

Toward a Smart Energy City

Tokyo's Initiative



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2. GHG Emissions in Tokyo and Tokyo's Climate Change Strategy

GHG Emissions in Tokyo

57.3
Mt-CO₂
(FY2010)

➤ **Population:**

13 Million

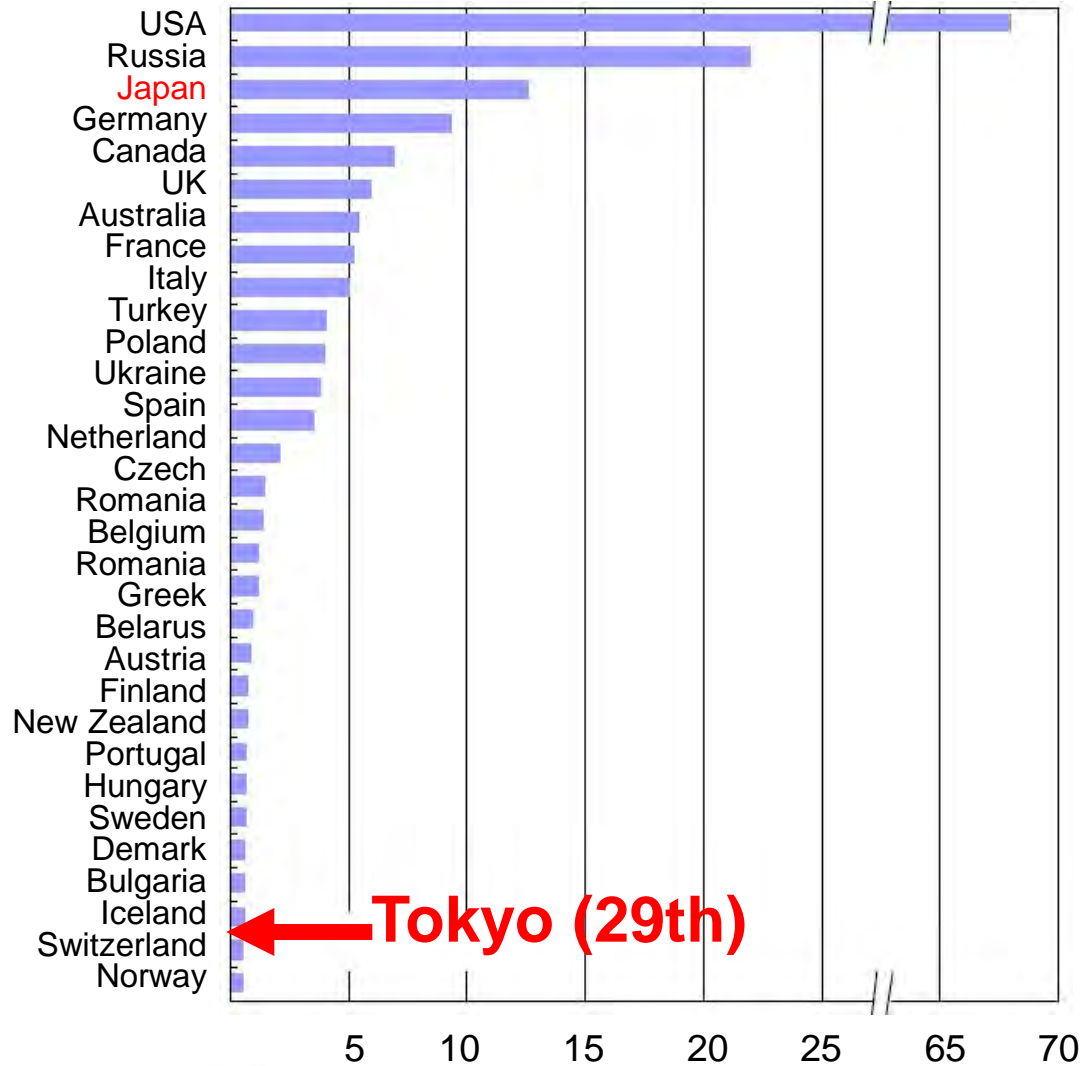
➤ **Emissions
per capita**

4.4 t-CO₂

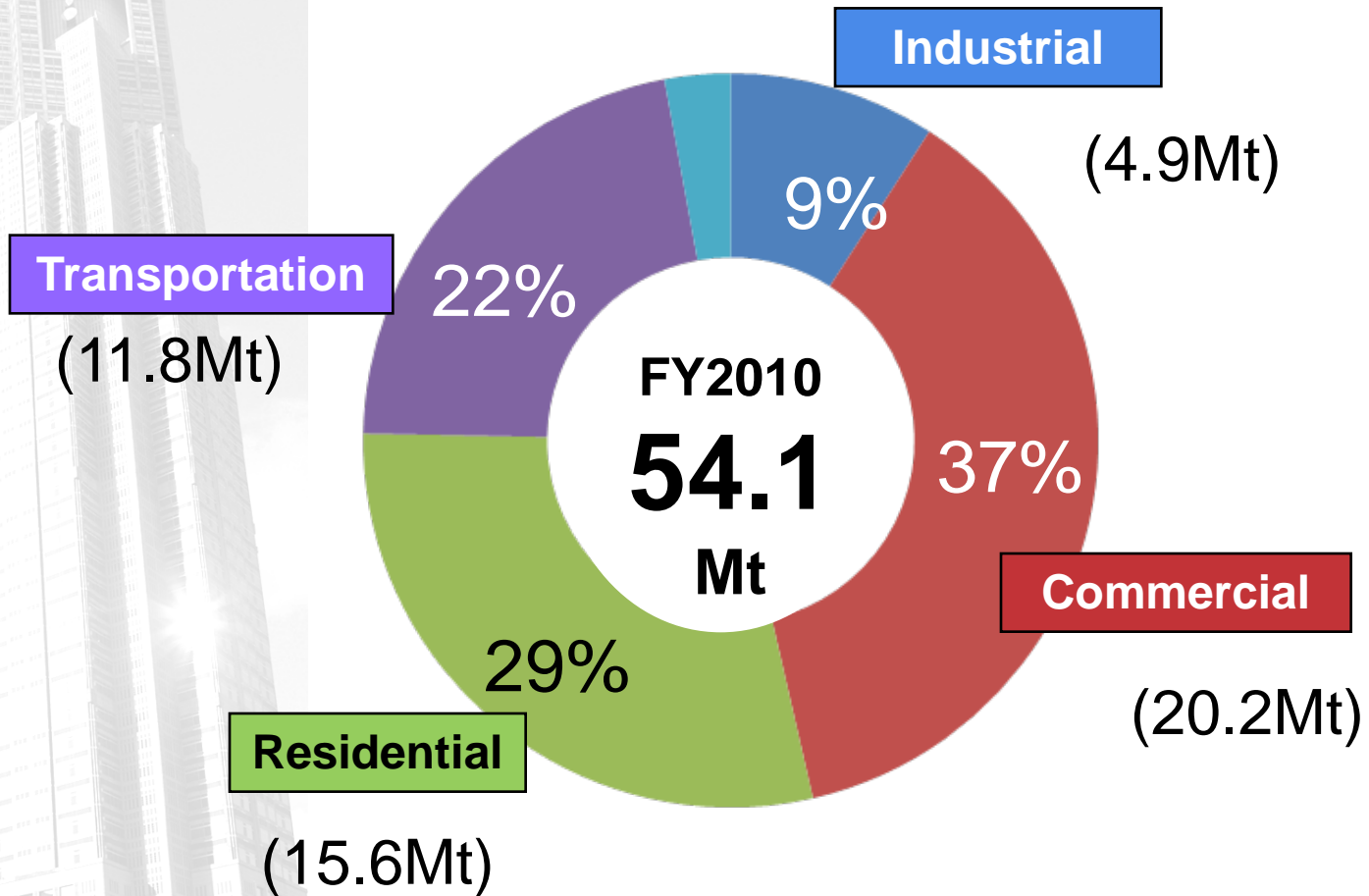
➤ **Area :**

2,187 Km²

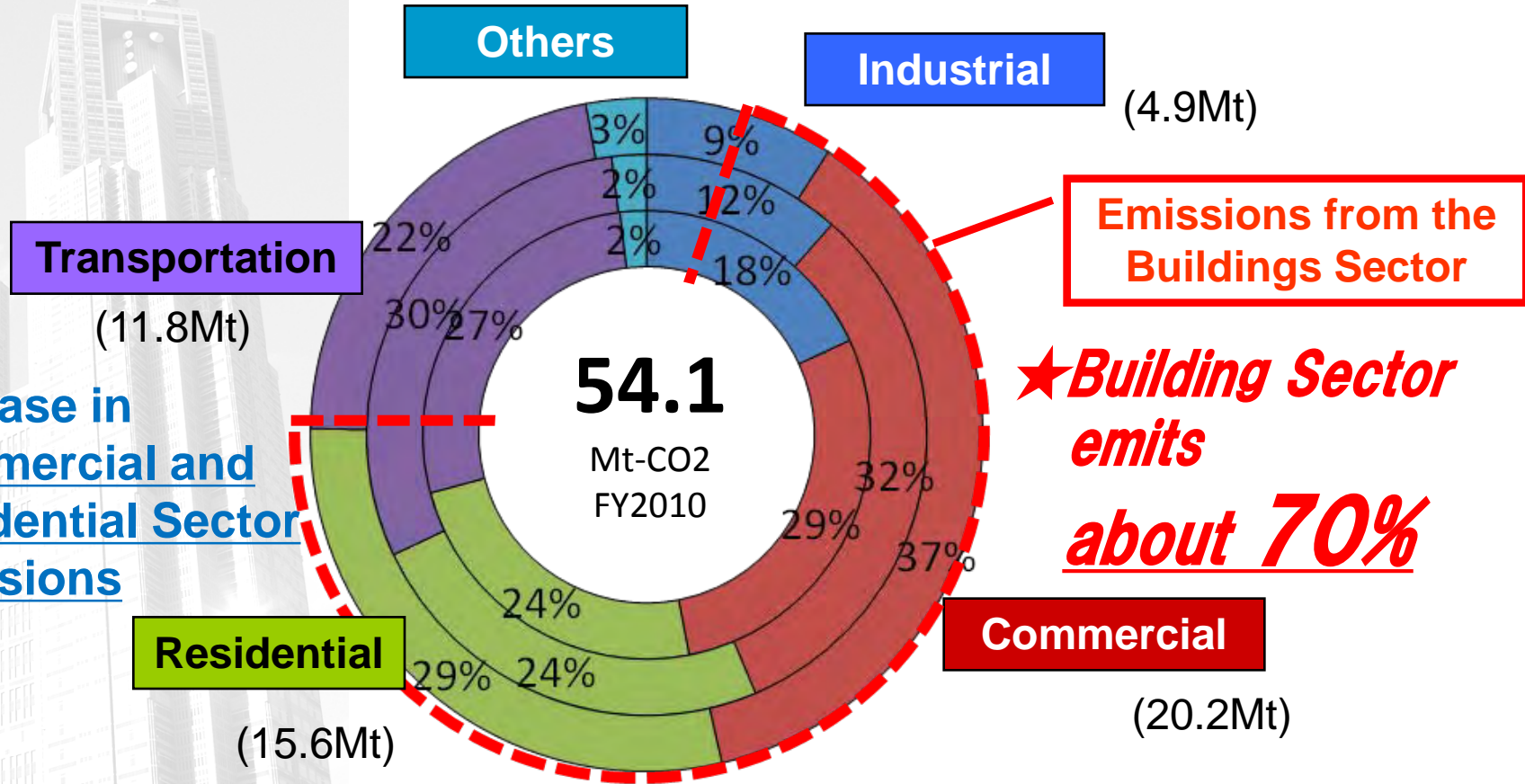
<GHG emissions of Annex I parties in 2010>



CO₂ Emissions in Tokyo (FY2010)



