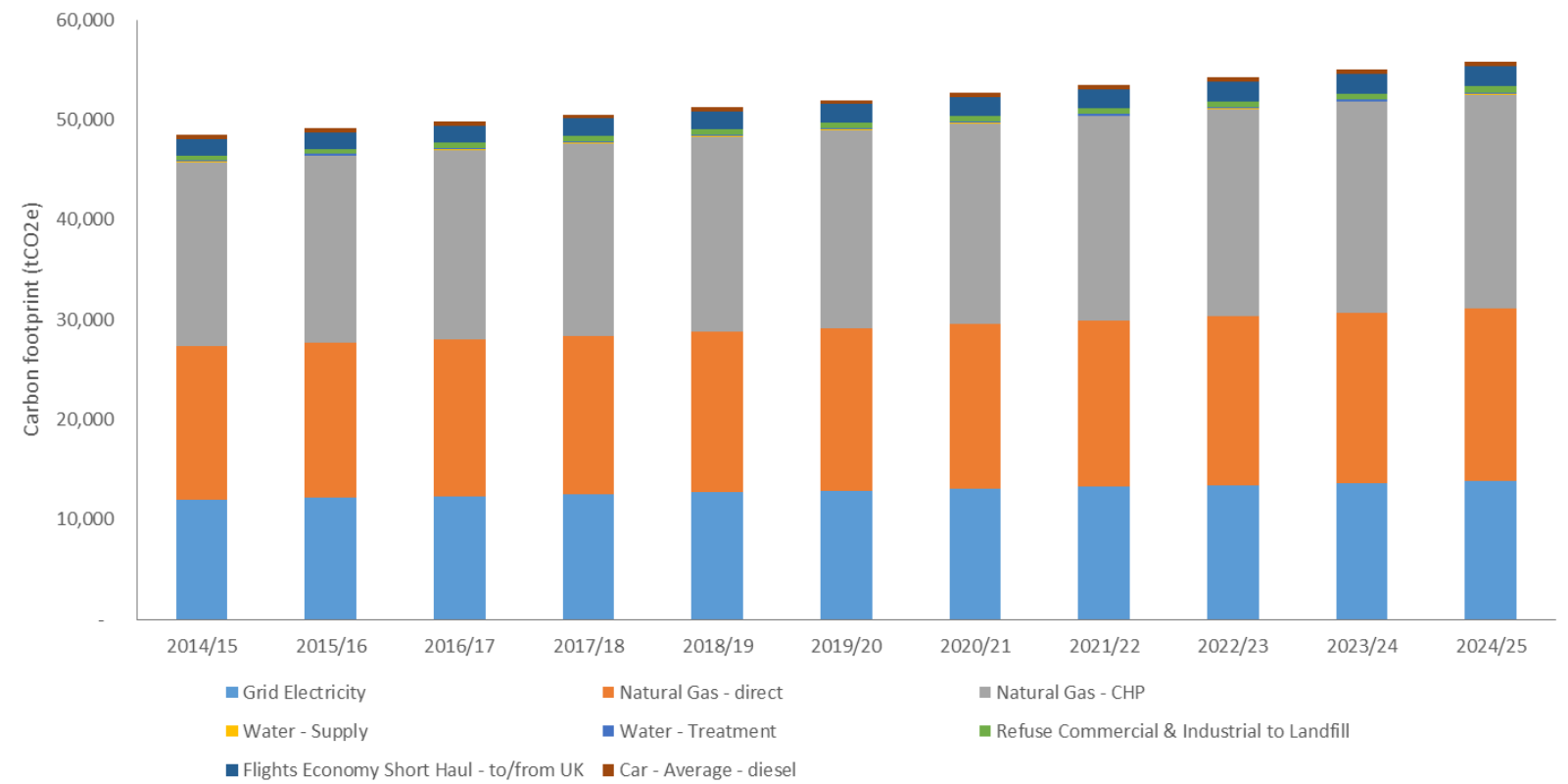




Demonstration of the Carbon Scenario Tool



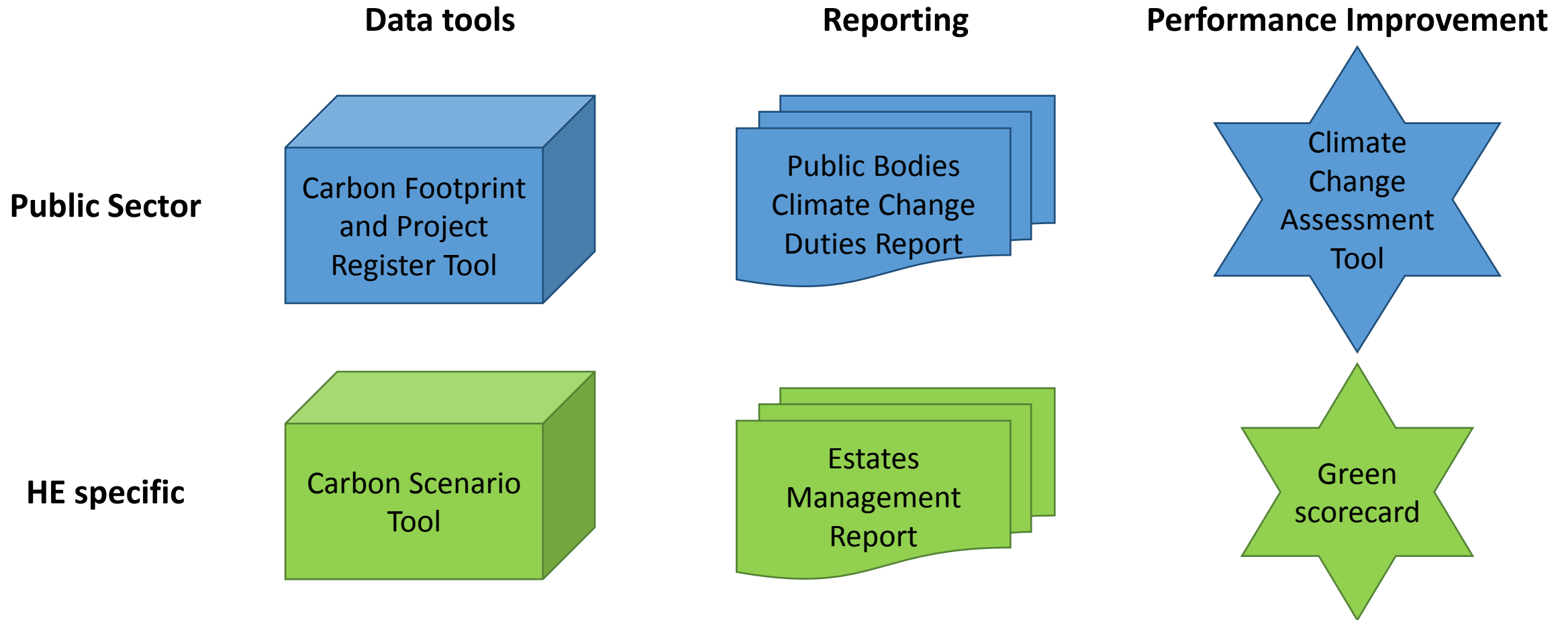
Webinar outline	Time
Background to the Carbon Scenario Tool, including history and process of development	13:00 – 13:05
Overview of the various Carbon Scenario Tool elements	13:05 – 13:10
Introduction to Carbon Footprinting facility	13:10 – 13:20
Introduction to forecasting facility and dataset requirements	13:20 – 13:25
Building a forecast based on future additional building opening and closures	13:25 – 13:30
Introduction to scenario facility and data requirements	13:30 – 13:35
Building a scenario based on future student and floor area increases	13:35 – 13:45
Incorporating carbon reduction projects	13:45 – 13:50
Interpreting overall results and using graphs and outputs in Climate Change Strategy documents	13:50 – 14:00

