Economic, Environmental, and Social Impacts of Data Centers in the United States

Including Statewide Impacts for Arizona, Ohio, and Virginia

Prepared for The Data Center Coalition

September 2023

pwc

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About

The Data Center Coalition (DCC) engaged PwC to quantify the economic, environmental, and social impacts of the US data center industry. This report presents PwC's impact assessments for the 2017-2021 period at the national level and for three states: Arizona, Ohio, and Virginia. Data for select environmental and social impact metrics were available for 2022 and are included in this report.

DCC is the membership association for the data center industry and represents the industry's interests through a range of activities, including public policy advocacy, thought leadership, stakeholder outreach, and community engagement.

For more information, see www.datacentercoalition.org

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Acronyms

BEA	United States Bureau of Economic Analysis
BLS	United States Bureau of Labor Statistics
CRIT	Colorado River Indian Tribes
CSR	Corporate social responsibility
DCC	Data Center Coalition
DEI	Diversity, equity, and inclusion
ESG	Environmental, social, and governance
GDP	Gross domestic product
HVAC	Heating, ventilation, and air conditioning
IT	Information technology
LGBTQ+	Lesbian, gay, bisexual, transgender, and queer community
NAICS	North American Industry Classification System
OCP	Open Compute Project
PPA	Power purchase agreement
PUE	Power usage effectiveness
SBT/SBTi	Science-Based Target or Science-Based Targets Initiative
STEAM	Science, technology, engineering, arts, and mathematics
Tbps	Terabits per second
WUE	Water usage effectiveness

Executive Summary

Data centers are a crucial component of the modern economy, supporting digitalization, enabling data-driven decision-making, and powering a wide range of industries and services. Their role in storing, processing, and managing data is essential for organizations to thrive in the digital age.

Economic and Tax Impacts

Displayed in **Table E-1** below, the data center industry has had a significant impact on the US economy over the 2017-2021 period. The industry's growth has significantly outpaced that of the overall US economy over this period. From 2017-2021, the US data center industry's direct employment grew by over 17 percent, compared to 2 percent employment growth for the United States overall during the same period.

Between 2017 and 2021, the data center industry's total annual impact (combining its direct, indirect, and induced impacts arising from data center construction and operations) on national employment has grown from 2.9 million jobs in 2017 to 3.5 million jobs in 2021, a 20 percent increase over the period.

Based on preliminary government data for 2022, the industry is estimated to have added more jobs in 2022 than it added over the entire 2017-2021 period, resulting in 560,000 direct jobs and supporting 4.2 million total jobs across the country. This report finds that at the national level, each direct job in the data center industry supports more than six jobs elsewhere in the US economy (including both operational and capital spending impacts).

The US data center industry total* annual economic impacts between 2017-2021 included

2.9 to 3.5 million annual jobs

Each direct job in the data center industry supports more than 6 jobs elsewhere in the US economy.

$209 to $294 billion in annual labor income

Total impact on national labor income grew 40% and labor income earned directly from the data center industry grew by 74% between 2017 and 2021.

$355 to $486 billion in annual GDP contribution

Total contribution to GDP grew 37% from 2017 to 2021. The growth rate in GDP for the US economy as a whole was about half as much over the same time period.

*Total impact includes direct, indirect, and induced impacts. Direct impacts are those occurring directly within the data center industry. Indirect impacts are those occurring within other businesses as part of the supply chain to the data center industry. Induced impacts are those arising from household spending of income earned from the data center industry or its supply chain.

The industry's total annual impact on national labor income grew from $209 billion in 2017 to $294 billion in 2021, a 40 percent increase. The industry's total annual impact on US value added (i.e., contribution to Gross Domestic Product, GDP) grew from $355 billion in 2017 to $486 billion in 2021, a 37 percent increase. Over this same period, the growth rate in GDP for the entire US economy was only about half as much.

Table E-1.– The Economic Impacts of the US Data Center Industry, 2017-2021

Item	2017	2018	2019	2020	2021
Employment (jobs)[1]					
Direct Impact	400,100	420,400	421,600	443,600	468,800
Indirect and Induced Impact	2,525,290	2,628,140	2,683,520	2,883,680	3,039,490
Operational Impact	2,202,100	2,311,400	2,315,700	2,438,200	2,572,900
Capital Spending Impact	323,190	316,740	367,820	445,480	466,590
Total Impact[4]	2,925,390	3,048,540	3,105,120	3,327,280	3,508,290
Labor Income ($billions)[2]					
Direct Impact	$43	$51	$56	$60	$75
Indirect and Induced Impact	$166	$178	$184	$202	$219
Operational Impact	$144	$155	$158	$168	$180
Capital Spending Impact	$22	$23	$26	$34	$39
Total Impact[4]	$209	$229	$240	$262	$294
Value Added ($billions)[3]					
Direct Impact	$89	$103	$112	$114	$136
Indirect and Induced Impact	$267	$287	$297	$322	$350
Operational Impact	$234	$253	$259	$275	$295
Capital Spending Impact	$33	$34	$38	$47	$55
Total Impact[4]	**$355**	**$390**	**$409**	**$436**	**$486**

Source: PwC calculations using the IMPLAN modeling system and public data sources. Details may not add up to totals due to rounding.

1. Employment is defined as the number of payroll and self-employed jobs, including part-time jobs.
2. Labor income is defined as wages, salaries, and benefits as well as proprietors' income.
3. Value added refers to the additional value created at a particular stage of production. It is measured as the difference between the total revenue of the industry and the total cost of its materials, supplies, and services purchased from other businesses, other than capital goods.
4. Total impact includes direct, indirect, and induced impacts. Direct impacts are those occurring directly within the data center industry. Indirect impacts are those occurring within other businesses as part of the supply chain to the data center industry. Induced impacts are those arising from household spending of income earned from the data center industry or its supply chain.

[1]Value added is a term commonly used by economists to describe how much an industry contributes to a nation's or state's GDP. It represents the additional value created at a particular stage of production. Value added is measured as the difference between the total revenue of the industry and the total cost of its materials, supplies, and services purchased from other businesses, other than capital goods. Value added can also be derived as the sum of employee compensation, proprietors' income, pretax income to capital owners from property (including depreciation), and taxes on production and imports (including excise taxes, property taxes, fees, licenses, sales taxes, and custom duties paid by businesses).

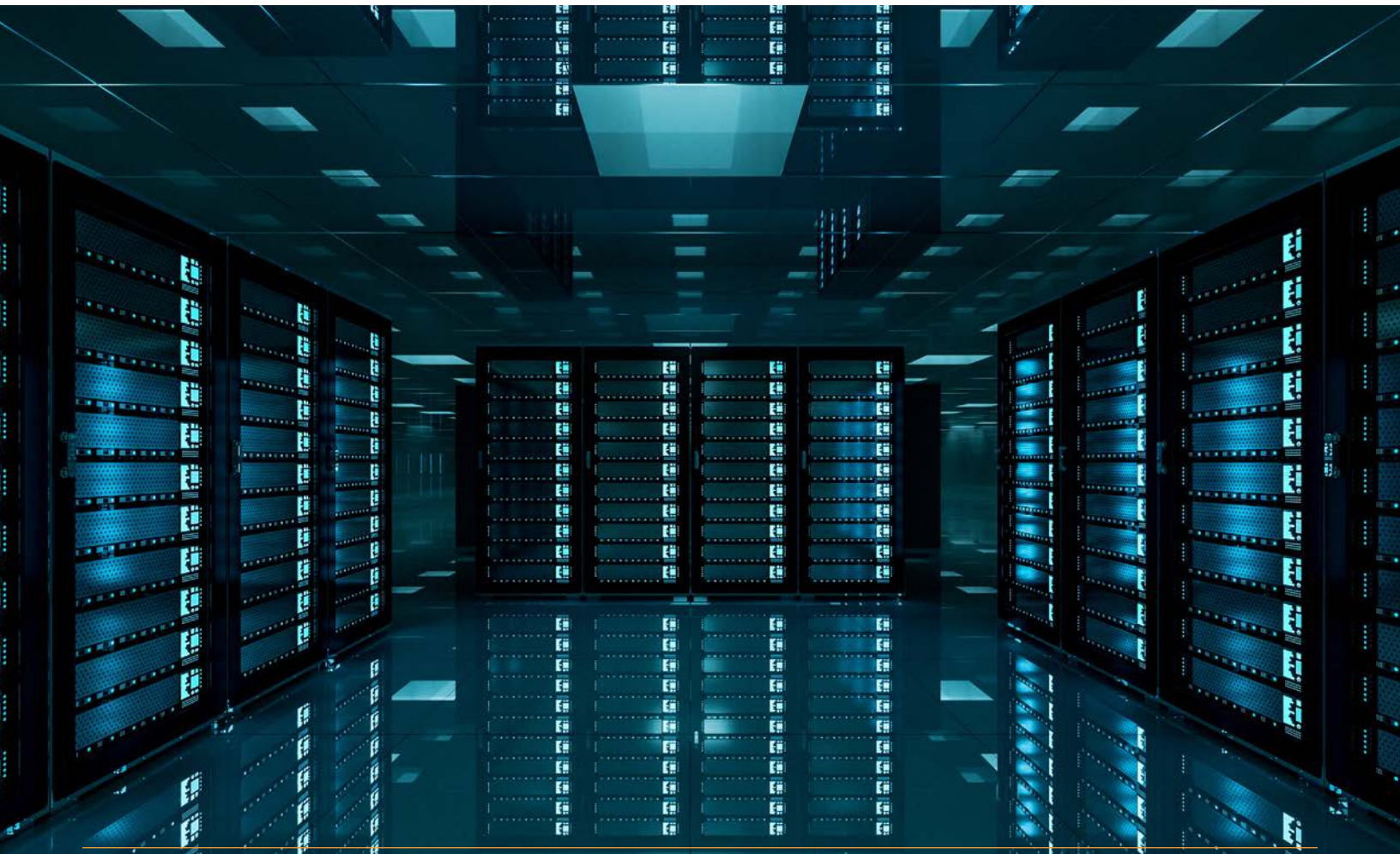
Displayed in **Table E-2** below, the data center industry's total contribution to government revenues at the federal, state, and local level, including direct, indirect, and induced impacts, increased from $66.2 billion in 2017 to $99.6 billion in 2021, a 50 percent increase.

Table E-2.– Federal, State, and Local Tax Impact of the US Data Center Industry, 2017-2021[1]

Item	2017	2018	2019	2020	2021
Total Impact ($billions)	**$66.2**	**$74.0**	**$79.0**	**$84.7**	**$99.6**
Social Insurance Contributions	$20.3	$22.7	$24.2	$26.9	$31.5
Corporate Income Taxes	$5.6	$6.3	$6.8	$7.1	$8.2
Personal Income Taxes	$20.2	$22.6	$24.2	$26.7	$31.2
Property Taxes	$8.1	$9.0	$9.6	$9.6	$11.5
Sales/Use Taxes	$9.1	$10.1	$10.8	$10.8	$12.9
Other payments	$2.9	$3.2	$3.4	$3.6	$4.3

Source: PwC calculations using the IMPLAN modeling system and public data sources. Details may not add up to totals due to rounding.

1. Tax impact includes all federal, state, and local taxes directly or indirectly resulting from the US data center industry's construction and operations (including direct, indirect, and induced economic effects).

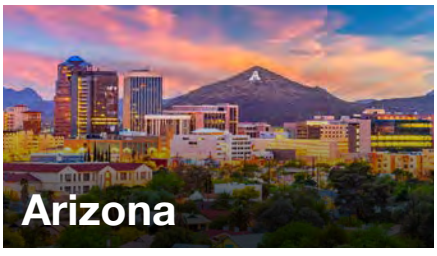


The data center industry operates in all 50 states and the District of Columbia (see Table A-1 in the appendix). In 40 states and the District of Columbia, data centers directly provided at least 1,000 jobs in each jurisdiction in 2021. We examine the total employment impact of the data center industry in three selected states: Arizona, Ohio, and Virginia. Including direct, indirect, and induced impacts, the industry's total annual employment impact in Arizona increased from 60,810 jobs in 2017 to 72,210 jobs in 2021, an 19 percent increase. The industry's total annual employment impact in Ohio increased from 50,330 jobs in 2017 to 61,740 jobs in 2021, a 23 percent increase. The industry's total annual employment impact in Virginia increased from 65,500 jobs in 2017 to 86,290 jobs in 2021, a 32 percent increase (see **Table E-3**).

Table E-3.– Total Economic Impacts of the Data Center Industry on Selected States, 2017-2021

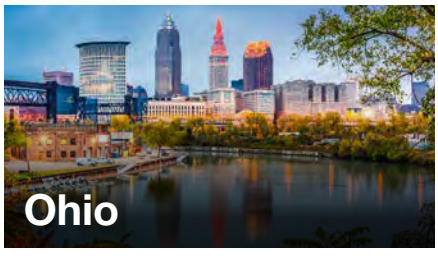
Item	2017	2018	2019	2020	2021
Employment (jobs)[1]					
Arizona	60,810	62,410	64,920	65,660	72,210
Ohio	50,330	53,050	55,140	59,760	61,740
Virginia	65,500	64,460	74,930	81,770	86,290
Labor Income ($millions)					
Arizona	$3,891	$4,147	$4,382	$4,578	$5,330
Ohio	$2,994	$3,358	$3,614	$3,960	$4,388
Virginia	$5,051	$5,041	$6,214	$6,814	$7,921
GDP ($millions)					
Arizona	$6,965	$6,850	$7,211	$7,460	$8,573
Ohio	$5,027	$5,650	$6,099	$6,462	$7,070
Virginia	$8,913	$8,979	$11,079	$11,732	$13,525

Source: PwC calculations using the IMPLAN modeling system and public data sources. Details may not add up to totals due to rounding.



72,210 jobs

The data center industry's total employment impact supported 72,210 jobs in Arizona in 2021, an increase of 19% from 2017.



61,740 jobs

The data center industry's total employment impact supported 61,740 jobs in Ohio in 2021, an increase of 23% from 2017.

86,290 jobs

The data center industry's total employment impact supported 86,290 jobs in Virginia in 2021, an increase of 32% from 2017.

Environmental and Social Impacts

DCC member companies participated in an environmental impact survey and social impact survey in conjunction with this report. Among the small number of survey participants, procurement of clean energy grew substantially over the 2017-2021 period, and participants also reduced their Scope 2[2] greenhouse gas emissions over the period. Data center owners and operators also contributed billions of dollars towards science, technology, engineering, arts, and mathematics (STEAM) education and other workforce development programs, and millions of dollars in charitable contributions.[3] Respondents to the social impact survey also increased workforce representation of women and racial and ethnic minority groups between 2019-2021.

[2] Greenhouse gases are categorized in three scopes. Scope 1 emissions are produced directly from the combustion of fuel. Scope 2 are indirect emissions from the use of purchased electricity. Scope 3 emissions are indirect emissions from a company's value chain, discussed further in Section IV.

[3] PwC Survey of DCC members.

I. Introduction

The rapid expansion of digital technologies, the proliferation of cloud computing, and the increasing demand for data-intensive applications have driven the exponential growth of data centers in the United States and worldwide. Data centers have become vital infrastructure supporting our digital-driven society. At the same time, they are driving economic activity and job opportunities across the United States.

DCC engaged PwC to quantify the economic, environmental, and social impacts of the US data center industry, including job creation, economic growth, regional development, and environmental sustainability. This report presents PwC's assessments for the 2017-2021 period at the national level and for three states: Arizona, Ohio, and Virginia.[4] We selected a set of states significant to the data center industry that reflect a range of market sizes and of varying maturity. Arizona is a rapidly growing data center market, with the Phoenix metro area ranked third in data center leasing activity in the first half of 2022.[5] Ohio is an emerging market for the data center industry. Virginia is a large and mature data center market.

The establishment and expansion of data centers have generated a wide range of employment opportunities across different skill levels, from construction and facility management to highly specialized roles in information technology (IT) and data management. The US data center industry has become a catalyst for economic growth, attracting investments and fostering innovation. Beyond the direct impact on job creation, data centers generate secondary effects by stimulating the growth of supporting industries such as construction, telecommunications, power infrastructure, and technology manufacturing.

DCC members completed an environmental impact survey and social impact survey for the purposes of this report. Of the 27 DCC member companies (24 at the time the survey was conducted), 13 submitted environmental and social impact surveys. Responses have been aggregated in some presentations to anonymize the data. The survey responses are the primary source of environmental and social impact data for this report. Additional data from member companies' environmental, social, and governance (ESG) reports, corporate social responsibility (CSR) reports, and other sources are documented throughout the report. The environmental and social impacts described in the report are representative only of the DCC members who participated in the survey and are not necessarily representative of the entire data center industry.

Data centers have rapidly innovated to drive operational efficiencies in the use of water and energy and meet their environmental sustainability goals. Data center operations often require large amounts of electricity and water to power and cool their equipment. As the industry has grown significantly over the last decade, there has been increasing attention to the environmental impacts of data centers from regulators and residents in the communities where data centers are located. This report estimates environmental impacts from 2017 to 2021 regarding energy[6] use, including both clean energy procurement and advances in energy efficiency, carbon emissions, water consumption and replenishment, and waste.

[4] Data for select environmental and social impact metrics were available for 2022 and are included in this report.
[5] CBRE Research, North America Data Center Trends H1 2022, (CBRE, 2022), https://www.cbre.com/insights/reports/north-america-data-center-trends-h1-2022#download-report.
[6] Clean energy is energy that is produced by non-polluting or greenhouse gas-emitting methods. Clean energy includes renewable energy sources such solar, wind, geothermal energy, and hydropower, as well as non-renewable sources such as nuclear energy.

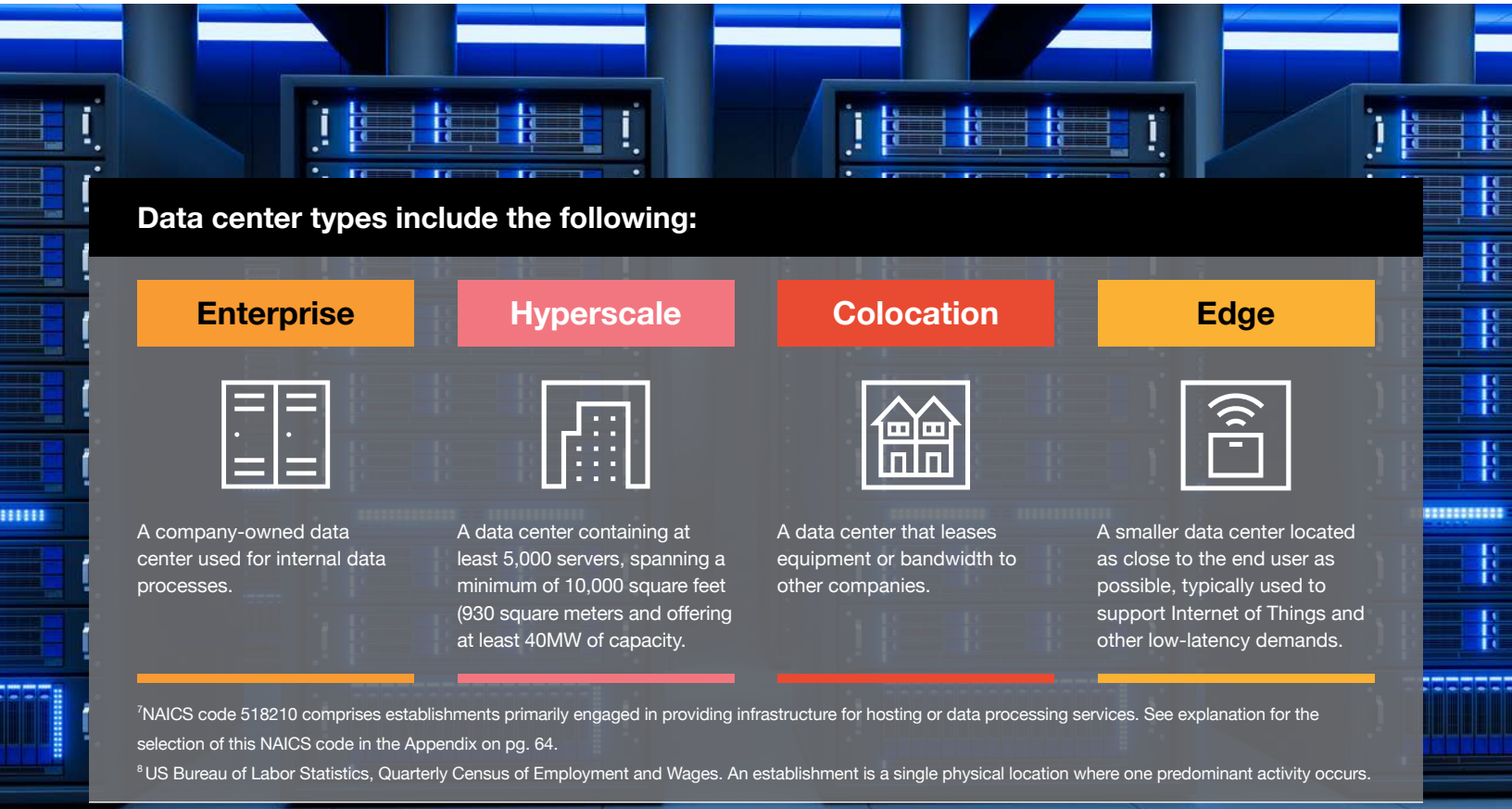
In addition to the economic benefits to local communities, the data center industry creates positive social impacts. This report presents data center contributions in science, technology, engineering, arts, and mathematics (STEAM) education and workforce development programs, community support, diversity, equity, and inclusion (DEI) initiatives, enhancing connectivity infrastructure in rural communities, and support of small and minority-owned businesses.

This report is organized as follows: **Section II** defines the data center industry for this study. **Section III** presents PwC's estimates of the industry's total economic impacts at the national and state levels for Arizona, Ohio, and Virginia for the 2017-2021 period, the most recent five years for which a consistent set of national and state-level data by industry is available. **Section IV** presents PwC's estimates of data center environmental impacts in the areas of energy efficiency, clean energy, carbon emissions, water usage and replenishment, and waste. **Section V** presents PwC's estimates of data center companies' social impacts in the areas of STEAM education, workforce development, DEI, community support, connectivity impact, and small and minority-owned business support. An appendix at the conclusion of the report provides additional information on data sources and methodology for the economic impact estimates.

II. Industry Overview

Data centers power our daily lives. They are the physical facilities that house computing machines and related information technology (IT) infrastructure, such as servers and network equipment, and store the digital data demanded by users around the globe. With their roots in the large computer rooms of the 1940s, data centers and the data stored within them have been powering the technology sector and enabling business-critical functions across nearly all sectors throughout our increasingly digitally connected economy for decades. Data centers are essential digital infrastructure that support nearly all industries across all sectors.

For the purpose of this study, we define the data center industry to include all establishments under the North American Industry Classification System ("NAICS") code 518210.[7] The data center industry, as measured by NAICS code 518210, has experienced tremendous growth over the last 20 years. At the end of the third quarter of 2022 (the most recent quarter for which government data are currently available), there were 47,310 data center establishments spanning every state and the District of Columbia, more than three times the number of data center establishments that were in operation in 2001.[8] The pace of the expansion was especially strong in the last five years, with the industry recording double-digit growth in the number of data center establishments each year. This rapid growth is indicative of exponential growth of the US digital economy as government, businesses, and households embrace broader digital transformation.



Data center types include the following:

Enterprise	Hyperscale	Colocation	Edge
A company-owned data center used for internal data processes.	A data center containing at least 5,000 servers, spanning a minimum of 10,000 square feet (930 square meters and offering at least 40MW of capacity.	A data center that leases equipment or bandwidth to other companies.	A smaller data center located as close to the end user as possible, typically used to support Internet of Things and other low-latency demands.

[7] NAICS code 518210 comprises establishments primarily engaged in providing infrastructure for hosting or data processing services. See explanation for the selection of this NAICS code in the Appendix on pg. 64.

[8] US Bureau of Labor Statistics, Quarterly Census of Employment and Wages. An establishment is a single physical location where one predominant activity occurs.

Data centers provide a variety of hosting and data processing services, such as:

1. Business process management services,
2. Application service provisioning,
3. Web site hosting services,
4. Data management services,
5. Data storage services,
6. IT technical support services,
7. Other data processing or IT infrastructure provisioning services,
8. Information and document transformation services, and
9. Computer systems design services.

III. Economic Impact

This section presents the estimated economic impact of the data center industry in the United States for the 2017-2021 period, as well as at the state level for Arizona, Ohio, and Virginia.

In measuring the total economic impact, we included the **direct impact** (the jobs, labor income, value added, and tax payments from operations of companies in the data center industry), the **indirect impact** (the jobs, labor income, value added, and tax payments occurring throughout the supply chain of the data center industry), and the **induced impact** (the jobs, labor income, value added, and tax payments resulting from household spending of income earned either directly or indirectly from the data center industry).

We used the IMPLAN input-output model to quantify these linkages (a detailed description of data sources and modeling methodology used can be found in **Appendix A**).[9]

To measure the economic activity of the US data center industry, we considered four metrics: employment, labor income, value added, and tax payments, as defined below.

Employment	The number of full-time and part-time payroll and self-employed jobs averaged over the year.
Labor income	Total wages, salaries, and benefits, as well as proprietors' income.
Value added	The total output of each sector less the associated value of intermediate inputs.[10] The sum of the value added across all sectors in the economy is GDP. An industry's value added represents its contribution to GDP.
Tax payments	Fiscal support through taxes to the federal government and state and local governments.

A. US Results

As shown in **Table III-1** below, the data center industry had a significant impact on the US economy over the 2017-2021 period. During the onset of COVID-19 in 2020, the data center industry experienced growth in each economic indicator evaluated, with further growth in direct employment, labor income, and value added in 2021. This growth during a period of economic disruption further highlights the importance of the US data center industry to the US economy.

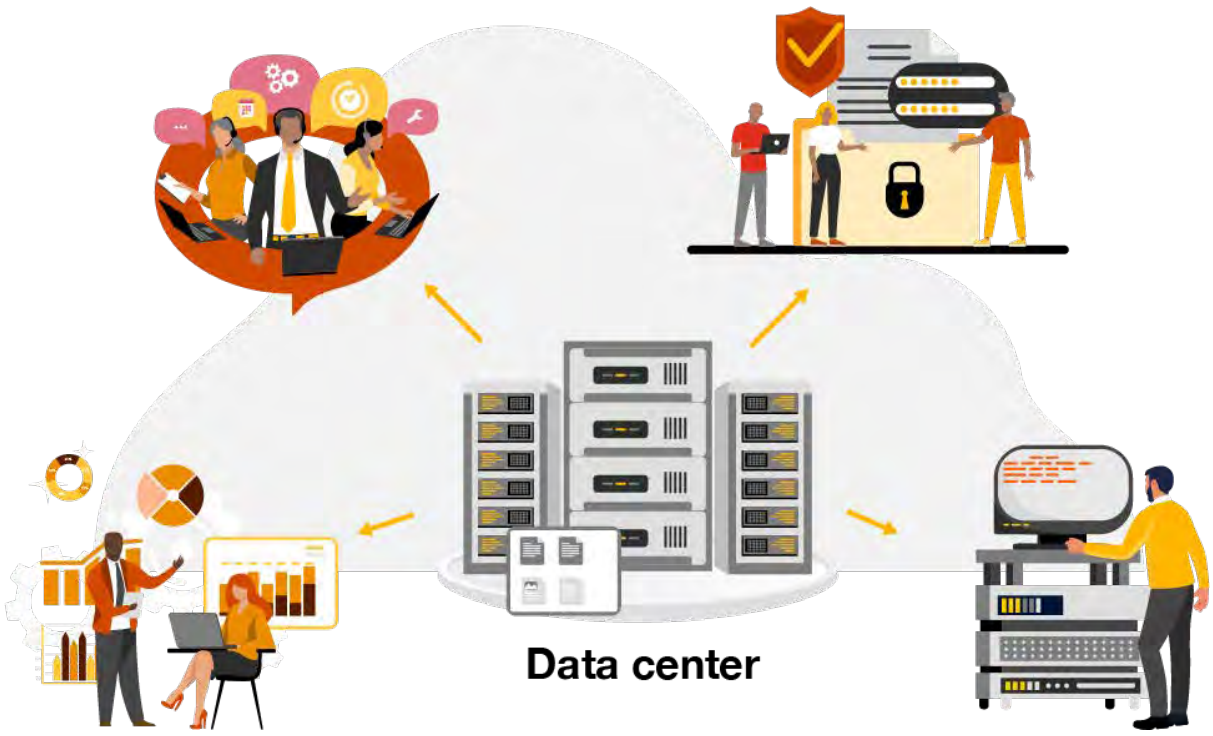
[9] The IMPLAN model, supported by the IMPLAN Group LLC., is an application that provides economic impact data and analysis using the economic modeling "input-output" (I-O) technique. Input-output analysis is a type of applied economic analysis that tracks the interdependence among various industries of an economy. IMPLAN is a regional economic analysis software that is designed to estimate the ripple effects of a given economic activity or the contribution of an existing activity within a specified geographic area of interest. "About IMPLAN", https://support.implan.com/hc/en-us/articles/360044985833-About-IMPLAN.

[10] Intermediate inputs are goods and services that are used in the production process to produce other goods or services. Bureau of Economic Analysis "What are intermediate inputs?" https://www.bea.gov/help/faq/185.

Employment. This report finds that at the national level, each direct job in the data center industry supports more than six jobs elsewhere in the US economy (including both operational and capital spending impacts). The jobs supported elsewhere in the economy are a result of the indirect impact (jobs existing to produce goods and services needed in the supply chain of the data center industry) as well as the induced impact (jobs resulting from additional household spending of income earned from the data center industry and its supply chain). Direct employment in the US data center industry grew by over 17 percent from 2017 to 2021. For comparison, the growth of employment in the United States overall was 2 percent over the same period.

Between 2017 and 2021, the data center industry's total annual impact (combining its direct, indirect, and induced impacts arising from data center construction and operations) on national employment grew from 2.9 million jobs in 2017 to 3.5 million jobs in 2021, a 20 percent increase over the period. Based on preliminary government data for 2022, the industry is estimated to have added more jobs in 2022 than it added over the entire 2017-2021 period, resulting in 560,000 direct jobs and supporting 4.2 million total jobs across the country.

Including both operational and capital spending impacts, each direct job in the US data center industry accounted for a total of 7.4 jobs throughout the US economy on average over the 2017-2021 period. This relationship is summarized as an employment multiplier of 7.4, meaning that each job in the US data center industry supported an average of 6.4 additional jobs elsewhere in the US economy through indirect and induced operational and capital spending impacts.[11]



[11] The employment multiplier based only on the operational impact averaged 6.5 over the 2017-2021 period.

Labor Income. Labor income earned directly from the data center industry grew by 74 percent between 2017 and 2021, rising from $43 billion to $75 billion. This growth is almost three times as much as the growth in labor income across all US industries over the same period. The industry's total annual impact on national labor income (from both operations and capital investments) grew from $209 billion in 2017 to $294 billion in 2021, a 40 percent increase. The labor income multiplier including both operational and capital spending impacts averaged 4.3 over the 2017-2021 period, meaning that for each dollar of labor income in the US data center industry, 3.3 dollars of labor income were generated elsewhere in the US economy.[12]

Value Added. Value added generated directly by the data center industry grew by 53 percent between 2017 and 2021, rising from $89 billion in 2017 to $136 billion in 2021. Over this same period, the growth rate in GDP for the entire US economy was only about half as much. The industry's total annual impact on US value added (i.e., contribution to GDP) from both operations and capital investments grew from $355 billion in 2017 to $486 billion in 2021, a 37 percent increase. The value added multiplier including both operational and capital spending impacts averaged 3.7 over the 2017-2021 period, meaning that for each dollar of direct value added in the US data center industry 2.7 dollars of value added were supported elsewhere in the US economy.[13]

[12] The labor income multiplier based only on the operational impact averaged 3.8 over the 2017-2021 period.

[13] The value added multiplier based only on the operational impact averaged 3.4 over the 2017-2021 period.

At the national level, each direct job in the data center industry supports **more than six jobs** elsewhere in the US economy.

Table III-1.– The Economic Impacts of the US Data Center Industry 2017-2021

Item	2017	2018	2019	2020	2021
Employment (jobs)[1]					
Direct Impact	400,100	420,400	421,600	443,600	468,800
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Capital Spending Impact	$33	$34	$38	$47	$55
Total Impact[4]	$355	$390	$409	$436	$486

Source: PwC calculations using the IMPLAN modeling system and public data sources. Details may not add up to totals due to rounding.

1. Employment is defined as the number of payroll and self-employed jobs, including part-time jobs.
2. Labor income is defined as wages, salaries, and benefits as well as proprietors' income.
3. Value added refers to the additional value created at a particular stage of production. It is measured as the difference between the total revenue of the industry and the total cost of its materials, supplies, and services purchased from other businesses, other than capital goods.
4. Total impact includes direct, indirect, and induced impacts. Direct impacts are those occurring directly within the data center industry. Indirect impacts are those occurring within other businesses as part of the supply chain to the data center industry. Induced impacts are those arising from household spending of income earned from the data center industry or its supply chain.

Taxes. The data center industry is an important tax contributor to the US economy. These tax contributions at the federal, state, and local level support the financing of government and public programs and services. Notable services supported by taxes include public education, maintenance of infrastructure such as roads and public transportation, and public health. Displayed in **Table III-2** below, the data center industry's total fiscal support to the federal government and state and local governments, including direct, indirect, and induced impacts, increased from $66.2 billion in 2017 to $99.6 billion in 2021, a 50 percent increase.

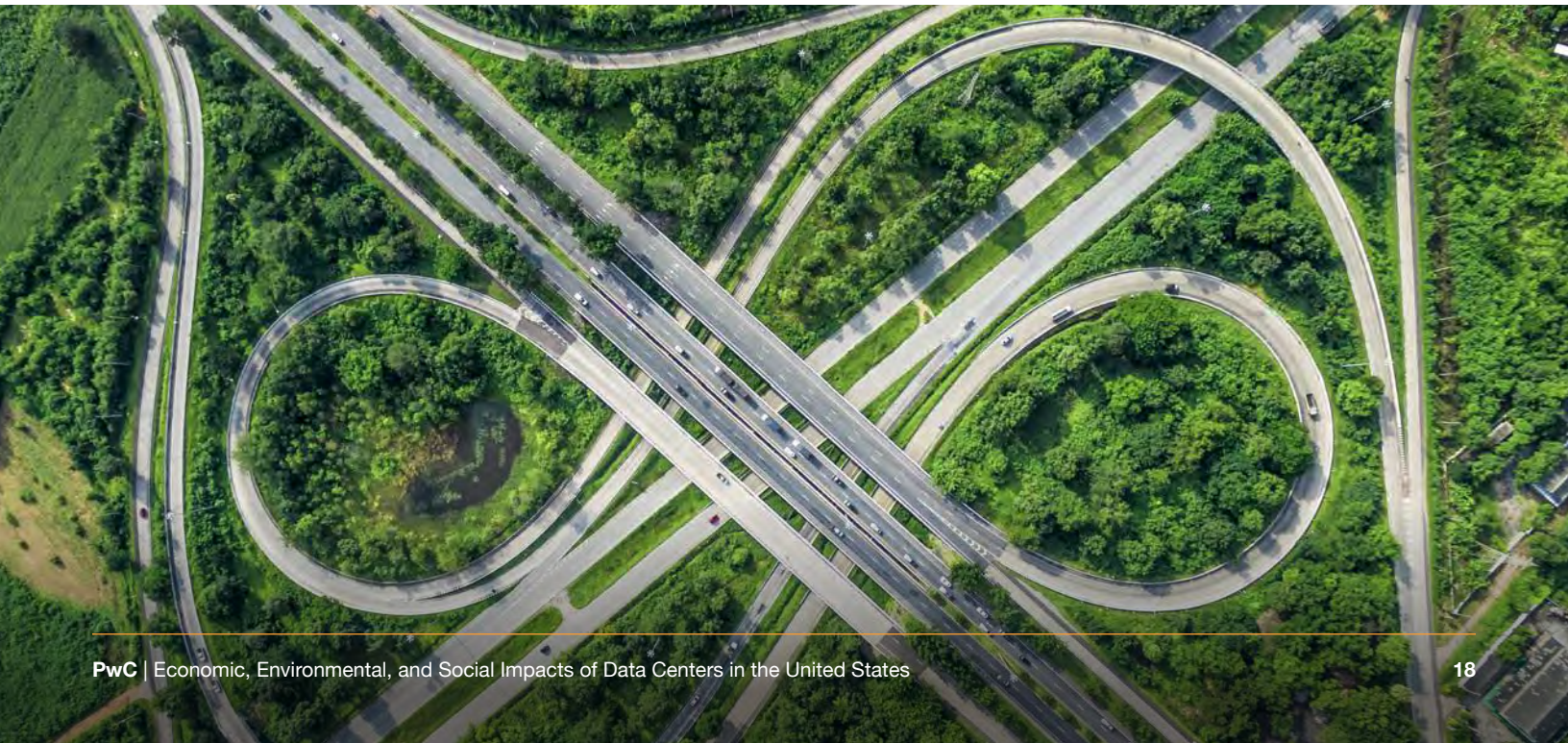
Data centers are eligible for exemptions from certain taxes in many states, as are other industries. Tax exemptions applicable to data centers in the states of Arizona, Ohio, and Virginia are discussed in **Section III B,** below.

