

Data Centers

Community Engagement Session #4



Agenda

- ◀ **Data Centers Overview**
- ◀ **Staff Presentations**
 - Zoning
 - Water
 - Energy, Noise, Urban Heat
 - Groundwater & Air Quality
- ◀ **Group discussion/polling**
- ◀ **Closing**

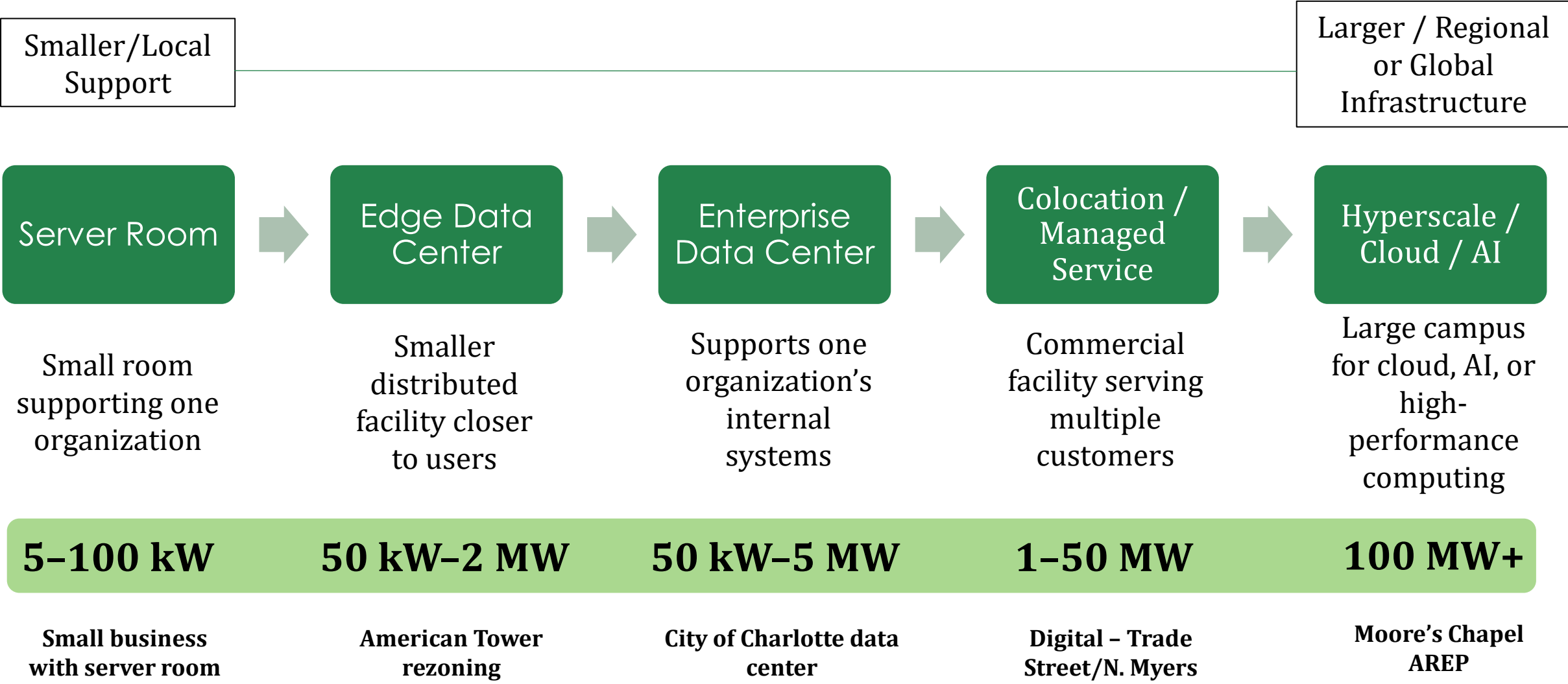
Data Centers Overview

A wide-angle photograph of a city skyline at dusk or dawn. The sky is filled with large, white, fluffy clouds. In the foreground, there are dark silhouettes of trees and buildings. In the middle ground, a city skyline is visible, with several tall buildings. One building on the right side of the skyline is highlighted in a bright blue color. The text "DATA CENTERS" is overlaid in large, bold, white capital letters. Below it, the text "WHAT ARE THEY AND HOW ARE THEY USED?" is overlaid in smaller, bold, white capital letters.

DATA CENTERS

**WHAT ARE THEY AND
HOW ARE THEY USED?**

Data Centers Exist on a Spectrum



Data Center Trends

IT

AI is driving demand

- AI growth is increasing demand for high-density GPU facilities.
- Distance from user affects speed (cloud storage needs differ than real time banking, emergency services)

POWER

Power is the main constraint

- Power availability and land is a key constraint for large facilities.
- Grid connections can take longer than construction.

WATER

Cooling and water needs are rising

- Cooling demand is rising, including liquid-cooled designs.
- AI workloads can significantly increase water use.

ADAPT

Facilities are adapting

- More sites may pursue on-site generation, storage, power purchase agreements, nuclear, geothermal, or dedicated substations.
- Closed loop systems are becoming more common



Bottom line:

Data center growth is accelerating, while power, cooling, water, and supply chain constraints shape where and how facilities can be built.

Jobs & Economic Development



20–50
Typical new jobs per data center



\$54K–\$80K
Typical annual salary for data center
technicians



Existing data centers contributed
\$1.17M
2025 tax revenue

- Data centers can generate substantial tax revenue relative to their employment footprint, especially when paired with large capital investment.
- A hyperscale facility with ~2.5M SF in Charlotte could generate ~\$40M in tax revenue annually
- They also tend to create limited direct demand on schools and roads compared with many other large development types.

