

bkm



Summary of Qualifications

Mission Critical Market Sector

working to enhance the everyday

About BKM

BKM is an engineering firm that listens. Backed by 58 years of responsive client experience and a shared commitment to collaboration, we design holistic MEP solutions that allow our clients to do their best work.

Based in Baltimore, Maryland, our team of 106 professional and technical staff includes 42 registered engineers, 20 EITs, and 23 LEED/WELL/Green Globes Accredited Professionals. Our engineers have extensive experience across mission critical, education, government, healthcare, science & technology, and commercial sectors, and are deeply knowledgeable of the codes and regulations our work must satisfy.

BKM was founded in 1968 with core values of transparency, responsiveness, extreme diligence, and the celebration of great ideas. Today, James L. Barrett, Jr., Mark A. Flickinger, and Anthony R. Page lead the firm with these values instilled in everything we do. From the management-level professionals actively involved in every project to the innovative solutions we develop for our clients, exceeding expectations is always our goal.

Throughout the mid-Atlantic region—and nationwide—BKM's work at data centers, schools, public safety buildings, research laboratories, medical centers, even Camden Yards is well

>50%

MEP Prime Work
Allocation

<1%

MEP Prime Change
Orders

37

Years Providing
Mission Critical
Engineering Services

58

Years of Service
Excellence

41

Professional
Engineers

81%

Work from Repeat
Clients

established. We're proud of that, but we're more proud that our work helps each organization continue its work.

BKM's Core Pillars

Collaboration is at our core.

With collaboration at our core and a 58-year legacy of responding to our clients' needs, we design MEP solutions that harmonize with their surroundings and further our clients' missions.

We're engineers who listen.

Our people make BKM the company it is. We're a dedicated team of creative people who genuinely enjoy each other and solving problems together. Most of all, we love turning challenges into smart, practical designs that allow our clients to do their best work.

We work to enhance the everyday.

Buildings are living spaces. At BKM, we respond to our clients' needs with mechanical, electrical, and plumbing solutions designed to support everyday life.

Every project is a partnership.

In our 58 years, collaboration has been crucial to helping our clients succeed. That's why our team brings openness, responsiveness, and a transparent design process to every project.

Mission Critical Expertise

We strive to develop long-term relationships with each client, becoming a trusted partner in the success of their projects. We focus exclusively on engineering resiliency, reliability, and maintainability of mission-critical facilities. Today, our mission is to deliver exceptional engineering in a customer-first, highly interactive environment, creating facilities for information technology that clients are proud to own and confident to operate.

From concept through construction and long after the contractors have left, our customers rely on the firm as a knowledgeable, trusted, and reliable partner throughout the facility's lifecycle. Our project engineering team is exclusively involved in all design, factory testing, construction phase services, site acceptance testing, integrated commissioning, and operator training. Our data center experience includes more than 100 Continuous Availability Reviews™ of corporate critical facilities throughout the United States.

We are honored to have a team of talented engineers who have repeat success with great clients including:

- AWS
- Microsoft
- Digital Realty
- Cloud HQ
- Apple
- CENTRA Digital
- TECfusions



Core Capabilities

Mechanical Design



We tailor our mechanical designs to meet the requirements of every project with a focus on indoor environmental quality, efficiency, maintainability, and flexibility. Our engineers recommend systems that will best serve the function of the space and provide the best possible environment for its occupants.

Electrical Design



At BKM, we understand the complexity of power systems and the responsibility owners face to provide service to a large number of users. Maintainability and energy efficiency are key aspects to our electrical system designs. Our engineers design safe, reliable, and efficient power distribution systems.

Plumbing Design



Our engineers are well versed in plumbing and piping design allowing clients to rest easy in knowing we are looking out for their best interests. As with all other systems, plumbing must suit the client's objectives for sustainability, user convenience, cost constraints, and space limitations.

Lighting Design



Proper lighting design strikes a careful balance between the artistic vision of a space and the comfort, safety, and aspirations of its occupants. BKM is dedicated to providing an attractive and streamlined lighting design that is fully coordinated, sustainable, and economically attainable for our clients.

Commissioning



BKM's commissioning process ensures the owner receives the full benefit of their building systems, which include inter-related automation systems to maximize energy efficiency and occupant comfort. Our goal is to provide the building manager with the training and experience to monitor the facility and be comfortable to modifying components to align with the changing needs throughout the building's life-cycle.

Building Assessments



Because of our thorough understanding of how the MEP systems are interrelated and how they affect decisions in other disciplines, our approach is inherently holistic. We can quickly recognize the positive and negative impacts of various decisions, helping our clients to work through the possibilities, clarify their vision, and then make it a reality.