CO₂ Emissions Trend



◆ Increase in Commercial and Residential Sector Emissions

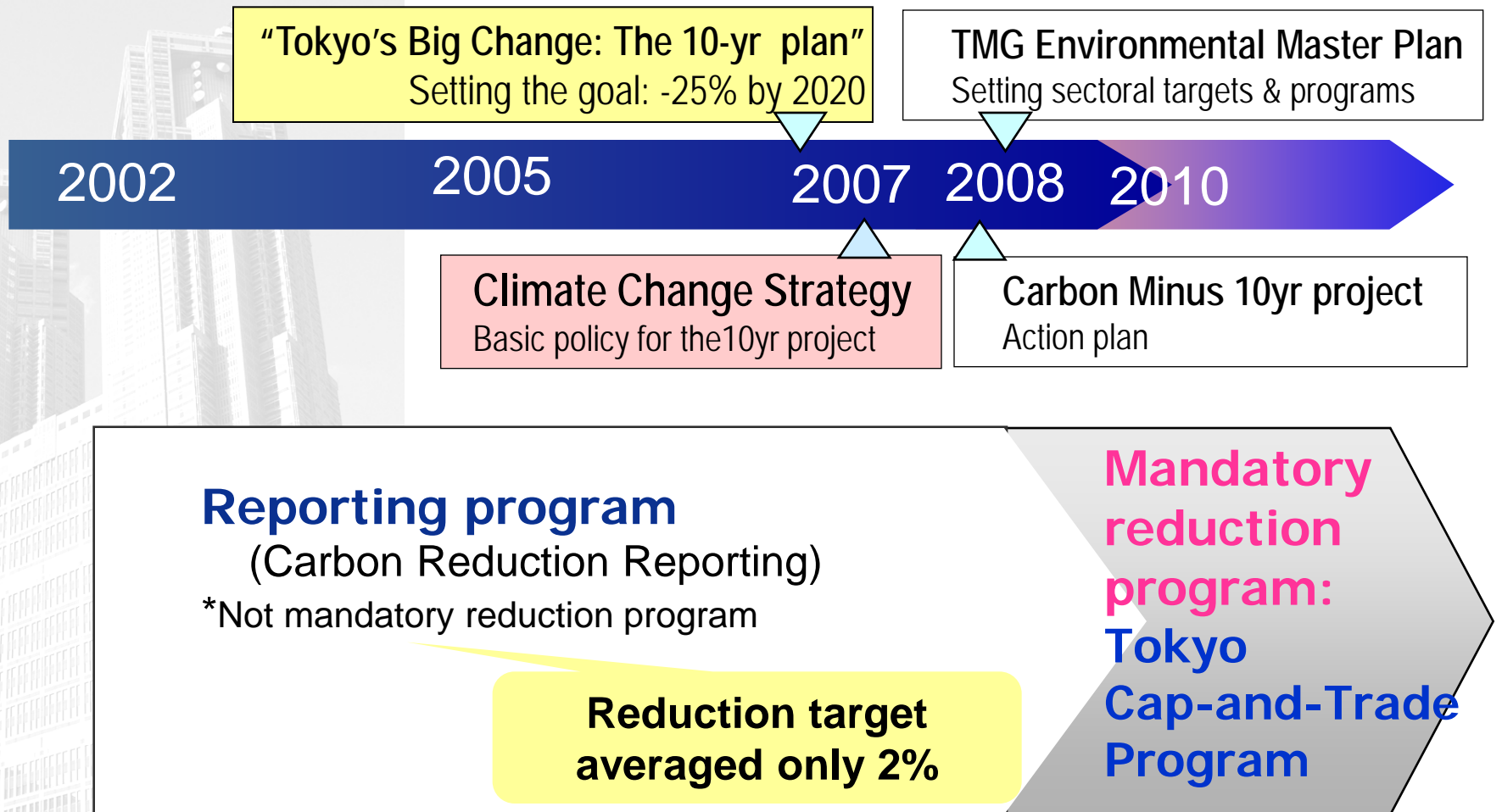
Inner circle : FY1990 / Total : 54.4Mt-CO₂
 Middle circle: FY2000 / Total : 58.8Mt-CO₂
 Outer circle : FY2010 / Total : 54.1Mt-CO₂

Tokyo Climate Change Strategy Basic Policy

- 1** Responsibility as an **enormous energy consumer**
- 2** Reducing emissions from **buildings** is the key
- 3** Enable Tokyo to grow in the coming carbon restraint age
The early shift to a low carbon city will bring sustainable growth to Tokyo

GHG Reduction Goal :
-25% below 2000 level by 2020

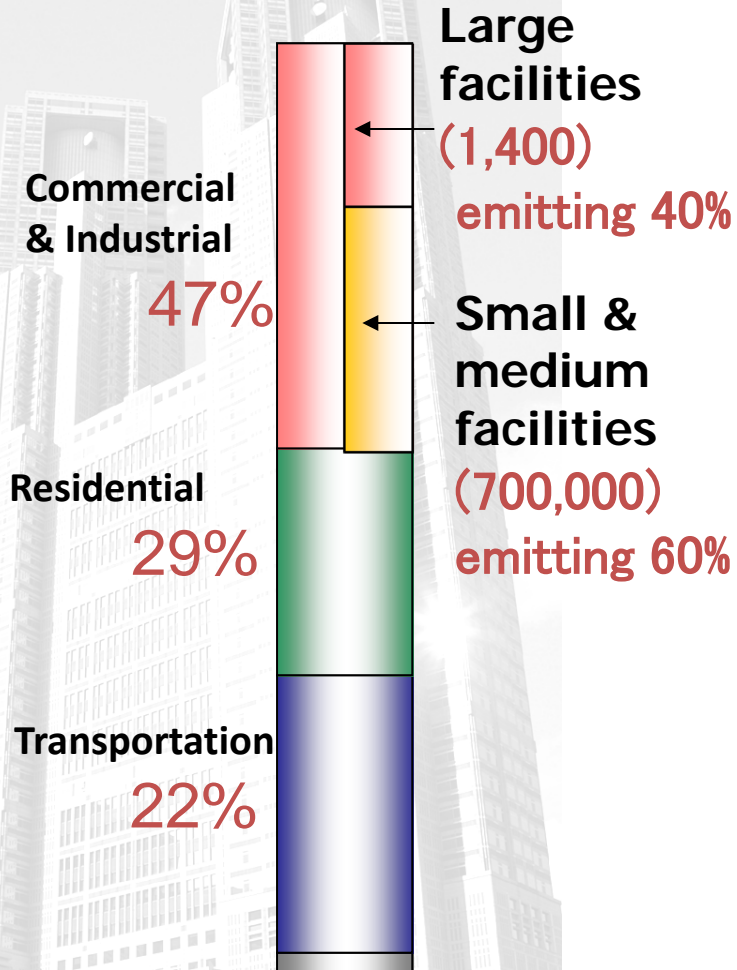
Policy Development



Accumulation of data helped to design a tailor-made C&T

Portfolio of Tokyo's Climate Actions

Total CO2 emissions



Large Facilities

- Cap-and-Trade Program

Small & Medium-sized Facilities

- Carbon Reduction Reporting Program
- Tax Reduction ● Energy-saving & Carbon Credit

Residential Sector

- Solar Energy Subsidy Program
- Energy Advisers ● Environmental Education

Transportation

- Subsidy Program for EVs and pHEVs
- Benchmarking & Rating for Freight Transport

Green Building & City development

- Green Building Program
- Green Labeling Program for Condominiums
- Energy Performance Certificate Program

