

JAPANESE GOVERNMENT POLICIES AND STANDARDS FOR BUILDING ENERGY EFFICIENCY

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Topic of presentation

1. The outline of revised energy-saving standard for buildings in Japan
2. The effect of the revised energy-saving standard to energy-saving building design and retrofit.

Backgrounds of revised energy-saving standard in Japan

- The energy-saving standard of the Japanese building was enacted in 1980 after the oil crisis.
- Primary energy consumption for buildings in Japan has been increasing up to present .
- Therefore, Japanese government decided to make long-term strategy until 2050 for energy-saving in the buildings based on the energy-saving scenario shown in IEA report(2013).

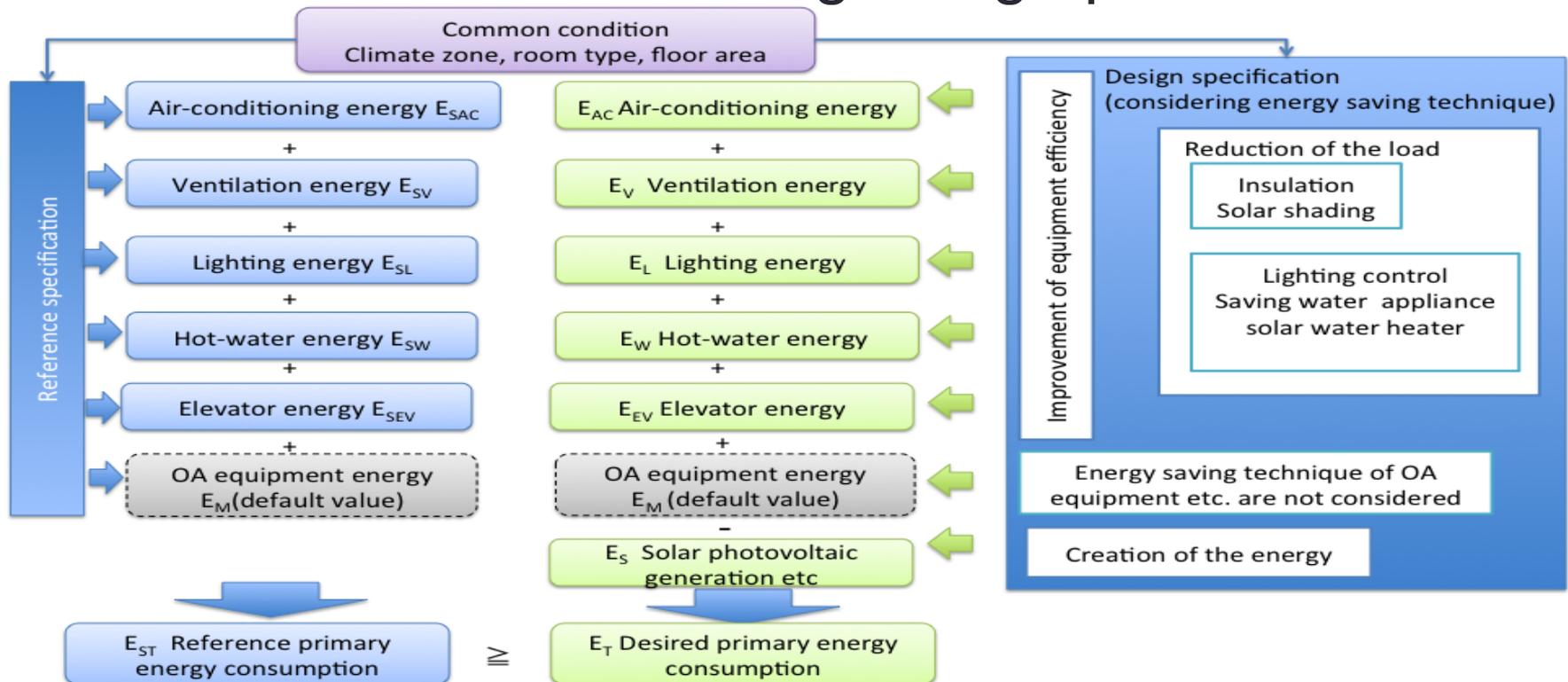
Outline of revision of energy-saving standard

- As the beginning of the long-term strategy, the energy-saving standard for buildings was largely revised in 2013.
- The special feature of revision is adopting primary energy consumption (J/year) as the main evaluation scales.
- Obligation of conformity is to be carried out until 2020.



