



# CHICAGO

## Data Center Market Report



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# About This Report

Open Spectrum provides intense data center intelligence, experience and training. As a part of our on-going commitment to the data center marketplace, the Chicago Market Report has been designed, in coordination with members of the Open Spectrum Alliance, to support our agents and their customer's increasing need to centralize IT operations, hardware, and data storage.

## Additional Contributors

The following organizations are a part of the Open Spectrum Strategic Alliance and provide contributing information to this Market Report.



[NEF's FiberLocator](#) product is a comprehensive telecom, colocation and lit building database whose data can be accessed in single servings with a snapshot, in ongoing research with the online application, in customized report deliverables and also via API (application programming interface).



[Structure Research](#) is an independent research and consulting firm, with a special focus on the Internet Infrastructure Market. They publish insightful research and analysis with a uniquely informed perspective.



[Lathrop & Gage LLP](#) is a US based law firm with a cross functional team of experienced partners. Our engagement is focused specifically on those in the firm with intimate knowledge of the data center and telecommunications industry who have been on the leading edge of industry-related local, state and national tax legislation issues.



## About Open Spectrum

Open Spectrum is a data center marketplace consulting firm working with buyers, sellers and investors in mission critical infrastructure around the world. Our team has personally negotiated hundreds of contracts and toured hundreds of facilities across the country. Our targeted data center and hosting education programs and supporting materials have become the de facto training standard in the industry.

To learn more, visit: [openspectruminc.com](https://openspectruminc.com).

# Local Spotlight

Chicago continues to serve as the largest interconnection hub in the Midwest. As such, there is a seemingly never-ending expansion of mega data center buildouts occurring both downtown and within the surrounding suburbs.

This reality, coupled with a resurgence of startups in the region, has caused demand for data center and hosting services to boom over the past few years here.

These metrics are showing no signs of slowing down any time soon.



## Digital Realty to Build Data Center in Downtown Chicago

“Digital Realty Trust is planning to build a massive, 12-story data center in the South Loop of the Chicago Central Business District, which it says will act as an “annex” to its iconic building across the street, at 350 East Cermak, one of the world’s largest carrier hotels and a key network access point for financial services firms involved in the Chicago commodities market.”\*

## With Microsoft Data Center Deal, EdgeConneX Takes on Wholesale Giants

“EdgeConneX recently bought a large industrial building in Elk Grove Village, just outside of Chicago, and secured the necessary power to convert it into a data center. The facility at 1800 Nicholas Road is slated to become a 25-30MW build-to-suit data center leased to Microsoft Corporation.”\*\*

## CyrusOne Plans Huge Expansion at CME Data Center Campus in Chicago

“CyrusOne currently has just 36,000 square feet of colocation capacity “available to sell” in the existing CME facility, the data center provider’s CEO Gary Wojtaszek said on the call. The wording apparently implies there may be significant expansion space in the existing building which CyrusOne isn’t currently able to market. He also mentioned a new 1MW customer has made a verbal commitment to take down a portion of the available capacity.”\*\*\*

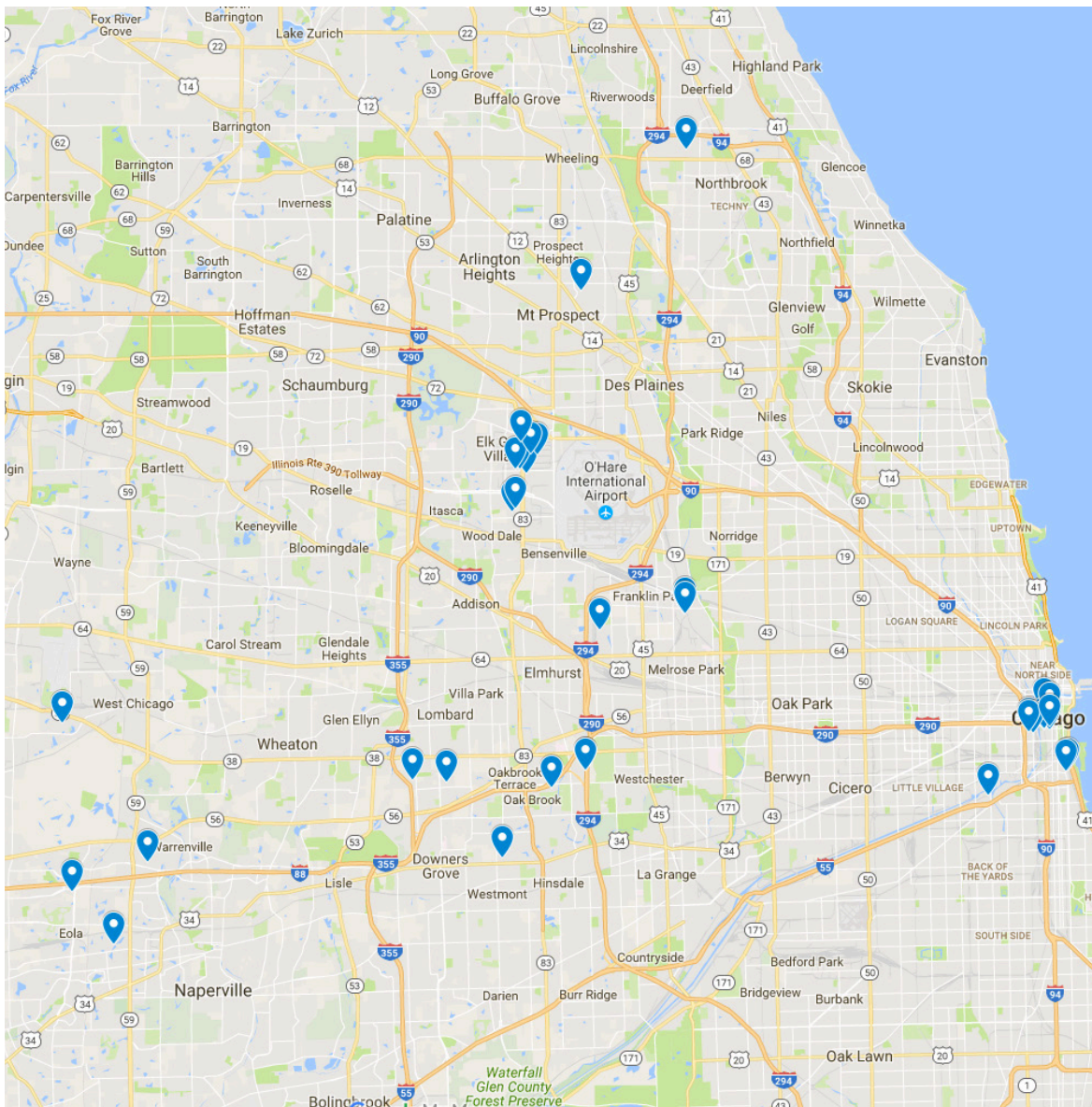
\*Source: <http://www.datacenterknowledge.com/archives/2016/10/19/digital-realty-to-build-data-center-tower-in-downtown-chicago/>

\*\*Source: <http://www.datacenterknowledge.com/archives/2016/10/03/microsoft-data-center-deal-edgeconnex-takes-wholesale-giants/>

\*\*\*Source: <http://www.datacenterknowledge.com/archives/2016/05/09/cyrusone-plans-huge-expansion-at-cme-data-center-campus-in-chicago/>