Table III-2.– Federal, State, and Local Tax Impact of the US Data Center Industry, 2017-2021[1]

Item	2017	2018	2019	2020	2021
Total Impact ($billions)	**$66.2**	**$74.0**	**$79.0**	**$84.7**	**$99.6**
Social Insurance Contributions	$20.3	$22.7	$24.2	$26.9	$31.5
Corporate Income Taxes	$5.6	$6.3	$6.8	$7.1	$8.2
Personal Income Taxes	$20.2	$22.6	$24.2	$26.7	$31.2
Property Taxes	$8.1	$9.0	$9.6	$9.6	$11.5
Sales/Use Taxes	$9.1	$10.1	$10.8	$10.8	$12.9
Other payments	$2.9	$3.2	$3.4	$3.6	$4.3

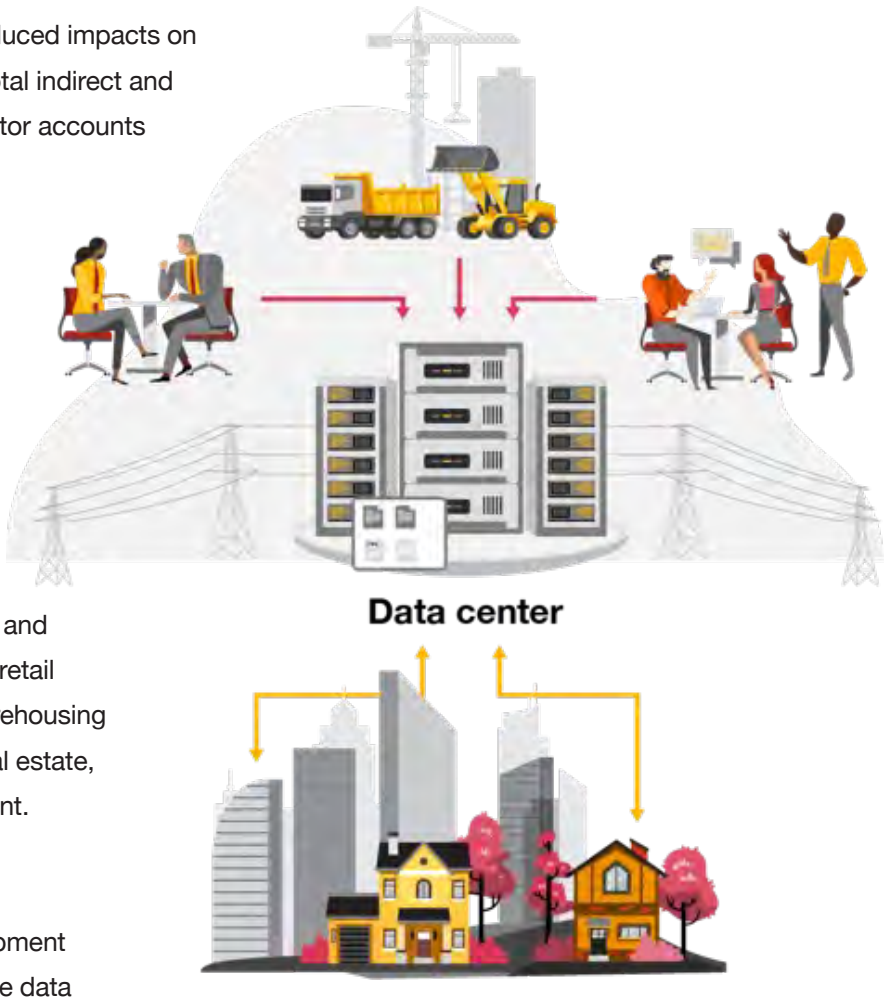
Source: PwC calculations using the IMPLAN modeling system and public data sources. Details may not add up to totals due to rounding.

1. Tax impact includes all federal, state, and local taxes directly or indirectly resulting from the US data center industry's construction and operations (including direct, indirect, and induced economic effects).



Widespread indirect and induced effects across industries. This study finds that the indirect and induced economic activity spurred by the data center industry between 2017 and 2021 occurred across a broad range of other US industries.

Table III-3 below breaks out the indirect and induced impacts on employment by sector as a percentage of the total indirect and induced employment impact.[14] The services sector accounts for over half of the indirect and induced impacts attributable to the US data center industry from 2017 to 2021. This is not surprising because the services sector, which includes professional services, administrative support services, food services, management consulting services, health care, and accommodations, among others, is the largest in the US economy.



The next three sectors with the greatest indirect and induced employment effects are wholesale and retail trade at over 10 percent, transportation and warehousing at roughly 9 percent, and finance, insurance, real estate, rental and leasing sector also at roughly 9 percent.

The manufacturing sector (including fiber cable, server, storage device, and other electrical equipment manufacturing) received close to 5 percent of the data center industry's indirect and induced employment impact. The information sector (excluding data centers) received nearly 3 percent of the data center industry's indirect and induced employment impact. The construction sector (including new structures and fiber cable installation) received nearly 2 percent of the data center industry's indirect and induced employment impact.

Industry distributions of the indirect and induced impacts for labor income and value added are similar, since the economic indicators of jobs, labor income, and value added are closely related to one another.

[14] The top supplying sectors benefiting from the data center industry's indirect economic effect are shown in Table A-2 in the appendix.

Table III-3.– Distribution of Indirect and Induced Activity Generated by the US Data Center Industry, 2017-2021: *Employment*

Total number and percent by industry

Item	2017	2018	2019	2020	2021
Total (thousands of jobs)	**2,525**	**2,628**	**2,684**	**2,884**	**3,039**
Services	59.4%	59.6%	59.5%	59.3%	59.4%
Wholesale and retail trade	10.2%	10.1%	10.1%	10.5%	10.4%
Transportation and warehousing	9.3%	9.3%	9.3%	9.2%	9.2%
Finance, insurance, real estate, rental and leasing	9.2%	9.2%	9.1%	9.1%	9.0%
Manufacturing	4.7%	4.7%	4.7%	4.7%	4.7%
Information	2.8%	2.8%	2.8%	2.7%	2.7%
Construction	1.8%	1.6%	1.8%	1.8%	1.9%
Other	1.2%	1.2%	1.1%	1.1%	1.1%
Agriculture, forestry, and fishing	1.0%	1.0%	1.0%	1.0%	1.0%
Utilities	0.4%	0.4%	0.4%	0.4%	0.4%
Mining	0.1%	0.1%	0.1%	0.1%	0.1%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: PwC calculations using the IMPLAN modeling system and public data sources. Details may not add up to totals due to rounding.

B. State Results

The economic impact of the data center industry varies from state to state, depending on each state's population, natural resources, industry mix, wage structure, spending and saving patterns, and connections to other economies. For this study, the economic impact reported for each state includes the data center industry's direct, indirect, and induced impacts in the state based only on the data center industry's operations in the state.[15]

[15] The operations of the data center industry outside of each state also generate economic benefits for the state through indirect and induced effects. These spillover benefits for each state are excluded from the analysis presented in this section.

Arizona

Arizona has the second greatest number of data center jobs among the three states evaluated. **Table III-4a** below details the data center industry's economic and tax impacts in Arizona.

Direct data center jobs in Arizona increased from 11,310 to 13,080 between 2017 and 2021, an increase of 16 percent, compared to an 8 percent increase in the state's economywide total employment over the same period. The indirect and induced employment impact in Arizona generated by Arizona's data center industry increased from 49,500 jobs to 59,130 jobs between 2017 and 2021, of which the operational employment impact increased from 44,340 jobs in 2017 to 51,630 jobs in 2021, and the capital spending employment impact increased from 5,160 jobs in 2017 to 7,500 jobs in 2021. All told, the industry's total annual employment impact in Arizona increased from 60,810 jobs in 2017 to 72,210 jobs in 2021, a 19 percent increase.

The industry's total annual labor income impact in Arizona increased from $3.9 billion in 2017 to $5.3 billion in 2021, a 37 percent increase.

The industry's total annual GDP impact in Arizona grew from $7.0 billion in 2017 to $8.6 billion in 2021, a 23 percent increase.

Arizona's data center industry directly and indirectly **generated $2.3 billion total state and local taxes** over the 2017 and 2021 period.

Arizona offers a transaction privilege and use tax exemption for data center equipment to qualifying data centers investing at least $50 million.[16] Local governments in Arizona may offer other exemptions and abatements.

To put the total tax impacts of the data center industry in perspective, we evaluated the industry's state and local tax revenue impact for Arizona relative to the state and local governments' fiscal budget and spending for 2020, the most recent year for which state-level government spending data are currently available.[17] Our analysis shows that, in 2020, the US data center industry's total state and local tax impact in Arizona was sufficient to fund all of Arizona's state and local expenditures on library education services plus over one-fourth of hospital services.

[16] The state government in Arizona reported $1.1 million in transaction privilege and use tax exemptions on sales of computer data equipment for use in a certified computer data center in fiscal year 2021 (https://www.azjlbc.gov/revenues/22taxbk.pdf).

[17] Census Bureau, "Annual Survey of State and Local Government Finances", https://www.census.gov/programs-surveys/gov-finances.html. Data for state and local government spending in 2021 are not yet available.

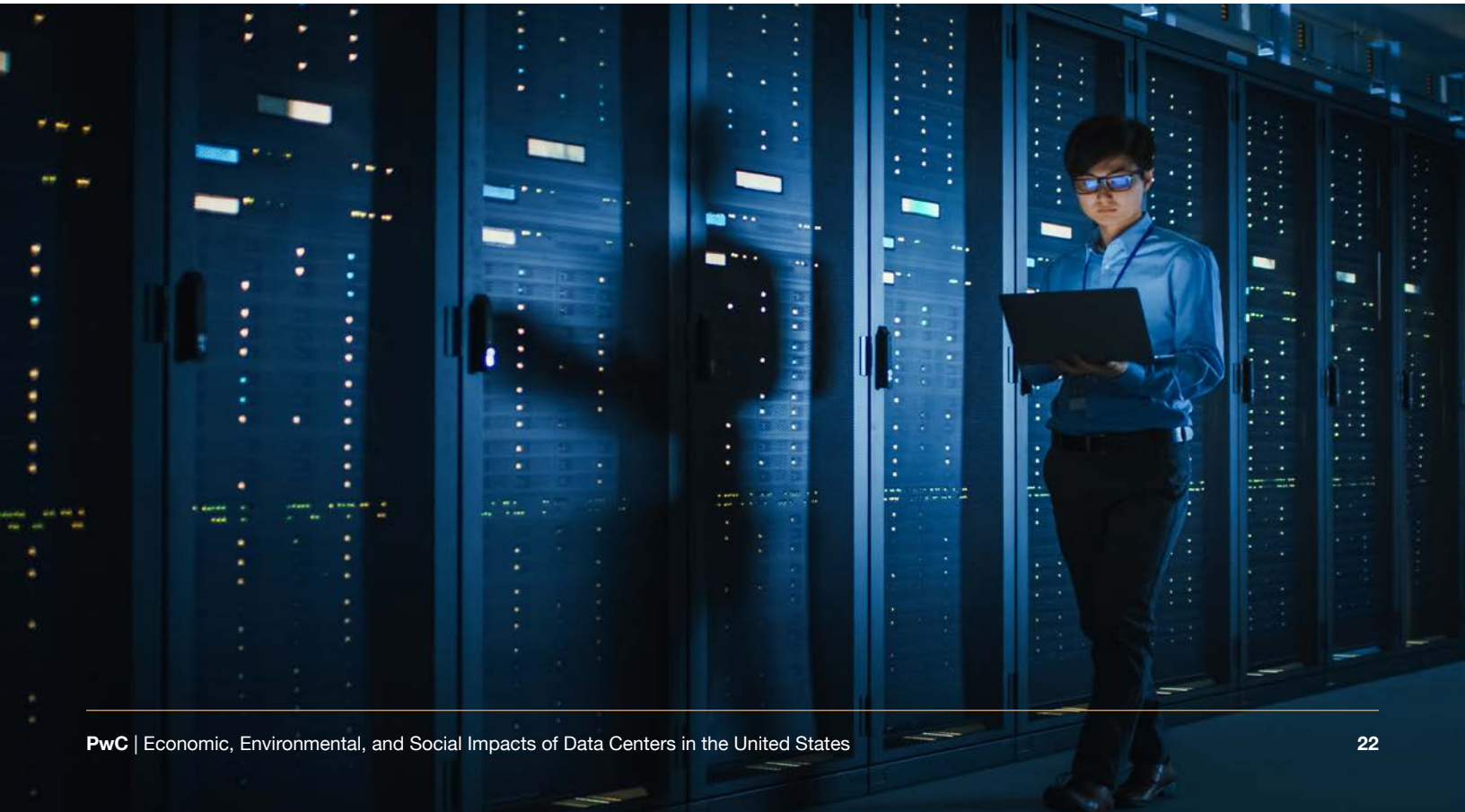


Table III-4a.– The Economic and Tax Impacts of the Data Center Industry in Arizona, 2017-2021

Item	2017	2018	2019	2020	2021
Employment (jobs)					
Direct Impact	11,310	11,640	11,980	11,890	13,080
Indirect and Induced Impact	49,500	50,770	52,940	53,770	59,130
Operational Impact	44,340	45,750	47,050	46,710	51,630
Capital Spending Impact	5,160	5,020	5,890	7,060	7,500
Total Employment Impact	**60,810**	**62,410**	**64,920**	**65,660**	**72,210**
Labor Income ($millions)					
Direct Impact	$1,051	$1,143	$1,205	$1,290	$1,623
Indirect and Induced Impact	$2,841	$3,004	$3,177	$3,288	$3,707
Operational Impact	$2,538	$2,694	$2,816	$2,828	$3,167
Capital Spending Impact	$302	$309	$361	$461	$540
Total Labor Income Impact	**$3,891**	**$4,147**	**$4,382**	**$4,578**	**$5,330**
GDP ($millions)					
Direct Impact	$2,480	$2,098	$2,188	$2,292	$2,737
Indirect and Induced Impact	$4,485	$4,751	$5,023	$5,167	$5,837
Operational Impact	$4,028	$4,290	$4,497	$4,528	$5,075
Capital Spending Impact	$456	$461	$526	$639	$762
Total GDP Impact	**$6,965**	**$6,850**	**$7,211**	**$7,460**	**$8,573**
Total State and Local Tax Impact ($millions) [1]	**$422**	**$427**	**$462**	**$442**	**$565**

Source: PwC calculations using the IMPLAN modeling system and public data sources. Details may not add up to totals due to rounding.

[1] Tax impact includes all state and local taxes directly or indirectly resulting from the US data center industry's construction and operations (including direct, indirect, and induced economic effects) benefiting the state.

Ohio

Ohio has the lowest direct data center employment among the three states evaluated, largely because it is an emerging market for the data center industry. **Table III-4b** below details the data center industry's economic and tax impacts in Ohio.

Direct data center industry employment grew by a rapid 17 percent between 2017 and 2021 compared to less than a 1 percent increase in Ohio's economywide total employment over the same period. The indirect and induced employment impact in Ohio generated by Ohio's data center industry increased from 40,530 jobs to 50,240 jobs between 2017 and 2021, of which the operational employment impact increased from 33,380 jobs in 2017 to 39,410 jobs in 2021, and the capital spending employment impact increased from 7,150 jobs in 2017 to 10,830 jobs in 2021. All told, the industry's total annual employment impact in Ohio increased from 50,330 jobs in 2017 to 61,740 jobs in 2021, a 23 percent increase.

The industry's total annual labor income impact in Ohio increased from $3.0 billion in 2017 to $4.4 billion in 2021, a 47 percent increase.

The industry's total annual GDP impact in Ohio grew from $5.0 billion in 2017 to $7.1 billion in 2021, a 41 percent increase.

Ohio's data center industry directly and indirectly **generated $2.6 billion in total** state and local tax revenues in Ohio from 2017 to 2021.

Ohio offers sales tax abatement for data centers that invest at least $100 million and create annual payroll of $1.5 million or more. Local governments in Ohio may offer other exemptions and abatements.

To put the total tax impacts of the data center industry in perspective, we evaluated the industry's state and local tax revenue impact for Ohio relative to the state and local governments' fiscal budget and spending for 2020, the most recent year for which state-level government spending data are currently available.[18] Our analysis shows that in 2020, the US data center industry's total tax impact in Ohio was sufficient to fund all of Ohio's state and local government expenditures on airport-related services plus roughly 20 percent of Ohio's state and local expenditures on natural resource protection and management.

[18] Census Bureau, "Annual Survey of State and Local Government Finances", https://www.census.gov/programs-surveys/gov-finances.html. Data for state and local government spending in 2021 are not yet available.

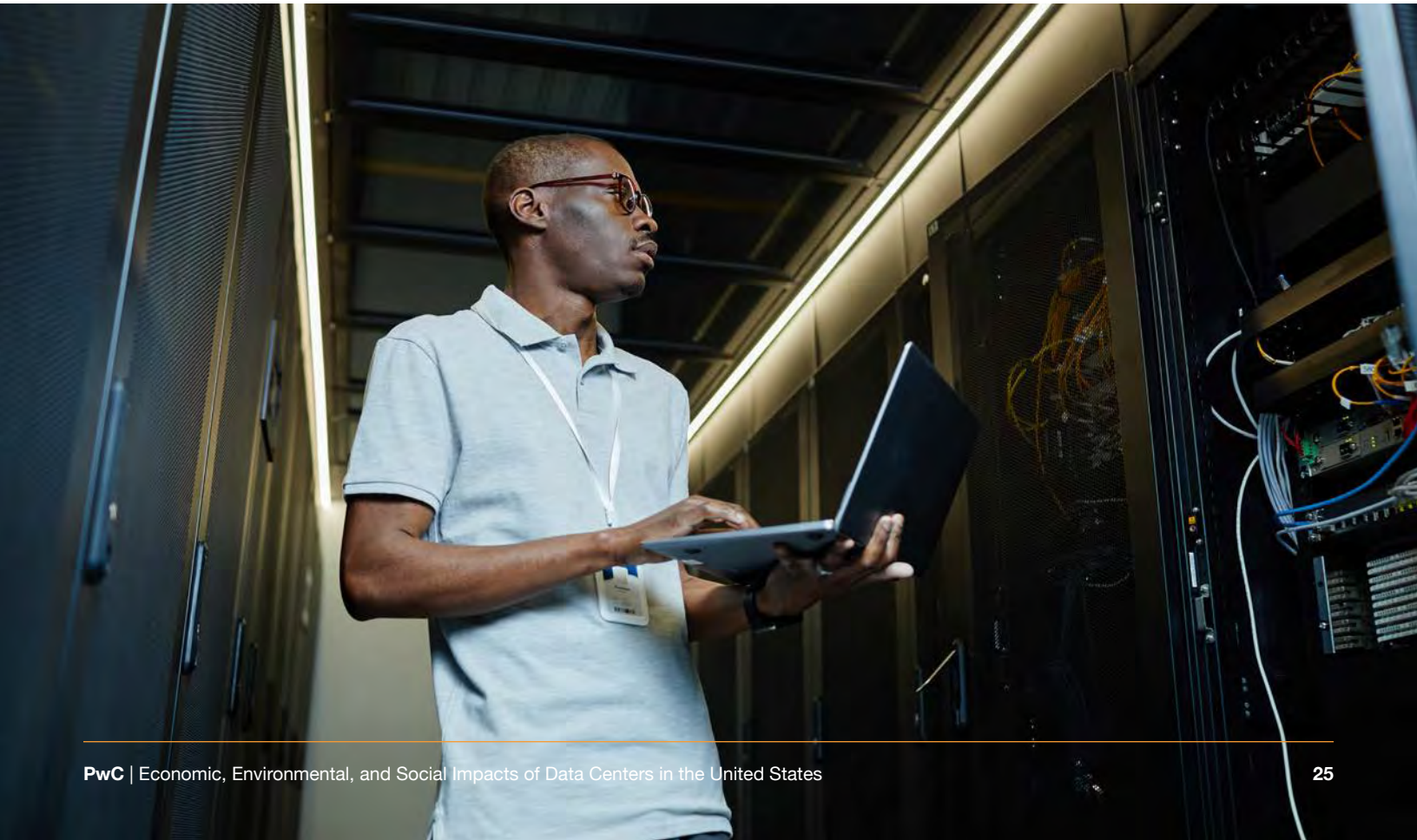


Table III-4b.– The Economic and Tax Impacts of the Data Center Industry in Ohio, 2017-2021

Item	2017	2018	2019	2020	2021
Employment (jobs)					
Direct Impact	9,800	10,490	10,670	11,290	11,500
Indirect and Induced Impact	40,530	42,560	44,470	48,470	50,240
Operational Impact	33,380	35,260	36,070	38,170	39,410
Capital Spending Impact	7,150	7,300	8,400	10,300	10,830
Total Employment Impact	**50,330**	**53,050**	**55,140**	**59,760**	**61,740**
Labor Income ($millions)					
Direct Impact	$750	$921	$1,033	$1,087	$1,299
Indirect and Induced Impact	$2,244	$2,437	$2,581	$2,873	$3,089
Operational Impact	$1,818	$2,007	$2,063	$2,203	$2,309
Capital Spending Impact	$426	$430	$518	$669	$780
Total Labor Income Impact	**$2,994**	**$3,358**	**$3,614**	**$3,960**	**$4,388**
GDP ($millions)					
Direct Impact	$1,441	$1,737	$1,956	$1,912	$2,176
Indirect and Induced Impact	$3,586	$3,913	$4,143	$4,551	$4,894
Operational Impact	$2,965	$3,270	$3,396	$3,633	$3,806
Capital Spending Impact	$621	$643	$747	$918	$1,088
Total GDP Impact	**$5,027**	**$5,650**	**$6,099**	**$6,462**	**$7,070**
Total State and Local Tax Impact ($millions) [1]	**$419**	**$481**	**$533**	**$489**	**$630**

Source: PwC calculations using the IMPLAN modeling system and public data sources. Details may not add up to totals due to rounding.

[1] Tax impact includes all state and local taxes directly or indirectly resulting from the US data center industry's construction and operations (including direct, indirect, and induced economic effects) benefiting the state.

Virginia

Virginia has the highest industry direct employment of the US states evaluated due to the number and size of data centers in the state. **Table III-4c** below details the data center industry's economic and tax impacts in Virginia.

Direct data center jobs in Virginia increased by 26 percent between 2017 and 2021 compared to a 2 percent increase in the state's economywide total employment over the same period. The indirect and induced employment impact in Virginia generated by Virginia's data center industry increased from 51,730 jobs to 68,910 jobs between 2017 and 2021, of which the operational employment impact increased from 44,780 jobs in 2017 to 58,320 jobs in 2021, and the capital spending employment impact increased from 6,950 jobs in 2017 to 10,590 jobs in 2021. All told, the industry's total annual employment impact in Virginia increased from 65,500 jobs in 2017 to 86,290 jobs in 2021, a 32 percent increase.

The industry's total labor annual income impact in Virginia increased from $5.1 billion in 2017 to $7.9 billion in 2021, a 57 percent increase.

The industry's total annual GDP impact in Virginia grew from $8.9 billion in 2017 to $13.5 billion in 2021, a 52 percent increase.

Virginia's data center industry directly and indirectly **generated $3.5 billion** in state and local tax revenues over the 2017-2021 period.

Virginia offers a sales tax exemption for data center equipment to those data centers that qualify by meeting both a capital investment and employment threshold.[19] Local governments in Virginia may offer other exemptions and abatements.

To put the total tax impacts of the data center industry in perspective, we evaluated the industry's state and local tax revenue impact for Virginia relative to the state and local governments' fiscal budget and spending for 2020, the most recent year for which state-level government spending data are currently available.[20] Our analysis shows that in 2020, the US data center industry's total tax impact in Virginia was sufficient to fund Virginia's state and local expenditures on all cash assistance program payments plus almost one-third of housing and community development program expenditures.

[19] Data from Virginia Department of Accounts show that the amount of abated retail sales and use tax revenues for data centers for the fiscal year 2021 was $124.5 million, nearly twice the amount of data center tax abatements in 2017 ($65.2 million). Available at: https://www.doa.virginia.gov/reports/ACFReport/2021-ACFReport.shtml.

[20] Census Bureau, "Annual Survey of State and Local Government Finances", https://www.census.gov/programs-surveys/gov-finances.html. Data for state and local government spending in 2021 are not yet available.

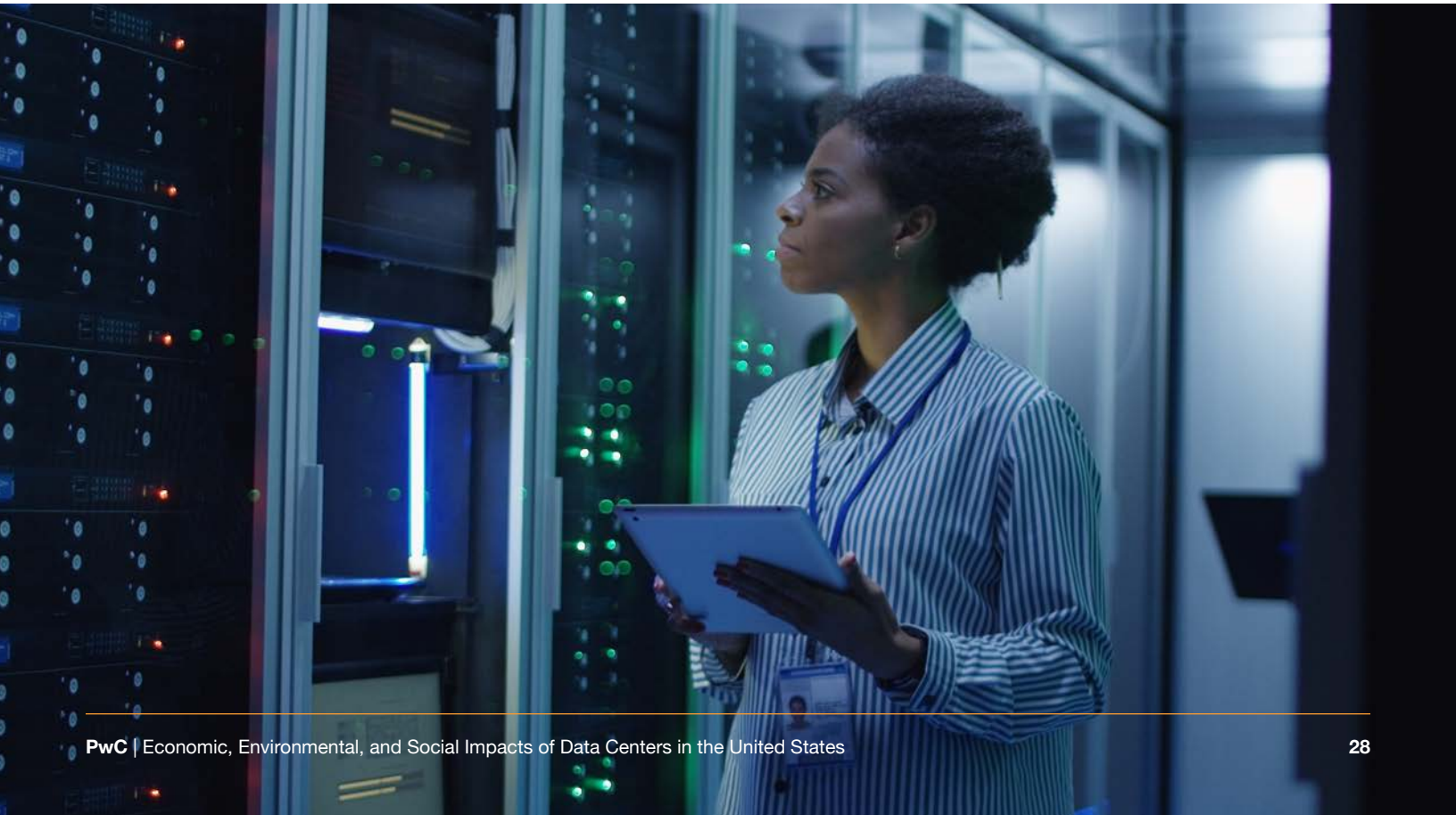


Table III-4c.– The Economic and Tax Impacts of the Data Center Industry in Virginia, 2017-2021

Item	2017	2018	2019	2020	2021
Employment (jobs)					
Direct Impact	13,770	13,590	15,730	16,880	17,380
Indirect and Induced Impact	51,730	50,870	59,200	64,890	68,910
Operational Impact	44,780	44,170	51,070	54,850	58,320
Capital Spending Impact	6,950	6,700	8,130	10,040	10,590
Total Employment Impact	**65,500**	**64,460**	**74,930**	**81,770**	**86,290**
Labor Income ($millions)					
Direct Impact	$1,706	$1,683	$2,245	$2,375	$3,008
Indirect and Induced Impact	$3,345	$3,359	$3,969	$4,440	$4,912
Operational Impact	$2,827	$2,836	$3,339	$3,614	$3,938
Capital Spending Impact	$518	$523	$631	$825	$974
Total Labor Income Impact	**$5,051**	**$5,041**	**$6,214**	**$6,814**	**$7,921**
GDP ($millions)					
Direct Impact	$3,640	$3,667	$4,804	$4,789	$5,824
Indirect and Induced Impact	$5,273	$5,312	$6,275	$6,943	$7,701
Operational Impact	$4,538	$4,569	$5,403	$5,869	$6,409
Capital Spending Impact	$735	$743	$872	$1,074	$1,292
Total GDP Impact	**$8,913**	**$8,979**	**$11,079**	**$11,732**	**$13,525**
Total State and Local Tax Impact ($millions) [1]	**$568**	**$593**	**$728**	**$725**	**$909**

Source: PwC calculations using the IMPLAN modeling system and public data sources. Details may not add up to totals due to rounding.

[1] Tax impact includes all state and local taxes directly or indirectly resulting from the US data center industry's construction and operations (including direct, indirect, and induced economic effects) benefiting the state.

C. Other Economic Benefits of Data Centers

C1. Diverse Job Opportunities

The data center industry provides employment opportunities for individuals across a broad range of educational backgrounds. As shown in **Table III-5a** below, nationwide over 40 percent of the data center industry's workforce are high school graduates or have some post-secondary training or associate degree, and nearly 60 percent have a four-year college degree or higher.[21] This contrasts with workers across all US jobs, where about 70 percent have less than a four-year college degree and 30 percent have a bachelor's degree or higher.

Table III-5a.– Typical Employee Education: Data Centers vs. All US Jobs, 2021

	Percent of Employees	
Education Level	**Data Centers**	**All US Jobs**
Less than a high school diploma	0.8%	9.9%
High school diploma or equivalent	16.5%	35.2%
Post-secondary certificate or some college courses	14.2%	17.4%
Associate degree (or other 2-year degree)	10.8%	8.5%
Bachelor's degree	46.7%	19.5%
Post-graduate	11.1%	9.6%
Total	**100.0%**	**100.0%**

Source: PwC calculations using the IMPLAN modeling system. Details may not add up to totals due to rounding.

[21] IMPLAN occupation database, which combines four government data sources: (1) BLS Occupational Employment and Wage Statistics (OEWS); (2) BLS Employment Projections national industry by occupation matrix; (3) Census Bureau American Community Survey (ACS) Public Use Microdata Sample (PUMS); and (4) The US Labor Department's O*NET database, which provides information on knowledge, skills, abilities, education, work experience, and on-the-job training by occupation.

Data centers support a range of occupations with growth opportunities for employees, as shown in Table III-5b below. Some of the most in-demand job positions in the industry include: (1) computer specialists (38.9 percent), (2) business operations specialists (10.5 percent), (3) information and record clerks (8.1 percent), and (4) operations specialties managers (6.6 percent).

Table III-5b.– US Data Center Industry: Types of Occupation, 2021

Occupation	Percent of Employees
Computer Occupations	38.9%
Business Operations Specialists	10.5%
Information and Record Clerks	8.1%
Operations Specialties Managers	6.6%
Other Office and Administrative Support Workers	5.8%
Sales Representatives, Services	5.7%
Top Executives	4.2%
Financial Specialists	2.9%
Advertising, Marketing, Promotions, Public Relations, and Sales Managers	2.7%
Financial Clerks	1.9%
Supervisors of Office and Administrative Support Workers	1.7%
Sales Representatives, Wholesale and Manufacturing	1.2%
Mathematical Science Occupations	1.2%
Engineers	1.2%
All Other Occupations	7.5%
Total	**100.0%**

Source: PwC calculations using the IMPLAN modeling system.

Data center occupations require a wide range of skills and expertise, allowing people with different educational backgrounds and professional experiences to contribute to the growing field. For example,

1. **Technical Roles:** Data centers employ professionals with technical knowledge and skills in areas such as networking, system administration, and hardware maintenance. These roles often require specialized training or degrees in computer science, information technology, or related fields.
2. **Operations and Management:** The operations and management of data centers involve personnel responsible for monitoring, troubleshooting, and maintaining critical systems and equipment. These roles may require certifications in areas such as data center operations, facilities management, or project management.

3. **Security and Compliance:** Data centers must protect sensitive information. Professionals with backgrounds in cybersecurity, risk management, compliance, and auditing can play crucial roles in implementing and maintaining robust security measures and ensuring adherence to relevant regulations.
4. **Support and Customer Service:** Data centers need to provide technical support, customer service, and account management services. These roles may require strong communication skills and a customer-oriented approach, among others, making such job opportunities available to individuals from diverse backgrounds.
5. **Project Management:** Data center construction, expansion, or migration projects require experienced project managers. Individuals with project management expertise can supervise the planning, coordination, and successful execution of these projects.
6. **Sales and Marketing:** Data centers operators need sales and marketing professionals to promote their services, attract customers, and drive business growth, thus opening the door for individuals with backgrounds in sales, marketing, or business development.

As the types of jobs described above illustrate, the data center industry provides diverse job opportunities in the local communities in which they operate. The range of job opportunities can be attractive to residents who wish to stay and work in their own community, whether they are young workers entering the job market for the first time, or experienced professionals who look to join the growing industry. This helps strengthen the talent pool in the local economy and form the foundation of a local "tech hub," providing the expertise needed to support the growth of digital businesses in the local economy.[22] A data center-led tech hub may result in spillover benefits to the local economy, particularly in terms of innovation and productivity.[23] This is because data centers help bring together technology companies, startups, researchers, and industry professionals. Their collaboration enhances the flow of ideas, sharing of best practices, and the transfer of knowledge, all of which can help stimulate new innovations. Further, data centers serve as the foundation for emerging technologies such as artificial intelligence, machine learning, Internet of Things (IoT), and big data analytics, so their presence increases the likelihood of the adoption and development of these technologies in the local economy. This in turn leads to the creation of innovative products, services, and solutions that enhance productivity, efficiency, and competitiveness across other sectors of the region.

In addition, a more diversified economy reduces the exposure of the region to a reduction in economic activity specific to a single sector. A diversified economy creates a sustainable cycle of economic activity, makes employment more stable, and reduces the volatility of local government tax revenue.

[22] A tech hub refers to a geographical location where there is a concentration of technological-related businesses and startups as well as supporting infrastructure and talent pool.

[23] The potential spillover benefits of a tech hub is a part of the agglomeration phenomenon extensively studied by economists. For a recent literature review, see Kathleen Bolter and Jim Robey, "Agglomeration Economies: A Literature Review," W.E. Upjohn Institute for Employment Research, 2020. Also see Enrico Moretti, "The Effect of High-Tech Clusters on the Productivity of Top Inventors," American Economic Review, 2021, 111(10): 3328–3375, https://doi.org/10.1257/aer.20191277.

C2. Investment and Development

Businesses throughout the data center supply chain benefit from the development of data centers. When a data center opens a new campus location, it draws additional businesses to the surrounding area. Suppliers to data centers may be drawn to the area to be geographically close. Other businesses may come due to the availability of high-speed internet connectivity and other infrastructure provided by the data center industry.

Given the interdependency between the US data center industry and the rest of the economy, the data center industry's growing demand for energy, infrastructure, technology, connectivity, security, and public services has driven investment in many other industries, supporting their development and advancement.

Clean Energy: As detailed in **Section IV: Environmental Impact,** data centers are energy intensive. The industry has increased its use of clean energy sources, such as solar and wind, to power its operations. This has led to increased industry investment in clean energy projects.

Real Estate: As data centers continue to expand, more physical space is needed to support the expansion. This has led to increased demand for commercial real estate in areas of the country across the United States, including:

- Northern Virginia, known as "Data Center Alley"

- Silicon Valley, home to many of the world's largest technology companies and a popular location for data centers
- Dallas-Fort Worth, one of the largest data center markets and high-tech employment centers in the country
- Chicago, a major telecommunications hub
- New York metro area, a popular location for data centers due to its central location and proximity to major financial markets
- Phoenix, due to the city's lower power costs relative to proximate markets, affordable real estate, and low natural disaster risk
- Atlanta, due to robust connectivity, power availability, a competitive colocation/cloud environment, and low natural disaster risk[24]

Artificial Intelligence (AI): Data centers offer high-performance servers, GPUs (Graphics Processing Units), and specialized hardware accelerators like TPUs (Tensor Processing Units) that can handle large-scale matrix operations with high throughput and parallel processing capabilities, ideal for running complex AI models, conducting large-scale data processing, and training AI algorithms. Data center equipment needs facilitate advancements in AI technology, leading to innovations and applications across sectors.

Manufacturing: Data centers have a significant impact on the manufacturing industry by driving demand for materials such as aluminum and steel during construction and hardware components and encouraging technological advancements.[25] Data centers rely on advanced hardware and equipment, such as high-performance servers, storage devices, networking components, and security systems. To meet the requirements of data centers, hardware manufacturers invest in research and development to improve the performance, efficiency, and reliability of their products. Data centers drive technological advancements in hardware and equipment, pushing for innovations that can handle the computational demands, storage capacity, and networking requirements of data-intensive operations. This has led to improved hardware technologies, including more powerful processors, higher-capacity storage devices, and faster networking solutions. For instance, semiconductor manufacturers continuously innovate to develop processors with higher

[24] "Markets," DataCenterHawk.com, accessed July 24, 2023, https://www.datacenterhawk.com/markets/

[25] Emily Freehling, "Data Centers' Job Impact is Spread Out," Virginia Business, April 27, 2023, https://www.virginiabusiness.com/article/data-centers-job-impact-is-spread-out/.

core counts, improved clock speeds, and enhanced architectures. These advancements in processor technology benefit not only data centers but also other industries that rely on computing-intensive tasks. The development of technologies like non-volatile memory express (NVMe) and 3D NAND flash has significantly enhanced storage performance and efficiency. The emergence of 40 Gigabit Ethernet (40GbE), 100 Gigabit Ethernet (100GbE), and beyond has revolutionized data center networking. These technological advancements benefit all sectors that rely on cutting-edge hardware solutions.

