting in: (a) the recovery of costs associated with the CE-1, CE-2, and CE-3 PPAs through Rider CE, and (b) the end of Rider PPA as of April 30, 2024.

### RPS Development Plan

Dominion states that its RPS Development Plan reports on the Company's progress toward meeting the solar, onshore wind, and energy storage development targets outlined in the VCEA and presents the Company's development plan for solar, onshore wind, and energy storage facilities through 2035. The Company's RPS Development Plan calls for additional investment in solar, onshore wind, and energy storage through 2035.

The Company also provides a consolidated bill analysis calculating the projected monthly bill through 2035 for residential, small general service, and large general service customers for each alternative plan presented in the Company's 2023 Integrated Resource Plan. For Alternative Plan B, for example, the Company projects the monthly bill of a Virginia residential customer using 1,000 kilowatt hours ("kWh") per month to be $243.20 by 2035, an increase of $127.02 over the May 1, 2020 level of $116.18, using the methodology approved by the Commission in Case No. PUR-2020-80134. The Company's bill projections are not final and all customer rates are subject to regulatory approval.

Further, the Company also presents its 2022 RPS Program Compliance Report in the Petition, certifying compliance with the RPS Program for compliance year 2022.

### CE-4 Projects

Dominion seeks CPCNs and approval to construct or acquire and operate four utility scale projects totaling approximately 329 MW of solar. In addition to these four projects, Dominion intends to acquire and operate one additional CE-4 Project, a five MW solar facility ("Peppertown"); however, the Company asserts that, consistent with the Commission's prior determination that projects of five MW or less do not require a CPCN, and Rule 19 of the Commission's Filing Requirements in Support of Applications for Authority to Construct and Operate an Electric Generating Facility, Peppertown does not require a CPCN.

The name, size, locality, interconnection and projected commercial operation date ("COD") for each of the CE-4 Projects is provided below:

| Project | Size (MWac) | Locality | Interconnection | COD |
|---|---|---|---|---|
| Utility-Scale Solar | | | | |
| Bellisle | 57 | Powhatan County | Transmission | 2026 |
| Blue Ridge | 95 | Pittsylvania County | Transmission | 2028 |
| Bookers Mill | 127 | Richmond County | Transmission | 2024 |
| Milchaus | 58 | Henry/Pittsylvania County | Transmission | 2026 |
| Peppertown | 5 | Hanover County | Distribution | 2024 |

The Company asserts that the CE-4 Projects are needed to comply with the VCEA and to serve customers' capacity and energy needs. According to the Company, the total estimated costs for the CE-4 Projects are approximately $855.6 million, excluding financing costs, or approximately $2,562 per kilowatt ("kW") at the total 334 MW (nominal AC) rating.

### Rider CE

In this proceeding, Dominion makes four requests related to Rider CE. First, the Company seeks to update Rider CE for the recovery of costs associated with the CE-1, CE-2, and CE-3 projects, the CE-2 and CE-3 distributed solar projects, and related interconnection facilities, which have previously been approved by the Commission.

Second, Dominion requests recovery through Rider CE of the costs of the CE-4 Projects and CE-4 Distributed Solar Project, as well as the related interconnection facilities. The CE-4 Projects are discussed in more detail above. The CE-4 Distributed Solar Project consists of one distributed solar project totaling approximately 3 MW and related interconnection facilities.

The Company asserts that the CE-4 Distributed Solar Project is needed to comply with the VCEA and to serve customers' capacity and energy needs. According to the Company, the total estimated costs for the CE-4 Distributed Solar Project are approximately $10.9 million, excluding financing costs, or approximately $3,642 per kW at the total 3 MW (nominal AC) rating.

Third, the Company seeks to consolidate Rider CE and Rider PPA. Rider PPA was approved by the Commission pursuant to Code § 56-585.1 A 5 for the recovery of costs associated with the CE-1, CE-2, and CE-3 PPAs. The Company asserts that the consolidation of Rider CE and Rider PPA is in the interest of judicial economy because the Commission already considers the prudence of PPAs in the annual RPS Filing proceedings, and the consolidation would allow the Commission to consider associated cost recovery issues simultaneously. Such a consolidation would result in the recovery of costs associated with the previously approved CE-1, CE-2, and CE-3 PPAs through Rider CE. Consolidation would also result in the end of Rider PPA as of April 30, 2024.

Fourth, the Company seeks to recover the costs of the CE-4 PPAs through Rider CE.

Dominion asks the Commission to approve revised Rider CE for the rate year beginning May 1, 2024, and ending April 30, 2025 ("Rate Year"). The Company is requesting a total revenue requirement of $138,676,486 in Rider CE for the Rate Year. If the proposed total revenue requirement for the Rate Year is approved, the impact on customer bills would depend on the customer's rate schedule and usage. According to Dominion, implementation of its revised Rider CE on May 1, 2024, would increase the monthly bill of a residential customer using 1,000 kWh per month by approximately $1.54 when compared to the combined total residential rates in the current Rider CE and Rider PPA.

### CE-4 PPAs

In its 2023 RPS Filing, Dominion also seeks a prudence determination for the CE-4 PPAs. The CE-4 PPAs consist of: (i) eight PPAs for utility scale solar generating facilities totaling approximately 429 MW and (ii) five PPAs for distributed solar generating facilities totaling approximately 15 MW.

