Carbon Footprint and Project Register Training

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Keep Scotland Beautiful

Agenda

Agenda	
Introduction to SSN and housekeeping	10.30 – 10.35
Introduction to workshop, CFPR tool and identification of key organisational needs	10.35 – 10.45
The carbon management information triangle – *carbon footprint*	10.45 – 11.00
Exercise to enter CFPR footprint data and outputs	11.00 – 11.20
Exercise to identify data patterns in operational footprints (plus coffee break)	11.20 – 11.50
PBCCD Q3a, 3b and 3c	11.50 – 12.00
The carbon management information triangle – *carbon reduction projects*	12.00 – 1.00
Lunch	1.00 - 1.45
Exercises to enter new projects and amend existing projects	1.45 – 2.15
PBCCD Q3e, 3f and 3h	2.15 – 2.30
The carbon management information triangle – *Business as Usual scenario*	2.30 – 2.45
Exercise to change the scenario	2.45 – 3.00
PBCCD Q3g and 3i	3:15 – 3.30
Trouble shooting – typical problems and how to solve them	3.30 – 3.50
Summary and wrap up	3.50 – 4.00

Introduction to this training event

The aim of this interactive workshop will help you better understand how to:

- Calculate your annual carbon footprint
- Collate and manage their carbon project list and forecast savings
- Document estate changes and other impacts on your footprint to create a Business as Usual forecast
- Track progress towards targets and provide management information to other parts of the organisation
- Produce accurate and auditable outputs to easily complete annual Public Bodies Climate Change Duties reporting

Carbon Register & Project Register (CFPR) tool

Philosophy of the CFPR tool

- Designed to be easy to use with minimal data entry
- Helps to easily calculate your footprint, create a project register and run a Business As Usual scenario
- Presents easy to follow charts and figures to help you visualise your bodies emissions through time
- Full explanatory section at start with notes throughout
- Tool is issued annually with updates to Carbon Emission Factors

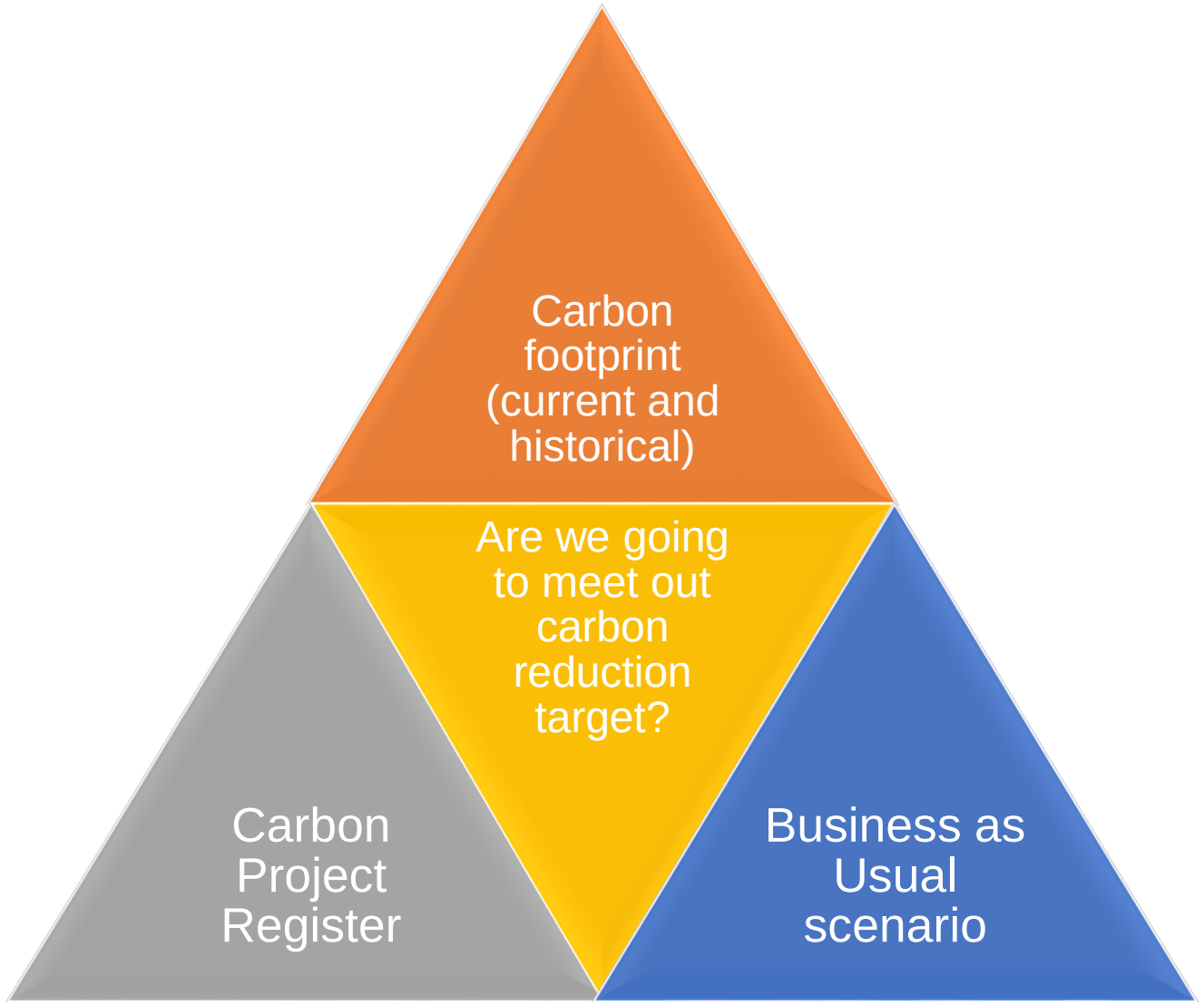
Updates to the new CFPR tool

- Builds on the previous RES tools - same format and style
- More user friendly (in my opinion!)
- Easier and more dynamic to update yearly
- Improvement in the way renewable emission sources and projects are accounted for
- Much better alignment with the public bodies duties reporting form (where possible)

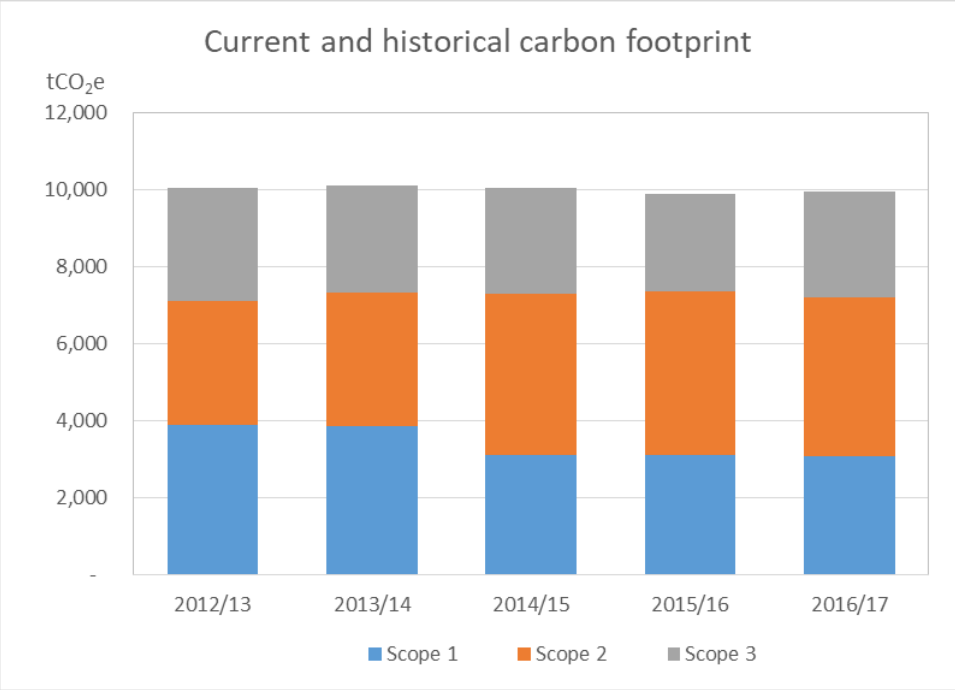
Exercise 1: Organisational needs

Using the post-it notes on the tables, note down your key organisational need from today:

The Carbon Management Triangle



Why measure your carbon footprint?



