



Photo Credit: <http://datacenterfrontier.com/red-hot-in-nova-burst-of-leasing-new-construction-in-ashburn/>

# Ashburn

# Data Center Market Report



# About Our Market Reports

The data center market reports are a labor of love for the Open Spectrum team. The information found within is designed to be service provider agnostic, accurate, highly relevant, and actionable for anyone working within the industry. In producing these reports, we pool information from our own dealings around the data center marketplace working directly with hundreds of buyers, sellers, and investors.

We also partner with different experts and aggregators of targeted data sets such as Structure Research, NE Fiber, and Lathrop & Gage, LLP.

**Fiber**Locator



**STRUCTURE  
RESEARCH**

**LATHROP & GAGE**LLP

We hope these reports provide value to you in whatever you are trying to accomplish.

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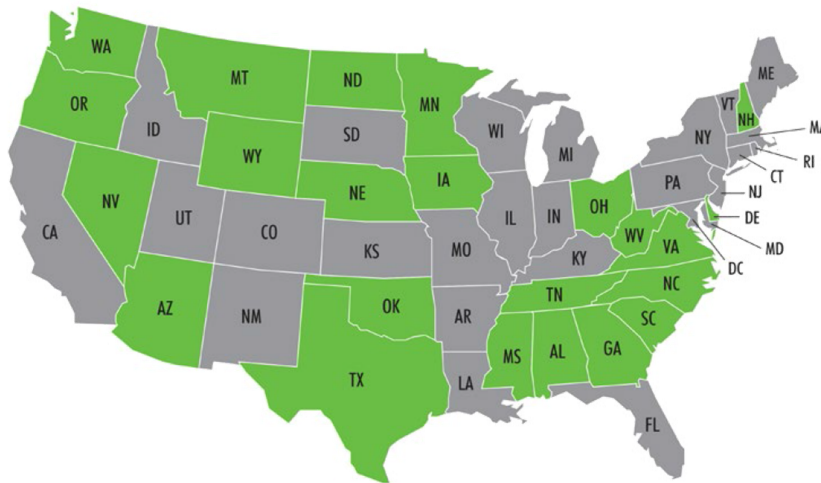
# Tax Incentives

Sales and use taxes, property taxes, and real estate taxes all play a role in the total operating costs of data centers. Some states, however, offer incentives that lower the operating cost, or Total Cost of Occupancy (TCO) for both data center developers and clients installing infrastructure within these facilities. Site Selection is typically based on four primary drivers:

1. Power: Cost per kWh, carbon footprint, fuel mix, and infrastructure
2. Telecom: Fiber Providers, Latency
3. Geography: Proximity to headquarters, population size, labor force, water
4. Climate: Environmental risk (i.e. hurricanes, tornadoes, earthquakes, etc), free cooling

## SALES TAX INCENTIVES FOR DATA CENTERS

■ States with incentives



## Sales & Property Taxes

Virginia's incentive program for data centers was first created in 2008, and amended in 2012. The state's incentive program allows for 100% exemption of sales taxes on computer equipment, and mechanical and electrical equipment.

The minimum thresholds include \$150 million in capital investment and 50 new jobs. The amendment allows tenants and owners to be qualified data center users. What this means is that the tenants of a colocation facility are allowed to earn the incentive.

\*Source: Lenio, John and Lynch, Patrick, "Impact of Taxes & Incentives on Data Center Incentives," CBRE..

# National Industry Trends

90% Amount as a % of the totality of data generated  
*-Expected to **Increase** year after year*

2,500 Number of commercial colocation facilities within the USA  
*-Expected to **Increase** year after year*

2,940,000 Number of corporate owned data centers in the USA\*  
*-Expected to **Decrease** year after year*

611,400,000 Total data center sq. ft. within the USA\*  
*-Expected to **Increase** year after year*

\*Source: IDC trends

# National Industry Trends

## PRIMARY WHOLESALE COLOCATION MARKET SNAPSHOT

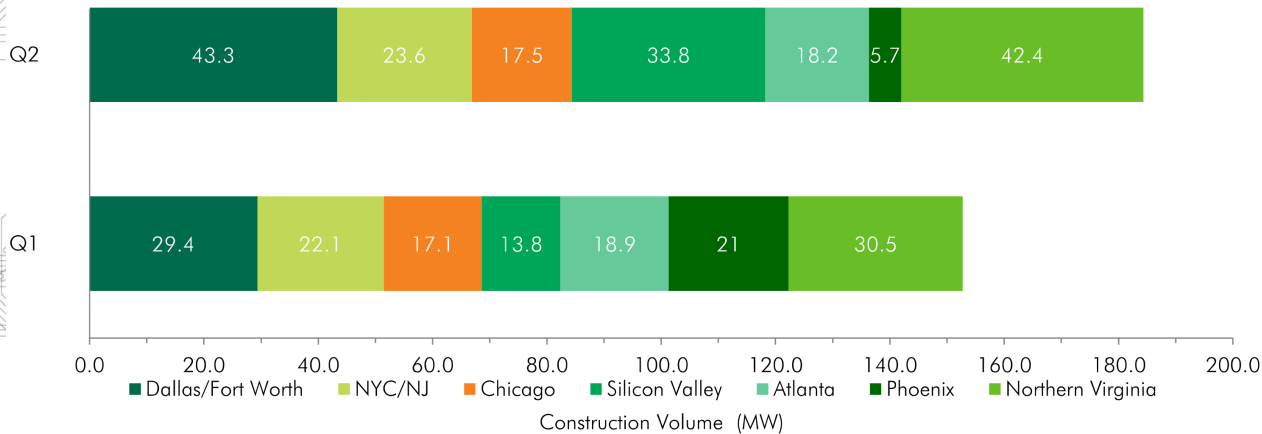
Market	Quarter	Inventory	Vacancy	Absorption	Rental Rates (kW/mo)*
Northern Virginia	Q1	417 MW (▲ 15.0 MW)	21.2 MW / 5.1% (▼ 24.1%)	20.8 MW (▲ 11.9 MW)	\$130-\$145
	Q2	421 MW (▲ 3.6 MW)	15.5 MW / 3.7% (▼ 27.7%)	9.4 MW (▼ 11.4 MW)	\$130-\$145
Phoenix	Q1	218 MW (▲ 5.0 MW)	4.1 MW / 1.87% (▼ 0.1%)	5.0 MW (▲ 2.8 MW)	\$140-\$160
	Q2	228 MW (▲ 10.0 MW)	4.1 MW / 1.87% (▲ 0.0%)	10.0 MW (▲ 5.0 MW)	\$140-\$160
Atlanta	Q1	127 MW (▲ 0.6 MW)	25.7 MW / 20.2% (▼ 2.4%)	0.7 MW (▼ 1.8 MW)	\$125-\$150
	Q2	127 MW (▲ 0.0 MW)	24.3 MW / 19.1% (▼ 5.2%)	1.4 MW (▲ 0.7 MW)	\$135-\$150
Silicon Valley	Q1	131 MW (▲ 14.9 MW)	16.1 MW / 12.3% (▼ 10.7%)	14.7 MW (▲ 11.7 MW)	\$140-\$150
	Q2	134 MW (▲ 3.6 MW)	15.8 MW / 11.7% (▼ 4.6%)	3.9 MW (▼ 10.8 MW)	\$130-\$150
NYC/NJ	Q1	134 MW (▲ 11.4 MW)	21.7 MW / 16.2% (▼ 0.5%)	10.1 MW (▲ 3.8 MW)	\$145-\$165**
	Q2	135 MW (▲ 1.5 MW)	22.2 MW / 16.5% (▲ 1.4%)	1.0 MW (▼ 9.2 MW)	\$150-\$170
Chicago	Q1	117 MW (▲ 2.4 MW)	3.4 MW / 2.9% (▼ 7.9%)	2.6 MW (▼ 1.6 MW)	\$145-\$165
	Q2	130 MW (▲ 13.0 MW)	10.9 MW / 8.40% (▲ 189.7%)	5.5 MW (▲ 2.8 MW)	\$145-\$165
Dallas/Fort Worth	Q1	131 MW (▲ 18.6 MW)	23.7 MW / 18.0% (▲ 68.1%)	7.0 MW (▼ 1.9 MW)	\$125-\$155
	Q2	132 MW (▲ 0.7 MW)	21.5 MW / 16.3% (▼ 9.6%)	2.8 MW (▼ 4.2 MW)	\$125-\$155