Power Systems Studies



BKM understands the importance of electrical safety, maintenance, reliability, and asset protection within your facility. Our Power System Engineers specialize in load flow, fault current, coordination, protection, and arc flash studies. Our goal is to minimize your down time while maximizing protection of your assets and personnel.

Energy Modeling



BKM offers whole building energy analysis to satisfy the growing needs of building owners in an increasingly energy cost-conscious market. Building energy analysis plays a crucial role in the earliest stages of design, informing the building owner and design team of the true impact and value gained by various siting, envelope, and MEP systems design strategies. Services can be provided to address LEED/WELL requirements, building life cycle cost analysis, building energy code compliance, and utility incentives and rebates.

CFD Modeling



CFD is an essential part of the design process for critical spaces. CFD allows us to optimize the design of a space by evaluating space configuration, airflow distribution, operating conditions, and energy consumption. We work with our clients to produce a design that is energy and cost effective while ensuring that the design can maintain the desired space setpoints.

Mission Critical Leadership & Team



Ryan P. Moran, PE

As BKM's Mission Critical Market Sector Leader, Ryan, brings 27 years of experience, specializing mission-critical facilities. Over the course of Ryan's career, his experience includes enterprise, government, colocation and hyperscale data centers for some of the largest clients in the industry.



Adam Palanker, PE

Adam is a seasoned electrical engineer and project manager with 19 years of experience. He has concentrated his expertise on mission-critical facilities. His data center portfolio includes projects across government, enterprise, colocation, and hyperscale environments.



Michael F. McKenna, PE, CxA, LEED AP BD+C

Mike has 35+ years of engineering experience in a wide variety of applications. For the past 19 years his focus in the mission critical market has led him through multiple generations of cooling technology systems as the industry has evolved.



David Adams

David brings 30+ years of mission-critical electrical experience, from 2.1 GW AI campus and a Fortune 10 cloud provider's modular electrical building program to the White House power section and Camp David. He personally installed, spliced, tested, and commissioned the same class of equipment his designs specify.



Ryan Moran, PE

Principal, Mission Critical

Education

University of Maryland
College Park, Bachelor
of Science, Mechanical
Engineering, 1999

Years of Experience

Total: 27
Total with BKM: 2

Registrations

PE: MD

Ryan specializes in mission-critical markets, with experience in enterprise, government, co-location, and hyperscale data centers for some of the largest clients in the industry. As a leader, he has a proven track record of delivering innovative, solutions-oriented strategies that drive success.

Project Experience:

- **Reno Data Center Design, CENTRA Digital**, Two story, 90,000 SF data center facility in Reno, NV with a total capacity of 12MW. Redundancy and outdoor equipment yards comprising of 3.0MW diesel engine-generators.
- **Keystone Building J Upgrades, TECfusions**, Adaptive re-use and upgrade of an existing data center from 2 MW of IT capacity to a potential of 12MW capacity. The upgraded system uses AI capable direct to rack liquid cooling systems. Systems replaced and upgraded include generators, electrical distribution, and cooling systems.
- **SBN201, Confidential Client**, Nine-building campus of 50 MW data centers located in South Bend, IN. Evaporatively cooled data halls. Scope included sizing of campus make-up water requirements for extreme weather conditions. **Project performed with previous employer*
- **SBN100, Confidential Client**, A seven- building campus of 50 MW data centers located in New Carlisle, IN. The project also included evaporatively cooled data halls. Campus design included water infrastructure and support and logistic buildings. **Project performed with previous employer*
- **Loudon County 1 (LC1), CloudHQ Data Center**, A massive 1,050,000 SF two story data center for a single tenant user to support critical load densities averaging 240 W/SF. Cooling is provided by three independent air-cooled chiller plants at 5,000+ tons each. Each plant is equipped with chilled water storage tanks sized to provide continuous cooling during a chiller plant restart. The electrical systems include diesel engine-generators and static UPS systems arranged in a shared redundant catcher system configuration, delivering 264 MW of emergency generation and over 144 MW of UPS power. **Project performed with previous employer*



Michael McKenna, PE, CxA, LEED AP BD+C Associate, Senior Mechanical Engineer

Education

Georgia Institute of Technology, Bachelor of Science, Mechanical Engineering, 1987

Years of Experience

Total: 35+

Total with BKM: 2

Registrations

PE: CO, FL, IA, IN, MD, MN, MT, NC, NJ, NV, OH, OR, PA, VA

Mike has diverse experience in the mission-critical market, navigating the advancements of cooling technology systems as the industry has evolved. He specializes in complex projects that require careful phasing and coordination, bringing a strong technical focus to his designs.