Dominion asserts that the CE-4 PPAs are needed to comply with the VCEA and to serve customers' capacity and energy needs. As noted above, the Company seeks approval to recover the costs of the CE-4 PPAs through Rider CE, in addition to the costs of the CE-1, CE-2 and CE-3 PPAs previously approved by the Commission.

Interested persons are encouraged to review Dominion's Petition and supporting documents in full for details about these and other proposals.

TAKE NOTICE that the Commission may apportion revenues among customer classes and/or design rates in a manner differing from that shown in the Petition and supporting documents and thus may adopt rates that differ from those appearing in the Company's Petition and supporting documents.

The Commission entered an Order for Notice and Hearing in this proceeding that, among other things, scheduled public hearings on Dominion's Petition. A hearing for the receipt of testimony from public witnesses on the Company's Petition shall be convened telephonically at 10 a.m. on January 16, 2024. On or before January 3, 2024, any person desiring to offer testimony as a public witness shall provide to the Commission (a) your name, and (b) the telephone number that you wish the Commission to call during the hearing to receive your testimony. This information may be provided to the Commission in three ways: (i) by filling out a form on the Commission's

# Planning for data centers requires planning for energy infrastructure…

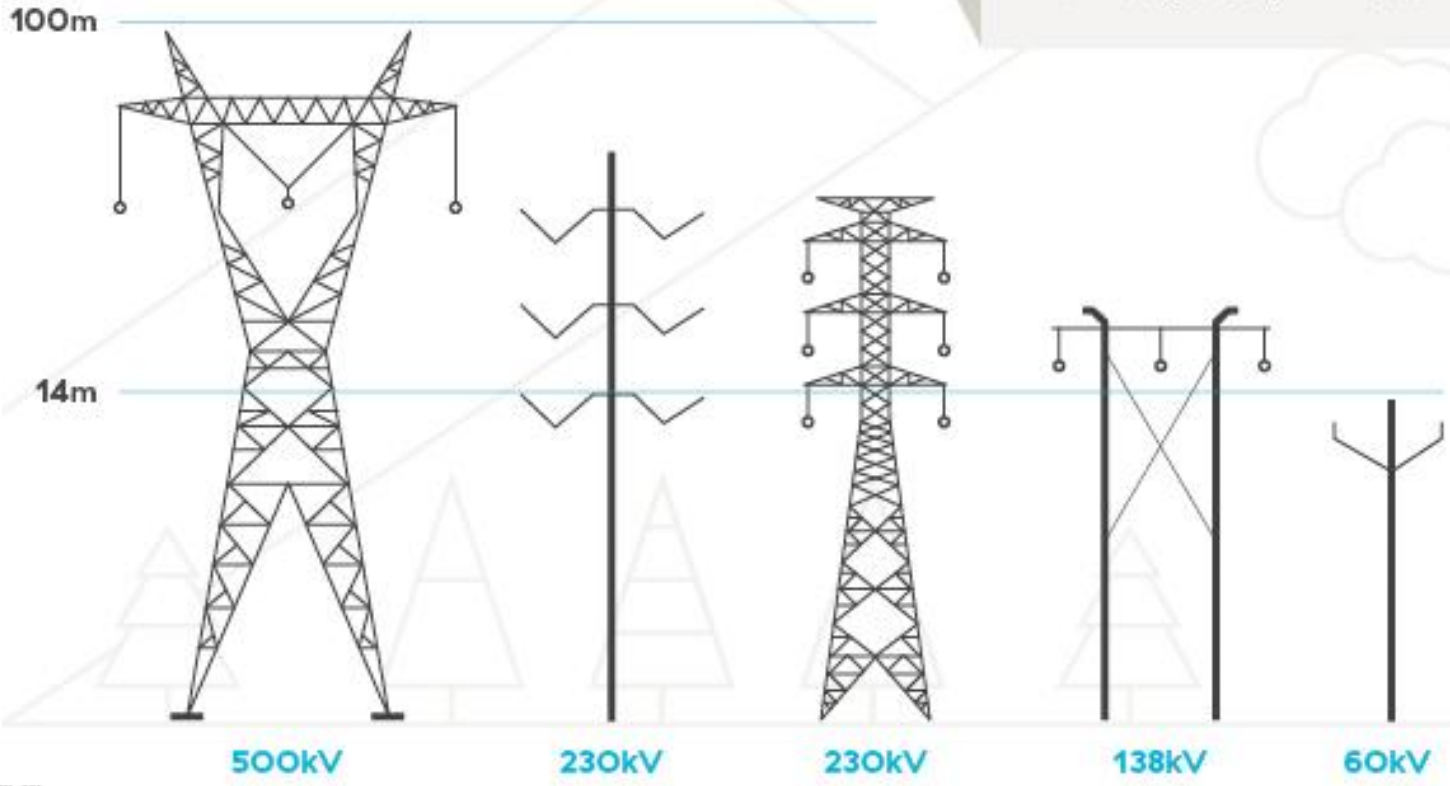
- Substations - Convert electricity into different voltages (max 300MW)
- Serving Hyperscale Data Center Load Requests - 230kV and below
- Approval of Transmission Lines (138kV +) - State Corporation Commission regulates electric facilities
- Approval of substations - Localities permit siting, zoning, and site plan
- Rough estimates of lines capacity (varies based on conductor and conditions):
  - 230 kV line around 1 to 1.6 GW
  - 500 kV line around 4.3 to 5.2 GW
- Single source radial transmission line load is generally limited to 100MW
- Dominion requires reinforcements when load exceeds 300MW (N-1-1 contingency; simultaneous loss of 2 major units); applies to both line loss and substation loss