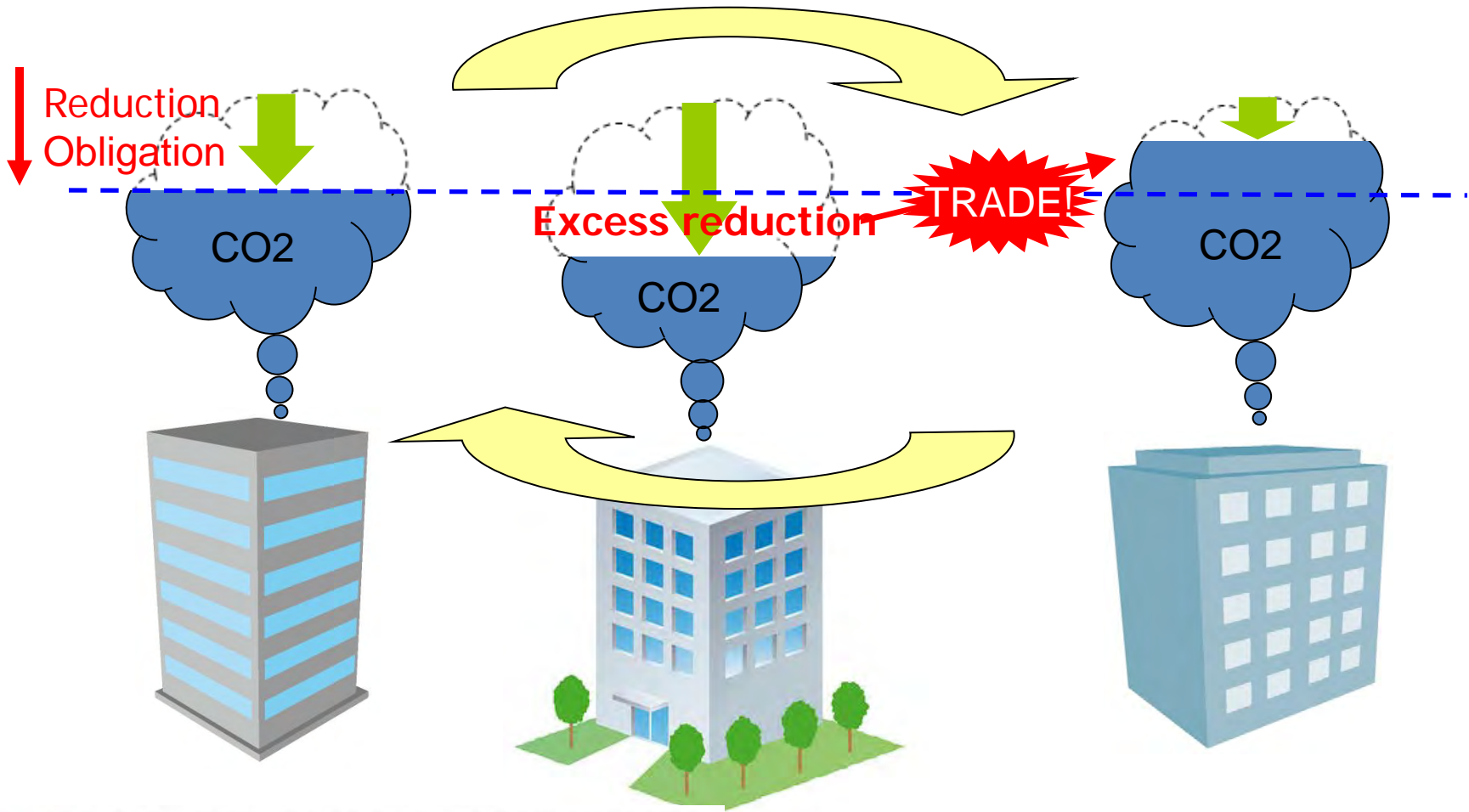


3 Tokyo's Major Program toward a Low Carbon City

Cap-and-Trade Program

Tokyo Cap & Trade Program

Mandatory emission reductions & Emission trading program



Tokyo Cap & Trade Program (1)

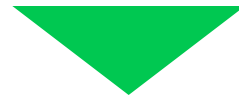
Mandatory emission reductions & Emission trading program

The world's first urban cap and trade program to cover buildings

Offices, institutional buildings, shopping centers, schools, hospitals, factories...

Target: 1,400 facilities

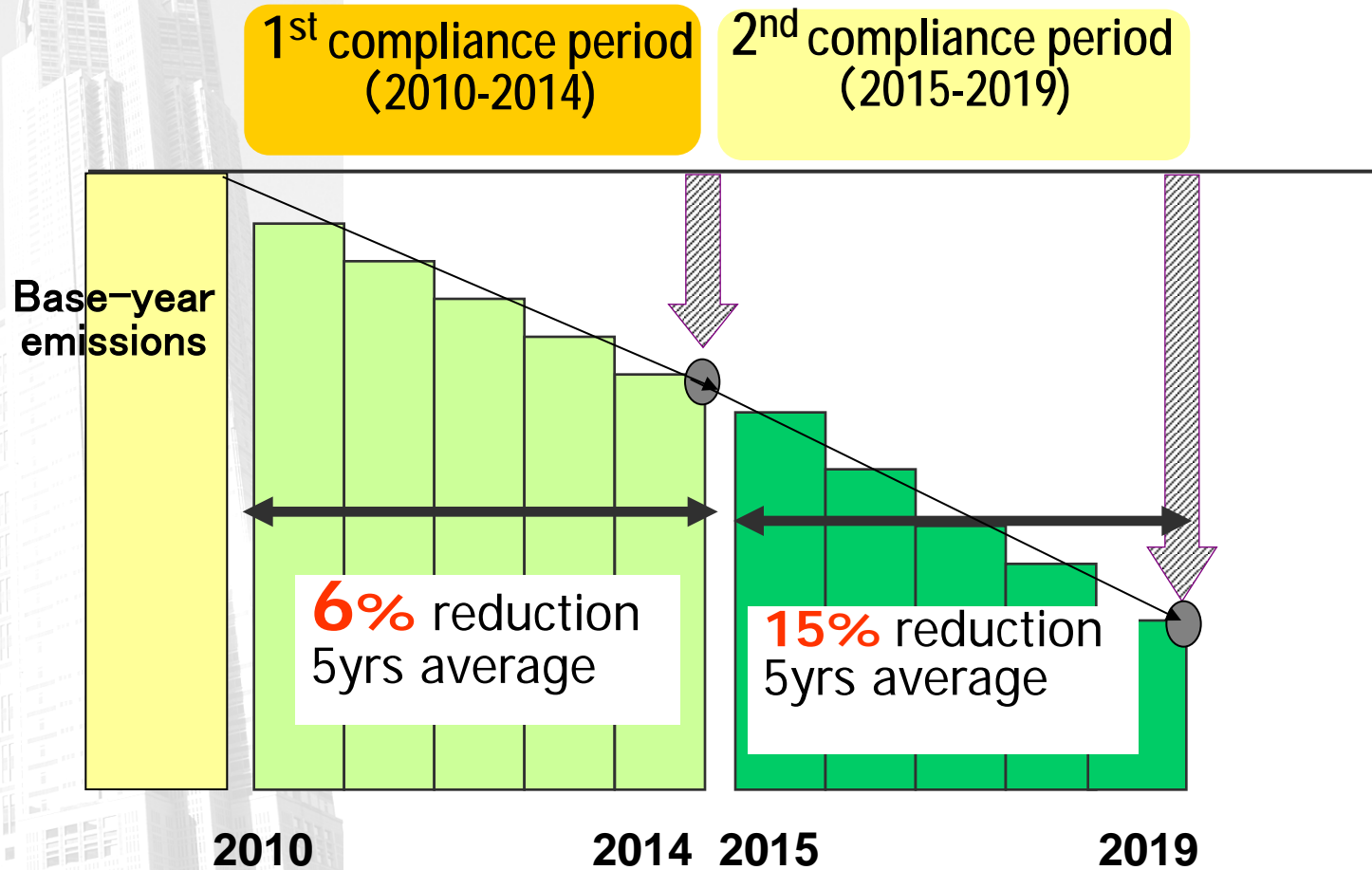
Facilities with annual energy consumption of **1,500 kl or more** (crude oil equivalent)