Telecommunications: Data centers require high-speed connectivity to function properly, and this has led to increased investment by telecommunications companies in telecommunication infrastructure. Over the 2017-2021 period, US telecommunications companies invested $450.9 billion to upgrade their infrastructure, roughly three times greater than the amount of capital investment by the US auto industry over the same period. Telecommunications companies have invested in fiber optics (the fastest way to send data), edge computing (which involves processing data closer to the end user), cloud services (which provide customers with necessary computing resources without having to manage their own data centers), and internet exchanges (which allow different networks to exchange data more efficiently by reducing the amount of data transferred to and from data centers.)

Construction: The construction of data center facilities requires specialized expertise, which has led to increased investment by construction firms that specialize in data center design and construction. For example, construction companies have invested in developing techniques to construct modular data centers that can be quickly deployed and easily expanded. They have also developed expertise in building data centers that are energy-efficient and sustainable.

Security: Data centers house sensitive information that require strict security data protection protocols. This has led to increased investment by cybersecurity firms that provide data center security services. Such services may include vulnerability assessments, penetration testing, monitoring of network traffic, real-time threat intelligence feeds, secure cloud storage, encryption, and identity management, among others. Additionally, physical security is an important component to the operation of data centers. Physical security may include: security guards on patrol around the facility perimeter and at the entrance, monitoring security camera video feeds inside and out of the data center facility, and screening inside the datacenter (upon entrance to the facility as well as

entrance to any datacenter floor), and other security and safety functions.[26] As both the cyber and physical threat landscape continues to evolve, it is reasonable to expect continued investment in cybersecurity tools and services to support the secure operation of data centers.

Public Services: Construction of data centers creates demand for the expansion and upgrade of roads, power infrastructure, network speeds, and sewer systems due to the influx in employment and business activity. Data center operators and local government organizations often work in partnership to address these infrastructure demands. The expanded infrastructure provides benefits to local communities and residents.[27]

This report highlights the social implications of broadband investments and development in **Section V: Social Impact.**

[26] Microsoft, "Datacenter physical access security," March 2, 2023, https://learn.microsoft.com/en-us/compliance/assurance/assurance-datacenter-physical-access-security.

[27] US Chamber of Commerce Technology Engagement Center. Data Centers: Jobs and Opportunities in Communities Nationwide (US Chamber of Commerce Technology Engagement Center, 2017) https://www.uschamber.com/assets/archived/images/ctec_datacenterrpt_lowres.pdf.

IV. Environmental Impact

With the growing usage of cloud-based services and data storage, data center companies face increasing regulatory, shareholder, and activist pressure to reduce their negative environmental impacts. Data center companies have innovated in energy and water management to reduce costs and build a more sustainable future, and the industry is making great strides in reducing carbon emissions and promoting water and waste management stewardship. For many of these environmental initiatives, the major hyperscale providers have set industry standards by defining commitments or funding new innovations, and smaller industry players have been fast followers. In this section, we outline data center progress in environmental sustainability through enhancing energy efficiency, procuring clean energy, reducing greenhouse gas emissions, promoting water stewardship, and responsibly managing waste.

A. Energy Efficiency

Data centers are essential digital infrastructure and support the technologies that are driving digital transformation across industries. Demand for data center processing and storage is expanding dramatically. One report projects that the global volume of data will grow from 33 zettabytes (ZB) in 2018 to 175 ZB by 2025. One zettabyte, or a billion terabytes, is equivalent to the data capacity of about 250 billion DVDs. Data centers require substantial energy to power their large data capacities. In Northern Virginia, the largest electric utility recently temporarily suspended new data center service connections to ensure transmission infrastructure will keep pace with growing demand. In response, some data center owners and operators have partnered with the utility to identify unique solutions for new data center projects. For example, one data center owner partnered with the utility to build a new 300 megawatt substation on the site of its new data center campus.[31]

[31] Hannah Denham, "Dominion Energy, PowerHouse find workaround to Loudoun's data center power supply issues," Washington Business Journal, March 28, 2023, https://www.bizjournals.com/washington/news/2023/03/28/powerhouse-data-center-loudoun.html.

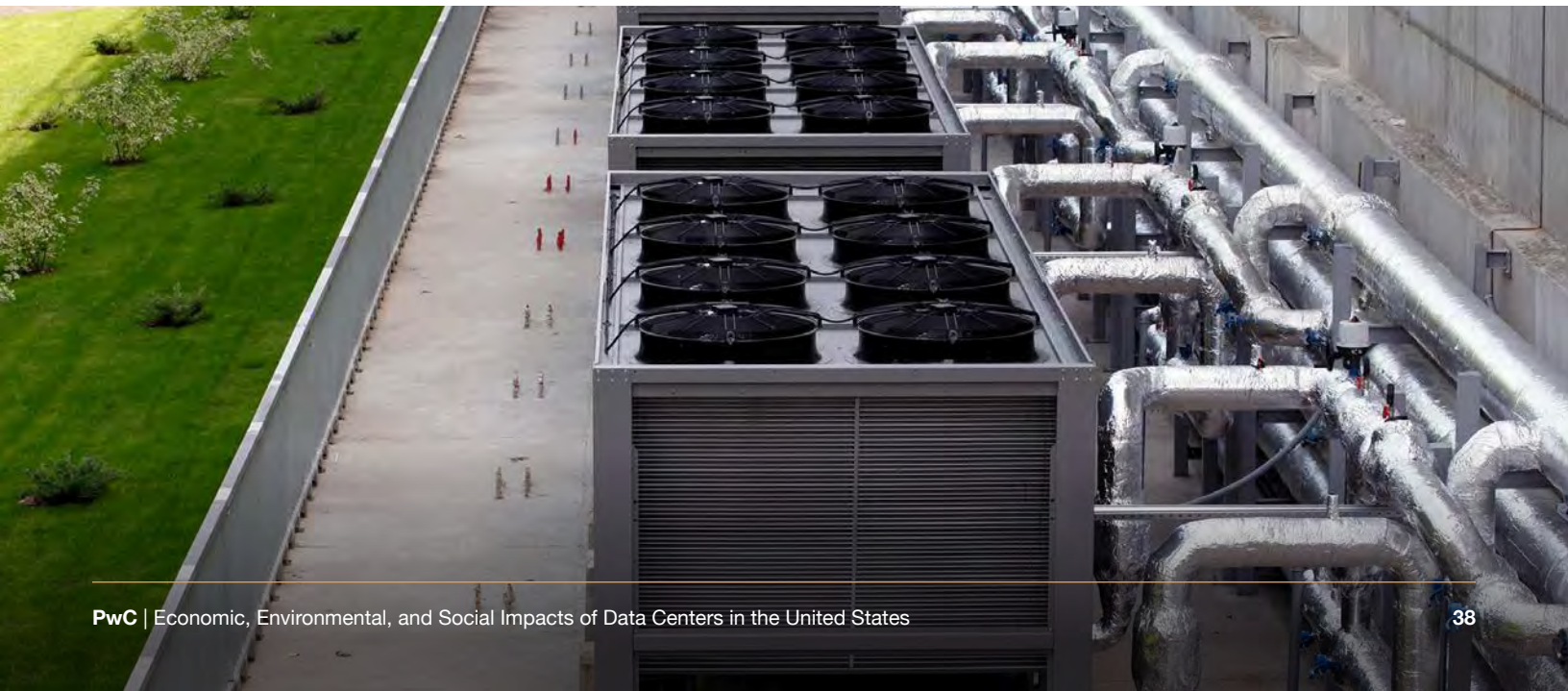
As demand has increased for data processing and storage, energy efficiency has become more of a business-critical consideration for data center providers to reduce costs and mitigate negative environmental impacts. Data center owners and operators seek to design their facilities to optimize energy efficiency from day one, while prioritizing reliability. For example, some data centers use computational fluid dynamics to optimize the design of their facilities' cooling systems before they become operational.

Leading companies have adopted a number of innovations to reduce energy consumption in data centers, such as efficient cooling technology solutions, AI-driven caching, load-balancing technologies, and energy-efficient servers.[32]

Through an innovative industry collaboration, data center providers use energy efficient design principles to reduce energy usage. The Open Compute Project Foundation (OCP) is an open-source, collaborative model founded in 2011 "to design, use, and enable mainstream delivery of the most efficient designs for scalable computing."[33] OCP members publish hardware designs that reduce complexity in components and enable flexibility, scalability, and efficiency within data centers. Today, its board includes some of the largest data center owners and operators in the United States, and their collaborative efforts have accelerated innovation in the industry and raised the bar for environmental sustainability.

[32] PwC survey of DCC members.

[33] Open Compute Project, "About," accessed April 24, 2023, https://opencompute.org/about.



Advances in energy efficiency have resulted in industry-wide power usage effectiveness (PUE, the ratio of all power used by a data center over a given time divided by the amount of power used by the IT equipment alone[34]) falling from 2.5 in 2007 to 1.6 in 2022.[35] Moreover, while data center computing workloads increased nearly 550 percent between 2010 and 2018, electricity consumption grew only six percent,[36] due to efficiencies from the cloud migration, improvements in cooling systems, and other operational and technological efficiency gains at modern data centers.[37] Data center operators must continue to balance the competing priorities of reliability and energy efficiency.

B. Clean Energy

While data centers continue to improve their energy efficiency, they nevertheless require substantial energy to run. Data centers require a great deal of electricity to power a large amount of equipment which stores the data needed for streaming services, social media platforms, email, real-time applications, and other integral digital tools.[38] Many data center providers partially utilize clean energy to reduce the carbon footprint of their electricity consumption. Furthermore, many data center companies have committed to sourcing 100 percent of their energy from clean sources, and two respondents to the environmental impact survey already operate with 100 percent clean energy.[39]

Hyperscale providers, referred to as hyperscalers, have been among the leading US companies in clean energy procurement through power purchase agreements (PPAs), virtual power purchase agreements, green bonds, carbon offsets, and large-scale investments in solar and wind farms. According to a recent report, the top four buyers of clean energy globally are data center operators,[40] and the US Environmental Protection Agency lists eight DCC members among its Green Power Partnership National Top 100.[41]

[34] Uptime Institute Intelligence, Glossary of Digital Infrastructure Sustainability, (New York: Uptime Institute, 2022), https://uptimeinstitute.com/resources/research-and-reports/glossary-of-digital-infrastructure-sustainability.

[35] Jacqueline Davis, Daniel Bizo, Andy Lawrence, Owen Rogers, Max Smolaks, Lenny Simon, and Douglas Donnellan, Uptime Institute Global Data Center Survey 2022, (New York: Uptime Institute, 2022), https://uptimeinstitute.com/resources/research-and-reports/uptime-institute-global-data-center-survey-results-2022.

[36] Md Abu Bakar Siddik, Arman Shehabi, and Landon Marston, "The environmental footprint of data centers in the United States," Environmental Research Letters 16, 6 (May 2021), https://doi.org/10.1088/1748-9326/abfba1.

[37] Eric Masanet, Arman Shehabi, Nuoa Lei, Sarah Smith, and Jonathan Koomey, "Recalibrating Global Data Center Energy-use Estimates," Science Vol 367, 984-986 (February 2020), https://www.science.org/doi/abs/10.1126/science.aba3758.

[38] Arman Shehabi, Sarah J Smith, Eric Masanet, and Jonathan Koomey, "Data Center Growth in the United States: Decoupling the Demand for Services from Electricity Use," Environmental Research Letters 13, 12 (December 2018), https://iopscience.iop.org/article/10.1088/1748-9326/aaec9c.

[39] PwC survey of DCC members.

[40] Michelle Lewis, "These big tech firms bought the most clean energy in 2022," Electrek, February 9, 2023, https://electrek.co/2023/02/09/big-tech-clean-energy-2022/.

[41] "Green Power Partnership National Top 100," EPA, last updated April 24, 2023, https://www.epa.gov/greenpower/green-power-partnership-national-top-100.

To meet the needs of data centers, clean energy supply must increase, particularly in key data center markets. In 2019, a coalition of data center owners and operators signed a joint letter to the largest electricity utility in Virginia to request that the utility expand its clean energy supply.[42] In June 2022, DCC submitted comments to Virginia's State Corporation Commission requesting that the Commission require the electric utility to evaluate whether it would be cost-effective to accelerate the decarbonization of its electrical generation fleet. The Virginia Clean Economy Act requires utilities in Virginia to transition to 100 percent clean energy sources by 2045, and DCC requested that the largest electric utility consider beginning this transition sooner.[43] Similarly, DCC submitted comments to the Ohio Power Siting Board recommending that the Board consider all relevant public benefit factors, not only economic benefits, when making a public interest determination for new clean energy projects.[44] The data center industry has initiated conversations about the procurement and transmission of clean energy in the United States and created demand for more clean energy in the regions in which they operate.

In addition to procuring clean energy, leading data center companies have also invested large sums to develop new clean energy projects to meet the demands of their operations. For example, in Ohio, leading hyperscalers have invested in several solar and wind farms capable of generating millions of megawatt-hours of clean energy each year.[45, 46] In Virginia, a leading hyperscaler plans to fund 15 new utility-scale solar farms with a total capacity of 1,430 megawatts, which represents a 56 percent increase in state-wide solar generation capacity.[47] By investing in new grid-scale clean energy projects, the data center industry strengthens clean energy infrastructure and demonstrates that clean energy is a reliable power source, even for power-intensive industries.[48]

In Ohio, leading hyperscalers have invested in several solar and wind farms capable of generating millions of megawatt-hours of clean energy each year.

[42] Rich Miller, "Dominion Energy Plans More Green Power for Virginia's Data Centers," Data Center Frontier, January 27, 2021, https://www.datacenterfrontier.com/cloud/article/11428441/dominion-energy-plans-more-green-power-for-virginia8217s-data-centers.

[43] William T. Reisinger, "Comments and Recommendations of the Data Center Coalition," SCC Docket Search, June 30, 2022, https://www.scc.virginia.gov/docketsearch/DOCS/7fsh01!.PDF.

[44] Josh Levi, "Data Center Coalition Comments," Ohio Public Utilities Commission Docketing Information System, August 4, 2022, https://dis.puc.state.oh.us/ViewImage.aspx?CMID=A1001001A22H05B04059A01138.

[45] PwC survey of DCC members.

[46] Sara VanLear, Facebook's U.S. Renewable Energy Impact Study, (Research Triangle Park, NC: RTI International, 2021), https://www.rti.org/publication/facebooks-us-renewable-energy/fulltext.pdf.

[47] "Economic Impact of Amazon Solar Investment Impact in Virginia," AWS, https://d1.awsstatic.com/WWPS/pdf/aws-renewable-investments-virginia.pdf.

[48] Ciaran Flanagan, "How Data Centers Are Driving The Renewable Energy Transition," Forbes, March 13, 2023, https://www.forbes.com/sites/siemens-smart-infrastructure/2023/03/13/how-data-centers-are-driving-the-renewable-energy-transition/?sh=187c5a274214.

Among the data center companies that participated in the environmental impact survey, 13 have committed to procure 100 percent clean energy, with target dates ranging from 2024-2040. Survey results for several data center companies show a large aggregate growth in megawatts of clean energy procured from 2017-2021.

Some providers have committed to powering their data centers with clean energy 24 hours a day, seven days a week within the next seven to 10 years. To achieve 24/7 clean energy, these companies must develop and procure significantly more clean energy production capacity than they will actually use to accommodate hourly fluctuations in supply (e.g., solar energy is not available at night) and current technical limitations of storage. A data center operator must develop its clean energy portfolio to generate sufficient energy to meet expected demand every hour in the day, especially in the critical evening hours when clean energy is limited. An energy portfolio designed to meet the 24/7 clean energy goal will then produce much more energy than the data center actually needs, and the excess energy can be sold back to local power grids at market rates. Excess clean energy production will therefore create greener power grids and will further accelerate clean energy growth and availability to local communities, mitigating power generation constraints and reducing blackouts in some regions. Data centers accelerate the clean energy transition in the United States with commitments to purchase clean energy and by funding the development of new sources of clean energy.

C. Carbon Emissions

To meet the decarbonization goals set forth in the Paris Agreement intended to limit global warming to 1.5°C, society will need to reduce global emissions by 50 percent by 2030. Regulatory, activist, and investor pressure to reduce greenhouse gas emissions is increasing across industries, and data center providers are rising to meet the challenge.

Data center providers are setting increasingly ambitious targets to reduce carbon emissions. Among respondents to the environmental impact survey, operators committed to the following.

Table IV-1.– Data Center Carbon Emissions Reduction Commitments by Type

Carbon neutral commitment	Net zero commitment	SBT validated or committed	Other carbon reduction goal
3	6	8	4

Sources: PwC survey of DCC members, company ESG reports, and sciencebasedtargets.org

Carbon neutral operations: Commitment to achieve carbon neutrality in operations by purchasing carbon offsets equivalent to the company's operating emissions.

Net zero emissions: Commitment to reduce emissions to zero or to a residual level that is consistent with reaching net-zero emissions and neutralizing any residual emissions through carbon removals.

Science-Based Targets (SBT): A target validated by the Science-Based Targets Initiative (SBTi) as aligning with climate science to limit warming to 1.5°C. SBTs are rigorous climate targets due to third-party review, and a net zero target validated by SBTi is the most rigorous.

Other carbon reduction goals: All other commitments related to reducing greenhouse gas emissions.

Data center emissions of greenhouse gases are attributable to two key sources. Emissions from purchased electricity, or Scope 2 emissions, are typically the largest source of emissions attributable to data centers because data center operations require a great deal of electricity. However, the increasing use of clean energy sources discussed above is leading to a reduction in Scope 2 emissions among data center providers. Our survey results show an aggregate decrease in Scope 2 emissions from 2018-2021 across the small number of respondents that provided data.[49]

The other key source of emissions attributable to data centers are the Scope 3 emissions from a company's value chain. Scope 3 emissions are indirect emissions not created by the data center provider but created upstream and downstream of their operations, including emissions from purchased goods and services. For example, the materials used to build the data center, primarily concrete and steel, are a large source of Scope 3 emissions. Data center providers are taking steps to reduce embodied emissions from construction by employing algorithms to optimize concrete add-ins to reduce concrete usage and investing in innovative, low-carbon building materials.[50]

Addressing Scope 3 emissions can be challenging, regardless of industry. To achieve net zero emissions, however, companies must reduce their emissions to zero or to a residual level in line with a 1.5°C scenario. Data center providers use a variety of options to reduce their Scope 3 emissions. For example, one major hyperscaler recently updated its Supplier Code of Conduct to require suppliers to disclose and reduce their greenhouse gas emissions on an absolute basis at least 55 percent by 2030.[51] Another hyperscaler is engaging suppliers to set carbon reduction commitments, and addressing other sources of Scope 3 emissions, such as employee commuting.[52] One survey respondent is engaging two-thirds of its suppliers with the greatest emissions to set their own science-based greenhouse gas targets.[53]

As data centers continue to decarbonize their operations, companies using data center services will have lower Scope 3 emissions. Data centers can have a catalytic effect in the net zero transition because they play a role across many sectors.

[50] PwC survey of DCC members.

[51] Microsoft, "Supplier Code of Conduct," accessed May 22, 2023, https://www.microsoft.com/en-us/procurement/supplier-conduct.aspx?activetab=pivot:primaryr11.

[52] PwC survey of DCC members.

[53] PwC survey of DCC members.

D. Water

Water stewardship is a critical sustainability concern for the data center industry.[54] When water is used in data centers, it is predominantly used in cooling systems[55], ensuring controlled heat production, improved energy efficiency, and 24/7 runtime for internal servers. Especially in communities experiencing record-breaking droughts and accelerating climate change impacts, local communities are asking data center operators to improve water use efficiency and to withdraw less water from local sources. In Arizona, a state that experienced drought conditions in 99 percent of the state in 2021, the driest conditions on record for the state, expectations for data centers entering the market are understandably high.[56] In response to community concerns over the anticipated water consumption for a new data center in Mesa, Arizona, a leading hyperscaler developed three water restoration projects[57] that restore more than 200 million gallons per year.[58] Within their operations, data center owners and operators seek to reduce their water use effectiveness (WUE), the ratio of water used divided by the IT equipment's energy use. Data centers can reduce WUE by implementing innovative cooling systems for servers to decrease water usage and by considering water availability as a major factor for location selection.

Reducing water requirements for data centers is highly complex, as water consumption mostly depends on the climate in the region in which the data center is located. The hot, dry climate of the southwestern United States has historically required more water for cooling in data centers than in other regions, but the water stress of the region necessitates reduced water withdrawals. Leading hyperscalers are addressing regional water stress for data center sites and have pledged to become water positive by 2030.[59] "Water positive" is defined as replenishing more water in the natural environment than is consumed in operations. Water positive initiatives include reducing water use, using sustainable water sources like recycled water or harvested rainwater, and supporting water replenishment projects.

[54] Jay M. Dietrich and Andy Lawrence, Three Key Elements: Water, Circularity, and Citing, (New York: Uptime Institute, 2022), https://uptimeinstitute.com/resources/research-and-reports/three-key-sustainability-elements-water-circularity-and-siting.

[55] Water cooling is also used in other industries, such as utilities, chemicals, and some heavy manufacturing.

[56] Tom Di Liberto, "Western drought 2021 spotlight: Arizona," NOAA, accessed April 28, 2023, https://www.climate.gov/news-features/event-tracker/western-drought-2021-spotlight-arizona.

[57] Water restoration projects create, re-create, or enhance water habitats.

[58] Rich Miller, "Facebook Unveils Water Projects to Support $800 Million Mesa Data Center," Data Center Frontier, August 12, 2021, https://www.datacenterfrontier.com/featured/article/11428015/facebook-unveils-water-projects-to-support-800-million-mesa-data-center.

[59] Amanda Schupak, "Corporations are pledging to be 'water positive'. What does that mean?", The Guardian, October 14 2021, https://www.theguardian.com/environment/2021/oct/14/water-positive-pledge-corporations.

To reduce water withdrawals, data centers use an array of efficient cooling strategies tailored to the local climate. Direct evaporative cooling uses water evaporation to reduce air temperature and can eliminate the need to use water for many months of the year. Free air cooling uses outdoor air rather than water to cool data centers. Immersion cooling systems involve submerging hardware in a liquid coolant to reduce temperatures. Data center owners and operators minimize water usage by deploying the appropriate cooling system for the local environmental conditions of each data center. One survey respondent eliminated direct evaporative cooling in their operations and achieved a WUE of zero for all new data centers.[60, 61] Another DCC member plans to use a closed-loop cooling system for its new data center campus in Phoenix, Arizona, which will operate with a WUE near zero.[62]

Data center operators committed to being water positive use sustainable water sources when water use is unavoidable. Leading data center owners and operators use recycled water in their operations when possible, which frees up drinking water for local communities. In Virginia, a major hyperscaler worked with the local water utility to be the first data center operator in the state approved to use recycled water in direct evaporative cooling systems, and the company now uses recycled water for cooling in 20 data centers worldwide.[63] Other data centers in Virginia also make use of recycled water in closed loop water systems.[64]

[60] PwC survey of DCC members.

[61] Rich Miller, "Prime Will Enter Phoenix Market with 210 Megawatt Campus," Data Center Frontier, May 4, 2023, https://www.datacenterfrontier.com/hyperscale/article/33004536/prime-will-enter-phoenix-market-with-210-megawatt-campus.

[62] Rich Miller, "Prime Will Enter Phoenix Market with 210 Megawatt Campus," Data Center Frontier, May 4, 2023, https://www.datacenterfrontier.com/hyperscale/article/33004536/prime-will-enter-phoenix-market-with-210-megawatt-campus.

[63] Nat Sahlstrom, "Here's how AWS is working together with communities to lower water footprint," Fairfax County Times, March 24, 2023, https://www.fairfaxtimes.com/articles/opinions/here-s-how-aws-is-working-together-with-communities-to-lower-water-footprint/article_019719a4-c9aa-11ed-963c-a7cf3b8f9c4f.html.

[64] Rich Miller, "AWS Plans to Slash Water Use in its Cloud Data Centers," Data Center Frontier, November 28, 2022, https://www.datacenterfrontier.com/sustainability/article/21438279/aws-targets-water-use-in-its-cloud-data-centers.

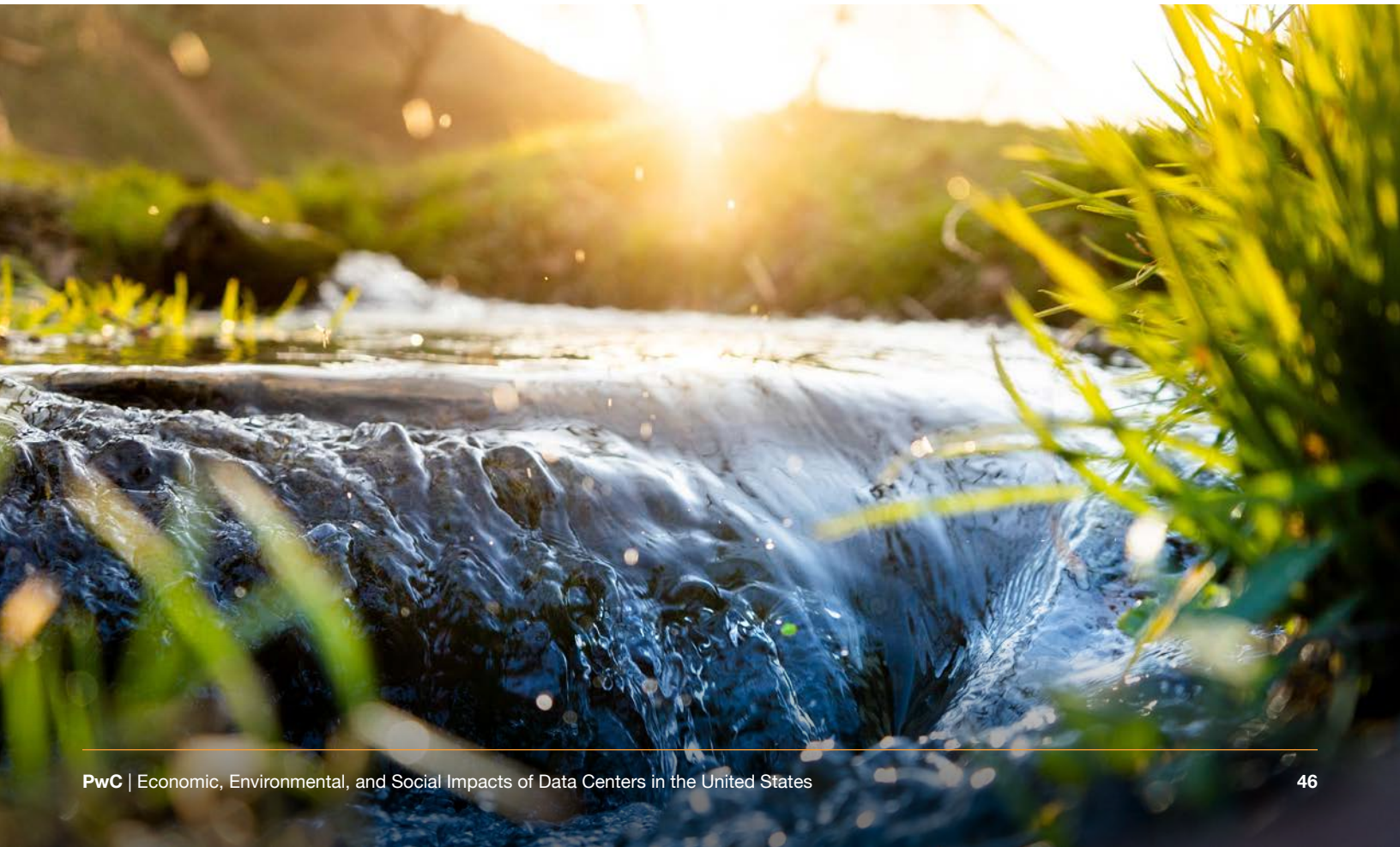
Increasingly, data center owners and operators fund water replenishment projects to restore drinking water in regions of high water stress. One of the major hyperscaler survey respondents set a target to replenish 850 million gallons of water per year. The company partners with local nonprofits to identify water restoration projects with the greatest impacts and currently has water restoration work underway in New Mexico, Arizona, Texas, Utah, Oregon, and California.[65]

In Arizona, leading hyperscalers have worked with the State of Arizona and the Colorado River Indian Tribes (CRIT) in an innovative public-private partnership to reduce risks from ongoing drought. The goal is to stabilize water levels in Lake Mead under Arizona's Drought Contingency Plan. The companies provided funding to CRIT by leasing water rights from the tribes in exchange for CRIT adopting practices that reduce water withdrawals from Lake Mead, for example by forgoing irrigation water deliveries to some of their least profitable and least efficiently irrigated areas. The project will benefit CRIT, enabling them to modernize their irrigation infrastructure. The project is also projected to create volumetric water benefits through 2030 for Colorado River water users.[66, 67]

[65] "Restoring More Water Than We Consume by 2030," Meta, August 19, 2021, https://about.fb.com/news/2021/08/restoring-water/.

[66] Noelle Walsh, "Expanding cloud services: Microsoft launches its sustainable datacenter region in Arizona," Microsoft Azure (blog), June 15, 2021. https://azure.microsoft.com/en-us/blog/expanding-cloud-services-microsoft-launches-its-sustainable-datacenter-region-in-arizona/#:~:text=We%20chose%20Arizona%20as%20the,in%20the%20regions%20we%20operate.

[67] LimnoTech. Meta: Volumetric Water Benefits Report 2021, LimnoTech, 2022. https://sustainability.fb.com/wp-content/uploads/2022/08/Meta_2021_Volumetric_Water_Benefit_Report.pdf.



E. Waste

Waste reduction (the elimination of waste) and circularity (increased reuse of materials) are emerging as key environmental issues. Data center owners and operators seek to reduce waste across their operations, including electronic waste (e-waste), construction waste, and other operational waste. To reduce waste, companies can increase reusability of components and materials or divert waste from landfills. Leading data center owners pursue zero waste certification for their facilities by avoiding waste where possible and diverting at least 90 percent of unavoidable waste from landfills.[68]

Data centers produce e-waste in the normal course of their operations. The most common sources of data center e-waste include decommissioned racks, computing equipment, monitors, circuits and other electrical components, and obsolete devices within the infrastructure. The industry has been proactive in addressing e-waste, with several data center companies outlining initiatives to reduce and divert waste by promoting reuse and recycling of e-waste. Increasing lifetime usage of microchips and other potential sources of e-waste can also moderate supply chain shortages. Major data center companies partnered to form the Circular Electronics Partnership (CEP), which aims to drive circular practices and reduce e-waste. In 2020, a major hyperscaler performed server upgrades using 23 percent refurbished inventory.[69] Another hyperscaler announced circular centers dedicated to reusing and recycling servers and other hardware in its data centers and the company expects the centers to increase reuse of components to 90 percent by 2025.[70] Most data centers have partnered with third-party firms to recycle their e-waste, and one DCC member offers onsite e-waste recycling service to their customers.[71] Recycling of e-waste reduces landfill waste and spurs economic activity. The e-waste management market is expected to grow significantly through 2030.[72]

As the footprint of data centers grows across the United States, construction and operational waste management increases in importance. Effective waste management practices like recycling, reducing waste generation at the source, reusing, and repurposing can help reduce construction waste.

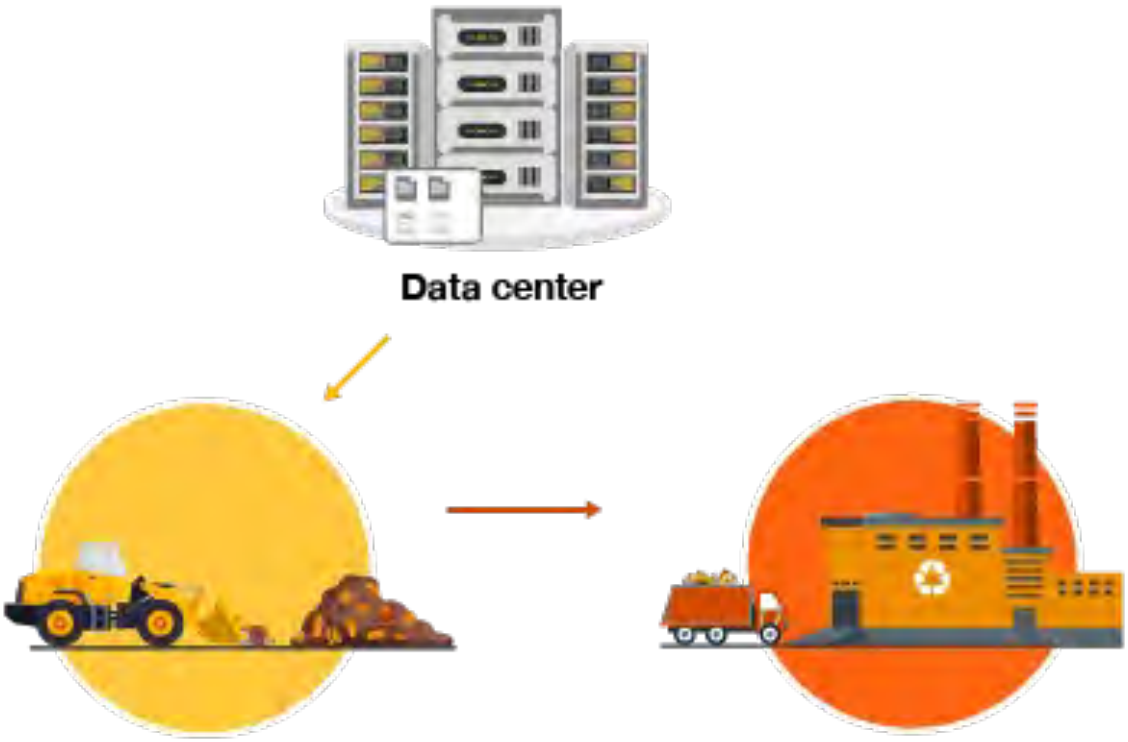
[68] GBCI, TRUE Rating System, (GBCI, 2022), https://true.gbci.org/sites/default/files/resources/TRUE-Rating-System-2022.pdf.

[69] Dan Swinhoe, "Re-use, refurb, recycle: Circular economy thinking and data center IT assets," Data Center Dynamics, March 8, 2022, https://www.datacenterdynamics.com/en/analysis/re-use-refurb-recycle-circular-economy-thinking-and-data-center-it-assets/#:~:text=Google%20is%20also%20a%20major,resold%20into%20the%20secondary%20marke.

[70] "Microsoft Circular Centers program achieves 83% reuse, increasing supply chain efficiency and resiliency with Dynamics 365 and Power Platform," Microsoft, November 2, 2021, https://customers.microsoft.com/en-us/story/1431789627332547010-microsoft-circular-centers.

[71] PwC survey of DCC members.

[72] "Global E-Waste Management Market to Reach $158.9 Billion by 2030," PRNewswire, January 31, 2023, https://www.prnewswire.com/news-releases/global-e-waste-management-market-to-reach-158-9-billion-by-2030--301734485.html.



A leading hyperscaler is partnering with a zero-waste technology company on a pilot seeking to reduce construction waste from drywall. If successful, the program will use mushrooms to convert drywall debris into a fully renewable byproduct for use in manufacturing.[73, 74] This closed-loop solution could avoid tons of drywall debris from being placed in landfills for each new data center.[75] Recycling of construction waste is not available in all US markets, so identifying new ways of preventing construction waste is key to reducing volumes sent to landfill.

[73] Meta, "Building with Mushrooms to Reduce Drywall Waste—or Cooking Up a New Future for Data Center Construction," Sustainability (blog), April 10, 2023, https://sustainability.fb.com/blog/2023/04/10/building-with-mushrooms-to-reduce-drywall-waste-or-cooking-up-a-new-future-for-data-center-construction/.

[74] Mycocycle, accessed May 3, 2023, https://mycocycle.com/.

[75] Meta, "Building with Mushrooms to Reduce Drywall Waste—or Cooking Up a New Future for Data Center Construction," Sustainability (blog), April 10, 2023, https://sustainability.fb.com/blog/2023/04/10/building-with-mushrooms-to-reduce-drywall-waste-or-cooking-up-a-new-future-for-data-center-construction/.

V. Social Impact

Leading data center companies make donations and form partnerships that aim to strengthen communities and improve the lives of local residents. Many data center companies have programs in place to expand STEAM education in their communities, collectively investing billions of dollars. These programs aim to provide technical skills to community members and serve as an investment in the next generation of data center employees. Data center owners and operators also contribute time and funds to charitable causes and encourage their employees to volunteer for organizations addressing food insecurity, education, women's empowerment, and other social issues. This report finds that data center companies have collectively donated millions of dollars and thousands of hours of volunteer time to community support. Data centers have set goals and commitments to expand workforce diversity by increasing representation of women, ethnic and racial minorities, veterans, disabled people, and/or members of the LGBTQ+ community.

In this section, we focus on the impacts that data centers have both nationwide and in the selected markets of Arizona, Ohio, and Virginia in the areas of STEAM education and workforce development, DEI, community support, connectivity impact, and small and minority-owned business support. The initiatives outlined below are drawn largely from the survey of DCC members undertaken for this report as well as company ESG reports.

A. STEAM Education and Workforce Development

The rapid expansion of the data center industry in much of the United States made it challenging for data center operators to attract and retain talent.[76] Data centers often require employees with highly technical skills. Communities and data center operators both benefit from expanding the talent pool of skilled employees by upskilling workers today and by building a talent pipeline for the next generation. Data center companies create and fund STEAM education programs and other workforce development initiatives.[77] These initiatives aim to spark interest in STEAM for participants of all ages and empower diverse populations to pursue careers in IT and other technological fields. Data center companies collectively contributed billions of dollars and thousands of hours to STEAM education and workforce development initiatives since 2011.

