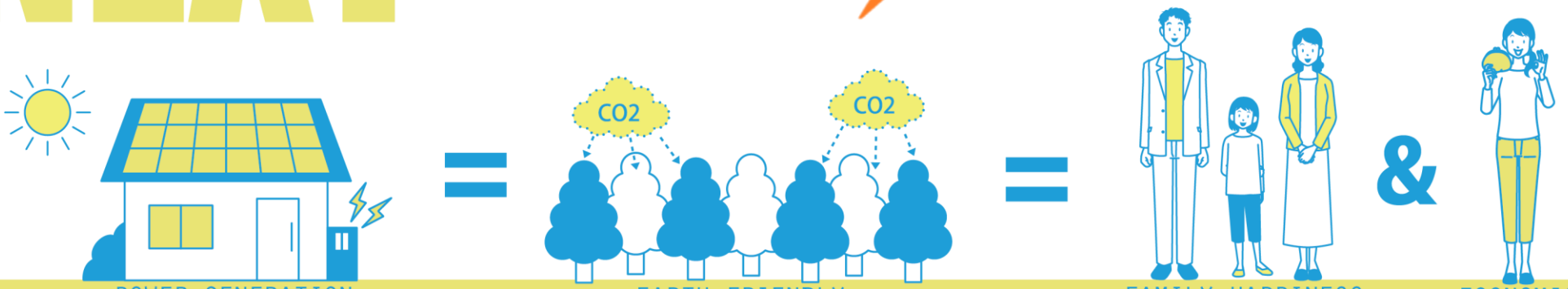
ZERO EMISSION TOKYO NOW NEXT

TOKYO METROPOLITAN GOVERNMENT

HTT Tokyo Tokyo

ZERO EMISSHION TOKYO NOW NEXT



Zero Emission Tokyo Now Next

To mitigate climate change and ensure a stable supply of energy the Tokyo Metropolitan Government has currently been engaged in a variety of initiatives *to realize a decarbonized society.*

For society to achieve this, as a whole, it is important for each and every one of us to be aware and try to do what we can.

To this end, we have gathered specific information concerning the following topics, among others: *“Why decarbonization is necessary,” “Impact on our daily life,” and “What kind of actions would lead to decarbonization.”*

We hope it will help you learn more about, and raise your awareness of decarbonization.

Let’s work together to push forward decarbonization efforts so that we can achieve a safe and comfortable society where people can lead a healthy life.

HTT

Ⓗ Herasu(save)
Ⓣ Tsukuru(generate)
Ⓣ Tameru(store)
Electricity

Tokyo Tokyo

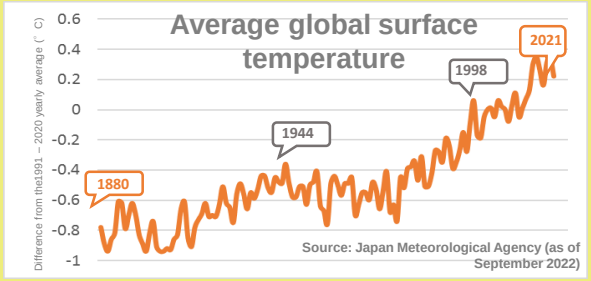
Table of Contents

Zero Emission Tokyo Now Next

Point

1 Global warming is getting serious

- Our planet is getting warmer due to a rapid increase in CO_2, methane, and other types of greenhouse gases.



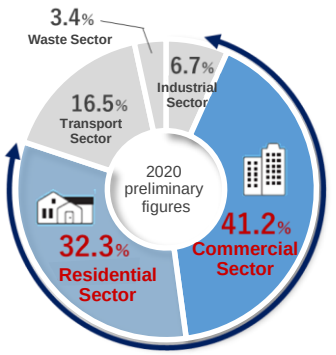
2 Impact on our planet and society

- Extreme weather has been occurring around the world (e.g., super typhoons, extreme heat, drought, flooding).
- Heat waves and torrential rain have been occurring across Japan as well.
- Tokyo is no exception, with heat waves occurring more frequently.