# Local Data Center Map

## 41 Commercial Data Centers House 28 Different Providers Within the Chicago Region



# Local Data Center Directory

Name	Retail	Whole-sale	Hosting	Location	Type (Ticker: Exchange)	Address	City
360TCS	x			Local	Private	360 E. 22nd St.	Lombard
365 Data Centers	x			National	PE Backed	427 S. La Salle St.	Chicago
Ascent - CH2		x		Regional	Private	505 N. Railroad Ave.	Northlake
Ascent - CH3		x		Regional	Private	717 S. Desplaines	Chicago
ByteGrid - CH11	x	x		Regional	Private	4267 Meridian Pkwy.	Aurora
Colo@	x			National	Private	725 S. Wells St.	Chicago
Continuum Data Centers	x	x		Local	Private	603 Discovery Dr.	West Chicago
CoreSite - CH1	x			National	Public REIT (COR: NYSE)	427 S. La Salle St.	Chicago
CyrusOne	x	x		National	Public REIT (CONE: NASDAQ)	1850 Springer Dr.	Lombard
CyrusOne	x	x		National	Public REIT (CONE: NASDAQ)	2905 Diehl Rd.	Aurora
Cyxtera CH2 (formerly CenturyLink)	x		x	Global	PE Backed	2425 Busse Road	Elk Grove Village
Cyxtera CH3 (formerly CenturyLink)	x		x	Global	PE Backed	10 S. La Salle St.	Chicago
Cyxtera CH4 (formerly CenturyLink)	x		x	Global	PE Backed	350 E. Cermak Rd.	Chicago
Digital Capital Partners, LLC		x		Local	Private	725 S. Wells St.	Chicago
Digital Realty Trust		x		Global	Public REIT (DLR: NYSE)	330 E. Cermak Rd.	Chicago
Digital Realty Trust		x		Global	Public REIT (DLR: NYSE)	350 E. Cermak Rd.	Chicago
Digital Realty Trust		x		Global	Public REIT (DLR: NYSE)	600-780 S. Federal St.	Chicago
Digital Realty Trust		x		Global	Public REIT (DLR: NYSE)	9333, 9355, 9377 Grand Ave.	Franklin Park
DuPont Fabros - CH1, CH2		x		Global	Public REIT (DFT: NYSE)	2200 Busse Rd.	Elk Grove Village
DuPont Fabros - CH3		x		Global	Public REIT (DFT: NYSE)	1450 E Devon Ave.	Elk Grove Village

# Local Data Center Directory

Name	Retail	Whole-sale	Hosting	Location	Type (Ticker: Exchange)	Address	City
EdgeConneX	x	x		Global	PE Backed	1800 Nicholas Blvd.	Elk Grove Village
Equinix - CH1, CH2, CH4	x			Global	Public (EQIX: NASDAQ)	350 E. Cermak Rd.	Chicago
Equinix - CH3	x			Global	Public (EQIX: NASDAQ)	1905 Lunt Ave.	Elk Grove Village
Equinix - CH7 (formerly Verizon)	x		x	Global	Public (VZ: NYSE)	111 Plaza Dr.	Westmont
NaviSite	x		x	Global	Subsidiary of TW Cable (TWC: NYSE)	800 Jorie Blvd.	Oak Brook
Netrality Properties	x			National	PE Backed	717 S. Wells St.	Chicago
NetSource Naperville Data Center	x		x	Local	Private	2368 Corporate Ln.	Naperville
Peerless Network	x			Local	PE Backed	840 S. Canal St.	Chicago
QTS Realty Trust	x	x	x	National	Public REIT (QTS: NYSE)	2800 S. Ashland Ave	Chicago
Server Farm Realty	x	x		National	Private	840 S. Canal St.	Chicago
ServerCentral	x		x	Local	Private	2200 Busse Rd.	Elk Grove Village
ServerCentral	x		x	Local	Private	350 E. Cermak Rd.	Chicago
Steadfast Networks	x		x	Regional	Private	350 E. Cermak Rd.	Chicago
Steadfast Networks	x		x	Regional	Private	725 S. Wells St.	Chicago
Sungard AS - CHI-3100	x		x	National	Private	3100 Arnold Lane	Northbrook
Sungard AS - CHI-341	x		x	National	Private	341 Haynes Drive	Wood Dale
Sungard AS - CHI-711	x		x	National	Private	711 North Edge-wood Ave.	Wood Dale
T5 Data Centers		x		Local	PE Backed	1240 Busse Rd.	Elk Grove Village
TierPoint	x		x	National	PE Backed	601 W. Polk St.	Chicago
TierPoint	x		x	National	PE Backed	9333 W. Grand Ave.	Franklin Park



# Local Data Center Directory

Name	Retail	Whole-sale	Hosting	Location	Type (Ticker: Exchange)	Address	City
XO	x			National	Private	1808 Swift Dr.	Oak Brook
XO	x			National	Private	140 S. Dearborn St.	Chicago
zColo Zayo	x	x	x	National	PE Backed	1808 Swift Dr.	Oak Brook
zColo Zayo	x	x		Global	PE Backed (division of Zayo)	600 S. Federal St.	Chicago
zColo Zayo	x	x		Global	PE Backed (division of Zayo)	800 E. Business Center Dr.	Mount Prospect

# Local Peering Exchange

## List of Major Peering Exchanges in and Around Chicago

Exchange name	Long Name	City/Region
Equinix Chicago	Equinix Chicago Exchange	Chicago
ChIX	United IX - Chicago	Chicago
CoreSite - Any2 Chicago	CoreSite - Any2 Chicago	Chicago
CGIIX	Greater Chicago International Internet Exchange	Chicago
AMS-IX Chicago	AMS-IX Chicago	Chicago

\*source: peeringdb.com. Accessed August 12, 2014.

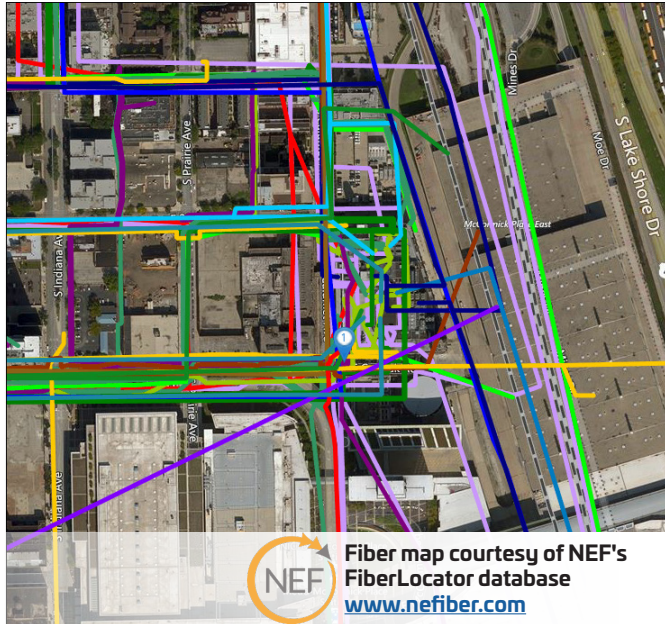
# Local Metro Fiber Map

## 350 E. Cermak, Chicago IL 1 Mile View

FiberLocator

350 E Cermak Rd, Chicago, IL 60616

- 350 E Cermak Rd, Chicago, IL 60616
- Metro Networks
- Bluebird Network - Leased
- CenturyLink Metro
- Cloudtertia
- Everstream
- Gapnet
- Hudson Fiber Leased
- Illinois Century Network
- Level3 Metro
- Lighttower
- Lighttower Leased
- Nitel
- RCN
- SDN Leased
- Spread Networks
- Stratus Networks
- Sunesys
- US Signal
- Unifi Fiber
- WOW! Business
- Windstream
- Wisconsin Independent Network
- XO Communications
- Zayo Metro

