Kidder Mathews

Data Center Valuation for Real Estate Tax Assessment – A Framework for Illinois Assessors

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Executive Summary

Data centers have emerged as a distinct and important commercial real estate asset class driven by the rapid growth of cloud computing, artificial intelligence, e-commerce, telecommunications, and digital services. Unlike traditional industrial or office properties, data centers derive their value primarily from their ability to deliver reliable electrical power, cooling, connectivity, and security to mission-critical computing operations. This is achieved by significant and redundant Mechanical, Electrical and Plumbing (MEP) systems in data centers. These MEP systems are fixed into the data center buildings and are an integral part of the real estate. As such, they are typically not considered personal property. Given the high demand for data centers, rising rental rates and low vacancy rates, there is no evidence of any significant functional or external obsolescence in MEP systems installed in newer data centers. Data center economics are driven primarily by critical IT power capacity rather than building area. Leasing rates, operating performance, and investor demand are commonly measured on a power basis. All three traditional approaches to value: the Cost Approach, Sales Comparison Approach, and Income Capitalization Approach can be used to value data centers, but the Income Capitalization Approach is the primary method used in the market. Property tax assessment of data centers presents additional valuation challenges, particularly regarding the availability of market data including sales and rent comparables. However, commercial brokerage market reports and investor survey data provide market rent, vacancy and capitalization data sufficient to support a reliable estimate of value using the income-based valuation approach with the other two approaches providing additional support.

Introduction

A data center is a facility used to house mission critical computer systems and associated components for companies and other organizations. It generally includes environmental controls (air conditioning, fire suppression, etc.), redundant/backup power supplies, redundant data network connections, and high security. Financial companies, banks, insurance, internet service providers, e-commerce companies, and governments are major data center users. However, data centers are increasingly critical in most businesses and most large corporations either maintain their own data centers or outsource to a data center service provider.

Data centers require significant investment in expensive infrastructure, high electrical capacity, and access to fiber networks. As such, they are not easily replicated and generally command higher rents and generate greater net operating income than conventional industrial properties. While data center buildings may superficially resemble modern warehouses insofar as they both utilize large industrial-style structures with expansive floor areas and limited interior finish, most warehouses lack the utility infrastructure, electrical capacity, cooling systems, floor loading characteristics, fiber connectivity, and redundancy architecture necessary to support mission-critical computing operations. As a result, the value of a data center derives not merely from its building shell, but from the integrated infrastructure that enables the facility to deliver reliable computing capacity.

The data center market is national and increasingly worldwide in scope, as many data centers do not need to be physically close to urban centers. In fact, high electrical capacity and access to excellent quality fiber networks are important factors in selecting data center locations.

Types of Data Centers

Data centers are classified into several categories depending on design and intended use. According to the source Dgtl Infra, categories include:

Enterprise data centers are private facilities that are owned and operated by an individual organization to meet its own IT infrastructure requirements. These data centers are particularly well-suited for organizations that require customized networks or can benefit from economies of scale due to significant amounts of traffic or data being processed and managed within their data center.

Colocation data centers are used by multiple organizations to house their computing hardware, servers, and supporting infrastructure, such as power, cooling, and networking equipment, in an off-site location. These third-party facilities are particularly useful for organizations that lack the space or IT resources to manage their own enterprise data center.

Wholesale data centers are facilities leased to a single customer, who is responsible for managing the day-to-day operations of either a full building or data hall to create a fully functioning data center. Unlike retail colocation providers, wholesale data center operators offer only space and power without additional services. Wholesale data centers are designed to accommodate large enterprises, government agencies, and retail colocation providers.

Hyperscale data centers are massive, centralized, and custom-built facilities that are operated by a single company. These facilities support primarily cloud service providers (CSPs), large technology companies and other corporations including AI firms with enormous compute, storage, and networking requirements. In terms of footprint, hyperscale data centers house thousands of racks and tens of thousands of servers across 50,000 to 1+ million sq ft. As such, construction costs for these data center facilities can be measured in billions of dollars.

Edge data centers, which include micro data centers, are smaller, decentralized facilities that provide compute and storage in a location closer to where data is being generated and used. They are situated near their intended users, allowing for low network latency and real-time data processing and analysis.

Data Center Redundancy

Mechanical, networking and electrical redundancy is essential to maintain consistent and constant uptime at data centers which provide mission critical services. Redundancy is typically expressed as a function of minimum essential MEP capacity to operate the data center, denoted as N. N+1 redundancy is a single element of MEP redundancy (less than N) which allows for a single failure or required maintenance on a single component. 2N redundancy is a fully redundant, mirrored system with dual independent systems for resiliency meeting the level of critical power N. 2N+1 is a fully duplicated system plus additional redundant capacity. Most modern data centers are constructed with N+1 redundancy in electrical and mechanical systems.

Level	Description
N	Just enough capacity to support operations; no redundancy.
N+1	One additional backup component beyond what is required.
N+2	Two backup components available.
2N	Complete duplication of critical systems.
2N+1	Full duplication plus an extra backup component.

The Uptime Institute has developed a rating and certification system commonly used in the data center industry. The rating system ranks data centers into four tiers based on the level of infrastructure, capabilities, redundancy and ultimately reliability and performance. Tier I data centers have the lowest level of infrastructure, redundancy and reliability. Tier IV has the highest. The following table details each tier rating.

Tier I
Tier I data centers have a single path for power and cooling distribution, without redundant components. They are susceptible to disruption from both planned and unplanned activity. Also, they may or may not have a raised floor, a UPS, or a generator. If they do have UPS or generators, they are single-module systems and have many single points-of-failure.