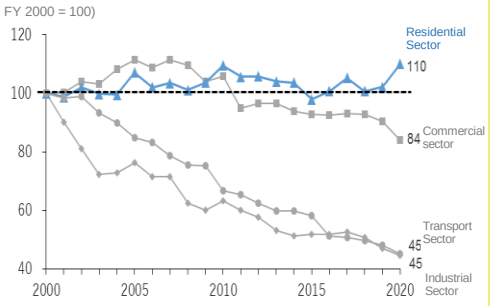
3 Key to reducing CO_2

- Approx. 70% of Tokyo's CO_2 emissions come from the residential sector and commercial sector.
- Only the residential sector showed an increase in energy consumption when compared to 2000 data.
- The more time people spend at home, the more household energy consumption is expected to rise.

Tokyo's CO_2 emissions by sector



Final energy consumption by sectors



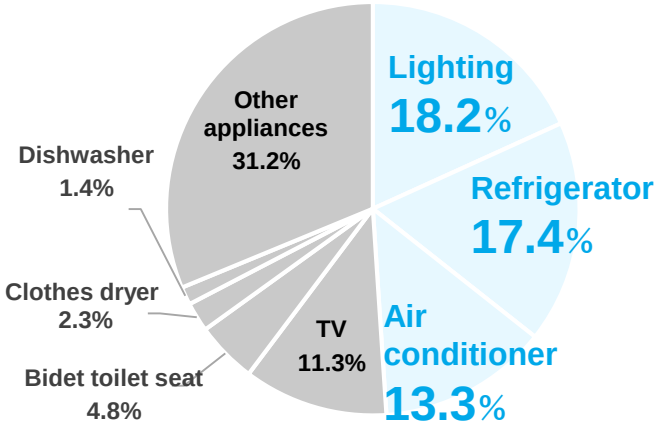
Saving power at home will indeed help reduce CO_2 emissions.

Where is the electricity used at home?

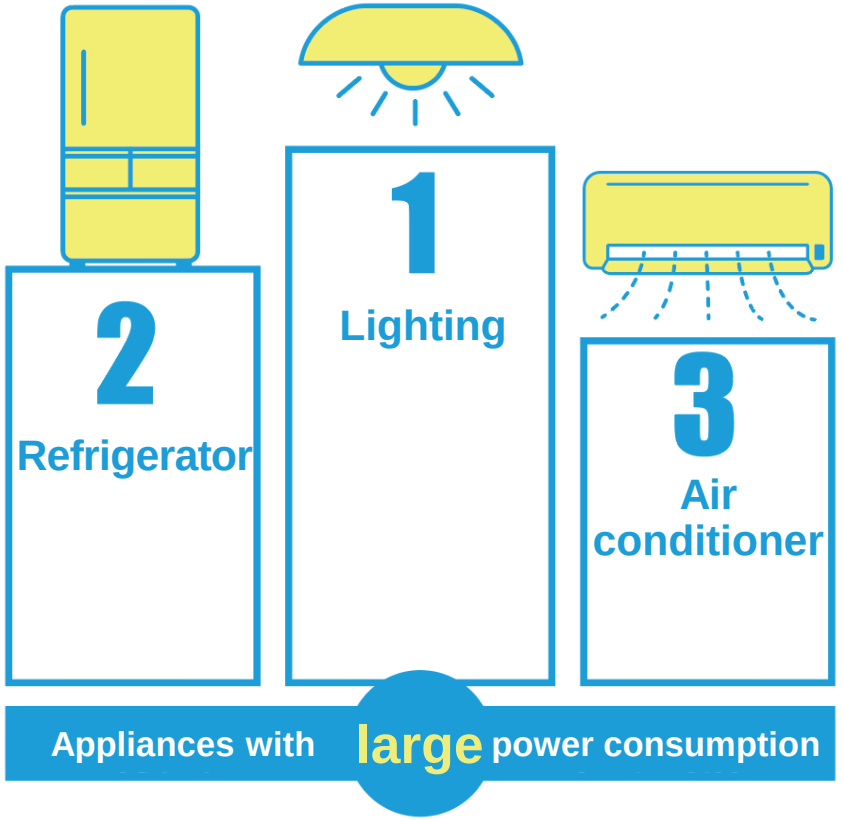
Lighting, refrigerators, and air conditioners are the top three electricity consuming home appliances, accounting for around half of the total electricity consumption, when combined.

