

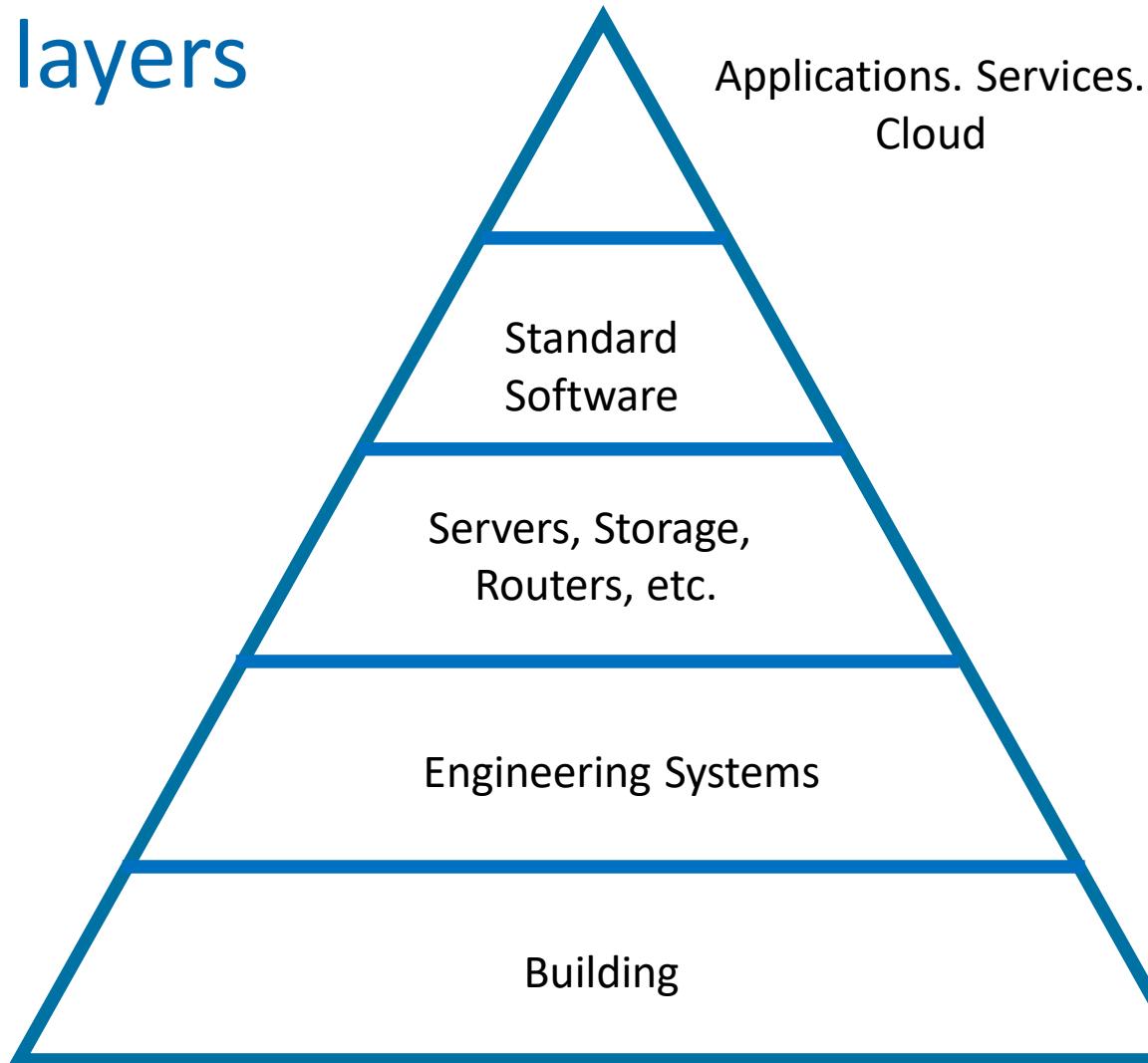
Data centers: global market and modern trends

