Department for Energy Security & Net Zero

Cabinet Office

Government Property Function

CATAPULT Energy Systems

Theme 1 – Developing and delivering your strategy

Public Sector Decarbonisation Guidance

Disclaimer:

Contents

What is the purpose of this guide?

As part of a programme funded by The Department for Energy Security and Net Zero (DESNZ) and working with the Government Property Function (GPF), Energy Systems Catapult (ESC) has produced guidance to support the public sector to decarbonise their built estate.

These guides cover seven themes and give an overview of all the activities required to successfully develop and deliver a decarbonisation programme. They are designed to be used as a set, but also stand alone as a guide to each theme area. It should be noted that decarbonisation is not a linear process and all themes will be relevant to developing your strategy to a greater or lesser extent.

This guide is for Theme 1 and is designed to provide a high-level insight into how to approach strategic definition, planning and briefing when developing an organisational decarbonisation strategy for existing buildings.

Each of the seven guides will also signpost to:

- Other guides, tools and templates developed by ESC
- Useful external resources

We welcome your feedback on these resources, please email ESC at PSDecarbGuidance@es.catapult.org.uk

The learning in these guides is based on best practice and the observations from the Modern Energy Partners (MEP) Programme which was an innovative programme that ran from 2019 to 2021. It looked at testing out the practicalities of decarbonising public sector estate on a testbed of 42 sites across the UK. Split roughly a third, third, third between MOD MOJ and NHS the sites reflected a reasonable representation of the challenges faced, both technical and other. More about the observations from the MEP can be found in the **final reports**.

1

Developing and delivering your strategy

Setting an organisational strategy to decarbonise heating. Gaining decision maker and stakeholder buy-in. Setting emissions reduction targets. Selecting projects and planning delivery, developing project briefs.

2

Feasibility and design

Developing a detailed feasibility study for one or a suite of investible decarbonisation measures. Securing budgets and determining project timescales.

3

Procurement

Running a procurement process and ensuring value for money is achieved through a competitive process. Accessing framework agreements and designing contracts.

4

Funding

Securing external or internal funding for at scale decarbonisation projects. Writing robust business cases.

5

Installation

Project management of installation and implementation of a decarbonisation project. Monitoring progress against a programme of works and implementing quality assurance processes.

6

Commissioning and handover

Handing over a completed decarbonisation project including staff training, correct setup and commissioning of equipment and ensuring all handover documentation is in place.

7

Monitoring and evaluation

Understanding the benefits being delivered by an energy efficiency and/or decarbonisation measure through metering and analysis. Ensuring benefits are reported.

Decarbonisation

Why is it important to decarbonise?

Greenhouse gas (GHG) emissions have been rising since 1990, due to rapid economic growth. The accumulation of GHGs in the earth's atmosphere traps solar radiation, causing a warming effect. Scientific consensus is that we need to limit global warming to well below 2 degrees celsius, and ideally 1.5 degrees celsius, to avoid potential catastrophic damage to our climate. If warming exceeds this threshold, we will reach a tipping point, beyond which the climate won't be able to recover.

Climate scientists at the Intergovernmental Panel on Climate Change (IPCC) claim we are now at a crossroads; we have the knowledge and toolkit to limit warming, however policies, infrastructure and innovative technologies need to be scaled up rapidly to support 2050 decarbonisation targets. Coordinated collective action is central to achieving this. As the climate is a global good, and pollution is a trans-boundary issue, a single organisation or country reducing their emissions, positively impacts all others.

The public sector's built estate currently accounts for 2% of all UK emissions, with the built environment in total contributing 34% of emissions. Tackling public-sector built emissions will help to demonstrate a credible decarbonisation pathway for the rest of the UK. There is potential for the UK public sector to lead the way and set an example, both nationally and globally.

The public sector's built estate currently accounts for 2% of all UK emissions, with the built environment in total contributing 34% of emissions.

How is the UK tackling climate change?

