

# Data Center Capabilities



**Jacobs**

Challenging today.  
Reinventing tomorrow.

# About Us

**Across our company, across our offices, across the world, we're continually challenging today to reinvent tomorrow.**

At Jacobs, we're challenging today to reinvent tomorrow by solving the world's most critical problems for thriving cities, resilient environments, mission-critical outcomes, operational advancement, scientific discovery and cutting-edge manufacturing, turning abstract ideas into realities that transform the world for good. With \$14 billion in revenue and a talent force of more than 55,000, Jacobs provides a full spectrum of professional services including consulting, technical, scientific and project delivery for the government and private sector.

Our global network includes more than 400 offices with operations in North America, Europe, the Middle East, India, Australia, Africa, and Asia. More than 90 percent of our work is repeat business. That commitment to client value and partnership produces consistent cost advantages, profits and growth, allowing us to attract and retain the industry's top talent. Our strict dedication to Safety and uncompromising Ethics & Integrity create a work environment that promotes employee progress and helps grow our business.

From the way we operate our business, to the work we perform with clients and other organizations, we continue to look at ways we can make a positive environmental, societal and economic difference for our people, businesses, governments and communities around the world.

Jacobs is listed in the S&P 500 stock market index, and traded on the New York Stock Exchange under the symbol J. Our headquarters is located in Dallas, Texas.

**55k+**  
employees worldwide

**\$14B**  
annual revenue

**400**  
offices worldwide

"Addressing critical infrastructure needs is among the most rewarding work we do, because it makes such a positive difference in the communities and companies we serve, helping to resolve major issues like water, mobility, urbanization and security with smart and sustainable solutions."

—Bob Pragada, President & COO



# Industry Leaders

30+ Years of Mission Critical Expertise

Our history is long when it comes to delivering sustainable data centers. At Jacobs, we understand the need for a global network of expertise and knowledge to design for scalability, adapt for market demand, and innovate to remain several steps ahead. We create impactful solutions so you can succeed – not just today but into tomorrow.

Our mission-critical practice specializes in providing integrated planning, architecture, engineering, construction management, and commissioning specifically for data centers. Our projects include traditional data, command, and control centers, trading and call centers, business-hosting facilities, computational research facilities, hardened military and strategic command centers, civilian emergency-response centers, and mission-critical utility infrastructure facilities. Our designs have stood the test of time for operability, low PUE and lowest Total Cost of Ownership while proving to be resilient under the most severe conditions / events. Our reputation is built on helping our clients find the right combination of energy efficiency, reliability, resiliency, sustainability, and flexibility while helping keep projects on schedule and budget.