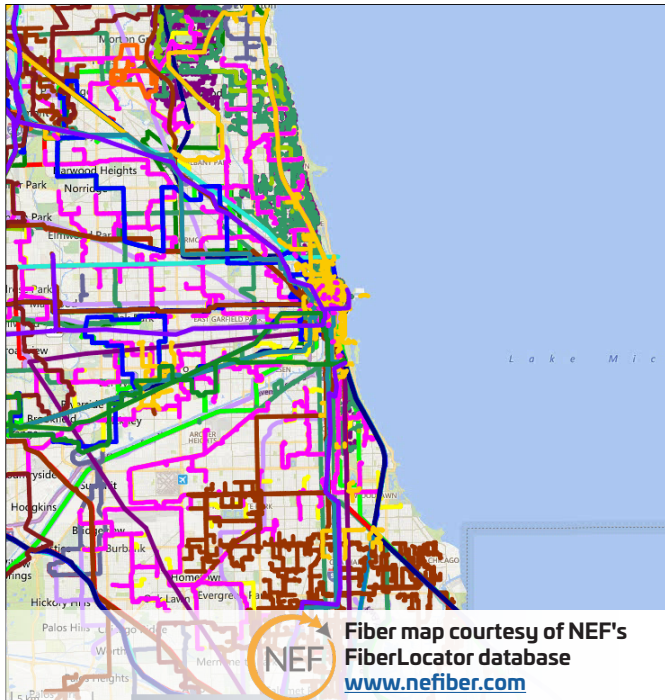


Fiber map courtesy of NEF's  
FiberLocator database  
[www.nefiber.com](http://www.nefiber.com)

FiberLocator

Chicago Metro

- Metro Networks
- Bluebird Network - Leased
- CenturyLink Metro
- Cloudtertia
- Everstream
- G4S
- Gapnet
- Hudson Fiber Leased
- Illinois Century Network
- Level3 Metro
- Lighttower
- Lighttower Leased
- Mobilite Fiber
- Nitel
- RCN
- SBA Communications Corp
- SDN Leased
- Spread Networks
- Stratus Networks
- Sunesys
- US Signal
- Unite Private Network
- Unifi Fiber
- VinaKom
- WOW! Business
- WOW! Business - Planned
- Windstream
- Wisconsin Independent Network
- XO Communications
- Zayo Metro
- Zayo Planned Routes



Fiber map courtesy of NEF's  
FiberLocator database  
[www.nefiber.com](http://www.nefiber.com)

