HTT 電力をへらす つくる ためる
Tokyo Tokyo

Tokyo Cool Home & Biz

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2023

Household Energy Efficiency Handbook

Small Ideas to Help Household Budgets and the Earth

Let's Start Energy Efficient Practices at Home!

TOKYO METROPOLITAN GOVERNMENT

Small Ideas to Help Household Budgets and the Earth

Energy efficiency means the efficient use of energy.

It's about using energy wisely and smartly instead of being patient or trying too hard.

As more and more people spend their time at home, energy efficiency has become increasingly important.

Energy efficiency leads to a lifestyle that is friendly to both household budgets and the Earth.

This booklet showcases a variety of ideas for energy efficiency to realize such a lifestyle.

The Household Energy Efficiency Handbook is full of information on energy efficiency!

- Comparison of energy bills of your house with averages in Tokyo
- Ideas for energy efficiency for a variety of situations in everyday life
- Points to check before buying appliances
- Considerations for the introduction of solar power generation and solar heating systems
- A close look at global warming
- Figures showing how much energy efficiency and saving can be achieved
- Support for building an energy efficient and comfortable house
- Information on special subsidy programs

This booklet presents energy efficiency savings and CO_2 reductions calculated based on:

- Monetary conversion factors including consumption tax
  * As of January 2023

Electricity	35.1 yen/kWh	Source: TEPCO Energy Partner, Incorporated; Calculated based on an average model electricity bill
Gas	234.5 yen/m^3	Source: TOKYO GAS Co., Ltd.; Calculated based on Table B for General Contract Prices in Tokyo Etc.
Water	226.6 yen/m^3	Source: Bureau of Waterworks, Tokyo Metropolitan Government; Calculated based on the average monthly usage (approximately 20 m^3) of a three-person household with sewerage bills included
Kerosene	119 yen/L	Source: Agency for Natural Resources and Energy

* Electricity and gas bills do not reflect measures taken by the national government to mitigate sudden fluctuations in electricity and gas prices.

- Cooling/heating operation period

Heating period: 5.5 months or 169 days from October 28 to April 14
Cooling period: 3.6 months or 112 days from June 2 to September 21

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● CO_2 emission factors

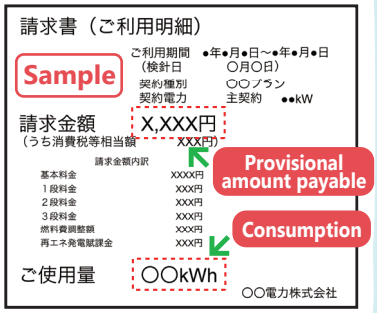
Electricity	0.489 kg-CO_2/kWh	Calculated based on the Guideline for Monitoring and Reporting Energy-Related CO_2 Emissions in the Tokyo Cap-and-Trade Program as of July 2022
City gas	2.17 kg-CO_2/m^3	Ditto
Kerosene	2.49 kg-CO_2/L	Ditto
Water	0.266 kg-CO_2/m^3	Calculated based on the Guideline for Monitoring and Reporting Other Gases Emissions in the Tokyo Cap-and-Trade Program as of April 2021
Sewerage	0.400 kg-CO_2/m^3	Ditto

How Much Does Our Home Consume?

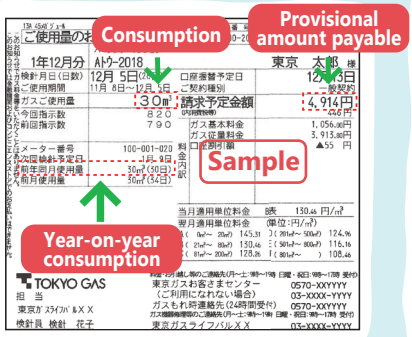
Be an Energy Eff

Check here on a bill and meter reading slip!

Electricity

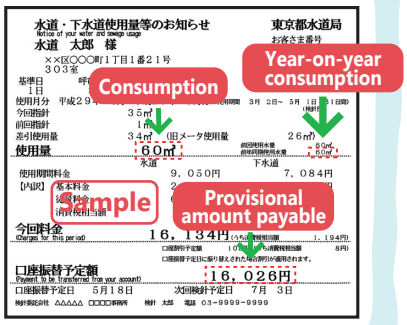


Gas (e.g., TOKYO GAS)



Sample provided by TOKYO GAS Co., Ltd.

Water/sewerage



Sample provided by Bureau of Waterworks, Tokyo Metropolitan Government

* As of January 2022

Detached house

(These columns show consumption on the left and electricity bills on the right)

Electricity

		May Intermediate season		August Cooling season		January Heating season	
		kWh	Yen	kWh	Yen	kWh	Yen
1-person household	Energy efficient household	76	2,668	95	3,335	105	3,686
	Average household	192	6,739	240	8,424	297	10,425
2-person household	Energy efficient household	115	4,037	132	4,633	177	6,213
	Average household	269	9,442	352	12,355	461	16,181
3-person household	Energy efficient household	129	4,528	166	5,827	206	7,231
	Average household	314	11,021	430	15,093	530	18,603
Household with 4 or more persons	Energy efficient household	118	4,142	187	6,564	226	7,933
	Average household	343	12,039	479	16,813	608	21,341

(These columns show consumption on the left and gas bills on the right)

Gas

		May Intermediate season		August Cooling season		January Heating season	
		㎥	Yen	㎥	Yen	㎥	Yen
1-person household	Energy efficient household	7	1,642	3	704	15	3,518
	Average household	19	4,456	9	2,111	40	9,380
2-person household	Energy efficient household	12	2,814	6	1,407	27	6,332
	Average household	34	7,973	17	3,987	74	17,353
3-person household	Energy efficient household	12	2,814	6	1,407	22	5,159
	Average household	34	7,973	18	4,221	61	14,305
Household with 4 or more persons	Energy efficient household	19	4,456	9	2,111	38	8,911
	Average household	55	12,898	27	6,332	99	23,216

"Energy efficient household" shows the average of households whose consumption is less than half of the average of households in Tokyo.

"Average household" shows the average of households whose consumption is within ±25% of the average of households in Tokyo.

Water/sewerage (in m³/month)

	Monthly average
1-person household	8.1
2-person household	14.9
3-person household	19.9
4-person household	23.1

Source: Bureau of Waterworks, Tokyo Metropolitan Government. FY 2020 Domestic Water Survey.

First, we should check the consumption on a bill or receipt.

If you can't find it, contact your power company or gas company.

ficient Household!

Apartment building

(These columns show consumption on the left and electricity bills on the right)

Electricity

		May Intermediate season		August Cooling season		January Heating season	
		kWh	Yen	kWh	Yen	kWh	Yen
1-person household	Energy efficient household	58	2,036	88	3,089	80	2,808
	Average household	153	5,370	215	7,547	232	8,143
2-person household	Energy efficient household	83	2,913	150	5,265	141	4,949
	Average household	214	7,511	322	11,302	336	11,794
3-person household	Energy efficient household	90	3,159	131	4,598	133	4,668
	Average household	261	9,161	369	12,952	402	14,110
Household with 4 or more persons	Energy efficient household	123	4,317	114	4,001	159	5,581
	Average household	267	9,372	387	13,584	378	13,268

(These columns show consumption on the left and gas bills on the right)

Gas

		May Intermediate season		August Cooling season		January Heating season	
		㎥	Yen	㎥	Yen	㎥	Yen
1-person household	Energy efficient household	6	1,407	2	469	11	2,580
	Average household	14	3,283	7	1,642	28	6,566
2-person household	Energy efficient household	10	2,345	6	1,407	20	4,690
	Average household	26	6,097	14	3,283	52	12,194
3-person household	Energy efficient household	13	3,049	7	1,642	24	5,628
	Average household	36	8,442	19	4,456	69	16,181
Household with 4 or more persons	Energy efficient household	12	2,814	10	2,345	26	6,097
	Average household	39	9,146	29	6,801	64	15,008

Source: Bureau of Environment, Tokyo Metropolitan Government. Survey on Household Energy Consumption Trends. 2014.

We are using more electricity and gas than an average household.

Our electricity and gas bills are much more expensive than those of an energy efficient household! It's just a waste of money.

Do you know units of electricity?

- Watt (W)
  The force with which electricity does work (electrical power)
- Watt-hour (Wh)
  The amount of electricity used (electrical energy)
  Electrical energy (Wh) = Electrical power (W) x Time (h)
- Volt (V)
  The force to push electricity (voltage)
  * The voltage for home use is generally 100 V.
- Ampere (A)
  The amount of electricity flowing (electric current)
  Electric current (A) = Electrical power (W)/ Voltage (V)

When I turn on a 40 W bulb for two hours...

You will use 80 Wh (40 W x 2 h) of electricity.

How to choose a contracted power (ampere)

Contracted power (ampere) represents the amount of electricity that can be used at the same time. Choose the one based on when you use the most electricity in a year.

For example: What is the amperage when using electricity in the kitchen and living room at dinner time in winter?

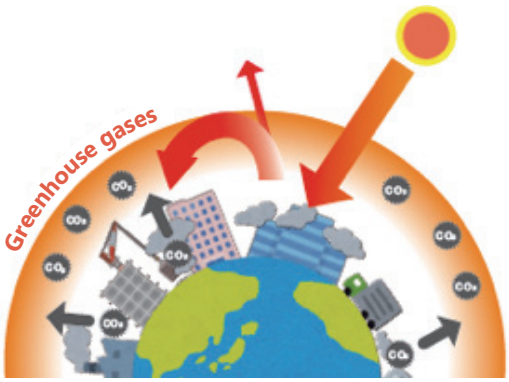
Air conditioner for heating 6.6 A + Refrigerator 2.5 A + Lighting (aggregate) 2 A + IH jar rice cooker 13 A + LCD TV (42 inch) 2.1 A = 26.2 A ≒ 30 A

* Consider the amperage as 1 A at 100 W power consumption in the case of 100 V.

Notes

- The replacement work of ampere breakers in the range of 10 A and 60 A is free of charge in principle, but paid work by an electrical workshop may be needed depending on the contract or the state of electrical equipment.
- Approval of an owner or manager may be required at apartment buildings.

What is Global Warming?



Greenhouse gases in the atmosphere around Earth, such as carbon dioxide and methane, retain the heat that reaches Earth from the Sun, keeping the temperature suitable for us to live.

However, the amount of greenhouse gases has increased rapidly since the industrial revolution, and more heat has been absorbed than before, causing the temperature of the Earth to rise. This phenomenon is known as global warming.

The global average temperature has already risen by about 1°C compared to 1880 - 1899.

Extreme weather and floods said to be caused by global warming are occurring more frequently

The effects of global warming have resulted in not only rising temperatures, but also a variety of other climate effects, such as super typhoons, extremely high temperatures, droughts, and floods in different parts of the world.

Even in Japan, temperatures over 40°C and heavy rains have occurred across the country.

Flood caused by heavy rains in August 2021

Source: Website of the Geospatial Information Authority of Japan

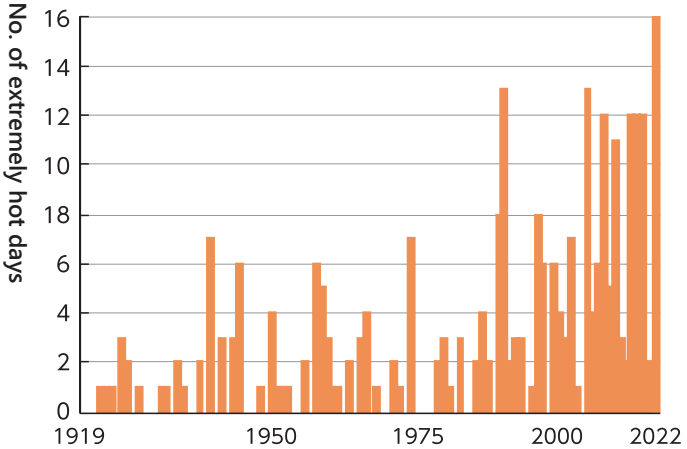
Tokyo is no exception

The number of extremely hot days* in central Tokyo reached a record high in 2022 and has been trending upward since then.