## #1

**Engineering News-Record**

- Top 500 in Design Firms
- Telecommunications
- Data Centers

## #1

**Building Design+Construction**

- Engineering and Architecture Firm
- Data Center Sector Engineering Firm

## #1

**Consulting-Specifying Engineer**

- MEP Engineering Giant
- Commissioning Giant

## #1

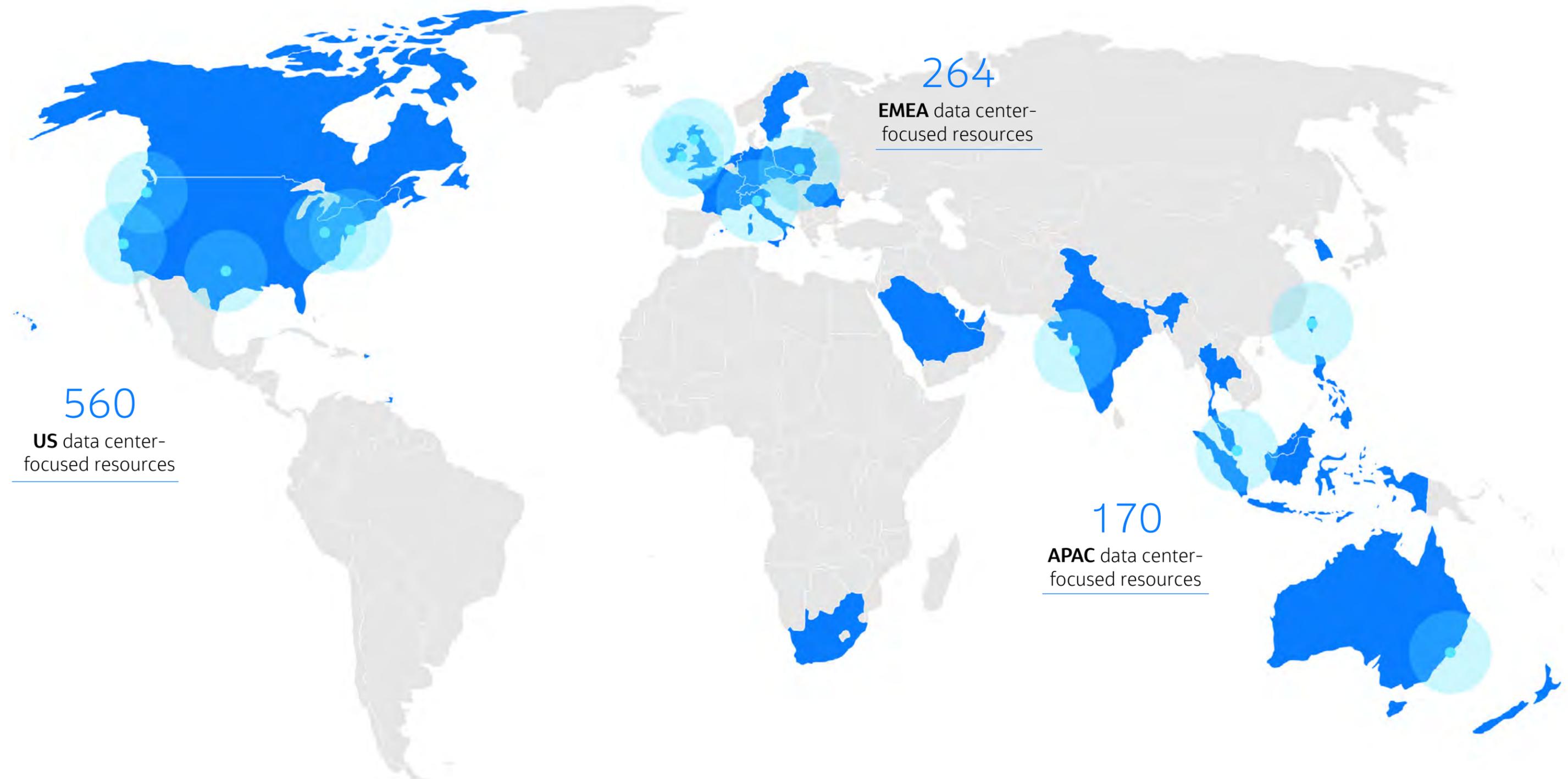
**Fortune Magazine**

- Most Admired Company (Engineering, Construction)

# Global Reach

Global Knowledge, Local Support

We operate more than 400 offices across 40 countries, delivering innovative, sustainable solutions through local knowledge and mission critical expertise drawn from across the globe. Our geographic coverage and full service capabilities enable us to effectively deliver projects worldwide. As your trusted partner, we offer a streamlined process through a single source to enhance program efficiencies, coordination, and speed to market, reducing program risks and providing secure high quality, reliable delivery. The map below highlights our global presence along with our Mission Critical Centers of Excellence.



# Integrated Solutions



## Consulting Services

- Site Analysis and Selection
- Tax Incentive Coordination
- Campus / Master Planning
- Energy Modeling
- Benchmarking Studies
- Reliability Analysis
- Data Center Energy Audit
- Single Point of Failure Analysis
- Program Development / Needs Analysis
- Facility Audits / Assessments
- Sustainability Assessment & LEED
- Total Cost of Ownership Modeling

## Full Service Design

- Site / Civil Engineering
- Landscape Design
- Architecture
- Interior Design
- Structural Engineering
- Mechanical Engineering
- Life Safety / Fire Protection
- Electrical Engineering
- Telecommunications
- Security
- BMS / DCiM
- Fault Protection / Coordination / Arc Flash Analysis
- CFD Modeling
- Peer Review

## Construction Management

- Full-time Site Based Staff
- Program Management
- Project Planning & Controls
- Cost Analysis
- Scheduling
- Procurement
- Move Management
- QA/QC
- Safety Planning/Audits
- Constructability Reviews
- Value Engineering
- City/County/State Coordination
- Contractor/Vendor Management & Coordination

