8 cities leading the way on sustainable urban data centres

Delivering on the C40 Global Urban Data Centres Pact

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C40 CITIES

Contents

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Foreword

Through the Global Urban Data Centres Pact, cities are setting the first-ever global vision for sustainable urban data centres.

As data centres grow rapidly in urban areas, the need for local governance that delivers sustainability and real benefits for residents has never been greater. Without it, cities face increased carbon emissions, air pollution, water scarcity, and rising energy prices. The Global Urban Data Centres Pact is a mayoral-led vision that sets the conditions for sustainable data centres. It ensures cities can reap the economic benefits of this growing industry while safeguarding communities and the climate.

This publication details case studies showing how cities already play a vital role in working with industry and residents to ensure urban data centres can and must support local communities and the environment. These case studies serve as a guidance and inspiration for how the growing number of cities signing the Urban Data Centre Pact can use their powers to ensure urban data centres are not a drain on the cities they are built in.

Pillar 1) Strategic integration in the city

Case studies from Milan, Frankfurt, Atlanta and Chicago provide examples of how data centres can be strategically integrated into cities, which is pillar 1 of the pact, to ensure they are prioritising brownfield sites, avoiding public health impacts, avoiding displacement of communities and ensuring city priorities like transit oriented development are maintained.

Pillar 2) Sustainability and resource-efficiency

Case studies from Phoenix, Santiago and Chicago offer ways for cities to require data centres to be sustainable and resource-efficient, pillar 2 of the pact, preventing continued reliance or expansion of fossil fuel use to meet demand, reducing use of potable water alongside capturing waste heat to provide tangible community benefits.

Pillar 3) Accountability and community-focus

Case studies from Dublin, Santiago and Chicago offer insight into how pillar 3 can be realised, which asks data centres to be accountable and community-focused, by engaging with the local community and ensuring transparency on their plans and impact. These cities do so by requiring data centres to publicly report their energy, water use and waste heat reuse alongside showcasing how to use local perspectives to shape standards set for data centres.

Pillar 4) Cost-security and shared prosperity

A case study from Atlanta shows how to protect residents from the increasing costs of data centres, with state regulators ensuring that new facilities bear the costs of their increased electricity demand rather than this impacting residents.

Case studies

📍 Atlanta, Georgia, United States

Protecting Community Priorities Through Land Use and Utility Regulation

- ➔ **Pillar 1:** Strategic integration in the city ☑️
- ➔ **Pillar 2:** Sustainability and resource-efficiency ☑️
- ➔ **Pillar 4:** Cost security and shared prosperity ☑️

Atlanta used local planning powers to shape data centre development, despite having limited authority over broader energy systems. As data centre investment accelerated across the state of Georgia, Atlanta moved to ensure that new facilities would not undermine community priorities around transit-oriented development, neighbourhood character, urban forestry, and public spaces. Rather than treating data centres as a conventional industrial use, the city established a dedicated regulatory framework that recognises their unique impacts on land use, infrastructure, and quality of life.

The city's approach began by formally defining data centres as a distinct land-use category and restricting their location near some of Atlanta's most valuable urban assets. Data centres are prohibited within half a mile of the BeltLine (a major linear park) and MARTA transit stations and are barred from several neighbourhoods where city leaders determined that they would conflict with broader development goals. In 2025, Atlanta strengthened its oversight by requiring all data centre projects to obtain a special-use permit. As part of this process, developers must submit plans addressing water consumption, electricity demand, transmission infrastructure impacts, stormwater management, and tree preservation. The city also adopted detailed design requirements governing building massing, façade treatments, landscaping, equipment screening, and separation distances between facilities to improve compatibility with surrounding communities. At the state level, Georgia's Public Service Commission adopted complementary rules requiring large-load customers such as data centres to pay for generation, transmission, and distribution infrastructure needed to serve them, while also establishing longer-term contracts and minimum billing requirements to reduce risk for other ratepayers.

The significance of Atlanta's approach lies in its use of local planning authority to protect community priorities while relying on utility regulators to address system-wide energy impacts. Rather than focusing solely on whether data centres should be permitted, the city has focused on where they should be built and what they should look like. At the same time, state regulators sought to ensure that the costs of serving

large new electricity loads are borne by the facilities creating them rather than being shifted onto other customers.