Charlotte: Data Center Inventory & Zoning

Existing/Proposed Data Centers

Map Legend

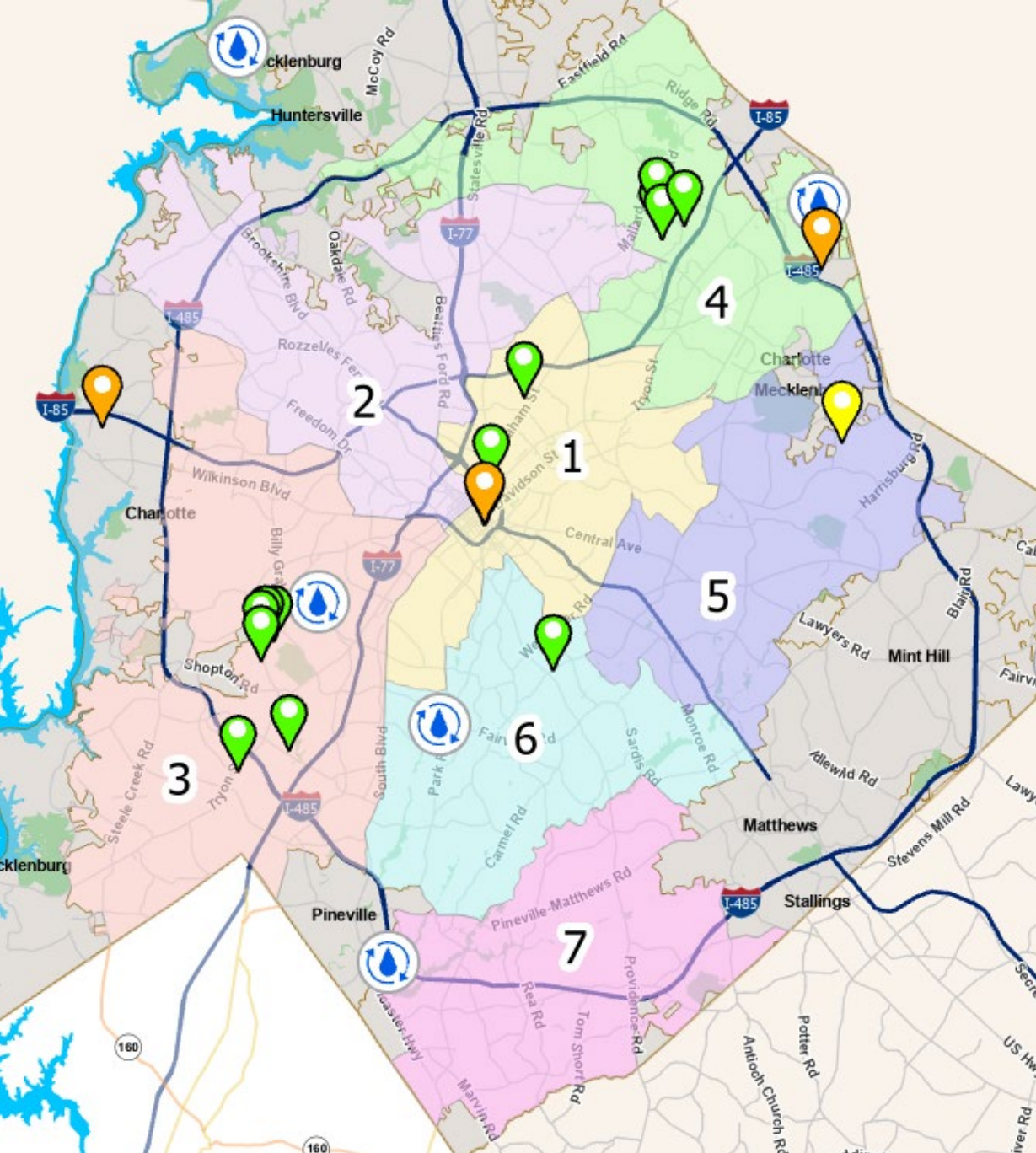
-  Proposed Data Center
-  Approved Data Center
-  Existing Data Center
-  Wastewater Treatment Plants

Existing Inventory

Approx. **1 million SF**

single-user facilities identified via tax parcels

Definition matters: server rooms and IT closets may not appear as separate land uses.



What is Allowed Today

- ◀ All data centers, regardless of size, type + capacity, are treated the same under the UDO
- ◀ Where allowed, data centers have no additional prescribed conditions
- ◀ Subject to applicable zoning + general development standards
 - setbacks, height, transparency, landscape yards, screening, exterior lighting, etc.



Zoning Districts Where Allowed

- ◀ **CG (General Commercial)**
- ◀ **CR (Regional Commercial)**
- ◀ **OFC (Office Flex Campus)**
- ◀ **RC (Research Campus)**
- ◀ **ML-1 (Manufacturing and Logistics 1)**
- ◀ **ML-2 (Manufacturing and Logistics 2)**
- ◀ **IMU (Innovation Mixed-Use)**
- ◀ **UC (Uptown Core)**

UDO Definition: Telecommunications and Data Storage Facility:

A facility, accessed only by employees, that houses computer systems and associated components, related to the transmittal and receiving of information, including but not limited to, telecommunications systems, telecommunication and telephone switching systems, cloud storage systems, and server farms.

Current Legislative Context in NC

Current law: Session Law 2024-57 (SB 382)

- Local governments can no longer impose zoning changes that **reduce** development entitlements on any property without property owner consent
- Limits government flexibility in adapting zoning to align with planning goals or respond to land use challenges

Data Center Moratorium

Charlotte Data Center Moratorium

- ◀ A temporary moratorium on the acceptance, processing and approval of applications for new telecommunications and data storage facilities in the City of Charlotte and its ETJ.
 - **Does not impact existing or currently permitted data centers.**
- ◀ From June 8, 2026 to November 5, 2026, or upon City Council approval of new regulations and/or policies regarding data centers, whichever occurs first
- ◀ Does not apply to facilities that are accessory to the internal operations of institutions such as healthcare providers, government entities, and telecommunications providers

Brief Summary from May 26 Public Hearing

◀ **Most speakers were in favor of City Council adopting a moratorium and cited the following concerns:**

