

Tokyo Metropolitan Government's Efforts to Expand and Promote the Use of Hydrogen Energy

Bureau of Industrial and Labor Affairs
Tokyo Metropolitan Government
(Hereafter TMG)

Visions for 2050 and Actions toward 2030

Goals for 2050

● Green Hydrogen

Make full use of Green Hydrogen to support the mass introduction of renewable energy



Green Hydrogen Facility
© Toshiba Energy Systems & Solutions Corporation

● Hydrogen Powered Transport

Use green hydrogen to fuel large vehicles such as ships, aircraft, and so on



Image of a hydrogen aircraft
© Kawasaki Heavy Industries, Ltd.

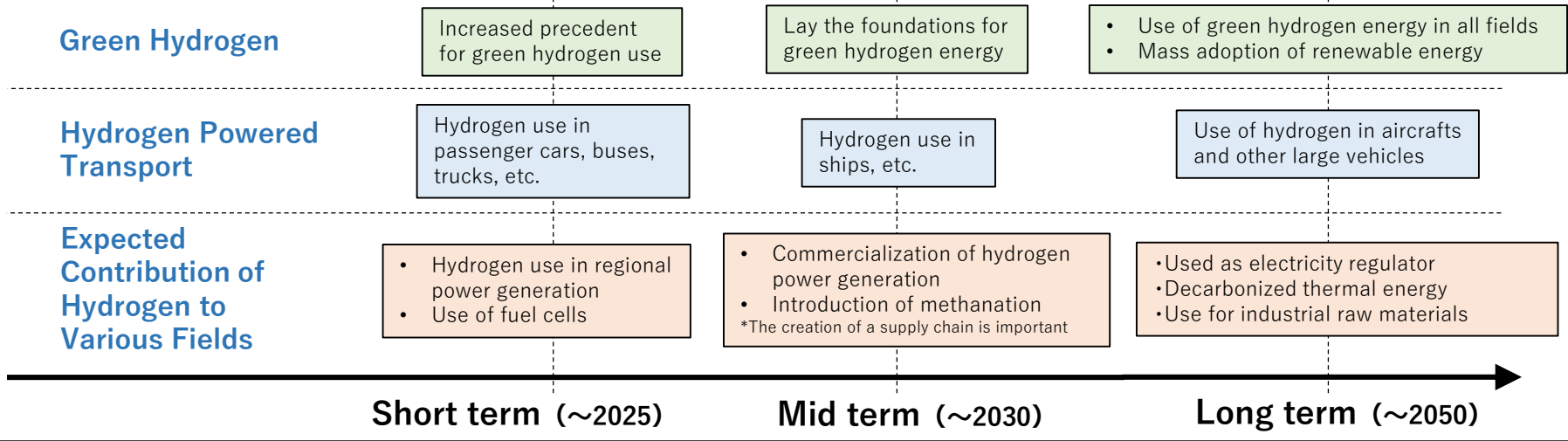
● Expected Contribution of Hydrogen to Various Fields

Use green hydrogen for power generation, heat demand (e.g. methanation), and industrial raw materials



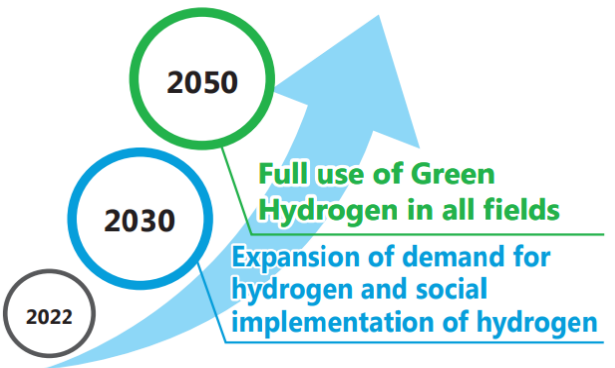
Image of verification equipment
© Mitsubishi Heavy Industries, Ltd

Mid-Long Term Outlook



Visions for 2050 and Actions toward 2030

- By 2050, in a decarbonized society, green hydrogen will be used in all sectors and contribute to further decarbonization in transportation etc.
- By 2030, we aim to establish a foundation for the full-scale use of green hydrogen, and expand demand for the fuel as well as its implementation in society.



Technological Development, Cost Reduction, Construction of a Supply Chain for a Virtuous Cycle

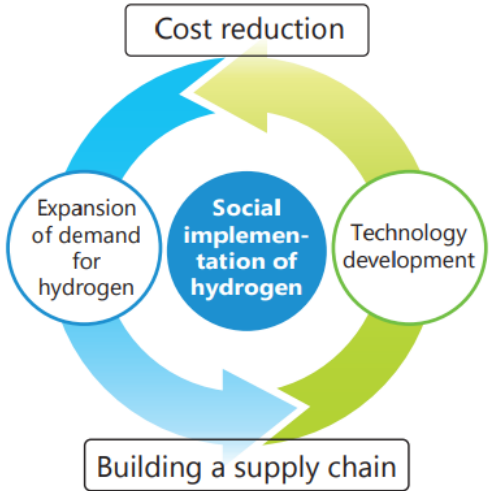
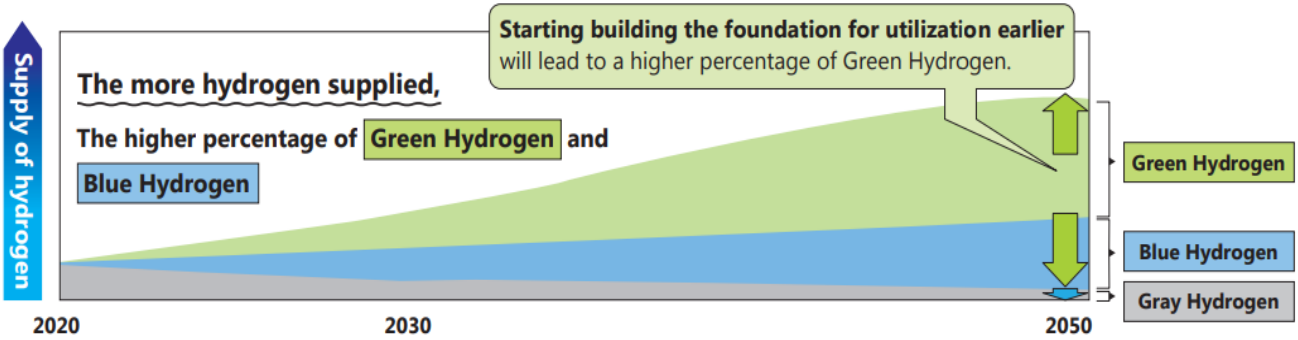


Image of expansion of Green Hydrogen



Source: Global Hydrogen Review 2021, IEA

Future Tokyo: Tokyo's Long-Term Strategy Upgrade 2024

■ Including projects under the control of the Bureau of Urban Development, Bureau of Port and Harbor, Bureau of Construction, Bureau of Environment, Bureau of Transportation, etc.

