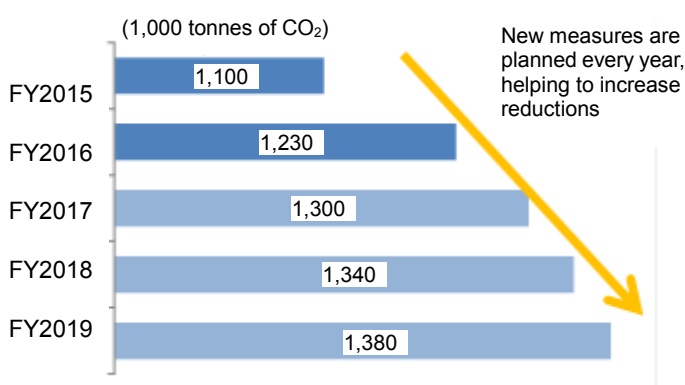


## Reference

### ➤ Analysis of implementation or planning of measures

#### Reductions resulting from measures implemented or planned by covered facilities



- Further reductions are expected as new energy efficiency measures are implemented or planned to meet obligations for the second compliance period.
- Many reduction measures have been focused on updating to high-efficiency equipment, such as LED lights.

#### Reduction measures indicated in plans

Measures for heat sources, air conditioning, and lighting	Quantity	Reductions (tonnes)
<b>Introduction of high-efficiency heat source equipment</b>	<b>409</b>	<b>135,342</b>
<b>Introduction of high-efficiency pumps for air conditioning and energy-saving control</b>	<b>388</b>	<b>38,000</b>
<b>Introduction of high-efficiency air conditioning equipment</b>	<b>409</b>	<b>39,919</b>
<b>Introduction of high-efficiency packaged air conditioning equipment</b>	<b>86</b>	<b>3,757</b>
Introduction of variable-air-volume systems for air conditioning equipment	39	6,896
Introduction of systems for cooling using outside air	286	25,476
Introduction of external air volume control based on CO <sub>2</sub> concentration	122	17,675
Introduction of total heat exchangers	47	3,774
<b>Introduction of high-efficiency fans</b>	<b>285</b>	<b>19,379</b>
“Cool Biz” and appropriate room temperatures during summer	112	15,904
Introduction of warming-up control	33	736
More careful timing of starting up air-conditioning before using rooms	140	14,141
Introduction of building energy management systems	47	7,636
Visualization of energy consumption included in above	9	649
Demand control systems	6	557
Introduction of high-efficiency lighting and energy saving control	1,745	130,618
<b>LED lights included in above</b>	<b>1,452</b>	<b>110,225</b>
Hf lights included in above	109	10,158
Sensors included in above	101	3,061
Relaxing illumination conditions	315	22,059
Total or partial lights-out during lunch break and outside business hours	30	937
Introduction of energy saving control for elevators	122	2,753
<b>Total</b>	<b>11,499</b>	<b>1,378,015</b>

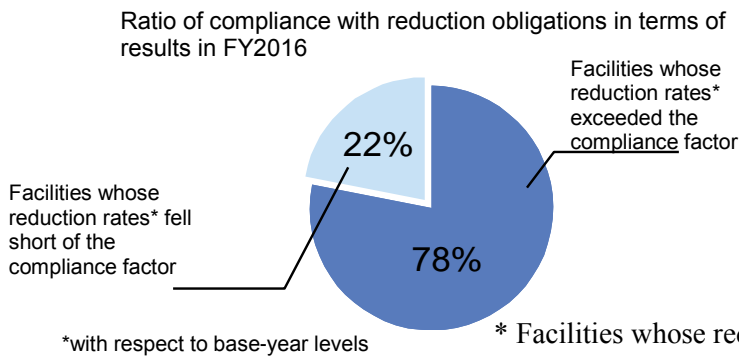
### ➤ Selection of low-carbon electricity or heat as a means to meet obligations

- In the second compliance period, a new mechanism has been introduced to accept equivalence to CO<sub>2</sub> reductions when covered facilities procure electricity or heating from TMG-certified suppliers with smaller emission factors.
- In FY2016, this mechanism was used by 17 facilities for low-carbon electricity and 123 facilities for low-carbon heat.