# Regional Fiber Map

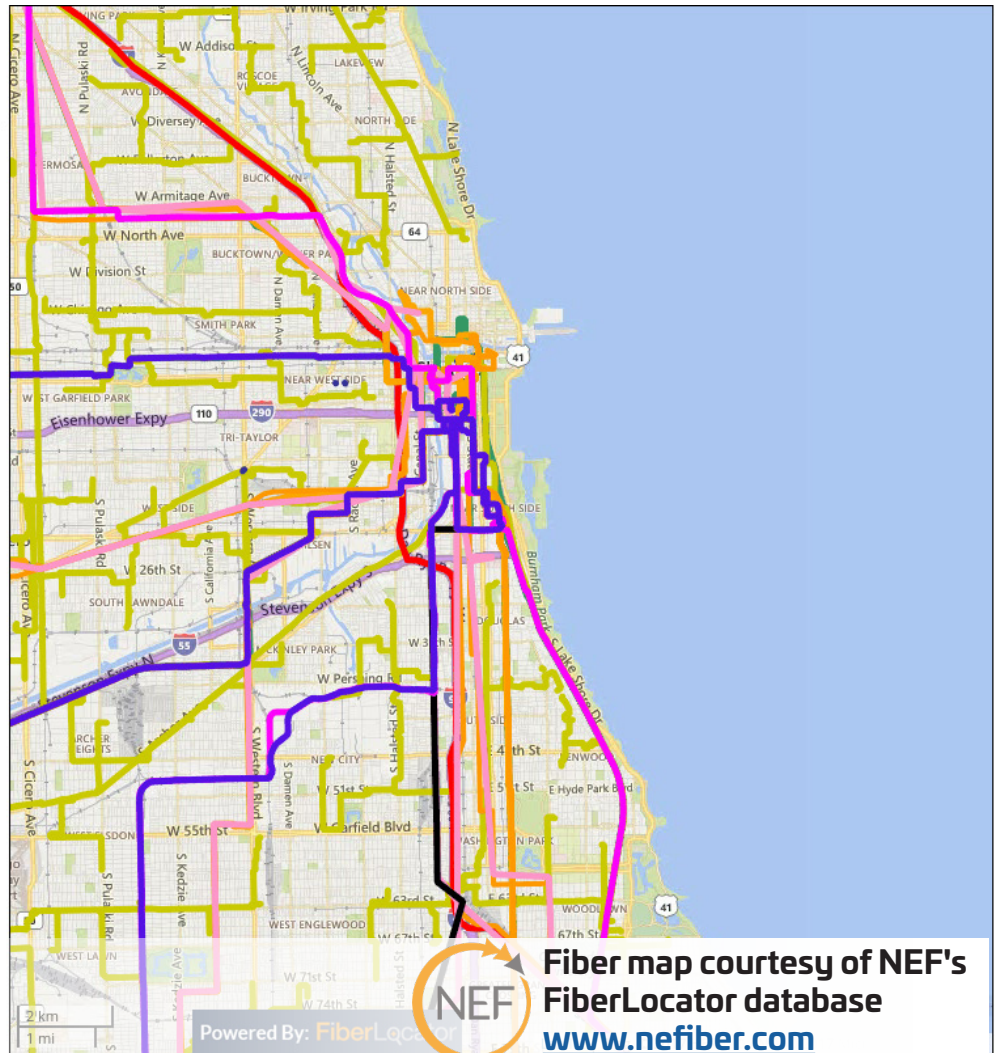
## 20 Mile Metro Networks

FiberL<sub>+</sub>ocator

Chicago Long Haul

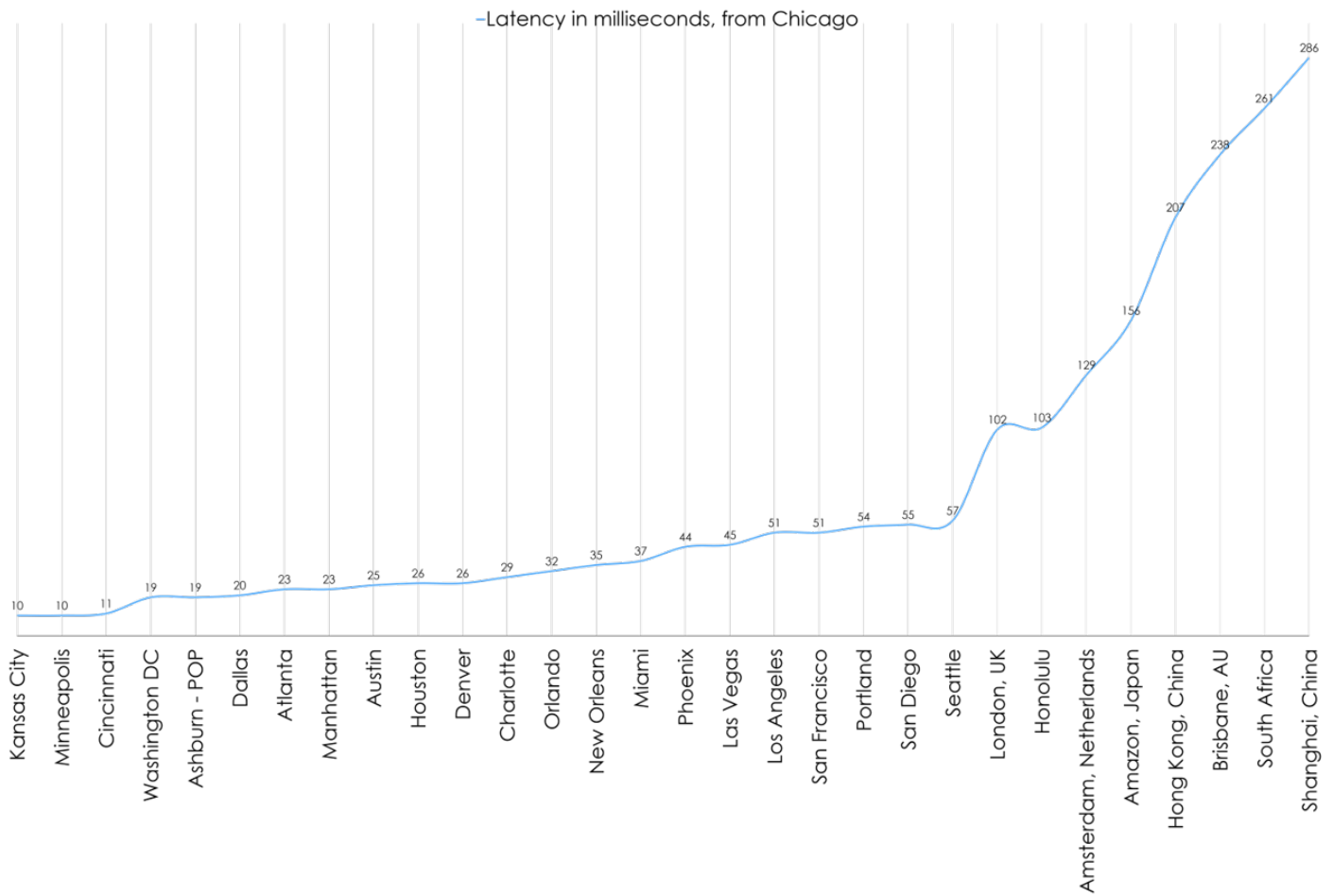
Long Haul Networks

- 123Net
- CenturyLink Long Haul
- Hudson Fiber LH Leased
- Level 3 Long Haul
- Neutral Path Communications LH
- Sprint Long Haul
- Telia Carrier
- Verizon Long Haul
- Windstream Long Haul
- XO Long Haul
- Zayo Long Haul



# Regional Latency

## Latency in milliseconds, from Chicago



\*source: twtelecom.com on 6/30/2014. International data from dotcom-monitor.com, accessed 7/18/2014.

# Local Tax Incentives

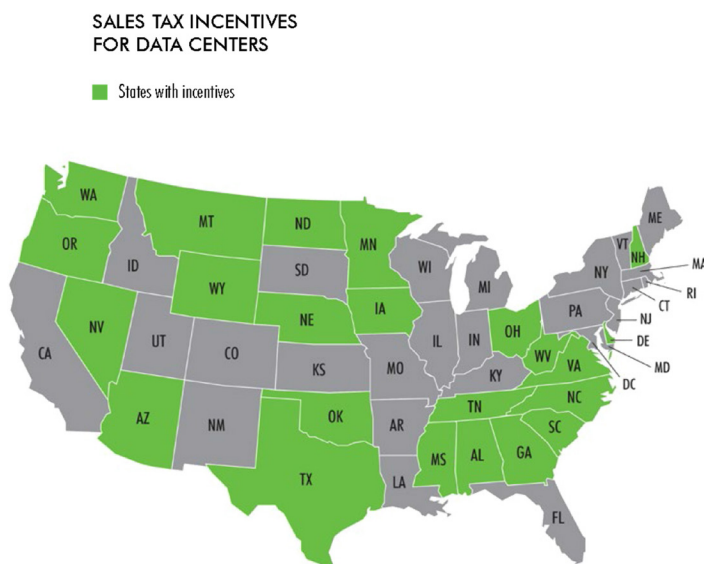
Sales and use taxes, property taxes, and real estate taxes all play a role in the total operating costs of data centers. Some states, however, offer incentives that lower the operating cost, or Total Cost of Occupancy (TCO) for both data center developers and clients installing infrastructure within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

Power: Cost per kWh, carbon footprint, fuel mix, and infrastructure

Telecom: Fiber Providers, Latency

Geography: Proximity to headquarters, population size, labor force, water

Climate: Environmental risk (i.e. hurricanes, tornadoes, earthquakes, etc), free cooling



## Sales & Property Taxes

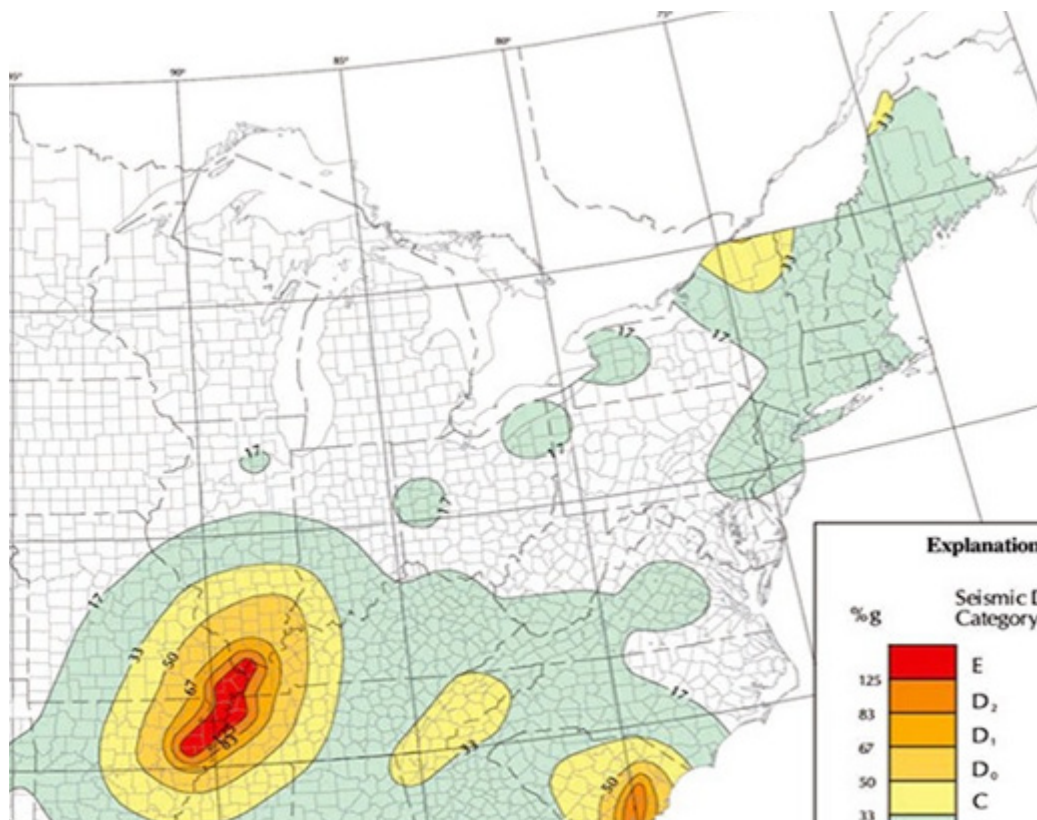
Illinois currently does NOT offer sales tax incentives that affect data center owners, operators, or their clients installing hardware and related infrastructure.\*