Covers approx. 40% of commercial & industrial sectors' emissions

Tokyo Cap & Trade Program (2)

Cap Setting



Tokyo Cap & Trade Program (3)

Allowance allocations

$$\text{Emission Allowance (5yrs)} = \left(\text{Base-year emissions} - \text{Obligation reductions} \right) \times 5 \text{ years}$$

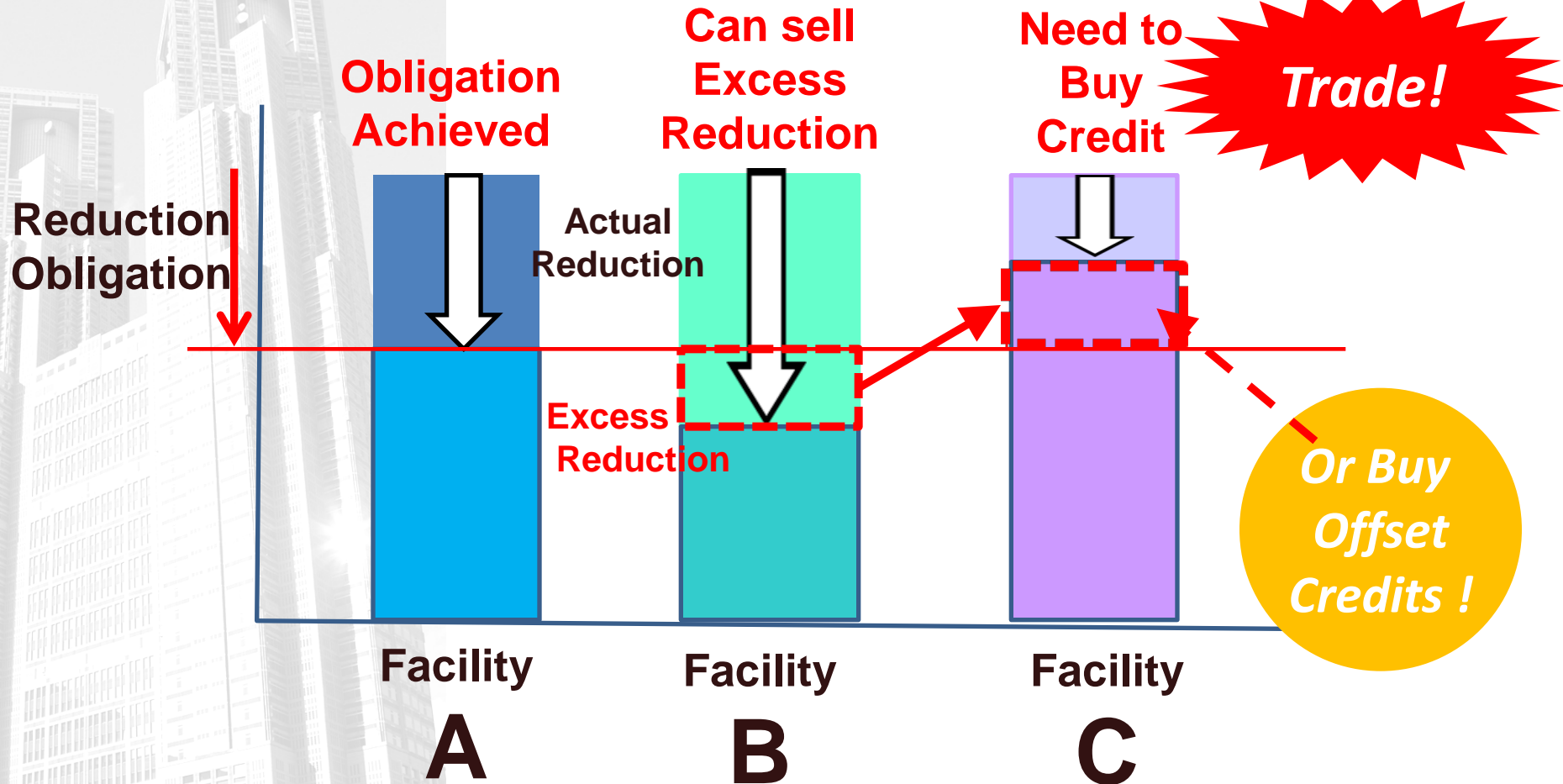
$$\text{Obligation reductions} = \text{Base-year emissions} \times \text{Compliance factor}$$

Base-year emissions : Average emissions of three consecutive years between 2002 to 2007

Category		Compliance factor (2 nd CP)
I -1	Commercial buildings, District cooling & heating facilities (plants)	8% (17%)
I -2	Commercial buildings using District Heating and Cooling	6% (15%)
II	Factories, etc.	6% (15%)
Top level	A facility already achieving high energy efficiency is certified as a: Top level / Near-top level Facility	1/2 or 3/4 of the compliance factor