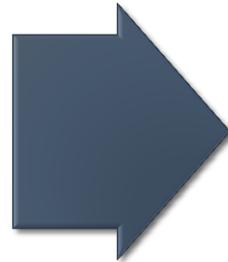
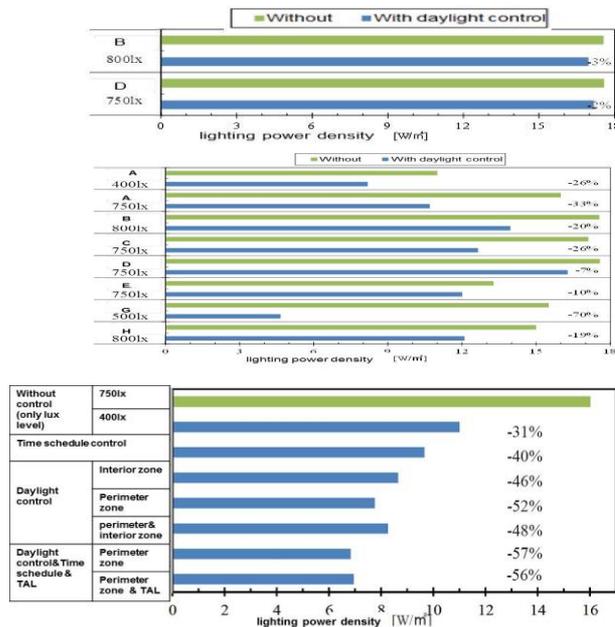
Evaluation by the primary energy consumption among all equipment

- Since evaluation of standard is carried out as a primary energy consumption of the whole building, the relation of energy-saving performances among the equipment can be evaluated with building design process.



Calculation of the lighting in the standard

- Simple calculation with the lighting control coefficient table based on an actual buildings measurement was used in calculation of lighting energy.
- The standard evaluation purpose is not ideal energy saving but realistic energy saving for wide range buildings, therefore these simplify are used.



Lighting control system		Applicable conditions	Coefficient
Human detection control	Dimming	Corridor	0.80
	On-off(room)	Bathroom, corridor	0.70
	On-off(6.4mx6.4m)	Office room	0.95
	On-off(3.2mx3.2m)	Office room	0.85
Time schedule control	Dimming	Before opening/after closing in the store	0.95
	Off	Lunch time	0.90
Initial illumination correction control		-	0.85
Daylight control	(unilateral daylighting, without blind control)	-	0.90
	(unilateral lighting, with blind control)	-	0.85
	(bilateral daylighting, without blind control)	-	0.80
	(bilateral daylighting, with blind control)	-	0.75
Daylight control (on/off)		corridor with daylight	0.80
Illuminance adjustment control		-	0.95

Web program for standard calculation

- Building Research Institute etc. opened to the public the Web program and manual for calculating simply by the standard.

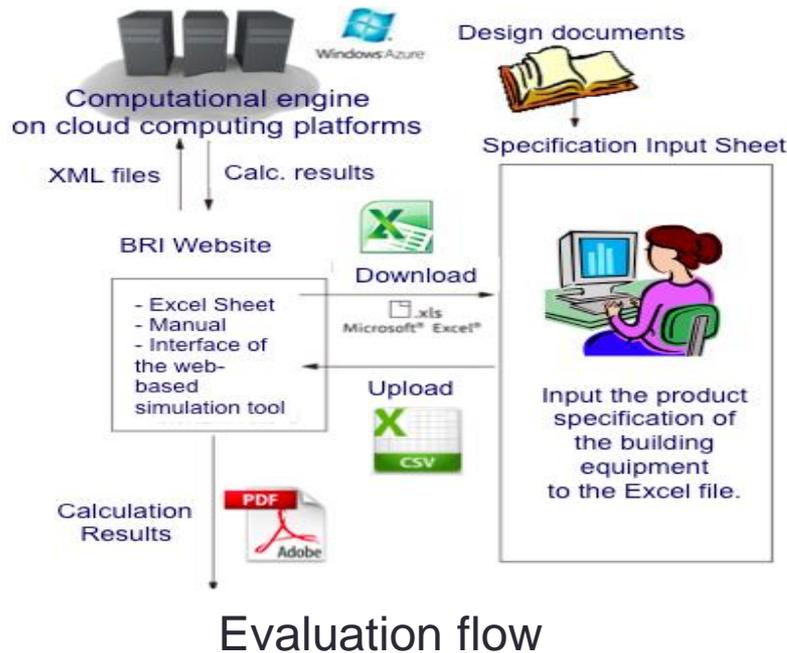


Figure 1: (High-rise building) Building equipment sheet. This is a spreadsheet with multiple columns and rows. The columns include various equipment types and their specifications. The rows list different equipment items with their respective details.

Specification input sheet



Web program

The effect of the revised energy-saving standard to energy-saving building design and retrofit

- Evaluation of the energy-conservation standards by the Web program which calculates all the equipment enables feedback between an energy-saving design and an evaluation result.
- Moreover, easy calculation environment leads to easy calculation of the energy-saving effect by retrofit.



Subjects to be considered in revised energy-saving standard

- When final building specification is changed after the evaluation by energy-saving standard, it cannot evaluate the energy consumption properly.



- Necessity for making standard of building energy commissioning which complements the evaluation at the time of building design process.