📍 Chennai, India

Elevating Data Centre Sustainability Through City-State Coordination

➔ **Pillar 1:** Strategic integration in the city ☑️
➔ **Pillar 2:** Sustainability and resource-efficiency ☑️

Cities in India have little to no regulatory oversight, as zoning, land use, water, and energy are largely managed by State governments. As a result, with India's push to position itself as an AI leader and regional data centre hub, many states have rolled out dedicated policies to attract data centre development to key urban centres. These state-level policies vary in scope and scale, especially regarding sustainability mandates, land use, and incentives. Chennai, in the state of Tamil Nadu, has the third most data centres in the country (after Mumbai and Delhi NCR).

Compared to other states with major urban data centre hubs, Tamil Nadu's Data Centre Policy[1] has more robust sustainability standards and stringent approvals processes, and fewer fiscal and tax incentives. Data centres can receive a 25% cost subsidy for projects that adhere to the green ratings. Additionally, unlike many other Indian states, Tamil Nadu does not classify data centres as essential services or give them infrastructure status, so projects must be received from the Chennai Metropolitan Development Authority (CMDA), Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), Tamil Nadu Pollution Control Board (TNPCB), Tamil Nadu Water Supply and Drainage Board (TWAD), and more.

Tamil Nadu offers expansive clean energy incentives for projects. Developers that meet at least 30% of their energy consumption through renewable energy sources can take advantage of discounted cross-subsidy charges of 60% for wind and 70% for solar[2]. Developers that set up a renewable energy plant can receive a 20% subsidy on Eligible Fixed Assets[3], as well as a single fast track review to secure necessary permits, approvals, and licences[4]. Although Chennai is one of several Indian cities dealing with acute water shortages and depleted aquifers, Tamil Nadu does not have any water management or conservation mandates for data centres.

The significance of Tamil Nadu's approach lies in its relative focus on sustainability in a competitive national context and while pursuing ambitious economic development goals. At the same time, gaps remain (most notably the absence of specific water management requirements in a highly water-stressed city), highlighting the risks of rapid growth without fully aligned resource safeguards. The case of Chennai

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[1] Tamil Nadu's Data Centre Policy was published in 2021 and expired in March 2026.
[2] The cross-subsidy surcharge compensates the state utility (TANGEDCO) for revenue losses and ranges from Rs1.6 to Rs2.5 per unit.
[3] Eligible Fixed Assets (EFA) incentives in Chennai, under the Tamil Nadu Industrial Policy 2021, cover investments in manufacturing, land, buildings, and other internal infrastructure and equipment.
[4] A single window clearance system is a one-stop digital portal for identifying and applying for approvals.

underscores the need to work closely with state governments to shape policy frameworks, leveraging state-led incentives while advocating for stronger safeguards where local infrastructure and environmental constraints are most acute.

📍 Chicago, Illinois, United States

Implementing Cross-Departmental Review and Enhanced Environmental Standards to Manage Data Center Growth

- ➔ **Pillar 1:** Strategic integration in the city ☑️
- ➔ **Pillar 2:** Sustainability and resource-efficiency ☑️
- ➔ **Pillar 3:** Accountability and community-focus ☑️

Chicago has long served as a key hub for digital infrastructure, home to approximately 39 data centres largely concentrated downtown and along major utility corridors. However, as the scale and energy intensity of modern data centers accelerated, city leaders recognised that legacy regulatory frameworks, designed for an earlier generation of facilities, were inadequate to address current operational characteristics. Localised impacts, including noise from cooling systems, air pollution from emergency diesel backup generators, and significant pressures on electricity and water systems, have prompted numerous community complaints. In response, Chicago's City Council established the Sustainable Data Centers Working Group, which studied the impacts of data centres and engaged with industry experts, utilities, environmental organisations, community stakeholders, and government agencies to establish policy recommendations for the City of Chicago. Based on those recommendations, Mayor Johnson adopted a proactive and coordinated approach, issuing an August 2026 Executive Order to establish enhanced standards and departmental enforcement while the City Council considers a temporary moratorium to develop permanent regulations.

