



BUNCOMBE COUNTY

PLANNING & DEVELOPMENT

Agenda

Buncombe County Planning Board

August 19, 2024

30 Valley Street, Asheville, NC 28801

1. Call to Order
2. Announcements – Nancy Waldrop
3. Roll Call of Board Members
4. Approval of Agenda
5. Approval of Minutes
6. Public Comment
7. Comprehensive Plan Implementation:

ZPH2024-00024 Module 2 Sub Module A: Permitted Use Text Amendment-Crypto Currency, Data Centers, and Government Protection Services

- Introduction and Review of Proposed Regulations

8. Adjournment

Buncombe County Planning Board
June 17, 2024
30 Valley Street, Asheville, NC 28801

The Buncombe County Planning Board met on June 17, 2024, at 30 Valley Street, Asheville, NC. Planning Board members present were Nancy Waldrop-Chairperson, Tim Collins, Anthony Coxie, Ken Kahn, Jay Marino, and Mike Fisher. County staff present were Gillian Phillips, Curt Euler, Shannon Capezzali, and Haylee Madfis.

Call to Order

Chair Ms. Waldrop called the meeting to order at 9:30am.

Announcements

Nancy Waldrop read the conflict-of-interest statement for Board members. The regular public comment period will resume at meetings going forward.

Roll Call of Board Members

Completed.

Approval of Agenda

A motion was made by Tim Collins to approve the agenda, seconded by Anthony Coxie and passed unanimously.

A motion was made by Anthony Coxie to approve the minutes from the April 1, 2024 meeting, seconded by Ken Kahn and passed unanimously.

A motion was made by Tim Collins to approve the minutes from the April 22, 2024 meeting, seconded by Ken Kahn and passed unanimously.

Public Comment

None.

Public Hearing

ZPH2024-00015: Seyed Hesam Sadeghian Motahar has requested to rezone one (1) parcel of land identified as tax lot PIN 0629-76-3339 (99999 Yates Ave) from R-1(Residential) and CR (Conference Resort) to R-1 (Residential).

Staff Presentation

Haylee Madfis presented the County Staff Report of the rezoning request.

Planning Board Discussion

Nancy Waldrop asked for clarification about permitted uses in the R-1 district. Haylee Madfis explained the special requirement standards for HUD-labeled manufactured homes. Tim Collins asked about sewer availability. Gillian Phillips provided information about the Ridgecrest private sewer system limitations. Mike Fisher asked about the road access. Haylee Madfis provided information about future addressing

and access. Bianca Taylor, realtor for the applicant, provided information about the access roads and future rights-of-way.

Public Hearing Comment

None

Closing of Public Hearing

Ms. Waldrop closed the public hearing portion of the meeting at 9:44am.

Planning Board Discussion and Vote

Jay Marino made a motion to recommend approval of the rezoning application, seconded by Anthony Coxie and passed unanimously.

Adjourn

The meeting was adjourned at 9:45am.

ORDINANCE NO. 23-05-05

AN ORDINANCE IMPOSING A TEMPORARY MORATORIUM ON CRYPTOCURRENCY MINING FACILITIES IN BUNCOMBE COUNTY, NORTH CAROLINA PURSUANT TO N.C.G.S. §160D-107

- WHEREAS, pursuant to N.C. Gen. Stat. § 160D-107, local governments may adopt an ordinance authorizing a temporary moratorium on any development approval required by law;
- WHEREAS, the Buncombe County Zoning Ordinance does not define cryptocurrency mining as a specific use;
- WHEREAS, cryptocurrency mining has the potential to negatively impact surrounding neighborhoods due to excessive energy use, e-waste, pollution and noise;
- WHEREAS, the County Commissioners believe that such a moratorium will protect the public interest and welfare of the residents of the County until such regulations regarding cryptocurrency mining are adopted; and
- WHEREAS, a legislative hearing regarding this moratorium was held in accordance with N.C. Gen. Stat. § 160D-601 on May 2, 2023.

NOW, THEREFORE, BE IT ORDAINED BY THE BUNCOMBE COUNTY BOARD OF COMMISSIONERS THAT:

- Section 1. A temporary moratorium is hereby imposed commencing on May 2, 2023 and expiring no later than May 1, 2024, or on the approval of a new zoning regulation regarding cryptocurrency mining within the unincorporated areas of Buncombe County whichever occurs first. This moratorium specifically includes all land uses that involve cryptocurrency mining in the unincorporated areas of Buncombe County.
- Section 2. In compliance with the requirements of N.C. Gen. Stat. § 160D-107, the County makes the following statements:
- (1) Cryptocurrency mining requires considerable amounts of electricity usage, which can result in greenhouse gas emissions, as well as additional pollution, e-waste, noise, and other local impacts to communities living near the mining facilities. The County is in the process of developing a new Comprehensive Plan which seeks to develop standards and mitigation methods for intensive land uses that may pose detrimental harm to the natural environment, and the County seeks time to develop standards in conjunction with the Buncombe County Planning Board and the Buncombe County Board of

Commissioners. The County looked at alternative solutions to a moratorium but found none. The County has determined that to simply allow this intensive land use to be permitted without regard to location, height, size, density, population and type of trade, industry, residence or other purposes would hinder the current and future Comprehensive Plan and Zoning Ordinance.

- (2) Buncombe County seeks to specifically define “cryptocurrency mining” as a specific land use, separate and apart from other data centers, and therefore seeks to take action to place a moratorium on the use of property within the unincorporated jurisdiction of Buncombe County for cryptocurrency mining for a time period of one (1) year or until such a time that specific land use standards can be developed. No zoning certification permits pursuant to Code Sec. 78-598 shall be issued for cryptocurrency mining uses in any zoning district during the moratorium. The moratorium will maintain the status quo by limiting any negative effects in neighborhoods impacted by this use until a proper regulatory scheme can be developed.

For the duration of the moratorium cryptocurrency mining is defined as the commercial process by which cryptocurrency transactions are verified and added to the public ledger, known as the block chain, and also the means through which new units of cryptocurrencies are released, through the use of server farms employing data processing equipment. A server farm, as used herein, shall be three or more interconnected computers housed together in a single facility whose primary function is to perform cryptocurrency mining or associated data processing.

