

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



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

As of September 2025

Visions for 2050 and Actions toward 2030

Visions for 2050

Green Hydrogen

Green Hydrogen will be **fully used** to support the **massive introduction and supply of renewable energy**.



Facility utilizing Green Hydrogen
© Toshiba Energy Systems & Solutions Corporation

Transport field

Green Hydrogen will be **used as transportation fuel** for large vehicles, ships, aircraft, etc.



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

Various fields (power generation, industrial, commercial, and residential fields)

Green Hydrogen will be used as a **raw material** for **hydrogen power generation, heat demand**, including methanation, and industrial use.



Image of verification equipment for hydrogen production/storage/power generation © Mitsubishi Heavy Industries, Ltd.

Mid- to Long-Term Outlook

Green Hydrogen

More **cases of introducing** Green Hydrogen

Foundation created for using Green Hydrogen

- **Full use** of Green Hydrogen in various fields
- Supporting the **massive introduction of renewable energy**

Transport field

Hydrogen used for **passenger cars, buses, trucks, etc.**

Hydrogen used for **ships, etc.**

Hydrogen used for **aircraft and other large transportation equipment**

Various fields

- Hydrogen used for **regional power generation**
- Use of **fuel cells**

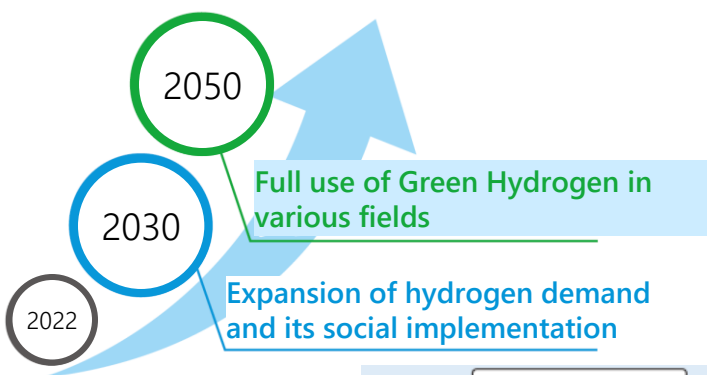
- **Commercialization of hydrogen power generation**
- Introduction of **methanation**
* Creation of supply chain is essential

- Hydrogen used as **adjustment capacity for electricity**
- **Decarbonization of heat**
- Used as **raw material** in industry

Initial stage (until around 2025) Medium term (until around 2030) »

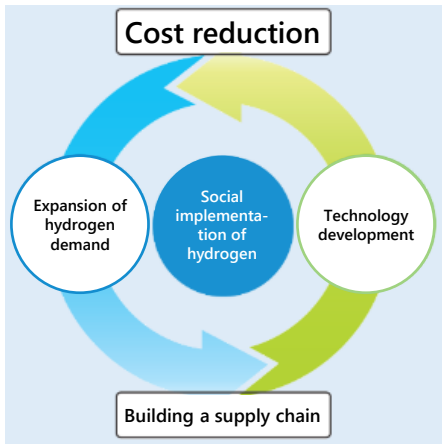
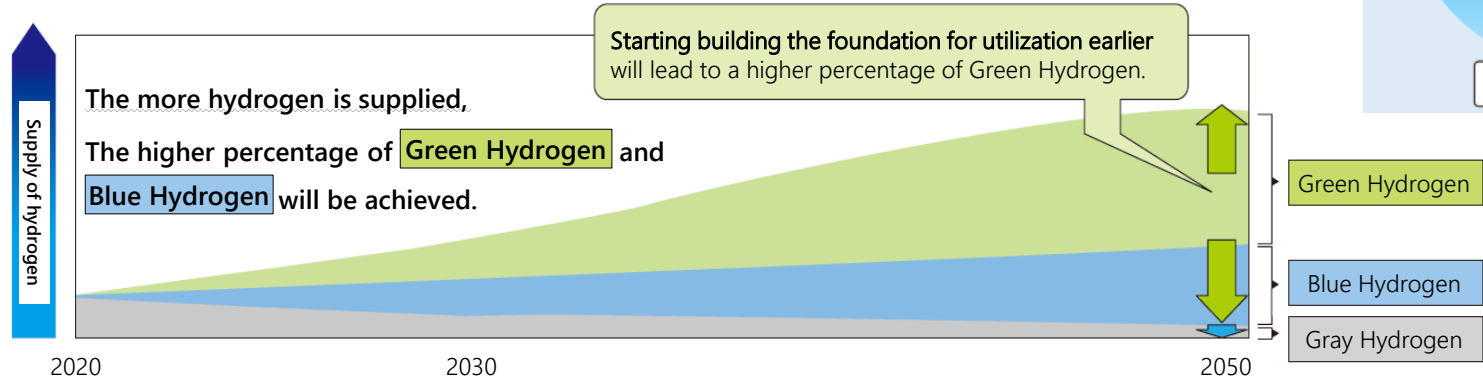
Visions for 2050 and Actions toward 2030

- In the decarbonized society of **2050**, **Green Hydrogen** is expected to be **fully used** in various fields and contribute to decarbonization in transport and other fields.
- **Toward 2030**, it is **essential to** lay the foundation for the full use of Green Hydrogen and **accelerate the expansion of hydrogen demand and its social implementation.**



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

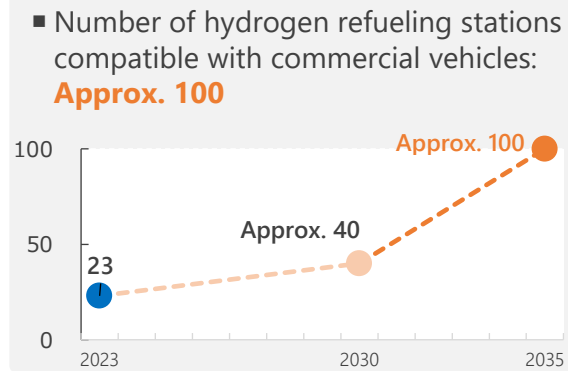
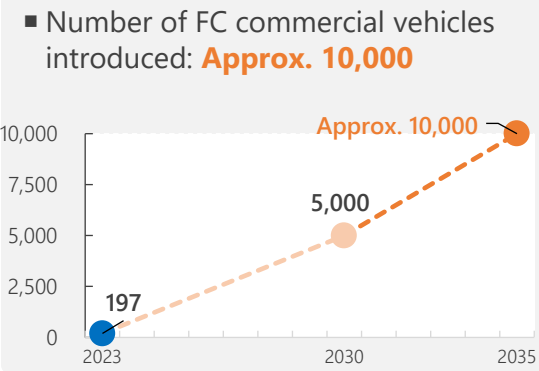
■ Image of Green Hydrogen expansion



Tokyo 2050 Strategy (Development toward 2035)

Policy goals

- Establishing a Green Hydrogen supply system
Start of supply from other prefectures (status quo)
Increase in supply from other prefectures in addition to **production in Tokyo** (2030)
Establishing a supply system at home & abroad (2035)



Outline of the three-year action plan

| Specific initiatives | End of FY 2024 (estimate) | Annual plans | | |
|---|--|---|--|----------------------------------|
| | | FY 2025 | FY 2026 | FY 2027 |
| Production and supply centers installed by TMG | Installing production and supply centers | Installing production and supply centers Starting partial operation | Installing production and supply centers | Full-scale operation (tentative) |
| Promoting the industrial use of Green Hydrogen | — | Promoting use in cosmetics, fertilizers, and other fields | | |
| Initiatives for launching a Green Hydrogen exchange | Designing the hydrogen exchange system and conducting trial transactions | Refining system design, expanding trial transactions | | |
| Promoting the introduction of FC commercial mobility | Supporting the introduction of FC buses and trucks | Supporting the introduction of FC buses, taxis, and trucks (subsidy, etc.) | | |
| Promoting the installation of hydrogen refueling stations | — | Promoting support for expanded installations, exploring further support initiatives | | |
| Comprehensive support for hydrogen mobility and stations | — | Comprehensive support including generating mobility demand and matching it with station operators | | |

