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Overview of Energy Conservation Systems for Buildings

Outline of the Amended Building Energy Efficiency Act / Based on the Discussion on Amendments to the Energy Conservation Act Regarding Data Center Operations

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1. Introduction

Japan has made an important international commitment to achieve carbon neutrality by 2050 and to reduce greenhouse gas emissions by 46% (compared to fiscal year 2013) by fiscal year 2030. The building sector accounts for approximately 30% of final energy consumption, making it urgent to accelerate energy-saving measures within this sector to fulfill this commitment.[1]

In response to this, the Amendment to the Act on the Improvement of Energy Consumption Performance of Buildings (the "**Building Energy Efficiency Act**") (formally titled the Act for Partial Amendment to the Act on the Improvement of Energy Consumption Performance of Buildings for the Purpose of Creating a Decarbonized Society (Act No. 69 of 2022); the "**Amendment Act**") was promulgated on June 17, 2022 to enhance the energy consumption performance of buildings.

1 Page 2 of the "Explanatory Materials on Systems under the Building Standards Act and the Amended Building Energy Efficiency Act," dated September 2024, published by the Building Guidance Division, Housing Bureau, Ministry of Land, Infrastructure, Transport and Tourism (the "**Explanatory Materials**"). (https://www.mlit.go.jp/common/001627103.pdf#page=4)

The Amendment Act has been enforced in stages from the date of promulgation to a designated deadline, with all amendments having come into effect by April 1, 2025.

Additionally, discussions are underway regarding measures to improve the efficiency of energy consumption in data center ("**DC**") operations. Given that DCs consume substantial amounts of electricity in their operations, the amendment to the Act on Rationalization of Energy Use and Shift to Non-fossil Energy (the "**Energy Conservation Act**") has initiated discussions on a legal framework requiring DC operators to comply with certain energy efficiency standards.

This newsletter provides an overview of the amendments to the Building Energy Efficiency Act and highlights the ongoing discussions surrounding systems applicable to DC operations.

2. Outline of the Amended Building Energy Efficiency Act

2.1 Background of the Amendment

The Building Energy Efficiency Act was enacted in July 2015 to improve the energy consumption performance of buildings. Prior to its amendment under the Amendment Act, the Building Energy Efficiency Act primarily required medium-sized or larger non-residential buildings to comply with certain energy conservation standards and obligated developers of residential houses to file a notification with the competent authority confirming that the houses met these standards at the time of their construction.

To fulfill the international commitment described at the beginning of this newsletter, the "Basic Energy Plan,"[2] approved by the Cabinet on October 22, 2021, stated that the Building Energy Efficiency Act would be amended to make compliance with energy conservation standards mandatory by fiscal year 2025 for residential houses and small-sized buildings that were not previously subject to such standards. For residential houses and buildings constructed in fiscal year 2030 and beyond, the policy further indicated that the level of energy conservation standards would be gradually raised, along with the implementation of a requirement that developers take measures to demonstrate the effectiveness and advantages of ZEHs and ZEBs to potential buyers, with the aim of promoting the broader adoption of ZEHs[3] and ZEBs[4].

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2 "Basic Energy Plan," dated March 2021, published by the Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry. (https://www.enecho.meti.go.jp/category/others/basic_plan/pdf/20211022_01.pdf)

3 ZEH (Net Zero Energy House): a house designed to achieve a zero annual primary energy consumption balance by (1) significantly improving the thermal insulation performance of the building envelope, (2) achieving significant energy savings while maintaining the quality of the indoor environment through the adoption of highly efficient facility systems, and (3) utilizing renewable energy.

4 ZEB (Net Zero Energy Building): a building designed to maximize energy self-sufficiency and achieve a zero annual primary energy consumption balance by (1) achieving significant energy savings while maintaining the quality of the indoor environment through advanced architectural design that reduces energy burdens, the active use of natural energy through passive technology, and the

Four measures were identified as the pillars of energy conservation efforts: (i) raising the level of energy efficiency performance, (ii) incentivizing higher energy efficiency performance, (iii) renovating existing buildings to improve energy conservation,[5] and (iv) encouraging the adoption of renewable energy facilities. The Amendment Act, aimed at implementing these measures, was promulgated in 2022 and has been enforced in phases, with full implementation completed in April 2025.[6] The following section provides an outline of the specific systems introduced in accordance with these measures.

