

# Report on follow-up tasks for JRE CO2 reduction for FY2023 (Summary Edition)

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Mitsubishi Jisho Design Inc.



# 1. Background and Purpose



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In FY2019, we conducted a review and calculation of the CO2 reduction target for all owned buildings until FY2030. We also set a target to reduce 20,000t CO2 emissions by renovation work compared to FY2019.

Beside setting reduction targets, it is important to consider how to achieve CO2 reduction through renovation work. This year, We have been studying a roadmap for CO2 reduction until FY2030, monitoring the reduction effects of renovation work carried out in FY2022.

We have set a target of acquiring 5 to 10 ZEBs by FY2030. We conducted on-site study of selected ZEB candidate properties in FY2022 to improve the accuracy of certification acquisition for the following year (FY2024). We also discussed the possibility of certification acquisition for other properties.

## Outline of business operations for FY2023

### ①CO2 reduction follow-up

⇒ Confirmation of Energy Data for FY2022, monitoring the CO2 reduction progress until FY2030 and the reduction effects from the renovation work carried out in FY2022.

### ②ZEB conversion study

⇒ Conduct simple calculations for ZEB candidates (total of 3 buildings) using the BEI simplified calculation system. Also, organize candidates for ZEB certification acquisition on and after FY2024.

### ③Reduction Value Calculation Based on Internal Carbon Pricing

⇒ Calculation of the equivalent amount applying Internal Carbon Pricing (ICP) from the expected reduction in CO2 emissions thanks to energy-saving renovation work. (For renovation work from FY2023 onwards)

## 2. Follow-up study on CO2 emissions reduction



# Follow-up on CO2 emissions reduction in FY2023

## Follow-up on CO2 emissions reduction in FY2023

- We calculate the CO2 reduction amount from energy-saving measures implemented in FY2022 and updated the progress chart of reduction by calculating the total reduction amount since FY2019.

## Approach to CO2 Reduction Effect by the Renovations Conducted in FY2022

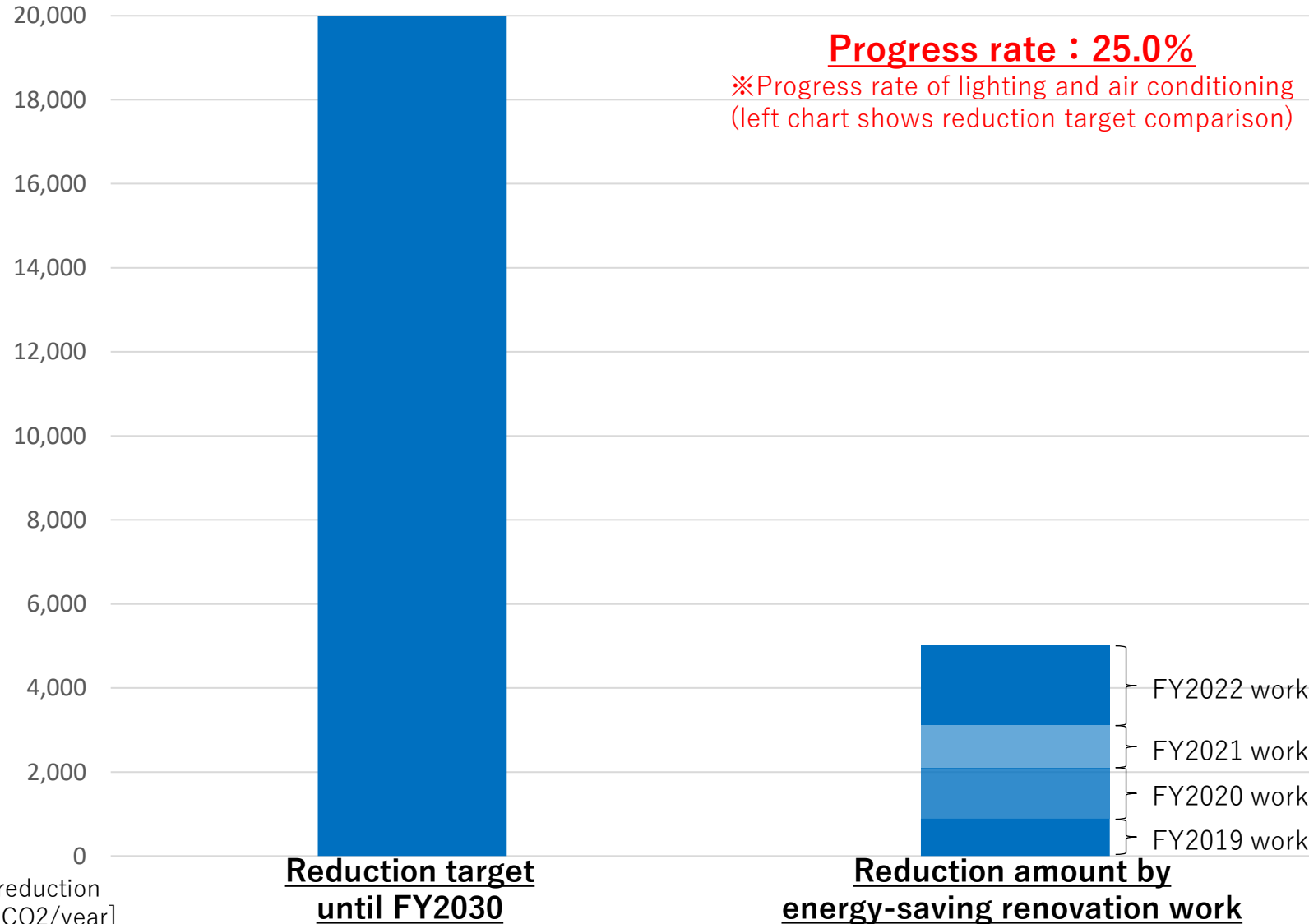
Calculation was performed for all energy-saving renovation work according to the following procedure.

