# DATA CENTER DEVELOPMENT PLAYBOOK

Streamlining Site Selection, Due Diligence, Entitlements, and Construction

Second Edition

BOHLER

# In This Guide

# 1 / INTRODUCTION

**$117 B**

Projected value of data center construction market by 2032 [1]

**3,404 MW**

Forecasted energy capacity to be added by 2028 [2]

**26M SF**

Forecasted U.S. data center construction market area by 2028 [3]

As the market projections show, the need for data centers continues to grow exponentially. Enterprise demand for cloud services, dependence on 5G cell networks, artificial intelligence technology, edge computing capabilities, social media use, and streaming needs continue to drive demand.

And not just in Virginia. Data center development is also growing across the Southeast, Midwest, and Southwest.

With successful deals driven largely by the speed-to-market demands of end users, owners and developers need to move quickly.

My colleagues and I developed this playbook to help development teams streamline site selection, due diligence, entitlements, and construction, allowing you to make more informed decisions faster and deliver quality facilities on time.

Megan Baird, PE
Associate

# 2 / EXPEDITING DUE DILIGENCE

**We always recommend thorough due diligence. An incomplete understanding of the project could significantly impact your ability to keep it on track.**

## Due Diligence Time Crunch? 6 Items Not to Miss

While it may be tempting to cut corners (and costs) in due diligence, an incomplete understanding of the project could impact your ability to keep it on schedule and within budget as the project progresses.

Whether faced with time constraints due to lease obligations or simply managing a tight budget, an expedited due diligence period may seem like the only option. If you are evaluating an undeveloped site or assessing a potential redevelopment, here are six key items that should remain on your checklist to minimize unexpected costs and delays.

1

### UTILITY SERVICE AND IMPACT FEES

Determine if existing infrastructure can meet the proposed project's utility demands, especially power, or gain an understanding of the off-site connections, extensions, or upgrades required.

2

### GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATIONS

Identify whether soil conditions and environmental challenges pose risks or design constraints, and determine the estimated cost of potential solutions.

3

### ZONING REVIEW

As zoning regulations around data centers continue to evolve, consult a land use attorney to discuss the feasibility of obtaining data center use approval at your site.

4

### ALTA SURVEY

Review public records as part of this survey to identify easements, restrictions, and other encumbrances that can significantly impact the site's development potential.

5

### CONCEPTUAL GRADING

Protect your budget by giving your design team the opportunity to strategize earthwork and stormwater management, and use AGTEK software to identify cost-effective ways to work with challenging topography.

6

### CURSORY TRAFFIC ACCESS REVIEW

Evaluate site access and traffic circulation patterns to identify obstacles that could impact layout, design, and the entitlements timeline.

**DOWNLOAD OUR DUE DILIGENCE CHECKLIST**

CASE STUDY

# Comprehensive Due Diligence Drives Site Planning Process

With thorough due diligence we were able to move forward on critical design factors faster, streamlining the process, reducing the overall timeline, and maximizing the site's potential.

**MICHAEL O'SHAUGHNESSY, PE, ASSOCIATE**

## 5+ M SF CAMPUS

A Northern Virginia data center developer tapped Bohler to rezone a large site for a multi-phase development.

Bohler's extensive due diligence process helped determine the site's feasibility, inform planning, and identify opportunities to save time and money.

For example, as an early adopter of precision AGTEK software, Bohler analyzed geotechnical boring reports to strategize the most efficient earth-moving process for the massive site – a decision that helped set early expectations on cost and timelines associated with the proposed development.

# 3 / SITE FEASIBILITY FOR DATA CENTERS

**The data center market is both expensive and competitive. You need to move quickly, and you want someone who knows the process.**

## 3 Questions to Ask When Identifying Prime Data Center Opportunities

The need for data centers is permanent, and finding a suitable property with the right zoning, utilities, and timeline can be challenging. Here are three questions for owners or developers to ask when identifying prime sites for data center development, and a few tools to help move these types of projects forward.

1

### WHAT ARE THE ALTERNATIVES FOR MEETING UTILITY NEEDS?

Power, fiber, and water are essential to data center operations. If an end user can control the variable of power by adding substations or use reclaimed water over potable or domestic water, it can help them get to market faster and save on operating costs.

2

### HOW WILL ZONING CHALLENGES BE RESOLVED?

Many local land development codes lack clarity regarding data centers, which can slow a project's progress. Still, there are many successful case studies where properties, without delay, were rezoned or applicants received special exceptions to allow the use. The key is to work with a site civil engineer who can help determine the zoning needs and keep you moving forward.