\*Rental rates are quoted asking rates from providers for 500 kW. CBRE experiences that actual contract rates fall below these numbers.

\*\*Quoted rates are outside of NYC proper. NYC (Manhattan) wholesale rates average \$225-\$300/kW/mo.

Arrows reflect quarter-over-quarter changes.

## Q1-Q2 DATA CENTER CONSTRUCTION PIPELINE



\*Source: CBRE Data Center Solutions,

# Regional Industry Trends

## **Rapid Cloud Growth Drives Building Boom in Northern Virginia: Sabey Data Centers**

“The Seattle-based developer acquired 38 acres of land in Ashburn in 2011 when it announced the project, but has taken a patient approach to its development timeline. The first phase is expected to come online in October, and consists of four data halls with 12,000 square feet of raised floor and 1.8 MW each. The campus has the potential to accommodate two additional, 2-story buildings which are currently in the design process.”\*

## **Iron Mountain Entering N. Virginia with Massive Data Center Build**

“The first building is designed to support 10.5MW of critical power. The design is flexible to “meet the exacting requirements of cloud providers, federal government agencies, system integrators, financial services firms, and healthcare companies.”\*\*

## **CoreSite Cranks Up Data Center Construction Spending**

“It will essentially be an expansion of the existing nearby Reston campus nearby, Smith said. The future campus will have direct network links to the existing one, meaning its future tenants will have access to the many networks and cloud service providers who are the company’s current customers in Reston..”\*\*\*

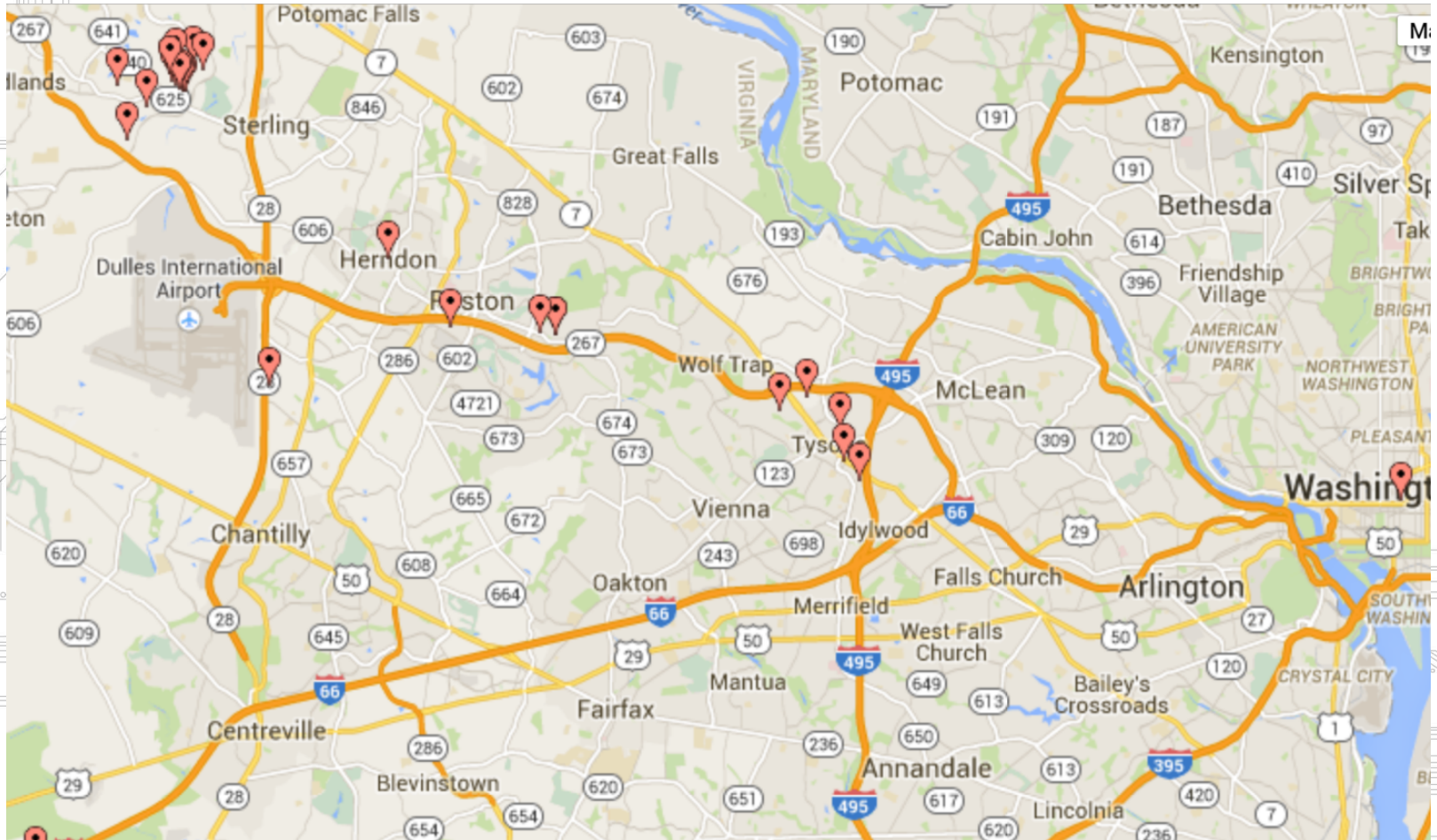
\*Source: <http://datacenterfrontier.com/northern-virginia-update/>