1. Provides a reference point (baseline) for setting targets
2. Tells you how far you have come (annual carbon footprint)
3. Tells you when you have met your target
4. Provides a focus for Carbon Management actions
5. Helps identify where you are likely to get greatest carbon return on investment
6. Provides an evidence base for business cases
7. Required for PBCCD reporting

Carbon footprint scopes

Scope 1 - direct emissions from sources that are owned or controlled by the organisation

e.g. natural gas used for heating and hot water, purchased diesel and petrol, fugitive emissions from refrigerants

Scope 2 - emissions from the consumption of purchased electricity, steam generated upstream from the organisation

Generation of electricity or heat and steam

Scope 3 - other indirect emissions that are a consequence of the operations of an organisation, but are not directly owned or controlled by the organisation

e.g. business travel using public transport or grey fleet, waste disposal, water supply and treatment and Transmission and Distribution losses for grid electricity

What is the boundary of my organisation?

GHG Protocol sets out two methods of determining your boundary; financial and operational control. However, these were set with businesses in mind, rather than the public sector. Therefore we should focus on 5 key questions:

1. Do we have sufficient control to be able to reduce emissions?
2. Is it recognised as part of our estate or organisation by the public?
3. Can we get hold of the data?
4. Do we pay the bill?
5. What did we report last year?

Out of boundary:

- Refrigerants
- **Business travel**
  - Taxi
  - Bus
  - Rail
- Staff commuting
- Procurement of goods/services
- CO_2 from biomass

Emission sources within Carbon Management boundary:

3 buildings

Direct fuel use
- Natural gas (kWh)
- Biomass (kWh)

Electricity
- Generation (kWh)
- T&D losses (kWh)

Waste disposal
- **Recycling (tonnes)**
  - Mixed
- **Landfill (tonnes)**
  - Commercial & industrial

Water
- Supply (m^3)
- Treatment (m^3)

Fleet vehicles
- Diesel (litres)

Business travel
- Private car (km)
- Air (passenger km)

Key
- Scope 1
- Scope 2
- Scope 3
- Out of scope

Documentation

1. It is useful to also have an actual asset list
2. This should list all the buildings in your estate included in the boundary
3. It should also detail the rationale for inclusion in the notes
4. For emission sources that are related to a building, it should show whether these are included
5. For fleet, a summary of vehicles should be sufficient

Exercise 2: carbon footprint data entry into the CFPR

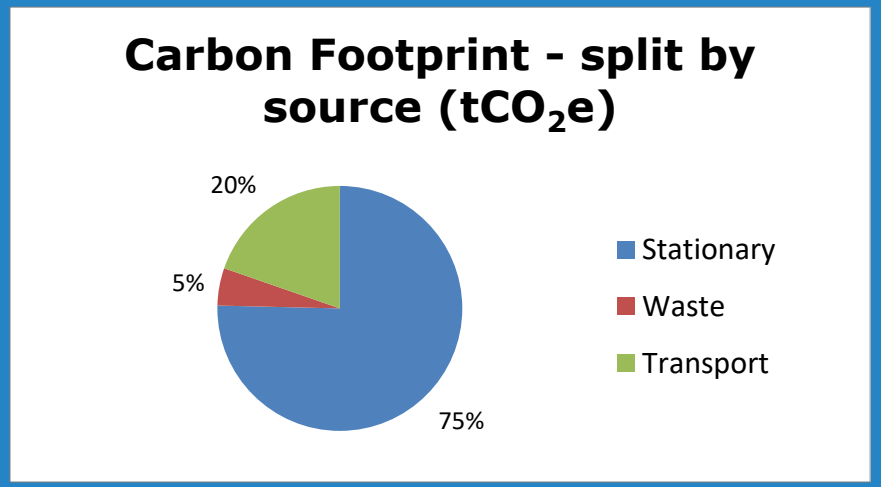
Building 1
Electricity: 2,000,000 kWh
Gas: 5,000,000 kWh
Floor area: 2,000 m^2

Building 2
Electricity: 3,000,000 kWh
Gas: 500,000 kWh
Biomass: 4,500,000 kWh
Floor area: 5,000 m^2

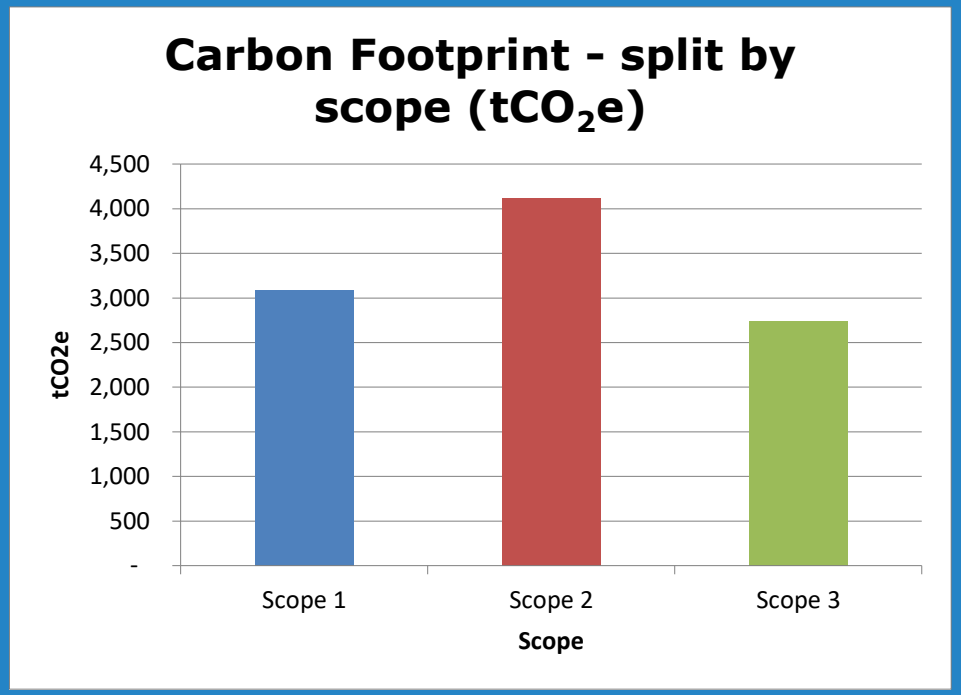
Building 3
Electricity: 5,000,000 kWh
Gas: 10,000,000 kWh
Floor area: 10,000 m^2

