Update on the ZEB Current Situation and Policy in Japan

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9:50 a.m.

Update on the ZEB current situation and policy in Japan

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Modala Resort, Bohol, Philippines

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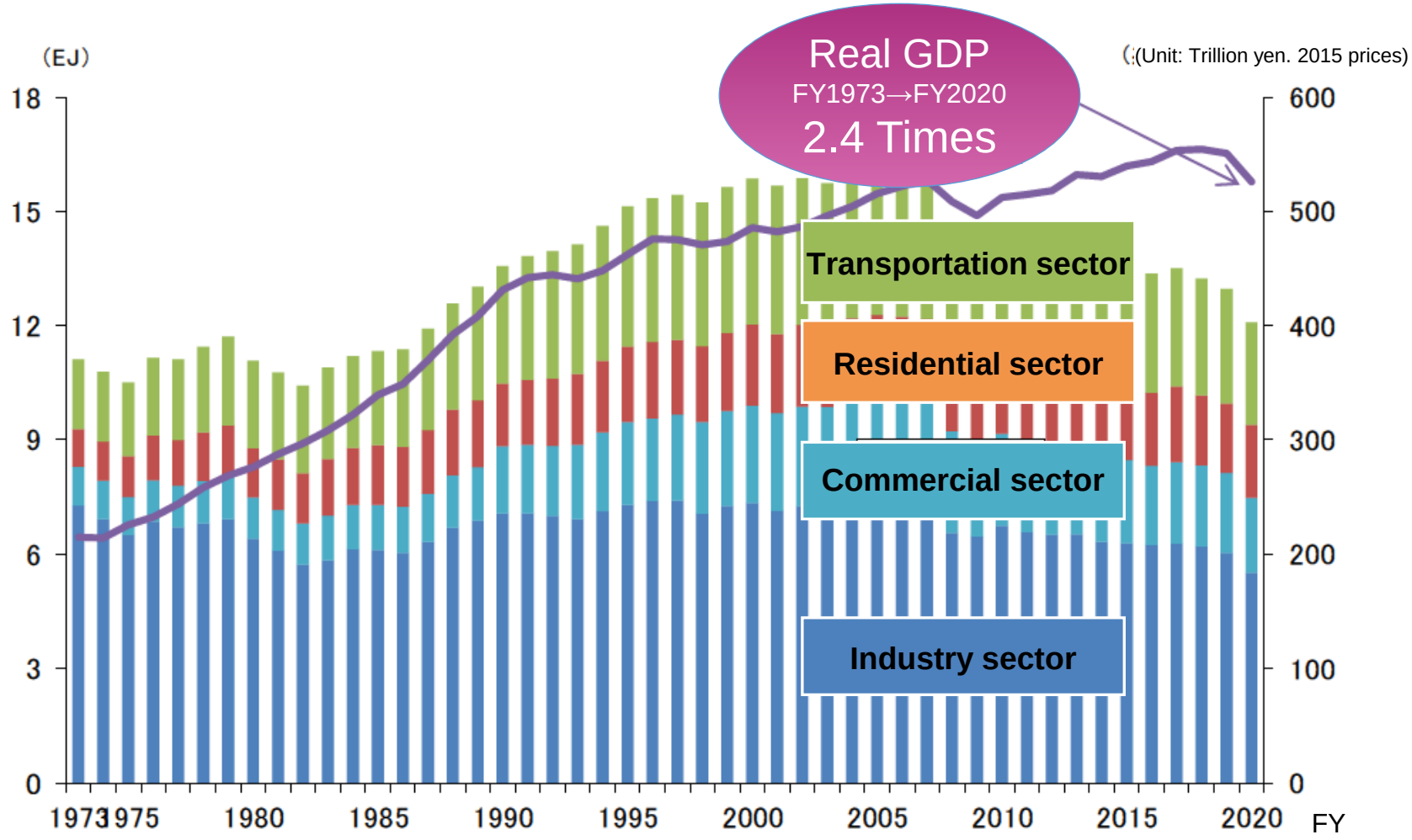
2. Energy Efficiency Standard for Design of Non-Residential Buildings

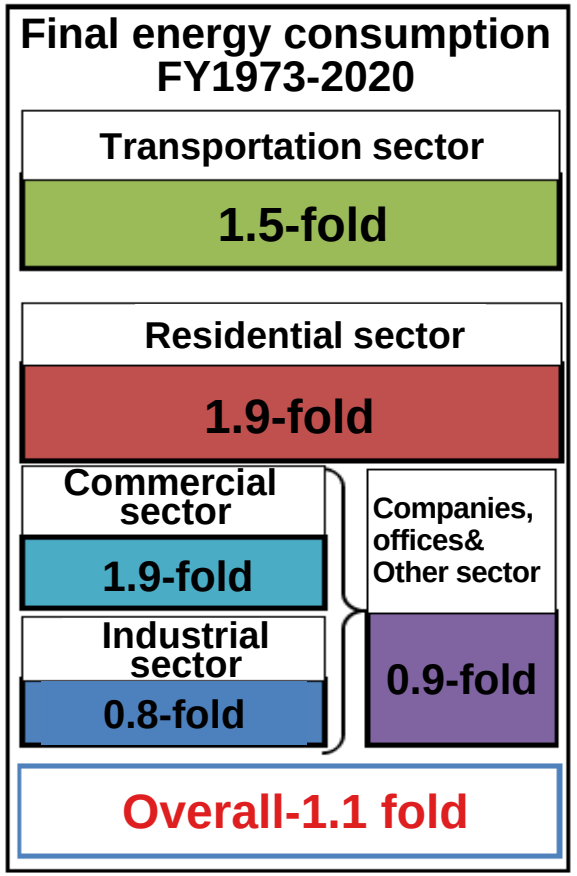
3. Dissemination of ZEB (Zero Energy Buildings) in Japan

4. “ZEB Family Concept” dissemination in ASEAN

5. Summary

1.1 Trends in the final energy consumption in Japan





1.2 Developments of Green Buildings in Japan

1980 Establishment of building energy conservation standards (Second oil shock)
Initially, PAL, CEC/AC, and office applications were subject to the notification requirements.

1993 CEC/V, L, HW, and EV were added. Hospitals and schools also became subject to the notification requirements.

1998 Introduced Type 2 designated factories (buildings) in the EC Act.

2002 Notification of energy conservation measures (for new construction and extension and reconstruction) was made compulsory.
All buildings (2,000m^2 or greater), with the exception of residences, became subject to the regulations.
(For large-scale renovations in 2006 and for buildings 300m^2 or larger in 2010)

The standards achievement rate was improved to 90% by making notification compulsory.

2002 Obligatory submission of periodical report for Type-2 Designated factories &buildings

2005 CASBEE for Buildings completed (CASBEE tools have been developed and revised until now)

2015 New Building Energy Code for design (Introduced primary energy standards)

2015 ZEB Family concept and the project started

2016 Benchmarking system for buildings (convenient stores)

2017 Mandatory requirement standard for design

2019 Revision of the scale of the buildings to be covered by the law

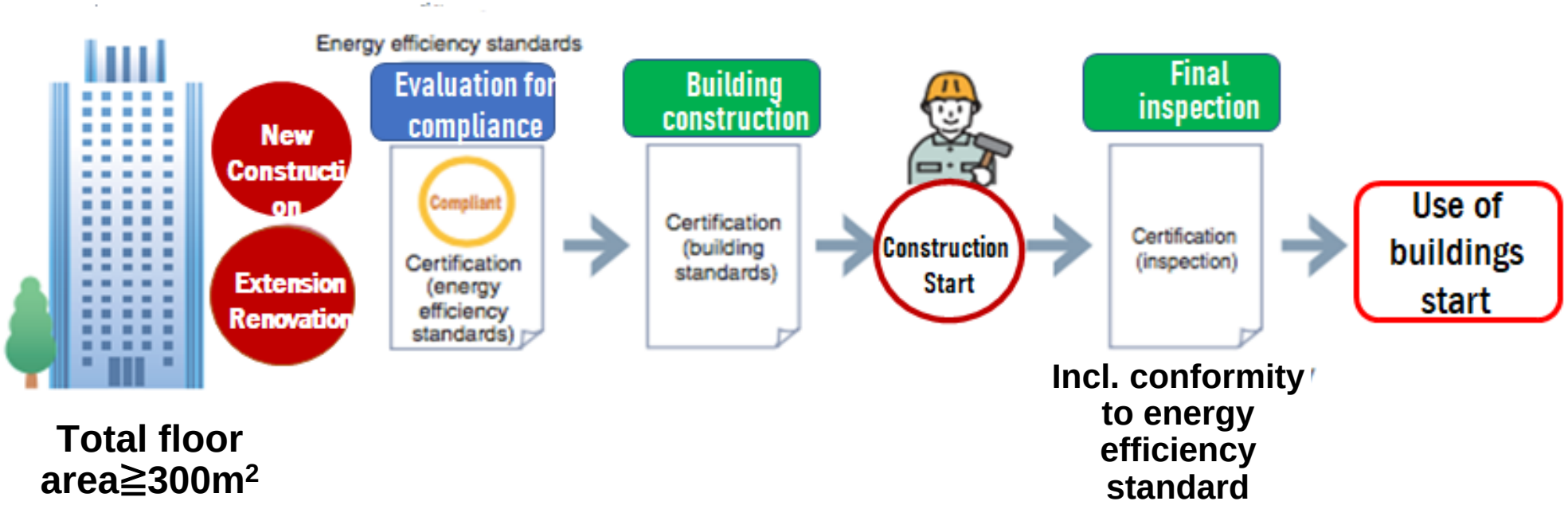
2021 Revision was enforced

2022 Further revision proposed to promote energy efficient buildings

1.3 Mandatory Compliance To The Design Standard

When construction clients plan to undertake new construction/ extensions/ renovations of buildings at or over a certain size, they must acquire certification of conformity with energy efficiency.