\*\*Source: <http://www.datacenterknowledge.com/archives/2016/10/20/iron-mountain-entering-n-virginia-with-massive-data-center-build/>

\*\*\*Source: <http://www.datacenterknowledge.com/archives/2016/08/16/coresite-cranks-up-data-center-construction-spending/>

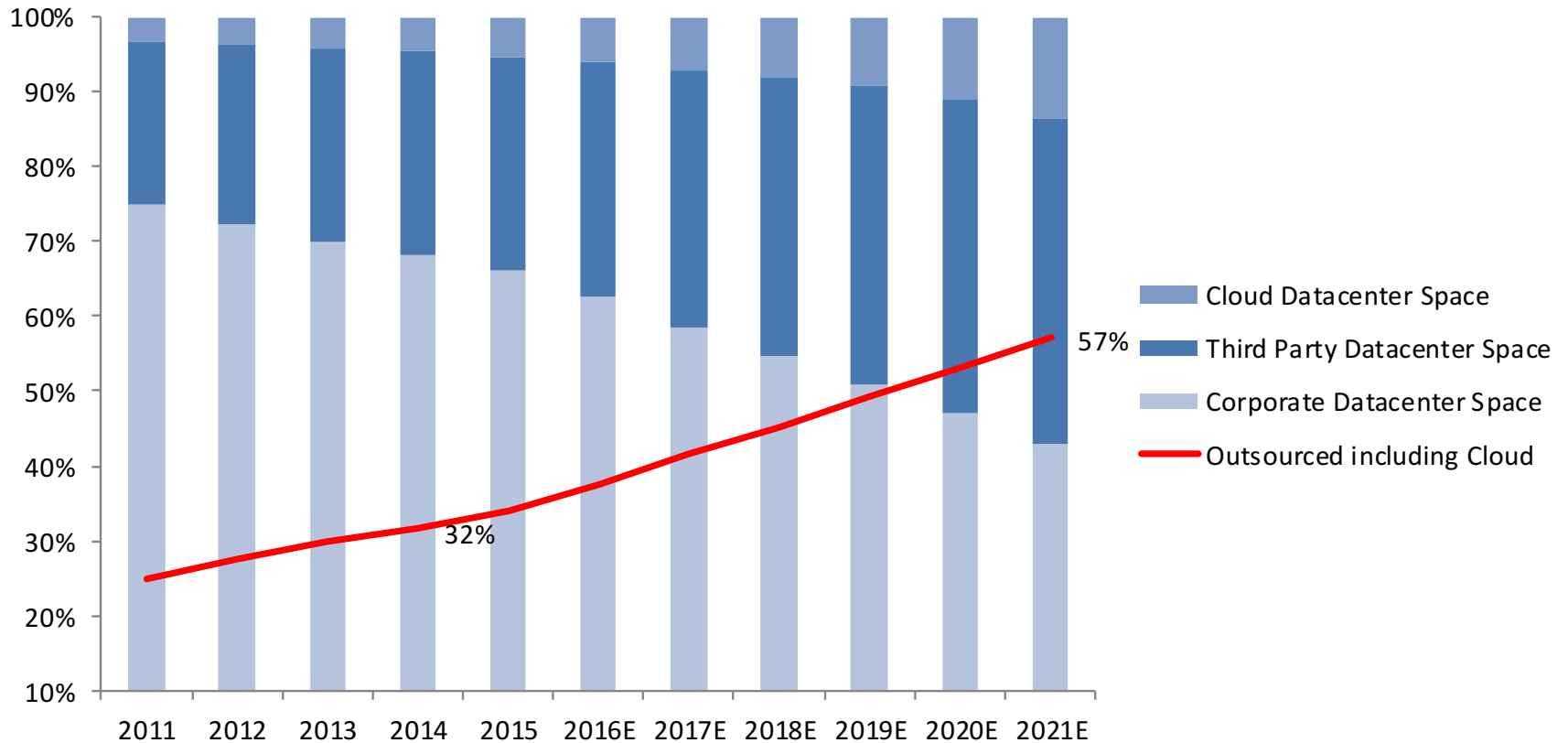
# Regional Industry Trends

32 Commercial Data Centers House 16 Different Providers Within the Ashburn Region





# Outsourcing Trends



# Public Data Centers Comparison

Stock (Ticker)	Ticker	Stock Price	Stock Perf Since YE15	Market Cap. (Mil.)	Firm Value (Mil.)	2016E Revs (Mil.)
Cloud Infrastructure						
Cyrus One (CONE)	CONE	\$52.4	40%	3,437	4,524	521
CoreSite Realty (COR)	COR	\$82.6	46%	3,910	4,409	397
Digital Realty Trust	DLR	\$102.1	35%	14,158	20,017	2,081
DuPont Fabros (DFT)	DFT	\$45.9	55%	3,761	5,279	521
Equinix (EQIX)	EQIX	\$371.0	23%	26,104	32,111	3,615
InterXion Holding (INXN)	INXN	\$38.3	27%	2,703	3,243	478
Landmark Infrastructure (LMRK)	LMRK	\$15.5	6%	1,269	1,497	43
QTS Realty Trust (QTS)	QTS	\$54.7	21%	2,322	3,132	389
Zayo (ZAYO)	ZAYO	\$27.9	5%	6,782	10,663	2,065
S&P 500 (Cons. Ests.)	SP50	\$2,112.0	3%			

# Public Data Centers Comparison

Stock (Ticker)	Ticker	Firm Value to '16E EBITDA (Consolidated)	Firm Value to '16E EBITDA (Multiplier)	16E FCF / AFFO Yield	16E Net Debt / EBITDA	Div. Yield %
Cloud Infrastructure						
Cyrus One (CONE)	CONE	272	16.6x	4.9%	4.0x	2.4%
CoreSite Realty (COR)	COR	206	21.4x	3.8%	1.9x	0.0%
Digital Realty Trust	DLR	1,185	16.9x	4.7%	4.9x	3.3%
DuPont Fabros (DFT)	DFT	323	16.3x	6.0%	3.6x	3.8%
Equinix (EQIX)	EQIX	1,653	19.4x	4.1%	3.6x	1.9%
InterXion Holding (INXN)	INXN	215	15.1x	-1.5%	2.5x	NA
Landmark Infrastructure (LMRK)	LMRK	38	39.7x	9.9%	6.1x	8.1%
QTS Realty Trust (QTS)	QTS	177	17.6x	4.6%	4.6x	2.3%
Zayo (ZAYO)	ZAYO	1,054	10.1x	8.3%	3.7x	0.0%
S&P 500 (Cons. Ests.)	SP50					2.1%

