

Data Center Overview

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**GREATER MINNESOTA
CHAPTER**

Advancing Data Center and
IT Infrastructure Professionals



Data Center Overview

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- Data Center Mentor



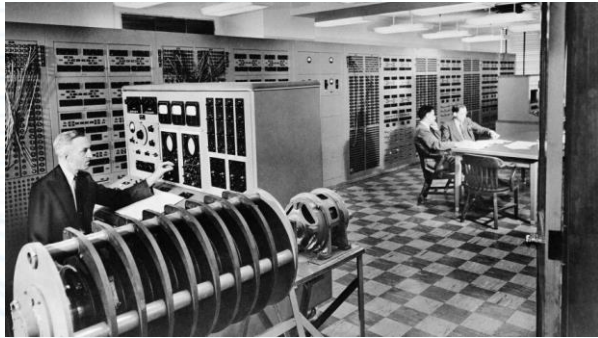
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Data Center Overview

Just a room full of computers



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Data Center Overview

Just a room full of computers



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What uses a data center?



Email

Phone Call



Directions



Documentation

Retail Transactions



Health Records



Internet



Streaming TV



Banking



Social Media Apps



Music Streaming



Data Center Sizes / Types

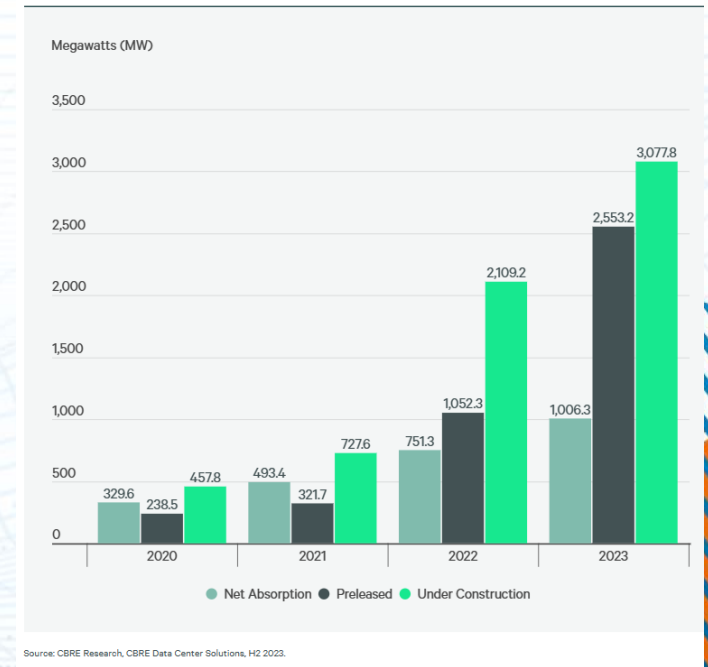
Types

- Enterprise
- Colocation
- Edge
- Hyperscale

Growth Rate

- 2000 - 1 MW
- 2010 - 10 MW
- 2024 - 100 MW+

Figure 5: Primary Markets Historic Net Absorption, Preleasing & Under Construction



Where is the Cloud?



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Are data centers important?

- **Outages**
 - 911 calls, Retail, Internet connectivity for business
- **Security**
 - Health Records, Financial, School Records, Photos
- **Speed and Accuracy**
 - Bank transactions, Stock Market, Favorite Show!



Artificial Intelligence – Data Center Impact



Add a Caption

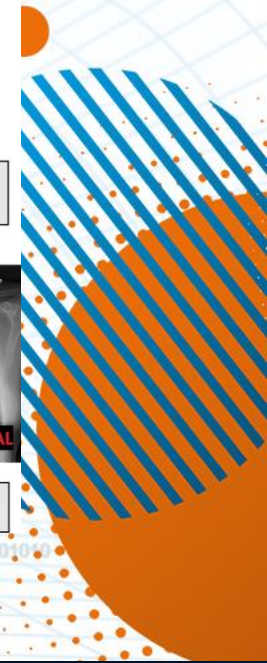
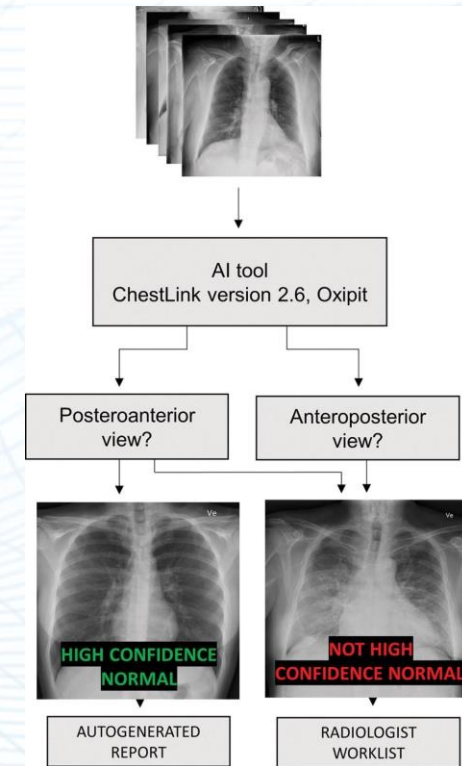
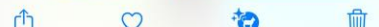
Look Up **Bombay** >

Friday · Mar 15, 2024 · 8:06 AM
IMG_5649

Apple iPhone 14 Pro

Main Camera — 24 mm f1.78
12 MP · 3024 × 4032 · 2.5 MB

ISO 800 | 24 mm | 0 ev | f1.78 | 1/60 s



What supports a Data Center?



Building



Power



Cooling



Internet /
Cabling



IT



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Recent Concerns – Energy Usage

- Always Increasing Energy Efficiencies
- Renewable Energy Deployments
- Green Grid – founded in 2007
 - Defined Power Usage Effectiveness (PUE)
 - Defined Water Usage Effectiveness (WUE)



Recent Concerns – Water Usage



- Depends on available water utility
- Depends on chosen cooling technology
 - Evaporative Cooling Tower – up to 15 gpm / MW
 - Closed Air-Cooled Chiller – minimal





Recent Concerns – Noise

- IT Equipment Noise
 - Far within concrete building
- Generators – Emergency use only
 - Sound Attenuation
- Cooling Equipment
 - Sound Dampening Fans



Recent Concerns – Pollution



- **Emergency Generators**
 - **Used just like Hospitals – only during utility outage**
 - **Testing one hour per month**
 - **Meets EPA requirements**



Recent Concerns – Traffic



- Construction Traffic
- Once Built, box truck deliveries of:
 - IT equipment
 - Maintenance materials
- Employees 24/7





Recent Concerns – Jobs for Local Area

- Hundreds of trades jobs during ~24-month construction
- Highly skilled IT workforce
- Trades jobs to maintain MEP equipment



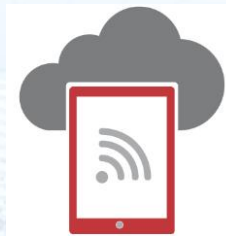
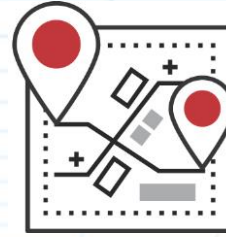
Why Minnesota?

- Considered a Tier 2 Market
- Free Cooling Potential > 80% of the year
- MN tax incentive program
- Available Power & Land



Take aways

- Data Centers are behind every business
- Technology Growing
 - AI will require more
- Good Neighbor
- Great Jobs
- Concerns Manageable



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