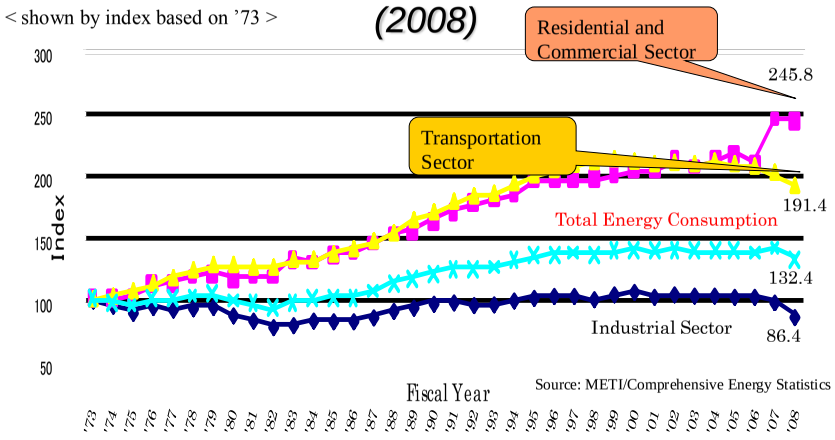
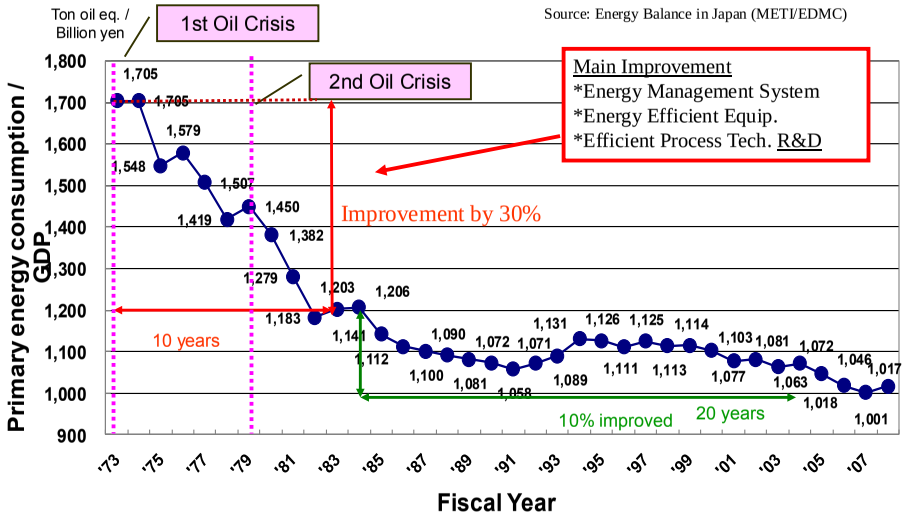
1. Trend in Final Energy Consumption by Sectors

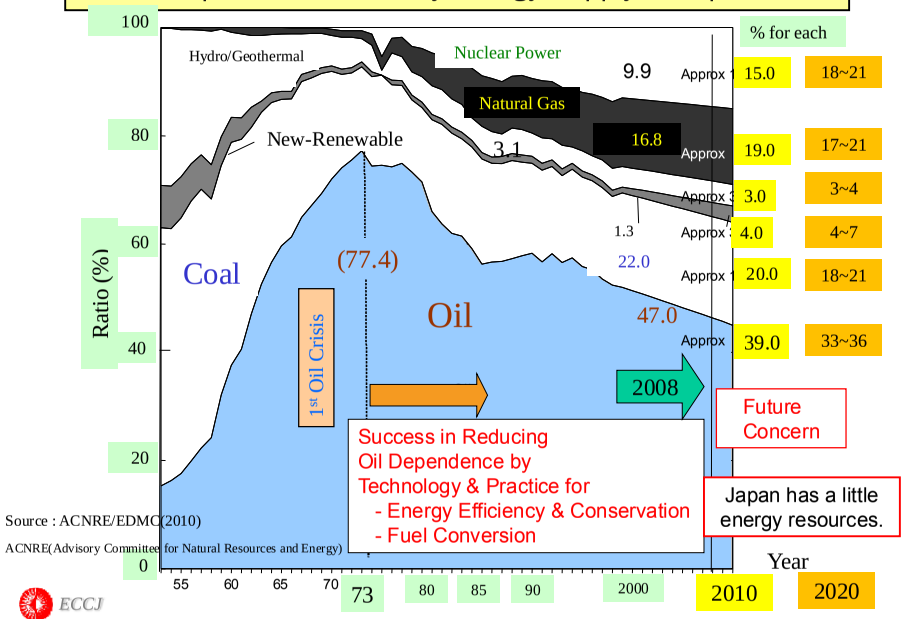


Amend the Energy Conservation Act (enforced in April, 2003), and enforce the regulation of large-scale buildings in conform with Type 1 designated factories.
Enforce the energy conservation promoting activities of the residential and commercial sector.

2. Changes of Primary Energy Intensity in Japan



3. Composition of Primary Energy Supply in Japan



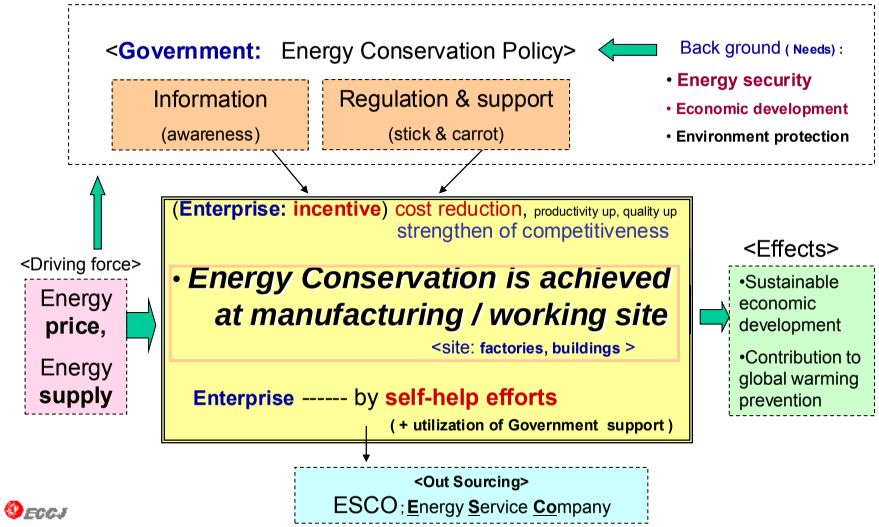
4. Why did the manufacturing industry of Japan succeed in the energy conservation after the Oil Crisis?

1. Regulation measures by Government (Energy Conservation Act)
2. Support and subsidy system by Government (finance, tax & subsidy aid)
3. Cost reduction (enforcement of international competitiveness) and Self-help efforts by companies --- ***investment, ZD,QC activity, Kaizen by Sho-shudan, TQM, etc.***
4. Energy saving effort in individual Sectors (Equipment and Transportation)
   --- Top-runner Program

Mutual effect, Synergy effect

Japan became the first class in energy conservation technology with the rapid progress of energy conservation.

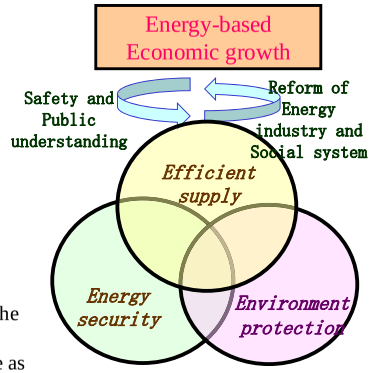
5. Mechanism of Energy Conservation



6-1. Energy Policy

The Basic Energy Plan has formulated in 2003 under Ministry of Economic, Trade and Industry (METI) on the basis of **Basic Act on Energy Policy enacted in 2002**.

The Basic Energy Plan is required to be reviewed at least every three years, and to be revised if needed. (Formulation: 2003, Revision: 2007, 2010)



In June 2010, the 2nd revised Basic Energy Plan was made for the 2003 October's "**Basic Energy Plan**" , taking into account the recent fluctuation of energy related status. The amendments are as follows:

1. **Formulating the revised Energy Basic Plan is consistent with the " New Growth Strategy"**
2. **Directing bold and quantitative policy targets and specific policy measures**

Japan will fundamentally change its Energy Supply and Demand System by 2030.

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6-2. New National Energy Strategy

New National Energy Strategy was formulated in 2006, under Ministry of Economic, Trade and Industry (METI).

The New National Energy Strategy containing an especially important program of measures, looking toward 2030, placing central importance on Energy security aims at the establishment of energy security of Japan, an integral solution of energy and environmental problems as well as contributions to the efforts to overcome energy problems of Asia and the world, setting up numerical targets.

Targets aimed at realization; In the New National Energy Strategy, the following three are targets to achieve.

1. **Establishment of energy security measurements that our people can trust and rely on**
2. **Establishment of the foundation for sustainable development through a comprehensive approach for energy issues and environmental issues all together**
3. **Commitment to assist Asian and other nations around the world in addressing energy problem**

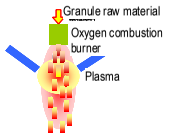
Numerical Targets

1. **Target of energy conservation; By at least 30% to be achieved by 2030**
2. **Target of nuclear power generation; To the level over 30-40% by 2030**
3. **Target of reducing oil dependence in the transport sector; To about 80% by 2030**
4. **Target of overseas natural resource development; To about 40% by 2030**
5. **Target of reducing oil dependence; Below 40% by 2030**

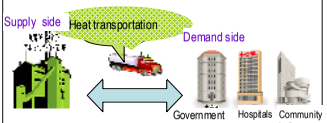
6-3. Development of Energy Conservation Technologies (1)

Energy Conservation Technology Strategy (Five Priority Fields)

○ Super combustion system technology
Technology to save energy in manufacturing processes by omitting combustion or improving the efficiency of combustion
Example: Glass manufacturing technology using plasma technology, etc.

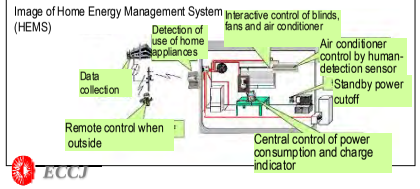


○ Technology of energy utilization beyond space-time restrictions
Technology to save energy by using excess energy beyond space-time restrictions
Example: Technology of transporting factory waste heat in demand to remote areas for effective use, etc.

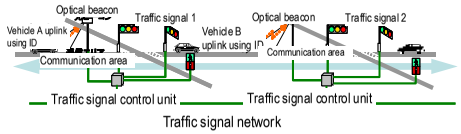


○ Future energy conserving device technology
Technology to save energy by upgrading the performance of devices such as semiconductors used in various fields
Example: Energy conservation technology for transformers and motors using silicon carbide (SiC), etc.

