

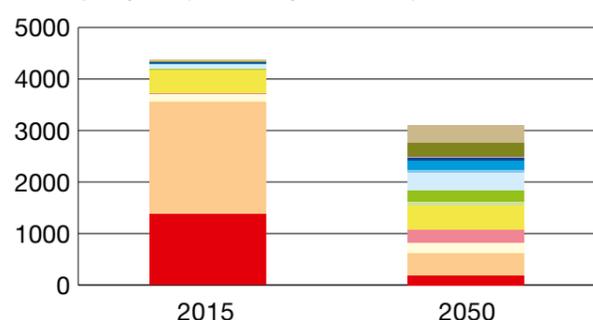
# Municipal Energy Plan of the City of Zurich

Basis of the implementation of the 2000-Watt Society in the energy supply

## Energy supply restructuring

### Heating supply

Demand for heating and energy carrier mix in GWh per year (Efficiency Scenario)

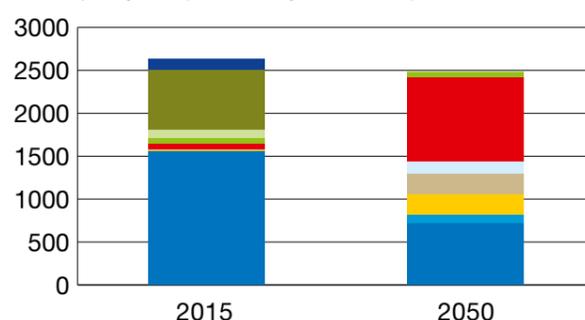


- Electricity heat pumps
- River water
- Groundwater
- Biogas
- Waste heat from sewage
- Solar thermal
- Natural gas
- Ambient air
- Lake water
- Geothermal
- Waste heat
- Waste heat from waste incineration power plant
- Wood energy
- Oil

The Efficiency Scenario envisages that the energy consumption for space heating and hot water systems in the city of Zurich will fall by about 30 percent by the year 2050 despite increases in population and jobs. In parallel with this, the energy carrier mix will change too: in the year 2050, some 40 percent of heat requirements will be supplied by heat pumps that extract the ambient heat from groundwater, lake water, air and geothermal or waste heat. About 15 percent will come from energy recovered from the waste incineration power plant. Another 25 percent of requirements will be covered by biogas, wood heating and solar collectors. Fossil fuels (heating oil, natural gas) will still account for a good 20 percent.

### Electricity supply

Demand for electricity and energy carrier mix in GWh per year (Efficiency Scenario)



- Import UCTE mix
- Waste
- Wind, foreign
- Solar, foreign
- Pumped storage
- Nuclear power
- Biomass
- Wind, domestic
- Solar, domestic
- Hydro

The electricity consumption in buildings will remain more or less constant in the city of Zurich up to 2050, according to the Efficiency Scenario. Rising consumption brought on by increases in population, jobs and heat pumps will be compensated for by greater efficiency in electrical applications. The electricity mix assumes a virtually complete coverage with renewable energies by 2050. According to the ewz Power of Tomorrow strategy 2012–2050, this also requires the import of renewable electricity from abroad.

**For detailed information on the Municipal Energy Plan of the City of Zurich:**

[www.stadt-zuerich.ch/energieplanung](http://www.stadt-zuerich.ch/energieplanung)

Publishing details: City of Zurich, Energy Commissioner, Postfach, 8021 Zürich, [stadt-zuerich.ch/energiebeauftragter](http://stadt-zuerich.ch/energiebeauftragter), April 2017

Photo of district heating tunnel: Michael T. Ganz, from: Valance/Ganz, «Zürich Untergrund. Die Stadt unter der Stadt», Hier und Jetzt, Baden 2015.



The City of Zurich is on the way to becoming a 2000-Watt Society. The goal is to reduce CO2 emissions stemming from the consumption of energy for buildings, infrastructure and mobility to one tonne per head of population per year by 2050. As the Municipal Code also states. This requires a significant reduction in energy consumption and a changeover from fossil fuels to renewable energies, waste heat and energy derived from waste.

The Municipal Energy Plan is an important foundation for the implementation of the 2000-Watt objectives in the area of buildings. It assesses the future energy requirements and the supply of renewable energies and waste heat. It sets development targets for the energy supply and energy consumption, also designating the necessary means and measures.

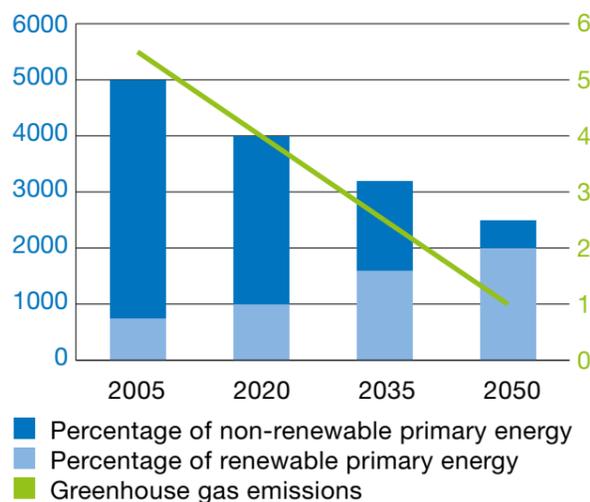
The focus of the Energy Plan is on securing an economically viable, ecologically friendly supply of heating and sometimes also cooling. Key elements are the expansion of district heating systems, the coordinated use of ground and lake water and the replacement of combustion-based systems with heat pumps. One key task is the spatial coordination of the supply with district heating, energy networks and gas to avoid a parallel development with the different grid-based energy systems.