2.2 Outline of the Systems under the Amendment Act

(1) Energy Conservation Standards Compliance System (Enforced in April 2025)

Under the Building Energy Efficiency Act prior to its amendment under the Amendment Act, non-residential buildings of 300 m^2 or more were required to comply with the energy conservation standards described below. For other buildings, including residential houses, developers were obligated to submit a notification to the competent authority confirming their compliance with certain energy conservation standards (we elaborate on this further below). Under the Amendment Act, enforced on April 1, 2025, the scope of mandatory compliance with the energy conservation standards has been expanded, in principle,[7] to include all residential houses and non-residential buildings (Article 10 of the Building Energy Efficiency Act) from the perspective of raising the level of energy efficiency performance described in Section 2.1 above.[8] This requirement also applies to building extensions and renovations under the Building Standards Act, where the extended and renovated portions must conform to the energy conservation

adoption of highly efficient facility systems, and (2) utilizing renewable energy.

5 This refers to the establishment of a low-interest loan program for construction work, including certain renovations, that contributes to energy conservation and renewable energy under the Act on the Japan Housing Finance Agency.

6 "About the Amended Building Energy Efficiency Act" by the Housing Bureau, Ministry of Land, Infrastructure, Transport and Tourism (https://www.shoenehou-online.mlit.go.jp/doc/1_R4_shoenehou.pdf).

7 This does not apply to (1) new constructions, extensions or renovations of 10 m^2 or less, (2) residential houses or non-residential buildings that do not require air conditioning facilities due to the absence of living rooms or their highly open structure, (3) historical buildings or cultural properties, etc., and (4) emergency temporary buildings, temporary buildings or temporary entertainment halls, etc.

8 The new system applies to residential houses and non-residential buildings for which construction begins in April 2025 or later. Even if an application is made for building confirmation and a certificate of confirmation is issued by March 2025, the new system will apply if construction starts in April 2025 or later. In such cases, inspections upon completion will require confirmation of conformity with the energy conservation standards. See page 62 of the Explanatory Materials.

standards.[9] To confirm conformity with these standards, an energy consumption performance conformity assessment (the "**energy conservation assessment**") is required.[10]

The energy conservation standards refer to (1) building envelope performance standards[11] and (2) primary energy consumption standards.[12] For residential houses, the values for both (1) and (2) must fall below a specified threshold, while for non-residential buildings, only the value for (2) must fall below the threshold.[13]

With the enforcement of the Amendment Act in April 2025, the obligation for developers to submit a notification to the competent authority regarding compliance with the energy conservation standards prior to the amendment has been abolished. Instead, architects who design buildings are now required to make efforts to explain to the building owners who commissioned them the energy consumption performance of the buildings and other matters that contribute to improving their energy consumption performance (Article 6, Paragraph 3 of the Building Energy Efficiency Act).

It is planned that the energy conservation standards will be raised to ZEH/ZEB levels over the next five years through 2030.[14]

(2) Energy Consumption Performance Labeling System

Under the Building Energy Efficiency Act prior to its amendment under the Amendment Act, business operators engaged in the sale or lease of buildings were required to make efforts to

9 Under the system prior to the enforcement of the Amendment Act, the entire building, including extensions and renovations, was required to comply with the energy conservation standards. However, after the enforcement of the Amendment Act, only the portion of the building where extensions or renovations were made is required to comply with the standards. See page 61 of the Explanatory Materials.

10 For specific building activities (*tokutei kenchiku koui*) where conducting an energy conservation assessment is relatively straightforward, a developer is permitted to omit the energy conservation assessment and instead confirm its compliance with the energy conservation standards as part of the integrated building inspection (*kenchiku kakunin shinsa*).

11 This refers to standards for evaluating the thermal insulation performance of buildings, calculated by dividing the total amount of heat loss through the building envelope (e.g., wallpaper and windows) by the total area of the building envelope.

12 This refers to primary energy consumption (with deductions for private use by photovoltaic power generation facilities, etc.) for air conditioning facilities (heating and cooling), ventilation facilities, lighting facilities, hot water supply facilities, and elevators (applicable only to non-residential buildings).

13 Prior to the enforcement of the Amendment Act in April 2025, energy conservation standards for large-scale non-residential buildings (2,000 m^2 or more) were raised in April 2024. See page 63 of the Explanatory Materials.

14 See page 56 of the Explanatory Materials.

indicate the energy consumption performance of the buildings they sold or leased. From the viewpoint of (ii) incentivizing higher energy efficiency performance described above, the labeling items and methods have been specified by a public notice[15] issued by the Minister of Land, Infrastructure, Transport and Tourism (the "**Public Notice**"), pursuant to the part of the Amendment Act that came into effect enforced on April 1, 2024 (Article 27 of the Building Energy Efficiency Act).