# Data Center Directory

Name	Retail	Wholesale	Hosting	Location(s)	TYPE (TICKER: EXCHANGE)	Address	City
365 Data Centers DC1	x			National	PE Backed	11513 Sunset Hills Road	Reston
Coresite DC 1	x			National	Public (COR: NYSE)	1275 K Street NW #700a	Washington, DC
CoreSite VA 1 & 2	x	x		National	Public (COR: NYSE)	12100 Sunrise Valley Drive	Reston
CyrusOne Sterling	x	x		National	Public REIT (CONE: NASDAQ)	21111 Ridgetop Circle	Sterling
Digital Realty Trust Ashburn	x	x		Global	Public REIT (DLR: NYSE)	44060 Loudoun Plaza	Ashburn
Digital Realty Trust Reston	x	x		Global	Public REIT (DLR: NYSE)	1807 Michael Faraday Court	Reston
Digital Realty Trust Vienna	x	x		Global	Public REIT (DLR: NYSE)	8100 Boone Boulevard	Vienna
DuPont Fabros Tech ACC7		x		National	Public REIT (DFT: NYSE)	44521 Hastings Drive	Ashburn
DuPont Fabros Tech VA3		x		National	Public REIT (DFT: NYSE)	1780 Business Center Drive	Reston
Equinix DC1	x			Global	Public (EQIX: NASDAQ)	21711 Filigree Court Suite C	Ashburn
Equinix DC2	x			Global	Public (EQIX: NASDAQ)	21715 Filigree Court	Ashburn
Equinix DC 7	x			Global	Public (EQIX: NASDAQ)	7990 Science Applications Court	Vienna
Equinix DC 8	x			Global	Public (EQIX: NASDAQ)	8502-A Tyco Road	Vienna
Equinix DC10	x			Global	Public (EQIX: NASDAQ)	21551 Beaumeade Circle	Ashburn
Equinix DC11	x			Global	Public (EQIX: NASDAQ)	21721 Filigree Court	Ashburn
Equinix DC3	x			Global	Public (EQIX: NASDAQ)	44470 Chilum Place Building 1	Ashburn
Equinix DC4	x			Global	Public (EQIX: NASDAQ)	21691 Filigree Court	Ashburn
Equinix DC5	x			Global	Public (EQIX: NASDAQ)	21701 Filigree Court Building D	Ashburn
Equinix DC6	x			Global	Public (EQIX: NASDAQ)	21721 Filigree Court	Ashburn
EvoSwitch - WDC1	x	x		Global	Private	9651 Hornbaker Road	Manassas

# Data Center Directory

Name	Retail	Wholesale	Hosting	Location(s)	TYPE (TICKER: EXCHANGE)	Address	City
HopOne DCA2	x		x	National	Private	8201 Greensboro Drive	McLean
HopOne DCA3	x		x	National	Private	6639 Electronic Drive	Springfield
iM Integrated Vienna Data Center	x			Global	Private	8619 Westwood Center Drive Suite 200	Vienna
InfoRelay IAD4 (Dulles Exchange)	x		x	Local	Private	13873 Park Center Road #75	Herndon
Net Data Centers IAD3	x		x	Global	Private	44480 Hastings Drive	Ashburn
Net Data Centers IAD4	x		x	Global	Private	1780 Business Center Drive	Reston
NTT Communications Sterling	x		x	Global	Public (NTT: NYSE)	44521 Hastings Drive	Ashburn
QTS Realty Trust	x	x	x	National	Public REIT (QTS: NYSE)	6000 Technology Boulevard	Sandston
Ragingwire	x	x		National	Majority Owned by NTT Com	44664 Guilford Drive	Ashburn
Sabey Intergate Ashburn	x	x		National	Private	21741 Red Rum Drive	Herndon
Verizon Ashburn	x		x	Global	Public (VZ: NYSE)	21830 UUNET Way	Ashburn
Verizon Manassas	x		x	Global	Public (VZ: NYSE)	7400 Infantry Ridge Road	Manassas
Zayo Group	x	x	x	Global	Public (ZAYO: NYSE)	21635 Red Rum Drive Suite 100	Ashburn

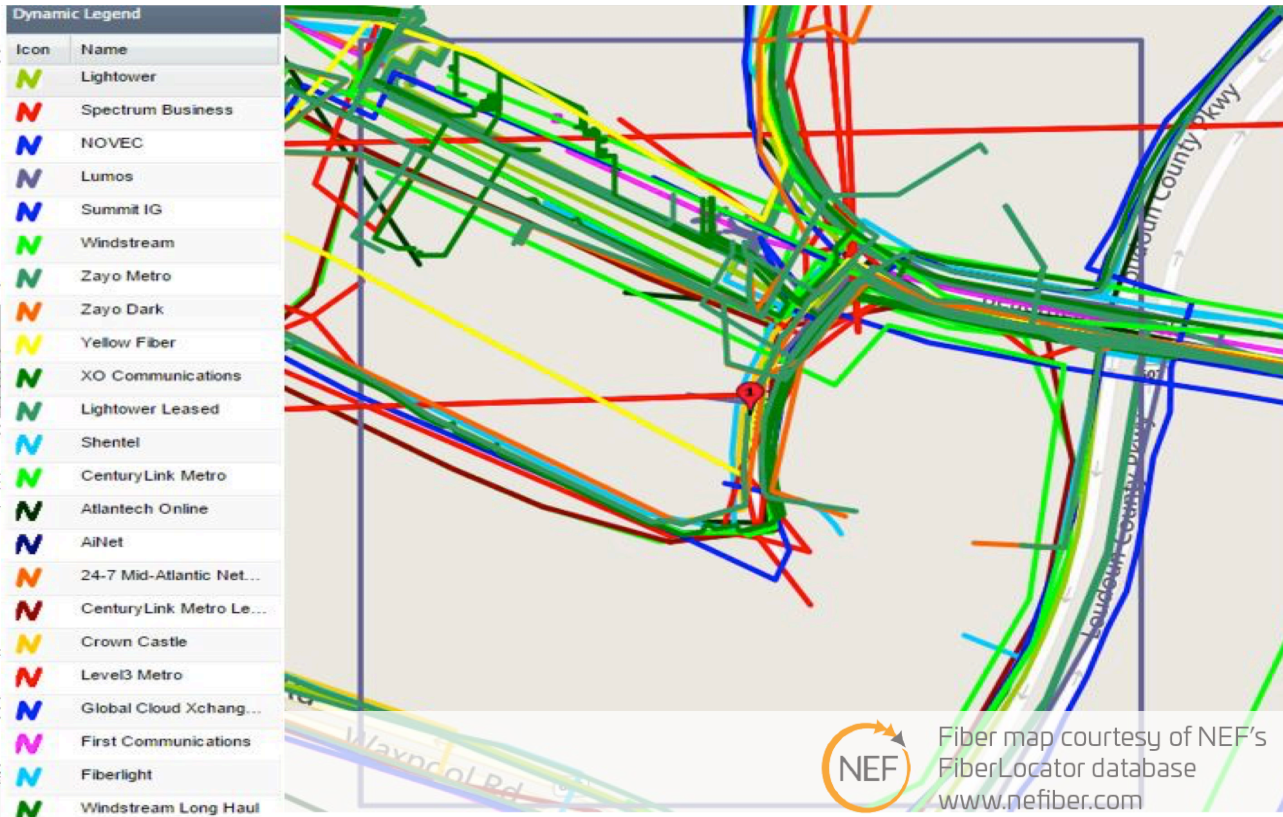
# Regional Peering Exchanges

List of Major Peering Exchanges In and Around Ashburn

Exchange Name	Long Name	City/Region
Equinix Ashburn	Equinix Ashburn Exchange	Ashburn
CoreSite - Any2 NorthEast	CoreSite - Any2 NorthEast	DC, Reston, Boston, New York
LINX NoVA	LINX Northern Virginia	Northern Virginia
Equinix Vienna, VA	Equinix Internet Exchange Vienna, VA	Vienna