Learning about where electricity is used will help you save it!

Breakdown of annual energy consumption in Tokyo's residential sector by appliance



Source: "Comprehensive survey on the final energy consumption and greenhouse gas emissions in Tokyo" (FY 2019 preliminary figures)



Simple energy-saving steps to reduce CO_2 emissions and electricity bills too!

The largest power consumption **Lighting**

*Yearly figures

		Energy saved	Money saved	CO2 reduced
(1) Use the lighting less, by one hour a day	Incandescent lamp	19.7kWh	640 yen	9.6kg
	Fluorescent lamp	4.4kWh	140 yen	2.2kg
	LED bulb	2.9kWh	90 yen	1.4kg
(2) Replace incandescent lamps with LED bulbs		92.0kWh	3,010 yen	45.0kg

Energy saving tips

Is it possible to save energy by switching lights off even for a short time?

A lot of power runs through every time you switch a light, but doesn't last long enough to have an impact on your electricity bill. Therefore, it will save power by switching the light off even if only for a short time. In the case of using fluorescent lamps, their life will be shortened if we repeatedly turn them on/off over a short period.

(1) Incandescent bulb: 54W bulb, fluorescent lamp: 12W bulb, LED bulb: 8W bulb
(2) Case where 54W incandescent bulbs are replaced with 8W LED bulbs (hours of use: 2,000 hours/year)

Simple energy-saving steps to reduce CO_2 emissions and electricity bills too!

The 2nd largest power consumption **Refrigerator**

*Yearly figures

	Energy saved	Money saved	CO_2 reduced
(1) Place it at an appropriate distance from the wall	45.1kWh	1,470 yen	22.1kg
(2) Adjust the temperature setting according to the season	61.7kWh	2,020 yen	30.2kg
(3) Don't overfill	43.8kWh	1,430 yen	21.4kg
(4) Don't open it too often	10.4kWh	340 yen	5.1kg
(5) Open the door for as little time as possible	6.1kWh	200 yen	3.0kg

Energy saving tips *Is it possible to save power by keeping your freezer full?*

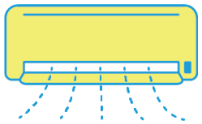
In the case of a drawer-type freezer, we can save energy by packing it with frozen items. The frozen items will cool each other , which will help to prevent the temperature from rising when the freezer is opened.

However, keeping your freezer organized will help you save time finding what you need.

(1) Comparison of the following cases: a) a refrigerator is placed in close proximity with the ceiling and the walls on both sides, and b) a refrigerator is placed in close proximity with a wall on one side.
(2) Changing the refrigerator's temperature setting from "Strong" to "Medium" in an ambient temperature of 22℃.
(3) Comparison between when the refrigerator is fully packed and when it is half-packed
(4) Comparison of the following cases: a) opening/closing the refrigerator door for the number of times as prescribed in the former JIS Opening/Closing Test, and b) opening/closing the door twice as much
(5) Comparison between when the refrigerator door is left open for 20 seconds, and when it is left open for 10 seconds.

Simple energy-saving steps to reduce CO_2 emissions and electricity bills too!

3rd largest power consumption — **Air Conditioner**



*Yearly figures

	Energy saved	Money saved	CO_2 reduced
(1) Keep the room temperature around 28℃ in the summer	30.2kWh	990 yen	14.8kg
(2) Cut the use of the air conditioner for one hour a day in the summer	18.8kWh	610 yen	9.2kg
(3) Keep the room temperature around 20℃ in the winter	53.1kWh	1,740 yen	26.0kg
(4) Cut the use of the heater for one hour a day in the winter	40.7kWh	1,330 yen	19.9kg
(5) Clean the filters regularly (twice a month or so)	32.0kWh	1,050 yen	15.6kg

Energy saving tips

Is it possible to save energy by switching your air conditioner off even for a short time?

