

Enforcement of the Building Energy Efficiency Act in the City of Yokohama

November 27, 2017

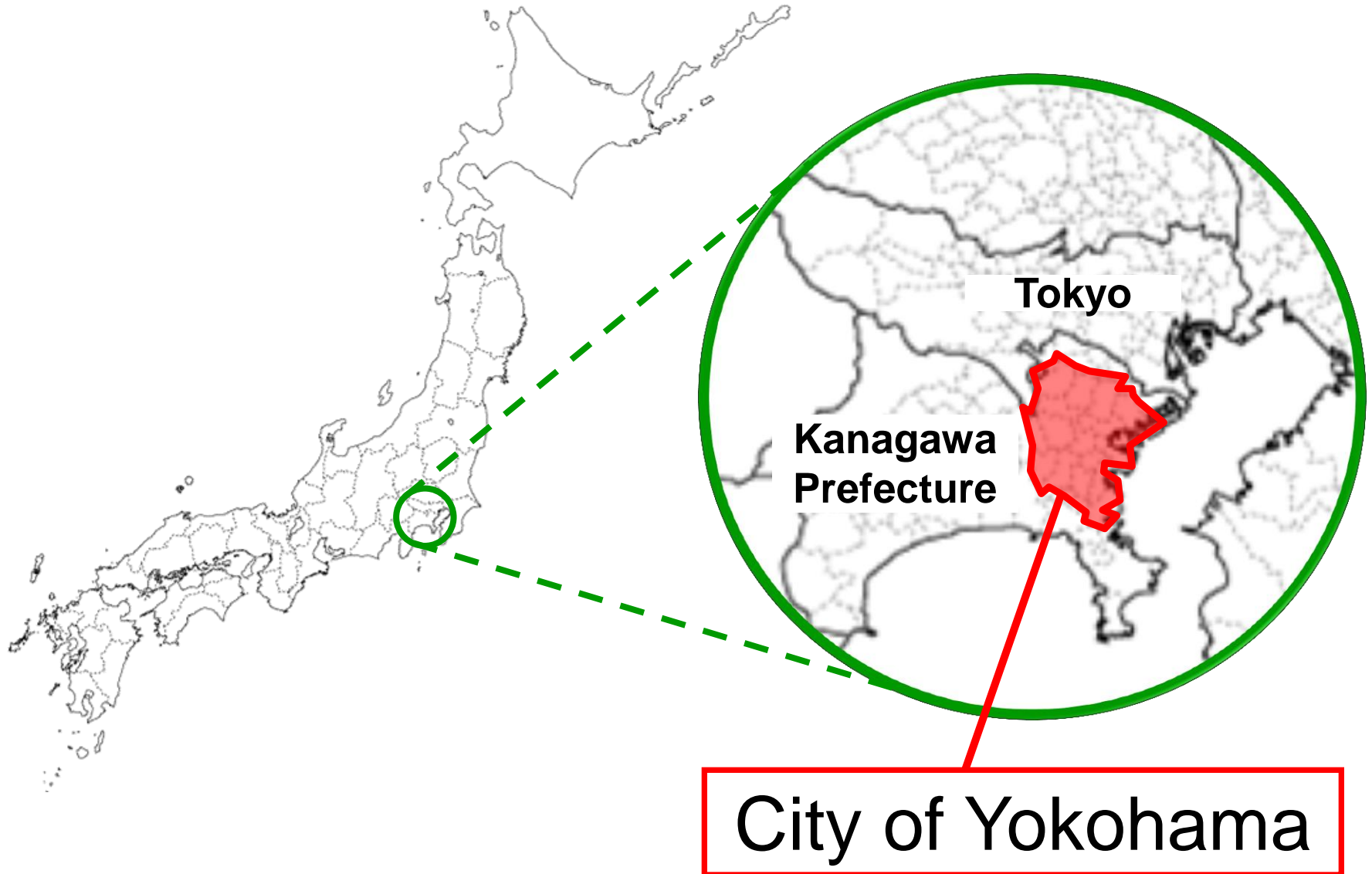
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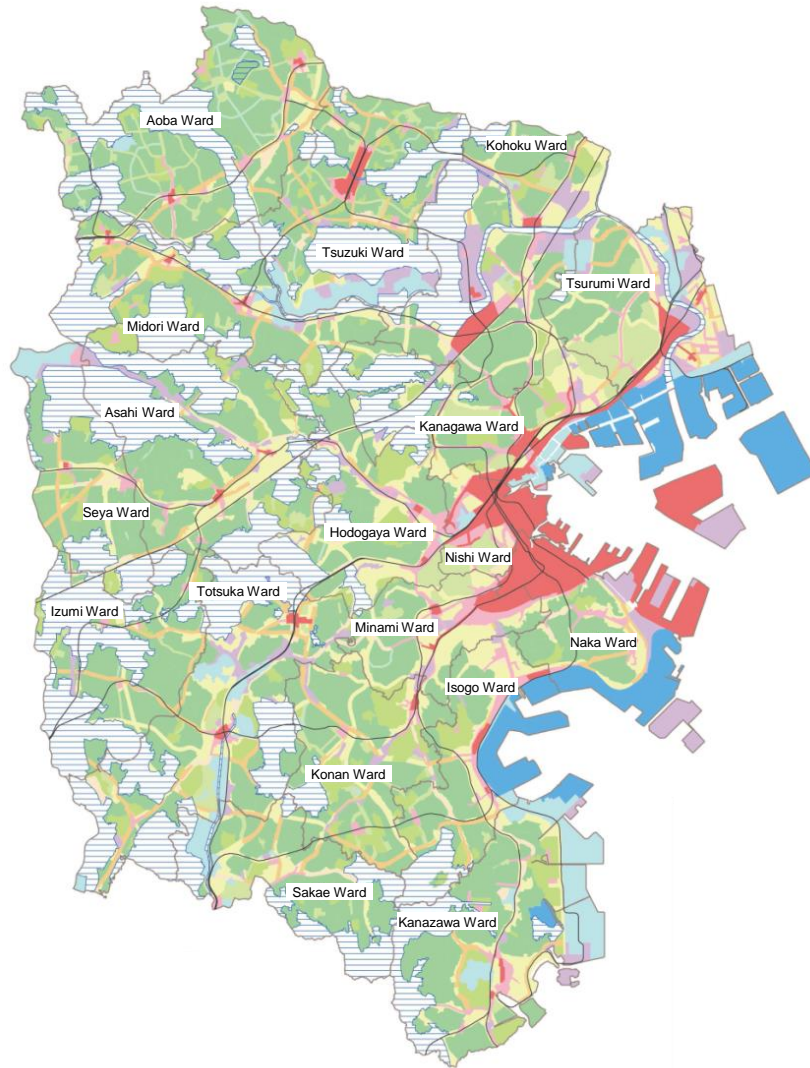
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Overview of the City of Yokohama