\*source: Lenio, John and Lynch, Patrick, "Impact of Taxes & Incentives on Data Center Incentives," CBRE, July 2013.

# Regional Earthquake Risk

## Low Earthquake Risk

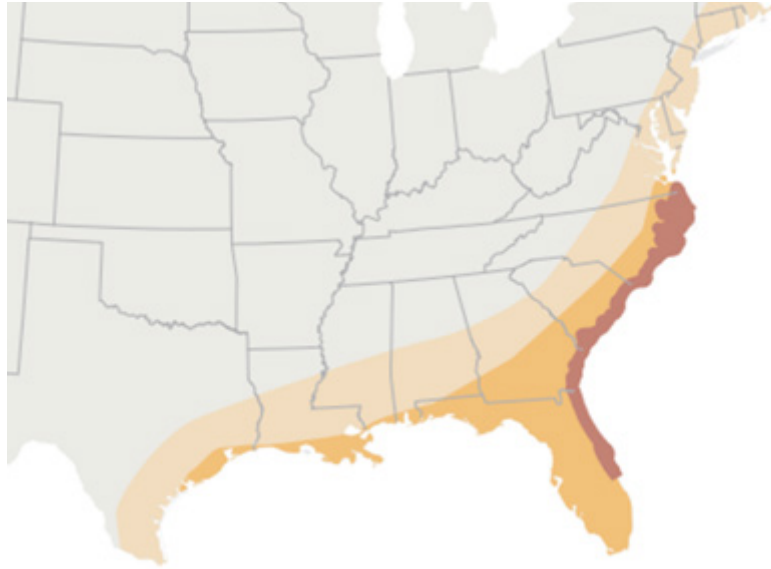
SDC	Earthquake hazard
<b>A</b>	Very small probability of experiencing damaging earthquake effects
<b>B</b>	Could experience shaking of moderate intensity
<b>C</b>	Could Experience Strong Shaking
<b>D0</b>	Could experience very strong shaking (the darker the color the stronger the shaking)
<b>D1</b>	
<b>D2</b>	
<b>E</b>	Near major active faults capable of producing the most intense shaking



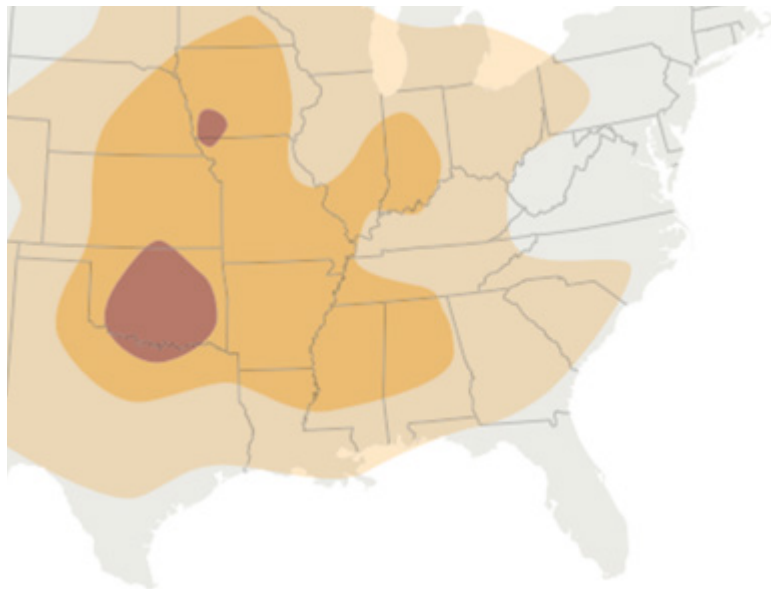
\*source: FEMA Earthquake Hazard Maps, <http://www.fema.gov/earthquake/earthquake-hazard-maps#1>. Accessed July 11, 2014.

# Regional Hurricane Risk

## No Hurricane Risk



## Moderate Tornado Risk

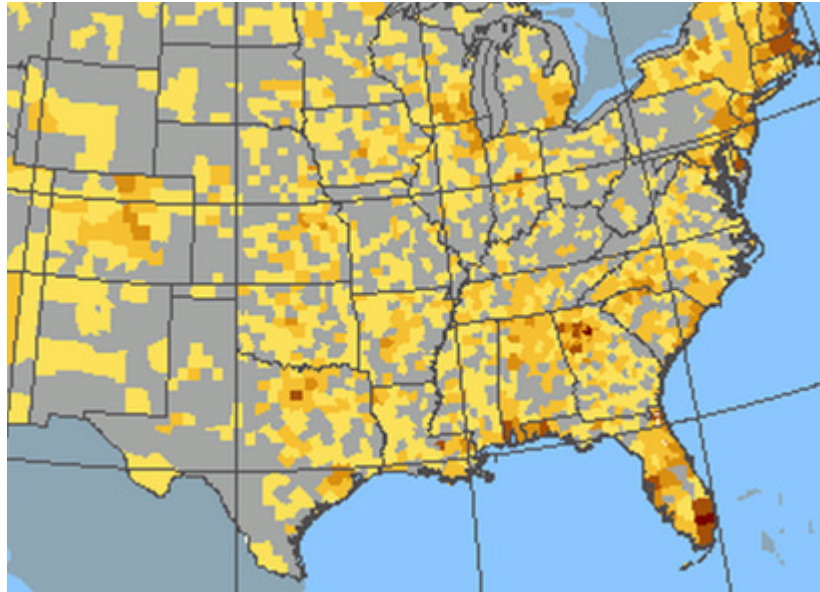


\*source: nationalatlas.gov data range = 2001-2009 and Matthew Erickson, Joe Burgess, and Bill Marsh of The New York Times, April 30, 2011. Accessed online