The operation of the labeling system under the Amendment Act is detailed in the guidelines established by the Ministry of Land, Infrastructure, Transport and Tourism[16] (the "**Labeling System Guidelines**"). These guidelines stipulate that energy efficiency performance labels, based on the prescribed format, must be used as the labeling method under the Public Notice. Energy efficiency performance labels must primarily include information on energy consumption performance[17], thermal insulation performance, estimated utility costs, and the status of achieving ZEH/ZEB[18] levels.

Additionally, if a business operator fails to place a label as required under the Public Notice, it may be subject to recommendations or other sanctions by the competent authorities. In particular, the competent authorities will issue recommendations for business operators that fail to comply with labeling requirements under the Public Notice if such a failure has a significant social impact (Article 28 of the Building Energy Efficiency Act).[19]

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15 Matters to be indicated by sales companies, etc., regarding the energy consumption performance of buildings, methods of indication, and other matters to be observed by sales companies, etc., when indicating the energy consumption performance of buildings (Public Notice of the Ministry of Land, Infrastructure, Transport and Tourism No. 970 of 2023).

16 "Guidelines for Energy Conservation Performance Labeling System upon Sale and Lease of Buildings under the Building Energy Efficiency Act (Second Revised Edition)," dated August 2024, published by the Counsellor (in charge of architectural planning), Housing Bureau, Ministry of Land, Infrastructure, Transport and Tourism (https://www.mlit.go.jp/shoene-label/images/guideline_honpen.pdf).

17 This refers to the performance evaluated based on the amount of energy consumed when the building is used under certain conditions (Article 2, Paragraph 1, Item 2 of the Building Energy Efficiency Act). The evaluation method for energy conservation performance is specified in the Ministerial Ordinance on Standards, etc.

18 Under this system, ZEH/ZEB levels are deemed achieved by meeting the following requirements. See page 7 of the Labeling System Guidelines.

i. For residential houses, compliance with enhanced building envelope standards and a reduction in primary energy consumption (excluding on-site power generation and consumption of renewable energy) by 20% compared to the current energy conservation standards; and

ii. For non-residential buildings, a reduction in primary energy consumption (excluding on-site power generation and consumption of renewable energy) by 40% or 30%, depending on the building's use, compared to the current energy conservation standards.

19 See page 27 of the Labeling System Guidelines.

(3) Housing Top Runner System

This system establishes a target year and standards that exceed energy conservation standards for business operators supplying more than a certain number of residential houses annually. It imposes an obligation on these business operators to make efforts to meet these standards on average for the new residential houses they supply (Articles 21 to 26 of the Building Energy Efficiency Act).

Previously, this system applied to detached houses, custom-built detached houses, and rental apartments. However, from the viewpoint of incentivizing higher energy efficiency performance as described in Section 2.1 above, the scope of the system was expanded under the part of the Amendment Act which came into effect on April 1, 2023, to include condominiums.

(4) Creation of Renewable Energy Facilities Promotion Zone System

From the viewpoint of encouraging the adoption of renewable energy facilities as described in Section 2.1 above, part of the Amendment Act was enforced on April 1, 2024 to establish a "zone for promoting the use of renewable energy facilities in buildings" ("**Promotion Zone**"). Under this system, municipalities can designate zones within their jurisdiction that are deemed necessary for promoting the installation of renewable energy facilities as Promotion Zones and prepare promotion plans (Article 60 of the Building Energy Efficiency Act).

In a Promotion Zone, building owners constructing buildings are required to install renewable energy facilities in their buildings. Local governments are expected to provide information, advice, and other support to building owners regarding the installation of renewable energy facilities. Additionally, architects are required to explain certain matters (e.g., facility type and capacity) to building owners related to renewable energy facilities that can be installed in buildings (Articles 61 to 63 of the Building Energy Efficiency Act).

Furthermore, buildings located in Promotion Zones are exempt from certain regulations under the Building Standards Act (e.g., floor-area ratio, building-to-land ratio, and height restrictions). These regulations are relaxed for buildings that install renewable energy facilities in compliance with a promotion plan (Article 64 of the Building Energy Efficiency Act).

3. Trends in Amendments to the Energy Conservation Act Regarding Data Center Operations

3.1 Introduction

In recent years, the DC market in Japan has been expanding due to the spread of cloud services, increased demand driven by the promotion of digital transformation, and government subsidies.