Data center operators support STEAM education from the grade school level to community college and beyond.[78] Programs focus on coding, cloud computing, and computer science, building subject knowledge in areas critical for technology careers.[79] Major hyperscalers have designed curricula for use in schools and created innovative learning environments where students can learn in a hands-on setting.[80] Some data center operators encourage their employees to share their unique career experiences in mentorship programs with local schools and community groups.[81] Often, educational programs are designed to reach underrepresented groups in the technology sector, including women and girls and racial and ethnic minority groups.[82] For example, a leading hyperscaler created a program to build sustainable computer science programs in high schools. The program supports educators in teaching computer science by providing proven curricula and pairing technology industry volunteers with teachers. The program serves underrepresented groups, including students from rural communities who historically lack access to STEAM education.[83] One major hyperscaler developed a program in Arizona to introduce graduating high school seniors from historically underrepresented groups to the field of computer science. The program helps to prepare students for success in college while sparking a passion for technology.[84] In another example, two DCC members contributed funds through the Loudoun Education Foundation for a mathematics summer program for middle schoolers from underrepresented groups interested in STEAM careers. Many of the students who participated in the math program improved enough to move upwards into advanced math classes the following school year.[85]

[76] Jacqueline Davis, Daniel Bizo, Andy Lawrence, Owen Rogers, Max Smolaks, Lenny Simon, and Douglas Donnellan, Uptime Institute Global Data Center Survey 2022, (New York: Uptime Institute, 2022), https://uptimeinstitute.com/resources/research-and-reports/uptime-institute-global-data-center-survey-results-2022.

[77] PwC survey of DCC members.

[78] PwC survey of DCC members.

[79] PwC survey of DCC members.

[80] AWS and Community Outreach," AWS, Amazon, https://aws.amazon.com/about-aws/global-infrastructure/aws-incommunities/.

[81] PwC survey of DCC members.

[82] PwC survey of DCC members.

[83] "TEALS Program," Microsoft, accessed May 23, 2023, https://www.microsoft.com/en-us/teals.

[84] PwC survey of DCC members.

[85] Danielle Nadler, "Nadler: Data Center Partner with Educators to Blaze New 'Classroom-to-Career' Pathways," LoudounNow, March 2, 2023, https://www.loudounnow.com/opinion/nadler-data-centers-partner-with-educators-to-blaze-new-classroom-to-career-pathways/article_12780ea0-b847-11ed-a790-67ef6ad86820.html.

Data center operators also invest in educational programs that help pave the way for students entering the workforce. DCC members have cultivated partnerships with high schools, community colleges, and universities throughout the United States to offer training and certification courses.[86] In Ohio, one company partnered with Columbus State Community College to develop a new associate degree of applied science in software development. The program was designed to coordinate with certification exams and other credentials in the IT industry, with the goal of teaching students the skills necessary to enter the data center industry.[87]

High school graduates who earn an associate degree are more likely to be employed, earn higher wages, and own a home, compared to students whose highest level of education achieved is a high school diploma.[88] A recent study found that on average, an individual who graduates with an associate degree from a US community college will earn $9,600 more per year compared to an individual with only a high school diploma.[89] Because individuals earn more, they create additional tax revenue throughout their working lives. Their increased disposable income also allows them to spend more, stimulating economic activity throughout the region. Data center companies' investments in high school and postsecondary education benefit students and create benefits for the broader economy.

[86] PwC survey of DCC members.

[87] Jennifer Smola, "New Path to IT Jobs", The Columbus Dispatch, March 5, 2019, https://www.dispatch.com/story/news/education/campus/2019/03/05/new-path-to-it-jobs/53189807007/

[88] American Council on Education, Center for Policy Research and Strategy and Hobsons, "A Look at Five Key Outcomes in Early Adulthood for Associate Degree Earners", Jonathan M. Turk, Ph.D.

[89] American Association of Community Colleges, "The Economic Value of America's Community Colleges," https://www.aacc.nche.edu/wp-content/uploads/2022/11/AACC_ExecSum_1920_Formatted-Finalv2.pdf

Data center operators also offer technical workforce development such as certification programs in fiber optic installation and repair, internship and apprenticeship programs, and scholarships and grants for training programs.[90] A major data center operator partnered with colleges in Arizona to develop workforce courses that will prepare students for IT sector and data center jobs.[91] One hyperscaler has more than 30 active training and educational programs designed to upskill workers to transition into careers related to data centers in Virginia.[92] Another hyperscaler founded a trade school on the campus of a homeless youth support organization in Virginia to provide training programs for young adults pursuing careers in trades such as plumbing, automotive, or HVAC.[93]

Data center companies collectively contributed billions of dollars and thousands of hours to STEAM education and workforce development initiatives since 2011.

[90] PwC survey of DCC members.

[91] Noelle Walsh, "Expanding cloud services: Microsoft launches its sustainable datacenter region in Arizona," Microsoft Azure (blog), June 15, 2021. https://azure.microsoft.com/en-us/blog/expanding-cloud-services-microsoft-launches-its-sustainable-datacenter-region-in-arizona/#:~:text=We%20chose%20Arizona%20as%20the,in%20the%20regions%20we%20operate.

[92] PwC survey of DCC members.

[93] PwC survey of DCC members.

One hyperscaler is investing $1.2 billion toward their commitment to upskill more than 300,000 employees by 2025.

One hyperscaler is investing $1.2 billion toward their commitment to upskill more than 300,000 employees by 2025,[94] including funding $50,000 in scholarship and internship opportunities in Ohio.[95]

Another hyperscaler regularly hosts job fairs, employee-led classroom training, data center site tours, and conducts mock interviews to engage with students and job seekers.[96] One of the survey participants invested more than $75,000 in digital education scholarship programs.[97]

A company with data centers around the country provided a $10 million grant to a nonprofit organization to help 25,000 lower-income older adults improve their technology skills.[98]

Another survey respondent provided $24 million in funding since 2011 across the United States to organizations that promote STEAM education.[99]

[94] Amazon, 2021 Sustainability Report, accessed April 10, 2023, https://sustainability.aboutamazon.com/2021-sustainability-report.pdf

[95] PwC survey of DCC members.

[96] PwC survey of DCC members.

[97] PwC survey of DCC members.

[98] "AARP Foundation Gets Grant to Help Older Adults Build Digital Skills," AARP, January 26, 2022, https://www.aarp.org/work/careers/aarp-foundation-grant-google/.

[99] PwC survey of DCC members.

B. Diversity, Equity, and Inclusion

The data center industry, like many technical industries, is generally male-dominated. According to a recent survey of data center operators more than three-quarters report that women make up only 10 percent of their workforce or less.[100] Among the broader technology sector, some have charged that recent layoffs have disproportionately impacted Black and brown employees despite company commitments to embed DEI in their organizations.[101] It is difficult to identify whether and how broader technology sector layoffs and DEI initiatives impact the data center industry specifically. However, data center companies are taking action to improve DEI in their workplaces.

In addition to improving equity in the local community, DEI efforts can also help data centers improve employee retention and overcome staffing shortfalls.[102] Lack of representation can deter potential candidates and impact retention of existing employees, so improving DEI can help data center providers address their staffing needs while supporting historically underrepresented groups.

[100] PwC survey of DCC members.

[101] Rich Miller, "Prime Will Enter Phoenix Market with 210 Megawatt Campus," Data Center Frontier, May 4, 2023, https://www.datacenterfrontier.com/hyperscale/article/33004536/prime-will-enter-phoenix-market-with-210-megawatt-campus.

[102] Rich Miller, "Prime Will Enter Phoenix Market with 210 Megawatt Campus," Data Center Frontier, May 4, 2023, https://www.datacenterfrontier.com/hyperscale/article/33004536/prime-will-enter-phoenix-market-with-210-megawatt-campus.

Many companies have set targets to increase representation of various demographic groups across the workforce, including in leadership roles, and to include a more diverse pool of candidates in all interview processes.[103] Of the participants in the social impact survey, the majority have set time-bound targets for improving representation of women and/or racial and ethnic minorities.[104] To support these targets, data center operators hold DEI trainings for staff, create employee resource groups to build employees' sense of inclusion, and appoint internal DEI champions to ensure organizational efforts reach staff across regions.[105] These initiatives help to create a more inclusive and equitable culture within the organizations, improving employee retention while also addressing the needs of historically marginalized groups.

While DEI initiatives have mostly addressed representation of women and racial and ethnic minorities in the past, data center companies are increasingly addressing the needs of other underrepresented communities, including veterans, the LGBTQ+ community, and people with disabilities.[106] For example, one major hyperscaler runs an autism career program, with a goal of increasing hiring of autistic individuals. Only 29 percent of people diagnosed with autism have any sort of paid work, suggesting the community is in need of greater support in hiring and employment. The autism career program trains managers and recruiters to ensure equitable hiring processes and accommodations for candidates with autism.[107] These initiatives aim to increase hiring and retention of underrepresented groups in the future.

Respondents to the social impact survey increased workforce representation of women and racial and ethnic minority groups between 2019-2021, the years for which the most complete data were available.[108]

[103] PwC survey of DCC members.

[104] PwC survey of DCC members.

[105] PwC survey of DCC members.

[106] PwC survey of DCC members.

[107] AWS and Community Outreach," AWS, Amazon, https://aws.amazon.com/about-aws/global-infrastructure/aws-incommunities/.

[108] PwC survey of DCC members.

C. Community Support

Many data center operators have made concerted efforts to give back to the communities in which they are located. Supporting local communities through charitable donations and volunteer work is a core component of many data center operators' social impact programs. Data centers have contributed volunteer hours and made donations to a variety of causes, ranging from food security and disaster relief to environmental stewardship and community revitalization.[109]

Data center employees volunteer for a myriad of causes, including food banks, tree planting campaigns, and even the DCC-hosted "#DataCenterSleevesUp" Red Cross blood drive campaign, which witnessed strong participation from its member companies.[110] One major hyperscaler appoints employees as "community ambassadors" who nominate local causes and organizations for volunteer work or donations. The ambassador program empowers employees to make a difference for causes they find personally significant and address local needs.[111] Another DCC member granted its employees paid leave to do community service and created a portal to track progress toward their 2025 goal of completing 100,000 hours of volunteer work.[112]

[109] PwC survey of DCC members and company ESG Reports.

[110] PwC survey of DCC members.

[111] PwC survey of DCC members.

[112] PwC survey of DCC members and Iron Mountain ESG report, https://www.ironmountain.com/about-us/sustainability/strengthening-our-communities.

At the start of the COVID-19 pandemic, data center operators took steps to meet the increased need for community support. Many donated funds to local nonprofit organizations. One data center supported local restaurants in delivering over 10,000 free meals for first responders and funded delivery services to provide more than 50,000 meals to local seniors.[113]

Among other examples with respect to service time, one of the leading data center providers holds an annual "Impact Month," during which employees are encouraged to volunteer or donate to their favorite causes. In 2021, the company provided more than 7,300 service hours from 1,700 volunteers and raised more than $300,000 in charitable donations.[114]

In other examples, a hyperscaler partnered with organizations that combat human trafficking and forced labor, making donations and running volunteering campaigns.[115] Similarly, another data center operator supports philanthropic efforts to rescue girls from exploitation and provides them with vocational training.[116] Another leading hyperscaler donated more than $80 million worldwide to organizations that work towards creating equitable job opportunities for women.[117] Yet another data center made a $750 million commitment in housing grants and investments to create affordable housing. Of this, approximately $580 million was granted to preserve about 9,000 housing units in Washington state.[118] The company also launched a technology acceleration program and enrolled more than 1,500 organizations that support Black and African American communities to provide technology training and support.[119]

In Virginia, five data center companies contributed more than $4.6 million in charitable contributions in the period from 2020-2022, the years for which most complete data were available.[120] Multiple data center operators have made donations to local schools, libraries, food banks, underserved communities, veterans, and art labs.[121] In Loudoun County, Virginia a leading hyperscaler partnered with a youth shelter to build raised beds at a community farm, which improved access to high quality produce for 200,000 local residents.[122]

Since 2018, a leading data center operator has provided more than $2 million in grants to nonprofit organizations based in Ohio. The company supported more than 8,000 nonprofit organizations in Ohio since 2011 and provided over $17 million in free digital advertising.[123, 124]

[113] PwC survey of DCC members.

[114] PwC survey of DCC members.

[115] PwC survey of DCC members.

[116] PwC survey of DCC members.

[117] "Google.org Impact Challenge for Women and Girls 2021", Google.org, accessed May 5, 2023, https://impactchallenge.withgoogle.com/womenandgirls2021/organizations.

[118] Jane Broom, "An update on our $750 million commitment to affordable housing," Microsoft On the Issues (blog), January 20, 2022, https://blogs.microsoft.com/on-the-issues/2022/01/20/affordable-housing-initiative-washington-state-2022/.

[119] "Supporting Black community nonprofits," Microsoft, https://www.microsoft.com/en-us/nonprofits/technology-resources-black-nonprofits

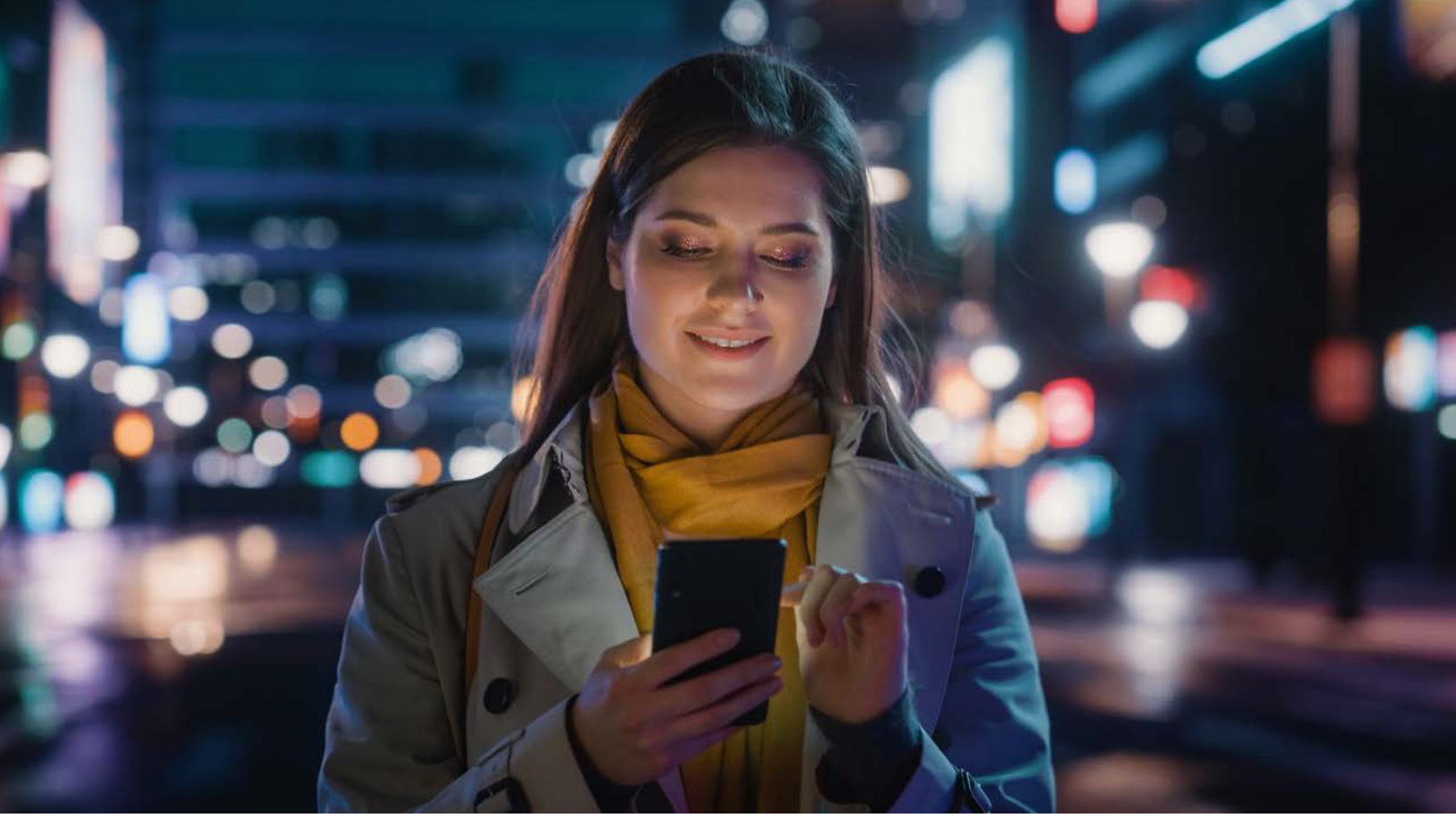
[120] PwC survey of DCC members.

[121] PwC survey of DCC members.

[122] PwC survey of DCC members.

[123] Google, Google is proud to call Ohio home, (Mountain View, CA: Google, 2021), https://kstatic.googleusercontent.com/files/dc1d93cfc71c0402fdbc14e4a252e8005fa01712bcf8525ebe22bea31647d986af8bf5ad327b0e84a2cdc03b11e4e11b8d7e58048140ab5646de6c85570f601e.

[124] "Ohio," Google Economic Impact, accessed April 17, 2023, https://economicimpact.google/state/oh/.



D. Connectivity Impact

The data center market has grown rapidly in recent years, and this trend continues today. Some of the key factors driving this growth include 5G adoption and deployment, evolution of cutting-edge technologies, and increased automation. Rapid development requires enhanced connectivity, particularly in rural communities, where data centers are often located.

Hyperscalers have invested heavily to improve connectivity in the communities in which they operate by improving internet speeds, developing new fiber routes, and improving access to internet services. Among the survey respondents, there were several examples of investment in constructing new long-haul fiber routes to link their data centers.[125] New fiber routes create robust connectivity for data centers and increase internet access for residents and businesses of the surrounding regions. For example, one data center provider extended a fiber connection to connect local schools in rural Nevada school districts, increasing bandwidth by 2,000 percent and reducing internet costs by 14 percent for local schools. The fiber routes act as a backbone for local internet service providers in the region, allowing them to provide high-speed internet to residents.[126]

[125] PwC survey of DCC members and company ESG Reports.

[126] PwC survey of DCC members.

Data center companies helped several areas with little or no broadband access gain access to affordable broadband connections. Hyperscalers partner with local communities and equipment suppliers to deploy high-speed, low-cost internet in underserved rural communities.[127] One leading data center provider developed and published a detailed dashboard that visually represents the state-by-state digital divide in the United States. The dashboard can help governments and lawmakers identify which areas need digital infrastructure urgently and allows the data center company to partner with local governments to expand internet accessibility.[128]

In response to the COVID-19 pandemic, data center companies deployed technology tools including contact tracing applications, enhanced video conferencing capabilities, health information tools, and other IoT-enabled tools. These tools mitigated the health and economic impacts of the crisis.[129]

One DCC member participated in the planning and funding of a pilot initiative to bring broadband access to one of Virginia's least connected counties, Grayson County. The company participated in the project due to its presence in Virginia and nearby states.[130] The initiative to connect Grayson County with high-speed internet began in 2017 with a collaboration between a regional internet service provider and a power company. The data center joining this partnership provided engineering, construction, and technical resources. The regional providers did not have capacity on their own, so the data center's involvement filled a crucial gap. This mutually beneficial partnership spurred by the investments and location of the data center industry is an example of positive social and economic impacts to the surrounding regions. In another example, a leading data center owner partnered with the internet service provider in Boydton, Virginia to bring free public Wi-Fi service to the community. The data center owner provided funds to construct the infrastructure needed for the Wi-Fi system, enabling internet access for the community.[131]

[127] "Microsoft Airband Initiative," Microsoft, accessed April 10, 2023, https://www.microsoft.com/en-us/corporate-responsibility/airband-initiative.

[128] Vickie Robinson, "A street-by-street view of digital inequity in the United States," Microsoft (blog), 2022. https://blogs.microsoft.com/on-the-issues/2022/07/14/digital-inequity-dashboard-broadband-access/.

[129] Sanjoy Mondal and Priyanjana Mitra, The Role of Emerging Technologies to Fight Against COVID-19 Pandemic: An Exploratory Review, (Transactions of the Indian National Academy of Engineering 7(1), 2022), https://doi.org/10.1007%2Fs41403-022-00322-6.

[130] Brian Funk, "No more going to the cemetery to get wi-fi," Cardinal News, September 28, 2021, https://cardinalnews.org/2021/09/28/facebook-joins-grayson-countys-broadband-roll-out/.

[131] "Microsoft and Lake Country Satellite roll out free Wi-Fi in Boydton, Virginia," Microsoft News Center, October 10, 2018, https://news.microsoft.com/2018/10/10/microsoft-and-lake-country-satellite-roll-out-free-wi-fi-in-boydton-virginia/.

Data center owners and operators also built new fiber routes in Northern Virginia. Leading data center providers invested to bring the Marea subsea cable to Virginia, connecting Spain and Virginia. With an estimated theoretical total capacity of 160 terabits per second (Tbps), the Marea cable increases data transfer speed by about 20 percent compared to other existing cables.[132] Another data center invested in bringing the Dunant submarine cable to Virginia, which has a capacity of 250 Tbps.[133] The cable landing station in Virginia has attracted newer data centers to the state, which has in turn allowed higher speed internet connectivity for local communities. Data center companies also improved connectivity in Virginia by donating cash and equipment to local schools.[134] Expanded broadband access in Virginia and donations of headsets enabled remote learning during the COVID-19 pandemic.[135]

Similarly, data center expansion in Ohio is driving connectivity improvements in the state. One major hyperscale provider invested in a new long-haul fiber route to connect its data centers in Ohio and Virginia. This fiber route created enough additional bandwidth to enable the hyperscaler to extend excess capacity to Ohio's internet service providers, which in turn can provide better network connectivity in adjoining rural areas by building new local networks from the provider's fiber.[136] Rural communities in Ohio benefit from this strategy with improved digital infrastructure.

[132] AChuong Nguyen, "Microsoft and Facebook's undersea Marea cable breaks data transfer speed record," DigitalTrends, February 28, 2019, https://www.digitaltrends.com/computing/marea-undersea-cable-faster-data-transfer-speed/.

[133] Chris Ciauri, "The Dunant subsea cable, connecting the US and mainland Europe, is ready for service," Google Cloud (blog), February 3, 2021, https://cloud.google.com/blog/products/infrastructure/googles-dunant-subsea-cable-is-now-ready-for-service.

[134] PwC survey of DCC members.

[135] ARLnow.com, "Amazon Donating $1 Million to Arlington and Alexandria Schools," ARLnow, October 7, 2020, https://www.arlnow.com/2020/10/07/amazon-donating-1-million-to-arlington-and-alexandria-schools/.

[136] Yevgeniy Sverdlik. "Facebook to Sell Bandwidth on Its New Inter-Data Center Fiber Routes," Data Center Knowledge, March 6, 2019, https://www.datacenterknowledge.com/facebook/facebook-sell-bandwidth-its-new-inter-data-center-fiber-routes.

E. Small & Minority-Owned Business Support

Data center companies are interconnected to the communities in which they operate, and have great impacts on local economies, as discussed in **Section III**. Many data center owners and operators set targets to increase their spend with small and minority-owned enterprises, fueling small business growth.[137] A leading company with data centers around the world recently launched a $150 million initiative to promote Black-owned businesses.[138] The company also launched a program where small and/or minority-owned businesses, nonprofits, and public sector organizations can access business, technical, and marketing support. The program grants a variety of financial incentives, including discounted prices for digital and marketing services, as well as access to the company's partner benefits and resources.[139]

A leading company with data centers around the world recently launched a $150 million initiative to promote Black-owned businesses.

[137] PwC survey of DCC members.

[138] "AWS Impact Accelerator: Black Founders," AWS, accessed April 17, 2023, https://aws-startup-lofts.com/amer/program/accelerators/black-founders. https://aws-startup-lofts.com/amer/program/accelerators/black-founders.

[139] "AWS Think Big for Small Business Program," AWS, accessed April 17, 2023, https://aws.amazon.com/partners/programs/small-business/.

A leading hyperscaler launched a program to support and train small businesses in communities where they operate with the aim of improving economic success for Black-, Latinx-, and Hispanic-owned businesses.[140] They also launched a platform to provide small businesses with training, consultative support, digital marketing guidance, and certifications for digital marketing, advertising, liquidity management, and performance measurement.[141] This hyperscaler introduced a digital marketing resource hub and a community platform for small business owners to collaborate and learn from each other.[142]

A major data center operator launched a training program to improve the digital skills of women entrepreneurs, training more than 10,000 people with digital skills that can help them start or improve their businesses.[143]

A leading hyperscaler trained 1,870 small business owners in Ohio through more than 75 digital skills workshops.[144]

As data centers expand and face increased scrutiny, operators seek to make positive impacts through workforce development, philanthropy, DEI initiatives, enhanced connectivity, and support of small businesses.

[140] "Meta Elevate," Meta, accessed April 17, 2023, https://www.facebook.com/fbelevate.

[141] "Meta Blueprint," Meta, accessed April 17, 2023, https://www.facebookblueprint.com/student/catalog.

[142] "Introducing Meta Boost Small Business Studios, a new digital marketing resource hub and event series," Meta, July 20, 2022. https://www.facebook.com/business/news/small-business-studios.

[143] PwC survey of DCC members.

[144] Google, *Google is proud to call Ohio home,* (Mountain View, CA: Google, 2021), https://kstatic.googleusercontent.com/files/

VI. Conclusion

Data centers are critical to the digital economy. Data centers store and process the data that enables our digital lives, from social media and entertainment streaming to mission critical business services. The data center industry made a significant impact on the US economy over the 2017-2021 period, and the industry is growing rapidly. Between 2017 and 2021, the data center industry's total impact (combining its direct, indirect, and induced impacts arising from data center construction and operations) on national employment has grown from 2.9 million jobs in 2017 to 3.5 million jobs in 2021, a 20 percent increase over the period. This report finds that at the national level, each direct job in the data center industry supports more than six jobs elsewhere in the US economy. The data center industry's total contribution to government finances at the federal, state, and local level, including direct, indirect, and induced impacts, increased from $66.2 billion in 2017 to $99.6 billion in 2021, a 50 percent increase.

Data center owners and operators seek to reduce negative environmental impacts from their operations. Energy efficiency is a business-critical consideration in this energy-intensive industry, and data center providers adopt an array of innovations to reduce energy consumption, including efficient cooling technology solutions, energy-efficient servers, and AI-driven caching. Many data center owners and operators are committed to using clean energy to reduce the greenhouse gas emissions from energy consumption. Leading industry players have contributed to the clean energy transition by procuring large amounts of clean energy, funding new clean energy projects such as solar farms to increase the supply of clean energy, and advocating for improved clean energy policies. Data center providers are setting increasingly ambitious targets to reduce carbon emissions, which will lead to reduced Scope 3 emissions for data center customers. Reduction of water use in data centers and replenishment of water in the natural environment are also critical environmental priorities for many data centers, particularly in regions of high water stress. Data center owners and operators also seek to responsibly manage waste in their operations, particularly e-waste and construction waste, with some committed to zero waste targets.

Data center providers also make positive social impacts on the communities in which their data centers are located. Many data center companies have programs in place to expand STEAM education in their communities. These programs aim to provide technical skills to community members and serve as an investment in the next generation of data center employees. Data center owners and operators also contribute time and funds to charitable causes and encourage their employees to volunteer for organizations addressing food insecurity, education, women's empowerment, and other issues. Data centers have set goals and commitments to expand workforce diversity by increasing representation of women, ethnic and racial minorities, veterans, disabled people, and/or members of the LGBTQ+ community. Leading data center companies also make investments to improve connectivity in rural areas, enhancing digital infrastructure and enabling internet access for rural communities. Many data center owners and operators are also committed to supporting small and minority-owned businesses.

Appendix

Data sources and methodology for economic impacts

This appendix describes the methodology used to derive the results for the study. It first discusses the data sources PwC utilized to develop estimates of the data center industry's direct employment, labor income, and value added. It then describes the development of the indirect and induced impact estimates.

Direct Jobs, Labor Income and Value Added

PwC's employment estimates for the data center industry include both full-time and part-time workers as well as self-employed business owners. The State Annual Personal Income and Employment data set published by the BEA is the only government source on historical total employment including self-employed individuals by industry. These data are currently available through 2021. Because the NAICS sector for the data center industry is directly available from the BEA, we use the BEA data on the industry's employment, labor income, and GDP without any further adjustment. Table A-1 below shows the industry's direct employment at the state level in 2021.

NAICS code 518210 is selected to represent the data center industry in this study because it encompasses a broad range of services and activities in the industry, such as data storage, cloud computing, and data management. It should be noted that this NAICS code may not capture every aspect of the industry, and some businesses within the industry may also operate under different NAICS codes based on their specific activities.

Table A-1: – US Data Center Industry: Types of Occupation, 2021

State	Direct Employment
Alabama	3,180
Alaska	230
Arizona	13,080
Arkansas	4,290
California	66,610

State	Direct Employment
Colorado	17,180
Connecticut	4,210
Delaware	740
District of Columbia	1,870
Florida	30,200
Georgia	22,760
Hawaii	680
Idaho	1,180
Illinois	15,660
Indiana	4,130
Iowa	3,940
Kansas	2,790
Kentucky	5,130
Louisiana	3,650
Maine	980
Maryland	5,750
Massachusetts	10,790
Michigan	10,370
Minnesota	7,290
Mississippi	1,380
Missouri	13,630
Montana	730
Nebraska	2,730
Nevada	3,600
New Hampshire	1,660
New Jersey	14,420
New Mexico	1,070
New York	26,060
North Carolina	12,720
North Dakota	570
Ohio	11,500
Oklahoma	2,310
Oregon	7,990

State	Direct Employment
Pennsylvania	14,840
Rhode Island	790
South Carolina	4,890
South Dakota	400
Tennessee	8,410
Texas	49,290
Utah	7,420
Vermont	510
Virginia	17,380
Washington	16,730
West Virginia	1,360
Wisconsin	9,430
Wyoming	330
Total US	**468,800**

Source: US Bureau of Economic Analysis.

Indirect and Induced Economic Impacts

The initial round of output, income, and employment generated by the construction and operations of the data center industry leads to successive rounds of re-spending in the chain of production and through the personal consumption spending of industry and supplier employees. Such indirect and induced economic impacts can be measured using various approaches. The most common is multiplier analysis. In broad terms, a multiplier is an index that indicates the overall change in the level of economic activity that results from a given initial change. It effectively adds up all the successive rounds of re-spending, based on a number of assumptions that are embedded in the method of estimation.

There are different methods available for calculating multipliers. The method used in this report is input-output analysis. It is the most commonly used approach in regional economic impact studies. The input-output model developed by IMPLAN is built around an "input-output" table that relates the purchases that each industry has made from other industries to the value of the output of each industry. To meet the demand for goods and services from one industry, purchases are made in other industries according to the patterns recorded in the input-output table. These purchases in turn spark still more purchases by the industry's suppliers, and so on. Additionally, employees and business owners make personal purchases out of the additional income that is generated by this process, sending new demands rippling through the economy. Multipliers describe these iterations. The Type I multiplier measures the direct and indirect effects of a change in economic activity. It captures the inter-industry effects only, i.e., industries buying from local industries. The Type II (Social Accounting Matrix or SAM) multiplier captures the direct and indirect effects, and, in addition, it also reflects induced effects (i.e., changes in spending from households

as income increases or decreases due to the changes in production). The indirect and induced impacts by the data center industry on other sectors of the economy in terms of employment, labor income (including wages and salaries and benefits as well as proprietors' income), value added, and tax payments were calculated through the multiplier process built into the model.

For this study, PwC built customized IMPLAN input-output models for the United States as a whole and each of the three selected states to calculate the data center industry's indirect and induced economic impacts on each study area in terms of employment, labor income, value added, and tax payments.

Capital Investment Impact

PwC translated the data center industry's capital expenditures (as reported by the Census Bureau) into purchases of capital assets by type through the use of the so-called "capital flow matrix" prepared by the BEA. The IMPLAN model was then used to quantify the full economic impact of this spending. The capital spending impact is classified as an indirect and induced economic impact and is included in the overall economic impact of the data center industry.

Tax Impact

Due to data limitations, tax abatements are indirectly estimated in the data center industry's tax impact and are subtracted from estimated gross tax payments of the industry. We estimate that the data center industry's total tax impact is unlikely to vary by more than 5 percent (plus or minus) from the amounts shown in this report.

Top Suppliers

Table A-2 below shows the US data center industry's top supplying sectors in 2021. Nationwide the industry spent $14.5 billion on new data center construction and another $26.0 billion on new equipment, such as servers, storage devices, networking equipment, security systems, software, and automation (e.g., server provisioning, network monitoring, and workload management).[145] For its ongoing operations, the data center industry spent approximately $210 billion in 2021 to acquire goods and services from a large number of supplying sectors.[146] The top 20 supplying sectors shown below accounted for over 60 percent of the data center industry's total supplier expenditures (including both capital and noncapital expenditures) in 2021.

[145] US Census Bureau, Annual Capital Expenditures Survey (ACES). Available at: https://www.census.gov/programs-surveys/aces.html.

[146] IMPLAN economic modeling system.

Table A-2: – US Data Center Industry: Top Supplying Sectors, 2021

Supplying Sector	Percent of Total Industry Spend
Employment Services	10.2%
Construction of New Data Centers	5.7%
Management Consulting Services	5.7%
Advertising, Public Relations, and Related Services	5.0%
Custom Computer Programming Services	4.5%
Real Estate Services	4.2%
Software Publishers	3.5%
Leasing of Nonfinancial Intangible Assets	3.4%
Computer Related Services, including Facilities Management Services	3.4%
Radio and Television Broadcasts	3.0%
Data Processing, Hosting, and Related Services	2.6%
Computer Systems Design Services	2.3%
Legal Services	1.7%
Wireless Telecommunications (except Satellite)	1.6%
Air Transportation Services	1.4%
Electronics and Appliance Stores	1.4%
Wired Telecommunications	1.3%
Environmental and Other Technical Consulting Services	1.2%
Electronic Computer Manufacturing	0.4%
Computer Storage Device Manufacturing	0.2%
All Other Suppliers	37.1%
Total	100.0%

Source: PwC calculations using the IMPLAN modeling system.

Works Cited

AARP. "AARP Foundation Gets Grant to Help Older Adults Build Digital Skills." January 26, 2022. https://www.aarp.org/work/careers/aarp-foundation-grant-google/.

ARLnow.com. "Amazon Donating $1 Million to Arlington and Alexandria Schools." ARLnow, October 7, 2020. https://www.arlnow.com/2020/10/07/amazon-donating-1-million-to-arlington-and-alexandria-schools/.

Arthur, Charles. "What's a Zettabyte? By 2015, the Internet Will Know, Says Cisco." The Guardian, June 29, 2011. https://www.theguardian.com/technology/blog/2011/jun/29/zettabyte-data-internet-cisco

AWS. "AWS and Community Outreach." Accessed April 17, 2023. https://aws.amazon.com/about-aws/global-infrastructure/aws-incommunities/.

AWS. "AWS Impact Accelerator: Black Founders." Accessed April 17, 2023. https://aws-startup-lofts.com/amer/program/accelerators/black-founders.

AWS. "AWS Think Big for Small Business Program." Accessed April 17, 2023. https://aws.amazon.com/partners/programs/small-business/.

AWS. "Economic Impact of Amazon Solar Investment Impact in Virginia." Accessed May 8, 2023. https://d1.awsstatic.com/WWPS/pdf/aws-renewable-investments-virginia.pdf.

Broom, Jane. "An update on our $750 million commitment to affordable housing." Microsoft On the Issues (blog), January 20, 2022. https://blogs.microsoft.com/on-the-issues/2022/01/20/affordable-housing-initiative-washington-state-2022/.

Carton, Paul. "Data center staffing—an ongoing struggle." Uptime Institute Journal (blog), March 1, 2023. https://journal.uptimeinstitute.com/data-center-staffing-an-ongoing-struggle/.

CBRE Research. North America Data Center Trends H1 2022. CBRE, 2022. https://www.cbre.com/insights/reports/north-america-data-center-trends-h1-2022#download-report.

Ciauri, Chris. "The Dunant subsea cable, connecting the US and mainland Europe, is ready for service." Google Cloud (blog), February 3, 2021. https://cloud.google.com/blog/products/infrastructure/googles-dunant-subsea-cable-is-now-ready-for-service.

Data Center Hawk. "Markets." Accessed July 24, 2023. https://www.datacenterhawk.com/markets/

Davis, Jacqueline, Daniel Bizo, Andy Lawrence, Owen Rogers, Max Smolaks, Lenny Simon, and Douglas Donnellan. Uptime Institute Global Data Center Survey 2022. New York: Uptime Institute, 2022. https://uptimeinstitute.com/resources/research-and-reports/uptime-institute-global-data-center-survey-results-2022.

Denham, Hannah. "Dominion Energy, PowerHouse find workaround to Loudoun's data center power supply issues." Washington Business Journal, March 28, 2023. https://www.bizjournals.com/washington/news/2023/03/28/powerhouse-data-center-loudoun.html.

Di Liberto, Tom. "Western drought 2021 spotlight: Arizona," NOAA. Accessed April 28, 2023. https://www.climate.gov/news-features/event-tracker/western-drought-2021-spotlight-arizona.

Dietrich, Jay M. and Andy Lawrence. Three Key Elements: Water, Circularity, and Citing. New York: Uptime Institute, 2022. https://uptimeinstitute.com/resources/research-and-reports/three-key-sustainability-elements-water-circularity-and-siting.

Enslin, Rob. "Strengthening our workplace with neurodiverse talent." Google Cloud (blog), July 26, 2021. https://cloud.google.com/blog/topics/inside-google-cloud/google-cloud-launches-a-career-program-for-people-with-autism.

Flake, Ebony. "Tech Companies are Quietly Defunding Diversity Pledges and Industry Layoffs are Hitting Black and Brown Workers Hardest—Experts Say the Message is Clear." Essence, December 8, 2022. https://www.essence.com/news/money-career/tech-companies-quietly-defunding-diversity-pledges/.

Flanagan, Ciaran. "How Data Centers Are Driving The Renewable Energy Transition." Forbes, March 13, 2023. https://www.forbes.com/sites/siemens-smart-infrastructure/2023/03/13/how-data-centers-are-driving-the-renewable-energy-transition/?sh=187c5a274214.

Freehling, Emily. "Data Centers' Job Impact is Spread Out." Virginia Business, April 27, 2023. https://www.virginiabusiness.com/article/data-centers-job-impact-is-spread-out/.

Freehling, Emily. “On cloud nine.” Virginia Business, April 27, 2023.
https://www.virginiabusiness.com/article/on-cloud-nine/.