- We confirmed the overall volume of air conditioning and lighting work for each building and assessed the update rate by comparing it to the volume (capacity of equipment, number of lighting fixtures, etc.) of the 2022 work. Consideration was also given to the ownership percentage.
- For the FY2022 projects, the reduction effect was calculated by multiplying the reduction rate to the evaluated reduction amount (Case I: updating with the same capacity) that was assessed in the FY2019 work.

# Follow-up on CO2 emissions reduction in FY2023

【CO2 reduction target】 Total : 20,000 tons or more

Total : 5,006 tons



Total CO2 reduction amount[ton-CO2/year]

### 3. Study on ZEB Conversion



# Approach to considering ZEB conversion

## ZEB conversion investigation flow

### **STEP1 : Understanding Current status of each building**

Understanding of building basic data, equipment specifications and renovation status



### **STEP2 : Selection points and extraction of ZEB conversion investigated properties**

After organizing the points for ZEB conversion selection, extract and narrow down candidate properties



### **STEP3 : Implementation of rough calculations**

Perform rough calculations for candidate properties to confirm selected properties have the potential for ZEB conversion



### **STEP4 : Investigation of selected candidate properties for ZEB conversion**

Proposal of renovation specifications for ZEB conversion and determination of renovation specifications based on energy-saving calculations for selected properties



### **STEP5 : Implementation of ZEB acquisition application**

Create BELS application drawings and acquisition of certification based on determined renovation specifications (scheduled for FY2024 and beyond)