#### Facilities selecting low-carbon electricity or heat in FY2016

Categories	No. of facilities	Total reductions	Average ratio of reductions to emissions
Low-carbon electricity	17	Approx. 3,000 t-CO <sub>2</sub>	Approx. 2.6%
Low-carbon heat	123	Approx. 5,800 t-CO <sub>2</sub>	Approx. 0.5%

## ➤ Forecasts for compliance with obligations in second compliance period



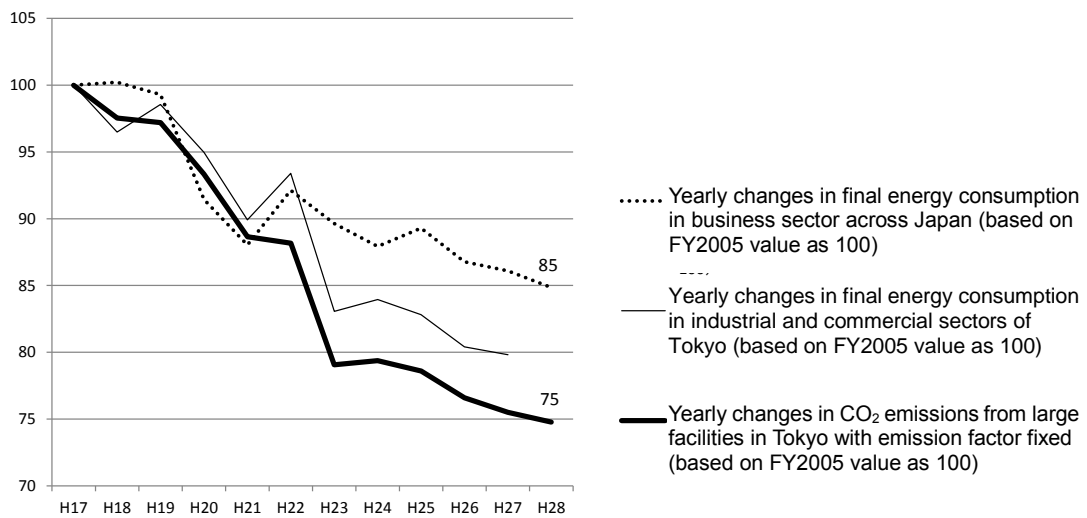
- Approximately 80% of facilities achieved reductions over their compliance factors in the second fiscal year of the second compliance period.
- Many facilities are expected to meet their obligations through their own reduction measures in the second compliance period as well.

\* Facilities whose reduction rates with respect to base-year levels will exceed the compliance factor for the second compliance period (17% or 15%) if emissions in FY2016 are maintained

## Reference: Comparison with National Levels

A comparison of yearly changes in CO<sub>2</sub> emissions at facilities under the program and those in energy consumption in the business sector across Japan and the industrial and commercial sectors of Tokyo shows that the facilities have achieved significantly more reductions than national levels.\*

Comparison of reductions in CO<sub>2</sub>, etc. in the business sector across Japan, in the industrial and commercial sectors of Tokyo, and at facilities covered by Tokyo Cap-and-Trade Program



\* The changes in CO<sub>2</sub> emissions from facilities covered by the Tokyo Cap-and-Trade Program almost correspond to those in energy consumption at the facilities as the emissions are calculated by fixing CO<sub>2</sub> emission factors.