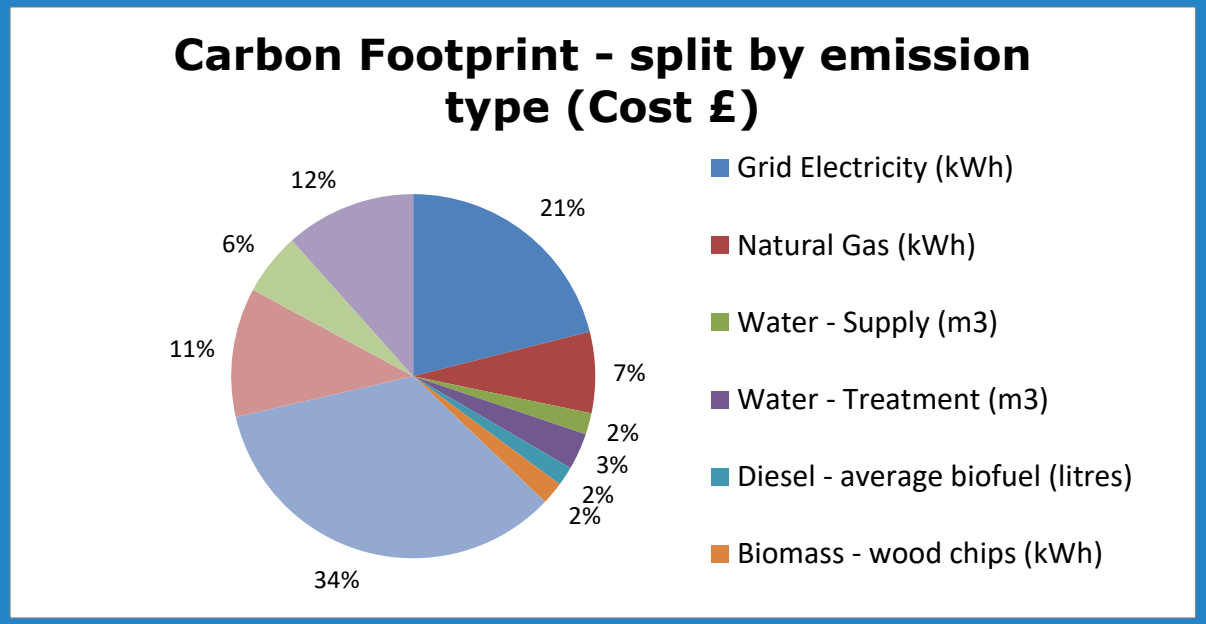
Category	Emission source	Emission type	Amount
Water supply	**Stationary**	**Water - Supply (m3)**	**100,000**
Water treatment	**Stationary**	**Water - Treatment (m3)**	**95,000**
Waste recycling	Waste	Paper & Board (Mixed) Recycling (tonnes)	4,500
Waste to landfill	**Waste**	**Refuse Commercial & Industrial to Landfill (tonnes)**	**2,000**
Fleet	**Transport**	**Diesel - average biofuel (litres)**	**70,000**
Business travel car	Transport	Car - Unknown fuel - Average (km)	5,000,000
Business travel flights	**Transport**	**Short Haul Flights - Average passenger (passenger km)**	**5,000,000**

Outputs of the CFPR for carbon footprint



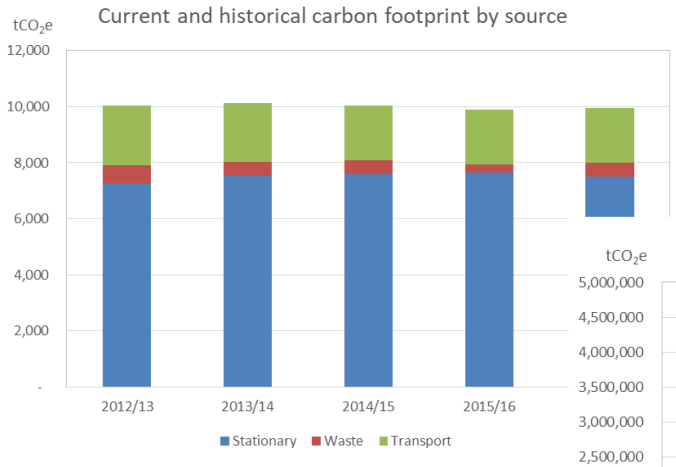
Simple graphs and tables – split by source, type and scope

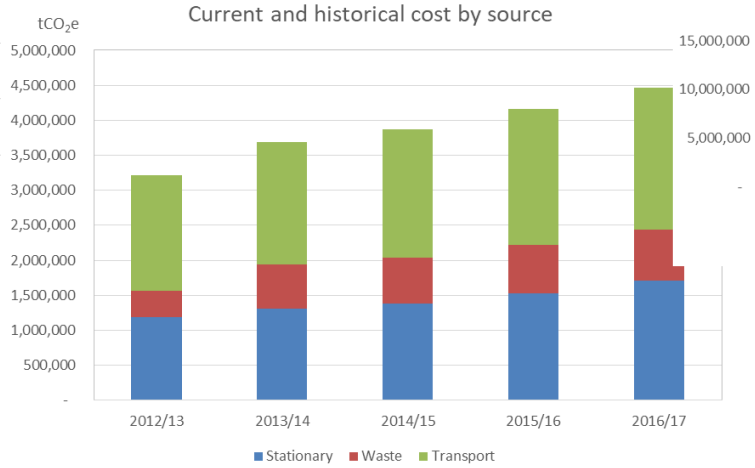


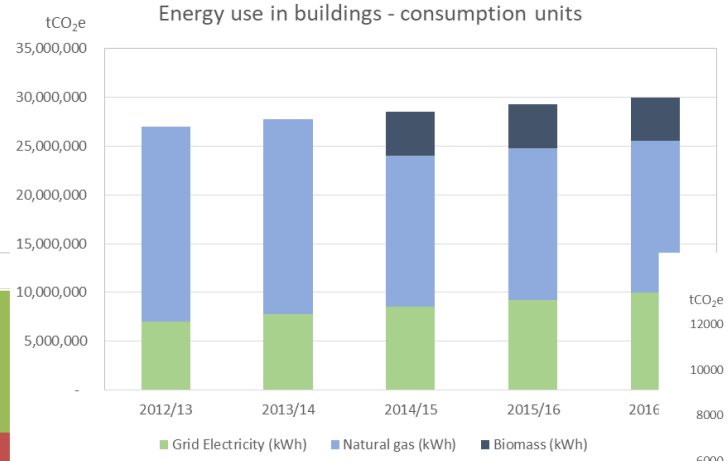


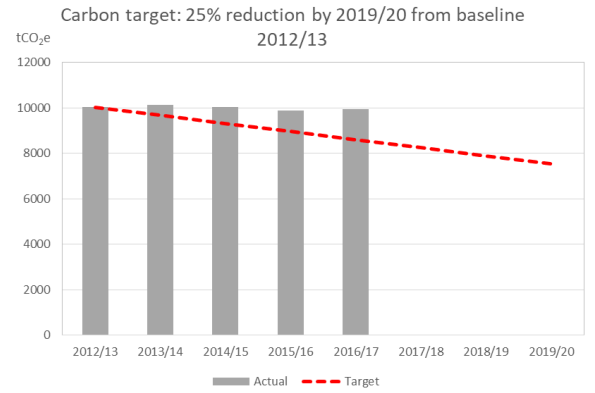
Exercise 3a: is the organisation going to meet their target?

