

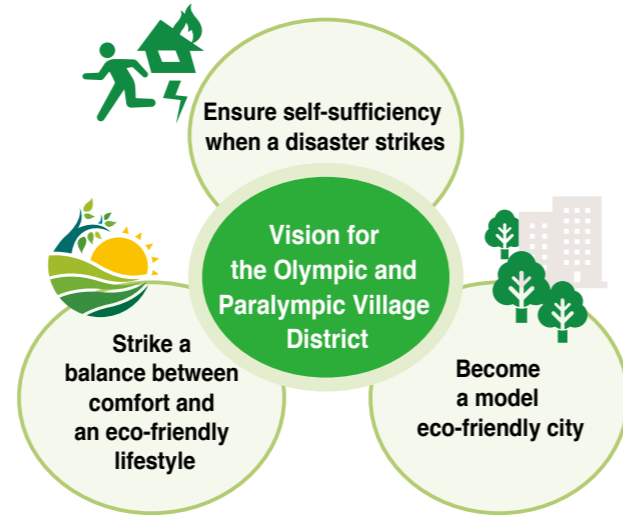
A city to serve as a model eco-friendly city

Olympic and Paralympic Village District Energy Development Plan

In the Olympic and Paralympic Village district, through the use of new technology, we aim to realize a city that will serve as a model eco-friendly city, including ensuring self-sufficiency in times of disaster and achieving a balance between comfort and an eco-friendly lifestyle.

To achieve this goal, the Olympic and Paralympic Village District Energy Study Panel was established together with outside experts in July 2016. Based on discussions held, the Olympic and Paralympic Village District Energy Development Plan was compiled, setting forth the vision to be pursued, policy direction, and specific development plans.

In addition to use of the electrical grid and city gas, by applying a combination of approaches in the district, including the use of hydrogen and waste heat, we aim to realize a more resilient, low carbon, energy efficient city.

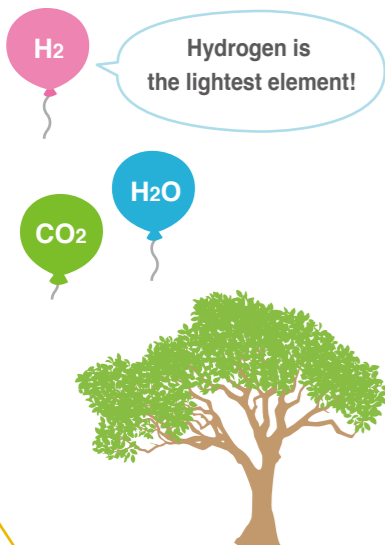


Column

What is hydrogen?

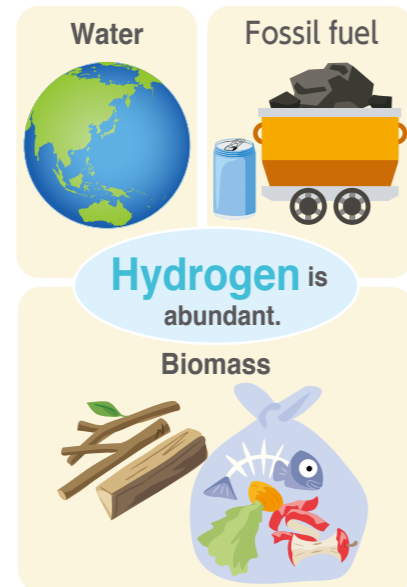
About Hydrogen

Hydrogen is the lightest element, and the most abundant element in the universe. Hydrogen (H₂) is a gas. However, on earth, it is mainly present in compound form, such as seawater.



Hydrogen is abundant.

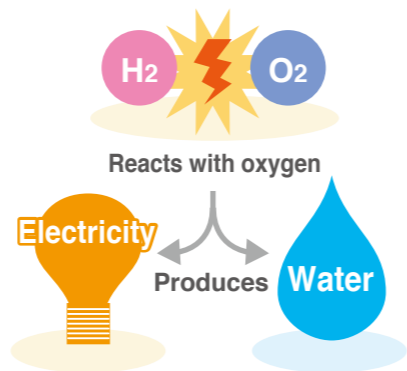
Through electrolysis of water, hydrogen and oxygen can be extracted. Hydrogen is also found in fossil fuels and biomass.



Hydrogen is very reactive.

When hydrogen reacts with oxygen, it easily burns, producing heat (electricity) and water. Conversely, hydrogen can be extracted from that water through the process of electrolysis. Therefore, it is also attracting attention as a recyclable energy source.