Overview of the City of Yokohama



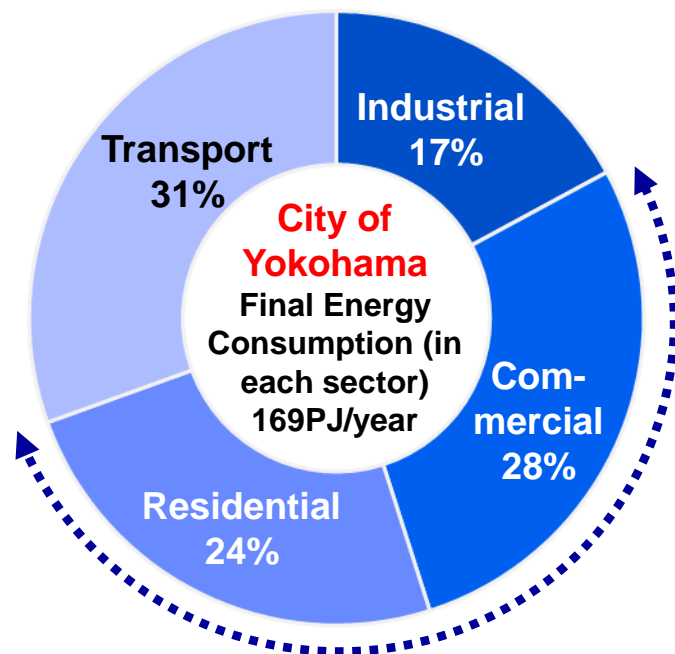
- ◆ Area: 435 km²
- ◆ Population: 3,730,000 people
- ◆ Households:
1,670,000 households
(as of September 1, 2017)



(Materials: Urban Master Plan of the City of Yokohama , March 2013)

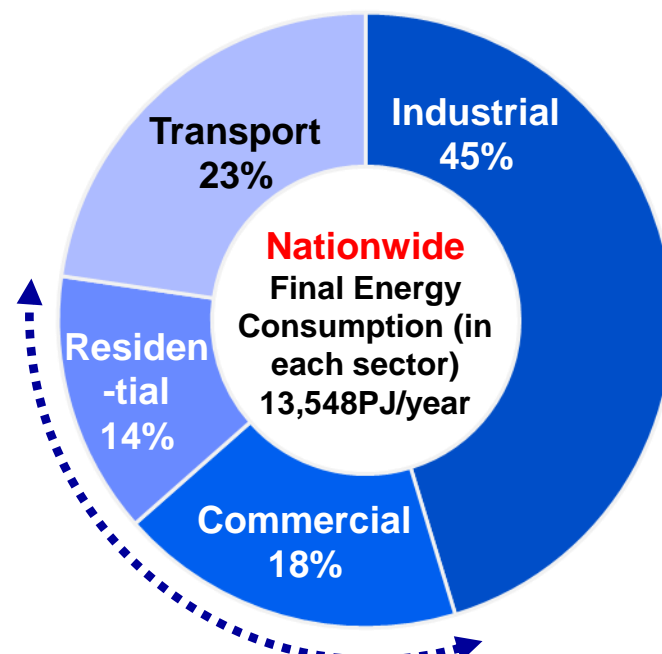
Comparison of the final energy consumption

- Breakdown of the final energy consumption (in FY2015)



Half of consumption is in the residential and commercial sectors

City of Yokohama (in each sector)



One third of consumption is in the residential and commercial sectors

Nationwide (in each sector)

Source: FY2015 Energy Demand Report (Preliminary)
(Agency for Natural Resources and Energy)

Overview of the Act on the Improvement of Energy Consumption Performance of Buildings (Building Energy Efficiency Act)



1. For large-scale non-residential buildings, mandatory compliance with energy efficiency standards, and mandatory evaluation for compliance

(Enforced on April 1, 2017)

→ Regarding large-scale non-residential buildings (Specified buildings: Non-residential buildings that are 2,000 m² or larger), it is mandatory to comply with the energy efficiency standards and to conduct evaluation certification at the time of the new construction, etc., and to guarantee this by conducting building confirmation.

2. Mandatory notification for medium- and large-scale buildings

(Enforced on April 1, 2017)

→ Regarding medium- and large-scale buildings (Buildings that are 300m² or larger, with the exception of specified buildings), it is mandatory to give notification of energy efficiency plans at the time of the new construction, etc. When the plans do not comply with the energy efficiency standards, the administrative agency with jurisdiction may give instructions or orders if necessary.

3. Certification of energy efficiency performance improvement plans and Exception of floor-area ratio regulation

(Enforced on April 1, 2016)

→ When the plans for new buildings or renovations receive certification from the administrative agency with jurisdiction for their compliance with the certification standards, buildings may receive exception of floor-area ratio regulations.

4. Labeling of energy consumption performance

(Enforced on April 1, 2016)

→ The owners of buildings can indicate the fact that they have received certification from the administrative agency with jurisdiction for the compliance of their buildings with the energy efficiency standards.