# Verification results (simple calculation) for Building A

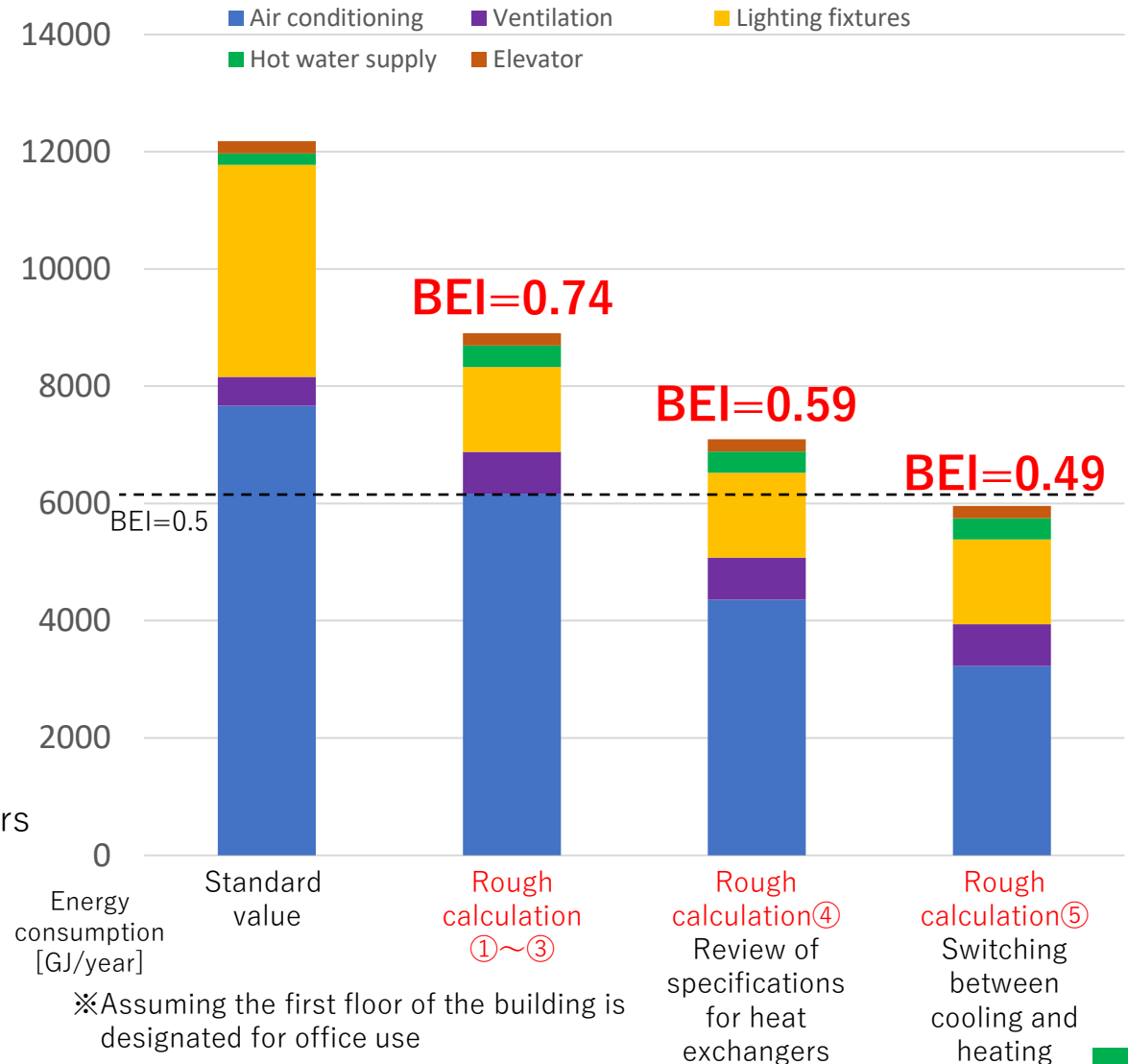
## ◇ Building overview

Location : Kansai area  
Floor area : More than 5,000m<sup>2</sup>  
Age of the building : More than 10 years  
Air-conditioning system : Multiple packaged air conditioning unit system  
Ventilation system : Total heat exchanger on each floor

## ◇ Conditions for renovation study

- ① Upgrade air-conditioning units to the latest model
- ② Optimization of air conditioning capacity
- ③ Upgrade all lighting to LED lighting
- ④ Review of specifications for heat exchangers
- ⑤ Changing from simultaneous heating and cooling to switching between heating and cooling