- Water use/thermal discharge
- Energy use
- Urban Heat Island Effect
- Noise
- Groundwater contamination
- Light pollution
- Environmental Justice
- Decommissioning
- Issues with Artificial Intelligence

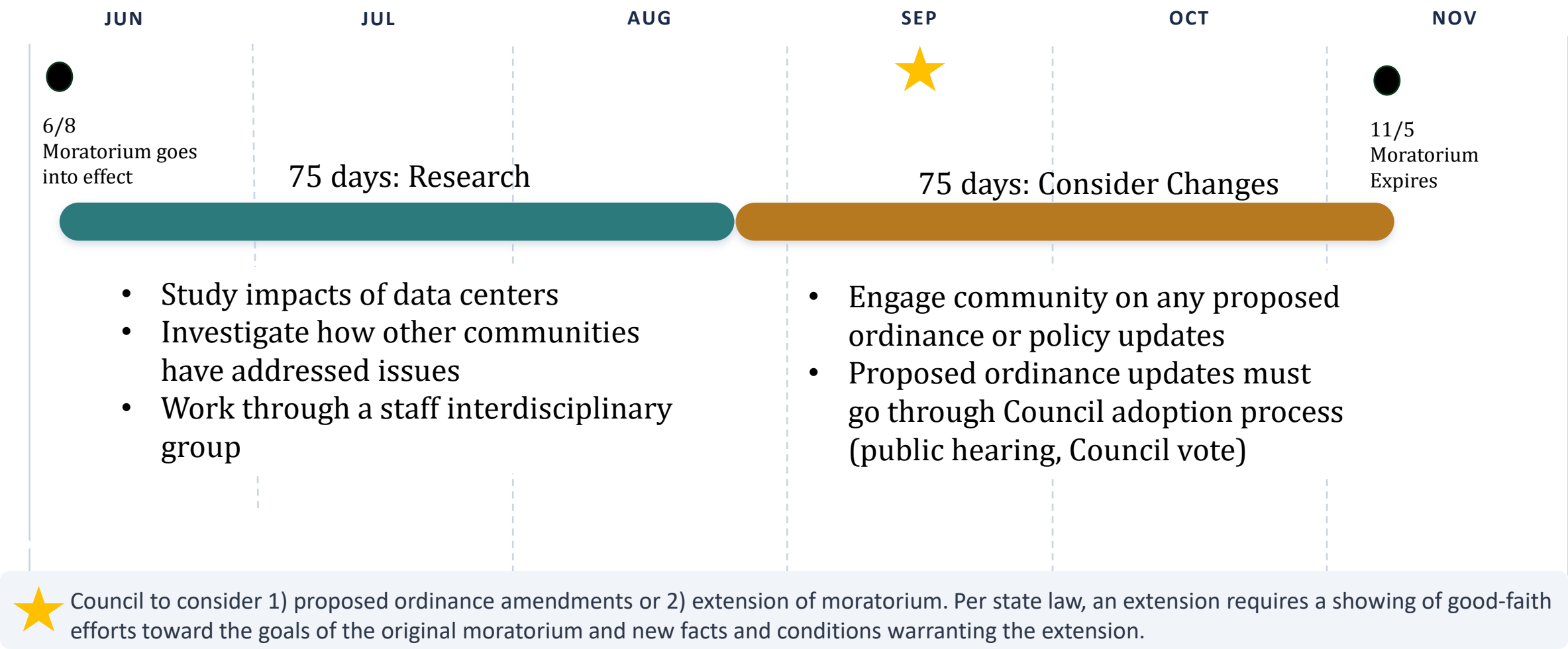
◀ **Speakers opposed to a moratorium cited the following concerns:**

- Data centers are critical infrastructure for communities
- Misinformation exists that may apply to hyperscale data centers but not all
- Need collaboration on standards before a complete ban on data centers
- Moratoria cannot be applied retroactively to already approved projects
- Down-zoning law does not allow changes to current by-right classifications

Goal of the Moratorium

- ◀ Listen to the Community and understand concerns
- ◀ Research and understand the impacts of the growing industry of Data Centers
- ◀ Implement solutions that mitigate the impacts of Data Centers under the City's legal authority

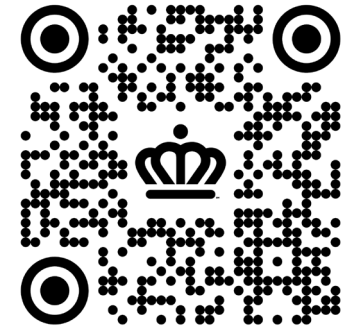
150-day Moratorium Timeline



Data Center Moratorium Microsite

Frequently Asked Questions: Data Centers & Moratorium

Published on June 08, 2026



Presentations

What to Expect During Today's Session

1

Hear from Staff

Hear from City and County staff on four important topics for 20 minutes each.

2

Share Your Input

After the presentations, you'll have the opportunity to participate in a live poll and share feedback.

3

Stay Connected

Learn how to stay involved after today's session, including our survey and email subscription list.

We Want to Hear From You



Visit **menti.com**
use code
4745 4535.

Engagement Opportunities

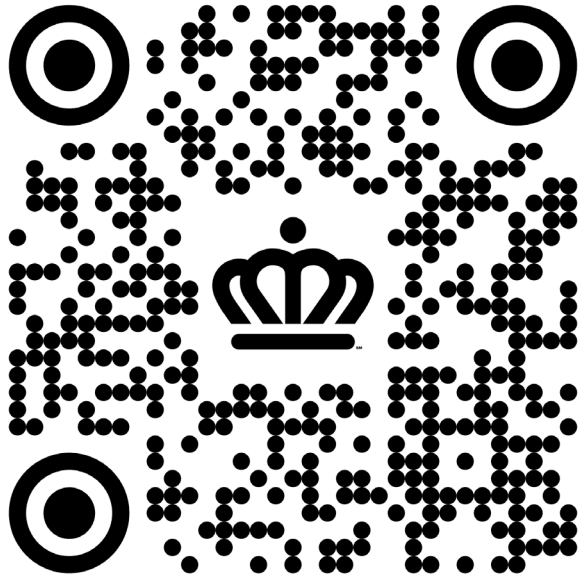
4 of 6

community meetings
on data centers

- You're welcome to attend as many sessions as you'd like.
- The next session is tomorrow, in-person.