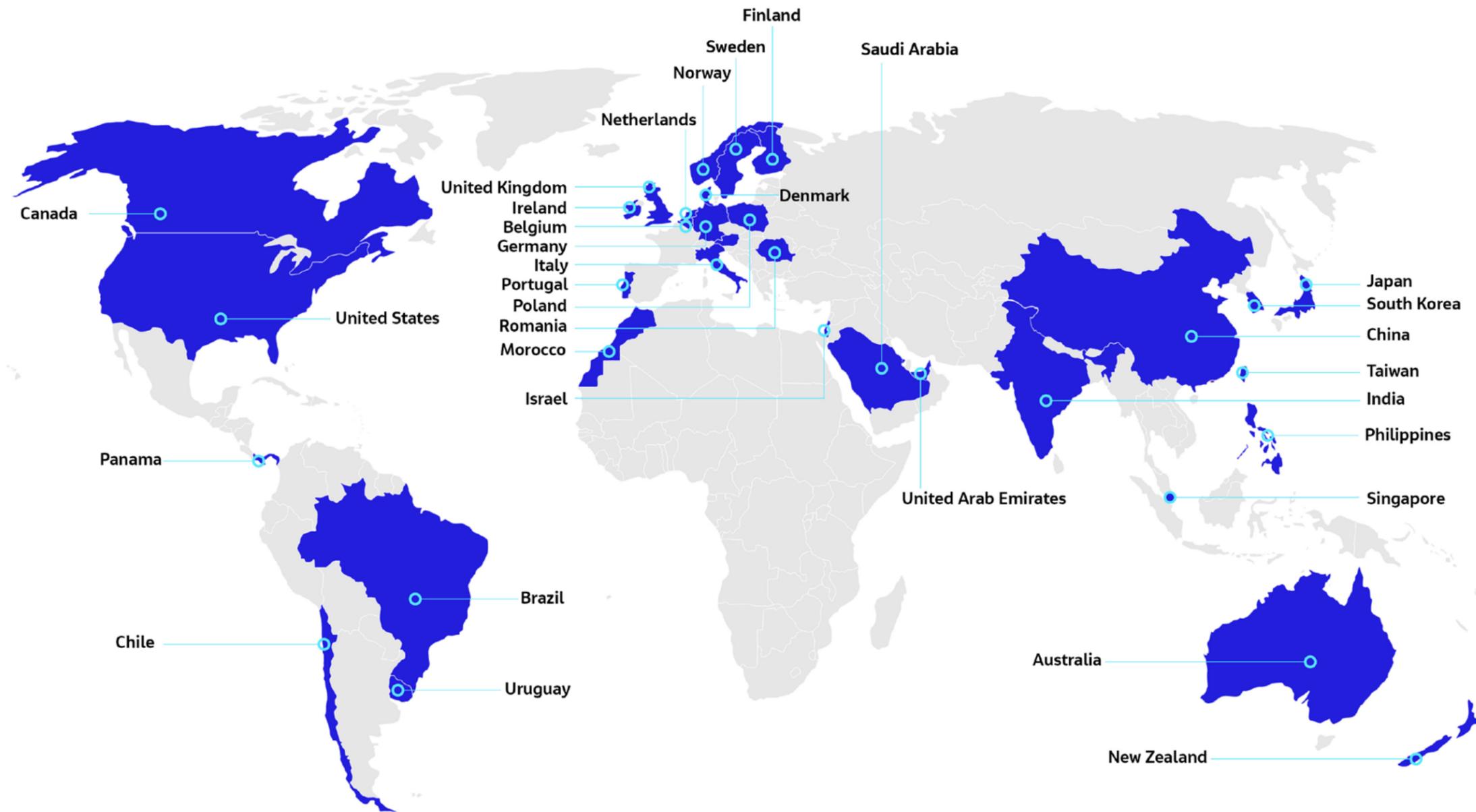
## Commissioning

- Cx Plan Development
- Turnover Management
- Operator Training
- Retro-Commission
- Third Party Testing

## Cross Market Solutions

- Water
- Environmental
- Resiliency
- Sustainability
- Energy + Power
- Cybersecurity
- Digital Twin
- Safety in Design
- Transportation & Infrastructure
- LEAN Manufacturing

# Global Delivery Experience



In the past 10 years:

**3.6 GW**

IT Load

**\$30B**

Construction Value

**17M**

SF of Data Center Space



# Cloud and Hyperscale

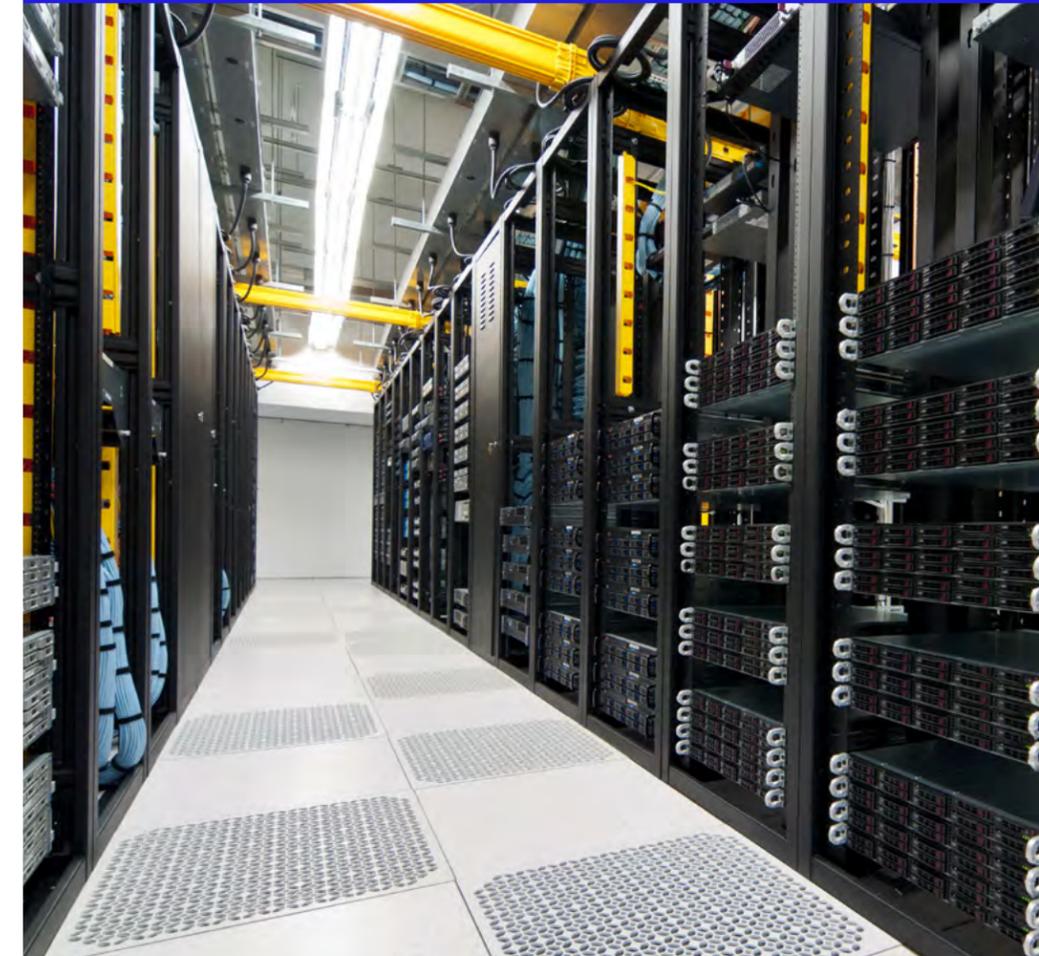
## Confidential Client, Global Data Center Program

### US, South America, Europe, and Asia

As part of our ongoing services with this confidential client, we provide a full suite of consulting, design, and construction support offerings for their cloud services data centers. We perform initial site selection criteria and recommendations, site development, design development, TCO analysis for various systems and planning, full design services, and construction support. As part of our ongoing support with existing sites, we provide site reviews and analysis, alteration planning and phasing, and construction support to limit any impact to ongoing operations.

We have supported this client both in the US and internationally where we have provided design development of prototype systems and designs for implementation internationally. We have used our nationally based core team with support from local offices both in the US and abroad to provide consistency in our program deliveries with a quality program developed specifically for the client and their specific needs and unique delivery requirements.

The efforts of our dedicated project team have resulted in the continual development of prototype designs, allowing for rapid deployment in both the US and abroad. These systems allow for the flexibility to deliver systems maximizing cost savings for the client while still providing scalability and high energy efficiency.



**10+ year** program  
delivering **20+ campuses**  
across **12 countries**

# Colocation

## Confidential Client, Flexible Data Center Program

### Northern California; Northern Virginia, USA

We provided engineering services for a prototype design for a modular scalable data center and site-specific designs for four separate locations. Each 182,000-SF facility includes six co-location suites of ~25,000-SF per facility, plus administrative and support areas. The LEED Gold facility includes a two-story administration space, data halls, mechanical and electrical rooms, technical support and office/client care spaces (i.e., conference room, break room, work kiosks, and crash carts).

Each facility accommodates approximately 2,800 server cabinets and is constructed with structural steel frame supported on a concrete foundation or greater efficiency and flexibility for large client deployments. The facilities were designed and constructed to a nominal Tier 3 Uptime rating.

This new, Tier 3 compliant data center has an average power density of 100+ W/SF and a peak localized power density of 250 W/SF. The total load capacity is 14.4MW per site, scalable in 2.4MW increments. We designed for high efficiency/low PUE and speed to market. The estimated average annualized PUE is ~1.25.