## Transmission lines

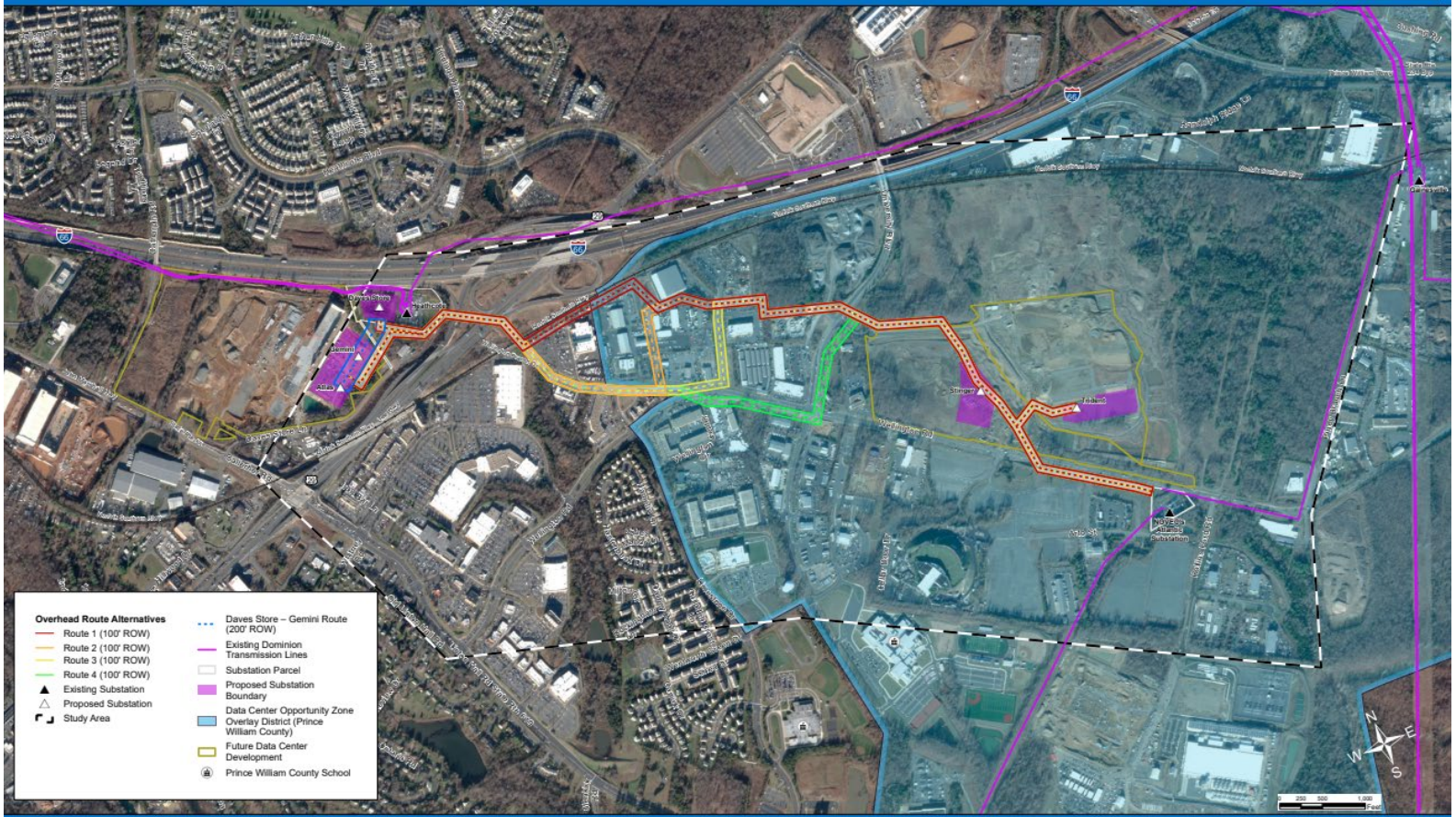
Transmission lines are the big, high voltage power lines that bring electricity from where it's made at our generating stations to substations near communities across B.C.

### What's a kV?

kV stands for kilovolt, which is a unit of potential energy.
One kV is equal to 1,000 volts.