Development toward 2035

- Procuring hydrogen in Tokyo, including Green Hydrogen production in Keihinjima
- Establishing a hydrogen supply system from other prefectures and overseas
- Expanding hydrogen use in FC commercial mobility to increase hydrogen demand
- Encouraging the installation of hydrogen refueling stations compatible with commercial vehicles by expanding subsidies for hydrogen refueling stations and enhancing matching between hydrogen mobility demand and hydrogen refueling station operators
- Further expanding the trial transactions of Green Hydrogen to establish a hydrogen exchange

Tokyo 2050 Strategy (FY 2025 Projects)

■ Including projects of bureaus/departments other than the Bureau of Industrial and Labor Affairs

- To promote the **production, transportation, and utilization of Green Hydrogen** that emits no CO₂ during production or other processes, TMG encourages **its social implementation** through **enhanced efforts on both the supply and demand sides, building domestic and international supply chains** for it and **expanding its introduction** to commercial vehicles and the industrial field.

Main initiatives:

Establishing a hydrogen supply system

- ◆ **Expanding the production of Green Hydrogen and building pipelines**
 - Develop **Tokyo's first large-scale Green Hydrogen production base** in Keihinjima
 - Promote **development of a Green Hydrogen production facility** using solar power generation at the **Inner Central Breakwater Reclamation Area**.
 - Provide support for **feasibility studies** for businesses in addition to holding a study council to **build a hydrogen pipeline supply system** **[Expanded]**
- ◆ **Promoting the installation of hydrogen refueling stations**
 - Open **Japan's first hydrogen refueling station in a bus terminal** to expand the **introduction of fuel cell buses** into the **Toei Bus Lines** **[Expanded]**
 - **Install Tokyo's first Green Hydrogen refueling station in Nishi-Shinjuku** **[New]**
 - Expand **subsidies for the installation and operation costs** and provide **hands-on support** for small and medium-sized businesses in opening their stations **[Expanded]**

Covering various forms of mobility

- **Expand subsidies for the introduction of fuel cell trucks and buses**, and subsidize the cost of conversion to **hydrogen engine trucks** **[Expanded]**
- Strengthen support for local governments that will introduce **fuel cell garbage trucks** **[Expanded]**
- Subsidize the **introduction and fuel costs of fuel cell taxis** **[New]**
- **Provide comprehensive support for hydrogen mobility and refueling stations** by generating hydrogen mobility demand and facilitating matching with hydrogen refueling station operators **[New]**
- Introduce **TMG-owned vessels** equipped with **hydrogen fuel cells**
- **Foster momentum** by taking advantage of **hydrogen trains** **[Expanded]**
- **Subsidize the cost of replacing ground support equipment with fuel cell-powered alternatives** at **Haneda Airport**

Effective use of hydrogen

- ◆ **Promoting hydrogen use in the industrial fields and the use of hydrogen facilities**
 - Research the **applicability of Green Hydrogen produced in Tokyo as a raw material in the chemical field including cosmetics** and its suitability for **fertilizer production and other fields** **[New]**
 - Conduct **trial production of green methane** using **Green Hydrogen produced in Tokyo** and **biomass-derived CO₂ from Morigasaki Water Reclamation Center** **[New]**
 - Subsidize the cost of **introducing equipment for the production, transportation, or utilization of Green Hydrogen** **[Expanded]**
 - Use domestically produced **Green Hydrogen** in Tokyo **[Expanded]**
- ◆ **Advanced utilization in the coastal area**
 - **Utilize hydrogen energy** through **hydrogen supply** to residential blocks via pipelines at the former Olympic Village in Harumi, which is in practical use for the first time in Japan
 - Encourage the introduction of **fuel cell-powered cargo handling equipment** at the **Port of Tokyo**
 - Explore the implementation of **hydrogen mixed combustion boilers** and **hydrogen piping technology** using a utility tunnel based on the **Tokyo Waterfront City Carbon Neutral Strategy**

Promoting domestic and international collaboration

- **Conclude agreements with other local governments** to expand hydrogen supply and demand **[New]**
- Expand the **trial transactions of Green Hydrogen** to establish a hydrogen exchange **[Expanded]**
- Host the **International Conference "HENCA Tokyo"** to encourage the widespread adoption of hydrogen energy and promote collaboration with overseas jurisdictions
- Promote the **creation of an international supply chain** in cooperation with **overseas jurisdictions** **[Expanded]**
- Hold the **Tokyo Green Hydrogen Roundtable** to discuss with companies making advanced efforts

Overview of FY 2025 Budget

Accelerate the social implementation of hydrogen energy 18.1 billion yen(FY2025) (17.7 billion yen (FY2024))

⇒ Invest in Produce, Carry, and Use in order to realize a society where hydrogen is used everywhere

| | Key issues | Direction | Main efforts in FY 2025 |
|---------|--|--|--|
| 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 of Tokyo as well➤ Provide support for Green Hydrogen production | <ul style="list-style-type: none">✓ Green Hydrogen production and utilization projects✓ Green Hydrogen utilization projects✓ Project to promote the introduction of equipment etc. for the social implementation of Green Hydrogen✓ Project to promote the industrial use of Green Hydrogen |
| 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 accelerate hydrogen use | <ul style="list-style-type: none">➤ Strengthen collaboration with overseas jurisdictions➤ 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 promoting project for social implementation of hydrogen✓ Project to create a hydrogen supply system including pipelines✓ Project to promote technological development to solve issues associated with hydrogen implementation in Tokyo |
| Use | <ul style="list-style-type: none">✓ Expansion of supply destinations that accept Green Hydrogen✓ Improvement of the refueling infrastructure 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➤ improve the hydrogen refueling infrastructure by encouraging hydrogen refueling station installation from every angle➤ Make various forms of mobility hydrogen compatible and develop them into hydrogen use in the port area | <ul style="list-style-type: none">✓ Project to assess the environmental value of Green Hydrogen and promote its utilization✓ Comprehensive support project for accelerating the widespread adoption of hydrogen mobility and refueling stations✓ Project to support the implementation of fuel cell trucks✓ Project to support the early implementation of FC mobility at airports etc. |

⇒ TMG is also considering the launch of a hydrogen exchange, a mechanism to connect "Produce," "Carry," and "Use," to stimulate the supply and demand of Green Hydrogen and revitalize its trading.

Summary of Projects

Promotion of hydrogen use in the transport field

- Promoting the installation of hydrogen refueling stations (details of FY 2025 subsidy expansion, main subsidy details, status of installation)
- Support for the introduction of fuel cell vehicles (FCVs, buses, trucks)
- Utilizing hydrogen for commercial and industrial vehicles (FC garbage trucks, FC forklifts)

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, utilization in various fields)
- Green Hydrogen from Fukushima Prefecture (use of hydrogen during the Tokyo 2020 Games in collaboration with Fukushima Prefecture)
- Support for the introduction of equipment etc. producing/using Green Hydrogen and the certification system for businesses using Green Hydrogen
- Project for creating a hydrogen supply system including pipelines
- Initiatives for launching a hydrogen exchange, including collaboration with H2Global
- International collaboration on hydrogen (International Conference "HENCA Tokyo," collaboration with overseas jurisdictions)
- Holding of the Tokyo Green Hydrogen Roundtable

Technological development for the widespread adoption of hydrogen

- Project for promoting technological development to address issues associated with hydrogen implementation in Tokyo

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")

Promotion of Hydrogen Use in the Transport Field

Promoting the installation of hydrogen refueling stations Expansion of subsidies for installation and operation from FY2025

Expansion details

(1) Extended subsidies for hydrogen refueling station installation

Installation costs: Subsidies for buildings, such as administration buildings and canopies

Provide subsidies for buildings, such as administration buildings and canopies

Operation costs: Additional subsidies for operation costs due to extended business hours

Increase subsidies for operation costs due to extended business hours between 8 p.m. and 9 a.m. (Further increased subsidies between 10 p.m. and 5 a.m.)