Regulatory measures

Incentive measures

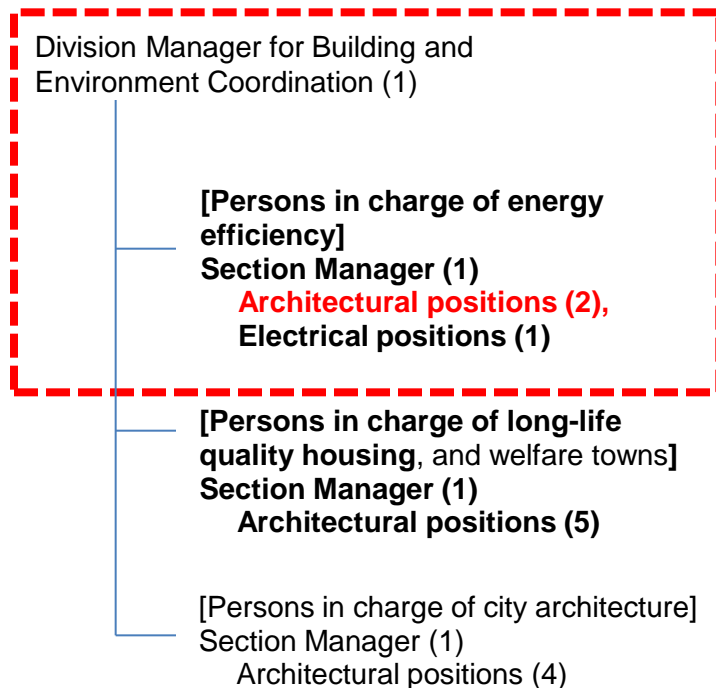
System and organization following the enforcement of the Building Energy Efficiency Act in the City of Yokohama



The City of Yokohama increased the number of staff members in charge of matters relating to the Building Energy Efficiency Act from four to six. (Added one division manager and one staff member.)

Building and Environment Coordination Division

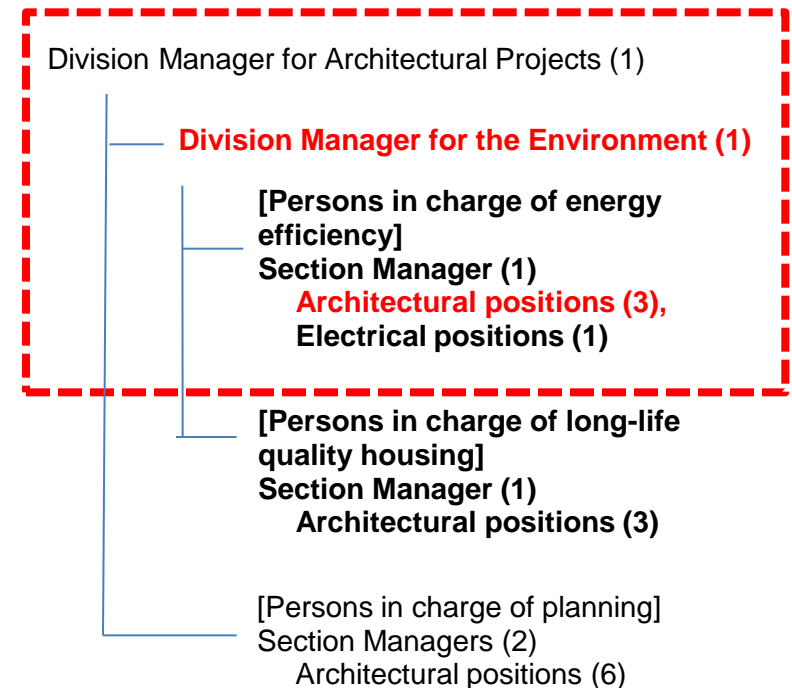
Until March 31, 2017
Energy Conservation Act



Added one
Division Manager
And one staff
member

Building Projects Division

From April 1, 2017
Building Energy Efficiency Act



Regulation details and energy efficiency standards for each building scale and application

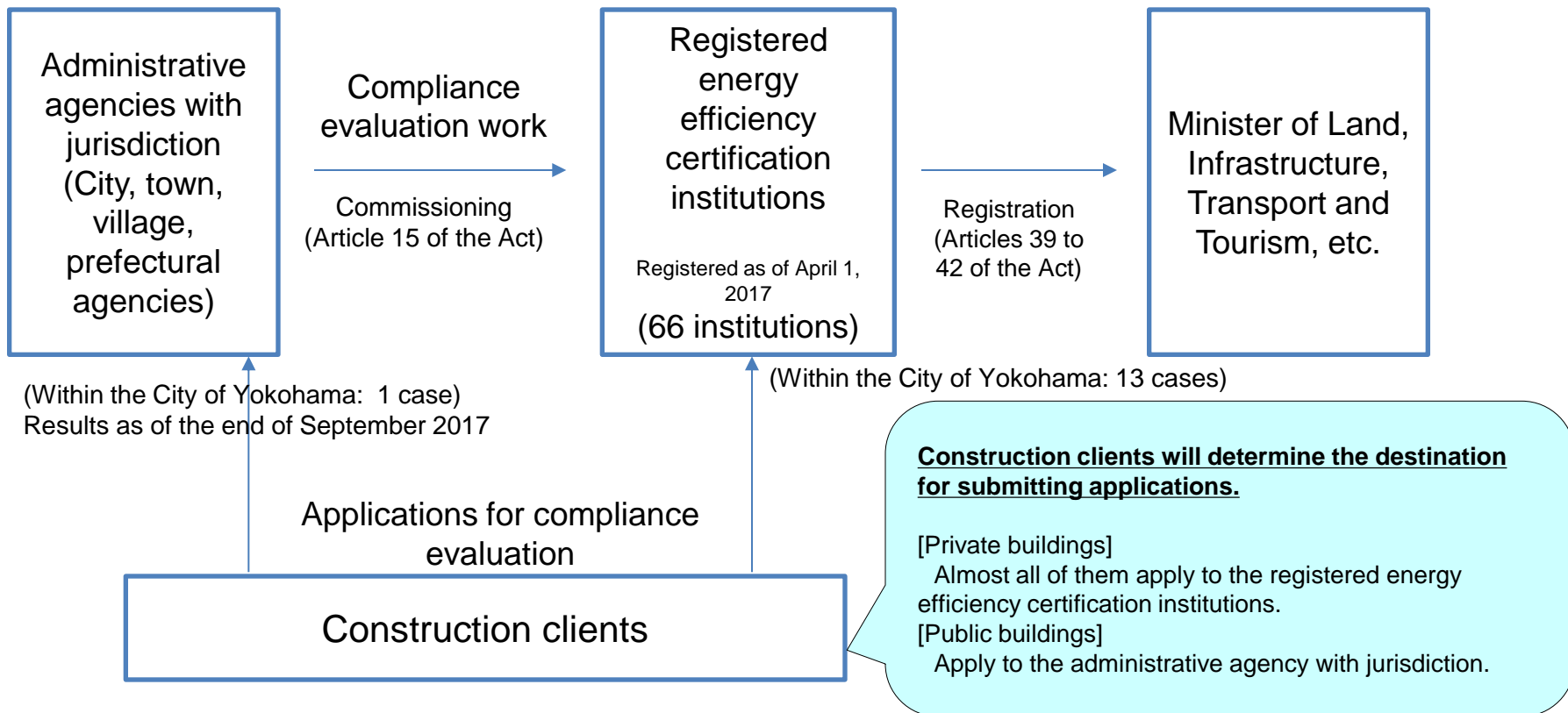
		Non-residential	Residential
Building scale	Large-scale buildings (2,000 m ² or larger)	<u>[Specified buildings]</u> <u>Compliance evaluation*</u>	Notification
	Medium-scale buildings (300 m ² or larger, less than 2,000 m ²)	Notification	Notification
Energy efficiency standards	Primary energy standards (BEI)	Design primary energy consumption/Standard primary energy consumption ≤ 1.0	
	Exterior standards Average outer shell heat transmission coefficient (U_A) Average solar heat gain coefficient during cooling period (η_{AC})	Exempt from application	Dwelling units $U_A \leq 0.87$ $\eta_{AC} \leq 2.8$