Saturday, September 26	4-6 p.m. (doors open at 3:45 for attendees)	University City United Methodist Church (3835 W W.T. Harris Blvd, 28269)
Tuesday, September 29	6-8 p.m.	Virtual; Zoom

Stay Connected



Share Your Feedback

Take a few minutes to complete our data center survey.

Subscribe for Updates

Sign up to stay informed as this project moves forward.

Data Centers & Zoning

Community Meeting



What brought you here today?

**What is a data center?
Where are they currently allowed in
Charlotte?**

UDO and Data Centers

UDO Definition

◀ Telecommunications and Data Storage Facility

◀ A facility, accessed only by employees, that houses computer systems and associated components, related to the transmittal and receiving of information, including but not limited to, telecommunications systems, telecommunication and telephone switching systems, cloud storage systems, and server farms.

Allowed in 8 Zoning Districts

◀ CG (General Commercial)

◀ CR (Regional Commercial)



◀ OFC (Office Flex Campus)

◀ RC (Research Campus)



◀ ML-1 (Manufacturing and Logistics 1)

◀ ML-2 (Manufacturing and Logistics 2)



◀ IMU (Innovation Mixed-Use)



◀ UC (Uptown Core)



Where are Data Centers Allowed By-Right?

PARKS & PRESERVES	NEIGHBORHOOD 1	NEIGHBORHOOD 2	COMMERCIAL	CAMPUS	MANUFACTURING & LOGISTICS	INNOVATION MIXED USE	NEIGHBORHOOD CENTER	COMMUNITY ACTIVITY CENTER	REGIONAL ACTIVITY CENTER
									
All districts permitted	<u>6 Districts</u> N1-A N1-B N1-C N1-D N1-E N1-F	<u>3 Districts</u> N2-A N2-B N2-C	<u>2 Districts</u> CG (Commercial-General) CR (Commercial-Regional)	<u>4 Districts</u> IC-1& IC-2 (Institutional Campus) RC (Research Campus) OFC (Office Flex Campus) OG (Office General)	<u>2 Districts</u> ML-1 ML-2	<u>1 District</u> IMU	<u>1 District</u> NC	<u>2 Districts</u> CAC-1 CAC-2	<u>3 Districts</u> RAC UC (Urban Core) UE (Urban Edge)
						TOD-TR TOD-NC		TOD-CC TOD-UC	

**What zoning rules do data centers
have to follow?**

UDO and Data Centers

- ◀ **The UDO does not contain use-specific standards for data centers**
 - ◀ *Regardless of size, type, or capacity, data centers are treated the same*
- ◀ **Data centers are subject to applicable zoning district + general development standards**
 - ◀ *Setbacks, building height & length, blank wall requirements, landscape yards, screening, lighting, etc.*

CG

CR

RC

OFC

ML-1

ML-2

IMU

UC



Image: Corgan



Applicable Zoning District Standards

Applicable UDO Zoning District Standards*

UDO Standard	CG	CR	OFC	RC	ML-1	ML-2	IMU	UC
Min. Lot Width	50'	50'	50'	25'	50'	50'	N/A	N/A
Frontage Setback	16'-40'	5'-36'	16'-40'	5'-36'	16'-40'	16'-40'	5'-36'	5'-36'
Side Setback	10'	10'	10'	0	0	0	0	0
Side Setback- Abutting N1	10'	10'	10'	10'	0	0	10'	10'
Rear Setback	20'	20'	20'	0	10'	10'	0	0
Rear Setback – Abutting N1	20'	20'	20'	20'	10'	10'	20'	20'
Max. Building Height	50'	50'	50'	120'	80'	80'	80'	Unlimited
Max. Building Length	500'	650'	600'	500'	N/A	N/A	500'	400'
Max Blank Wall	20'	40'	20'-60'	20'-50'	N/A	N/A	40'-60'	20'-50'

*This is a selection of applicable zoning district standards; this list is not exhaustive.

Can a data center locate next to a neighborhood?

Landscape Yards

◀ Landscape Yard

- ◀ Land area with landscape plantings and other components used to separate one use or development from another and/or to shield or block noise, lights, or other nuisances (UDO)
- ◀ Requirements vary depending on zoning district, development site size, and adjacent uses