# Colocation | Workplace

## Global Telecom Provider, North American Headquarters and Data Center

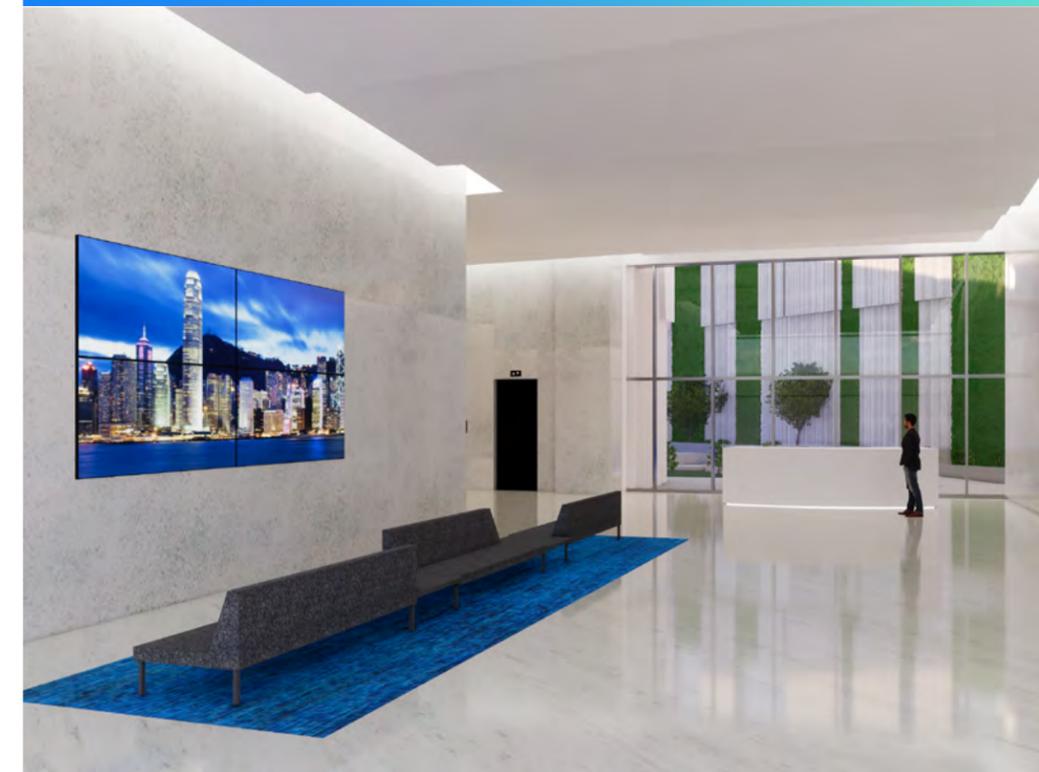
### Northern California, USA

We are providing architecture and engineering, project management, and commissioning services for this new construction 290,000-SF free-standing multi-story structure comprised of a 20-MW data center and office space on 7.5-acre site. The tier 3 data center will house 4,000 racks with 20 MW in power. The design is incorporating a number of sustainable features with a target PUE of 1.3.

The Data Center consists of two phases. Phase 1 is to include a 7.5 MW Data Center, Loading Dock and an Office Building for 200 people (60,000 SF). Phase 2 is to include an additional 12.5MW Data Center. The office building is to be the client's "flagship" facility for North America. The data center consists of three zones: Data Hall, Technical Spaces including electrical, telecom, and meet me rooms, and a loading dock.

The office building is a 5-story glass structure that houses office space for three different groups, multiple conference rooms, gym, canteen, public areas as well as support spaces. The entire facility requires 9 layers of security sequence for data center entry.

Jacobs provided the complete engineering and design services to deliver building shell and interior design while supporting client's requirements for highly technical spaces. Jacobs led and participated all the city interface such as planning entitlement and permit related activities. The project is currently under construction and Jacobs is on site for the construction administration services.



# Enterprise

## Financial Client Data Center Prototype Design and Site Adaptation

### Multiple US Locations

When this financial leader decided to consolidate its aging, regionally dispersed fleet of data centers into a handful of new data centers to improve IT performance, reduce costs, and meet future corporate sustainability goals, they came to Jacobs.

Jacobs' first task was to perform site selection and analysis for multiple planned data centers in several different regions of the US. As part of this scope, our team conducted feasibility studies for innovative building system topologies and form factors that would be incorporated into a plan of record (POR) design for the first data center, and performed in-depth comparative cost analyses to support client decisions regarding potential locations.

As the POR was also intended to become the basis of design for construction documentation of multiple other data centers in different locations, we created an easily replicable and adaptable POR design that would be consistent between all sites, with a PUE target of 1.3. The design leveraged the cost benefits of repeatable results, achieved maximal levels of financial reliability and security, and incorporated cost-effective construction approaches. Supporting our client's corporate targets for energy-efficient, sustainable operations, the design also included LEED requirements, connections for future on-site PV power generation, and highly efficient mechanical cooling schemes.