Background to the Carbon Scenario Tool

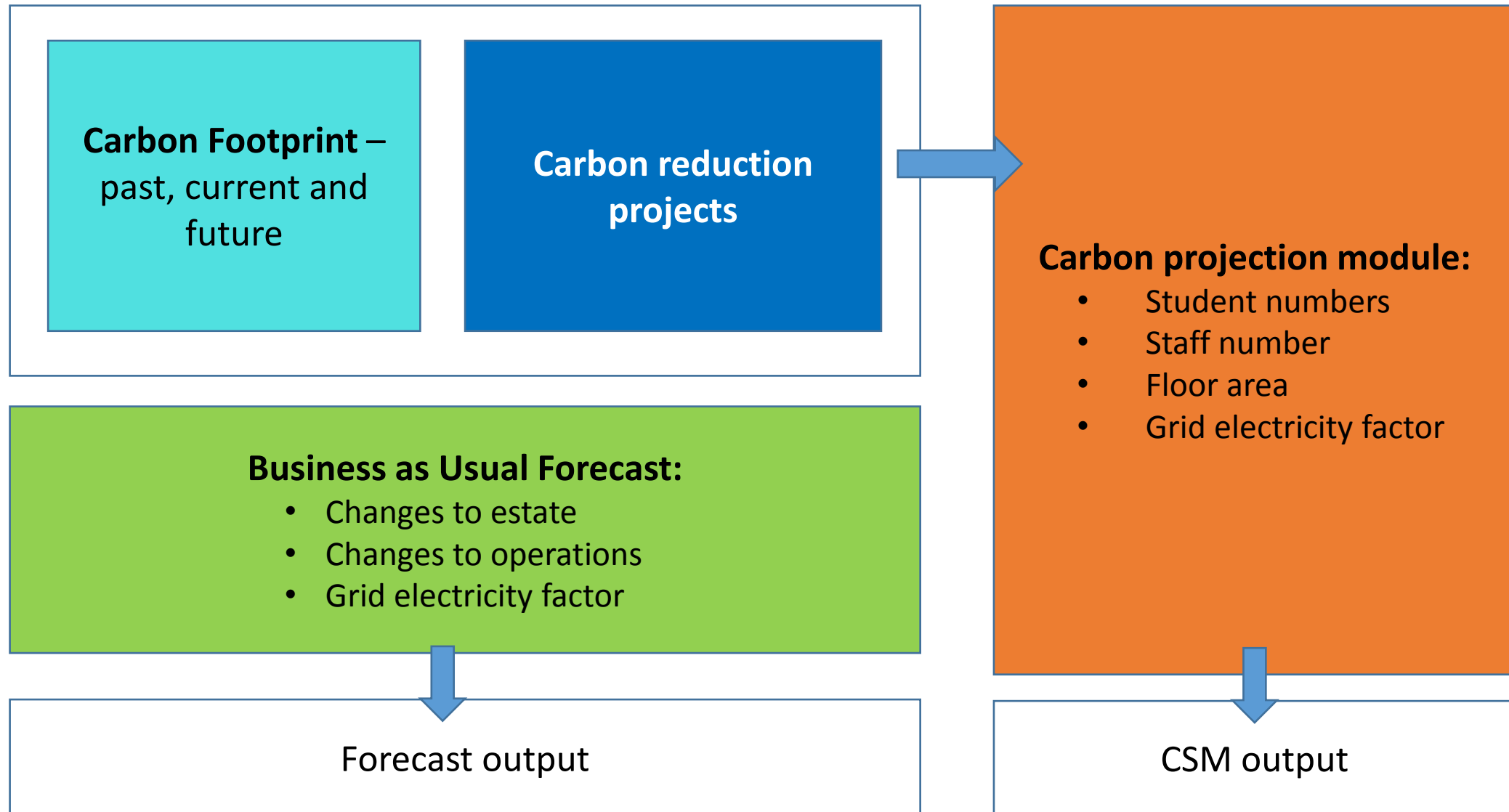
- Developed as a joint funded project between University of Edinburgh and the Scottish Funding Council
- Designed to manage, report and forecast carbon emissions for the University's estate and operations
- It can calculate the impact of carbon reduction projects on the carbon footprint
- Enable the development of scenarios that project future carbon footprints based on:
 - Changing student and staff numbers
 - Changing floor areas
 - Decarbonisation of the electricity grid



What is the Carbon Scenario Tool for?



Overview of CST elements



Out of boundary:

Refrigerants

Staff commuting

Business travel

Taxi

Bus

Rail

Outsourced activities

Procurement of goods/services

Key

Scope 1

Scope 2

Scope 3

Emission sources within Carbon Management boundary:

Campus A – 25% of floor area

Electricity generation & T&D losses

Water Supply & treatment

Natural gas - direct

Natural gas - CHP

Commercial & industrial waste to landfill

Private car

Air

Campus D – 55% of floor area

Electricity generation & T&D losses

Water Supply & treatment

Natural gas - direct

Natural gas - CHP

Commercial & industrial waste to landfill

Private car

Air

Campus B – 10% of floor area

Electricity generation & T&D losses

Water Supply & treatment

Natural gas - direct

Commercial & industrial waste to landfill

Private car

Air

Campus C – 10% of floor area

Electricity generation & T&D losses

Water Supply & treatment

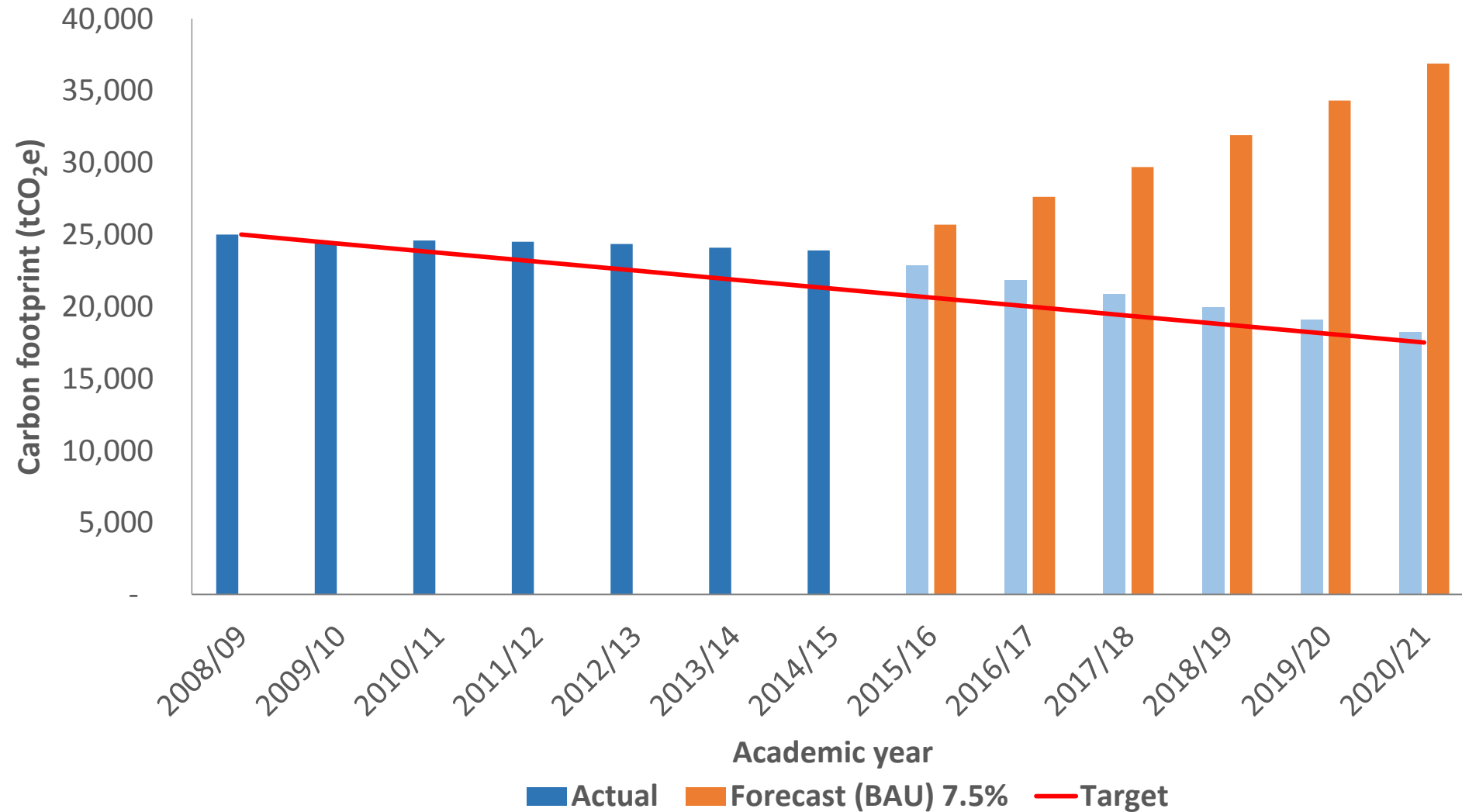
Natural gas - direct

Commercial & industrial waste to landfill

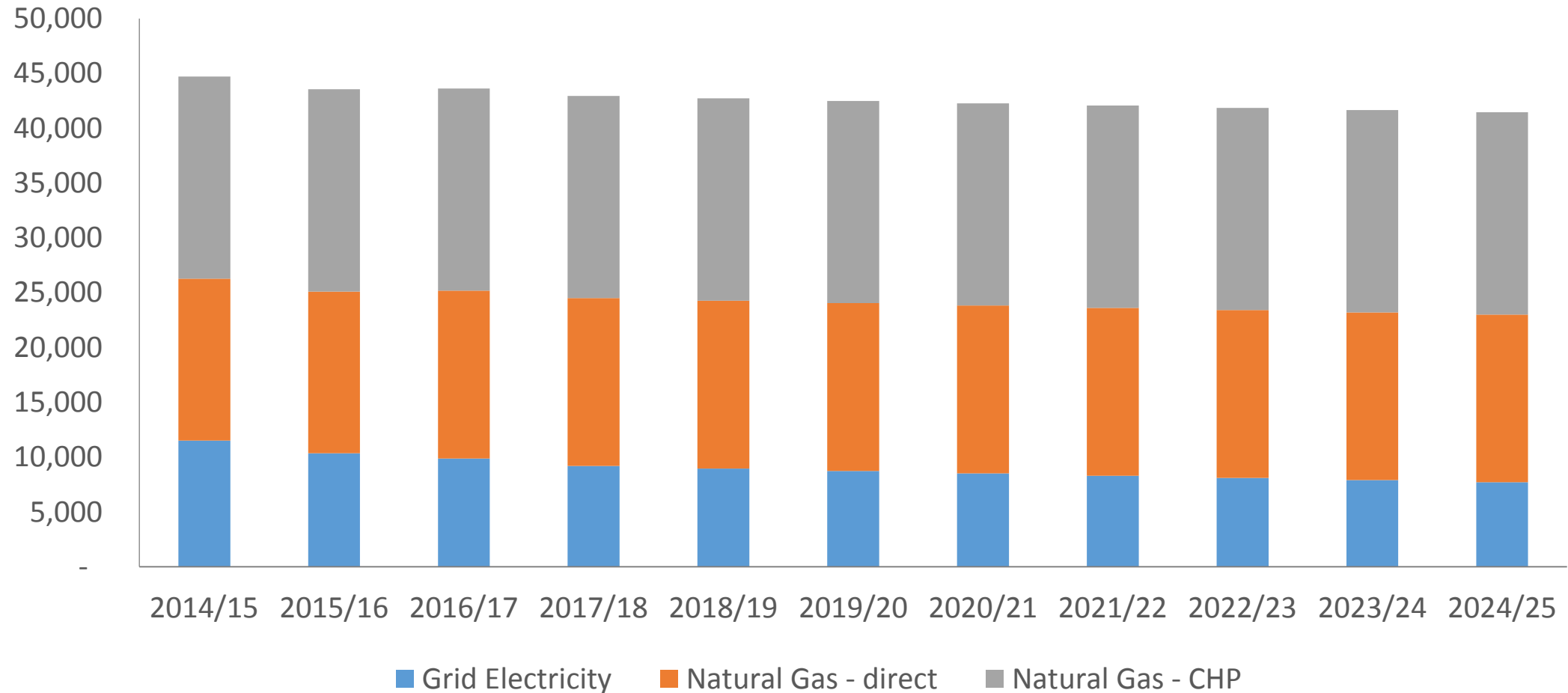
Private car

Air

Where are you going?

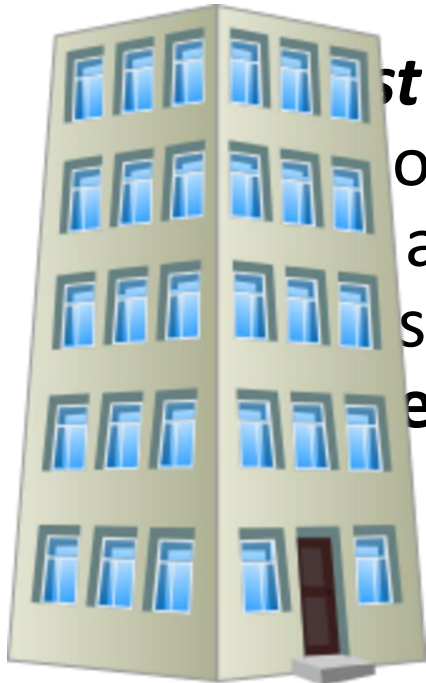


What will you be doing?



Difference between forecasting and projecting

Forecast



What is the impact of a new engineering building?

20,000 m²

Mid-range estimate of consumption:

Grid elec: 1,000,000 kWh

Natural gas: 3,000,000 kWh

Projection

What happens if:

Student numbers increase by 3% per year

Floor area increases by 10% per year

assumptions. It is sometimes used to present one or more hypothetical courses of actions for evaluation. It often answers the "what if" question



Building a forecast

- There are a number of ways to do this; very similar to RES CF&PR tool:

Add or close buildings – to close them, you have to have them separately listed

Existing Building /Operation?	Future New Build /operation
No	2016/17



Really need your estate listed by building but probably the most accurate short term forecasting method

Increase or decrease an emission source

Year of Change	% Change (at Year of Change)	Final Year of Full Operation
2015/16	5%	N/a



Only allows one change per emission sources so carbon footprint has to be listed in detail