* With regard to buildings in which compliance evaluations are mandatory, in most cases submissions are made together with the confirmation application to the registered energy efficiency certification institution (Article 15-1 of the Act). Currently, the buildings in which the City of Yokohama has implemented compliance evaluations consist only of public buildings where the confirmation application (plan notification) was also submitted to the City.

System and results of compliance evaluation work (As of end of September 2017)



It has been made mandatory for construction clients to, when conducting specified building activities, submit building energy consumption performance assurance plans (energy efficiency plans) to the “administrative agency with jurisdiction” or a “registered energy efficiency certification institution”, and have compliance evaluation conducted to prove that the plans conform to the energy efficiency standards.



Regulation details and energy efficiency standards for each building scale and application

For buildings that are 300 m² or larger, with the exception of specified building activities, construction clients shall give notification of the plans to the “administrative agency with jurisdiction” no less than 21 days before the day that construction will start.

		Non-residential	Residential
Building scale	Large-scale buildings (2,000 m ² or larger)	<u>[Specified buildings]</u> <u>Compliance evaluation*</u>	Notification
	Medium-scale buildings (300 m ² or larger, less than 2,000 m ²)	Notification	Notification
Energy efficiency standards	Primary energy standards (BEI)	Design primary energy consumption/Standard primary energy consumption ≤ 1.0	
	Exterior standards Average outer shell heat transmission coefficient (U_A) Average solar heat gain coefficient during cooling period (η_{AC})	Exempt from application	Dwelling units ≤ 1.0

* With regard to buildings in which compliance evaluations are mandatory, in most cases submissions are made together with the confirmation application to the registered energy efficiency certification institution (Article 15-1 of the Act). Currently, the buildings in which the City of Yokohama has implemented compliance evaluations consist only of public buildings where the confirmation application (plan notification) was also submitted to the City.

Energy efficiency standards compliance (City of Yokohama)



- ◆ Following the enforcement of the Building Energy Efficiency Act (after April 2017), the energy efficiency standards compliance rates have improved.
 - The compliance rate of housing with a scale of 2,000 m² or greater increased from around 50% before the revision to more than 70% after the revision.
 - The compliance rate of buildings with a scale of 300 m² or greater and less than 2000 m² increased from less than 80% before the revision to approximately 90% after the revision
- ◆ Improvement of compliance rates is thought to be attributed also to the fact that, following the enforcement of the Building Energy Efficiency Act, written instructions are given to construction clients who submitted non-compliant notifications to consider improvement.

Compliance rate according to building scale and application

Enforcement of Building Energy Efficiency Act

Fiscal year	2014	2015	2016	2017 April to September
Number of notifications (with the exception of mandatory compliance subjects)	933 cases	808 cases	913 cases	370 cases
[Specified buildings] 2,000 m ² or larger (Non-residential)	98%	100%	100%	Mandatory compliance
2,000 m ² or larger (Residential)	53%	39%	49%	75%
	Compliance rate around 50%			
300 m ² or larger, less than 2,000 m ² (Non-residential and residential)	53%	76%	73%	90%
	Compliance rate less than 80%			

- ◆ Details of non-compliance and building scales and applications in non-compliant notifications
- ◆ All of the non-compliant notifications were for condominiums or complex buildings with condominiums, and the representative dwelling unit scales of these condominiums was also less than 45m².
- ◆ In all the non-compliant notifications, items not compliant with the energy efficiency standards consisted of the following.
 - The building envelope performance of one or more of the dwelling units was non-compliant.
 - Residential overall primary energy was both compliant and non-compliant depending on the case.

- ◆ Compliance with the energy efficiency standards of representative dwelling units of different scales in condominiums

There is a tendency towards non-compliance in housing where the dwelling unit area is small, such as single-room apartments.

- Housing in which the representative dwelling unit is less than 40 m² has a compliance rate of less than 40%.
- Housing in which the representative dwelling unit is 40 m² or larger has a compliance rate of around 80%.

Measures for encouraging “compliance” for cases where notification is mandatory (City of Yokohama)



(1) Provision of guidance (advice) using information desks

- When non-compliant notifications are submitted, the fact that written instructions will be issued is conveyed, and reconsideration is requested.

→ There were 5 cases where improvements were made to achieve compliance and notifications were submitted as a result of the guidance given at information desks.

(2) Issuing of instructions relating to non-compliant cases (Article 19 of the Act)

- Using written instructions issued to the construction clients, the submission of reports for the details of measures are requested.

→ Instructions were issued in 38 cases.

→ Reports for the progress of measures were submitted in all the cases.

