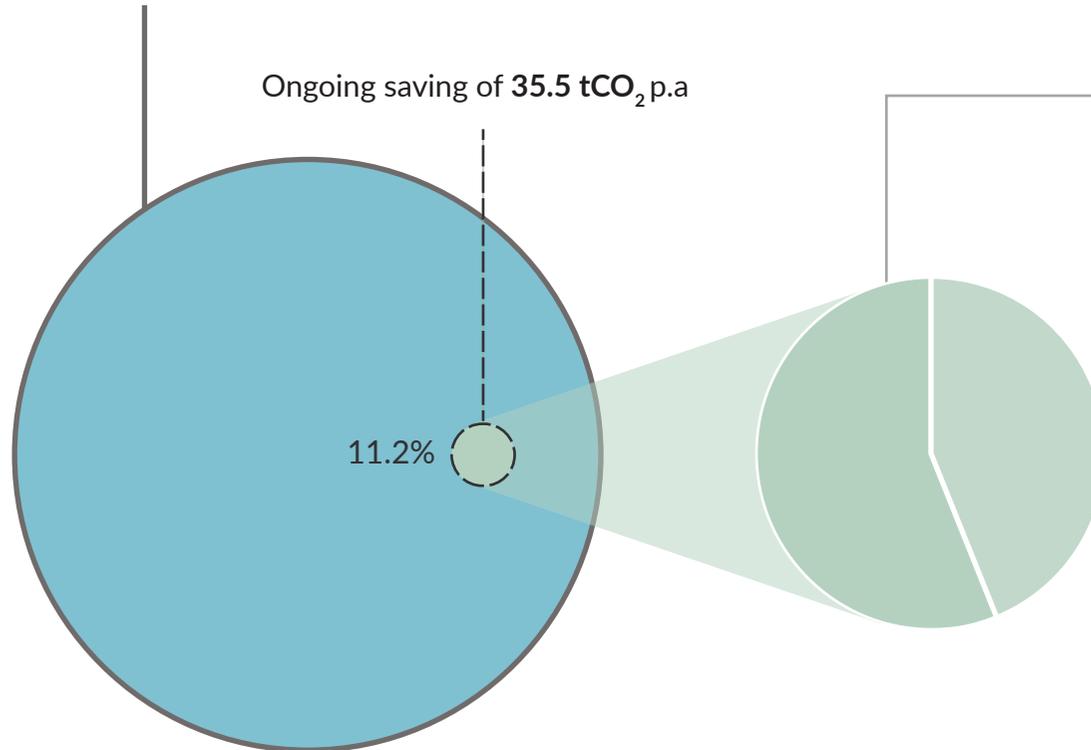


University of Oxford Henry Wellcome Building for Molecular Physiology.
 Building management system optimisation.



Typical annual emissions 317 tCO₂



Ongoing saving of 35.5 tCO₂ p.a

11.2%

Air handling unit 1 timeclock adjustment

The timeclocks for Air Handling Unit 1 have been changed so that they better match the occupation and usage of the building.

The new settings have reduced weekly run hours to 54 from 168. A reduction of 68%.

Air handling unit 2 timeclock adjustment

The timeclocks for Air Handling Unit 2 have been changed so that they better match the occupation and usage of the building.

The settings are now as follows:

Mon – Fri: Full Ventilation: 0800 – 1900
 Three Quarters: 1900 – 2300
 Minimum Speed: 2300 – 0800