However, DCs are characterized by their significant electricity consumption for data

communication and facility maintenance. Power consumption in DCs has been rising due to the proliferation of AI, GPUs, and other high power consumption devices, with annual power consumption reaching 8,000 GWh in fiscal year 2022. This figure is projected to grow to 17,000 GWh by fiscal year 2030 and 41,200 GWh by fiscal year 2050.[20] To simultaneously achieve GX (i.e., Green Transformation) and enhance the international competitiveness of DC operations, it is essential to promote the construction of domestic DCs while advancing energy-saving measures for DC facilities.

In light of these circumstances, the Working Group on Criteria for Factories, etc. (the "**WG**"), convened by the Agency for Natural Resources and Energy, has been discussing the design of a system to require DC operators to comply with certain energy efficiency standards and file reports. On May 14, 2025, the WG presented a detailed proposal for the system.[21] This newsletter provides an overview of the key issues in the proposed system.[22]

3.2 Current Benchmark System

The current Energy Conservation Act imposes an obligation on covered business operators (i.e., specified business operators (*tokutei jigyousha*)[23]) to submit periodic reports to the Minister of Economy, Trade and Industry regarding certain matters, such as details on its energy consumption, its specific energy conservation efforts, and the values of certain indicators under the benchmark system (Article 16 of the Energy Conservation Act).

The benchmark system evaluates the energy conservation status of business operators using industry-wide indicators (i.e., benchmark indicators), and each business operator is required to implement energy conservation efforts with the goal of achieving the targets set by the benchmark system.[24] Under this system, business operators in covered industries are required to report the values of these indicators to the Minister of Economy, Trade and Industry, along

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20 "AI Demand in the Domestic Data Center Market/Decentralization/Renewable Energy Source" by Fuji Chimera Research Institute, Inc. (https://www.meti.go.jp/policy/mono_info_service/joho/conference/digital_infrastructure/0007/005_fujichimera.pdf)

21 "FY2025 Second Meeting of Working Group on Criteria for Factories, etc.: Measures pertaining to the Energy Conservation Act," dated May 14, 2025, published by the Agency for Natural Resources and Energy (the "**WG Materials**"). (https://www.meti.go.jp/shingikai/enecho/shoene_shinene/sho_energy/kojo_handan/pdf/2025_00203.pdf)

22 Please note that the system may be changed during the process of actual legal amendments.

23 This refers to business operators whose annual energy consumption (crude oil equivalent) is 1,500 kl or more.

24 Page 6 of the "Outline of the Benchmark System," dated November 2016, published by the Energy Conservation Division, Agency for Natural Resources and Energy. (https://www.meti.go.jp/shingikai/enecho/shoene_shinene/sho_energy/kojo_handan/pdf/2016_00103_00.pdf)

with the details on their energy consumption and other related data.

Under the amended Energy Conservation Act, which came into effect in April 2023, business operators managing DCs above a certain scale are subject to this system. Specifically, DC operators that meet all the following three requirements are obligated to report their benchmark indicators[25] in periodic reports and work toward achieving their benchmark targets for fiscal year 2030.[26]

(i) The business operator is engaged in the DC business (a business that operates or uses DCs and provides part of the facilities or functions related to information processing);

(ii) The annual energy consumption (crude oil equivalent) of the DC business alone is 1500 kl or more; and

(iii) The business operator has all or part of the energy management authority related to the "building and ancillary facilities" of DCs.[27]

3.3 Overview of the Proposed New System

(1) Background of the Establishment of the New System

DCs are critical infrastructure supporting AI and digital technology in Japan and are considered essential for economic and social growth. At the same time, to maximize the number of DCs in appropriate locations, it is also indispensable to further improve their operational efficiency. This requires the steady implementation of available technologies that contribute to efficiency improvements, as well as the acceleration of the development and social implementation of cutting-edge technologies. To achieve these objectives, the WG is currently discussing the establishment of a new system which includes (1) setting standards for technology levels to be introduced (i.e., mandatory energy efficiency requirements) and (2) imposing obligations on business operators to submit additional medium- and long-term plans (targets and action policies) and periodic reports on the actual performance of their DC business.[28]

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25 In the DC business, the value (i.e., PUE) obtained by dividing the energy consumption within the DC by the energy consumption of IT equipment within the DC is used as the benchmark indicator. Page 3 of the "Benchmark System for the Data Center Business: Outline of the System," dated May 2023, published by the Agency for Natural Resources and Energy (the "System Outline"). (https://www.enecho.meti.go.jp/category/saving_and_new/saving/enterprise/factory/support-tools/data/2023_01benchmark.pdf)

26 The current target value is set at a PUE value of 1.4 or lower in the target year (2030). See page 3 of the System Outline.