Tbilisi, March 29 2023

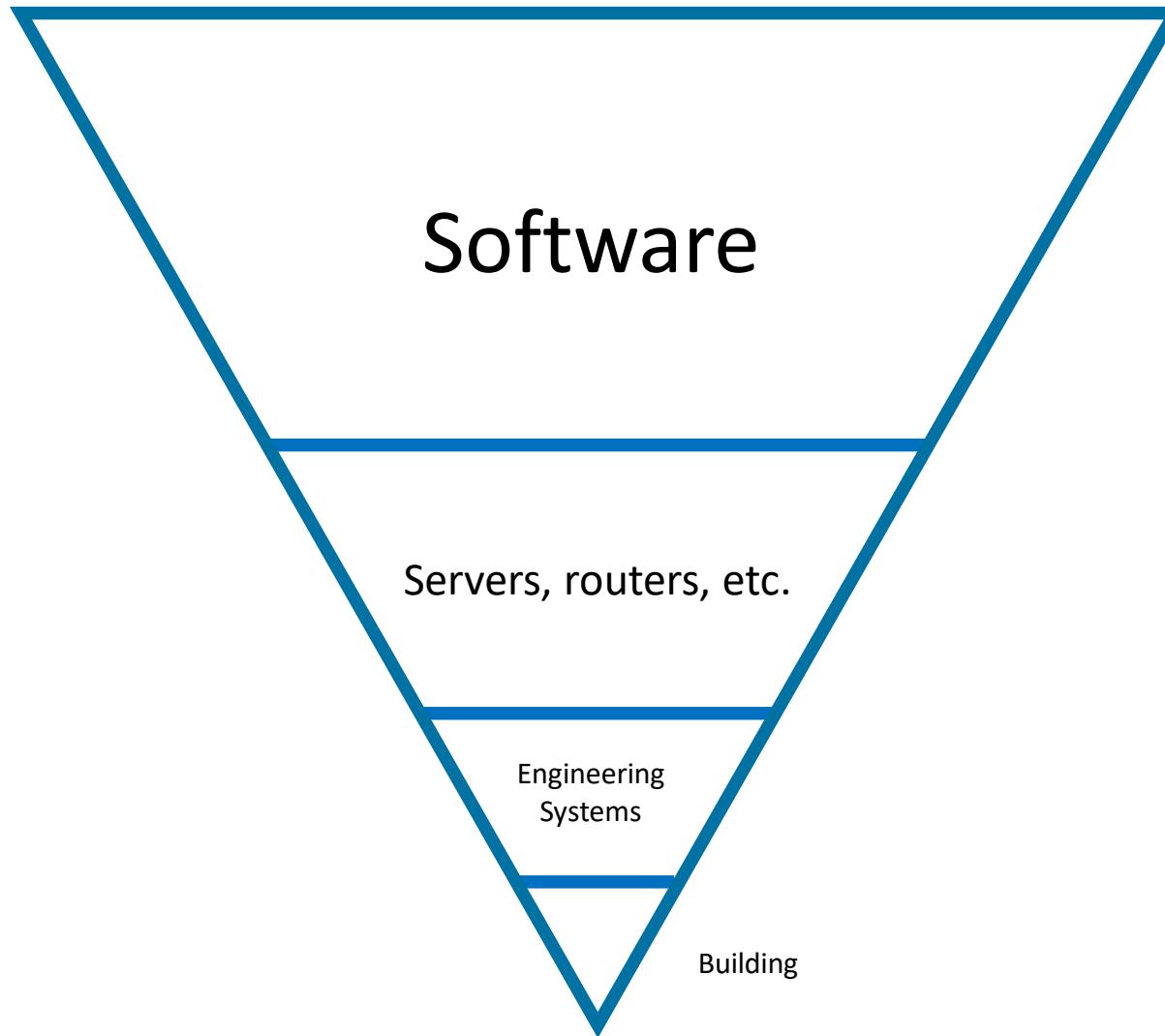
