



Photo Credit: <http://www.hotelvintage-portland.com/hotel-photos/>

Portland

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.

FiberLocator



**STRUCTURE
RESEARCH**

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

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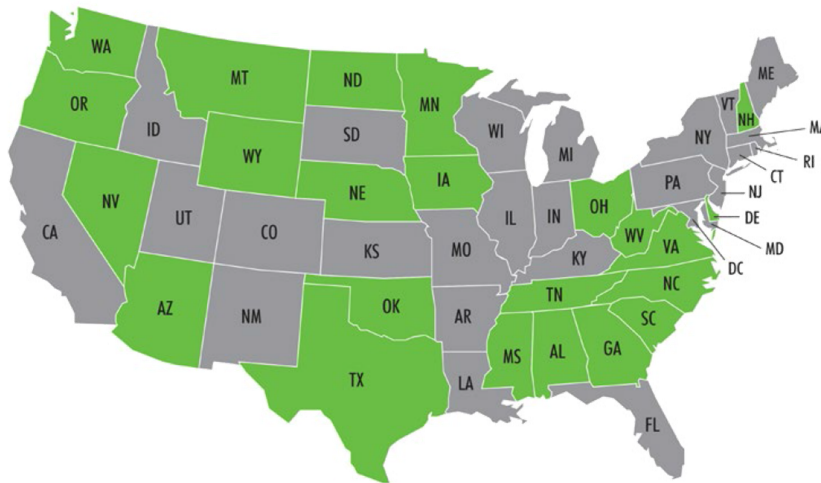
Tax Incentives

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

Oregon offers some of the most lucrative tax breaks in the nation to large data centers. The Portland area is among the most attractive places in the country to build a large data center. While the moderate construction costs, low power prices, and inexpensive land are just a few perks, the biggest perk is the tax breaks.

Oregon has no sales tax which saves companies millions of dollars on the high-end computers that run data centers, and many cities offer enterprise zone tax breaks that excuse computers from property taxes as well.

*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

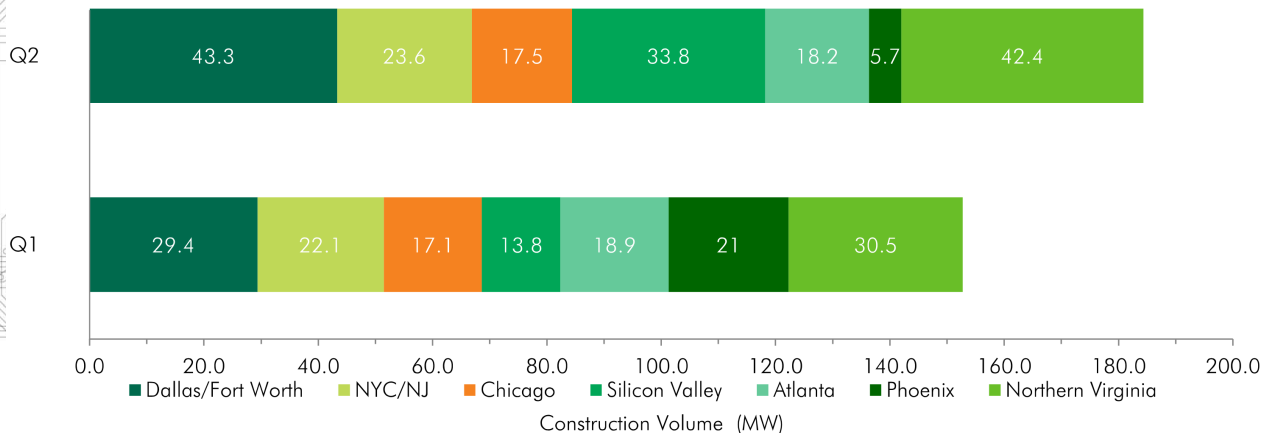
Market	Quarter	Inventory	Vacancy	Absorption	Rental Rates (kW/mo)*
Northern Virginia	Q1	417 MW (▲ 15.0 MW)	21.2 MW / 5.1% (▼ 24.1%)	20.8 MW (▲ 11.9 MW)	\$130-\$145
	Q2	421 MW (▲ 3.6 MW)	15.5 MW / 3.7% (▼ 27.7%)	9.4 MW (▼ 11.4 MW)	\$130-\$145
Phoenix	Q1	218 MW (▲ 5.0 MW)	4.1 MW / 1.87% (▼ 0.1%)	5.0 MW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

LinkedIn Opens Flagship 8MW Data Center in Oregon

“The facility offers 8MW of power capacity, cabinet-level cooling and a new network topology that relies on 100G connectivity. It has been awarded the Efficient IT (EIT) Stamp of Approval by the Uptime Institute, and is intended to serve as a template for future LinkedIn data centers..”*

EdgeConneX Brings the Edge of Amazon’s Cloud to Portland

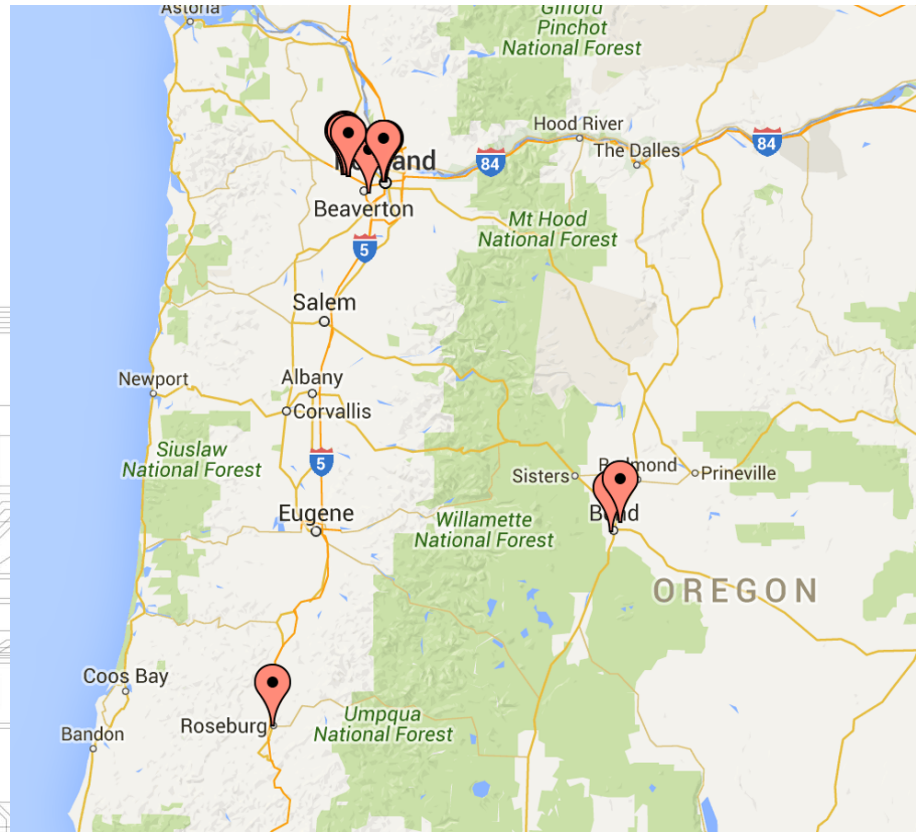
“The EdgeConneX data center in Portland, which came online last year, has become the first physical location in the Portland area where customers can connect directly and privately to the AWS infrastructure via a service called AWS Direct Connect.”**