The frequency of heavy rains has also been on the rise, causing floods, including inundation above floor level, to occur in various parts of Tokyo.

* Those on which the temperature rises above 35°C.

Number of extremely hot days observed at the Tokyo Regional Headquarters, JMA



Source: Japan Meteorological Agency.

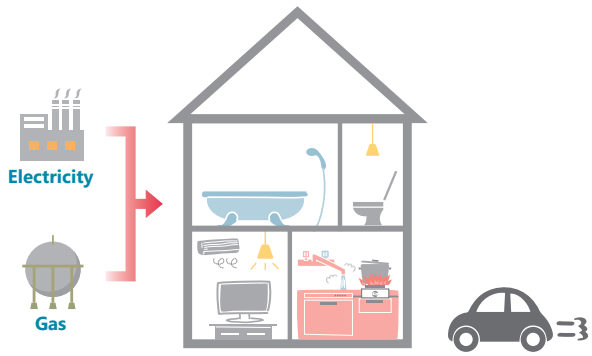
How is Our Daily Life Connected with Global Warming?

Among the greenhouse gases that cause global warming, carbon dioxide (CO_2) is the one that we most commonly focus on. Most of the CO_2 emitted is due to the use of fossil energy, such as petroleum, coal, and natural gas. Efforts for energy efficiency help reduce CO_2 emissions and are essential as global warming countermeasures.

When we use electricity, gas, kerosene or gasoline, CO_2 is emitted.

If we ensure energy efficiency, we can reduce CO_2 emissions.

Using water is also related to CO_2 emissions because energy is also used at water treatment plants and wastewater treatment plants.



To calculate CO_2 emissions:

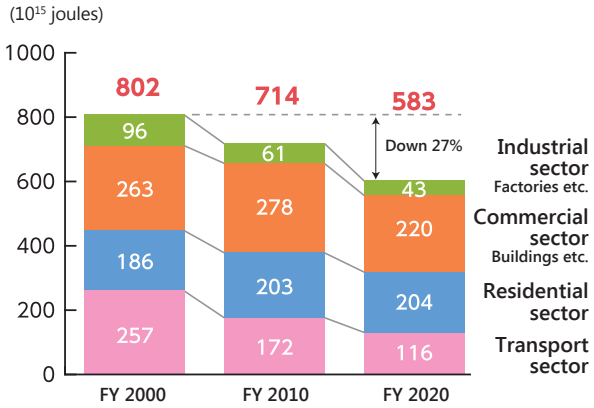
Multiply electricity, gas, or other consumption (fuel consumption) by a CO_2 emission factor of each.

Fuel consumption x CO_2 emission factor = CO_2 emissions

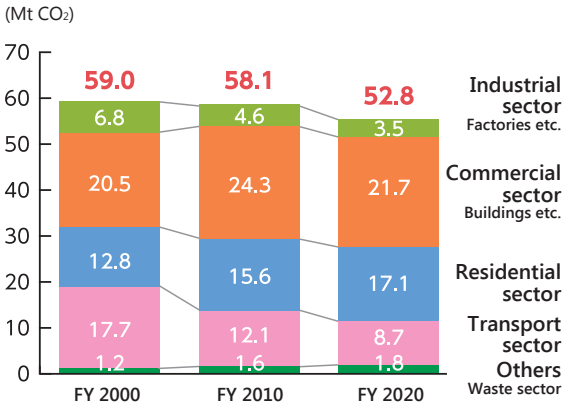
Key to CO_2 reduction and energy efficiency: Residential sector

Energy consumption in Tokyo has been trending downward in recent years, but only that of the residential sector has increased compared to FY 2000. The residential sector accounts for about 30% of the energy consumption in the whole of Tokyo. And as more time is spent at home, more energy will be consumed at home. This is why CO_2 reduction and energy efficiency in the residential sector has become increasingly important.

Energy consumption in Tokyo



CO_2 emissions in Tokyo



Electricity CO_2 emission factors	FY 2000	FY 2010	FY 2020
	0.328 kg/kWh	0.378 kg/kWh	0.448 kg/kWh

Source: Comprehensive Survey of Final Energy Consumption and Greenhouse Gas Emissions in Tokyo (preliminary results for FY 2020).

What is a joule?

A joule is a unit of energy.
It takes 100 joules to light a 100-watt bulb for 1 second.

Let's Work on HTT

(Ⓗ- Herasu (save), Ⓣ- Tsukuru (generate), and Ⓣ - Tameru (store) electricity)

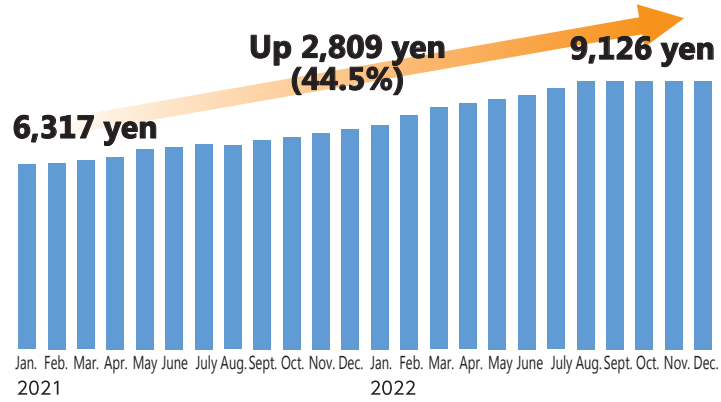
Scarcity of electricity and rising electricity bills

The conflict between Russia and Ukraine as well as the COVID-19 pandemic have caused a significant change in the energy environment as evidenced by soaring crude oil prices and uncertainty in gas supplies.

2022 saw severe heat with extreme hot days in June recorded for the first time in 11 years. Tokyo Electric Power Company (TEPCO) issued its first power shortage advisory, indicating that the stable supply of electricity is a major challenge.

Against this backdrop, electricity bills have increased by approximately 45% in about two years, having a major impact on our lives.

Changes in monthly electricity bills of TEPCO at standard households



Source: Data published by TEPCO.

Let's advance HTT

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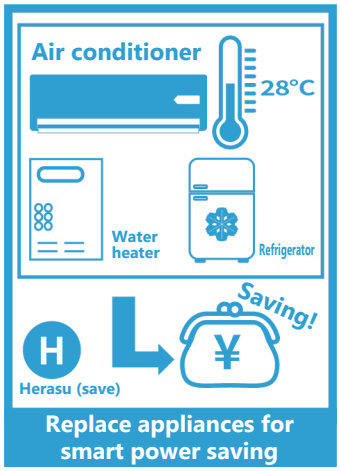
It is necessary not only to respond to the climate crisis, but also to strengthen and accelerate efforts from the perspective of ensuring a stable supply of energy over the medium to long term.

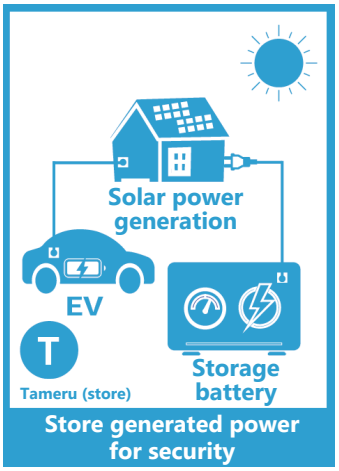
The keyword is HTT: Ⓗ- Herasu (save), Ⓣ- Tsukuru (generate), and Ⓣ- Tameru (store) electricity.

From these three points of view, change and improve your lifestyles together with your family members and promote HTT that is friendly to both the Earth and household budgets!

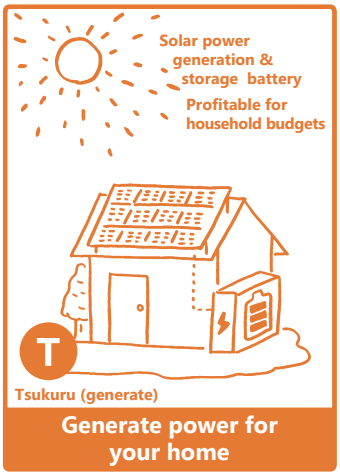
Tokyo HTT Search



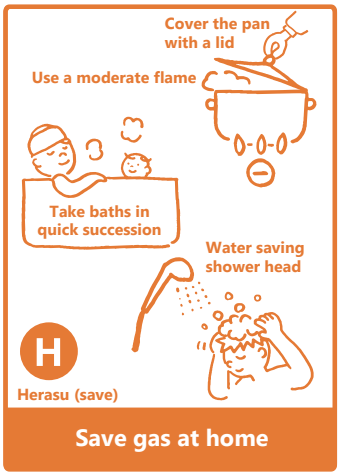
Replace appliances for smart power saving



Store generated power for security



Generate power for your home



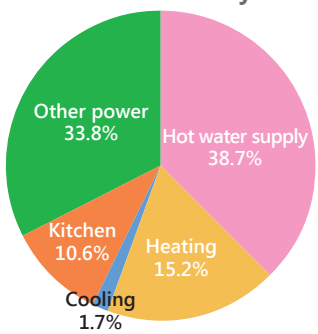
Save gas at home

How is Energy Used at Home?

Energy is used to operate different appliances at home. Let's find where and how much energy is used to improve energy efficiency.

Breakdown of energy use:

Percentage of energy consumption by use in the residential sector of Tokyo in FY 2020

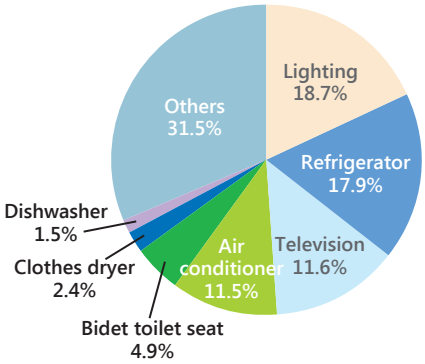


Hot water supply means providing hot water for use in the bath and kitchen. I'm surprised it's nearly 40%.

Heating uses more energy than cooling. So, energy-efficient home heating is important.

Breakdown of electricity use by appliance:

Percentage of electricity consumption by appliance in the residential sector of Tokyo in FY 2020



Source: Comprehensive Survey of Final Energy Consumption and Greenhouse Gas Emissions in Tokyo (preliminary results for FY 2020).

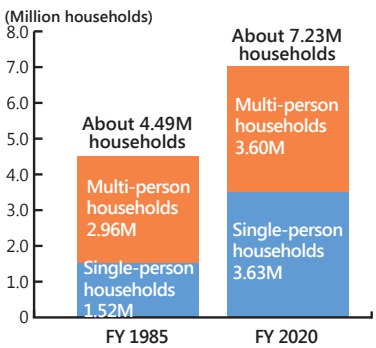
Home appliances consume a lot of electricity.

Lighting consumes the most.
Because there are a lot of lighting fixtures at home...

