BERNSTEIN
SOCIETE GENERALE GROUP

15 October 2026

U.S. Multi Industry & Electrical Equipment

Data Center Equipment: Sizing the US Cooling TAM



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The data center cooling equipment market is relatively opaque, with a fragmented set of sizing estimates. In this note, we attempt to size different types of equipment to better reflect an ever-changing growth outlook.

Methodology: We start with the Bernstein US data center forecast and use incremental facility GW additions as the foundation for our TAM. We then forecast the mix of liquid-cooled vs. air-cooled deployments for these additions and apply our updated cooling content assumptions ($M/MW). This gives us the TAM for cooling components. As a final step, we sanity check our numbers against public disclosures / bottom-up market sizing across the largest players in each equipment category. Model attached here.

Key takeaways: We estimate the overall US data center cooling TAM at **~$25B in 2026E**, growing to **~$63B by 2030E (~25% 4YCAGR)**. Chillers remain the largest category at **~$10B in 2026E**, reaching **~$23B by 2030E** (~25%+ 4YCAGR). We estimate the CDU market at **~$5B**, growing to **~$14B** (~30%+ 4YCAGR); *notably, we have increased our prior CDU estimates,* reflecting updated assumptions *and our view that Delta has emerged as a key supplier to the US data center market through indirect shipments of liquid-to-air (L2A) CDUs to cloud service providers (CSPs), which is now reflected in our sizing.* Cold plates grow from **~$3B to ~$10B** (~30%+ 4YCAGR), while manifolds increase from **~$1B to ~$3B** (~30%+ 4YCAGR). By comparison, CRAHs and RDHx grow more slowly, from **~$2B to ~$3B** each (~15% 4Y CAGR) as the share of air cooling declines across incremental deployments. **Overall, we expect liquid cooling equipment (CDUs, cold plates, manifolds) and chillers to outgrow incremental GW additions, driven by rising liquid cooling penetration and pricing increases amid tight supply chains and rapidly growing demand.**

From a pure liquid-cooling torque perspective, we believe that **Vertiv, nVent and Delta** offer the most direct exposure to benefit from the transition from air cooling to liquid cooling in our coverage universe. This is not to say that other companies highlighted in the report do not benefit (particularly as modular / prefabricated deployments gain traction). We would also like to note that Asia Vital Components (3017.TW; not covered) appears well positioned from a liquid cooling exposure standpoint.

Where could we be wrong? Recent industry developments (such as ~45°C+ inlet temperatures), suggest a future architecture where the reliance on chillers *could be* reduced, an area we continue to monitor closely. Our TAM estimates are also higher than previously published third-party forecasts; however, this reflects both our more refined view on top-down data center capacity additions and the fact that our estimates are triangulated against bottom-up market sizing for major component suppliers.

While we acknowledge that the data center cooling ecosystem remains opaque and precise estimation remains challenging, the combination of top-down and bottom-up approaches gives us confidence in the broader direction of our TAM forecast. We welcome engagement with investors who hold alternative views and expect our estimates to continue evolving as both industry disclosures and our own understanding are refined over time.

See the Disclosure Appendix of this report for required disclosures, analyst certifications and other important information. Alternatively, visit our Global Research Disclosure Website.

First Published: 15 Oct 2026 04:01 UTC Completion Date: 14 Oct 2026 22:26 UTC

BERNSTEIN TICKER TABLE

			14 Oct 2026		TTM	Adjusted EPS				Adjusted P/E (x)	
Ticker	Rating	Cur	Closing Price	Price Target	Rel. Perf.	Cur	2025A	2026E	2027E	2025A	2026E	2027E
VRT (Vertiv)	O	USD	222.83	368.00	11.0%	USD	4.20	6.60	9.06	53.1	33.8	24.6
NVT (nVent)	O	USD	152.72	229.00	37.3%	USD	3.34	5.15	6.55	45.7	29.7	23.3
TT (Trane)	O	USD	471.29	575.00	(5.0)%	USD	13.06	15.28	17.79	36.1	30.8	26.5
JCI (Johnson Controls)	O	USD	152.44	190.00	25.2%	USD	3.78	5.09	6.35	40.3	30.0	24.0
CARR (Carrier)	M	USD	54.24	64.00	(21.8)%	USD	2.57	2.86	3.24	21.1	18.9	16.8
2308.TT (Delta)	O	TWD	1,785.00	2,620.00	58.7%	TWD	23.09	39.35	57.98	77.3	45.4	30.8
ETN (Eaton)	O	USD	408.85	534.00	(7.0)%	USD	12.07	13.45	16.37	33.9	30.4	25.0
DLR (Digital Realty)	O	USD	172.09	226.00	(16.1)%	USD	3.87	3.09	3.21	44.5	55.6	53.7
EQIX (Equinix)	O	USD	995.90	1,270.00	5.7%	USD	14.96	17.12	20.13	66.6	58.2	49.5
BXDC (Blackstone Digital Infra)	O	USD	16.28	26.00	NA	USD	0.00	0.32	(1.00)		51.0	(16.2)
CSQR (Csquare)	O	USD	16.82	27.00	NA	USD	0.00	(1.34)	(1.06)		(12.5)	(15.8)
SU.FP (Schneider)	O	EUR	264.40	350.00	(4.3)%	EUR	8.43	10.42	13.24	31.4	25.4	20.0
SPX			7,718.94									
ASIAX			1,876.06									
EDME			1,581.51									

O - Outperform, M - Market-Perform, U - Underperform, NR - Not Rated, CS - Coverage Suspended

2308.TT estimate is Reported EPS; 2308.TT valuation is Reported P/E (x);

Source: Bloomberg, Bernstein estimates and analysis.

INVESTMENT IMPLICATIONS

We rate VRT (PT $368), NVT (PT $229), Trane (PT $575) and JCI (PT $190) Outperform.

We rate CARR (PT $64) Market-Perform.

We rate Delta Electronics Outperform, with PT = NT$2,620.

We rate Schneider Outperform, with a price target of €350.