3

### DOES THE SITE PROVIDE ENOUGH SPACE?

Data center tenants generally need to build two buildings on a site to take advantage of efficiencies in utilities and security. This means a feasible site size is approximately, and at a minimum, 40 acres. Some developers and tenants could be interested in much more than that.

READ MORE: THREE FACTORS THAT GET A DATA CENTER FACILITY TO MARKET FAST

# Tools For Developers

The following tools are readily available, and leveraging these resources could save you time and money.

1. **Tax incentives** are available that vary by state.
2. **Overlay districts** specify additional restrictions or allowances that can make approvals easier.
3. **Fast-track programs** offer priority reviews for projects likely to significantly impact the tax base.
4. **Advance permits** for site clearing can expedite the construction timeline.

# 4 / OVERCOMING DEVELOPMENT CHALLENGES

**Successful site planning requires an in-depth knowledge of the challenges data center developments face, plus insight into creative solutions.**

## Tips for Maintaining Data Center Momentum

While the easy-to-develop sites have been snapped up and demand for additional data and cloud services continues to grow, data center developers are forced to look beyond the obvious locations. This can entail running into less-than-obvious delays in the development process. Here are four tips for overcoming some of these challenges and maintaining momentum.

1

### OVERCOMING COMMUNITY PUSHBACK

Data centers actually make good neighbors. They don't generate traffic or draw on municipal resources such as schools, police, and fire department. Noise can be mitigated with buffers and buildings can be more visually appealing with faux windows.

2

### POWERING THE FACILITY

With a growing increase in the required computing power per rack, many data centers require onsite substations to provide the power needed. While adding electrical infrastructure is feasible, the time associated with designing and building the substation can pose a challenge. Coordinating with the local power supplier will help expedite speed to market for a power campus.

3

### CONSIDERING THE EDGE

Edge data centers are smaller facilities that require less power, have a smaller footprint, and help users avoid latency issues. The need for these facilities in more and more suburban settings provides opportunities for developers to enter the market.

4

### STREAMLINING ENTITLEMENTS

Spending more time upfront in the conceptual planning and strategy phase could delay the design start. But delaying the start to get applicable agencies on board might mean getting permits faster, and ultimately accelerating the overall timeline.

READ MORE: DATA CENTERS: SUCCEEDING WITH IMPERFECT SITES

**Developers need to demonstrate how data centers can seamlessly coexist with communities and the ways they contribute to a healthier local environment.**

## A Deeper Look at Addressing Community Concerns

Although public concerns are legitimate, they can be resolved through innovative design solutions and wise planning decisions that lead to significant advantages for communities. For example, data centers revitalize sites, increase revenue without straining local resources, and promote development and economic growth.

Discussing these desirable outcomes positions data centers as agents of positive change, encouraging communities to recognize their full potential and embrace your project – resulting in a smoother review and feedback process and faster approvals.

Here's what you can do to ensure your data center becomes an asset, along with benefits you can highlight in community presentations.

1

### MITIGATE SOUND

Artificial barriers like trees, shrubs, buildings, and soundproof walls reduce sound. Also consider strategic site layout planning, which uses the land's shape and equipment location to block sound waves.

2

### ENHANCE THE NEIGHBORHOOD

Soften your data center's design with faux windows, appealing color schemes, and dynamic light displays or by blending the structure into its surroundings. If you're revitalizing a neglected site, your project will naturally elevate the neighborhood's visual appeal.

3

### REDUCE ENVIRONMENTAL IMPACT

Demonstrate commitment to sustainability by seeking recycled materials and using green energy sources such as wind or solar. Consider gray water and stormwater for cooling and use stormwater management systems like bioswales and rain gardens to reduce strain on local water systems, manage runoff, and improve water quality.

4

### SUPPORT THE FUTURE OF THE COMMUNITY

Data centers often require more robust and advanced infrastructure, which attracts further development, boosting the local economy. Data centers also create jobs, generating more tax revenue without burdening local and public resources.

READ MORE: ADDRESSING COMMUNITY CONCERNS

READ MORE: EMBRACING THE BENEFITS OF DATA CENTERS

CASE STUDY

# Collaboration with Utility Providers Secures Power Requirements and Delivery Dates

Our team's proactive management of the many infrastructure planning variables involved in this project minimized risk and maximized certainty.

**MICHAEL O'SHAUGHNESSY, PE, ASSOCIATE**

## 500+ ACRE SITE

Ensuring enough power and water to service an over 500-acre data center site is a complex task.

To achieve it, Bohler launched an extensive coordination effort with power providers and the local jurisdiction to establish the availability and timing of resources required to complete infrastructure improvements.

This collaboration streamlined the design and construction process and enabled the developer to set accurate delivery dates for potential future tenants.