- (3) The moratorium shall begin on May 2, 2023 and the moratorium shall terminate on May 1, 2024 or upon a text amendment addressing the land use of commercial scale cryptocurrency mining whichever occurs first. This one (1) year moratorium will allow the County to complete its Comprehensive Plan and study what type of zoning districts are appropriate for this type of land use. County staff is directed to study and prepare an amendment to the zoning ordinance regarding cryptocurrency mining prior to the expiration of the moratorium.
- (4) Upon the adoption of the Comprehensive Plan, Buncombe County Planning Staff will be actively advancing a series of text amendments to the Buncombe County Zoning Ordinance that will seek to mitigate any negative impacts associated with the land use described as cryptocurrency mining prior to the expiration of the moratorium.

Section 3. If any section, subsection, sentence, clause, or phrase of this ordinance is, for any reason, held to be invalid, such decision shall not affect the validity of the

remaining portions of this ordinance. The Board of Commissioners hereby declare that it would have passed this ordinance, and each section, subsection, sentence, clause, or phrase thereof irrespective of the fact that anyone or more sections, subsections, sentences, clauses, or phrases be declared invalid.

Section 4. All ordinances or parts of ordinances in conflict herewith are hereby repealed to the extent of such conflict.

Section 5. This ordinance is effective upon adoption.

Read, approved and adopted this 16th day of May 2023.

ATTEST

BOARD OF COMMISSIONERS FOR THE
COUNTY OF BUNCOMBE



Lamar Joyner, Clerk

By: 

Brownie Newman, Chairman

APPROVED AS TO FORM



County Attorney

ORDINANCE #: 24-05-09

AN ORDINANCE EXTENDING THE TEMPORARY MORATORIUM ON CRYPTOCURRENCY MINING FACILITIES IN BUNCOMBE COUNTY, NORTH CAROLINA, PURSUANT TO N.C.G.S. § 160D-107

WHEREAS, on May 2, 2023, the Buncombe County Board of Commissioners unanimously passed Buncombe County Ordinance No. 23-05-05 entitled “An Ordinance Imposing a Temporary Moratorium on Cryptocurrency Mining Facilities in Buncombe County, North Carolina, Pursuant to N.C.G.S. §160D-107”:

WHEREAS, the temporary moratorium on cryptocurrency mining facilities in Buncombe County is scheduled to expire on May 1, 2024;

WHEREAS, section (3) of Ordinance No. 23-05-05 directed county staff to “study and prepare an amendment to the zoning ordinance regarding cryptocurrency mining prior to the expiration of the moratorium;”

WHEREAS, county staff have taken all reasonable and feasible steps proposed to be taken in its ordinance establishing the moratorium to address the problems or conditions leading to imposition of the moratorium on cryptocurrency mining facilities in Buncombe County;

WHEREAS, new facts and conditions warrant an extension of the temporary moratorium on cryptocurrency mining facilities in Buncombe County;

WHEREAS, the County Commissioners believe that an extension of the temporary moratorium on cryptocurrency mining facilities in Buncombe County will protect the public interest and welfare of the residents of the County until county staff can complete their study and prepare a text amendment to the zoning ordinance regarding cryptocurrency mining; and

WHEREAS, a legislative hearing concerning this extension to the moratorium was held, in accordance with N.C. Gen. Stat. § 160D-601 on April 16, 2024.

NOW, THEREFORE, BE IT ORDAINED BY THE BUNCOMBE COUNTY BOARD OF COMMISSIONERS THAT:

Section 1. The temporary moratorium imposed on May 2, 2023, pursuant to Buncombe County Ordinance 23-05-05 and scheduled to expire no later than May 1, 2024, is extended to April 30, 2025. This extension of the moratorium specifically includes all land uses that involve cryptocurrency in the unincorporated areas of Buncombe County.

Section 2. In compliance with the requirements of N.C. Gen. Stat. § 160D-107(e), the County incorporates by reference Section 2 (1) and (2) of Buncombe County Ordinance 23-05-05 as if fully set forth herein, and further states:

(3) The extension of the moratorium shall begin on May 1, 2024, and the moratorium shall terminate on April 30, 2025, or upon the adoption of a text amendment to the zoning ordinance addressing the land use of commercial scale cryptocurrency mining, whichever occurs first. This one (1) year extension will allow county staff to continue their study of appropriate zoning districts for this type of land use.

(4) Buncombe County Planning Staff will advance text amendments to the Buncombe County Zoning Ordinance on or before the expiration of the moratorium. The text amendments will seek to mitigate any negative impacts associated with cryptocurrency mining.

(5) Buncombe County Planning and Development staff require additional time to complete their study of this relatively new technology in light of the unique zoning and resource requirements. Cryptocurrency mining implicates a host of complex issues and Planning and Development staff must also coordinate with other departments such as Environmental Health, Soil & Water Conservation, Solid Waste, Public Health, Planning Board, and Equity and Human Rights, and Air Quality before making a formal recommendation to the Board of Commissioners or drafting appropriate text amendments.

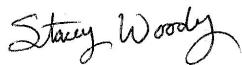
Section 3. If any section, subsection, sentence, clause, or phrase of this ordinance is, for any reason, held to be invalid, such invalidation shall not affect the validity of the remaining portions of this ordinance. The Board of Commissioners hereby declare that it would have passed this ordinance, and each section, subsection, sentence, clause, or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses, or phrases be declared invalid.

Section 4. All ordinances or parts of ordinances in conflict herewith are hereby repealed to the extent of such conflict.

Section 5. This ordinance is effective upon adoption.

Read, approved and adopted this 7th day of May, 2024.

ATTEST



Stacey Woody, Interim Clerk

BOARD OF COMMISSIONERS FOR THE
COUNTY OF BUNCOMBE



Brownie Newman, Chairman

APPROVED AS TO FORM



County Attorney



Buncombe County Planning and Development
Long Range Planning Division
46 Valley St.
Asheville, NC 28801

CRYPTOCURRENCY, DATA CENTERS, GOVERNMENT PROTECTIVE SERVICES

To: Buncombe County Planning Board
From: Long Range Planning Division
Date: July 7, 2024

Re: Text Amendments Addressing Crypto Currency Mining, Data Centers, and Government Protective Services

PURPOSE

The Crypto Currency Mining, Data Centers, and Government Protective Services Memorandum provides an overview of the key issues and proposed Zoning Ordinance changes related to those topics.