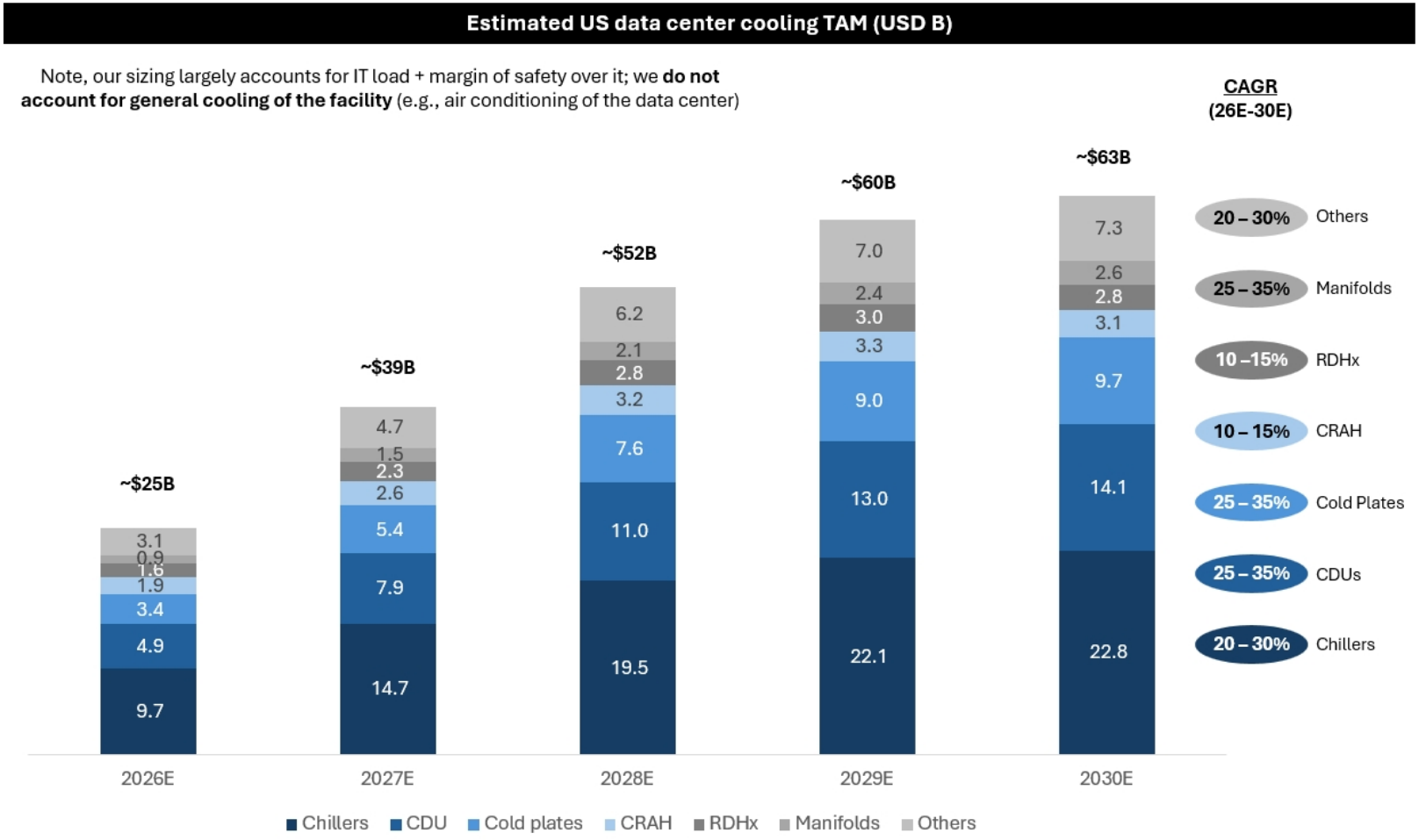
We rate ETN Outperform, with PT $534.00.

We rate DLR, EQIX, BXDC, and CSQR Outperform.

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DETAILS

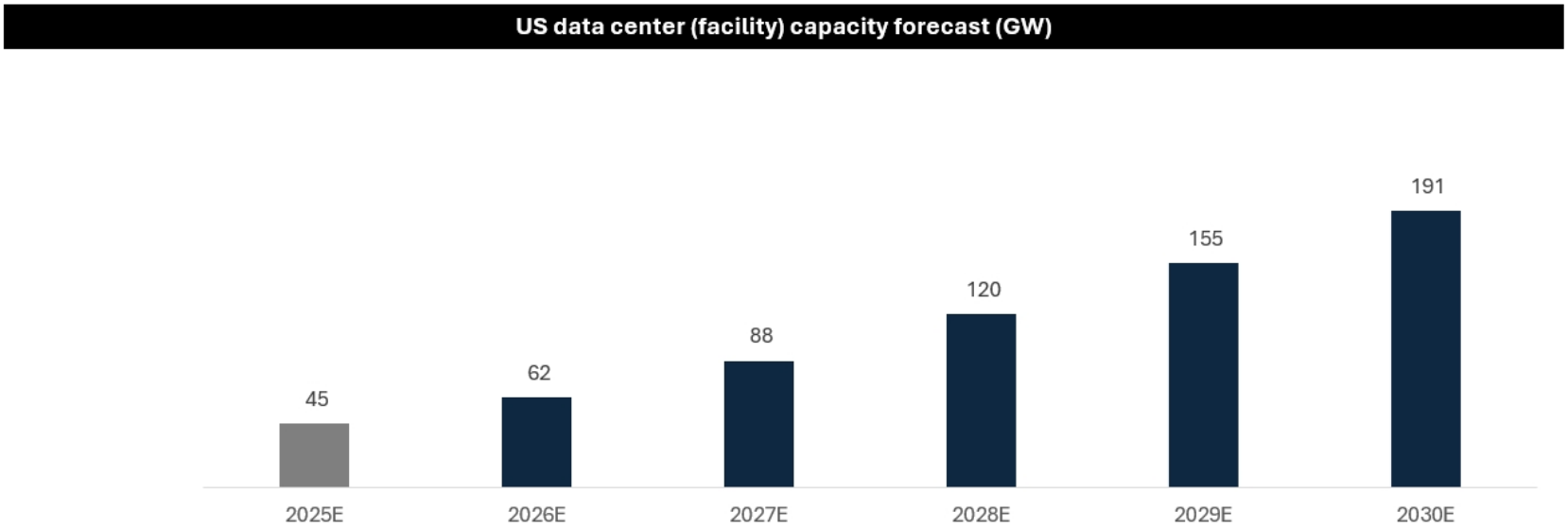
EXHIBIT 1: **We estimate total US data center cooling TAM at ~$25B in 2026E to reach ~$63B by 2030E at ~25% 4Y CAGR**