Funk, Brian. “No more going to the cemetery to get wi-fi.” Cardinal News, September 28, 2021.
https://cardinalnews.org/2021/09/28/facebook-joins-grayson-countys-broadband-roll-out/.

GBCI. TRUE Rating System. GBCI, 2022.
https://true.gbci.org/sites/default/files/resources/TRUE-Rating-System-2022.pdf.

Google. Google is proud to call Ohio home. Mountain View, CA: Google, 2021.
https://kstatic.googleusercontent.com/files/ dc1d93cfc71c0402fdbc14e4a252e8005fa01712bcf8525ebe 22bea31647d986af8bf5ad327b0e84a2cdc0 3b11e4e11b8d7e58048140ab5646de6c85570f601e.

Google Economic Impact. “Ohio.” Accessed April 17, 2023,
https://economicimpact.google/state/oh/.

Google.org. “Google.org Impact Challenge for Women and Girls 2021.” Accessed May 5, 2023.
https://impactchallenge.withgoogle.com/womenandgirls2021.

“Global E-Waste Management Market to Reach $158.9 Billion by 2030.” PRNewswire, January 31, 2023.
https://www.prnewswire.com/news-releases/global-e-waste-management-market-to-reach-158-9-billion-by-2030--301734485.html.

Lewis, Michelle. “These big tech firms bought the most clean energy in 2022.” Electrek, February 9, 2023,
https://electrek.co/2023/02/09/big-tech-clean-energy-2022/.

Lightcast. The Economic Value of America’s Community Colleges. American Association of Community Colleges, 2022.
https://www.aacc.nche.edu/wp-content/uploads/2022/11/AACC_ExecSum_1920_Formatted-Finalv2.pdf.

LimnoTech. Meta: Volumetric Water Benefits Report 2021. LimnoTech, 2022.
https://sustainability.fb.com/wp-content/uploads/2022/08/Meta_2021_Volumetric_Water_Benefit_Report.pdf.

Masanet, Eric, Arman Shehabi, Nuoa Lei, Sarah Smith, and Jonathan Koomey. “Recalibrating Global Data Center Energy-use Estimates,” Science 367, 984-986 (February 2020).
https://www.science.org/doi/abs/10.1126/science.aba3758.

Meta. “Meta Blueprint.” Accessed April 17, 2023.
https://www.facebookblueprint.com/student/catalog.

Meta. “Building with Mushrooms to Reduce Drywall Waste—or Cooking Up a New Future for Data Center Construction.” Sustainability (blog), April 10, 2023.
https://sustainability.fb.com/blog/2023/04/10/building-with-mushrooms-to-reduce-drywall-waste-or-cooking-up-a-new-future-for-data-center-construction/.

Meta. “Introducing Meta Boost Small Business Studios, a new digital marketing resource hub and event series.” July 20, 2022.
https://www.facebook.com/business/news/small-business-studios.

Meta. “Meta Elevate.” Accessed April 17, 2023.
https://www.facebook.com/fbelevate.

Meta. “Restoring More Water Than We Consume by 2030.” August 19, 2021.
https://about.fb.com/news/2021/08/restoring-water/.

Microsoft. “Datacenter physical access security.” March 2, 2023.
https://learn.microsoft.com/en-us/compliance/assurance/assurance-datacenter-physical-access-security.

Microsoft. “Microsoft Airband Initiative.” Accessed April 10, 2023.
https://www.microsoft.com/en-us/corporate-responsibility/airband-initiative.

Microsoft. “Microsoft and Lake Country Satellite roll out free Wi-Fi in Boydton, Virginia.” Microsoft News Center. October 10, 2018.
https://news.microsoft.com/2018/10/10/microsoft-and-lake-country-satellite-roll-out-free-wi-fi-in-boydton-virginia/.

Microsoft. “Microsoft Circular Centers program achieves 83% reuse, increasing supply chain efficiency and resiliency with Dynamics 365 and Power Platform.” November 2, 2021.
https://customers.microsoft.com/en-us/story/1431789627332547010-microsoft-circular-centers.

Microsoft. “Supplier Code of Conduct.” Accessed May 22, 2023.
https://www.microsoft.com/en-us/procurement/supplier-conduct.aspx?activetab=pivot:primaryr11.

Microsoft. “TEALS Program.” Accessed May 23, 2023,
https://www.microsoft.com/en-us/teals.

Miller, Rich. “AWS Plans to Slash Water Use in its Cloud Data Centers.” Data Center Frontier, November 28, 2022.
https://www.datacenterfrontier.com/sustainability/article/21438279/aws-targets-water-use-in-its-cloud-data-centers.

Miller, Rich. “Dominion Energy Plans More Green Power for Virginia’s Data Centers.” Data Center Frontier, January 27, 2021.
https://www.datacenterfrontier.com/cloud/article/11428441/dominion-energy-plans-more-green-power-for-virginia8217s-data-centers.

Miller, Rich. “Facebook Unveils Water Projects to Support $800 Million Mesa Data Center.” Data Center Frontier, August 12, 2021.
https://www.datacenterfrontier.com/featured/article/11428015/facebook-unveils-water-projects-to-support-800-million-mesa-data-center.

Miller, Rich. “Prime Will Enter Phoenix Market with 210 Megawatt Campus.” Data Center Frontier, May 4, 2023.
https://www.datacenterfrontier.com/hyperscale/article/33004536/prime-will-enter-phoenix-market-with-210-megawatt-campus.

Mondal, Sanjoy and Priyanjana Mitra. The Role of Emerging Technologies to Fight Against COVID-19 Pandemic: An Exploratory Review. Transactions of the Indian National Academy of Engineering 7(1), 2022.
https://doi.org/10.1007%2Fs41403-022-00322-6.

Mycocycle. Accessed May 3, 2023.
https://mycocycle.com/.

Nadler, Danielle. “Nadler: Data Center Partner with Educators to Blaze New ‘Classroom-to-Career’ Pathways.” LoudounNow, March 2, 2023.
https://www.loudounnow.com/opinion/nadler-data-centers-partner-with-educators-to-blaze-new-classroom-to-career-pathways/article_12780ea0-b847-11ed-a790-67ef6ad86820.html.

Nguyen, Chuong. “Microsoft and Facebook’s undersea Marea cable breaks data transfer speed record.” DigitalTrends, February 28, 2019.
https://www.digitaltrends.com/computing/marea-undersea-cable-faster-data-transfer-speed/.

Open Compute Project. “About.” Accessed April 24, 2023.
https://www.opencompute.org/about.

Patrizio, Andy. “IDC: Expect 175 Zettabytes of Data Worldwide by 2025.” Network World, December 3, 2018.
https://www.networkworld.com/article/3325397/idc-expect-175-zettabytes-of-data-worldwide-by-2025.html.

Robinson, Vickie. “A street-by-street view of digital inequity in the United States.” Microsoft (blog), July 14, 2022.
https://blogs.microsoft.com/on-the-issues/2022/07/14/digital-inequity-dashboard-broadband-access/.

Sahlstrom, Nat. “Here’s how AWS is working together with communities to lower water footprint.” Fairfax County Times, March 24, 2023.
https://www.fairfaxtimes.com/articles/opinions/here-s-how-aws-is-working-together-with-communities-to-lower-water-footprint/article_019719a4-c9aa-11ed-963c-a7cf3b8f9c4f.html#:~:text=In%20Northern%20Virginia%2C%20AWS%20worked,separate%20from%20regular%20fresh%20water.

Schupak, Amanda. “Corporations are pledging to be ‘water positive’. What does that mean?” The Guardian, October 14, 2021.
https://www.theguardian.com/environment/2021/oct/14/water-positive-pledge-corporations.

Shehabi, Arman, Sarah J Smith, Eric Masanet, and Jonathan Koomey. “Data Center Growth in the United States: Decoupling the Demand for Services from Electricity Use,” Environmental Research Letters 13, 12 (December 2018)
https://iopscience.iop.org/article/10.1088/1748-9326/aaec9c.

Siddik, Md Abu Bakar, Arman Shehabi, and Landon Marston. “The Environmental Footprint of Data Centers in the United States,” Environmental Research Letters 16, 6 (May 2021)
https://doi.org/10.1088/1748-9326/abfba1.

Smola, Jennifer. “New Path to IT Jobs.” The Columbus Dispatch, March 5, 2019.
https://www.dispatch.com/story/news/education/campus/2019/03/05/new-path-to-it-jobs/53189807007/.

Sverdlik, Yevgeniy. “Facebook to Sell Bandwidth on Its New Inter-Data Center Fiber Routes.” Data Center Knowledge, March 6, 2019.
https://www.datacenterknowledge.com/facebook/facebook-sell-bandwidth-its-new-inter-data-center-fiber-routes.

Swinhoe, Dan. “Re-use, refurb, recycle: Circular economy thinking and data center IT assets.” Data Center Dynamics, March 8, 2022.
https://www.datacenterdynamics.com/en/analysis/re-use-refurb-recycle-circular-economy-thinking-and-data-center-it-assets/#:~:text=Google%20is%20also%20a%20major,resold%20into%20the%20secondary%20market

United States Census Bureau. Annual Survey of State and Local Government Finances.
https://www.census.gov/programs-surveys/gov-finances.html.

United States Environmental Protection Agency. “Green Power Partnership National Top 100.” Last updated April 24, 2023.
https://www.epa.gov/greenpower/green-power-partnership-national-top-100.

Uptime Institute Intelligence. Glossary of Digital Infrastructure Sustainability. New York: Uptime Institute, 2022.
https://uptimeinstitute.com/resources/research-and-reports/glossary-of-digital-infrastructure-sustainability.

US Chamber of Commerce Technology Engagement Center. Data Centers: Jobs and Opportunities in Communities Nationwide. Washington, DC: US Chamber of Commerce Technology Engagement Center, 2017.
https://www.uschamber.com/assets/archived/images/ctec_datacenterrpt_lowres.pdf.

VanLear, Sara. Facebook’s U.S. Renewable Energy Impact Study. Research Triangle Park, NC: RTI International, 2021.
https://www.rti.org/publication/facebooks-us-renewable-energy/fulltext.pdf.

Walsh, Noelle. “Expanding cloud services: Microsoft launches its sustainable datacenter region in Arizona.” Microsoft Azure (blog). June 15, 2021.
https://azure.microsoft.com/en-us/blog/expanding-cloud-services-microsoft-launches-its-sustainable-datacenter-region-in-arizona/#:~:text=We%20chose%20Arizona%20as%20the,in%20the%20regions%20we%20operate.

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May 27, 2025

VIA EMAIL joshua.bednarek@phoenix.gov
AND FIRST CLASS MAIL

Josh Bednarek
City of Phoenix
Planning Development Department
Phoenix City Hall
200 West Washington Street
Phoenix, AZ 85003

Re: Text Amendment Z-TA-2-25-Y

Dear Josh:

I am writing on behalf of The Dairy 51.8 Trust Dated December 7, 2011 and Dairy 51.8, L.L.C. (together, "**Dairy 51.8**"), which owns 66 acres of land ("**Property**") at the northwest corner of Dobbins Road and the Loop 202 freeway. This letter is prompted by the above-referenced Text Amendment, which was first publicly circulated on May 1, 2025.

For the following reasons, the Text Amendment should clarify that a special permit is not required for projects : (1) that are already permitted under current zoning; (2) the property owner has entered into an engineering services or other agreement with a utility to determine data center requirements for the site and/or load capacity; and (3) the property is located within one mile of an electrical substation.

The Property (also identified as APN 300-02-021P and 6 other adjacent parcels all owned by Dairy 51.8) is being actively developed as a data center. This is happening at great expense, and in accordance with the Property's existing zoning, I have reviewed Jeff Gross's letter to you dated May 15, 2025, and will not repeat its excellent points. Instead, I want to illustrate how the proposed Text Amendment will violate my client's vested rights, and therefore why we believe this Text Amendment should include a grandfathering or transition provision for those properties with existing zoning.

In 2002, the Property was rezoned to C-2 and Commerce Park/General Commerce Park in anticipation of the eventual development of the Loop 202 freeway and at the City's encouragement in developing a technology corridor along the Loop 202 freeway.

Over the last decade, data centers have emerged as a new land use. The State of Arizona and the City of Phoenix both endorsed their development. In 2013, the Legislature enacted a tax incentive program to encourage data centers in Arizona. A.R.S. § 41-1519. The Arizona Commerce Authority explains that this whole program exists for "the purpose of encouraging computer data center (CDC) operation and expansion in Arizona."

In tandem with the State's policy, the City of Phoenix Community and Economic Development Department has long encouraged the location of data centers. In 2019, the City designated the "South Mountain Tech Corridor," with the goal of encouraging development similar to the Price Corridor in the City of Chandler. In a PowerPoint presentation to the public in 2020, the City (in conjunction with the ACA) listed "Data Centers" as a land use that was encouraged in the South Mountain Tech Corridor. Likewise, the City has applied its zoning ordinance to encourage data centers in various commercial and industrial districts. In her December 15, 2021, letter to Bill Allison, Tricia Gomes confirmed that data centers are a permitted use in CP/GCP.

In developing this property, Dairy 51.8 relied upon the City's policy announcements. Because data centers require extraordinary amounts of electricity, they require very long advance planning and require huge capital expenditures to expand the transmission grid. In September 2024, Salt River Project submitted an application to the Line Siting Committee for the South Mountain Transmission Project for two new 230-kV transmission lines, Docket #L-00000B-0223-00239. SRP identified the Property as a future user in its Line Siting application, (see p. 26), and the Line Siting Committee ultimately chose an option that literally bisected the Property. On January 25, 2025, the Corporation Commission issued a Certificate of Environmental Compatibility as decision number 79665. The approved Line Siting map, showing that the 230-kV transmission lines will cross over and through the Property on three sides, is attached to this letter.

While SRP was incorporating the Property into its own planning, Dairy 51.8 has made commitments and expenditures with SRP. On December 11, 2024, my client submitted an application for Load Impact Study Agreement and has made several payments in connection with that study. The Property is a participant in SRP's "Cluster Process Agreement," which allocates the cost of constructing network upgrades to the new substation that is being located about 2600 feet southwest of the Property. These required network upgrades could exceed $100 million. Under the agreements in place between Dairy 51.8 and SRP, the Property will be required to start paying SRP for its pro rata share of that network upgrade cost in the Fall, 2025 (likely by October, 2025).

On April 30, 2025, Dairy 51.8 entered into an updated SRP Load Impact Study/Cluster Process Agreement to SRP. In the next few months (by July/August 2025), SRP's Load Planning/Cluster process will reach the "M-1 benchmark," which will require my client and others to make enormous expenditures. Long-term power purchase commitments for the

Property amount to hundreds of millions of dollars. Under the Load Impact Study/Cluster Process Agreement, the Property will be required in early 2026 to provide binding assurances to SRP to cover those long-term power purchase commitments.

Because the reliance interests at stake are substantial, the absence of ***any*** transition provision is a glaring omission from the Text Amendment. The draft proposal says nothing about projects that are in development.

Given the stakes, the Text Amendment should address the transition period for those property owners who have zoning and who have spent substantial time and money to develop property consistent with the existing zoning. It is not fair to anyone to leave this issue for Staff to figure out later.

We therefore urge an amendment to clarify that data center uses are vested, meaning the City will not require a special permit if they meet three conditions: (1) they are already permitted under current zoning; (2) the property owner has entered into an engineering services or other agreement with a utility to determine data center requirements for the site and/or load capacity; and (3) the property is located within one mile of an electrical substation.

We understand and support the City Council's goal of outlining new design and landscape standards that correspond to the new proposed new land use category. We are not requesting that the data centers be exempt from the design standards set forth in the Text Amendment. We would request that the City allow a transition period provision for those properties that meet the conditions outlined in this correspondence.

We appreciate your attention to this matter. We look forward to working with you and the City Council on revising the Text Amendment to resolve these concerns.

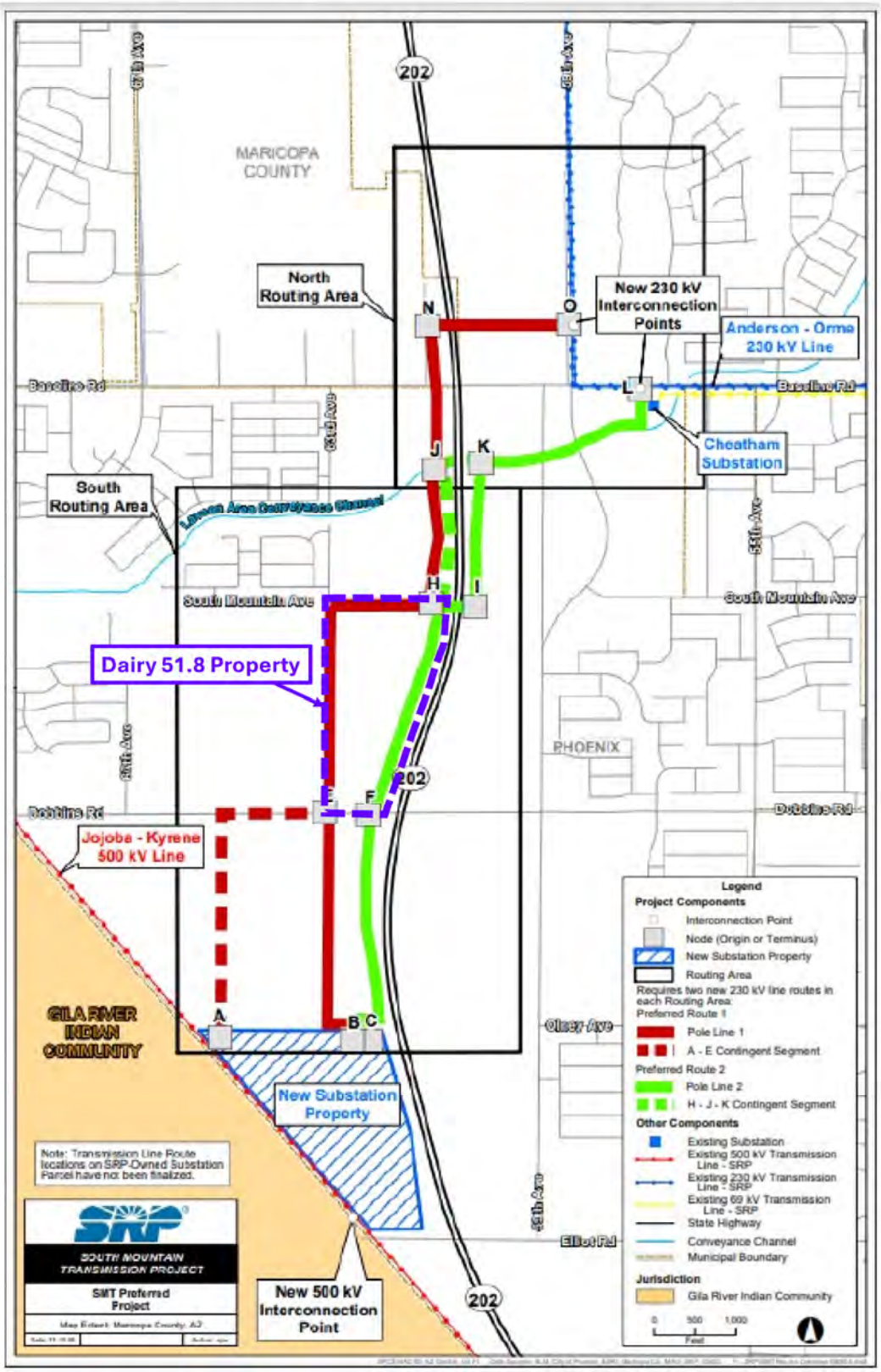
Sincerely,

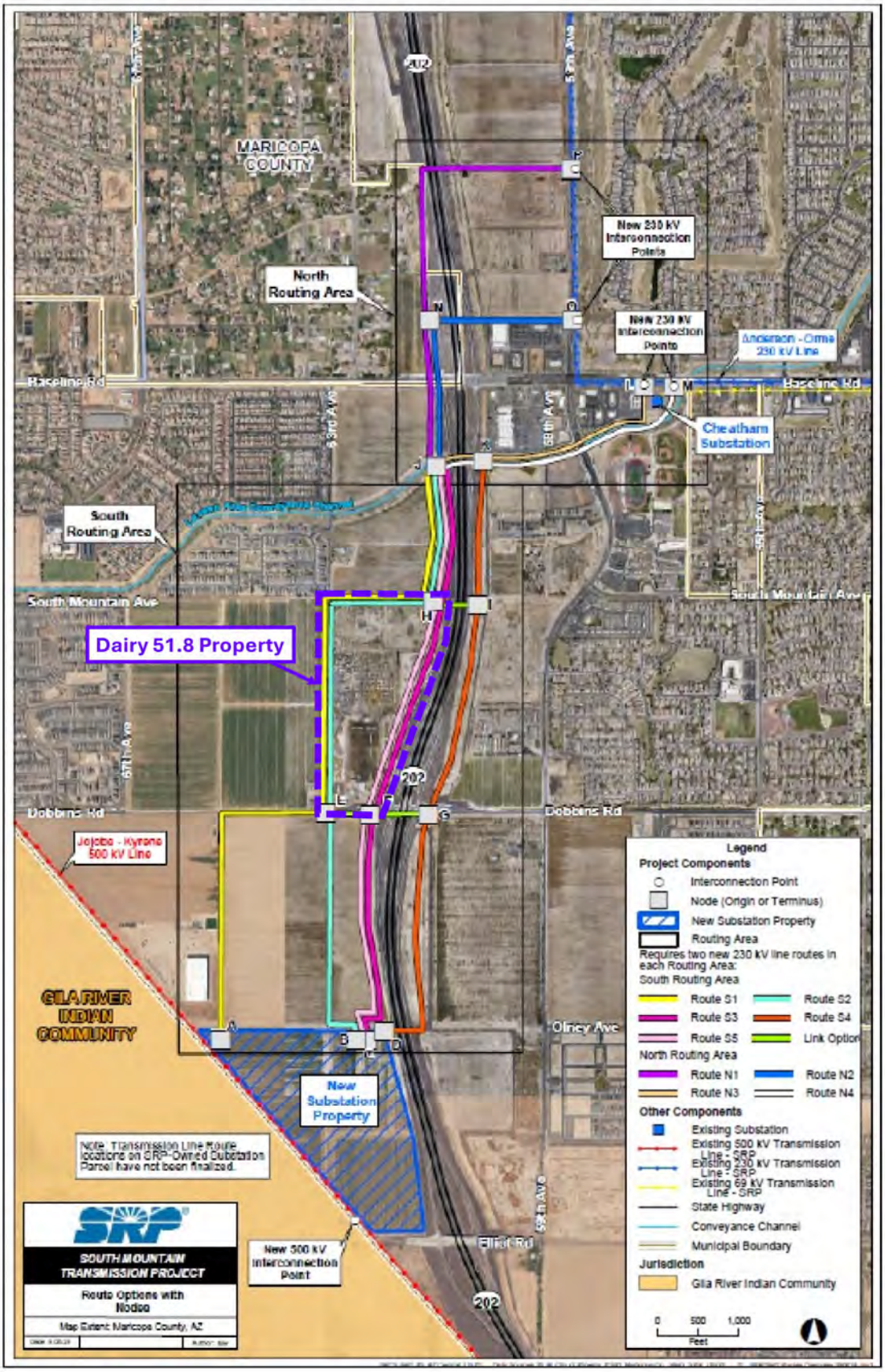
GAMMAGE & BURNHAM, P.L.C.

Cameron C. Artigue

CCA/nc
cc: Tricia Gomes
Attachment

SRP's Approved Preferred and Contingent Route Map




MARICOPA COUNTY
North Routing Area
New 230 kV Interconnection Points
NNW 230 kV Interconnection Points
Anderson - Cirrus 230 kV Line
Baseline Rd
Cheatham Substation
South Routing Area
South Mountain Ave
Dairy 51.8 Property
Dobbins Rd
Jojoba - Kyrene 500 kV Line
GILA RIVER INDIAN COMMUNITY
New Substation Property
Olney Ave
Elliot Rd
New 500 kV Interconnection Point
Note: Transmission Line Route locations on SRP-Owned Substation Parcel have not been finalized.
SRP
SOUTH MOUNTAIN TRANSMISSION PROJECT
Route Options with Nodes
Map Extent: Maricopa County, AZ
Legend
Project Components
Interconnecton Point
Node (Origin or Terminus)
New Substation Property
Routing Area
Requires two new 230 kV line routes in each Routing Area:
South Routing Area
Route S1
Route S2
Route S3
Route S4
Route S5
Link Option
North Routing Area
Route N1
Route N2
Route N3
Route N4
Other Components
Existing Substation
Existing 500 kV Transmission Line - SRP
Existing 230 kV Transmission Line - SRP
Existing 69 kV Transmission Line - SRP
State Highway
Conveyance Channel
Municipal Boundary
Jurisdiction
Gila River Indian Community
0 500 1,000
Feet

Google LLC
1600 Amphitheatre Parkway
Mountain View, CA 94043

Google.com

May 20, 2025

Mayor and Council, City of Phoenix
Phoenix City Hall
200 West Jefferson Street
Phoenix, AZ 85003

Subject: Proposed Zoning Text Amendment Affecting Data Centers

Dear Mayor Gallego and Councilmembers,

We are writing on behalf of Google to express our concerns regarding the proposed zoning text amendment that impacts data centers in the City of Phoenix. Data centers are critical infrastructure vital to the future of both the United States and Phoenix economies. These facilities are essential for continued investment, economic development, and national security. The reliable operation of data centers underpins virtually every aspect of modern life, from automotive safety features and banking security to photo storage. As public demand for digital services grows, the need for this foundational infrastructure will only intensify. To remain competitive, cities must acknowledge that data centers are not optional; they are a necessity.

Google has made a substantial investment in Phoenix and the surrounding region and is committed to building upon this foundation. We are proud to operate in a city that has historically championed innovation, supported infrastructure development, and provided the regulatory certainty required for long-term investment in advanced technology.

Data centers are a significant contributor to Arizona's economy. In 2023 alone, they supported over 81,000 jobs and contributed more than $11 billion to the state's GDP. These facilities not only power the digital economy and national security but also attract high-tech businesses, drive demand for skilled labor, and generate substantial tax revenue for local communities.

The proposed amendment, as currently drafted, would necessitate a special permit and impose siting restrictions on data centers in all zoning districts where they are presently permitted by right. Furthermore, it would prohibit preliminary site plan approval unless a utility issues a "will serve" letter guaranteeing power delivery within two years—a requirement that is unattainable under existing utility processes.

Google is concerned that the proposed Text Amendment was developed without adequate stakeholder input. Several provisions within the Ordinance would effectively halt new data center development in Phoenix. We have enclosed a draft redline for your consideration. However, we believe a more productive approach would be to continue this text amendment process to enable industry representatives, city staff, and other stakeholders to collaborate on an ordinance that addresses concerns while allowing this vital industry to continue operating and

thriving in the Valley. We respectfully request a 90-day continuance to facilitate a meaningful stakeholder engagement process. Alternatively, if city staff has determined that additional stakeholder engagement is not necessary, we urge you to amend the text amendment by either entirely removing the "will serve" provision or extending the "two years" timeframe to "ten years." As currently written, the two-year "will serve" requirement is practically impossible to meet and would effectively preclude the construction of any new data centers in Phoenix.

We value our participation in the Phoenix business community and appreciate your attention to this critical issue. We remain committed to collaborating with the City to ensure that any modifications to the zoning ordinance are made with full transparency, industry input, and a shared dedication to Phoenix's economic future.

Sincerely,

Clay Allsop
Public Affairs
Google

UNITED BROTHERHOOD OF CARPENTERS AND JOINERS OF AMERICA
Local Union No. 1912

President *Fabian Sandez*
Recording Secretary *Cristian Sanchez*
Financial Secretary *Conrad Carrasco*

May 28, 2025

The Honorable Mayor Kate Gallego
Phoenix City Hall
200 W. Washington St.
Phoenix, AZ 85003

Dear Mayor Gallego and Members of the Phoenix City Council:

On behalf of over 5,000 members of Carpenters Local 1912, I write to express our firm opposition to the proposed text amendment that would place new restrictions on data center development in the City of Phoenix.

Carpenters are proud builders of Phoenix—from the framing of major commercial projects to the intricate interiors of public and private buildings. Data centers represent not only critical infrastructure for our digital economy and national security, but also a major driver of good-paying union construction jobs. Our members rely on these projects to provide for their families and to contribute meaningfully to the growth and prosperity of our community.

Every data center project brings with it an ecosystem of skilled trade opportunities—roads, concrete foundations, drywall, ceilings, fireproofing, and more. These are union jobs that cannot be outsourced and are essential to training the next generation of carpenters right here in Phoenix.

We are seriously concerned that the current text amendment could halt these opportunities. The proposed electric 'will serve' provision appears to create unrealistic demands, and the additional noise limitations seem unnecessary given Phoenix's already robust noise ordinance. If passed as-is, this amendment could stifle a vital industry and choke off thousands of union construction jobs that benefit local families.

Phoenix is known for working with labor and industry to get policy right. That hasn't happened here. This amendment is moving too fast and without meaningful input from those of us on the ground. We urge you to pause this process and initiate a stakeholder-driven dialogue that includes labor, industry, and the community.

Let's ensure that Phoenix continues to grow with policies that support strong union jobs, economic development, and smart infrastructure planning.

Sincerely,

Fabian Sandez
President
Carpenters Local 1912

4547 W. McDowell Road, Phoenix, AZ 85035 ● Tel: (602) 484-0444 ● Fax: (602) 272-1977

International Brotherhood of Electrical Workers

LOCAL UNION 640
5808 NORTH 7TH STREET
PHOENIX, ARIZONA 85014-5806
(602) 264-4506

May 28, 2025

Mayor Kate Gallego
Phoenix City Hall
200 W. Washington St.
Phoenix, AZ 85003

Dear Mayor Gallego and Members of the Phoenix City Council,

On behalf of the members of the International Brotherhood of Electrical Workers (IBEW) Local 640, I write to express our strong opposition to the proposed text amendment that would impose new restrictions on data center development in the City of Phoenix.

As the union representing electricians who live and work in this city, we know firsthand that data centers are not just steel and servers—they are job creators. These facilities generate thousands of hours of union electrical work, from high-voltage transmission and distribution infrastructure to backup systems and utility interconnections. Moreover, they drive additional construction across multiple crafts, create long-term maintenance opportunities, and stimulate local economic growth.

Our members—your constituents—have built the electrical backbone of Phoenix. Data centers offer a once-in-a-generation opportunity to expand that backbone, creating family-sustaining jobs and training opportunities for the next wave of skilled tradespeople. We are deeply concerned that the proposed text amendment, as written, threatens to shut the door on this opportunity before it is fully understood or discussed.

Provisions like the proposed electric "will serve" requirement set an unrealistic bar that neither utilities nor developers can meet. Similarly, new noise standards seem arbitrary given that Phoenix already enforces a comprehensive noise ordinance. These overly broad restrictions could grind data center development to a halt—taking thousands of good-paying union jobs with it.

We urge the City Council to slow down and launch a real stakeholder process that includes labor, industry experts, and community voices. Phoenix has a strong track record of doing things the right way—and we believe this issue is too important to rush.

Let's work together to ensure we keep building a Phoenix that values innovation, economic growth, and union jobs.

Sincerely,

James Crutchfield
Business Manager
IBEW Local 640

SHEET METAL | AIR | RAIL | TRANSPORTATION

Sheet Metal, Air, Rail and Transportation Workers Local Union No. 359

Phoenix Office; 2604 E Adams St. Phoenix, AZ 85034-1409 - (602) 273-1388

Tucson: 2524 W Ruthrauff Road Tucson, AZ 85705-1895

Jeff Holly
Business Manager
SMART Local 359

May 28, 2025

Mayor Kate Gallego
Phoenix City Hall
200 W. Washington St.
Phoenix, AZ 85003

Dear Mayor Gallego and Members of the Phoenix City Council,

On behalf of the members of SMART Local 359, I am writing to express our opposition to the proposed text amendment targeting data center development in the City of Phoenix.

Our union represents sheet metal workers who play a critical role in the construction of data centers—installing HVAC systems, ductwork, architectural metal, and vital ventilation infrastructure. These are highly skilled, unionized jobs that contribute to the safe and efficient operation of these essential facilities.

Data centers are not only the backbone of our digital infrastructure and national security—they also power job creation across multiple trades. Every data center project represents a cascade of opportunities for union labor, from fabrication to installation to long-term facility maintenance. These are local, middle-class jobs that support our families and communities.

The proposed text amendment threatens to derail this momentum. The 'will serve' utility requirement is vague and overly burdensome. The noise provisions seem redundant given the city's existing ordinances. If passed in its current form, the amendment could stop data center projects in their tracks—cutting off job opportunities our members depend on.

Phoenix has long been a city where labor and government work hand-in-hand to shape smart policy. This process has moved too quickly and without adequate consultation with stakeholders, including the working men and women who will be most affected by these decisions.

We urge the Council to pause and initiate a transparent stakeholder process. Let's ensure any ordinance moving forward protects job creation, supports our economy, and respects the vital role union workers play in building Phoenix's future.

Sincerely,
Jeff Holly
Business Manager
SMART Local 359

May 30th, 2025

The City of Phoenix

ATTENTION
Tricia Gomes, Deputy Director, Planning & Zoning

Via: E-mail
tricia.gomes@phoenix.gov

RE: Planned Data Center Zoning Ordinance Amendment 2025

Dear Tricia Gomes, Deputy Director, Planning & Zoning,

On behalf of Holder Construction Company, we're requesting more stakeholder involvement prior to the passage of this new Zoning Ordinance Amendment. Although we are open to zoning changes, the current version goes too far, and a more thoughtful approach is needed in order to not significantly hinder the data center industry within the City of Phoenix.

The following are points to consider as it relates to Data Centers:

1. **Data Center Hubs.** Metro Phoenix is a leader in major leading edge technology investments (as evidenced by the $165 Billion TSMC Campus in the City of Phoenix). Metro Phoenix has become one of the top Data Center Hubs in the United States, along with Northern Virginia, Atlanta, Dallas, Chicago, Silicon Valley and Austin. These represent peer cities for the City of Phoenix, with frequent competition between the City of Phoenix and these cities for companies, jobs and talented employees.
2. **Economic Development.** To date, Data Center projects that have been completed or are under construction in Metro Phoenix represent an investment of over $10 Billion.
3. **Metro Phoenix Data Centers.** This includes investments by leading national and international Data Center companies in Metro Phoenix: Compass; Cyrus One; Google; Microsoft; NTT Global; Aligned Energy; Meta; Stack Infrastructure; Vantage; Stream and Edged.
4. **City of Phoenix Data Centers.** Here are the Data Centers currently active in the City of Phoenix: BlueCross Blue Shield; AMEX; PayPal; GoDaddy; APS; Charles Schwab; Safeway; Lumen; Digital Realty; Aligned Energy; Flexential; Iron Mountain; PhoenixNAP; QTS; and Databank.
5. **Taxes/Fiscal Impact.** Data centers significantly support state and local governments through tax revenues. In 2023, the industry generated $863 million in state and local tax revenues.
6. **Jobs.** The data center industry has proven to be a significant driver of economic growth and employment, bringing substantial benefits to Arizona. In 2023, the Arizona data center market

directly created 14,430 jobs, contributing $6.2 billion to labor income. Including direct, indirect, and induced effects, the industry's total employment contribution reached 81,730 jobs.

7. **Construction Trades.** Data Center projects require many of the same construction trades working on TSMC and other technology-based industries. Metro Phoenix has established a highly skilled and specialized workforce for the future. Many major Arizona General Contractors and Subcontractors are involved in building Data Center Projects, including: DPR, Haydon, JE Dunn, Holder, McCarthy, Skanska, Cannon Wendt, Bel-Aire, Rosendin, Sturgeon, Wilson Electric, and more.
8. **Contributions to AZ STEM.** STEM contributions from data center organizations AZ Chapters in the last year include 7x24 AZ Chapter $12,500 to AZ Science Center/Girls in Stem and $12,500 to SciTech Institute, $10,000 to ASU Fulton School of Engineering Scholarships; AFCOM AZ Chapter $20,000 in STEM scholarships and 2 internships, AZ Data Center Alliance and AZ Chapter of iMasons $20,000 to STEM Scholarships and First Responders and extensive workforce development with local high schools and Community Colleges.

For consideration, the following are our comments to this Amendment:

- **Design.** A draft modification of the Text Amendment removing the requirements of a Special Permit and Will Serve Letter, along with other minor edits, has been assembled and can be provided upon request. Here are several suggested changes to the current Text Amendment.
- **Noise Study/Within 300 Feet of Residential Area.** Limit the application of the Noise Study Requirement to that portion of the site that is within 300-feet of a residential area. Also: define the “existing ambient noise level”.
- **Section 5.1/Setbacks.** The 150-foot Setback requirement should be limited to that portion of the site that is adjacent to a residential area. Exclude from the 150-foot Setback requirement (i) sites adjacent to a Freeway, (ii) sites adjacent to other allowed Data Center sites, and (iii) sites adjacent to major public roadways.
- **Section 5.2/Landscape Setbacks.** Exclude from the 30-foot Landscape Setback requirement (i) sites adjacent to a Freeway, and (ii) sites adjacent to other allowed Data Center sites.
- **Section 5.3.4/Architecture/Solar Considerations.** The City should define “solar consequences”.
- **Section 5.4.3/Streetscapes.** Exclude from the underground requirement any new transmission lines already approved by the Arizona Corporation Commission and planned to be built by Salt River Project.
- **2-Year Utility Will Serve Letters.** A standard utility Will Serve Letter from APS or SRP shall be adequate for a Data Center project located in the City of Phoenix. No specific time frame for the delivery of power should be required from the utility company. Eliminate the 2-year Will Serve Letter. The Data Centers will typically have an extended 5 to 10 year Load Ramp requirement for power. It should be adequate that the utility company (SRP or APS) provide a general Will Serve Letter.