Change the grid factor

2016/17	2017/18	2018/19
0.438	0.427	0.416



Requires assumptions about the grid

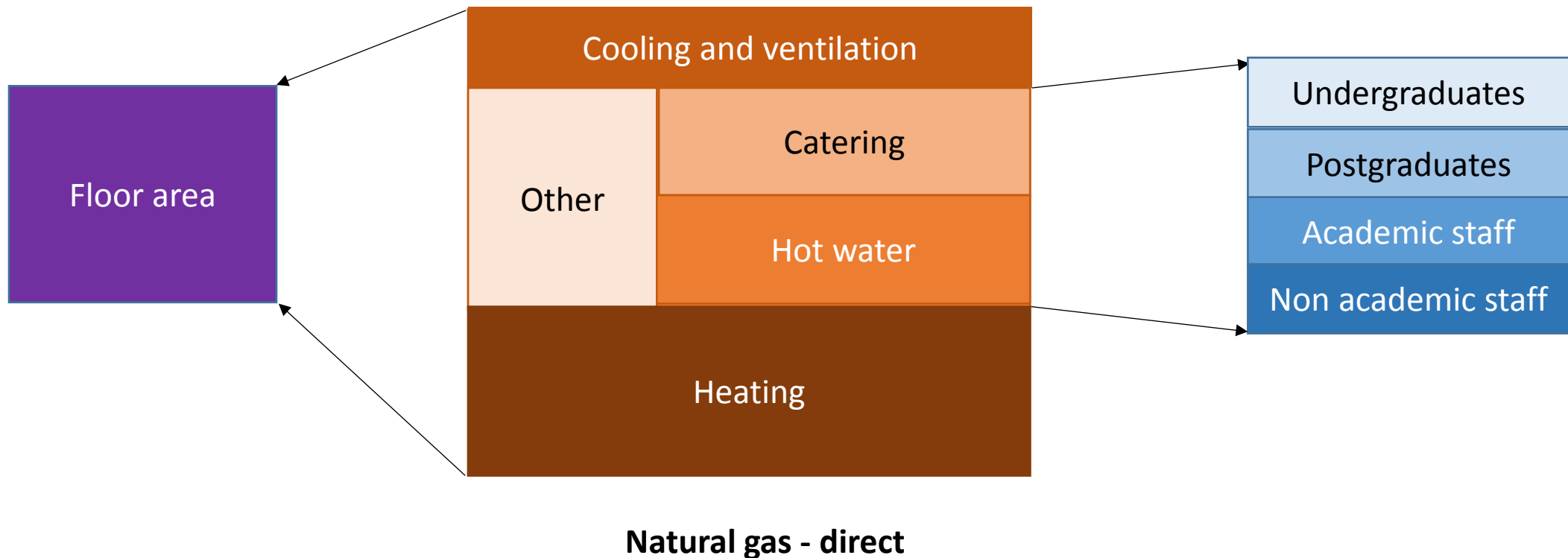
Building a scenario; data requirements

This is done in the CSM Factors tab but requires the tool to be loaded with information in Space and People allocations

Data	By year	By campus
Undergraduate numbers	Source: HESA	Source: Institution records
Postgraduate numbers		
Academic staff numbers		
Non-academic staff numbers		
Floor area		
Income (£ million)		No required

How does the tool work? *End use matrix*

For the three key emission sources (grid electricity, natural gas direct and natural gas CHP), there are assumed to be a set of end uses:

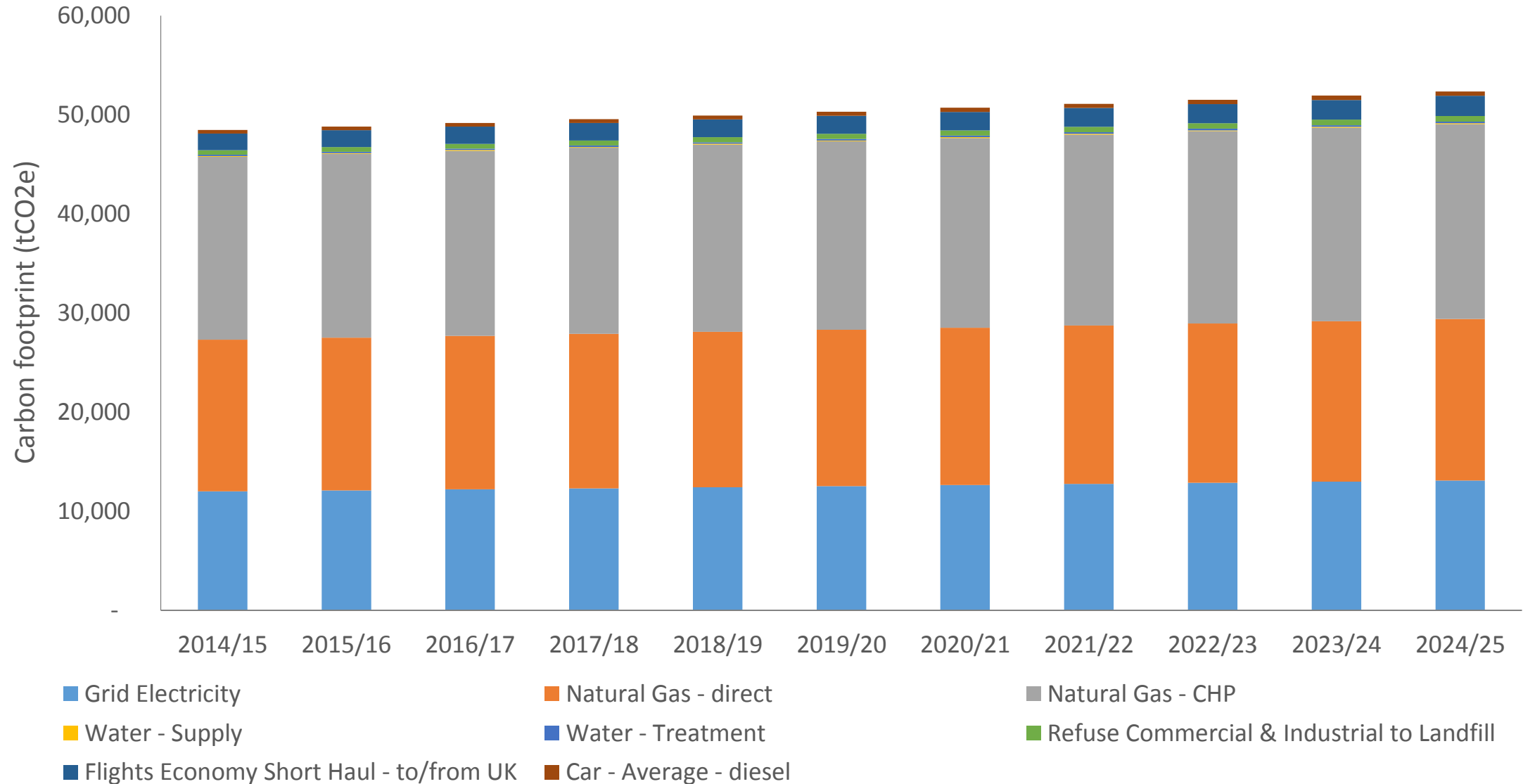


How does the tool work? *End use assumptions*

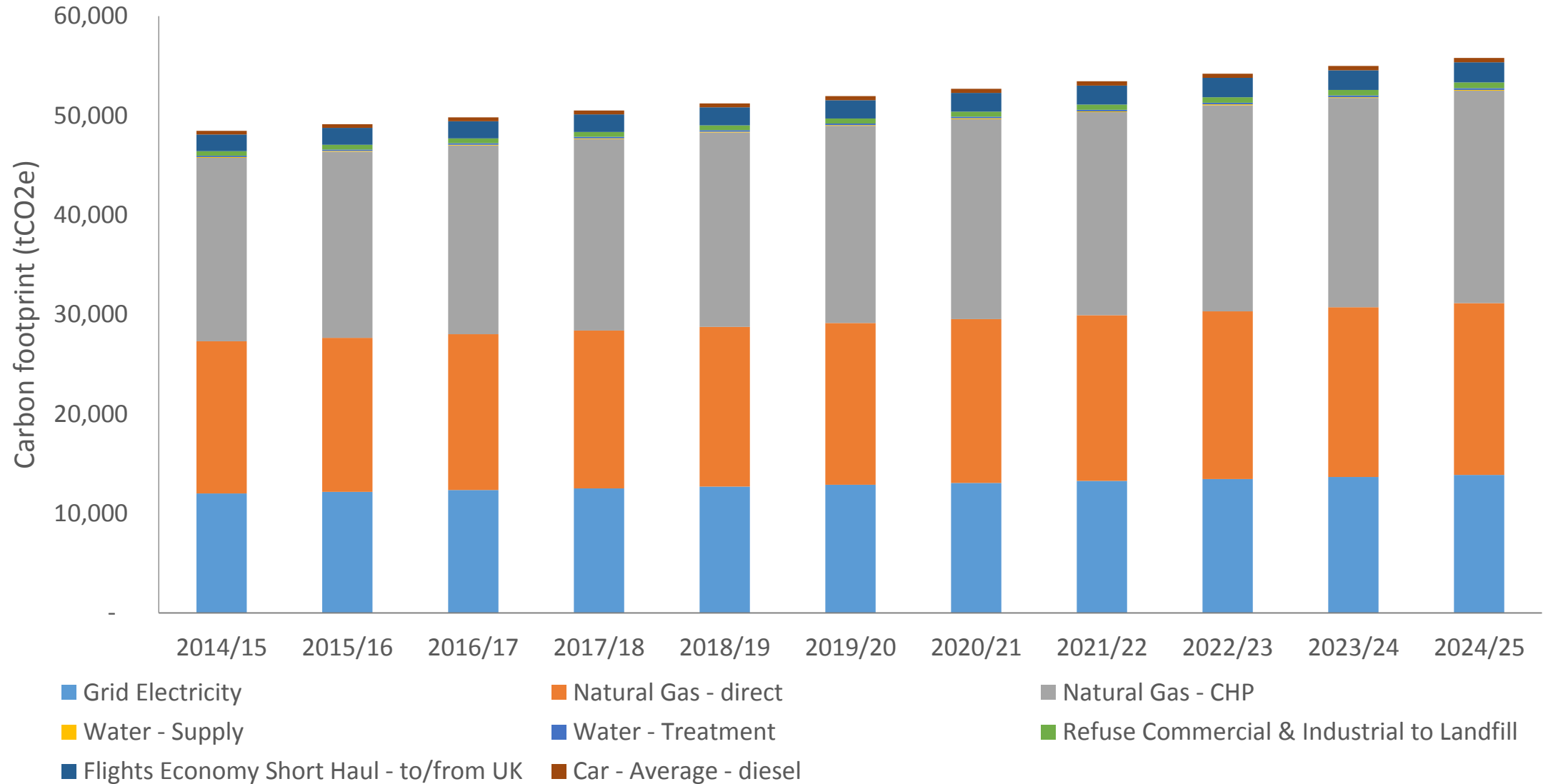
Sector	Fuel	Use	Estimated percentage	Campus A
Education	Grid Electricity	Catering	11%	5%
Education	Grid Electricity	Computing	12%	25%
Education	Grid Electricity	Cooling and Ventilation	2%	2%
Education	Grid Electricity	Hot Water	7%	7%
Education	Grid Electricity	Heating	8%	8%
Education	Grid Electricity	Lighting	51%	45%
Education	Grid Electricity	Other	9%	8%

The estimated percentage of end use comes from Government data but can be changed for each campus