Source: Bernstein Analysis and Estimates

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EXHIBIT 2: **US data center capacity (facility GW) forecasted to grow to ~190GW by 2030E**

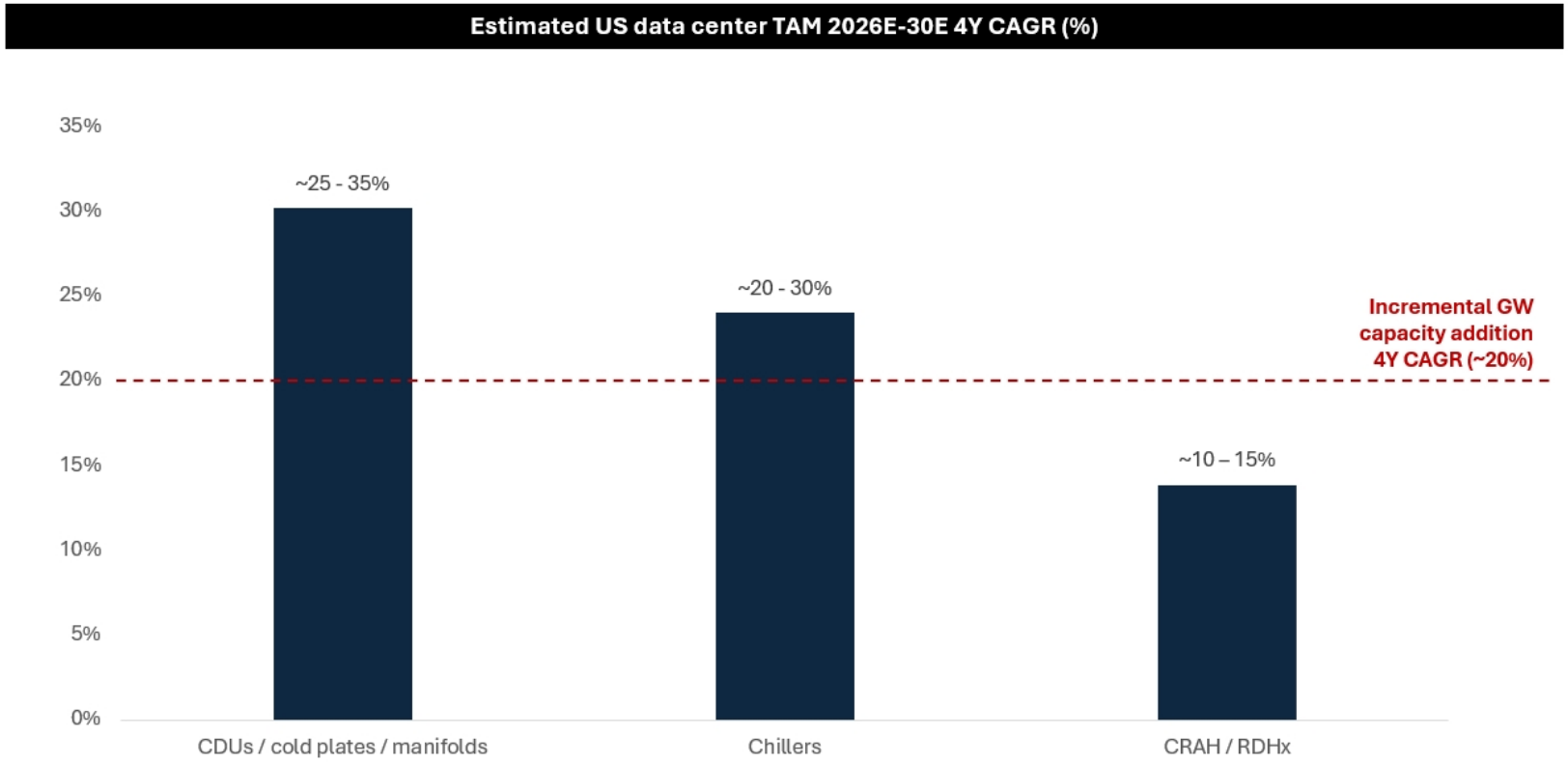


	2025E	2026E	2027E	2028E	2029E	2030E
Incremental capacity added *(GW)*	-	~18	~25	~32	~35	~35
% of liquid cooled *(incremental capacity)*	-	~70%	~74%	~78%	~81%	~85%
% of air cooled *(incremental capacity)*	-	~30%	~26%	~22%	~19%	~15%