Project Experience:

- **Reno Data Center Design, CENTRA Digital**, Two story, 90,000 SF data center facility in Reno, NV with a total capacity of 12MW. Redundancy and outdoor equipment yards comprising of 3.0MW diesel engine-generators.
- **SBN201, Confidential Client**, Nine-building campus of 50 MW data centers located in South Bend, IN. Evaporatively cooled data halls. Scope included sizing of campus make-up water requirements for extreme weather conditions. **Project performed with previous employer*
- **SBN100, Confidential Client**, This project involved a seven-building campus of 50 MW data centers located in New Carlisle, IN. This project also included evaporatively cooled data halls. Campus design included water infrastructure and support and logistic buildings. **Project performed with previous employer*
- **Loudon County 1 (LC1), CloudHQ Data Center**, A massive 1,050,000 SF two story data center for a single tenant user to support critical load densities averaging 240 W/SF. Cooling is provided by three independent air-cooled chiller plants at 5,000+ tons each. Each plant is equipped with chilled water storage tanks sized to provide continuous cooling during a chiller plant restart. The electrical systems include diesel engine-generators and static UPS systems arranged in a shared redundant catcher system configuration, delivering 264 MW of emergency generation and over 144 MW of UPS power. **Project performed with previous employer*



Adam Palanker, PE

Associate, Lead Electrical Engineer

Education

University of Delaware,
Bachelor of Science,
Electrical Engineering,
2007

Years of Experience

Total: 19
Total with BKM: 1

Registrations

PE: AZ, CO, MD, MN, NV,
NC, OR, VA

Adam is a seasoned electrical engineer and project manager with 19 years of experience. He has concentrated his expertise on mission-critical facilities. His data center portfolio includes projects across government, enterprise, colocation, and hyperscale environments.

Project Experience:

- **Reno Data Center Design, CENTRA Digital**, Two story, 90,000 SF data center facility in Reno, NV with a total capacity of 12MW. Redundancy and outdoor equipment yards comprising of 3.0MW diesel engine-generators.
- **Keystone Building J Upgrades, TECfusions**, Adaptive re-use and upgrade of an existing data center from 2 MW of IT capacity to a potential of 12MW capacity. The upgraded system uses AI capable direct to rack liquid cooling systems. Systems replaced and upgraded include generators, electrical distribution, and cooling systems.
- **Eagan MSP1 Data Center Design, CENTRA Digital**, An adaptive reuse of an existing two-story 132,000 SF data center facility involving comprehensive interior architectural renovations, structural enhancements, site improvements, and a near-complete replacement of MEP systems. The multi-phase design increases the IT critical load capacity of the facility from 3.6MW to 9.3MW utilizing multiple 4 to make 3 distributed redundant electrical systems and N+1 mechanical system.
- **A and C Bldgs Main Switchboard Retrofit, USAA**, Design and retrofit of 2 sets (A & C Core) of existing electrical main switchboards (MDS-ASVS1 & MDS-ASVS2 and MDS-CSVS1 & MDS-CSVS2) with new electrically operated circuit breakers (with networking capable trip units), network communication infrastructure, and updated meters and protection control schemes. Tampa, FL.



David Adams

Associate, Mission Critical Practice

Years of Experience

Total: 30+

Total with BKM: <1

Registrations

Master Electrician, Virginia

DPOR No. 2710040512

NCSCB Certified Medium Voltage Cable Splicer No. 1127

David is an Associate in the Mission Critical Practice at BKM, where he leads mission-critical electrical design. His designs run from gigawatt scale down, a 2.1 GW AI campus with thirty 72 MW buildings, a 288 MW first phase carried on 574 MW of fuel-cell bridge generation, and two 72 MW hyperscale buildings in Northern Virginia, where he took over mid-stream, proved full delivery under every failure scenario in two redundancy topologies, and completed both.

From 2016 to 2022 he ran a Fortune 10 cloud provider's Modular Electrical Building program from design competition through a production line: four 30 MW modular power supplies per site (120 MW) feeding the data center, 51 prefabricated units on a 15-month accelerated schedule, a design the client adopted as its standard on every new campus. His secure-facility record includes the White House power section, the complete medium-voltage replacement at Camp David, the Pentagon, classified Intelligence Community data centers, and U.S. embassies worldwide as a traveling State Department power assessor. He previously held Top Secret/SCI (full-scope polygraph) and Yankee White clearances.