Cryptocurrency Mining:

In May of 2023 the Buncombe County Board of Commissioners unanimously passed a moratorium on Cryptocurrency Mining to allow the County time to develop standards and mitigation methods for this use. In May of 2024 the moratorium was extended until May of 2025. County staff have used the guidance of the adopted Comprehensive Plan for environmental protection and energy savings to establish regulations for this land use.

Data Centers:

For the purpose of this memo and the associated text amendments, Data Centers will refer to a grouping of computer servers used for the remote storage, processing, or distribution of data. They do not include crypto currency mining activities, which is a separate use. Adding Data Centers to the Zoning Ordinance is part of a general update and modernization of the Ordinance.

Government Protective Services:

Examples of Government Protective Services includes fire stations, police stations, E-911 centers, and EMS stations. These uses are currently permitted in some but not all zoning districts. The ability to provide protective services throughout the county is essential for public health and safety. Currently, a local fire district has obtained land for a new station which is in a district that does not permit government protective services. The proposal is to allow protective services in all zoning districts to meet the needs of our residents. This was likely an oversight when County-wide zoning was adopted years ago.

EQUITY ANALYSIS

Cryptocurrency Mining

Cryptocurrency mining operations have been shown to have outsized negative impacts on the environment and surrounding communities. These facilities use huge amounts of energy and resources and provide few or no local jobs, benefits, or services. “A growing body of academic studies compares Bitcoin’s carbon footprint to the emission levels of mid-sized countries.”¹ A crypto-currency mine in Buncombe County would be detrimental to the County’s Strategic Plan goal of reducing greenhouse gas emissions to reach 100% renewable energy sources for the community as a whole. Beyond the high use in energy, cryptocurrency mining also causes potentially harmful noise from equipment and generators at all hours of the day and night. The noise caused by these facilities has been shown to negatively impact resident wellbeing and property values².

Cryptocurrency mining facilities have the potential to exacerbate environmental justice issues as they are often sited where energy and land costs are relatively cheap.³ For Buncombe County, more affordable land is often found in rural communities, many of which have higher scores on the Equity Index of the Community Index Map, indicating higher levels of poverty and other equity factors.

Data Centers

Data centers are largely used for data storage, management, processing, and dissemination. Many government, business, and institutional operations require some type of data center for their day-to-day operations. Limiting their locations to commercial zoning districts will allow for their services to be provided with minimal impacts to the residential and rural communities. Local examples of data centers include Buncombe County, the City of Asheville and the National Climatic Data Center which provides crucial analysis of climate change, weather patterns, etc. Data centers support commerce, research and are integral to both the functionality of government services and the economy⁴.

Government Protective Services

The proposed amendment allows government protective services, such as fire stations, to be provided throughout the county, including in areas where vulnerable populations are located, such as in Equity Opportunity Areas.

REGULATIONS IN OTHER JURISDICTIONS

This is a brief look at what other local governments are doing. *Examples from outside North Carolina may not be legal or otherwise desirable in North Carolina but are presented to illustrate alternative approaches.*

Localities

The following is a list of notable standards from other jurisdictions:

LOCATION	REGULATORY EXAMPLES
Madison County, NC	In May 2024, after a one-year moratorium, the Madison County Board of Commissioners unanimously approved Land Use Ordinance changes regulating cryptocurrency/data processing facilities. Facilities under 10,000 square feet are permitted in commercial districts. Larger facilities are permitted in Industrial districts. Design standards include a height limit of 35 feet, security fencing, and screening around the entire perimeter. Facilities are subject to the county’s noise ordinance.
McDowell County, NC	Adopted a total ban on crypto-currency mining in McDowell County.

Waynesville, NC	Adopted a total ban on crypto-currency mining in Waynesville.
Marion, NC	Prohibited in all zoning districts except for M-1, and requires a Special Use Permit.
Haywood County, NC	Requires facilities to be a minimum of 750 feet from neighboring property lines.
Clay County, NC	Adopted a total ban on crypto-currency mining in Clay County.
Greenville, NC	Requires a 3,400 foot setback from residences and schools, limits hours of operation to 9am to 5pm, and limits the allowable noise decibel to 30.
Prince William County, VA	Created a Data Center Overlay District where the development of Data Centers is promoted in close proximity to existing supportive infrastructure. There are design standards related to building façade, screening with vegetation, buffers, and fencing.
Chandler, AZ	Data Centers are only allowed as part of a Planned Area Development and must comply with the following: notify the neighbors within a half-mile radius, hold 2 neighborhood meetings with residents, on-site neighborhood liaison to respond to noise complaints, sound study, sound mitigation requirements, and maintain a website that will announce when a back-up generator will be used.

EXISTING COUNTY ORDINANCES

Buncombe County’s Zoning Ordinance does not have specific standards related to cryptocurrency mining or data centers as unique uses. Currently these uses are regulated under the Commercial Services use type, with no special requirements. The proposed change will add a definition for each type of use and clarify in the Permitted Use Table where they are allowed. Special requirement standards will be created for data centers.

Government Protective Services are currently allowed in all zoning districts except for R-LD, R-1, and BDM. The proposed change will allow protective services in all zoning districts.

Continue to next page...

PROPOSED TEXT AMENDMENTS

The following table summarizes the proposed Zoning Ordinance Text Amendments related to cryptocurrency, data centers, and government protective services.