Air conditioners consume a lot of energy when adjusting the temperature. However, air conditioners use a relatively small amount of energy to maintain the set temperature. Therefore, it's not energy efficient to frequently switch the AC on and off over a short period of time. According to research done by CRIEPI*, the energy consumed with intermitted operation (five cycles of on for 30 minutes, off for 5 minutes) is approx. 30% greater than continuous operation.

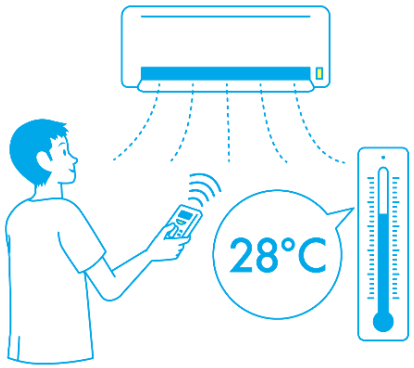
*Source: Central Research Institute of Electric Power Industry, “Comparison of the energy-saving effects of intermittent operation and continuous operation of air conditioners”

Leave your air conditioner on if you’re going to be back within 30 minutes

(1) Changing the room temperature setting of an air conditioner (2.2 kW) from 27℃ to 28℃ when the outside temperature is 31℃ (hours of use: 9 hours/day)
(2) When the temperature setting is 28℃
(3) Changing the room temperature setting of an air conditioner (2.2 kW) from 21℃ to 20℃ when the outside temperature is 6℃ (hours of use: 9 hours/day)
(4) When the temperature setting is 20℃
(5) Comparison between when the filter of an air conditioner (2.2 kW) is clogged up, and when the filter has been cleaned

Even small energy-saving efforts can make a big difference in the hot summer.

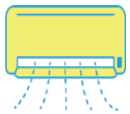
Tips for using the air conditioner



Air conditioners account for over half of your daytime power consumption during summer. Small efforts can help you save energy.

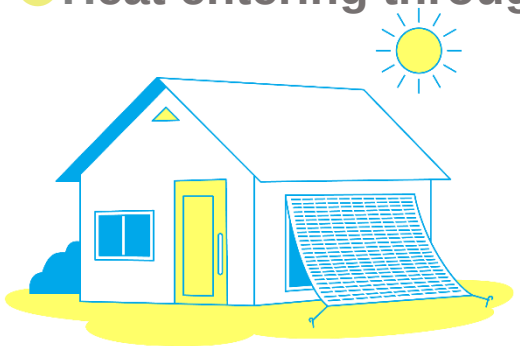
*Be careful not to get heatstroke for the sake of saving energy.

Air conditioner



	Energy saved	Money saved	CO_2 reduced
(1) Keep the room temperature around 28°C in the summer	30.2 kWh	990 yen	14.8 kg
(2) Cut the use of the air conditioner for one hour a day in the summer	18.8 kWh	610 yen	9.2 kg

Heat entering through windows



Heat entering from windows accounts for more than 70% of the heat that enters from the outside during the summer. Improve cooling efficiency by blocking sunlight from windows.

Window

- ✓ Blinds
- ✓ Bamboo screen
- ✓ Sunshade
- ✓ Green wall

(1) Changing the cooling temperature setting of an air conditioner (2.2 kW) from 27℃ to 28℃ when the outside temperature is 31℃ (hours of use: 9 hours/day)
(2) When the temperature setting is 28℃

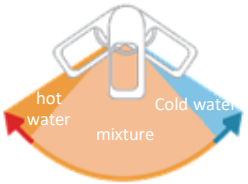
Even small energy-saving efforts can make a big difference in the hot summer.

Don’t forget the shower!

People take more showers in the summer. Follow these tips to be more energy-efficient.

Lever

✓ If you have a single lever for adjusting the water temperature/volume, slide it to the right side (cold water) when you don’t need hot water.