Tackle the climate crisis and accelerate decarbonization

Further promote the use of hydrogen as a decisive measure for decarbonization

Strategy 14

Decisively take the lead in the spread of Green Hydrogen etc. by **building a supply system** through the launch of Japan's first hydrogen exchange etc. and accelerating efforts to Produce, Carry, and Use as shown by **effective initiatives to expand the demand** for hydrogen

Creating the demand for hydrogen to expand its supply

◆ Promoting the spread of vehicles and equipment that use hydrogen

- Subsidize the introduction costs of large FC trucks as well as those of normal sizes, and the **difference in fuel costs** depending on travel distance
- Subsidize **introduction of FC ground support equipment**
- Expand support for businesses by providing new subsidies for the **installation of hydrogen burners and hot water generators** at facilities in Tokyo

◆ Increasing demand in the coastal area

- Expand the use of FC mobility at the Port of Tokyo by subsidizing the introduction of **FC trailers**
- **Promote the conversion of all RTGs at container wharves to FC-capable types** by subsidizing their introduction
- **Collaborate with** research institutes and private businesses to **implement hydrogen mixed combustion boilers for district heat supply**

◆ Raising motivation to use Green Hydrogen

- Strengthen incentives, such as **certification of businesses proactively using Green Hydrogen**

◆ TMG's initiatives

- Introduce **TMG-owned vessels equipped with hydrogen fuel cells**
- Sort out issues related to hydrogen utilization through the introduction of **hydrogen-compatible equipment to TMG facilities**
- Introduce more **FC buses into the Toei Bus Line**



Large FC truck



International Conference on Hydrogen "HENCA Tokyo 2023"



Image of hydrogen modules Provided by Toyota Motor Corporation



FC buses.

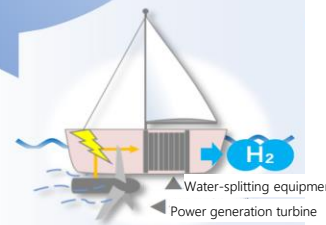


Image of hydrogen production

Building a supply system for the full-scale spread of Green Hydrogen etc.

◆ Building a supply chain by enhancing international collaboration

- Work toward launching a **hydrogen exchange** in collaboration with H2Global to **revitalize the trading** of Green Hydrogen
- Promote **alliances with overseas cities etc.** by holding international conferences and on other occasions

◆ Creating a hydrogen supply system including pipelines

- **Set up a consortium** to create a hydrogen supply system for the **airport coastal area** including the airport and its surroundings
- Establish a study group exploring the **use of a utility tunnel to supply hydrogen inside the Tokyo Waterfront City**
- Conduct research on hydrogen **supply methods with a view to accepting hydrogen** from overseas and examine the use of hydrogen at sewer facilities

◆ Developing hydrogen supply equipment to meet diverse demands

- Consider the **use of hydrogen modules** and stations for the supply to fuel cell ships
- Provide packaged support to businesses that **combine hydrogen refueling station business with car sharing and other services**

◆ Building a hydrogen production system in Tokyo

- Develop **Green Hydrogen production equipment** in Tokyo in collaboration with Yamanashi Prefecture

◆ Support for the implementation and development of advanced technology for hydrogen production

- Provide support for the implementation of cutting-edge technologies, such as **fuel cell ships using wind power to produce hydrogen and hydrogen generation from seawater**
- Provide support for technology development that contributes to **solving problems with hydrogen storage and transportation**

Increase both demand and supply to make hydrogen energy a pillar of a decarbonized society

Overview of FY 2024 Budget

Accelerate efforts toward social implementation of hydrogen energy ⑥20.3 billion yen (⑤11.4 billion yen)

⇒ Focus investment in Produce, Carry, and Use in order to realize a society where hydrogen is used in various fields.

	Key issues	Direction	Main efforts in FY 2024
Produce	<ul style="list-style-type: none"> ✓ Building momentum and providing support for Green Hydrogen production 	<ul style="list-style-type: none"> ➤ Take the lead in producing and using Green Hydrogen ➤ Effectively use Green Hydrogen outside Tokyo as well ➤ Provide support for Green Hydrogen production 	<ul style="list-style-type: none"> ✓ Green Hydrogen production and utilization projects ✓ Project to promote the introduction of equipment etc. in anticipation of the full-scale use of hydrogen from renewable energy
Carry	<ul style="list-style-type: none"> ✓ Building an international supply chain to use overseas Green Hydrogen etc. ✓ Promoting technological development by the private sector to spread hydrogen 	<ul style="list-style-type: none"> ➤ Strengthen collaboration with overseas cities etc. ➤ Consider and build a supply system, including pipelines, for hydrogen from overseas ➤ Cooperate with the private sector to develop technology for hydrogen transportation and storage 	<ul style="list-style-type: none"> ✓ International collaboration promotion project for social implementation of hydrogen ✓ Project for creating a hydrogen supply system including pipelines ✓ Project for promoting technology development to solve issues with hydrogen implementation in Tokyo
Use	<ul style="list-style-type: none"> ✓ Expansion of supply destinations that accept Green Hydrogen ✓ Improvement of the refueling environment to promote the switch to FCVs ✓ Further development and mass production of hydrogen-based mobility 	<ul style="list-style-type: none"> ➤ Provide incentives to businesses utilizing Green Hydrogen ➤ Enhance the hydrogen refueling environment by encouraging hydrogen refueling station development from every angle ➤ Make various forms of mobility hydrogen compatible 	<ul style="list-style-type: none"> ✓ Packaged support project that combines hydrogen refueling stations with car sharing and other services ✓ Project for supporting the implementation of fuel cell trucks ✓ Project for supporting the early implementation of FC mobility at airports etc.

TMG will establish its own hydrogen exchange to accelerate the social implementation of hydrogen energy

Summary of Projects

Promotion of hydrogen use in the transport field

- Promoting the installation of hydrogen refueling stations (status of installation, multi-energy stations)
- Support for the introduction of fuel cell vehicles (FCVs, buses, trucks, forklifts)
- Utilizing hydrogen for commercial and industrial vehicles

Promotion of the effective use of Green Hydrogen etc.