Source: Bernstein Data Center Forecast Model, Bernstein Analysis and Estimates

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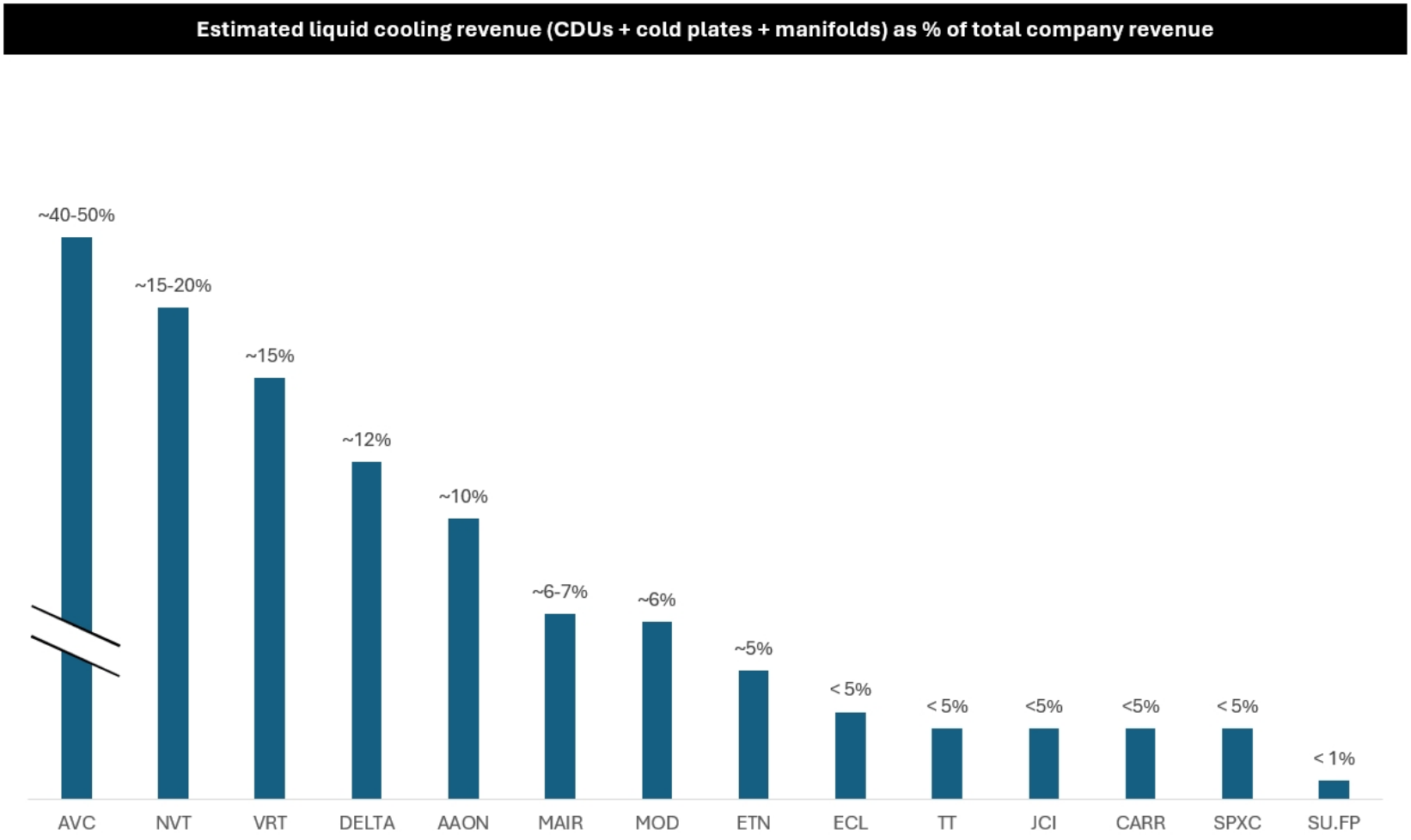
EXHIBIT 3: **Liquid cooling equipment (CDUs, cold plates, manifolds) and chillers expected to grow faster than GW additions, driven by rising liquid cooling penetration and price increases**



Source: Bernstein Analysis and Estimates

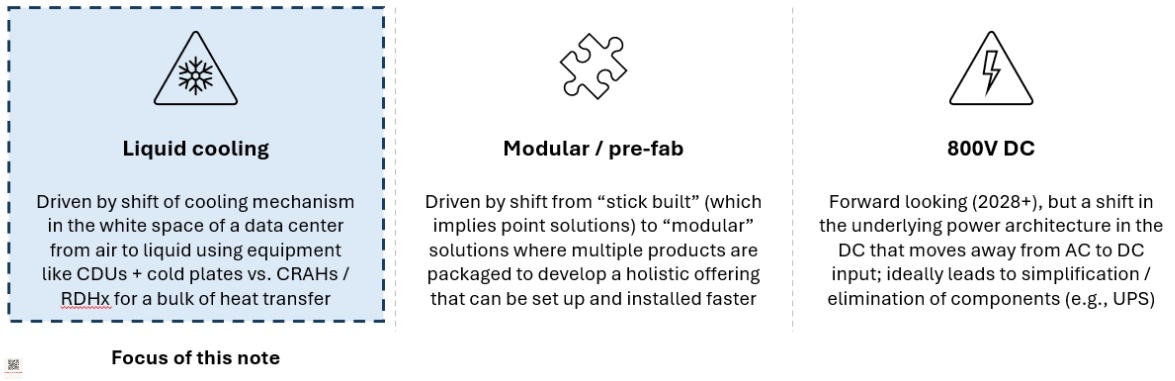
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EXHIBIT 4: **Some companies are more exposed to liquid cooling than others**



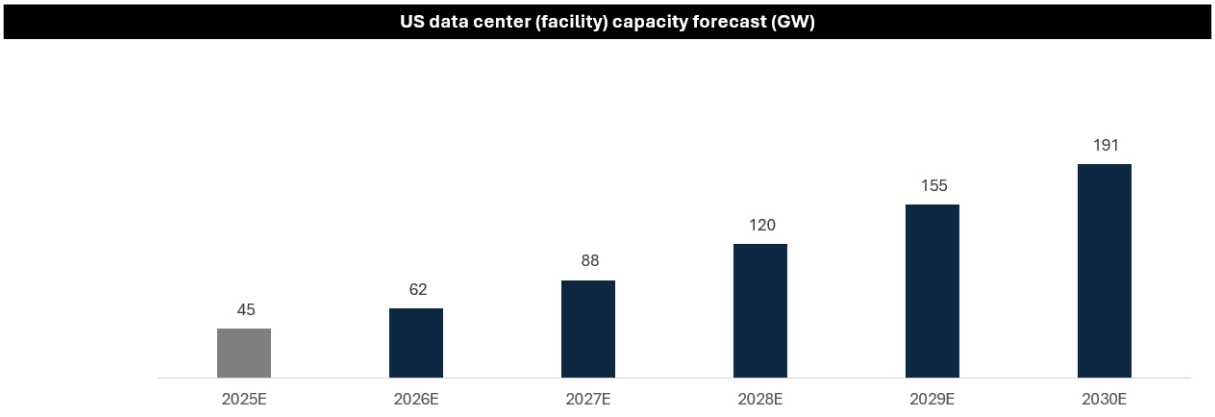
Source: Bernstein Analysis and Estimates