Once specific locations for the data centers had been selected, our team completed site adaptation and validated compliance with local jurisdiction requirements, supporting the successful deployment of the POR design at multiple sites.



Sustainable features included meeting LEED requirements, connections for future on-site PV power generation, and highly efficient mechanical cooling schemes.

# Cloud and Hyperscale

## Global Data Center Program

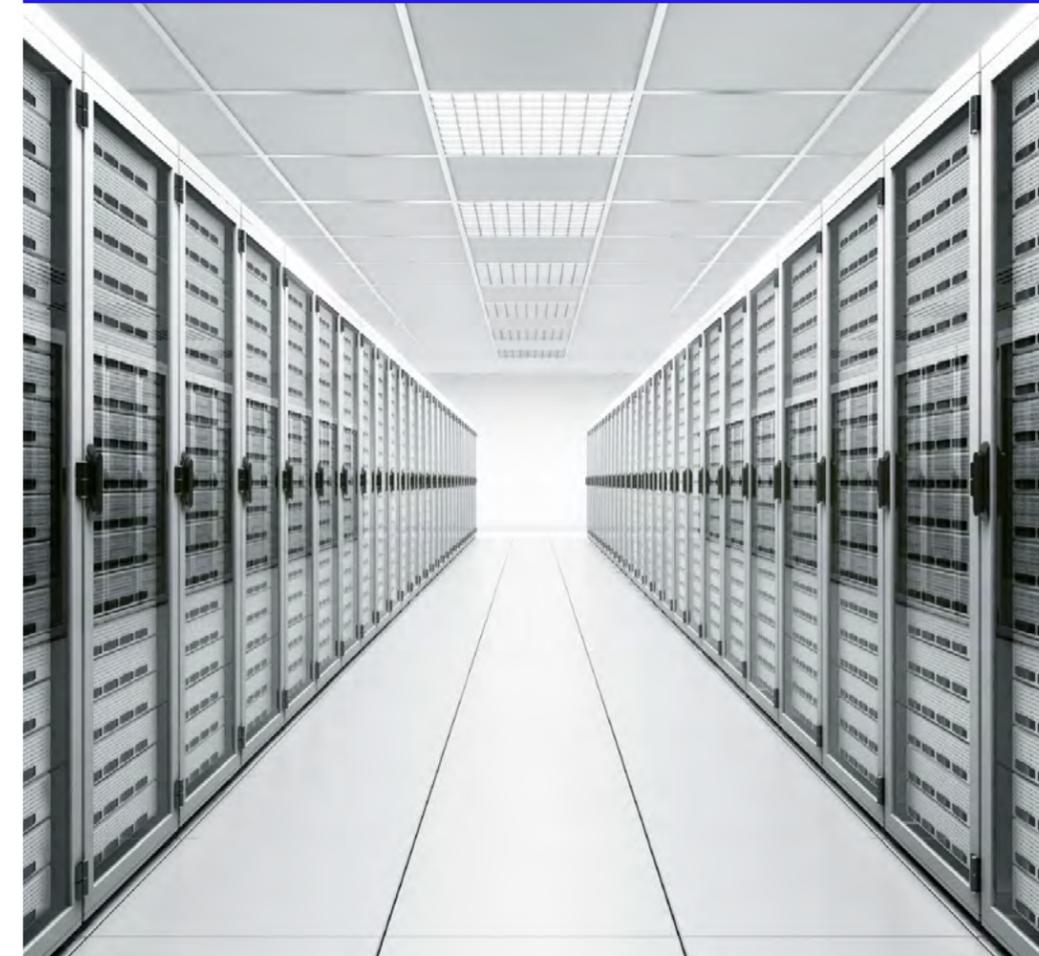
### Multiple Campuses in the US, EMEA, and APAC

Jacobs has provided global architecture and engineering services to support an ambitious world-wide data center delivery program for a leading technology client. The program draws on resources from across the Jacobs enterprise and showcases our ability to transfer technology innovation and best practices across markets.

The program is comprised of three components: global A/E services, regional A/E services, and staff augmentation. In the global A/E role, Jacobs provides program level services, including development and maintenance of the client's Technology Roadmap, Master Specifications, and Quality Assurance program. We hire and manage sub-consultants and support the program with cost analysis, trending tools, and peer review.

As regional A/E, Jacobs has provided self-perform planning and design services for projects ranging from small renovation/upgrades, to a new greenfield high performance data center with a construction cost of over \$500 million. Our ability to provide staff augmentation helped the client meet the challenge of sufficient resources to execute concurrent projects in multiple locations with multiple stakeholders.