The Executive Order requires development of a comprehensive cross-departmental review process for Planned Developments that will include data centres. This process will rigorously assess electricity demand, water use, cumulative environmental burdens, and localised neighborhood effects. It will also introduce new, data-centre-specific rules to regulate noise produced by mechanical systems and enhance the evaluation of air pollution control permits to curb harmful emissions from diesel generators. To shape a long-term regulatory strategy, the Order created the Interdepartmental Data Center Environment and Community Protection Task Force. Co-chaired by the Mayor's Chief Sustainability Officer and Chief of Policy, and featuring representatives from the Departments of Buildings, Environment, Planning and Development, Technology and Innovation, and Water Management, the Task Force is charged with implementing the recommendations of the city's Sustainable Data Centers Working Group.

Chicago's strategy successfully bridges the gap between immediate enforcement and long-term legislative action. The Working Group's framework centres on three pillars: establishing strong environmental safeguards, utilising responsible zoning and land use such as requirements for renewable energy, efficiency, and sustainable building design, and requiring transparent data reporting by incorporating data centres into the Chicago Energy Benchmarking framework. For cities grappling with rapid digital expansion,

Chicago demonstrates how leveraging cross-departmental coordination, enhanced environmental permitting, and community-focused planning can ensure that data centre growth does not saddle residents with disproportionate environmental, energy, or infrastructure burdens.

📍 Dublin, Ireland

Requiring Data Centres to Provide Their Own Clean Power to Protect Electricity Rates and Grid Reliability

- ➔ **Pillar 1:** Strategic integration in the city ☑️
- ➔ **Pillar 2:** Sustainability and resource-efficiency ☑️
- ➔ **Pillar 3:** Accountability and community-focus ☑️
- ➔ **Pillar 4:** Cost security and shared prosperity ☑️

Dublin became one of the world's most concentrated data centre markets, with facilities in and around the city consuming nearly one quarter of Ireland's electricity by 2024. Among European data centre markets, Dublin, which is second only to London by installed capacity, has seen the development of primarily hyperscale facilities for cloud computing. This rapid growth outpaced available grid capacity, raised concerns about system reliability, and ultimately triggered significant local and national government interventions, including a temporary national moratorium on new data centre construction while a long-term regulatory strategy was created.

The resulting approach combines local land-use planning with strict national energy requirements. At the municipal level, Dublin's land use plan established "data centres" as a distinct zoning category, legally restricting them to specific industrial zones and requiring planning reviews that consider grid capacity, renewable energy availability, environmental constraints, and infrastructure readiness. Nationally, the Commission for the Regulation of Utilities introduced a binding connection policy that designates Dublin as a "grid-constrained" area, giving utilities the legal authority to deny connections that could threaten system reliability. Furthermore, the policy mandates that new large facilities cannot rely solely on the national grid; they must install separate, independently metered on-site power generation or battery storage to cover 100% of their energy needs on a de-rated basis during peak hours. New facilities are also expected to meet approximately 80% of their electricity demand through additional renewable energy sources within six years. Ireland's national policy also requires data centres to publicly report their water use and waste heat reuse.

The policies in Dublin and Ireland place the responsibility to deliver clean, realisable power onto data centres, not residents, municipalities, or power companies. Rather than relying exclusively on public investment to expand electricity infrastructure, Ireland requires data centre developers to internalise a significant portion of the energy costs associated with their projects, and to act as grid-stabilising partners. For cities facing rapid data centre growth, Dublin showcases how zoning, utility regulation, and transparency requirements can be combined to enable digital infrastructure expansion without compromising grid reliability or shifting disproportionate costs onto other users of the electricity system.

📍 Frankfurt-am-Main, Germany
Controlling Location, Standardising Performance

- ➔ **Pillar 1:** Strategic integration in the city ☑️
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- ➔ **Pillar 3:** Accountability and community-focus ☑️

Frankfurt is one of Europe's largest and most established data centre hubs, making it an early test case for how cities can balance the economic benefits of digital infrastructure with growing pressures on land, electricity infrastructure, and climate goals. As data centres expanded rapidly throughout the region, city leaders recognised that unmanaged growth could conflict with other urban development priorities and place increasing demands on scarce resources. Rather than relying on moratoria or broad restrictions, Frankfurt chose to embed data centres directly into its planning framework and actively steer their location within the city. Today, Frankfurt constitutes Europe's third largest data centre market, and is dominated by latency-sensitive colocation facilities serving the financial sector.