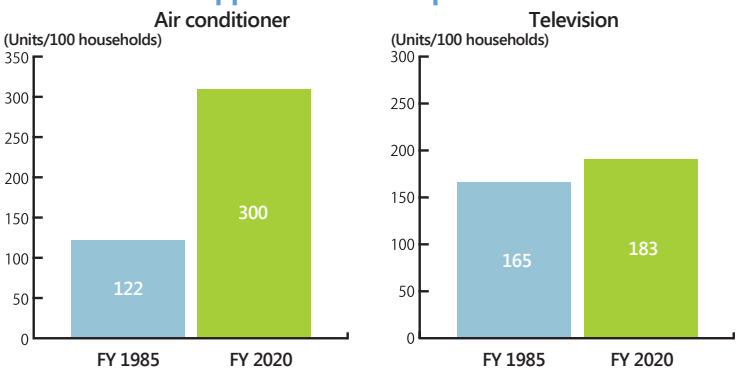
Lighting, refrigerator, television and air conditioning account for about 60%.

Comparing households in Tokyo with those 35 years ago:

Number of households



Number of appliances owned per 100 households



* Figures may not add up to totals shown due to rounding.

Source: Tokyo Metropolitan Government and national census.

1.5 times in 35 years.
More than half are single-person households.

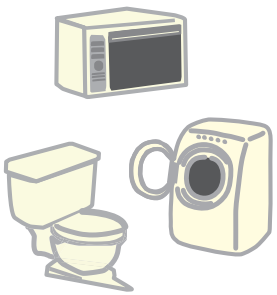
PCs and bidet toilet seats have become popular, too.

What is the Power Consumption (W) of Appliances?

Products with a star mark may be used for a long time and tend to consume a large amount of electricity in total over a year.

Large

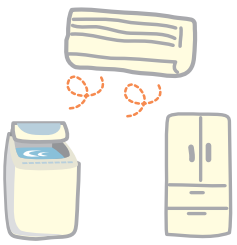
Induction cooker with one burner	3000 W
Microwave	1400 W
Iron	1400 W
Jar rice cooker (electric rice cooker)	1300 W
Bathroom dryer (electric type)	1290 W
Bidet toilet seat (tankless type)★	1200 W (when in use)
Halogen heater	1200 W



Rated power consumption

Washer/dryer★	1100 W (when drying)
Hair dryer	1000 W
Oven toaster	1000 W
Vacuum cleaner	1000 W
Electric heater	800 - 1000 W
Electric carpet	760 - 1000 W
Air conditioner for 10 - 15 tatami mats	750 - 1100 W
Dishwasher	900 W
Electric kettle	800 W (when boiling)

Bidet toilet seat (tank type)★	500 W (when in use)
Air conditioner for 6 tatami mats	450 W
Washing machine	400 W
Oil heater	360 - 1500 W
Refrigerator★	200 - 300 W



Small

Fluorescent light★	100 W
LCD television	50 W
PC	45 W
Fan	34 W
Compact fluorescent light★	12 W
LED bulb★	8 W

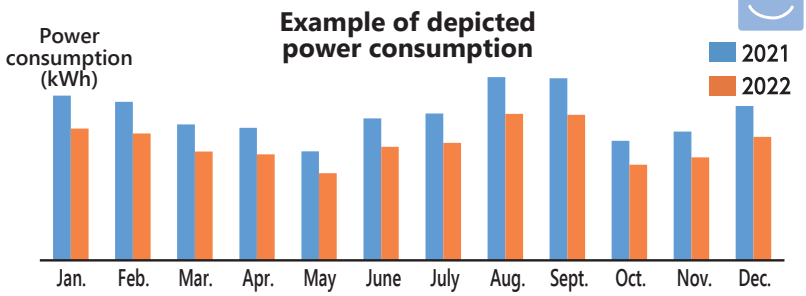
The above are examples of the rated power consumption. The actual power consumption during use will vary depending on the type of product, its use, and other factors.

Source: Agency for Natural Resources and Energy and others.

Recommendation for Energy Data Visualization

Smart meters with communication functions have been installed at most households to enable them to measure and record power consumption every 30 minutes. Check your power consumption on the website of your power company!

*The checking method differs depending on the power company you have a contract with.



Review of contracted power (ampere)

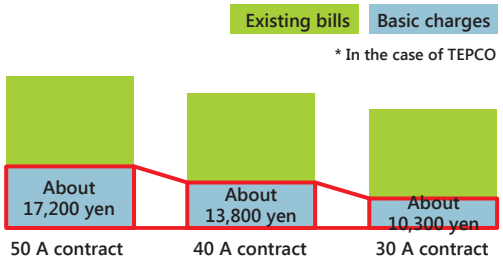
Compare your current and past power consumption. Consider reviewing your contracted power (ampere) if the power consumption is significantly less than before.

For example, the contracted power (ampere) can be reduced at households where family structure has changed or the number of people has decreased, or appliances have been replaced with energy efficient ones but the contracted power (ampere) has not been changed since the time of house construction or contract conclusion.

By not using home appliances at the same time, which can also contribute to mitigating peak power demand, you may be able to reduce the contracted power (ampere).

You can change the contracted power (ampere) by applying to your power company. The replacement work of ampere breakers in the range of 10 A and 60 A is free of charge in principle, but paid work by an electrical workshop may be needed depending on the contract or the state of electrical equipment. Approval of an owner or manager may be required at apartment buildings.

General perception of savings



Changing 50 A to 40 A can save about 3,400 yen annually.
Changing 50 A to 30 A can save about 6,900 yen annually.

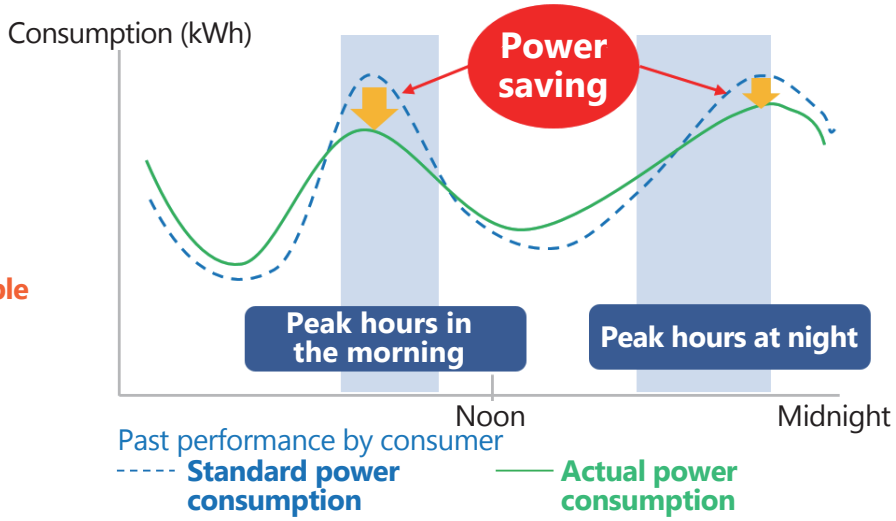
Be aware of time of day when using electricity

When a scarcity of electricity is expected, it is important to not use appliances that consume a lot of power, such as irons, but instead to use such electrical appliances outside of peak hours.

Via electricity suppliers, TMG rewards once in summer and winter 1,000-yen worth of points to households (2,000-yen worth of points to contractors with 100% renewable energy) that have saved power for at least five days in response to a power-saving request based on the situation of supply and demand.

In order for you to participate in the campaign, your electricity supplier must have already applied for TMG's project and be conducting a power saving campaign.

Check the project website for applicable electricity suppliers.



Do You Ensure Energy Efficiency in the Living Room?

Scene 1 A/C (Cooling) & TV

Keys to energy efficiency

(Figures are annual values)

		kWh etc. Saved energy	¥ Saved money	CO_2 Reductions
1	☐ Set the air conditioner to keep the room temperature at around 28°C.	30.2 kWh	1,060 yen	14.8 kg
2	☐ Reduce the time using the air conditioner by one hour a day.	18.8 kWh	660 yen	9.2 kg
3	☐ Clean the air conditioner filter twice a month or so.	32.0 kWh	1,120 yen	15.6 kg
4	☐ Reduce the amount of time the TV is on by one hour a day.	16.8 kWh	590 yen	8.2 kg
5	☐ Don't set the television screen too bright.	27.1 kWh	950 yen	13.3 kg

◎Tips for lifestyle◎

● Air conditioner
Set the wind direction upward during cooling and downward during heating. An effective approach is to use a fan or circulator together to circulate cold air remaining above the floor and warm air remaining below the ceiling.

● Air conditioner
For cooling operation, place the outdoor unit in a well-ventilated shaded area to keep it from direct sunlight. If there are obstacles around the outdoor unit and the air does not flow smoothly, the cooling or heating performance may decrease by about 17% and 25% respectively.

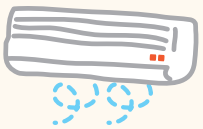
● Air conditioner
Overcooling may cause fatigue, sluggishness, or headaches. For your family's health, adjust the room temperature while paying attention to ventilation. There is a sophisticated ventilation system, called total heat exchanger, which does not take in heat or cold air from the outside.

Trivia about energy efficiency

Is it more energy efficient to leave the air conditioner running without turning it on and off frequently?

Air conditioners use a large amount of electricity to reach a set temperature, and then they use a relatively small amount to maintain the room temperature. Therefore, turning it on and off frequently may not save energy. Data* shows that the amount of power consumed when 30 minutes of operation then 5 minutes of stop (intermittent operation) is repeated 5 times is about 30% higher than that of continuous operation.

* Source: Central Research Institute of Electric Power Industry. Comparison of Power Saving Effects between Intermittent Operation and Continuous Operation of Air Conditioners (using an air conditioner with cooling capacity of 3.6 kW, COP 3.87, rated power consumption of 930 W, temperature set at 28°C, automatic air volume and blade direction)



❶ Based on the case where the cooling temperature of an air conditioner (2.2 kW), which is used for nine hours a day, is changed from 27°C to 28°C given an outside temperature of 31°C
❷ Based on the case of temperature set at 28°C
❸ Based on the comparison between an air conditioner (2.2 kW) with a clogged filter and that with a clean filter
❹ Based on the case of a 32 V LCD television
❺ Based on the case where the screen brightness of a 32 V LCD television is optimized (from maximum to medium)

Source:
Saved energy: Agency for Natural Resources and Energy. Four-Season Complete Guide for Energy Efficiency at Home. August 2017.
Saved money: Calculated based on unit prices on p. 29.
CO_2 reductions: Calculated based on emission factors on p. 30.

Scene 2 PC & Vacuum Cleaner

Keys to energy efficiency

(Figures are annual values)

		kWh etc. Saved energy	¥ Saved money	CO_2 Reductions
1	Tidy the room up before vacuuming it.	5.5 kWh	190 yen	2.7 kg
2	Use a mop or rag to reduce the time spent vacuuming.	16.4 kWh	580 yen	8.0 kg
3	Use the PC one hour less a day.	Desktop 31.6 kWh Note 5.5 kWh	1,110 yen 190 yen	15.5 kg 2.7 kg
4	Change the power options of the desktop PC.	12.6 kWh	440 yen	6.2 kg

◎Tips for lifestyle◎

● PC
A screen saver does not reduce power consumption although many people use it. Some 3D screen savers use a lot of CPU power for rendering and consume more power as a result.

● Vacuum cleaner
When cleaning flooring and tatami mats, set the suction level of the vacuum cleaner to low. The Low mode will work well in this case. If the vacuum cleaner has an Eco mode, selecting it will lead to energy efficiency.

● Vacuum cleaner
If the vacuum cleaner is full of dust, it will have less suction power and will take longer to clean, resulting in more power consumption. Frequently replace the paper bag or remove dust from the vacuum cleaner.