**This illustrates a 100' Class A Landscape Yard*

UDO Landscape Yard Standards

CLASS A LANDSCAPE YARD: ZONE 1/ZONE 2

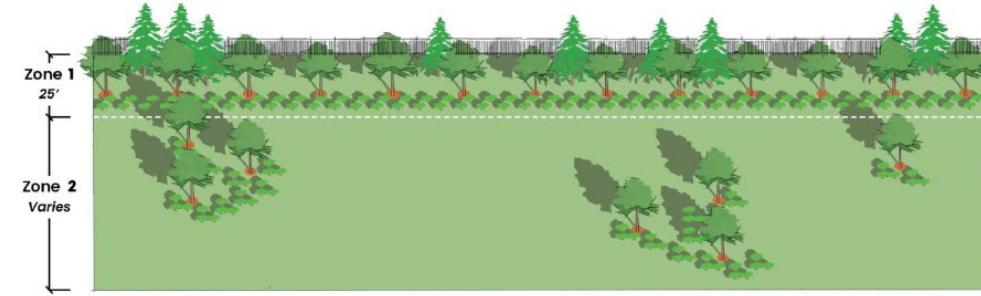


Table 20-3: Required Landscape Yards by Zoning District

Zoning District of Property Under Development	Development Type Required to Install Landscape Yard Per Section 20.9.B	Landscape Yard Required for Development When:	Landscape Yard Class Required
CG	Development in the zoning district	Abutting residential use, or abutting vacant parcel zoned: a Neighborhood 1 or a Neighborhood 2 Zoning District, or R-3(CD), R-4(CD), R-5(CD), R-6(CD), R-8(CD), R-8MF(CD), R-12MF(CD), R-17MF(CD), R-22MF(CD), R-43MF(CD), UR-1(CD), UR-2(CD), UR-3(CD), MX-1, MX-2, or MX-3	B
CR	Development in the zoning district	Abutting residential use, or abutting vacant parcel zoned: a Neighborhood 1 or a Neighborhood 2 Zoning District, or R-3(CD), R-4(CD), R-5(CD), R-6(CD), R-8(CD), R-8MF(CD), R-12MF(CD), R-17MF(CD), R-22MF(CD), R-43MF(CD), UR-1(CD), UR-2(CD), UR-3(CD), MX-1, MX-2, or MX-3	A
UC	Development in the zoning district	None required	
IC-1, IC-2, OFC, OG, RC	Development in the zoning district	Abutting single-family, duplex, triplex, or quadruplex dwelling, or abutting vacant parcel zoned: a Neighborhood 1 Zoning District, or R-3(CD), R-4(CD), R-5(CD), R-6(CD), or R-6(CD), R-8(CD), R-8MF(CD), R-12MF(CD), R-17MF(CD), R-22MF(CD), R-43MF(CD), UR-1(CD), UR-2(CD), UR-3(CD), MX-1, MX-2, or MX-3	B
IMU	Development of an industrial use in the zoning district	Abutting any other zoning district except ML-1, ML-2, I-1(CD), I-2(CD), or BD(CD) Zoning District	B
	Development in the zoning district	Abutting residential use, or abutting vacant parcel zoned: a Neighborhood 1 or a Neighborhood 2 Zoning District, or R-3(CD), R-4(CD), R-5(CD), R-6(CD), R-8(CD), R-8MF(CD), R-12MF(CD), R-17MF(CD), R-22MF(CD), R-43MF(CD), UR-1(CD), UR-2(CD), UR-3(CD), MX-1, MX-2, or MX-3	
ML-1, ML-2	Development in the zoning district	Abutting any other zoning district except CG, CR, ML-1, ML-2, I-1(CD), I-2(CD), or BD(CD) Zoning District	A
	Development in the zoning district	Abutting CG or CR Zoning District	B
	Development in the zoning district - required for area along a street frontage	When located across a street with a right-of-way width of 100' or less from a residential use or from a vacant parcel zoned: a Neighborhood 1 or a Neighborhood 2 Zoning District, or R-3(CD), R-4(CD), R-5(CD), R-6(CD), R-8(CD), R-8MF(CD), R-12MF(CD), R-17MF(CD), R-22MF(CD), R-43MF(CD), UR-1(CD), UR-2(CD), UR-3(CD), MX-1, MX-2, or MX-3	

Table 20-2: Landscape Yard Class

Requirements	Landscape Yard Class		
	A	B	C
Width of Landscape Yard	Development Site Size: Up to 3 acres: 40' 3+ acres up to 7 acres: 65' 7+ acres to 10 acres: 85' More than 10 acres: 100'	25'	10'
Shrubs	Zone 1: 1 evergreen shrub per 2 linear feet Zone 2: 1 evergreen shrub per 300sf	1 evergreen shrub per 3 linear feet	1 evergreen shrub per 5 linear feet
Large Maturing and Medium Maturing Trees	Zone 1: 1 tree per every 30 linear feet Zone 2: 1 tree per every 2,500sf of landscape yard area in Zone 2	1 tree per every 30 linear feet	1 tree per every 50 linear feet
Required % of Trees to be Evergreen Trees	Zone 1: 40% Zone 2: Not required	40%	40%
Small Maturing Tree Substitution (Cannot substitute for required evergreen trees)	Zone 1: Not permitted Zone 2: In lieu of planting 1 required tree, 2 small maturing trees may be planted	In lieu of planting 1 required tree, 2 small maturing trees may be planted	In lieu of planting 1 required tree, 2 small maturing trees may be planted
Fence/Wall	Zone 1: Optional Zone 2: Not permitted The width of Zone 2 may be reduced by 25% if a fence/wall is provided in Zone 1	Optional	Fence/wall required
Fence/Wall Height ¹	6' min.	6' min.	6' min.

¹ The Zoning Administrator will determine landscape yard applicability for any conditional zoning district not listed and established based on a Zoning Ordinance in effect prior to 1993.

¹ The Charlotte Douglas International Airport is not subject to minimum or maximum fence height requirements.

**What should we consider when
recommending zoning changes for
data centers?**

Questions?

Data Centers

COMMUNITY MEETINGS MASTER DECK

Energy Demand

Planning for Reliability

Utilities conduct engineering studies to ensure reliable service despite growth.

Who Pays?

Large users pay for grid upgrades and minimum energy agreements.

Infrastructure Needs

Significant new electricity demand may require additional grid infrastructure.

Community Consideration

Planning is intended to support new large users while maintaining reliable service for existing customers.

Noise Impacts

Data Center Noise

Sound from mechanical equipment used to cool servers, distribute electricity, and provide emergency backup power.

How Noisy?

Noise levels vary considerably depending on design, components, and site.

Noise Levels

Noise levels ranging from the equivalent of moderate rainfall, to vacuums at 10' away, to traffic.

Heat Impacts

Waste Heat Impacts

Data Centers may produce waste heat, potentially raising nearby temperature.

Infrastructure Heat Impacts

The size and materials used for data center development (for example, large roofs, paved parking lots, etc.) may trap heat and raise local temperatures overall.

Understanding Data Center Energy Demand

Data centers can place significant new demand on the electric grid.