In a collaborative partnership with this client, Jacobs has developed new approaches to increasing efficiency and lowering costs world-wide, and created the framework for best-in-class facilities now and in the future.



Delivering end-to-end services for **25+ Sites** across **13 countries**

# Colocation | Enterprise

## OCP Data Center

### Benguerir, Morocco

OCP Group is the largest global exporter of phosphates, and also at the forefront of innovation from employee-led change through extensive research & development and new start-up/technology incubators.

Located at the Techpark of the Green City of Mohammed VI in Benguerir, which is the largest solar energy research site in Africa, this new Tier III/IV data center provides world class infrastructure serving Morocco and the African continent. It brings great flexibility in meeting the needs of OCP, their customers and partners specializing in IT services and cloud computing solutions.

Thriving around the knowledge economy and sustainable development, the data center benefits from the accessibility, infrastructure and services of the Green City while also being immediately adjacent to Mohammed VI Polytechnic University (UM6P).

Built as an element of OCP's digital transformation policy, the Benguerir data center includes (4) 500-SM data halls (3 at Tier III and 1 at Tier IV, Uptime Institute Certified) delivering a total of 5MW of IT capacity.

This project required delivery of a highly resilient and efficient data center in a location with a hot, arid climate, a scarcity of water and few existing data centers. The project team addressed these challenges through intensive collaboration with the client, thoughtful mitigation of the environmental obstacles and a specific focus on team dynamics that ensured our global expertise was well delivered in the local market.



## Award Winner

2020 DCD Global  
Enterprise Design  
Award

# Additional Experience



## Cloud Data Center Campus

**Guiyang, China | 260 MW | 350,000 SM**

The project consists of a campus with approximately 200,000 SM of data center and plant space with ancillary office, educational and residential space for in-house training programs. Jacobs scope of work consists of architectural and engineering design and construction administration. The design team is led by Jacobs and includes personnel based in our US and China offices.



## US Army Corps of Engineers, Utah Data Center

**Camp Williams, UT, USA | 60 MW | 1,450,000 SF**

Jacobs, as design partner in a design-build joint venture, provided A-E design services for the \$1.2 billion Utah Data Center (UDC), featuring 100,000 SF of Tier III data center space at 65 MW IT load and 1.35 million SF of technical support and administrative space. Support facilities include a VCC, RIF, chiller and generator plants, secure warehouse, and kennel on a 200-acre site with perimeter security. Critical support systems include 100% electrical generator and UPS back up, and high redundancy chilled water, fuel and water storage, and fire suppression systems.

The facility showcases numerous innovative technology and energy efficiency features, and is designed and constructed to achieve LEED Silver certification. In addition, the team maximized the use of Building Information Modeling (BIM) tools to help facilitate collaboration and coordination of all project elements throughout design and construction.



## Colocation Data Center

**South India | 24 MW | 19,000 SM**

Jacobs is providing architectural, engineering and security design, including cost consultancy and procurement support for a new data center at greenfield site in Chennai, India. The 19,000-SM Tier 3 facility will accommodate a total of 3,000 racks with an IT capacity of 24MW.

- Racks in server Hall & No of Halls: 3,000
- Area of Server Hall: 16,000 SM
- Building Structure: RC, Post Tensioned Slabs
- Redundancy level: Tier 3
- Cooling Load: 8,200 TR
- Transformers: 26 / 2750 Kva each
- Power Requirement: 42 MVA

# Additional Experience



## Terremark NAP Data Center

**Amsterdam, The Netherlands | 4.8 MW | 2,700 SM**

Jacobs provided complete multi-discipline design and project management services for Terremark's new "fortress data center" located at Amsterdam Airport Schiphol. Hailed by Terremark as a secure, top-tier, cloud-enabled facility, the NAP (Network Access Protection) of Amsterdam is designed to meet the highest requirements for power, availability and security.

The NAP is home to Terremark's industry-leading Enterprise Cloud™ platform, providing high-performance computing infrastructure on demand..



## Pennsylvania State University, Data Center

**University Park, PA | 53,000 SF | 4 MW**

We were the architect for two data center facilities constructed for Penn State in University Park, PA and in Hershey, PA. The University awarded us both projects with the expectation we would achieve commonality in design between the two facilities to the greatest extent possible for cost savings and other efficiencies.

We provided design A/E services, including programming, architectural, engineering, interior/workplace design, and engineering during construction for the new Tier 3+ data center. Our scope included, electrical, telecom, MEP, HVAC, airflow modeling (CFD), fire protection, building systems, and sustainability (LEED) services.