Tier II
Tier II data centers have a single path for power and cooling distribution, with redundant components. Tier II facilities with redundant components are slightly less susceptible to disruptions from both planned and unplanned activity than a Tier I data center. They have a raised floor, UPS, and generators, but their capacity design is N+1, which has a single-wired distribution path throughout. Maintenance of the critical power path and other parts of the site infrastructure will require a processing shutdown.
Tier III
Tier III data centers have multiple active power and cooling distribution paths, but only one path active. Tier III level capability allows for any planned site infrastructure activity without disrupting the computer hardware operation. Planned activities include preventive and programmable maintenance, repair, and replacement of components, addition, or removal of capacity components, testing of components and systems. For large sites using chilled water, this means two independent sets of pipes. Sufficient capacity and distribution must be available to simultaneously carry the load on one path while performing maintenance or testing on the other path. Unplanned activities such as errors in operation or spontaneous failures of facility infrastructure components will still cause a data center disruption.
Tier IV
Tier IV data centers have multiple active power and cooling distribution paths, have redundant components, and are fault tolerant. Tier IV provides site infrastructure capacity and capability to permit any planned activity without disruption to the critical load. Fault-tolerant functionality also provides the ability of the site infrastructure to sustain at least one worst-case, unplanned failure or event with no critical load impact. This requires simultaneously active distribution paths. Electrically, this means two separate UPS systems in which each system has N+1 redundancy. Tier IV requires all computer hardware to have dual power inputs. There are relatively few data centers that meet the rigorous Tier IV specifications (~4 in the U.S.).

Most modern data centers are reflective of a Tier III rating.

Data Center Economics

Power has become the primary resource required when operating data centers, having eclipsed square footage in importance. Data center rents are more directly related to available power than to real estate area. Higher power density will allow for more tenant computer equipment and will command a higher rent. The ability for data center operators to secure power from the local utility is as important as securing the initial land. Newer generation servers require more power, increasing demand and rents for high power data center space. Additionally, electrical pricing plays a significant part in location of some data centers. Areas where electrical power is cheap have seen a proliferation of large-scale data centers. Access to long-haul fiber networks is also highly important.

Data Center Components

While data centers may superficially resemble modern industrial warehouses because both typically feature large floor plates, high clear heights, and relatively simple exterior building shells, data centers are distinguished by integrating into their infrastructure highly specialized electrical, mechanical, cooling, and telecommunications infrastructure that is essential to their operation. Unlike a conventional warehouse, a data center cannot perform its intended function without this integrated infrastructure, which enables the facility to receive, condition, distribute, cool, and deliver mission-critical computing capacity. Components of the mechanical and electrical systems are duplicated (redundant) to prevent single points of failure. Data center buildings include the following components.

Data Hall with Server Racks: Computer servers are mounted on racks and arranged in aisles inside data halls. Cold air is circulated through one side or bottom of the racks and hot air out the other side or top. Frequently, there will be a “cold aisle” where cooled air enters and a “hot aisle” where hot air is expelled from the back of the servers.

Raised Floors: Data hall floors have typically been modular, typically 2 ft by 2 ft with tiles that can be lifted off for access to a subfloor chase for electrical and mechanical systems. The tiles are perforated for ventilation. There is typically 3 ft or so of clearance under the floor for cabling, utility feeds, piping for cooling, etc. Sometimes the area under the floor is used as a plenum for air circulation as part of the cooling system. However, modern data centers frequently lack raised floors and cabling, and utilities are hung from the roof.

Data Hall with Server Racks (modern style with utilities hung from the roof)

<u>CRACs (Computer Room Air Conditioner) or CRAHs (Computer Room Air Handler)</u>: A typical CRAC or CRAH unit will provide 30 tons of cooling and draw approximately 100 kW of power per unit. A conventional warehouse, in contrast, may operate with relatively few HVAC units. Data centers typically contain dozens or even hundreds of CRAC and CRAH units operating continuously to remove heat generated by computing equipment and are therefore a core operational system of the facility. Each chiller can accommodate several CRAH units, working in conjunction with cooling towers, pumps, and an extensive network of piping that removes heat from the data hall and recirculates cooled refrigerant throughout the facility. While conventional warehouses may utilize HVAC systems designed primarily to control temperature for comfort, data center cooling systems are engineered to continuously dissipate the substantial heat generated by mission-critical computing equipment. The scale, complexity, and integration of these systems are substantially greater than those found in typical industrial buildings.

Data centers commonly incorporate multiple layers of cooling redundancy to ensure uninterrupted operation, allowing the cooling system to continue operating even if a primary chiller fails. Some facilities store cooled water for circulation in the event of a total failure. These redundancy features are not optional enhancements but are often required to meet the reliability standards expected of mission-critical data center facilities. Such systems are rarely found in conventional warehouses, where temporary loss of cooling may be inconvenient but does not threaten the fundamental operation of the property.

Rooftop Chillers

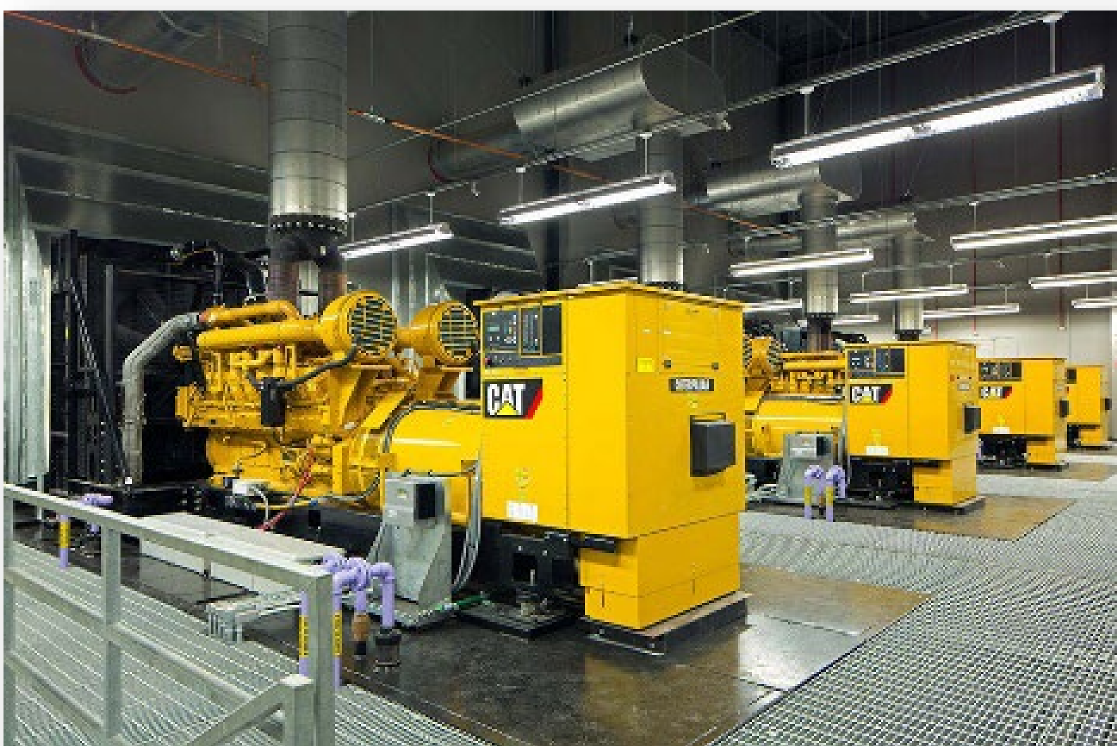
Electricity Feed: Many data centers require more than one utility feed for redundancy. The availability of more than one utility feed is a key factor in selecting a data center site because uninterrupted electrical service is essential for data center operations. Unlike a conventional warehouse, which can generally tolerate a temporary power outage without significant loss of function, a data center is designed to operate continuously.