Project Experience:

- **Gigawatt-scale Campus Design, Clarksville, AK**, Led design of full MEP scope, design, through construction administration. Thirty 72 MW buildings, twelve 6 MW halls each. Phase 1 (four buildings, 288 MW IT, about 426 MW delivered) carried on 574 MW of solid-oxide fuel cells as bridge generation, on a stacked dual-loop architecture with 6+1 block redundancy, validated with ReliaSoft reliability modeling and full protection and arc-flash studies. **Project performed with previous employer*
- **TECfusions, Keystone Bldg J Upgrades, Pittsburgh, PA**, Adaptive re-use and upgrade of existing data center from 2 MW of IT capacity to a potential of 12 MW capacity.
- **Centra Digital Reno Data Center Design, Reno, NV**, Two-story, 90,000 SF data center facility phased in 1.0 MW increments to 5.0 MW with catcher redundancy and outdoor equipment yards comprising 3.0 MW diesel engine-generators.
- **Centra Digital Eagan MSP1 Data Center, Eagan, MN**, Adaptive reuse of two-story 132,000 SF data center, multi-phase design increases IT critical load capacity from 3.6 MW to 9.3 MW using multiple 4-to-make-3 distributed redundant electrical systems and N+1 mechanical system.
- **Hyperscale campus HV/MV**, Two 160 MVA 115 kV transformers plus one 50 MVA; 35 kV GIS lineups; 15 kV AIS lineups. **Project performed with previous employer*



Tony Scalone, PE

Senior Associate, Electrical SME

Education

University of Maryland
College Park, Bachelor
of Science, Electrical
Engineering

Years of Experience

Total: 35+
Total with BKM: 2

Registrations

PE: CA, CO, CT, DC, DE, GA,
IA, IL, KY, MA, MD, MN,
NC, NJ, NV, OH, PA, TX, VA,
WV

Tony is knowledgeable about medium- and low-voltage (35 kV, 15 kV, 5 kV, 480/277V, 208/120V) substations, power distribution, and generator power systems. He has experience in evaluating, planning, budgeting, designing, specifying, reviewing, and commissioning complex and sophisticated electrical systems.

Project Experience:

- **Reno Data Center Design, CENTRA Digital**, Two story, 90,000 SF data center facility in Reno, NV with a total capacity of 12MW. Redundancy and outdoor equipment yards comprising of 3.0MW diesel engine-generators.
- **Keystone Building J Upgrades, TECfusions**, Adaptive re-use and upgrade of an existing data center from 2 MW of IT capacity to a potential of 12MW capacity. The upgraded system uses AI capable direct to rack liquid cooling systems. Systems replaced and upgraded include generators, electrical distribution, and cooling systems.
- **Loudoun County 1 (LC1), CloudHQ Data Center**, A massive 1,050,000 SF two story data center for a single tenant user to support critical load densities averaging 240 W/SF. Cooling is provided by three independent air-cooled chiller plants at 5,000+ tons each. Each plant is equipped with chilled water storage tanks sized to provide continuous cooling during a chiller plant restart. The electrical systems include diesel engine-generators and static UPS systems arranged in a shared redundant catcher system configuration, delivering 264 MW of emergency generation and over 144 MW of UPS power. **Project performed with previous employer*
- **Manassas Corporate Center 2 (MCC2), CloudHQ Data Center**, This project supports a single tenant with critical load densities of 330 W/SF. Cooling is provided by custom CRAH units and three independent air-cooled chiller plants at 5,000+ tons each. Each plant is equipped with chilled water storage tanks sized to provide continuous cooling during a chiller plant restart. The electrical systems include diesel engine-generators and static UPS systems arranged in a shared redundant catcher system configuration, delivering 108 MW of emergency generation and over 64 MW of UPS power. **Project performed with previous employer*



David Wetzel, PE

Senior Electrical Engineer

Education

Drexel University,
Master of Science,
Electrical Power System
Engineering, 2002
University of Maryland,
Bachelor of Science,
Electrical Engineering,
1992

Years of Experience

Total: 34
Total with BKM: 17

Registrations

PE: MD

Dave is involved in the preparation of construction documents, engineering studies, equipment design standards, field investigations, equipment commissioning, and equipment diagnostic testing for various commercial, industrial, institutional, and utility applications.