*Source: <http://www.datacenterdynamics.com/content-tracks/colo-cloud/linkedin-opens-flagship-8mw-data-center-in-oregon/97344.article>

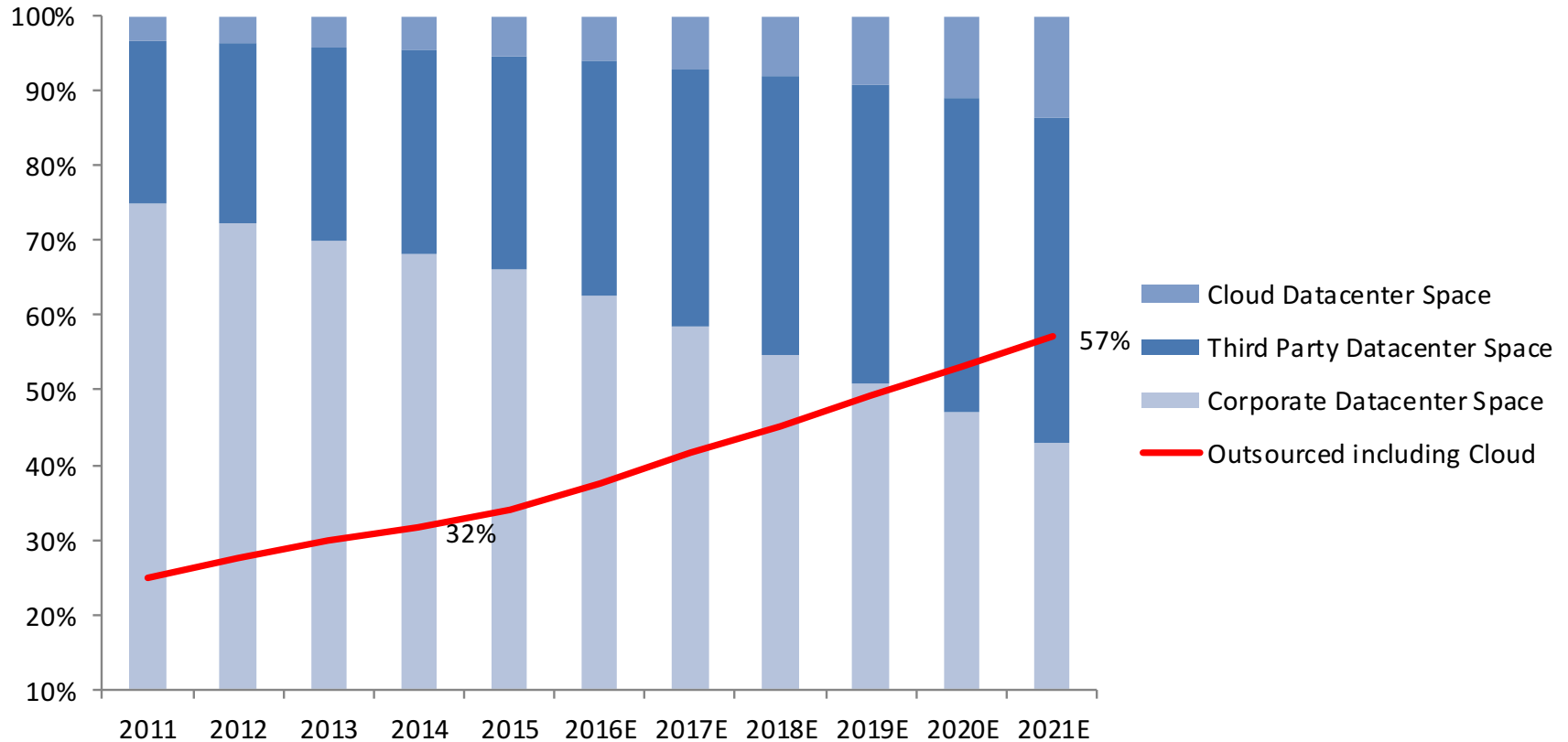
**Source: <http://www.datacenterknowledge.com/archives/2016/05/03/edge-data-centers-amazon-extends-clouds-edge-to-portland/>