Switchgear: Switchgear control the power distribution and connection between utility service, the UPS system and generators. Switchgear allow operators to isolate equipment, transfer loads, and manage connections between utility power, generators, and UPS systems. In large data centers, switchgear systems are custom designed to support significant electrical loads and multiple layers of redundancy. These systems are integrated into the facility's electrical infrastructure and are fundamentally different in scale and complexity from the electrical systems typically found in conventional industrial buildings.

UPS (uninterruptible power supply): UPS systems provide instantaneous clean, undisturbed, conditioned AC voltage, within strict amplitude and frequency limits, to protect the IT load during any utility. The UPS systems can use a number of technologies including a rotary system (using flywheels) or battery backups. These systems are used in conjunction with generators, taking over immediately in case of a power outage until the generators are online. Unlike conventional backup power systems that activate after an outage occurs, UPS systems operate continuously and bridge the transition between utility power and backup generation without interruption. As a result, they constitute a core component of the facility's power infrastructure rather than a supplemental building feature.

PDUs (Power Distribution Units): PDUs distribute conditioned electric power to racks of computers and networking equipment located within a data center.

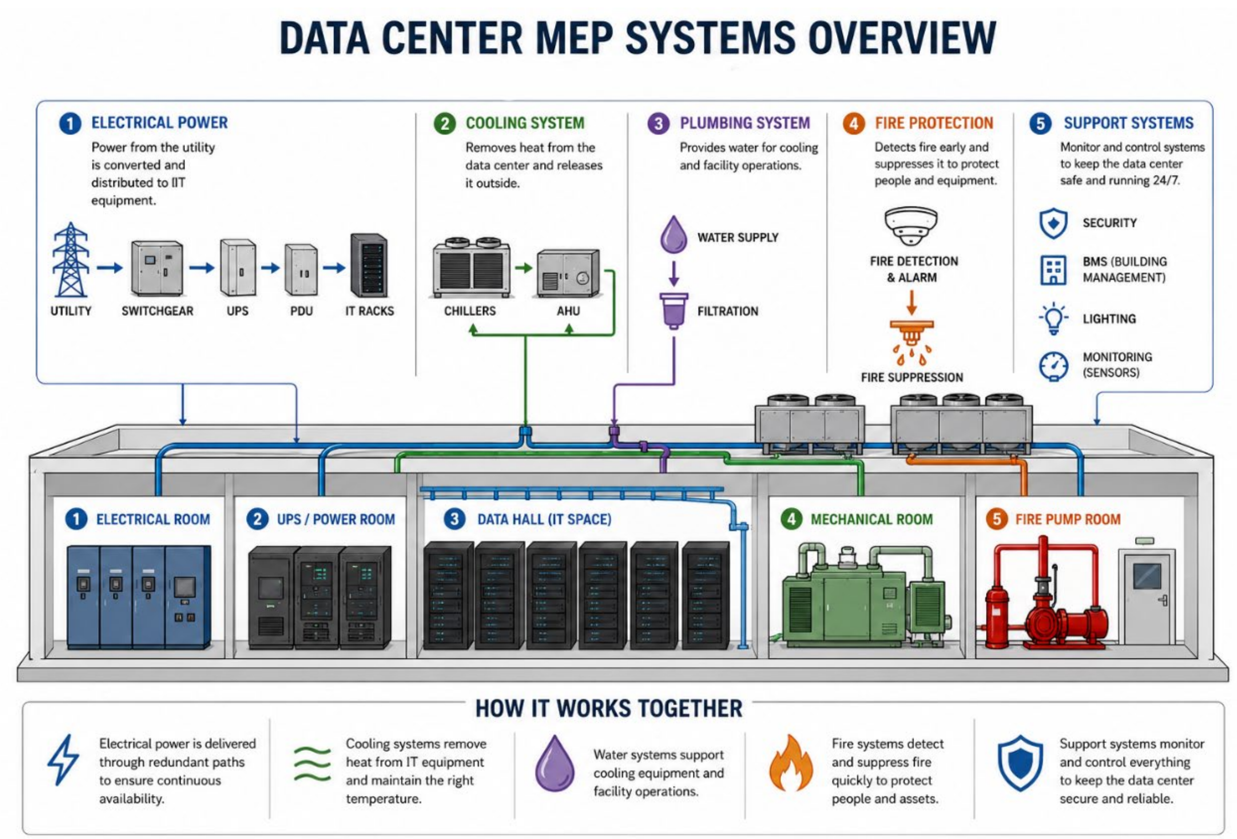
Generators: Generators are the main source of back-up power in the event that utility power fails. The number of generators needed is related to the total critical power capacity of the facility with enough generating capacity to supply at least as much critical power plus additional generators for redundancy. Diesel fuel storage tanks are required on-site, able to supply enough fuel to keep the generators running for at least 48 hours. Unlike the emergency generators commonly found in commercial buildings, which are generally intended to support life-safety systems and limited essential functions, data center generators are designed to maintain full operation of mission-critical computing infrastructure during extended utility interruptions. As a result, they constitute a fundamental component of the facility's integrated electrical infrastructure and overall economic utility.



