Energy Conservation Policies of Japan

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The final energy consumption of Japan has basically consistently increased, except for periods immediately following the two oil crises and the recent economic downturn.

Until 2012 the GDP continued increasing to about 2.4 times the 1973 level and the consumption of energy for individual sectors significantly increased with the Consumer sector increasing to about **2.4 times**, while the transportation sector increased to about **1.8 times**, whereas the industrial sector decreased to about **0.8 times**.

Japan’s Energy Conservation Efforts after the Oil Crises

- Japan has improved energy efficiency by approx. 40% after the oil crises in the 1970s as a result of positive actions by both public and private industrial sectors.

- Japan intensively introduced "Energy Management System based on Energy Conservation Law", then achieved the lowest level of energy consumption per GDP in the world.

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**Primary energy use per real GDP of Japan**

(1 trillion yen)

**Approx. 40% improvement**

**Primary energy supply per GDP unit of each country (2011)**

(Index : Japan=1.0)

Calculated according to IEA statistics
“Energy Conservation Law” was introduced in 1979.

- The Law covers the energy consumption in industry, commercial & residential and transportation sectors.
- The Law specifies
  1) the framework which requires the business operators to annually measure and report their energy consumption to the Government,
  2) the energy efficiency standards for buildings and houses, and
  3) the “Top Runner program” which is applied to household appliances, equipment and automobiles.

<table>
<thead>
<tr>
<th>Regulatory measures</th>
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<tbody>
<tr>
<td>Industry sector</td>
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<tr>
<td>✓ Annual reports to the Government by business operators with 1,500 or more kl/yr energy consumption</td>
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<tr>
<td>✓ 15,000 manufacturing plants &amp; offices</td>
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<tr>
<td>✓ Reduction efforts of 1% per year</td>
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<tr>
<td>Consumer sector</td>
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<tr>
<td>✓ Energy efficiency standards for buildings and houses (300m² or more)</td>
</tr>
<tr>
<td>✓ Top runner standards for household appliances, equipment, automobiles etc., 29 items in total (Account for about 70% of household energy consumption)</td>
</tr>
<tr>
<td>Transportation sector</td>
</tr>
<tr>
<td>✓ Periodic reports by freight carriers and consigners</td>
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<tr>
<td>✓ Reduction efforts of 1% per year</td>
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</table>
The Energy Conservation Law is the basis of all energy conservation policies in Japan. It was established in 1979, triggered by the Oil Crisis.

**Fields Subject to Regulations Under Energy Conservation Law**

1. **Manufacturing plants & business establishments**
   - Business operators with an annual energy consumption of at least 1,500 kl (equivalent crude oil) at manufacturing plants and business establishments.

2. **Transportation**
   - Freight carriers with a transportation capacity of a minimum certain scale, such as 200 trucks or 300 railway cars for railroads, etc.
   - Cargo owners with an annual freight transport order of at least 30 million tons.

3. **Residential buildings and structures**
   - Structures on a large scale with a total floor areas of at least 2000 m².
   - Small to mid size structures with a total floor area of at least 300 m².
   - Business operators who build and sell residential buildings (annually supplying at least 150 units).

4. **Machinery and equipment**
   - Passenger cars, air conditioners, television sets, etc., 29 items.
   (Comprises about 70% of household energy consumption.)
### Manufacturing plants & business locations

**Obligation for business operators to make an effort and public disclosure of judgment standards**

- Specified business operators and specified chain business operators
  (Energy consumption of 1,500kl per year)
  - Obligation to appoint Energy Managers, etc.
  - Obligation to periodically report on energy consumption status.
  - Obligation to submit medium and long term plans.

### Transportation

**Obligation for business operators to make an effort and public disclosure of judgment standards**

- Specified carriers (freight and passengers)
  (Fleet of vehicles: At least 200 trucks or at least 300 railway cars for railroads, etc.)
  - Obligation to submit medium and long term plans.
  - Obligation to periodically report energy consumption status.

- Specified consigners
  (Annual transport volume of at least 30 million ton-km.)
  - Obligation to submit plans.
  - Obligation to periodically report consumption of energy related to consigned transportation.

### Residential buildings and structures

**Obligation for construction clients and owners to make an effort and public disclosure of judgment standards**

- Specified buildings
  (Total floor area of at least 300m².)
  - Obligations relating to the submission of notifications pertaining to energy conserving measures implemented by construction clients in relation to large scale modifications and obligations relating to reporting the status of overall maintenance.