Project Experience:

- **Keystone Building J Upgrades, TECfusions**, Adaptive re-use and upgrade of an existing data center from 2 MW of IT capacity to a potential of 12MW capacity. The upgraded system uses AI capable direct to rack liquid cooling systems. Systems replaced and upgraded include generators, electrical distribution, and cooling systems.
- **Electrical Switchgear and Distribution, Community College of Baltimore County**, Design for the replacement of the customer-owned 13.2 kV main-tie-main utility service entrance load-interrupter switchgear and the medium-voltage campus distribution at the Essex campus.
- **Glen Arm Maintenance Facility Substation-Switchgear Replacement, Baltimore County Property Management**, 15kV Switchgear replacement project involved replacing the 13.2kV double-ended primary utility service for a County mission-critical facility. It included modifications to the service entrance substation, replacement of 13.2kV feeders for the campus distribution system supplying four substations, and replacement of one downstream medium-voltage switch and substation.
- **Greenwood Switchboard Replacement, Baltimore County Public Schools**, Upgrades to the electrical distribution system of a 45,000 SF central administration building in Towson, MD. The project replaced 10 of 18 existing panelboards and added 6 more to increase capacity.



Patrick Burke, PE

Project Manager, Senior Mechanical Engineer

Education

University of Maryland,
Bachelor of Science,
Mechanical Engineering,
2007

Years of Experience

Total: 9
Total with BKM: 5

Registrations

PE: MD, VA

Patrick is a professional engineer and project manager with over seven years of experience in mechanical design. He has a range of experience, largely including projects in the mission critical, government, higher-education, and municipal market sectors.

Project Experience:

- **Keystone Building J Upgrades, TECfusions**, Adaptive reuse and upgrade of an existing data center from 2 MW of IT capacity to a potential of 12MW capacity. The upgraded system uses AI capable direct to rack liquid cooling systems. Systems replaced and upgraded include generators, electrical distribution, and cooling systems.
- **Eagan MSP1 Data Center Design, CENTRA Digital**, An adaptive reuse of an existing two-story 132,000 SF data center facility involving comprehensive interior architectural renovations, structural enhancements, site improvements, and a near-complete replacement of MEP systems. The multi-phase design increases the IT critical load capacity of the facility from 3.6MW to 9.3MW utilizing multiple 4 to make 3 distributed redundant electrical systems and N+1 mechanical system.
- **Reno Data Center Design, CENTRA Digital**, Two story, 90,000 SF data center facility in Reno, NV with a total capacity of 12MW. Redundancy and outdoor equipment yards comprising of 3.0MW diesel engine-generators.
- **The Institute for Defense Analyses (IDA) CSS Data Center Study**, A study supporting the existing facility, which included a secure data center and a mix of secure and non-secure offices. The study evaluated the existing MEP systems and made recommendations for future upgrades. The assessment include chiller loads, generator loads, UPS loads, airflow, and equipment useful life. It also provided recommendations on whether it was more cost-effective to expand the existing infrastructure or to replace it.



Travis Polletto, PE

Senior Electrical Engineer

Education

University of Maryland,
Bachelor of Science,
Electrical Engineering,
2004

Years of Experience

Total: 19

Total with BKM: 2

Registrations

PE: MD

Travis has 19 years of experience across a wide range of market sectors, including Mission Critical. Design experience includes normal and emergency electrical power distribution and critical systems. Many of his projects have required a phased design approach to minimize outages and disruptions to the operations of existing occupied facilities.

Project Experience:

- **Keystone Building J Upgrades, TECfusions,** Adaptive re-use and upgrade of an existing data center from 2 MW of IT capacity to a potential of 12MW capacity. The upgraded system uses AI capable direct to rack liquid cooling systems. Systems replaced and upgraded include generators, electrical distribution, and cooling systems.
- **Eagan MSP1 Data Center Design, CENTRA Digital,** An adaptive reuse of an existing two-story 132,000 SF data center facility involving comprehensive interior architectural renovations, structural enhancements, site improvements, and a near-complete replacement of MEP systems. The multi-phase design increases the IT critical load capacity of the facility from 3.6MW to 9.3MW utilizing multiple 4 to make 3 distributed redundant electrical systems and N+1 mechanical system.
- **UPS Battery Room, Kite Pharma,** Design of a second power distribution pathway including switchboard, manual transfer switches, transformers and panelboards to allow for concurrent maintenance of instruments, lighting and HVAC distribution equipment supporting GMP manufacturing.
- **Third Floor Critical Power Upgrades, Brown Advisory,** Replaced the power string serving the third floor critical infrastructure with a system to match the upgraded fourth floor system previously designed by BKM. The equipment designated for replacement is the third floor UPS System, PDU, CRAC units and the 750 kW Engine Generator supporting both the third and fourth floors.



Thomas Ogden, PE

Senior Mechanical Engineer

Education

University of Maryland,
Bachelor of Science,
Mechanical Engineering,
2017

Years of Experience

Total: 9

Total with BKM: 1

Registrations

PE: MD

Thomas has 9 years of experience across a wide range of market sectors, including Mission Critical. He has worked on data centers, including hyperscaling data centers, including new construction and renovations. Thomas performs calculations and provides design for public and private clients. He coordinates work for on-going action items, and provides permit support. Many of his projects have required a phased design approach to minimize outages and disruptions to the operations of existing occupied facilities.