○ Energy conserving information living space creation technology
Technology to save energy by integrating high-efficiency equipment and IT technology based on lifestyle changes
Example: Technology for integrated control of air conditioning, lighting, etc. using human-detection sensors

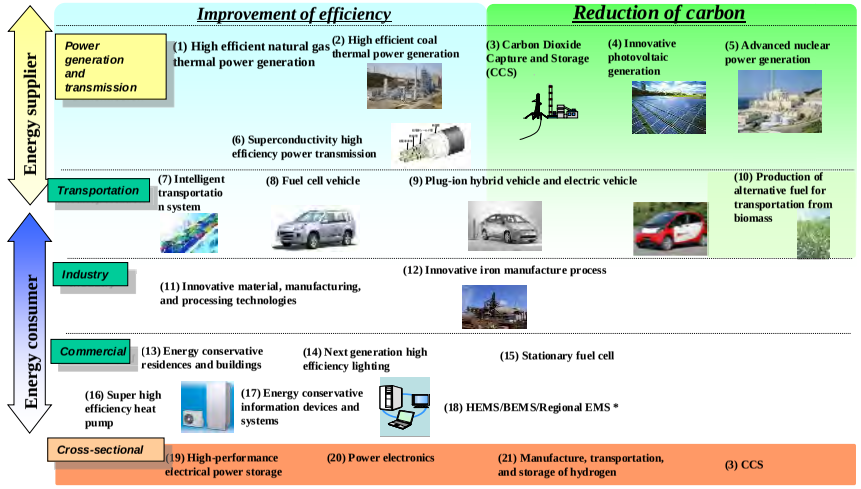


○ Technology to establish an advanced transport society
• Technology to save energy by improving the efficiency of transport machines and by more sophisticated use of machines including modal shift
Example: Technology to improve fuel economy of vehicles, control of traffic signals using IT (see figure below), new traffic system technology, etc.
(Traffic signal control technology adjusting to the movement of running vehicles)



6-4. Development of Energy Conservation Technologies (2)

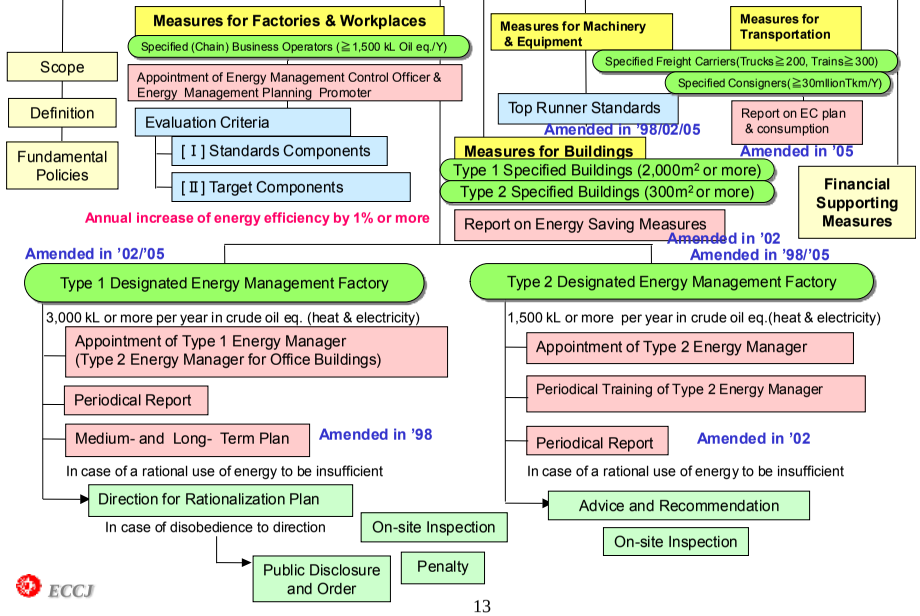
Surveying the flows from suppliers to consumers for each energy source, "21" technologies that enable drastic reduction of CO_2 were chosen from both perspectives of efficiency improvement and reduction of carbon



* EMS：Energy Management System、HEMS：House Energy Management System、BEMS：Building Energy Management System

ECCJ

7. Energy Conservation Act
【enacted in 1979, amended in 1983/1993/1998/2002/2005/2008 】



ECCJ

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Specific Measures for Energy Conservation

Regulatory Control
(The Energy Conservation Act)

《Industrial Sector》
Target: 1%/year improvement of energy intensity
- Obligation for factories with high energy consumption
  - *Energy Management System*
    → To appoint Energy Managers
    → To submit periodic reports on energy utilization
    → To submit mid-long term plan for energy conservation

《Residential/ Commercial Sectors》
- Obligation to prevent heat-loss through windows and wall, to utilize high efficient facilities for buildings
- Obligation to improve energy efficiency of appliances utilized in households and offices based on the Top-Runner Program

《Transportation Sector》
- the Top- Runner Program for passenger/freight vehicles
- Obligation for cargo owners and carrier companies (to submit periodical report and mid-to long term plan)

Supporting Promotion
(preferential tax, loan and investment)

《Promoting the introduction of high-efficiency equipment for enterprises and local public bodies》
- Tax incentives for introduction of equipment (exemption or depreciation)
- Low-interest loan for the introduction of equipment
- Budgetary support for introduction of high-efficiency equipment --- subsidies
  - Promoting the Home/Building Energy Management System (HEMS & BEMS)
  - Supporting ESCOs business
  - Promoting the introduction of High-efficiency hot water supply apparatuses, Co-generation system etc.

《Technological development 》---- by NEDO
- Technological development by governmental bodies
- Supporting technological development by enterprises <reduction of standby power consumption, etc.>

Energy Conservation Progress

Public Information (publication, labeling and education)

《Publication, Advisory》
- Dispatch of advisory experts for glass roots activities
- Public distribution of the catalogues of high-efficiency products

《Labeling System》
- Labeling system to provide consumers with information on high energy efficient home appliances and passenger cars

《Education》 - Promoting energy conservation in elementary and junior high schools

ECCJ

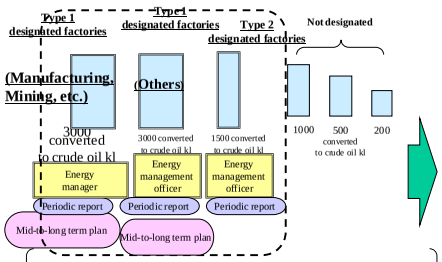
The comparison of regulatory target before and after revision in 2008

The Energy Conservation Act was revised in May 2008.

- Companies who have and run factories or workplaces of which total energy consumption amounts to 1,500kl or more per year in crude oil equivalent are designated as "Specified Business Operators".
- Chain business operators such as convenience stores or restaurants who have and run factories, workplaces or member stores of which total energy consumption amounts to 1,500kl or more per year in crude oil equivalent are designated as "Specified Chain Business Operators".
- They shall prepare and submit a Medium- and Long-term Plan, and Periodical Report on the status of their energy utilization.

[Before Revision]

<Energy Management per Factory or Workplace>

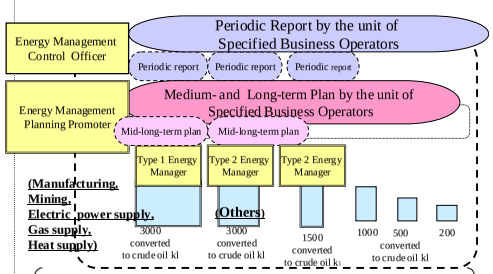


[Energy management system]
- Energy managers, etc. are appointed in each designated factory.

[Plans and reports]
Each type 1 designated factory is obligated to make mid-to- long term plans.
- Each designated factory is obligated to make periodic reports.

[After Revision]

<Energy Management in the Company on the whole>



[Energy management system]
- Energy Management Control Officer is selected from executives.
- Energy Management Planning Promoter to support Energy Manager control Officer is selected.
- Energy Managers, etc. by each designated factory

[Plans settlement and Report]
- Submission of Medium and long--term plan and periodic report by each company.

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The condition and role of each key person for energy management after revision in 2008

Energy Management Control Officer

Condition: According to the law, the position shall be filled with a person who supervises and manages the implementation of the business (executive-level employee). It means the person shall implement energy management for a company as a whole with a bird's eye view.
Role: 1. Promotion of efforts with management perspective
2. Coordination of Medium- and Long-term Plan
3. Planning for on-site management, implementation of practical business affairs

Energy Management Planning Promoter

Condition: A person who has completed training courses concerning energy management or who has a qualified energy manager's license.
Role: 1. Practical assistance for an energy management control officer

Type 1 Energy Manager and Type 2 Energy Manager

Condition: Same as before the revision
Role: Same as in the law before the revision, they shall implement management in the workplaces such as designated energy management factory. Also, they shall collaborate with an energy management control officer and energy management planning promoter to implement systematic efforts based on management judgment and to take effective measures for energy conservation for a company as a whole.

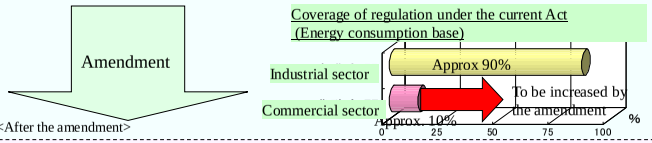
Outline of Amendments Part of the Energy Conservation Act

○ In order to further promote the measures for containing the global warning, it is important to strengthen the energy conservation measures in the Commercial and Residence sectors where the energy consumption is greatly increasing.
○ To do this, the energy conservation measures for offices, residences and buildings must be strengthened by amending the Energy Conservation Act.

Strengthening of energy conservation measures for the commercial sector

Introduction of regulation by the unit of a business organization

<Currently>
Energy management obligation by the unit of a factory is imposed on factories bigger than the specified scale.



<After the amendment>
(1) Introduction of the energy management obligation by the unit of Business Operators (company unit)
(2) Each of franchise chains is considered to be Chain Business Operators and the same regulation as that implemented by the unit of Specified Business Operators (over 1,500 kL per year in crude oil equivalent) is applied to it.

Other measures

<After the amendment>
Energy conservation activities of each company are totally evaluated considering the following factors.
- State of energy conservation of each business type (benchmark for each sector is made)
- Energy conservation activities to be implemented jointly by multiple business organizations (joint energy conservation project)

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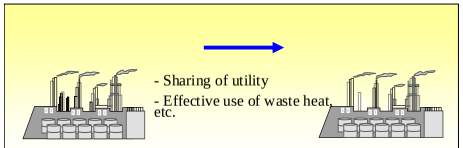
Joint Energy Management by Multiple Companies

Introduces a system that systematically evaluates Business Operators which jointly implement the energy management crossing the unit of Business Operator (Energy, CO_2 Joint Reduction Project).

Examples of joint energy management

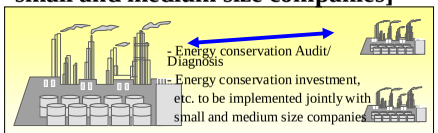
[Co-work at industrial complex]



○ There are some cases in which multiple business organizations jointly implement the energy management in an industrial complex.

○ Periodic Reports, etc. are required to be made by each factory under the current Energy Conservation Act.

[Co-work by big companies and small and medium size companies]



○ There are some cases in which big companies implement energy conservation measures jointly with small and medium size companies which are difficult for the small and medium size companies to implement alone.

○ It is being studied to incorporate the support of energy conservation of the household sector or green electricity certificates into the joint energy conservation project.

The energy management implemented jointly by those multiple companies is systematically evaluated.

Benchmark index and Medium- and Long- Term Target Level

Classification	Business Field	Benchmark Index	Target Level
1A	Iron manufacturing using Blast Furnace	The value obtained by A/B A: Energy consumption in BF B: Amount of raw steel	0.531 kl/t or less
1B	Common steel manufacturing using Electrical Furnace	Sum of (1) and (2) (1) A: Energy consumption in EF B: Amount of raw steel (2) A: Energy consumption in Rolling B: Amount of rolled steel	0.143kl/t or less
1C	Special steel manufacturing using Electrical Furnace	Sum of (1) and (2) (1) A: Energy consumption in EF B: Amount of raw steel (2) A: Energy consumption in Rolling B: Amount of shipped steel	0.36kl/t or less
2	Electrical supplier	The value obtained by A/B (thermal efficiency standard index))	100.3% or more
3	Cement manufacturing (Portland cement, BF cement, silica cement, fly-ash cement)	Total of (1) to (4) (1) Raw material process (2) Pyro-process (3) Finishing process (4) Shipping	3,891MJ/t or less

- The way to set the sectors and the **Benchmark** is decided based on the specific study at the council.

Energy Conservation Act and its back ground

1973, 1978 Oil crisis <Energy security>

1979 the Act Concerning on the Rational Use of Energy (Energy Conservation Act) enacted

*guidelines for EC to factories & business premises, buildings and equipment

*Designated energy management factories (DEMF) must appoint energy managers 14,116 factories

1983 amended *Streamlines the process of license approval & issuance

1993 the Act for energy conservation and recycling assistance

Global Warming Issue

Rapid increase of energy consumption in commercial/residential and transportation sectors

1993 the EC Act amended
- *submission of Periodical Report concerning energy consumption and energy management

1998 amended
- *Top Runner Program
- *submission of Medium- & Long-Term Plan
- *new category as to the type 2 DEMF

2002 amended
- *submission of periodical report from the type 2 DEMF
- *EC measures for the designated buildings

2005 amended
- *heat and electricity are integrated into a single amount of energy consumption
- *submission of periodical report and mid-to long-term plan from cargo owners and carrier companies
- *E-C measures for residential buildings
- *energy saving information by energy suppliers and equipment retailers

2008 amended
- *E-C measures for chain-stores and franchised business
- *integrated management of factories' EC by the head office

1997 COP3 (Kyoto Protocol)

1998 Law Concerning the Promotion of the Measures to Cope with Global Warming

2002 Fundamental Law on Energy Policy Measures

2005 Kyoto Protocol Target Achievement Plan

2006 New National Energy Strategy

International collaboration structure after 2013?