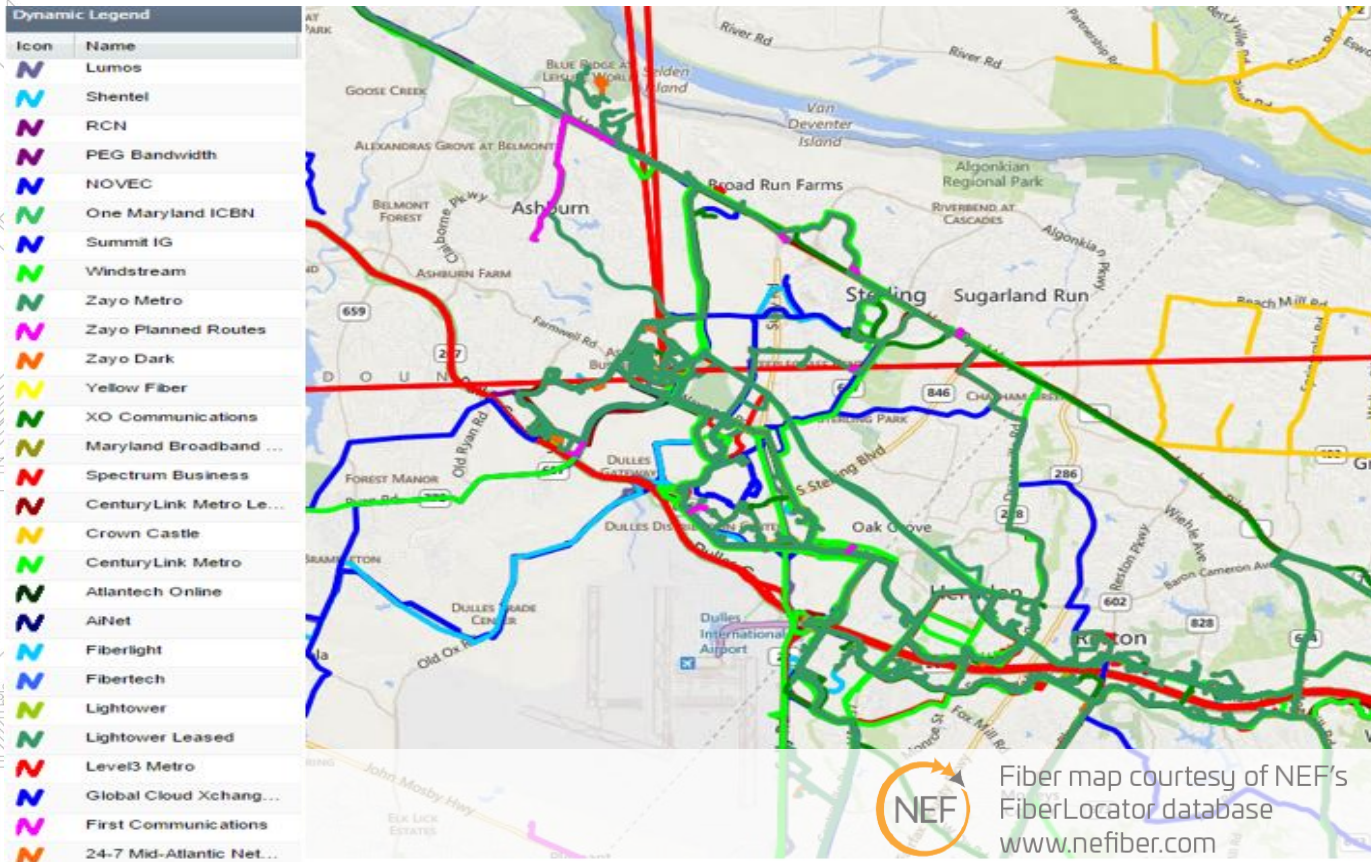
# Regional Carrier Hotels

21715 Filigree Ct., Ashburn  
1 Mile View



# Regional Metro Networks

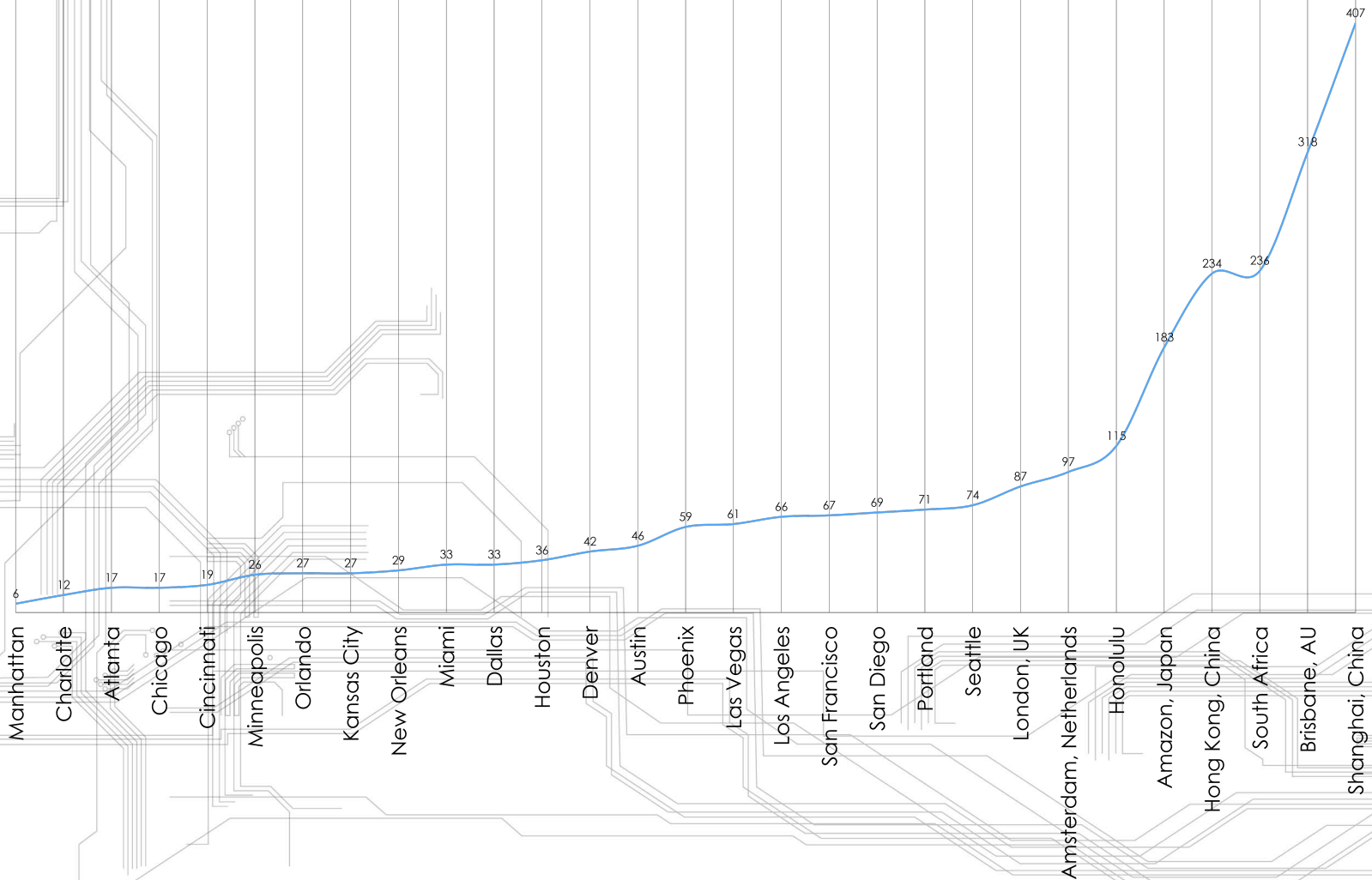
20 Mile Metro Networks





# Network Latency

- Latency in milliseconds, from Ashburn



# Environment & Industry

Ashburn and the surrounding suburbs are home to the largest Peering Exchange (Equinix, Ashburn) in the USA, and a stones throw away from the endless agencies and bureaucrats in Washington DC.

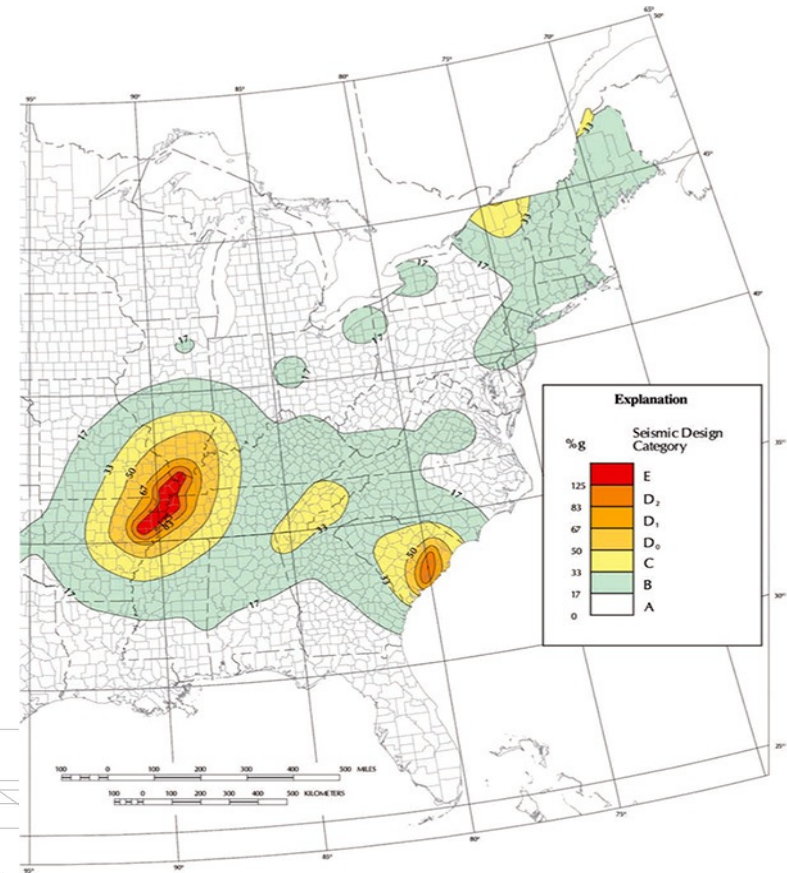
It is no wonder as to why this region maintains the record for the most capacity available (Megawatts) in the USA, which is only second to London on a global scale.

It also serves as one of the fastest growing (gross space available) markets in the world and shows no signs of slowing.

# Local Weather Factors

## Moderate Earthquake Risk

SDC	EARTHQUAKE HAZARD
A	Very small probability of experiencing damaging earthquake effects.
B	Could experience shaking of moderate intensity.
C	Could experience strong shaking.
D0	
D1	Could experience very strong shaking (the darker the color, the stronger the shaking).
D2	
E	Near major active faults capable of producing the most intense shaking.