After the implementation of the regulatory measures, such non-residential buildings that are not compliant with energy efficiency standards become ineligible for construction under the law.



1.3 Mandatory Compliance To The Design Standard

In the revision of the Building Energy Conservation Law in May 2019, to promote conformity to the energy saving standards, expansion of application scope of the target buildings and obligation to explain EE&C measures from the designer (architect) to the building owner were added in the building approval procedure. In 2025, all the commercial buildings and residents should have their obligation to comply to the standard.

	Before revision	
	Commercial Building	Residences
Large buildings (Total floor area ≧2000m²)	Degignated building **Obligation to comply** (Linked to the building approval procedure)	**Obligation of notification** (Instruction and order when not comply with the standard)
Middle-sized building (2000m²> Total floor area≧300m²)	**Obligation of notification** (Instruction and order when not comply to the standard and need to do)	
Small buildings (300m² > Total floor area)	**Obligation to effort** for improvement of EE&C	**Obligation to effort** for improvement of EE&C **Top runner system** (Comply to the Top-runner standard) Target: Built-for -sale houses

	Revised in 2019	
	Commercial Building	Residences
Large buildings (Total floor area ≧2000m²)	Degignated building **Obligation to comply** (Linked to the building approval procedure)	**Obligation of notification** (Instruction and order of the jurisdiction agency when not comply to the standard and need to do) The procedure of Instruction and order to be rationalized
Middle-sized building (2000m²> Total floor area≧300m²)	**Obligation to comply** (Linked to the building approval procedure)	
Small buildings (300m² > Total floor area)	**Obligation to effort** (Comply to EE standard) + Obligation of instruction from the archtect to the owner	**Obligation to effort** (Comply to EE standard) **Top runner system** (Comply to the Top runner standard) Target: Built-for -sale houses Order houses Rental appartments

2025

All the commercial buildings and residences

Obligation to comply

Source：METI Website

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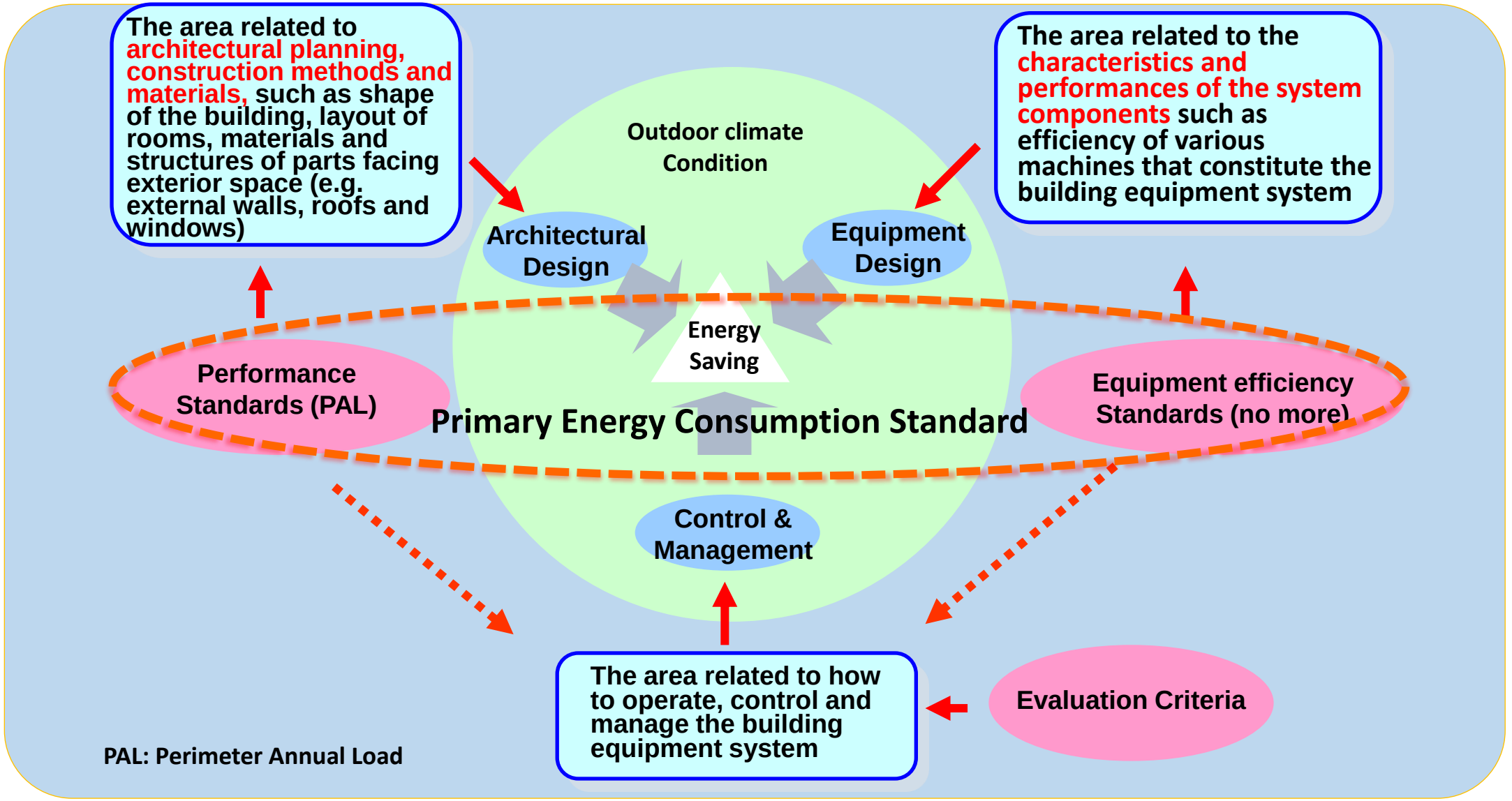
2.1 The Related Regulations on Buildings

Three key areas and the Standards of the EE&C in buildings



2.2 Approach of Primary Energy Regulations

What is Primary Energy Consumption?

- The energy obtained from nature, including fossil fuels, nuclear fuels, hydropower, and sunlight, is known as “primary energy”, while the energy (such as electricity, kerosene, and city gas) obtained by changing or processing this energy is called “secondary energy”. Each type of energy uses different measuring units (such as kWh, ℓ, and MJ).
- Converting these units to primary energy consumption amounts allows us to find the building total energy consumption in the same units (MJ and GJ).

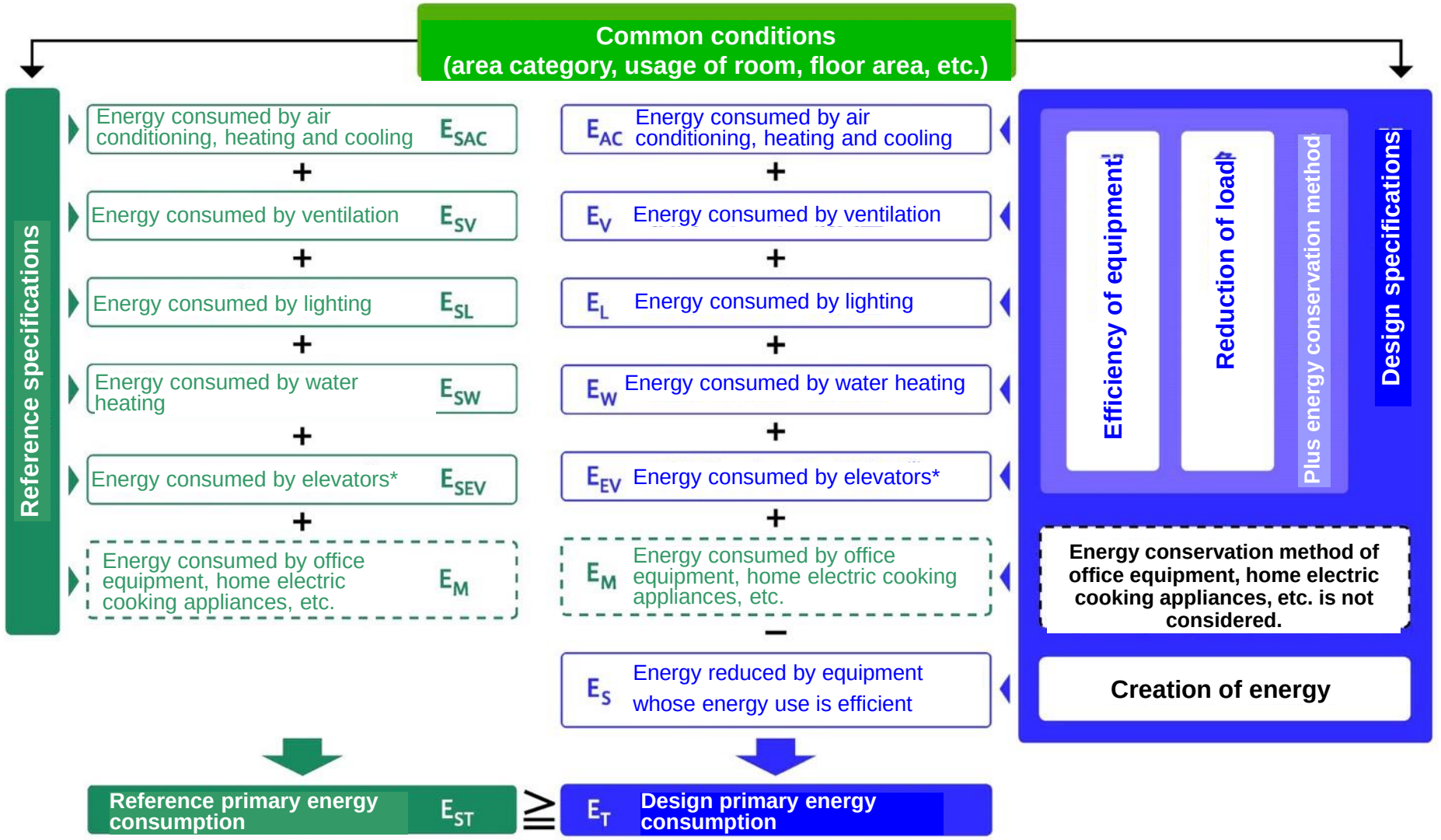
Approach of Using Primary Energy Consumption Standards