Beginning with its Commercial Real Estate Development Programme in 2021 and subsequent updates in 2022, Frankfurt formally recognised data centres as a distinct planning category and established a spatial framework dividing the city into suitable, restricted-suitability, and exclusion areas for future development. The city also incorporated sustainability requirements into its planning approach, including a requirement that facilities make waste heat available for reuse. This local planning framework was later complemented by Germany's national Energy Efficiency Act, which introduced binding requirements for data centre operators, including power use effectiveness (PUE) limits, mandatory energy or environmental management systems, increasing renewable electricity requirements culminating in 100% renewable electricity by 2027, and annual reporting of electricity consumption, energy efficiency performance, and waste heat utilisation.

The significance of Frankfurt's approach lies in the clear division of responsibilities between local and national government. The city focused on what it controls most directly (land use and siting) while the federal government established operational standards for sustainability and transparency. Together, these policies demonstrate how cities can shape where data centres develop and ensure alignment with local planning objectives, while leveraging national regulation to drive improvements in energy performance, renewable energy adoption, and public accountability.

📍 Milan, Italy

Leveraging Local Policy to Guide Data Centre Siting and Incentivise Regeneration

➔ **Pillar 1:** Strategic integration in the city ☑️
➔ **Pillar 2:** Sustainability and resource-efficiency ☑️

The growth of the data centre sector in the Milan area has prompted the launch of a process to define shared planning criteria and guidelines among the Lombardy Region, the Metropolitan City of Milan, and the City of Milan.

The Lombardy Region approved the guidelines for the development of physical infrastructure housing IT resource management equipment and services (data centres) via Regional Executive Board Resolution (DGR) No. XII/2629 of June 24, 2024. These guidelines provide technical and planning direction and recognise the urban planning compatibility of data centres with areas designated for industrial and administrative/office use, without imposing binding requirements regarding their specific location.

As part of Strategy 3 of Milan's Metropolitan Territorial Plan, the Metropolitan City of Milan has adopted an amendment aimed at introducing siting and quality criteria for data centres, identifying suitable areas and areas requiring special consideration, as well as measures to mitigate environmental, landscape, and infrastructure impacts.

The City of Milan does not currently have specific urban planning regulations dedicated to data centres; however, it is examining the issue within its broader urban planning activities, focusing particularly on territorial, energy, and environmental impacts, as well as the reuse of already urbanised areas or sites slated for regeneration.

Overall, the regulatory and planning framework is still evolving, and the situation in Milan represents an ongoing institutional process aimed at establishing shared criteria for the sector's territorially sustainable development.

📍 Phoenix, Arizona, United States
Using Municipal Powers to Manage Data Centre Impacts

➔ **Pillar 1:** Strategic integration in the city ☑️
➔ **Pillar 2:** Sustainability and resource-efficiency ☑️

Phoenix used the full range of local regulatory tools available to them to shape data centre development, even in the absence of state or federal policies targeted specifically at the sector. Located in one of the fastest-growing data centre markets in the United States and facing significant pressures on water resources, energy infrastructure, and urban livability, Phoenix is addressing data centres through zoning, permitting, municipal water policy, and design standards. The city has sought to ensure that new facilities are compatible with local infrastructure constraints and community priorities.

In 2025, Phoenix updated its zoning ordinance to require all data centres to obtain a Special Use Permit and prohibited their development within half a mile of high-capacity transit stations. The permit process allows the city to evaluate projects based on factors including electricity demand, water consumption, fire protection, onsite energy generation, and noise. The city also adopted a comprehensive set of design standards aimed at reducing impacts on surrounding neighbourhoods, including limits on operational noise, setbacks and screening requirements for mechanical equipment, landscaping standards, façade design requirements, and extensive shade requirements for sidewalks and pedestrian areas. Phoenix has gone further than many cities by directly addressing resource consumption through its municipal code. Large water users consuming at least 250,000 gallons per day cannot access the city's water system without approval from the Water Director and must submit detailed water conservation plans. Similarly, data centres cannot receive permit approval unless the relevant local utility confirms that sufficient electricity capacity exists to serve the project.