1. Work in pairs or small groups
2. You have been provided with historical and current carbon footprint data for a medium sized public body
3. Answer the questions on the handout based on the data available









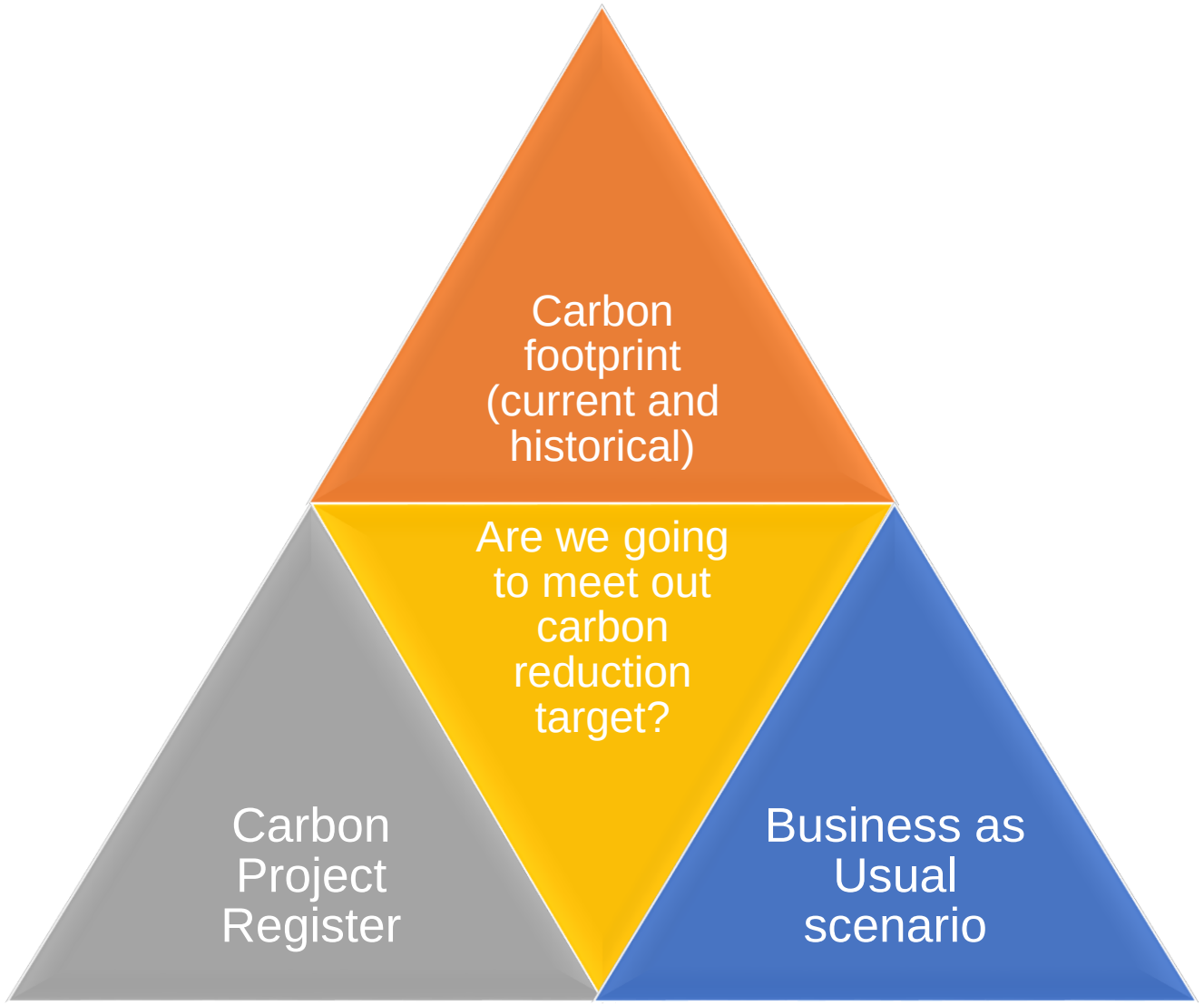
Using the CFPR to complete your PBCCD report – Q3a, 3b, 3c

3a - Emissions from start of the year which the body uses as a baseline (for its carbon footprint) to the end of the report year.
Use Outputs for Public Bodies Duties reporting – Table a

3b - Breakdown of emission sources
Use Outputs for Public Bodies Duties reporting – Table b

3c - Generation, consumption and export of renewable energy
Use Outputs for Public Bodies Duties reporting – Table c

The Carbon Management Triangle – Carbon Project Register



The carbon project register

1. Acts as a project register to store ALL carbon saving project information
2. Reference list of ‘Live’ and ‘Future’ projects
    - Keeps you updated on project progress
    - Helps prioritise projects for funding/implementation
    - Helps in predicting your progress against your Carbon Reduction target(s)
3. Reference list of ‘Completed’ projects
    - Helps you review project success/barriers
    - Supports analysis (bias towards certain projects?)

The carbon project register

Project Information needs to be **clear** and **accurate**. This gives confidence in project analysis, comparisons between projects and carbon forecasting, helping you make the **right** decisions.

1. Project ID, description, location
2. Year of Implementation
3. Capital (and ongoing maint/op costs)
4. Responsibilities
5. Project Status
6. Confidence
7. Emission Saving details (and any associated emission increases)

The carbon project register

Accurate and timely Project data collection is essential to keep the Project Register ‘live’ – relevant and providing confidence.

1. **WHO** provides the information? Energy/Water/Waste/Travel/Costing information?
2. **WHERE** do they provide it to?
3. **HOW** do they provide it? What format?
4. **WHEN** do they provide it?

The carbon project register

1. Who needs to know what?
   a) Internal Stakeholders – Staff, Board etc
   b) External Stakeholders – General public, funders etc
2. What do they need to know and when?
   a) Project Status/Timelines
   b) Costs/savings
   c) Progress towards Carbon Reduction target(s)
3. Key messages
   a) Format (graphs/tables)
   b) Journey (come from, going to, distance travelled, on target – are we nearly there yet!)

Exercise 4a: entering a new project

Demo on entering a new project – Food & Drink (from Landfill to Composting)

Exercise – enter the following new project – LED lighting upgrade

Project Description	Location	Com Year	Cap Cost	Additional Annual Op/Maint Saving	Project Status	Subject to CRC EES	Type of Saving	Type of Emission	Amount	Annual Savings for…
Lighting upgrade to LED	Building 1	2016/17	50,000	100	In Progress	Yes	Stationary	Grid Elec	130,000	No

Exercise 4a: entering a new renewables project

Project List (Renewables) slightly different: Inputs/Outputs/Displaced Fuels.

Exercise – enter the following new project – Solar PV
Do Inputs section yourself!
No Export BUT FiT support

Project Description	Location	Com Year	Cap Cost	Additional Annual Op/Maint Saving	Project Status	Subject to CRC EES	Output consumed by Org	Income from Financial Support	Saving from Displaced fuel
Solar PV	Building 2	2017/18	160,000	1,500	Full Details Dev	Yes	110,000	2,200	110,000

Exercise 4b: updating existing project information

Take some time to have a look through the Project List tabs and then add/amend the following projects. Note the impact of each.

1. Increase the total number of all LED lamps to be installed by 50%
2. Change food recycling from composting to AD
3. Instead of saving flights through train travel, teleconferencing will be used instead. How do you reflect this in the tool?
4. The PV project has been abandoned.