The Energy Plan has a time horizon of 15 years. It is binding for the City Council, the administration department and the municipal energy suppliers. It has no legal implications for home owners. The basic principle of free choice of the energy carriers available locally remains in place.

## Goals of the municipal energy policy

### Target range according to Energy Master Plan

Primary energy in watts per person  
Greenhouse gas emissions in tonnes per person



The objectives cover the areas of buildings, infrastructure and mobility. They are valid for all energy carriers equally: heat, power and fuel.

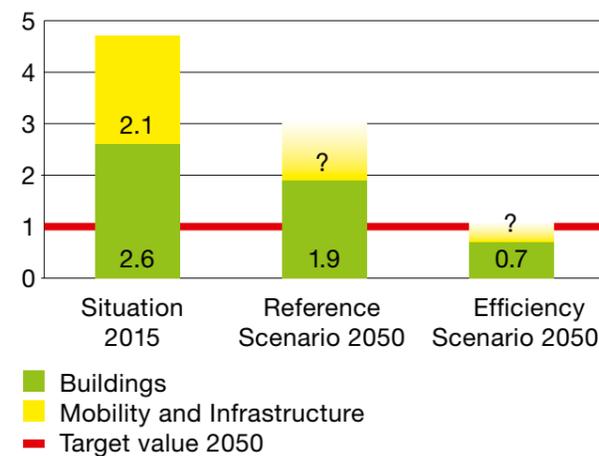
### Intermediate targets per resident

	2005 Measured value	2015 Measured value	2020 Target value	2035 Target value	2050 Target value
Greenhouse gas emissions	5.5 t/person (100%)	4.5 t/person (82%)	4 t/person (72%)	2.5 t/person (45%)	1 t/person (18%)
Primary energy	5000 W/pers. (100%)	3500 W/pers. (70%)	4000 W/pers. (80%)	3200 W/pers. (65%)	2500 W/pers. (50%)
Percentage of renewable primary energy	750 W/pers. (15%)	880 W/pers. (25%)	1000 W/pers. (25%)	1600 W/pers. (50%)	2000 W/pers. (80%)

- Compared with the intermediate result for 2015, the goals up to the year 2050 signify
- an 80 percent reduction in greenhouse gas emissions
  - a 40 percent reduction in primary energy consumption
  - a four-fold increase in the percentage of renewable energies

## Potential for the reduction of greenhouse gas emissions and primary energy consumption

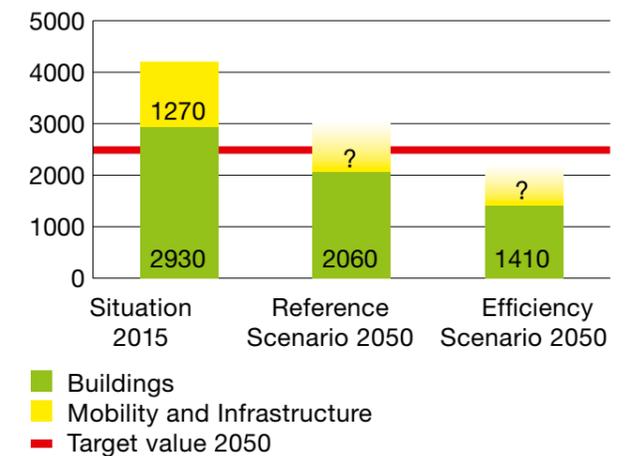
Greenhouse gas emissions in tonnes of CO<sub>2</sub>-eq per person



The potential to reduce greenhouse gas emissions and primary energy consumption in the city of Zurich for the area of buildings is based on scenarios drawn up in compliance with the [2050 Energy Supply Concept](#) and the [ewz Power of Tomorrow strategy 2012–2050](#). For the areas of mobility and infrastructure, on the other hand, only rough estimates exist as yet, as illustrated by the question marks in the charts.

The scenarios show that the area of buildings can make a significant contribution towards implementing the objectives of the 2000-Watt Society. But the challenges are huge. Were a “business-as-usual” policy (Reference Scenario) to be pursued, by the

Primary energy consumption in watts per person



year 2050 more greenhouse gases would be emitted in the area of buildings alone than is the target value for the emissions of all energy applications. If the goals are to be achieved, additional measures will have to be adopted, as assumed by the Efficiency Scenario. These include a climate and energy steering system, the tightening of energy legislation and intensified energy refurbishment of the building stock.

The charts also show very clearly that the targets will be reached only if greenhouse gas emissions and primary energy consumption in the area of mobility are also substantially reduced.