- In the buildings that are subject to the evaluations, based on the common conditions such as area categories and floor areas, **the design primary energy consumption** calculated from the actual building design specifications should basically be lower than **the reference primary energy consumption** calculated from the standard specifications (building envelope and standard facilities corresponding to the 1999 standards).
- The primary energy consumption is calculated as the total of the energy consumptions of the “Air Conditioning, Heating and Cooling Equipment”, “Ventilation Equipment”, “Lighting Equipment”, “Hot Water Supply Equipment”, “Elevators”, and “Office Equipment, Home Electric Cooking Appliances, etc.*”.

Source: MLIT Website

2.3 Evaluation method of EE&C of non-residential buildings

Based on the following calculation methods, the design building primary energy consumption should be less than the standard values.



* The target is non-residential buildings and apartment residences.

2.3 Evaluation method of EE&C of non-residential buildings

Calculation of Design Primary Energy Consumption, etc.

Evaluation Method	Standard method	Model building method	Small scale model building method
Characteristics	Precise evaluation in which all building information is entered and calculated on a room-by-room basis.	Simplified evaluation by calculation using a model building for each building use	Simpler evaluation calculated by greatly reducing the number of input items in the model building method
Calculation tool	WEB-Program Input by room	WEB-Program Input by building type	WEB-Program Input by building type
Envelop performance: Area of envelop	Calculate each part	Calculate each part	Not calculated (Auto calculation based on the floor area
Envelop performance: Perform. of each part of envelop	Calculate the envelop performance according to the thermal conductivity of each component.	Calculate the envelop performance according to the thermal conductivity of each component.	Select main insulation material and specifications of the openings
Envelop performance: Cal. results	BPI (PAL*)	BPI m(PAL*)	—
Primary energy consumption: Perform. & spec. of Eq.	Enter performance and specifications for all equipment to be installed	Enter performance and specifications for all equipment to be installed	Enter types and specifications for all equipment to be installed
Primary energy consumption: Cal. results	BEI	BEIm	BEIs
Remarks	—	—	• Floor area<300m2 • Performance improv. Plan only • Not apply for BELS, etc.

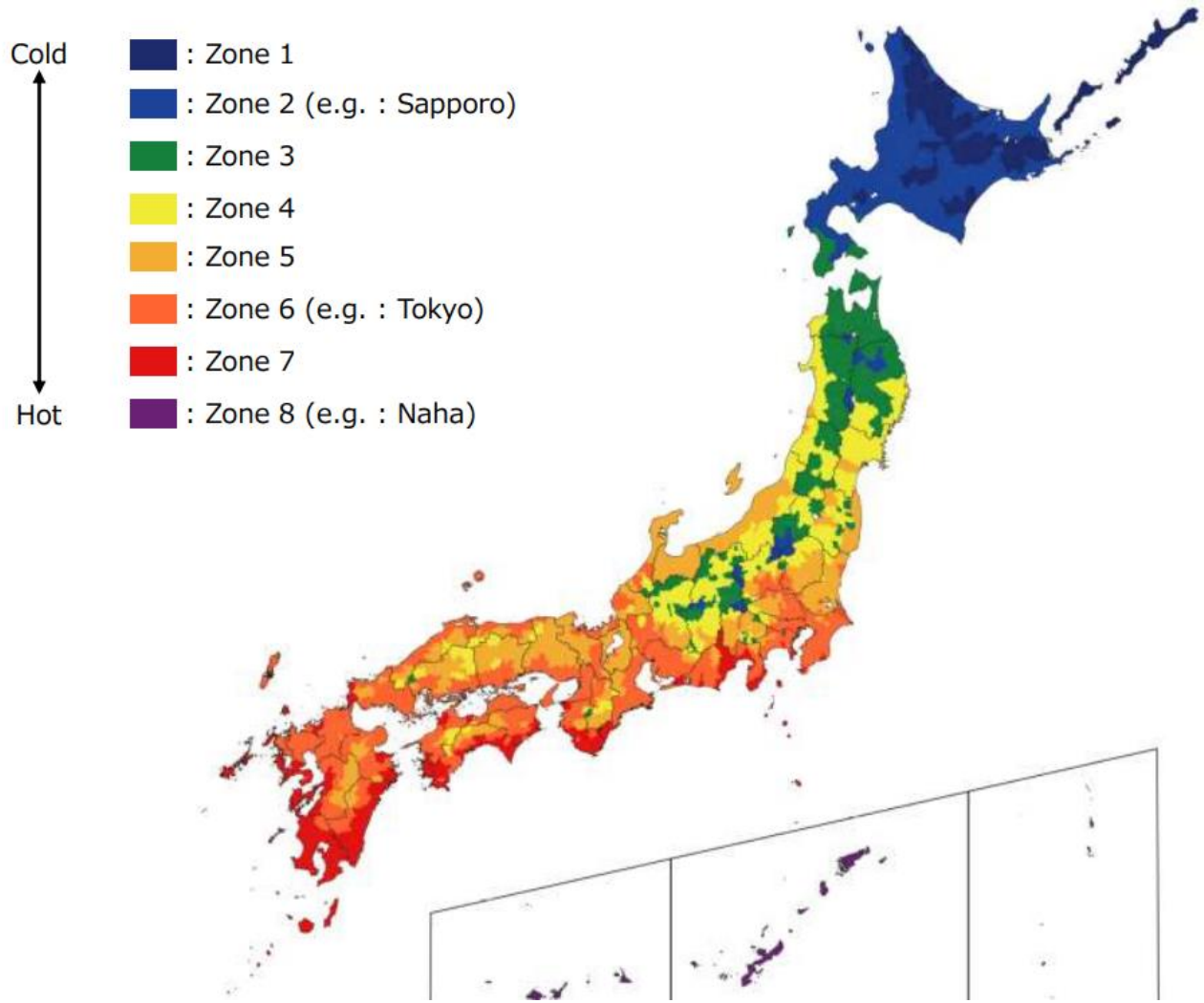
More precise
More work load

More rough
Less work load

Source: Website of Center of environment and Energy conservation

2.4 Method of Calculating the Reference Primary Energy Consumption

Climate Zone in Japan



Source: The presentation by the Building Research institute in the seminar in “New Japan-Brazil cooperation on EE&C” on 14 Octo 2021

2.4 Method of Calculating the Reference Primary Energy Consumption

Building types and room types

Building type	Number of room types
Office	19 room types e.g. : Office room, Meeting room, Computer room, etc.
Hotel	31 room types e.g. : Guest room, Front desk, Office room, Banquet hall, etc.
Hospital	28 room types e.g. : Ward, Staff station, Consulting room, Operating room, etc.
Store	17 room types e.g. : Large scale retail store, Specialized store, Supermarket, Backyard, etc.
School	26 room types e.g. : Classroom in primary school / high school / college, Staff room, etc.
Restaurant	19 room types e.g. : Restaurant, Kitchen, Coffee shop, Bar, Front desk, etc.
Meeting place	60 room types e.g. : Gymnasium in athletic, Arena for official competition, Cheering section in stadium, Auditorium in movie theater etc.
Factory	2 room types Warehouse, Outdoor parking
Apartment House	9 room types e.g. : Indoor corridor, lobby, Manager room, Assembly room, etc.

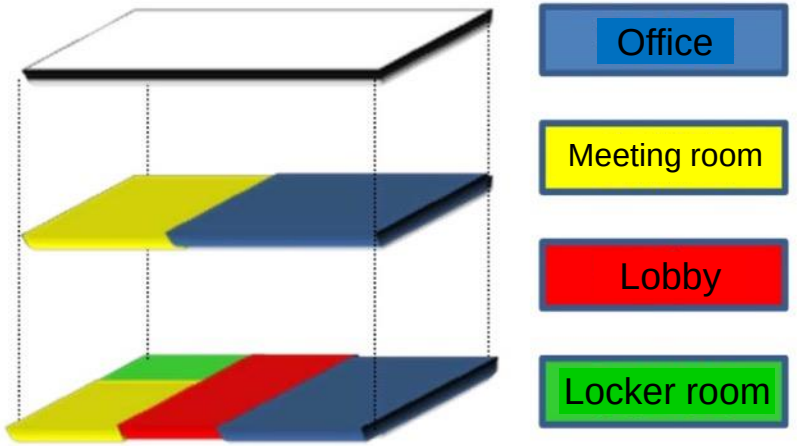
Source: The presentation by the Building Research institute in the seminar in “New Japan-Brazil cooperation on EE&C” on 14 Octo 2021

2.4 Method of Calculating the Reference Primary Energy Consumption

Floor area and standard unit energy consumption

(1) Room usages are classified and floor areas of each room usage are totaled.