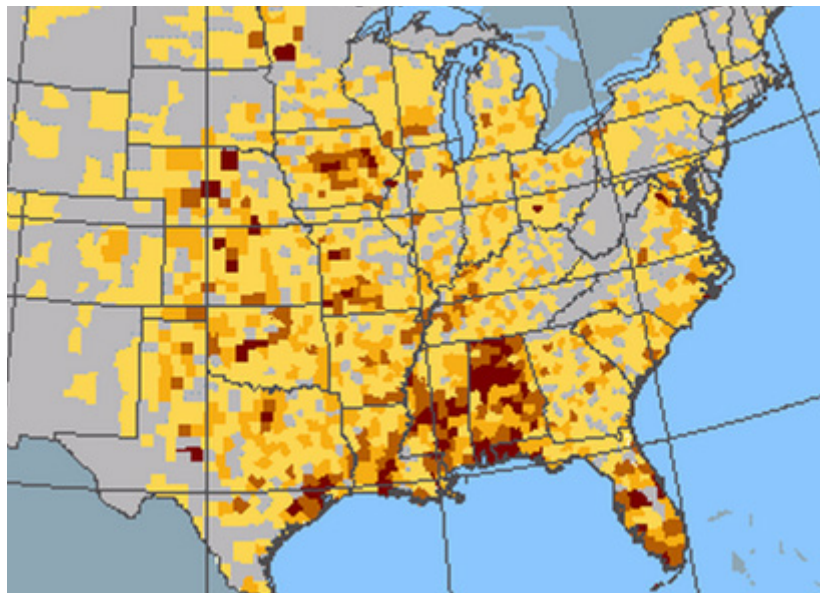


# Regional Thunderstorm Risk

## High Lightning Risk



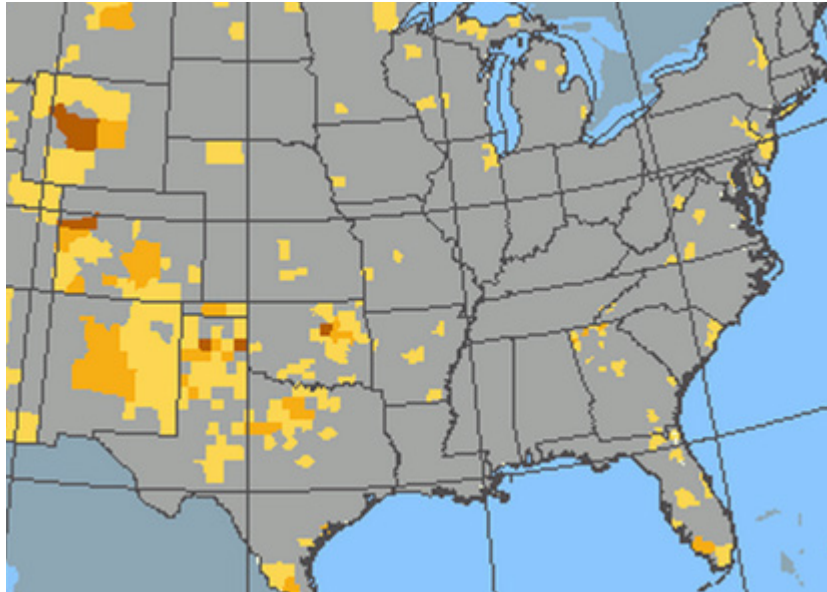
## Moderate Thunderstorm Risk



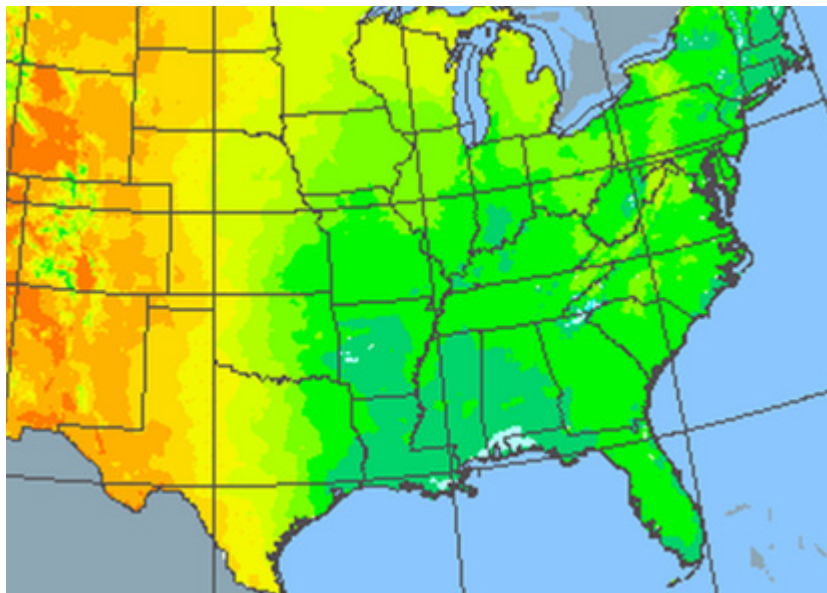
\*source: nationalatlas.gov data range = 2001-2009 and nationalatlas.gov data range = 2001-2009