- Building the foundation for the use of Green Hydrogen (cooperation with Yamanashi Prefecture, production of Green Hydrogen by TMG)
- Use of hydrogen during the Tokyo 2020 Games
- Support for the introduction of equipment etc. producing/using Green Hydrogen and evaluation of its environmental value
- Project for creating a hydrogen supply system including pipelines
- Hydrogen exchange (collaboration with H2Global)
- International collaboration on hydrogen (International Conference "HENCA Tokyo 2023," collaboration with overseas cities etc.)
- Holding of the Tokyo Green Hydrogen Roundtable

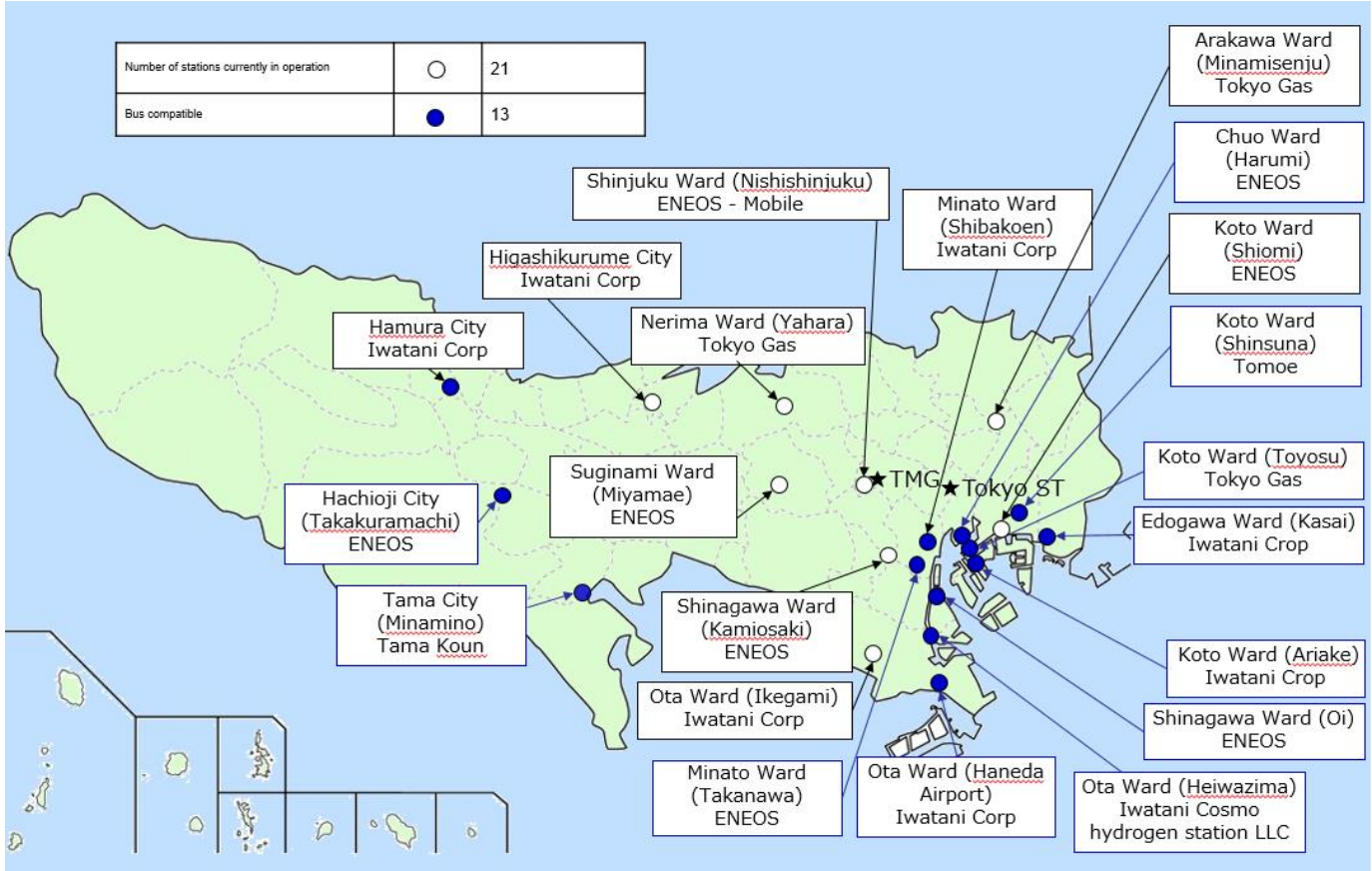
Fostering momentum

- A variety of collaborations to raise awareness of hydrogen
- Operation of communication tools (Tokyo Hydrogen Vision, website featuring hydrogen energy "Tokyo Hydrogen Navigator")

Hydrogen use in the Transportation Sector

Installation of hydrogen refueling stations in Tokyo

As of April 2024, there are 21 hydrogen refueling stations, 13 of which are bus-compatible



Utilization of Tokyo-owned land

A station for large and small fuel cell trucks will be built on Tokyo-owned land in Shinsuna, Koto Ward.

Promotion of hydrogen use in the transport field

Support for multi-energy stations

Subsidies for the establishment of hydrogen refueling stations

Large stations: 100% subsidized up to 1 billion yen combined with national government subsidy

Medium-sized stations: Up to 174 million yen, 290 million yen for SMEs (in the model case of off-site LH2 1 lane)

Subsidy rate: 4/5, 5/5 for SMEs

Small stations: Up to 20 million yen, 50 million yen for SMEs

Subsidy rate: 4/5, 5/5 for SMEs

Extension/retrofits to accept buses/trucks: Up to 400 million yen

Subsidy rate: 4/5, 5/5 for SMEs (TMG only)

Installation of barrier walls: Up to 30 million yen

Subsidy rate: 4/5, 5/5 for SMEs (TMG only)

Removal/relocation of existing equipment: Up to 30 million yen (including when extension/retrofits are made to accept buses/trucks)

Subsidy rate: 4/5, 5/5 for SMEs (TMG only)

Subsidy for operational losses due to conversion/ installation: Up to 5 million yen (including when extension/retrofits are made to accept buses/trucks)

Subsidy rate: 10/10 (TMG only)

Installation of next generation canopies: Up to 100 million yen

Subsidy rate: 4/5, 5/5 for SMEs (TMG only)

Land development in unserved areas: Up to 200 million yen

Subsidy rate: 4/5, 5/5 for SMEs (TMG only)

Construction costs in unserved areas: Up to 100 million yen

Subsidy rate: 4/5, 5/5 for SMEs (TMG only)

Installation of hydrogen pipelines: Up to 1 billion yen

Subsidy rate: 4/5, 5/5 for SMEs (TMG only)

Subsidies for the management expenses of hydrogen refueling stations

Stations for passenger cars

Up to 5 million yen, 10 million yen for SMEs

Bus acceptance (1-facility system)

Up to 10 million yen, 20 million yen for SMEs

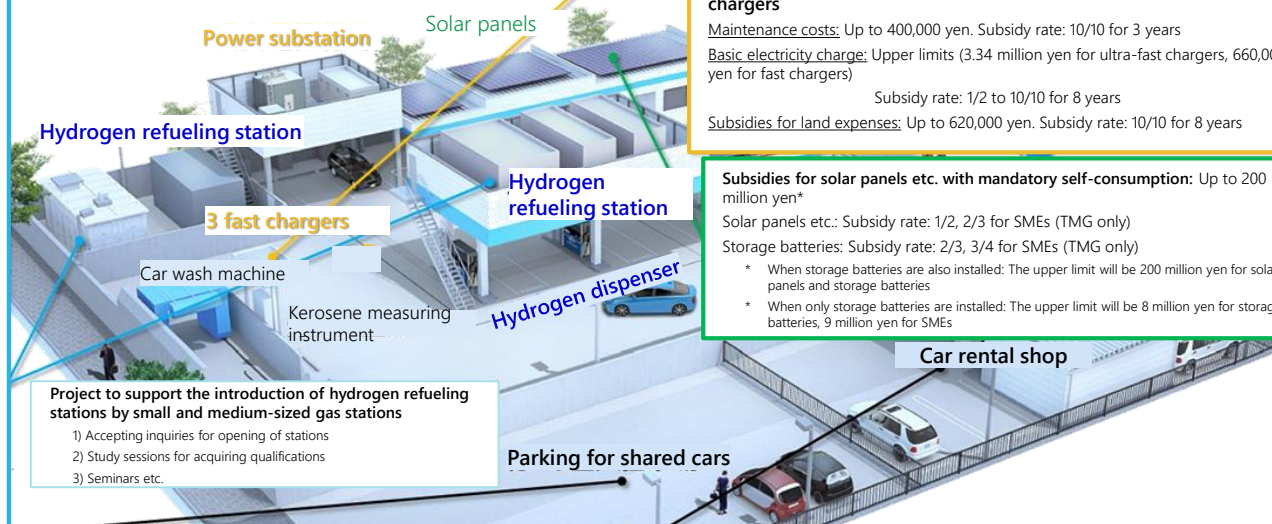
Bus acceptance (2-facility system)