<Building>



(2) The reference primary energy consumption of each piece of equipment is calculated by using the reference primary energy consumption of each room usage (example: air conditioning).

Room usage	Reference value of air conditioning (GJ/m² · year)	Floor area	Total of each room usage (GJ/year) (Reference value x Floor area)
Office	1.0	2,000	2,000
Meeting room	0.8	1,000	800
Lobby	0.9	500	450
Locker room	1.0	200	200
Total		3,700	3,450

Reference primary energy consumption of each piece of equipment (GJ/year) = $\sum$ [Reference primary energy consumption of each piece of equipment of each room usage (GJ/m² · year) × Area of each room (m²)] (All room usage)

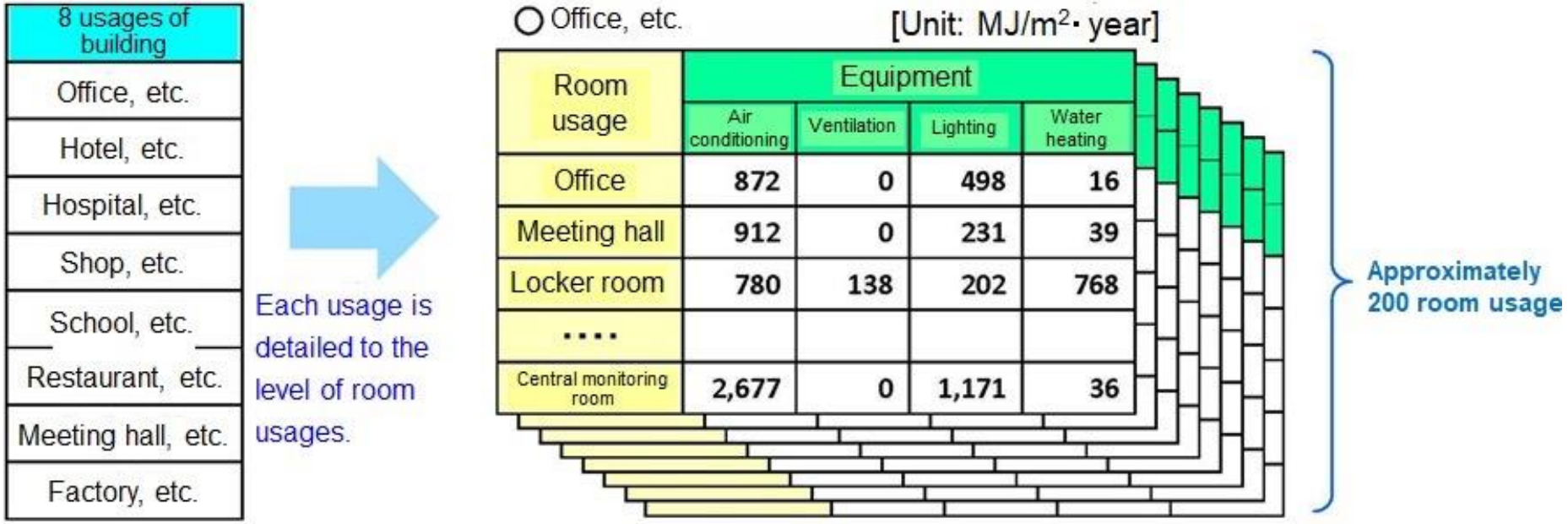
(3) The reference primary energy consumption of an entire building is calculated by totaling the reference primary energy consumption of each piece of equipment.

Reference primary energy consumption of entire building (GJ/year) = $\sum$ (All equipment) Reference primary energy consumption of each piece of equipment (GJ/year)

Source: MLIT Website

2.4 Method of Calculating the Reference Primary Energy Consumption

In order to consider the differences in energy consumptions due to the configuration of the room usages, the reference primary energy consumption is set for approximately 200 room usages.



Equipment types	Items to be considered
AC equipment	Yearly air conditioning time, heat generation of lighting, number of people in the room, equipment heat generation, equipment types, types of the envelope, etc.
Ventilation equipment	Yearly ventilation time, number of ventilation, ventilation method, total pressure loss, etc.
Lighting equipment	Yearly lighting time, illumination setting, equipment type, maintenance ratio, etc.
Water heating equipment	Yearly water heating days, unit hot water consumption, etc.

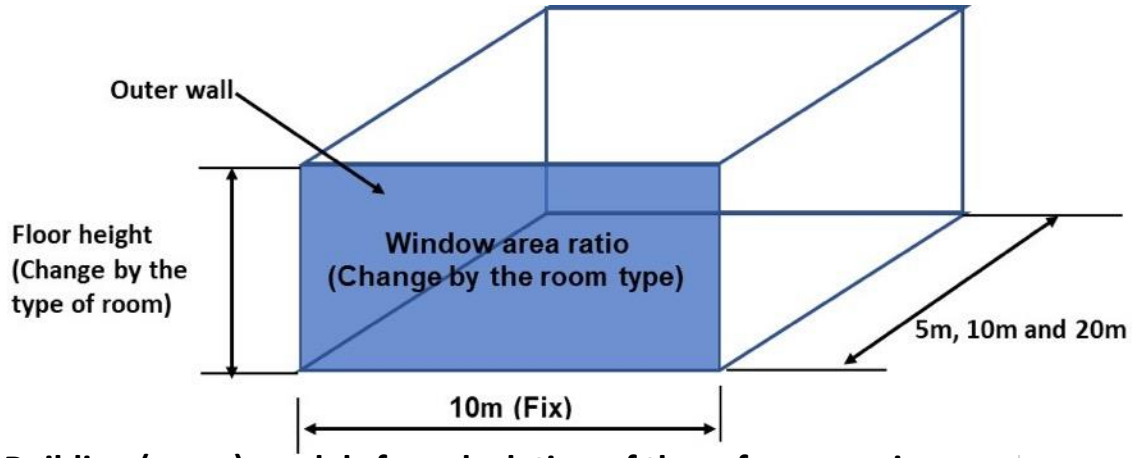
2.4 Method of Calculating the Reference Primary Energy Consumption
(1) Air Conditioning (AC) System

Calculation of Annual primary energy consumption of AC system

$$E_{AC} = \sum_{i=1}^{N_{AC,ahu}} \times \left(E_{AC,\,ahu,\,i} + E_{AC,\,ahu,\,aex,\,i}\right) + \sum_{i=1}^{N_{AC,\,pump}} E_{AC,\,pump,\,i} + \sum_{i=1}^{N_{AC,\,ref}} \left(E_{AC,\,ref,\,i} + E_{AC,\,ref,\,sub,\,i}\right)$$

E_{AC} : Annual primary energy consumption of air conditioning equipment [MJ/year]
$E_{AC,\,ahu,\,i}$: Annual primary energy consumption of a blower belonging to the air conditioner group"i"[MJ/year]
$E_{AC,\,ahu,\,aex,\,i}$: Annual primary energy consumption of all heat exchangers belonging to air conditioner group"i"[MJ/year]
$N_{AC,\,ahu}$: Total number of air conditioners in the calculation [—]
$E_{AC,\,pump,\,i}$: Annual primary energy consumption of secondary pump group"i"[MJ/year]
$N_{AC,\,pump}$: Total number of secondary pumps in the calculation [—]
$E_{AC,\,ref,\,i}$: Annual primary energy consumption of the main equipment of heat source group "i" [MJ/year]
$E_{AC,\,ref,\,sub,\,i}$: Annual primary energy consumption of auxiliary equipment of heat source group"i"[MJ/year]
$N_{AC,\,ref}$: Total number of heat source group in the calculation [—]

2.4 Method of Calculating the Reference Primary Energy Consumption
(1) Air Conditioning (AC) System



Building (room) models for calculation of the reference primary energy consumption

The results of primary energy consumption calculations for all 24 cases are averaged for each room use and region, and this is used as the reference primary energy consumption intensity for each room use and region. However, for some room uses, the number of cases to be averaged shall be reduced.