Regional Industry Trends

16 Commercial Data Centers House **14** Different Providers Within the Portland 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
Infomart Hillsboro	x	x		National	REIT: ASB Real Estate Fund	21515 NW Evergreen Pkwy.	Hillsboro
ViaWest Hillsboro I & II	x	x	x	National	Sub of Shaw Public (SJR: NYSE)	3935 NW Aloclek Pl. Bldg C & D	Hillsboro
ViaWest Brookwood	x	x	x	National	Sub of Shaw Public (SJR: NYSE)	23605 NW Huffman St.	Hillsboro
Telx / DRT Portland Oregon Data Center PRT1	x			National	REIT	3825 NW Aloclek Pl.	Hillsboro,
Atmosera Beaverton DC1 & DC2	x		x	Regional	Private (PE Backed)	9705 SW Sunshine Ct.	Beaverton
Atmosera Portland DC3	x		x	Regional	Private (PE Backed)	511 SW 10th Ave. 3rd floor	Portland
EdgeConneX EDCPORo1	x		x	National	Private	23245 NW Evergreen Pkwy. - Bldg C-300	Hillsboro
Pittock Internet Exchange	x			Local	Private	921 SW Washington St Suite 100	Portland
LightPoint Portland Datacenter	x		x	Local	Private	625 SW Stark St. Suite 500	Portland
Opus Interactive Portland	x		x	Regional	Private	1225 West Burnside St. Suite 310	Portland
Opus Interactive Hillsboro	x		x	Regional	Private	21515 NW Evergreen Pkwy.	Hillsboro
vXchnge Portland Data Center	x		x	National	Private	233 NW 12th Ave. Suite 201	Portland
T5 Portland Data Center		x		National	Private	4082 Northwest Brookwood Pkwy.	Hillsboro
Tata Communications	x		x	National	Public (TATACOMM: NYSE)	21101 NW Evergreen Pkwy.	Hillsboro
Cascade Divide Roseburg	x			Regional	Private	455 SE Spruce St.	Roseburg
Cascade Divide Bend	x			Regional	Private	213 SW Columbia St.	Bend
OneNeck Data Center in Bend, Oregon	x		x		Sub of TDS Telecom (TDS: NYSE)	20845 Sockeye Place	Bend

*Source: peeringdb.com.

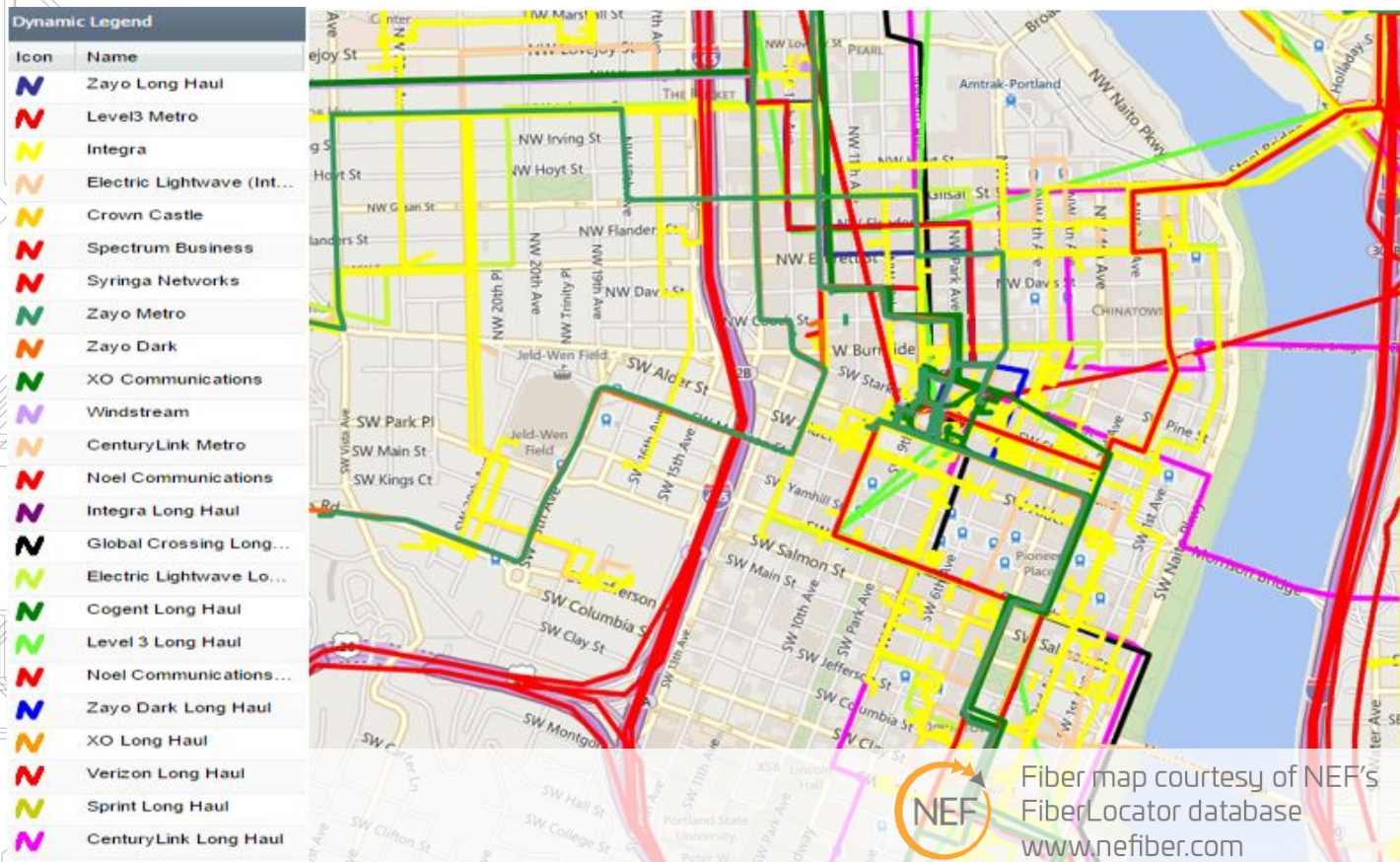
Regional Peering Exchanges

List of Major Peering Exchanges In and Around Portland

Exchange Name	Long Name	City/Region
NWAX	Northwest Access Exchange, Inc.	Portland, Oregon