Up to 20 million yen; 40 million yen for SMEs

Subsidies for the land expenses of hydrogen refueling stations

Subsidy rate: 4/5, 5/5 for SMEs (TMG only) (existing rate is 1/4)

- Support for environmentally friendly multi-energy stations, including the installation of hydrogen refueling stations, fast chargers, and renewable energy equipment



Project to support the introduction of hydrogen refueling stations by small and medium-sized gas stations

- 1) Accepting inquiries for opening of stations
- 2) Study sessions for acquiring qualifications
- 3) Seminars etc.

Packaged subsidies for car sharing etc. (TMG only)

Cost of establishing hydrogen refueling stations: Up to 500 million yen. Subsidy rate: 4/5, 5/5 for SMEs

Management expenses of hydrogen refueling stations: Up to 5 million yen, 10 million yen for SMEs

Purchase cost of FCVs for car sharing etc.: Up to 3 million yen

Cost of starting-up car sharing business etc.: Up to 5 million yen. Subsidy rate: 1/2

Subsidies for the introduction of ultra-fast and fast chargers^{*1}

Purchase costs: Upper limits depend on models^{*2}. Subsidy rate: 10/10

Installation costs: Up to 16 million yen for ultra-fast chargers^{*3}

60,000 yen/kW or 3,090,000 yen for fast chargers^{*3}

Subsidy rate: 10/10

Power substation retrofit cost^{*4}: Up to 4.35 million yen

Remote control energy management equipment introduction cost: Up to 300,000 yen

^{*1} For chargers with communication functions, the upper limits will be increased by 100,000 yen.

^{*2} For chargers with storage batteries, the upper limits will be increased by 3.35 million yen.

^{*3} If chargers are installed at large facilities, the subsidies will be increased under certain conditions.

^{*4} The cost will be covered only when chargers with a total output of 50 kW or more are installed.

Subsidies for the management expenses of ultra-fast and fast chargers

Maintenance costs: Up to 400,000 yen. Subsidy rate: 10/10 for 3 years

Basic electricity charge: Upper limits (3.34 million yen for ultra-fast chargers, 660,000 yen for fast chargers)

Subsidy rate: 1/2 to 10/10 for 8 years

Subsidies for land expenses: Up to 620,000 yen. Subsidy rate: 10/10 for 8 years

Subsidies for solar panels etc. with mandatory self-consumption: Up to 200 million yen*

Solar panels etc.: Subsidy rate: 1/2, 2/3 for SMEs (TMG only)

Storage batteries: Subsidy rate: 2/3, 3/4 for SMEs (TMG only)

* When storage batteries are also installed: The upper limit will be 200 million yen for solar panels and storage batteries

* When only storage batteries are installed: The upper limit will be 8 million yen for storage batteries, 9 million yen for SMEs

Subsidies for rental or shared ZEVs

EVs/PHVs with a vehicle-to-load function: 750,000 yen, those without the function: 650,000 yen

FCVs with a vehicle-to-load function: 2 million yen, those without the function: 1.9 million yen

* The subsidies may be increased under certain conditions

EV motorcycles: Up to 530,000 yen

(These subsidies have been derived by subtracting national subsidies from the price differences from gasoline vehicle prices and adding 50,000 yen to the resulting amounts)

Perspective of multi-energy station (third party perspective)

Promotion of hydrogen use in the transport field

Expanded use of fuel cell vehicles

Goal **Phasing out the sale of new gasoline-only passenger cars in Tokyo: 100% by 2030**
 * **1,539 fuel cell vehicles (FCVs) were owned as of the end of March 2023.**
 Source: Statistics of Automobile Inspection & Registration Information Association

Subsidy projects

● **Project to expand the use of fuel cell vehicles**

- Targets: Fuel cell vehicles
- Subsidy: **1.1 million yen** for FCVs with a vehicle-to-load function or 1.0 million yen for FCVs without a vehicle-to-load function
- *Another subsidy is available for vehicles from automobile manufacturers that have a certain level of sales of ZEVs and others.
- *Subsidies available for the following
 - **Additional 250,000 yen** if 100% renewable electricity contract is concluded or solar power generation equipment (2 kW) is installed
 - **Additional 100,000 yen** if Companies introduce V2B



Fuel cell vehicle
© Toyota Motor Corporation

● **Project to introduce ZEVs to car sharing and rental services**

- Targets: Fuel cell vehicles introduced for car sharing or rental services
- Subsidy: **2.0 million yen** for FCVs with a vehicle-to-load function or 1.9 million yen for FCVs without a vehicle-to-load function
- * Another subsidy is available for vehicles from automobile manufacturers that have a certain level of sales of ZEVs and others.
- * **Additional 100,000 yen** if Companies introduce V2B

Hydrogen use in the Transportation Sector

Promotion of Fuel Cell Buses

Aim To have 300 'zero emission buses' in operation by 2030

Current Situation Number of Fuel cell buses in Tokyo
118 (As of March 2024)

Subsidy

● **Support for introduction costs until FY 2030**

【Basic subsidy】 Upper limit of 50,000,000JPY*

*This figure is reached when you subtract the total government subsidy and the cost correspondent to a typical diesel bus

【Additional subsidy】 Upper limit of 20,000,000JPY*

- * 1) dependent on a written agreement to introduce at least 5 units for 5 years,
- 2) must also go toward the maintenance of hydrogen stations

● **Support for fuel costs until FY 2025**

Subsidies for hydrogen refueling stations in Tokyo to buses with a Tokyo license plate to account for the difference in sale price compared to diesel fuel.