# 5 / STREAMLINING ENTITLEMENTS

**It's so important to establish priorities early on. This can help design consultants identify, mitigate, and manage challenges – and shape the timeline accordingly.**

## Maintaining Momentum Through Permitting and Entitlements

Today's real estate development market is evolving fast, and industry professionals may be challenged to keep up. They are facing increasingly long entitlement timelines and permitting challenges that can easily interrupt or sideline their projects.

Here's how development and design teams can minimize delays and control budgets — the two most important factors to moving land development projects forward.

1

### ENGAGE THE DESIGN TEAM AHEAD OF SITE DUE DILIGENCE

Looping in your design team ahead of due diligence kick-off allows them to help you develop a systematic approach to the research process. Design teams can help developers determine how to allocate budget, establish realistic timelines, and identify due diligence milestones – key factors that can impact your deal structure.

2

### SUBMIT DOCUMENTS CONCURRENTLY

Whenever possible, run zoning, grading, drainage, site planning, and construction document plan sets concurrently. Processing these reviews parallel with each other shortens the overall project schedule and can also help the permitting timeline.

3

### COLLABORATE WITH LOCAL STAKEHOLDERS

Meet with local community stakeholders and ask for feedback. This allows developers and design consultants to discuss project considerations quickly and offers an opportunity to explain design rationale. This approach tends to reduce plan review comments which typically saves a couple of months.

READ MORE: MAINTAINING MOMENTUM THROUGH PERMITTING AND ENTITLEMENTS

CASE STUDY

# Piloting Fast-Track Program Streamlines Entitlements

By maintaining sight of the big picture, Bohler helped to identify solutions that went beyond simply connecting utilities and improved efficiency.

**MEGAN BAIRD, PE, ASSOCIATE**

## 35 ACRES | 457K SF | 3 BUILDINGS

Seeking expedited delivery of Ashburn Crossing for a Fortune 500 Tenant, Corporate Office Properties Trust (COPT) agreed to pilot Loudoun County's Fast-Track Commercial Incentive Program.

Bohler's team worked with the County to refine the new process and set the precedent for future developments.

Beginning construction in just over three months, the project was designed and approved on one of the fastest timelines in County history, allowing COPT to successfully deliver on speed-to-market demands.

**LEARN MORE: VIEW FULL CASE STUDY**

**Familiarizing yourself with the typical land development review process, the potential need for variances, and the importance of teamwork is essential for streamlining approvals.**

## A Deeper Look at the Data Center Approval Process

Obtaining approval for data centers is especially complex when municipal codes and zoning master plans don't cover them, facilities fall under multiple zoning classifications, or it's the municipality's first encounter with data centers.

However, data centers are still subject to local development regulations and are generally not exempt from traditional permitting and entitlements. Here are four things you need to know about a typical land development review.

1

### CODES MAY LACK SPECIFIC LANGUAGE

If this is the case, your project may fit into multiple zoning categories or require a customized approval process. In either scenario, clear communication and collaboration with local authorities will be essential for streamlining approvals.

2

### REQUESTING VARIANCES IS COMMON

In the absence of provisions, developers often seek variances or exemptions to setback requirements, height limitations, certain architectural guidelines, and more. Justify your requests by demonstrating your project meets community goals, contributes to economic growth, and provides technological and infrastructure improvements.

3

### THE PROCESS IS LENGTHY

Thoroughly evaluating a proposed data center's design and impact requires several stages of review and typically spans 6 to 18 months. The exact length depends on factors like project complexity, jurisdictional efficiency, and stakeholder relationships – making good communication even more vital.

4

### COLLABORATION AND EXPERTISE ARE KEY

Collaboration with developers, local authorities, and experienced land development and zoning consultants is essential to successfully navigating the process. Early interaction will help you understand unique requirements and expectations so you can address potential obstacles and delays more quickly.

READ MORE: NAVIGATING THE DATA CENTER DESIGN AND APPROVAL PROCESS

# 6 / STREAMLINING CONSTRUCTION

**We design with constructability in mind, which streamlines the bidding and construction process. Sometimes, slowdowns in the field are inescapable, but effective due diligence raises awareness of potential construction challenges and can help to minimize delays.**

## 5 Strategies to Streamline Construction

Unexpected conditions discovered during construction can stall your project and stretch your budget. While some challenges may be unavoidable, having a highly informed due diligence process and ensuring your site civil engineer is designing with constructability in mind can streamline the overall bidding and construction process. Here are five best practices for keeping land development projects moving forward – especially during construction.