(3) Additional subsidies for expanding subsidies for small and medium-sized businesses [New]

Installation costs: Subsidies for schematic design fee

Subsidize the cost of schematic design required for applying for national subsidies

Operation costs: Subsidies for the purchase of equipment spare parts

Subsidize the cost of purchasing spare parts, such as compressor piston rings and refueling hoses, for the stable operation of hydrogen refueling stations

Operation costs: Subsidies for unexpected equipment repair costs

Subsidize unexpected equipment repair costs in the event of equipment failure or damage

(2) Additional subsidies for expanding the introduction of Green Hydrogen [New]

Installation costs: Cost of installing solar power generation equipment

Subsidize the cost of installing on-site solar power generation equipment to produce Green Hydrogen



Installation costs: Cost of installing water electrolyzers

Subsidize the cost of installing water electrolyzers to produce Green Hydrogen



Operation costs: Green power purchase costs

Subsidize the price difference between regular electricity and green power when hydrogen is produced through water electrolysis on-site using green power



Promotion of Hydrogen Use in the Transport Field

Promoting the installation of hydrogen refueling stations

Main subsidy details

| Installation costs | Subsidization targets | | Subsidy rates | Upper limits | |
|--------------------|-----------------------|--|---|---|---------------------|
| | National govt. & TMG | Large hydrogen refueling station with supply capacity of 500 Nm ³ /h or more | | Full subsidies | 1B yen |
| | | Medium-sized hydrogen refueling station | With supply capacity of 300 Nm ³ /h or more and less than 500 Nm ³ /h | 4/5 for large enterprises, 5/5 for SMEs | 500M yen |
| | | | With supply capacity of 50 Nm ³ /h or more and less than 300 Nm ³ /h | | 360M yen |
| | | Small hydrogen refueling station with supply capacity of less than 50 Nm ³ /h | | 4/5 for large enterprises, 5/5 for SMEs | [Expanded] 200M yen |
| | TMG | Extension/retrofits for buses/trucks | | 4/5 for large enterprises, 5/5 for SMEs | 400M yen |
| | | Installation of barrier walls | | 4/5 for large enterprises, 5/5 for SMEs | 30M yen |
| | | Removal/relocation of existing equipment | | 4/5 for large enterprises, 5/5 for SMEs | 30M yen |
| | | Land development | | 4/5 for large enterprises, 5/5 for SMEs | 200M yen |
| | | Construction etc. [Expanded] | | 4/5 for large enterprises, 5/5 for SMEs | 100M yen |
| | | Including next-generation canopies | | | 200M yen |
| | | Hydrogen refueling stations for other fuel cell mobility | | 4/5 for large enterprises, 5/5 for SMEs | 300M yen |
| | | Laying of hydrogen pipelines | | 4/5 for large enterprises, 5/5 for SMEs | 1B yen |
| | | Schematic design fee not eligible for the national government subsidies [New] | | 5/5 for SMEs only | 10M yen |
| | | Installation of solar power generation equipment [New] | | 4/5 for large enterprises, 5/5 for SMEs | 200M yen |
| | | Installation of water electrolyzers [New] | | 4/5 for large enterprises, 5/5 for SMEs | 1B yen |
| | | Loss expense* | | Full subsidies | 5M yen |

* Subsidizing loss expense during business suspension due to installation, addition, or retrofits of hydrogen supply equipment

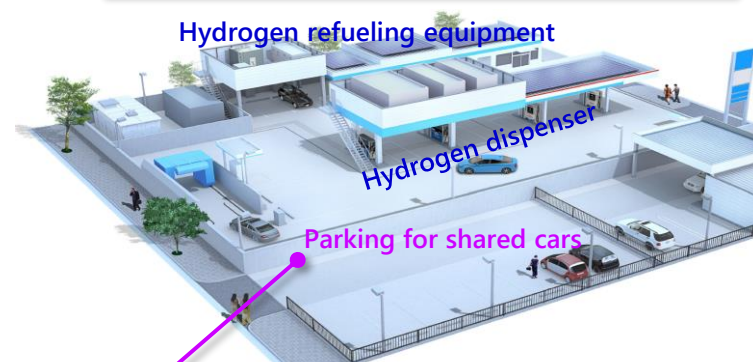
| Equipment owning & operating costs | Subsidization targets | Upper limits |
|--|---|---|
| | Equipment o&o costs for passenger cars | 5M yen for large enterprises, 10M yen for SMEs |
| | Equipment o&o costs for one bus line | 10M yen for large enterprises, 20M yen for SMEs |
| | Equipment o&o costs for two bus lines | 20M yen for large enterprises, 40M yen for SMEs |
| | Equipment owning & operating costs (additional subsidies due to extended business hours) [Expanded] | 2,000 yen/h for large enterprises, 4,000 yen/h for SMEs if they operate between 8 p.m. and 9 a.m. Further increased (1.25-fold) subsidies between 10 p.m. and 5 a.m. |
| | Equipment spare parts purchase costs [New] | 5M yen for SMEs only |
| | Unexpected equipment repair costs [New] | 10M yen for SMEs only |
| | Green power purchase costs [New] | Price difference between green power and regular electricity for SMEs only |
| Land rent for stations installed in and after 2022 | Subsidy rates: 4/5 for large enterprises, 5/5 for SMEs | |

| Fuel costs | Subsidization targets | Upper limits |
|------------|-----------------------|---|
| | Hydrogen fuel costs | 2,051 yen/kg for large enterprises, 2,315 yen/kg for SMEs (Price difference between hydrogen and diesel oil) [Expanded] |
| | Administrative costs | 132 yen/kg for large enterprises, 290 yen/kg for SMEs [Expanded] |

(Subsidies for fuel costs for fuel cell buses are provided via hydrogen refueling stations)

Supports for SMEs to introduce hydrogen refueling stations

- (1) Station opening and operation help desk "Sui Sui Support"
- (2) Support for acquiring qualifications and practical experience
- (3) Seminars, etc.