Fuel Cell Bus
 ©TMG Bureau of Transportation

Hydrogen use in the Transportation Sector

Promote the Early Implementation of Fuel Cell Trucks

Current Status

- Participating in and collaborating with large-scale social implementation projects involving automobile manufacturers, shippers, logistics companies, etc.
- Number of Light-scale fuel cell trucks introduced in Tokyo area : **79** (as of the end of March 2024)

Project Overview

- Introducing Large Fuel Cell trucks, etc. from trunk logistics to last mile delivery
 - Small FC trucks: Approximately 190 units (to be introduced gradually from 2023)
 - Large FC trucks: Approximately 50 units (to be introduced gradually from 2025)
- Building an energy management system integrated with operation management



Light-duty Fuel Cell Truck



Large Fuel Cell Truck

Subsidy projects

● Project for supporting the implementation of fuel cell trucks until FY 2030

Subsidies for vehicle introduction

Maximum subsidies: **13 million yen for a small truck, 56 million yen for a large truck**

Subsidization: In addition to the national government subsidy, these subsidies are provided up to the price of a diesel vehicle with equivalent specifications

Subsidies for the difference in fuel costs (Maximum subsidies are revised every fiscal year based on the price difference from light oil)

Maximum subsidies: **2 million yen per truck & year for small trucks, 9 million yen per truck & year for large trucks**

Subsidization: The subsidies are calculated by multiplying a unit of subsidies (price difference between hydrogen and light oil) by travel distance and subtracting the national government subsidy etc. from the resulting amounts

Promotion of hydrogen use in the transport field

Implementation support for fuel cell garbage trucks

- Provide support to municipalities that want to use FC garbage trucks on a trial basis or aim at the intensive introduction of the trucks

Trial use

- Introduce five trucks in five wards/cities and then introduce them in another five wards/cities to have each truck used in each ward/city for about a year and a half

Trial completed in Chiyoda Ward

Trial scheduled in Taito Ward, Katsushika Ward, Edogawa Ward, Hachioji City, Machida City, Tama City, Higashikurume City, Kiyose City, Higashimurayama City

Intensive introduction

- Cover the vehicle costs of FC garbage trucks delivered to municipalities planning their intensive introduction (Provide additional subsidies if hydrogen refueling stations are also invited)

Introduction scheduled in Koto Ward, Higashikurume City, Kiyose City, Nishitokyo City



Fuel cell garbage truck

Utilizing hydrogen for commercial and industrial vehicles

Fuel cell forklift (FCFL)

- Match businesses considering introducing FCFLs with relevant businesses to allow trial use for a certain period of time
- Subsidize part of FCFL vehicle prices for businesses introducing it

Ground support equipment (GSE)

- Provide support for businesses that convert existing GSE to FC vehicles etc. and verify the effects with the aim of promoting the conversion at airports and other places
- Provide subsidies for businesses to introduce FC GSE, including towing tractors



Fuel cell forklift

Promoting the Use of Green Hydrogen

Collaboration with Yamanashi Prefecture



Project outline

- Conclusion of a Basic Agreement on Promoting the Use of Green Hydrogen with Yamanashi Prefecture
- Collaboration in **promoting the use of Green Hydrogen from Yamanashi Prefecture in Tokyo**, and **encouraging the development of technologies covering the production of Green Hydrogen through its use**



Basic Agreement Signing event on October 28, 2022 with Yamanashi Governor Nagasaki and Tokyo Governor Koike

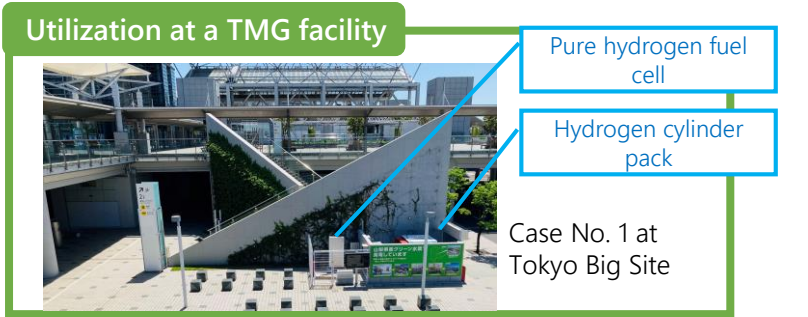
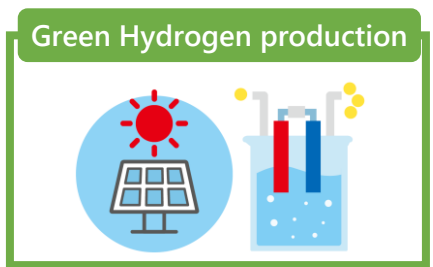


New Energy and Industrial Technology Development Organization (NEDO) Developing P2G system technology for building a CO₂-free hydrogen powered society from 2016 to 2022
* Yonekurayama Electric Power Storage Technology Research Site in Yamanashi Prefecture © Yamanashi Prefectural Enterprise Bureau

Building the foundation for the use of Green Hydrogen - Utilization at a TMG facility for creating introduction examples

Project outline

- A pure hydrogen fuel cell has been installed at a TMG facility, allowing TMG to demonstrate the advantages of using Green Hydrogen produced in Yamanashi Prefecture.
- **PR for visitors has also been arranged.**



Promotion of the effective use of Green Hydrogen etc.

Green Hydrogen production in Tokyo

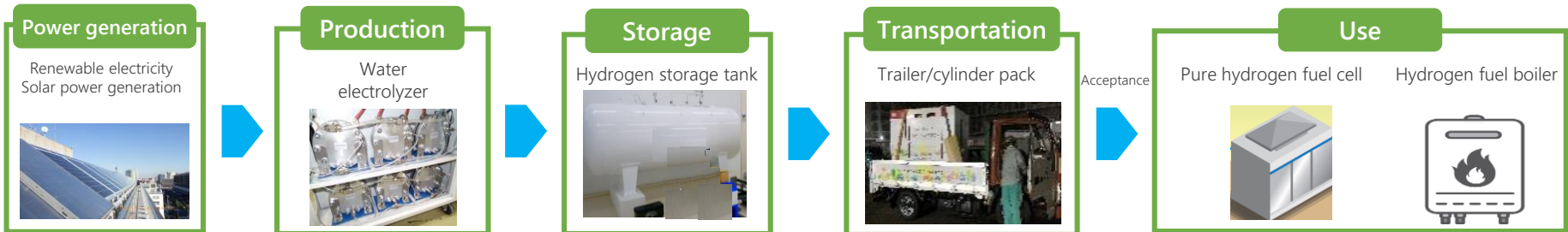
Project outline (I)

- Present TMG's model for producing and using Green Hydrogen by developing such efforts as designing Green Hydrogen production facilities to be installed on TMG-owned land
- Promote the broader use of Green Hydrogen by encouraging its implementation in Tokyo

Project outline (II)

- Produce Green Hydrogen in Tokyo and develop production and supply centers to supply it in Tokyo
- Install solar panels and hydrogen production equipment on the Central Breakwater to produce hydrogen through renewable energy
- Implement the project in cooperation with the Tokyo Bay eSG Project in FY 2023 and FY 2024

Process from hydrogen production to use



Promotion of the effective use of Green Hydrogen etc.