# General Project Area Map



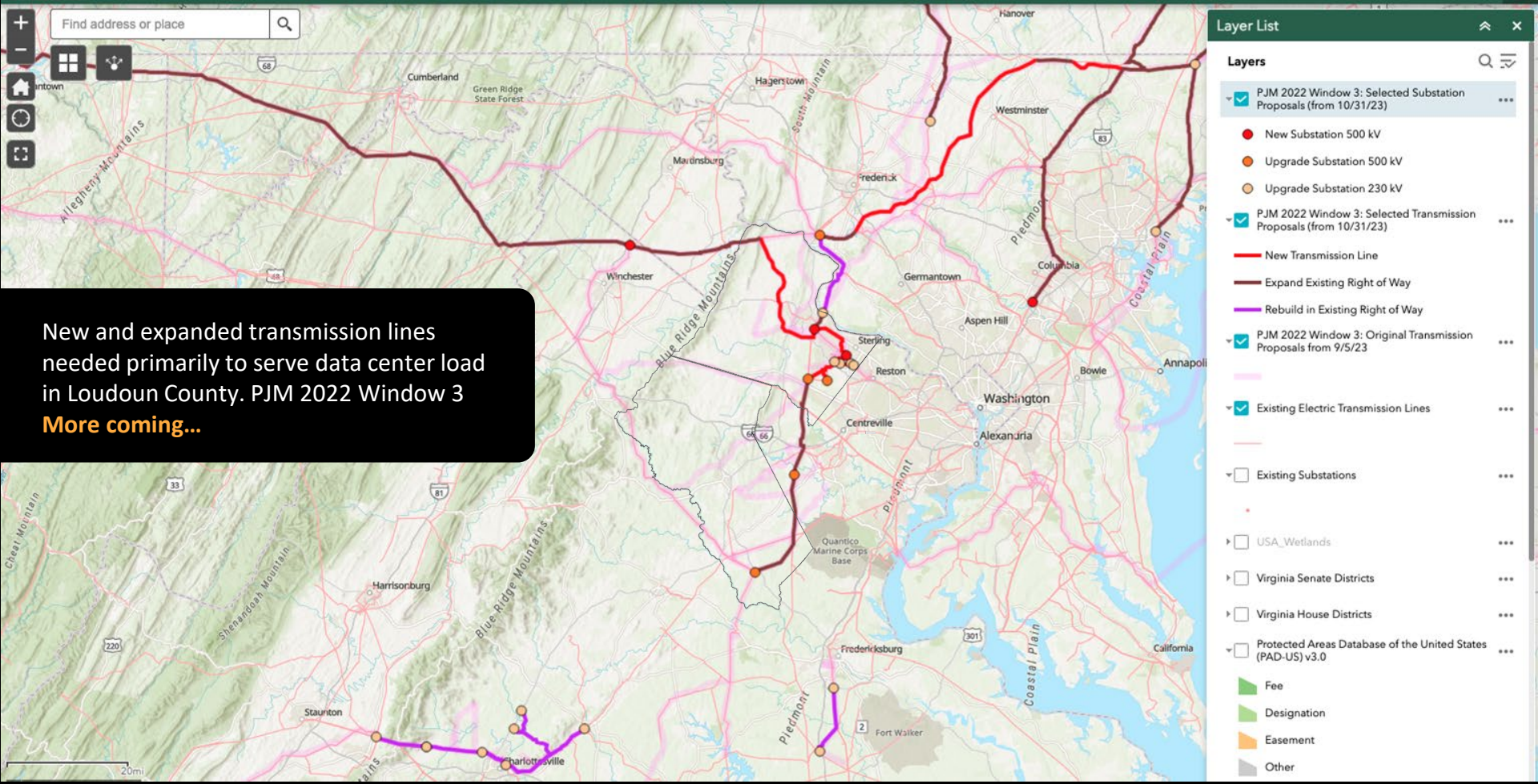

# Daves Store Substation and 230 kV Transmission Line Project

Prince William Times

# New high-voltage transmission line for Gainesville data centers is already facing pushback from activists

By Jill Palermo Times Staff Writer Jan 8, 2024 Updated 7 hrs ago 4

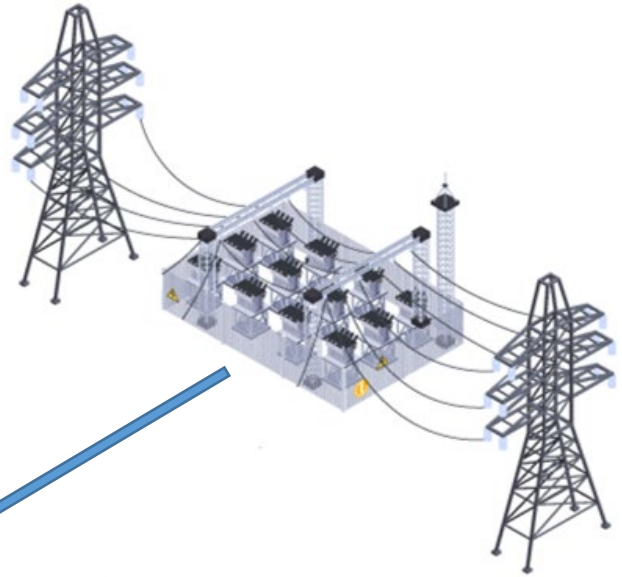
# Initial Transmission Line Proposals to Serve Data Center Load Growth