Sat – Sun: Three Quarters: 0800 – 1900
 Minimum Speed: 1900 – 0800

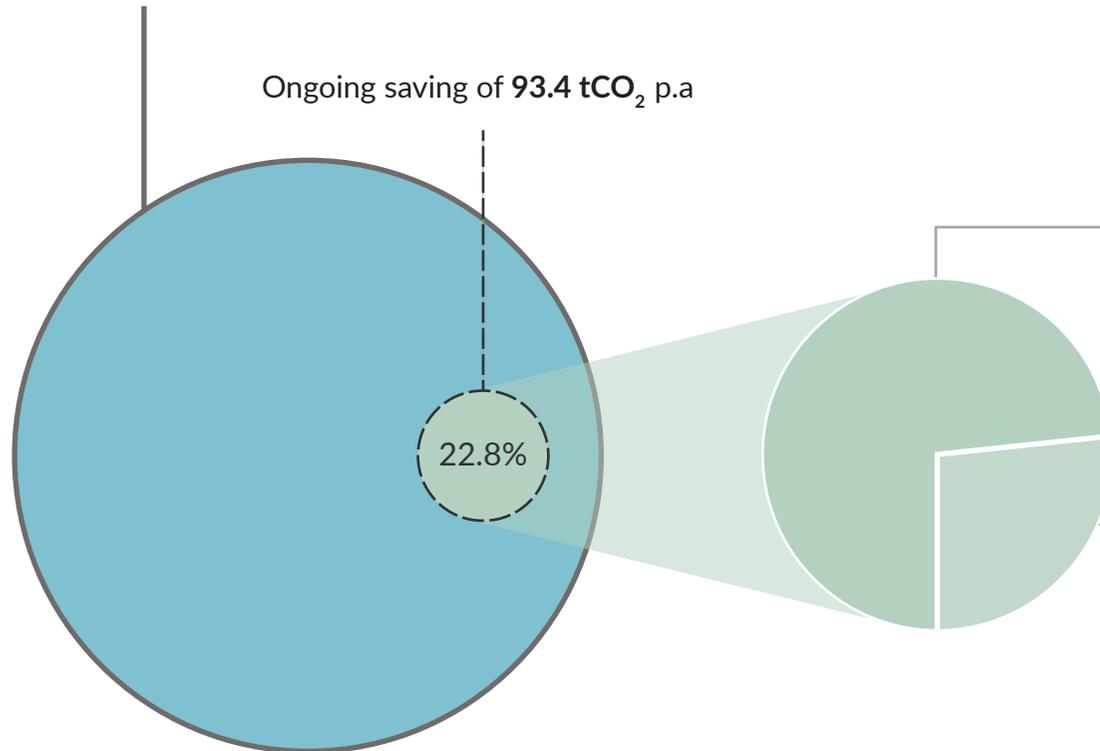


35.5t CO₂ is equivalent to the CO₂ emitted from 5.9 households in one year (DECC 2015).

A saving of 35.5t CO₂,
 Equivalent to £6,395 p.a at time of implementation, 2017.

Typical annual emissions 410 tCO₂

Ongoing saving of 93.4 tCO₂ p.a



22.8%

Air handling unit night time setback

Previously, the air handling units were operating at full speed 24/7. We have implemented a new pressure based control strategy whereby the air handling unit controls to 130 Pascals during occupied hours and 50 Pascals during low occupancy hours. This reduces fan power, and the energy requirement of boilers and chillers.

Chiller and associated pump operation

The chilled water pumps previously operated continuously. We have implemented temperature control setpoints so that the pumps do not operate when the temperature is between 5C and 15C. Within this band, passive cooling of the building using outside air is possible.