## ◇ Simple calculation results for ZEB BEI (※)



# Verification results (simple calculation) for Building B

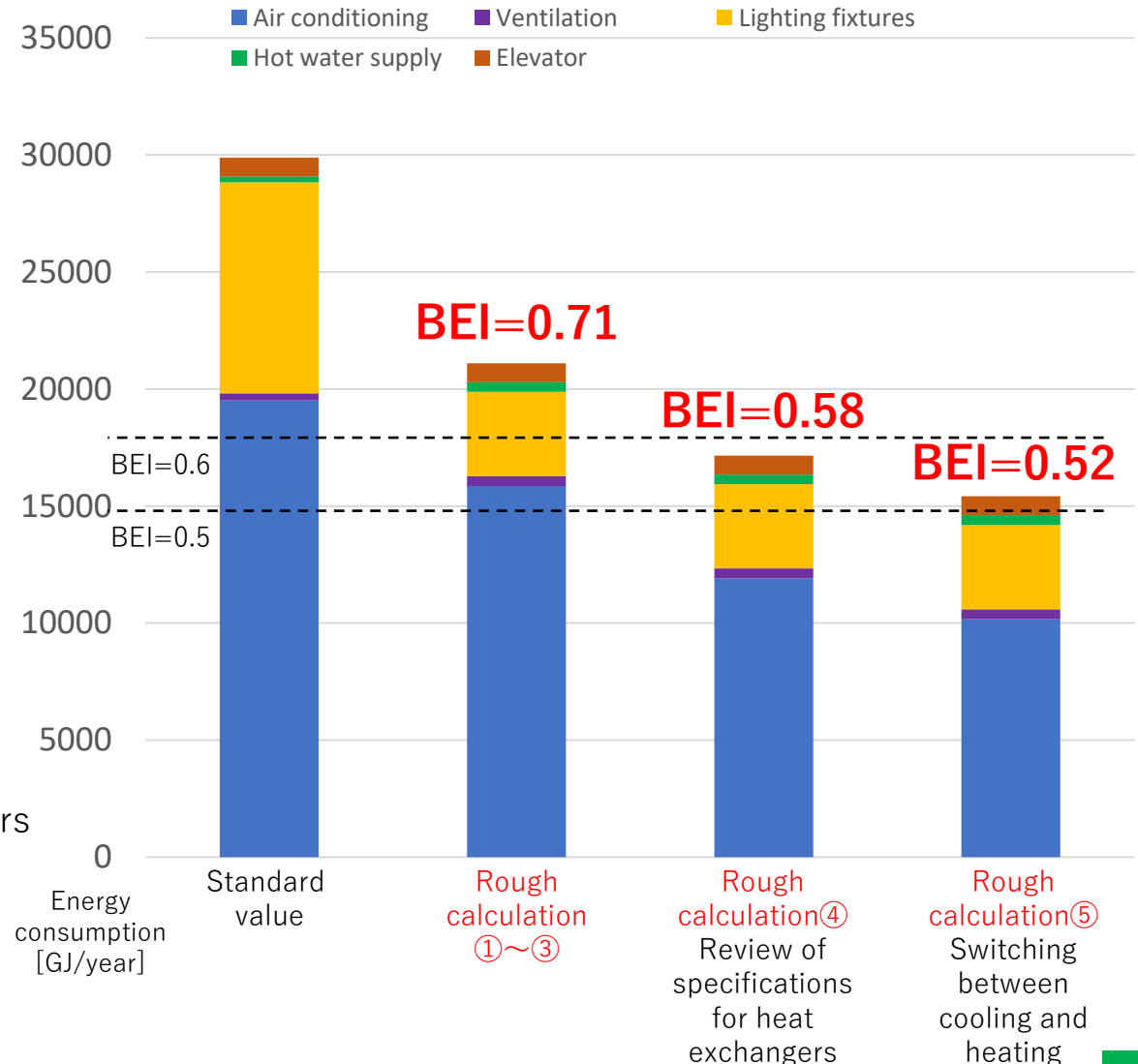
## ◇ Building overview

Location : Kansai area  
 Floor area : More than 10,000m<sup>2</sup>  
 Age of the building : More than 10 years  
 Air-conditioning system : Multiple packaged air conditioning unit system  
 Ventilation system : Total heat exchanger on each floor

## ◇ Conditions for renovation study

- ① Upgrade air-conditioning units to the latest model
- ② Optimization of air conditioning capacity
- ③ Upgrade all lighting to LED lighting
- ④ Review of specifications for heat exchangers
- ⑤ Changing from simultaneous heating and cooling to switching between heating and cooling