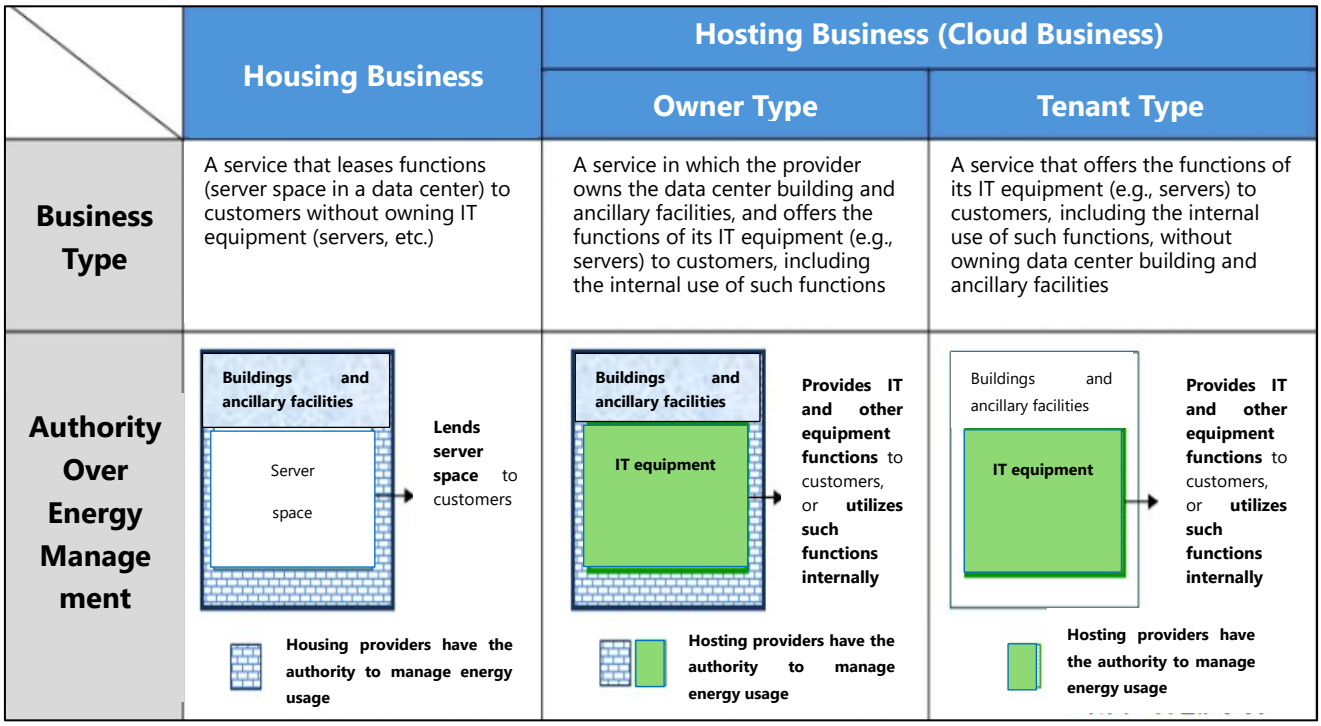
27 Businesses (hosting cloud (tenant) type) that do not own DC buildings or ancillary facilities but only provide the functions of their IT equipment (e.g., servers) are excluded.

28 See page 13 of the WG Materials.

(2) Establishment of Mandatory Energy Efficiency Standards

The WG presented a proposal to establish energy efficiency standards for DCs that meet certain requirements and to impose an obligation om business operators to comply with these standards.

The covered DCs are those operated by business operators with an annual energy consumption (crude oil equivalent) of 1,500 kl or more each that are (1) housing DCs, (2) hosting cloud (owner) DCs, and (3) hosting cloud (tenant) DCs whose server room area is 300 m^2 or more, or whose annual energy consumption (crude oil equivalent) is 1,500 kl or more, and that will be newly installed in fiscal year 2029 or later (see the figure below for each DC business type).



