

Accounting and Tax Benefits of Modular, Portable Data Center Infrastructure

White Paper 115

Revision 1

by Barry Rimler

> Executive summary

Well-informed accounting treatment of data center physical infrastructure (DCPI) assets provides significant opportunities to contribute to improving the financial performance of a business, institution, or organization. Design and manufacturing improvements in modular, scalable UPS systems, power distribution units (PDUs), and computer room air conditioners have not only created technological benefits, but provide entirely new DCPI asset management opportunities with direct and measurable financial benefits.

Contents

Click on a section to jump to it

Introduction	2
“Traditional” vs. factory-built solutions	2
Understanding property taxes and related government fees	3
Financial planning for DCPI assets	5
Implementation of an asset management strategy for DCPI	6
Conclusion	9
Resources	10
Appendix	11

Introduction

This white paper is provided to highlight the opportunities and benefits of involving a finance or tax professional who is knowledgeable in the acquisition and deployment of data center physical infrastructure (DCPI) assets. Applying the accounting options available within the framework of what is known as Generally Accepted Accounting Principles (GAAP), DCPI assets may be better aligned with the goals and objectives of a particular business, institution, or organization. This document is not intended to provide or offer advice on tax planning, as only a qualified or certified financial professionals may actually provide tax advice.

Among the difficulties faced by owners of DCPI assets, is the absence of perceptive financial treatment of the individual portions of mission critical systems. Frequently, the UPS, power distribution unit (PDU), and branch circuit panels installed in the construction of a building (or as a major "improvement project") will be booked as a "building improvement" and depreciated along with the concrete, steel, boilers and pipes of the building. The "building" will likely have a long depreciable life, which may be upwards of 30+ years. However, DCPI equipment typically has a relatively short useful life, even though the UPS, PDU, and related branch circuits may remain on the books long after they are declared obsolete. For many companies, improper booking of high technology DCPI such as UPS systems and PDUs routinely causes substantial problems in the form of overstated "real property" asset value, and the obligation to take a "write-down" in the year that the UPS and related parts are "retired". A glossary is provided in the appendix of this paper to define various terms used throughout.

Recent improvements in the design and manufacture of DCPI equipment, particularly UPS systems, PDUs, and (to some extent) air conditioning, has opened up the opportunity to treat DCPI as "business equipment", rather than a part of the building in which the equipment is installed. This achievement is the direct result of scalable, modular, and fully manufactured systems requiring little or no field wiring other than the connection of the input power (which may be accomplished through "cord and plug connected" means).

This improved DCPI works well in a dynamic business climate where technology changes frequently and economic cycles and leaseholds may be substantially shorter than real estate investment periods. The integration of this DCPI into a corporation, institution, or organization's economic model is not difficult, because nearly all corporations, institution, or organizations have experience with the management of business equipment, including computers, copy machines, production machinery, and company owned vehicles.

"Traditional" vs. factory-built solutions

"Traditional" or "legacy" UPS and PDUs

While all UPS systems and PDU sub-assemblies are manufactured in a factory, the complexity and intensity of the connection activities performed in the field to install a traditional (or legacy) UPS system generally promotes the inclusion of the UPS, along with the PDU and branch circuits into the realty. They may be categorized as either a "building improvement" or a "leasehold improvement".

A traditional UPS system (consisting of a UPS module, battery cabinet, and various out-board switches) is more than likely installed as a part of the building's electrical system, and booked as a building improvement, in the case of an owner occupied property, or as a leasehold improvement in property secured under a lease.

While it is possible to apply different depreciation schedules to the UPS batteries, doing the same for the UPS system isn't as simple, since it is difficult to financially determine where the UPS system ends and where building components such as transformers and switchgear

begin. Consequently, the traditional UPS system becomes merged with the rest of the building's electrical systems, even though it has a substantially shorter useful life.

The traditional UPS, PDU, and branch circuits therefore are declared part of a construction job and then part of the "real estate". Building improvements, particularly "built in place building improvements" are always subject to permits, inspection delays, and inspection fees.