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8. Structure of the Energy Conservation Act
(Act on the Rational Use of Energy)
(1979 enforced, 1983,1993,1999, 2003,2006,2008 amended and enforced)

<Contents>

9. Energy Conservation Measures for Machinery & Equipment

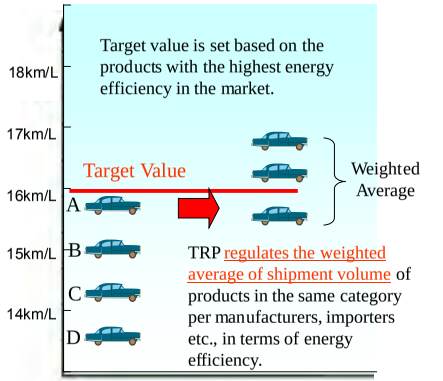
"Top Runner Program

*Top Runner Program: The concept of the program is that fuel economy standards for vehicles and energy conservation standards for electric appliances, etc. shall be set exactly the same as or higher than the best standard value of each product item currently available in the market.

Concept for setting target standard

Fuel efficiency

Energy efficiency standard (A is the top runner.)



Currently designated products

Total 23 products designated

11 products designated in 1999
1. Air conditioners
2. Fluorescent lights
3. Television sets
4. Copying machines
5. Computers
6. Magnetic disk units
7. Video cassette recorders
8. Passenger vehicles
9. Freight vehicles
10. Electric refrigerators
11. Electric freezers

2 more products designated in 2008
22. Routers
23. Switches units

7 more products designated in 2002
12. Space heaters
13. Gas cooking appliances
14. Gas water heaters
15. Oil water heaters
16. Electric toilet seats
17. Vending machines
18. Transformers (molded)

3 more products designated in 2006
19. Microwave Oven
20. Electric Rice Cooker
21. DVD Recorder

Outline of the Top Runner program

1) Background:
The government launched the Top Runner Program based on the 1999 amended Act which the standards are set based on the most energy efficient product commercially available in given category. For each manufacturer and importer, the weighted average efficiency of all units shipped within the same category must meet the standards for that by the target year decided for each category.

2) Designated products:
Target products are ones designated as machinery and equipment which are commercially used in large quantities in Japan, consume significant amount of energy on use and intensively required with "energy consumption efficiency".

3) Target standard values:
As for the designated products, manufacturers and importers etc. are obliged to meet the target standard values concerning "energy consumption efficiency". Target standard values are set based on the most energy efficient product commercially available in the market in given category.

4) Classification of target standard values
Target standard values are set in classifications considering a variety of models with different sizes and functions etc. for each product.

5) Target fiscal years:
Target fiscal years by which the target standard value must be achieved are set up through taking into consideration of future technological development forecasts and the development period of products and so on, usually in the range of 4 to 8 years from the base fiscal year.

6) Judgment methods of achievement :
In the target fiscal year, achievement of the target is judged based on such indicators as a weighted average of shipment by product for each product category per manufacturer and importer etc.

7) Measurement methods:
The measurement method primarily uses JIS (Japanese Industrial Standards)

8) Indications:
Responsibility is assigned to indicate the "energy consumption efficiency" of the device in catalogs, on the device itself, etc.

What is Top Runner Program? (Example: TV Sets)

(1) Target standard value (standard energy consumption efficiency):

It is product's annual energy consumption, expressed as energy consumption efficiency. Taking the best annual energy consumption (kWh/year) as a base, target standard values are decided with an allowance for technological improvement.

(2) Category:

For TV sets, products are classified by number of pixels, TV receiver size, moving picture display speed , and number of additional functions.

(3) Target year:

For LCD and plasma TV sets, the target fiscal year is FY 2012 and every fiscal year after that (the standard was developed in FY 2007).

(4) Method for evaluation of achievement:

Achievement is judged based on a weighted average for each category per manufacturers (vendors).

(5) Measurement method:

Measurement method which takes into account hours of use based on the actual status is adopted.

(6) Display:

Product's annual energy consumption is required to be displayed in catalogs, on product bodies, etc.

Energy Conservation Effect under Top Runner Program

Product Category	Target Fiscal Year	Base Fiscal Year	Efficiency Improvement (Initial Expectation)	Efficiency Improvement (Result)
TV sets (using CRT)	2003	1997	16.4%	25.7%
Video Tape Recorders	2003	1997	58.7%	73.6%
Air Conditioners (Room Air Conditioner)	2004* Oct. 1,2003 → Sep.30,2004	1997** Oct.1,1996 → Sep.30,1997	66.1%	67.8%
Electric Refrigerators	2004	1998	30.5%	55.2%
Electric Freezers	2004	1998	22.9%	29.6%.
Passenger Vehicles * (Gasoline)	2010	1995	22.8%	22.8%(FY2005)
Freight Vehicles* (Diesel)	2005	1995	6.5%	21.7%
Vending Machines	2005	2010	33.9%	37.3%
Fluorescent Light Equipment	2005	1997	16.6%	35.6%
Copying Machines	2006	1997	30.8%	72.5%
Computers	2007	2001	69.2%	80.8%
Magnetic Disc Units	2007	2001	71.4%	85.7%
Electric Toilet seats	2006	2000	10.0%	14.6%

Reference: "Top Runner Program (March 2010) by METI

Legislation pertaining to the Top Runner Program

Act on the Rational Use of Energy (Act No.49 of June 22, 1979) the latest amendment in 2008

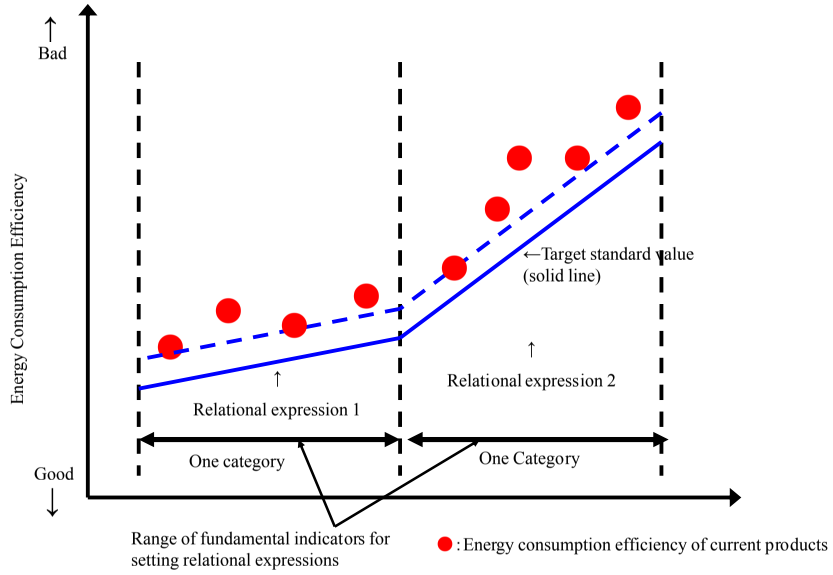
[Acts]
Chapter VI Measures Pertaining to Machinery and Equipment
Article 77 Role of Manufacturers, etc.
Article 78 Standards of Judgment for Manufacturer/ Importers (the basic concepts used in the Top Runner Program)
Article 79 Recommendations and Orders concerning Improvement of Performance (Standards Monitoring Procedures)
Article 80 Labeling
Article 81 Recommendations and Orders concerning Labeling
Chapter VII Miscellaneous Provisions
Article 87-13 Reports and On-site Inspections
Chapter VIII Penal Provisions
Article 95-2 Penal Regulations

[Government Ordinances]
Article 21 Designated Devices (explicit notification of designated devices)
Article 22 Production and importation volumes for manufacturers of designated devices (margin standards)
Article 23 Council to hear opinions on orders issued to manufacturers of designated devices
Article 32 Reports and On-site Inspections (items reported, etc.)

[Ministerial Ordinances]
Article 48 Exclusions for designated devices
Article 49 (appendix 5) Energy consumption efficiency (standard evaluation index)
* For passenger and freight vehicles, this is the "Ministerial Ordinance Concerning the Calculation of Vehicle Energy Consumption Efficiency".

[Notifications]
Criteria for Judging Manufacturers with Regard to Improvements in Designated Device Performance, etc. (established for each product)

Concept of Setting Top Runner Standards



Advisory Committee for the Government

Committee Name	Function	Membership
Advisory Committee for Natural Resources and Energy	Define and submits target, authorizes results	Industry representatives, academic experts, researchers, local government representatives, consumer representatives
Energy Efficiency Standards Subcommittee	Define subcommittees, compiles final reports, conducts deliberations	Representatives from various industries, academic experts, trade union representatives, consumer representatives, representatives from related corporations
Evaluation Standard Subcommittee (for each type of machinery and equipment)	Prepares and discusses draft target	Representatives from relevant machinery and equipment industries and manufacturers, academic experts, researchers, consumer representatives, representatives from related corporations
Working Group / Working Group		

Three principles to designate the machinery & equipments

1) The machinery and equipment are used in large volumes in Japan.

2) The machinery and equipment use substantial amounts of energy while in use.

3) Improvement on the energy consumption efficiency of the machinery and equipment can be expected.

Future Direction of Top Runner Program

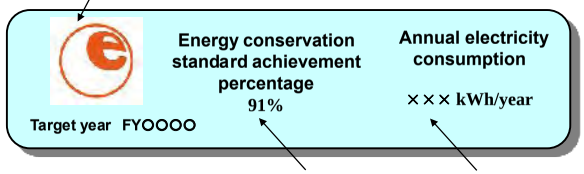
- Enlargement of Targeted Products
- Targeted products will be those for commercial use.

Energy Labeling Program （Ⅰ） -- Method of Indication

☆Case 1: Target still not achieved

This system introduced in August 2000

Symbol is colored in orange

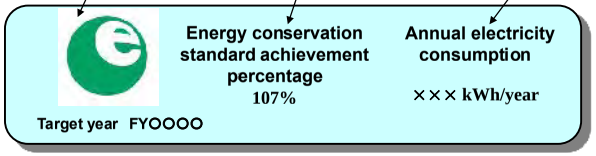


Achievement rate of energy conservation standards

Energy consumption efficiency

☆Case 2 : Target achieved

Symbol is colored in green



* The label size differs depending on the space available for indication etc.

Uniform Energy-Saving Labeling System for Retailers (Ⅱ)

- The Revised Law Concerning the Rational Use of Energy enforced in April 2006 stipulates that retailers shall make efforts to provide information. In light of this, a guideline was formulated, including providing information by using uniform energy-saving labels.
- The system started in October 2006.(For Air Conditioners, Refrigerators and Television Sets)
- From April 2010, Fluorescent Lights(household) started, now 5 products including Electric Toilet Seats are designated.

Uniform Energy-saving Label

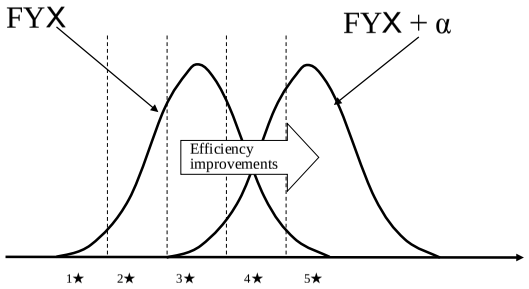
【Multi-star rating system】
- Energy-saving performance is indicated in 5 stages, from 1 to 5 stars, from low to high performance of products offered in the market.
- In order to clarify the compliance level with the Top Runner standard, arrows are placed under the stars, showing achievement and non-achievement.