Tokyo Cap & Trade Program (4)

Trading

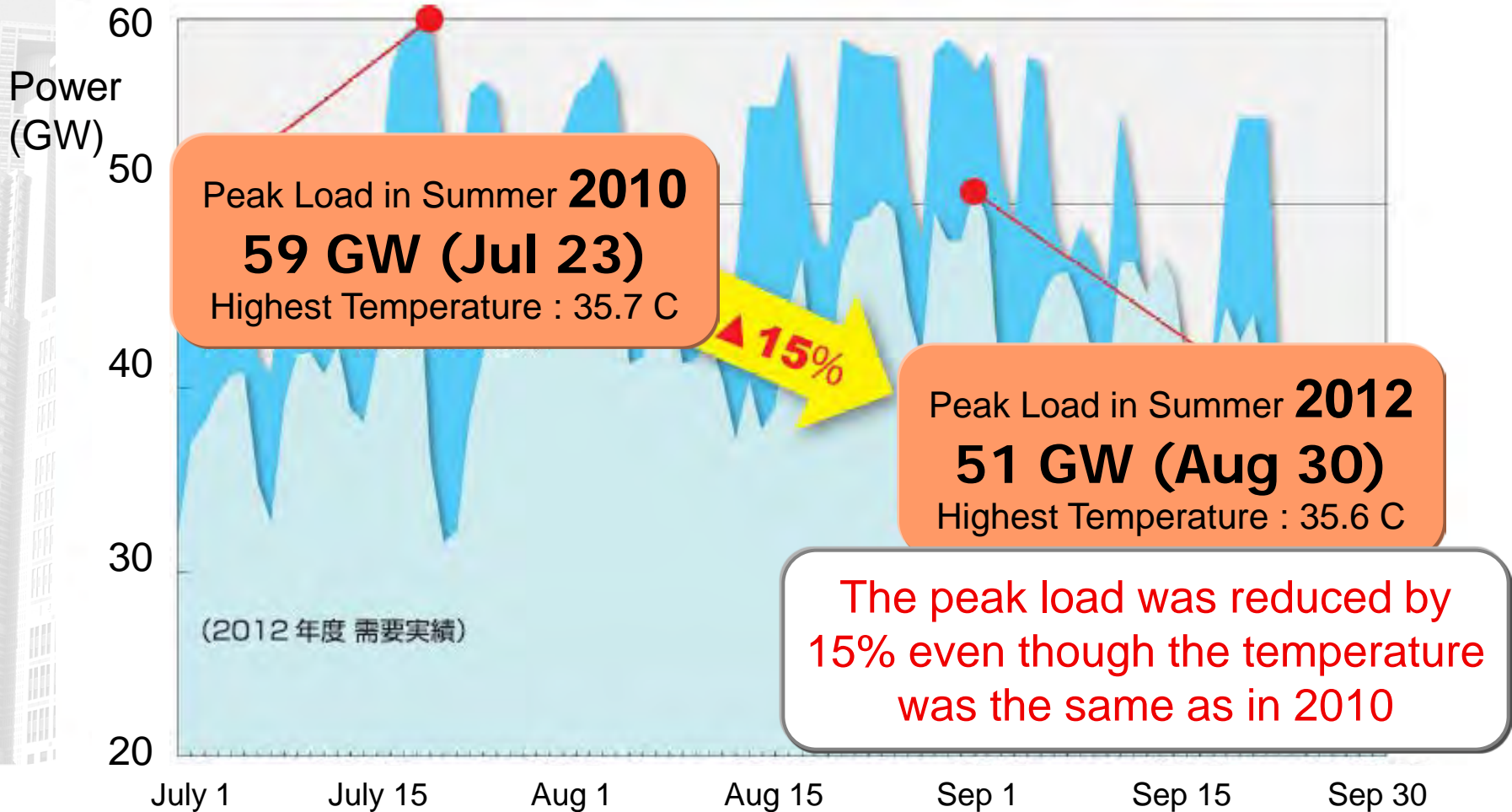




4. Enhanced Energy Saving Measures after March 11th Disaster

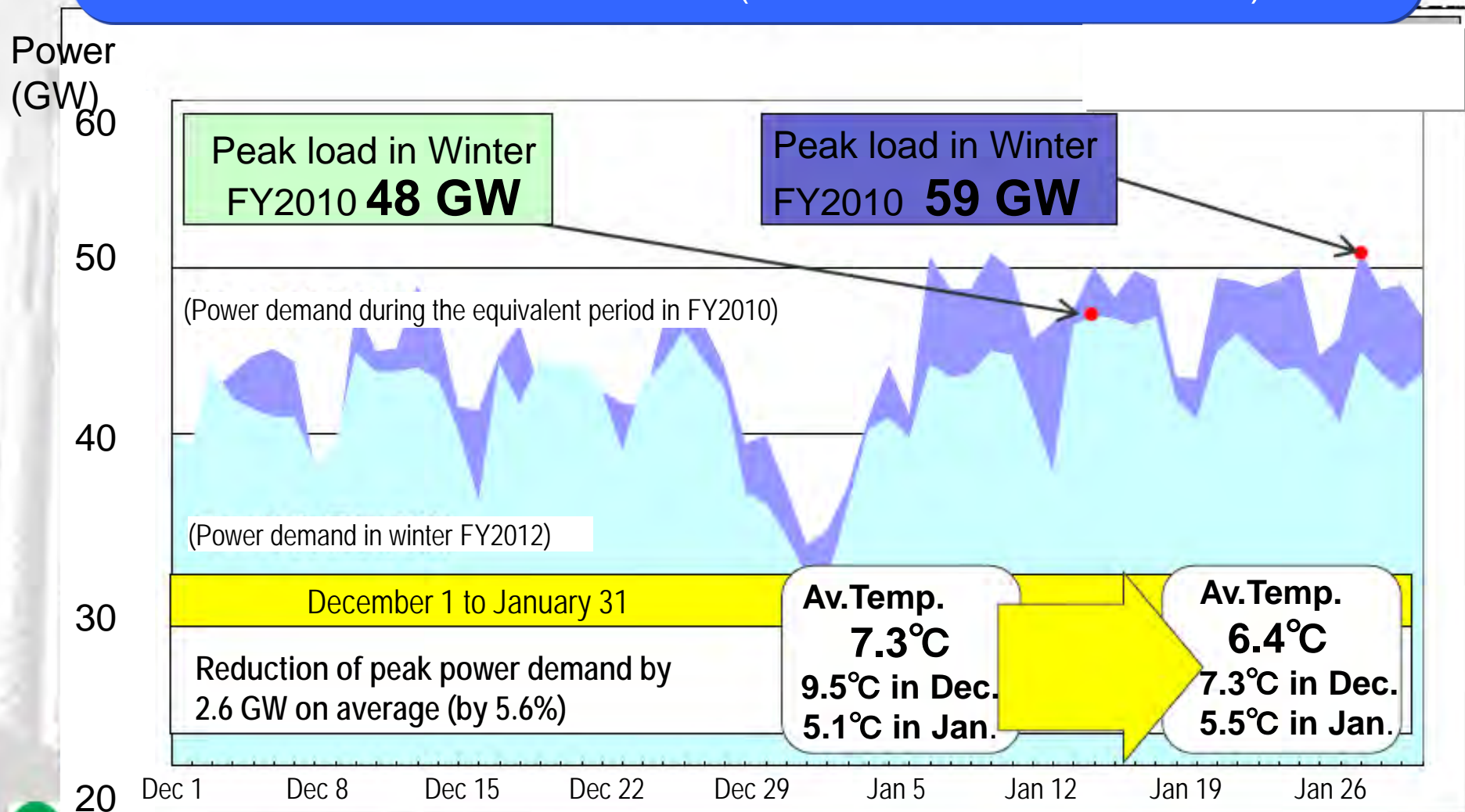
Electricity Peak Load in 2012 (Summer)