- Housing providers
  (Annual supply of at least 150 units.)
  - Obligation to observe targets for improving energy conservation performance of supplied ready built residential housing.

### Provisions relating to machinery and equipment

**Obligation for manufacturers and import business operators of energy consuming equipment to make an effort**

- **Top Runner Standards (29 units)**
  - Standards for energy conservation of passenger cars, air conditioners, television sets, etc. To exceed the performance of most superior products that have been commercialized at the present time is required of each type of unit.

### Provision of information

**Obligation to make effort in providing information to general consumers**

- Provision of information on energy conservation (annual electric power consumption, fuel economy, etc.) that is easy to understand at storefronots of retailers who sell household electrical appliances, etc.
- Popularization of energy conserving equipment and the provision of information, etc., by electric power and gas companies.
Current Regulatory Scheme at Manufacturing Plants, etc.

- Business operators with overall annual energy consumption (head office, manufacturing plants, branch offices, sales offices, etc.) of at least 1,500kl in crude oil equivalent are subject to regulations.
- Business modes, such as franchized chains of stores, are also considered single business operators and those consuming at least 1,500kl for the whole chain are subject to regulations.

On the basis of energy consumption, about 90% of the industry sector and about 40% of the commercial sector are covered subject to regulations.

Obligation to report periodically

1. Transition of energy unit consumption
2. Status of activities relating to energy conserving measures
3. Obligation to annually report on status of benchmark indices (for subject business lines only), etc.

Guidelines pertaining to energy conservation measures:

- Stipulation of standards (guidelines) based on the Energy Conservation Law as observance items for energy management.
  - Energy conservation measures for business operators overall
    - Maintenance of energy management organization.
    - Allocation of persons in charge.
    - Formulation of policies for activities pertaining to energy conservation targets, etc.
  - Energy conservation measures at individual manufacturing plants and business establishments (Example: Air conditioning systems.)

Preparation and implementation of management standards (manuals) pertaining to the following measures:

- Operational management (operating time, set temperature, etc.).
- Periodical measurement and recording of temperature, humidity, etc.
- Periodical maintenance and inspection of facilities.

New numerical targets to include in addition to existing targets

Benchmark indices and standards to be targeted

- Currently set business lines: Iron and steel, electric power, cement, paper manufacturing, petroleum refining and chemical.
- Standards to be aimed for: Levels satisfied by most superior business operators in respective industries (10 to 20%).
The “Top Runner Program” is a mandatory program for companies (manufacturers and importers), to fulfill the efficiency targets within 3 to 10 years, which encourages competition and innovation among the companies without increasing market prices.

Companies make efforts toward those goals, so the program has contributed to improving energy efficiency of consumer electronics and automobiles in Japan.

For instance, we had expected energy efficiency improvements of 16.0km/L for medium class gasoline passenger vehicles in fiscal year 1999, but actually, it attained 19.9km/L.

### Achievement of Top Runner Program

<table>
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<tr>
<th>Category</th>
<th>Improvement</th>
<th>Period</th>
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<tr>
<td>Gasoline passenger vehicles</td>
<td>48.8%</td>
<td>FY1995→FY2010</td>
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<tr>
<td>Air-conditioners</td>
<td>32.3%</td>
<td>FY1997→FY2007</td>
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<tr>
<td>Electric refrigerators</td>
<td>43.0%</td>
<td>FY2005→FY2010</td>
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<tr>
<td>TV sets (LCD and PDP TVs)</td>
<td>29.6%</td>
<td>FY2004→FY2008</td>
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### Basic mechanism of Top Runner Program

#### Ultimate Goal

- To improve energy efficiency, setting the target beyond the current maximum level.

#### Fuel efficiency by category

- Current maximum (15.8km/L)
- Target (16.0km/L)

#### Vehicle weight category

- (Light class)
- (Medium class)
- (Heavy class)

#### 2010fy Target Fuel Efficiency

- (Medium class) (1,016~1,265kg) (19.9km/L)

#### 1997fy Actual Fuel Efficiency

- (Medium class) (12.9km/L)
Energy conservation standards according to the Top Runner Program have been implemented for automobiles and household electrical appliances according to the Energy Conservation Law as amended in 1998. As of 2014, 29 equipment and materials are subject to these standards.