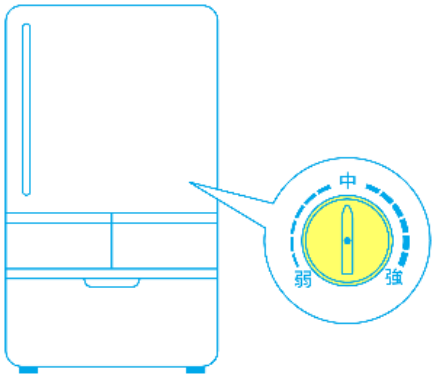
Shower head

✓ You can reduce your hot water consumption by 20 to 30% by installing a water-saving shower head.

Change your appliance settings in the summer

Do you regularly change your appliance settings? You can save energy by adjusting the settings.

*Yearly figures



Refrigerator

● Change the temperature setting to “Medium”

Energy saved	Money saved	CO_2 reduced
61.7 kWh	2,020 yen	30.2 kg

Electronic bidet

✓ Switch off the seat heater and warm water bidet function

TV

✓ Reduce the brightness of your TV screen (don’t forget to ensure viewing comfort)

● Changing the refrigerator temperature setting from “High” to “Medium” in an ambient temperature of 22℃.

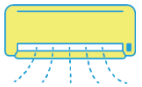
Even small energy-saving efforts can make a big difference in the cold winter, too

Gather in a warm room

The key to saving energy in winter is to reduce energy consumption for heating.
You can save energy and money by having family members gather in the same room.

*Don't forget to ventilate the room regularly even when trying to saving energy.

*Yearly figures

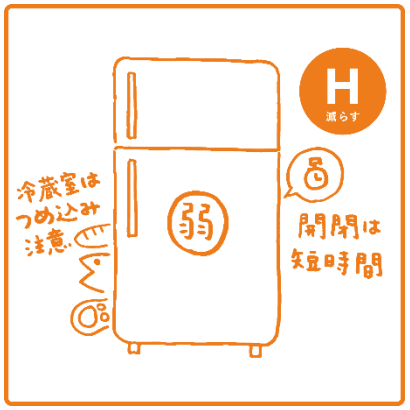


	Energy saved	Money saved	CO_2 reduced
Air conditioner (Heater)			
(1) Keep the room temperature around 20°C in the winter	53.1 kWh	1,740 yen	26.0 kg
(2) Cut the use of the heater for one hour a day in the winter	40.7 kWh	1,330 yen	19.9 kg
Heated carpet			
(3) Use a heated carpet that matches the room size	89.9 kWh	2,940 yen	44.0 kg
(4) Change the temperature setting from "High" to "Medium"	186.0 kWh	6,080 yen	91.0 kg
Electric *kotatsu*			
(5) Use a blanket cover and floor mat in addition to the *kotatsu* blanket	32.5 kWh	1,060 yen	15.9 kg
(6) Use a low temperature setting for the *kotatsu*	49.0 kWh	1,600 yen	24.0 kg

(1) Changing the room temperature setting of an air conditioner (2.2 kW) from 21℃ to 20℃ when the outside temperature is 6℃ (hours of use: 9 hours/day)
(2) When the heating temperature is set to 20℃. Compared with the gas and oil necessary for a gas heater and oil fan heater, respectively.
(3) Comparison between a heated carpet for 3.11 m^2 and 4.63 m^2 used for 5 hours a day at "Medium" when the room temperature is 20℃.
(4) When the heating setting of a heated carpet for 4.63 m^2 is changed from "High" to "Medium" (hours of use: 5 hours/day)
(5) Comparison of the following cases: a) using only a *kotatsu* blanket, and b) using a *kotatsu* blanket cover and floor mat in addition to the blanket (hours of use: 5 hours/day)
(6) When the heating setting is changed from "High" to "Medium" (hours of use: 5 hours/day)

Even small energy-saving efforts can make a big difference in the cold winter too

Keep your refrigerator organized



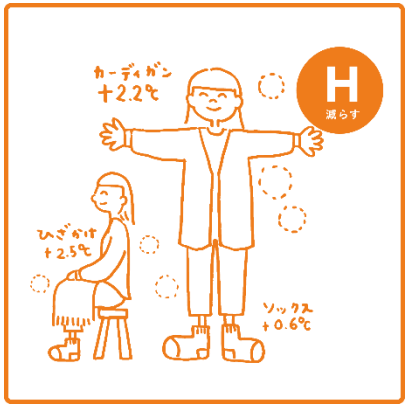
Don’t overfill your refrigerator, otherwise the food inside won’t be uniformly cooled.