Trivia about energy efficiency

Which is more energy efficient, the Shutdown or Sleep mode of a PC?

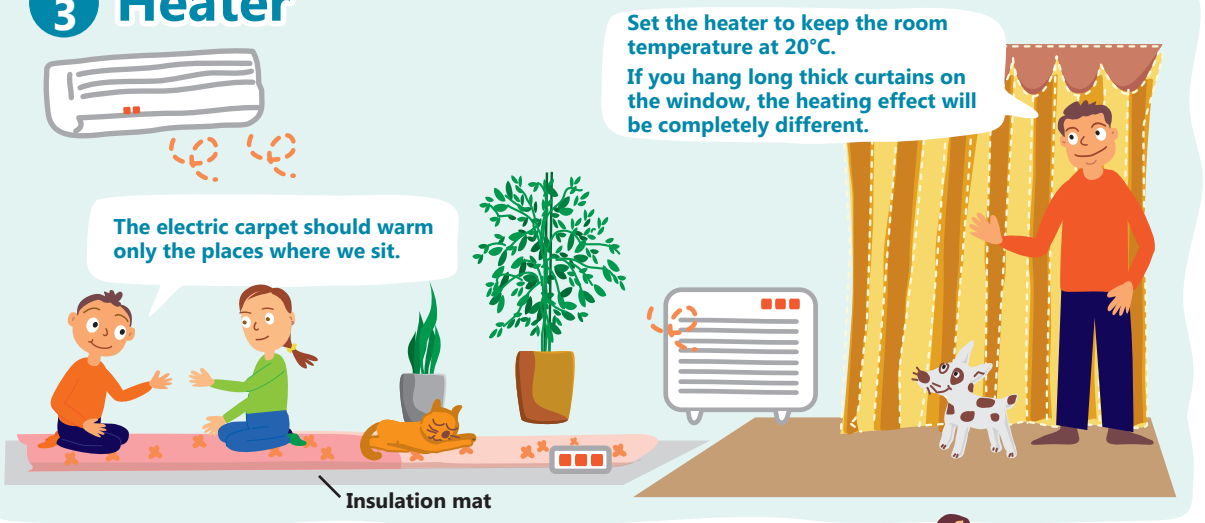
A PC uses a lot of electricity when it starts up and shuts down. Therefore, if you are going to use the PC again shortly, or at least within the next 90 minutes*, putting it into Sleep mode is more energy efficient than completely turning it off. Shut down your PC if you won't use it in the next 90 minutes, but just put it to sleep if you will use it again soon.

* Source: Microsoft Japan Company, Limited. How to Save Power on Windows PCs.

❶ Based on the case where the time using the vacuum cleaner is shortened by one minute a day
❷ Based on the case where the time using the vacuum cleaner is shortened by three minute a day
❹ Based on the case where the power option of a desktop PC is changed from Turn Off the Display to Put the Computer to Sleep used for 3.25 hours a week x 52 weeks

Do You Ensure Energy Efficiency in the Living Room?

Scene 3 Heater



Keys to energy efficiency

(Figures are annual values)

		kWh etc. Saved energy	¥ Saved money	CO_2 Reductions
❶ ☐	**Set the heater to keep the room temperature at around 20°C.**	Air conditioner 31.6 kWh Gas fan heater 8.2 m^3 Oil fan heater 10.2 L	1,860 yen 1,920 yen 1,210 yen	26.0 kg 17.8 kg 25.4 kg
❷ ☐	**Use the heater one hour less a day.**	Air conditioner 40.7 kWh Gas fan heater 12.7 m^3 Oil fan heater 15.9 L	1,430 yen 2,980 yen 1,890 yen	19.9 kg 27.6 kg 39.6 kg
❸ ☐	**Choose an electric carpet that matches the space available.**	89.9 kWh	3,160 yen	44.0 kg
❹ ☐	**Set the temperature of the electric carpet to Medium rather than High.**	186.0 kWh	6,530 yen	91.0 kg

◎Tips for lifestyle◎

● Electric carpet

If you put an insulation mat sold at a home center under the carpet or kotatsu (a low table with a heater), it will keep the heat above the floor, contributing to efficient heating. Placing unit tatami mats is also effective.

● Heater

The warm air going up through convection is cooled by the cold air near the window and flows down to make your feet feel cold. It is a good idea to place a heater near the window to prevent the cold air from entering through it.

● Fan

Warm air remains above you.
If you direct the fan towards the ceiling, the warm air will circulate down to spread the warmth around your feet.

Trivia about energy efficiency **Raise the temperature around you to keep you warm**

Our feeling of the cold, heat, coolness, and warmth is affected by the surface temperature of surrounding objects (radiant temperature) in addition to temperature and humidity. There is a relationship expressed by the formula: Sensible temperature ≒ (Room temperature + Radiation temperature) / 2. For example, if the room temperature is 20°C and the ambient temperature is 14°C, the sensible temperature is approximately 17°C. You can stay warm even in winter by laying down a carpet and closing thick curtains to raise the temperature of the surroundings.

* Source: The Energy Conservation Center, Japan. The 6th Revised Edition of the Household Energy Efficiency Expert Examination.

❶ Based on the case where the heating temperature of an air conditioner (2.2 kW), which is used for nine hours a day, is changed from 21°C to 20°C given an outside temperature of 6°C

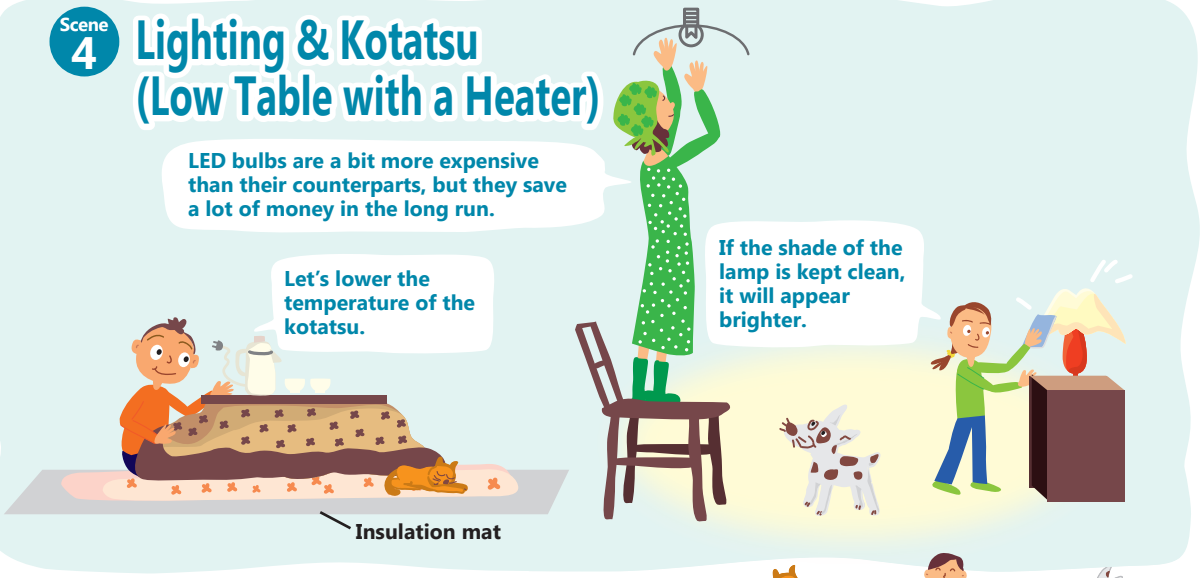
❷ Based on the case of temperature set at 20°C on gas fan heaters and oil fan heaters compared with their counterparts, respectively

❸ Based on the comparison of electric carpets for 3 and 2 tatami mats used for five hours a day given a room temperature of 20°C and carpet temperature set at Medium

❹ Based on the case where the temperature of an electric carpet for 3 tatami mats, which is used for five hours a day, is changed from High to Medium

Scene 4

Lighting & Kotatsu (Low Table with a Heater)



Keys to energy efficiency

(Figures are annual values)

		kWh etc. Saved energy	¥ Saved money	CO_2 Reductions
1 ☐ Use lighting one hour less a day.	Incandescent bulb	19.7 kWh	690 yen	9.6 kg
	Fluorescent light	4.4 kWh	150 yen	2.2 kg
	LED bulb	2.9 kWh	100 yen	1.4 kg
2 ☐ Replace incandescent bulbs with LED bulbs.		92.0 kWh	3,230 yen	45.0 kg
3 ☐ Add a cover and mat to a kotatsu blanket.		32.5 kWh	1,140 yen	15.9 kg
4 ☐ Lower the temperature of the kotatsu.		49.0 kWh	1,720 yen	24.0 kg

◎ Tips for lifestyle ◎

● Lighting
If the lighting in the living room and entrance, which is often left on for a long time, is replaced with LED lighting, it will be more economical and improve energy efficiency. Take advantage of dimming features. You can use motion sensors to prevent excess use from forgetting to turn off the lights.

● Lighting
Clean the light covers regularly.
That will affect the brightness significantly. For your safety, always turn off the power and use a dry cloth when cleaning.

● Visual effects
In the colder months, change lighting to that with a color of an incandescent bulb and replace the carpets and rugs with those in warmer colors for a visual effect.

Trivia about energy efficiency **Is it energy efficient to turn the light on and off frequently?**

A lot of current flows in the light the moment it is turned on, but the duration is very short and does not have a major impact on your electricity bill. Therefore, turning off the light even for a short time is energy efficient.
However, the lifespan of fluorescent lights is shortened if they are repeatedly turned on and off for short periods of time.

❶ The power consumption of an incandescent bulb, fluorescent light, and LED bulb is assumed to be 54 W, 12 W, and 8 W, respectively.
❷ Based on the case of replacing a 54 W incandescent bulb with an 8 W LED bulb, both of which are used for 2,000 hours a year
❸ Based on the comparison between using only a kotatsu blanket and using a cover and mat in addition to the blanket, both of which are used for five hours a day
❹ Based on the case where the temperature of a kotatsu, which is used for five hours a day, is changed from High to Medium

Do You Ensure Energy Efficiency in the Kitchen?

Scene 5 Refrigerator

Keys to energy efficiency
(Figures are annual values)

	kWh etc. Saved energy	¥ Saved money	CO_2 Reductions
❶ ☐ Place the refrigerator at an appropriate distance from the wall.	45.1 kWh	1,580 yen	22.1 kg
❷ ☐ Adjust the refrigerator temperature according to the season.	61.7 kWh	2,170 yen	30.2 kg
❸ ☐ Don't overpack things in the refrigerator.	43.8 kWh	1,540 yen	21.4 kg
❹ ☐ Don't open the refrigerator thoughtlessly.	10.4 kWh	370 yen	5.1 kg
❺ ☐ Don't leave the refrigerator open.	6.1 kWh	210 yen	3.0 kg

◎ Tips for lifestyle ◎

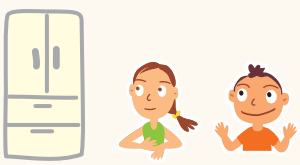
● Refrigerator
Refrigerators are weak against heat. A refrigerator placed in high temperatures consumes extra power. Place it away from a gas stove, water heater, toaster oven, and direct sunlight.

● Refrigerator
Let something hot cool down. Allow hot teas and foods to cool before putting them in the refrigerator. If you put them in hot, the temperature inside the refrigerator will rise, causing it to take extra energy to cool them down.