SUMMARY OF PROPOSED TEXT AMENDMENTS		COMP PLAN ALIGNMENT
1	Add the definition of Crypto-currency mining operation to the definitions section.	<p>Growth, Equity, Conservation Action 6: Support the protection of agricultural and forest lands, environmentally sensitive areas, and rural communities.</p> <p>Farms, Forests, Environment Policy 2: Preserve Buncombe County’s natural heritage. Policy 3: Promote ecosystem enhancement...</p> <p>Health & Recreation Policy 5: Utilize environmental protection and land conservation to... promote health.</p> <p>Infrastructure & Energy Policy 2: Plan for the long-term sustainability of public services.</p> <p>Infrastructure & Energy Action 2: Implement policies around new development and re-development that advance decarbonization and sustainability goals</p>
2	Add the definition of Data Center to the definitions section.	
3	Add Government Protective Services to the Permitted Uses Table to allow it as a Use-By-Right in all zoning districts	
4	Add Data Center (non-crypto currency) to the Permitted Uses Table, and permit it only in the CS, EMP, PS, and AI zoning districts with Special Requirements (SR).	
6	Add Special Requirement standards for Data Centers, to include: <ul style="list-style-type: none"> • sound study • facility enclosure • certification of noise level • setback requirements from residential properties and structures • generator use hours of operation • screening requirements 	
7	Add Crypto-currency mining to the Permitted Use Table and prohibit it in all zoning districts	

TIMELINE

- **August 19, 2024 Planning Board Meeting:** Review proposed text amendment with Planning Board.

JURISDICTIONAL REFERENCES:

- Casey, Johnny. Madison County approves crypto mining facilities regulation as moratorium set to expire. 2024. Citizen Times. <https://www.citizen-times.com/story/news/madison/2024/05/16/madison-county-approves-crypto-mining-facilities-regulation/73692422007/>
- Holloway, Jaylen. Many relieved as Greenville City Council unanimously votes in favor of changing crypto mining ordinance standards. 2024. WITN. <https://www.witn.com/2024/05/10/many-relieved-greenville-city-council-unanimously-votes-favor-changing-crypto-mining-ordinance-standards/>
- Johnson, Becky. Waynesville bans crypto currency mining operations. 2023. The Mountaineer. https://www.themountaineer.com/news/waynesville-bans-crypto-currency-mining-operations/article_d7af3cf4-8a86-11ee-b791-97a57405a302.html
- Long, Becky. No commercial crypto mining allowed. 2022. Clay County Progress. <https://www.claycountyprogress.com/local/no-commercial-crypto-mining-allowed#:~:text=On%20Thursday%2C%20Aug.,or%20operating%20in%20Clay%20County.>
- Prince William County, VA Zoning Ordinance, Part 509. Data Center Opportunity Zone Overlay District. 2024.
- The Code of the City of Chandler, Arizona, Part VI. Planning, Chapter 35 Land Use and Zoning, Article XXII Additional Height and area regulations, 35-2214 Data Centers. (2024)

¹ Stoll et al., 2023. Climate Impacts of Bitcoin Mining in the U.S. Massachusetts Institute of Technology, Climate Portal. <https://climate.mit.edu/posts/climate-impacts-bitcoin-mining-us>

² 'It's been a disaster' Residents warn neighboring areas of crypto mine impacts. 2023. ABC News 13. ['It's been a disaster' Residents warn neighboring areas of crypto mine impacts \(wlos.com\)](#)

³ Fact Sheet: Climate and Energy Implications of Crypto-Assets in the United States. 2022. The White House. <https://www.whitehouse.gov/ostp/news-updates/2022/09/08/fact-sheet-climate-and-energy-implications-of-crypto-assets-in-the-united-states/>

⁴ Morley, David. Zoning for Data Centers and Cryptocurrency Mining. 2022. American Planning Association, Zoning Practice Issue #6

PERMITTED USES TEXT AMENDMENTS- CRYPTO-CURRENCY MINING, DATA CENTERS, AND GOVERNMENT PROTECTIVE SERVICES

MODULE 2 SUBMODULE A

Sec. 78-581. - Definitions.

Crypto-currency mining operation means a process to verify transactions on the blockchain, enter new cryptocurrency unit into circulation, or perform other hardware or software processes to generate crypto information, processing, or distribution using computer servers. Crypto-currency mining operations are not permitted in Buncombe County.

Data Center means a facility of 5,000 square feet or greater, containing a grouping of computer servers and associated equipment and systems used for the remote storage, processing, or distribution of data, for purposes other than crypto-currency mining operations. Data Centers less than 5,000 square feet shall be regulated as manufacturing and processing operations.

Sec. 78-641. - Permitted uses.

Table 1—Permitted Use Table													
Uses	P = Permitted												
	CS = Allowed as Conditional Special Use												
	SR = Permitted with Special Requirements												
	Blank Space = Not Permitted												
	Districts												
	R-LD	R-1	R-2	R-3	NS	CS	EMP	PS	CR	AI	BDM	OU	
<u>Government protective services</u>	P	P	P	P	P	P	P	P	P	P	P	P	P
<u>Data Center, non-crypto currency</u>						SR	SR	SR		SR			
<u>Crypto-currency mining</u>													

Sec. 78-678. - Uses by right subject to special requirements and special use standards.

(a) Uses by right, subject to special requirements (SR).

(x) Data Center. Standards for non-crypto currency data centers shall be as follows:

- a) A pre-construction sound study shall be conducted at the property to establish a noise baseline, and the development shall include sound mitigation measures to ensure that noise levels from the data center and all associated equipment does not exceed levels observed during the baseline study. In no case shall a data center exceed 55 dBA at any time of day, as measured at the property lines.
- b) The center’s operations must be completely enclosed within a building.
- c) Prior to final Certificate of Completion an engineer’s certification shall be provided indicating that the data center noise levels do not exceed the baseline study and do not exceed 55dBA.

- d) No HVAC system, cooling system, or generator shall be located closer than 100 feet from a residentially-zoned property line or from a residential structure.
- e) Generators shall not undergo maintenance or testing between the hours of 8pm and 8am.
- f) Data Centers within the CS-Commercial Service zoning district shall conceal mechanical operations from all road frontages using solid architectural screening or commercial landscaping buffers.



Skyland Fire & Rescue

Phone: (828) 684-6421 Address: PO Box 640 Skyland NC 28776 Fax (828) 684-1010
www.skylandfire.com

July 26, 2024

The Buncombe County Board of Commissioners, and
The Buncombe County Planning Board
c/o: The Buncombe County Planning and Development Department,
Long Range Planning Division, via email to:
Gillian Phillips, Division Manager
Gillian.Phillips@buncombecounty.org.
Shannon Capezzali, Long Range Planner
Shannon.Capezzali@buncombecounty.org

Re: *Letter in Support of Allowing Government Protective Services in All Zoning Districts*

Dear County Commissioners and Members of the Planning Board:

As Chief of the Skyland Fire and Rescue Department, I am writing to express the Department's support of County Staff's recommendation to amend the County's Zoning Ordinance to allow Government Protective Services, which includes fire and rescue stations, in all Zoning Districts.