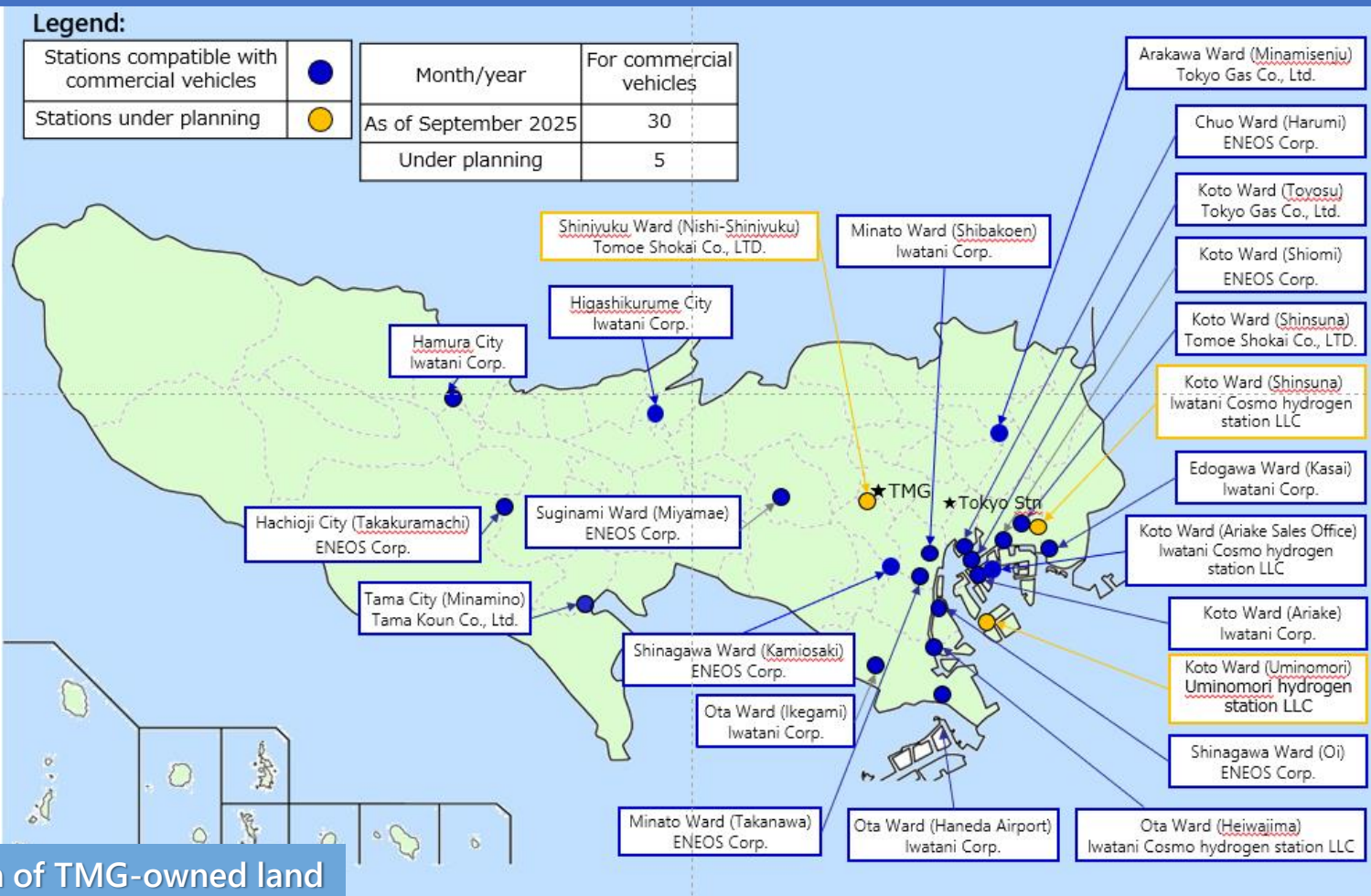
Hydrogen refueling station (image)

Packaged subsidies for 35 MPa hydrogen refueling stations and car sharing etc. (by TMG)

- Station installation costs: Up to 500M yen. Subsidy rate: 4/5 (5/5 for SMEs)
- Station operation costs: Up to 5M yen (up to 10M yen for SMEs)
- Purchase cost of FCVs for car sharing etc.: Up to 3M yen
- Cost of starting-up car sharing business etc.: Up to 5M yen. Subsidy rate: 1/2

Promotion of Hydrogen Use in the Transport Field

Promoting the installation of hydrogen refueling stations As of September 2025, there are 30 hydrogen refueling units.



- Utilization of TMG-owned land**
- A **station compatible with large fuel cell trucks** will be installed using TMG-owned land in Shinsuna 3-chome, Koto Ward.
 - A **Green Hydrogen-based** station will be installed using TMG-owned land in Nishi-Shinjuku 4-chome.

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

* **1,424 fuel cell vehicles (FCVs) were owned as of the end of March 2024.**

Source: Statistics of Automobile Inspection & Registration Information Association

Subsidy projects

● Project to expand the use of fuel cell vehicles

○ Targets: Fuel cell vehicles

○ Subsidy: **Up to 2.25 million yen**

Breakdown:

● Manufacturer-specific subsidy:

Up to 1.9 million yen

* The basic subsidy varies depending on manufacturers' efforts toward GX and sales performance.

● **Additional 100,000 yen** for businesses introducing V2B

● **Additional 250,000 yen** if 100% renewable electricity contract is concluded or solar power generation equipment (2 kW) is installed

● Project to introduce ZEVs to car sharing and rental services

○ Targets: Fuel cell vehicles introduced for car sharing or rental services

○ Basic subsidy: **2.15 million yen**

* **Additional 100,000 yen** for businesses introducing V2B



Fuel cell vehicle
© Toyota Motor Corporation

Promotion of Hydrogen Use in the Transport Field

Promoting the introduction of fuel cell buses and taxis

Outcomes

- 135 fuel cell buses, including 80 Toei Buses, at the end of FY 2024
- * Goal: Approximately 300 buses by the end of FY 2030
- Subsidization for fuel cell taxis will begin in FY 2025



Fuel cell bus (Bureau of Transportation, TMG)

Subsidization

- Subsidizing introduction costs**
Basic subsidies combined with national subsidies allow introduction at the same prices as those of conventional vehicles (diesel buses or LP gas taxis).
 - Up to 50 million yen for FC buses
 - Up to 3.7 million yen for FC taxis including bodywork costsAdditional subsidies apply to (1) Introduction plans of five or more vehicles* within five years, or (2) The case where a hydrogen refueling station is installed at sales offices etc.
 - Up to 20 million yen for FC buses
 - Up to 2.4 million yen for FC taxis
 - * Three or more FC taxis for SMEs

Model case of subsidization in the case of an FC bus with a vehicle price of 100 million yen

| | | |
|---|---------------------------------------|---|
| National subsidy with a rate of 1/2 50 million yen | TMG's basic subsidy 30 million yen | TMG's additional subsidy Up to 20 million yen <small>If requirements are met:</small> Business's share 20 million yen |
|---|---------------------------------------|---|

- Subsidizing fuel costs** * Maximum subsidies are revised every fiscal year based on the price difference from deisel oil and LP gas.
- For FC buses, subsidies are provided to hydrogen refueling stations in Tokyo to cover the difference in the selling prices of hydrogen and deisel oil used for buses with Tokyo license plates.
- For FC taxis, subsidies are provided to cover the difference in costs between hydrogen and LP gas (up to 1.3 million yen per taxi & year).

Promotion of Hydrogen Use in the Transport Field

Promoting the introduction of fuel cell trucks

Outcomes

- **124 small fuel cell trucks at the end of FY 2024**
- **Large fuel cell trucks will be introduced from FY 2025 onwards**
 - * Participate in social implementation projects involving automobile manufacturers, shippers, logistics companies, etc. and collaborate with them
 - * Goal: Approximately 3,600 small trucks and 500 large trucks by the end of FY 2030



Small fuel cell truck



Large fuel cell truck

Subsidization

- **Subsidizing introduction costs**

Basic subsidies combined with national subsidies help ensure that vehicle prices (vehicle lease prices for SMEs) are the same as those of diesel trucks with equivalent specifications.

 - **Up to 13 million yen (26 million yen for SMEs)** for small FC trucks
 - **Up to 56 million yen (96 million yen for SMEs)** for large FC trucks

Subsidizing conversion costs: **Up to 11 million yen** that results from: (Cost of conversion to hydrogen engine trucks – National subsidies) x 2/3.

Additional subsidies apply to (1) Introduction plans of five or more vehicles* over five years, or (2) The case where a hydrogen refueling station is installed at sales offices etc.

 - **34 million yen** combined with basic subsidies for small FC trucks
 - **115 million yen** combined with basic subsidies for large FC trucks
 - **11 million yen** for hydrogen engine trucks

* Total planned number of FC trucks and hydrogen engine trucks: Three or more for SMEs, 10 or more for large enterprises if large FC trucks are not included.
- **Subsidizing fuel costs** * Maximum subsidies are revised every fiscal year based on the price difference from diesel oil.

Subsidies are provided to cover the difference in costs between hydrogen and diesel oil.