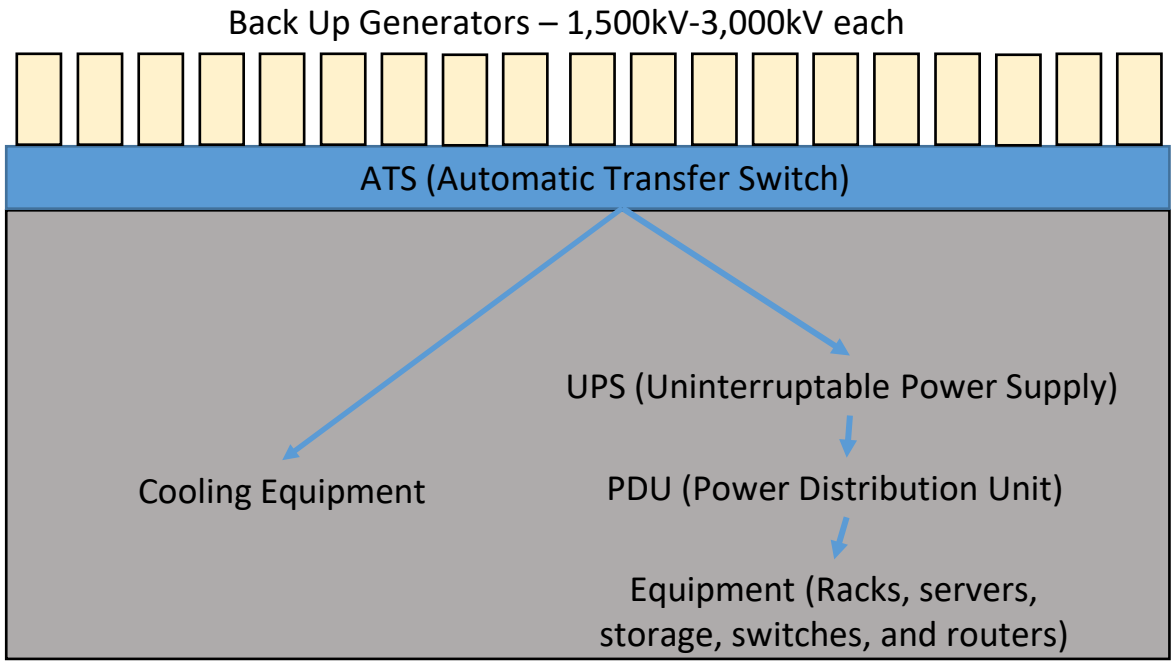



New and expanded transmission lines needed primarily to serve data center load in Loudoun County. PJM 2022 Window 3