Project Experience:

- **Keystone Building J Upgrades, TECfusions**, Adaptive re-use and upgrade of an existing data center from 2 MW of IT capacity to a potential of 12MW capacity. The upgraded system uses AI capable direct to rack liquid cooling systems. Systems replaced and upgraded include generators, electrical distribution, and cooling systems.
- **Reno Data Center Design, CENTRA Digital**, Two story, 90,000 SF data center facility in Reno, NV with a total capacity of 12MW. Redundancy and outdoor equipment yards comprising of 3.0MW diesel engine-generators.
- **Eagan MSP1 Data Center Design, CENTRA Digital**, An adaptive reuse of an existing two-story 132,000 SF data center facility involving comprehensive interior architectural renovations, structural enhancements, site improvements, and a near-complete replacement of MEP systems. The multi-phase design increases the IT critical load capacity of the facility from 3.6MW to 9.3MW utilizing multiple 4 to make 3 distributed redundant electrical systems and N+1 mechanical system.
- **Project Blue Ridge - MNZ05, Confidential Client, Dulles, VA**, This is a 50 MW, 5 colocation and administrative space data center part of the client's project Blue Ridge campus. Cooling is provided by evaporative air cooled units for the colocation space. The system was designed in compliance with client specs and from the existing CFD model. Thomas coordinated with the client and performed submittal review to ensure contractor equipment selection and construction methodologies aligned with the design. *Project performed with previous employer



David Kirsch

BIM Manager

Years of Experience

Total: 29

Total with BKM: 1

David has been a BIM Manager for 10 years, having started his career in the industry as a mechanical designer. He has collaborated with architects and engineers to develop accurate 3D models that align with project objectives. He has supported network and cloud-based Revit projects and guided staff on BIM protocols and best practices.

Project Experience:

- **BIM Support for Family Development, Rolls-Royce Solutions America Inc.**, This project involves the conversion of twenty (20) Solidworks STEP files into Revit families for Rolls-Royce and their clients. Clearances were added that can be toggled on or off as needed or requested. Dimensions are confirmed with the Rolls-Royce designer. Once confirmed, the Revit file, images of different views, and a Navisworks export are sent.
- **Eagan Bldg-E DD & Test Fits., CENTRA Digital**, An adaptive re-use of an existing two-story 132,000 SF data center facility involving comprehensive interior architectural renovations, structural enhancements, site improvements, and a near-complete replacement of MEP systems. The multi-phase design increases the IT critical load capacity of the facility from 3.6MW to 9.3MW utilizing multiple 4 to make 3 distributed redundant electrical systems and N+1 mechanical system.
- **Keystone Building J Upgrades, TECfusions**, Adaptive re-use and upgrade of an existing data center from 2 MW of IT capacity to a potential of 12MW capacity. The upgraded system uses AI capable direct to rack liquid cooling systems. Systems replaced and upgraded include generators, electrical distribution, and cooling systems.
- **2W244 & 2W245 Imaging Labs, Howard Hughes Medical Institute**, Renovation of one lab into two Microscopy Imaging Labs at the Janelia Research Campus in Ashburn, VA. MEP systems were detailed and modeled to integrate the BIM model with the existing facility management system.

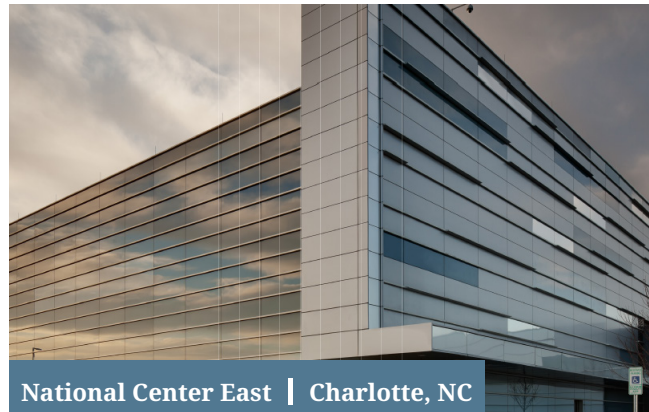
Mission Critical Portfolio



National Center West | Centennial, CO

This project was our Client's second National Data Center to support critical operations in the western portion of the US.

This three-story greenfield data center project included phased construction to maintain 24x7 operation of the existing systems throughout construction and commissioning.