Doing so would be consistent with the Buncombe County Comprehensive Plan, which envisions that "[t]he County will be ready to respond to future events through enhanced emergency preparedness planning, public safety expansion, *and reduced response times of first responders.*"¹ Permitting fire and EMS stations throughout the County would allow for such public safety expansion and will predicably reduce first responder response times.

Currently, Government Protective Services are permitted in all Zoning Districts except the R-1 Residential District (R-1), The R-LD Low-Density Residential District (R-LD), and the Beaverdam Low-Density Residential District (BDM). All of these districts would benefit from the inclusion of Government Protective Services.

R-1 "is primarily intended to provide locations for single-family and two-family residential development and supporting recreational, community service, and educational uses in areas where public water and sewer services are available or will likely be provided in the future."² Allowing Government Protective Services in R-1 supports recreational and community services, will allow for greater access to governmental services for those in the District, and will make it easier for first responders to keep up with our County's rapid growth.

¹ Buncombe County Comprehensive Plan, pg. 133 (emphasis added). Available at: <https://www.buncombecounty.org/common/planning/calendar-files/compplan/web-docs/Adopted%20Plan/Adopted%20Comprehensive%20Plan.pdf>).

² County Zoning Ord. Sec. 78-640(b).

The Low-Density Residential Districts (R-LD and BDM) allow for, among other things, low-density residential uses.³ Such areas are less likely to have public water, sewer services, and fire hydrants. Permitting Government Protective Services in these areas will make it easier for first responders to serve such low-density areas by being located within the same.

All Zoning Districts contain people who may need emergency services. Allowing Government Protective Services countywide could increase the speed with which emergency services reach people in need, and faster response times saves lives. Response times of less than 8 minutes have been associated with a more than double increase in survival rates.⁴ For this reason, Skyland Fire and Rescue, and most agencies, strive for response times under five (5) minutes.

In addition to potentially saving more lives, proximity to emergency services can reduce the risk of property destruction by fire and can also improve an area's Fire Insurance Rating, which directly impacts insurance premiums for homes and commercial buildings.

Fire, EMS, and rescue stations are also community hubs that connect governments and the people they serve. They can be voting sites during elections; host Meals on Wheels, mobile libraries, and preparedness trainings; provide free community WiFi; distribute potable water during outages; and distribute aid during disasters.

All Districts would benefit from easier access to such services. Accordingly, the Skyland Fire and Rescue Department wholeheartedly supports County Staff's proposed amendment.

Respectfully yours,



Trevor Lance, Fire Chief
Skyland Fire and Rescue

Cc: Nathan Pennington, Buncombe County Planning Director
Derek J. Allen, Allen Stahl + Kilbourne
J. Brandon Freeman, Allen Stahl + Kilbourne

³ (County Zoning Ord. Sec. 78-640(a);(j))

⁴ Alumran A, Albinali H, Saadah A, Althumairi A. The Effects of Ambulance Response Time on Survival Following Out-of-Hospital Cardiac Arrest. *Open Access Emerg Med.* 2020 Dec 1;12:421-426. doi: 10.2147/OAEM.S270837. PMID: 33293876; PMCID: PMC7718983. ("The odds of death if the response time was more than 8 minutes were 2.4 times higher compared to the response time of less than 8 minutes; that is, the odds of death, if the response time was more than 8 minutes, were more than double compared to the response time of less than 8 minutes.") Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7718983/> (Last visited July 24, 2024).

ZONING PRACTICE

JUNE 2022



AMERICAN PLANNING ASSOCIATION

➔ ISSUE NUMBER 6

PRACTICE DATA CENTERS



Zoning for Data Centers and Cryptocurrency Mining

By David Morley, AICP

Data centers are the physical facilities where the internet lives. Fundamentally, they consist of networked computer systems used for data storage and processing, along with supporting equipment, such as batteries, back-up power generators, and cooling devices. Modern data centers are the direct descendants of the, so-called, *telecom hotels* that began springing up in downtowns in the late 1990s to accommodate the rapid expansion of the commercial internet and, before that, of automated telephone exchange facilities that made it possible to place land-line telephone calls across a city, the nation, or the world (Evans-Cowley 2002).

An emerging segment of the data center market consists of facilities dedicated in whole or part to “mining” cryptocurrency. A cryptocurrency is a decentralized digital currency that uses encrypted data strings to denote individual units, or coins, and a peer-to-peer database known as a blockchain to maintain a secure ledger of transactions. Several of the most popular cryptocurrencies, most notably Bitcoin, require extremely complex computations to verify each transaction and add a record, or block, for that transaction to the blockchain. Whoever verifies a transaction first receives a new cryptocurrency coin as a reward. While, theoretically, anyone with a computer server can “mine” new coins by helping to verify these transactions, large-scale cryptocurrency mining requires a massive amount of computing power.

This article explores the reasons why cities, towns, and counties may wish to define and regulate data centers and cryptocurrency mining as distinct uses in their zoning codes and provides a summary of contemporary approaches. It begins with a brief overview of the factors that drive demand for data centers or cryptocurrency mines in particular locations before examining the key planning issues that may merit special attention through zoning and posing a series of questions to guide code drafting.



Chad Davis / Flickr (CC BY 2.0)

➔ A hyperscale Google data center in Council Bluffs, Iowa.

The article concludes with short profiles of local zoning approaches that may serve as models for others.

DEMAND DRIVERS

Industry analysts predict sustained growth in data center construction in the coming years (Dunbar and Bonar 2021). This includes demand for larger and larger “hyperscale” data centers as well as more widely distributed “edge” data centers (Sowry et al. 2018). Data center developers (or operators) are attracted to sites with low latency to end users and dependable and affordable electricity.

While data centers have historically been clustered around major internet access points, information technology companies, and government employment centers, the proliferation of cloud computing and the internet of things is pushing demand out to network edges. This means more data centers in smaller metropolitan and nonmetropolitan areas.