EXHIBIT 5: **As an equipment provider to data centers, how can you get "torque" over incremental GW? Three themes stand out.**



Source: Bernstein Analysis

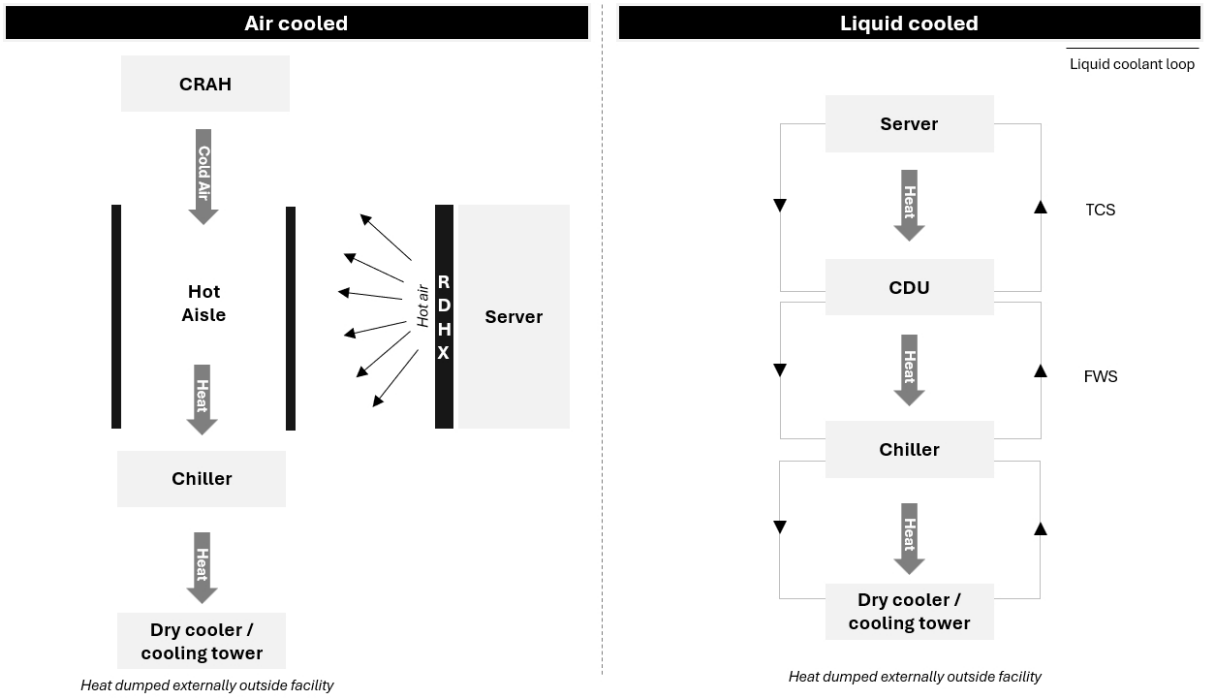
EXHIBIT 6: **US data center capacity (facility GW) forecasted to grow to ~190GW by 2030E**



	2025E	2026E	2027E	2028E	2029E	2030E
Incremental capacity added *(GW)*	-	~18	~25	~32	~35	~35
% of liquid cooled *(incremental capacity)*	-	~70%	~74%	~78%	~81%	~85%
% of air cooled *(incremental capacity)*	-	~30%	~26%	~22%	~19%	~15%

Source: Bernstein Data Center Forecast model, Bernstein Analysis and Estimates

EXHIBIT 7: **Recap | Different cooling architectures for data centers**



Source: Bernstein Analysis

EXHIBIT 8: **Components needed for cooling in data centers (1/2)**

✓ Required ✓ Required at partial capacity ✗ Not required

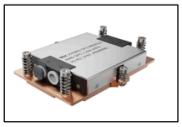
Component	Description	Value ($M/MW)	Requirement in architecture	
			Air-cooled	Liquid-cooled
Chiller[1]	 **"Central engine" of the cooling plant,** responsible for cooling water to inject into TCS and rejecting heat from warm liquid to the FWS	~0.50 – 0.60	✓	✓
Dry cooler	 **"Heat fans"** to blow hot air outside of the facility	~0.10 – 0.20	✓	✓
Cooling tower	 **"Heat rejection equipment"** sitting outside the facility to transfer heat from facility water system to environment	~0.10 – 0.20	✓	✓
Computer room air handler (CRAH)[2]	 **Data-hall-level air handler** that cools residual hot air over chilled-water coils	~0.40 – 0.60	✓	✓

1. Fully loaded cost including chiller, installation labor, pipes, pumping, heat rejection equipment (dry coolers and cooling towers) 2. While gross unit price is shown, we have taken residual heat assumptions while calculating overall content cost for both air-cooled and liquid-cooled

Source: Bernstein Analysis and Estimates

EXHIBIT 9: **Components needed for cooling in data centers (2/2)**

✓ Required ✓ Required at partial capacity ✗ Not required

Component	Description	Value ($M/MW)	Requirement in architecture	
			Air-cooled	Liquid-cooled
Rear door heat exchanger (RDHx)[1]	 **Server rack-level liquid-to-air coil** that rejects heat exhaust from the back of the rack	~0.30 – 0.50	✓	✓
Coolant distribution unit (CDU)[2]	 **"Gateway" between facility water and chip-level liquid cooling loop;** controls coolant flow, pressure and temperature to liquid-cooled racks	~0.35 – 0.45	✗	✓
Cold plates	 **"Metal plates" mounted on GPUs / CPUs,** responsible for pulling heat directly from chip into the liquid loop	~0.25 – 0.30	✗	✓
Manifolds	 **Rack plumbing** that distributes coolant from CDU to each cold plate and returns the warm liquid	~0.05 – 0.10	✗	✓
Data center infrastructure management (DCIM) software	 **Monitoring and control software** that tracks the entire ecosystem	~0.05 – 0.10	✓	✓