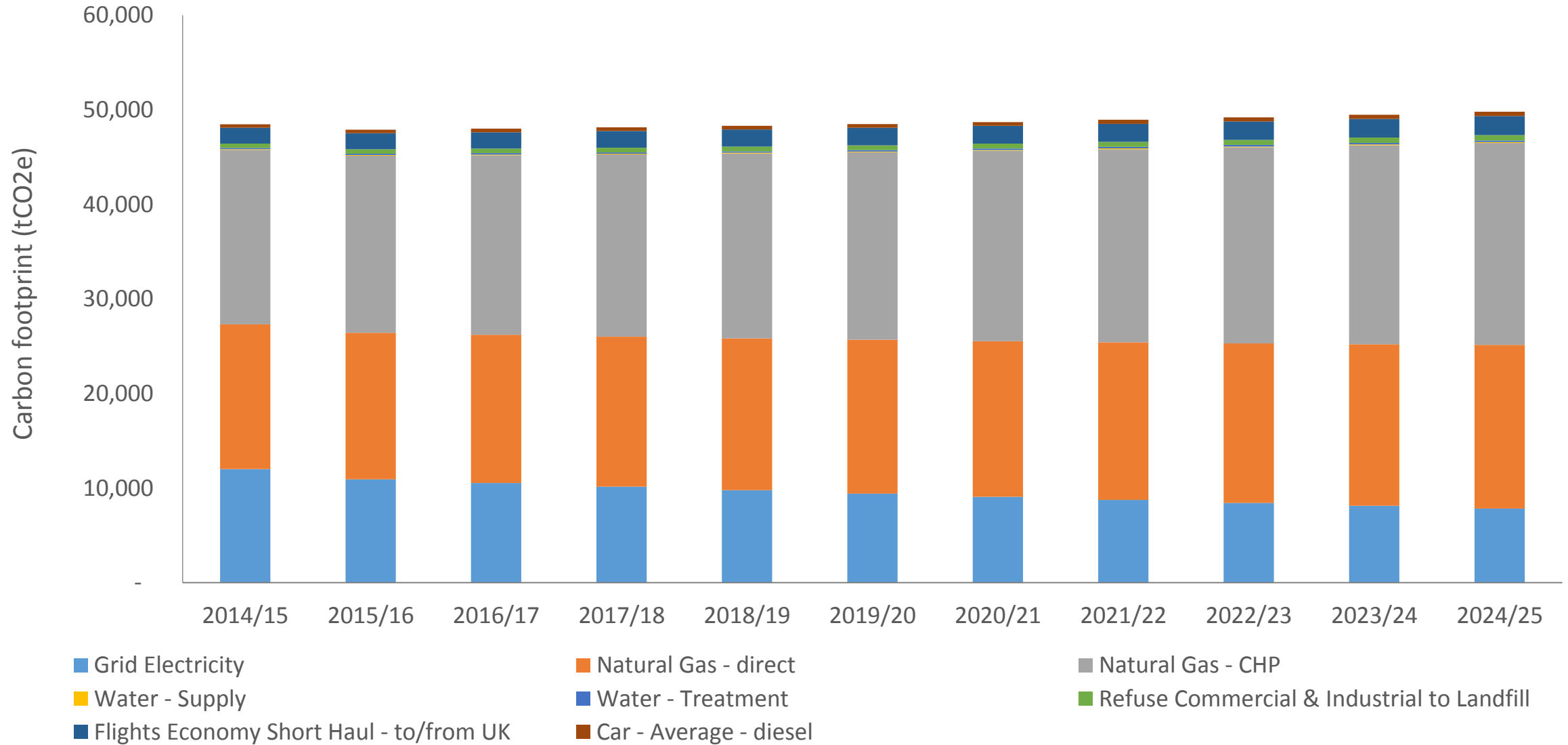
Scenario 1: 2% annual growth in staff and student numbers but no floor area increase (grid factor constant)



Scenario 2: 2% annual growth in staff and student numbers and floor area increase (grid factor constant)



Scenario 3: 2% annual growth in staff and student numbers and floor area and annual 3% decrease in grid factor



Incorporating carbon reduction projects

- There is the option to produce a 'with carbon reductions' project forecast or scenario
- Projects need to be entered into the 'Projects' tab with information about applicable campus, amount of anticipated saving and implementation date
- Forecasts and projections (with and without projects) are produced:
 - As carbon emissions
 - As consumption units
 - As cost

Interpreting and using outputs

Use graphs in Carbon Strategy documents to help indicate the impact of growth on carbon emissions

Use the CST to develop a range of outcomes for different growth strategies and investment

Use CST to have a discussion with finance managers about capital investment in lower carbon buildings

**How CST
could be
used**

Use the CST to identify gaps in your understanding of what is driving your carbon footprint

Use CST to demonstrate to senior management how likely you are to meet future targets

Use the CST to help develop a strategy for future fuel use composition and investment in technologies