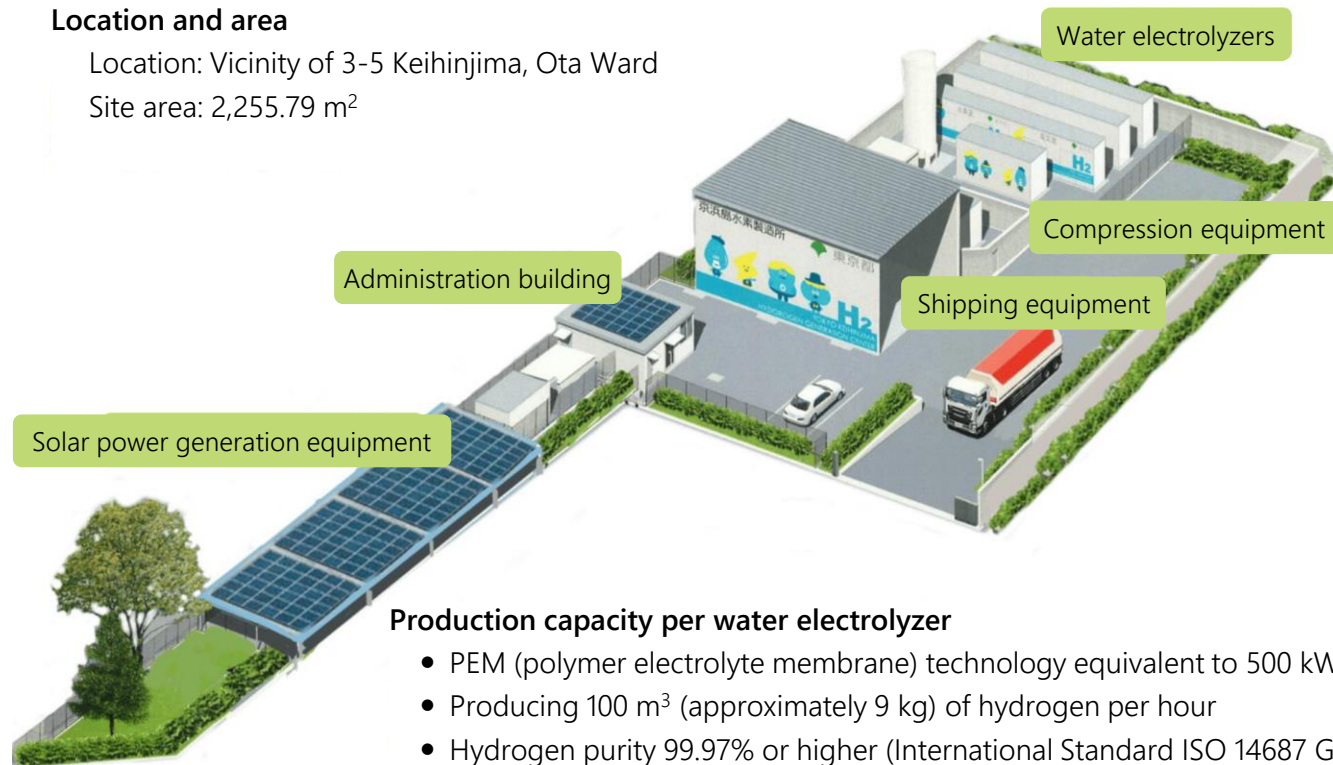
Green Hydrogen production on TMG-owned land

- Construct Tokyo's first full-fledged hydrogen production facility on TMG-owned land in Keihinjima, Ota Ward, as a joint project with Yamanashi Prefecture (Corporate Department) with which a Basic Agreement on Promoting the Use of Green Hydrogen has been concluded
- Start operating one of three water electrolyzers in FY 2024, and operate all of them in the future

Location and area

Location: Vicinity of 3-5 Keihinjima, Ota Ward

Site area: 2,255.79 m²



Production capacity per water electrolyzer

- PEM (polymer electrolyte membrane) technology equivalent to 500 kW per system
- Producing 100 m³ (approximately 9 kg) of hydrogen per hour
- Hydrogen purity 99.97% or higher (International Standard ISO 14687 Grade-D)

* The above is a perspective as of February 2024 and may change in the future.

Promoting the Use of Green Hydrogen

Use of hydrogen produced in Fukushima Prefecture during the Tokyo 2020 Games

Hydrogen used at the Relaxation House and residential buildings in the Olympic Village

- Hydrogen produced with renewable energy in Fukushima Prefecture was used at the Relaxation House and in some of the residential buildings in the Olympic Village.



©Tokyo 2020 / Uta MUKUO

Relaxation House in the Olympic Village

Hydrogen used for the Olympic cauldron and relay torches

- Hydrogen was used for the first time in the history of the Games for the Olympic cauldron and some of the relay torches.
- In some of these cases the hydrogen used was produced with renewable energy in Fukushima Prefecture.



Olympic cauldron

Promotion of the effective use of Green Hydrogen etc.

Support for businesses introducing equipment producing or using hydrogen (1)

Project outline

- **Project to promote the introduction of equipment in anticipation of the full-scale use of hydrogen from renewable energy**

Subsidize hydrogen-based equipment etc. that promote the implementation of hydrogen energy in Tokyo

Subsidized equipment		Subsidy rate (maximum subsidy)
Equipment using hydrogen from renewable energy	Renewable energy equipment, water electrolyzers * Installations in the service area of TEPCO are also applicable	1/2 (370 million yen)
Equipment using hydrogen	Pure hydrogen fuel cells, hydrogen boilers, hot water generators, hydrogen burners	2/3 (Subject to equipment)
Equipment carrying hydrogen	Hydrogen cylinder packs, hydrogen trailers, solid metal hydride, hydrogen supply equipment	2/3 (Subject to equipment)

Support for businesses introducing equipment producing or using hydrogen (2)

Goal **30 MW of commercial and industrial fuel cells by 2030**

Project outline

- **Project to promote the formation of smart energy areas using hydrogen in the commercial and industrial sectors**

- Subsidized equipment: Commercial and industrial fuel cells
- Subsidy rate (maximum subsidy): **2/3 (333 million yen)**

Promoting the Use of Green Hydrogen

Support for businesses introducing equipment producing or using hydrogen (3)

Project outline

● Project to support the implementation of equipment producing or using Green Hydrogen (from FY 2023)

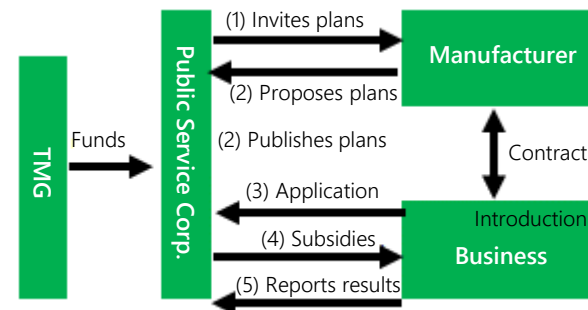
Hydrogen equipment manufacturers will propose model plans that package equipment covering production through use of Green Hydrogen in a form suitable for installation in Tokyo. Businesses will explore installation locations and costs by referring to the model plans. TMG will provide support for the introduction of these model plans.