● Refrigerator
Keep everything organized in the refrigerator. You can shorten the time to open the door by grouping like things together.

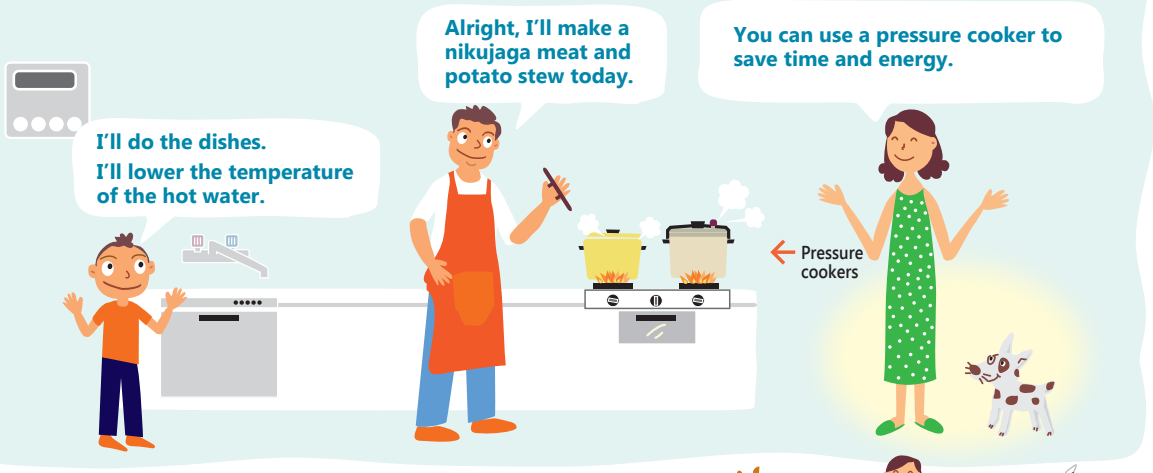
Trivia about energy efficiency **Is it energy efficient to pack things in the freezer?**

It is more energy efficient to put food in the drawer freezer without any gaps. Frozen foods keep each other cool and that helps mitigate the temperature rise when the door is opened. However, make sure to keep the freezer organized so that you can find and take what you need quickly.



❶ Based on the comparison between the top and both sides of a refrigerator being in contact with the wall and only its one side being in contact with the wall
❷ Based on the case where the refrigerator temperature is changed from Coldest to Colder given an ambient temperature of 22°C
❸ Based on the comparison between the case where things are packed in a refrigerator and the case where they are halved
❹ Based on the comparison between the case where a refrigerator door is opened and closed the number of times specified in the old JIS open/close test and the case where it is opened and closed twice the number
❺ Based on the comparison between the case where a refrigerator door is opened for 20 seconds and the case where it is opened for 10 seconds

Scene 6 Cooking & Washing Dishes



Keys to energy efficiency

(Figures are annual values)

			kWh etc. Saved energy	¥ Saved money	CO_2 Reductions
1	Control the flame to stay within the edge of the bottom of the pan.	Gas	2.4 m^3	560 yen	5.2 kg
2	Don't keep the rice in the cooker warm for a long time and unplug it when not in use.		45.8 kWh	1,610 yen	22.4 kg
3	Don't keep the hot water in the electric kettle warm for a long time.		107.5 kWh	3,770 yen	52.6 kg
4	Set the temperature to low when washing dishes.	Gas	8.8 m^3	2,060 yen	19.1 kg
5	Reduce the amount of hot water for washing dishes.	Gas Water	8.2 m^3 4.7 m^3	2,990 yen	20.9 kg

◎ Tips for lifestyle ◎

● Dishwasher

A dishwasher will significantly save water! To wash 60 dishes, you use 70 to 100 L of water but a dishwasher uses only about 10 L. It can finish the job with a very small amount of water.

● Fish grill

Grilling vegetables brings out their rich flavor and sweetness. You can also cook efficiently by arranging garnish vegetables side by side with the main dish, meat or fish.

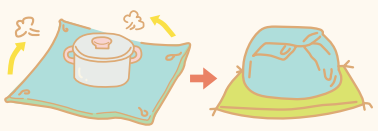
● Jar rice cooker

Cook rice for each meal rather than keeping it warm for a long time. If you keep rice warm for more than seven or eight hours, cook it twice instead. It is a good idea to cook a lot of rice all at the same time and freeze it in portions.

Trivia about energy efficiency Save time and energy with thermal cooking

Thermal cooking, in which you wrap heated ingredients in a cloth to keep the heat and allow them to be completely cooked, saves not only energy but also time for chores. It is suitable for curry and simmered dishes. Fully heat ingredients before wrapping them to keep warm and slowly cook and do not leave them warm more than an hour to ensure food safety, especially in summer. Make sure to heat the food again before eating.

* Source: Better Home Association. Booklet for CO_2 Reduction at Home.



❶ Based on the case where the heat of a stove, which is used three times a day, is changed from High to Medium to boil 1 L of water at around 20°C

❷ Based on the comparison between keeping rice warm for seven hours a day with a rice cooker plugged and not keeping rice warm with a rice cooker unplugged

❸ Based on the comparison between the case where 2.2 L of water is boiled in an electric kettle, 1.2 L is used, and 1 L is kept warm for six hours, and the case where after using 1.2 L the remaining water is not kept warm with the electric kettle unplugged, and it is boiled again as needed

❹ Based on the case where 65 L tap water at 20°C is used, the temperature of a water heater is changed from 40°C to 38°C, and dishes are washed manually twice a day for 253 days that do not include the cooling period

❺ Based on the case where annual gas consumption of 81.62 m^3 and annual water consumption of 47.45 m^3 are reduced by 10% when dishes are washed manually twice a day using 65 L tap water each time with a temperature of 40°C set on a water heater that is not used during the cooling period

Do You Ensure Energy Efficiency for Bath, Toilet, and Washbasin?

Scene 7 Bath & Laundry

Keys to energy efficiency

(Figures are annual values)

		kWh etc. Saved energy	¥ Saved money	CO_2 Reductions
1	☐ Stop the shower frequently.	Gas 12.8 m^3 Water 4.4 m^3	4,000 yen	30.7 kg
2	☐ Take baths quickly after each other.	Gas 38.2 m^3	8,960 yen	82.9 kg
3	☐ Do full loads of laundry.	Electricity 5.9 kWh Water 16.8 m^3	4,010 yen	14.1 kg
4	☐ Dry several loads of laundry at once to reduce dryer usage.	42.0 kWh	1,470 yen	20.5 kg
5	☐ Use the clothes dryer in combination with air-drying.	394.6 kWh	13,850 yen	193.0 kg

◎Tips for lifestyle◎

● Shower

There is a shower head that has a Pause button and/or increases the pressure to spout even just a small amount of hot water.

● Washing machine

A washing machine has several modes according to the level of dirt. Light dirt will be satisfactorily cleaned even with the Quick mode, which will also save electricity and water bills. Select an appropriate mode according to the degree of dirt.

● Leftover bath water

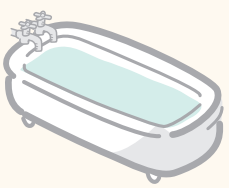
The leftover water from the bath can be used not only for washing clothes, but also for wiping the floor, cleaning the balconies, washing shoes, and watering the garden. It is lukewarm water and eases cleaning on a cold day.

Trivia about energy efficiency

Which feature is more energy efficient for the bath, Heat Retention, Reheating, or Hot Water Supply?

Under the same conditions, Hot Water Supply is slightly more energy efficient than Heat Retention and Reheating. There is almost no difference between Heat Retention and Reheating. However, Reheating may be more energy efficient, depending on the conditions of the bathroom and how long water is kept warm.

* Source: Website of TOKYO GAS Co., Ltd. Heat Retention means leaving the Bathing switch on all the time. Reheating means heating the hot water again as it is. Hot Water Supply means draining existing hot water and supplying hot water again. The same condition means that the temperature of the leftover bath water for Reheating and the temperature of the tap water for Hot Water Supply (automatic operation) are the same.



❶ Based on the case where the time for running hot water at 45°C is shortened by one minute a day

❷ Based on the case of reheating once every day 200 L of hot water that has become cool by 4.5°C after being left for two hours

❸ Based on the comparison between the case of washing laundry equivalent to 40% of the rated washing/spin-drying capacity of 6 kg of a washing machine and the case of washing 80% with the number of washing cycles halved

❹ Based on the comparison between the case of drying laundry equivalent to 80% of the rated capacity of 5 kg once every 2 days and the case of drying 40% every day

❺ Based on the comparison between the case of drying laundry after eight hours of natural drying once every two days and the case of drying laundry only with a dryer once every two days

Scene 8 Washbasin & Toilet

Keys to energy efficiency

(Figures are annual values)

		kWh etc. Saved energy	¥ Saved money	CO_2 Reductions
1 ☐ Close the lid of the electric toilet seat when not in use.		34.9 kWh	1,220 yen	17.1 kg
2 ☐ Lower the temperature of the electric toilet seat.		26.4 kWh	930 yen	12.9 kg
3 ☐ Lower the temperature of the cleaning warm water of the bidet toilet seat.		13.8 kWh	480 yen	6.7 kg
4 ☐ Use the hair dryer one minute less a day.		7.3 kWh	260 yen	3.6 kg
5 ☐ Don't leave the water running while brushing your teeth.	Water	3.9 m^3	880 yen	2.6 kg

◎ Tips for lifestyle ◎

● Toilet

Which flush do you use, the one for Solids or Liquids? Flush for Solids uses about 1 L more water than that for Liquids. Make it a habit for your family to choose the appropriate one.

● Toilet

Use timer settings and power saving mode for the bidet toilet seat. The timer turns off the warming of the toilet seat and water during a set period of time, and the power saving mode automatically saves power while the toilet is not in use.

● Hair dryer

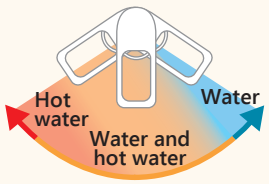
You can reduce the time needed for using the hair dryer by fully towel drying your hair after taking a bath. If you switch to cool air after your hair dries to some extent, you will protect your hair from heat damage as well as reducing power consumption.

Trivia about energy efficiency

Where to raise the lever of a single-lever mixer faucet

A single-lever mixer faucet allows you to adjust the water volume and temperature with one lever. When you raise the lever at the front, water and hot water are mixed and released.

When you don't need hot water, raise the lever on the water side or far right. There are new models that release water alone when the lever is raised in front.



1 Based on the comparison of the cases of closing and leaving open the lid of a tank-type toilet seat
2 Based on the case of changing the temperature of a tank-type toilet seat (turned off during cooling period) from Medium to Low
3 Based on the case of changing the temperature of cleaning warm water (of a tank-type toilet seat) from Medium to Low
4 Based on the case where the time using a 1,200-W hair dryer is shortened by one minute a day
5 Based on the comparison between the case of leaving the water running for 30 seconds consuming 6 L twice a day and the case of using a 0.6-L glass filled with water twice a day

Replacement Helps Energy Efficiency

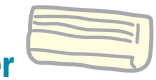
You can significantly enhance energy efficiency by replacing appliances as their energy efficiency performance has improved. When you buy a new one, choose a size that matches the size of a room and the number of your family members, and carefully consider what functions are needed.

● Refrigerator

Replacing a refrigerator used 24/7 greatly improves energy efficiency

Its energy efficiency performance has been significantly enhanced by improved thermal insulation and inverter control functions.

● Air conditioner



Check the APF value

The energy efficiency performance of air conditioners is indicated by APF (Annual Performance Factor). The greater the APF value is, the higher their energy efficiency.