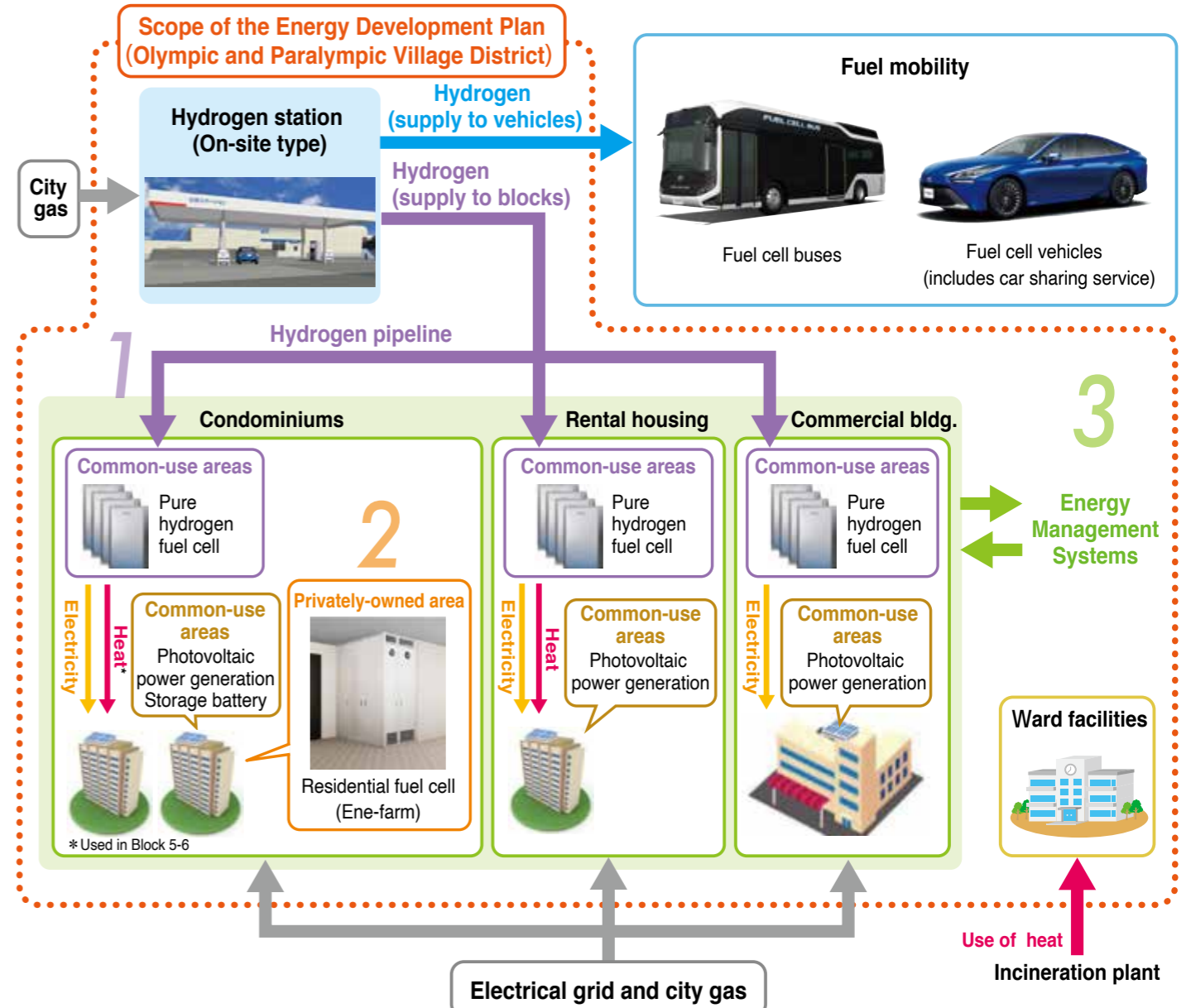
How hydrogen produces electricity



Since hydrogen energy emits no CO₂ when used, if a system to mass-produce hydrogen from water using electricity produced from renewable sources is put into use, this would be the key to realizing a carbon neutral society.

In addition, because hydrogen can be produced from fossil fuels, as well as from biomass and other resources, its use will contribute to transforming the energy structure.

Olympic and Paralympic Village District Energy Project Initiatives



1 Supply Hydrogen to Olympic and Paralympic Village District Blocks

In the Olympic and Paralympic Village district, in addition to power supplied by the electrical grid and other sources, hydrogen will be delivered from the hydrogen station to community blocks via pipelines to fuel pure hydrogen fuel cells, which will produce the electricity used in areas such as common spaces in residential buildings. ⇒For details, see the next page.

2 Residential fuel cell (Ene-farm)

The latest Ene-farm model will be installed in all condominium units. The Ene-farm system causes hydrogen extracted from city gas and oxygen in the air to react, generating electricity. It also converts heat generated when producing electricity into hot water. With the use of a storage battery, the system can use power supplied by the battery to start itself and generate electricity during a power outage.

3 Energy Management Systems

Information about energy in the whole city will be visualized and analyzed under integrated management so that energy will be used effectively. The peak power will be optimally cut by demand forecast for electricity and combination of storage batteries, photovoltaic power generation, pure hydrogen fuel cells and other sources of energy supply.