【Energy-saving labeling system】
- Products which achieved the Top Runner standard carry a green “e” mark, while others carry an orange “e” mark.
- Achievement level and annual electricity consumption are also indicated.

【Expected annual electricity bill】
- The expected annual electricity bill is indicated to show the energy consumption efficiency (annual electricity consumption) clearly.

Changing the Multi-level Evaluation Standards

- If the same multi-level evaluation standard is too rigidly applied long time, efficiency improvements due to model changes would tend to bias the overall distribution towards higher rankings, so the standards are reviewed on a regular basis.
- A survey is conducted once a year, and if the number of the devices that have attained the Top Runner standard increases 30% or more, the multi-level evaluation standard is revised.
- The multi-level evaluation standard is changed annually on April 1.



Top Runner Program and Labeling System List of Appliances / Equipment

	Appliances / Equipment	Top Runner Program	Energy Saving Labling Prgram	Uniform Energy Saving Lable	Indication of "Expected Electricity Bill"
1	Passenger Vehicles	○			
2	Freight Vehicles	○			
3	Air Conditioners	○	○	○	○
4	TV Sets	○	○	○	○
5	Video Cassette Recorders	○			○
6	Lighting Equipment	○	○	○	○
7	Copying Machines	○		(Fluorescent household)	
8	Computers	○	○		
9	Magnetic Disc Units	○	○		
10	Electric Refrigerators	○	○	○	○
11	Electric Freezers	○	○		○
12	Space Heaters	○	○		
13	Gas Cooking Appliances	○	○		○ (Fuel)
14	Gas Water Heaters	○	○		○ (Fuel)
15	Oil Water Heaters	○	○		○ (Fuel)
16	Electric Toilet Seats	○	○	○	○
17	Vending Machines	○			
18	Transformers	○	○		
19	Microwave Ovens	○	○		○
20	Electric Rice Cookers	○	○		○
21	DVD Recorders	○	○		○
22	Routers	○	○		
23	Switching Units	○	○		

Retailer Assessment Program for Top Energy Efficient Product Retailing Promotion Store

- In order to promote energy efficient products, it is essential to introduce measures for retailers, who are the contact point between manufacturers and consumers.
- Recognition should be extended to retailers who actively promote energy-efficient products or provide appropriate energy conservation information.
- The Energy Efficient Product Retailer Assessment Progarm was introduced in FY2003.

Logo

2005年度 e-Shop 省エネ型製品普及推進優良店

Targeted retailers:

All home appliance retailers including small-scale stores whose sales coming from home appliances account for 50% or more of total sales

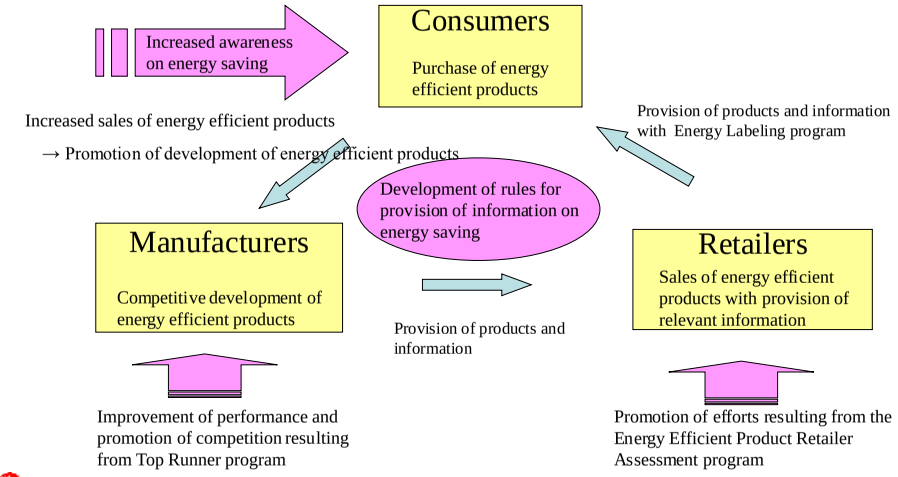
Modified in FY2005

・Large home appliance retailers having a total floor space of at least 800 m², whose sales from home appliances account for 50% or more of total sales

- "Top Energy Efficient Product Retailing Promotion Store" are selected each year and publicized along with their rankings. Effective FY2004, Minister of Economy, Trade and Industry Award and Minister of Environment Award were established.
- Selected retailers are authorized to carry a special logo.
- In FY2009, 485 large-scale stores and 210 medium- & small-scale stores were certified as excellent stores .

Positive Growth Cycle in Popularization of Energy Efficient Products

- Providing necessary information, it will be expected to encourage consumers to select energy efficient products.
- Popularization of energy efficient products will act as incentives for development of further energy efficient products.

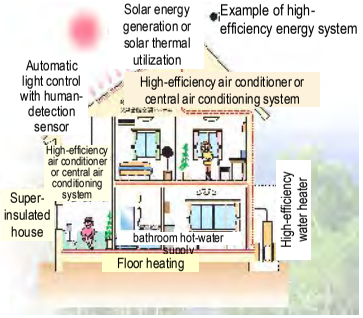


Support for High-Efficiency Residences and Buildings

○ Budgetary measures are utilized effectively to promote the introduction of higher-efficiency buildings and facilities and broader recognition of energy conservation residences and buildings.
(Improvement of projects to promote the introduction of high-efficiency energy systems for houses and buildings.)

Projects to promote the introduction of high-efficiency energy systems for houses and buildings

- Energy conservation for houses and buildings is achieved effectively through **comprehensive introduction and utilization of proper insulation, installation of high-efficiency facilities/equipment, and energy management systems.**
- For this purpose, **supports are provided for active efforts to introduce integrated "high-efficiency energy systems"** and to disseminate these systems widely.
- Regarding **houses**, in particular, it is **important to raise awareness** of the functions and advantages of highly energy-efficient houses **among a wide range of consumers**. For this purpose, considerations are made to **adequately evaluate better performance, strengthen linkage with systems to visualize the evaluation**, and utilize budgetary measures effectively.



System for Indicating Thermal Insulation Performance of Residential windows

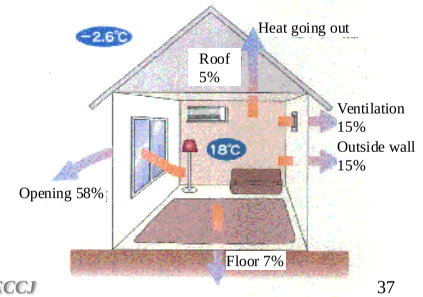
- **To promote the energy conservation in the household sector, the openings of residences are big factors in making the energy conservation performance of residences. It is important to encourage consumers to select windows, etc. with higher thermal insulation performance.**
- **The "Guideline concerning provision of information on thermal insulation of windows, etc." is compiled to provide consumers with information on thermal insulation performance of windows, etc. and to spread the windows with high thermal insulation performance.**
- **The indication system started on and from April 1, 2008.**

Importance of measures for residential windows

The proportion of the heat lost when it goes out or comes in from house windows when heating or cooling.

Proportion of heat going out of windows when heating in the winter: 58%
Proportion of heat coming in from windows when cooling in the summer: 73%

[Heating in the winter]



Insulation performance indication label

Indicated by four starts added as the insulation performance goes up

(Window)

* The indication is made basically for the entire windows, but depending on the business type, it is also possible to make the indication for each glass or sash.

(Glass)

(Sash)

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10-1. Financial Supporting Measures (FY 2010)

Tax incentives program(FY2010): Subject equipment 74units

This program is based on "Tax System Promoting Investment in the Reform of the Energy Supply and Demand Structure".
Tax incentives: To be able to choose one of the following options;
1) **Tax exemption is equivalent to 7% of the equipment acquisition cost (which should not be more than 20% of the income tax or corporate tax payable.) and applying only small and medium sized companies.**
2) **Special depreciation of 30% of the equipment acquisition cost in the year of acquisition, in addition to ordinary depreciation and applying all companies.**

Loan program with special interest rate (FY2010):

This program is based on "Act for Energy Conservation and Recycling Support" and applied only small and medium-sized enterprises from 2008.
1) **Newly acquired equipment should improve energy efficiency by more than 25% compared to existing average equipment.**
2) **In the case of replacement of equipment, newly acquired equipment should improve energy efficiency by more than 40% compared to the replaced equipment.**
3) **Subject equipment: 52units such as heat pump, waste heat boiler and cogeneration system. 11units such as excavating machines, compacting machines, tractors and foundation work machines.**
4) **For installing the specific high-performance furnace and boiler**

Subsidy program (FY2010):

This program is prepared by the government for those who will introduce energy conservation facilities, projects and technologies.

Through: NEDO and other organizations

Of course there are no governmental intervention and no subsidies for energy prices.

10-2. Finance conditions*1

Financing limit	**Direct loan*2 720 million yen** **Alternate loan*2 120 million yen**
Financing percentage	**Refer to the rate specified by the concerned financing** Predefined rate is applied based on the credit risk and financing period.
Financing period	**Less than 15 years (of which 2 years are designated as a grace period)**

*1. These finance conditions are those defined by Japan Finance Corporation (JFC), Operations aimed at Small and Medium Enterprise. Operations aimed at Micro Business and Individuals accommodate only the direct loans and the special financing limit is 72 million yen.
*2. Direct loans are loans which should be applied directly at the window of financing institutions. Alternate loans are those which are applied through the applicant's financial agency.

10-3. Financing target enterprises

Financing target enterprises of Japan Finance Corporation, Operations Aimed at Small and Medium Enterprises are stipulated in accordance with the Article 2, Item 3 of the Japan Finance Corporation Law, based on the industry and the size of business (in terms of capital and number of employees) as described below. If the target enterprise matches the size of business either in terms of capital or number of employees, it becomes a justifiable target. For the target enterprises of JFC, Operations Aimed at Micro Business and Individuals, please contact the appropriate client service.

Target industry	Target size of business
Manufacturing*1, Construction, Transportation, etc.	**Capital: less than 300 million yen or less than 300 employees**
Wholesale	**Capital: less than 100 million yen or less than 100 employees**
Retail	**Capital: less than 50 million yen or less than 50 employees**
Service*2 (there are some exceptions from the target)	**Capital: less than 50 million yen or less than 100 employees**

*1 Among manufacturing industries, the target size of rubber products manufacturing companies (excluding auto and airplane tire and tube manufacturing companies and industrial belt manufacturing companies) is capital of less than 300 million yen or less than 900 employees.
*2 Among service industries, the target size of hotel businesses is capital of less than 50 million yen or less than 200 employees, while that of software and information processing service companies is capital of less than 300 million yen or less than 300 employees. The companies which fall into the following industries are excluded from target industries eligible for JFC's financing programs for small and medium-sized enterprises: (For details, please contact the appropriate client service) Agriculture, forestry, fishery, Financial/Insurance (excluding insurance agency and insurance services), housing lease and housing land lease among the property industry, medical and social work services (excluding health services), non-profit organizations, certain entertainment and amusement business, speculative businesses, and enterprises which are offensive to public order and morals

Assistance to ESCO Projects/Business Promotion

ESCO Promotion Council (JAESCO)

Potentiality of ESCO(**E**nergy **S**ervice **Co**mpany) business in Japan is estimated as 2,470 billion yen., by the ESCO Business Introduction Promotion Study Group of ECCJ.
(energy saving amount: 4 million kl / year)

In the U.S, the scale of market is approx. $ 2 billion (2000).

ESCO business started in 1998 in Japan.