- **Existing Zoning/Special Permit.** No Special Permit shall be required for sites already zoned CP/GCP, C2, A-1 or A-2 (including Planned Unit Developments that include such Zoning categories). The new Data Center Design Review Requirements would apply even to Zoned sites (once those new Design Requirements are completed, with industry input; but no requirement for a Special Permit).
- **City of Phoenix Text Amendment Process.** Postpone the current process for adoption of the Data Center Text Amendment by 90 days to allow for comprehensive Data Center Industry input and work with City Staff. This would extend both to the Planning Commission Date of June 5 (out to Thursday, September 4), and the Phoenix City Council Date of June 18 (out to Wednesday, September 17).

We appreciate your consideration to revise this text amendment in the betterment of the City of Phoenix and Data Center community.

Please reach out if you have any further questions regarding this matter.

Sincerely,

William F. Headley
Senior Vice President

Holder Construction Group, LLC

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Atlanta | Charlotte | Dallas | Denver | Phoenix | San Jose | Washington, D.C.
www.holderconstruction.com

AZ License Number: ROC 213648 B-01

From:	Barrera, Danielle M.
To:	Tricia Gomes
Cc:	Joshua Bednarek; Graff, Benjamin W.
Subject:	Proposed Data Center Text Amendment Z-TA-2-25-Y [QBLLP-ACTIVE.FID44771785]
Date:	Friday, May 30, 2025 2:57:33 PM
Attachments:	image001.png Maps - 19400 North 56th Street.pdf

Tricia,

We are reaching out on behalf of our Client, American Express ("AMEX"), regarding their approved data center located at 19400 North 56th Street. Please see attached maps. The property is under a lease from ASLD. AMEX is moving forward expeditiously with building the new data center at this location and due to the recent pending text amendment (Z-TA-2-25-Y) regarding data center uses in the City, we need your assistance to confirm a few items.

First, AMEX received final site plan approval (Kiva Project No. 99-35425/SCMJ 2500766) on May 15, 2025 for the data center and civil work has already begun. Due to the fact that the text amendment is scheduled to be heard by City Council by June 18, 2025, we would like to confirm AMEX's proposed data center will not be regulated by the new ordinance because AMEX's final site plan was approved prior to the effective date of the new ordinance. This is consistent with the City's existing policies, e.g., how developers were grandfathered from the updated impact fee schedule as long as the developer received final site plan approval prior to June 23, 2025.

Second, AMEX is also in the process of planning a Phase II with additional data center space which has not received final site plan approval. The TA is very concerning in this regard, because the AMEX campus is zoned CP/BP, which under the proposed text amendment would not permit the use. It will cause significant issues if AMEX and ASLD were to find themselves in a situation where the Phase II expansion were prohibited under the new ordinance. We believe this is an unintended consequence of the TA requiring CP/BP to be included within the TA's zoning districts which allow for future data centers.

Third, we would also like to confirm whether the City plans to designate all approved (those with final site plan approval) data center uses as legal nonconforming uses. You can imagine what it means to lenders and the financing process for a development which is currently permitted as-of-right to suddenly shift to a legal non-conforming use before it is even built. Again, we are unsure if this consequence was intended or if the City is taking the time to evaluate these issues and delay the approval of the TA to ensure that property rights are properly protected.

To that end, we strongly urge the City to slow down the process and postpone the Phoenix Planning Commission and City Council hearings on this issue. Please let me know if you need any additional information.

Thank you,

Quarles

Danielle M. Barrera | AICP | Land Use Planner
danielle.barrera@quarles.com | D. 602-229-5501
Quarles & Brady LLP
One Renaissance Square, Two North Central Avenue, Suite 600, Phoenix, AZ 85004-2322
quarles.com [quarles.com] | LinkedIn [linkedin.com]

AERIAL MAP

APN: 212-32-962E

18850 NORTH 56TH STREET, PHOENIX, AZ 85050

Quarles

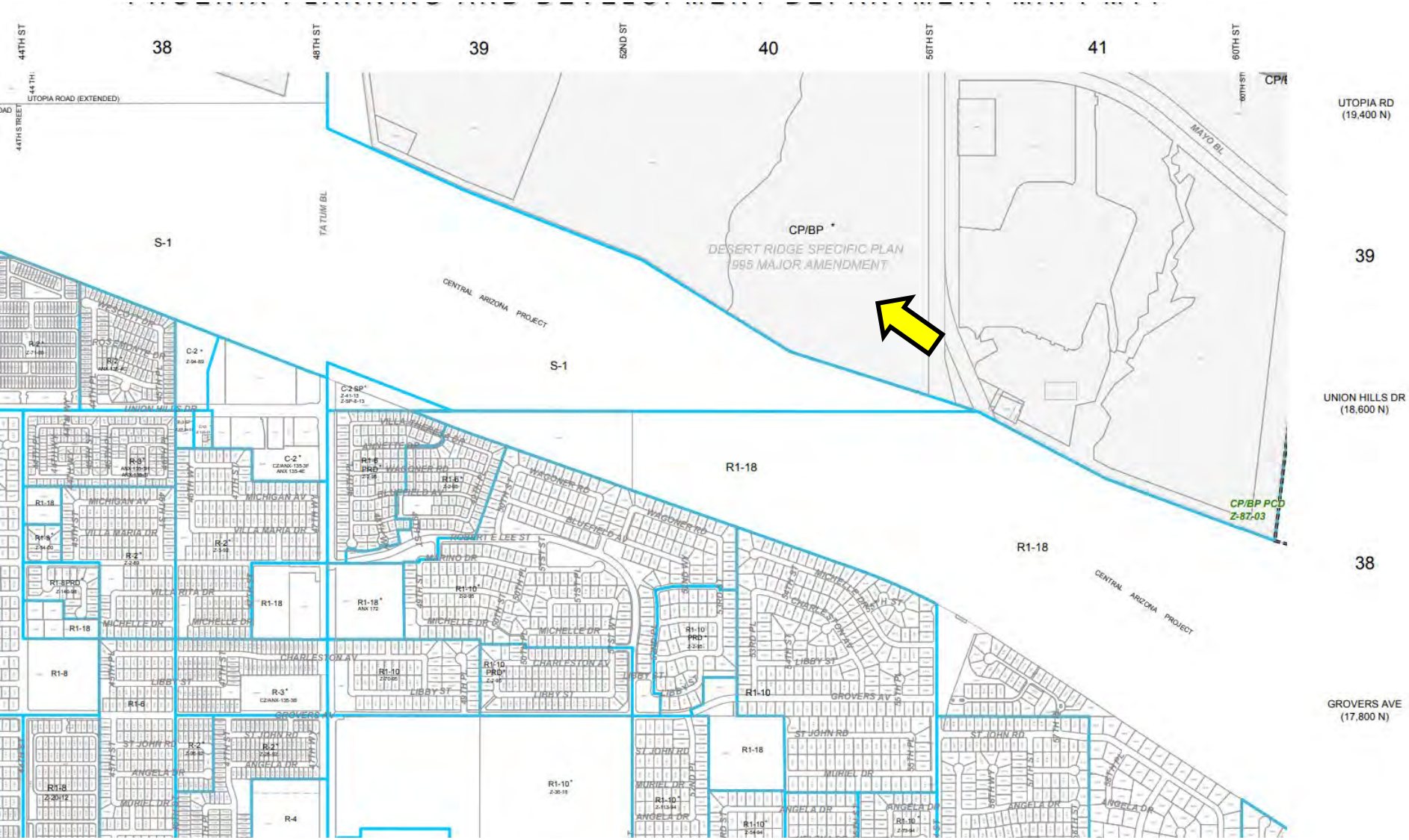
AERIAL MAP

APN: 212-32-962E

18850 NORTH 56TH STREET, PHOENIX, AZ 85050

Quarles

ZONING MAP
CP/BP – COMMERCE PARK/BUSINESS PARK OPTION

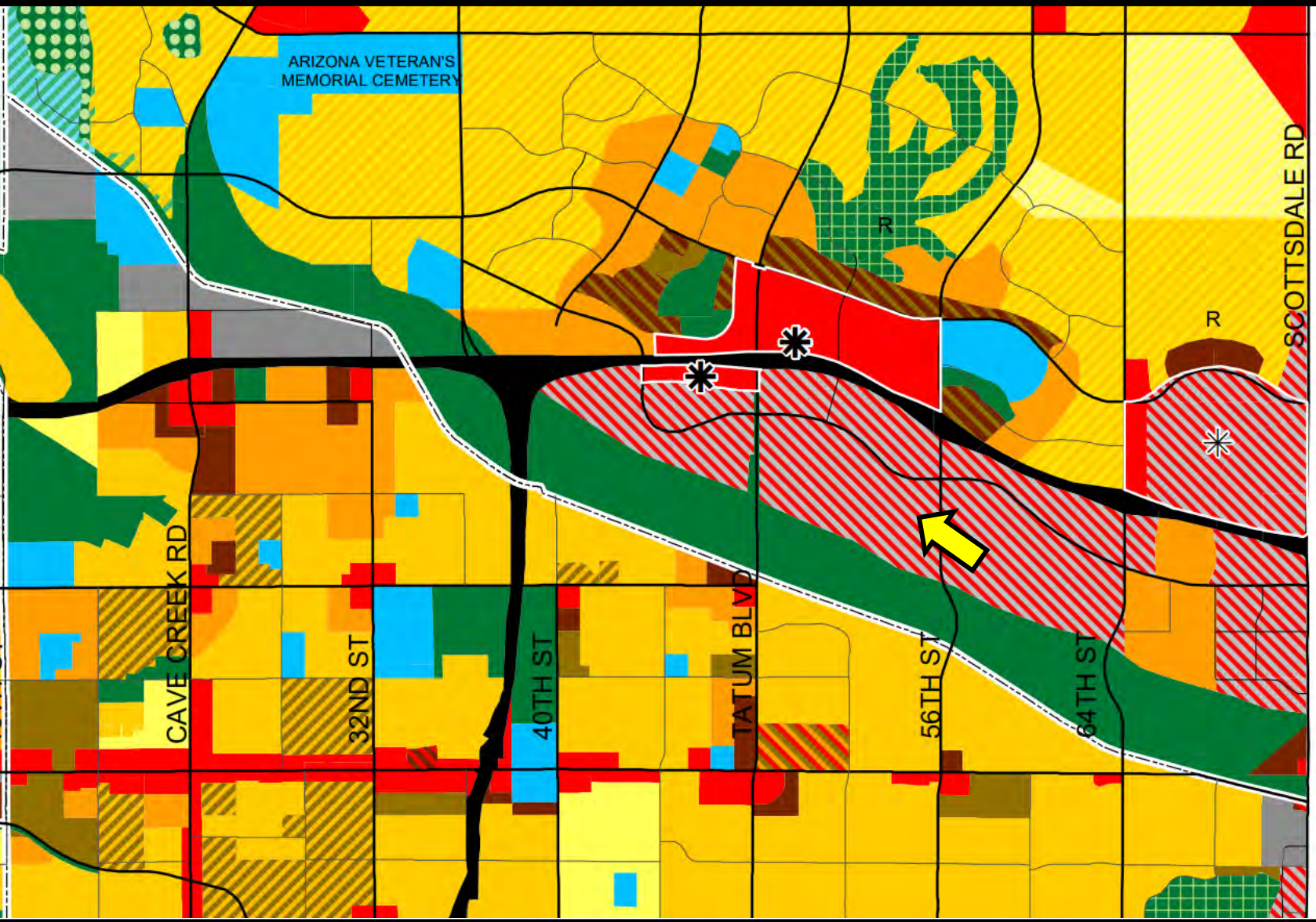


Quarles

APN: 212-32-962E

18850 NORTH 56TH STREET, PHOENIX, AZ 85050

GENERAL PLAN LAND USE MAP
MIXED USE – COMMERCIAL/COMMERCE/BUSINESS PARK

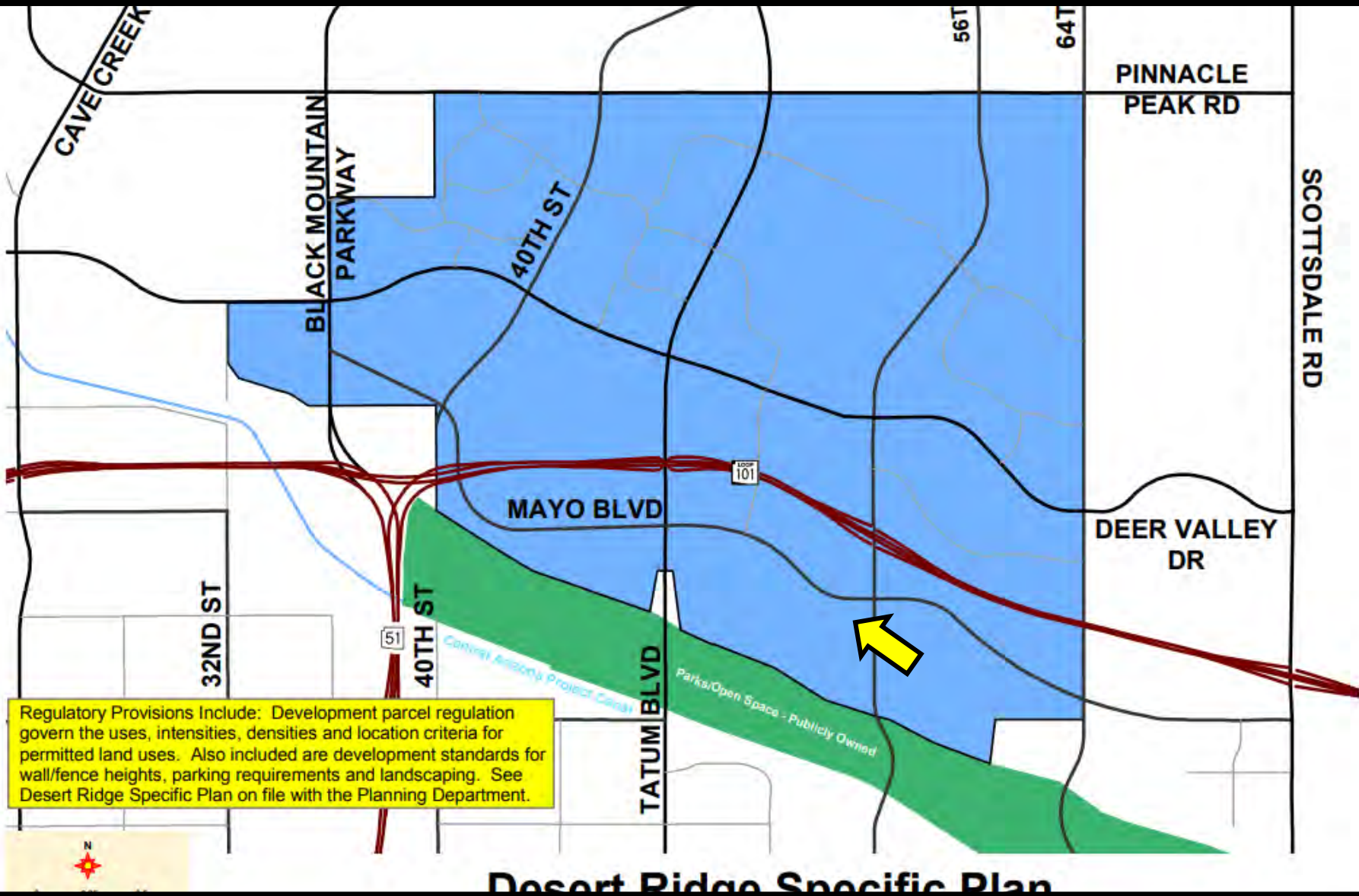


APN: 212-32-962E

18850 NORTH 56TH STREET, PHOENIX, AZ 85050

Quarles

DESERT RIDGE SPECIFIC PLAN

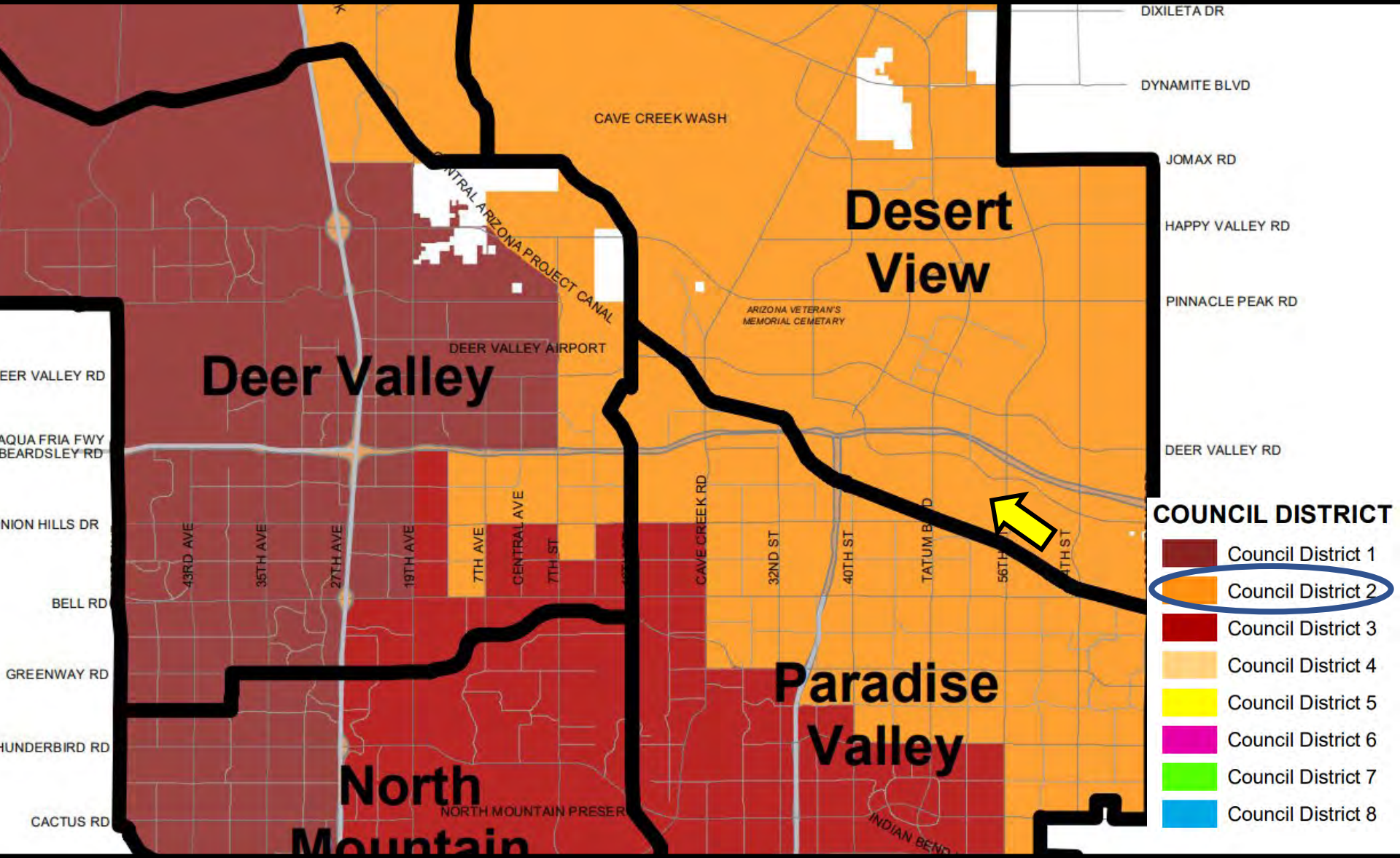


APN: 212-32-962E

18850 NORTH 56TH STREET, PHOENIX, AZ 85050

Quarles

DESERT VIEW VILLAGE PLANNING COMMITTEE – COUNCIL DISTRICT #2 – JIM WARRING



APN: 212-32-962E

18850 NORTH 56TH STREET, PHOENIX, AZ 85050

Quarles

PHOTOGRAPHIC ELEVATIONS

APN: 212-32-962E

18850 NORTH 56TH STREET, PHOENIX, AZ 85050

Quarles

From:	Mark Cardenas
To:	Mayor Gallego; Tony J Motola; phoenix.council.1@phoenix.gov; phoenix.council.3@phoenix.gov; phoenix.council.4@phoenix.gov; phoenix.council.5@phoenix.gov; phoenix.council.6@phoenix.gov; phoenix.council.7@phoenix.gov; phoenix.council.8@phoenix.gov
Cc:	Tricia Gomes; Alan Stephenson
Subject:	Proposed language to GPA 2-25-Y and Z-TA-2-25-Y
Date:	Friday, May 30, 2025 9:35:16 AM

Good morning,
We would like to propose the following addition to the proposed General Plan Amendment that was proposed by the Phoenix City Council:

DATA CENTERS

WITH CONTINUAL ADVANCEMENTS IN TECHNOLOGY, SUCH AS ARTIFICIAL INTELLIGENCE (AI) AND THE DIGITAL "CLOUD", THERE HAS BEEN A GROWING DEMAND TO CONSTRUCT DATA CENTERS IN ORDER TO SUPPORT THE DIGITAL WORLD. DATA CENTERS HOUSE A LARGE COLLECTION OF TECHNOLOGICAL EQUIPMENT DESIGNED TO STORE, PROCESS, AND MANAGE VAST AMOUNTS OF DIGITAL INFORMATION. ALTHOUGH DATA CENTERS ARE INFRASTRUCTURE FOR ADVANCING TECHNOLOGY THAT MANY COMPANIES AND ORGANIZATIONS NOW RELY ON, THEY ALSO COME WITH POTENTIAL CHALLENGES, INCLUDING A LOSS OF LAND FOR JOBS AND HOUSING, NOISE POLLUTION, SIGNIFICANT ENERGY DEMAND, INACTIVE FRONTAGES ALONG PUBLIC STREETS, AND CONFLICTS WITH THE CITY'S APPROACH OF MAXIMIZING TRANSPORTATION INVESTMENTS WITH WALKABLE COMMUNITIES. MEASURES SHOULD BE TAKEN TO IDENTIFY AREAS THAT ARE MOST APPROPRIATE FOR DEVELOPMENT AND TO ADDRESS THE NOISE, ENERGY, AND DESIGN ISSUES THAT THEY COME WITH.

IN RECOGNITION OF INDUSTRY CONCERNS REGARDING FLEXIBILITY AND ZONING STANDARDS, THE CITY SHALL ESTABLISH AN ALTERNATIVE COMPLIANCE MECHANISM THROUGH VOLUNTARY DEVELOPMENT AGREEMENTS.

DATA CENTER PROJECTS THAT SEEK FLEXIBILITY FROM TRADITIONAL ZONING STANDARDS—INCLUDING SETBACK REQUIREMENTS, LOT COVERAGE OR HEIGHT LIMITS, DESIGN OR SCREENING PROVISIONS, NOISE MITIGATION MEASURES, PARKING MINIMUMS, OR OTHER SITE-SPECIFIC DEVELOPMENT STANDARDS—MAY SEEK "BY-RIGHT" APPROVAL UNDER A DEVELOPMENT AGREEMENT ENTERED INTO WITH THE PHOENIX CITY COUNCIL.

TO QUALIFY FOR THIS FLEXIBILITY, DATA CENTER DEVELOPERS MUST INCLUDE ENFORCEABLE COMMITMENTS TO THE FOLLOWING COMMUNITY BENEFITS:

1. LOCAL HIRE PROVISIONS THAT ENSURE A PERCENTAGE OF CONSTRUCTION JOBS ARE FILLED BY RESIDENTS OF PHOENIX OR SURROUNDING AREAS.
2. PARTICIPATION IN A REGISTERED APPRENTICESHIP PROGRAM FOR CONSTRUCTION WORK, INCLUDING DEFINED GOALS FOR APPRENTICE HOURS.
3. COMMITMENT TO A MINIMUM CONSTRUCTION WORKER WAGE.
4. PROVISION OF HEALTHCARE BENEFITS TO CONSTRUCTION WORKERS.
5. OTHER PUBLIC BENEFITS AS DEEMED APPROPRIATE BY THE CITY COUNCIL.

As always, I am available to chat anytime to discuss further, thank you so much for your time and consideration.

Mark Cardenas

Date: May 22, 2025

City of Phoenix Planning and Development Department
200 W. Washington Street
Phoenix, AZ 85003

Subject: Response to Proposed Data Center Text Amendment

Dear Planning and Development Team,

On behalf of DPR Construction, I want to express our appreciation for the City of Phoenix's dedication to managing growth and guiding responsible development across our region. As a long-time construction partner in the delivery of many of the Valley's most advanced technology and mission-critical projects, we recognize and support the City's intent to update regulations that keep pace with industry evolution.

That said, we respectfully object to the current draft and the timetable of the proposed Data Center Text Amendment. As drafted, this amendment poses significant constraints on an industry that is not only foundational to Phoenix's growing status as a national technology hub but also vital to Arizona's broader economic development.

We are committed to being a constructive partner in shaping a balanced path forward. To that end, we urge the City to delay final action on the amendment and work collaboratively with stakeholders across the data center and construction ecosystem to revise the proposal in a way that reflects both community interests and economic priorities.

Summary of Key Concerns and Recommendations:

1. **Phoenix as a Leading Data Center Hub**
   Phoenix is already among the top U.S. data center and tech markets—joining Northern Virginia, Atlanta, Dallas, Chicago, Silicon Valley, and Austin—thanks to strategic public-private collaboration and forward-looking infrastructure investments.

2. **Over $10 Billion in Metro Phoenix Investment**
   The data center industry has fueled more than $10 billion in investment across the region, with world-leading operators such as Google, Microsoft, Meta, Compass, and others establishing critical infrastructure in our metro area, and BlueCross Blue Shield, AMEX, PayPal, GoDaddy, APS, Charles Schwab, Safeway/Albertsons, Lumen, Digital Realty, Aligned Energy, Flexential, Iron Mountain, PhoenixNAP, QTS, and Databank located in City of Phoenix.

Tel 602.808.0500 Fax 602.808.8843
222 N. 44th Street, Phoenix, AZ 85034
www.dpr.com

3. **Significant Economic Impact**
   In 2023, Arizona's data center industry generated:

- $863 million in state and local tax revenue,
- 14,430 direct jobs and a total of 81,730 employment impacts,
- $6.2 billion in labor income.

4. **Advanced Workforce Development**
   The sector relies on the same high-skilled trades fueling Arizona's advanced manufacturing boom. Local general contractors and subcontractors—including DPR, Haydon, JE Dunn, and others—play key roles in building these specialized, mission-critical facilities.

5. Please note that the majority of Villages have voted to reject the amendment or delay the vote.

6. **Recommended Revisions to the Text Amendment**

- **Noise & Setbacks:** Limit these requirements only to site portions adjacent to residential areas. Define terms such as "ambient noise" and "solar consequences."
- **Design Requirements:** Exclude major public roadways and freeways from enhanced setback and landscaping provisions.
- **Undergrounding Exemptions:** Exclude new lines already approved by the Arizona Corporation Commission.
- **Utility Letters:** Remove the 2-year Will Serve Letter requirement. Standard letters from SRP or APS should suffice.
- **Zoning Flexibility:** Eliminate Special Permit requirements for sites already zoned CP/GCP, C2, A-1 or A-2. Apply any new design review standards through a separate, collaborative process.

6. **Proposed 90-Day Postponement**
   To allow for productive dialogue and meaningful collaboration, we respectfully request that the amendment process be paused for 90 days. This would shift:

   - The Planning Commission date from June 5 to September 4.

Tel 602.808.0500 Fax 602.808.8843
222 N. 44th Street, Phoenix, AZ 85034
www.dpr.com

- The City Council date from June 18 to September 17.

7. **Ongoing Industry Commitment to Community and STEM**
   Our industry is proud to invest in Arizona's future workforce. In the past year alone, Arizona data center organizations have contributed over $75,000 to local STEM initiatives, scholarships, and internship programs, helping to prepare students for high-wage, high-skill careers.

   We are proud to build in the City of Phoenix and committed to supporting its long-term vision. We welcome the opportunity to work directly with your team on a revised amendment that balances regulatory clarity with continued economic momentum.

   Thank you for your time, consideration, and leadership.

   Sincerely,

Nathan Lentz
Business Unit Leader
DPR Construction
nathanl@dpr.com
602-819-8399

SNELL
& WILMER

Noel J. Griemsmann, AICP
Senior Urban Planner
602.382.6824
ngriemsmann@swlaw.com

May 29, 2025

Joshua Bednarek
Director
Planning & Development Services Department
City of Phoenix
200 West Washington Street
Phoenix, AZ 85003
Via Email to: joshua.bednarek@phoenix.gov

RE: Comments on the Proposed Zoning Ordinance Text Amendment Z-TA-2-25-Y Related to "Data Center" Land Uses

Josh,

On behalf of our client, Menlo Equities, which, via one of its corporate entities, owns the property addressed as 4801, 4805, 4809 and 4811 East Thistel Landing Drive (the "Site"), we have the following comments on the proposed text amendment.

For background, in 2024 we processed two (2) Planning Hearing Officer ("PHO") applications to amend the stipulations of two (2) zoning cases that govern development of the Site, Cases PHO-1-24-Z-10-96-6 and PHO-2-24-Z-127-96-6, in order to develop over a million square feet of structures in a five (5) building campus intended for technology center land uses, a project that includes Data Centers as a primary function/use of the campus. The campus also includes an approximately 2.5 acre area allotted for a future substation to provide sufficient power for the development at full buildout. The vision of the project is the development of Data Center facilities that may also include technology related businesses that would seek to co-locate at the Site due to a need to be in immediate proximity to Data Center uses and users.

The Site is zoned Commerce Park/General Commerce Park ("CP/GCP") option (City of Phoenix Zoning Ordinance Section 626.F), a zoning district that currently permits Data Center land uses by-right. While "Data Center" is not defined by the City of Phoenix Zoning Ordinance ("Ordinance") , it has been interpreted by the Zoning Administrator (as authorized by Ordinance Section 307.A.3) as being an analogous use to the defined land use of "Telecom Hotels" and therefore allowed by-right in C-1, Neighborhood Retail District, and, due to the cumulative nature of the Ordinance, in more intensive zoning districts, including CP/GCP, due to their office like nature (see Informal Interpretation letter dated December 15, 2021 for an example of such prior determination).

It is our understanding that the proposed Text Amendment would: (i) create a definition for Data Center uses; (ii) add design and performance standards for such uses; and (iii) add a Special Permit

requirement to establishment of such uses in the CP/GCP zoning district. As a property owner and developer of Data Center uses, our client is concerned about the impacts of this proposed Text Amendment to their approved project at the Site, particularly the transition of such land use being "by-right" to one requiring approval of a discretionary Special Permit under proposed new Ordinance Section 647.A.2.KK.

While the project has been moving forward, at this time there is only Preliminary Site Plan ("PSP") approval dated May 10, 2024 (Project #23-1632, PRLM 2402543). As you are aware, such approvals are valid for 24 months, therefore it will expire on May 10, 2026.

If the proposed Text Amendment is approved by the City Council, the current language of the proposed Text Amendment would then apply, requiring our client to process a Special Permit for their Data Center focused development.

With a Special Permit being a fully discretionary approval by the City Council, as well as the additional time and expense to process such an application, it is critical to Menlo Equities that their existing development rights at the Site are clearly and permanently maintained and that any amendment to the Ordinance not apply to their development of the Site.

Therefore, we would request the addition of clarifying language to unambiguously state that this proposed Text Amendment does not interfere with their current rights and approvals.

Suggested additional text is:

> 647.A.2.KK. DATA CENTERS IN THE C-2, C-3, CP/GCP, A-1 AND A-2 ZONING DISTRICTS, SUBJECT TO THE FOLLOWING:
>
> ***
>
> (5) ANY PROPERTY THAT HAS BEEN ISSUED A PRELIMINARY SITE PLAN APPROVAL (PER SECTION 507.F.1.d(2)(a) or (b)) PRIOR TO THE DATE OF THIS AMENDMENT TO THIS ORDINANCE (INSERT APPROVAL DATE) FOR A DATA CENTER USE (PRIMARY OR ACCESSORY) AND THE APPROVED PRELIMINARY SITE PLAN INCLUDES AN EXISTING OR PROPOSED POWER SUBSTATION, THIS SECTION AND SECTION 507 TAB A SECTION II.D.5, DATA CENTERS, SHALL NOT APPLY TO ANY DEVELOPMENT OF THE PROPERTY, REGARDLESS OF THE PASSING OF THE PERIOD OF VALIDITY FOR PRELIMINARY DEVELOPMENT REVIEW DOCUMENTS AT PER SECTION 507.K.6.a. DATA CENTER USES THAT ARE EXEMPT FROM THIS SECTION ARE PERMITTED IN THE CP/GCP ZONING DISTRICT AS IF EXPRESSLY LISTED AS A PERMITTED USE IN SECTION 626.F.2.
>
> ***

With the inclusion of the above exemption (or similar language), the proposed text amendment would not impact development of the Site now or in the future as the Site has Preliminary Site Plan approval (and this text allows for such approval to expire without loss of the exemption) and the approved site plan includes a future substation.

If the proposed language of the text amendment is amended to include the above or language similar to the above in a manner that will maintain the existing rights of our client to develop their Data Center project at the Site by-right and under the conditions applicable currently, there is no objection to this amendment from our client.

Note that nothing herein shall be construed as a waiver of any rights, including but not limited to A.R.S. 12-1131 et seq.

Respectfully Submitted,

Snell & Wilmer

Noel J. Griemsmann, AICP
Senior Urban Planner

Laborers' International Union of North America

LiUNA!

Local No.1184

Local No.1184
Arizona, Riverside and Imperial Counties

MICHAEL S. DEA
BUSINESS MANAGER
SECRETARY-TREASURER

William G. Smith
PRESIDENT

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EL CENTRO OFFICE
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(760) 337-3909
Fax (760) 337-3911

May 28, 2025

Mayor Kate Gallego
Phoenix City Hall
200 W. Washington St.
Phoenix, AZ 85003

Dear Mayor Gallego and Members of the Phoenix City Council,

On behalf of the more than 5,800 members of LiUNA Local 1184, I write to express our strong opposition to the proposed text amendment that would impose new and potentially damaging restrictions on data center development in Phoenix.

LiUNA members are the backbone of Arizona's construction workforce. From site preparation and trenching to pouring concrete and laying underground utilities, our laborers are essential to building the infrastructure that keeps this city moving. Data centers are no exception—they require extensive civil work that directly employs hundreds of skilled union laborers on each project.

Data centers represent a vital opportunity for local job creation and economic development. These facilities spur significant infrastructure investments, including water, sewer, power, and road systems—all work that puts our members to work. At a time when Phoenix should be doing everything possible to support sustainable job growth, this amendment moves in the wrong direction.

The proposed electric 'will serve' requirement appears infeasible and unrealistic, and the additional noise restrictions are duplicative given the city's existing regulations. Adopting this amendment without a thorough stakeholder process risks stopping new projects, killing union jobs, and stalling economic progress.

Phoenix has always been a city that values collaboration and careful policy-making. Unfortunately, this amendment has moved forward without meaningful consultation with labor or other key stakeholders. That must change.

We respectfully urge the Council to hit pause and engage in a real stakeholder process. Let's get this right—for the workers who build this city and for the future of Phoenix's economy.

Sincerely,

Mike Dea
Business Manager
LiUNA Local 1184

Feel the Power

From:	Mark Cardenas
To:	Mark Cardenas
Subject:	Union Letters Opposing Text Amendment
Date:	Thursday, May 29, 2025 8:52:26 AM
Attachments:	Outlook-22aff3p2.png Carpenters Local 1912 Data Center Letter.pdf IBEW Local 640 Data Center Letter.pdf SMART Local 359 Data Center Letter.pdf SMART Local 359 Data Center Letter.pdf

Dear Mayor Gallego, Members of the City Council, and Planning & Development Staff,

I am writing on behalf of the United Brotherhood of Carpenters and Joiners of America (Carpenters) Local 1912, The International Brotherhood of Electrical Workers (IBEW) Local 640, The International Association of Sheet Metal, Air, Rail, and Transportation Workers (SMART) Local 359, and The Laborers International Union of North America (LiUNA) Local 1184 to express our opposition to the current proposed General Plan Amendment GPA-2-25-Y and its companion Zoning Text Amendment Z-TA-2-25-Y regarding data centers.

Data center construction has been a critical source of high-paying jobs for skilled local workers, including electricians, carpenters, millwrights, operating engineers, laborers, and sheet metal workers. These are career-track jobs with benefits, built through federally-registered apprenticeship programs, that provide a pathway to the middle class for thousands of Phoenix families.

The proposed policies will severely restrict where data centers can be built—effectively pushing them out of core areas and imposing design requirements that make future projects less feasible. If adopted, this amendment will result in fewer projects, fewer jobs, and less opportunity for our local construction workforce including thousands of our union members.

Rather than moving forward with restrictive land use policies that put union jobs at risk, we urge the City to work directly with labor, industry, and community stakeholders to find balanced solutions that preserve both neighborhood character and economic opportunity. Data centers are not just infrastructure—they are job

creators. Phoenix cannot afford to turn those jobs away.

SMART LOCAL 359, IBEW LOCAL 640, LiUNA LOCAL 1184, AND CARPENTERS LOCAL 1912 ARE IN OPPOSITION TO THE CURRENT PROPOSAL. We respectfully urge you to set back and pause both GPA-2-25-Y and Z-TA-2-25-Y while engaging in a meaningful and thoughful stakeholder process with organized labor and others involved in the construction and operation of data centers.

Thank you for your time and consideration.

Mark Cardenas | Managing Partner
Phone: 623-340-8525
Email: Mark@westwoodaz.com

www.westwoodaz.com

Westwood
Public Affairs

VIAWEST
Group

ViaWest Group
2390 E. Camelback Rd., Ste. 305
Phoenix, AZ 85016

May 21, 2025

Mayor Kate Gallego
Phoenix City Council
200 W. Washington St.
Phoenix, AZ 85003

Re: Request to Delay Vote on Proposed Data Center Ordinance

Dear Mayor Gallego and Phoenix City Council Members,

On behalf of ViaWest Group, I am writing to express our strong support for the continued development of data centers in Phoenix and across the state of Arizona. We respectfully urge the City Council to delay the vote on the proposed data center ordinance until after the summer recess to allow time for a more thorough and inclusive stakeholder engagement process.