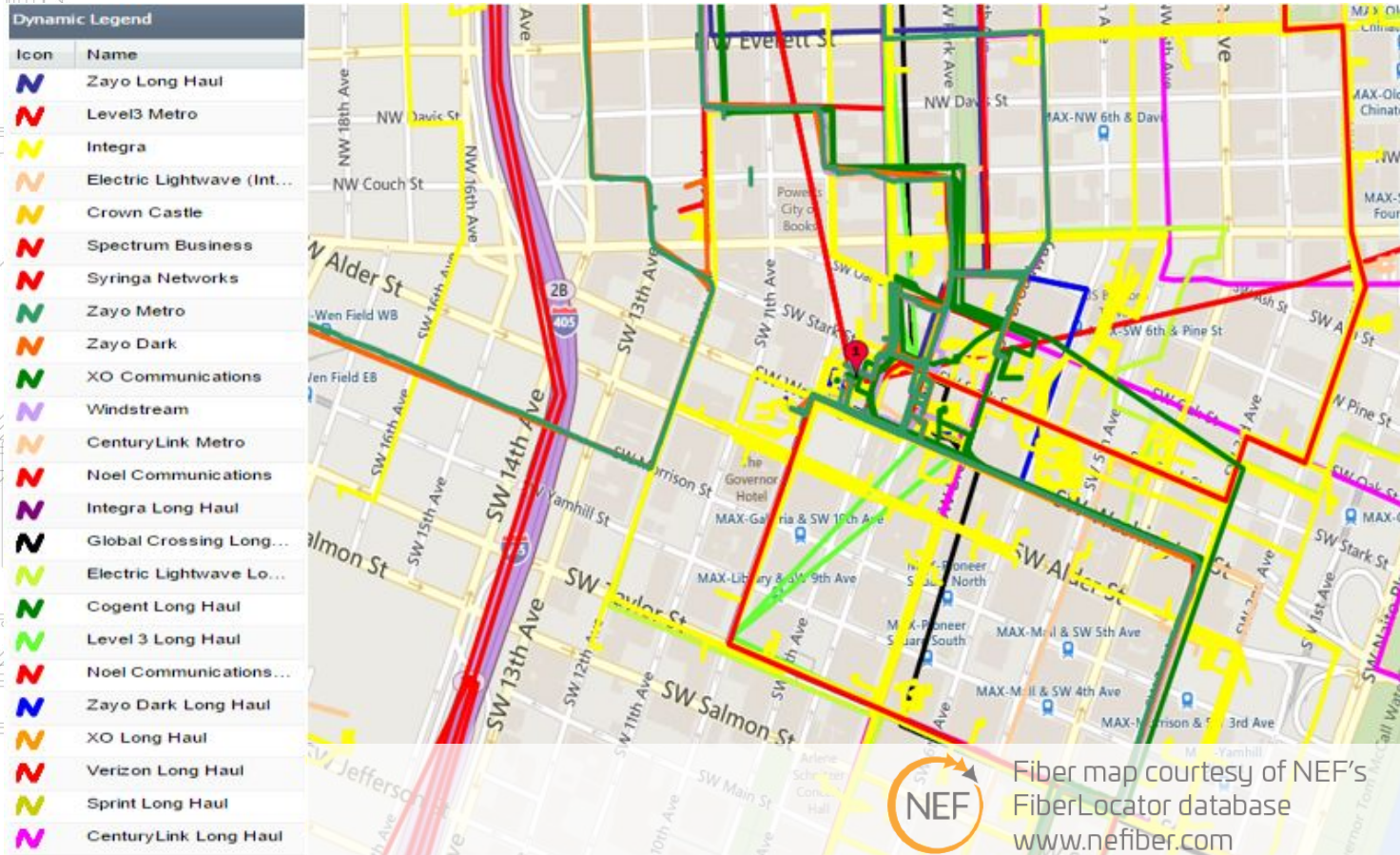
Regional Carrier Hotels

707 SW Washington St, Portland, OR
1 Mile View



Regional Carrier Hotels

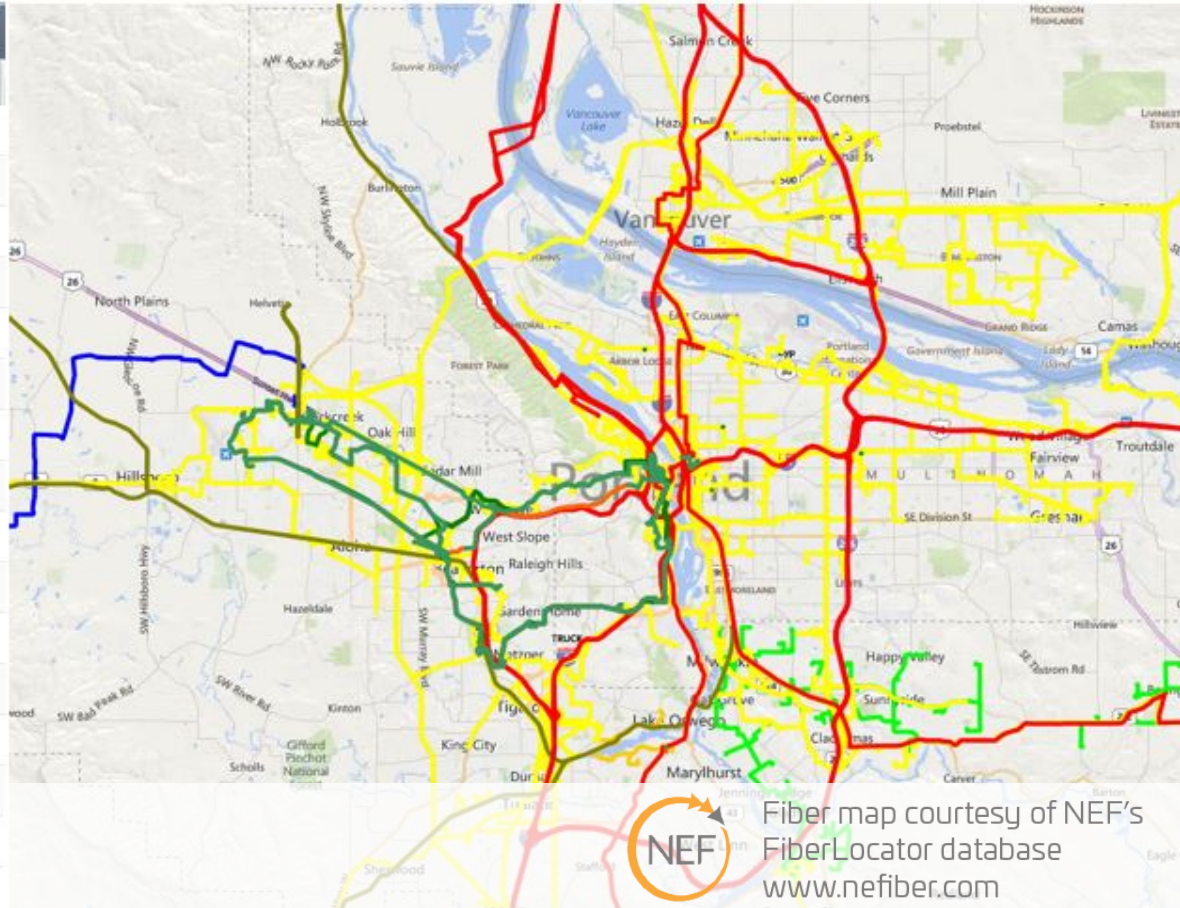
921 SW Washington St, Portland
1 Mile View