**Equipment subject to Top Runner Program according to Energy Conservation law**

1. Promotion for further improvement on energy consumption efficiency of machinery and equipment is conducted, by stipulating performance of currently commercialized products with most superior energy consumption efficiencies (Top Runner products) with considerations for future prospects of their performances and technical developments, as fuel economy standards for automobiles and judgment standards (hereinafter referred to as Energy Conservation Standards) of manufacturers for improving performance of specific equipment such as electrical equipment (household electrical appliances and OA equipment).

2. Furthermore, specific equipment that are subject to stipulations of the Top Runner Program are to be machinery and equipment that consume energy and satisfy three of following requirements (Article 78 of Energy Conservation law):

   ① Machinery and equipment that are used in large quantities in Japan.
   ② Machinery and equipment that consume significant amount of energy when used.
   ③ Machinery and equipment for which improvement of energy consumption efficiency is particularly important (those that have room for improving efficiency).

### Example of Top Runner Program

#### Fuel economy (km/L)

- 16
- 15km/L
- 14km/L
- 13km/L
- 12km/L

Judgment made with weighted average for each product category.

#### Specified equipment (29 equipment and materials)

1. Passenger cars
2. Trucks
3. Air conditioners
4. Television receivers
5. Video tape recorders
6. Lighting apparatuses
7. Copying machines
8. Computers
9. Magnetic disk devices
10. Electrical refrigerators
11. Electrical freezers
12. Heaters
13. Gas cooking appliances
14. Gas water heating appliances
15. Oil water heaters
16. Electric toilet seats
17. Vending machines
18. Power transformers
19. Jar rice cookers
20. Microwave ovens
21. DVD recorders
22. Routing equipment
23. Switching equipment
24. Multifunction Devices
25. Printers
27. AC motors
28. LED lumps
29. Heat insulating materials

When standards are set

Energy Conservation Standards according to Top Runner Program

Target fiscal year

19km/L
18km/L
17km/L
15km/L
16

“Top Runner Program” is implemented in about 70% of the energy consumption in households.

2009, Energy consumption level per household
34,905MJ/Year

- Gas water heaters, 23.7%
- Gas cooking appliances, 8.3%
- Electric refrigerators, 6.8%
- Lighting equipment, 6.4%
- TV sets, 4.3%
- Oil water heaters, 4.1%
- Oil heating stoves, 5.4%
- Electric toilet seats, 1.8%
- Air conditioning units, 3.5%
- Computers, 1.2%
- Network devices, 0.5%
- DVD recorders, 0.4%
- Microwave ovens, 0.9%
- Gas heating stoves, 0.3%
- Ecoute, 1.8%
- Videotap recorders, 0.3%
- Dish washer/dryers, 1.8%
- Oil fan heaters, 6.2%
- Electric water heaters, 2.6%
- Electric cooking appliances, 0.7%
- Solar heating, 0.2%
- Electric carpet, 1.0%
- Other heating equipments, 4.2%
- Other electric appliances, 11.7%

*1. Estimated by the Institute of Energy Economics, Japan (IEEJ), based on the Agency for Natural Resources and Energy's FY2009 Residential and Commercial Sector Energy Data Survey (10,040 valid responses) and Supplementary Survey concerning Appliance Use (?) (1448 valid responses)

*2. This survey is based on tabulation and analysis of each energy source, with values unified and converted on megajoule (MJ) basis. Electric power in secondary conversion value.
Improvements in Energy-Efficiency with Top Runner Program

[Passenger cars]
Transition in fuel economy of average new cars

Fuel economy (km/L)

12.3 12.4 13.2 14.0 14.7 15.1 15.5 16.5 17.8 18.3

(Note) Fuel economy values for the 10-15 mode.

48.8% improvement

[Air conditioners]
Electric power consumption for period (kWh)

Electric power consumption for period

1174 1220 1212 1157 1048 1028 997 924 870 884

(Note) Wall mounted cooling and heating units with cooling capacity of 2.8kW-class model; simple average values for a representative model of energy conserving-type products.

30% improvement
1. The following equipment has been added to the program.

- Heat pump water heaters (electric)
  - Added to program in March 2013.
  - Target efficiency is 27% in 2017Fy.

- Commercial refrigerators/freezers
  - Added to program in March 2013.
  - Target efficiency is 22.7% in 2016Fy.