Keeping the project register alive

Top Tips

1. Use filters (esp. Simple Payback and Carbon Cost Effectiveness)
2. Fill in User Notes at end of each row
3. Understand and always update the Project Status
4. Always update the Estimate of Confidence

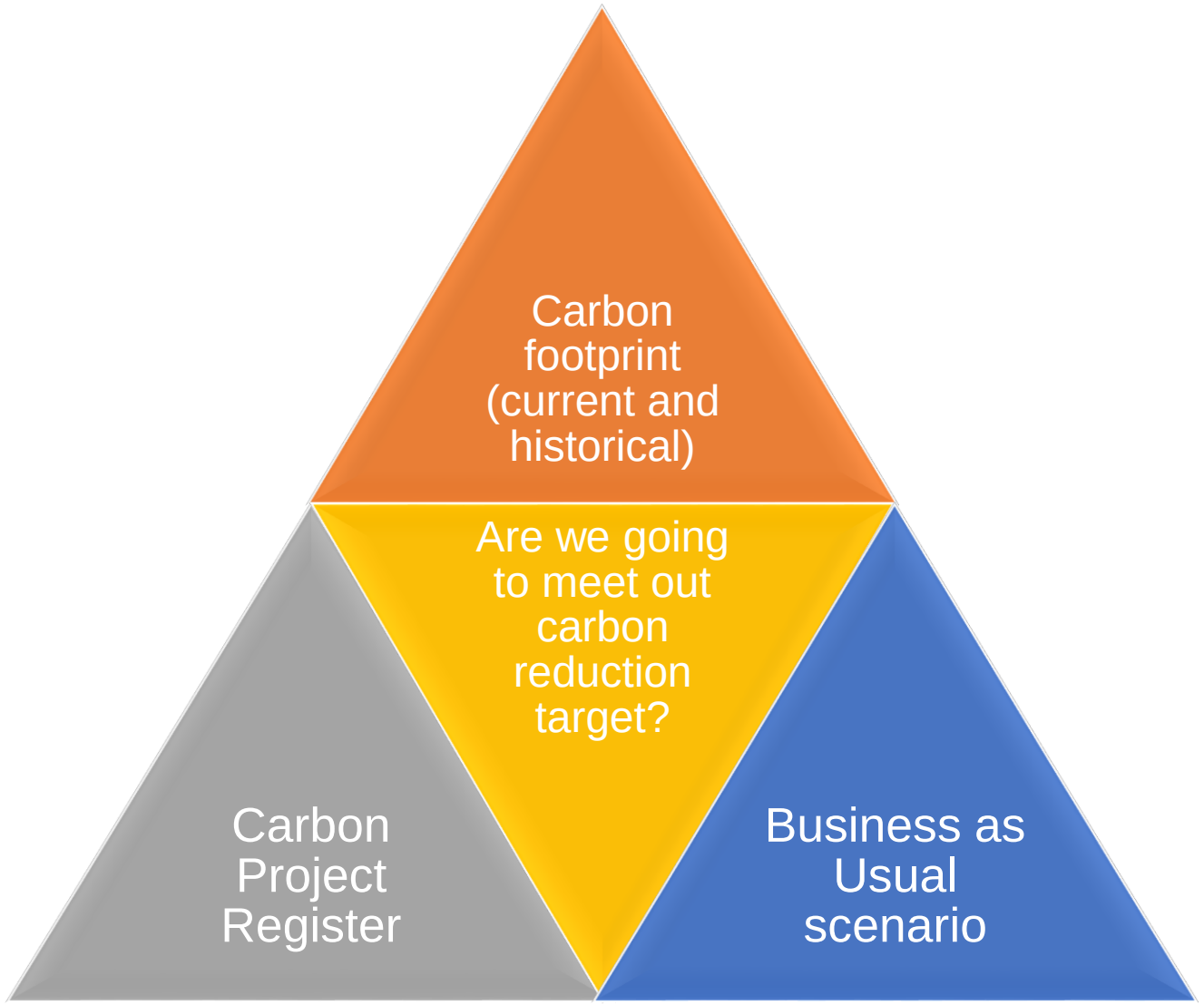
Using the CFPR to complete your PBCCD report – Q3e, 3f, 3h

3e - Estimated total annual carbon savings from all projects implemented by the body in the report year
Use the Project List & Project List (Renewables) tabs and filter for projects completed in the reporting year by emission source e.g. for reporting year 2017/18, filter for complete projects by grid electricity in commissioning year 2017/18

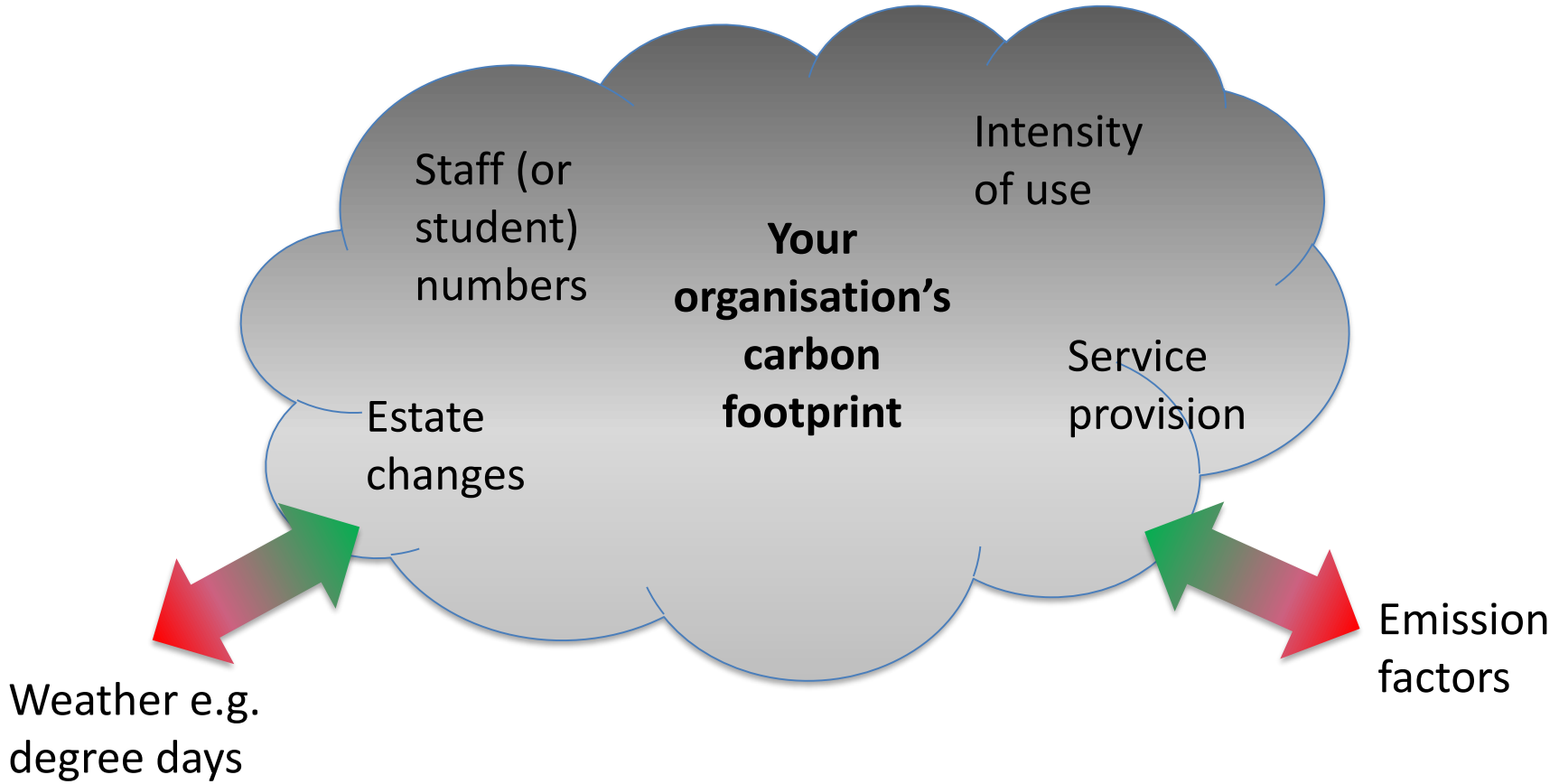
3f - Detail the top 10 carbon reduction projects to be carried out by the body in the report year
Use the Project List & Project List (Renewables) tabs and filter for projects completed in the reporting year and chose the top 10

3h - Anticipated annual carbon savings from all projects implemented by the body in the year ahead
Use the Project List & Project List (Renewables) tabs and filter for projects scheduled for the following year by emission source e.g. for reporting year 2017/18, filter for scheduled projects by grid electricity in commissioning year 2018/19