## ◇ Simple calculation results for ZEB BEI



# Verification results (simple calculation) for Building C

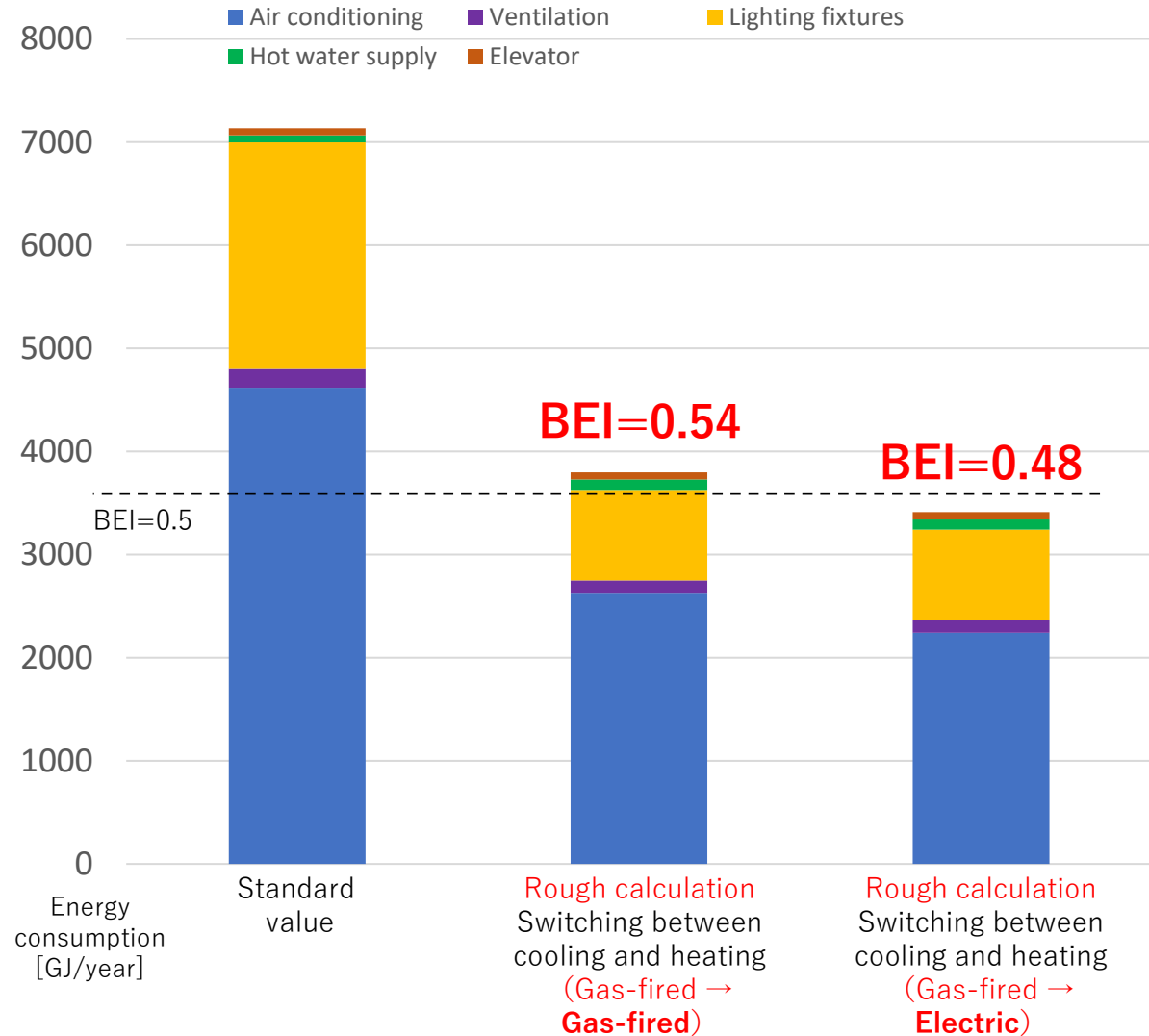
## ◇ Building overview

Location : Tokyo  
 Floor area : Less than 5,000m<sup>2</sup>  
 Age of the building : More than 10 years  
 Air-conditioning system : Gas-fired multiple packaged air conditioning unit system  
 Ventilation system : Total heat exchanger on each floor

## ◇ Conditions for renovation study

- ① Upgrade air-conditioning units to the latest model
- ② Optimization of air conditioning capacity
- ③ Upgrade all lighting to LED lighting
- ④ Consideration of changing from a gas-fired multi-packaged air conditioning unit system to a electric multi-packaged air conditioning unit system

## ◇ Simple calculation results for ZEB BEI



# Toward the future ZEB certification in the JRE portfolio

## Conclusion for ZEB conversion investigation in FY2023

- Continuing from FY2022 study (7 properties), a simple evaluation was conducted on 3 properties for the ZEB conversion study in FY2023. The outcome of the simple evaluation show that 3 of the building have the possibility of attaining ZEB by applying specific measures for that purpose.
- Going forward, JRE and Mitsubishi Jisho Design Inc.※(hereinafter “MJD”) will continue to evaluate the actual condition of properties in the portfolio and to study potential ZEB conversions in order to achieve the aim of owning 5 to 10 ZEBs as committed in the KPI. The results of this verification illustrate the potential for MJD Renovation Design Department. We aim to further evolve by proactively promoting environment-related initiatives such as carbon neutrality and ESG investment.