 - **Up to 9 million yen** for small FC trucks
 - **Up to 28.8 million yen** for large FC trucks
 - **Up to 12 million yen** for hydrogen engine trucks

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 their intensive introduction

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/underway in **Chiyoda Ward, Machida City, Tama City, Higashikurume City, Kiyose City** (1.5 years between FY 2023 and 2026)
Trial scheduled in **Taito Ward, Katsushika Ward, Nerima Ward, Hachioji City, Higashimurayama City** (1.5 years between FY 2025 and 2027)

Intensive introduction

- Cover the vehicle introduction 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)

- Basic subsidies up to **6 million yen** combined with national subsidies allow **introduction at the same prices as those of equivalent engine-powered FLs**
Additional subsidies up to **3.5 million yen** are provided to businesses that install a commercial hydrogen refueling station at their sales offices etc.



Fuel cell forklift

Ground support equipment (GSE vehicles)

- Subsidize the cost of converting existing GSE vehicles to FC vehicles and conducting their test operation to promote the conversion at airports and other places
Targets: Aircraft towing vehicles
Schedule: Vehicle conversion in FY 2024, trial operation and verification of the effects in FY 2025



Image of a converted aircraft towing vehicle

Promotion of the Effective Use of Green Hydrogen etc.

Building the foundation for the effective use of Green Hydrogen

Collaboration with Yamanashi Prefecture

- 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

Green Hydrogen production on TMG-owned land

- Promoting the widespread adoption of Green Hydrogen by **encouraging its deployment in Tokyo**, including the **establishment of Green Hydrogen production bases**

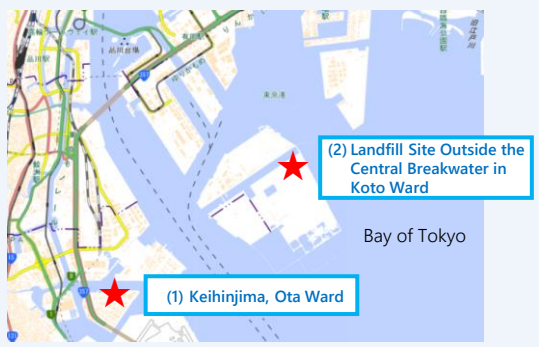
(1) Keihinjima Green Hydrogen Plant in Ota Ward

- Partial operation in FY 2025
Hydrogen production capacity: 100 Nm³/h
- Production capacity to be increased to 300 Nm³/h by FY 2027



(2) Green Hydrogen Plant at the Landfill Site Outside the Central Breakwater in Koto Ward (tentative)

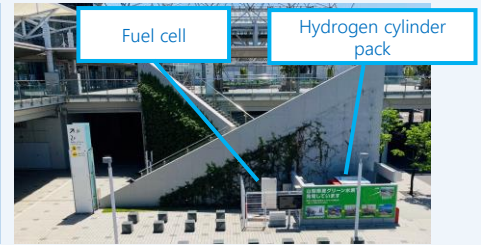
- Installing a hydrogen production facility with a mega solar power plant, aiming to start operation by FY 2028 (production capacity etc. is under consideration)



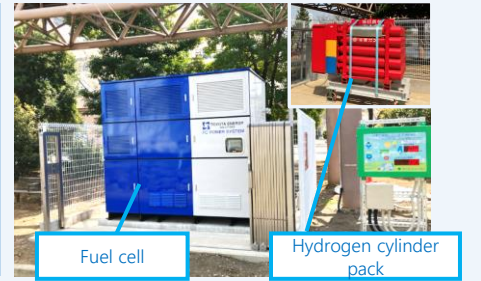
Using Green Hydrogen at TMG facilities

- **A fuel cell installed at a TMG facility** allowing TMG to demonstrate the advantages of using Green Hydrogen
- **PR for visitors** has also been arranged

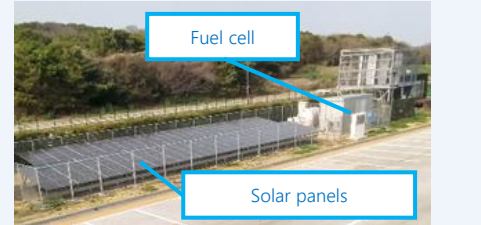
Tokyo Big Site
Since May 2023



Odaiba Seaside Park
Since April 2025



Sea Forest Waterway
Since March 2025



Promotion of the Effective Use of Green Hydrogen etc.

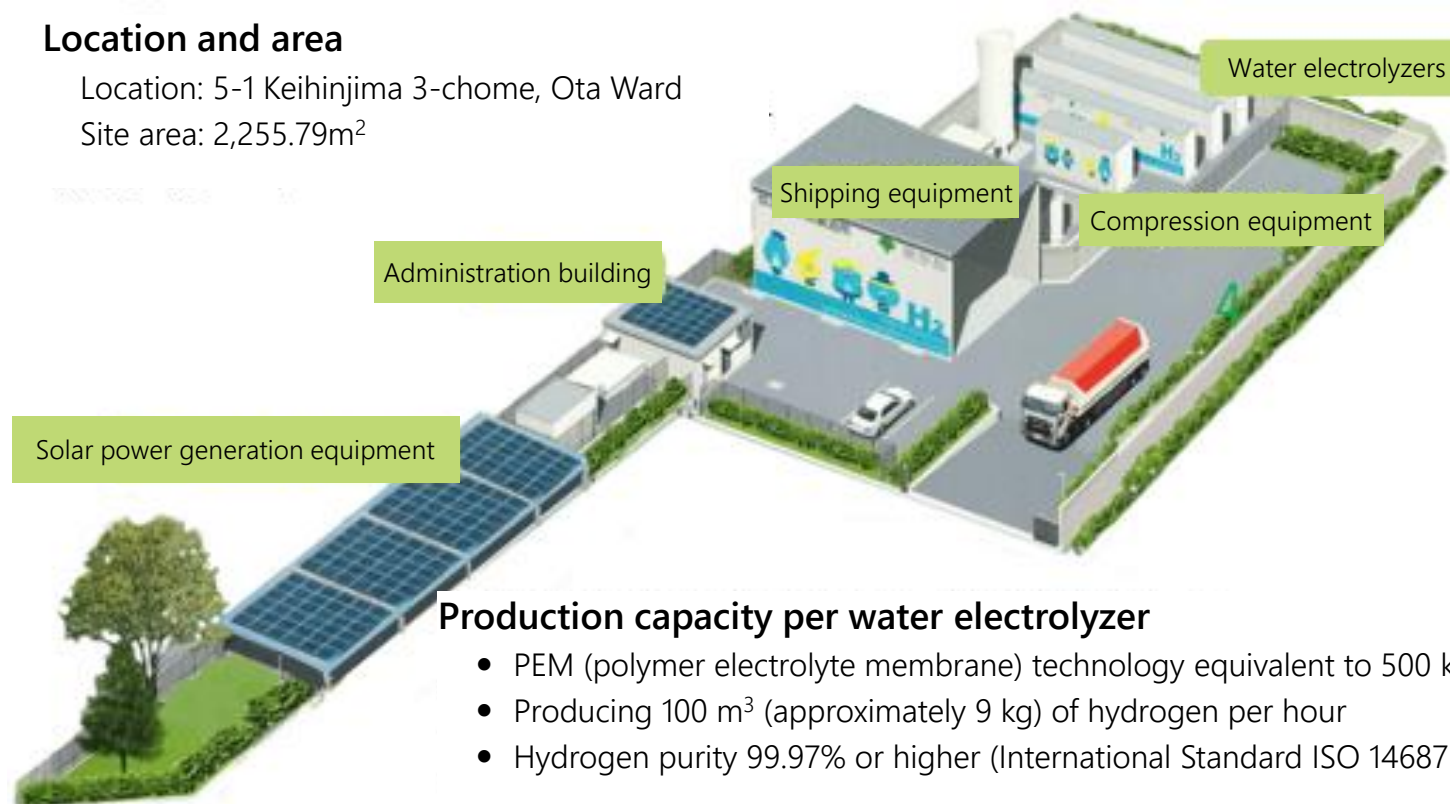
Green Hydrogen production on TMG-owned land

- Construct Tokyo's first full-fledged hydrogen production facility on TMG-owned land in **Keihinjima, Ota Ward**, as a joint project with **Yamanashi Prefecture (Enterprise Bureau)** with which a **Basic Agreement** on Promoting the Use of **Green Hydrogen** has been concluded
- Start operating one of three water electrolyzers in FY 2025, and operate **all of them** in the future

Location and area

Location: 5-1 Keihinjima 3-chome, Ota Ward

Site area: 2,255.79m²



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.