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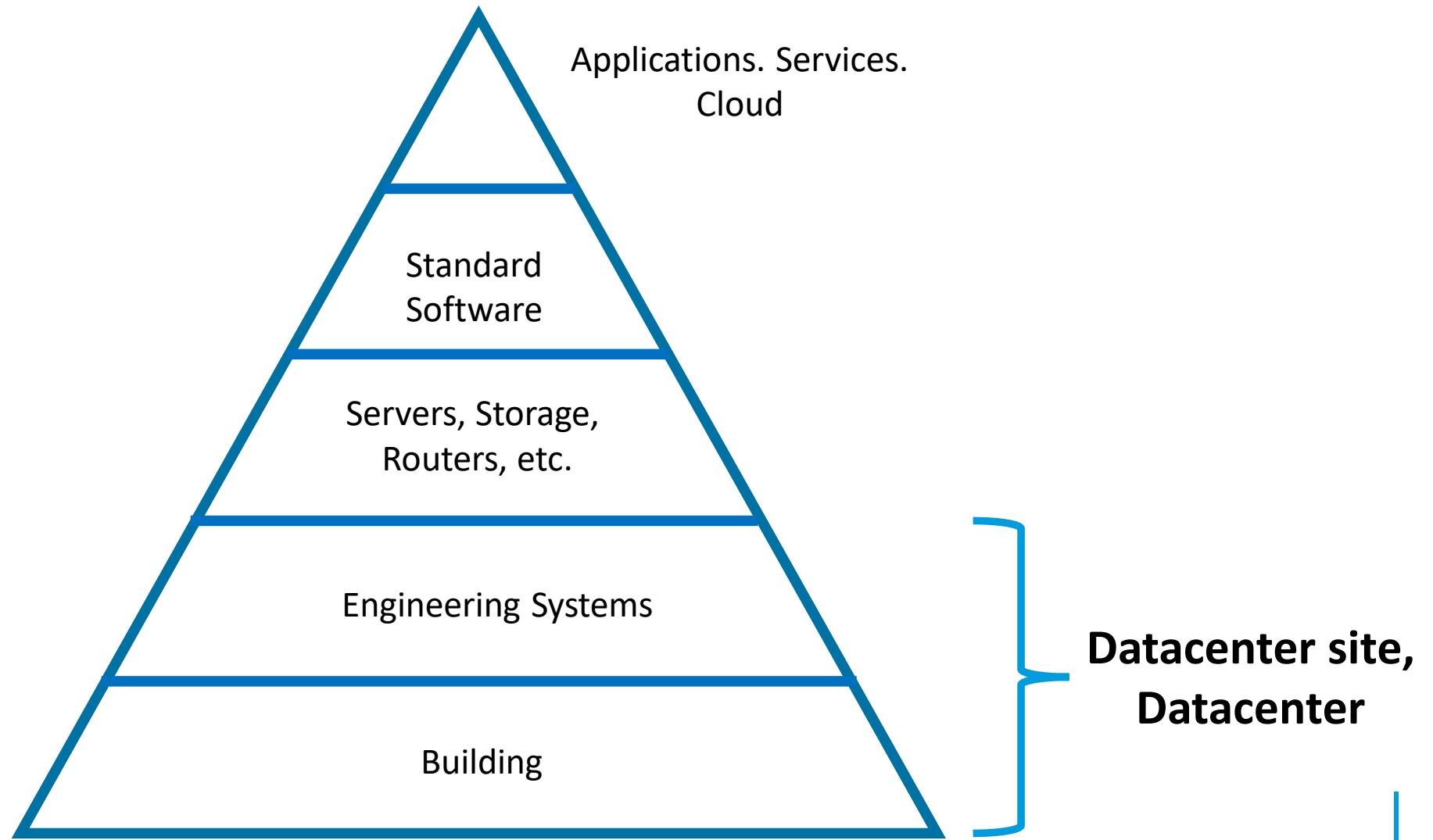
Datacenter layers