*Yearly figures

Refrigerator	Energy saved	Money saved	CO_2 reduced
● Don’t overfill	43.8 kWh	1,430 yen	21.4 kg

● Comparison between when the refrigerator is fully packed and when it is half full

Layer up to stay warm



Try layering before turning up the heat by 1°C.
You’ll feel much warmer simply by putting on an extra layer of clothing.

Lap blanket	Cardigan	Socks
		
+2.5℃	+2.2℃	+0.6℃

Even small energy-saving efforts can make a big difference in the cold winter, too

Saving gas

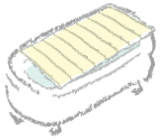
As the tap water temperature is lower, more energy is needed to heat up water in the winter than in the summer. Here are some tips for efficiently using hot water.

Dishwashing, washroom

- ✓ Use a lower water temperature setting
- ✓ Don't leave hot water running

Bathroom

- ✓ Avoid using the reheating and heat retention functions by using the bath one after another
- ✓ Close the bath lid even for a short time



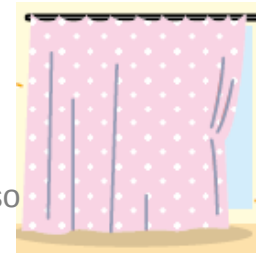
Improve window insulation to maximize heating efficiency

Prevent heat leaving and cold air entering from your windows.

Window

- ✓ Use long, thick curtains
- ✓ Stick an insulation sheet on the glass
- ✓ Use gap tape to prevent air flow

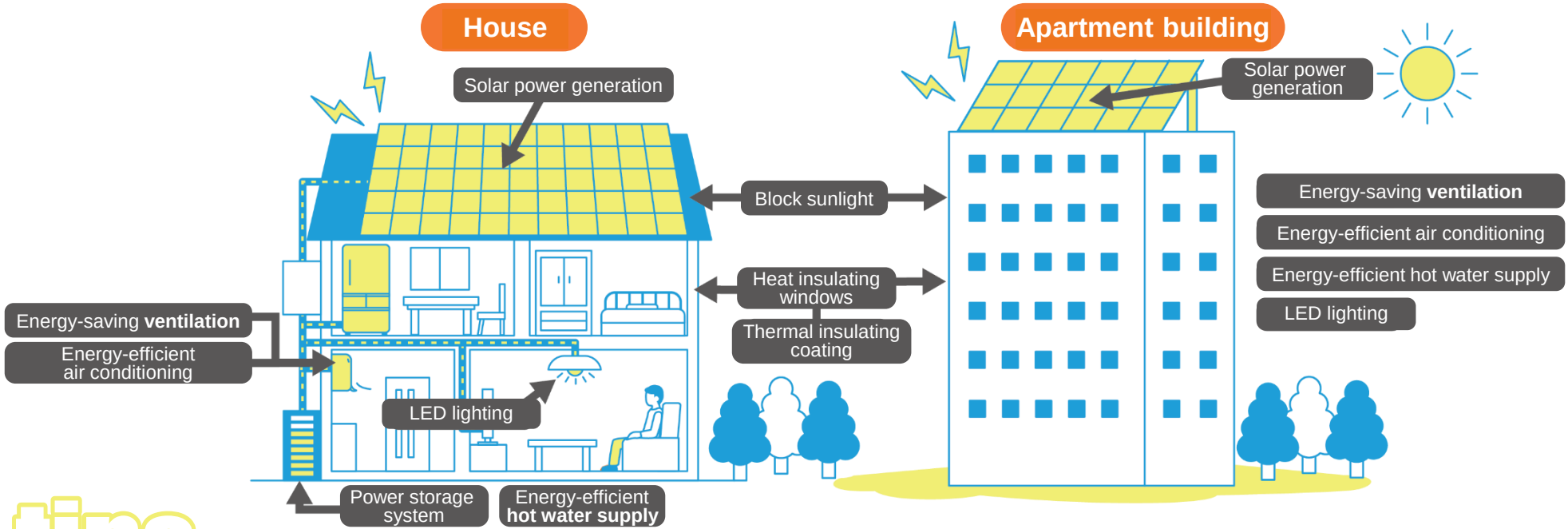
*Installing insulated glass, adding an extra pane to your windows, etc., are also effective