ESCO Promotion Council (JAESCO) established in 2000.
(124 members as 2010)

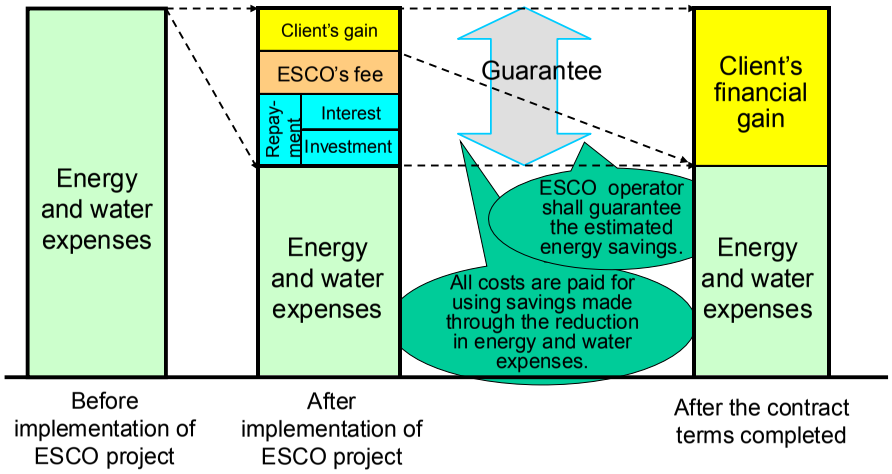
In FY 2007, the total amount of repair work for energy conservation increased by 30% compared to the previous fiscal year.

The order volume of ESCO business substantially increased from 27.8 billion yen in FY 2006 to 40.7 billion yen and ESCO business still accounts for more than half (64%).

<Future challenge>

To promote the ESCO business in the public sector
To facilitate fund procurement
To improve the recognition of the business

Cost and Profit of ESCO Project

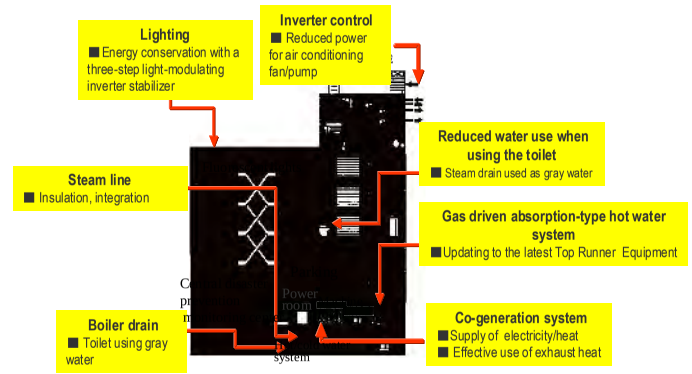


Support for the Introduction of ESCO Business ～ Expanding ESCO Market ～

○Support, in the forms of partial subsidy for initial investments, low-interest loans, etc., is extended to private enterprises and local governments implementing ESCO business.

○ ESCO projects have tended to increase their shares among "the government subsidy to disseminate and promote the projects that introduce highly-efficient energy system for residences and buildings" and "the government subsidy to assist businesses who execute the rational use of energy".

Example of ESCO business introduction (at a hospital)



Energy conservation effect due to the introduction of ESCO: (utility bill reduction) : Approximately 25%

ESCO Project in the Ministry of Economy, Trade and Industry Buildings

○ The ESCO project was introduced to the Ministry of Economy, Trade and Industry (METI) buildings, which is the first ESCO project for a government facility, to promote energy conservation at the Ministry's buildings, as well as to promote the ESCO project in the private sector.
○ Measures will be considered to introduce the ESCO project broadly to other government buildings, schools, hospitals, etc.

METI building ESCO demonstration project

○ Facilities: METI main building and annex (approximately 110,000 ㎡)
○ Project term: March 2005-end of March 2009
○ Contract partner:
Takasago, Kinden, Mitsubishi Jisho Sekkei Joint Consortium for METI **ESCO** Demonstration Project
(Participants: Takasago Thermal Engineering Co., Ltd., Kinden Corporation, Mitsubishi Jisho Sekkei Inc.)

Contract expense	19.95 million yen (including tax)
Guaranteed saving on utility bills	Approximately 5.5 million yen/year
Reduction of CO_2 emissions	Approximately 160 t - CO_2/year

【Specific activities】
(1) On-and-off operations considering the temperature of the machine room, etc.
(2) Modification of the setting values of the annex's freezer coolant temperature (to reduce the freezer's operational load)
(3) Modification of the cool water exit temperature of the annex's freezer (to reduce operational load)
(4) Stop OA when the annex's air conditioners start operation (to reduce load caused by the outside air)
(5) Control of outdoor air quantity based on CO_2 density
(6) Installation of automatic flushing valves and sound effect equipment at restrooms in the annex
(7) Replacement of emergency exit sign lighting on and above the ground floor of the main building with energy-saving high-intensity lights

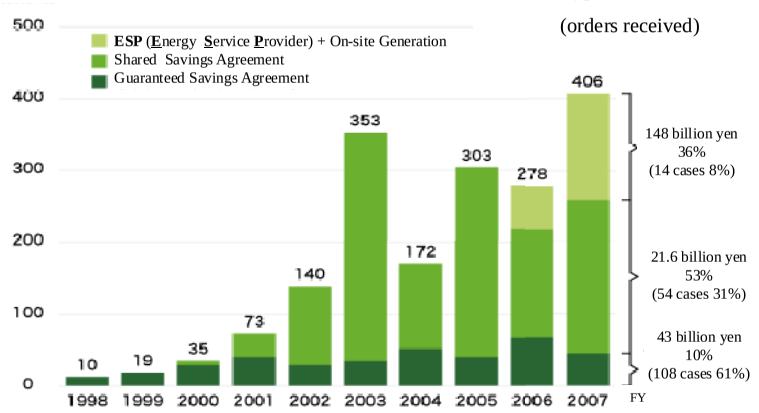
Utilized as a ESCO project model

✓ Promote ESCO projects for other government, municipality, and commercial buildings, using this project as a model case
✓ Publicize this project by including it in "The compilation of ESCO implementation project cases" (produced by ECCJ)

Dissemination and Promotion of the ESCO Project
～ Expanding ESCO Market ～

○ There are two methods of ESCO business.
○ The ESCO business has two forms: "Guaranteed Savings Agreement", where customers cover business costs, and "Shared Savings Agreement", where the ESCO business operator covers business costs. These options enable to be select service provision according to the customer needs.
○ After in FY2006, ESP with On-site Generation has researched and accounted the item separately.

Trend on Types of ESCO Contracts
(orders received)



Source: from the Homepage(http://www. jaesco.or.jp/) of JAESCO (Japan Association of Energy Service Companies)

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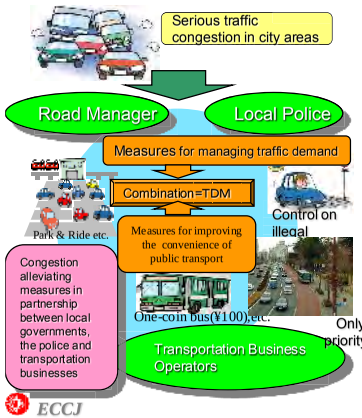
Traffic Management Measures

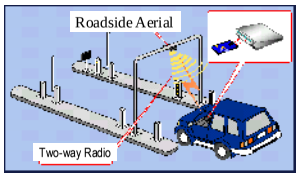
○Adjusting automotive traffic demands through the promotion of TDM (Transportation Demand Management) measures.
○Promoting ITS (Intelligent Transport System) by promoting ETC (Electronic Toll Collection) and VICS (Vehicle Information and Communication System)
○Promoting the development of traffic safety infrastructures such as upgrading traffic signals.

Promotion of TDM (Transportation Demand Management)



ETC Promotion Measures

Raise ETC usage rate to around 70% by the end of FY2007 to alleviate congestion at toll gates.



Source: Organization for Road System Enhancement (What is ETC?)

Development of Traffic Safety Infrastructures

Road traffic control center ⇕ Traffic information sign boards

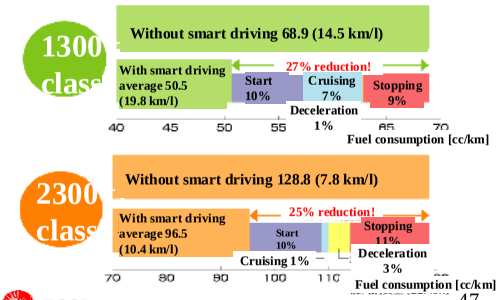
Car navigation systems

Optical beacons

Necessity of Dissemination and Promotion of Energy-Saving Driving

○ Fuel economy of new vehicles improved substantially through the introduction of the Top Runner fuel economy standard. However, fuel economy can further improve by energy-saving driving.
○ Approximately 25% fuel economy effect can be achieved by energy-saving driving.
Fuel economy effects differ depending on individual driving situations. However, energy-saving effects can be expected particularly in urban areas where drivers start and stop frequently.
○ It is possible to know the transition of fuel economy and the improvement of fuel economy by energy-saving driving by utilizing the energy-saving driving support system.

Fuel economy effect in energy-saving driving
* Based on results of the Smart Driving Contest in FY 2004



Utilization of the energy-saving driving support system
http://www.recoo.jp/

The key words are:
5 seconds, 5 km/hr and 5 seconds

Eco Drive 5-5-5

- ***5 seconds*** of energy saving awareness when starting your car
  <Reaching 20 km/hr speed in 5 seconds ensures full result>
- ***5 km/hr*** austerity from target speed
  <Driving 5 km/hr below the speed you want to drive at will relieve your stress>
- ***5 seconds*** of waiting is worth no idling

<Keeping your engine stopped even for a short while helps you enjoy fuel efficiency >

And if you add the early release of the accelerator pedal,
you will be a master of Eco Drive!

Promotion of High-Efficiency Boilers

- Energy demand for hot-water supply dominates approximately 30% of total energy consumption in a household.
- A subsidy system has been introduced to promote the proliferation of energy efficient hot-water systems.

CO_2 Refrigerant Heat-Pump Boiler (ECO CUTE)

Utilizing the principle of a heat-pump used in an air-conditioner, it can be heated with energy of approximately 3 times more than input energy. Energy saving of approximately 30% compared to a traditional combustion-type boiler is achieved.

Sensible-heat Recovery Boiler (ECO JOZU)

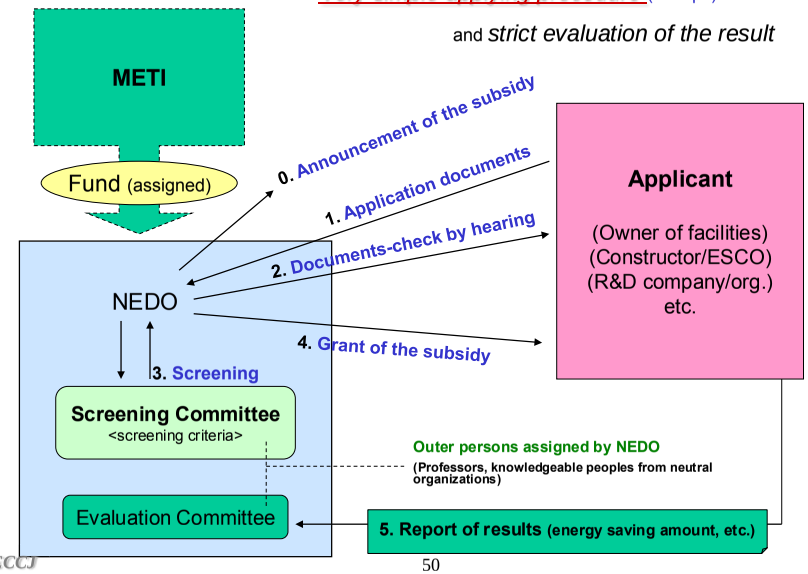
Recovers the sensible heat of exhausted gas, which is usually wasted. Energy saving of approximately 15% compared to a conventional combustion-type boiler is realized.

Gas Engine Boiler (ECO WILL)

Uses the gas-powered engine's exhaust heat and power to provide heat (main) and electricity (sub) for approximately 10% of overall energy saving for a building.