Regional Metro Networks

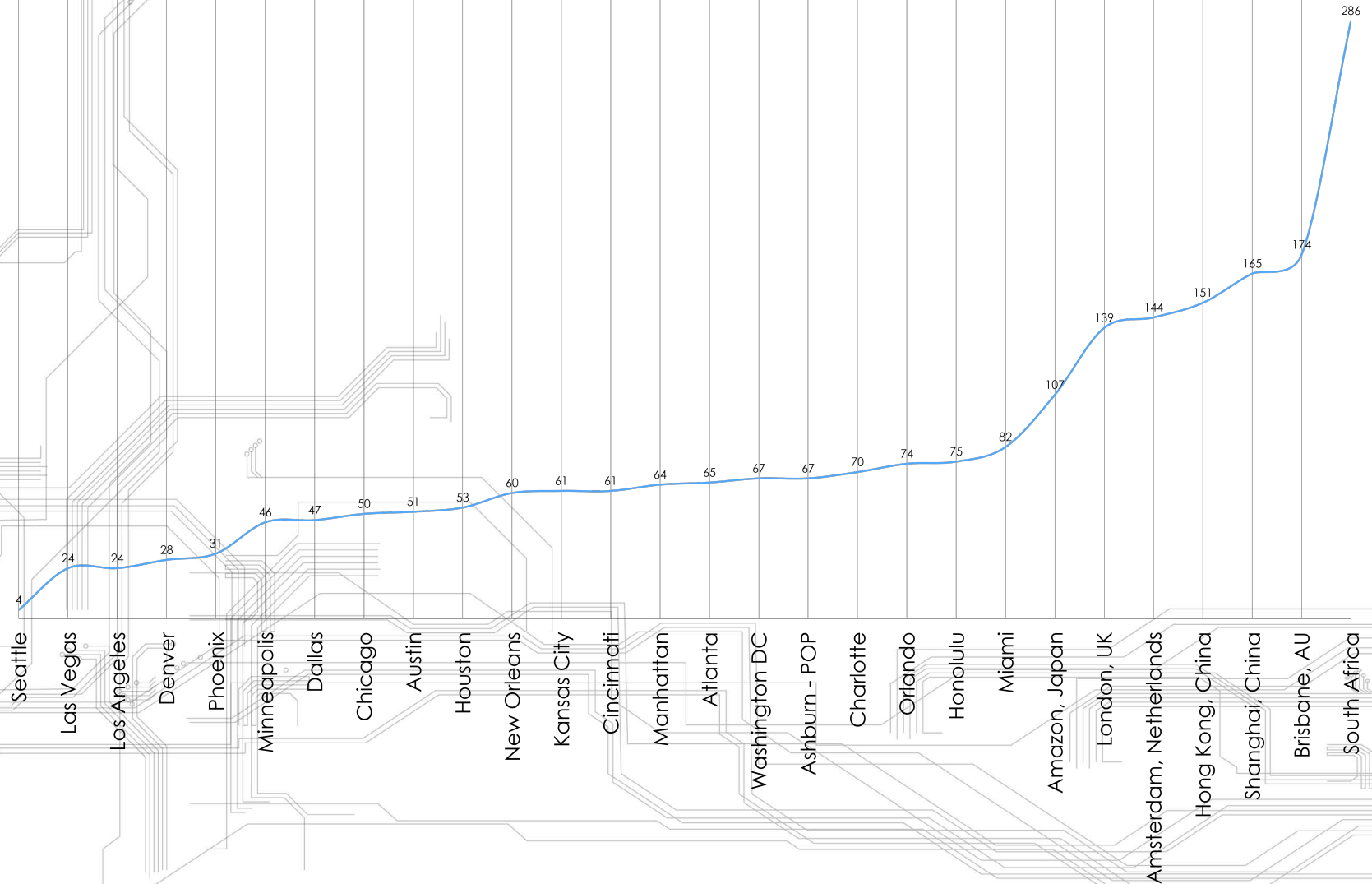
20 Mile Metro Networks

Dynamic Legend	
Icon	Name
	Noel Communications
	Syringa Networks
	Windstream
	XO Communications
	Zayo Metro
	Zayo Dark
	Parallel Infrastructure ...
	Spectrum Business
	County - Clackamas, ...
	CoastCom
	Crown Castle
	Electric Lightwave (Int...
	Level3 Metro
	Integra
	CenturyLink Metro