Big technology companies are likely to continue looking for sites that can accommodate new, large single-story structures. But

operators that specialize in leasing space in the same facility to multiple companies (i.e., collocated data centers) may be more open to infill sites and existing structures, especially if those sites have access to fiber optic infrastructure.

Data centers use a lot of electricity (see below) to power processing and storage hardware and to keep that hardware cool. The amount of electricity (and often water) needed for cooling is higher in warm, humid climates than in cool, dry areas. Consequently, holding other factors equal, developers favor locations with low electricity rates and cooler climates. Furthermore, because these facilities operate continuously, developers are also looking for sites that are less vulnerable to natural hazards.

Cryptocurrency miners are also looking for locations with cheap electricity and low hazard risk; however, dedicated mining facilities are not concerned about proximity to customers and are less likely to invest in backup power. While there seems to be a widespread consensus that data centers are essential to global communications and the global economy, cryptocurrency miners

have a more limited “social license” to operate. Widespread concerns about the energy use of mines and the limited utility of the coins they produce has led some countries, including China, to ban Bitcoin mining. Consequently, many cryptocurrency miners are relocating to the U.S. (Obando 2022).

PLANNING ISSUES

From the exterior, data centers and cryptocurrency mining facilities may be physically indistinguishable from many commercial or light industrial uses. However, the operational characteristics of these facilities are typically quite distinct from those of surrounding land uses. From a planning perspective, the most noteworthy characteristics relate to their electricity and water use, noise production, enhanced safety and security needs, and low employment densities.

They Use a Lot of Electricity (and Water)

In 2020, data centers used between 200 and 250 terawatt hours (TWh) of electricity, accounting for approximately one percent of global consumption (IEA 2021). While the total consumption has grown steadily along with global power demand, this ratio has held relatively constant over the past 20 years as efficiency improvements have proportionally offset increased demand from data centers. However, this pattern is unlikely to hold as growth in streaming video, online gaming, cloud computing, machine learning, virtual reality, and the internet of things begins to outstrip efficiency improvements.

The figures above exclude cryptocurrency mining. Bitcoin miners alone used an estimated additional 60 to 70 TWh in 2020. According to Cambridge University, if Bitcoin was country, it’s annual electricity consumption would be slightly higher than that of Poland or Malaysia (2022).

Data center and cryptocurrency mining equipment also generates a tremendous amount of waste heat, which must be dissipated by fans or absorbed by a cooling medium to avoid hardware damage and ensure efficient operations. Many data centers and cryptocurrency mines use water as a cooling medium. Water is also necessary for most forms of electricity production. In aggregate, a medium-sized data center typically uses more water each year than two 18-hole golf courses (Mytton 2021).

They Can Be Noisy

Inside a data center or cryptocurrency mine server room, the noise can make it difficult to carry on a conversation at a normal volume. While most data centers and large cryptocurrency mines incorporate construction and soundproofing techniques that ensure this server noise isn’t audible outside of the building, air conditioner compressors mounted on the roof or on ground near these facilities can generate noise that carries across property lines.

In some contexts, vegetation or other structures may rapidly attenuate this sound. In others, the sound may travel over long distances. Obviously, the degree to which these sounds constitute nuisance “noise” depends on surrounding land uses and ambient noise levels. The problem is typically most acute when data centers or mines are near residences.

They Have Enhanced Safety and Security Needs

Data centers typically aim to run continuously, and any outage or downtime can threaten business operations. Furthermore, data centers house expensive, highly specialized hardware, and many handle sensitive data. Consequently, most data centers incorporate enhanced safety and security features, such as gated access points, fencing, or bright lighting, to prevent unauthorized access and to minimize the likelihood of disruption.

Cryptocurrency mines have similar safety and security needs, with two key distinctions. First, miners want to maintain network access, but the stakes are lower

than for data centers because an outage wouldn’t negatively affect any other services or users. Second, cryptocurrency mines generally aren’t receiving any clients and have little incentive to draw attention to themselves with fencing or lighting.

They Have a Low Employment Density

Data centers typically have far fewer workers per square foot than professional offices or light industrial facilities (Tarczynska 2016). And cryptocurrency mines generally have even lower employment densities than data centers. For some communities, data centers (and potentially cryptocurrency mines) are highly desirable from an economic development perspective because they often generate a large property tax surplus that can subsidize more service-intensive land uses, such as single-family homes. Others, however, are reluctant to devote too much commercial or light industrial space to uses that generate few jobs.

ZONING CONSIDERATIONS

Any community interested in regulating data centers and cryptocurrency mining through zoning should consider three key questions:

1. Do these uses need new use definitions?
2. Where should these uses be permitted?
3. Do these uses need special development or performance standards?

Do They Need New Use Definitions?

New land uses don’t necessarily require new use definitions in the local zoning code. It depends, in part, on whether the use fits



➡ The roof of eBay’s Topaz data center in South Jordan, Utah.

neatly under a broader use category or is substantially like another defined use. And it depends on whether treating the new use the same as this use category or other similar use would be likely to generate negative effects on nearby properties or the community as a whole.

Many communities have defined data centers (or some closely analogous term) as a distinct use in their zoning codes. These definitions typically reference the general function of the facility and the degree to which it is occupied by computer systems and related equipment. For example, Anne Arundel County, Maryland, defines *data storage center* as “a facility used primarily for the storage, management, processing, and transmission of digital data, which houses computer or network equipment, systems, servers, appliances, and other associated components related to digital data storage and operations” (§18-1-101.(44)).

Comparatively fewer communities have defined cryptocurrency mining as a distinct use. Many of these definitions focus on the specialized purpose of the facility, often with references to other newly defined terms, such as *high density load* or *server farm*, that clarify its distinct characteristics. For example, Moses Lake, Washington, specifies that *cryptocurrency mining* often uses more than 250 kilowatt-hours per square foot each year (§18.03.040).

Where Should They Be Permitted?

Communities that choose to regulate data centers or cryptocurrency mines as distinct uses may permit these uses either by right or with a discretionary use permit (i.e., conditional, special, or special exception use permits) in one or more existing base or overlay zoning districts. Alternatively, they may elect to establish a new special-purpose base or overlay zoning district for either use.

Many communities permit data centers and cryptocurrency mines either by right or with a discretionary use permit in commercial and industrial districts. While data centers and mines can fit in a wide range of existing commercial or industrial buildings, purpose-built facilities are often single-story structures with large floorplates.