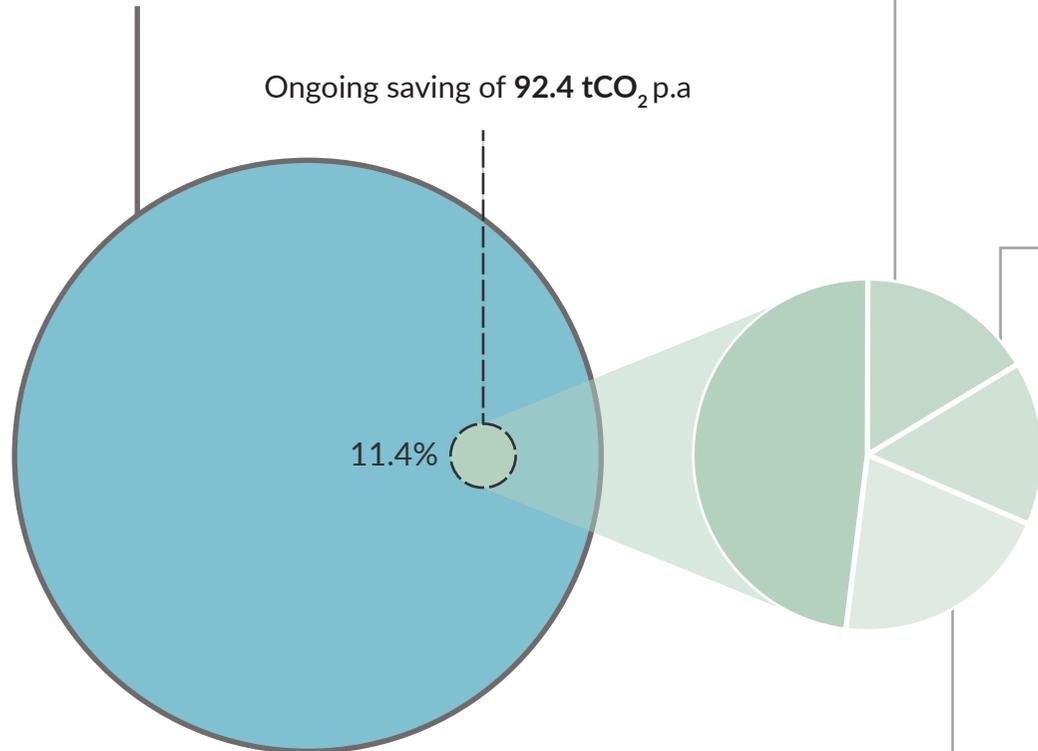
93.4t CO₂ is equivalent to the CO₂ emitted from 15.5 households in one year (DECC 2015).

A saving of 93.4t CO₂.
Equivalent to £14,310 p.a at time of implementation, 2017.

University of Oxford Manor Road Building.
Building management system optimisation.



Typical annual emissions 813 tCO₂



Ongoing saving of 92.4 tCO₂ p.a

11.4%



92.4t CO₂ is equivalent to the CO₂ emitted from 15.1 households in one year (DECC 2015).

Phase 1 air handling unit timeclock optimisation

The timeclocks controlling the air handling units in phase 1 have been altered so that the operational hours are in accordance with the occupancy of the areas served.

The timeclocks for air handling units 1 & 3 are now as follows:

Mon - Fri: 0900 - 1900
Sat & Sun: 1200 - 1700

Phase 2 air handling unit timeclock optimisation

The timeclocks controlling the air handling units in phase 2 have been altered so that the operational hours are in accordance with the occupancy of the areas served.

The timeclocks for all air handling units are now as follows:

Mon - Fri: 0900 - 1900
Sat & Sun: 1100 - 1700

Air conditioning unit timeclock adjustment

The timeclocks controlling the seminar room air conditioning units have been altered so that the operational hours are in accordance with the occupancy of the areas served.

The timeclocks for all five air conditioning units are now as follows:

Mon - Fri: 0900 - 1700
Sat & Sun: Off

Removal of De-Humidification

The use of de-humidification in the building is not deemed necessary and as a consequence de-humidification has been removed from the control algorithm for selected air handling units. This affects air handling unit 1 in phase 1 and all air handling units in phase 2.