1. While gross unit price is shown, we have taken residual heat assumptions while calculating overall content cost for both air-cooled and liquid-cooled 2. All-in costs for pure-play liquid-to-liquid CDUs including filtration, integration, labor and installation

Source: Bernstein Analysis and Estimates

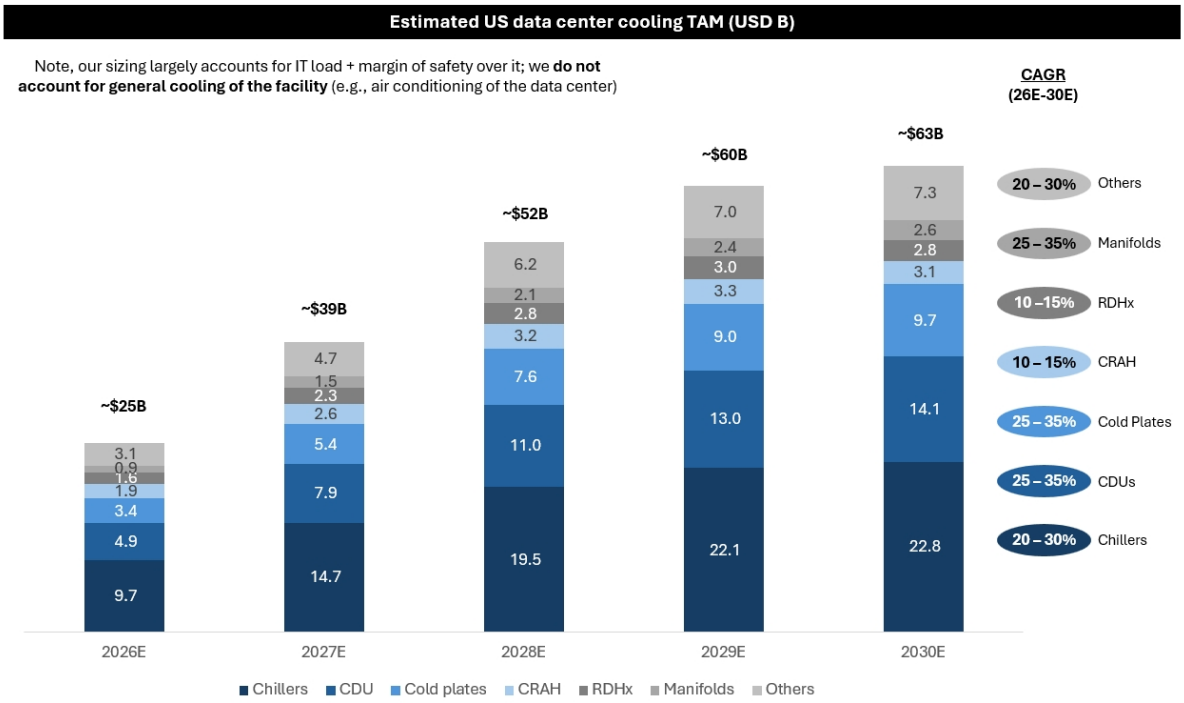
EXHIBIT 10: **Total cooling content opportunity by architecture ($M / MW)**

Component		Air cooled	Liquid cooled	Remarks
Cooling	Chillers[1]	~0.50 – 0.60	~0.50 – 0.60	*Revised by ~10% upwards as prior estimate was conservative*
	CRAH[2]	~0.20 – 0.30	~0.04 – 0.05	*Limited to compute cooling (GPU heat load); excludes facility cooling*
	RDHx[2]	~0.15 – 0.25	~0.04 – 0.05	*As per prior estimate (Cooling Content $M / MW note)*
	CDU[3]	*NA*	~0.35 – 0.45	*Revised by ~10% upwards as prior estimate was conservative*
	Cold plates	*NA*	~0.25 – 0.30	*Revised by ~10% upwards as prior estimate was conservative*
	Manifolds	*NA*	~0.05 – 0.10	*As per prior estimate (Cooling Content $M / MW note)*
	DCIM software	~0.05 – 0.10	~0.05 – 0.10	*As per prior estimate (Cooling Content $M / MW note)*
Ancillaries (incl. refrigerant)		~0.10	~0.10	*As per prior estimate (Cooling Content $M / MW note)*
Total Opportunity ($M / MW)		**~1.0 – 1.4**	**~1.3 – 1.7**	*Excludes redundancy assumptions; baked into facility GW forecast*

1. Fully loaded cost including chiller, installation labor, pipes, pumping, heat rejection equipment (dry coolers and cooling towers) 2. For air-cooled: assuming required at 50% of gross unit value as residual heat consumption is split 50/50 among CRAH and RDHx; For liquid-cooled: assuming ancillary heat capture split 50/50 among CRAH and RDHx 3. All-in costs for pure-play liquid-to-liquid CDUs including filtration, integration, labor and installation