(3) Implementation of encouragement measures

- Exception of floor ratio according to the certification of the energy consumption performance for buildings (Article 30 of the Act)

→ Two cases of certification (Floor-area ratio exceptions were not received)

[The figures show the results between April and September 2017]

Energy Conservation Act → Building Energy Efficiency Act (Concept of changeover)



From April 1, 2017

Energy Conservation Act

Until March
31, 2017

Mandatory notification when newly constructing or renovating buildings

Type 1 Specified Buildings (2,000 m² or larger)
Type 2 Specified Buildings (300-2,000 m²)

When there are noticeable insufficiencies,

Type 1: Instructions

→ Announcements and orders

Type 2: Recommendations

Mandatory notification when repairing or remodeling, or when installing or renovating facilities

Mandatory periodical reporting of maintenance condition every 3 years following the notification of energy efficiency measures

Building Energy Efficiency Act

Mandatory compliance of non-residential portions 2,000 m² or greater in scale

Mandatory notification for new construction and renovations

When notifications are non-compliant:

Instructions → Orders

Recommendations:
20 cases issued
during FY2016
(Results in the City
of Yokohama)

Discontinued

Instructions: 38 cases
issued between April
and end of
September 2017
(Results in the City of
Yokohama)

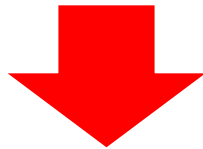
Discontinued

Instructions given for non-compliant notifications (City of Yokohama)

Article 19 of the Act

(2) [Omitted] ...when the plan pertaining to this notification does not conform with the building energy consumption performance standards and it is found to be necessary to secure the energy consumption performance of the building, the administrative agency with jurisdiction may give instructions to the person who made the notification to change the Plan pertaining to the notification or to take other necessary measures... [Omitted].

(3) When persons that received instructions as stipulated in the preceding Paragraph have not implemented measures pertaining to the instructions without valid reasons, the administrative agency with jurisdiction may order the person to implement measures pertaining to the instructions... [Omitted].



In the City of Yokohama, instructions are issued to the construction clients to reconsider the measures required to achieve compliance (but the City does not necessarily demand compliance).

Instructions issued according to the stipulations in Article 19-2 of the Act on the Improvement of Energy Consumption Performance of Buildings

To:

Construction client

株式会社〇〇
代表取締役〇〇 〇〇 様

建建企第〇〇号

平成29年〇月〇日

Instructions

Reference No. XX
[Month] [Day], 2017

横 浜 市 長 林 文 子

建築物のエネルギー消費性能の向上に関する法律に基づき届け出された、下記建築物のエネルギー消費性能の確保のための構造及び設備に関する計画は、同法に定められた建築物エネルギー消費性能基準に適合せず、当該建築物のエネルギー消費性能の確保のため必要があると認められますので、同法第19条第2項の規定により下記の通り指示します。

記

1. 届出年月日

平成29年〇月〇日

2. 建築物の概要

地名地番	横浜市〇〇区〇〇町〇〇
建築物の用途	共同住宅等
工 事 種 別	新築
延 べ 面 積	300.00 m ²

3. Details of the instructions

Regarding the non-compliant items (the housing building envelope performance), investigations should be conducted into the building concerned regarding measures for achieving compliance with the building energy consumption performance standards, and the results of the investigation should be reported to the Mayor by the date described below.

報 告 期 日 平成29年〇月〇日

<担当>

横浜市 建築局 建築企画課 建築環境担当
TEL 045-671-4526

Improvement situation relating to instructions for non-compliant notifications (City of Yokohama)

第9号様式（第7条）

Report for the details of measures

措置内容報告書

平成〇〇年〇〇月〇〇日

（報告先）
横浜市長

Construction client name and seal

報告者の住所又は
主たる事務所の所在地
報告者の氏名又は名称
代表者の氏名

〇〇市〇〇区〇〇町〇〇
株式会社〇〇
代表取締役〇〇 〇〇

建築物のエネルギー消費性能の向上に関する法律第16条第1項、第19条第2項及び附則第3条第3項の規定に基づく指示に対し、建築物エネルギー消費性能適合基準に適合するための措置の内容及びその時期について、次のとおり報告します。

1 指示書の番号 指示書の交付年月日	建建企 第 △△△ 号 平成〇〇年〇〇月〇〇日
2 届出年月日 （又は計画書の提出年月日）	平成〇〇 年〇〇月〇〇日
3 届出書（又は計画書）の受付番号	第 29-〇〇〇 号
4 建築主の住所又は 主たる事務所の所在地 建築主の氏名又は名称 代表者の氏名	〇〇市〇〇区〇〇町〇〇 株式会社〇〇 代表取締役〇〇 〇〇
5 建築物の名称	（仮称）〇〇計画
6 建築物の敷地の地名地番	横浜市〇〇区〇〇町〇〇
7 備考	

※
受
付
欄

- （注意）
- 1 報告者は、建築主となります。
 - 2 報告者の印は、届出書（又は計画書）と同一のものを押印してください。
 - 3 措置の内容及びその時期を記載した書類を添えてください。
 - 4 ※印のある欄は、記入しないでください。
 - 5 2通作成してください。

（A4）

【建築物エネルギー消費性能基準に適合するための措置に関する事項】

1 措置の方法
<input checked="" type="checkbox"/> 計画の変更（変更の届出：平成〇〇年〇〇月〇〇日提出予定） <input type="checkbox"/> 建築計画の取りやめ（取止届の提出： 年 月 日提出予定） <input type="checkbox"/> その他（ ）
2 具体的な措置の内容
<p>以下の見直しにより、建築物エネルギー消費性能適合基準に適合した計画に変更します。</p> <ul style="list-style-type: none"> ・外壁の断熱仕様（吹付け硬質ウレタンフォームA種1）を25mm→35mmに変更 ・妻側住戸（〇〇、〇〇）について、断熱補強を追加（断熱補強なし→断熱補強仕様1） ・設備仕様の見直し（全住戸） <ul style="list-style-type: none"> 給湯設備：洗面水栓を水優先吐水機能「有」のものに変更 照明設備：非居室（玄関）の人のセンサー機能を追加

Description of the results of the consideration
(Explanation of why improvements could not be made.)

Improvement situation relating to the instructions (City of Yokohama)



- ◆ Instructions issued: 38 cases
- ◆ Reasons why improvements could not be made
 - (1) The **project income and expenditures do not balance**, due to the increased costs resulting from realizing compliance.
(Because the plan has been developed over several years, it is difficult to change now)
 - (2) From a design point of view, it is not possible to **affect the room arrangements**.
 - (3) Due to being **rental apartments**, the facilities and specifications of each room are equally selected.