### Data sources:

- Final energy consumption across Japan announced by the Agency for Natural Resources and Energy: [http://www.enecho.meti.go.jp/statistics/total\\_energy/pdf/stte\\_023.pdf](http://www.enecho.meti.go.jp/statistics/total_energy/pdf/stte_023.pdf)
- Final energy consumption in Tokyo announced by TMG: [http://www.kankyo.metro.tokyo.jp/climate/other/2015sokuhou\\_revised](http://www.kankyo.metro.tokyo.jp/climate/other/2015sokuhou_revised)
- CO<sub>2</sub> emissions from large facilities in Tokyo (FY2005-FY2009) announced by TMG: [http://www.kankyo.metro.tokyo.jp/climate/large\\_scale/attachement/zenseidotatome.pdf](http://www.kankyo.metro.tokyo.jp/climate/large_scale/attachement/zenseidotatome.pdf)

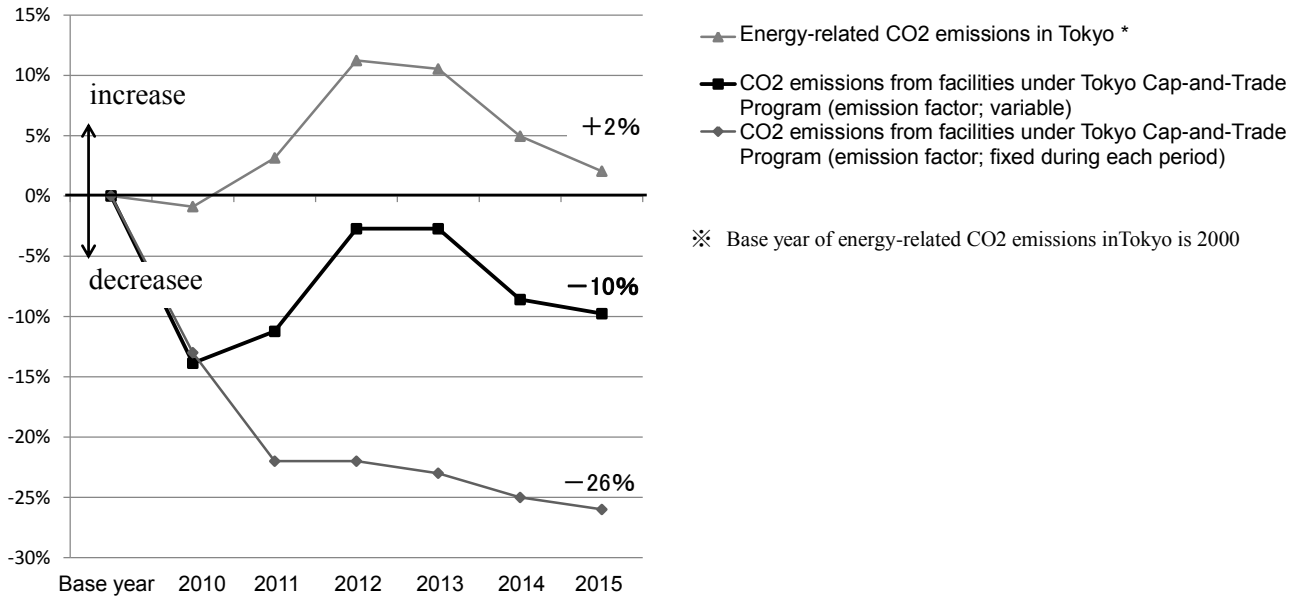
**Reference:**

**Changes in CO2 emissions when applying variable emission factors**

In order to evaluate energy conservation efforts of the covered facilities (energy demand side), the CO2 emission factors of supply side (electricity and others) are fixed during the compliance period in the Tokyo Cap-and-Trade program.

Calculating the CO2 emissions of covered facilities using the variable emission factors for each energy type, the amount of them has decreased by 10% in recent years although the emission factor of electricity has deteriorated 1.3 times from the base year.

(Reduction rate compared to the Base year)



**Emission Factor of Electricity (Mean value of the electricity supplied in Tokyo Jurisdiction) (t-CO2/1,000kWh)**

Base year	2010	2011	2012	2013	5014	2015
0.382	0.378	0.461	0.519	0.523	0.499	0.492

**Emission Factor of Electricity (Applied for Tokyo Cap-and-Trade Program) (Fixed during each period) (t-CO2/1,000kWh)**

First Compliance Period FY2010-2014	Second Compliance Period FY2015-2019
0.382	0.489