Factory-built solutions

"Factory built" UPS systems ship with factory wired PDUs, in which the branch circuit distribution is fully developed and furnished. This type of system saves exceptional amounts of field installation time, particularly if the entire system is part of a cord and plug connected solution. Such systems can be booked and depreciated as business equipment, and taxed as "personal property", (like a free-standing refrigerator or desktop computer) without permit or inspection fees for the factory built portion. This enables shorter depreciation schedules. This distinction may be useful to certain clients that see a benefit in separating higher technology assets from the real estate or "base building", and assigning a unique "life" to their business equipment, which may be substantially different than the lives assigned to long-life assets such as "bricks and mortar", chillers, pumps, and boilers.

Factory built solutions, such as APC by Schneider Electric's InfraStruXure are purchased by the client, delivered to the site, and connected to the power supply by a single cable¹ or (big) cord and plug assembly. Therefore, the value of the factory built solution is generally not required to be included in the contractor's electrical permit for the job. The electrical contractor will take the permit for the portion of the job that the contractor actually builds or wires on site¹.

Factory built solutions are UL listed as an entire end-to-end system, and not built in the field from individual components (like a UPS, PDU and branch circuit system). If treated as "business equipment" like a refrigerator or a computer, and not as a "building improvement", a factory built solution should not be subject to local permit fees and inspection. Inspection fees are usually in the range of 2%- 3% of the value of all of the components and labor representing a trade contractor's contract.

Other (very large) factory built solutions may be booked in part as business equipment, and in part as a real asset, to suit a client's business strategy. An example of this is APC's InfraStruXure for large data centers, where the UPS is incorporated and merged with the real property while the power distribution and racks are treated as "business equipment".

Understanding property taxes and related government fees

For all businesses, institutions, and organizations that are required to pay taxes and government fees, there is an obligation to pay real estate taxes, personal property taxes, and income taxes. Renters of an office, retail space, or manufacturing facility may not directly pay real estate taxes, but real estate taxes are a definite part of the rental or lease payment.

Assets used to house or operate a business (other than financial instruments associated with a company's debt and equity) are either "real property" or "personal property".

Real property

Most cities and towns rely on property taxes also known as real estate (or real property) taxes to fund general government services, which may or may not include the public schools,

¹ Check with your contractor as to the local rules which may be more stringent for "hard-wired" business equipment than "cord and plug" connected business equipment.

as sometimes schools have taxing authority of their own. Generally, real property taxes are determined through an assessment process, which ordinarily includes periodic real property appraisals, conducted by a professional appraiser reporting to the tax assessor. It is the appraiser's responsibility to determine the value of a piece of real property.

When DCPI equipment is placed on the corporate books as a "building improvement", it typically becomes part of the taxable basis of the real estate. Also, since real property is ordinarily taxed, based on assessed values, the value in between assessments may be increased as a result of successive "building permits". Owner occupied buildings with massive electrical / mechanical equipment and older traditional UPS systems tend to reflect inflated asset values (and have levels of taxation), substantially out of line with the (market) value of the real estate.

For many companies, booking high technology DCPI such as UPS systems and PDUs as "real property" causes a substantial problem (in the form of a "write-down") in the year that the UPS and related parts are "retired".

The appraiser uses several methods to determine value, which include:

(1) Market value: determined by researching the values received by sellers of similar properties in the area (2) Rental value: calculated by utilizing average rents and occupancy levels over various capitalization periods to determine what an investor might pay for the real property (3) Book value: determined by the appraiser using the asset values which include land, building and improvements carried on the corporate books of the owner of the property

The appraiser issues a valuation to the assessor, subject to appeal by the real property owner, based on a combination of the methodologies. The valuation is then subject to the town's assessment formula that will tax a standard percentage of the assessed value of the property, at a mil rate that the city or town regularly sets. Between appraisals, the assessed value of a piece of real property may be adjusted upward, but is rarely adjusted downward, in response to each permit that is filed for architectural, structural, electrical, plumbing, heating, cooling, and mechanical improvements.

Personal property

Personal property taxes function similarly to real property taxes, except the taxable assets are pieces of business equipment, or "personal property". The property taxed through personal property taxes can vary from automobiles to computers, but generally, these assets have relatively short useful lives, and are declared (usually annually) by the business, in the form of a "list or schedule", providing a simplified annual opportunity for revision. This allows businesses, institutions, and organizations to reflect movement of their assets between towns and cities, and provides flexibility to reflect the "disposal" of assets throughout growth and down-sizing cycles.