The Climate Change Act 2008 and our national commitments

The Climate Change Act (2008) is the UK's primary legislation underpinning action on climate change. It committed the UK to an 80% reduction in greenhouse gas (GHG) emissions by 2050. However it has since been revised (2019) to require Net Zero emissions for all GHG emissions by 2050. To meet this target, the UK Government has set out carbon budgets in conjunction with the Committee on Climate Change (CCC). Whilst the 5th Carbon Budget requires a 50% reduction of direct emissions by 2032 (against a 2017 baseline), the 6th Carbon Budget sets out a national 78% emissions reduction target by 2035 (against a 1990 baseline). In December 2020, the UK announced its new Nationally Determined Contribution (NDC) under the Paris Agreement, committing to reducing its emissions by at least 68% by 2030, compared to 1990 levels.

For the public sector, the UK's Net Zero Strategy sets out a target of reducing direct emissions from public sector buildings by 75% by 2037. This is over and above the Clean Growth Strategy which required a 50% reduction in direct public sector emissions by 2032, relative to a 2017 baseline. A huge part of tackling this will be decarbonising public sector buildings. The Heat and Buildings Strategy outlines the UK Government's approach to tackle emissions from the built environment. This includes phasing out traditional gas boiler installation from 2035 and transitioning to a mix of low carbon technologies.

The Government also set specific emission reduction targets for individual government departments contained within the Greening Government Commitments covered in the section below.

What could be driving your organisation to decarbonise?

There are many reasons that could lead to a decision to decarbonise. They include:

Declaring a climate emergency
Most public sector organisations now recognise the need to take action to tackle climate change. Many local authorities and councils have acknowledged their contribution to climate change and have signaled a commitment to reducing emissions, in line with climate science. The NHS has committed to a target of net zero by 2040 for emissions they control directly, with a target of 2045 for indirect emissions.

Whilst there is no formal process for declaring a climate emergency, any declaration should be followed up by a roadmap for reaching Net Zero, with interim targets set out. The focus should be on getting started, rather than producing a detailed plan. This decarbonisation plan can be dynamic and evolve as data availability improves, through improved emissions benchmarking and monitoring techniques.

The Local Government Association has guidance for areas that have declared a climate emergency.

The NHS has set out its targets and route to net zero in the Delivering a Net Zero National Health Service report.

The Greening Government Commitments (GGCs)
For central government departments the GGCs are set out over 4-year terms and annual progress reporting is mandatory. These high-level emissions reductions targets cover scopes 1, 2 and 3 (employee and business travel) emissions, with 2017-2018 set as the baseline year. A department's boundary includes office and non-office estate, and other operational activities internally, as well as for their Executive Agencies, executive Non-Departmental Public Bodies (NDPBs) and Non-Ministerial Departments (NMDs) in the UK.

The GGCs establish clear lines of accountability for departmental progress against decarbonisation targets. Departments are obligated to disclose annual figures for emissions and energy usage in their annual reports.

More information on greenhouse gas reporting including the different scopes of emissions can be found in the Greenhouse gas reporting guide.

Concerns about energy cost price increases and uncertainty

Reliance on high and volatile cost fossil fuels leaves public sector estates vulnerable to unpredictable cost increases. Decarbonisation and installing energy efficiency measures, in particular reducing or removing gas usage from estates, can protect organisations from changes in prices as well as remove carbon emissions.

Installing on site electricity generation can give a reliable source of electricity at a predictable price into the future giving organisations more certainty about the costs of running their operations.

Concerns about security of energy supply

Organisations may also be concerned about security of supply i.e. making sure they are always able to heat and power their buildings. This will be particularly true for organisations with operational parameters which must be maintained, for example hospitals or prisons. Again, decarbonisation, energy efficiency and on-site generation can play a part in increasing confidence about security of supply. Energy efficiency measures reduce overall demand, decarbonisation reduces reliance on fossil fuels and on-site renewable energy generation provides a predictable supply of electricity.