Network Latency

-Latency in milliseconds, from Portland

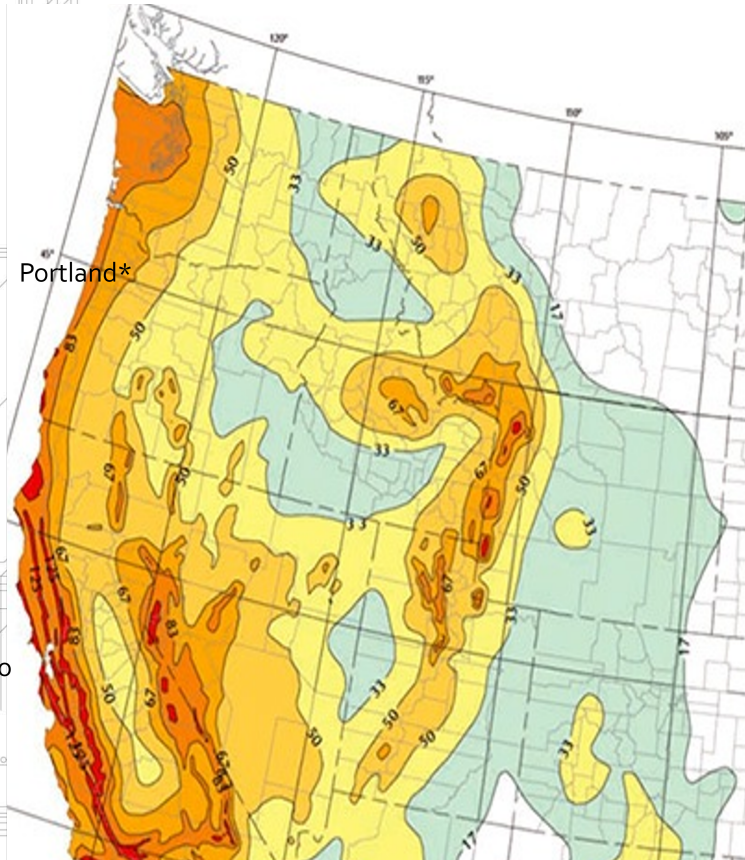


Environment & Industry

Portland, and the Pacific Northwest in general, have recently become a hotbed for new data center deployments by both single tenant owners such as Google and Facebook as well as multi-tenant data center operators such as Viawest, Telx and T5.

The low cost of power and 0% sales tax on infrastructure deployed within facilities here offer huge savings and incentives for customers of all shapes and sizes.

Local Weather Factors



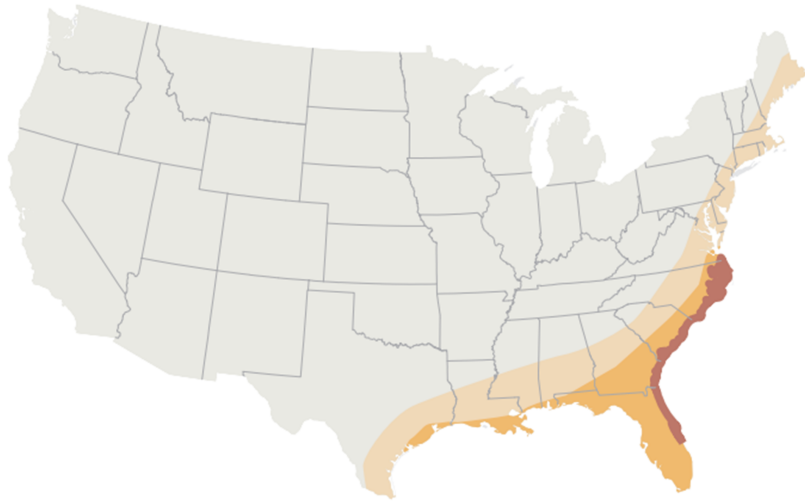
Moderate Earthquake Risk

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

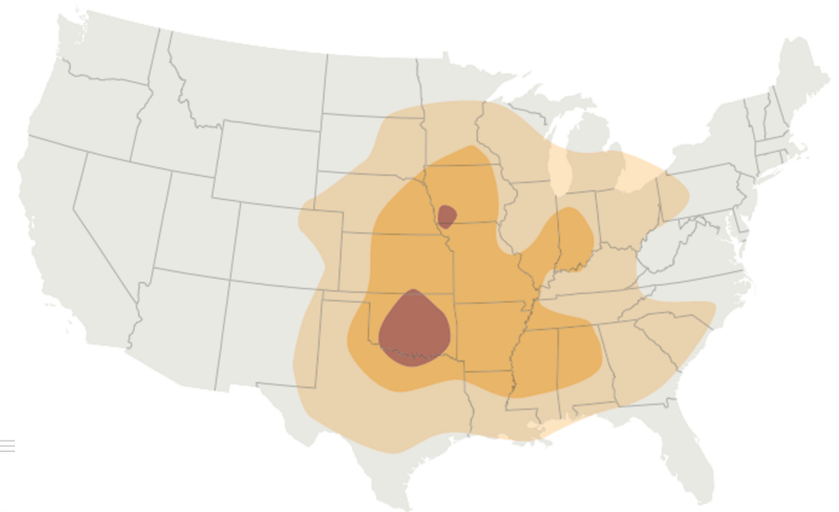
No Hurricane Risk

Lower  Higher



Low Tornado Risk

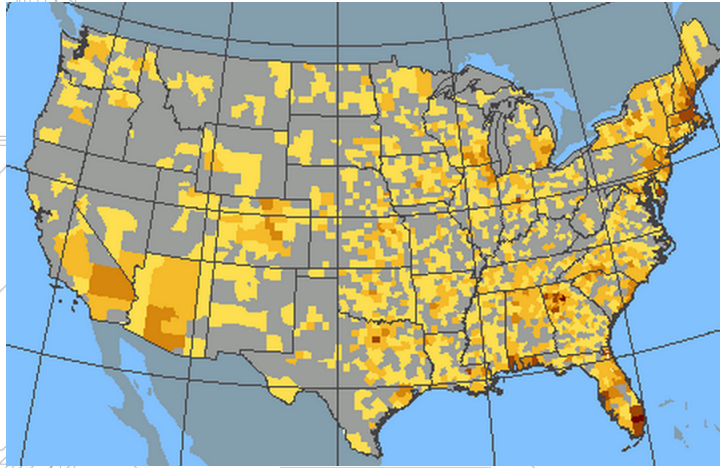
Lower  Higher



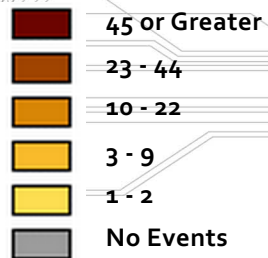
*Source: Matthew Erickson, Joe Burgess, and Bill Marsh of The New York Times. Accessed online, nationalatlas.gov