Corporate income

Whether required by a local, state, or federal government, corporate income taxes are levied on the income of a business, institution, or organization (that is required to report income to the respective governmental entities). Taxation of corporate income, along with all other (personal) income taxes, support the provision of public facilities and services, along with the operations of "departments" (such as the Department of Defense, the Department of Environmental Protection, etc.), that carry out the policy of those governments.

Income tax, as a general category, and corporate income taxes, in particular, are part of a dense and complex system of laws, codes, and decisions. Aside for providing revenue for the operation of governments, the underlying system of income taxation is designed to carry out strategic governmental policies through permitted tax deductions and allowances, such as

tax credits for new plants and deductions for the purchase of new production assets, including allowances to accelerate depreciation for new, qualifying business equipment.

Government inspection fees

Of the many government fees associated with owning real property or being a tenant in the real property, are inspection fees. Inspection fees accompany any building improvement activity or project where a contractor performs work. In theory, the inspection process is one of several consumer protection measures designed to protect the contractor's customer and the public from failures of the contractor to perform work according to the codes adopted by the city or town. In conjunction with *code making*, which establishes the rules a contractor must follow, and *licensing* which grants a contractor the privilege of practicing a profession in a particular jurisdiction, *inspection* serves as a quality control process.

Inspection fees are charged as a percentage of the value of a contractor's contract. The percentage is set locally but is usually in the 2%-3% range. Inspection fees are actually intended to cover the portion of a construction or improvement project which is "built in the field" and "will become part of the real property", however business equipment and personal property frequently get caught in the net, either through inattention or overly aggressive inspection practices.

Financial planning for DCPI assets

Financial managers and management practices

While DCPI assets are frequently purchased at the request of an IT professional or a facilities manager, often the "life of the new asset" fails to get linked to a business, institution, or organization's practices for the "booking of assets", despite having individuals who are well versed in accounting principles and tax issues. Without direct guidance, DCPI assets generally get booked to the realty or placed as a leasehold improvement, which is the traditional way to book and depreciate DCPI. This may be a costly mistake.

Modular factory built DCPI solutions in the hands of a resourceful alliance of IT, facilities, and financial personnel can make a substantial impact on data center reliability and a welcome contribution to the asset management and tax efficiency of their business, organization or institution. The booking of assets is usually a one-time opportunity to plan the financial and accounting future of newly acquired DCPI. Accurate assessment of the life of DCPI equipment reduces the chance of expensive "write-downs" later.

Fixed asset accounting

Fixed asset accounting is a form of financial management and is generally performed somewhere within a corporate or organizational structure. Fixed asset accounting fulfills a strategic or statutory function, and is related though different than accounting performed by asset managers who frequently deal with the same financial issues from a transactional perspective. Accountants handling fixed asset issues are responsible for the real property and personal property taxes, however more often than not, these financial professionals are not invited to IT equipment discussions, DCPI asset planning sessions, and meetings that develop the combined deployment strategies.

It is assumed that the financial management professional fulfilling the company's "fixed asset accounting" responsibilities knows what to do with all of the DCPI assets. However, few of these financial professionals have had exposure to factory-built DCPI products and solutions, and consequently are unable to use their knowledge of fixed asset accounting to the fullest benefit of their company. Once presented with an overview of factory-built DCPI, fixed asset

accountants will recognize the tax and accounting options, in relation to generally acceptable accounting principles (GAAP), and the company's internal rules and objectives.

Asset management practices

Whether practiced by asset managers, IT professionals, or facility managers, asset management practices used by many businesses were developed and documented many years before the advent of modular, scalable factory-built UPS systems, PDUs and related equipment. During that period of time, all DCPI was considered as “fixed in place” or “building equipment”. The “fixed in place” designation limits the equipment to treatment as “building improvement” in the case of owned property, and a “leasehold improvement” in the case of a rental. In either case the opportunity is missed, to account for UPS systems, PDUs and related equipment as “business equipment” that is managed as “personal property”.