# Regional Wildfire Risk

## Low Wildfire Risk



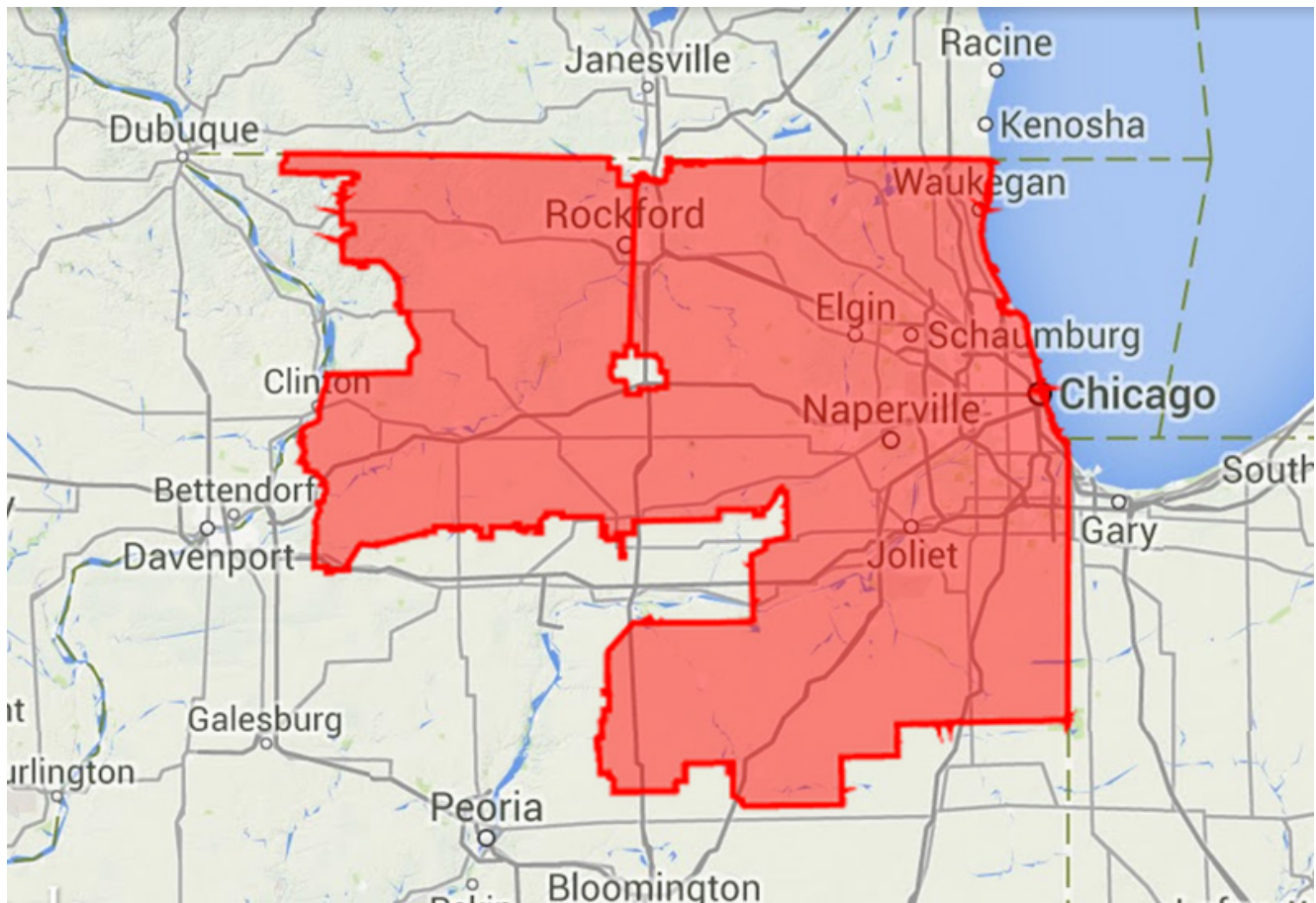
## Moderate Precipitation



\*source: Matthew Erickson, Joe Burgess, and Bill Marsh of The New York Times, April 30, 2011. Accessed online, [nationalatlas.gov](http://nationalatlas.gov) data range = 2001-2009

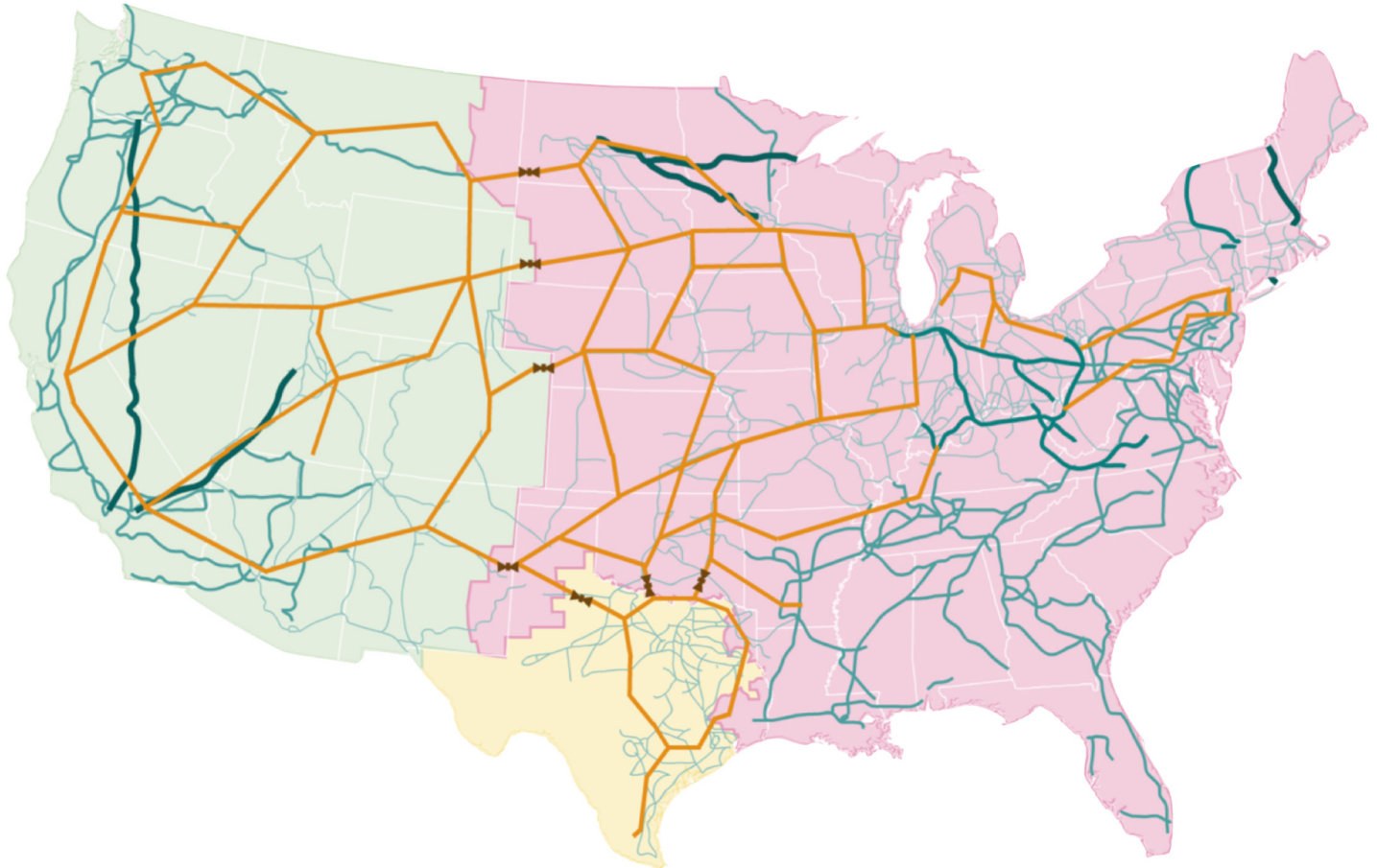
# Regional Utility Service Map

## Chicago ComEd Energy Service Map Area



\*source: <http://www.exeloncorp.com/energy/delivery/comed.aspx>, accessed August 13, 2014.

# 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)

\*source: [www.npr.org/2009/04/24/110997398/visualizing-the-u-s-electric-grid](http://www.npr.org/2009/04/24/110997398/visualizing-the-u-s-electric-grid) Accessed June 30, 2014.

# State Leading Businesses

## Fortune 500 Companies in Texas

Abbott Laboratories  
Allstate  
Anixter International  
Archer Daniels Midland  
Baxter International  
Boeing  
Caterpillar  
CDW  
CF Industries Holdings  
Deere  
Discover Financial  
Services  
Dover  
Exelon  
Hillshire Brands  
Illinois Tool Works  
Kraft Foods

McDonald's  
Mondelez International  
Motorola Solutions  
Navistar International  
OfficeMax  
R.R. Donnelley & Sons  
Sara Lee  
Sears Holdings  
State Farm Insurance  
Telephone & Data  
Systems  
Tenneco  
United Continental  
Holdings  
United Stationers  
W.W. Grainger  
Walgreen

\*source: <http://www.buyandhold.com/bh/en/research/states/NY.html>

# Public Company Comparisons

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	\$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 Company Comparisons

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	DLRt	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	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%

