Overview of the Act on the Improvement of Energy Consumption Performance of Buildings
(Building Energy Efficiency Act)

The Building Energy Efficiency Act shall be gradually implemented beginning in April 1, 2016.

Schedule

Incentive measures: April 1, 2016
- Announcement of Basic Policy
- Mandatory efforts of construction clients/owners etc., and business operators in selling and leasing of building
- Approval system for performance improvement plans (exception of floor-area ratio regulation)
- Labeling system

Regulatory measures: scheduled for April 2017
- Mandatory compliance/evaluation of compliance
- Notification system
- Minister-approval system for special structures/equipment
- Housing Top-Runner Program
- Notification for repairs, remodeling, installation of equipment and regular report system based on Energy Saving Act to be abolished

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The demand for energy in Japan has become increasingly tight against supply since the Great East Japan earthquake. As consumption drops in other sectors (industry and transportation), the amount of energy consumption in the building sector has markedly increased. Therefore the Building Energy Efficiency Act was promulgated on July of 2015 in order to strengthen energy efficiency measures on building.

What is the Building Energy Efficiency Act?

Act on the Improvement of Energy Consumption Performance of Buildings (Building Energy Efficiency Act) was newly established in July 8, 2015. This Act provides for 1) regulatory measures for mandatory compliance with energy efficiency standards for large-scale non-residential buildings, and 2) incentive measures such as a labeling system displaying compliance with energy efficiency standards and exception of floor-area ratio regulation for certified building.

Overview of the Act on the Improvement of Energy Consumption Performance of Buildings

The incentive measures are implemented from April 1, 2016, and the regulatory measures shall be implemented within two years (scheduled for April 2017) of the promulgation of the Act.

What Buildings are Target of this Act?

- **Targets of Regulatory Measures:** New construction/extensions/renovations on buildings at or over a certain size
  - When construction clients attempt to undertake new construction/extensions/renovations on buildings at or over a certain size, they must acquire certification of conformity with energy efficiency standards or notify the administrative agency with jurisdiction depending on the use and size, etc. of the building.
  - After the implementation of the regulatory measures, large-scale non-residential building that is not compliant with energy efficiency standards become ineligible for certification of Building Standards Law.

- **Targets of Incentive Measures:** All buildings
  - Targets of incentive measures are all new construction of buildings, or extensions, renovations, improvements, remodelings, pre-installation/repairs of cooling system equipment that contribute to the improvement of energy conservation performance. When plans for such are compliant with certification standards, the plans may receive certification (certification for the performance improvement plan) from the administrative agency with jurisdiction in the construction area. By acquiring certification for the performance improvement plan, construction clients are eligible to receive benefits, such as exception of floor-area ratio regulation (the portion exceeds the normal floor space of a building for equipment meant to improve energy efficiency performance is not calculated upper limit of 10%).

Additionally, pre-existing buildings can receive certification of conformity with energy efficiency standards from the administrative agency with jurisdiction in their area.

- Buildings being newly constructed can receive certification after their construction is complete.
- Receiving certification allows the legally-sanctioned Compliance Label (e mark) to be attached to the advertisements and contracts of the building in question.
What are the Standards for the Building Energy Efficiency Act?

Overview of the Energy Efficiency Standards for Residential Buildings

The evaluation of energy efficiency performance for residential buildings uses the following two standards:
- Standards to evaluate envelope performance, such as with the windows and exterior walls of residential buildings
- Standards to evaluate the primary energy consumption amount of equipment and appliances etc.

Overview of the Standards for Non-residential Buildings

The evaluation of energy efficiency performance for non-residential buildings uses the following two standards:
- Standards to evaluate for envelope performance (PAL+), such as with the windows and exterior walls of non-residential buildings
- Standards to evaluate the primary energy consumption amount of equipment and OA devices etc.

Envelope Performance (PAL+)

Conception of Envelope Performance (PAL+) and Primary Energy Consumption Amount

By taking measures to insulate the exterior walls and windows etc. of a building, it not only improves energy efficiency performance, but it can also improve the thermal environment inside the building, which can maintain and promote the health of the occupants, and contribute to the improvement of the working environment inside.

Primary energy consumption amount

- heating/cooling system primary energy consumption amount
- lighting system primary energy consumption amount
- hot water supply primary energy consumption amount
- elevator primary energy consumption amount
- other (household appliances) primary energy consumption amount

Reduction amount of primary energy consumption through PV, etc.

What is the perimeter zone?

This is the inside space that is within 5 horizontal meters of the centerline of the wall of each floor in contact with the outside air, the inside space of the floor directly below the roof, and the inside space that is directly above the floor in contact with the outside air.

Envelope performance

- Average outer shell heat transmission coefficient (UA)
  \[ UA = \frac{\text{Amount of total heat loss per unit of temperature difference}}{\text{Total surface area of exterior}} \]

- Average solar heat gain coefficient during cooling period (\(\eta_{AC}\))
  \[ \eta_{AC} = \frac{\text{Amount of total solar heat gain per unit of solar radiation intensity}}{\text{Total surface area of exterior}} \times 100 \]

Primary energy consumption amount

- Annual thermal load coefficient of perimeter zone (each floor) (\(\eta_{PAL}\))
  \[ \eta_{PAL} = \frac{\text{Annual thermal load of perimeter zone of each floor (kJ/\text{m}^2)} \times 100}{\text{Total floor space of perimeter zone (m}^2)} \]

- Yearly sum of heating load and cooling load through the thermal energy given in through below
  1. Temperature difference of perimeter zone with outside air
  2. Solar radiation from exterior walls and windows etc.
  3. Heat occurring in perimeter zone
  4. Heat of intake outside air based on outside air intake amount and difference of temperature/humidity perimeter zone air and intake outside air

- Total primary energy consumption amount

- Other (OA apparatus) primary energy consumption amount
  - air-conditioning system primary energy consumption amount
  - ventilation system primary energy consumption amount
  - lighting system primary energy consumption amount
  - hot water supply primary energy consumption amount
  - elevator primary energy consumption amount
  - reduction amount of primary energy consumption through PV and cogeneration system
  - primary energy consumption amount
There are two types of labeling systems: Labeling to display energy efficiency performance for buildings (Article 7), and labeling to display compliance with Energy Efficiency Standards (Article 36).

### Displaying Energy Efficiency of a Building based on Article 7 of the Act

Owners can emphasize the energy efficiency performance as being at or higher than standards during new construction of residential and non-residential buildings (office buildings etc.).

- **Reduction rate of design primary energy consumption amount**
- **Illustration showing relation among standard primary energy consumption amount, and design primary energy consumption amount**
- **Compliance with primary energy consumption amount standards**
- **Compliance with exterior standards**

Only with self-evaluation

### Approval of Compliance with Energy Efficiency Standards/Labeling System based on Article 36 of the Act

Owners can emphasize the compliance of an existing residential or non-residential building to energy efficiency standards during renovations etc.

- **Name of Building**
- **Location of Building**
- **Certification Number**
- **Date of Certification**
- **Certification Administrative Agency**
- **Applicable Standards**

Label verifying compliance with standards (e mark)