**More coming…**

# Power Path for Typical Data Center

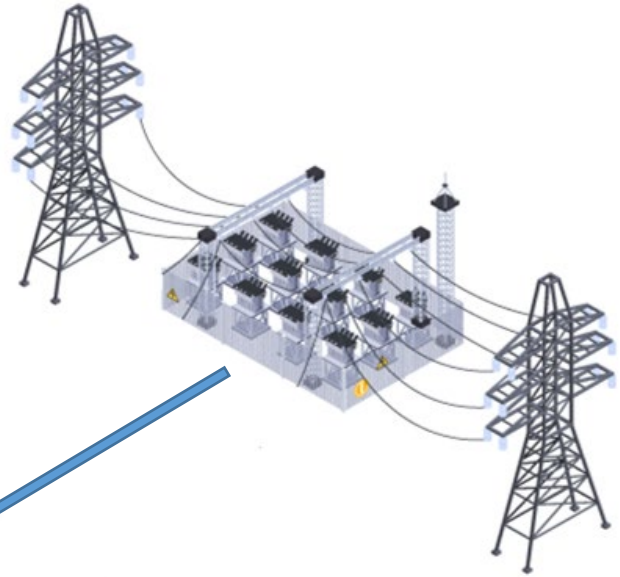


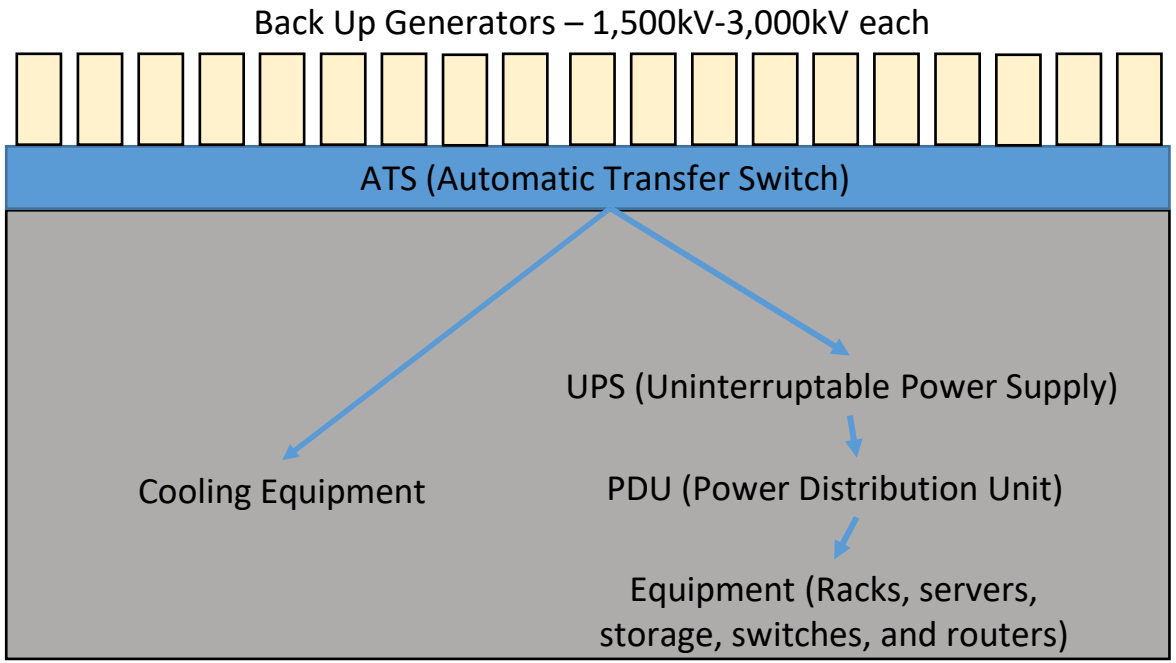



Note about energy efficiency:
Industry often uses: PUE

$$PUE = \frac{\text{Total Facility Power}}{\text{IT Equipment Power}}$$

# Power Path for Typical Data Center






Note about energy efficiency:
Industry often uses: PUE

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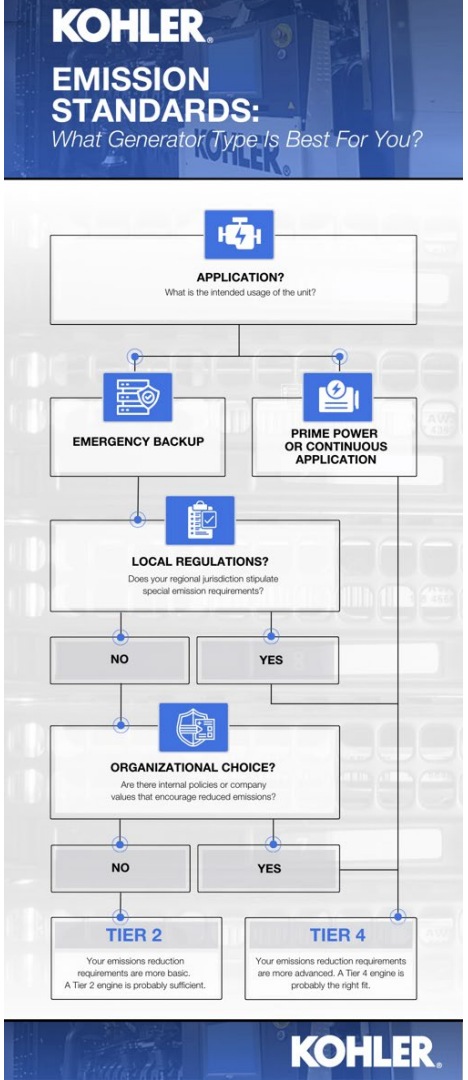
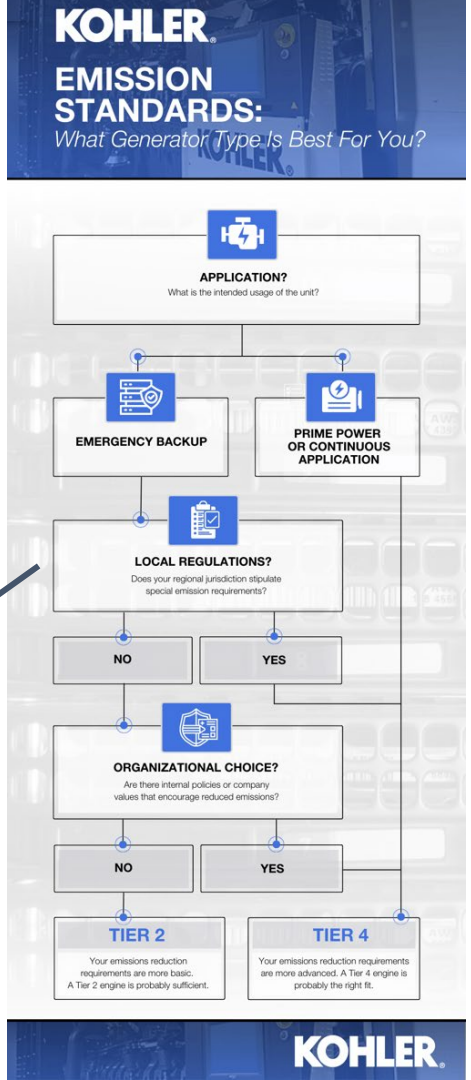
# Their backup power is large diesel generators

# How companies decide what generator type to use:



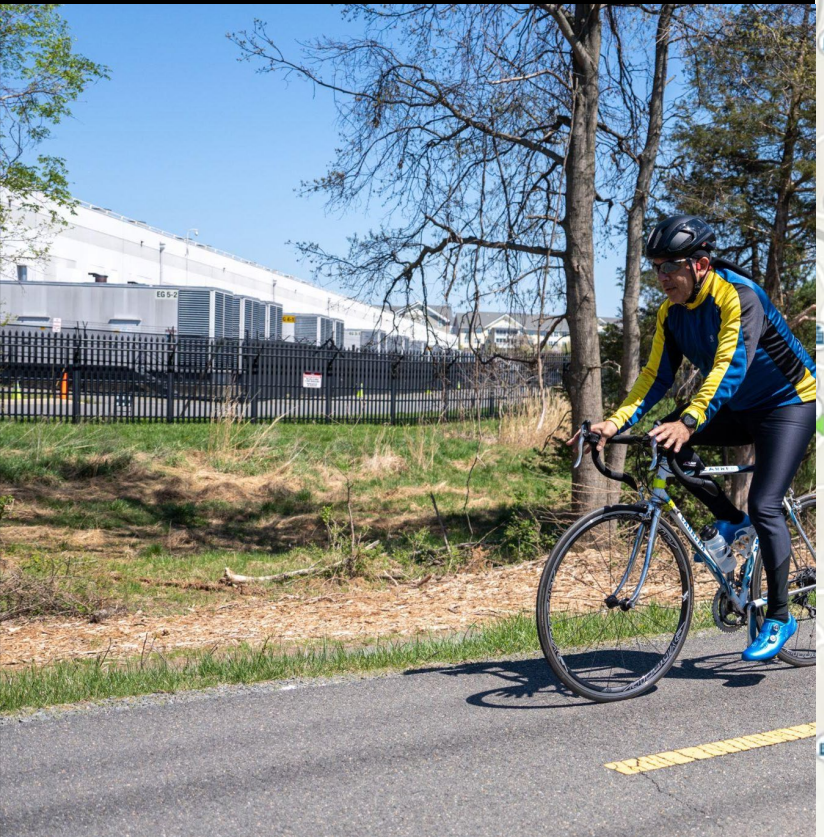

Source: https://insights-datacenters.kohlerpower.com/emission-standards-for-data-centers-a-decision-making-guide