Promotion of understanding among construction clients regarding the realization of building energy efficiency

- (1) Investigations at the project planning stage
- (2) Investigations at the construction stage into improving the performance without affecting the room arrangements

Creation of real estate value due to visualization of the energy efficiency performance

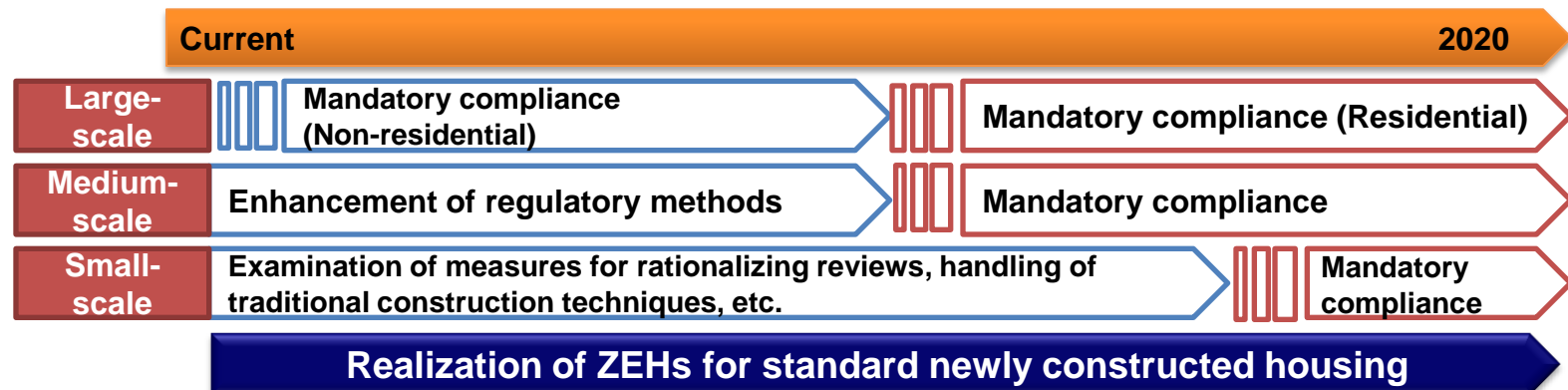
- (3) Building of mechanisms that link the environmental performance to the creation of real estate value
(The labeling of the energy efficiency performance in the real estate is insufficient)

Energy efficiency measures will be made mandatory for all new housing and buildings in the future

- ◆ By 2020, the compliance of newly constructed housing and buildings with the energy efficiency standards will be made mandatory in stages.
- ◆ Activities will also take place to realize ZEHs.

*ZEH: Net Zero Energy House

■ Schedule for mandatory compliance of new housing and buildings with the energy efficiency standards



*Created referencing the Process Chart relating to Energy Efficiency Measures in Housing and Buildings (Ministry of Land, Infrastructure, Transport and Tourism: January 2015)

Actions for buildings that are not subject to notification under the Building Energy Efficiency Act (City of Yokohama)



(1) Encouraging compliance with the energy efficiency standards for buildings that are not subject to notification using other systems

- CASBEE Yokohama, certification of long-life quality housing, certification of low-carbon buildings

(2) Positioning in the Administrative Plan (Mid-term Four-year Plan), and setting of numerical targets

- Promotion of global warming countermeasures for housing and buildings

(3) ZEH (Net Zero Energy House) Subsidy System

(4) Realization of energy efficiency in existing buildings




- [Public buildings] Implementation of ESCO projects
- [Private housing] Eco-renovation promotion projects for housing

(5) Popularization and education

- For technical experts, business persons, end-users, and children

Actions for buildings that are not subject to notification under the Building Energy Efficiency Act (City of Yokohama)

- ◆ Encouraging compliance with the energy efficiency standards for buildings that are not subject to notification using other systems

	Building Energy Efficiency Act	CASBEE Yokohama	Long-life quality housing	Low-carbon buildings
Required performance	<ul style="list-style-type: none"> • Energy efficiency standards (Thermal insulation performance, primary energy consumption) 	<ul style="list-style-type: none"> • Energy efficiency standards • Comfortable living and working environments • Consideration of natural disasters • Regional contributions, etc. *The items described above are self-assessed and notified. 	<ul style="list-style-type: none"> • Energy efficiency standards (Only for building envelope) • Seismic resistance • Measures to prevent deterioration • Maintenance plans • Dwelling unit area of 75m² or greater <p>etc.</p>	<ul style="list-style-type: none"> • High energy efficiency standards • Measures for realizing low-carbon buildings (Water-saving, change to wood construction, HEMS, etc.) <p>*Limited to urbanized areas</p>
Inducements	<ul style="list-style-type: none"> • Certification by authorities (Buildings smaller than 300m² are also subjects) → Special exceptions of floor-area ratios → Tax reductions and exemptions 	<ul style="list-style-type: none"> • Authentication by authorities (Free of charge) • Announcement of results • Use of labeling in advertisements 	<ul style="list-style-type: none"> • Certification by authorities → Tax reductions and exemptions 	<ul style="list-style-type: none"> • Certification by authorities → Special exceptions of floor-area ratios → Tax reductions and exemptions
Labeling system	  <p>e-Mark BELS</p>	 <p>Use of labeling in advertisements</p>		

Promotion of global warming measures for housing and buildings

Basic Measure 33

Promotion of energy measures appropriate for an environmental FutureCity and low-carbon city planning

“Promotion of global warming measures for housing and buildings”

Index	Current (FY2013)	Target value (End of FY2017)
Out of the newly constructed housing, percentage of housing which gives consideration to energy efficiency *	20%	30%

(FY2013: Approx. 6,000 households/ Approx. 30,000 households)

*

No. of condominium households complying with the energy efficiency standards from among those submitting energy efficiency notifications