Electricity Demand Peak Load in TEPCO area (July – September 2012)



Electricity Peak Load in 2012 (Winter)

Peak Load in TEPCO area (1 Dec. 2012– 31 Jan. 2013)



GHG Emissions in Tokyo

Cap-and-Trade Program

Tenant obligations

- Establishing a tenants' council
- Tenants' reporting

Top-level Facilities Certification

- Identifying and analyzing the energy use in buildings



Contribute to the
Power Crisis response



5. Toward Tokyo as a Smart Energy City

Demand side & Supply side Approach for 2020 Target

Demand Side

Current:

Energy consumption: **9.8% reduction**
(from 2000 to 2010)



Further reduction is expected for FY2011&12
Efforts in this field will be continued

Supply Side

Current:

Increasing amounts of **carbon** due to shift from
nuclear electricity generation

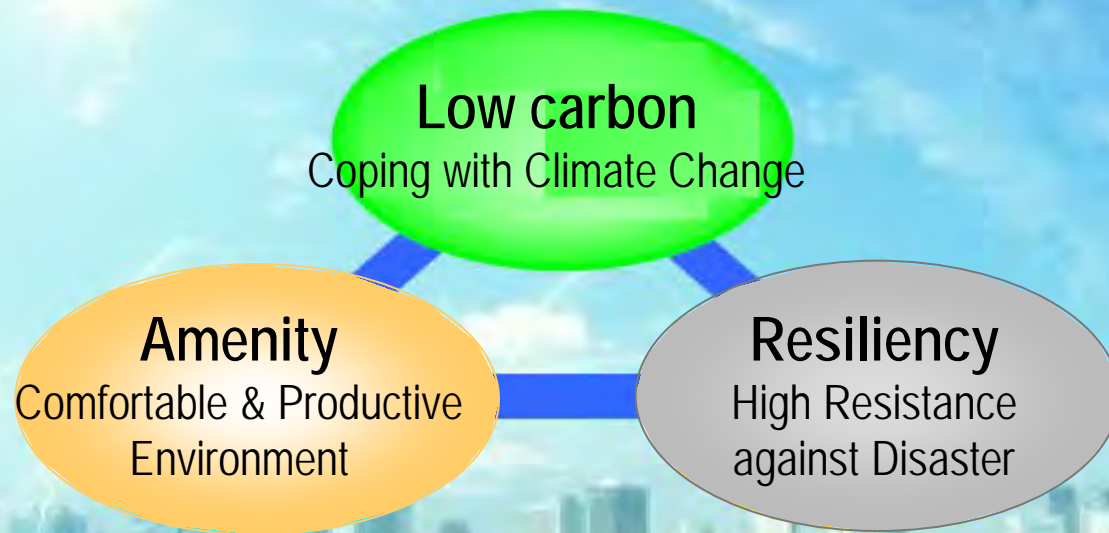


Shift to high-efficiency natural gas power plants
Dramatic increase in renewable energy
Promotion of high-efficiency co-generation
systems

Tokyo's Definition of A Smart Energy City

Tokyo Initiative on Smart Energy Saving (May 2012)

Three Factors for a Smart Energy City



Smart Energy Savings

+

Distributed Energy Sources

+

Optimization of Demand & Supply Energy

Tokyo's Policy on Sustainable Energy Use

◇ **Measures on the demand side**

Promoting conservation of power and energy, which also contributes to a stable power supply

◇ **Measures on the supply side**

Promoting the introduction of distributed energy sources such as renewable energy and co-generation systems

Promoting thermal power from sources other than electricity

◇ **Measures for optimization on the supply side and the demand side**

Introducing energy management systems, which enable efficient regional power supply

From “Following Demand” to “Demand Management”

- The conventional system has coped with peak power use by increasing the supply to cover even short time periods

Hourly power usage in FY2010 (within TEPCO service areas)


Power Use	Recorded Hours
59 to 60 GW	5 hours
58 to 60 GW	28 hours
57 to 60 GW	79 hours
56 to 60 GW	123 hours
55 to 60 GW	165 hours

- A peak demand exceeding 55 GW was recorded for 165 hours, which is only **2%** of the yearly total.