# How companies decide what generator type to use:

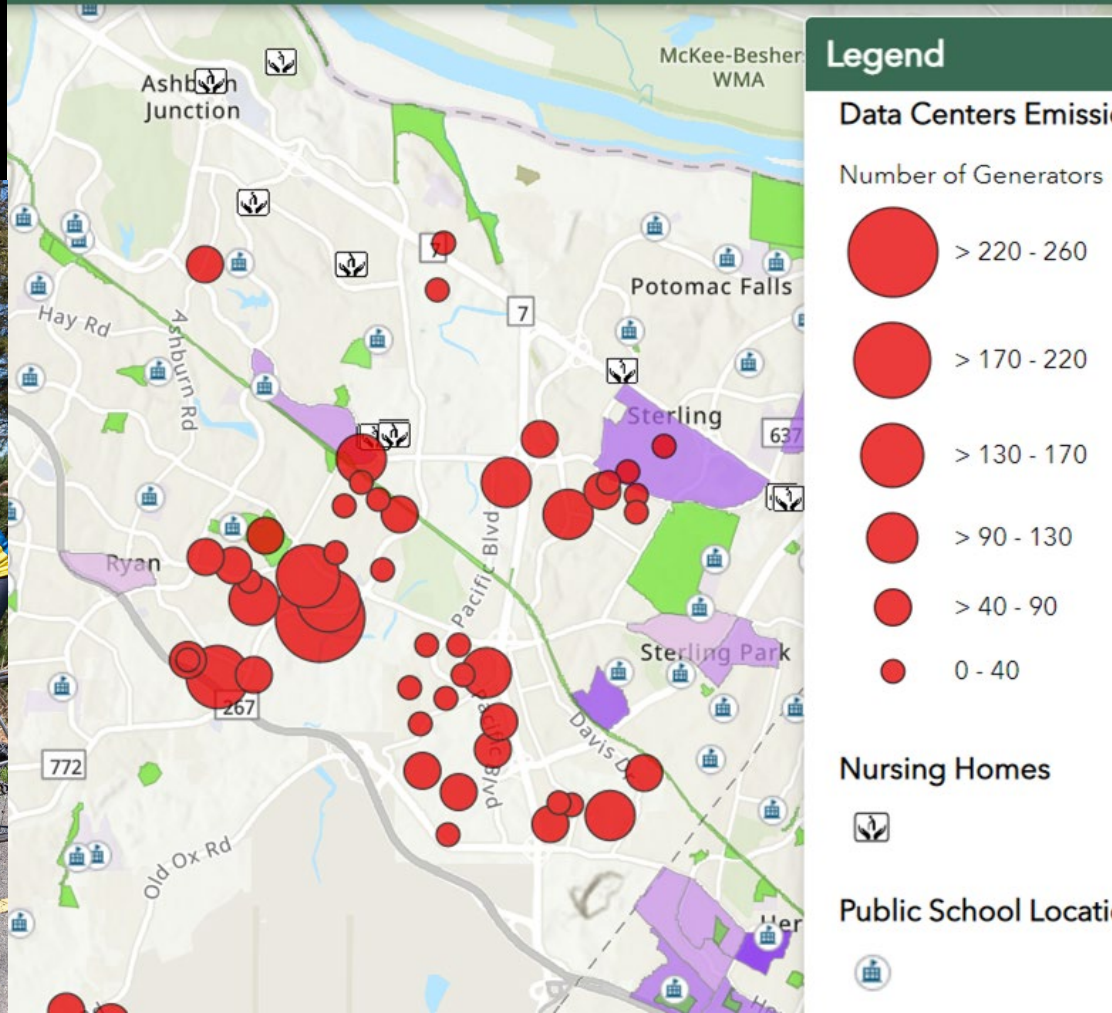




Source: https://insights-datacenters.kohlerpower.com/emission-standards-for-data-centers-a-decision-making-guide