<Example > Applying procedure for the subsidies by METI/NEDO

Very simple applying procedure (4 steps)
and *strict evaluation of the result*



II. Activities of ECCJ

Profile and main activities of ECCJ

1. Role of ECCJ

Execution of the "Energy Conservation Act" with promotion of a supportive system

省エネのシンボルです
SMART CLOVER

Industrial sector

* Self-help efforts
Energy management
(TQM, kaizen, small group activities)
R&D and investment

Specified Business Operators
Specified Chain Business Operators
Specified Construction Clients and Owners
Specified Freight Carriers and Consigners

Government (METI)
* Regulation and support

Orders, supervision, supportive measures
Periodical Reports
Medium-and Long-Term Plan
Support, supervision
Information providing
* High efficiency appliances
* Supportive measures
Provide of services
* Information (Technology, Acts and regulations)
* Training
* Dissemination
Supporting member (2,658)
Information offering, Policy recommendations by research and survey

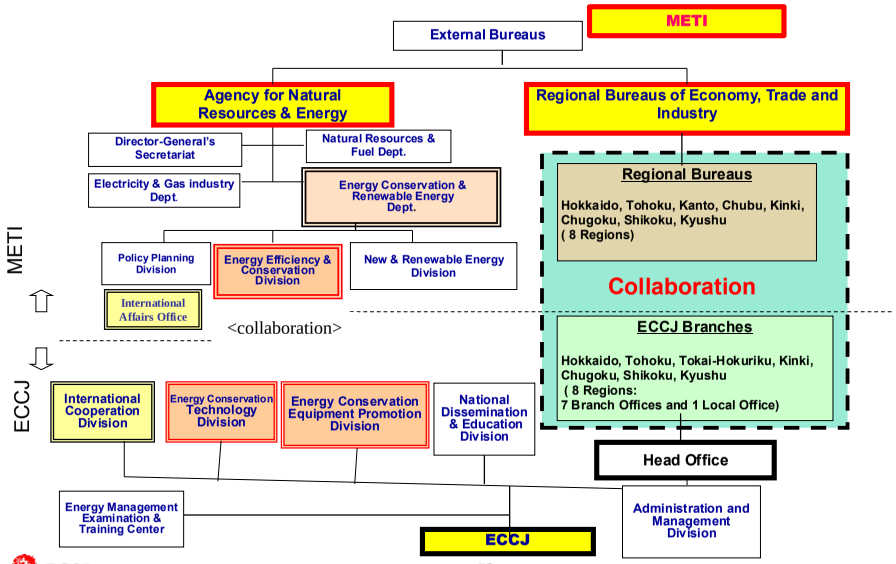
The Energy Conservation Center, Japan (ECCJ)
* The bridge over both sides for promotion and implementation of energy conservation measures

Information, Dissemination

Residential/ Commercial/ Transportation sectors

ECCJ

2. METI-ECCJ Collaboration Framework to enforce Energy Conservation Policy and the Act in Japan



ECCJ

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3. Profile of ECCJ

Legal status : * NPO under the supervision of METI

Establishment : * 16th October,1978 (just before the 2nd oil crisis)
<Roots: Heat-management Association established in 1947>

Purpose of establishment : * Core organization responsible for promotion of energy conservation

Office location : * Tokyo Head office & 7 branches and one branch office

Supporting member : * 2,658 companies (as of April 2010)

Staff (full time): * 143 persons (as of August 2010)

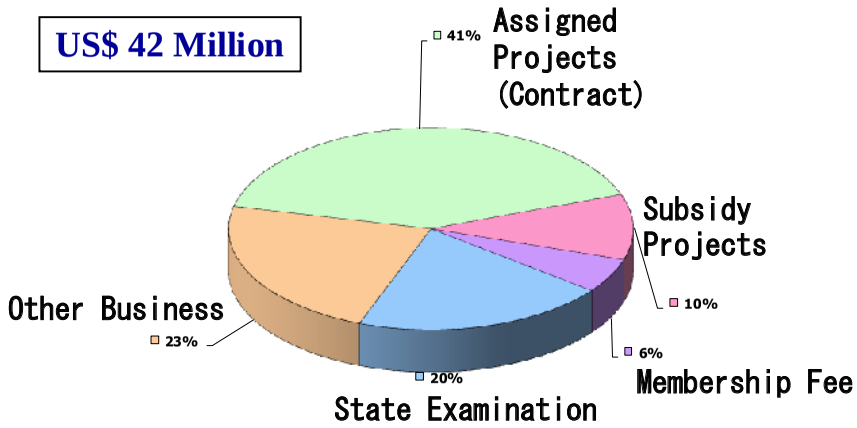
Budget : * 3,611 million yen in FY2009
(42 million US$:86￥/US$)

Fields of activity : * Industrial, Residential/Commercial and Transportation sectors

ECCJ

Budget in FY2009

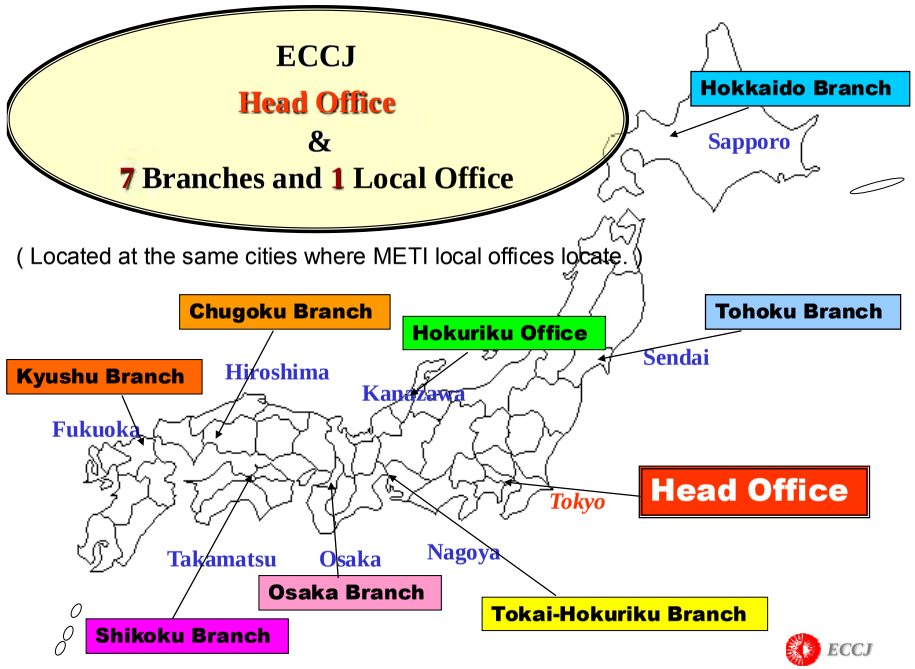
US$ 42 Million



ECCJ

4. History of ECCJ under Change of Energy-related Situation

History of ECCJ	Year	Change of Energy-related Situation
Heat-management Association established in Kinki district	1947	Heat-management Regulation enacted
Heat-management Association established in the other districts	1948	
Central Heat-management Conference started	1951	Heat-management Regulation enforced
Japan Heat Energy Technology Association established	1972	
	1973	1st Oil Crisis
ECCJ established	1978	
	1979	2nd Oil Crisis
	1979	Energy Conservation Act enforced
International Dept. started	1981	
	1983	Energy Conservation Act Rev. (1)
Examination Dept. started	1984	
	1993	Energy Conservation Act Rev. (2)
ESCO Project Promotion Office started	1997	COP3 (Kyoto Protocol)
Training Course Dept. started	1999	Energy Conservation Act Rev. (3)
	2003	Energy Conservation Act Rev. (4)
	2006	Energy Conservation Act Rev. (5)
AEEC (Asia EE&C Collaboration Center) started	2007	
JASE-World (Japanese Business Alliance for Smart Energy Worldwide)	2008	
	2009	Energy Conservation Act Rev. (6)



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5. Main Activities of ECCJ by Sectors

Industrial sector

① Energy conservation audit/diagnosis services for factories
② Education & training on energy conservation
③ State examination for energy managers (assigned by the Gov.)
④ Dissemination (conference for successful cases of EC activities, excellent energy conserving equipment, etc.)
⑤ Technological development and spillover

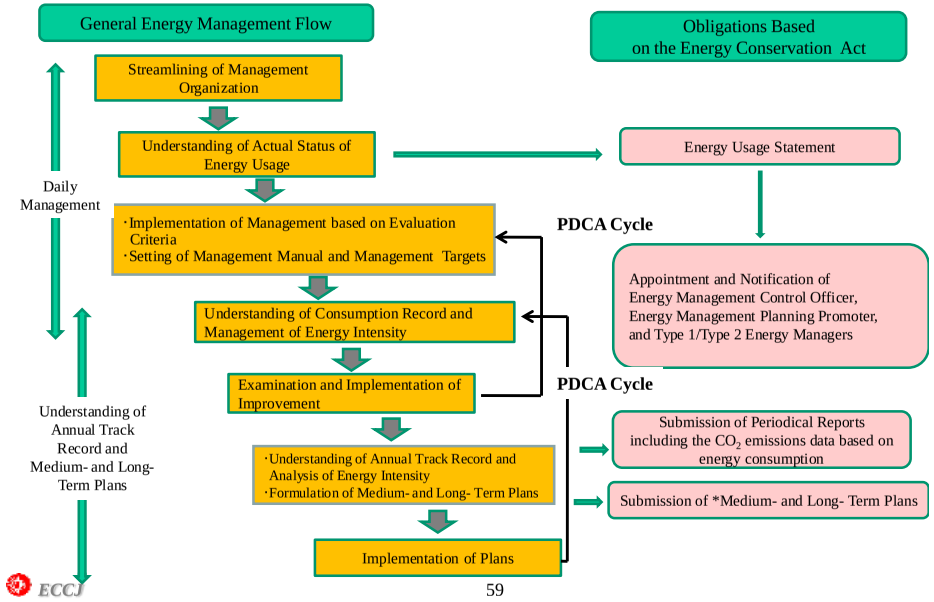
Residential, Commercial & Transportation sectors

① Energy conservation audit/diagnosis services for buildings
② Ranking catalogue for energy efficient appliances (Dissemination of Top Runner Program)
③ Promotion of Energy Labeling System
④ International Energy Star Program implementation
⑤ Energy Efficiency Product Retailer Assessment System
⑥ Dissemination of Energy conservation indicator "E-Co Navigator"
④ Energy Education at primary and middle schools

Cross sector

① Energy conservation campaign & exhibition (ENEX)
② Commendation (grand energy conservation prize)
③ Information & data base, Publicity and publishing "Handbook etc."
④ Survey and monitoring
⑤ International cooperation & Communications

Energy Management Flow and Obligations based on the Energy Conservation Act

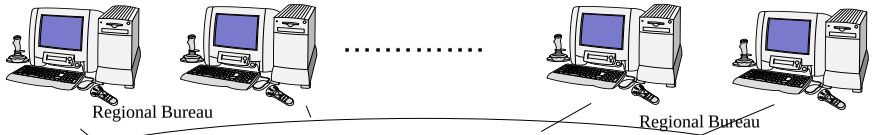


Roles of the Ministry of Economy, Trade and Industry (METI) and the Energy Conservation Center, Japan (ECCJ)

Major Energy Conservation Measure	Ministry of Economy, Trade and Industry	Regional Bureaux (9 Bureaux)	ECCJ
Complete standards such as acts and regulations	○	△ (Cooperation provided as required)	△ (Technical cooperation)
Acceptance of and guidance on notifications and reports such as periodic reports	–	○ (Acceptance of and guidance on notifications, etc.)	–
Enforcement of legal actions such as on-site inspections	○ (Determination of policies)	○ (Implementation of inspection)	–
Operation of training system for qualified person for energy management of type 1 designated energy management factory	○ (Designation of organ and delivery of certificate)	–	○ (Implementation of test and training)
On-site investigation and On-site inspection of factory	○ (Determination of policies and consignment)	○ (Guidance, etc. after investigation)	○ (Implementation of investigation)
Support for company such as energy conservation diagnosis, etc. 60	○ (Determination of policies and assistance)	△ (Publicity of system)	○ (Implementation of support)

Management of Information related to Type 1/Type 2 Designated Energy Management Factory

Input the Information to an Energy Conservation System Connecting the Ministry of Economy, Trade and Industry and Each Regional Bureau



Ministry of Economy, Trade and Industry (METI)

- ○ Basic information of the Type1/Type 2 Designated Energy Management Factories
  - Registered number
  - Type (1 or 2)
  - Date of registration/cancellation
  - Name of the company/factory
  - Location of the factory
  - Description of business
  - Contact, etc.
- ○ Information on the Periodical Reports ○ Medium- and Long- Term Plans
- ○ Energy Management Control Officer / Energy Management Planning Promoter
- ○ Information on Type 1/Type 2 Energy Managers*

Name, Date of birth, License number of the qualified person for energy management of type 1 designated factory, Date of appointment, etc.