		The cases for calculation of the standard energy consumption																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Room depth	5m	■	■	■	■	■	■	■	■																
	10m									■	■	■	■	■	■	■	■								
	20m																	■	■	■	■	■	■	■	■
Outer wall surface	one vertical wall	■	■	■	■					■	■	■	■					■	■	■	■				
	one outer wall + roof					■	■	■	■					■	■	■	■					■	■	■	■
Direction of the outer wall	East	■				■				■				■				■				■			
	West		■				■				■				■				■				■		
	South			■				■				■				■				■				■	
	North				■				■				■				■				■				■

2.4 Method of Calculating the Reference Primary Energy Consumption
(1) Air Conditioning System

Table 3.1.14 Specification of the standard heat source system (Climate zone 1 & 2)

表 3.1.14　基準設定空気調和設備仕様（1、2地域）　熱源系統

Type of the building	Room usage Office RM	Heat storage	Control system	Cooling source				Heating source				Primary pump WTF
				Heat source	Number	Rated cooling capacity	COP	Heat source	Number	Rated heating capacity	COP	
事務所等	Office RM	No	Yes	Air cooling HP	2	0.114	3.24	Air cooling HP	2	0.232	2.74	44
事務所等	Computer RM	No	Yes	Air cooling HP	2	0.132	3.24	Air cooling HP	2	0.232	2.74	44
Office	Meeting RM	無	有	空冷HP	2	0.17	3.24	空冷HP	2	0.326	2.74	44
Office	Coffee	無	有	空冷HP	2	0.17	3.24	空冷HP	2	0.326	2.74	44
事務所等	Restaurant	無	有	空冷HP	2	0.216	3.24	空冷HP	2	0.366	2.74	44
事務所等	Central control RM	無	有	空冷HP	2	0.13	3.24	空冷HP	2	0.218	2.74	44
事務所等	Locker RM	無	有	空冷HP	2	0.096	3.24	空冷HP	2	0.218	2.74	44
事務所等	Corridor	無	有	空冷HP	2	0.082	3.24	空冷HP	2	0.198	2.74	44
事務所等	Lobby	無	有	空冷HP	2	0.082	3.24	空冷HP	2	0.198	2.74	44
事務所等	Toilets	無	有	空冷HP	2	0.082	3.24	空冷HP	2	0.198	2.74	44
事務所等	Smoking RM	無	有	空冷HP	2	0.082	3.24	空冷HP	2	0.198	2.74	44
ホテル等	客室	無	有	空冷HP	2	0.086	3.24	空冷HP	2	0.242	2.74	44
ホテル等	客室内の浴室等	無	有	空冷HP	2	0.086	3.24	空冷HP	2	0.242	2.74	44

2.4 Method of Calculating the Reference Primary Energy Consumption
(1) Air Conditioning System

Specifications of the standard roof and walls (Office)

Zone		Climate Zone 1 & 2	
Portion	building materian No.	Building material	thicknes s(mm)
Roof		inside	
	70	Rock Wool Sound Absorbing Board	12
	62	Gypsum board	10
	302	Unsealed hollow layer	
	41	Concrete	150
	47	Cement/mortal	15
	103	Asphalt	5
	47	Cement/mortal	15
	181	Polystyrene foam	100
	41	Concrete	60
		Outside	
Wall		Inside	
	67	Gypsum board	8
	302	Unsealed hollow layer	
	181	Polystyrene foam	50
	41	Concrete	150
	47	Cement/mortal	25
	67	Tiles	10
		Outside	

表 3.1.2　基準設定外壁仕様（事務所等）

地域	1、2地域		
外壁名称	建材番号	建材名称	厚さ [mm]
屋根		室内側	
	70	ロックウール化粧吸音板	12
	62	せっこうボード	10
	302	非密閉中空層	
	41	コンクリート	150
	47	セメント・モルタル	15
	103	アスファルト類	5
	47	セメント・モルタル	15
	181	押出法ポリスチレンフォーム 保温板 1種	100
	41	コンクリート	60
		室外側	
外壁		室内側	
	62	せっこうボード	8
	302	非密閉中空層	
	181	押出法ポリスチレンフォーム 保温板 1種	50
	41	コンクリート	150
	47	セメント・モルタル	25
	67	タイル	10
		室外側	

地域	3、4地域		
外壁名称	建材番号	建材名称	厚さ [mm]
屋根		室内側	
	70	ロックウール化粧吸音板	12
	62	せっこうボード	10
	302	非密閉中空層	
	41	コンクリート	150
	47	セメント・モルタル	15
	103	アスファルト類	5
	47	セメント・モルタル	15
	181	押出法ポリスチレンフォーム 保温板 1種	50
	41	コンクリート	60
		室外側	
外壁		室内側	
	62	せっこうボード	8
	302	非密閉中空層	
	181	押出法ポリスチレンフォーム 保温板 1種	25
	41	コンクリート	150
	47	セメント・モルタル	25
	67	タイル	10
		室外側	

2.4 Method of Calculating the Reference Primary Energy Consumption

(1) Air Conditioning System

Standardized room use condition (e.g. : office room of office buildings)

Reference value for heat-generation density for lighting, human body, and equipment

Start and end time(hours)

Weekday →

Saturday →

Sunday or Holiday →

Fresh air intake [persons/m²]

共通		Air conditioning					Ventilation			Lighting				Hot water supply
カレンダパターン		times	照明発熱参照値	在室者数参照値	機器発熱参照値		times	基準設定換気風量	基準設定換気回数	times	基準照明消費電力	基準設定照度	基準設定保守率	年間給湯日数
A		[h/year]	[W/㎡]	[人/㎡]	[W/㎡]	[m3/㎡・h]	[h/year]	m3/m2h]	[回]	[h/year]	[W/㎡]	[lx]		[日]
室使用パターン別	年間日数	3374	12.0	0.1	12.0	5.0	0	0.0	-	3133	16.3	750	0.69	241
		空調時刻（時間）				人体発熱参照値	待機電力参照値	作業強度指数	換気時刻（時間）				基準設定全圧損失[Pa]	照明点灯時刻（時間）				基準設定器具形式	基準設定光源	HW usage
1	241	1	7	21	(14)				1	-	-	(0)	0	1	8	21	(13)			
2	51	2	-	-	(0)	[W/㎡]	[W/㎡]	[-]	2	-	-	(0)	基準設定換気方式	2	-	-	(0)			[L/person/day]
3	73	3	-	-	(0)	11.9	3.0	3	3	-	-	(0)	-	3	-	-	(0)	C	FHF32	3.8

Weekdays

Heat-generation schedule for lighting

Heat-generation schedule for human body

Heat-generation schedule for equipment

室使用パターン1

曜日等条件

平日

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
室同時使用率	0	0	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0	0
照明発熱比率	0	0	0	0	0	0	0	0	100	100	100	100	50	100	100	100	100	100	100	100	80	0	0	0
人体発熱比率	0	0	0	0	0	0	0	0	100	100	100	100	60	100	100	100	100	100	50	30	20	0	0	0
機器発熱比率	25	25	25	25	25	25	25	25	100	100	100	100	80	100	100	100	100	100	100	50	50	25	25	25

Saturdays

Heat-generation schedule for lighting

Heat-generation schedule for human body

Heat-generation schedule for equipment

Standby power is considered

室使用パターン2

曜日等条件

土曜日

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
室同時使用率	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
照明発熱比率	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
人体発熱比率	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
機器発熱比率	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25

Source: The presentation by the Building Research institute in the seminar in “New Japan-Brazil cooperation on EE&C” on 14 Octo 2021

2.4 Method of Calculating the Reference Primary Energy Consumption

Standard energy consumption value of each room type for offices

Room type		Standard value for the Primary Energy Consumption Amount [MJ/m^2]																	
		Air-conditioning								Venti-lation	Lighting	Hot-water supply							Other (OA)
		Climate zone										Climate zone							
		1	2	3	4	5	6	7	8			1	2	3	4	5	6	7	8	
Office	Office room	898	917	925	965	1,033	1,115	1,129	1,399	0	498	20	20	19	18	17	16	14	12	498
	Computer room	944	963	1,120	1,155	1,259	1,350	1,378	1,715	0	498	20	20	19	18	17	16	14	12	1,245
	Meeting room	1,060	1,071	993	1,021	1,075	1,148	1,153	1,464	0	231	51	50	47	45	43	39	36	29	42
	Tea room	1,060	1,071	993	1,021	1,075	1,148	1,153	1,464	0	254	1,712	1,678	1,572	1,531	1,454	1,322	1,209	978	42
	Canteen	394	397	380	392	406	458	450	594	0	141	2,568	2,517	2,358	2,297	2,180	1,983	1,813	1,467	0
		·····(omit)·····																	

Source: The presentation by the Building Research institute in the seminar in “New Japan-Brazil cooperation on EE&C” on 14 Octo 2021

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(1) Necessity of ZEB dissemination in Japan

1. The current energy efficiency measures cannot achieve COP21 requirements for reduction of greenhouse gas (GHG) in Japan.
2. The current Japanese E. E. Law for buildings does not have enough power to achieve the target for reduction of GHG in building sector.
3. Therefore, the following target has been set in order to promote and disseminate high level energy efficient buildings, “ZEB Ready” first and realize (net)ZEB by step-by-step approach though the continuous efforts.
   → **ZEB Family Concept (ISO TS23764)**

Target

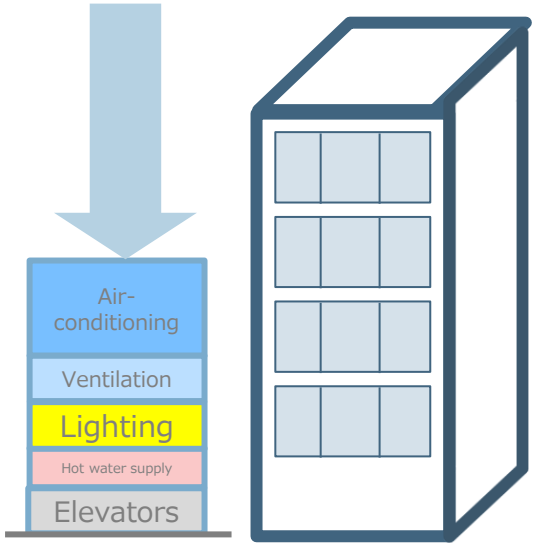
To realize ZEBs in average for newly constructed public and private buildings by 2030