# Over 4,000 diesel generators permitted in Loudoun



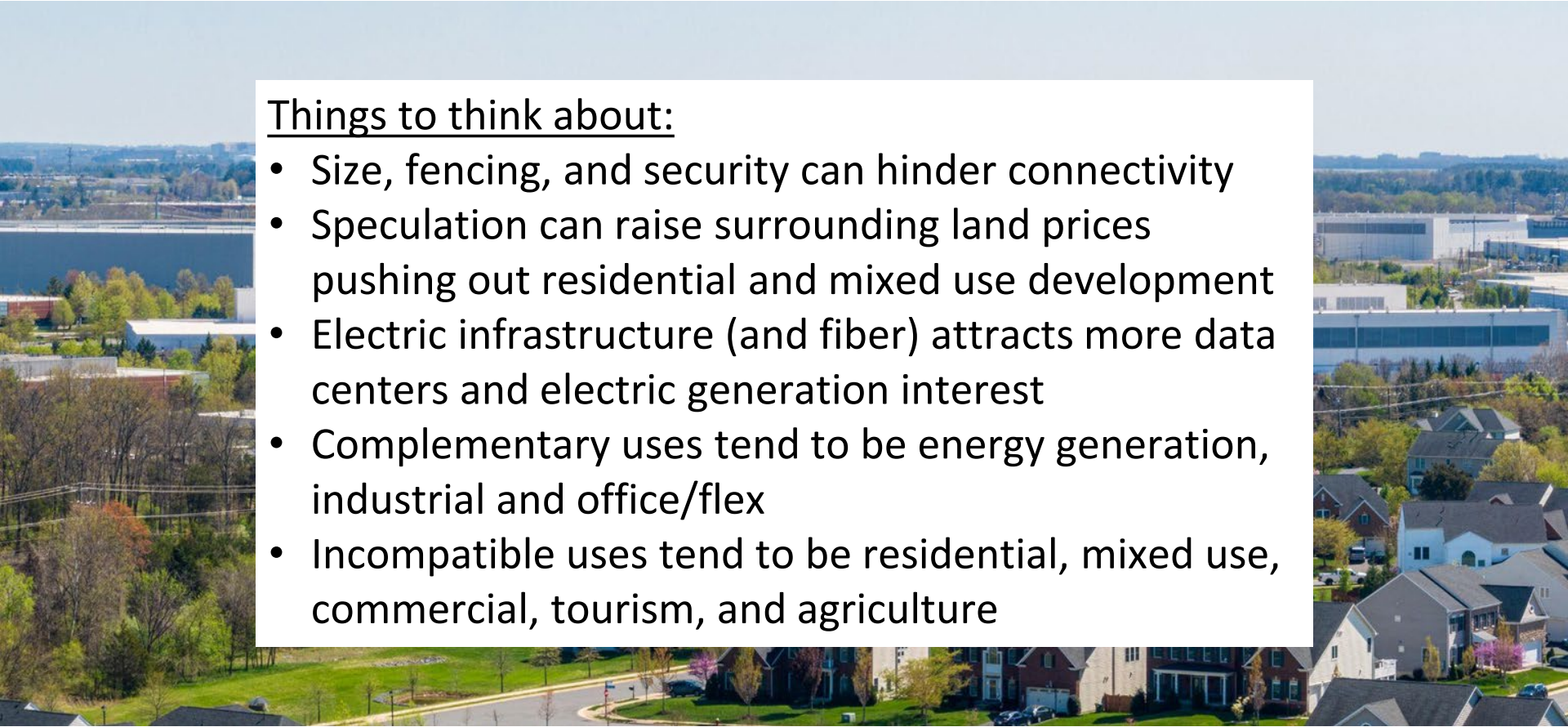
## Data Center Diesel Generators



# Effect on Adjacent Uses

Photo Credit: Hugh Kenny, PEC

# Effect on Adjacent Uses



Things to think about:

- Size, fencing, and security can hinder connectivity
- Speculation can raise surrounding land prices pushing out residential and mixed use development
- Electric infrastructure (and fiber) attracts more data centers and electric generation interest
- Complementary uses tend to be energy generation, industrial and office/flex
- Incompatible uses tend to be residential, mixed use, commercial, tourism, and agriculture

# Local Land Use Impacts of Data Centers Vary…

- Traffic
- Effect on Adjacent Uses
- Lighting
- Building Design
- Energy Usage
- Air Quality
- Noise
- Water Usage and Wastewater
- Water Vapor Plumes
- Fire Protection and Fuel Storage

# Suggested regulations:

- Define data centers/cryptocurrency (possibly separately) and any type of onsite power generation allowed
- Adopt use-specific standards, some ideas:
  - Require basic information on data center type, cooling system, projected energy and water usage, building design, site layout with substation, reserved transmission line right-of-way, generators, fuel storage and containment area, noise study, viewshed analysis, elevations, etc
  - Consider limiting the number or location of diesel generators in proximity to sensitive uses such as schools, parks, trails, elderly living facilities, hospitals, etc. or requiring less polluting forms of backup power such as a combination of battery and natural gas
  - Adopt energy efficiency standards such as a PUE of 1.2 or lower or a documented renewable energy agreement

# Suggested Policies

- Don’t sign NDA’s and review FOIA regulations and what is considered proprietary information (a general concept plan with building locations, anticipated power usage, generator yard, fuel storage, substation, etc and basic description of type of data center and cooling is not proprietary info)
- Meet with your utility to discuss electrical infrastructure required during review not after approval! This requires full information such as projected MW of data center and planned location of substation.
- Thoughtfully set the personal property tax and depreciation schedule. Closed door negotiations often burn locality… careful with performance agreements
- Consider allocating revenue from data centers into CIP budget that may be less impacted by revenue swings

# More information

- UpTime Institute - IT advisory organization tracking industry trends and providing guidance
- CBRE – commercial real estate services and investments research and provide insights
- Data Center Dynamics (DCD) - Articles, white papers, training, webinars, magazine
- Data Center Frontier – Articles, white papers, projections/trends, webinars, videos
- Podcasts – The Data Center Frontier Show, DCD Zero Downtime, Not Your Father's Data Center Podcast (less technical and more local focus)
- APA Illinois Chapter On-Demand Education Course on Crypto Mining & Data Centers (David Morley, AICP, Stewart Weiss, and Tom Thunder) CM 1.25
- PJM Transmission Expansion Advisory Committee (TEAC) – determining transmission line routes to deliver power to northern Virginia and other small data center hubs in the state
- Take a tour of Loudoun's Data Center Alley and schedule tour of inside of colocation data center with Iron Mountain or QTS
- **Visit PEC's website**

**www.pecva.org/our-work/energy-matters/data-centers-energy-demand/**

# Questions?