Backup Generators

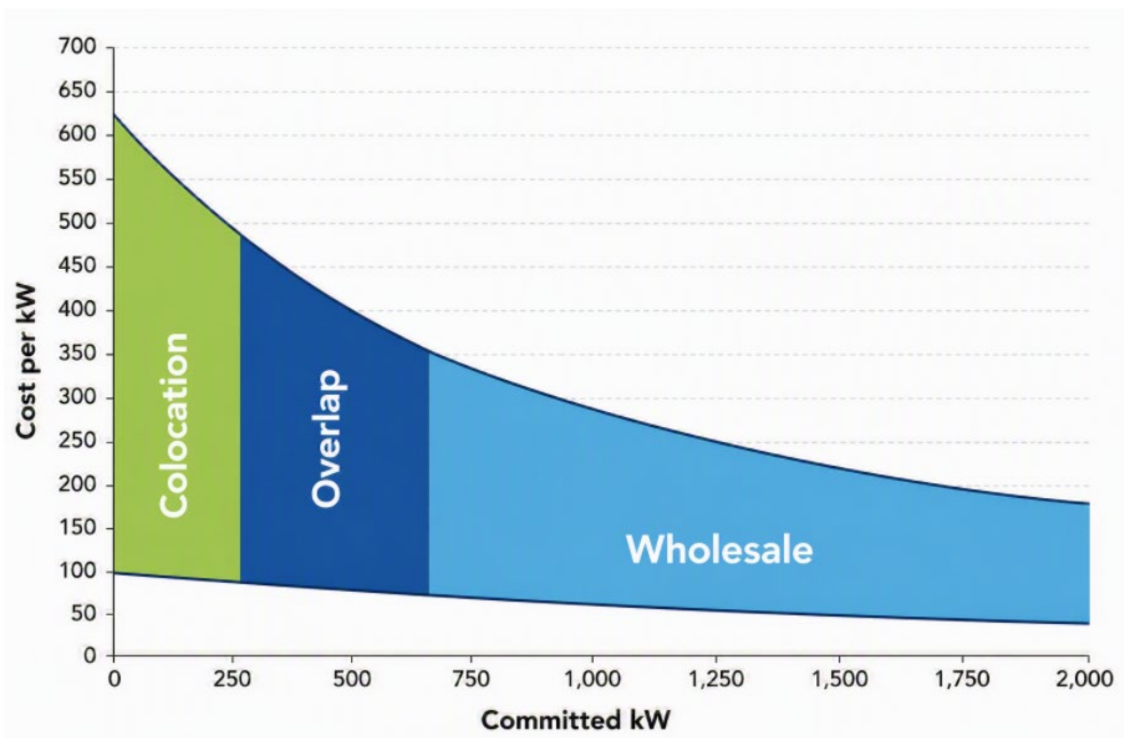
<u>Critical power (also referred to as Critical IT load):</u> Critical power is the electrical load provided to the computer servers or related equipment that is protected and pre-conditioned to remain operational at all times. This is the power available for exclusive use by the computer servers expressed in terms of MW or kW (1 MW is equal to 1,000 kW or 1,000,000 watts).

These data center components work together to ensure highly reliable data center performance. From the utility substation, incoming utility power passes through switchgear, which controls, protects, and distributes electrical power throughout the facility. Power then flows to the UPS systems which condition and stabilize incoming power by eliminating voltage fluctuations, frequency variations, and other disturbances and provide instantaneous backup power if utility power is interrupted. Conditioned power is distributed from the UPS systems to PDUs located near or within the data halls. PDUs transform and distribute power to individual server racks. This electrical architecture is fundamentally different from that found in a conventional warehouse or industrial building. Rather than merely supplying lighting, HVAC, and limited operational equipment, the power distribution system of a data center is designed to continuously deliver large volumes of conditioned, highly reliable power to mission-critical computing equipment. The switchgear, UPS systems, PDUs, generators, and associated infrastructure operate as an integrated system whose sole purpose is to ensure uninterrupted operation of the facility's critical IT load.



Each of the MEP components described above, UPS systems, generators, switchgear, cooling towers, CRACs/CRAHs, and PDUs, is permanently installed, serves the building rather than any particular tenant's computing equipment, and cannot be removed without materially impairing the facility's function as a data center. These characteristics distinguish MEP infrastructure from personal property. IT equipment, including servers, networking gear, and storage racks, is tenant-owned, movable, and depreciates rapidly on a technology cycle typically measured in three to five years. In contrast, MEP infrastructure is landlord-owned (in a turnkey facility), building-integrated, and assuming regular maintenance, has a useful life consistent with the building, typically twenty to forty years. This distinction is the foundation of the real versus personal property classification analysis and should be the starting point for any assessor evaluating a data center property.

Monthly Turnkey Data Center Rent Rates



Data Center Economic Metrics

Unlike traditional real estate which is leased and sold on the basis of area, the economic unit for data centers is electrical power and specifically critical IT power. Typically, data center tenants at turnkey data centers pay for critical power and not area. Rent is quoted on the basis of $/kW/month mainly between $90 to $250/kW/month on a modified gross expense basis. Electricity expense is typically passed through to the tenant in data center leasing with the landlord paying all other expenses. The high end of the rent range typically reflects smaller power requirements in colocation leasing, and the low end of the range is for large power requirements in wholesale or hyperscale leases. In some cases, particularly with hyperscale leases, rent reflects a triple net expense basis. The graph above illustrates how average pricing is generally affected by total kW leased with larger power amounts (wholesale range) reflecting lower rental rates on a $/kW/month basis and smaller power amounts (colocation range) commanding higher rental rates.