+

No. of households that are certified as low-carbon buildings

+

No. of households that are certified as long-life quality housing

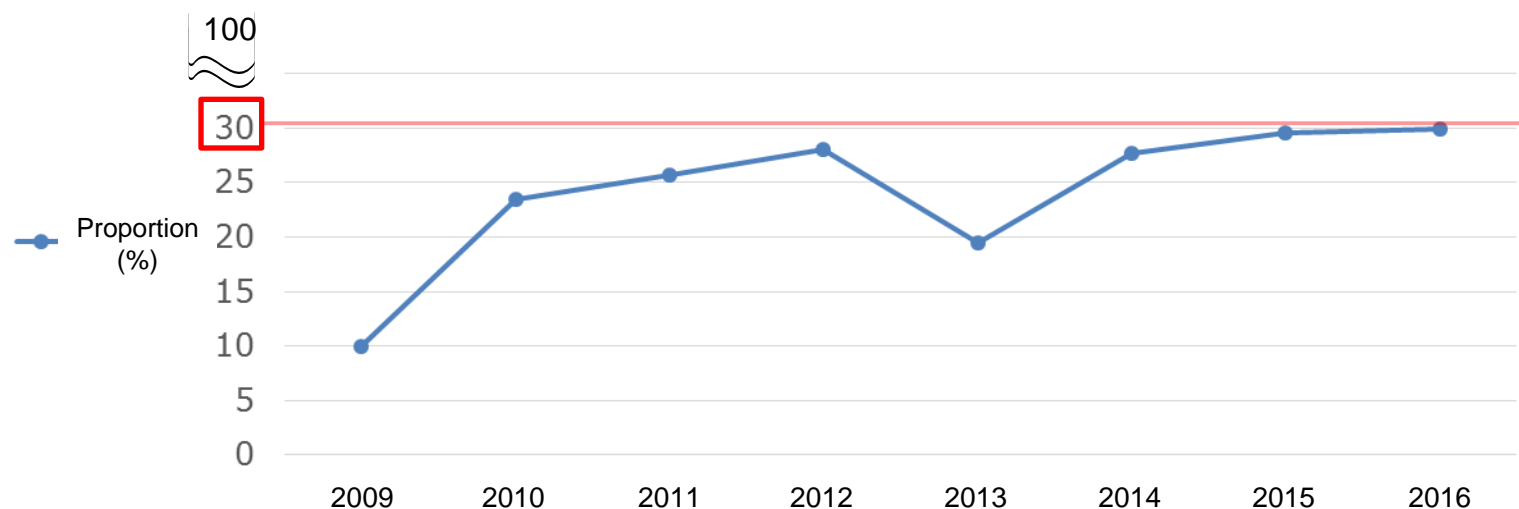
No. of households whose construction has newly started

Promotion of **CASBEE Yokohama, low-carbon buildings, long-life quality housing, etc.**



Promotion of global warming measures for housing and buildings

Proportion of housing that gives consideration to energy efficiency among newly constructed housing (as of the end of FY2016) Units: Households



Fiscal year	2009	2010	2011	2012	2013	2014	2015	2016
Proportion	10%	23.5%	25.7%	28.0%	19.5%	27.7%	29.6%	29.9%
No. of construction starts*1	23,497	28,124	28,980	27,548	30,892	25,030	28,285	28,933

*1: No. of construction starts: the number of households in the City of Yokohama whose construction has newly started, which is included in the Kanagawa Prefecture construction starts statistics

Promotion of global warming measures for housing and buildings



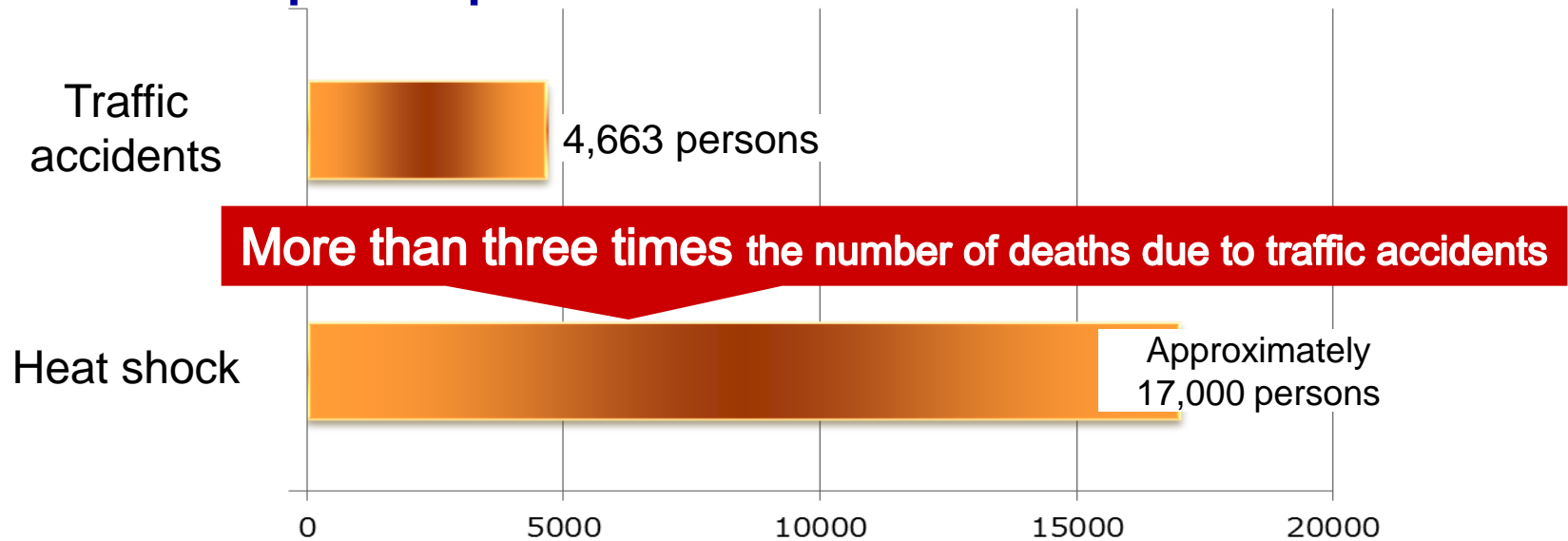
◆ Tax reductions due to compliance with the energy efficiency standards

For newly constructed housing that complies with the energy efficiency standards, the city planning tax will be reduced by half as in the case of the municipal real estate tax.