# 2016 Market Trends

## PRIMARY WHOLESALE COLOCATION MARKET SNAPSHOT

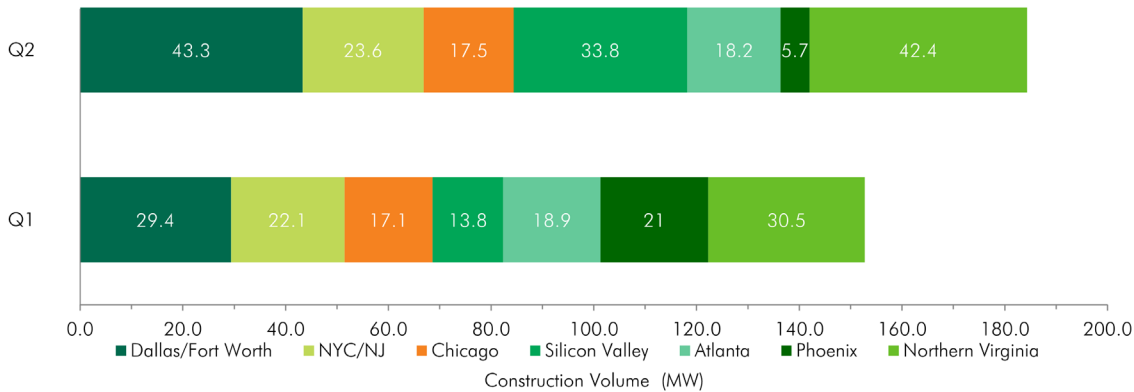
Market	Quarter	Inventory	Vacancy	Absorption	Rental Rates (kW/mo)*
Northern Virginia	Q1	417 MW (▲ 15.0 MW)	21.2 MW / 5.1% (▼ 24.1%)	20.8 MW (▲ 11.9 MW)	\$130-\$145
	Q2	421 MW (▲ 3.6 MW)	15.5 MW / 3.7% (▼ 27.7%)	9.4 MW (▼ 11.4 MW)	\$130-\$145
Phoenix	Q1	218 MW (▲ 5.0 MW)	4.1 MW / 1.87% (▼ 0.1%)	5.0 MW (▲ 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.

Arrows reflect quarter-over-quarter changes.

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

## Q1-Q2 DATA CENTER CONSTRUCTION PIPELINE



90%

2,500

2,940,000

611,400,000

New data generated over past 2 years as a % of total of all data ever generated

-Expected to INCREASE year after year

Number of commercial colocation facilities within the USA

-Expected to INCREASE year after year

Number of corporate owned data centers in the USA\*

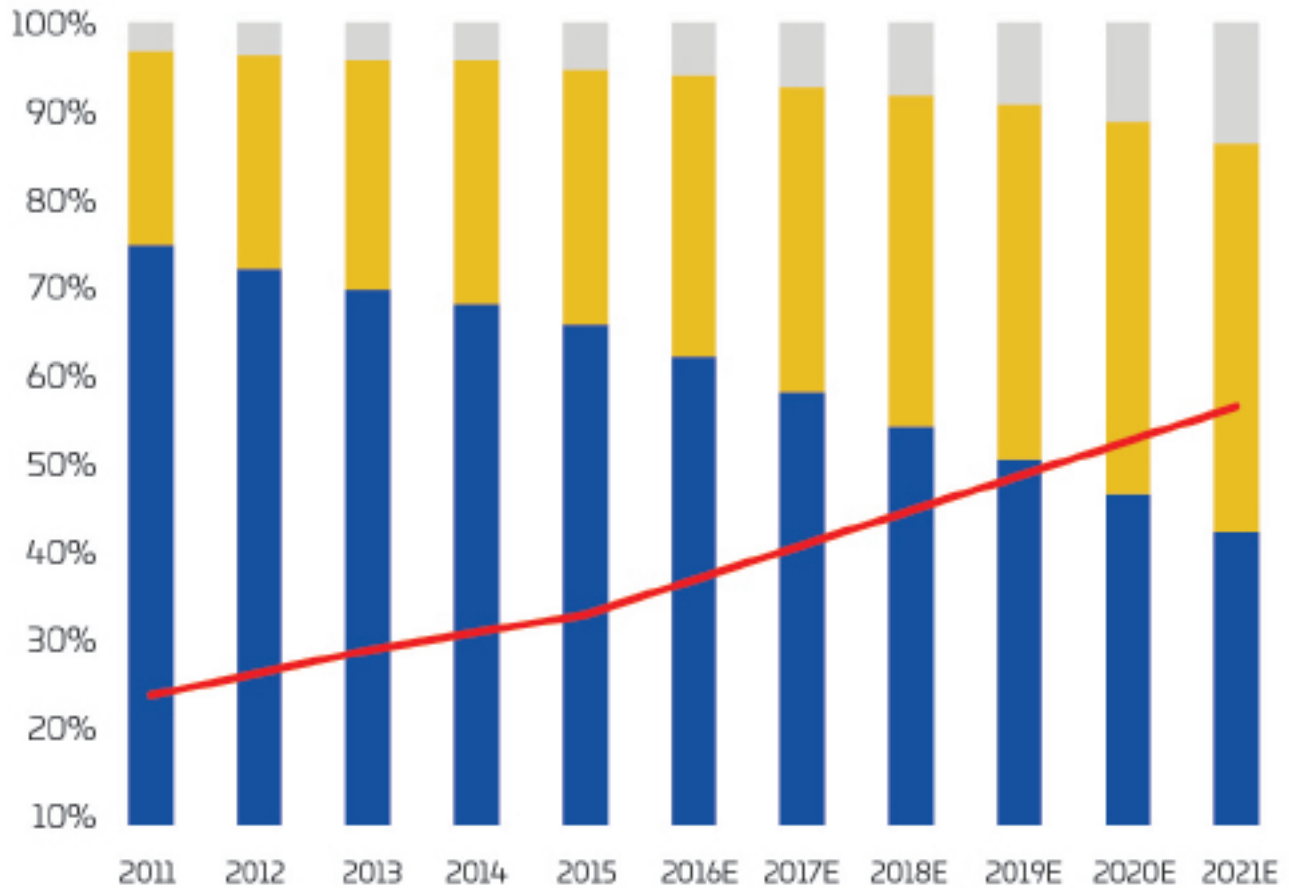
-Expected to DECREASE year after year

Total data center sq. ft. within the USA\*

-Expected to INCREASE year after year



# Outsourcing Trends



- Cloud Datacenter Space
- Third Party Datacenter Space
- Corporate Datacenter Space
- Outsourced including Cloud

Source: Oppenheimer & Co. Inc., Company Data

# The Industry Playbook

If you were **fluent** in the language of the data center industry, how much more **effective** would you be?

"The book and bootcamp should be the de facto training for anyone who wishes to take themselves seriously in the industry."

-Richard Donaldson, eBay

"You will learn the essentials – there is no fluff in this material – and be better positioned to do your job."

-Bill Norton, IIX



## What's in the book:

- Data center owner types
- Data center solution types
- Data center pricing and case studies
- Power configuration and distribution fundamentals
- Cooling fundamentals
- Contracts, audits, and compliance fundamentals

[openspectruminc.com/playbook-download](https://openspectruminc.com/playbook-download)



## Experience the Online Bootcamp

Learn from home or on the road

Want to learn more about the industry? Our proprietary training materials are specifically designed to do just that.

Do you already know everything there is to know about Data Centers? Test yourself and find out. You can take the final exam without enrolling in the bootcamp.

[openspectruminc.com/online-bootcamp](https://openspectruminc.com/online-bootcamp)

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