“TCO” angle of view



“Datacenter” for today’s discussions



Datacenters trends

AI in datacenters

DCIM

Edge datacenters

Staff shortage

Compressorless cooling

...

Software-defined power

Multisite resiliency

Direct liquid cooling

Fuel cells

Heat rejection into water

...

Uptime Institute Global Datacenter Survey (2022, #12)

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Trends 1. Energy

Energy consumption reduction

Using energy from renewable sources

Energy. Why is it so important?



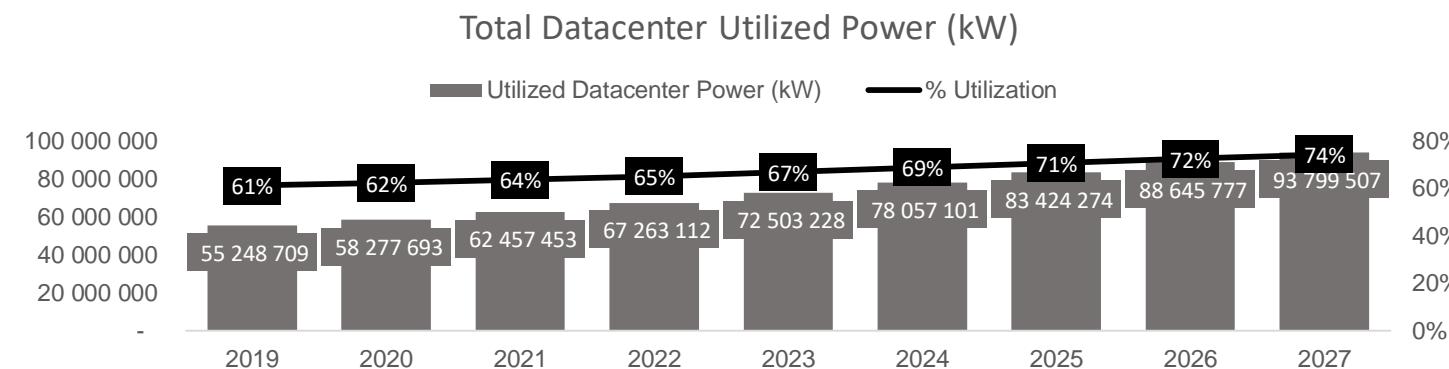
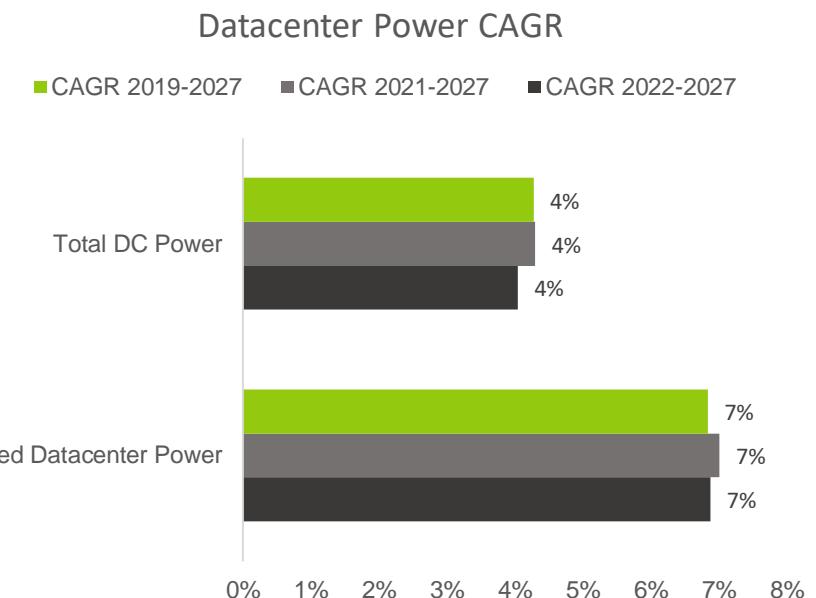
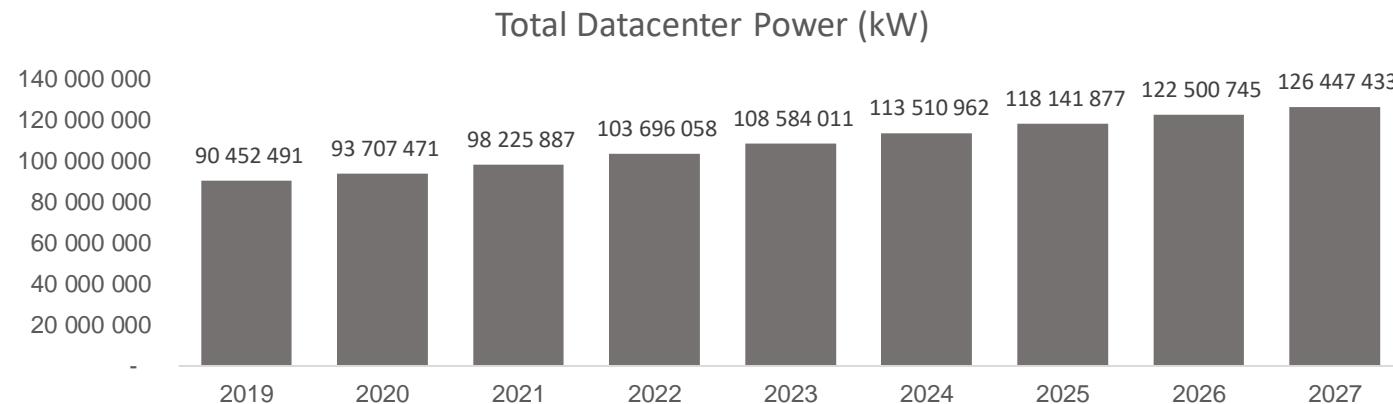
Datacenters Power Summary