Reputational risk

For some organisations there may be particular reputational risks of not setting and delivering emissions reduction targets, for example if the organisation's broader remit has an environmental focus. This is true both in the public and private sectors, but it is right that the public sector as a whole shows leadership on arguably the biggest challenge that society faces in the coming years.

More specifically the Heat and Building Strategy set out the expectation that all public sector bodies should now be monitoring and reporting their energy use, setting targets and reporting on their progress on reducing emissions. Increasingly public sector bodies will be held accountable by the public, and their peers.

What could decarbonisation look like?

Historically reducing electricity usage was the approach used to decarbonise estates. This was achieved by installing better controls and more energy efficient equipment, for example replacing older lighting with LED lighting. However, as the grid electricity generation mix continues to change, with an increasing proportion of renewables and diminishing fossil fuels making it less carbon intensive, it is the use of fossil fuels within buildings that should now be the target of decarbonisation activity.

Given most fossil fuels used in buildings are used for heating, either space (central) heating or producing hot water, decarbonisation activity should focus on heat. However, there are often challenges with the financial costs and practicalities of replacing fossil fuel heating systems. As a result, considering a mix of measures is likely to be the most appealing approach.

Decarbonisation therefore is likely to look like a combination of:

- Energy efficiency measures to reduce both heat and electricity demand
- Renewable energy generation to provide electricity, often at a cheaper and more predictable price
- A transition away from fossil fuels for heat to another source, potentially electricity through heat pumps or other technology

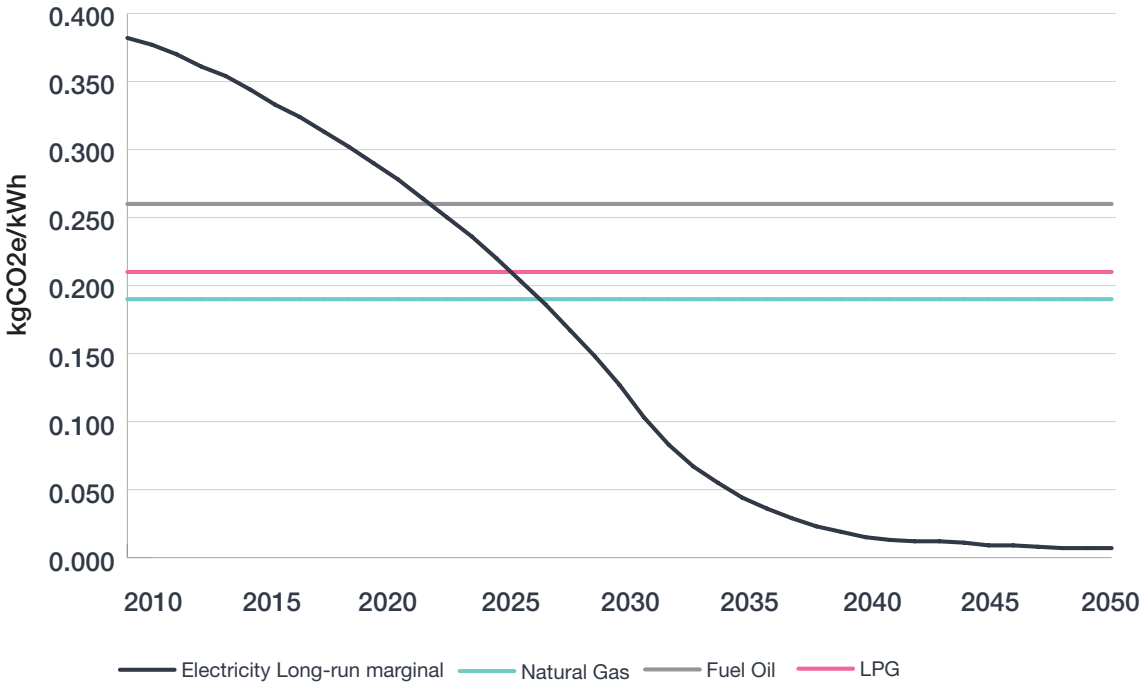
It is projected that by 2026/2027 the emissions associated with the grid are likely to be less than that of natural gas[1]. From that point onwards removing fossil fuels from your estate, for example the use of gas and oil heating, is the most important activity to achieve emission reductions.