Local Weather Factors

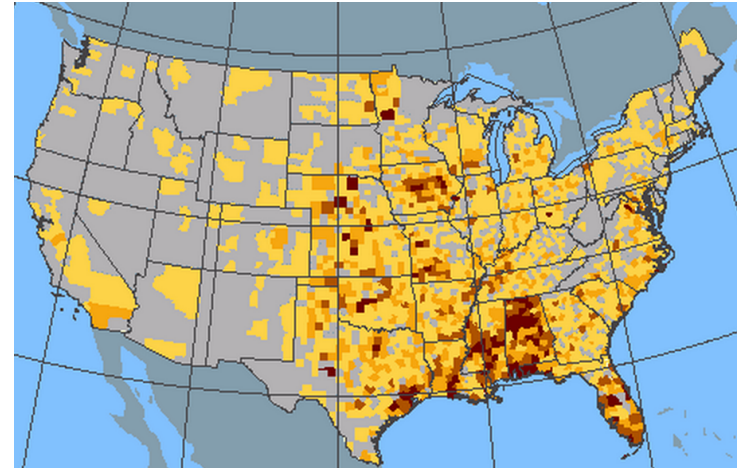
Moderate Lightning Risk



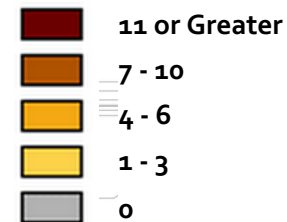
Lightning: Number of events that resulted in damage



Low Thunderstorm Risk



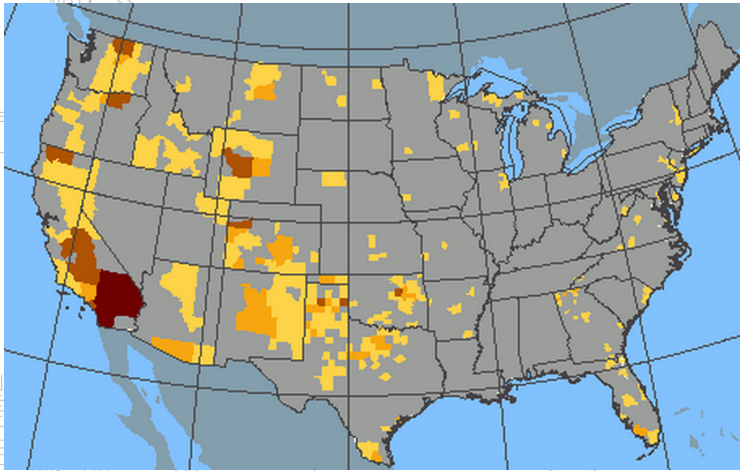
Thunderstorm: Number of damage-causing events



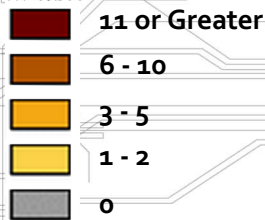
*Source: nationalatlas.gov

Local Weather Factors

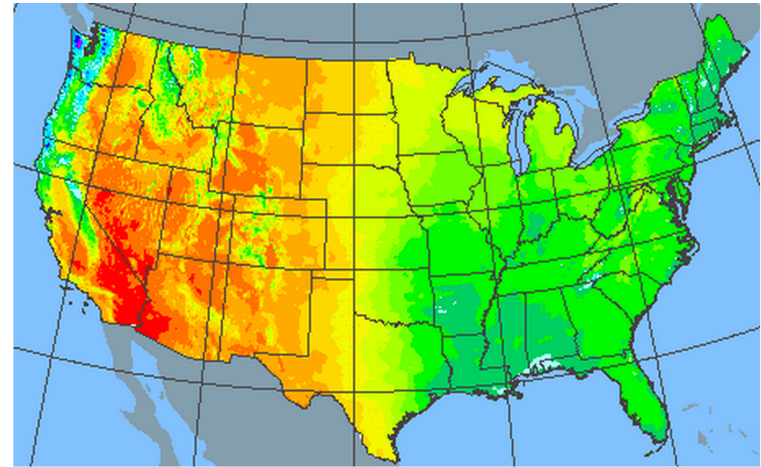
Moderate Wildfire Risk



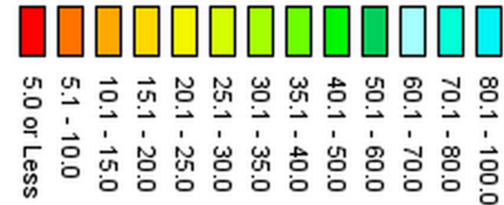
Wildfires: Number of events that resulted in damage