451 Research

S&P Global

Market Intelligence

Market Monitor & Forecast



Current Datacenters Power Consumption is

72 GW (Servers, storage, routers), etc.

Together with engineering systems could be as high as **130 GW**
(estimated)

Some facts about electricity consumption

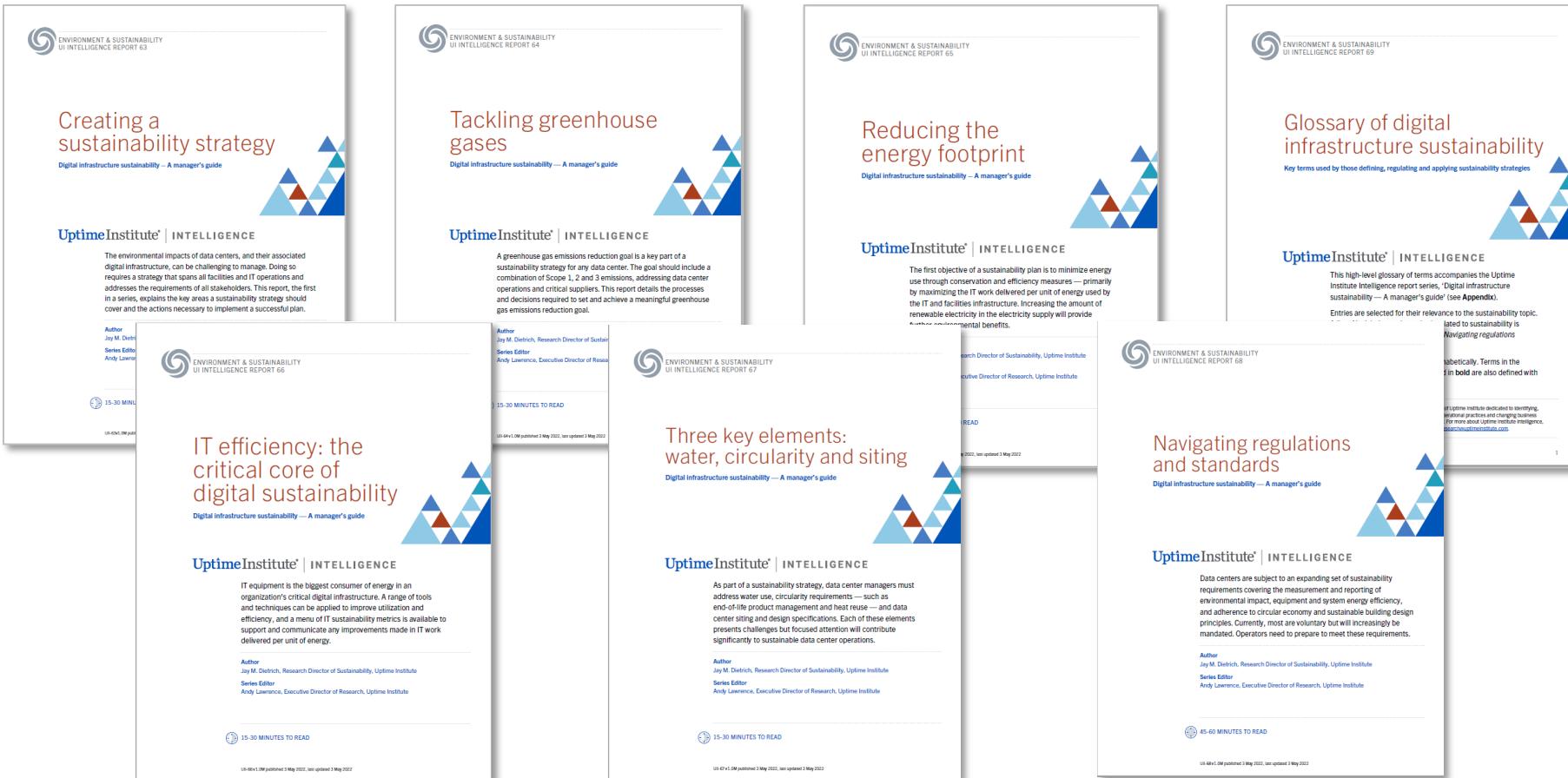
2023	Consumption, W*Hr	
Whole world	2.65 E+16	
Railroads	2.86 E+14	1.1%
Oil refineries	3.65 E+14	1.4%
Datacenters (worldwide)	1.14 E+15	4.3%
Georgia	1.3 E+13	x88
USA	4.1 E+15	28%

