

## Case Study

# QTS Irving 1, DC 6 Data Center Hyperscale Expansion in the Dallas-Fort Worth Metroplex



### Executive Summary (Elevator Story)

In under 18 months, QTS transformed a partially built core-and-shell structure into Irving DC 6, a 210,755-square-foot, two-story Hyperscale-ready Data Center on its 56-acre Irving campus, investing \$152 million to deliver critical capacity amid exploding AI and cloud demand in North Texas. Leveraging its proprietary **Freedom Design water-free closed-loop cooling system**, DC 6 achieves a Water Usage Effectiveness (WUE) of 0 while supporting high-density deployments without consuming a drop of water for cooling. This facility exemplifies how strategic, sustainable infrastructure can simultaneously fuel digital growth, conserve scarce regional resources, and strengthen local economies, delivering scalable, resilient power and connectivity in one of America's fastest-growing tech hubs.

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## Background

QTS Data Centers (now part of Blackstone's portfolio) has operated a flagship mega-campus in Irving, Texas (Dallas-Fort Worth market) since the early 2010s. The 56-acre Irving 1 campus at/near Longhorn Drive already housed multiple facilities (DC 1–5), delivering over 147 MW of critical power with facilities like DC 1&2 (700,000 sq ft / 75.2 MW) and DC 3 (415,900 sq ft / 43 MW).

By 2024, surging Hyperscale demand, driven by AI, cloud computing, and enterprise digital transformation, prompted QTS to file for DC 6 at 6300/6440 Longhorn Drive. The project added a two-story, partially pre-built 210,755 sq ft facility with phased Data Halls, administrative space, equipment yards, and full mechanical/electrical infrastructure. Construction ran from August 2024 to late 2025, with campus enclosure work extending into 2026. The \$152 million investment was supported by local tax abatements and positioned DC 6 to serve Hyperscalers (including proximity to Microsoft's nearby builds).

As of 2026, DC 6 is operational and contributes to the campus's total 165 MW+ critical power capacity, reinforcing Irving as a key QTS hub with coast-to-coast fiber connectivity.

### Technical Specifications (Emphasis on Cooling Infrastructure)

- Facility Size & Layout: Two-story building; 210,755 sq ft total (core-and-shell with phased Data Halls); part of master-planned 56-acre campus with redundant inter-building fiber conduits.
- Power: Contributes to campus-wide 165 MW+ critical IT load capacity; on-site substation elements and backup generators for N+1 or 2N redundancy (consistent with prior Irving buildings). Phased buildout supports high-density hyperscale racks.
- Connectivity: Diverse campus fiber entrances; redundant conduit system for direct, low-latency express fiber to each building and between facilities.
- Sustainability Certifications: Campus-wide LEED Gold; renewable-sourced power available; dedicated EV charging.

### Type of Cooling Infrastructure (Core Emphasis)

DC 6 deploys QTS's standardized Freedom Design, a water-free, closed-loop cooling system using a low-pressure pumped refrigerant to remove heat from IT equipment. Unlike traditional evaporative or water-cooled chillers, the system circulates refrigerant in a sealed loop, rejecting heat via air without any water consumption for cooling



operations. This achieves a WUE of 0 (no water used in cooling). Domestic water use remains minimal (~600,000 gallons/year per facility for non-cooling needs).

The design saves more than 48 million gallons of water annually per Data Center compared to conventional systems, equivalent to the annual water use of over 2,200 U.S. households. It supports efficient and reliable operation even in Texas's extreme heat, with potential integration of liquid cooling elements for ultra-high-density AI workloads (Direct-to-Chip and Dielectric Immersion Colling). Prior Irving expansions (e.g., DC 3) explicitly highlighted "Advanced Cooling Systems"; DC 6 follows the same Freedom Standard now mandated for all new QTS facilities.

This cooling approach also contributes to low Power Usage Effectiveness (PUE) through optimized refrigerant heat rejection and free-cooling opportunities when ambient conditions allow.

## **Challenges and Solutions**

### **Key Challenges**

- ✓ Regional Water Scarcity & Heat: North Texas faces drought risks and high cooling demands; traditional data centers consume vast amounts of water via evaporative cooling.
- ✓ Rapid Hyperscale Demand & Timeline: Explosive AI/cloud growth required fast capacity addition while maintaining 99.995%+ uptime.
- ✓ Power Grid & Regulatory Pressures: Securing reliable utility power and local approvals in a competitive market.
- ✓ Supply Chain & Construction: Phased core-and-shell integration on an active campus.

### **Solutions Implemented**

- ✓ Water-Free Freedom Cooling: Eliminated evaporative water use entirely, directly addressing sustainability concerns and regulatory/community scrutiny.
- ✓ Master-Planned Phased Build: Leveraged existing campus infrastructure (fiber, substations, security) for rapid deployment and cost efficiency.
- ✓ Redundant Power & Fiber: On-site substations and diverse campus conduits ensured resilience.
- ✓ LEED & Renewable Integration: Aligned with tax incentives and corporate ESG goals while enabling carbon-free energy sourcing.

## Results and Impacts

- ✓ Capacity Delivered: Added significant hyperscale-ready space and power to the Irving campus, supporting multi-MW client deployments and contributing to the 165 MW+ total.
- ✓ Sustainability Wins: Zero water consumption for cooling; >48 million gallons saved annually at DC 6 scale. Campus remains LEED Gold with renewable power options.
- ✓ Operational Excellence: State-of-the-art security, safety, and advanced cooling ensure high reliability and efficiency for hyperscale tenants.
- ✓ Economic & Community Impact: \$152 million investment created construction and ongoing jobs; strengthened DFW's position as a top U.S. Data Center market; tax abatements returned value to the local economy. Proximity to Microsoft's Irving projects amplifies regional tech ecosystem growth.

## Lessons Learned

1. Embed Sustainability from Day One: Water-free designs like Freedom not only mitigate environmental risk but also accelerate permitting and community acceptance in water-stressed regions.
2. Master Planning Scales Efficiently: Expanding within an existing campus (shared fiber, power yards, security) dramatically reduces time-to-market and capital intensity versus greenfield sites.
3. Design for Hyperscale Density: Closed-loop refrigerant systems provide flexibility for future liquid-cooling retrofits, future-proofing against AI-Driven rack densities.
4. Stakeholder Alignment Matters: Securing tax incentives and engaging local utilities early turns potential regulatory hurdles into competitive advantages.

## Conclusion

QTS Irving DC 6 stands as a model of forward-thinking data center development—delivering massive compute capacity with groundbreaking **water-free cooling** in a region where traditional approaches would strain resources. By prioritizing innovation in cooling infrastructure, QTS has not only met immediate Hyperscale demand but also set a new standard for sustainable digital infrastructure. This project solidifies QTS's leadership in North America's data center landscape and offers a blueprint for responsible expansion nationwide