High Electricity Demand

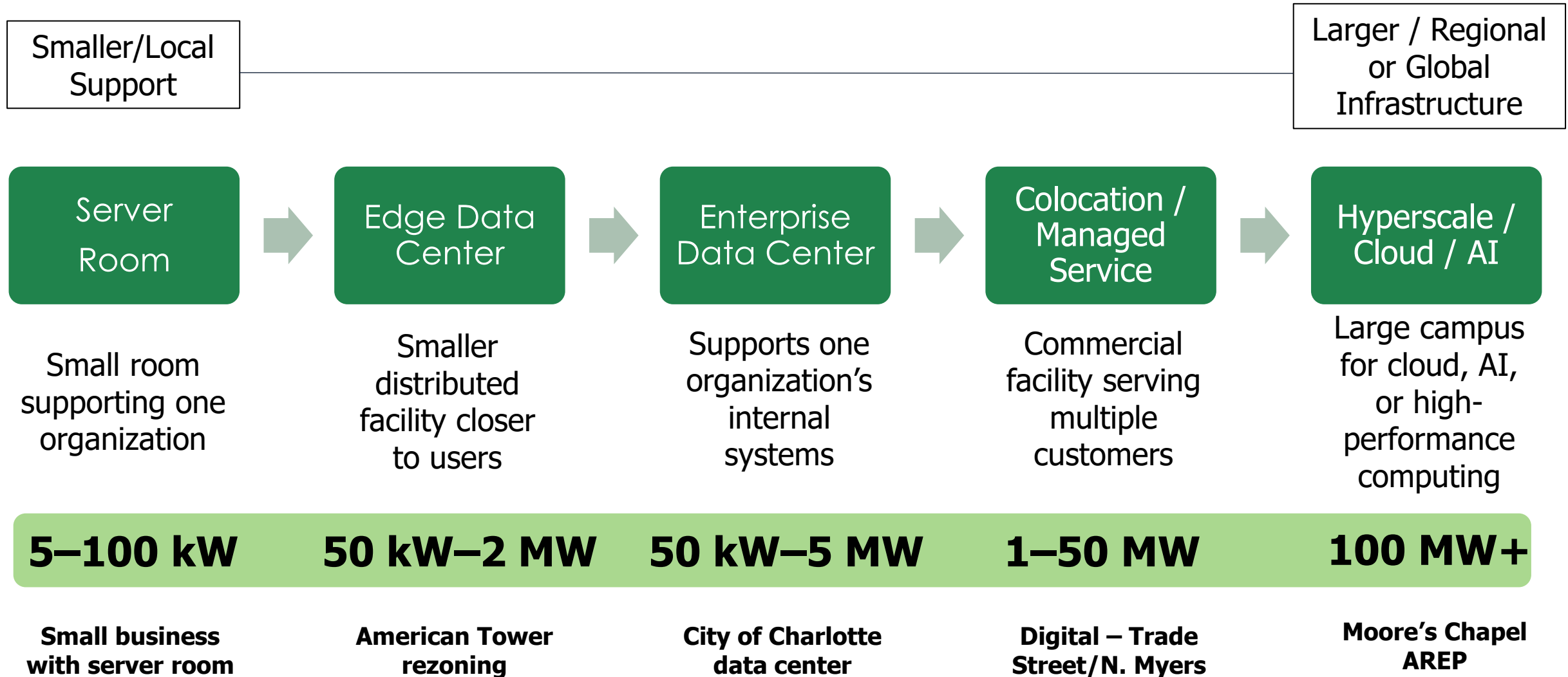
Data centers can require significant amounts of electricity to operate.

Grid Infrastructure

Higher demand may require new or upgraded grid infrastructure to support growth.

Cooling Connection

Cooling design affects resource use. Some systems use more water or energy. Closed-loop systems reduce water consumption.



What Increased Energy Demand Means

Utility planning considers reliability, infrastructure needs, and protections for ratepayers.

Planning for Reliability

Utilities conduct engineering studies to ensure reliable service despite growth.

Infrastructure Needs

Significant new electricity demand may require additional grid infrastructure.

Who Pays?

Large users pay for grid upgrades and minimum energy agreements.

Community Consideration

Planning is intended to support new large users while maintaining reliable service for existing customers.

NC is a regulated-utility state, overseen by the North Carolina Utilities Commission, and Duke Energy Carolinas serves Charlotte as a regulated utility

Resident Considerations

Community questions can help shape what information is needed as data center development continues.

- 1 What concerns do you have about increased electricity demand?
- 2 What would you want to know about grid reliability or new infrastructure?
- 3 What information would help you understand how costs and upgrades are handled?

Noise Impacts from Data Centers

- Noise levels vary depending on facility design and layout, equipment selection, topography, and operational characteristics.

Data Center Noise

Data centers generate sound from mechanical equipment used to cool servers, distribute electricity, and provide emergency backup power.

Noise Levels

Studies from other areas of the country show noise levels ranging from the equivalent of moderate rainfall, to vacuums at 10' away, to traffic.

How Noisy?

Noise levels vary considerably depending on facility design, equipment selection, site layout, topography, surrounding land uses, and operational characteristics.

What Do They Sound like?

Generators typically produce shorter-duration noises. Other mechanical and electrical equipment produces continuous, low frequency noises.

Charlotte's Noise Ordinance

- The City of Charlotte has a noise ordinance first adopted in 2011 and revised in 2019.

Current Noise Regulations

Mechanical noise is generally limited to 70 dB(A) at the nearest complainant's property line. That is approximately the sound of a vacuum cleaner 10' away.

Noise Enforcement

The noise ordinance currently fines businesses who violate the noise ordinance. The fines increase depending on the violation frequency.

How Can We Reduce Noise Levels?

Compliance is typically evaluated after a facility becomes operational. As a result, some local governments require noise studies before construction to estimate how loud a facility could be.

Data Center Applicability

Updating the city's noise ordinance to include data centers is something the city can consider.

Resident Considerations – Noise

Community questions can help shape what information is needed as data center development continues.