National Center East | Charlotte, NC

BKM performed a full assessment and study of this corporate Data Center in 2015, focusing on critical infrastructure, operations, and key performance index values.

The study led to two-phased expansion for NCE, completed in 2018 and 2021, increasing the facility's total IT capacity while maintaining 24/7 operations. The 48,000 SF Tier III-designed data center supports 8,200 kW of critical load with redundant power, cooling, and continuous operation infrastructure.



Fannie Mae-UTC | Urbana, MD

This data center serves as the cornerstone of Fannie Mae's technology operations. Located in rural Maryland, the Urbana Technology Center (UTC) is a 247,000 SF facility.

The facility includes 70,000 SF of infrastructure support space, 60,000 SF of raised floor IT space, and a 3-story office building that houses a trading floor, call center, disaster recovery area, offices and amenity spaces for employees. The command center has direct visual access to the data center.



Phoenix Data Center | Phoenix, AZ

This four-story, 135,000-square-foot data center was designed to reliably support the client's immense data needs.

The outdoor equipment yards house ten 2MW generators, a 250,000-gallon chilled water storage tank, and a hydro-pneumatic well tank (for back-up cooling tower make-up water). Floors one and two encompass all of the building's infrastructure (switchgear, UPS, batteries, chillers, and pump rooms), while the two upper floors are completely dedicated to raised floor computing space.



Information Technology Center | San Antonio, TX

The 50,000 SF data center spans three floors and features a hot aisle/cold aisle layout with dual-powered PDUs and centralized AHUs delivering conditioned air beneath the raised floor.

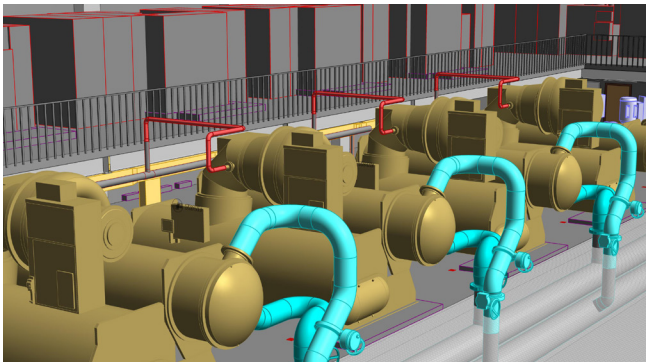
BKM provided services to enhance capacity and efficiency through several key upgrades. These include CAHU improvements with new motors, VFDs, and optimized temperature control; deployment of high-density Software Defined Data Center pods; and a UPS system expansion to a new 4,000 kW topology.



Hazelwood Data Center | St. Louis, MO

An open-envelope, three-story, facility and upgraded in 2010 with a CUP housing the chiller plant, engine-generators, and UPS systems.

BKM developed a plan that reconfigured the raised floor into four 10,000 SF data halls with 4,050 kW total UPS capacity. The site now features eight 2MW diesel generators in an N+2 configuration, a 3x750-ton chiller plant with free cooling, and upgraded air handling and power systems supporting efficient hot aisle/cold aisle data halls.



Campus Chiller Plant Upgrades | San Antonio, TX

BKM provided planning, design, and commissioning services to upgrade four chiller plants supporting over 5 million SF of corporate and critical operations space in Texas.

The project replaced more than 15,000 tons of chillers, upgraded pumps, piping, and substations, and installed a new BAS while maintaining continuous plant operation. Retro-commissioning and life cycle cost analyses guided the selection of efficient, flexible upgrade options for each plant.



Data Center North | Columbus, OH

Originally built as a Tier II facility, BKM designed and managed a complete mechanical and electrical infrastructure upgrade to achieve Tier IV standards while keeping the data center fully operational.

The 40,000 SF facility now supports 2,700 kW of critical load with 2(N+1) UPS redundancy, N+2 chilled water systems, and continuous cooling through mechanical UPS support. BKM provided full commissioning, maintenance procedure development, and arc flash assessments.



Mahwah Data Center | Mahwah, NJ

This 60,000 SF data center was originally built in 1989 as a Tier II facility. BKM was converted this data center into one of the very first Tier IV facilities in the country.