There is another leasing model known as a powered shell lease. In this model, the landlord provides only a building shell with utilities including significant electrical power, and the tenant builds out all of the data center electrical and mechanical infrastructure including but not limited to switchgear, UPS systems, generators, and cooling systems. Rent is structured like a traditional lease with rent structured on an area basis typically between $25/sq ft and $50/sq ft on a triple net expense basis. Note that the distinction between a typical powered shell lease and a typical turnkey data center lease is ownership: a turnkey data center is fully built-out by the landlord and a powered shell lease data center is one where the tenant has built-out all the data center infrastructure into the building shell and rent is set accordingly.

Real versus Personal Property in Illinois Property Tax Assessment

The previously described electrical and mechanical components are fixed and permanently part of the data center building. They are essential to the functionality of the data center. Under Illinois Property Tax Code, real property is defined as the land itself, all things contained, all buildings, structures, and improvements, other permanent fixtures thereon, including all oil, gas, and other minerals, excluding coal from the land, and all rights and privileges belonging or pertaining thereto. [1]

Illinois courts and assessment authorities distinguish real property from personal property primarily through the statutory definition of real property contained in the Property Tax Code and the common law of fixtures. In certain circumstances, classification questions are also informed by the historical classification provisions contained in Section 24-5 of the Property Tax Code, commonly referred to as the "Freeze Act."

There are four components used to define real property:

1. The land, including its natural environment;
2. All buildings, structure and improvements, and other permanent fixtures on the land;
3. All oil, gas, coal, and other minerals in the land, including the right of removal of the minerals; and
4. All rights and privileges associated with owning the land.

Personal property is defined as property that is not real.

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[1] 35 ILCS 200/1-130.

Under 35 ILCS 200/1-130, real property includes all buildings, structures, and improvements, and other permanent fixtures on the land. Major MEP components meet this definition. UPS systems, generators, switchgear, cooling towers, CRAC/CRAHs, and PDUs are permanently installed, structurally integrated into the building. They cannot be removed without materially impairing the facility's function and operational capability. Based on that definition, electrical and mechanical components should under most circumstances be considered real estate, and computer servers and racks would be considered personal property. However, the manner in which real and personal property are classified in Illinois is not black and white and its application varies between counties.

Because Illinois law presumes property is taxable unless exempted by statute, a taxpayer seeking to exclude substantial portions of a data center's infrastructure from the assessment base should be prepared to demonstrate both the legal and factual basis for that exclusion. Classification conclusions should be supported by ownership records, engineering documentation, lease provisions, and applicable legal authority.

Freeze Act and Like-Kind Classification

Illinois abolished ad valorem taxation of personal property effective January 1, 1979. To prevent the reclassification of previously exempt personal property into taxable real property, the General Assembly enacted what is commonly referred to as the "Freeze Act," 35 ILCS 200/24-5. The statute provides that property lawfully assessed and taxed as personal property before January 1, 1979 shall not thereafter be classified as real property, and similarly that property lawfully assessed as real property shall not thereafter be classified as personal property. The statute further extends this treatment to property of "like kind" acquired after January 1, 1979. As a result, classification disputes in Illinois often require consideration not only of traditional fixture principles, but also historical county classification practices and whether the property at issue is of like kind to property previously classified as real or personal property.

Intention Test Under Illinois Law

Illinois courts apply a multi-factor fixture test examining: (1) annexation: the degree to which the item is physically attached to the realty; (2) application: whether the item is specially applied to the use or purpose of the realty; and (3) intent: the objective manifestations of the annexing party's intent to make the item a permanent part of the realty.[2] Illinois courts have emphasized that the relevant inquiry is not merely whether equipment is used in a business conducted on the premises, but whether the equipment was intended to permanently improve the real estate.[3] Applying these principles, data center MEP infrastructure strongly supports classification as real property because MEP infrastructure satisfies all three factors.

1. It is bolted, welded, or otherwise permanently affixed to the structure;
2. It is specifically engineered to serve the building's function as a data center;

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[2] *Beeler v. Boylan*, 106 Ill. App. 3d 667 (4th Dist. 1982); *Cherry Bowl, Inc. v. Property Tax Appeal Board*, 100 Ill. App. 3d 326 (2d Dist. 1981)

[3] *Cherry Bowl*, 100 Ill. App. 3d at 330

3. It is integrated into the building's electrical and mechanical systems; and
4. The cost, scale, and design of the systems objectively manifest an intent to permanently improve the real estate.

Unlike servers, networking equipment, and other IT assets, these systems are not readily movable and cannot be removed without materially impairing the function and value of the facility.

Integrated Nature of MEP Systems

Where a system of equipment operates together as a single functional unit integrated into real property, Illinois courts have recognized the integrated industrial plant doctrine, treating the system as a whole as real property.[4] Data center MEP infrastructure—power distribution from utility feed through switchgear, UPS, and PDUs; cooling from towers through chillers and CRACs—operates as an integrated system. No component is independently functional. The systems are permanently installed, specifically adapted to the operation of the data center, and intended to remain in place for the useful life of the facility. Their function is not to support a tenant's business operations independent of the real estate, but rather to create and maintain the specialized building environment that gives the property its utility and value as a data center.

Powered Shell versus Turnkey Ownership

The classification of real versus personal property is also informed by lease structure. In a turnkey or hyperscale single-tenant lease, the landlord owns and has permanently installed the MEP infrastructure as part of the real estate improvement. That landlord ownership, combined with the permanence and building-integration of the systems, reinforces real property classification for assessor purposes. In a powered shell lease, the tenant installs MEP infrastructure and may own those components during the lease term. Under this ownership structure, the annexation, application or adaption and intended permanency of those components remain significant in determining whether the MEP infrastructure should be classified as real property.

