Commercial demand for heating and cooling

This sector considers the amount of energy for heating, cooling and hot water in commercial buildings such as shops, hotels, offices, and schools; it doesn't include industrial buildings which are covered under the industry sector. In 2013, commercial premises used an estimated 8.1 TWh/y of energy for heating, 1.4 TWh/y for hot water, and 1.0 TWh/y for cooling.

The 2050 Calculator assumes that the number of commercial properties increases by 1% per year, from 109,000 in 2013 to ~160,000 in 2050.

Trajectory 1

Trajectory 1 assumes that in 2050, heating and hot water demand are higher than in 2013, reaching 11.7 TWh/y for heating and 2 TWh/y for hot water. This means that in 2050 each building requires about the same heat and hot water as in 2013. Almost half of commercial buildings are air-conditioned in 2050, increasing energy demand for cooling to 3 TWh/y. The total energy demand for commercial heating and cooling in 2050 is 17 TWh/y.

Trajectory 2

Trajectory 2 assumes that in 2050, heating demand grows to 9.4 TWh/y, while hot water demand grows by 33% to 1.9 TWh/y. This means each building requires 20% less heat and 10% less hot water in 2050. The share of commercial buildings with air conditioning is similar to today (~23%), increasing energy demand for cooling by 40% to 1.4 TWh/y. The total energy demand for commercial heating and cooling in 2050 is 13.8 TWh/y.

Trajectory 3

Trajectory 3 assumes that in 2050, total heating and cooling demands remain at 2013 levels, at 9.5 TWh/y for heating and 1 TWh/y for cooling. This means each building requires 45% less heat and air-conditioning in 2050. The total energy demand for commercial heating and cooling in 2050 is 11.6 TWh/y.

Trajectory 4

Trajectory 4 assumes that in 2050, total heating and cooling demands are slightly lower than in 2013. Heating demand falls to 7 TWh/y, hot water demand grows to 1.5 TWh/y, and cooling demand falls to 0.6 TWh/y. This means each building needs 40% less heat, 30% less hot water and 60% less air-conditioning in 2050. The total energy demand for commercial heating and cooling in 2050 is 10.2 TWh/y.

Interaction with other choices

2050 Calculator users should choose the technologies for heating and air-conditioning in the 'Domestic and commercial heating choices' sector.

Figure 9: Energy demand in TWh/y assuming Trajectory A on electrification and commercial heating that is not electric (primarily gas).