(2) Step by step approach toward ZEB

The concept of ZEB has been expanded to “ZEB series” according to actual conditions. First step is to aim for super energy efficient buildings which are defined as “ZEB ready”, and then aim for “ Nearly ZEB” and “(net) ZEB” which is a step-by-step approach.→ **ZEB family Concept**

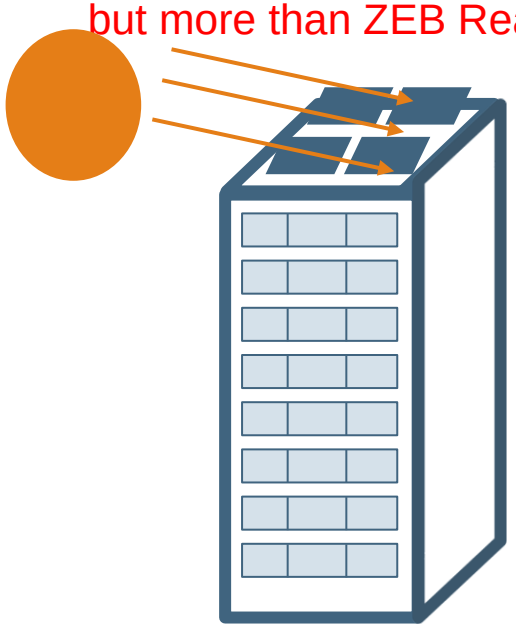
ZEB Ready

(Significant energy saving more than 50% from reference point)



Nearly ZEB

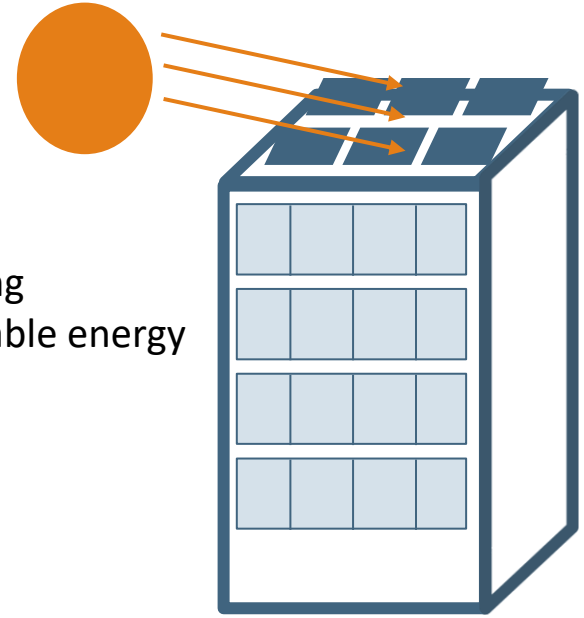
(Net energy saving (RE) not reach 100including% but more than ZEB Ready)



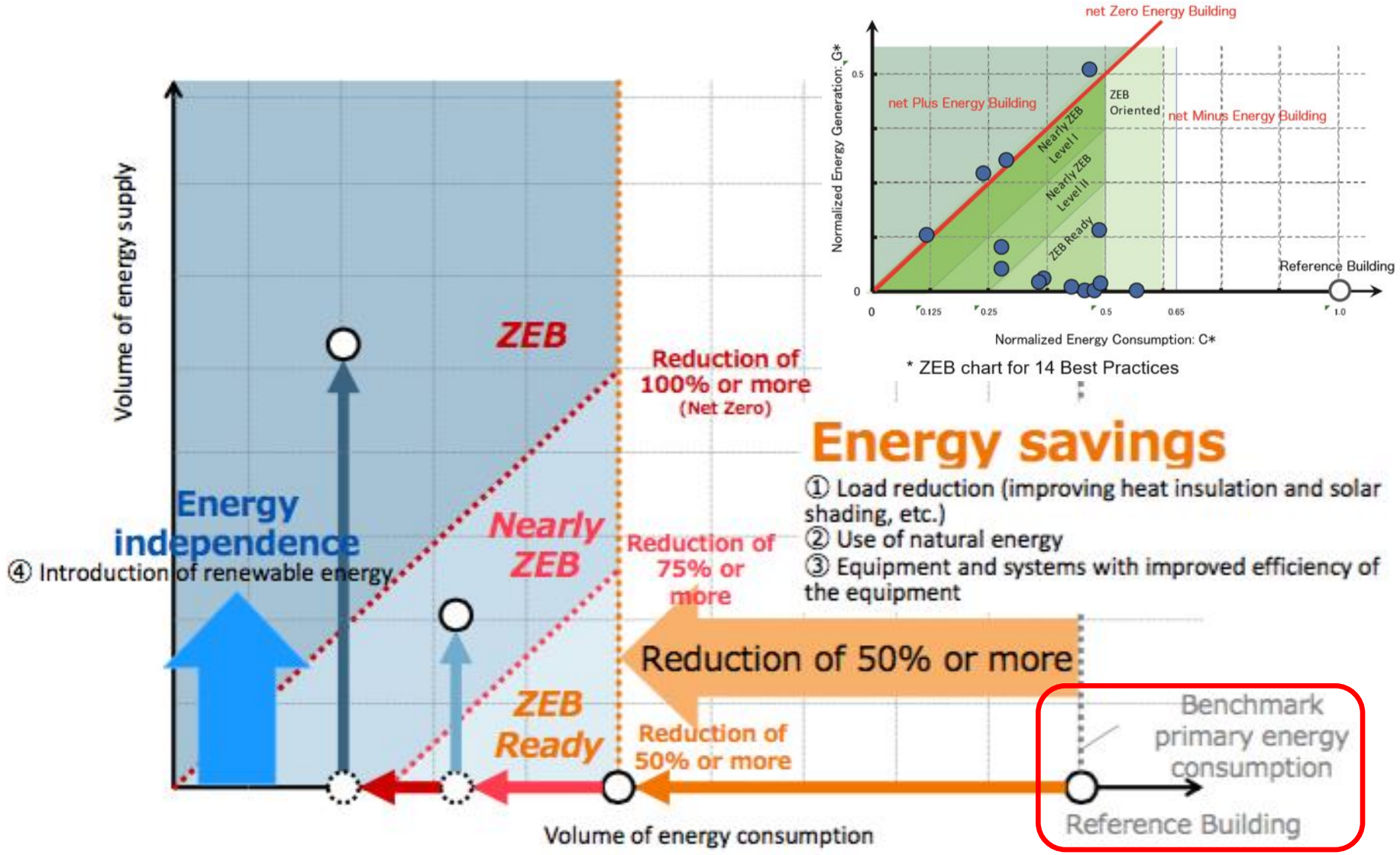
Including Renewable energy

(net)ZEB

(Net energy saving (including RE) of 100% or more)