While we understand and appreciate the City's desire to thoughtfully manage growth, the ordinance as currently proposed presents significant and immediate concerns for the health of Arizona's data center industry—and, by extension, the broader economy. The current language and restrictions threaten to slow or halt new data center development, discourage future investment, and jeopardize high-quality job creation in one of our region's most resilient and forward-looking industries.

Data centers are long-term economic engines. In 2023 alone, the Arizona data center market directly supported 14,430 jobs and contributed $6.2 billion in labor income. Including indirect and induced effects, total employment supported by the industry reached 81,730 jobs. These are well-paying, skilled positions that support families and drive economic mobility throughout our community.

Furthermore, data centers contributed $11.0 billion to Arizona's GDP last year—a 5% increase over 2022. The current ordinance, however, creates uncertainty that could stall this momentum and shift investment to other more business-friendly states. Arizona has worked hard to establish itself as a hub for high-tech infrastructure. Undermining that progress with rushed regulation would be a step backward at a time when we should be accelerating innovation and competitiveness.

The stakes extend beyond employment and capital investment. In 2023, the industry generated $863 million in state and local tax revenues. To put that in perspective, the 2022 tax contribution alone was sufficient to fund all public parks and recreation services statewide. If the current proposal is adopted without sufficient input and adjustment, we risk undercutting a vital source of public funding that supports the very services our residents rely upon.

At ViaWest Group, we are deeply invested in the long-term prosperity of Phoenix. We believe there is a way to thoughtfully regulate growth while preserving the economic and technological benefits that data centers bring to our city. But that can only be achieved through collaboration, not haste. We urge the City Council to delay the vote until after the summer recess and allow all stakeholders the opportunity to work together on a solution that balances community priorities with continued innovation and job creation.

Thank you for your leadership and consideration.

Sincerely,

Steven R. Schwarz
Founding Partner
ViaWest Group

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May 15, 2025

VIA EMAIL AND FIRST CLASS MAIL
Josh Bednarek
Planning & Development Director
200 W. Washington St., 13th Floor
Phoenix, AZ 85003

Re: Proposed Data Center Text Amendment

Dear Mr. Bednarek:

This firm represents property owners in Phoenix who intend to develop their properties for data center use. The City is processing a text amendment that, among other things, would require a special permit for all data centers in C-2, C-3, CP/GCP, A-1 and A-2 zoning districts, which are the only zoning districts where data centers are currently permitted. In addition, the text amendment provides that the City would not approve a preliminary site plan for a data center, even if a special permit were issued, until a utility provides a "will serve" letter confirming that it will serve the energy demand of the data center within two years. Based on recent discussions, it is questionable whether a utility would or could issue such a letter.

Currently, data centers are permitted as a matter of right in C-2, C-3, CP/GCP, A-1 and A-2 zoning districts and without a requirement for any "will serve" letter, much less confirmation that power can be provided within two years. Adding requirements for a special permit and a "will serve" letter that no utility likely would issue would have a severe detrimental impact on the value of all property that currently may be developed for data center use as a matter of right. Therefore, the City will face overwhelming liability under Proposition 207, and may be exposed to other potential consequences, if the text amendment is adopted.

The purpose of this letter is to explain the City's exposure and how it can be avoided.

I. THE TEXT AMENDMENT WOULD VIOLATE ARIZONA LAW.

A. Proposition 207.

The initiative known as Proposition 207, codified into law as the Private Property Rights Protection Act, entitles a property owner to just compensation if enactment of a "land use law" reduces the fair market value of that property:

> If the existing rights to use, divide, sell or possess private real property are reduced by the enactment or applicability of any land use law enacted after the date the property is transferred to the owner and such action reduces the fair market value of the property the owner is entitled to just compensation from this state or the political subdivision of this state that enacted the land use law.

A.R.S. § 12-1134(A).

A "land use law" includes an ordinance that "regulates the use or division of land or any interest in land." A.R.S. § 12-1136(3). Because the proposed ordinance would regulate the use of land by imposing special requirements for data centers, it would be a land use law for purposes of Proposition 207. In fact, the City is proposing the text amendment as a zoning ordinance, which by definition would regulate the use of land.

The amended ordinance would reduce the value of property that it regulates. The Phoenix metropolitan area is a robust market for data centers. In fact, Phoenix is the fourth largest data center market in the United States, and that market is expanding. There is a growing need for data centers to meet the power demands of AI companies, which are increasingly looking to Phoenix to satisfy that demand. In return, data centers create jobs and increase tax revenues, which benefit the City. Data centers also enhance Phoenix's reputation as a nationally recognized technology hub, which has ripple effects on the rest of the local economy.

Because the Phoenix data center market is experiencing such high demand, land that is zoned, suitable and ready for data center use has some of the highest values in the Valley. At this time, there are thousands of acres of land located within the service areas of Arizona Public Service and the Salt River Project that are zoned C-2, C-3, CP/GCP, A-1 or A-2, where data centers are suitable and permitted as a matter of right. Because data centers are permitted uses, and because land for data centers is in extremely high demand, being zoned for data center use greatly enhances the value of those properties. The effect of the text amendment will be to reduce the existing right to use all those properties and decrease their value.

If the text amendment is adopted, virtually every owner of every property zoned C-2, C-3, CP/GCP, A-1 or A-2 could have a Proposition 207 claim against the City. Even property owners with existing data centers could have Proposition 207 claims. The effect of the text amendment would be to make every data center in the City a nonconforming use subject to the significant restrictions in Chapter 9 of the Phoenix Zoning Ordinance. No data center could expand its footprint or even be restored after a fire or similar event as a matter of right. As nonconforming uses, data centers would contribute less value to the underlying properties than without the text amendment. In fact, a stated goal of the City's nonconforming use restrictions is "to curtail substantial investment in nonconformities and to bring about their eventual improvement or elimination;" an admission that nonconforming use status reduces value.

It is no exaggeration to estimate that claims based on the loss of the valuable right to develop property for data centers could easily reach billions of dollars. The City could be inundated with litigation to recover these damages, including class action lawsuits, and could face substantial litigation-related expenses. And the City should not lose sight of the non-monetary harm that would be done to its reputation as a municipality that welcomes and encourages technology.

The City can avoid this potential enormous liability by either withdrawing the proposed text amendment or limiting its scope, as we will explain below.

B. The Arizona Constitution.

Proposition 207 is not the only legal protection available to property owners. If a government regulation goes "too far," it will be a taking without compensation prohibited by the Fifth Amendment to the United States Constitution and Article 2 § 17 of the Arizona Constitution. To establish a taking, an owner may show that a regulation interferes with its reasonable "investment backed expectations." *Penn Central Transportation Co. v. City of New York*, 438 U.S. 104 (1978).

In this market and given the current zoning ordinances, many owners purchased their properties with investment-backed expectations to use them for data centers. The text amendment clearly would interfere with those reasonable expectations, giving rise to takings claims under both the state and federal constitutions.

C. Arizona's Anti-Moratorium Statute.

The text amendment appears to be a disguised attempt to impose a *de facto* moratorium on new data centers, particularly due to the requirement that a utility issue a "will serve" letter confirming that service will be available within two years. It is our understanding from the

electric utilities that the two-year requirement is unworkable. The added layer of approvals for a special permit and a two-year "will serve" letter that will never be issued raises doubts about whether any data center can or will be approved for construction.

Pursuant to A.R.S. 9-463.06, the City may not impose a moratorium on development, whether express or *de facto*, unless the City follows a process and makes certain findings. That was not done. By imposing requirements that likely cannot be met without first having made the necessary findings, the City likely has violated A.R.S. § 9-463.06.

D. SB1487.

Violation of the Arizona Constitution or a state statute may go beyond merely creating a cause of action against the City for damages. A.R.S. § 41-194.04, which codified a legislative bill known as SB1487, authorizes a member of the state legislature to request the Arizona Attorney General to investigate whether an ordinance violates state law. A.R.S. § 41-194.01(A). If the Attorney General finds a violation, she shall notify the state treasurer to withhold state shared revenues from the City. A.R.S. § 41-194.01(B).

The proposed text amendment would have such an egregious impact on property values that a member of the legislature may decide to ask the Attorney General to investigate based on the violations of Proposition 207, Article 2 § 17 of the Arizona Constitution and/or A.R.S. § 9-463.06. The City should weigh that significant risk carefully against whatever perceived benefits the City believes the proposed text amendment may create.

II. THE CITY CAN AVOID LIABILITY BY EXEMPTING CURRENTLY ZONED DATA CENTER PROPERTY FROM THE SPECIAL PERMIT AND "WILL SERVE" LETTER REQUIREMENTS.

There is a simple way for the City to avoid incurring this massive liability and risk. If the City is determined to require data centers to obtain special permits and "will serve" letters (which is poor public policy to begin with), those requirements should only apply prospectively to land that is not yet zoned for data center use. In other words, a special permit and a "will serve" letter with reasonable terms may be required as part of a rezoning case to C-2, C-3, CP/GCP, A-1 and A-2 to allow a data center, but not to properties that already have such zoning. The only other conditions on use of property that is currently zoned for data center use should be reasonable site planning or development review criteria such as landscaping, setbacks or noise control.

Our clients are open to working with the City staff on reasonable conditions for data centers. To allow the stakeholders to address these issues, we request that the text amendment process be placed on hold for six months.

Please let me know if you have any questions or need further information.

Very truly yours,

BERRY RIDDELL LLC

Jeffrey D. Gross

JDG/lk

cc: Alan Stephenson, Deputy City Manager (via email)
Tricia Gomes, Deputy Director (via email)
Chris DePerro, Team Leader, Text Amendments and Special Projects (via email)
Julie Kriegh, Esq., City Attorney (via email)

The Honorable Mayor Kate Gallego
City of Phoenix
200 West Washington Street
Phoenix, Arizona 85003

June 10, 2025

Re: Zoning Ordinance Text Amendment Z-TA-2-25-Y

Dear Mayor Gallego,

As president and CEO of the Arizona Technology Council, the state's premier trade association representing more than 750 science and technology companies, I am writing to respectfully request that you convene **a roundtable discussion with the Phoenix Planning and Development Department and local data center industry partners and stakeholders regarding Zoning Ordinance Text Amendment Z-TA-2-25-Y (Text Amendment), guiding future data center development**.

The digital age has exponentially increased our reliance on data. As businesses and communities become more data-driven, there is a growing demand for reliable and efficient data centers. Our region now ranks as one of the nation's top markets for data centers. These facilities drive industry growth and economic development and are critical components of the state's technology ecosystem.

The language proposed in the Text Amendment will create additional ambiguity for developers. We would like to highlight two critical issues that warrant further consideration:

1. Utility Requirements:
   The requirement that a developer provides a will-serve letter from a utility company demonstrating that the utility will meet the data center's energy demand within two years is unrealistic. Such a requirement would rush the design review process and significantly limit flexibility during crucial early project phases.

2. Noise Level Measurement:
   The Text Amendment's ambient noise level stipulations are too vague and do not align with industry standards or established scientific measurement methods. If implemented, this would adversely impact both the development of future data centers and the quality of life for the city's residents. While we support regulating ambient noise levels, measuring such noise levels in percentages is ineffective and we recommend replacing this with specific A-weighted decibel (dBA) thresholds, including measurement period specifications and timing. Additionally, we recommend including provisions for emergency scenarios, particularly regarding generator operations during power outages.

To resolve these and other ambiguities, local data center industry partners and stakeholders would like to take part in a roundtable discussion with you and staff from the Phoenix Planning and Development Department prior to any Planning Commission vote on June 5, 2025.

Thank you for your consideration.

Sincerely,

Steve

ARIZONA TECHNOLOGY COUNCIL & SCITECH INSTITUTE

Steven G. Zylstra
President & CEO

Table A-5: The economic contribution of the data center industry in Arizona, 2022-2023

Item	2022	2023	Growth
Employment (jobs)			
Direct contribution	14,720	14,430	-2%
Indirect and induced without the spillover effect[a]	66,950	67,300	1%
Operational	58,980	57,730	-2%
Capital Spending	7,970	9,570	20%
Total contribution without the spillover effect[a]	81,670	81,730	0%
Cross-state spillover	25,740	26,990	5%
Total contribution with the spillover effect[a]	107,410	108,720	1%
Labor Income ($millions)			
Direct contribution	$1,840	$1,967	7%
Indirect and induced without the spillover effect[a]	$4,213	$4,266	1%
Operational	$3,620	$3,547	-2%
Capital Spending	$593	$719	21%
Total contribution without the spillover effect[a]	$6,052	$6,233	3%
Cross-state spillover	$1,688	$1,799	7%
Total contribution with the spillover effect[a]	$7,740	$8,032	4%
GDP ($millions)			
Direct contribution	$3,518	$3,920	11%
Indirect and induced without the spillover effect[a]	$7,040	$7,115	1%
Operational	$6,144	$6,036	-2%
Capital Spending	$896	$1,079	20%
Total contribution without the spillover effect[a]	$10,558	$11,035	5%
Cross-state spillover	$2,923	$3,113	7%
Total contribution with the spillover effect[a]	$13,481	$14,147	5%
Total State and Local Tax Contribution ($million)[b]			
Without cross-state spillover[a]	$829	$863	4%
With cross-state spillover[a]	$1,067	$1,108	4%

Source: PwC calculations using the IMPLAN modeling system and public data. Details may not sum to totals due to rounding.

[a] The spillover effect refers to the indirect and induced effects in a state attributable to the national data center industry's direct activity in all other states.

[b] Tax contribution includes all state and local taxes directly or indirectly resulting from the U.S. data center industry's construction and operations (including direct, indirect, and induced economic effects) benefiting the state.

1. The data center industry's total annual employment contribution in Arizona (without the cross-state spillover effect) exceeded 80,000 jobs in both 2022 and 2023. Including the cross-state spillover effects, the data center industry's total annual employment contribution in Arizona was 107,410 jobs and 108,720 jobs in 2022 and 2023, respectively.
2. The industry's total annual labor income contribution in Arizona (without the cross-state spillover effect) increased from $6.1 billion in 2017 to $6.2 billion in 2023, a 3 percent increase. Including the cross-state spillover effects, the data center industry's total annual labor income contribution in Arizona was $7.7 billion and $8.0 billion in 2022 and 2023, respectively.
3. The industry's total annual GDP contribution (without the cross-state spillover effect) in Arizona increased from $10.6 billion in 2022 to $11.0 billion in 2023, a 5 percent increase. Including the cross-state spillover effects, the data center industry's total annual GDP contribution in Arizona was $13.5 billion and $14.1 billion in 2022 and 2023, respectively.
4. The latest government spending data suggest that the data center industry's total state and local tax contribution (without cross-state spillover effects) of $829 million in Arizona in 2022 was sufficient to fund all provision and support of parks and recreational facilities and activities in the state.

From:	Jordan R. Rose
To:	Tricia Gomes; Christopher DePerro
Cc:	Rebekah Pineda; Jordan R. Rose
Subject:	RE: 4/29/25 DRAFT General Plan Amendment and Text Amendment Language for Data Centers & Hearing Schedule
Date:	Wednesday, April 30, 2025 3:47:24 PM
Attachments:	image002.png image003.png image004.png Data+Center+Economic+Contribution+Study+2025_Final (ARIZONA only).pdf

Tricia and Chris. Thank you for taking the time to talk to me yesterday. We represent a number of data center developers and end users and have some comments about the proposed data center draft Ordinance. We appreciate the city considering these comments and including in your staff report if at all possible.

We were aware of the December 2024 action where the Council directed Staff as follows "*Motion to approve the initiation of a general plan amendment process to add design and location criteria, establish definitions for data centers as a primary and accessory use that would be applied in all future planned unit development applications, consider options for amending the zoning ordinance to address design, location criteria, noise concerns, performance standards, and back up generation requirements. And provide for a community engagement process.*" We just saw the draft Ordinance for the first time on April 24th with a meeting called by Planning Staff for April 29th. Aside from the April 29th meeting, and another meeting scheduled on May 6th, there does not appear to be any stakeholder outreach or stakeholder meetings to develop or refine the draft Ordinance. We understand the staff report is being finalized on April 30th so we may have other comments later as more is learned. Nevertheless, with this background we want to be sure you consider the following initial comments:

- We assume that any data center site that is either partially built, approved with a PUD for this use, or in the preliminary site plan review process, will expressly be exempted from this new Ordinance. I underlined the portion of the motion from December 2024 that seems to indicate the Council also intend this to apply only to not yet contemplated developments. Developers who have reached this stage of development have typically made substantial investments in their projects in reliance on the existing entitlements, rules, and policies in place. Changing the land use regulations applicable to these projects in middle of the game would effectively downzone the land triggering financial obligations under Prop 207. These developers and end users have spent tens to hundreds of millions of dollars on their commitment to the City of

Phoenix and to change their entitlement trajectory now would be highly problematic and expensive.

- The language requiring a "will serve" letter seems superfluous as a Data Center project cannot be operated or get a Certificate of Occupancy until and unless they have an ability to connect to a power source. We believe that language is unnecessary as your Council policy direction was to try to review data center proposals that were located near potential retail sites and this power requirement does nothing to further that goal.
- Furthermore, there are a few issues with the language regarding the "will serve letter" requirement that should be resolved. First, these projects can often develop over time with only a small portion of the energy being available in year one and a ramping schedule into the future from there. It is in fact the case that most of these projects do not have all the energy they need available to them in the year they commence operation. As a result, language would need to be modified so as not to inadvertently require the full project energy to be available in two years. Further, we ask that the time frame be extended from 2 years to a 10-year time frame as most of these investments are of a scale that requires a long-term commitment and building the infrastructure to provide the electrical service can sometimes take years. Next, we ask that if you want to require a "will serve letter" that you revise the draft to strike "local utility company" and say "power provider." There are alternatives for power service that may permit power to be self-provided or from a provider that is not a "local utility company" and that language should be revised.

As an aside, but important for decision makers and the public to note, I have attached a page from a report by the Data Center Coalition that outlines the economic contributions from the data center industry in Arizona from 2023. Here are a few highlights, all of which are for Arizona only and do not take into account the "spillover effect" of benefits Arizona receives that would be attributable to the national data center industry's activities in other states.

- Data Centers were responsible for AZ 81,730 jobs in 2023 (14,430 direct jobs, plus 67,300 indirect and induced jobs)
- Data Centers were responsible for over $6.2B in Labor Income for Arizona workers ($1.9B direct jobs, plus $4.2B indirect and induced jobs)
- Data Centers contributed over $11B to Arizona's GDP – Note, Arizona's total GDP for 2023 was $422.4B so that is over 2.5%.
- Data Centers provided $863M in state and local tax benefits in Arizona.

Again, we may have more comments later but in the interest of getting you something quickly this is our clients first reaction. Thank you again for taking our initial comments and happy to talk at any time.

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Direct 480.505.3939 Fax 480.505.3925 Mobile 602.369.4692

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RLG is Service :: Winner "Best places to work in Arizona"

From: Tricia Gomes <tricia.gomes@phoenix.gov>
Sent: Tuesday, April 29, 2025 6:56 PM
To: Alisa Lyons <admin@sloanlyons.com>; Manjula M. Vaz <mvaz@gblaw.com>; Taylor Earl <tearl@EarlCurley.com>; Ricardo Toris <rtoris@EarlCurley.com>; Clay Allsop <clayallsop@google.com>; Jordan R. Rose <jrose@roselawgroup.com>; Rodney.Ross@aps.com; mkgreene@srpnet.com; Karla.moran@srpnet.com; Futral, Ashton <Ashton.Futral@pinnaclewest.com>; Elyse DiMartino <ed@berryriddell.com>; Austin.Prusak@aps.com; Brian Vaccaro <BVaccaro@EarlCurley.com>; Patricia DiRoss <Patricia.DiRoss@srpnet.com>; Wendy Riddell <wr@berryriddell.com>
Cc: Christopher DePerro <christopher.deperro@phoenix.gov>
Subject: 4/29/25 DRAFT General Plan Amendment and Text Amendment Language for Data Centers & Hearing Schedule

Dear Stakeholders,

Thank you for attending the stakeholder meeting today. Attached is the copy of the General Plan Amendment and Text Amendment Language that we went over today. We will be finalizing the staff report in the next day or two. Once it is finalized, we can provide a copy as well. Attached is the hearing schedule as well. Please let me know if you have any questions or feedback. We have a second stakeholder meeting schedule for 5/6 at 1pm. If you did not receive an invite and would like to attend, please let me know.

Thank you,
Tricia Gomes, Deputy Director, Planning & Zoning Division
Office: 602-262-4870 Email: tricia.gomes@phoenix.gov

City of Phoenix
► Planning & Development Department
Planning & Zoning Division
200 West Washington Street, 3rd Floor
Phoenix, AZ 85003

Mission: Planning, Development and Preservation for a Better Phoenix

Turf Paradise

May 27, 2025

Dear Mayor Gallego, Phoenix City Council, and Members of the Planning Commission,

As the longstanding owner of Turf Paradise, Arizona's first sports franchise, we have been an engaged member of the Phoenix Business community for over 60 years. Being passionate and proactive about supporting the new economic needs of the tech focused Phoenix Metro Area, having on site water, and located within ten miles of TSMC, we are planning to redevelop the track into a technology campus to include advanced manufacturing and data centers. Given these exciting plans which are in line with Phoenix's economic development goals, we are writing to express concern over the proposed Data Center draft Ordinance which appears to be moving through the adoption process quicker than we have ever seen any other City initiated amendment in history.

We ask that you slow this down to allow for the more thoughtful and typical stakeholder input process that has made Phoenix such a reliable place to conduct business.

This peculiarly quick processing of an Ordinance that will, as worded now, literally shut down new data center development sends a frightening message to the overall business technology market that Phoenix could change the rules of engagement at any time and without much input. That is not a good message for our data centers or the corporate HQ's we hope to attract that want their data storage nearby.

Our particular concern with the language as currently proposed is that the "will serve" requirement is worded in such a way that it will be impossible to meet the standard. The power companies have verified that they cannot issue the letters as worded so if this verbiage remains then data center uses will effectively be dead in Phoenix.

We are also concerned about this Ordinance applying to sites that provide for at least 50% of their site as "advanced manufacturing." We know that the City wants to encourage this type of use and pairing advanced manufacturing with data centers can accelerate the

Turf Paradise Race Course ◆ 1501 West Bell Road ◆ Phoenix, Arizona 85023
(602) 942-1101 ◆ Fax: (602) 942-8569

development of both. When a data center Ordinance moves forward, we request that you provide an exception for these types of productive mixed use technology campus sites.

Thank you for taking the time to review our comments. We love our great City and hope to continue to add value to an ever-evolving Phoenix.

Jerry Simms
Owner,
Turf Paradise Race Course

5/30/2025

To: Phoenix Planning Staff

Subject: Request for 90-Day Delay and Revision to Proposed Phoenix Data Center Ordinance

Dear Mayor Gallego and Members of the Phoenix City Council,

On behalf of the Metrobloks PHX-MB01 data center project proposed within the Downtown Code (DTC) Warehouse District at 425 W Grant Street (City of Phoenix KIVA 24-1539), we are writing to express significant concerns regarding the currently proposed Data Center Zoning Text Amendment (Z-TA-5-22) and to respectfully request:

1. A 90-day extension to the ordinance process to allow for meaningful stakeholder engagement and a revised ordinance draft prior to any formal votes.
2. Clear language that protects projects that are in the development process including those that have completed and relied on Pre-Application Reviews.

The PHX-MB01 project represents a major private investment that aligns with the City's goals for innovation, economic growth, and sustainable infrastructure in the urban core. Our project has undergone months of coordinated review under the current zoning and development standards. Further, we point out that Metrobloks is a new company and has been self-funding all of the costs incurred up to this point through the Fact Finding and Pre-Application processes.

Rewriting the rules mid-process, particularly under an ordinance not informed by project-specific engagement, places our completed design and financial investments at peril.

As stated above, we believe a 90-day delay would be constructive as this pause would ensure the City receives high-quality input and avoids unintended consequences.

Metrobloks stands as a case study in productive infill, adaptive urban design, and public-private partnership under the Downtown Code. We urge the City to allow time for a more tailored and informed ordinance that can work in concert with the very developments it seeks to regulate.

Thank you for your time and continued leadership.

Ryan Shea

Metrobloks

SVP Real Estate

shea@metrobloks.com

880 Apollo St #329

El Segundo CA, 90245

DP Electric Inc.
2210 S Roosevelt St.
Tempe, AZ 85282
480-858-9070

June 2nd, 2025

To Whom It May Concern:

On behalf of DP Electric, Inc., I am writing to express our deep concern over the potential adverse impacts of the proposed Text Amendment Z-7-25-Y on the future of data center development in the City of Phoenix. As a leading electrical contractor supporting mission-critical infrastructure projects across Arizona, we are closely aligned with the data center sector and the economic vitality it brings to our region.

Metro Phoenix has emerged as one of the top data center hubs in the United States—competing with peer markets such as Northern Virginia, Atlanta, Dallas, and Silicon Valley. Investments in the region have surpassed $10 billion, with national leaders such as Google, Microsoft, Meta, and Stack Infrastructure contributing significantly. In Phoenix alone, key data centers including AMEX, APS, Digital Realty, and GoDaddy support our digital economy and critical services.
This growth is not only a matter of prestige but a cornerstone of our local economy. In 2023, Arizona's data center industry generated $863 million in state and local tax revenues and supported over 81,000 jobs, directly and indirectly. Construction firms like ours—alongside DPR, JE Dunn, and Holder—employ thousands of skilled workers on these projects, contributing to workforce development and STEM education through partnerships with ASU, the SciTech Institute, and others.

However, aspects of the current draft amendment—such as extended setback requirements, restrictive noise studies, and utility constraints—risk undermining this momentum. These changes create uncertainty, drive up project costs, and make Phoenix less competitive at a time when other cities are actively courting the same investments. The proposed 2-year “Will Serve” letter requirement, in particular, fails to reflect the 5–10 year power ramp typical of data centers.
We respectfully urge the City to pause the current adoption timeline and collaborate with industry stakeholders to ensure the amendment supports continued responsible growth—balancing thoughtful design with economic development.

Thank you for your consideration.

Sincerely,

Danielle Puente Torres– President

From:	Jordan R. Rose
To:	Tricia Gomes; Christopher DePerro
Cc:	Rebekah Pineda; Jordan R. Rose
Subject:	RE: 4/29/25 DRAFT General Plan Amendment and Text Amendment Language for Data Centers & Hearing Schedule
Date:	Wednesday, April 30, 2025 3:47:24 PM
Attachments:	image002.png image003.png image004.png Data+Center+Economic+Contribution+Study+2025_Final (ARIZONA only).pdf

Tricia and Chris. Thank you for taking the time to talk to me yesterday. We represent a number of data center developers and end users and have some comments about the proposed data center draft Ordinance. We appreciate the city considering these comments and including in your staff report if at all possible.

We were aware of the December 2024 action where the Council directed Staff as follows "*Motion to approve the initiation of a general plan amendment process to add design and location criteria, establish definitions for data centers as a primary and accessory use that would be applied in all future planned unit development applications, consider options for amending the zoning ordinance to address design, location criteria, noise concerns, performance standards, and back up generation requirements. And provide for a community engagement process.*" We just saw the draft Ordinance for the first time on April 24th with a meeting called by Planning Staff for April 29th. Aside from the April 29th meeting, and another meeting scheduled on May 6th, there does not appear to be any stakeholder outreach or stakeholder meetings to develop or refine the draft Ordinance. We understand the staff report is being finalized on April 30th so we may have other comments later as more is learned. Nevertheless, with this background we want to be sure you consider the following initial comments:

- We assume that any data center site that is either partially built, approved with a PUD for this use, or in the preliminary site plan review process, will expressly be exempted from this new Ordinance. I underlined the portion of the motion from December 2024 that seems to indicate the Council also intend this to apply only to not yet contemplated developments. Developers who have reached this stage of development have typically made substantial investments in their projects in reliance on the existing entitlements, rules, and policies in place. Changing the land use regulations applicable to these projects in middle of the game would effectively downzone the land triggering financial obligations under Prop 207. These developers and end users have spent tens to hundreds of millions of dollars on their commitment to the City of

Phoenix and to change their entitlement trajectory now would be highly problematic and expensive.

- The language requiring a "will serve" letter seems superfluous as a Data Center project cannot be operated or get a Certificate of Occupancy until and unless they have an ability to connect to a power source. We believe that language is unnecessary as your Council policy direction was to try to review data center proposals that were located near potential retail sites and this power requirement does nothing to further that goal.
- Furthermore, there are a few issues with the language regarding the "will serve letter" requirement that should be resolved. First, these projects can often develop over time with only a small portion of the energy being available in year one and a ramping schedule into the future from there. It is in fact the case that most of these projects do not have all the energy they need available to them in the year they commence operation. As a result, language would need to be modified so as not to inadvertently require the full project energy to be available in two years. Further, we ask that the time frame be extended from 2 years to a 10-year time frame as most of these investments are of a scale that requires a long-term commitment and building the infrastructure to provide the electrical service can sometimes take years. Next, we ask that if you want to require a "will serve letter" that you revise the draft to strike "local utility company" and say "power provider." There are alternatives for power service that may permit power to be self-provided or from a provider that is not a "local utility company" and that language should be revised.

As an aside, but important for decision makers and the public to note, I have attached a page from a report by the Data Center Coalition that outlines the economic contributions from the data center industry in Arizona from 2023. Here are a few highlights, all of which are for Arizona only and do not take into account the "spillover effect" of benefits Arizona receives that would be attributable to the national data center industry's activities in other states.

- Data Centers were responsible for AZ 81,730 jobs in 2023 (14,430 direct jobs, plus 67,300 indirect and induced jobs)
- Data Centers were responsible for over $6.2B in Labor Income for Arizona workers ($1.9B direct jobs, plus $4.2B indirect and induced jobs)
- Data Centers contributed over $11B to Arizona's GDP – Note, Arizona's total GDP for 2023 was $422.4B so that is over 2.5%.
- Data Centers provided $863M in state and local tax benefits in Arizona.

Again, we may have more comments later but in the interest of getting you something quickly this is our clients first reaction. Thank you again for taking our initial comments and happy to talk at any time.

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From: Tricia Gomes <tricia.gomes@phoenix.gov>
Sent: Tuesday, April 29, 2025 6:56 PM
To: Alisa Lyons <admin@sloanlyons.com>; Manjula M. Vaz <mvaz@gblaw.com>; Taylor Earl <tearl@EarlCurley.com>; Ricardo Toris <rtoris@EarlCurley.com>; Clay Allsop <clayallsop@google.com>; Jordan R. Rose <jrose@roselawgroup.com>; Rodney.Ross@aps.com; mkgreene@srpnet.com; Karla.moran@srpnet.com; Futral, Ashton <Ashton.Futral@pinnaclewest.com>; Elyse DiMartino <ed@berryriddell.com>; Austin.Prusak@aps.com; Brian Vaccaro <BVaccaro@EarlCurley.com>; Patricia DiRoss <Patricia.DiRoss@srpnet.com>; Wendy Riddell <wr@berryriddell.com>
Cc: Christopher DePerro <christopher.deperro@phoenix.gov>
Subject: 4/29/25 DRAFT General Plan Amendment and Text Amendment Language for Data Centers & Hearing Schedule

Dear Stakeholders,

Thank you for attending the stakeholder meeting today. Attached is the copy of the General Plan Amendment and Text Amendment Language that we went over today. We will be finalizing the staff report in the next day or two. Once it is finalized, we can provide a copy as well. Attached is the hearing schedule as well. Please let me know if you have any questions or feedback. We have a second stakeholder meeting schedule for 5/6 at 1pm. If you did not receive an invite and would like to attend, please let me know.

Thank you,
Tricia Gomes, Deputy Director, Planning & Zoning Division
Office: 602-262-4870 Email: tricia.gomes@phoenix.gov

City of Phoenix
► Planning & Development Department
Planning & Zoning Division
200 West Washington Street, 3rd Floor
Phoenix, AZ 85003

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From:	Wendy Riddell
To:	Tricia Gomes; Christopher DePerro
Cc:	Elyse DiMartino; Kaelee Palmer; d.slack@bakerdevelopmentcorp.com
Subject:	Data Center Text Amendment/ Z-54-23
Date:	Wednesday, April 30, 2025 2:25:55 PM
Attachments:	image001.png

Dear Tricia and Chris,

During the listening session yesterday, there was discussion regarding where this new proposed Text Amendment might apply. On June 13th, 2024, the City of Phoenix approved the 52nd Street and McDowell PUD. On pages 6 and page 4 our narrative on this case you will note that data centers are specifically called out. Page 4 states in relevant part, "This is a request to rezone the Site from R-3A, C-2, P-1, and IND.PK to Planned Unit Development ("PUD") to allow the Site to be developed **with data center**, manufacturing, warehouse, and distribution-type uses."

Given the specific language included in this PUD, can you please confirm in writing the proposed Data Center Text Amendment would not apply here, and data centers would continue to be a permitted use by right?

As always, your assistance is appreciated.

Best,

Wendy R. Riddell, Esq.
BERRY RIDDELL LLC
6750 E. Camelback Road, Suite 100
Scottsdale, Arizona 85251
480-682-3902 direct
602-616-8771 cell
480-385-2757 fax
wr@berryriddell.com | www.berryriddell.com [berryriddell.com]

From: Alex Hayes
To: Tricia Gomes
Subject: RE: Staff Reports for Data Center General Plan Amendment (GPA-2-25-Y) and Text Amendment (Z-TA-2-25-Y)
Date: Friday, May 2, 2025 1:13:20 PM

Thanks, Tricia. One specific question:

If a PUD does not specifically list data centers as a permitted use, but the property owner received an interpretation letter specifically stating data centers are permitted in the PUD, will that entitlement be affected by this text amendment?

Alex Hayes
Withey Morris Baugh, PLC
2525 E. Arizona Biltmore Circle, Ste A-212
Phoenix, AZ 85016
602-230-0600 Main
602-346-4636 Direct

From: Tricia Gomes <tricia.gomes@phoenix.gov>
Sent: Friday, May 2, 2025 12:58 PM
To: Alisa Lyons <admin@sloanlyons.com>; Manjula M. Vaz <mvaz@gblaw.com>; Taylor Earl <tearl@EarlCurley.com>; Ricardo Toris <rtoris@EarlCurley.com>; clayallsop@google.com; jrose@roselawgroup.com; Rodney.Ross@aps.com; mkgreene@srpnet.com; Karla.moran@srpnet.com; Futral, Ashton <Ashton.Futral@pinnaclewest.com>; Elyse DiMartino <ed@berryriddell.com>; Austin.Prusak@aps.com; Alex Hayes <hayes@wmbattorneys.com>; Brian Vaccaro <BVaccaro@EarlCurley.com>; Patricia DiRoss <Patricia.DiRoss@srpnet.com>; ss@berryriddell.com; Wendy Riddell <wr@berryriddell.com>; Jon Gillespie <jgillespie@roselawgroup.com>; Ty Utton <tutton@roselawgroup.com>
Subject: Staff Reports for Data Center General Plan Amendment (GPA-2-25-Y) and Text Amendment (Z-TA-2-25-Y)

Dear Stakeholders,

I wanted to follow up and provide the staff reports for the Data Center General Plan Amendment (GPA-2-25-Y) and Text Amendment (Z-TA-2-25-Y). These staff reports are available on the City's website as well at https://www.phoenix.gov/administration/departments/pdd/about-us/reports-

data/staff-reports.html. For those of you who have submitted questions, I am compiling those questions and preparing responses. Please feel free to reach out if you have any additional questions.

Thank you,

Tricia Gomes, Deputy Director, Planning & Zoning Division
Office: 602-262-4870 Email: tricia.gomes@phoenix.gov

City of Phoenix
► Planning & Development Department
Planning & Zoning Division
200 West Washington Street, 3rd Floor
Phoenix, AZ 85003

Mission: Planning, Development and Preservation for a Better Phoenix

From:	Ty Utton
To:	Tricia Gomes
Cc:	Jordan R. Rose; Cameron Carter; Jon Gillespie; Hopi Slaughter
Subject:	RE: Staff Reports for Data Center General Plan Amendment (GPA-2-25-Y) and Text Amendment (Z-TA-2-25-Y)
Date:	Friday, May 2, 2025 2:26:13 PM
Attachments:	image002.png image003.png image004.png

Hi Tricia,

Thank you again for your work on this matter. We are reaching out to clarify how the proposed Text Amendment (Z-TA-2-25-Y) will apply to currently developing data center projects.

It is our understanding that the City does not intend to negatively impact active projects already in the development pipeline, and that there will be an explicit interpretation or policy direction confirming that projects which are actively working through the preliminary site plan approval process, with prior Pre-App and Fact-Finding completed, will be excepted from the requirements of the new ordinance once adopted.

Can you confirm whether that is your understanding as well? And would you advise that we file a formal zoning interpretation request on this matter, or will the City be issuing general guidance prior to Council adoption? It seems that without clear direction on this point, there is potential for confusion, and possibly even Proposition 207-related concerns, after the ordinance is enacted.

We appreciate any clarification you can provide.

Best,

Ty Utton
Planner/Project Manager

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From: Tricia Gomes <tricia.gomes@phoenix.gov>
Sent: Friday, May 2, 2025 12:58 PM
To: Alisa Lyons <admin@sloanlyons.com>; Manjula M. Vaz <mvaz@gblaw.com>; Taylor Earl <tearl@EarlCurley.com>; Ricardo Toris <rtoris@EarlCurley.com>; clayallsop@google.com; Jordan R. Rose <jrose@roselawgroup.com>; Rodney.Ross@aps.com; mkgreene@srpnet.com; Karla.moran@srpnet.com; Futral, Ashton <Ashton.Futral@pinnaclewest.com>; Elyse DiMartino <ed@berryriddell.com>; Austin.Prusak@aps.com; Alex Hayes <hayes@wmbattorneys.com>; Brian Vaccaro <BVaccaro@EarlCurley.com>; Patricia DiRoss <Patricia.DiRoss@srpnet.com>; ss@berryriddell.com; Wendy Riddell <wr@berryriddell.com>; Jon Gillespie <jgillespie@roselawgroup.com>; Ty Utton <tutton@roselawgroup.com>
Subject: Staff Reports for Data Center General Plan Amendment (GPA-2-25-Y) and Text Amendment (Z-TA-2-25-Y)

Dear Stakeholders,

I wanted to follow up and provide the staff reports for the Data Center General Plan Amendment (GPA-2-25-Y) and Text Amendment (Z-TA-2-25-Y). These staff reports are available on the City's

website as well at https://www.phoenix.gov/administration/departments/pdd/about-us/reports-data/staff-reports.html. For those of you who have submitted questions, I am compiling those questions and preparing responses. Please feel free to reach out if you have any additional questions.