- 1 What concerns do you have about increased noise impacts from data centers?
- 2 What information would help you understand how this impacts your community?

Understanding Data Center Heat Impacts

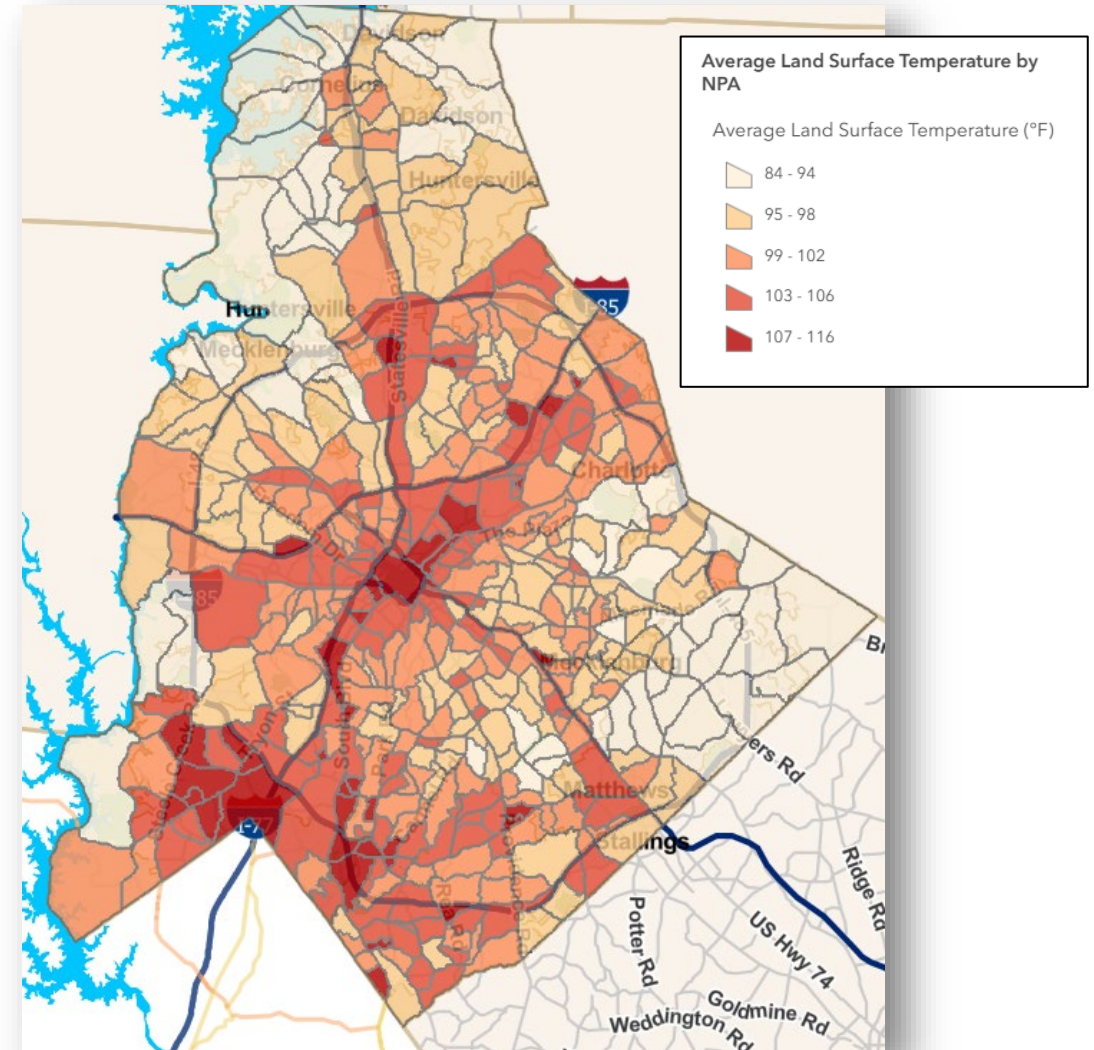
Data centers can impact overall urban heat island in two ways

Waste Heat Impacts

Data Centers may produce waste heat, potentially raising nearby temperature.

Infrastructure Heat Impacts

The size and materials used for data center development (for example, large roofs, paved parking lots, etc.) may trap heat and raise local temperatures overall.



Resident Considerations – Urban Heat

Community questions can help shape what information is needed as data center development continues.

- 1 What concerns do you have about increased heat impacts from data centers?
- 2 What information would help you understand how this impacts heat in Charlotte?