Other items
- Complex machines (Mar. 2013)
- Printers (Mar. 2013)
- Industrial motors (three-phase induction motors) (Nov. 2013)
- LED lamps (Nov. 2013)

2. Equipment for which standards are currently under deliberation.
- Showcases
"Energy Conservation Label": Stipulated by JIS standards for 18 equipment, primarily household equipment with a large amount of general consumer usage in particular, among equipment that are subject to Top Runner Standards.

"Unified Energy Conservation Label": A unified energy conservation label that covers air conditioners (for household use), television receivers, electric refrigerators, electric toilet seats and fluorescent lighting apparatuses (for household use) to facilitate recognition and comparison of energy conserving performance by consumers when products are purchased and displayed by retailers in five stage ranking from five stars down to one star (multistage evaluation).

Examples of energy conservation labels (primarily displayed by manufacturers)

Examples of unified energy conservation label and simplified version label (primarily displayed by retailers)
**Energy Conservation Measures in Consumer Sector**

**Top Runner Program for Building Materials etc.**

- Certain items that do not consume energy themselves but contribute to higher efficiency of energy consumption in housing, buildings, or other equipment will be added to the Top Runner program.

(Products currently subject to the program): 29 products including passenger vehicles, air conditioners, TVs, Luminaires and refrigerators, heat insulating materials,

(Newly added products (planned)): windows, etc.

**Peak Demand Reduction**

**Measures on demand side**

- Consumers’ efforts to reduce the use of electricity from utility grids during the peak demand hours will be able to evaluat.

  *For example, using storage batteries, energy management systems in buildings and households, private power generation etc.*

- Specifically, the procedures to calculate the target of efforts under the Energy Conservation Law will be reviewed.
Materials Covered by The New Top Runner Program

- "Insulation used in envelopes" and "glass and frames used in windows" are concluded to be covered by the new Top Runner Program (Oct. 2013).
- Details of coverage of insulation under the Building Material Top Runner Program were deliberated in line with this conclusion.
- Details of coverage of glass and frames used in windows under the new Top Runner Program are now under consideration.

Insulation

- **Ordinary glass wool**
  - Avg. fiber diameter: 7-8 µm
  - Thermal resistance: 2.0 (m²K/W)
  - Market share: approx. 3%
  - Approx. 40% better insulating performance than ordinary glass wool

- **High-performance glass wool**
  - Avg. fiber diameter: 4-5 µm
  - Thermal resistance: 2.7 (m²K/W)
  - Market share: approx. 3%
  - Approx. 100% better insulating performance than aluminum single-pane windows

Windows

- **Aluminum sash + single-pane glazing**
  - Market share: approx. 3% to under 10%
  - Approx. 100% better insulating performance than aluminum single-pane windows

- **Al-plastic composite sash + low-E multilayer glazing**

- **Plastic sash + low-E multilayer glazing**
The review was executed for the first time in 13 years (since 1999 - to be publicized in the early part of December).

For structures, the standards are changed from those which regulate the performance of “thermal insulation” and “individual building equipment (air conditioners, machine ventilators, lights, water heaters, elevators)” to those using the primary energy index which integrates the previous two elements.

For residential buildings, the standards have changed from those which quantitatively regulate “thermal insulation” only to those using the primary energy index which integrates the building equipment.

The standard value has become the level which can be achieved by introducing equipment whose performance is higher than that of the standard equipment currently available in the market.

In addition to primary energy consumption, the thermal insulation performance (standard level of 1999) must in principle be satisfied for the purpose of reducing air conditioning load and securing heat.
Level of the Energy Conservation Standards after being Reviewed

- The energy conservation level was enhanced by approximately 15% to 25% by improving the performance of equipment.

### Structures: Estimation of offices in 6 areas (old IVb area (Tokyo)) (*)

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Standard</th>
<th>Energy Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before</strong></td>
<td><strong>After</strong></td>
<td></td>
</tr>
<tr>
<td>External cover: Urethane foam spray 20 mm</td>
<td>Equivalent to 1999 standards</td>
<td>1.80 GJ/m²/year</td>
</tr>
<tr>
<td>Air conditioning: CEC/AC = 1.5</td>
<td>Air conditioning: CEC/AC = 1.5</td>
<td>7.4% reduction</td>
</tr>
<tr>
<td>Ventilation: CEC/V = 1.0</td>
<td>Ventilation: CEC/V = 0.68</td>
<td></td>
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<tr>
<td>Lighting: CEC/L = 1.0</td>
<td>Lighting: CEC/L = 0.82</td>
<td></td>
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<tr>
<td>Water heating: CEC/HW = 1.5</td>
<td>Water heating: CEC/HW = 1.5</td>
<td></td>
</tr>
<tr>
<td>Elevator: CEC/EV = 1.0</td>
<td>Elevator: CEC/EV = 1.0</td>
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</tbody>
</table>

* Estimation based on energy consumption ratio of each piece of equipment described in “FY2002, Research on energy consumption of buildings”.