Consider making your home more energy-efficient for a more comfortable, safe and healthier future

Consider the energy efficiency of your home

Whether you live in a detached house or an apartment, you can save even more energy by installing a solar panel in addition to the use of other heat-insulating, energy-saving properties



tips

Various benefits of energy-saving homes

- Improved cooling/heating efficiency can reduce the temperature difference between rooms.

  Leading to a more comfortable, healthier life
  (while preventing heat shock)

- Preventing decay and deterioration of wood due to condensation

  Preventing deterioration of your house

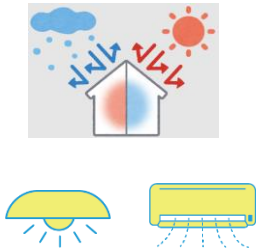
- Solar panels allow electricity usage during blackouts

  Get a storage battery to improve your disaster preparedness even further

Improve energy efficiency by Ⓗ Herasu (saving) and Ⓣ Tsukuru (generating) electricity

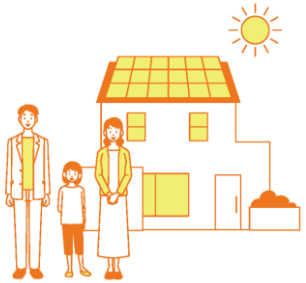
Save

- ✓ Improve thermal performance of walls, windows, etc.
- ✓ Improve energy-saving performance of appliances, etc.



Generate

- ✓ Generate renewable energy

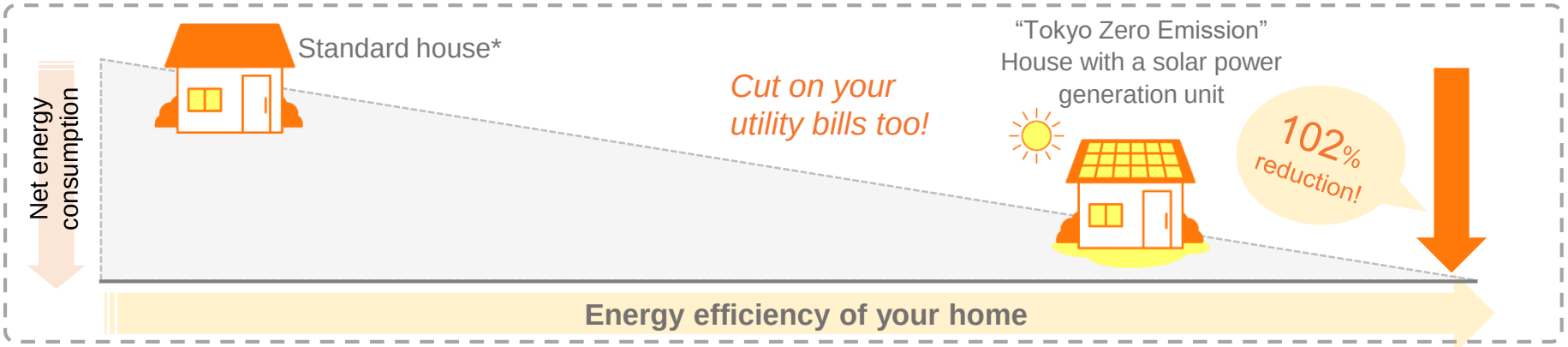


*Example of a detached house

A “Tokyo Zero Emission House” equipped with a solar power generation unit can reduce your energy consumption to net zero

- ✓ A “Tokyo Zero Emission House” is equipped with heat insulating windows and walls, as well as other energy-saving features. By installing a 4 kW solar power generation unit to the house, you could save more money than you need for the installation/construction work and also achieve net zero energy consumption.