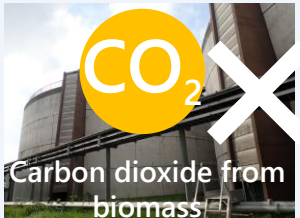
Promotion of the Effective Use of Green Hydrogen etc.

Utilizing Green Hydrogen produced in Tokyo in various fields

Trial production of green methane


- Conduct **trial production** of **green methane** using **Green Hydrogen produced in Tokyo** and biomass-derived CO₂ from **Morigasaki Water Reclamation Center**

Sludge digester



Carbon dioxide from biomass

Green Hydrogen plant



Green Hydrogen produced in Tokyo

CH₄

Green methane

Carbon dioxide + Hydrogen → Methane + Water

CO₂+4H₂→CH₄+2H₂O

Promoting the industrial use of Green Hydrogen (1)

- Work with private companies to produce **pilot cosmetics products** using **Green Hydrogen produced in Tokyo** as a raw material in the **chemical field including cosmetics**



Replacing hydrogen used to harden fat with Green Hydrogen

Hydrogen in the chemical field:

- Hardens fat
- Deodorizes fat
- Stabilizes fat quality, etc.

Promoting the industrial use of Green Hydrogen (2)

- Research the applicability of **Green Hydrogen produced in Tokyo** as a raw material in **fertilizer production** and other fields



Replacing hydrogen used to produce nitrogen fertilizer with Green Hydrogen

Promotion of the Effective Use of Green Hydrogen etc.

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.

Collaboration with Fukushima Prefecture

- In February 2025, TMG signed a **Collaboration Agreement for the Realization of a Hydrogen Powered Society** with **Fukushima Prefecture**.
Objectives
Toward the realization of a hydrogen powered society, both prefectures will **work together** to promote the widespread adoption of hydrogen in the **mobility field**, encourage the use of **Green Hydrogen**, and support hydrogen-related industries.
Major areas of collaboration
 - (1) Expanding the introduction of **hydrogen mobility** and promoting the installation of **hydrogen refueling stations**
 - (2) Promoting the effective use of **Green Hydrogen from Fukushima Prefecture** in Tokyo
 - (3) Matters related to the **rationalization and optimization of regulations** regarding the use of hydrogen
- **NEDO**, which has signed a **comprehensive** agreement with TMG on the promotion of hydrogen energy, conducted a demonstration project at the **Fukushima Hydrogen Energy Research Field (FH2R)***, one of **the world's largest** hydrogen production facilities using solar power, located in **Namie Town, Fukushima Prefecture**.
- TMG will further promote the **widespread use** of **Green Hydrogen** produced at **FH2R** in cooperation with **NEDO**, other local governments, and private companies.



Collaboration Agreement signing event on February 17, 2025

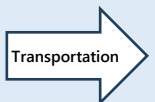


Ceremony for starting the expanded use of Green Hydrogen from Fukushima in Tokyo

Ceremony held on May 20, 2024



Hydrogen production at FH2R in Namie Town, Fukushima Prefecture



Shinsuna hydrogen refueling station in Koto Ward, Tokyo, and other stations



Used in fuel cell buses

* NEDO hydrogen production facility, Fukushima Hydrogen Energy Research Field (FH2R)
• FH2R was constructed in Namie Town, Fukushima Prefecture at the end of February 2020 through a hydrogen-related technology demonstration project of the New Energy and Industrial Technology Development Organization (NEDO) and the Ministry of Economy, Trade and Industry.
• Using 20 MW of solar power and grid power, a 10 MW hydrogen production equipment, one of the world's largest facilities of its kind, electrolyzes water to produce up to 2,000 Nm³/h of hydrogen for storage and supply.

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 etc. for the social implementation of Green Hydrogen [New in FY 2025]**

In order to encourage the **social implementation of Green Hydrogen**, TMG is committed to the widespread use of hydrogen based on an increased demand for it by subsidizing the introduction of facilities for the **production, transportation, and storage of Green Hydrogen** as well as those for using hydrogen.

| Subsidized equipment | Subsidized expenses | Subsidy rates | Maximum subsidies |
|---|---|---|--|
| (1) Green Hydrogen production equipment | Design costs Equipment costs Construction costs Miscellaneous expenses | 2/3 or 1/2 for mixed combustion equipment | 300M yen or 225M yen for mixed combustion equipment (for each facility (1) to (5)) |
| (2) Green Hydrogen storage equipment | | | |
| (3) Green Hydrogen transportation equipment | | | |
| (4) Pure hydrogen fuel cell | | | |
| (5) Other equipment using hydrogen (unmixed/mixed combustion) | | | |

(5) Other equipment using hydrogen includes:

- Hydrogen fuel boilers
- Hot water generators
- Hydrogen burners
- Hydrogen fuel engines

(The subsidy also covers equipment that uses both hydrogen and existing fuels through mixed combustion and other techniques)

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

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)**

Promotion of the Effective Use of Green Hydrogen etc.

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

Project outline

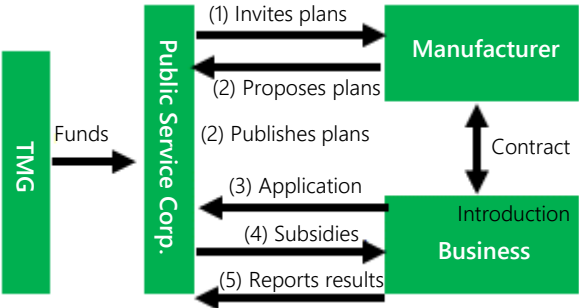
● **Project to support the implementation of equipment producing or using Green Hydrogen [Expanded in FY 2025]**

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 | Maximum subsidies | |
|---|--------------|--|------------------------------|
| | | Hydrogen production capacity of 10 Nm ³ or more | Less than 10 Nm ³ |
| One package ^{*1} | 10/10 | 400 million yen | 330 million yen |
| Other than one package | | 280 million yen | 177 million yen |
| Renewable electricity equipment ^{*2} | | 54 million yen | |



^{*1} Equipment that integrates hydrogen production through use in a container
^{*2} To be subsidized according to hydrogen production capacity. Additionally subsidized if the amount of hydrogen production goes beyond the power capacity set by this project

■ Project sequence

- (1) Start of public invitation of model plans from manufacturers
- (2) The Tokyo Metropolitan Environmental Public Corporation publishes proposed model plans (since August 2023).
- (3) Based on the published model plans, businesses 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 2027).
- (4) The Corporation subsidizes the introduction costs after businesses complete the introduction.
- (5) Businesses hold an inspection tour of equipment, disseminate information on it, and report the outcomes to the Corporation.

Promotion of the Effective Use of Green Hydrogen etc.

Certification system for businesses using Green Hydrogen

Project outline

● Green Hydrogen Active User Certification System since FY 2024

Businesses using **Green Hydrogen** in Tokyo are certified as **Green Hydrogen Active Users**. For each of the following certification category, certification is given according to the amount of use over the previous fiscal year, and **financial incentives** are provided. A **logo for the certification system** has been created for certified businesses to use it.