Energy consumption reduction
Using energy from renewable sources

Ensuring sustainable and
responsible growth



Uptime Sustainability Report Series



www.uptimeinstitute.com (Executive Summary)

Efficiency metrics

Track KPIs for operations with environmental impact, including:

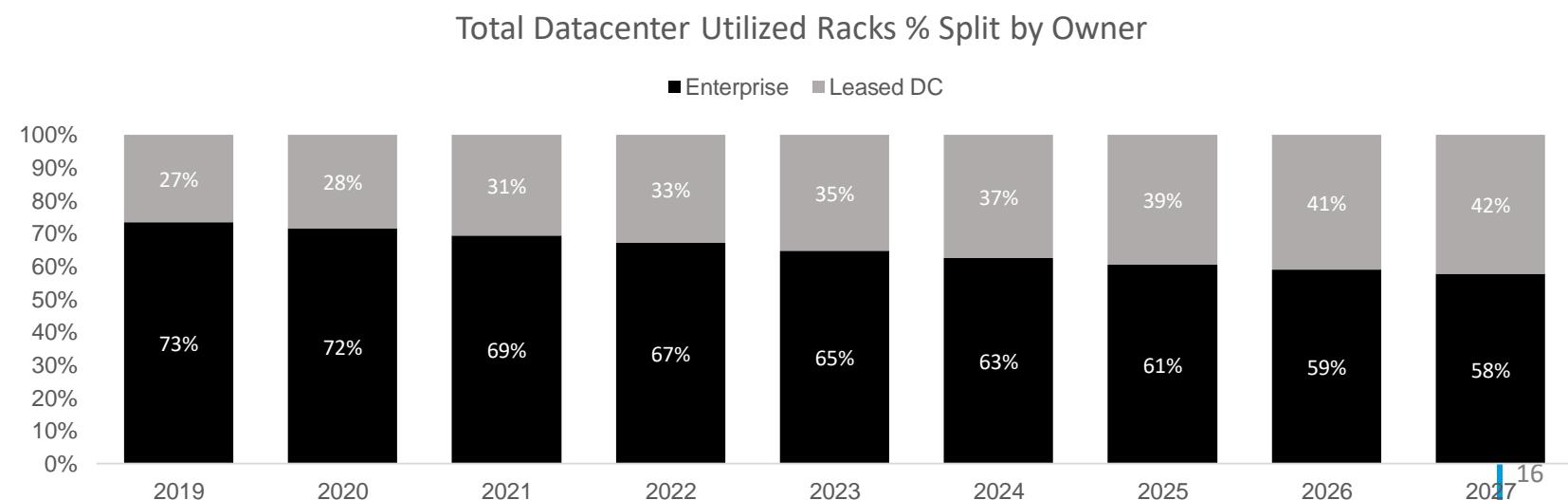
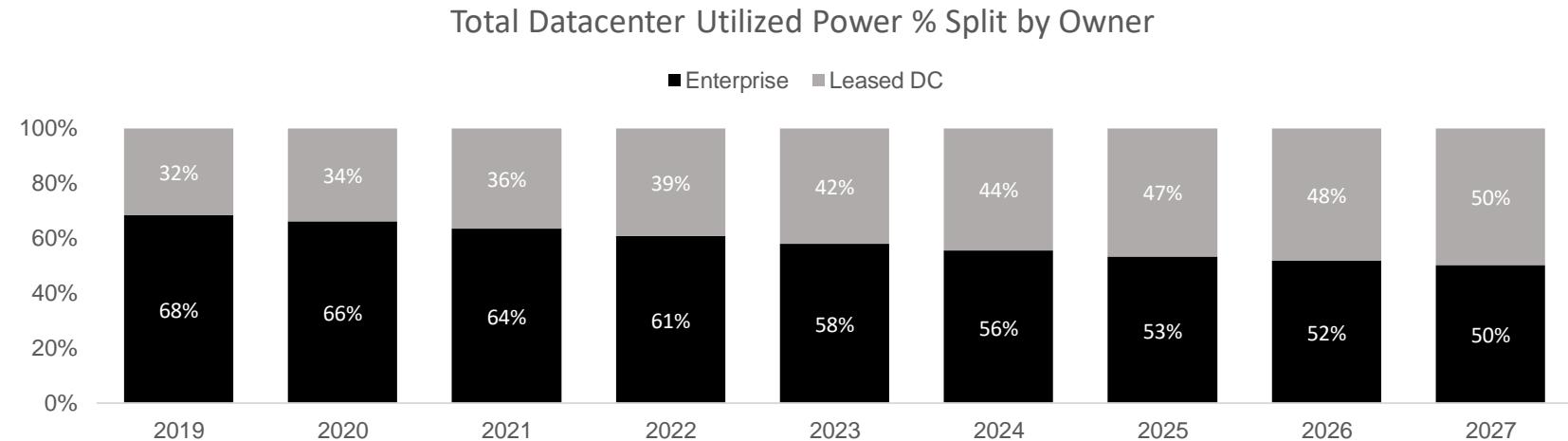
- IT infrastructure: Average CPU, memory and/or storage utilization, and images per server
- Facilities infrastructure: PUE, average IT operating space temperature and chiller COE
- Environmental metrics: Carbon usage effectiveness (CUE), WUE, percentage of energy consumption matched to renewable energy and percentage of energy consumption supplied by renewable energy
- IT equipment EOL metrics: Percentage of equipment reused, percentage of EOL equipment sent to a certified management facility for reuse and percentage of EOL equipment parts sent to a landfill

Trends 2.

From Enterprise to MTDC (leased)