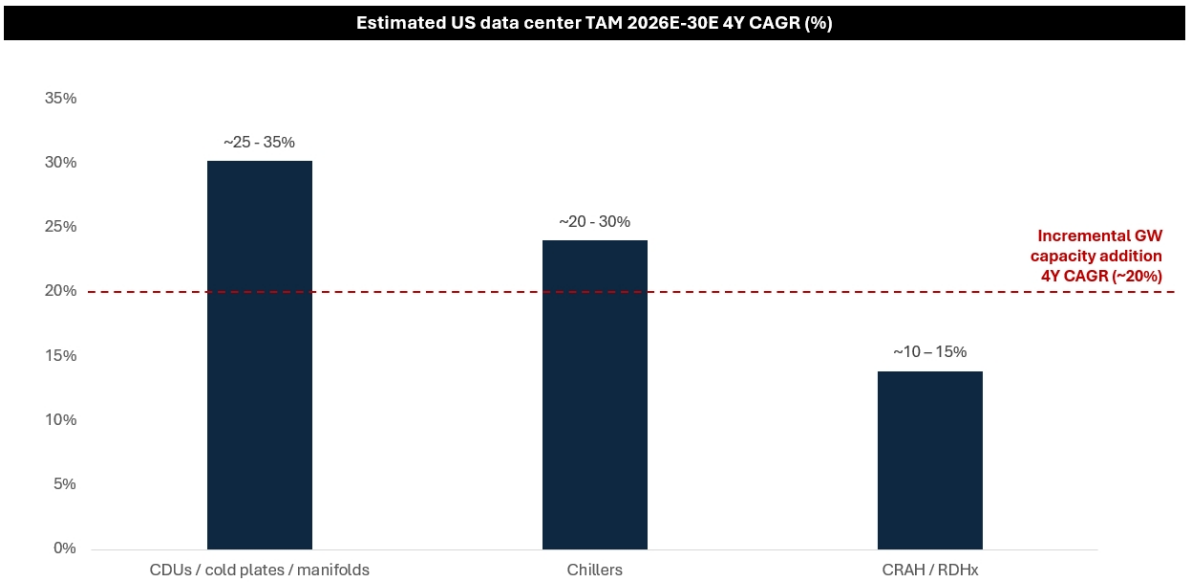
Source: Bernstein Analysis and Estimates

EXHIBIT 11: **We estimate total US data center cooling TAM at ~$25B in 2026E to reach ~$63B by 2030E at ~25% 4Y CAGR**



Source: Bernstein Analysis and Estimates

EXHIBIT 12: **Liquid cooling equipment (CDUs, cold plates, manifolds) and chillers expected to grow faster than GW additions, driven by rising liquid cooling penetration and price increases**



Source: Bernstein Analysis and Estimates

EXHIBIT 13: **Sanity check of chiller market size (North America only)**

Company	Estimated chiller revenue ($B)	Methodology	Level of confidence
TRANE TECHNOLOGIES	~$2.5 – 3B	• We estimate ~$4B of data center revenues; ~70% are assumed to directionally be chillers	Low *(limited company disclosure)*
Johnson Controls	~$2 – 2.5B	• We estimate ~$4B of data center revenues; ~60% are assumed to directionally be chillers (to account for higher share of CRAHs / fan walls vs. Trane)	Moderate
Carrier	~$1.5 – 2B	• Based on management guidance of ~$0.5B in 1H26 and expectations of reaching ~$1.5B in 2H26 • Assumed to be mostly chillers	High
MODINE	~$0.4 – 0.5B *(FY26)*	• Based on ~45% revenues from data center sales of $1.1B in FY26; will mostly be higher in CY26	High
VERTIV.	~$0.5 – 1B	• North America product revenue at ~7.5B ($9.3B consensus and product share of revenue at 80%) • Cooling assumed ~40% of that mix, with ~20 – 30% being chillers (rest allocated to CDUs, CRAHs, etc.)	Low *(limited company disclosure)*
Others	~$1 – 3B	• Balancing figure for long tail (assumed top 5 are ~80% of market)	-
Total	**~$8 – 12B**		

Source: Bernstein Analysis and Estimates

EXHIBIT 14: **Sanity check of CDU market size (North America only)**

Company	Estimated CDU revenue (USD B)	Methodology	Level of confidence
VERTIV.	~$1 – 1.5B	• North America product revenue at ~7.5B ($9.3B consensus and product share of revenue at 80%) • Cooling assumed ~40% of that mix, with ~30 – 40% being CDUs (rest allocated to chillers, CRAHs, etc.)	Low *(limited company disclosure)*
DELTA	~$1.5 – 2B	• ~$1.5B US revenue; ~90% CDUs (2025) • Projected US revenue of $2.5B (2026E)	High
nVent	~$0.8 – 1B	• Rough math is ~0.4 – 0.5B of liquid cooling revenue in 2025, but capacity has since doubled • Anecdotally, we've heard NVT has been taking share and is hyperscaler-weighted	Low *(limited company disclosure)*
Schneider Electric	~$0.3B	• NA CDU revenues expected ~EUR 290M (2026E)	Moderate
BOYD TRUSTED INNOVATION	~$0.3B	• Boyd Thermal projected revenue of ~$1.7B (2026E) • ~85% liquid cooling; ~25% of this is CDUs	High
CoolIT systems	~$0.3B	• CoolIT FY26 revenues of ~$550M • ~2/3rds of this are CDUs	High
Others	~$1 - 2B	• Balancing figure for long tail (assumed top 5 are ~80% of market); smaller CDU players such as Trane / JCI / CARR included here	-
Total	**~$5 - 6B**		

Source: Bernstein Analysis and Estimates

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EXHIBIT 15: **Sanity check of cold plates market size (North America only)**

Company	Estimated cold plates revenue ($B)	Methodology	Level of confidence
BOYD TRUSTED INNOVATION	~$0.9 – 1B	• Boyd Thermal projected revenue of ~$1.7B (2026E) • ~85% liquid cooling; ~65% of this is cold plates	High
CoolIT systems	~$0.2 – 0.3B	• CoolIT FY26 revenues of ~$550M • ~1/3rds of this is cold plates	High
AVC	~$1 – 1.5B	• AVC FY26E revenue ~$7B; ~45% liquid cooling • ~70% North America revenue • 70/30 split among cold plates & manifolds	Moderate
Auras	~$0.2 – 0.3B	• Auras FY26E revenue ~$1.2B; ~50% liquid cooling • ~60% North America revenue • 80/20 split among cold plates & manifolds	Moderate
COOLER MASTER	~$0.5 – 1B	• Assuming slightly lesser market share to AVC	Low *(limited company disclosure)*
DELTA	~$0.1 – 0.3B	• Projected US revenue of $2.5B (2026E) • ~10% cold plates revenue	Moderate
Others	~$0.3 – 0.5B	• Balancing figure for long tail (assumed top 5 are ~80% of market)	-
Total	**~$3 – 5B**		