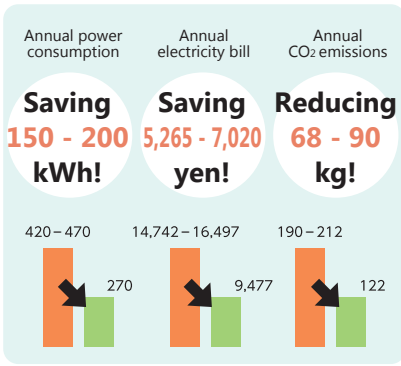
● Television

Choose a size that fits your room

Recent LCD televisions use LED backlights to reduce power consumption.

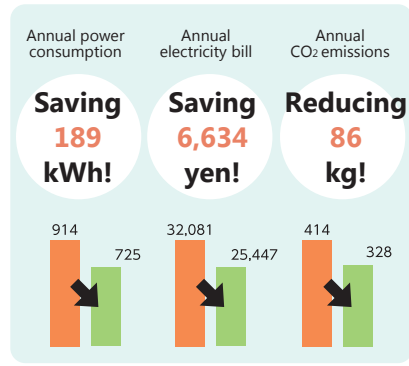
Replacing appliances

Refrigerator compared to those of a decade ago



Rated internal volume: 401 - 450 L

Air conditioner compared to those of a decade ago



Cooling capacity: 2.8 kW

High efficiency water heater

You can reduce energy consumption to about 1/3 by for example replacing an electric water heater with a high-efficiency water heater, such as Eco Cute (CO_2 refrigerant heat pump water heater) or Eco Jozu (latent heat recovery type gas water heater).

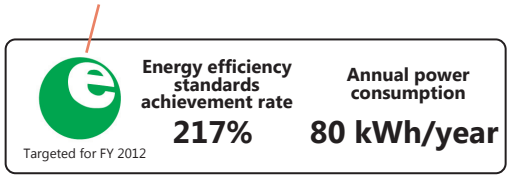
Source: Data on refrigerators and air conditioners is estimated based on the Energy Efficient Product Replacement Navigation of the Ministry of the Environment.
Old products were purchased in 2012 with manufacturers or model numbers unknown.
New products are listed in the Energy Efficiency Performance Catalog 2022 of the Agency for Natural Resources and Energy and they are the most energy efficient among the products available in the Energy Efficient Product Replacement Navigation of the Ministry of the Environment.

Check this label before buying

In a product catalog

Energy-Saving Label Choose a product with a green mark

Green means the energy efficiency standards are met, and orange means they are not met.



Energy efficiency standards achievement rate

It indicates how much the product achieves the top runner standards in percentage points. The greater the number, the higher the energy efficiency performance of the product.

At a store

Check the Uniform Energy-Saving Label

On the label, check if:

1. There are many ★ marks.
2. The mark is in green.
3. The estimated annual energy bill is low.

Choose a product with many ★ marks and a low estimated energy bill.

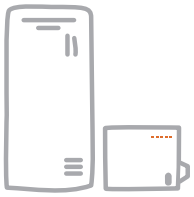
Applicable appliances

Air conditioners, lighting fixtures, televisions, electric refrigerators, electric freezers, electric toilet seats, electric water heaters, gas water heaters, oil water heaters

Choosing Appliances and Equipment with High Energy Efficiency

● High efficiency water heater

There are many home water heaters with higher efficiency.



● Eco Cute (CO_2 refrigerant heat pump water heater)

It is an energy efficient appliance with high thermal efficiency that takes in the heat from the air to boil water.

● Eco Jozu (latent heat recovery type gas water heater)

It is a water heater that recovers exhaust heat when making hot water with gas. The amount of gas used is about 13% less than before.

● Eco Feel (latent heat recovery type oil water heater)

It is an oil water heater that recovers and reuses the heat in exhaust gas. You can save kerosene and reduce CO_2 emissions.

● Hybrid water heater

It is a water heater that combines Eco Jozu, which makes hot water instantly, and Eco Cute, which uses the heat in the air.

● ENE・FARM (home-use fuel cell)

It is a system that extracts hydrogen from gas, reacts it with oxygen in the air to generate electricity, and uses the heat generated at that time to make hot water.

Points are provided for switching to appliances with high energy efficiency performance!

TMG gives Tokyo Zero Emission Points, which can be exchanged for gift certificates etc., for switching to applicable appliances that meet certain criteria.

Take this opportunity to replace your appliances with energy efficient counterparts to work on further energy efficiency!

Applicable appliances (visit our website for details)					Old points	* New points
Air conditioner	Two stars or more and targeted for FY 2010 on the Uniform Energy-Saving Label	Cooling capacity	Up to 2.2 kW	4 stars or more	12,000	15,000
				2 or 3 stars	7,000	9,000
			2.4 – 2.8 kW	4 stars or more	15,000	18,000
				2 or 3 stars	8,000	10,000
			3.6 kW or more	4 stars or more	19,000	23,000
				2 or 3 stars	9,000	11,000
Refrigerator	Energy efficiency standards achievement rate of 100% or more as indicated by the green mark	Rated internal volume	Up to 250 L		11,000	14,000
			251 – 500 L		13,000	16,000
			501 L or more		21,000	26,000
Water heater	Unclassified	High efficiency water heater			10,000	12,000
LED lighting fixture	Unclassified	LED lighting fixtures fixed and used indoors			3,000	4,000
	Unclassified	Above products and the cost of replacement work			5,000	6,000

Application method

After purchasing an applicable appliance, make an application on our website by uploading an image of the requisite documents taken with a smartphone etc., or mail the application form and necessary documents to the secretariat. This program also covers online purchases. Please note that the program will end when the budget runs out.

* The new points will be applied to applications with receipts dated on and after April 1, 2023.

For details on where to apply and others, check with the call center or our website.

Contacts

● Call center TEL (0570) 005-083

● Contact for IP phones TEL (03) 6634-1337

● https://www.zero-emi-points.jp

Tokyo Zero Emission Points Search

Switching Lighting to LED

Lighting accounts for the largest share of the annual power consumption of home appliances at households in Tokyo.
The longer we stay home, the more frequently we use lighting.
Use LED lighting that is energy efficient and has a long life span.

Why do you recommend it?

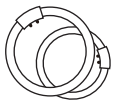
Benefit 1 **Energy efficiency**

Benefit 2 **Long life span**

Incandescent bulb

Consumption: Down about 85%
Life span: About 40 times (About 40,000 hours)

LED bulb



Fluorescent ceiling light

Consumption: About half
Life span: About 6.7 times (About 40,000 hours)

LED ceiling light

It saves the trouble of replacement as it has a long life span.

If you replace a lighting fixture with four 54 W incandescent bulbs with an 8 W LED bulb and use it for five to six hours a day or 2,000 hours a year, you can:

In one year

Save about **368** kWh of energy!

Save about **12,900** yen on electricity bills!

Benefit 3 Resistant to repeated on/off

The life span of fluorescent lights is shortened each time they are turned on and off, but that of LED lighting is not affected by how frequently it is turned on and off.

Benefit 4 Lighting up immediately after being turned on

Compact fluorescent lights gradually light up after being turned on, but LED bulbs light up immediately.

Benefit 5 Repelling insects

LED lighting is less likely to attract insects as it contains almost no ultraviolet rays.

Some products have toning and dimming functions that allow you to change colors and brightness of the light.

But LED bulbs are expensive...

Once you take into account electricity bills, LED is a better deal.

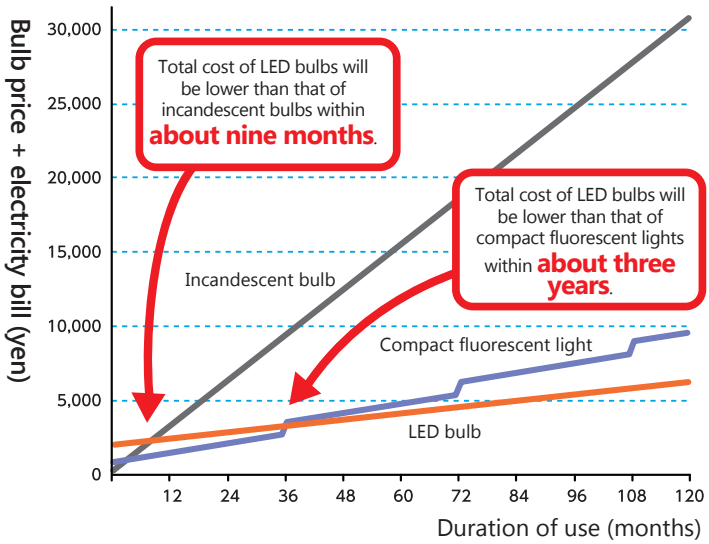
They can be attached to the sockets for incandescent bulbs or compact fluorescent lights.

Calculation conditions

Light types	Power consumption	Life span	Price
Incandescent bulb	54W	1,000 hours	100 yen
Compact fluorescent light	12W	6,000 hours	800 yen
LED bulb	8W	40,000 hours	2,000 yen

- Based on the comparison of different bulbs equivalent to a 60 W incandescent bulb with total luminous flux of 810 lm
- Annual lighting time: 2,000 hours (five to six hours a day)

Cost comparison of LED bulbs, compact fluorescent lights, and incandescent bulbs including electricity bills



How do I choose an LED bulb?

Point 1 Check brightness

The brightness of an LED bulb is indicated in lumens (lm). The higher the value, the brighter the bulb.

Typical brightness

	Incandescent bulb	Compact fluorescent light	LED bulb with E26 cap	LED bulb with E17 cap
Category	W type	W type	Total luminous flux (lumen)	
Bright	100 W	25 W	1520 lm	1430 lm
↕	60 W	15 W	810 lm	760 lm
↕	40 W	10 W	485 lm	440 lm
Dark	25 W	—	—	230 lm

Source: Website of the Japan Lighting Manufacturers Association

Point 2 Check cap size

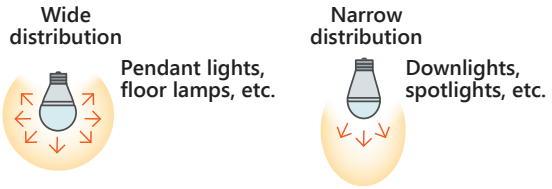
There are two cap sizes, E26 and E17.

Choose the size that fits the socket you will use.

Point 3 Check how light is distributed

There are two ways of distribution in general, wide distribution and narrow distribution.

Choose the one appropriate for where the bulb will be used.



Point 4 Check if the bulb is compatible with the fixture

Lamp with dimming function

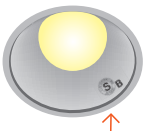
↓

Lamp for a dimmer

Lamp covered in its entirety

↓

Lamp for an enclosed fixture



Japan S Mark

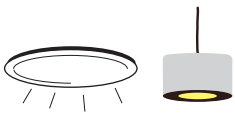
Lamp with Japan S Mark

↓

Lamp for insulation fixture

* On the package of a bulb, there is a description of what kind of fixture it is compatible with.

Easy to switch to LED lighting fixtures!



There are a variety of LED lighting fixtures, such as ceiling lights and pendant lights. Though replacement involves such fixtures, it can be easily completed without electrical construction if there is a hook sealing on the ceiling

Example of hook sealings

Square hook sealing

Round hook sealings

Precautions for purchasing straight tube LED lamps

When replacing only a straight tube lamp with LED, please note that it cannot be used unless the type of fixture is correct even if the cap is correct. Before replacement, make sure that the lamp is suitable for the existing fixture, and check the precautions for attachment at the store or in the instruction manual for your safely.