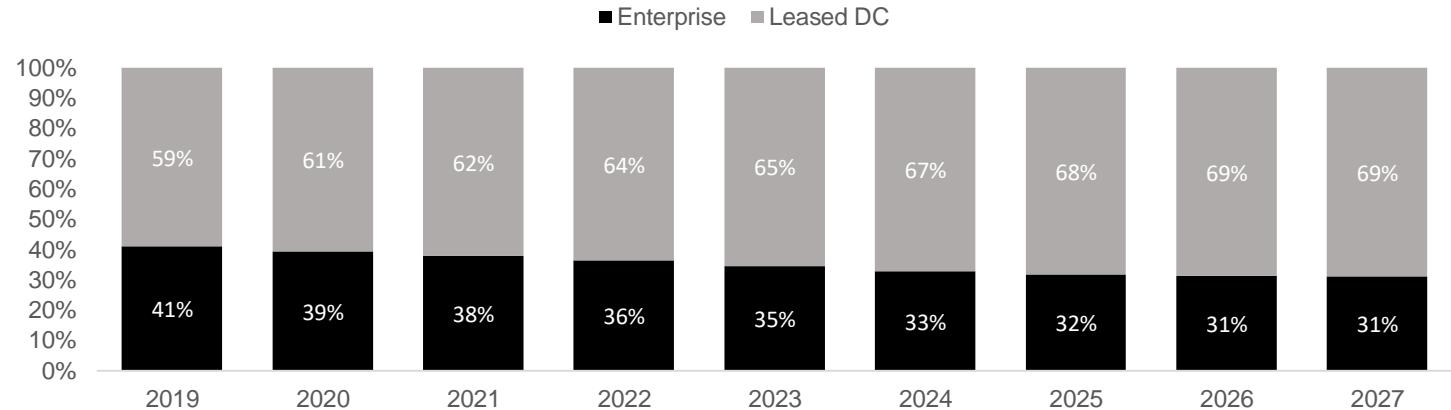


Datacenter load clearly migrates from enterprise to MTDCs. Whole world picture

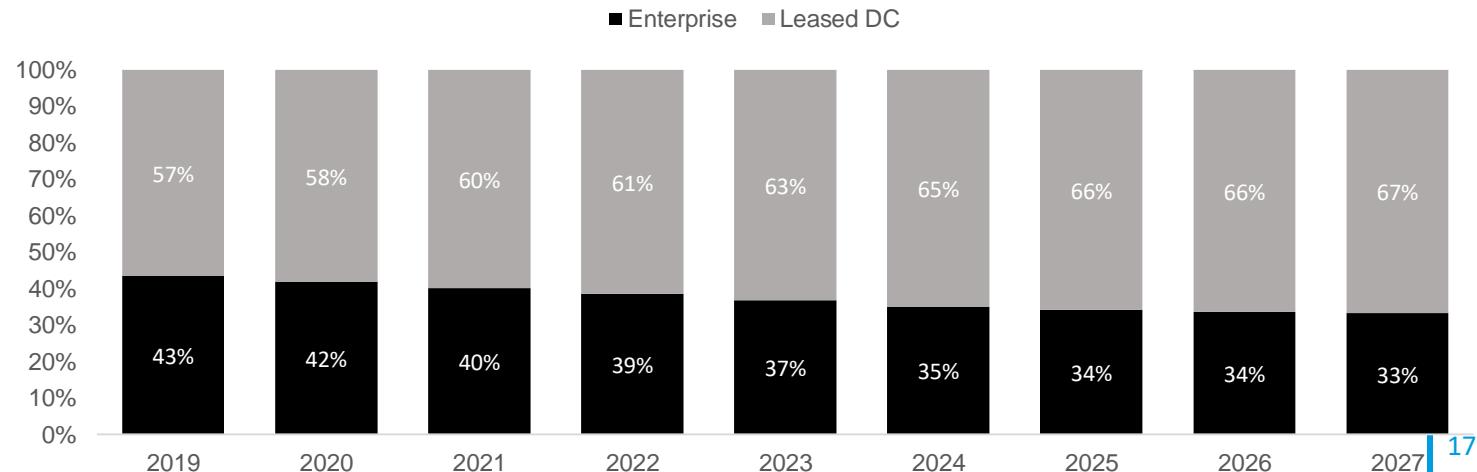


Datacenter load migrates clearly from enterprise to MTDCs. NA (North America), DCs > 5MW

Total Datacenter Utilized Power % Split by Owner



Total Datacenter Utilized Racks % Split by Owner



Today's event main goal

We are here today to help datacenter community of Georgia to accelerate this movement together with the rest of the world.

Two necessary conditions:

- 1) There should be the professional datacenter services offer on the market;
- 2) The end-users – banks, telecom, government, etc. should understand it's economically more viable to buy datacenter services than to design, build and operate the datacenter themselves.

Trends summary

Datacenters consume VERY significant amount of electricity and water. CAGR for DCs power consumption is about 7% vs. overall planet-wide demand growth < 4%. Sustainable and responsible growth became top priority for the DCs industry last several years

The world DC load flows clearly from enterprise DCs to MTDCs. Banks, telecom, other companies prefer to concentrate on their core business and buy datacenter services from a professional datacenter operator. Division of labor works!

Thank you!

Any questions, please?

Visit www.uptimeinstitute.com for
more information