# Local Weather Factors

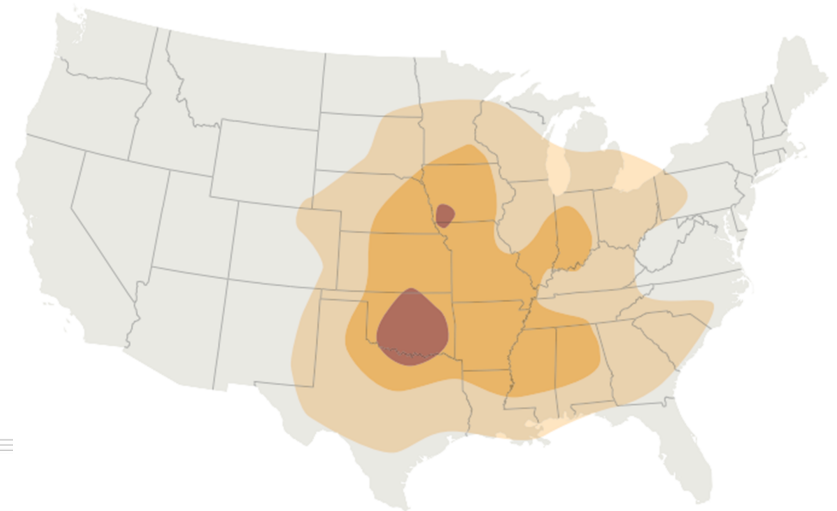
## Moderate Hurricane Risk

Lower  Higher



## Low Tornado Risk

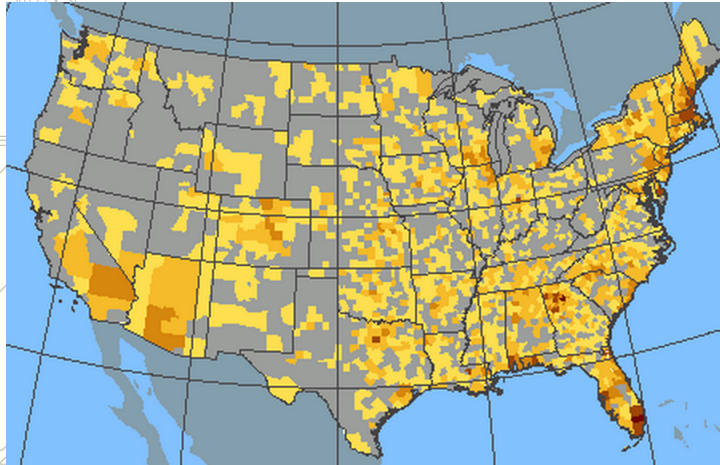
Lower  Higher



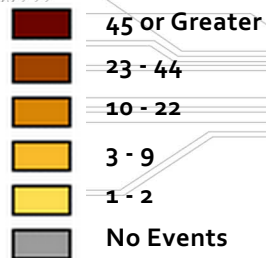
\*Source: Matthew Erickson, Joe Burgess, and Bill Marsh of The New York Times. Accessed online, [nationalatlas.gov](http://nationalatlas.gov)

# Local Weather Factors

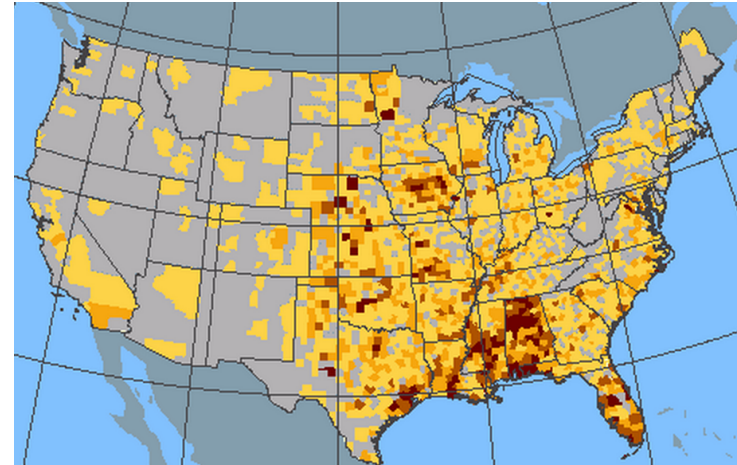
## High Lightning Risk



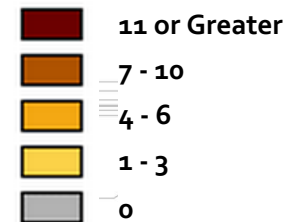
Lightning: Number of events that resulted in damage



## High Thunderstorm Risk



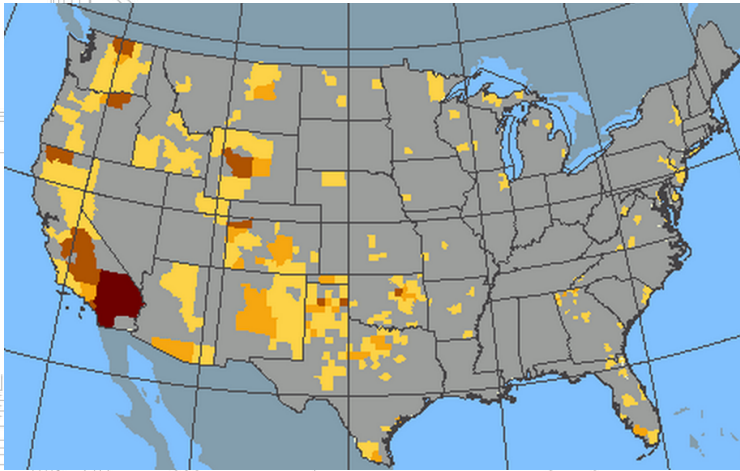
Thunderstorm: Number of damage-causing events



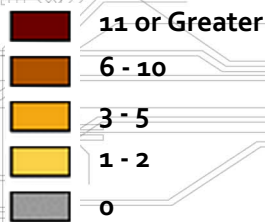
\*Source: [nationalatlas.gov](http://nationalatlas.gov)

# Local Weather Factors

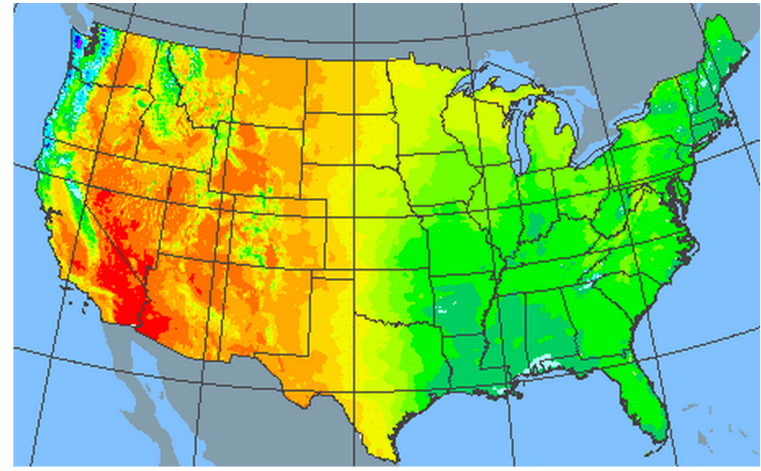
## Low Wildfire Risk



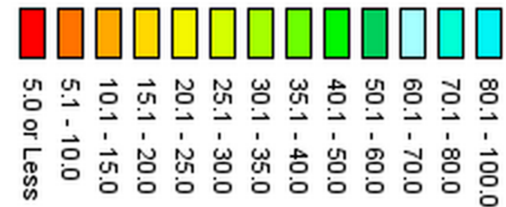
Wildfires: Number of events that resulted in damage



## High Precipitation



Average Annual Precipitation (in inches)



\*Source: [nationalatlas.gov](http://nationalatlas.gov)