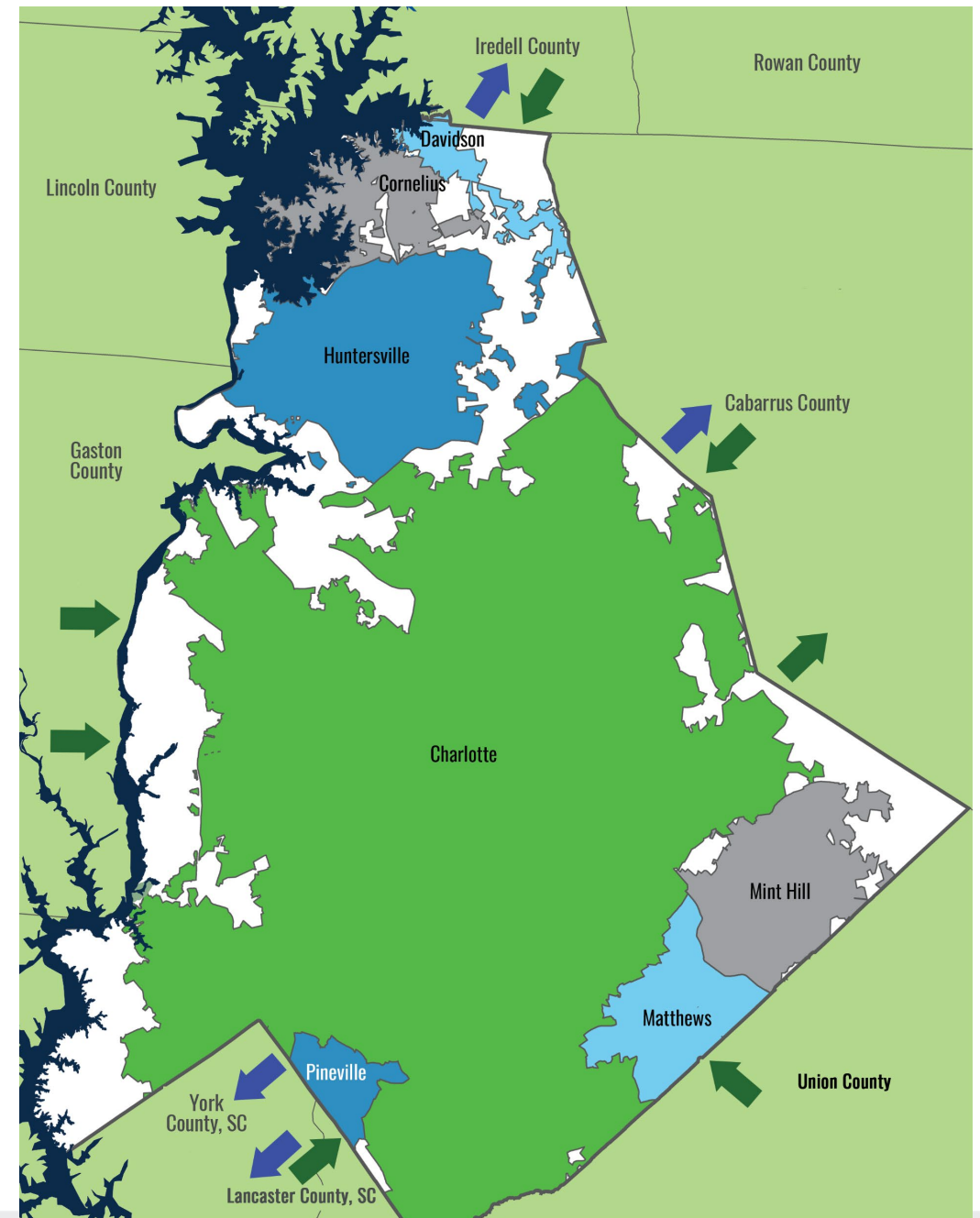


Thank you!



Regional Utility

- ❑ Largest water and wastewater provider in the Carolinas
- ❑ Regional service provider
- ❑ Source water is the Catawba River Basin
 - ❑ Charlotte Water is a member of the Catawba-Wateree Water Management Group
- ❑ Long-term planning, models and forecasts include water supply planning



Water Impact Study & Capacity Assurance Program

- Every proposed development is evaluated for system capacity.
 - Proposals provide applications to the existing Capacity Assurance Program
- We evaluate the full system impact.
 - Evaluate projects from the proposed point of connection through the down stream collection system and treatment facility.
- Hydraulic modeling helps us look ahead.
 - Modeling helps identify potential capacity constraints and understanding of how new demand could affect system performance.
- Potential impacts are addressed before development moves forward.
 - The system accommodates growth, but responsibly.
- Existing customers remain a priority.
 - Charlotte Water maintains a high level of service and reliability as the community grows.

QUESTIONS?





MECKLENBURG COUNTY
North Carolina

Air Quality

Air Quality Regulating & Permitting in Mecklenburg County:

1. Regulatory Authority & Jurisdiction:

- **Local Jurisdiction:** Mecklenburg County Air Quality (MCAQ) is a certified local air pollution program (pursuant to NCGS 143-215.11) with jurisdiction over the entire county, including all incorporated areas. This program is certified by the NC Environmental Management Commission (NCEMC)
- **Delegated Power:** MCAQ holds direct enforcement authority from the US EPA and the NC Environmental Management Commission (EMC).
- **Rules & Ordinances:** State and federal rules (including those for generators) are built directly into the Mecklenburg County Air Pollution Control Ordinance (MCAPCO).
- **More Stringent Rules:** Local rules can only be stricter than state/federal rules *if approved by both the NC Environmental Management Commission (NCEMC) and the Mecklenburg Board of County Commissioners.*

2. Permitting Process & Local Zoning

- **The First Step:** Air quality permit applications begin with a requirement to provide one of the following:
 - **Option A:** A signed zoning determination letter from the local land use official confirming the facility is consistent with local ordinances.
 - **Option B:** Proof of receipt (e.g., certified mail) showing the local government clerk was sent the draft permit and a request for a zoning determination.
- **Why It Matters:** This bridges the gap between local land use authority and air quality permitting right at the start of the application process.

****Note:** These air quality regulations and permitting requirements apply broadly to all applicable regulated sources of air pollution (such as emergency generators and electric generating units) across various industries throughout the county, not just data centers.



Groundwater

Current process related to development/permits	Mecklenburg County Groundwater reviews and issues permits for groundwater wells and regulated groundwater activities as required by local Groundwater Well Regulations. During site development, existing wells must be protected or properly abandoned before construction. Existing septic systems should be pumped, crushed, and backfilled by a licensed contractor before development. Additional restrictions apply if a proposed site is located within an Area of Regulated Groundwater Usage (ARGU).
Connection to EPA/State DEQ	Groundwater contamination resulting from facility operations falls primarily under NCDEQ and EPA oversight. Mecklenburg County administers and enforces local groundwater well regulations, while hazardous substance storage, handling, and contamination prevention are regulated by NCDEQ Division of Waste Management and EPA.
How changes would occur in the future	Changes to groundwater contamination standards, hazardous waste requirements, and related regulatory oversight would occur through state and federal regulatory agencies (primarily NCDEQ and EPA). Changes to Mecklenburg County Groundwater Well Regulations would occur through the County's regulatory process where local authority exists.