Modular, scalable, factory-built DCPI solutions provide for “asset reuse and portability”. This provides IT professionals and facility managers the ability to deploy and redeploy DCPI in response to changes in business or upon the conclusion of a lease, reducing the cost of abandonment in place, or the necessity to write down a “stranded asset”, or cause the asset to inure to a landlord as a leasehold improvement. This benefit is realized by facility managers or asset managers who develop “rent-rates”, benchmark their facilities against the facilities of other companies, and plan capital improvement. IT departments receive the direct benefit, because real estate taxes and depreciation are a large part of rents applied to IT space, collectively only second to energy costs.

Implementation of an asset management strategy for DCPI

Managing the tax and operational benefits of all DCPI, including “fixed in place” and modular, scalable, factory built DCPI is part of an overall asset management strategy for DCPI. Accordingly, the astute accounting treatment of DCPI assets provides significant opportunities to contribute to improved financial performance of a business, institution, or organization, by involving financial professionals with intimate knowledge of asset management and fixed asset accounting in the selection process of new DCPI. The most successful deployment of DCPI can therefore be achieved by a collaborative team including IT professionals, facility managers, and financial professionals.

Step 1: Needs assessment

It is very likely a *needs assessment* for new DCPI has already been very accurately performed very early in the life of a planning cycle for establishment or improvements to a data center or network room. Generally, the requirements for floor space, rack capacity, and power and air conditioning are known prior to beginning the selection process for the DCPI to support the data processing requirements.

Step 2: Life cycle assessment

Of equal importance to knowing the DCPI needs of a particular data center or network room, it is important to understand the expected life cycle of the installation. While it is arguably difficult to assess life-cycle in an owned location where data center or network room life is potentially open-ended, in locations secured by leases, the life cycle should never be expected to be longer than the lease for “traditional” fixed-in-place equipment, though may be longer for modular, scaleable, factory built DCPI that is intended to be moved at the end of the lease.

Step 3: Construction programming

When *traditional fixed in place DCPI* is compared to *modular, scaleable, factory built DCPI* the relative cost of construction should be compared. While traditional fixed in place DCPI ordinarily requires separate electrical or UPS rooms, modular, scaleable, factory built DCPI may generally be located on the computer room floor and not require a separate UPS room. There are construction savings associated with building fewer separately demised spaces. These savings include not only the cost of the room, but also the aisle ways and common spaces. Costs vary by location, but may be in the range of \$18 to \$35 per square foot² in office-building settings, and well beyond \$75 per square foot² for medium size and large standalone data centers.

Step 4: Construction schedule

Fast construction schedules overwhelmingly benefit from modular, scaleable, factory built DCPI. Not only is engineering time and costs mitigated in direct proportion to the amount of DCPI delivered as finished products (ready for installation), but inspection fees and inspection delays will be reduced. As mentioned previously, inspection fees are generally between 2% and 3% of the cost of the field constructed portion of a project, which may include a "fixed-in-place" UPS or PDU, but not a modular, scaleable, factory built UPS and PDU.

Step 5: Operational programming

Managers of nearly all types of buildings used by businesses, institutions, and organizations have a means of calculating and assigning occupancy costs. Whether incorporated in lease costs for rented space or developed by facility managers who handle a business, institution, or organization's own property, occupancy costs invariably include the cost of taxes, insurance, maintenance, security, cleaning, grounds maintenance, energy, depreciation (or some form of debt service) and common area expenses. Therefore, every square foot of space within a building carries a calculable cost.

An installation using modular, scaleable, factory built DCPI is likely to use less building square footage than a traditional system with a separate UPS room. Even though the cost of computer room space sometimes carries higher square foot values than UPS room space, inefficiencies associated with minimum room sizing within a building, aisles and common area allocations make having a separate UPS room a disproportionately expensive option in all but larger data center and network room installations.

With base rents that (depending on the local real estate market) can easily range between \$19 and \$50 per square foot, along with "additional rent" that is typically added to cover incremental property taxes, utilities, and "common area expenses", modular, scaleable, factory built DCPI solutions can consistently be expected to produce the most economically efficient data center, for the entire life of the data center. The same concept is applicable in owner occupied buildings where instead of "rent", "corporate allocation formulas", generally perform the same function.