The Carbon Management Triangle – BAU



BAU – other factors that impact on your carbon footprint



Exercise 5: changing the BAU

We are going to model the impact of closing Building 1 over a two year period and moving the staff into Building 3 (which will increase staff numbers in building 3 by 25%)

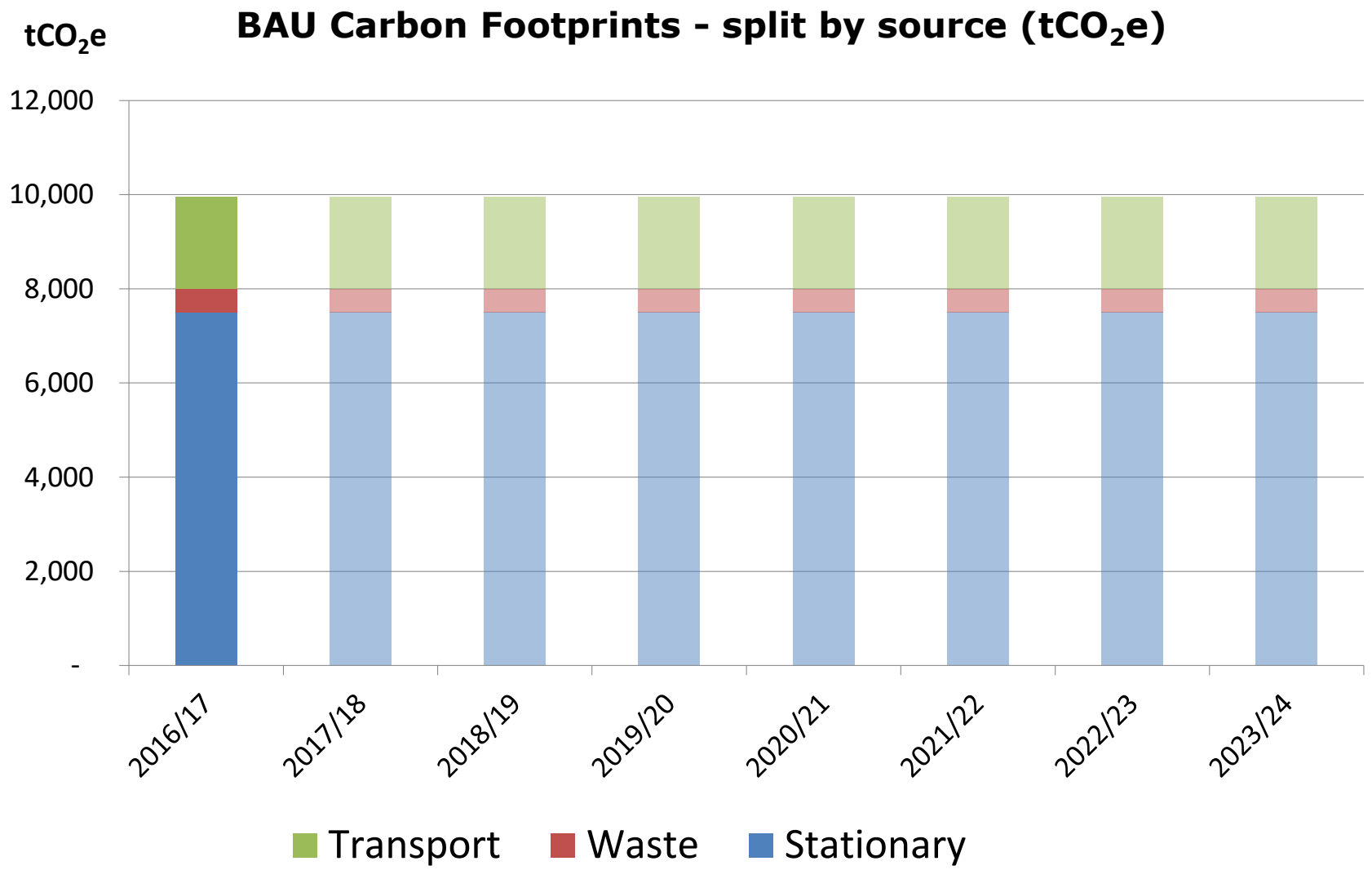
Building 1
Electricity: 2,000,000 kWh
Gas: 5,000,000 kWh
Floor area: 2,000 m^2

	Column Q	Column R	Column S
	Year of change	% change	Final year of full operation
Grid electricity in Building 1	2017/18	-50%	2018/19
Natural gas in Building 1	2017/18	-50%	2018/19

Building 3
Electricity: 5,000,000 kWh
Gas: 10,000,000 kWh
Floor area: 10,000 m^2

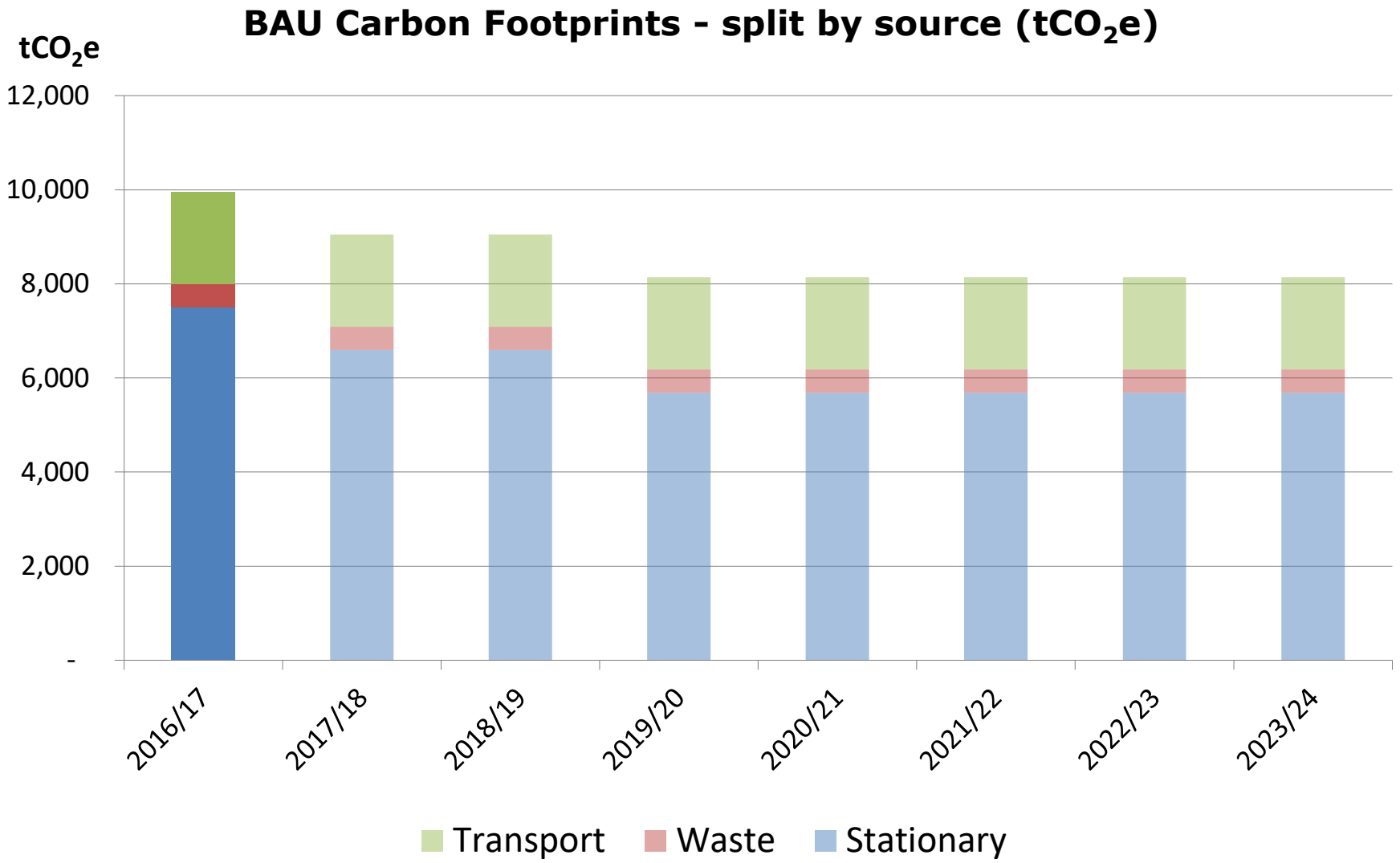
	Column Q	Column R	Column S
	Year of change	% change	Final year of full operation
Grid electricity in Building 3	2017/18	+25%	N/a
Natural gas in Building 3	2017/18	+10%	N/a