Market Practice

The legal analysis is consistent with how market participants view data center assets. Buyers, sellers, lenders, investors, and appraisers do not separately value switchgear, cooling systems, generators, UPS systems, and power distribution infrastructure apart from the real estate. Rather, these systems are viewed as integral components of the facility that enable it to perform its intended function and generate revenue. This market treatment is consistent with the Illinois Property Tax Code's definition of real property, which includes buildings, structures, improvements, and permanent fixtures.[5] It is also consistent with Illinois fixture law, which focuses on annexation, adaptation, and intent. The MEP infrastructure of a data center is permanently installed, specially adapted to the operation of the facility, and intended to remain

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[4] *Ayrshire Coal Co. v. Property Tax Appeal Board*, 19 Ill. App. 3d 41 (5th Dist. 1974); *Cherry Bowl, Inc. v. Property Tax Appeal Board*, 100 Ill. App. 3d 326 (2d Dist. 1981)

[5] 35 ILCS 200/1-130

in place for the useful life of the property. The same conclusion is reflected in appraisal practice and capital markets. Commercial lenders underwriting data center transactions do not separately underwrite generators, switchgear, cooling infrastructure, or UPS systems as independent personal property assets. Financing decisions are based on the income-producing capability of the integrated facility. Likewise, appraisers value data centers as integrated real estate assets and do not separately deduct building-integrated MEP infrastructure from the real estate value conclusion. Both Illinois property tax principles and market evidence support the conclusion that turnkey data center building-integrated MEP infrastructure is part of the taxable real estate asset rather than separate personal property.

Valuation Methodology

All three traditional valuation approaches, Cost Approach, Sales Comparison Approach and Income Capitalization Approach can be used to value data centers.

Cost Approach

The Cost Approach is based on the principle that value can be estimated as the total cost of developing a property including a reasonable profit which then is adjusted for depreciation. This includes the cost of the land and constructing the building improvements. The Cost Approach is generally a good measure of value for new developments like data centers with specialized electrical and mechanical equipment. A properly conducted Cost Approach Analysis includes the cost of MEP infrastructure. Using only the building shell cost, or deducting MEP costs as personal property, systematically understates value and is inconsistent with market practice.

Confidential Data Center Cost Comparables

No.	Delivery	Market	Size (SF)	Size (MW)	Cost/MW
1	2028	Secondary	3,725,814	>800 MW	$19,567,695
2	2027	Secondary	2,561,450	>800 MW	$19,614,365
3	2026	Secondary	748,665	100 - 150 MW	$12,529,163
4	2027	Secondary	551,345	50 - 100 MW	$12,724,603
5	2026	Secondary	430,000	50 - 100 MW	$11,708,071
6	2027	Primary	490,992	50 - 100 MW	$13,203,394
7	2026	Primary	545,690	100 - 150 MW	$10,749,000
10	2024	Primary	364,649	0 - 50 MW	$12,000,000
11	2026	Primary	383,240	50 - 100 MW	$10,616,037
12	2026	Primary	498,000	50 - 100 MW	$13,518,385

National cost manual data such as Marshall Valuation Service are often inaccurate for data centers given the highly specialized design and mechanical and electrical systems which are a significant portion of the overall cost of data center development. Although difficult to get due to confidentiality requirements, the best cost estimation data is typically construction cost comparables from recent data center projects. In the table above are development budgets from 12 recent data center development projects across the U.S. The properties are

confidential but are examples based on verified data held in confidential internal work files. Generally, total development cost ranges between about $12 to $15 million/MW but can be higher particularly for power dense data centers being constructed for AI development firms which use very high-powered computer servers. These costs include the cost of the building shell plus redundant MEP systems.
Note that redundant MEP systems do not represent functional obsolescence or a super-adequacy. Redundant MEP configurations are not over-improvements but rather they are market-required features that are essential in data center operation. Data center sale prices and lease rates are based on the reliability provided by these MEP systems. Typical data center leases specify in detail required operating metrics including essentially no downtime, consistent required temperature and moisture parameters which are all achieved by redundant MEP systems. Market evidence confirms that MEP redundancy is essential, value-additive and not a form of obsolescence.

Depreciation can be difficult to estimate but for newer data centers this is less of a concern. The main shortcoming of the Cost Approach is that it is not market driven. Unlike the Sales Comparison or Income Capitalization Approaches, the Cost Approach does not use recent sales of similar properties or recent leases to measure rental income potential.

Sales Comparison Approach

In the Sales Comparison Approach, a property's value is estimated by comparing it to similar properties that have recently sold in the same or competing market. It is based on the economic principle of substitution: a buyer will generally not pay more for a property than the cost of acquiring a similar substitute property. Comparables are adjusted for differences in market conditions, physical, locational, economic characteristics for direct comparison with the property being valued. Because data centers (other than powered-shell facilities) are generally leased on a power basis, power is the primary economic unit used to analyze comparable sales. For newer good quality data centers, pricing is determined by the quality of tenancy including creditworthiness of the tenant, lease term and rent rate. Prices vary but generally range between about $15 million/MW and less than $25 million/MW. As with construction cost data, obtaining details about data center transactions can be challenging due to confidentiality requirements. A summary of representative sales of data centers nationally shown in the following table indicates pricing between $13.4 million/MW and $23.9 million/MW. The comparables are confidential but are turnkey wholesale or hyperscale data centers with between 9 MW and 67 MW of critical IT power.

Summary of Data Center Sales Comparables

No.	Property	Area (SF) Power (kW) Year Built	Site Area LTB ratio	Sale Date	Sales Price	Price Per Sq Ft Per kW	Cap. Rate NOI/Sq Ft NOI/kW/Mo.	Comments
1	Confidential Property Major Market	185,000 sq ft 15,200 2009	1,690,128 sq ft 9.14	Aug-25	$253,000,000	$1,368 $16,645	6.90% $94.36 $95.71	Fully leased, two tenant data center with expansion potential. Buyer is investor with signficant data center holdings. Seller is JV between data center investor and pension fund.
2	Confidential Property Secondary Market	193,953 sq ft 7,500 2016	875,120 sq ft 4.51	Dec-24	$150,000,000	$773 $20,000	6.32% $49 $105	Fully leased to single tenant through 2031. A portion of the building was in shell condition with plan to expand critical power to 13.5 MW. Sold as part of a portfolio sale.
3	Confidential Property Major Market	176,000 sq ft 32,000 2005/2015	412,078 sq ft 2.34	Nov-24	$766,000,000	$4,352 $23,938	5.90% $257 $118	Flex property in process of being converted to data center use with full completion projected in 2026. Fully leased to major tech firm.
4	Confidential Property Major Market	1,116,264 sq ft 67,000 1978, r. 2018 2008	357,192 sq ft 0.32	Jul-23	$900,000,000	$806 $13,433	6.50% $52 $73	Sale of 65% ownership into JV. Hyperscale data center portfolio about 90% leased at time of sale.
5	Confidential Property Major Market	132,285 sq ft 9,000 2010	357,192 sq ft 2.70	Mar-23	$150,000,000	$1,134 $16,667	6.00% $68 $83	Fully leased to two major tenants, one with a short term remaining. Contract rent somewhat above a market rate.