# Utility Service Territories

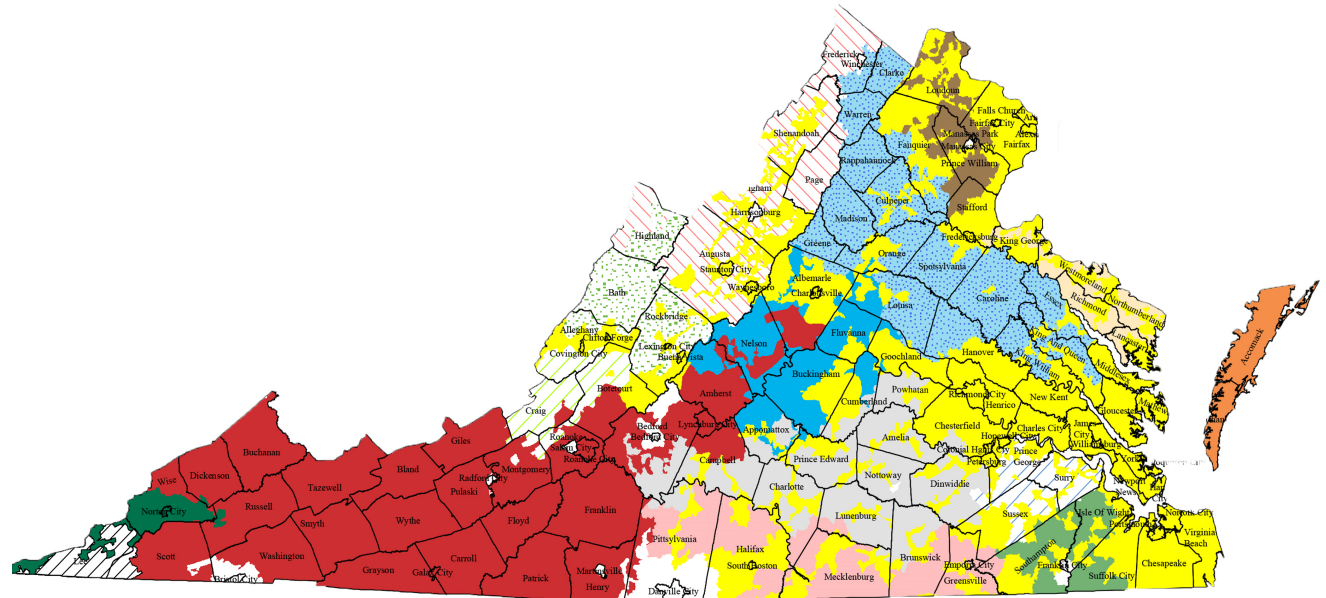
## Virginia Energy Service Area Map

### Investor Owned Utilities

- APCo
- Kentucky Utilities
- Dominion Virginia Power

### Electric Cooperatives

- A&N
- BARC
- Craig Botetourt
- Community
- Central Virginia
- Mecklenberg
- Northern Neck
- Northern Virginia
- Powell Valley
- Prince George
- Rappahannock
- Southside
- Shenandoah Valley



# National Power Connections

## EXISTING LINES

- 345-499 kV
- 500-699 kV
- 700-799 kV
- 1,000 kV (DC)

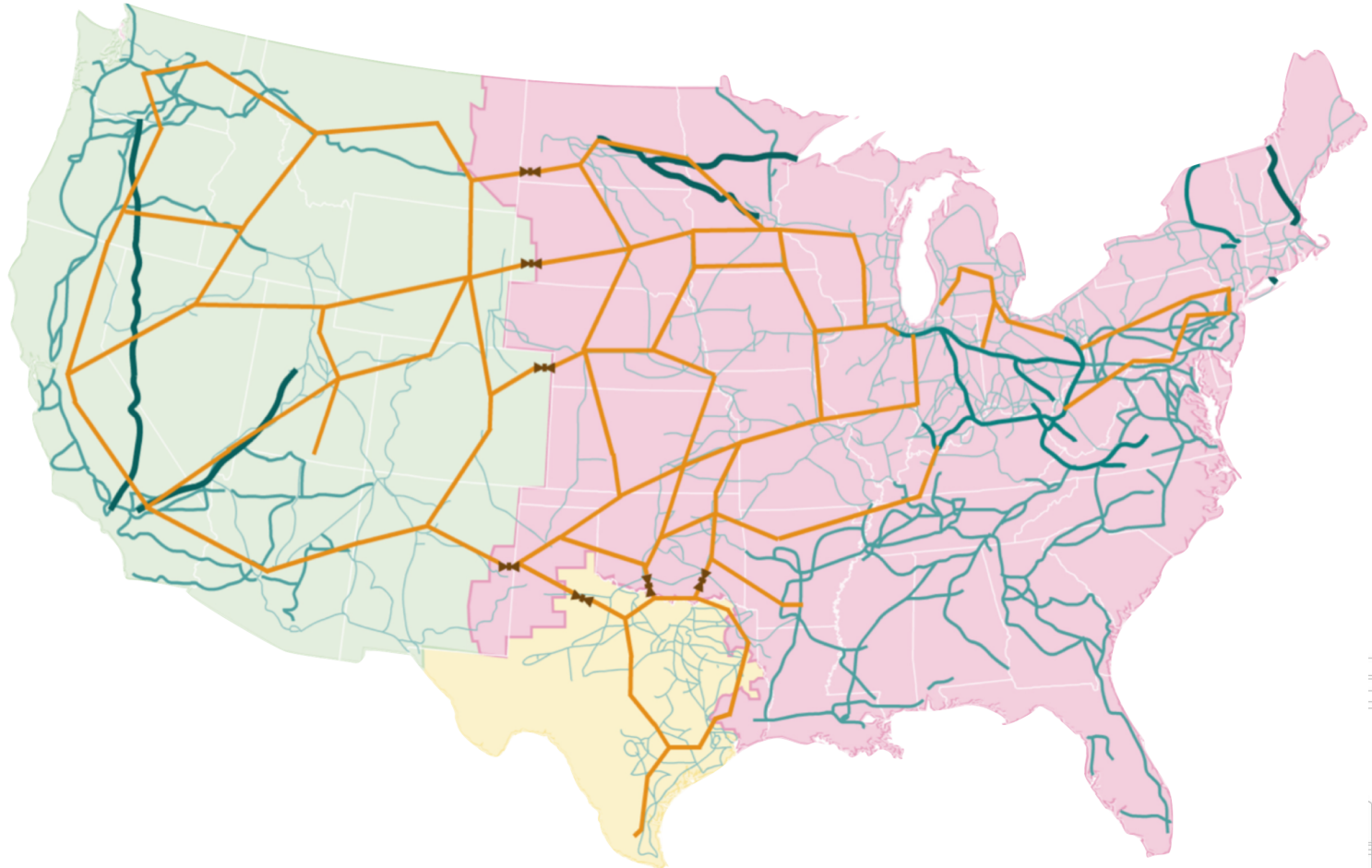
## PROPOSED LINES

- New 765 kV
- AC-DC-AC Links

## INTERCONNECTIONS

Major sectors of the U.S. electrical grid

- Eastern
- Western
- Texas (ERCOT)





# Leading Businesses

## Fortune 500 Companies in Virginia

Advanced Auto Parts

AES

Alpha Natural Resources

Altria Group

Booz Allen Hamilton Holding

Capital One Financial

CarMax

Computer Sciences

Dollar Tree

Dominion Resources

Exelis

Freddie Mac

Gannett

General Dynamics

Genworth Financial

Huntington Ingalls Industries

Mead Westvaco

NII Holdings

Norfolk Southern

Northrop Grumman

Owens & Minor

SAIC

Smithfield Foods

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