Impact of BAU on future forecast – no change scenario



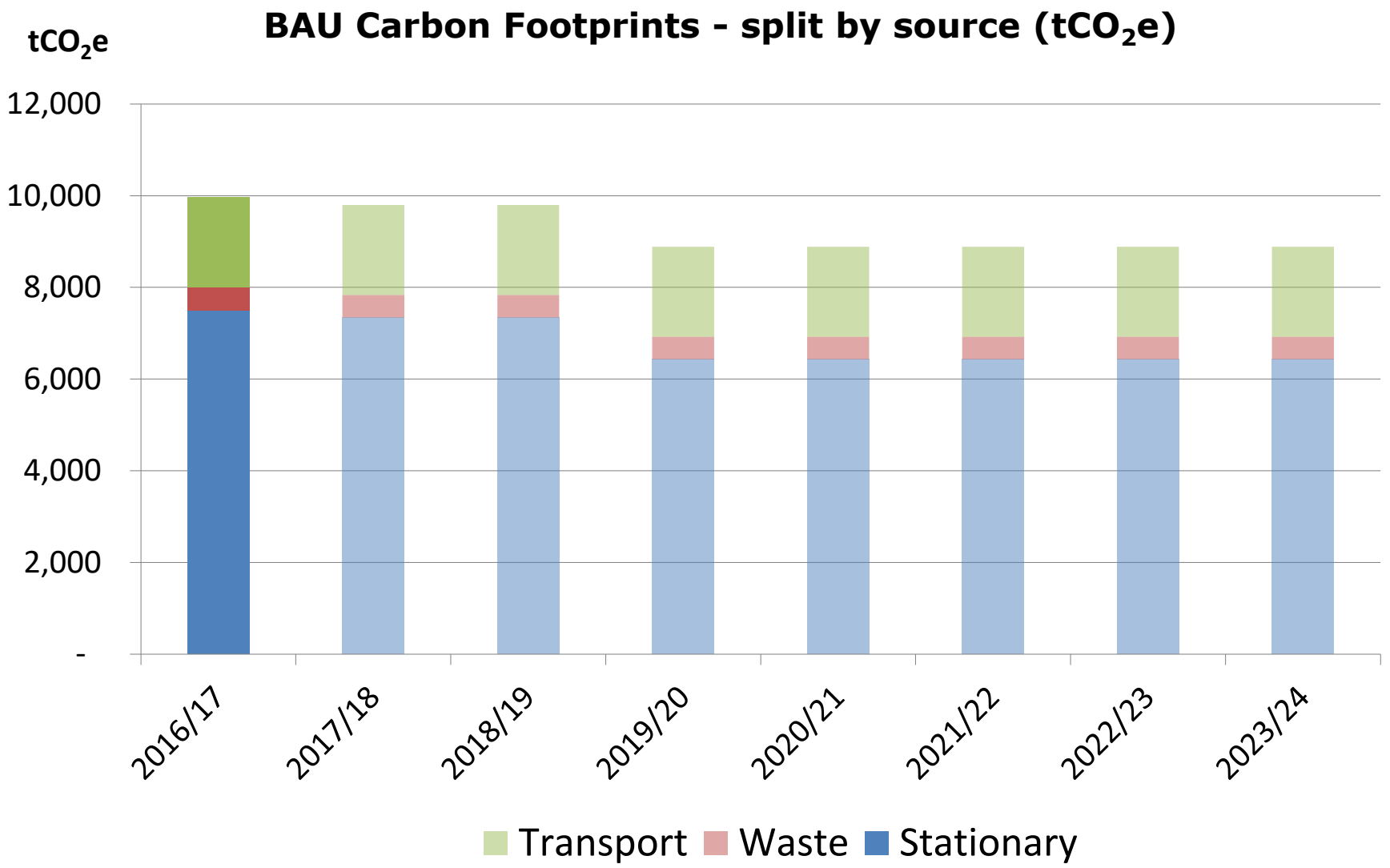
The initial Business as Usual scenario shows that there is no change in the emissions over time because all the future changes columns are set to ‘N/a’

Impact of BAU on future forecast – closure of Building 1



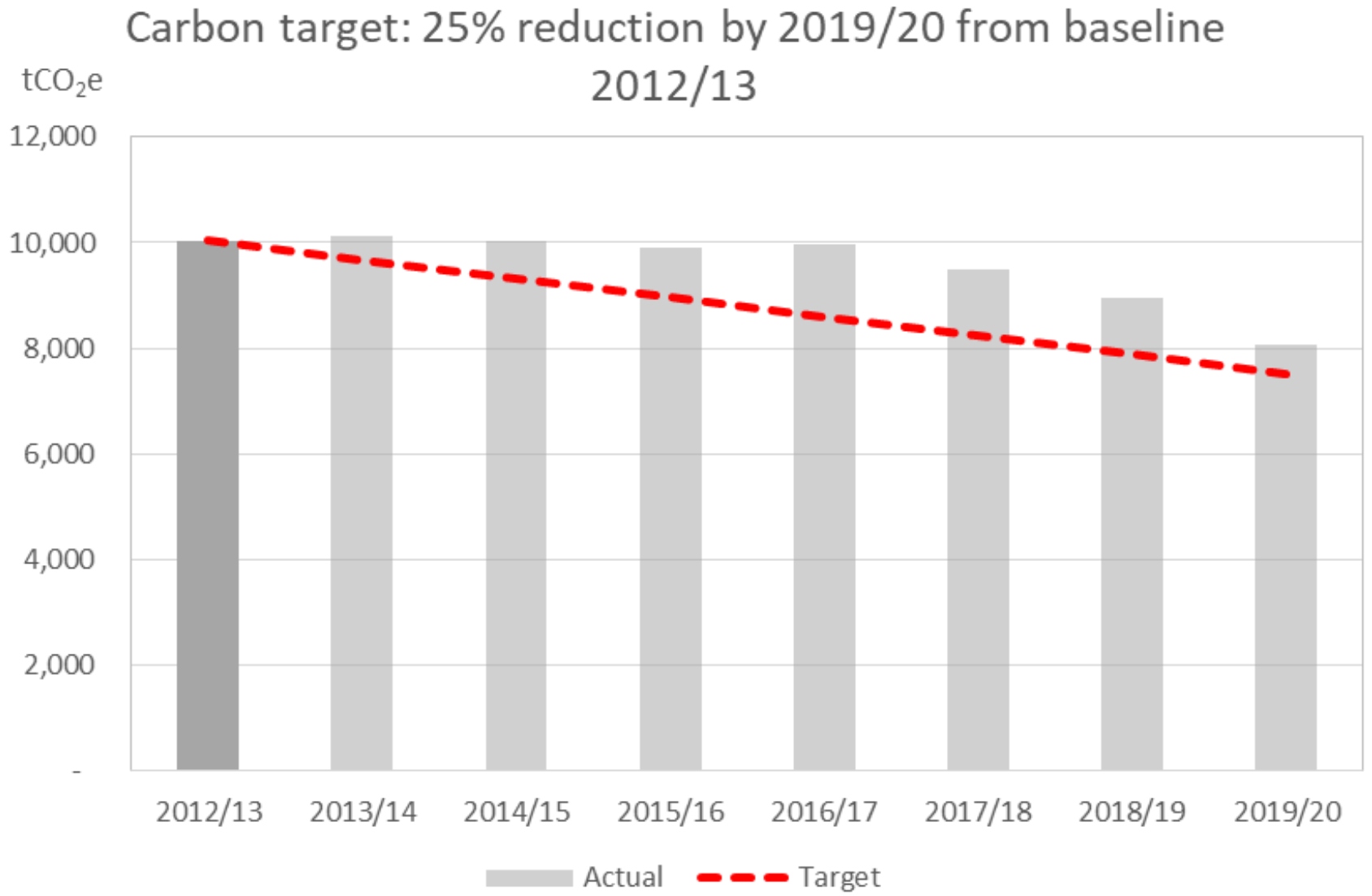
The impact of Building 1 closing is to reduces carbon footprint in the future by nearly 20%