The Sales Comparison Approach is market driven and will reflect current market conditions in the data center market. The approach is generally considered a good indicator of value, but challenges include obtaining transaction and property information in a market where the use of non-disclosure agreements and expectations of confidentiality are extremely high. There is also a lack of sales of larger data centers as many data center developers build and hold their data center properties.

The sale prices reflected above—in the range of $13 to $24 million per MW—reflect the full integrated facility, including all MEP infrastructure. Buyers of data centers do not exclude MEP from the purchase price or negotiate a discount on the theory that MEP is personal property. The market treats MEP as an inseparable component of real estate value. The premium paid for a turnkey facility over a powered shell facility represents the market's valuation of the installed MEP infrastructure as real property. The classification of which must still comply with Illinois law. Assessors should recognize this market evidence in their classification and valuation analysis.

<u>Income Capitalization Approach</u>

The Income Capitalization Approach is the primary method of valuing income properties and data centers are most typically leased investment properties. The basis of this approach is that the value of a property is derived from the present worth of its future economic benefits, usually measured by its net operating income (NOI). The process of converting an NOI projection into value is done using two primary methods: direct capitalization and discounted cash flow. The direct capitalization method converts NOI to value by dividing by a capitalization rate. The discounted cash flow method involves projecting revenues expenses and net income across several years and discounting net income as well as sale proceeds from a future projected sale of the property to the present.

The direct capitalization method is simpler and often most suitable for tax assessor valuation purposes. Like with the other two approaches, confidentiality is a challenge. However, there is now a preponderance of investors surveys and data center market reports issued primarily by the larger commercial brokerage firms including CBRE, Colliers, JLL, Cushman Wakefield and Avison Young which provide useful data center market information like average rental rates and capitalization rates. Capitalization rate data is provided in investor surveys published by SitusAMC (RERC Real Estate Report), PwC (PwC Investor Survey), Avison Young (U.S. Data Center Update) and Colliers (2026 Data Center Marketplace). Capitalization rates from recent reports in 2026 indicate the following capitalization rates.

Investor Survey Reported Data Center Capitalization Rates

Source/Type	Capitalization Rate
RERC National Data Centers	6.20%
PwC National Data Centers	6.56%
Avison Young - Turnkey Data Centers	6.30%
Avison Young - Powered Shell Data Centers	5.30%
Colliers National Data Centers	6.25% - 7.0%

Another example is the following summary of major market statistics taken from CBRE's North American Data Center Report H2 2025. Notably, rental rates are relatively consistent nationally across the major markets and generally range from about $170/kW/month up to $220/kW/month for 250 kW to 500 kW power requirements. Vacancy rates are low and generally well below 5.0% despite delivery of significant new supply. These freely available reports provide a basis for some of the difficult-to-obtain parameters including rental rates, vacancy rates and capitalization rates.

The lease rate differential between powered shell (reflecting tenant owned MEP) and turnkey leases (reflecting landlord owned MEP) provides direct income-based evidence of MEP's contribution to real estate value. Turnkey leases at $90 to $180+/kW reflect the landlord's investment in MEP infrastructure. Powered shell leases have lower rates at between $25 to $50/sq ft reflecting only the building shell. The income attributable to MEP infrastructure is the difference between these two lease structures. It is real property income, generated by a real property improvement and reflects real property value.

Data Center Major Market Statistics – North American Data Center Report H2 2025

Market	Inventory (MW)	Y-o-Y Change (MW)	Available MW	Vacancy Rate	Y-o-Y Change* (bps)	2025 Net Absorption (MW)	Y-o-Y Change (MW)	Rental Rates (kW/mo)**
Northern Virginia	4,039.6	▲ 1,109.5	21.5	0.5%	▼ -5	1,102.0	▲ 650.3	$190-$235
Atlanta	1,459.2	▲ 458.8	28.5	2.0%	▼ -60	456.0	▼ -249.8	$165-$185
Dallas-Ft. Worth	1,067.3	▲ 476.3	26.0	2.4%	▼ -113	470.8	▲ 424.0	$140-$175
Chicago	904.6	▲ 263.7	10.7	1.9%	▼ -130	264.2	▲ 191.8	$190-$220
Phoenix	807.3	▲ 204.5	10.5	1.3%	▼ -60	205.5	▼ -40.0	$170-$210
Silicon Valley	489.2	▲ 20.8	23.2	4.7%	▼ -76	-1.4	▼ -46.6	$180-$275
Hillsboro, OR	475.4	▲ 0.0	1.0	0.2%	▲ 1	1.9	▼ -240.2	$175-$225
New York Tri-State	190.0	▲ 0.0	13.6	7.2%	▲ 74	-1.4	▼ -1.4	$180-$225

At the capitalization rates and rental rates reported in investor surveys (6% to 7% capitalization rates; $120–$220/kW/month for 250–500 kW power requirements), a facility with 100 MW of critical IT capacity would have a real estate value well into the hundreds of millions of dollars. An assessment framework that strips MEP from the income stream results in a value well below that recognized by investors, lenders, and other market participants as the value of the data center real estate. The direct capitalization method—dividing stabilized NOI by the applicable capitalization rate—is the most accessible approach for assessors. The Income Capitalization Approach is market-driven with rental rates, expenses and capitalization rates being influenced by market conditions and subject to change as market conditions change. It is the primary valuation method used in the market to value data centers. The Cost and Sales Approaches remain secondary methods in the market.