Reference: Website of the Bureau of Citizens, Culture and Sports, Tokyo Metropolitan Government.

Focusing on the Energy Efficiency of Your House

A house that is cool in summer and warm in winter with less energy

An energy efficient house will:

- Allow better heating and cooling.
- Decrease temperature differences between rooms and within a room.
- Reduce condensation, making it difficult for mites and mold to propagate.
- Prevent decay of wood and deterioration of building materials due to condensation.

Energy efficiency
Comfort
Health
Long lasting house

Improve thermal insulation!

When building or renovating a house:

- Use windows, sashes, and doors with high levels of thermal insulation and airtightness.
- Install insulating material in sections exposed to the outside air, such as walls, roofs including ceilings, and floors.

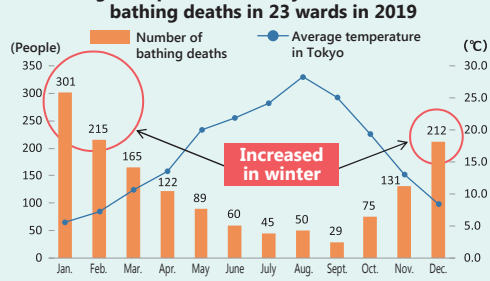
What you can do by yourself is to:

- Hang long thick curtains.
- Apply insulation film to window glass.

Heat shock

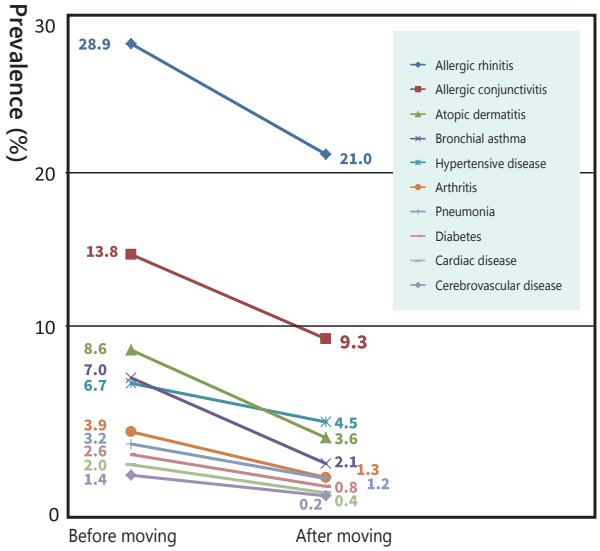
Heat shock is a health hazard caused by major fluctuations in blood pressure due to sudden changes in temperature. It often happens while bathing in winter when the temperature drops.

Average temperature in Tokyo and the number of bathing deaths in 23 wards in 2019



Source: Tokyo Medical Examiner's Office. Changes in the Number of Bathing Deaths in the 23 Wards of Tokyo. Japan Meteorological Agency. Past Weather Data Search (temperature data for 2019).

Decrease in the number of people with illness due to moving to highly insulated houses*



* The decrease is considered to be the combined effect of the reduced occurrence of mold and mites due to the reduction of condensation, improvements in indoor air quality due to the enhancement of the heating system and 24-hour mechanical ventilation, improvements in sound insulation performance, and improvements in psychological aspects due to moving to a new house.

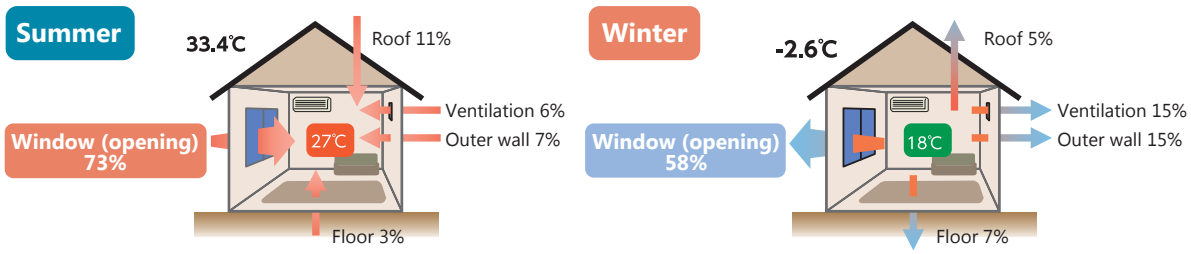
Source: Toshiharu Ikaga, Rika Eguchi, Shuzo Murakami, Atsushi Iwamae, Tanji Hoshi, et al. Evaluation of Investment in Home Insulation with Consideration for Indirect Benefits of Health Maintenance (NEB). Architectural Institute of Japan, Environmental Paper Vol. 76, No. 666, August 2011.

Heat and cold come through the window!

In most cases, the heat entering a room during cooling in summer and the heat escaping from a room during heating in winter passes through windows.

Choose windows that use materials with high insulation performance, such as double glazing glass and resin sashes.

Percentage of the heat entering during cooling in summer and escaping during heating in winter



Source: Office for Housing Policy, Tokyo Metropolitan Government and Japan Construction Material & Housing Equipment Industries Federation. Guidebook for Energy Efficiency Home Renovation.

★ Insulation of windows with renovation

* **Inner window installation**
  Install a window inside an existing window.
* **Replacing glass**
  Fasten double glazing glass with attachment to an existing sash.
* **Replacing window**
  Replace glass and sash with models with higher thermal insulation performance.

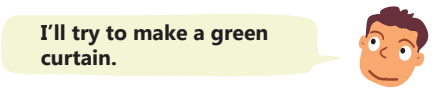
Inner window

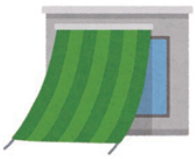
Double glazing glass with attachment

Images provided by AGC Inc.

Don't forget to shield windows from heat in summer

The higher the insulation performance of a house, the more difficult it is to discharge the heat outside once it enters a room. Prevent direct sunlight from passing through windows in summer. A heat shielding effect is higher when the heat is shielded outside a house rather than from the inside.





For details, visit the Guidebook for Energy Efficiency Home Renovation website of the Office for Housing Policy, Tokyo Metropolitan Government.

https://www.juutakuseisaku.metro.tokyo.lg.jp/juutaku_seisaku/reformguide.html

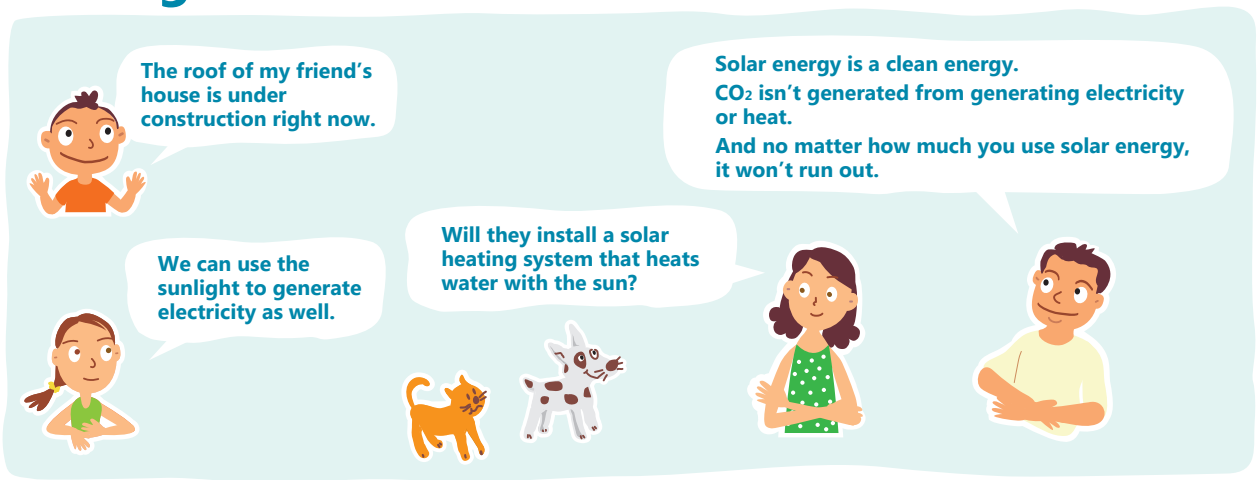
You may qualify for a tax break or subsidies by carrying out energy efficiency home renovations that meet requirements, such as the insulation of windows.

For details, visit the Home Renovation Guidebook website of the Housing Renovation Promoting Council.

http://www.j-reform.com/publish/book_guidebook.html

TMG also has a subsidy program, check to see if it applies in your case. See page 28 for details.

Using Solar Power Generation Equipment and Storage Batteries

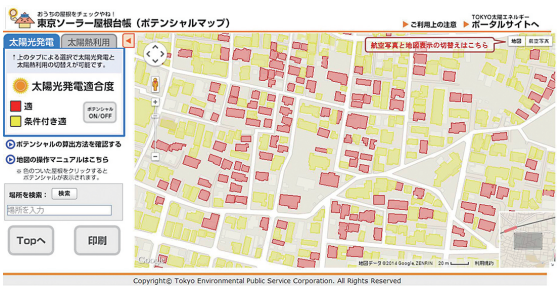


Tokyo Rooftop Solar Register

The Tokyo Rooftop Solar Register (potential map) allows to you see at a glance how suitable each building in Tokyo is for a solar power generation system or solar heating system.

It is easy to use and supports address search.

Check out your roof!



- Tokyo Rooftop Solar Register (potential map)
  https://tokyosolar.netmap.jp/map/

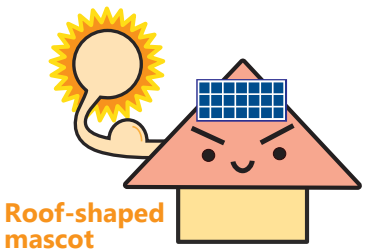
- Team for Collaborative Dissemination, Tokyo Metropolitan Center for Climate Change Actions (Cool Net Tokyo)
  TEL: (03) 5990-5065 Reception hours: 9:00 - 12:00, 13:00 - 17:00 Monday - Friday (excluding holidays and year-end and New Year holidays)

Tokyo Rooftop Solar Register Search

Solar power generation system

It generates electricity from sunlight. It is estimated that the annual power generation per 1 kW of the system is approximately 1 MWh.* The system allows you to cover part of the electricity used at home, and sell the electricity that could not be used up (surplus electricity) to a power company. You will be able to realize self-sufficiency in electricity by storing it in a storage battery for later use.

* Cited from the website of Japan Photovoltaic Energy Association (JPEA).
This calculation assumes that a solar cell is installed tilting 30 degrees horizontally and facing due south.



Roof-shaped mascot

Check out your roof!

Benefits of installing solar power generation equipment

Economy

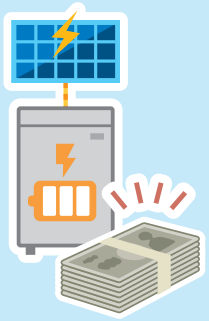
★Saving on monthly energy bills

If 4 kW is introduced at a detached house with a monthly electricity bill of about 10,000 yen:

☑ **Economic benefits of about 7,800 yen per month and about 93,600 yen per year**

↳ **By using the current subsidy of 100,000 yen/kW, you can recover the installation cost of about 980,000 yen in about 6 years!**

* Estimate is based on a household of two or more people living in a ward of Tokyo as of May 2022, and may change depending on future circumstances.