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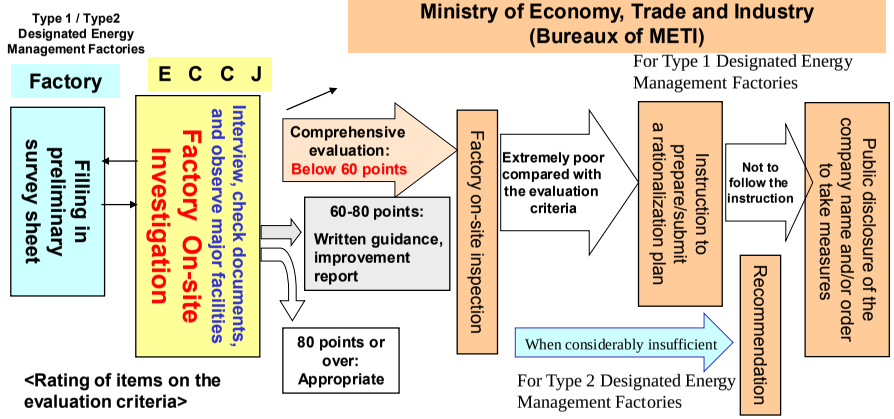
Flow of Factory On-site Investigation

Type 1 DEMFs /Since FY 2001 Type2 DEMFs /Start FY 2008

ECCJ assists Nation-wide Factory Investigation by METI

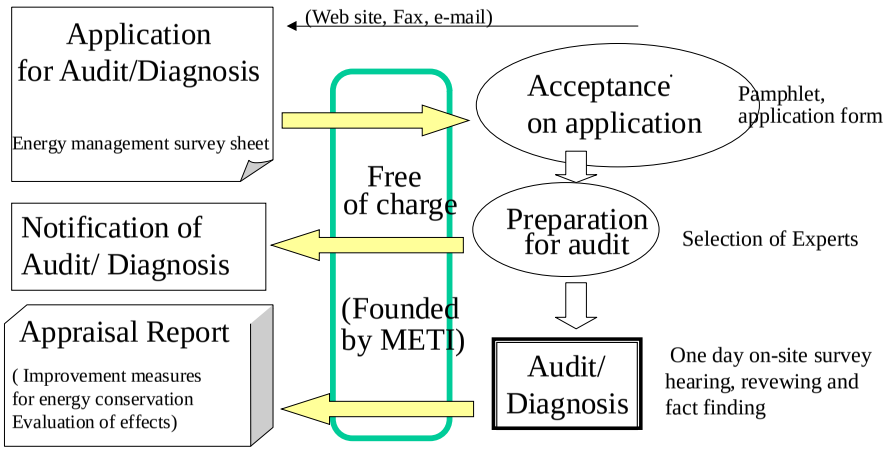


* ECCJ conducts on-site investigation on assignment from the government (METI) and reports results to METI.
(Previously, inspectors from the METI conducted on-site surveys, and technical specialists from ECCJ accompanied them for technical assistance.)

* METI implements comprehensive evaluation / determines action such as “appropriate”, “written instruction” or “factory inside inspection” based on the evaluation result, and notifies the factory.

Scheme of Audit/Diagnosis

for medium sized factories & buildings



One-day Energy Diagnosis is very effective for fact finding.

Survey items
- Energy Management Standards
- Energy loss / Efficiency of Utilities

Preliminary survey (document review) and 1-day on-site survey
by 1 thermal expert and 1 electric expert

Fact finding: *** Items to be improved**

General management items (along the guide line of the ACT),
EE&C propelling organization
Air conditioning and refrigeration facilities
Pump, fan, compressor, co-generation and others
Boiler, industrial furnace, steam system, heat exchanger, waste heat, wastewater
Receiving and transforming facilities, motor, lighting, and electric heating facilities

Recommendations:
- *Counter measures
- *Effect estimated (energy saving / cost saving)

<After follow> questionnaire survey for top management
--- implementation of the recommendation, energy/cost saving %,

We have made public the proposed measures & expected effects for other factories' reference.

Promotion toward "Smart Life" -- *Change of lifestyle* in Residential & Commercial Sectors

First oil crisis (1973)
Second oil crisis (1979)
→ Imminently promoted energy conservation measures
→ Perpetual energy conservation measures

Promotion and enlightenment of energy conservation
Sustained awareness of energy conservation

Action
- ¶ Summer and Winter campaigns (PR activities through mass-media, Commendation ceremonies)
- ¶ ENEX exhibitions
- ¶ Education (posters contests, textbooks, seminars)
- ¶ Grass roots activities (EC Republic)
- ¶ Disclosure of information on internet

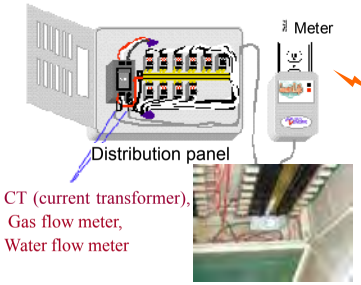
Equipment
- ¶ Ranking catalogs for high energy efficiency (TV, Refrigerator, Air-conditioner, etc.), Labeling system
- ¶ Energy conservation Indicator (Ene-Con "Navi")
- ¶ Grand prize for energy conservation (activities, equipments)
- ¶ International Energy Star logo displayed on energy-saving OA equipments

Change of lifestyle

A4-300

Energy conservation-monitoring system for residential Sector

"Energy Conservation Navigator" displaying energy saving amount and saved charges (electricity, fuel gas, water)



The voltage and current are measured to calculate power consumption, and the results thereof are transferred to the monitor.

NEDO/ECCJ Cooperative Publication (since FY 2000)

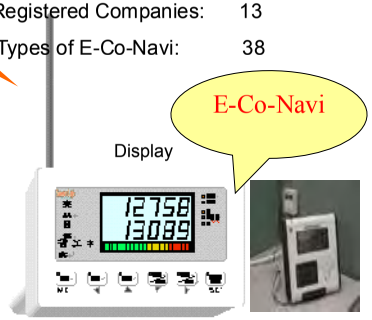
Number of Registered Companies: 13

Number of Types of E-Co-Navi: 38

Wireless transmission

E-Co-Navi

Display



The system displays the following items
- Consumed amount (kWh, m^3) from the beginning of the month
- -Charges for the above amount
- -Target energy charges
- -Previous energy charges

<Example> Practical training courses for energy conservation (5 courses)

Objective: to bring up engineers who can implement practically "Energy Conservation" through their own workshop

General course, Electric course, Thermal course, Building management course, Improvable-subject finding course

Objective person: Energy manager and engineer, Maintenance engineer, Manufacturing engineer, Plant and facility operator

Thermal course contains 4 stages (total 9days course)

1st stage (2 days)
<Lecture>
- * Basic technology of heat saving
  - *Thermal energy
  - * Oil and gas fuel
  - *Combustion calculation and CO_2 emission
  - *Successful cases
  - etc.
- *<Practical training with facilities>*
- * Combustion adjustment practice
  - *Air ratio
  - *Shape and color of flame
- * Gas explosion experiment and safety limit
  - etc.

<fee: 800US$>

2nd stage (2 days)
<Lecture>
- *Energy saving on steam
  - *Energy of steam
  - *Management of steam system
  - *Effective use of steam
  - *Steam trap and drain recovery
  - *Engineering software for steam
  - etc.
- *<Practical training with facilities>*
- *Steam trap practice
  - *Function *How to judge
- *Air trap practice
  - *Function
- *Engineering software practice
  - *Design *Merit
  - etc.

<fee: 800US$>

3rd stage (3 days)
<Lecture>
- *Measuring instrument and how to measure
- *Heat balance calculation and analysis
- *Improvement measures
  - etc.
- *<Practical training with facilities>*
- *Practice of heat balance with model furnace
  - *Operation of furnace
  - *Data acquisition
  - *Data analysis
  - etc.

<fee: 1,000US$>

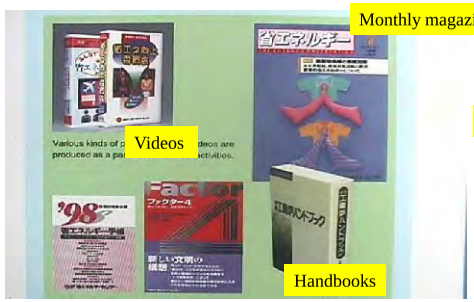
4th stage (2 days)
<Lecture>
- *Successful cases and thermal energy management
  - *Various cases
  - *Check list for energy saving activity
  - *Boiler management
  - *Energy Conservation Law
  - etc.
- *<Practical training with facilities>*
- *Observation of actual facilities (improved facilities)
  - *O_2 control *Air pre-heater
  - *Co-generation
  - *Regenerative burner
  - etc.

<fee: 800US$>

Conferment of the Certification

Publication

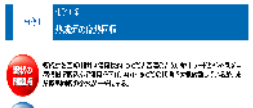
Various kinds of publications and videos are produced as a part of ECCJ's activities



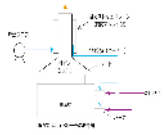
Videos

Handbooks

Monthly magazine



Guidebooks



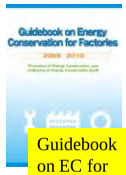
Pamphlets

<Projects / Promotion>

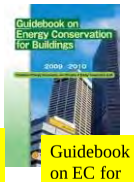
<Financial Assistance Measures>

ECCJ 2009-2010

Top Runner Program



Guidebook on EC for Factories



Guidebook on EC for Buildings

Taxation System

Loan System

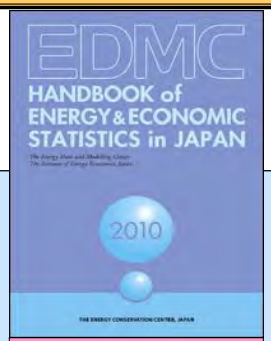
System of Gathering of Data on Energy in Japan <Example >

by METI / ANRE / IEEJ / ECCJ

METI
Ministry of Economy, Trade and Industry

8 Regional Bureaus

ANRE
Agency for Natural Resource & Energy



Published by ECCJ
Edited by EDMC (IEEJ)

IEEJ
The Institute of Energy Economics, Japan

EDMC
Energy Data and Modelling Center

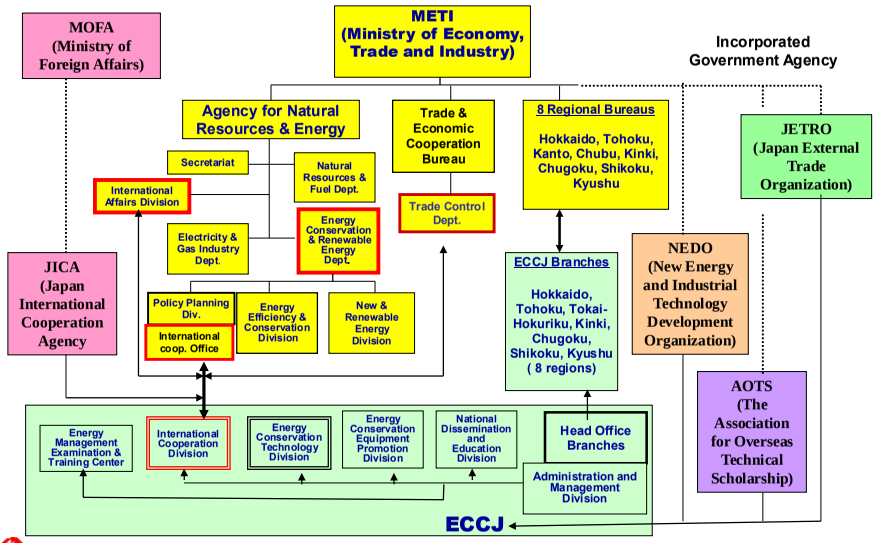
<Energy Demand, Supply and Forecast Analysis Group>
<Statistics Information Group

ECCJ
The Energy Conservation Center, Japan

A4-301

6. METI and the Related Organizations in Japan

for International Cooperation on the Energy Conservation



Fundamental Framework of ECCJ's Activities for International Cooperation

<Policy Proposal>
*Investigation of policy regarding energy and energy conservation.
*Potential survey and feasibility study on energy conservation and reduction of GHG emission.