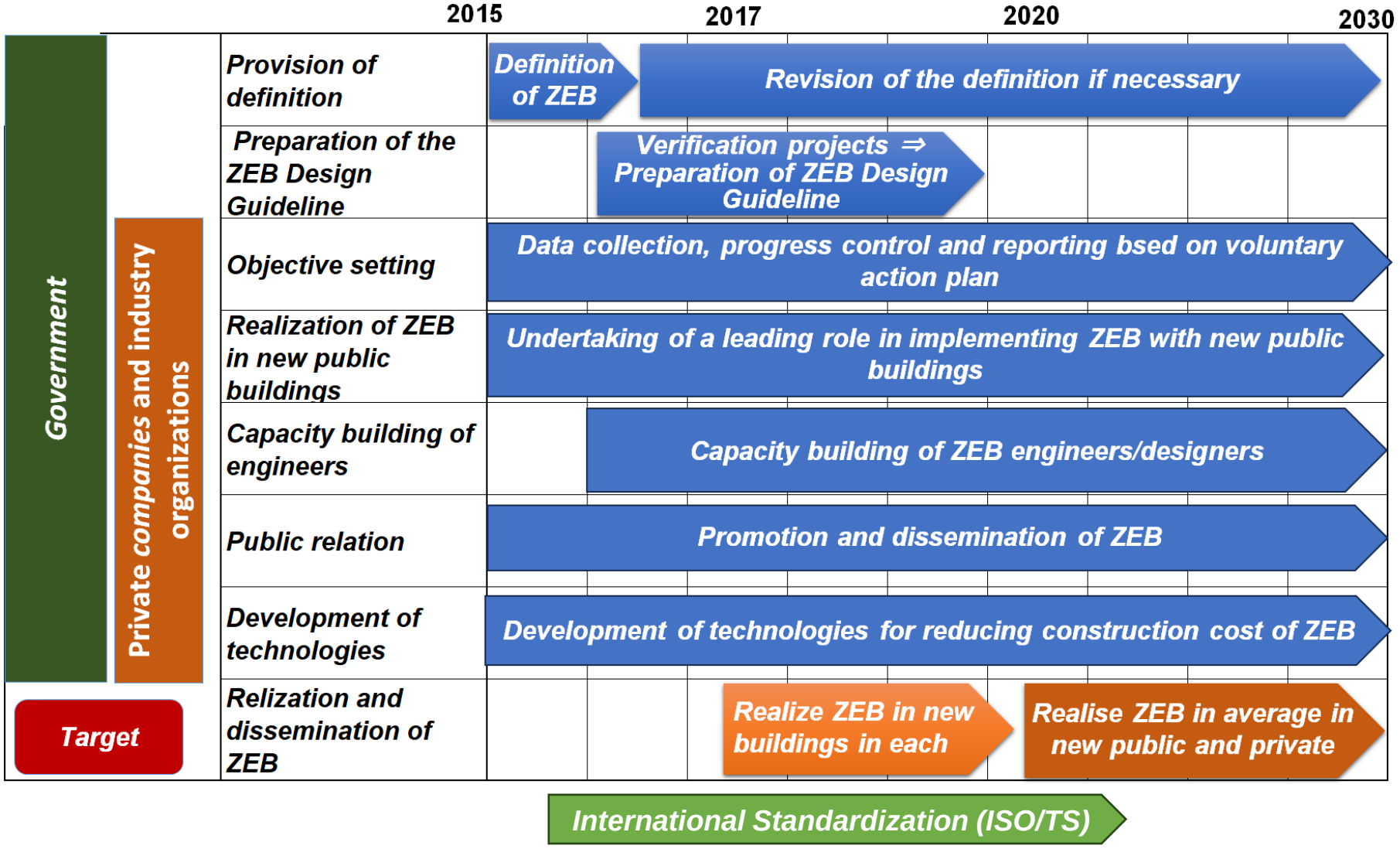


3.2 ZEB family Concept
Definition and evaluation methods of ZEBs



3.2 The measures for ZEB dissemination in Japan

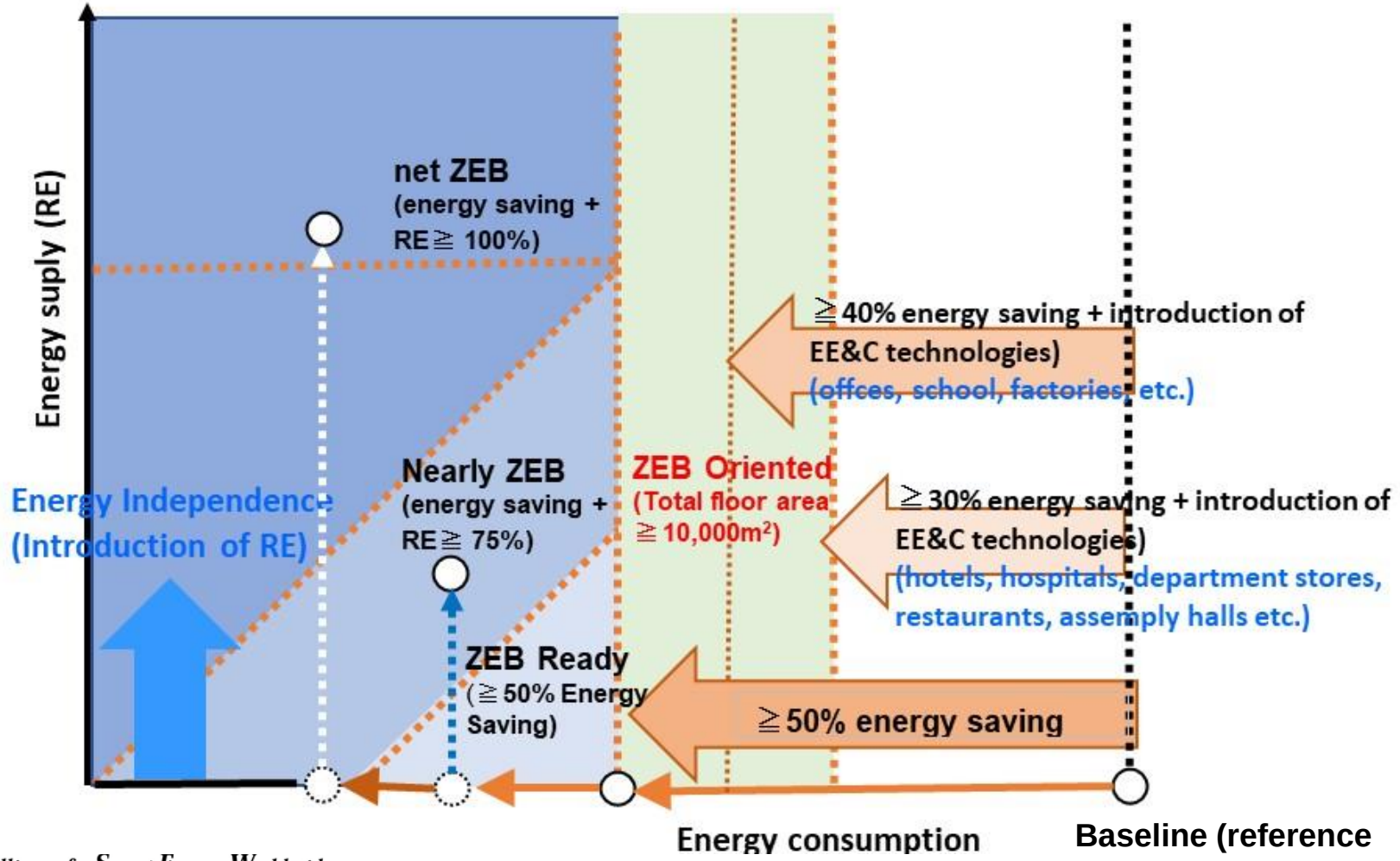
The road map toward the realization and dissemination of ZEB (2015-2030)



Source: METI Website

ZEB Oriented

New evaluation method of ZEB family buildings including “ZEB Oriented”



Source: METI Website

3.2 The measures for ZEB dissemination in Japan
(2) ZEB Planner / ZEB Leading Owner Registration System

How to create a ZEB?

Building owner

Consultation

Support

ZEB Planner

Design Company

Design and construction company

Consulting Companies

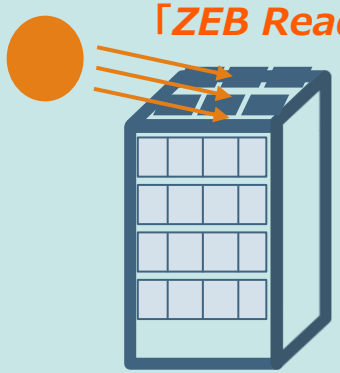
・Disclosure of planner information (scope of work, coverage area, etc.), ZEB planning results, and consultation services

Building ZEB with the involvement of planners

ZEB Leading Owner Registration

・Owner information (companies, municipalities, etc.)
・Targets for ZEB initiatives
・Installation results, installation plans
・Case studies (building outline, energy-saving performance, etc.)

Building owner 『*ZEB*』
「*Nearly ZEB*」
「*ZEB Ready*」



Number of registered ZEB planners: **284 companies**
Number of registered ZEB Leading Owners: **378 cases**
(As of September 24, 2021)

Dissemination of ZEB building examples

Spread to new ZEB owners

Risk reduction for ZEB planning (increase in reference cases)

Better understanding of the benefits of ZEB

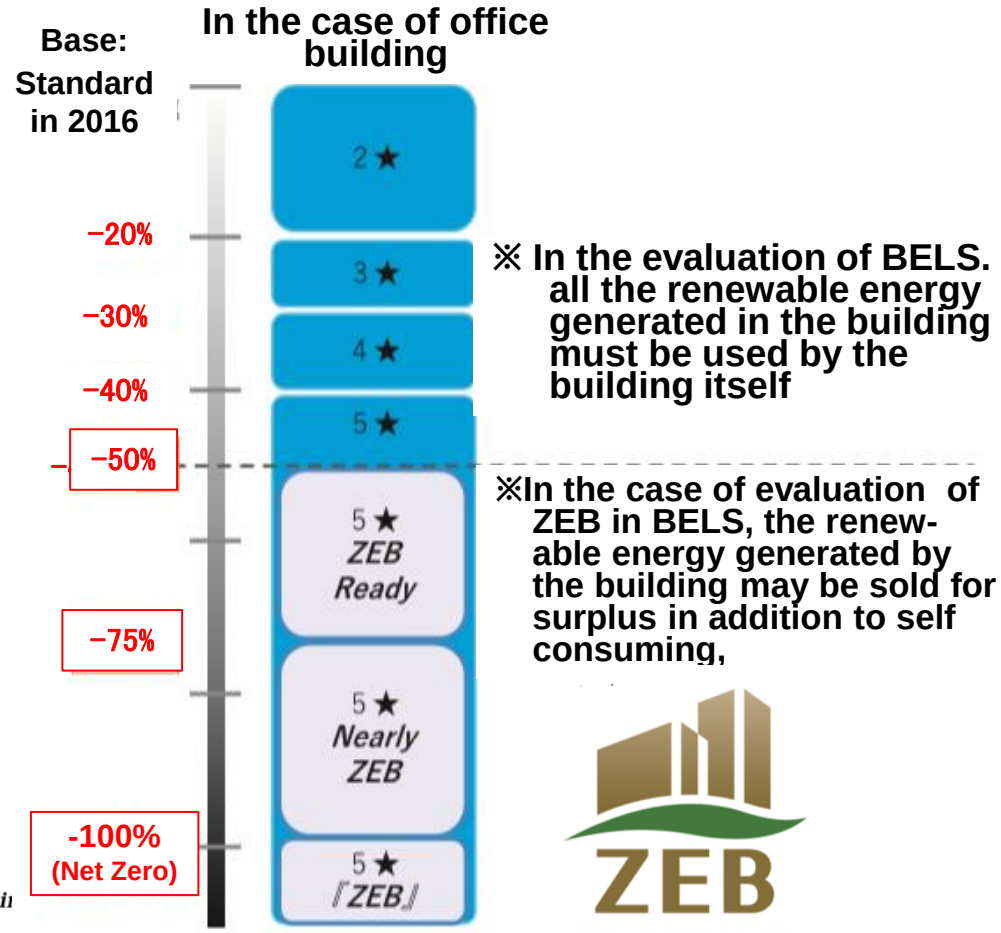
Expansion of initiatives through improved social reputation