Thank you,

Tricia Gomes, Deputy Director, Planning & Zoning Division
Office: 602-262-4870 Email: tricia.gomes@phoenix.gov

City of Phoenix
► Planning & Development Department
Planning & Zoning Division
200 West Washington Street, 3rd Floor
Phoenix, AZ 85003

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From:	Mark Cardenas
To:	Mayor Gallego; Tony J Motola; phoenix.council.1@phoenix.gov; phoenix.council.3@phoenix.gov; phoenix.council.4@phoenix.gov; phoenix.council.5@phoenix.gov; phoenix.council.6@phoenix.gov; phoenix.council.7@phoenix.gov; phoenix.council.8@phoenix.gov
Cc:	Tricia Gomes; Alan Stephenson
Subject:	Proposed language to GPA 2-25-Y and Z-TA-2-25-Y
Date:	Friday, May 30, 2025 9:35:16 AM

Good morning,
We would like to propose the following addition to the proposed General Plan Amendment that was proposed by the Phoenix City Council:

DATA CENTERS

WITH CONTINUAL ADVANCEMENTS IN TECHNOLOGY, SUCH AS ARTIFICIAL INTELLIGENCE (AI) AND THE DIGITAL "CLOUD", THERE HAS BEEN A GROWING DEMAND TO CONSTRUCT DATA CENTERS IN ORDER TO SUPPORT THE DIGITAL WORLD. DATA CENTERS HOUSE A LARGE COLLECTION OF TECHNOLOGICAL EQUIPMENT DESIGNED TO STORE, PROCESS, AND MANAGE VAST AMOUNTS OF DIGITAL INFORMATION. ALTHOUGH DATA CENTERS ARE INFRASTRUCTURE FOR ADVANCING TECHNOLOGY THAT MANY COMPANIES AND ORGANIZATIONS NOW RELY ON, THEY ALSO COME WITH POTENTIAL CHALLENGES, INCLUDING A LOSS OF LAND FOR JOBS AND HOUSING, NOISE POLLUTION, SIGNIFICANT ENERGY DEMAND, INACTIVE FRONTAGES ALONG PUBLIC STREETS, AND CONFLICTS WITH THE CITY'S APPROACH OF MAXIMIZING TRANSPORTATION INVESTMENTS WITH WALKABLE COMMUNITIES. MEASURES SHOULD BE TAKEN TO IDENTIFY AREAS THAT ARE MOST APPROPRIATE FOR DEVELOPMENT AND TO ADDRESS THE NOISE, ENERGY, AND DESIGN ISSUES THAT THEY COME WITH.

IN RECOGNITION OF INDUSTRY CONCERNS REGARDING FLEXIBILITY AND ZONING STANDARDS, THE CITY SHALL ESTABLISH AN ALTERNATIVE COMPLIANCE MECHANISM THROUGH VOLUNTARY DEVELOPMENT AGREEMENTS.

DATA CENTER PROJECTS THAT SEEK FLEXIBILITY FROM TRADITIONAL ZONING STANDARDS—INCLUDING SETBACK REQUIREMENTS, LOT COVERAGE OR HEIGHT LIMITS, DESIGN OR SCREENING PROVISIONS, NOISE MITIGATION MEASURES, PARKING MINIMUMS, OR OTHER SITE-SPECIFIC DEVELOPMENT STANDARDS—MAY SEEK "BY-RIGHT" APPROVAL UNDER A DEVELOPMENT AGREEMENT ENTERED INTO WITH THE PHOENIX CITY COUNCIL.

TO QUALIFY FOR THIS FLEXIBILITY, DATA CENTER DEVELOPERS MUST INCLUDE ENFORCEABLE COMMITMENTS TO THE FOLLOWING COMMUNITY BENEFITS:

1. LOCAL HIRE PROVISIONS THAT ENSURE A PERCENTAGE OF CONSTRUCTION JOBS ARE FILLED BY RESIDENTS OF PHOENIX OR SURROUNDING AREAS.
2. PARTICIPATION IN A REGISTERED APPRENTICESHIP PROGRAM FOR CONSTRUCTION WORK, INCLUDING DEFINED GOALS FOR APPRENTICE HOURS.
3. COMMITMENT TO A MINIMUM CONSTRUCTION WORKER WAGE.
4. PROVISION OF HEALTHCARE BENEFITS TO CONSTRUCTION WORKERS.
5. OTHER PUBLIC BENEFITS AS DEEMED APPROPRIATE BY THE CITY COUNCIL.

As always, I am available to chat anytime to discuss further, thank you so much for your time and consideration.

Mark Cardenas

From:	Barrera, Danielle M.
To:	Tricia Gomes
Cc:	Joshua Bednarek; Graff, Benjamin W.
Subject:	Proposed Data Center Text Amendment Z-TA-2-25-Y [QBLLP-ACTIVE.FID44771785]
Date:	Friday, May 30, 2025 2:57:33 PM
Attachments:	image001.png Maps - 19400 North 56th Street.pdf

Tricia,

We are reaching out on behalf of our Client, American Express ("AMEX"), regarding their approved data center located at 19400 North 56th Street. Please see attached maps. The property is under a lease from ASLD. AMEX is moving forward expeditiously with building the new data center at this location and due to the recent pending text amendment (Z-TA-2-25-Y) regarding data center uses in the City, we need your assistance to confirm a few items.

First, AMEX received final site plan approval (Kiva Project No. 99-35425/SCMJ 2500766) on May 15, 2025 for the data center and civil work has already begun. Due to the fact that the text amendment is scheduled to be heard by City Council by June 18, 2025, we would like to confirm AMEX's proposed data center will not be regulated by the new ordinance because AMEX's final site plan was approved prior to the effective date of the new ordinance. This is consistent with the City's existing policies, e.g., how developers were grandfathered from the updated impact fee schedule as long as the developer received final site plan approval prior to June 23, 2025.

Second, AMEX is also in the process of planning a Phase II with additional data center space which has not received final site plan approval. The TA is very concerning in this regard, because the AMEX campus is zoned CP/BP, which under the proposed text amendment would not permit the use. It will cause significant issues if AMEX and ASLD were to find themselves in a situation where the Phase II expansion were prohibited under the new ordinance. We believe this is an unintended consequence of the TA requiring CP/BP to be included within the TA's zoning districts which allow for future data centers.

Third, we would also like to confirm whether the City plans to designate all approved (those with final site plan approval) data center uses as legal nonconforming uses. You can imagine what it means to lenders and the financing process for a development which is currently permitted as-of-right to suddenly shift to a legal non-conforming use before it is even built. Again, we are unsure if this consequence was intended or if the City is taking the time to evaluate these issues and delay the approval of the TA to ensure that property rights are properly protected.

To that end, we strongly urge the City to slow down the process and postpone the Phoenix Planning Commission and City Council hearings on this issue. Please let me know if you need any additional information.

Thank you,

Quarles

Danielle M. Barrera | AICP | Land Use Planner
danielle.barrera@quarles.com | D. 602-229-5501
Quarles & Brady LLP
One Renaissance Square, Two North Central Avenue, Suite 600, Phoenix, AZ 85004-2322
quarles.com [quarles.com] | LinkedIn [linkedin.com]

From:	Tim Kreis
To:	Joshua Bednarek
Cc:	Tricia Gomes; Justin Alexander; John Mertens
Subject:	Large Data Centers
Date:	Tuesday, June 3, 2025 3:03:36 PM

Director Bednarek,

Despite the prevention measures, fires in data centers still occur globally. Fires in data centers can produce vast quantities of dense, corrosive smoke, which contains known carcinogens. Visibility may become nearly impossible, and when combined with unfamiliar building configurations, the prospect of disorientation is clear. Often, even a small fire isolated by the building's fire protection systems is a high-risk and long-duration incident for responding firefighters.

Two physical hazards in large data centers, which are generally not present to the same degree in other occupancies, are large lithium-ion batteries and electrical power.

- Lithium-ion batteries contain volatile electrolytes that can release flammable gases when exposed to high temperatures or physical damage.
- If a battery generates more heat than it can dissipate for any reason, it can lead to rapid and uncontrolled heat releases, resulting in a fire (thermal runaway). In many instances, fire sprinkler systems prevent fire spread, but cannot actually extinguish.
- Accidental battery overcharging can lead to fires.
- Batteries can be ejected from their casing during a fire, potentially spreading the fire or causing secondary ignitions.
- Burning batteries release toxic chemicals.
- Due to the large amounts of energy required, electrical distribution and fires involving electrical components are another possibility. Firefighters must be familiar with the power disconnect procedures and the vast electrical hazards of large data centers.

Fire incidents in large data centers can necessitate using large volumes of water to bring the fire under control, and contaminated runoff is an additional concern. Fires involving lithium-ion batteries also release toxic heavy metal particulates, requiring specialized decontamination of firefighter personal protective equipment.

The Fire Department is committed to providing our community with the highest level of fire protection services. The Fire Marshal's Office works hard to manage compliance with the fire code requirements in large data centers. Additionally, the Operations Division ensures firefighters have the necessary training and equipment to mitigate emergencies in large data centers. While the department is equally focused on code enforcement and emergency response, the challenges with large data centers remain, necessitating sustained organizational attention.

Please let me know if you have any questions.

Sincerely,

Tim Kreis
Executive Assistant Fire Chief
Phoenix Fire Department

LKY Development Company, Inc.

5040 E. Shea Blvd., Suite 254
Scottsdale, Arizona 85254
TEL: 480-951-1281
FAX: 480-483-2736

June 2, 2025

Mayor Gallego, City Council, Et a

My name is Larry Yount of LKY Development Company, Inc, which has invested and owned land in the Phoenix area for over 40 years and has actively been working on Data Center projects for the last 10 years.

The City's pursuit of draft blanket policies for Data Centers is clearly not well thought out and creates more problems than it is trying to solve. For example, we have 5 plus acres in the Downtown Warehouse District at Lincoln and 6th Ave immediately next to an APS substation that we have been working with APS for years to bring a downtown Data Center too. Multiple policy recommendations in the City's draft do not work for downtown properties and do not work for our property. These projects are complicated, require a lot of time and money, including the process of working with the power provider, APS. The current downtown zone allows for data center use, but the draft policy changes make it impossible because of the conditions that are being required.

In addition, if we were not active in the Data Center area, there is little chance that an industrial landowner would know about or understand the ramifications of these policy changes, as there has been little or no property notifications directly sent out as would be required if we were to pursue a zoning change.

The City seems to be working on a blanket Policy change that really is not needed or does not work and does not seem to recognize that each parcel is different and has its' own unique features.

At the very least, this process needs a lot more time, work and a provision for grandfathering in any projects that are in process.

Sincerely,

Larry K Yount, President

NAIOP
COMMERCIAL REAL ESTATE DEVELOPMENT ASSOCIATION
ARIZONA CHAPTER

June 3, 2025

Phoenix Planning & Zoning Commission
City Hall
200 W. Washington St.
Phoenix, Arizona 85003

Re: Proposed Data Center Ordinance

Dear Planning Commissioners:

On behalf of NAIOP Arizona, the commercial real estate development association, we respectfully request a delay in the consideration of the City of Phoenix's proposed data center ordinance to allow for greater stakeholder input and more comprehensive analysis.

While we recognize the importance of addressing evolving land use issues tied to data center development, the speed at which this ordinance has been advanced leaves too little time for meaningful engagement with impacted industries, utility partners, and economic development stakeholders. The lack of a robust public process raises serious concerns that the current draft may result in a range of unintended consequences to not only data center users, but the manner by which the City of Phoenix may address other land use ordinances.

Data centers are highly specialized uses that intersect with infrastructure planning, energy policy, and regional economic strategies. Creating a new ordinance for this industry necessitates input from technical experts and private-sector partners. That has not happened with this draft ordinance.

We urge the Commission to delay its recommendation to allow additional time for outreach, collaboration, and refinement of the draft ordinance. A more inclusive and transparent process will result in stronger policy, better outcomes for our community, and continued trust in the City's planning process.

Thank you for your consideration, and we welcome the opportunity to work collaboratively towards a balanced and thoughtful path forward.

Sincerely,

Suzanne Kinney
President & CEO
NAIOP Arizona

John Baumer
Director of Government Relations
NAIOP Arizona

Joe Murphy
Sales Engineer
Varitec Solutions
joem@varitecsolutions.com
602-663-8352
June 4, 2025

To:
Alan Stephenson, Deputy City Manager – alan.stephenson@phoenix.gov
Joshua Bednarek, Director of PDD – joshua.bednarek@phoenix.gov
Tricia Gomes, Deputy Director, Planning & Zoning – tricia.gomes@phoenix.gov
Christopher DePerro, Team Leader, Text Amendments – christopher.deperro@phoenix.gov
Racelle Escolar, Principal Planner – racelle.escolar@phoenix.gov
Mayor Kate Gallego – mayor.gallego@phoenix.gov
Phoenix City Councils – council.district.1@phoenix.gov; council.district.2@phoenix.gov; council.district.3@phoenix.gov; council.district.4@phoenix.gov; council.district.5@phoenix.gov; council.district.6@phoenix.gov; council.district.7@phoenix.gov; council.district.8@phoenix.gov
Planning Commission – zoning@phoenix.gov

RE: Phoenix Data Center Text Amendment – Industry Concerns & Request for Postponement

Dear City of Phoenix Planning and Elected Officials,

I'm writing to express concern regarding the proposed Data Center Text Amendment currently scheduled for Planning Commission review on June 5 and City Council vote on June 18. As a Sales Engineer at Varitec Solutions and Arizona native, I work closely with mission-critical clients across the Valley and see firsthand the economic value, technological advancement, and high-paying jobs these facilities bring to our region.

Phoenix has emerged as one of the top data center hubs in the U.S., competing with peers like Northern Virginia, Dallas, and Silicon Valley. To date, over $10 billion has been invested in Metro Phoenix data centers – including critical facilities operated by Microsoft, Google, Meta, AMEX, and APS, to name a few.

These projects generate over $860 million in tax revenues annually and support more than 80,000 jobs statewide. My own company, Varitec Solutions, has seen substantial and robust growth over the past decade due to the increased expenditure of data centers in the valley.

The current Text Amendment, as drafted, threatens to undermine this success by imposing overly restrictive design and zoning standards, burdensome utility requirements, and an unnecessarily aggressive adoption timeline. Key concerns include:

- **Excessive Setback Requirements**: A blanket 150-foot setback and 30-foot landscape buffer—even for sites adjacent to freeways or other industrial parcels—adds undue burden and reduces developable area without meaningful benefit.
- **Will-Serve Letter Requirement**: Mandating a 2-year delivery timeframe from utilities is impractical and misaligned with typical 5–10 year load ramping strategies used by APS and SRP.
- **Special Permit Requirements**: Projects on sites already zoned CP/GCP, C2, A-1, or A-2 should not be subject to additional special permit requirements, especially when new design review standards are still under development.
- **Timeline Concerns**: A 90-day postponement is essential to give stakeholders the opportunity to work collaboratively with city staff and propose balanced, enforceable, and future-ready alternatives.

Data centers are vital infrastructure. Their presence here fuels job growth, STEM education, and infrastructure investment. We urge you to take a more measured approach that protects neighborhoods while preserving Phoenix's leadership in the digital economy.

Thank you for your consideration.

Sincerely,
Joe Murphy
Sales Engineer
Varitec Solutions

From:	Greg LeRoy
To:	PDD Planning Commission
Cc:	Tony J Motola; Mayor Gallego
Subject:	Testimony for June 5 from Greg LeRoy/Good Jobs First
Date:	Tuesday, June 3, 2025 3:30:33 PM
Attachments:	image002.png image003.png image004.png Testimony City of Phoenix 6-3-25 data center general plan amendment.pdf

Friends

Please find attached my testimony for the hearing on this Thursday evening June 5, 2025

Sincerely,

GLR

Greg LeRoy
Executive Director

1380 Monroe St. NW, PMB 405,
Washington DC 20010
Direct line: 202-494-0888
Email: goodjobs@goodjobsfirst.org
Website: www.goodjobsfirst.org [goodjobsfirst.org]

Sign up for our emails at goodjobsfirst.org/signup [goodjobsfirst.org]and follow us:
[twitter.com] [facebook.com] [linkedin.com]

1380 Monroe St NW
PMB 405
Washington DC 20010
202-232-1616

June 5, 2025

Testimony of Greg LeRoy
Executive Director, Good Jobs First
To the City of Phoenix Planning Commission
Regarding Two General Plan Amendments on Data Centers

Thank you for the invitation to testify today. My name is Greg LeRoy. I am the 1998 founder and executive director of Good Jobs First, a national, nonprofit, nonpartisan research center dedicated to improving economic development. I have written two books on economic development incentives and worked with hundreds of public bodies, associations, grassroots groups and journalists since the mid-1980s.

I have two messages regarding data centers. First, I applaud your proposals to better regulate the siting of such facilities, as presented in GPA-2-25-Y and Z-TA-2-25-Y. Because they employ so few workers once they are built, they are not suitable to be located near transit hubs.

My second message has to do with a related data center issue, but not a General Plan amendment. Under Arizona's state sales and use tax exemption for data center equipment[1], companies are exempted from paying state *and local* shares of the sales tax. That is to say: the City of Phoenix loses 2.0% to 2.3% sales tax when data centers in the city purchase start-up equipment or replenish equipment, such as servers when they wear out, or chips when they get upgraded. Given the sharply rising size and cost of a typical data center, if more are built in Phoenix, the city's foregone revenues will rise sharply as well.

Since FY 2017, governments in the United States — including Phoenix — which use so-called "GAAP accounting," or Generally Accepted Accounting Principles as set forth by the Governmental Accounting Standards Board (GASB), have been subject to GASB Statement No. 77 on Tax Abatement Disclosures.

Under Statement No. 77, when a GAAP-compliant government loses tax revenue to an economic development tax abatement program, it must report that program's name, program details, and dollars in lost revenue in a Note in its Annual Comprehensive Financial Report (ACFR).

Per Statement No. 77, this reporting obligation adheres to one government even if the loss occurs due to the action of a second government. That is, even if a government loses revenue passively — in this case Phoenix is losing revenue passively due to the actions of the State of Arizona — that passive revenue-losing government is itself obligated to calculate and report said loss. The same passive-loss reporting requirement adheres, for example, to school districts, which in most states lose revenue passively when cities or counties award tax abatements (pursuant to state enabling legislation authority).

However, in viewing the City of Phoenix's FY 2024 ACFR[2], while the city does disclose in a Statement No. 77 Note its revenue losses to the Government Property Lease Excise Tax (GPLET) and its Transaction Privilege Tax Reimbursement, it fails to report its sales and use tax revenue loss on data centers.

This failure to disclose is a serious financial oversight problem. That's because data centers today are both larger and far more expensive than they were in 2013 when the State enacted its sales and use tax exemption. (The rising costs are driven by the industry's accelerating growth, and by data centers' greater size, complexity, and the higher prices of microchips required to perform artificial intelligence functions.)

This means the revenue foregone by states and localities is rising rapidly and very difficult to forecast. As we recently cited in a study[3], in just 23 months, Texas had to revise its FY 2025 revenue-loss estimate from $130 million to $1 billion.

I recommend that Phoenix comply with GASB Statement No. 77, calculate its sales and use tax revenue losses to data centers for fiscal years 2017 through 2024, and issue ACFR restatements with those tax abatement disclosures so that the City's leadership can accurately oversee the fiscal impact of data centers. That accounting will, in turn, better inform your decisions about how many and how large server farms are right for Phoenix.

Thank you and I look forward to any questions you may have.

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[1] At: https://www.azleg.gov/ars/41/01519.htm
[2] See pages 98 and 99 of the ACFR: 2024PHXACFRFinalOnlineRS.pdf
[3] Greg LeRoy and Kasia Tarczynska, "Cloudy With A Loss of Spending Control: How Data Centers Are Endangering State Budgets," Good Jobs First, April 2025, at: https://goodjobsfirst.org/cloudy-with-a-loss-of-spending-control-how-data-centers-are-endangering-state-budgets/

From: Stephanie Hurd
To: PDD Planning Commission
Subject: June 5, PC, item #2 data center text amendment
Date: Tuesday, June 3, 2025 4:19:45 PM

Hello,

Laveen will be devastated if data centers are allowed to take the precious land we have saved for our town core. data centers are desperate to come here because SRP has announced they're building a new transmission station. They are building that for our town core. That does not include a large amount of data centers. That land is precious to Laveen. We need that land to be able to sustain ourselves with an employment tech corridor as well as housing, & commercial. We are already on the low end of those things we desperately need. Data centers will devastate us.

Please, please, please support passing the data center text amendment so there are some extra steps in place so they don't have a free-for-all.

Stephanie Hurd
10207 S 47th Ave
Laveen, AZ 85339

From:	JAMES BARRETT
To:	PDD Planning Commission
Cc:	Felicita Lopez-Mendoza
Subject:	Zoning Ordinance Text Amendment Z-TA-2-25-Y
Date:	Tuesday, June 3, 2025 5:17:54 PM

Hi, I support a "yes" vote for Zoning Ordinance Text Amendment Z-TA-2-25-Y. A "yes" vote will ensure that our Laveen Community will be remain an historic, family-centered community that is based in residential family growth and opportunities that are outside the influence of commercial development that is not in line with our community objectives and values.

V/R,

James L. Barrett
10219 S. 47th Avenue
Laveen, AZ 85339
jbarrett12@cox.net
602-803-8161

From:	Juanita Darby
To:	PDD Planning Commission
Subject:	Concerns Regarding Proposed Data Center Development in Laveen, Arizona
Date:	Tuesday, June 3, 2025 5:23:58 PM

Dear Mayor / City Council Member / Planning Commission,

I hope this message finds you well. I am writing as a concerned resident of Laveen and LVP Committee member to express my opposition to any additional development of data centers in our community.

While I recognize the importance of technological infrastructure and economic development, I believe that placing large-scale data centers in Laveen poses several serious concerns that should not be overlooked:

1. **Environmental Impact & Heat Emissions:**
   These facilities generate a significant amount of heat, requiring continuous cooling systems that can raise ambient temperatures and strain our energy resources. Their carbon footprint contradicts our community's environmental goals.

2. **Noise & Aesthetic Disruption:**
   Data centers often run industrial cooling systems and backup generators that can disrupt the quiet nature of residential areas. They are also large, unattractive structures that do not align with the natural and rural character that Laveen residents deeply value.

3. **Limited Community Benefit:**
   Although data centers may create some construction jobs and a handful of high-tech positions, they typically do not result in long-term employment opportunities for the average resident. The tax benefit is often minimal compared to the long-term environmental and infrastructural costs.

4. **Incompatible Land Use:**
   Laveen is a growing residential and agricultural area with a unique sense of community and natural beauty. Industrial development of this scale risks changing the character and livability of our neighborhoods.

I respectfully urge you and fellow decision-makers to reconsider the placement of these facilities and explore alternative locations that are more suited for heavy infrastructure—areas with existing industrial zoning and less environmental sensitivity.

Thank you for your time, leadership, and dedication to preserving what makes Laveen such a special place to live.

Sincerely,

Juanita E. Darby
602-384-8443

From: Lauryn Mangum
To: PDD Planning Commission
Subject: Data Support Center Tax Amendment #2
Date: Tuesday, June 3, 2025 5:47:36 PM

Hello,

My name is Lauryn Mangum Reed, I am a Laveen resident and a business owner in D8.

I am emailing you in support of the data center tax amendment. I do not think that it is in the best interest of the community to have a data center in Laveen. We are working so hard to revitalize and beautify Laveen with all of the housing developments, restaurant and retail planning.

We need more spaces that will create job opportunities and destinations for residents, not an eye sore that gets “plopped” into the middle of our growing city.

You have the opportunity to continue to grow the positive and successful story of the city of Laveen and a data center is completely counterproductive to that!

Thank you for your time and consideration

Lauryn Mangum Reed

From: Susan Rayeski
To: PDD Planning Commission
Subject: data center text amendment, item #2.
Date: Tuesday, June 3, 2025 5:51:24 PM

I am in support of data center text amendment, item #2.
Sent from my iPhone

From: Aaron Kokumo
To: PDD Planning Commission
Subject: Opposition to Data Centers in Laveen
Date: Tuesday, June 3, 2025 10:26:12 PM

Hello Planning Committee,

I am writing to share my concerns about the proposed development of data centers in Laveen. These large-scale projects could significantly impact the environmental balance and quality of life in our peaceful, close-knit community.

Laveen is small town with a distinct charm an atmosphere that is not well-suited for data centers, semiconductor operations, or heavy manufacturing. These industries bring increased noise, energy demands, and pollution.

Furthermore, data centers typically provide few long-term employment opportunities for local residents, offering little benefit to our community while posing potential risks.

Let's say "No" to data centers in Laveen. Thank you for your time and consideration.
Regards,

Aaron Kokumo
602-500-8267

From: Nina Lynn
To: PDD Planning Commission
Subject: Data Center Amendment
Date: Wednesday, June 4, 2025 7:45:23 AM

Good morning!

I would like to cast my vote as a Laveen resident in favor of NOT having data centers in the community.

Thank you.
Nina Lynn

From: Carlos Ortega
To: PDD Planning Commission
Subject: Support of text amendment #2
Date: Wednesday, June 4, 2025 10:54:36 AM

To whom it may concern:
I'm sending this email here in support of data center text amendment, item #2.
Regards,

Carlos Ortega

From: lovinglaveen
To: PDD Planning Commission
Subject: Comment GPA-2-25-Y
Date: Tuesday, June 3, 2025 4:33:33 PM

I would like to share in favor of the Citywide Amendment to the General Plan to incorporate design and location criteria for data centers.

Respectfully,

Claudine Reifschneider
Laveen, AZ 8539
602-758-1902

Sent from my Verizon, Samsung Galaxy smartphone

From: Paula Fleck
To: PDD Planning Commission
Subject: GPA-225-1
Date: Tuesday, June 3, 2025 4:29:27 PM

To whom it may concern,
I am writing this email as a way of showing my support for GPA-225-1. I feel that it would greatly benefit our employment corrridor.

Best,
Paula Fleck
4812 W Siesta Way, Laveen Village, AZ 85339

From:	Ryan Gruver
To:	Alan Stephenson; Joshua Bednarek; Tricia Gomes; Christopher DePerro; Racelle Escolar; Mayor Gallego; Council District 1 PCC; Council District 2 PCC; Council District 3 PCC; Council District 4; Council District 5 PCC; Council District 6 PCC; Council District 7 PCC; Council District 8 PCC; PDD Zoning
Subject:	Request for Revisions and Postponement of Proposed Data Center Text Amendment
Date:	Thursday, June 5, 2025 12:01:48 PM

Dear Mayor Gallego, Councilmembers, and Planning Department Leaders,

I am writing to express serious concern regarding the proposed Data Center Text Amendment currently scheduled for review by the Phoenix Planning Commission on **June 5** and City Council on **June 18**.

As currently written, the amendment imposes restrictive conditions that go far beyond reasonable land use regulation. These changes—particularly the Special Permit requirements, rigid setback rules, and the two-year "Will Serve" letter provision—pose a significant threat to the continued growth and competitiveness of Phoenix's data center industry.

Metro Phoenix is recognized as one of the premier data center hubs in the United States, alongside Northern Virginia, Dallas, and Silicon Valley. This position has been earned through billions in investment, robust job creation, and strong collaboration with local government. In 2023 alone, the Arizona data center sector:

- Created over **81,000 jobs** (direct, indirect, and induced),
- Contributed **$6.2 billion in labor income**, and
- Generated **$863 million in state and local tax revenue**.

Many of the companies making these contributions—including Aligned, Flexential, Iron

Mountain, Microsoft, Meta, and Google—have made Phoenix a central part of their strategy. This proposed amendment, if passed as-is, would jeopardize those relationships and drive future development to peer cities.

We respectfully request the following:

1. **Postpone the adoption process by 90 days** to allow for proper industry engagement and alignment on design standards.

2. **Remove the Special Permit requirement** for properties already zoned for appropriate industrial and commercial uses (e.g., A-1, A-2, CP/GCP).

3. **Eliminate the 2-year "Will Serve" letter requirement**, which does not reflect standard data center ramp-up timelines or utility practices.

4. **Apply setback and noise requirements more precisely**—specifically targeting areas adjacent to residential zones rather than applying them site-wide.

The current approach risks creating a chilling effect on new investment, at a time when Arizona has the opportunity to lead in digital infrastructure and advanced technologies.

We appreciate the City's willingness to address community needs and plan responsibly for growth. However, it is essential that these goals be balanced with an understanding of how the data center sector functions and contributes to our economy. A more thoughtful, collaborative amendment process will produce a far better result for all stakeholders.

Thank you for your time and consideration.

_____
Ryan Gruver
President, AFCOM Phoenix Chapter
Board Member, Arizona Data Center Alliance
ryan@ryangruver.com
✆ +1-480-220-7524

From: Michael DePaola
To: PDD Planning Commission
Subject: Comment: Z-TA-2-25-Y (Companion Case GPA-2-25-Y)
Date: Thursday, June 5, 2025 2:51:19 PM
Attachments: image001.png

We appreciate the City's attention to the impacts of data center development, but we are concerned that this ordinance is moving forward without sufficient time for industry review and community feedback. Given the significant implications for land use, sustainability, and neighborhood character, we urge the Council to provide more time for stakeholders to understand, evaluate, and comment on the proposed changes. Thank you for considering this request.

VANTAGE DATA CENTERS
Michael DePaola
Senior Manager, Public Policy - West
200 Clayton Street, Suite 500
Denver, CO 80206
+1.540.809.3672 **Cell**
michael.depaola@vantage-dc.com
vantage-dc.com [vantage-dc.com]

From: Jon Gillespie
To: alan.stephenson@phoenix.gov; Joshua Bednarek; Tricia Gomes; Racelle Escolar
Cc: Angelica Van Balen
Subject: RE: Redline Suggestions/Request for Planning Commission Consideration
Date: Thursday, June 5, 2025 3:01:52 PM
Attachments: image626510.png
image625028.png
image719049.png

Hello Alan, Josh, Tricia, Racelle, and Members of the Planning Commission,
I wanted to pass along a redline of the City's addendum Text Amendment for your consideration. I believe this redline addresses the key concerns raised by the Data Center industry while preserving the intent to appropriately regulate this important industry. Below are the key items it attempts to accomplish:

- Permits Data Center's in the CP/GCP, CP/BP, A-1, and A-2 districts By-Right (subject to the new design standards)
- Changes the applicability of the new rules to not apply to projects that have received "Preliminary Site Plan Approval" as opposed to Final Site Plan Approval.
- Changes the applicability of the new rules to not apply to projects that have received an Interpretation Letter specifically stating that Data Centers are permitted for the site.
- Exempts facilities which devote 50% of their gross floor area to advanced manufacturing uses
- Changes the setback requirement to pertain only to ground mounted mechanical equipment (not rooftop equipment) and removes the 150 foot setback requirement to right of way and includes substations being exempt from the setback requirements as well.

I know you have lots of comments coming from every direction on this but just wanted to share in case you had a moment to review.

Also, I am also pasting below some 207 waiver language which is similar to language that the City of Mesa used in its recent data center update and I believe it is the good way to protect the City from 207 claims. I don't recall the city attorneys who are assigned to work on this item but if you wouldn't mind running this language by them I'd appreciate it.

"BINDING WAIVER OF ENFORCEMENT. As permitted by Arizona Revised Statutes ("A.R.S.") § 12-1134 and set forth in this Section XXX, if an owner of real property claims that the owner's rights to use, divide, sell, or possess, and that the fair market value of; the real property ("specific parcel") was reduced by the enactment or applicability of the newly enacted land use laws applicable to data centers contained in Section XXX of this Ordinance ("Data Center Laws"), the owner may request a binding waiver of enforcement as to the Data Center Laws for the specific parcel. Only an owner who owned a specific parcel on the effective date of this Ordinance, and the specific parcel was zoned C-2 (Intermediate Commercial), C-3 (General Commercial), CP/GCP (Commerce Park/Business Park), CP/GCP (Commerce Park/General Commerce Park), A-1 (Light Industrial), A-2 (Industrial), DTC-W (Downtown Code Warehouse), or a PUD (Planned Unit Development) which permitted the uses allowed within the CP/BP, CP/GCP, A-1, or A-2 zoning districts, on the effective date of this Ordinance, may request a waiver. No prior or subsequent owner may request a waiver.

To request a waiver, an owner must submit a written demand to the City of Phoenix Planning Division within three years of the effective date of this Ordinance that includes: (1) the specific amount of just compensation; (2) a statement that

the rights to use, divide, sell, or possess, and that the fair market value of, the owner's specific parcel were reduced by the enactment or applicability of the Data Center Laws; and
(3) evidence that the owner submitting the waiver request owned the specific parcel on the effective date of this Ordinance.

If the waiver request meets all the requirements of this Section XXX, as determined by the Planning Director or their designee, the City of Phoenix Planning Division may issue to the owner a waiver of the Data Center Laws on the owner's specific parcel ("Waiver"). A Waiver grants the owner only the right to use the specific parcel in compliance with the Phoenix Zoning Ordinance as if the Data Center Laws were not adopted. By way of example, an owner of a specific parcel zoned DTC-W or within a PUD that allowed Professional Office uses on the effective date of this Ordinance would be allowed to develop a data center as set forth in the Phoenix Zoning Ordinance as it existed immediately prior to the effective date of this Ordinance but would not be required to obtain a Special Permit (SP) as set forth in the Data Center Laws. A Waiver does not waive or modify any other land use laws in this Ordinance or in the Phoenix City Code. A Waiver is only applicable to the specific parcel for which it is granted. A Waiver automatically terminates when the specific parcel is rezoned. The Planning Director and City Attorney are authorized to draft the Waiver form to be used pursuant to the terms, conditions, and limitations of this Section XXX.

For purposes of this Section XXX, the meaning of the terns "fair market value," ''just compensation," "land use law," and "owner" are as defined in A.R.S. § 12-1136."

Jon Gillespie
Attorney

CELEBRATING 25 ROSE LAW GROUP pc RICH • CARTER • FISHER 25 Years

7144 E Stetson Drive, Suite 300, Scottsdale, AZ 85251
Direct 480.240.5641 Fax 480.505.3925 Mobile 480.271.6287

From:	Mark Luciano
To:	Alan Stephenson; Joshua Bednarek; Tricia Gomes; Christopher DePerro; Racelle Escolar; Mayor Gallego; PDD Zoning; Council District 1 PCC; Council District 2 PCC; Council District 3 PCC; Council District 4; Council District 5 PCC; Council District 6 PCC; Council District 7 PCC; Council District 8 PCC
Cc:	Steve Coon; Larry Coon; Ashley Coon
Subject:	Zoning Ordinance Amendment GPA-2-25-Y - Strategic Mission Critical Response
Date:	Monday, June 9, 2025 9:32:47 AM
Attachments:	2025.06.04 - Text Amendment Z-7-25-Y Concerns.pdf

All,

Strategic Mission Critical would like to express our concerns with Zoning Ordinance Amendment GPA-2-25-Y, please see the attached letter.

We hope this letter finds you and look forward to the outcome of the proposed changes.

Regards,

Mark Luciano | Vice President
360.391.3371
Strategic Mission Critical [smc-eng.com]
Engineering Data Centers with Precision and Expertise

RE: Proposed Text Amendment Z-7-25-Y – Data Center Uses

Dear Mayor and Members of the City Council,

I am writing to express concern regarding the City of Phoenix's proposed text amendment Z-7-25-Y, which could have significant consequences for the future of data center development in our region.

Metro Phoenix has firmly established itself as a national leader in technology and innovation. The landmark $165 billion TSMC investment is a testament to the City's commitment to high-tech industries. Similarly, our region has emerged as one of the premier data center hubs in the United States—standing alongside other key markets like Northern Virginia, Dallas, Atlanta, Silicon Valley, and Chicago.

To date, more than $10 billion in data center investments have been completed or are underway in Metro Phoenix, reflecting strong confidence from major players in this industry. Companies such as Google, Microsoft, Meta, Compass, CyrusOne, Aligned Energy, Vantage, Stack Infrastructure, and NTT Global have chosen our region for their mission-critical infrastructure, bringing with them long-term economic and employment benefits.

Within the City of Phoenix itself, a strong and growing ecosystem of data centers has taken root, including facilities for BlueCross Blue Shield, American Express, PayPal, GoDaddy, APS, Charles Schwab, Digital Realty, PhoenixNAP, and many others. These are vital assets that not only serve the operational needs of leading enterprises, but also contribute to the City's economic resilience.

In 2023 alone, the data center industry generated $863 million in state and local tax revenue, and supported over 81,000 jobs statewide when accounting for direct, indirect, and induced impacts. These are high-wage, future-focused jobs that span operations, technology, and construction sectors. More than 14,000 direct jobs were created in Arizona by this industry last year, resulting in $6.2 billion in labor income.

Furthermore, Arizona's construction and skilled trades workforce has directly benefited from these projects, with major local firms such as DPR, JE Dunn, Holder, Haydon, and Cannon Wendt deeply involved in construction. These projects provide a steady pipeline of work for specialized tradespeople and further cement our region's capabilities to support cutting-edge industries.

It's also worth highlighting the data center industry's strong commitment to Arizona's future workforce. Recent contributions to STEM education include tens of thousands of dollars in scholarships, internships, and educational programs through local chapters of 7x24 Exchange, AFCOM, iMasons, and the AZ Data Center Alliance. These organizations are directly supporting Arizona's high schools, community colleges, and universities.

Considering all these contributions, I respectfully urge the City Council to reconsider the proposed Z-7-25-Y amendment. Rather than limiting this vital industry, Phoenix should continue to foster an environment that welcomes innovation, attracts world-class employers, and ensures our position as a global leader in technology infrastructure.

Thank you for your time and consideration.

Sincerely,

Mark Luciano,
Vice President