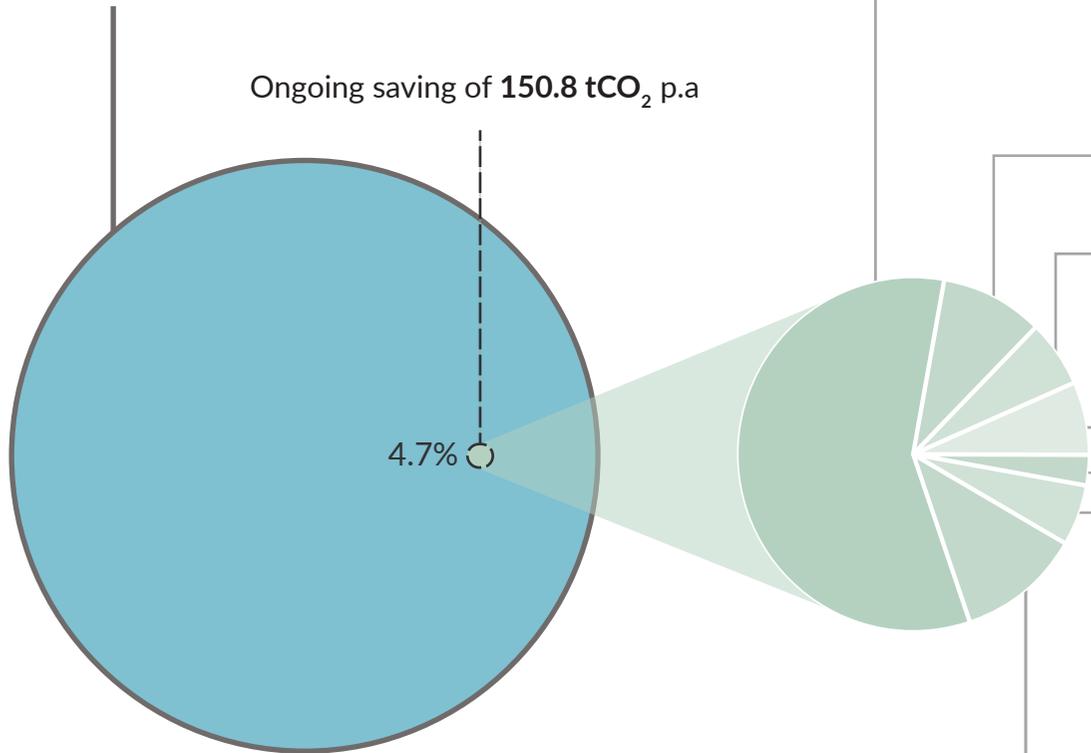
A saving of 92.4t CO₂.

Equivalent to £16,500 p.a at time of implementation, 2016.

Typical annual emissions 3,180 tCO₂

Ongoing saving of 150.8 tCO₂ p.a

4.7%



■ **Lab ventilation setback**

The ventilation controls to the labs were altered so that between 8pm and 8am the amount of ventilation is reduced. As a back-up the ventilation will begin to rise during this time if temperature limits are reached.

■ **Chiller pump frost protection**

The frost protection temperature on the chiller pumps was reduced to prevent the chiller pumps from running too soon.

■ **Bioinformatics**

The Bioinformatics room was originally intended to be used for high grade IT purposes but has subsequently been used more akin to a general office. Several floor fans and an air conditioning unit were isolated to take into account this reduced load.

■ **Write-Up ventilation setback**

The controls for the ventilation serving the write-up areas was adjusted to include a reduced rate between 8pm and 8am. During this period the atrium provides sufficient fresh air for the limited number of people working overnight.

■ **Ventilation frost protection**

The frost protection temperature setpoint on the ventilation unit B2 was reduced to prevent the heating system activating before required.

■ **Chiller optimisation**

One of the chillers was found to be in fault, but this fault was not registered by its pumps. This meant that the pumps ran even if the chiller was unable to provide any cooling. Controls were set up to prevent the pumps from running if the chiller is in fault.

■ **Atrium setback**

The controls to the atrium were disabled overnight as long as the space remains within tolerable conditions. A feature has also been added to help purge any excess heat overnight in preparation for the next day.



150 tCO₂ is equivalent to the CO₂ emitted from 25 households in one year (DECC 2015).

A saving of 150 tCO₂,
Equivalent to £28,500 p.a at time of implementation, 2015.