### Residential buildings: Estimation of 120m² living rooms operated intermittently in 6 areas (old IVb area (Tokyo)) (*)

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Standard</th>
<th>Energy Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before</strong></td>
<td><strong>After</strong></td>
<td></td>
</tr>
<tr>
<td>External cover: Equivalent to 1999 standards</td>
<td>Air conditioning: Air conditioning COP (LDK heating: 2.2, cooling: 1.9)</td>
<td>80.1 GJ/year</td>
</tr>
<tr>
<td>Ventilation: SFP (1.0)</td>
<td>Ventilation: SFP (0.3)</td>
<td></td>
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<tr>
<td>Lighting: Incandescent lamps are used in part.</td>
<td>Lighting: Incandescent lamps are used in part.</td>
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<tr>
<td>Water heating: Gas instantaneous type (conventional type)</td>
<td>Water heating: Gas instantaneous type (conventional type)</td>
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</table>

* Value excluding “other” energy consumption (approx. 21 GJ/year) set by the standard after being reviewed.
Transition of Compliance Rates of Energy Conservation Standards for Residential Housing and Building Structures

➢ The compliance rate for the Energy Conservation Standards of new buildings is **about 90%**, which is quite high, but the compliance rate of newly built residential housing is only **about 40%**.

(The reason for the rise in the compliance rate for residential housing from 2009 to 2011 was due to the impact of the Residential Eco Point program.)

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**Transition of compliance rate** with Energy Conservation Judgment Standards for newly constructed building structures (1999 standards)

<table>
<thead>
<tr>
<th>Year</th>
<th>Compliance Rate (%)</th>
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<tbody>
<tr>
<td>1999</td>
<td>34</td>
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<tr>
<td>2000</td>
<td>34</td>
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<td>2001</td>
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<td>2009</td>
<td>88</td>
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<td>2010</td>
<td>85</td>
</tr>
<tr>
<td>2011</td>
<td>83</td>
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</table>

*Proportion of floor areas in building structures, which complied with the Energy Conservation Standards (1999 standards), for building structures (at least 2,000 m²) constructed and verified in the applicable year.

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**Transition of compliance rate** with Energy Conservation Judgment Standards for newly constructed residential housing (1999 standards)

<table>
<thead>
<tr>
<th>Year</th>
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<tbody>
<tr>
<td>1999</td>
<td>0</td>
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<td>10</td>
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<td>2008</td>
<td>90</td>
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<tr>
<td>2009</td>
<td>100</td>
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</table>

*Estimated values, based on a survey for the distribution of residential housing units according to the levels of thermal insulation, were used as the figures up to FY2009 and estimated values (tentative values), based on the number of units for which residential housing Eco Points were issued (single dwelling residential housing) and the number of notifications submitted (for multiple dwelling residential buildings, etc.) under the Energy Conservation Law, were used as the figures for FY2010.

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Submission of notice for energy conservation measures made obligatory from April 2003.

Coverage of energy conservation measures subject to submission of notices expanded from April 2010.

Submission of notice for energy conservation measures made obligatory from April 2006.

Coverage of energy conservation measures subject to submission of notices expanded from April 2010.
**Obligatory Compliance with Energy Conservation Standards for Residential Buildings and Structures**


- The compliance with the energy conservation standards for residential buildings and structures is to be obligatory by 2020 in steps, i.e. in the order of large-scale structures, medium-scale structures and small-scale structures, considering the following issues.

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### Issues to be resolved, etc. in realizing obligatory compliance
- Clarification of necessity and grounds for regulation for residential buildings and structures
- Balance with regulations concerning energy conservation of residential buildings and structures in other sectors or other countries must be considered
- Sufficient consideration for medium and small-size builders

* There are opinions saying that it becomes impossible to build traditional wooden residential buildings if the compliance with the energy conservation standards becomes obligatory or that the efforts to build residential buildings suited to Japanese climate and culture should be re-evaluated, so the matter is under study by professionals, experts, etc.