High Precipitation



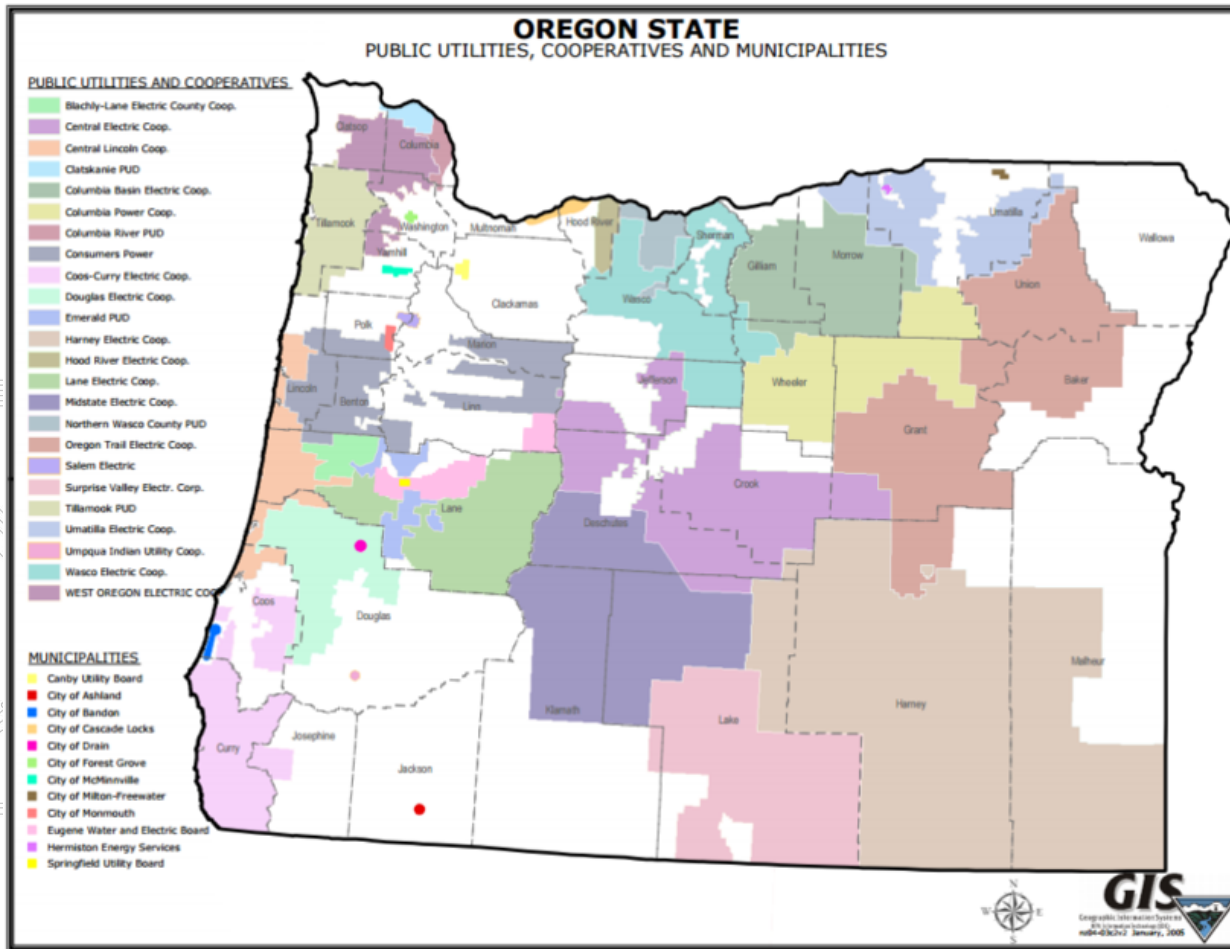
Average Annual Precipitation (in inches)



*Source: nationalatlas.gov

Utility Service Territories

Oregon Energy Service Area Map



National Power Connections

EXISTING LINES

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

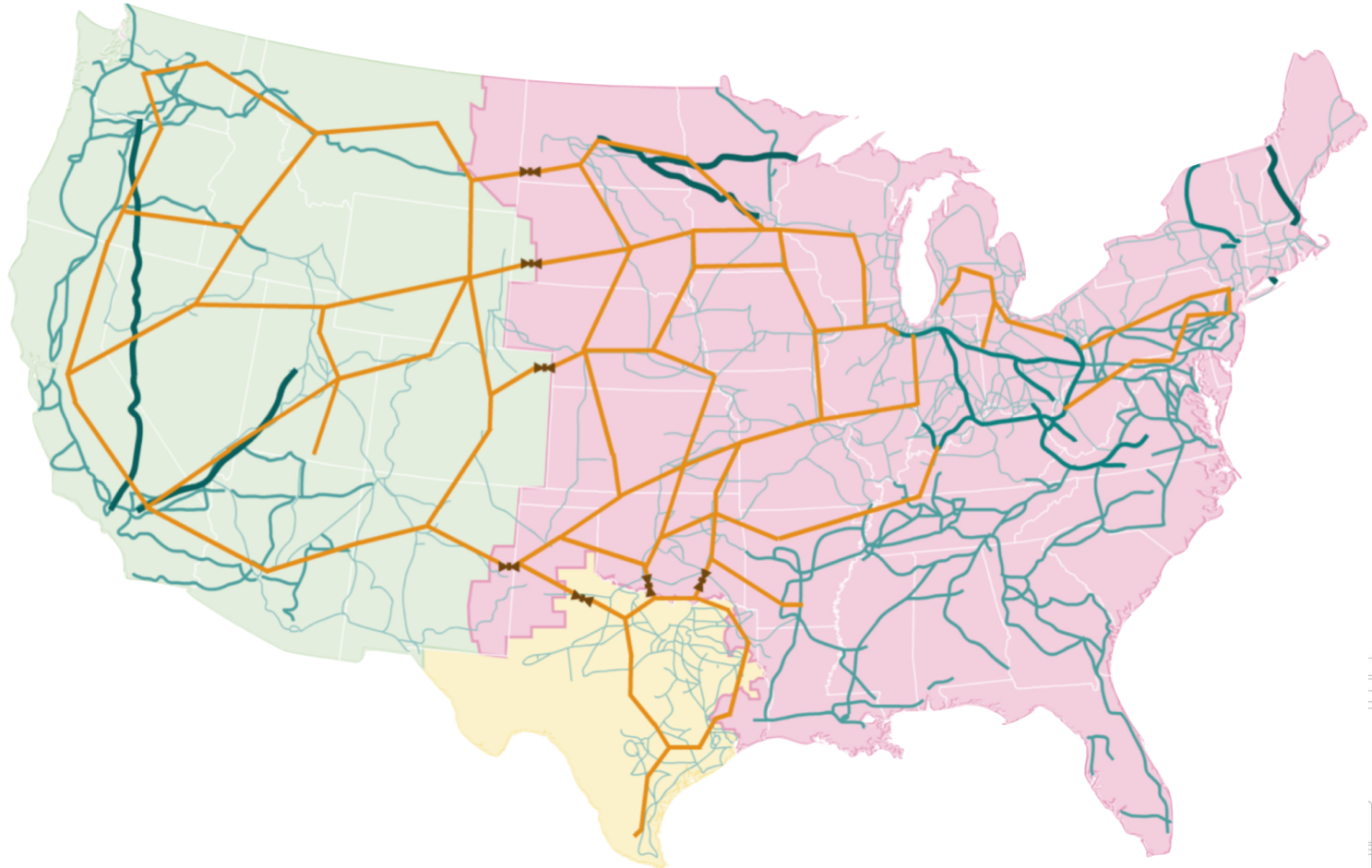
PROPOSED LINES

- 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 Oregon

Columbia Sportswear

Greenbrier Companies

Lithia Motors

Nike

Precision Castparts

Schnitzer Steel Industries

StanCorp Financial Group

Regardless of How You Learn, We've Got You Covered.

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