Buildings: Lighting & Appliances

This lever controls the sub-levers listed in the table, and ambition levels are for the end year shown on the right-hand side. Units of 'Index' are relative to 2015.

In 2015, 56% of lighting demand was met by halogen lights with the majority of the remaining demand met by compact fluorescent lamps (CFL).

Energy used to provide lighting can be reduced in two ways: reduce the overall demand for lighting, and/or use more efficient lights. Lighting demand could be reduced through improved behaviours and building practices such as turning off unnecessary lights. More efficient lighting options include using LEDs (light emitting diode). LEDs use half the amount of energy as CFLs and a fifth of that of halogens. In the Mackay Calculator, the energy intensity of lighting is the amount of energy consumed by the lighting technology to produce light. Reducing the energy intensity depends on how soon, and to what extent, LEDs can replace existing CFL and halogen bulbs.

Ownership of appliances such as televisions, computers and white goods is increasing, but so too is the efficiency.

Key Interaction

Reducing electricity demand will help reduce energy requirements and emissions from electricity generation.

Level 1

A lack of ambition to curb usage as well as an increase in lighting in and outside of the home means lighting demand increases. Appliance demand also increase with a rise in the number of appliances owned in the home.

Level 2

Lighting and appliance demand remains the same as in 2015. Efficiencies improve thus reducing the overall energy consumed for lighting and appliances compared to the 2015.

Level 3

Demand for lighting and appliances decreases due to a behavioural shift. There is a complete switch to LED lighting. Appliances continue to see improved efficiencies.

Level 4

LEDs are used for all lighting, and technological advances realise a more efficient form of LED bulb for creating white light from UV LEDs. Lights in buildings automatically turn off when not needed and more daylight lighting options are included in new builds. Similar behavioural changes are applied to appliances reducing overall demand.

Default Timing   Start year: 2020, End year: 2050

Sub-Lever	Units	2015	Level 1	Level 2	Level 3	Level 4
Demand						
Lighting - Residential	Index	1.00	1.50	1.00	0.85	0.70
Lighting - Non-Res	Index	1.00	1.30	1.00	0.75	0.50
Appliance - Residential	Index	1.00	1.50	1.00	0.75	0.50
Appliance - Non-Res	Index	1.00	1.30	1.00	0.90	0.80
Energy Intensity						
Lighting - Residential	Index	1.00	0.78	0.33	0.33	0.25
Lighting - Non-Res	Index	1.00	0.79	0.50	0.50	0.40
Appliance - Residential	Index	1.00	0.90	0.77	0.63	0.50
Appliance - Non-Res	Index	1.00	0.90	0.77	0.63	0.50
Air Con - Residential	Index	1.00	0.90	0.77	0.63	0.50
Air Con - Non-Res	Index	1.00	0.90	0.77	0.63	0.50

Residential Appliance - Energy Intensity Index