For municipalities facing rapid data centre growth, this case study provides a practical example of how existing local powers and regulations can be leveraged to address environmental impacts, infrastructure constraints, and quality-of-life concerns while still allowing development to proceed.

📍 Singapore
Setting Industry-Wide Standards to Accelerate Data Centre Sustainability

➔ **Pillar 1:** Strategic integration in the city ☑️
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➔ **Pillar 4:** Cost security and shared prosperity ☑️

Data centres (DCs) are key enablers of the digital services we use every day and underpin Singapore's digital economy. Recognising that they are significant users of electricity and water, and in support of Singapore's climate action efforts, we are committed to growing the DC sector in a measured and sustainable manner.

As demand for digital services, AI adoption, and other compute-intensive technologies continue to rise, we need to balance economic growth with the responsible use of resources. This is outlined in the Infocomm Media Development Authority (IMDA)'s Green Data Centre Roadmap (GDCR) launched in 2024, which sets out Singapore's strategy for sustainable DC growth through greater energy efficiency, increased use of green energy, and improved water efficiency.

A key enabler is the strong public-private partnership to develop industry-wide standards and certifications to advance DC sustainability. These standards and certifications support Singapore's efforts in anchoring new DCs through the Data Centre – Call for Application (DC-CFA) process, ensuring that new developments are best-in-class in sustainability while delivering strategic and economic outcomes for Singapore's Digital Economy. They also support the continuous improvement of existing DCs to meet the energy efficiency requirements under the upcoming Digital Infrastructure Act (DIA).

Through this close partnership, Singapore has developed four key technical standards:

A. The Singapore Standard on Green Data Centres – Energy and environmental management systems (SS 564), which provides a systematic framework for DC operators to enhance energy efficiency and environmental sustainability across the design, construction, and operation of their facilities.
B. The Tropical Data Centre Standard (SS 697:2023), which helps DCs to improve cooling efficiency by running safely at higher operating temperatures and humidity levels.
C. The Singapore Standard on Energy Efficiency of Data Centre IT Equipment (SS 715:2025), which aims to reduce energy consumption from IT equipment by 30%. The standard guides DC users to procure IT equipment that meets international energy-efficiency baselines and adopt best practices, such as workload consolidation and virtualisation, to increase equipment utilisation.
D. The Singapore Standard on Liquid Cooling in Tropical Data Centres (SS 726:2026), which provides guidance on the design and optimisation of liquid cooling systems for data centres operating in tropical environments.

DCs are also encouraged to push the sustainability envelope through the voluntary BCA-IMDA Green Mark for Data Centres (GMDC) certification scheme, which recognises DCs that have successfully deployed best practices and demonstrated superior sustainability and environmental performance. Refreshed in

2024 through close collaboration with industry, the GMDC assesses DCs across key areas including energy efficiency, sustainable design and construction, use of digital tools, and maintainability.

As part of the GDCR, new and existing DCs can aim to achieve a Water Usage Effectiveness (WUE) of 2.0 m3/MWh or lower over the next decade. PUB, Singapore's National Water Agency, requires large water users that consume at least 60,000 m3 of water annually to comply with Mandatory Water Efficiency Management Practices. These include installing private water meters at key water usage areas to track and monitor water usage, submitting an annual Water Efficiency Management Plan (WEMP) for at least three consecutive years, and appointing at least one Water Efficiency Manager.

The WEMP allows water users to systematically monitor and review their water use, identify opportunities for water savings, and develop plans to improve water efficiency. These submissions also allow PUB to understand and engage them on water-saving opportunities and provide guidance on improving water efficiency.

The significance of Singapore's approach lies in its use of ecosystem partnerships, industry-led standards, and targeted requirements to support sustainable DC growth. By working closely with industry, Singapore continues to strengthen its position as a trusted digital infrastructure hub while ensuring the efficient use of scarce resources.