Save approx. 10,000 yen a month!



*House that meets the mandatory requirements of the Act on the Improvement of Energy Consumption Performance of Buildings scheduled to come into effect in 2025.

This calculation is made on the assumption that the house is for a family of three with a floor area of 100 m².

			Energy-saving home	Tokyo Zero Emission House (standard 1)	
House facilities	Insulation (example)	Window	Aluminum window frames + multilayer glass	Aluminum resin composite window frames + Low-E double glass	
	Energy conservation (example)	Air conditioner	★★★	★★★★ or higher	
		Boiler	Conventional gas-type	Gas latent heat collection type	
	Solar power generation unit		N/A	Not installed	Installed (4 kW)
Reduction of utility expenses, etc.*1		Annual amount	N/A (reference)	-55,000 yen	-130,000 yen
		(30 years)	N/A (reference)	-1.65 million yen	-3.65 million yen
Additional construction expenses, etc.			N/A (reference)	+800,000 yen	+1.78 million yen
Tokyo Zero Emission House subsidy*2			N/A	-300,000 yen	-700,000 yen
Central government subsidy*3			N/A	-800,000 yen	-800,000 yen
Reduction of housing loan interest rate*4			N/A	-220,000 yen	-30,000 yen
Overall balance over 30 years			N/A (reference)	-2.17 million yen	-3.40 million yen
Energy consumption			N/A (reference)	-30%	“0” (-102%)

*1: Income from selling electricity at the FY2022 unit price; includes power converter replacement cost (230,000 yen).
Unit price: 17 yen/kWh (Year 1 to 10), 8.5 yen/kWh (Year 11 to 30); electricity charge: 33 yen/kWh; gas charge: 158 yen/m^3

*2: subsidy of 200,000 yen to 2.1 million yen depending also on the environmental features and type of your house (standards 1 to 3). If a solar power generation unit or storage battery is installed, the subsidy will be increased according to the capacity (e.g., 100,000 yen/kW for a solar power generation unit).

*3: Children’s Future House Assistance Program

*4: Estimation based on the following assumption: with 30 million yen loan for the reference house using the Flat 35 S Interest B Plan

Utilize the Tokyo Metropolitan Government's subsidy and assistance programs to promote efforts

We have created *Eco Support 2022*, *a pamphlet on the Tokyo Metropolitan Government's Environment-related Subsidies and Assistance Programs for Households and Businesses*.

Please check out the Tokyo Metropolitan Government's subsidies and assistance programs.

For more details, please see the menu in *Eco Support 2022*.

Daily efforts to reduce energy use in the workplace

Equipment	Reduced power use	Measures
Air conditioning	-2%	Maximize Cool Biz efforts to allow a higher temperature setting (28℃ for office space, 28℃ or higher for other spaces)
	-0.6%	Switch off air conditioners in office spaces when not in use
	-0.1%	Clean air conditioner filters
Lighting	-2.5%	Review lighting intensity (around 500 lux for office space)
	-0.4%	Switch lights off during lunch break, etc.
Powersockets	-0.3% or more	Turn off heating for bidet toilet seats, and stop the hot water supply to lavatories, etc. Reduce the brightness of PC screens
Ventilation	-0.4%	Reduce excessive ventilation by using fans appropriately in line with the ventilation purpose (*)

Update/install equipment to reduce energy use

Equipment	Reduced power use	Measures
Air conditioning	-7 to -14%	Install highly efficient ventilation and air conditioning equipment (assistance program: Energy-saving Ventilation/Air Conditioning Equipment Installation Assistance Program for Small to Medium-sized Offices)
Lighting	-14%	Replace regular lamps with LED bulbs (assistance program: Energy-saving Incentive Tax Program for SMEs)

*Please ensure sufficient ventilation for preventing the spread of COVID-19.
Reference: carbon dioxide concentration based on the Act on Maintenance of Sanitation in Buildings (1,000 ppm or less)

*The "reduced power use" is a rough estimate of the reduction of energy consumption in the entire office when the relevant measure is taken. (An office building (individual air conditioning: 20%) is assumed.)