[Initiative 1]

Promotion of Smart Energy Project Subsidy Programs FY2013

(yen)

Project name	Budget amount
 Energy Creation and Management Promotion Project for Households	6.77 billion (~USD68m)
 Energy Creation and Management Promotion Project for Office Buildings and Business Establishments	3 billion (~USD30m)
 Energy Management Support Service Promotion Project for Small and Medium-sized Tenant Buildings	270 million (~USD2.7m)
 Electric Power Demand Response Demonstration Project for Tenant Buildings	100 million (~USD1m)
 Research and Study on the Construction of Regional Energy Management Systems	10 million (~USD100k)

Total: Approx. 10.2 billion yen

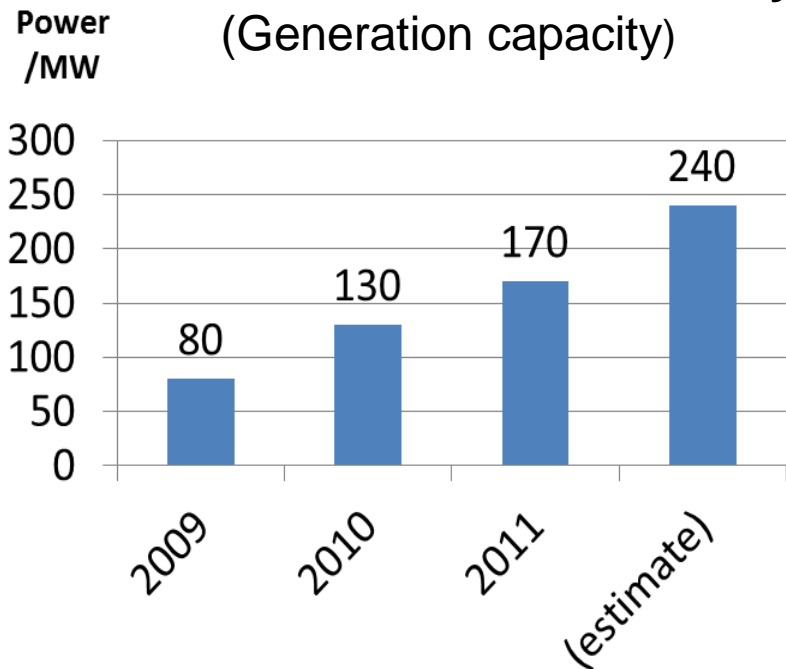
[Initiative 2]

Promotion of Solar Power Generation

TMG Subsidy Program

Solar Power Generator Installation: **Tripled**
80MW (2009) to 240 MW (2012)

Solar-Power Installation in Tokyo



Introduction of

Feed-in-Tariff (FIT)

Utilizing FIT scheme and promoting installation of solar power systems

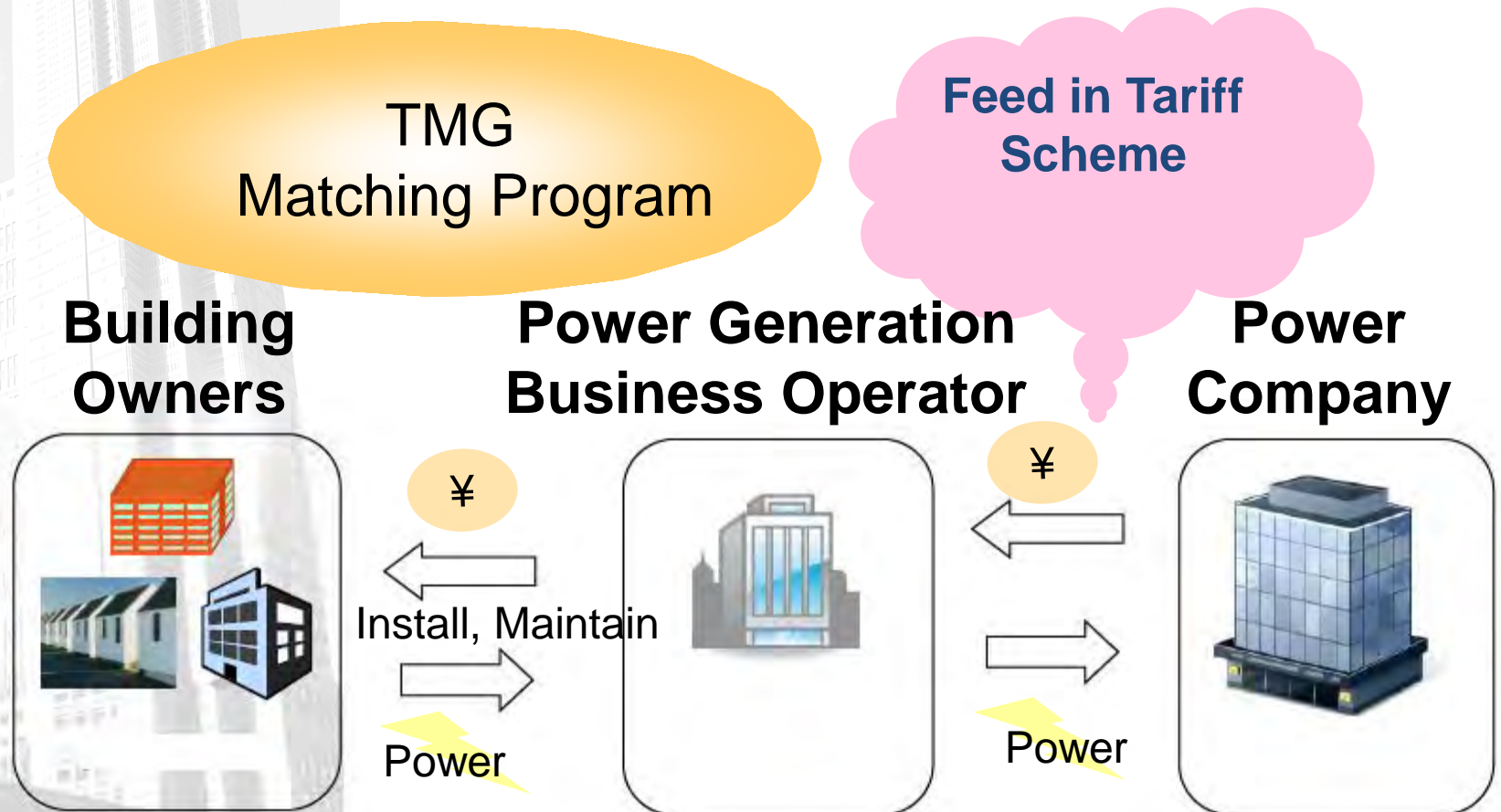
Promotion of

Roof-Leasing Business

Introducing the **mapping system** showing solar-power generation potential

[Initiative 2]

Promotion of Solar Power Generation: Roof-Leasing Business



[Initiative 3]

Steady Implementation of Tokyo Cap-and-Trade Program

Enacted in June 2008

Launched in April 2010

1st period
2010–2014

2nd Period
2015–2019

Remarkable Results in 2011, 2012

Aiming for further promotion of smart energy and power saving

The 2nd period is already looking promising!!

Policy Speech by Tokyo Governor at Assembly (February 20, 2013)



**Toward
a Sustainable Energy City**

**Need for
Comprehensive approach**

◆ **Institutional reform**

Set up an organization specialized in energy issues

◆ **Accelerate promotion of measures**

C40&Siemens Climate Leadership Award Winner!



INQUIRY

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