Given that they generally have few employees and visitors, these uses may not be appropriate in ground-floor street-frontage spaces in pedestrian-oriented

EXAMPLES OF DEFINED USES

Jurisdiction	Defined Uses
Alpharetta, GA	Data center (§1.4.2)
Anne Arundel County, MD	Data storage center (§18-1-101.(44))
Fairfax County, VA	Data center (§9103)
Frederick County, MD	Critical digital infrastructure facility (§1-19-11.100)
Moses Lake, WA	Cryptocurrency mining; Data center/server farm/cluster (§18.03.040)
Pitt County, NC	Data processing facility (large scale) (§15)
Plattsburgh, NY	Commercial cryptocurrency mining; Server farm; High density load service (LL 6-2018)
Prince George’s County, MD	Qualified data center (§27-2500)
Prince William County, VA	Data center (§32-100)
Somerville, MA	Data center (§9.8.b)
Vernal, UT	Data center (§16.04.173)
Wenatchee, WA	Cryptocurrency mining; Data center (§10.08)

commercial areas. Wenatchee, Washington, addresses this issue by permitting data centers and cryptocurrency mines by right in multiple pedestrian-oriented commercial districts, with a simple stipulation that they cannot occupy “grade level commercial street frontage” (§10.10.020).

A new special-purpose zoning district can help steer data centers or cryptocurrency mines toward corridors or other subareas that have suitable utility infrastructure. When adopted as floating zones, special districts can also provide an extra layer of review for large projects that may cover dozens or hundreds of acres.

Prince William County, Virginia, added a Data Center Opportunity Zone Overlay District to its zoning code in 2016 (§32-509). The county has mapped this overlay to more than 70 percent of its industrially zoned land. The overlay permits data centers and includes design standards for these facilities; however, it does not otherwise modify the existing use permissions for underlying districts.

Do They Need Special Development or Performance Standards?

Communities that decide to regulate data centers or cryptocurrency mines as distinct uses may choose to adopt use-specific standards that modify or supplement other relevant universal or district-specific development or performance standards. This approach can help communities target standards to the distinct features of these uses

to address specific community concerns.

Use-specific standards can help minimize reliance on discretionary approvals and improve the consistency of local decisions. Without these standards, local officials may be more likely to require all data centers and cryptocurrency mines to obtain a discretionary use permit, and they may be more likely to adopt wildly varying conditions of approval for substantially similar proposals.

Communities that have adopted use-specific standards for data centers and cryptocurrency mines often establish building design and buffering or screening requirements to minimize the visibility or improve the appearance of these facilities from public streets or nearby properties. Other common standards address environmental performance, including noise and light pollution, and evidence of electric utility approval.

POTENTIAL MODEL APPROACHES

It would be difficult to find a community with more experience with data centers than Loudon County, Virginia. And the county’s approach to zoning for data centers serves as a potential model for other communities with suitable sites and sufficient infrastructure to accommodate data center development. In contrast, Missoula County, Montana, was one of the first local jurisdictions to craft zoning regulations for cryptocurrency mining operations. And its emphasis on mitigating the potential climate impacts represents a different type of potential model.

Loudon County, Virginia

Northern Virginia's Data Center Alley, primarily clustered around Routes 7 and 267 in Loudon and Fairfax Counties is the largest data center market in the world (Fray and Koutsaris 2022). Its combined power consumption capacity is more than 1.6 gigawatts (GW), nearly twice as much as the next largest market. And within Data Center Alley, Loudon County has the highest concentration of data centers. As of October 2021, data centers occupied more than 25 million square feet, with another 4 million square feet in development (LCDED 2022).

Several important factors have driven demand for data center development in Loudon County. It is home to the Equinix internet exchange, one of the largest internet access points in the world and a successor to Metropolitan Area Exchange, East, the first

U.S. exchange. The county has abundant (and redundant) fiber optic infrastructure, relatively cheap power, and sufficient water. Additionally, it has a high concentration of skilled technology workers and businesses that support the data center industry.

By the year 2000, there was already an emerging data center cluster in Loudon County. However, the county did not define and regulate data centers as a distinct use in its zoning code until 2014 (ZOAM 2013-0003). According to Acting Planning & Zoning Director James David, prior to this, the county defined data centers as commercial offices.

The latest version of the county's zoning ordinance permits data centers by right in Planned Office Park, Research and Development Park, Industrial Park, and General Industrial districts and as a special exception use in Commercial Light Industry

districts. New data centers (without vested rights) must comply with a set of use-specific standards governing façade design, screening of mechanical equipment, exterior lighting, pedestrian and bicycle facilities, and landscaping, buffering, and screening (§5-664).

According to David, these standards are intended to improve the aesthetics of data centers, minimize visibility from nearby residential areas, and ensure continuous sidewalk and trail networks. Overall, they represent a light-touch approach that has, so far, worked well for a county with enormous demand for data centers and relatively modest competition for space from other commercial and industrial uses.

However, in February 2022, county officials directed staff to research regulatory options to prevent new data centers in the