Our designs were scalable and provided for capacity expansion and fit-out without interrupting the computing operations since the project was a multi-phase build out.

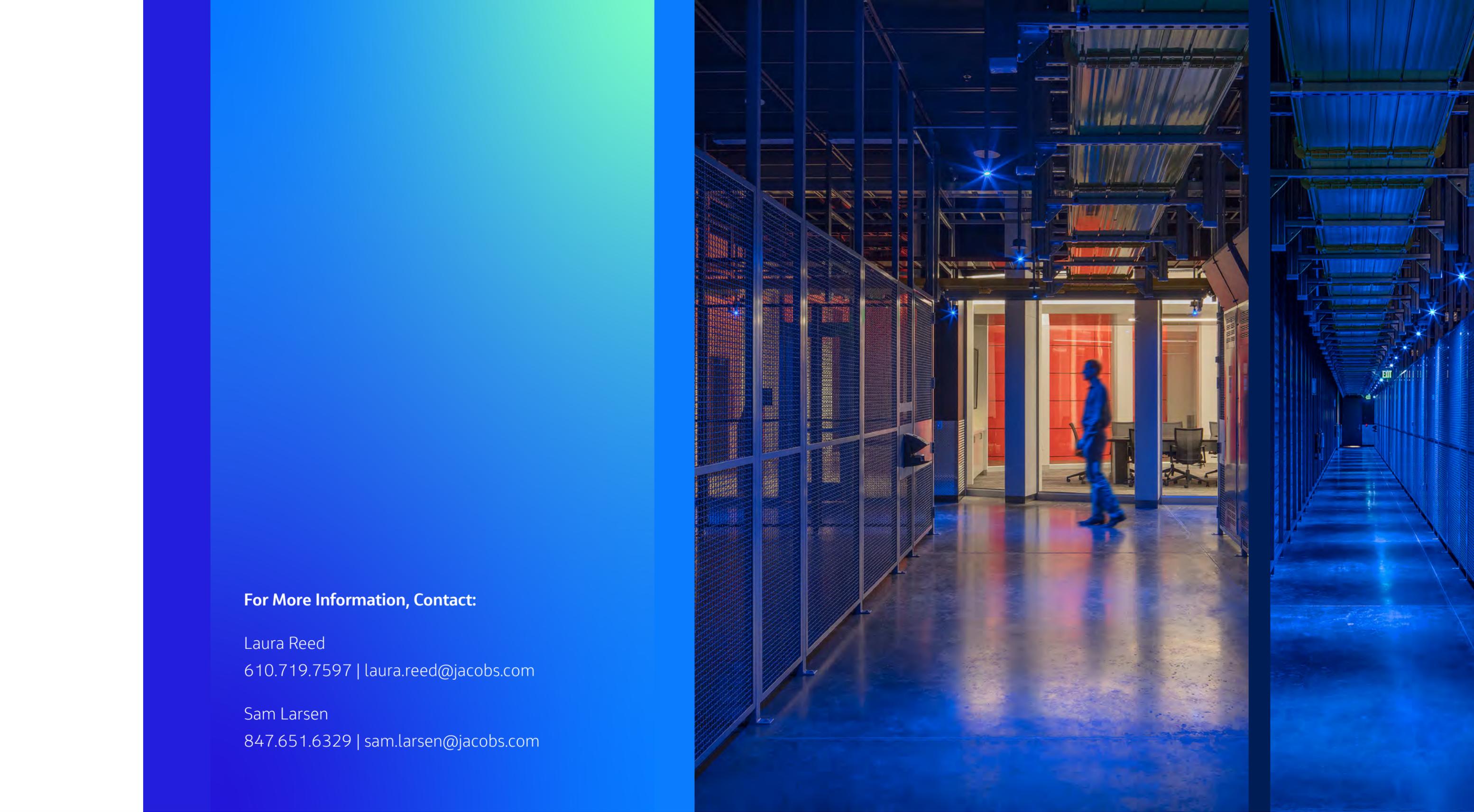


## US Dept. of Energy, National Energy Technology Laboratory

**Pittsburgh, PA | 15,000 SF**

To support their computing needs, we are providing full A/E design and commissioning services at NETL's 62.6-acre Pittsburgh campus to renovate and expand Building 83 (B83) – supercomputer data center. The project includes a new addition to an existing research building to include a 15,000-SF high-performance computing center, mechanical/electrical infrastructure, and related site work. It also includes a visualization center featuring a 270° theatre and interactive virtual reality and augmented reality experiences.

The Tier 3 data center and associated spaces are part of a renovation/addition. The 15,000-SF planned expansion will house 10,000-SF of raised floor with liquid cooling, with a targeted PUE of 1.15 or less.



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