READ MORE: 5 STRATEGIES TO STREAMLINE CONSTRUCTION

1

### GEOTECHNICAL DUE DILIGENCE EARLY ON

Geotechnical due diligence is important early in the process to provide clarity for other obstacles like groundwater, buried objects, rocks, and more. While it may be a large up-front cost, it can help avoid delays and costly adjustments once construction begins.

2

### UTILITY PROFILING

With the help of proactive geotechnical due diligence reports, utility profiling can identify depths, utility profiling can identify depths and intersections of underground utilities, which helps to limit conflicts with crossings.

This is a critical step in avoiding time-consuming change orders or the need to modify plans on-site. Involve a utility specialist to get access to up-to-date plans from utility companies.

3

### IN-DEPTH LOCAL KNOWLEDGE

Having extensive knowledge and understanding of your jurisdiction's process, as well as trusted local relationships, can play a critical role in streamlining construction and permits.

4

### QUALITY DOCUMENTATION

Construction documents that are detailed yet easy to understand provide peace of mind. Contractors are able to consider constructability before they begin, consult plans at any time, and project more accurate costs and timelines.

5

### IN-PERSON, ON-SITE KICKOFF MEETINGS

In person and on-site meetings with contractors allow the site civil engineer to go through the construction documents before construction begins. Contractors can get their questions answered and the entire team can head into the construction phase with confidence.

# 7 / ABOUT BOHLER

# About Bohler

## A high-performing project starts with a site layout that considers how different industrial facilities function, what makes the site profitable, and the end-users' needs.

We approach each project by drawing from our experience with different facility types to identify development challenges early on. Leveraging our local experience and knowledge of various industrial operations, we strategize design and entitlements and bring clients into the decision-making process.

Bold ideas lead to state-of-the-art facilities. Our teams tackle the main design factors of industrial projects including topography and earthwork, stormwater management requirements, site access and circulation, maximizing square footage and parking, and meeting tenant operational requirements.

LEARN MORE ABOUT BOHLER'S NATIONAL DATA CENTER DEVELOPMENT CAPABILITIES

# National Capabilities

**CONNECTICUT**

Fairfield, CT
Hartford, CT

**DELAWARE**

Northern Delaware
Rehoboth Beach, DE

**DISTRICT OF COLUMBIA**

Washington, D.C.

**FLORIDA**

Boca Raton, FL
Miami, FL
Orlando, FL
Tampa, FL

**GEORGIA**

Atlanta, GA

**MARYLAND**

Baltimore, MD
Gaithersburg, MD
Suburban Maryland

**MASSACHUSETTS**

Boston, MA
Southborough, MA

**NEW HAMPSHIRE**

Bedford, NH

**NEW JERSEY**

Red Bank, NJ
Ridgewood, NJ
Southern New Jersey
Warren, NJ

**NEW YORK**

New York Metro
New York, NY
Rochester, NY
Upstate New York

**NORTH CAROLINA**

Charlotte, NC
Raleigh, NC

**OHIO**

Columbus, OH

**PENNSYLVANIA**

Harrisburg, PA
Lehigh Valley, PA
Philadelphia, PA
Pittsburgh, PA
Southeastern PA

**TENNESSEE**

Nashville, TN

**TEXAS**

Dallas, TX

**VIRGINIA**

Northern Virginia
Richmond, VA
Warrenton, VA

**NATIONWIDE COVERAGE: CONTACT OUR DATA CENTER TEAM NEAR YOU!**

# About the Authors

**MICHAEL O'SHAUGHNESSY**
Associate, Northern Virginia

| YEARS IN THE INDUSTRY | YEARS AT BOHLER |
|---|---|
| 15 | 8 |

Working in the heart of data center development in Northern Virginia, Michael has designed and permitted close to **8 million square feet of mission critical facilities**. Currently, Michael is overseeing the planning and site design of a **250-acre high-profile campus.**

**MEGAN BAIRD, PE**
Associate, Northern Virginia

| YEARS IN THE INDUSTRY | YEARS AT BOHLER |
|---|---|
| 12 | 10 |

Megan has overseen the site design and permitting for **more than 8 million square feet of high-profile data center facilities** across Northern Virginia. She serves as an in-house expert on data center design and operations.

**JOEL DELLICARPINI, RLA**
Principal, Atlanta, GA

| YEARS IN THE INDUSTRY | YEARS AT BOHLER |
|---|---|
| 22 | 22 |

Joel's recent data center development experience includes a multi-phase, **one million-SF data center** in Northwest Georgia and a **500,000-SF data center** in Central Texas. He has designed and permitted approximately **10 M SF of industrial space** across the Southeast.

**NATIONWIDE COVERAGE: CONTACT OUR DATA CENTER TEAM NEAR YOU!**

# Sources

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