### Notification of obligation

### Compliance obligation

### Challenge

### [Enrichment of measures for new construction]
Support for zero energy residential buildings/support for residential buildings and structures as CO₂ saving model/certification of and support for low carbon residential buildings and structures, etc.

### [Strengthening of existing, stock measures]
Support for energy conservation reform of currently-existing residential buildings and structures/improvement of the performance of building materials and equipment using the Top Runner Program for building materials and equipment, etc.

### [Human development, etc.]
Support for medium and small-scale builders and carpenters trying to master energy conservation construction techniques (5 years from 2012 to 2016)/review of evaluation method for traditional wooden residential buildings, etc.

* Excerpt and summary of the article entitled “process chart for promoting the houses and the way of living aiming to realize a low carbon society” in the paper entitled “the interim report on the promotion of the houses and the way of living aiming to realize a low carbon society” (July 10, 2012).
The challenge is to keep consumers’ efforts of energy conservation in the long term.

**Policy Development After the Earthquake**

**Usual energy conservation**

- Energy consumption
  - Last year
  - This year
  - Next year

**Peak Demand Management**

- Power demand (kW)
- Power supply
- Demand curve
- Peak hours
  - Morning
  - Daytime
  - Night

**Improve Energy efficiency of houses and buildings**

**Promote Energy Management Systems**
Use of Energy Management System

- Energy Management Business, such as ESCO, Energy Service Company, is becoming more common. ESCO provides various service such as advice about replacement of facility, visualization of electricity consumption, control of connected devices and comparison to the past results, for small enterprises, and small and medium-sized building, which don’t have enough energy-saving methods.

- In addition, the energy management business including the multi-base package management for two or more consumers and demand watch and control, is also expanding.

- Registration system for energy management service provider is established and program in which they achieve more efficient and effective energy-saving by introduction of Energy Management System (EMS), is added to object program in Subsidies for Supporting Business Operators Strive to Rationalize Their Energy Use in FY 2014 budget.

**Main Service Contents**

- **Visualization service**
  Give electricity consumption in real time (at 30 minutes interval)

- **Demand Response service**
  Reduce the load on power grids

- **Diagnostic service**
  Provide continuous energy-saving advice and make a proposal about renewal of facilities and systems.

- **Energy-saving service**
  Provide Energy-saving service such as energy-saving advice, tuning and ESCO
Next step in Energy Management

- Handle electricity supply-demand problem with promotion of introduction of HEMS / BEMS, high efficient air conditioners, lighting and hot-water supply.
- Pursue energy efficiency of entire systems by managing entire home and buildings.
- In addition, more efficient energy management can be realized by cross-management of home and buildings, or regional management.

Cooperate by buying equipment such as efficient air conditioners and lighting, and controlling them with HEMS or BEMS.

“Net zero energy” means that net annual primary energy consumption is approximately zero.
Actions for Realizing Net Zero Energy Buildings

- To realize net zero energy buildings (ZEB) in 2020, ZEB is pursuing the establishment of a complex system including enhancement of thermal insulation performance, introduction of high-performance equipment, use of renewable energy, introduction of energy management systems, etc.
- The subsidy system to support the introduction of complex systems such as high-performance equipment and to realize ZEB (business promoting net zero energy for houses and buildings) started in FY2012.

[Example of subsidy support: Newly built office building]

Name of subsidy business: Shizuoka Gas Company, Head Office Building, net zero energy promotion construction
(Floor area 7,500 m², thermal insulation performance: 1999 standard or above)

- Effective use of waste heat by means of gene-link
- Task and ambient air conditioning by means of floor blowing
- Outside air inlet shaft for routing outside air through cooling/heating tube
- Reduction of incoming sunlight by means of eaves
- Thermal insulation enhanced by rooftop greening
- Solar cooling using solar heat
- Cogeneration generator
- Solar light power generation panel
- LED, High-efficiency lighting + Lighting control by means of daylight sensor
- Eco tower prompting natural ventilation (Stairs room)
- Natural light is sent deep into rooms through light ducts

Subsidy business operator: Shizuoka Gas Company
Design: Nikken Sekkei Ltd.
Starting in FY2011, large-scale smart community demonstration projects have been proceeding in 4 regions across Japan that constitute representative examples of different concepts, with the participation of many residents, local governments, and corporations.