Impact of BAU on future forecast – moving staff to Building 3



The impact of adding in the movement of staff to Building 3 pushes the footprint back up but it is still lower than in the no change scenario

Exercise 3b: is the organisation going to meet their target?



This graph shows the impact of BOTH the carbon reduction projects AND the Business As Usual Scenario on the future forecast

Using the CFPR to complete your PBCCD report – Q3g & 3i

3g - Estimated decrease or increase in the body's emissions attributed to factors (not reported anywhere else in this form) in the report year.
This is a chance to explain what has helped/hindered your organisation achieving its target in the reporting year. For example, if your target translates to a reduction of 2,000 tCO_2e and you implemented 2,500 tCO_2e project savings (as reported in Q3e in last year's report) but your footprint has only decreased by 1,000 tCO_2e, you know that something has added 1,500 tCO_2e to your footprint (or your project saving estimates were very far out).

3i - Estimated decrease or increase in the body's emissions attributed to factors (not reported elsewhere in this form) in the year ahead.
This is a chance to say what might cause you to miss your target next year. The easiest way to do this is to run a BAU scenario for your top 10 buildings or emissions sources and see what is the difference between the reporting year footprint and the next year's footprint in the BAU results. This will give you an approximate overall tCO_2e increase or decrease to report.

Trouble shooting the CFPR tool

1. Make sure macros are enabled on your version of Excel
2. Read the ‘Read This First’ tab – IMPORTANT
3. Keep a saved version and manage your version control
4. Keep back up documentation (more notes than you think you need!)
5. Use it regularly
6. Keep it simple
7. Take care when transposing over data from an old version of the tool to the new one
8. For renewables emissions sources and projects, review the worked example within the tool.
9. If you see ‘#######’ within cells, the column width is too narrow. Simply adjust the width
10. Contact SSN with any and all queries – we are here to help you!

Summary of training

Topics covered;

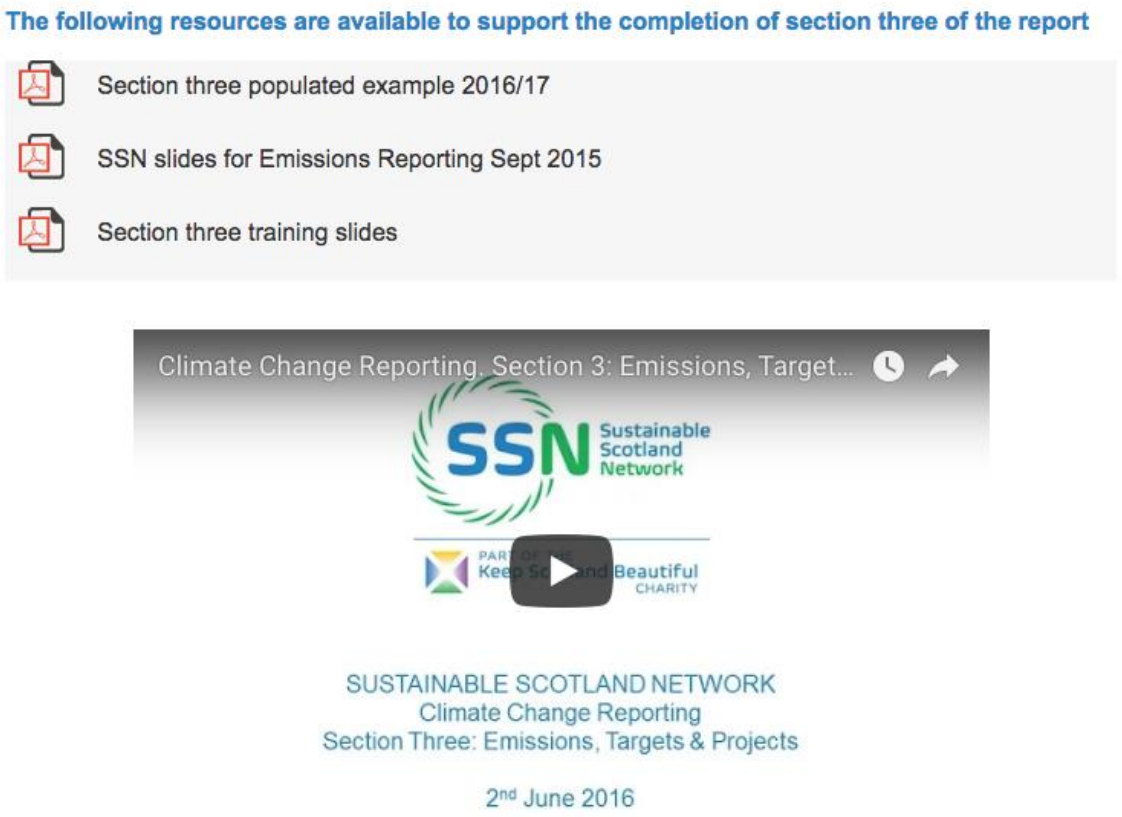
- How to set your boundary and calculate your carbon footprint
- Creating, maintaining and managing a project register
- Projecting forward your current year footprint to account for savings from projects (and other fluctuations in emissions) to create a BAU scenario and using this to track against organisational targets
- Using the CFPR tool to assist with your public bodies duties reporting

Hopefully now you feel more confident with;

- Your ability to calculate your annual carbon footprint
- Your ability collate and manage your carbon project list and forecast savings
- Your ability to document estate changes and other impacts on your footprint to create a BAU forecast
- Completing your public bodies duties climate change report

Other available resources

Please refer to our website here for various resources and other guidance on assisting with your public bodies duties.



RES's tool for measuring and monitoring raw materials and waste can be downloaded from their website. This waste tracking spreadsheet will help you to collate and analyse your measurement data. It contains a template that can be edited to suit your organisation

The Greenhouse Gas Protocol Corporate Standard provides standards and guidance for bodies preparing a GHG emissions inventory.

The guide *Working 9 to 5 on Climate Change: An office Guide* has been produced by the World Resources Institute and will be useful for those bodies who operate from a very small estate (i.e. office based) and are new to Climate Change reporting.

DEFRA's Environmental reporting guidelines has been designed to help bodies in complying with the greenhouse gas (GHG) reporting regulations and other voluntary reporting requirements. The guidance is largely transferable with the same principles that will be useful when completing your climate change report.