Excerpt from the "Interim Report of the Working Group on Criteria for Factories, etc. (March 2022)" by the Subcommittee on Energy Conservation

Based on the actual results from the fourth year of the DC's operation, a determination will be made as to whether the PUE is 1.3 or lower.[29] If a DC fails to meet this standard, the Japanese government will request the DC operator to prepare a rationalization plan to bring the DC into compliance with the standard. If necessary, the government will instruct the operator to revise the plan or implement an appropriate plan.

If the instructions are not followed, the government will issue a public announcement to that effect and an order for the operator to comply with the instructions. A fine will be imposed if the operator fails to comply with the order (Article 174 of the Energy Conservation Act).

29 In cases where a DC starts operation in year X, the PUE must be 1.3 or lower in year X+2 or later. Whether this has been achieved will be determined by evaluating the actual performance for year X+3, which is the fiscal year following year X+2, or later.

(3) Measures for Submission and Partial Publication of Additional Medium- and Long-term Plans and Periodic Reports

(i) Measures for Submission and Publication of Additional Medium- and Long-term Plans

The WG presented a proposal requiring business operators whose total energy consumption in the DC business is 1,500 kl or more to submit an additional medium- to long-term plan for the DC business alongside their medium- to long-term plan as specified business operators, starting from fiscal year 2026. This additional plan must include targets related to the index designated by the Japanese government (i.e., PUE) and action policies to achieve these targets.

Below is a list of indicators to be included in the medium- to long-term plan for the DC business, as well as the DCs subject to the obligation to submit such a plan. The details of (1) and (3) must be disclosed by the business operator on its website or other Internet sites during the year in which the medium- to long-term plan is submitted.

Indicator	Summary	DCs Covered by the Plan
(1) Target PUE value for newly constructed DCs	A PUE value targeted to be achieved in the operation of DCs that are newly constructed in or after fiscal year 2025 (for each business type)	DCs newly constructed in or after fiscal year 2025 with a server room area of 300 ㎡ or more or annual energy consumption (crude oil equivalent) of 1,500 kl or more
(2) Average target PUE value for all business operators by the target fiscal year 2030	An average PUE value for all DCs targeted to be achieved in the operation of DCs by the target fiscal year 2030	All DCs, including existing ones, with a server room area of 300 ㎡ or more or annual energy consumption (crude oil equivalent) of 1,500 kl or more
(3) Target value in medium- to long-term improvement rates for the energy consumption basic unit	A value targeted to be achieved in the operation of DCs as the medium- to long-term improvement rate of the assessment indicator for the energy basic unit, as set by the business operator for each business type (the five-year average of the year-on-year improvement rates of the basic unit)	

Excerpt from page 21 of the "FY2025 Second Meeting of the Working Group on Criteria for Factories, etc.: Measures Concerning the Energy Conservation Act" by the Agency for Natural Resources and Energy

(ii) Measures for Submission and Publication of Additional Periodic Reports

The WG has also proposed that business operators whose total energy consumption in the DC business is 1,500 kl or more submit a periodic report on the status of energy consumption in each DC (i.e., a periodic report on the DC business) when submitting a periodic report as a specified business operator.

The covered DCs are all DCs with a server room area of 300 m^2 or more or annual energy consumption of 1,500 kl or more (regardless of whether they are newly constructed or existing). Additionally, certain matters concerning DCs to be newly established in fiscal year 2025 or later, as included in the periodic report on the DC business, will be required to be disclosed by the business operator on its website or other Internet sites during the year in which the periodic report is submitted.

(4) Future of the Benchmark System

The target year (fiscal year 2030) and target level (PUE＝1.4 or lower) will remain unchanged, and the framework of the current benchmark system is expected to be largely maintained. However, hosting cloud (tenant) DCs, which were previously exempted from the benchmark system, will now be subject to it. Furthermore, the requirements for DCs covered by the benchmark system will be expanded to include those with a server room area of 300 m^2 or more or annual energy consumption (crude oil equivalent) of 1,500 kl or more, across all business types.

4. Conclusion

As outlined above, recent legal amendments require business operators that sell buildings and those that consume significant amounts of energy in buildings, including DCs, to comply with certain environmental indicators and operate their businesses in an environmentally friendly manner. These measures aim to achieve the government’s goal of promoting carbon neutrality and reducing greenhouse gas emissions. While only the negative aspects of these systems, such as the burden on business operations, often tend to be emphasized, a proper understanding and implementation of these systems can directly lead to increased demand from investors considering ESG investments. Additionally, it can improve a company's image as an environmentally conscious entity.

Please note that revisions to legal systems related to energy conservation are fluid, and various legal amendments and system changes are expected in response to evolving social conditions and public perceptions.

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