- **Yokohama City**
  - **Wide-area metropolis**
    - Introduction of an energy management system for an existing wide-area metropolis. As the sample number is high (4,000 households), demonstration using a variety of strategies is possible.

- **Toyota City**
  - **Separated housing**
    - Automatic control of home appliances in 67 homes. Secondary cells equipped in vehicles are used to supply energy to households. Approaches to drivers for reducing a traffic jam.

- **Keihanna Science City**
  - **Housing development**
    - Demand response demonstration based on a point system is being implemented for general households (approximately 700 households) where PV or HEMS automatic control has not been introduced.

- **Kitakyushu City**
  - **Designated supply area**
    - In an area where power is supplied by Nippon Steel Corporation, a pricing system is being implemented where the energy price fluctuates for 2 hours afterwards in accordance with the state of supply and demand of energy for the day, applicable to 50 business establishments and 230 households.
While drastically accelerating energy conservation investment which leads to reduction of energy cost and strengthening of industrial competitiveness, energy conservation must be strengthened in residential, office and transportation sectors where energy consumption is increasing.

**Promotion of energy conservation**

- **Promotion of introduction of energy conservation equipment, etc. into the industrial, commercial and transportation sectors**
  - Subsidy given to business operators promoting the rational use of energy. **[41 billion yen]**
    - The subsidy is given to energy conservation efforts improving of production processes and modifying already-existing equipment including introduction of advanced energy conservation equipment into factories and workplaces. From FY2014, energy conservation efforts using energy management system and implementing measures for electricity peak demand are newly added.
  - Subsidy given to business for promoting energy conservation logistics. **[5.01 billion yen]**
    - Effective energy conservation measures for the transportation sector are diffused by verifying the ocean transportation system, truck transportation business and taxi business contributing to energy conservation and by widely deploying the achievement.

- **Promotion of energy conservation efforts by small and medium enterprises**
  - Subsidy given to business for promoting introduction of specified equipment contributing to the rational use of energy **[2.4 billion yen]**
    - To promote introduction of energy conservation equipment in the industrial sector or installation of top runner equipment, the subsidy is given to cover part of the interest that accrues when borrowing fund from private financial institutes. From FY2014, while strengthening the cooperation with private financial institutes, etc. in local communities, the energy conservation investment of small and medium enterprises, etc. which are actively promoting energy conservation in each area is strongly supported.
  - Subsidy given to business for promoting introduction of energy conservation measures **[550 million yen]**
    - Energy diagnosis is implemented for small and medium enterprises to find energy conservation potential. Meanwhile, to support the energy conservation activities of small and medium business operators, cooperation with financial institutes is strengthened and information on case examples and energy conservation technologies found by the diagnosis is diffused through various media.

- **Promotion of energy conservation measures for houses and buildings**
  - Subsidy given to business for promoting introduction of innovative energy conservation technologies for houses and buildings **[7.6 billion yen]**
    - In order to promote net zero energy house (ZEH) and net zero energy buildings (ZEB) where energy consumption is increasing, introduction of high energy-efficient equipment, etc. is supported. Also, to enhance the thermal insulation performance of already-existing houses, introduction of high performance thermal insulation materials, windows, etc. is supported. In addition, introduction of high-performance energy management system which can control air conditioners, etc. is supported.

  **Further promotion development of energy conservation technologies**
  - Strategic energy conservation technology innovation program **[9.3 billion yen]**
    - For innovative energy conservation technologies whose development risk is high, proposal encouraging research and development which provides support consistently from the seeds finding phase to the business establishment phase is strategically implemented.
    - Super high-efficiency vacuum insulation material

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**FY2014 Main Budgets relating to Energy Conservation**

- **Subsidy given to business operators promoting the rational use of energy.**
- **Subsidy given to business for promoting energy conservation logistics.**
- **Subsidy given to business for promoting introduction of specified equipment contributing to the rational use of energy.**
- **Subsidy given to business for promoting introduction of energy conservation measures**

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**Promotion of energy conservation efforts by small and medium enterprises**

- **Subsidy given to business for promoting introduction of specified equipment contributing to the rational use of energy.**
- **Subsidy given to business for promoting introduction of energy conservation measures**
Thank you for your attention