Source: METI Website

BELS (Building Energy-Efficiency Labeling System)

Labeling system and Positioning of ZEB

ZEB certification and labeling system



※ In the evaluation of BELS. all the renewable energy generated in the building must be used by the building itself

※In the case of evaluation of ZEB in BELS, the renew-able energy generated by the building may be sold for surplus in addition to self consuming,

ZEB

The number of BELS acquisition

Status of BELS acquisition

- As of September 30, 2021: **2,040**
- ZEB series: **724 cases**
- Percentage of ZEB series: approx. **35.5**

Source: METI Website

3.2 The measures for ZEB dissemination in Japan
(4) Utilize the Energy Conservation Grand Prize (conducted by ECCJ)

In order to further enhance awareness of ZEB and to impress upon building owners and investors the benefits of ZEB, the framework of **the Energy Conservation Grand Prize**, which is already widely recognized as an award system for home appliances, etc., will be utilized. **The "ZEB/ZEH field" was newly established** in the "Energy Conservation Best Practice Category" and "Product and Business Model Category" of the Energy Conservation Grand Prize in fiscal year 2021.

	Energy Conservation Best Practice Category	Product and Business Model Category
Evaluation targets	• Projects that are expected to lead to the future spread of ZEH and ZEB through activities that have achieved energy savings by converting to ZEH and ZEB. • Projects that have achieved a high ratio of ZEH in their own house supply or a large supply of ZEH on a national scale. • Activities of building owners that contribute to EE&C through the conversion of their buildings to ZEB	• Products that have achieved ZEH/ ZEB, have excellent functionality and design considering the surrounding environment and customer needs and are expected to be widely used in the future, • Standardized ZEB that is expected to spread in the future
Evaluation items	a. Innovativeness and originality b. Energy efficiency and conservation c. Replicability and spillover potential d. Sustainability of improvement	a. Development Process b. Innovativeness and originality c. Energy efficiency d. Resource saving/recyclability e. Marketability and economic efficiency c. Environmental preservation and safety

Note: ZEH in the Energy Conservation Grand Prize is "Nearly ZEH" and higher. ZEB is "ZEB Ready" or higher.

Source: Report of ZEB / ZEH-M Committee (2021)

3.2 The measures for ZEB dissemination in Japan
(5) Sharing and accumulation of know-how Capacity building for engineers

ZEB Design Guideline and ZEB Brochure

ZEB Design Guidelines

Medium office | Home for the aged・Welfare homes | Small office | Supermarkets | Hospital | School | Hotel | Assembly hall

✓**For design engineers**

- Combination of technologies for ZEB conversion
- Energy saving effect of the technology, additional cost
- Actual design cases

ZEB Brochure

office | Supermarkets | Home for the aged・Welfare homes | hospital | school | hotel

✓**For building owners**

- Benefits of ZEB (energy-saving benefits, improved working environment, etc.)
- How to achieve ZEB, actual design examples
- Available support systems, etc.

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4. “ZEB Family Concept” dissemination in ASEAN

METI cooperates with each ASEAN Member State to establish the systems & policies to promote energy saving measures through the introduction of the advanced Japanese energy conservation policies, systems and technologies.

	2017	2018	2019	2020	2021	2022	2023
JASE-W *Public – private collaboration activities*	① *Introduction of ZEB family concept in AJEEP* Program* ② *One training workshop for private and public sectors in Japan.*	① *Proposal of ZEB Building Award in AEA* ② *S&W in AMS: Malaysia* ③ *Two training WS for AMS in Japan* ④ *Introduction in AEBF*	① *S & W in:Thailand & Malaysia,* ② *S & W in Philippines* ③ *Started ZEB Ready Building Award in AEA*	*The online seminars:* • *Vietnam (Dec 7-8),* • *Malaysia (ZEB Guideline) (Dec 14 and Mar 1) and* • *Indonesia(Feb.1)*	The online seminar • Indonesia （June 15） • AEBF（Sep 15）	The online seminar • Vietnam(Sep 27) • Malaysia (Oct 19)	• **Seminar in Vietnam (May 8 and Aug 9), Indonesia (July 25) and Philippines (Sep 28)**
AJEEP * Activities	• *The study of ZEB award in AEA in ECAP 14 of AJEEP*	• *Draft of the guideline for ZEB award in AEA in ECAP 17 of AJEEP.*	*ECAP **20 (workshop) under AJEEP Program in Japan*	*ECAP 23 of AJEEP by online (Dec 8, 2020)*	ECAP 26 of AJEEP by online (Dec 15-16, 2021)	ECAP 29 of AJEEP by online Dec 20 and 21)	**ECAP 32 (Dec) WS in Japan**

**ASEAN-Japan Energy Efficiency Partnership, ** Energy Conservation Workshop Under AJEEP*

Oct. 2019@Bangkok

Feb. 2020@Malaysia

Dec. 2020 @ Vietnam

Dec. 2021@ ECAP 26 (AJEEP)

Feb. 2022@ ECAP29 (AJEEP)

4. “ZEB Family Concept” dissemination in ASEAN

Winners of the ASEAN Energy Award 2021

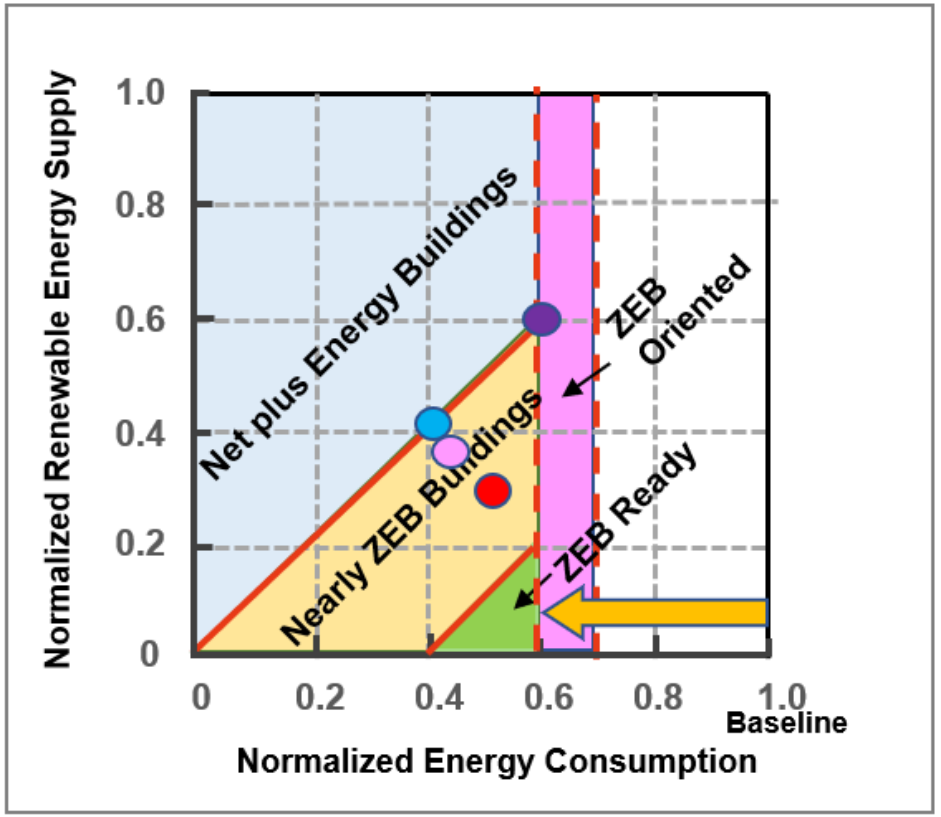
Special Submission Category of EE Building Area, ZEB Ready Sub-category (2021)

● Nanyan Technological University (Singapore)

● Ulu Pandan Bus Stop (Singapore)

● Khonkean International Convention Center (Thailand)

● Dhanaphiphat Building (Thailand)



Source: ACE presentation in ECAP26 in Dec. 2021

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- ***The energy efficiency in buildings is one of the key issues for the Japanese EE&C policy, and has developed the policy and regulatory framework, such as EC law/regulations, assessment measures, etc.***
- ***Japan enacted new Energy Building Code in 2015 and the standard has become mandatory requirement in 2017.***
- ***The current Japanese E. E. Law for buildings still does not have enough power to achieve the target for reduction of GHG, that Japan announced at COP 21 in 2015, in the building sector. Therefore, the government has implemented the policy of " ZEB Family Concept" to promote and disseminate high level energy efficient buildings, "ZEB Ready" and to finally realize (net)ZEB by further energy efficiency and conservation as well as applying renewable energy.***
- ***The government has been implementing further measures to disseminate ZEB.***
- ***The Japanese government has also been promoting " ZEB Family Concept" in ASEAN region.***

Thank You Very Much

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