■ Project content

Subsidized equipment	Subsidy rate	Scale	Maximum subsidy
One package ^{*1}	10/10	2	253 million yen
Other than one package		3	177 million yen
Renewable electricity equipment ^{*2}		-	54 million yen

*1 Equipment that integrates hydrogen production through use in a container

*2 Subsidy for scale according to hydrogen production capacity



■ Project sequence

- (1) Start of public invitation of model plans from manufacturers
- (2) The Public Service Corporation will publish proposed model plans. (from August, 2023)
- (3) Based on the published model plans, businesses will apply for subsidies to the corporation, contract with manufacturers, and start construction work for introducing equipment (installation and reporting to be completed by the end of December 2026).
- (4) The corporation will subsidize the introduction costs after businesses complete the introduction.
- (5) Businesses will hold a tour of equipment, disseminate information on it, and report the results to the corporation.

Promotion of the effective use of Green Hydrogen etc.

Certification of businesses using Green Hydrogen and provision of subsidies

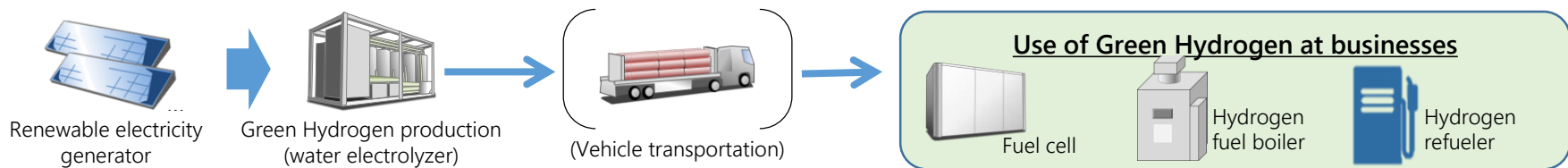
Project outline

• Green Hydrogen Active User Certification System from FY 2024

Certify businesses using Green Hydrogen produced in Japan as Green Hydrogen Active Users

Provide subsidies according to the certification category and certified consumption (amount equivalent to the difference from the case where Gray Hydrogen is used)

Certification category	Description	Requirements		Subsidy rate
		Continuity	Consumption	
On-site type (local production for local consumption)	<ul style="list-style-type: none"> Businesses generate renewable electricity by themselves and use Green Hydrogen produced by equipment at their facilities in Tokyo 	Using Green Hydrogen for 2 months or more a year in the past	Using 100 Nm³ or more of Green Hydrogen a year in the past	2/3
On-site type	<ul style="list-style-type: none"> Businesses are supplied renewable electricity by others and use Green Hydrogen produced by equipment at their facilities in Tokyo 		* Equivalent to refueling 1.6 MIRAI FCVs	3/5
Off-site type	<ul style="list-style-type: none"> Businesses use Green Hydrogen produced in Japan on equipment at their facilities in Tokyo Hydrogen must be transported by ZEVs (EVs or FCVs) or greenhouse gas emissions at the time of supply must be offset 		Using 500 Nm³ or more of Green Hydrogen a year in the past	1/2



Promotion of the effective use of Green Hydrogen etc.

Project for creating a hydrogen supply system including pipelines

- To expand the hydrogen supply in Tokyo in the future, it will be important to procure hydrogen from overseas in addition to producing it in Tokyo and procuring it in Japan.
- The coastal area of Kawasaki City, near Tokyo, has been selected as a receiving port for supply chains of liquefied hydrogen from overseas and is expected to become a hydrogen receiving hub in future years.
- Research will be conducted on supply chains including pipelines in anticipation of accepting hydrogen from overseas in the future.
- To create a hydrogen supply system for the airport coastal area including the airport and its surroundings, a consortium will be set up and a secretariat will be operated to build consensus among stakeholders.

Partnership agreement signed by Kawasaki City, Ota Ward, and TMG

On June 1, 2023, an agreement was concluded to enable the three parties to work together and expand the use of hydrogen, which is an effective means of maintaining and strengthening industrial competitiveness, stabilizing the supply of energy, and realizing carbon neutrality.



Mayor of Kawasaki City, Governor of Tokyo, Mayor of Ota Ward



Image of the expanded use of hydrogen etc. through collaboration among TMG, Kawasaki City, and Ota Ward (Press release June 1, 2023 on the conclusion of the partnership agreement between TMG, Kawasaki City, and Ota Ward)

Promotion of the effective use of Green Hydrogen

Hydrogen exchange

- Announce the idea of launching a hydrogen exchange by working with Germany's H2Global Foundation, known as one of the world's leading organizations promoting hydrogen
- Publish efforts for opening a hydrogen exchange in collaboration with H2Global

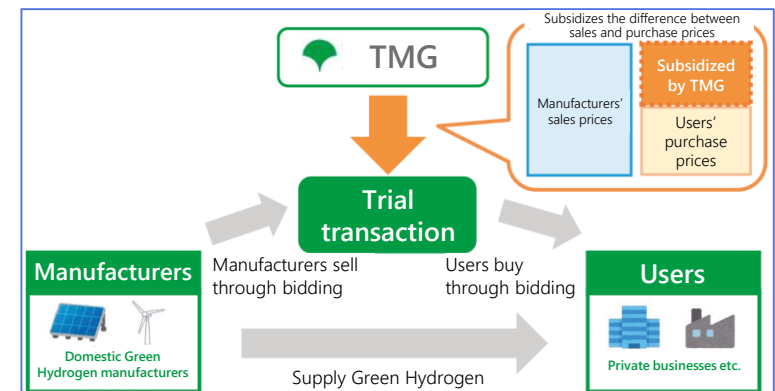
Collaboration Agreement with H2Global Foundation*

- * Established in 2021 with its activities supported by more than 60 companies since then. Funded by the German government and other sources, it compensates for the difference between supply and demand prices, promoting the launch of an effective market
 - Agreement was concluded on February 2, 2024
 - Collaboration aims for information sharing and opinion exchange related to transactions and logistics, research and study on technology trends, and establishment of exchanges together



Trial of hydrogen exchange

Hold a double auction between existing manufacturers and users as a trial transaction for domestic Green Hydrogen, in order to narrow the gap between sales prices desired by manufacturers and purchase prices desired by users



Promotion of the effective use of Green Hydrogen

Holding of the Hydrogen Energy Conference for Action, "HENCA Tokyo 2023"

• A new international conference, "HENCA Tokyo 2023," sponsored by TMG, was held to further advance the creation and technological development of an international hydrogen supply chain.

* HENCA is an abbreviation for Hydrogen Energy Conference for Action.

• Date: November 14, 2023

• Theme: **Social Implementation of Hydrogen Energy by 2030**

The view of the conference was distributed through archive:

<https://www.tokyo-h2-navi.metro.tokyo.lg.jp/tokyo-h2-forum/en/>



Presentation by Tokyo Governor Koike Yuriko



Panel discussion

• After the conference, a joint message was issued toward the social implementation of hydrogen by 2030.