EXAMPLES OF USE-SPECIFIC STANDARDS FOR DATA CENTERS AND CRYPTOCURRENCY MINING

Jurisdiction	Use-Specific Standards
Alpharetta, GA	Requires evidence of compliance with noise standards; specifies exterior lighting fixture design; establishes minimum building height; requires building façade design elements; establishes other fencing, screening, and landscaping requirements to minimize visibility from adjacent roads and properties (§2.7.2.1)
Anne Arundel County, MD	Establishes minimum lot size and setbacks; prohibits residences on the same lot; establishes limit on outdoor storage (§18-10-119)
Fairfax County, VA	Requires all equipment to be enclosed within a building; establishes maximum floor area by zoning district (§4102.6.A)
Frederick County, MD	Establishes criteria for reducing setbacks; specifies building design standards; specifies landscaping, screening, and buffering requirements; clarifies parking, loading, signage, and lighting standards; establishes criteria for private roads; establishes noise and vibration standards (§1-19-8.402)
Moses Lake, WA	Clarifies review process for business license; prohibits container storage; requires evidence of electrical utility approval; requires evidence of electrical permit and inspection; establishes environmental performance standards, addressing noise, heat, and electric and magnetic fields; limits amount of exposed equipment on facades (§18.74)
Pitt County, NC	Limits height; requires separation from sensitive uses; requires noise study and compliance with noise standards; requires underground wiring; requires security fencing and vegetative screening; requires evidence of electrical utility approval; clarifies signage standards; requires notification of abandonment (§8(UUUU))
Plattsburgh, NY	Requires fire suppression and mitigation techniques; limits internal ambient temperature and the direct release of heat on colder days; establishes permissible noise levels (LL 6-2018)
Prince George's County, VA	Requires building façade design elements; specifies exterior lighting fixture design; requires screening for security fencing and limits fence height; requires compliance with landscape manual; clarifies applicable off-street parking standard; clarifies signage standards; requires an acoustical study; specifies additional site, locational, and noticing requirements for facilities in rural residential districts (§27-5102(e)(4)(B))
Somerville, MA	Establishes special review criteria related to aesthetic impacts and employment opportunities (§9.8.b)
Vernal, UT	Requires fencing and structural screening for electrical generators; requires noise mitigation plan for facilities near residential zones or existing hotels or motels (§16.20.250)
Wenatchee, WA	Clarifies review process for business license; prohibits container storage; requires evidence of electrical utility approval; requires evidence of electrical permit and inspection; clarifies blank wall limitation standards; requires an affidavit verifying operating sound levels (§18.48.310)

Route 7 corridor. While data center demand remains high in this area, the county's comprehensive plan designates most of this corridor as Suburban Mixed Use, which envisions a compact, pedestrian-friendly mix of commercial, residential, cultural, and recreational uses. Furthermore, the existing electricity network infrastructure is insufficient to accommodate the existing demand for new data centers (LCDED 2022).

The county is working on its first complete overhaul of its zoning code since 1993. And it intends to incorporate any new regulations for data centers into the new code, which officials hope to adopt by the end of 2022.

Missoula County, Montana

In April 2019, Missoula County, Montana, adopted an interim zoning resolution that established a cryptocurrency mining overlay (Resolution No. 2019-026). The county had one large cryptocurrency mine already, and its low electricity rates and cool climate made it an attractive area for prospective miners. While a few other jurisdictions had already defined cryptocurrency mining in their zoning codes, Missoula County appears to be the first to explicitly position its zoning approach as a response to climate change.

According to county planner Jennie Dixon, AICP, local officials originally took an interest in regulating cryptocurrency mining as a distinct use after multiple complaints of noise from cooling fans at an existing Bitcoin mine operating out of a former sawmill in unincorporated Bonner. Soon, though, the county expanded its focus to include energy consumption and electronic waste.

Montana law only authorizes interim zoning in the case of an emergency involving "public health, safety, morals, or general welfare" (§76-2-206). Dixon says the Intergovernmental Panel on Climate Change's 2018 Special Report on *Global Warming of 1.5° C* helped justify climate change as a local emergency that warranted interim zoning to mitigate greenhouse gas emissions (and other potential environmental impacts) from cryptocurrency mining.

The interim zoning regulations defined cryptocurrency mining as a distinct use and created a Cryptocurrency Mining Overlay Zone, mapped to the entire unincorporated geographic extent of the county (which includes some un-zoned areas). The overlay



Google Earth

➡ The heart of Northern Virginia's Data Center Alley in Ashburn, Virginia.



Google Earth

➡ The former Bonner sawmill in Missoula County, Montana, was once home to the HyperBlock cryptocurrency mine.

restricted cryptocurrency mining operations to industrial districts and required operators to obtain a discretionary use permit if the mine was adjacent to a residential district or within 500 feet of a residential property boundary. These regulations also required all mining operations to verify that all electronic waste be handled by a licensed recycling firm and that all electricity use be offset by new renewable energy production.

Caroline Lauer, the county's Sustainability Program Manager, stresses the importance of this last requirement. If cryptocurrency miners purchased existing supplies of renewable energy, it could actually displace existing utility customers to dirtier sources. While most of the county's

electricity comes from hydropower, coal accounts for much of the remainder.

Missoula County's 2016 *Growth Policy* plan includes an objective to "reduce the county's contribution to climate change" (4.1) and lists policies that promote alternative energy development (4.1.3) and reduce energy use and waste generation as implementation actions (4.1.6). A day before it adopted the interim cryptocurrency mining regulations, the county further strengthened its policy rationale by adopting a joint commitment with the City of Missoula to achieve 100 percent clean electricity use by 2030.

County officials extended the interim zoning for another year in 2020 before adopting the same regulations as a permanent zoning amendment in March 2021 (§1.04

& \$5.05). According to Dixon, the Bonner mine ceased operations during the interim zoning period, but not because of the county's zoning. It declared bankruptcy two days after the "Black Thursday" Bitcoin crash in March 2020, leaving the tribal-owned independent power producer that provided its electricity with a \$3.7 million unpaid bill (Rozen 2020).

CONCLUSIONS

The rapid rise in data center development has coincided with dramatic decreases in the costs of producing solar and wind power. This, in combination with a growing trend toward clean power commitments among technology companies, has blunted some of

the climate impacts of an increased demand for data storage and processing.

The increased digitalization of life virtually guarantees that data centers will continue proliferating in strategic locations across the country (Gomez and DeAngelis 2022). Soon, communities may start seeing a sharp increase in interest in very small edge data centers that could fit in underutilized commercial spaces or even be collocated with other telecommunications infrastructure, such as small cell facilities, in public rights-of-way (Sowry et al. 2018).

The future of cryptocurrency mining facilities is less certain. Bitcoin and other energy-intensive cryptocurrencies are facing social pressure to transition to more

energy-efficient transaction verification methods, and several existing cryptocurrencies already use these methods. However, we are still at the very beginning of the cryptocurrency story. While this form of currency currently exists primarily as a speculative investment vehicle, this could change rapidly if valuations stabilize and large numbers of goods and service providers accept cryptocurrencies for payment.

Not every community will see the value in defining data centers or cryptocurrency mines as distinct uses in their zoning codes. Nevertheless, doing so can give local jurisdictions a leg up when it comes to signaling preferences to developers and operators and minimizing or mitigating potential adverse impacts.

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