1 https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

This mixed approach not only makes sense for the organisation, but also from a macro net zero systems perspective. For example, if you want to do your bit for net zero and show leadership you absolutely need to focus on reducing direct emissions, but reducing consumption and cost also helps too as this will help with offsetting the cost of implementing the change. Additional benefits to this is the potential to realise optimisations of the existing systems and a more fit-for-purpose building.

We have provided high-level information about the common technologies in our **How to treat technologies and what to ask for.**

Green Book Predicted Electricity Emissions Factor to 2050 against Natural Gas, LPG and Oil



Strategy and Programme versus Project

How does this guide fit with the following?

Salix and its Heat Decarbonisation Plan Guidance

Salix Finance is a company wholly owned by the Government and operates as a Non-Departmental Public Body (NDPB), under the sponsorship of DESNZ. It is the delivery body for the Government's Public Sector Decarbonisation Scheme (PSDS) and the Low Carbon Skills Fund (LCSF). These projects provide grant funding to public sector organisations for heat decarbonisation and energy efficiency projects to reduce greenhouse gas emissions from public sector buildings.

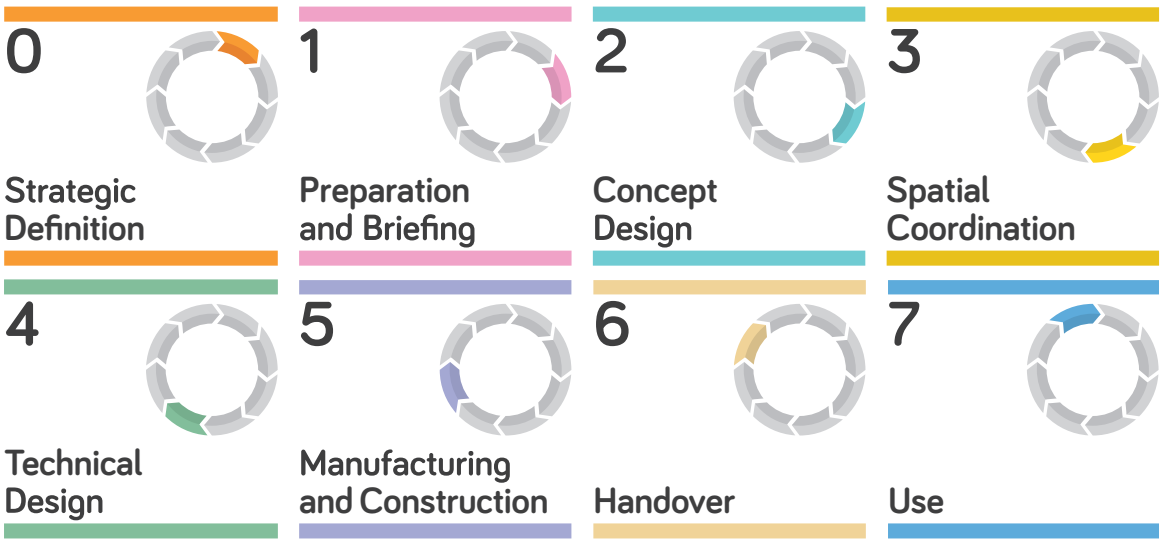
Their current Heat Decarbonisation Plan Guidance is a helpful guide for all eligible public sector organisations wishing to upgrade and improve their current heat decarbonisation plans. It was developed to support Phase 2 of the LCSF. It covers high level guidance for two types of heat decarbonisation plans. The first for a whole portfolio of buildings and the second for an individual project and gives suggestions on the types of things to consider.