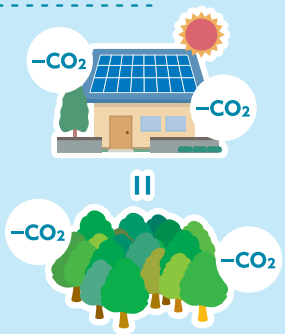


Environment

★Contribution to CO_2 reduction

☑ **The amount of CO_2 reduced by 4 kW of solar power generation is equivalent to the removal by 2,000 m^2 of cedar forest, or approximately 200 cedar trees.**

* Calculated based on the materials published by the Forestry Agency.



Disaster preparedness

★Electricity available during power outages

☑ **You can collect information and confirm the safety of people on your TV or smartphone during a power outage.**

☑ **You can increase disaster preparedness by adding a storage battery.**

Electricity bills are so high these days.

If we have a storage battery, we can store any extra electricity generated that we don't use.

By using the stored electricity at night, we can reduce the amount of electricity we buy and reduce our electricity bill.

We can efficiently use electricity generated at home by combining solar power generation and a storage battery.

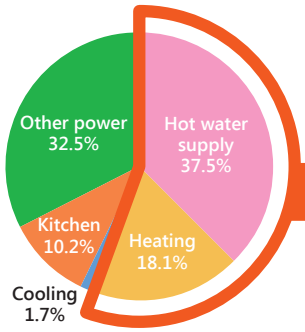
We don't have to worry in case of a power outage.

It may be more profitable to use electricity, which you generate, for self-consumption rather than selling it.

Using Solar Heat and Ground Source Heat

Solar heating system

This system uses the thermal energy of the sun to supply hot water and for space heating. It is highly efficient in exchanging energy for heat. As even a 4 - 6 m^2 panel can reduce the consumption of gas and electricity, the system can be used in houses with a small roof area.



"Heat for heat"

This is an idea that the heat used at relatively low temperatures for hot water supply and space heating, which accounts for half of household energy consumption, should be covered by heat generated by solar heat and other renewable energy as much as possible.

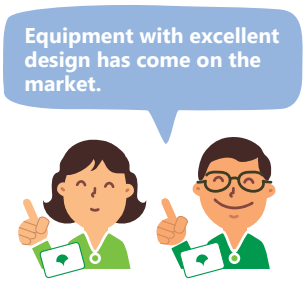
Low temperature heat is used for about half of applications

Use solar heat!

Source: Percentage of energy consumption by use in the residential sector of Tokyo (preliminary results in FY 2019)

System on the balcony

System integrated with the roof



Ground source heating system

Geothermal heat is a renewable energy source that uses the underground temperature, which does not change much throughout the year, and can be used anywhere in Tokyo without being affected by the weather or time of day.

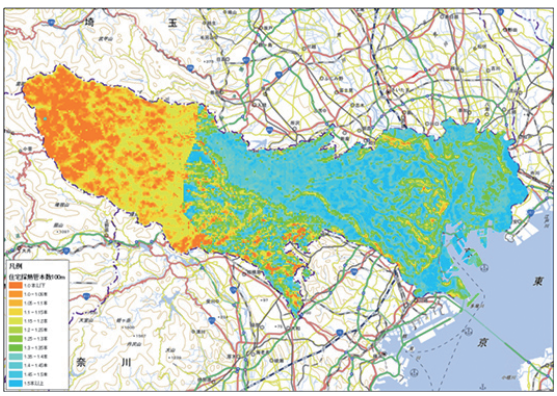
To explore the use of ground source heat, use the Tokyo Ground Source Heat Potential Map, which provides an easy-to-see estimated amount (potential) of ground source heat that can be collected in Tokyo.

Features of the Tokyo Ground Source Heat Potential Map

- Color-coded meshes reflecting an estimated amount (potential) of ground source heat collectable, which has been analyzed from geological information, groundwater levels, etc.
- Indicating the approximate number of heat exchangers required for each building type.

- https://www3.kankyo.metro.tokyo.lg.jp/

Tokyo Ground Source Heat Potential Map Search



*You can check the potential of desired areas by zooming in on the map.

Information on TMG's Subsidies

TMG offers a variety of subsidy programs for new and existing houses.

Visit our website for details of the subsidy programs.

Visit our website for details of subsidies

Tokyo HTT Search

Tokyo Zero Emission House Promotion Project

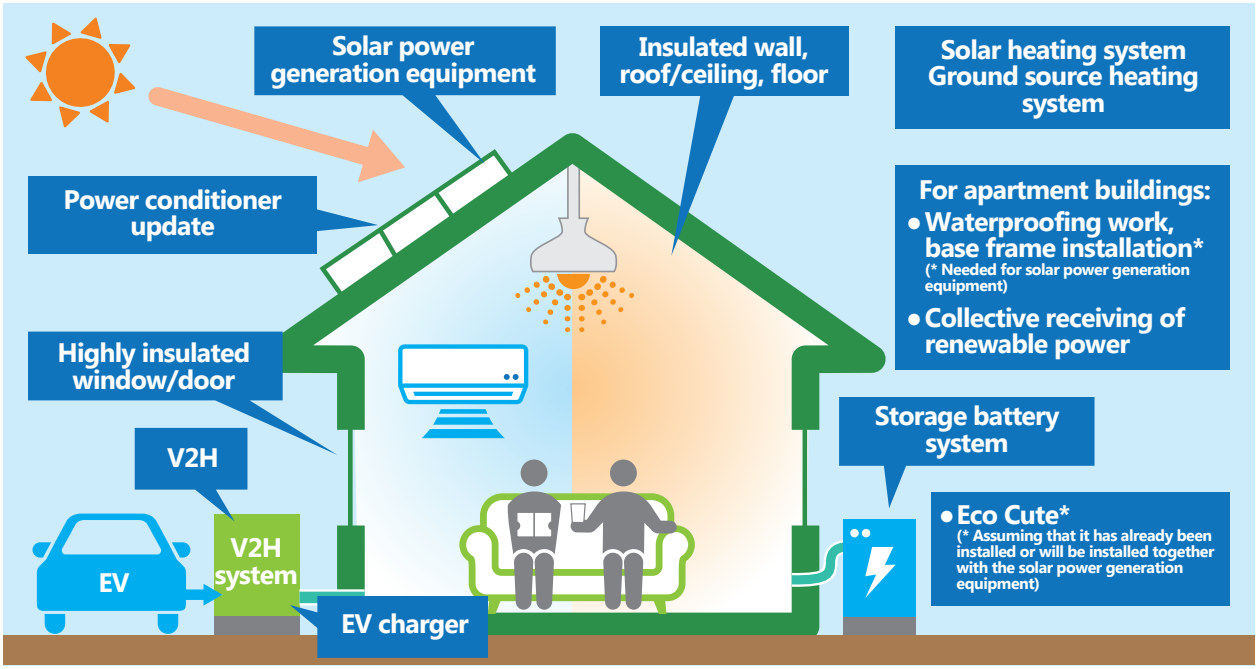
Unique to TMG, a Tokyo Zero Emission House is friendly to both people and the global environment, using highly insulated material and windows as well as incorporating highly energy efficient lighting and air conditioners.

In addition to energy efficiency, living in a Tokyo Zero Emission House is characterized by high levels of insulation that keeps a comfortable room temperature and reduces temperature differences between rooms, helping decrease the risk of heat shock.

東京ゼロエミ住宅
TOKYO ZERO EMISSION HOUSE

Which houses	● New housing in Tokyo, including detached houses and apartment buildings, with a total floor area less than 2,000 m²
Who can apply	● Owners of new housing, including individuals and businesses
Main requirements for subsidies	● New housing must be certified to meet the criteria of a Tokyo Zero Emission House according to the Outline of Tokyo Zero Emission House Certification.
Websites	**For subsidies:** **For the criteria of a Tokyo Zero Emission House:**
Contact	● Tokyo Metropolitan Center for Climate Change Actions (Cool Net Tokyo) TEL (03) 5990-5169

Project to Promote Thermally Insulated Solar Homes That Are Resistant to Disasters and Contribute to Health of Residents



Contact Tokyo Metropolitan Center for Climate Change Actions (Cool Net Tokyo)
TEL (03) 5990-5236

Lifestyle in Harmony with the Season

In the hot season

Summer

Only 50 years ago people lived without air conditioners. They hung wind chimes and used paper fans, creating an atmosphere specific to the summer season.

Summer clothing or materials

Among natural materials, cotton and linen have better moisture absorption properties than nylon and polyester.

Rayon and some other synthetic fibers or fabrics have a cool feel, making them perfect for summer.

Water sprinkling

A scene with sprinkled water looks really cool, but it actually lowers the temperature as water draws heat from the surroundings when it evaporates. The trick is to sprinkle little by little in the morning or evening when the sun is not high. Use leftover bath water for sprinkling. Watering in the morning will keep you cool during the day, and watering in the evening will allow you to stay cool at night.

Green curtains

Grow climbing plants, such as luffa, bitter gourd, and morning glory, on your balcony or in your garden. Not only do they soften the summer sun, but they also make you feel cool through transpiration from the leaves. There is also the pleasure of harvesting fruit.

Awnings, shades, and reed blinds

If you block the direct sunlight by putting reed blinds or shades outside the window, you can greatly reduce the amount of heat entering the room and keep the room temperature from rising.

An awning is a covering commonly found on the terraces or balconies of European buildings. If you install it above the window, you can take in the cool breeze while blocking the sun.

Don't get heat stroke at home—save power within a reasonable range

- Don't exert yourself too much. Use air conditioners, fans, and reed blinds to avoid the heat.
- Wear cool clothes.
- Keep yourself hydrated.
- Take extra care on days when it suddenly becomes hot during or following the rainy season.

Awning

In the cold season

Winter **A small idea will keep your body, mind, and wallet warm. Stomach wraps and hot water bottles are recommended when it is cold.**

Ideas for clothes

Before raising the temperature of a heater by 1°C, try something else, such as wearing thick socks or a cardigan, or using a blanket or lap robe.

In the cold season, the key to efficiently warming your body with clothing is to focus on your neck, wrists, and ankles.

The theory is that the blood flowing under the thin skin of these parts warms when they are heated, and the blood flows throughout the body to warm the entire body. Use turtlenecks, high-necked clothes, leg warmers, etc.

Winter clothing or materials

Wool, acrylic, and silk are excellent at retaining heat.

A variety of thin functional innerwear has been developed, consisting of materials that generate heat by absorbing moisture or sweat from the body. They are also recommended for their excellent heat retention.

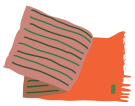
Hot water bottles

Hot water bottles provide extra warmth under the comforter. They provide a natural warmth and can be applied to your lower back, feet, and other parts you want to warm. Since they do not need a power supply and are portable, they are helpful when you feel a little chilly while you are relaxing in your living room or camping outdoors.

Family gathering

Some people may wonder: Why does it help energy efficiency? However, if each family member is in their own room, lighting and air conditioning are necessary for each one of them. Staying together leads to the prevention of global warming. Also, if parents teach their children the importance of energy efficiency, they will naturally acquire energy efficiency actions.

Increase sensible temperature by adding:



Lap robe +2.5°C

Cardigan +2.2°C

Socks +0.6°C

Not using a heater unreasonably may cause a cold.
Keep the room temperature at around 20°C.

Beware of the epidemic of infectious diseases in winter.

- Adjust the room temperature by paying attention to ventilation.
- Keep a moderate humidity of 50 to 60% in a room that tends to become dry.
- Wash your hands and gargle when you come home to prevent infectious diseases.

Household Energy Efficiency Handbook

Published in March 2023

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Environmental Document No. 34081

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R70
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