Step 6: Asset accounting

Guided by a financial professional with an intimate understanding of fixed asset accounting, the objective of this part of the process is to create the maximum financial benefit by correctly booking the new DCPI assets. Where differentiation can be made between modular,

² The client's local Facilities and Financial people should know these numbers for all of the properties in their portfolio.

scaleable, factory built DCPI such as UPS and PDUs, different asset lives and classes can be assigned when compared to “fixed in place” portions of the project such as the walls, floors, ceilings, and fire detection and suppression systems that may be considered building improvements with entirely different asset lives.

Therefore certain DCPI systems and components may be classified as *business equipment*, and may be regarded as “personal property”, entirely distinguishable from “building improvements” or “real property” because business equipment maintains a certain physical and economic character not specific to its present street address. Moreover, the opportunity exists to designate the future value of any new DCPI component, by establishing a business-driven depreciation schedule, and avoiding the creation of *stranded assets*. The *net present value* can then be determined at every point in each asset's life, and *business equipment (personal property)* will have an economic life separate from the real property.

Step 7: Cost segregation

By applying different depreciation rates to different components of a building, a business, institution, or organization may lower its corporate income taxes and thereby make available more cash flow. *Cost segregation*, as practiced by financial professionals with experience in corporate income tax accounting, is largely an exercise in recognizing and separately accounting for the costs of 5, 7, 10, 15, and 20 year property from the 30 or 39 year property classifications. The property in the each of the classifications from 5 to 20 years, in addition to being properly separated from the 30 or 39 year categories, once properly identified, are eligible for accelerated depreciation. Accelerated depreciation allows a business, institution, or organization paying corporate income tax to further increase deductions during the early life of the equipment.

Businesses, institutions, and organizations that own high technology assets can benefit the most from employing cost segregation methodology, so long as each asset can pass the so called *function and use test* and the *inherent permanency test*. The function and use test is intended to determine whether an asset serves any purpose in the operation of the building, as carefully differentiated from the business conducted within the building. If the asset is determined not to serve any purpose in the operation of the building, it is then subject to the inherent permanency test, where ease of removal and the complexity of the removal process are evaluated. Modular, scaleable, factory built DCPI performing the work or mission of a business, institution, or organization, routinely pass both tests easily.

Conclusion

The impact of tax and tax related asset management strategies on the total cost of ownership of DCPI can be significant. These savings are entirely separate to gains in energy efficiency and the cost of maintenance, compared to an old, oversized legacy or traditional UPS system, with high electrical energy consumption, escalating repair, deferred maintenance, and real estate costs. Personal property, real estate, and corporate income tax savings, and tax related savings (such as the tax component of rent) can produce direct financial benefits, in excess of 20% of the installed cost of a properly sized, installed, and “booked”, factory-built UPS and PDU solution.

The key to successful implementation of a tax and tax related asset management strategy is involving a financial professional along with the IT professionals, and facility managers involved in the deployment of DCPI, and:

1. Consider treating all factory-built DCPI solutions as business equipment
2. Consider declaring factory built DCPI as personal rather than real property
3. Create realistic depreciation schedules
4. Avoid life cycle errors creating stranded asset requiring a “write-down” against earnings
5. Reassess permit and inspection requirements for factory built DCPI
6. Plan for asset portability and asset reassignment; and incorporate tax related savings including
7. Plan for reduction in construction costs for a dedicated UPS room
8. Lower monthly or annual rents or allocation cost associated with dedicated UPS rooms, hallways, and common areas required to access the dedicated UPS rooms

Modular, scalable UPS systems, PDUs, and computer room air conditioners have not only created technological benefits, but provide entirely new DCPI tax and asset management opportunities with direct and measurable financial benefits. While this white paper is intended to highlight these opportunities, its primary message is the benefit of involving a tax professional in any team planning improvement to a data center or network room DCPI. The results will be dramatic.



About the author

Barry Rimler is a Senior Data Center Product Applications Engineer for APC by Schneider Electric. He has over 20 years of fortune 100 company experience as a Facility and Asset Manager of diverse real estate portfolios consisting of office buildings, data centers and light industrial space. He is a member of BOMA and the Association for Facility Engineering.