		General housing	Housing with energy efficiency measures	Long-life quality housing
Reduction rate	Municipal real estate tax	1/2	1/2	1/2
	City planning tax	—	<u>1/2</u>	<u>1/2</u>
Reduction period		3-5 years	3-5 years	<u>5-7 years</u>

Promotion of global warming measures for housing and buildings

Prevention of heat shock by realizing thermal insulation, which also improves prevalence rates



- ◆ The annual number of deaths caused by heat shock while taking a bath is estimated to be around 17,000 persons nationwide, which is more than three times the number of deaths due to traffic accidents.
- ◆ Improving the thermal insulation performance can alleviate changes in temperature, which is also reputed to have an effect in preventing heat shock.
- ◆ In addition, there are also research results stating that, by changing to houses that have a high thermal insulation performance, the prevalence rates of allergies and heart disease reduced from approximately 76% to approximately 44%.

*1: Tokyo Metropolitan Institute of Gerontology "Approximately 17,000 persons died while taking a bath during 2011" (December 18, 2012)

*2: From the website of the Japan Center for Climate Change Actions "Improvement in prevalence rates due to improving thermal insulation performance" (<http://www.jccca.org/>)

Overview of the ZEH (Net Zero Energy House) subsidy system operated by the state



Core organization	Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry
Project name	The Promotion Project for the Introduction of Innovative Energy-Saving Technology for Houses and Office Buildings: Grants in Aid, ZEH (Net Zero Energy House) Support Project
Contact organization for application	Sustainable open Innovation Initiative (SII)
Subsidy amount	Fixed amount of 750,000 yen

+

City of Yokohama
ZEH Subsidy System

(Upper limit) **500,000 yen**

Realization of energy efficiency among existing buildings in the City of Yokohama

(1) [Public buildings] Implementation of ESCO Projects

These projects intend to realize energy efficiency and reduce the maintenance and administration costs through improving equipment in existing facilities while making use of private sector know-how.

After the construction work, the business operators guarantee and report the proposed energy savings over a defined period. In response, the city pays compensation.

(2) [Private buildings] Eco-renovation promotion projects for housing

(1) Yokohama eco-renovation (energy efficiency renovations) of housing subsidy system

This system aims to popularize housing which has few temperature differences inside, which is the basis for housing that is both “energy efficient” and “healthy”, without rebuilding existing housing.

Cost is partially subsidized for housing owners who implement thermal insulation work which leads to “securing the housing’s overall thermal insulation”.

(2) Special courses at Yokohama Eco Renovation Academy

By holding courses at the Academy, which will become a location for studying eco-renovation, homes and lifestyles which realize the smart use of energy will be popularized among citizens, etc.

Distribution of the “Tender Textbook” which summarizes the basic know-how and actual practices of eco-renovation



Overview of Eco-Renovation (energy-saving renovations) subsidy system



Subsidy classification	General improvement housing	Specified improvement housing
Subsidy amounts	One third of the amount required for the improvement work including eco-renovations <small>*Amounts less than 1000 yen are omitted.</small>	
	(Upper limit amount) 400,000 yen	(Upper limit amount) 800,000 yen
No. of subsidies paid	Approximately 30 cases	
Requirements	—	<u>All of the openings in the housing shall have thermal insulation improvement</u>
	Cooperation such as by providing energy consumption (electricity and gas) data and answering questionnaires	

Popularization and education

◆ Popularization and education from three perspectives

① For technical experts and workers
...Lecture courses and seminars



[Lecture course for technical experts and workers (in 2016)]

② For end-users
...Housing exhibitions and events



[Event for end-users (in 2014)]

Popularization and education

◆ Popularization and education from three perspectives

③ Environmental education

...Environmental lecture courses held at schools

...”Children’s Adventure”



[Environmental education lecture course held at a school (in 2017)]



[“Children’s Adventure” (in 2017)]

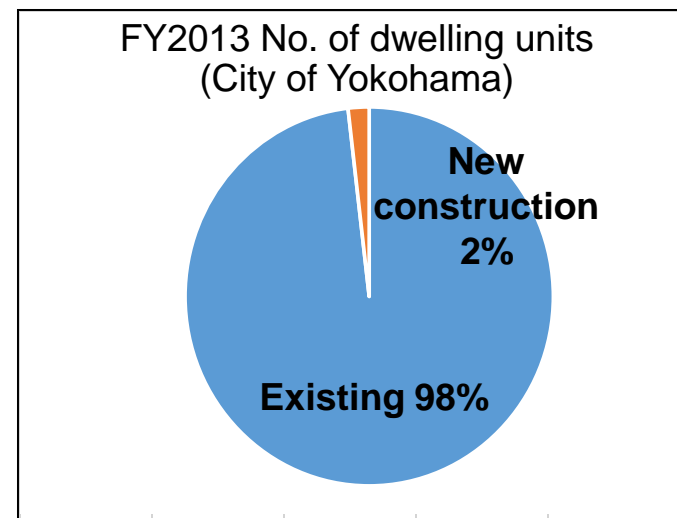
Issues and actions for realizing energy efficiency in buildings

[Notification subjects under the Building Energy Efficiency Act]

- ◆ Creation of conditions where compliance becomes a matter of course
- ◆ Promotion of understanding among construction clients Ex.: Popularization and education, instructions, etc.
- ◆ Building of mechanisms in which the merits of the energy efficiency performance are evaluated in the market Ex.: Standardization of labeling systems, etc.
- ◆ Provision of guidance using information desks, and improving the capabilities of staff members required for giving guidance. Enable staff to approach applicants and resolve their issues.
- ◆ Issuing of appropriate instructions, and thorough acceptance of the reports for the details of measures.

[Not subject to notification under the Building Energy Efficiency Act]

- ◆ Newly constructed buildings
Utilization and promotion of other systems that employ tax reductions and exemptions according to compliance with the energy efficiency standards.
- ◆ Existing buildings
Utilization of popularization and education, and subsidy systems
Creation of mechanisms that improve asset values by realizing energy efficiency
- ◆ Conducting follow-up activities to designers to expand the energy efficiency standards mandatory compliance subjects



Reduction of the energy consumption in the commercial and residential sectors by improving the building energy consumption performance