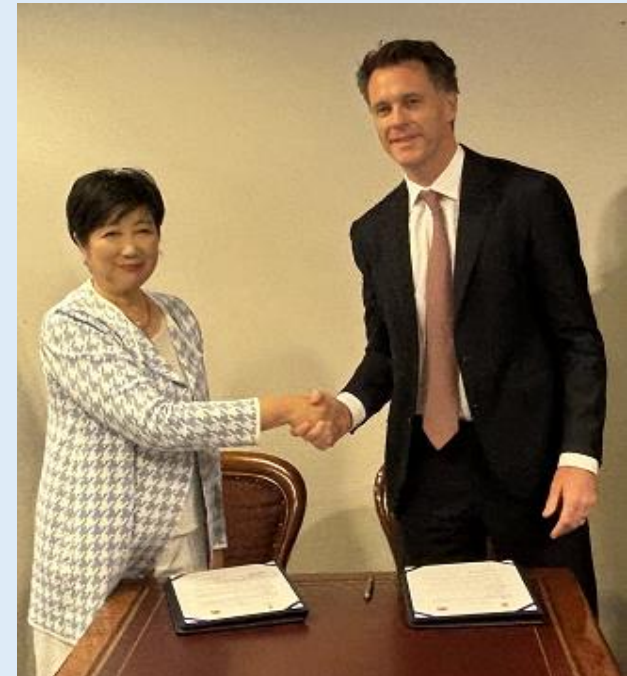
Promotion of the effective use of Green Hydrogen

Strengthening collaboration with overseas cities etc.

- In February 2024, Tokyo Governor Koike Yuriko visited the state of New South Wales, which is celebrating the 40th anniversary of the sister state relationship with Tokyo. She talked with the state's Premier The hon. Chris Minns, MP about collaboration in the future and signed an agreement on exchange and cooperation between the two states.
- An agreement on the social implementation of hydrogen energy was also concluded to reinforce cooperation in hydrogen energy.

Main areas of cooperation:

- (1) Creation of an international supply chain
- (2) Technology development
- (3) Expansion of demand



Governor of Tokyo Premier of New South Wales

Promoting the Use of Green Hydrogen

Holding of the Tokyo Green Hydrogen Roundtable

Outline

- Examples were shared in the discussions between companies and organizations making advanced efforts for expanding the use of Green Hydrogen etc. in August and November 2022 and February and May 2023.

1st Round on August 19, 2022

- Theme: Establishment of an international hydrogen supply chain and the expansion of Green Hydrogen etc.
- Participants: Iwatani Corporation, ENEOS, Kawasaki Heavy Industries, Shimizu Corporation, Sumitomo Corporation, Toshiba Energy Systems, Marubeni Corporation, Miura Industries

2nd Round on November 30, 2022

- Theme: Establishment of a hydrogen supply system including pipelines and the broader use of hydrogen
- Participants: Iwatani Corporation, ENEOS, Tokyo Gas, Toyota Motor Corporation, Ota Ward (observer)

3rd Round on February 14, 2023

- Theme: Hydrogen supply network (Green Hydrogen production and hydrogen transportation method)
- Participants: Asahi Kasei, ENEOS, Obayashi Corporation, Tokyo Gas, Toray, NEDO

4th Round on February 17, 2023

- Theme: Hydrogen supply network in the airport coastal area
- Participants: Kawasaki City, Ota Ward

5th Round on May 24, 2023

- Theme: Revision of the Basic Hydrogen Strategy of the national government and the formulation of the Hydrogen Industry Strategy and Hydrogen Safety Strategy
- Participants: Asahi Kasei, ENEOS, Kawasaki Heavy Industries, Chiyoda Corporation, Panasonic Holdings, Hitachi Zosen, Mitsui & Co., Ltd, Hydrogen Value Chain Promotion Council, High Pressure Gas Safety Institute

6th Round on December 18, 2023

- Theme: Exchange of opinions on hydrogen supply systems including pipelines etc.
- Participants: JFE Steel, Tokyo Gas, Tokyo Gas Network, Nishimura & Asahi, High Pressure Gas Safety Institute, Tokyo Energy Issues Advisory Board committee member

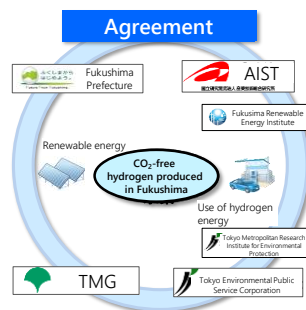


Fostering Momentum

A variety of collaborations to raise awareness of hydrogen

Agreements with Fukushima Prefecture, AIST, and Environmental Public Service Corporation

- Fukushima Prefecture, the National Institute of Advanced Industrial Science and Technology, Tokyo Environmental Public Service Corporation, and TMG signed a four-party agreement for the expansion of Green Hydrogen in 2016.



Basic agreement with NEDO

- An agreement was concluded with NEDO in 2020 to obtain technical knowledge for TMG's policies, and collaborate on information dissemination and awareness raising.



Hydrogen information center "Tokyo Hydrogen Museum"

- Easy-to-understand information on hydrogen is provided for all, from children to the elderly, at the Tokyo Hydrogen Museum, a comprehensive learning facility established in 2016 where visitors can enjoy learning about hydrogen through a hands-on experience.



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Tokyo Hydrogen Promotion Team

- To foster a movement toward the expansion of hydrogen energy in both public and private sectors, the Tokyo Hydrogen Promotion Team was formed in 2017 in cooperation with more than 100 private companies and local governments in Tokyo.



Fostering Momentum

Formulation of the Tokyo Hydrogen Vision

Outline of the Tokyo Hydrogen Vision

- Show the **Tokyo of 2050 with hydrogen energy widespread.**
- Present the **direction of hydrogen initiatives toward the milestone of 2030.**
- Encourage the **understanding of Tokyo residents and participation of businesses** by communicating the efforts of companies to make hydrogen more familiar.



Hydrogen mascot "Suison"
© Tokyo Environmental Public Service Corporation

Chapter 1 Climate Crisis and Hydrogen Energy
Significance of hydrogen for the climate crisis and the realization of a decarbonized society

Chapter 2 Visions for 2050
Green Hydrogen fully utilized in all fields, including transport, power generation, and industrial fields, supporting the massive introduction and supply of renewable energy as well as contributing to decarbonization and a stable energy supply

Chapter 3 Direction of Actions toward a 2030 Carbon Half
Expanding the use of Green Hydrogen, ensuring the broader use of hydrogen in the transport and other fields



Fostering Momentum

Creating a website featuring hydrogen energy: Tokyo Hydrogen Navigator

Outline of Tokyo Hydrogen Navigator

- A website that aggregates information on hydrogen energy to be opened in June 2023
- Aiming to provide an opportunity for Tokyo residents to become more familiar with hydrogen and for businesses to consider participating in the hydrogen business



Main content

The latest information on hydrogen energy

Efforts and support measures of TMG, including subsidy information

Activities of the Tokyo Hydrogen Promotion Team

Expansion of hydrogen energy in Tokyo

Introduction of kids' page, videos, and learning facilities

<https://www.tokyo-h2-navi.metro.tokyo.lg.jp/>

*Japanese only