Resources

Click on icon to link to resource



APC White Paper Library
whitepapers.apc.com



APC TradeOff Tools™
tools.apc.com



Contact us

For feedback and comments about the content of this white paper:

Data Center Science Center, APC by Schneider Electric
DCSC@Schneider-Electric.com

If you are a customer and have questions specific to your data center project:

Contact your **APC by Schneider Electric** representative

Appendix: Glossary of terms

Accelerated depreciation

A tax accounting concept and practice whereby a qualifying asset's depreciation schedule is designed to allow more depreciation to occur in the early years of asset life, than in the later years.

Appraiser

A government official or contractor, working or providing services to a taxing authority, intended to determine the value of real and personal property.

Assessment Percentage

A percentage of the appraised value of taxable property, adopted by a taxing authority, on which the tax will be levied. (For example, an assessment percentage of 70% would communicate that the mil rate would be applied to 70% of the appraised value of the property to compute taxation.)

Assessor

A government official, usually attached to a taxing authority, who performs the statutory responsibility of implementing real and personal property taxation.

Business Equipment

Assets in the form of machinery and equipment involved in the function of an enterprise. Also referred to, for tax purposes, as personal property.

Capacity and Standby Losses

A reference to low operating efficiencies, common to large or obsolete UPS systems, operating at a fraction of their rated capacity.

Cost Segregation

A concept closely related to corporate income tax accounting, which is designed to analyze business and construction costs for the purpose of separating individual costs into specific categories and depreciation lives for the purpose of utilizing accelerated depreciation methods to lower income tax liabilities.

Depreciation Schedule

An accounting vehicle to communicate and display the decline in value of assets.

Depreciation

The reduction or loss in value of property, usually personal property, as the property progresses through its useful life. (For example, a computer is worth less as it ages chronologically and technologically. Depreciation expresses a pre-determined loss of value, over a specified time period.)

Discount Rate

A certain interest rate that is used to bring a series of future cash flows to their present value in order to state them in current, or today's, dollars. Use of a discount rate removes the time value of money from future cash flows.

Fixed Asset Accounting

The practice of maintaining financial records of property (real property and personal property) owned by a business, institution, or organization solely for the purpose of operating that business, institution, or organization.

Fixed Assets

Property that may include business equipment or real estate that is held for business use and is not expected to be converted to cash in the current (or upcoming) fiscal year.

GAAP

Generally Accepted Accounting Principles are a common set of accounting principles, standards and procedures. GAAP is a combination of authoritative standards and the accepted ways of doing accounting. The Financial Accounting Standards Board (FASB) sets GAAP in the United States. The Canadian Institute of Chartered Accountants (CICA) sets GAAP in Canada. Differences in GAAP in Canada, Chile, Mexico and the United States, for instance, are typically addressed by the Committee for Cooperation on Financial Reporting Matters.

Mil Rate

A unit of property taxation expressed as dollars of tax per thousand dollars of assessed value. (For example, a mil rate of "32 mils" would indicate tax in the amount of \$32 for every \$1,000 or assessed value.)

Net Present Value

A statement of the value of a series of future payments or a future amount, with the time value of money removed. (Net present value is calculated with the help of a discount rate, which is functional equivalent of interest, though in reverse.)

Personal Property

Any individual piece or group of short-life assets generally including equipment, machinery, vehicles, and tools.

Real Property

Any individual or group of long-life assets including land, buildings, and improvements to the land and buildings.

Rent (components)

Rent components when applied to offices and data centers generally include taxes, insurance, maintenance, cleaning and grounds, security, energy, depreciation (or some form of debt service in lieu of depreciation), and common area expenses.

Stranded Assets

A term applied to fixed assets that are either undepreciated and slated for retirement/disposal, (or in the case of certain regulated industries, fixed assets that are denied further debt service support, through the public rate making process).

Write Down

The act of converting the undepreciated value of a fixed asset to an expense or “charge against earnings”. (For example a Legacy UPS that is being depreciated for 30 years will face a write-down of 50% of its original value if it is retired from service and scrapped at the end of its 15th year. The remaining fixed asset value is charged against the business's earning in the year of retirement.)