Depreciation and Obsolescence in Data Center Assessment

Depreciation and obsolescence arguments are also a problematic area of data center valuation. Assessors evaluating data center properties should apply the following principles:
Functional obsolescence requires market evidence. For a newly constructed data center facility, functional obsolescence arguments based on anticipated technology change should be rejected unless supported by current market evidence. The relevant question is not whether technology will change in fifteen years; it is whether the property, as of the assessment date, exhibits a loss in value due to functional inadequacy as demonstrated by market-based data. Generally speaking, newly constructed data centers are state-of-the-art facilities and there is no market-based evidence of functional obsolescence applicable to these properties. On the contrary, market vacancy rates and rent trends refute the existence of obsolescence. National vacancy rates well below 5% and double-digit annual rent rate increases in recent years are

direct market evidence that modern data centers are not functionally obsolete nor is there any external obsolescence in the current market. Obsolescence analysis for recently constructed data centers must be based on market evidence and not projected obsolescence that the market does not recognize.

As noted earlier, MEP redundancy is critically important design feature enabling highly reliably operations, not a super-adequacy. The argument that redundant MEP systems represent a super-adequacy is inconsistent with market evidence. Higher-redundancy facilities command premium lease rates per kW over lower-redundancy facilities. There is no market-based support for treating redundancy as functional obsolescence.

When a facility is physically deteriorated, functionally inadequate relative to current market standards, or economically affected by external forces, appropriate depreciation should be reflected. However, speculative, unsupported obsolescence applied to new or near-new data center facilities in the current market where demand consistently exceeds supply is clearly inappropriate.

Practical Guidance for Assessors

The following guidance is intended to help assessors in Illinois apply the correct framework when assessing data center properties under Illinois law. To correctly classify a data center component as real or personal property, an assessor should ask:

(1) Is the component permanently attached to the building or land?

(2) Is it integral to the building's function as a data center, such that removing it would compromise data center operations and capability?

(3) Does its cost, scale, engineering, and ownership reflect an intent to permanently improve the real estate?

In order to better understand and determine real property value, assessors should request from the taxpayer:

(1) Construction cost breakdowns distinguishing between the building shell and MEP infrastructure

(2) Engineering and architectural drawings and specifications showing how MEP components are attached to and integrated into the building structure

(3) Lease agreements identifying which party owns and installed the MEP infrastructure

(4) Appraisal reports or cost studies used by the taxpayer in any prior assessment proceedings

Uniformity Principle

If MEP infrastructure is taxable real property for one data center, it should be considered as taxable real property for all similarly situated facilities in the county. Assessors should apply the classification consistently across all data center properties. Inconsistent classification—treating MEP as real property for some facilities and personal property for others without a principled distinction—creates uniformity problems and exposes assessments to additional bases for challenge by taxpayers.

Valuation Approaches

As noted, the Income Capitalization Approach is the primary valuation method used in the market. Furthermore, publicly available market data from major brokerage reports and investor surveys provide a reliable foundation for rental rates, vacancy rates, and capitalization rates for all facility types. For enterprise, hyperscale and colocation turnkey facilities (where the landlord installed and owns MEP infrastructure), the Income Capitalization Approach using $/kW rental rates is appropriate. For powered shell facilities (where the tenant has installed MEP infrastructure), the Income Capitalization Approach using $/sq ft rental rates is appropriate. However, for the purposes of assessment valuation, significant adjustment is required to reflect the value of MEP installed by the tenant. For newer data center facilities, the Cost Approach (with MEP included in the improvement cost estimate if landlord owned) is also appropriate. The Sales Comparison Approach is also a reasonable method but obtaining reliable comparable data is challenging particularly given the prevalence of confidentiality in the data center market.

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David M. Chudzik is a senior vice president with the Valuation Advisory Services group at Kidder Mathews.

Since joining Kidder Mathews Valuation Advisory Services in October of 2004, David has provided valuation and consultation services for a wide variety of commercial property types including office, industrial, retail, multifamily, hospitality, marina, and development properties. His experience includes complex properties like biotechnology research facilities, data centers, sawmills, shipyards, and other specialized property types. He has performed biotechnology valuation and market analysis on a national basis and authored the National Biotechnology Real Estate Market Analysis for GVA Worldwide. David is recognized for his experience appraising data centers throughout the U.S., Canada and Mexico and is one of the leading data center appraisers in the U.S. Clients include lenders, data center investors and developers, attorneys and government agencies. David's data center experience includes work on some of the largest data center projects in North American including large -scale AI data centers.

David's professional experience also includes venture capital investing with emphasis in the life sciences industry. He has also worked as a development analyst and project manager at Seattle area real estate development companies. His development experience includes multifamily residential, commercial office, and marina developments.

David brings unique qualifications to real estate valuation and consulting making him well qualified in the analysis of some of the most complex and sophisticated real estate.

EDUCATION

Ph.D. in Biochemistry from University of Washington

MBA in Management from University of Washington

BS in Biochemistry from University of Washington

BA in Spanish from University of Washington

SELECT CLIENT LIST

- Allstate Life Insurance Co.
- Alexandria Real Estate Equities
- Archdiocese of Seattle
- Bank of America
- Capital One
- Citibank
- City of Seattle
- City of Renton
- Davis Wright Tremaine
- East West Bank
- First Citizens Bank
- First Mutual Bank
- GE Capital
- H5 Capital
- Heritage Bank
- JPMorgan Chase Bank
- KeyBank
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Merrill Lynch	Port of Seattle	Todd Shipyards
Morgan Stanley	Port of Port Townsend	Unico Properties
Morton McGoldrick, PS	Portland State University	Union Bank
Moss Adams	Puget Sound Bank	University of Washington
National Real Estate Advisors	Puget Western	US Bancorp
Nexus Properties	San Juan County Land Bank	Vulcan Real Estate
Northwest Diabetes Reaseach Center	San Juan Preservation Trust	Washington Federal
Northwest Kidney Center	Schnitzer West	Washington Trust Bank
Novartis	Seattle BioMed	Wells Fargo
Olympus Real Estate Partners	Seattle Monorail Project	
Overlake Medical Center	Server Farm Realty	