

6. Combining gas and power to provide heating

Most residential areas in Europe have old houses that are energy inefficient. Switching to an all-electric heating system would require time as well as substantial investments in house insulation and in the power grid to meet peak demand. The use of natural gas and renewable gases would provide more economic solutions for residential areas. The development of gas-based district heating will provide affordable heat for customers and support

efforts to improve air quality in metropolitan areas. In many cases, infrastructure for gas distribution and transmission has been built already; using this infrastructure helps to reduce the need for challenging electricity infrastructure expansions. Moreover, gas infrastructure can play a key role in transporting renewable and decarbonised gases, thereby facilitating sector coupling and the integration of larger shares of renewable power generation.

All-electric systems are not, by definition, the smartest solutions – neither in financial, nor in environmental terms

The results of a case study of the energy consumption on one of the coldest days of the year in Germany using a standard load profile for a household show a steep increase in energy use if the household had used electricity instead of gas:¹⁴



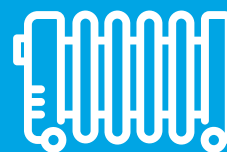
10x increase

if direct electric heating was used



4x increase

if state-of-the-art electric heat pumps were used



8x increase

if direct electric storage heaters were used