System outline and requirements

| Certification category | Description | Requirements | | Financial Incentives (Unit: 300 yen/Nm ³) |
|---|--|--|--|--|
| | | Continuity | Consumption | |
| On-site type (local production for local consumption) | 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 per year in the past | Using 100 Nm ³ or more of Green Hydrogen per year in the past | 2/3 of the unit x Consumption |
| On-site type | Businesses are supplied renewable electricity by others and use Green Hydrogen produced by equipment at their facilities in Tokyo | | | 3/5 of the unit x Consumption |
| Off-site type | Businesses use Green Hydrogen produced in Japan at their facilities in Tokyo * Hydrogen must be transported by ZEVs (EVs or FCVs) in principle. * For any other method of transportation, greenhouse gas emissions must be offset. | | Using 500 Nm ³ or more of Green Hydrogen per year in the past | 1/2 of the unit x Consumption |
| [New] Small amount users | Businesses use Green Hydrogen produced by themselves or in Japan at their facilities in Tokyo | Using Green Hydrogen for 1 month or more per year in the past | — | — |

Certification system logo





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 **port of discharge for supply chains of liquefied hydrogen** from overseas and is expected to become a hydrogen **accepting hub in future years**.
- **Research** is 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, the **Council for the Study of Establishing a Hydrogen Supply System in Tokyo, Including Pipelines** has been set up and the secretariat has been working on building 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 through three-party collaboration

Council for the Study of Establishing a Hydrogen Supply System in Tokyo, Including Pipelines

On April 24, 2024, a public-private council was established to build a hydrogen supply system in Tokyo in anticipation of hydrogen coming from overseas in the future, with the aim of increasing demand for hydrogen energy and promptly deploying it in society.

The council serves as a forum for lively discussions by building consensus with many stakeholders and allowing information sharing among them.



First general meeting on April 24, 2024

Promotion of the Effective Use of Green Hydrogen

Initiatives for launching a hydrogen exchange

- At **COP28**, TMG announced the idea of launching a **hydrogen exchange** in collaboration with **Germany's H2Global Foundation**, known as **one of the world's leading organizations** promoting hydrogen.
- TMG is studying the **system design** for launching a **Green Hydrogen Exchange** and has conducted **trial transactions** using **domestic Green Hydrogen** to **reflect the findings** in the study.

Collaboration Agreement with H2Global Foundation*

* Established in 2021 with its activities supported by more than **60 companies** since then. Funded by the **German Federal Government** and other sources, it compensates for the **difference** between supply and demand prices, promoting the launch of an effective **market**.

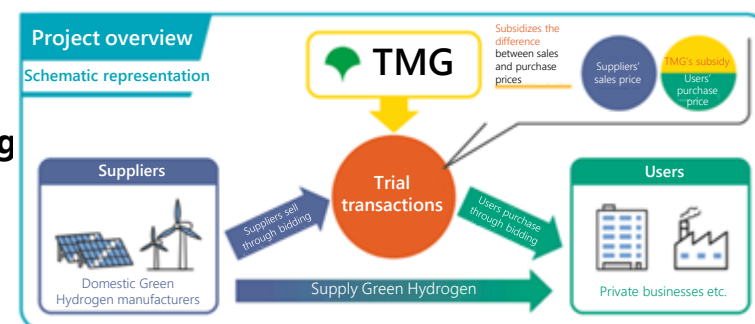
- Agreement was concluded on February 2, 2024.
- Collaboration aims for information sharing and opinion exchange related to transactions and logistics, research and study on technology trends, and establishment of exchanges and other institutions together.



Basic Agreement signing event on February 2, 2024

Tokyo Green Hydrogen trial transactions

Green Hydrogen trial transactions, a new trial of market-based **hydrogen transactions**, have been conducted through a **double auction system**, where **sales and purchase prices of Green Hydrogen** are determined by **bidding**.



Promotion of the Effective Use of Green Hydrogen

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

- An international conference on hydrogen, "**HENCA Tokyo**," hosted by TMG, has been held to foster **technological development** and **international hydrogen supply chain** creation.
- * HENCA is an abbreviation for Hydrogen Energy Conference for Action.

Overview of the FY 2024 conference:

- Date: Tuesday, October 22, 2024
- Theme: **Accelerating the Social Implementation of Green Hydrogen**
- Speakers

The view of the conference was distributed through archive:

[HENCA Tokyo 2024 – Hydrogen Energy Conference for Action](#)



Presentation by Tokyo Governor Koike Yuriko



Panel discussion

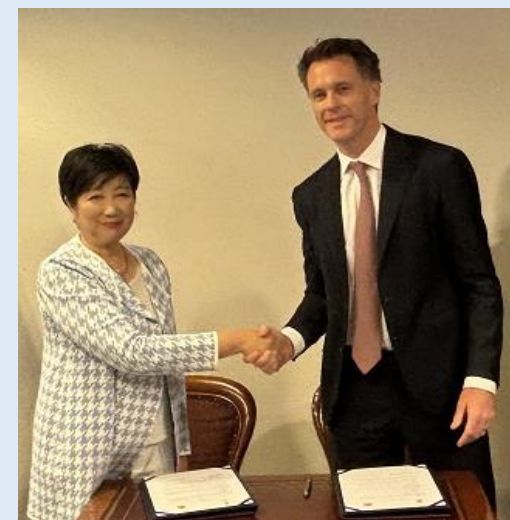
- After the conference, a **joint message** was issued toward accelerating the **social implementation of Green Hydrogen**.

Promotion of the Effective Use of Green Hydrogen

Strengthening collaboration with overseas cities etc.

Strengthening collaboration with New South Wales, Australia

- In February 2024, **Tokyo Governor Koike Yoriko** 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.
 - (1) Creation of an international supply chain
 - (2) Technology development
 - (3) Increase in demand
- In February 2025, a **seminar** on the promotion of hydrogen energy in both cities was held in Tokyo in cooperation with the NSW government.



Agreement was concluded in February, 2024

Strengthening collaboration with Queensland, Australia

- In December 2024, the Bureau of Industrial and Labor Affairs, Tokyo Metropolitan Government and **Trade and Investment Queensland** signed an **agreement** on cooperation in **trade and investment** in clean energy, including **Green Hydrogen**.
 - (1) Promoting sustainable economic growth
 - (2) Information and knowledge sharing
 - (3) Staff development and exchange, etc.



Agreement was concluded in December, 2024

Fostering Momentum

Holding of the Tokyo Green Hydrogen Roundtable

- **Examples and opinions were shared in the discussions** between **companies and organizations** making **advanced efforts** for expanding the use of **Green Hydrogen** etc.