<Capacity-Building>
*Training course in Japan and abroad.
*Dispatching experts to overseas for seminars, workshops, etc.

<Technical Cooperation>
*Factory audit/diagnosis and improving advise through field activities including plant survey, energy conservation audit, etc.
*Cooperation and support for establishment and operation of Energy Efficiency& Conversation (EE&C) Centers or such organizations.

A4-302

Asia Energy Efficiency & Conservation Collaboration Center

Establishment : In April, 2007
Location : In The Energy Conservation Center, Japan
Purpose : Information service on energy efficiency and conservation to Asian countries
Activities : One stop service

- Send of the information about legislation, policy, management method, technology, best practices, etc. on EE&C
- Response to inquiry on EE&C
- Introduction of contact points in government/non-government organizations related to energy

Asia Energy Efficiency and Conservation Collaboration Center
アジア省エネルギー協力センター

Contact Us :
http://www.asiaeec-col.eccj.or.jp/

JASE-World was established in October, 2008

Japanese Business Alliance for Smart Energy - Worldwide

JASE-World

Mr. H. Yonekura ,
Chairman of JASE-W

Purpose

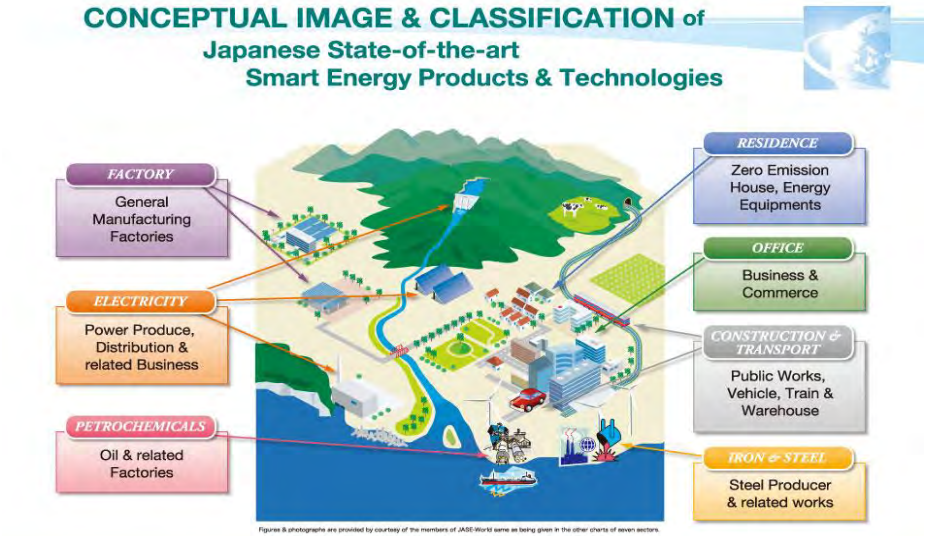
Contribution on Greenhouse Effect through Promotion of Energy Conservation Technology over the World

Activities

- **Publication of Smart Energy Products & Technologies and its distribution to the World.**
- **Globalizing Japan's eco-friendly businesses through the government – private joint activities.**
- **Deep discussion on specific business fields**
  - **① Heat Pump / Inverter Working Group**
  - **② Energy Saving Solution Working Group**
  - **③ Solar Power Working Group**

Establishment : **October 30th, 2008**
Chairman : Mr. F Mitarai , Former Chairman of Japanese Business Federation
Main Members : 57 Companies, 19 Observers, 11 Governmental Organizations

Dissemination/Promotion of Technology (Example)



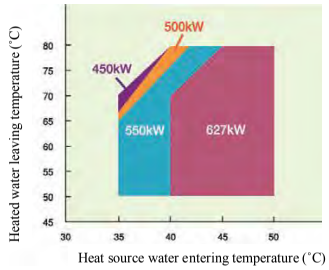
URL: http://www.jase-w.eccj.or.jp/technologies/overview.html

Dissemination/Promotion of Technology (Example)

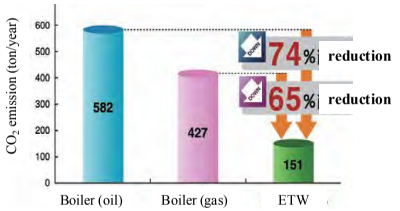
Device & Equipment: F-22 Water – Water Centrifugal Heat Pump

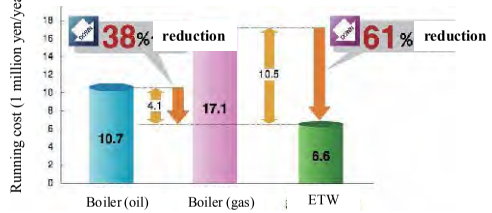
Rated COP*1)4.5 (when heat source water entering temperature is 45˚C and hot water leaving temperature is 80˚C)

*1): COP = Abbreviation of Coefficient of Performance.
The bigger the value of COP, the higher the energy-saving characteristics.
COP = Cooling rated ability (kW) / Power consumption (kW)



ETW water heat pump





URL: http://www.jase-w.eccj.or.jp/technologies/pdf/factory/F-22.pdf

A4-303

Dissemination/Promotion of Technology (Example)

Energy Supply: F-10 Heat Pump Chillers for Factories & Buildings

•Super-high-efficiency type, JIS conditions, cooled water outlet temperature 7° C, inlet/outlet water temperature difference 5° C, outside air temperature 35° C (D.B.)

◆ Unique integrated control system "ZU:NOS" can optimize control of up to 20 units to suit air conditioning load.
Large-capacity units can be linked together up to a maximum of 800HP, with the units controlled to operate in rotation for longer life spans.

Air-cooled heat pump chillers, suitable for large-scale air conditioning tasks, such as office buildings, factories and hospitals

Energy-saving effects: High-efficiency types reach COP4.5 for cooling. That is a 59% improvement over chillers of 15 years ago (20HP, our product)

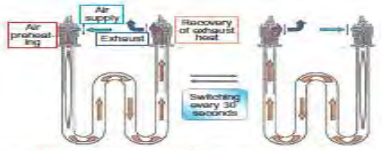
Model	Equivalent HP	Cooling capacity kW	Cooling COP
Super-high-efficiency types	20	42	4.5
High-efficiency types	30	85	3.6
High-capacity type	40	100	3.2

Ease of maintenance: When multiple modules operate together, one module can stop and the others that are in normal condition will continue to operate automatically.
Individual modules can then be serviced without shutting down the entire system.

URL: http://www.jase-w.eccj.or.jp/technologies/pdf/factory/F-10.pdf

Dissemination/Promotion of Technology (Example)

Device & Equipment:
F-7 High-performance Industrial Furnace Equipped with Regenerative Burner



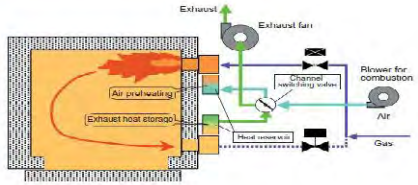
Exhaust gas passes through the burner via a tube.

Air and exhaust gas undergo direct heat exchange inside the burner.

Features

◆ Two burners are operated alternately. While one burner is in operation, the exhaust heat is stored in the heat reservoir of the other burner for effective utilization of the exhaust heat.

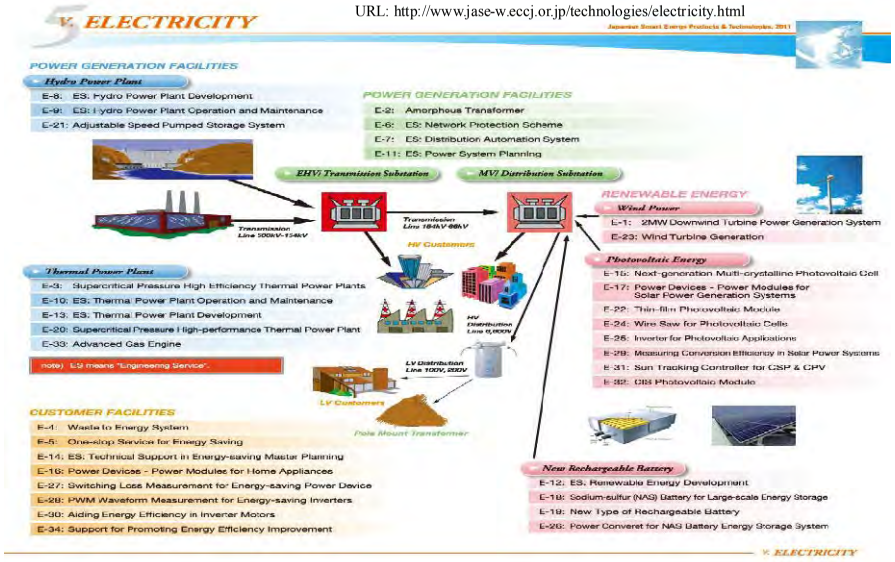
Basic Concept or Summary



URL: http://www.jase-w.eccj.or.jp/technologies/pdf/factory/F-7.pdf

Dissemination/Promotion of Technology (Example)

URL: http://www.jase-w.eccj.or.jp/technologies/electricity.html



Dissemination/Promotion of Technology (**Amorphous Transformer (1/2)**)

URL: http://www.jase-w.eccj.or.jp/technologies/pdf/electricity./E-2

Features

◆ Amorphous alloy is used in the iron core of the transformer.
◆ No-load loss (standby power) is reduced to about 1/3*1.
◆ Energy saved is a maximum 44% more than the value of the leading runner*1.
◆ CO2 emission is suppressed, contributing to the prevention of global warming.

*1: Comparison between the 3-phase, 1,000kVA50Hz X-SP Series and the top runner standard value

Oil-immersed transformer

Molded transformer

Amorphous core

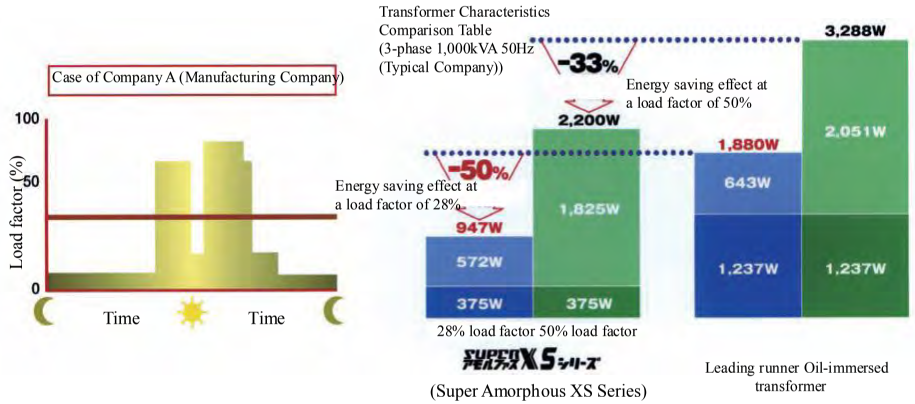
<Crystal Structure>

<Non-crystal Structure Amorphous)>

Concept Drawing of an Amorphous Alloy

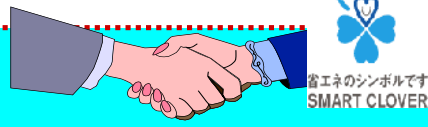
Dissemination/Promotion of Technology
(**Amorphous Transformer (2/2)**)

URL: http://www.jase-w.eccj.or.jp/technologies/pdf/electricity/E-2



A4-304

Thank you very much



More information could be seen in ECCJ's Internet Home Page at :

http://www.eccj.or.jp/ <from 1996>

http://www.asiaeee-col.eccj.or.jp/

http://www.jase-w.eccj.or.jp/

The Symbol of Energy Conservation
Since 2005
ECCJ has been spread the symbol mark with the visual image of a flour-leaf clover which is thought to bring happiness named as "SMART CLOVER", representing everyone's energy conservation activities.

The Energy Conservation Center, Japan

Since 1978