Source: Bernstein Analysis and Estimates

EXHIBIT 16: **Cooling content product coverage by company (1/2)**

✓ Core product ✓ Minor offering ✗ Not offered

Company / Component	VERTIV.	nVent	BOYD TRUSTED INNOVATION	Schneider Electric	CoolIT systems	DELTA	AVC	Auras
Chillers	✓	✗	✓	✓	✗	✓	✗	✗
CDU	✓	✓	✓	✓	✓	✓	✓	✓
Cold plates	✓	✗	✓	✓	✓	✓	✓	✓
CRAH	✓	✗	✗	✓	✗	✓	✗	✗
RDHx	✓	✓	✗	✓	✗	✓	✗	✗
Manifolds	✓	✓	✓	✓	✓	✓	✓	✓
Dry coolers	✓	✗	✗	✓	✗	✓	✗	✗

Source: Bernstein Analysis

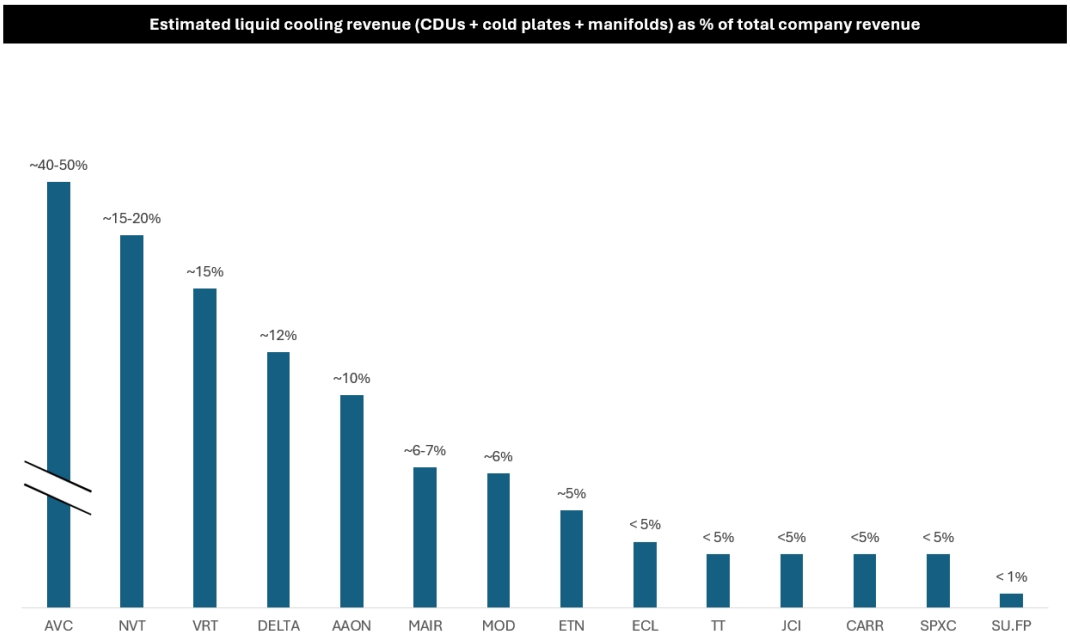
EXHIBIT 17: **Cooling content product coverage by company (2/2)**

✓ Core product ✓ Minor offering ✗ Not offered

Company / Component	TRANE TECHNOLOGIES	Johnson Controls	Carrier	MODINE	MADISON AIR	SPX TECHNOLOGIES	AAON	COOLER MASTER
Chillers	✓	✓	✓	✓	✓	✗	✓	✗
CDU	✓	✓	✓	✓	✓	✗	✓	✓
Cold plates	✗	✗	✗	✗	✗	✗	✗	✓
CRAH	✓	✓	✓	✓	✓	✓	✓	✗
RDHx	✗	✗	✗	✗	✓	✗	✗	✗
Manifolds	✗	✗	✗	✗	✓	✗	✗	✓
Dry coolers	✗	✓	✓	✓	✗	✓	✓	✗

Source: Bernstein Analysis

EXHIBIT 18: **Some companies are more exposed to liquid cooling than others**



Source: Bernstein Analysis and Estimates

RESEARCH INDEX

Primer Library

Liquid Cooling Primer: Coolant Distribution Units (CDUs)

Liquid Cooling Primer: Cold Plates

Data Center Chillers (1/3): Primer and free cooling economics

Data Center Chillers (2/3): How real is Chiller Gate risk?

Data Center Chillers (3/3): How much can "free cooling" impact chiller service revenues?

Data Center Cooling and Power: What's the $M per MW for different types of equipment

Orbital Data Centers: Content ($M/MW) Implications for Cooling Equipment Players

Other Relevant Research

Data Center Cooling Equipment: What is the service tail of a CDU (Coolant Distribution Unit)?

US Multis: Mapping the Data Center Service Footprint for Chiller OEMs (CARR / JCI / TT)

Data Center Cooling: Accelsius on the transition from single-phase to two-phase liquid cooling

Liquid Cooling: What does Google's Brazos mean for the broader CDU ecosystem?

Liquid Cooling in Data Centers: What comes after single phase DTC? With CoolIT's 15kW cold plate, does anything even need to?

Data Center Cooling: Chiller killer? Quick thoughts on Accelsius' two-phase cooling at >54 degree celsius inlet temperatures.

AI Data Centers: Procurement dynamics across power and cooling components (webinar recap)

US Industrials: 30 exhibits on the state of cooling and electrical equip. procurement in North American Data Centers

Initiations

US Multis Initiation: Thrills and Chills

US Multi Industrials: Can we (inter)connect? Initiating coverage with Outperform on Amphenol and TE Connectivity

The authors would like to thank Sakansh Mittal for his help in preparing this report.

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I. REQUIRED DISCLOSURES

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