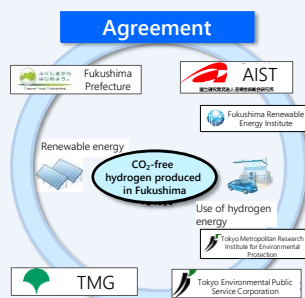
| | 1st round | 2nd round | 3rd round | 4th round |
|--------------|--|--|---|---|
| Date | August 19, 2022 | November 30, 2022 | February 14, 2023 | February 17, 2023 |
| Themes | Establishment of an international hydrogen supply chain and the expansion of Green Hydrogen etc. | Establishment of a hydrogen supply system including pipelines and the broader use of hydrogen | Hydrogen supply network (Green Hydrogen production and hydrogen transportation method) | Hydrogen supply network in the airport coastal area |
| Participants | Iwatani Corporation, ENEOS, Kawasaki Heavy Industries, Shimizu Corporation, Sumitomo Corporation, Toshiba Energy Systems, Marubeni Corporation, Miura Industries | Iwatani Corporation, ENEOS, Tokyo Gas, Toyota Motor Corporation, Ota Ward (observer) | Asahi Kasei, ENEOS, Obayashi Corporation, Tokyo Gas, Toray, NEDO | Kawasaki City, Ota Ward |
| | 5th round | 6th round | 7th round | |
| Date | May 24, 2023 | December 18, 2023 | October 10, 2024 | |
| Themes | Revision of the Basic Hydrogen Strategy of the national government and the formulation of the Hydrogen Industry Strategy and Hydrogen Safety Strategy | Exchange of opinions on hydrogen supply systems including pipelines etc. | Initiatives on the demand side such as urban development and the promotion of FC commercial vehicles, efforts for creating a hydrogen supply chain, and initiatives related to the national government's Hydrogen Society Promotion Act | |
| Participants | Asahi Kasei, ENEOS, Kawasaki Heavy Industries, Chiyoda Corporation, Panasonic Holdings, Hitachi Zosen, Mitsui & Co., Ltd, Japan Hydrogen Association, High Pressure Gas Safety Institute | JFE Steel, Tokyo Gas, Tokyo Gas Network, Nishimura & Asahi, High Pressure Gas Safety Institute, Tokyo Energy Issues Advisory Board committee members | Iwatani Corporation, NTT Anode Energy Corporation, ENEOS, Toyota Motor Corporation, East Japan Railway Company | |

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 be provided **technical knowledge** by NEDO for implementing TMG's policies, and collaborate on information dissemination and awareness raising.



Agreement signing event on January 23, 2020

Hydrogen information center "Tokyo Hydrogen Museum"

- Easy-to-understand information on hydrogen is provided at the **Tokyo Hydrogen Museum**, a comprehensive learning facility established in 2016 where visitors can enjoy learning about hydrogen through a hands-on experience.
- A **water electrolyzer** for producing **Green Hydrogen** is on display.



© Tokyo Environmental Public Service Corporation

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** companies and other organizations.
- Joint PR activities are conducted at events and exhibitions.

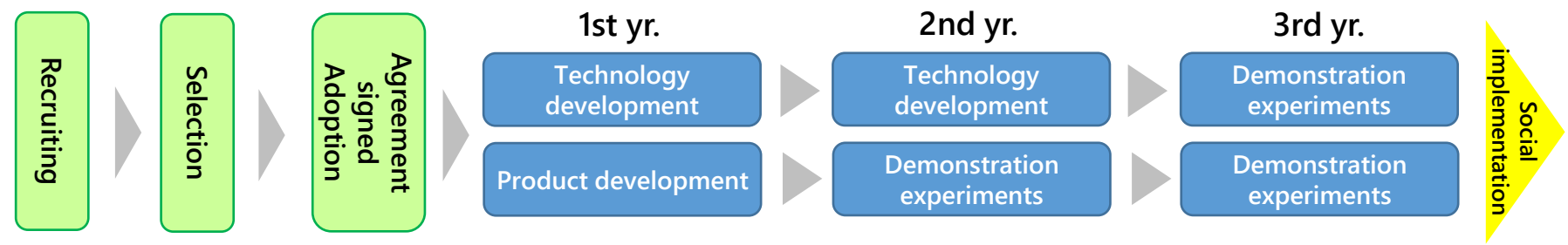


Technology Development for the Widespread Adoption of Hydrogen

Project for promoting technology development to address issues with hydrogen implementation in Tokyo

- TMG, **companies**, and **universities** conduct the joint **research, development**, and **demonstration** of **new technologies** and products with the aim of expanding the use of hydrogen.
- Period: Up to three fiscal years
- Budget: Up to 100 million yen/project
- No. of projects implemented: Approx. 2/FY
- Main development theme: Technologies for hydrogen storage and transportation

Flow



Projects adopted in FY 2024

| | |
|-----------|--|
| Project 1 | Verification concerning the demonstration and introduction of next-generation high-pressure gas containers |
| Project 2 | Development of hydrogen utilized technologies with MCH in urban areas |



Fostering Momentum

Formulation 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"
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Service Corporation

Chapter 1 Climate Crisis and Hydrogen Energy

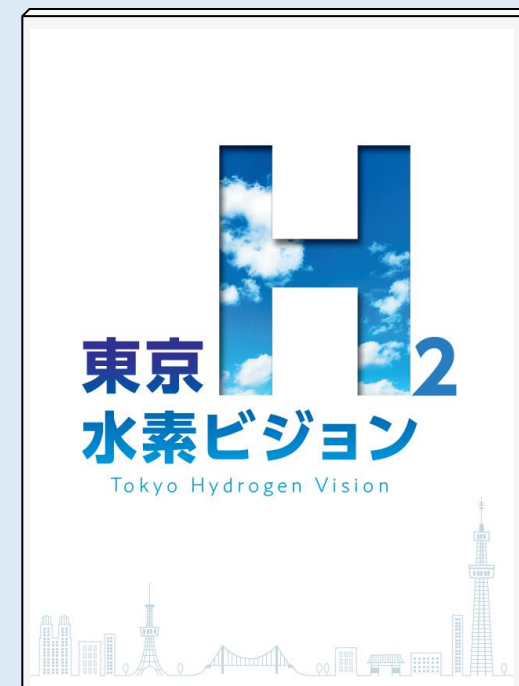
Significance of hydrogen for the climate crisis and the realization of a decarbonized society

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

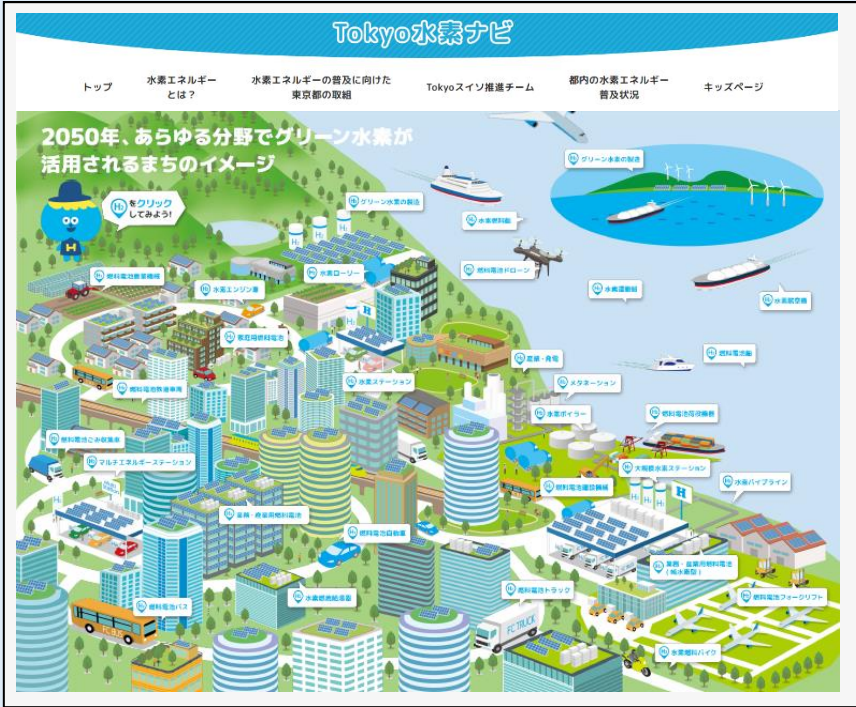
Expanding the use of Green Hydrogen, ensuring the broader use of hydrogen in the transport and other fields



Fostering Momentum

Creating a website featuring hydrogen energy: Tokyo Hydrogen Navigator

- Opening the **Tokyo Hydrogen Navigator** website that aggregates information on hydrogen energy
- Aiming to provide an opportunity for Tokyo residents to become more familiar with hydrogen and for businesses to consider participating in the hydrogen business
- Creating an **English website** to **strengthen the dissemination of information overseas** (scheduled to be operational in 2025)



| 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 pages for kids, videos, and learning facilities |

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