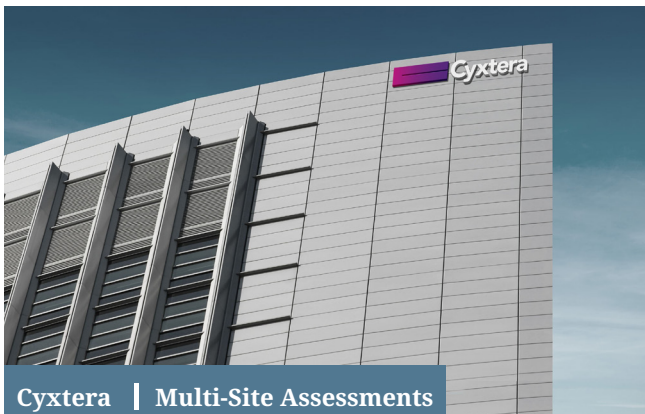
The design included eight 1,600 kW, 13.2 kV engine generators, four 5-module UPS system, static transfer switches, medium voltage control and distribution equipment, and low voltage distribution equipment.



TJX Corporate Technology Center | New Albany, OH

The TJX Corporate Technology Center (CTC) in New Albany, OH is the central processing hub for all retail sales transactions from over 4,300 stores globally (TJ Maxx, Marshalls, and HomeGoods).

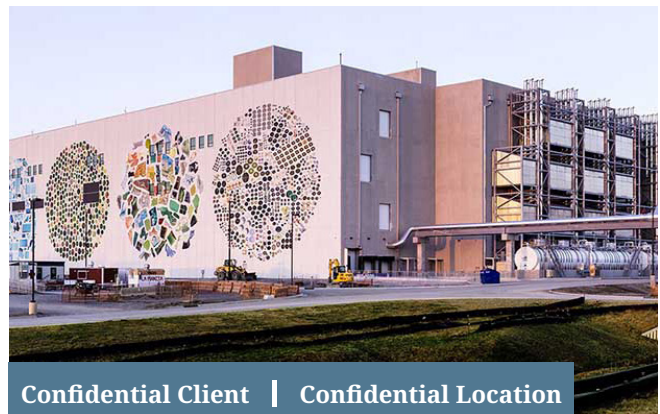
The CTC data center consists of two 9,000 SF Data Halls, each designed to support 900 kW of IT load.



Cyxtera | Multi-Site Assessments

BKM was engaged by Cyxtera on behalf of one of their long-term clients to perform a “tabletop” assessment for 10 collocation sites.

Using available record drawings and infrastructure assessment management data, the goal of this initiative was to identify vulnerabilities within the Critical Power Distribution and Mechanical Cooling systems that could impact uptime available for key tenants.



Confidential Client | Confidential Location

BKM provided Commissioning Services for this 55 MW hyperscale data center, the seventh and final building on the southern part of this massive data center campus.

This four-story facility is 522,000 SF in support of four 42,000 SF data halls. Each data hall is configured with three zones of IT cabinets, with approximately 60 rows of IT per floor.

Eagan Data Center | Eagan, MN

The Eagan campus originally consisted of two data centers (Bldgs E and F), each supported by a Tier II infrastructure. The critical systems were upgraded to increase the critical load and satisfy the need for Concurrent Maintainability (Tier III).

Each data center was provided with a new dedicated Engine-Generator Plant consisting of four 2 MW Engine Generators, and new N+1 UPS System architecture consisting of five 600 kW modules for a total of 2,400 kW (2,160 kW at 90% redline) per data center. BKM's involvement was instrumental for the successful load migrations, while maintaining uptime for each data center. The Data Center facility was expanded in 2008 with its third data center (Bldg H). Similar to the original data center, Bldg H is also equipped with four 2 MW Engine Generators and five 675 kW UPS modules in an N+1 configuration to support a slightly larger IT load of 2,700 kW (2,430 at 90% redline). Unlike Bldg E and F that utilized compressorized Computer Room Units, the third data center is equipped with a Chiller Plant consisting of five 350-ton chillers (N+2) cooling towers with remote sumps (for freeze protection), and a waterside economizer. A 2N mechanical UPS system serves the CRAH fans, secondary CHW pumps, and BAS to provide continuous cooling in conjunction with a 130,000 gallon stratified Thermal Storage Tank.



CENTRA Digital Data Center | Reno, NV

BKM provided MEP prime services for this two-story, 92,000 SF greenfield data center.

The data center is a 12 MW Tier III+ facility with an annualized PUE of 1.18. The electrical system is N + Catcher and the mechanical cooling is N+1. The data center has been designed for flexible deployment and is capable of supporting 200+ kW AI liquid cooled racks.



AT&T | Multi-Site Assessment

This project included conditions assessment of their 15 Enterprise Data Centers located throughout the US. BKM engaged to perform site assessments for eight of AT&T's facilities located in the eastern part of the country.

This project was accomplished by assigning two teams, each consisting of a principal-level mechanical and electrical engineer, along with a senior facility operations advisor.

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