This suite of guidance documents is designed to support public sector decarbonisation more widely as well as applying for Salix funding. They are complimentary when considering a portfolio of buildings and developing a strategy and managing a decarbonisation programme.

The RIBA Plan of Work

The RIBA process is an industry known process which covers the eight stages applied to a construction project (from a refurbishment to a build). The RIBA steps cover the flow of activities that might be undertaken.

It should be noted that under the RIBA process Strategic Definition is considered the definition of an individual project, whereas within this suite of guidance, Strategic Definition Briefing and Planning is very much around the development of an overall decarbonisation strategy and programme for an organisation.



Source: The RIBA Plan of Work

Your decarbonisation programme

The seven theme guides cover all the elements you need to deliver a successful decarbonisation programme. The following sections of this guide give an overview of a decarbonisation programme and then focus in on the set of actions you should consider when developing your decarbonisation strategy, reporting and engagement elements.

What does a decarbonisation programme look like?

Your decarbonisation programme is likely to include four key elements:

1: The Strategy

An overall strategy document containing information about how to deliver for the organisation, which should include:

- The scope of the strategy, i.e. what is included and what is not
- High level objectives detailing what is going to be delivered by when
- Targets for emissions reductions

This should be a living document that is regularly reviewed and updated. Within the Strategy there are likely to be a number of areas where critical questions need to be answered at the outset and monitored throughout.

1. Governance	How is the programme going to be structured, owned, managed, and monitored?
	What will the governance and decision-making structure be?
2. Cost	How much is the programme going to cost?
	Where will the funding come from?
3. Delivery model	What needs to be delivered
	What is the procurement/delivery model for each element?
	If these are not in place, how will that be achieved?
4. Timeline	How long will it take given known processes and delivery methods?
5. Resources, skills, and capability	Who is going to oversee the programme delivery? What skills and capability do they need?

Source: ESC MEP Report Chapter 2

2: The identified projects

The series of projects that are taken forward to deliver the targeted emissions reductions. As well as understanding what the projects are likely to be, you will also need to understand how they are going to be delivered. This could be a separate workstream considering how they are going to be funded and a workstream looking at which delivery/procurement route is going to be most appropriate. Dependencies within these workstreams will need to be well understood and any energy or carbon reductions monitored and recorded.

3: The reporting and communications approaches

Alongside your strategy and projects, you will need to consider how to both communicate your progress and successes to relevant internal and external stakeholders, as well as any methods you use to report on your carbon emission reductions and any other relevant metrics.

4. Resourcing

Ensuring you have the right level of appropriately skilled people to deliver. This should include appropriate timescales, budgets, internal and external capability and capacity for both oversight and delivery.

Developing your decarbonisation strategy

The following sections of this guide focus on your strategy document and the actions you need to take to develop it successfully. This guide provides a high-level overview of the actions required and then signposts to other tools or existing resources from other reputable organisations. Some of the actions might be more relevant than others, as organisations are likely to be at different stages in their decarbonisation journey.

Your strategy needs to include what your organisational emissions are, what the target is to reduce them, and what projects you are likely to take forward to meet those targets. At this point it is also worth considering any reporting requirements and how you might align your reporting requirements to simplify any data collection.

Additionally, you will need to develop a communications plan, set up robust governance and ensure you have the required resources.

Here are some examples of Departmental Strategies that have been published:

Delivering a 'Net Zero' National Health Service

Government Property Sustainability Strategy 2022-2030

Ministry of Justice and the environment

Sustainability and climate change: a strategy for the education and children's services systems

Sustainable Support Strategy – Ministry of Defence

The following figure[2] was created as part of the Modern Energy Partners (MEP) programme. The key facets shown should be combined to produce a comprehensive decarbonisation strategy at the organisational level. This will ensure that barriers and challenges are dealt with in advance of them causing delays or additional cost.

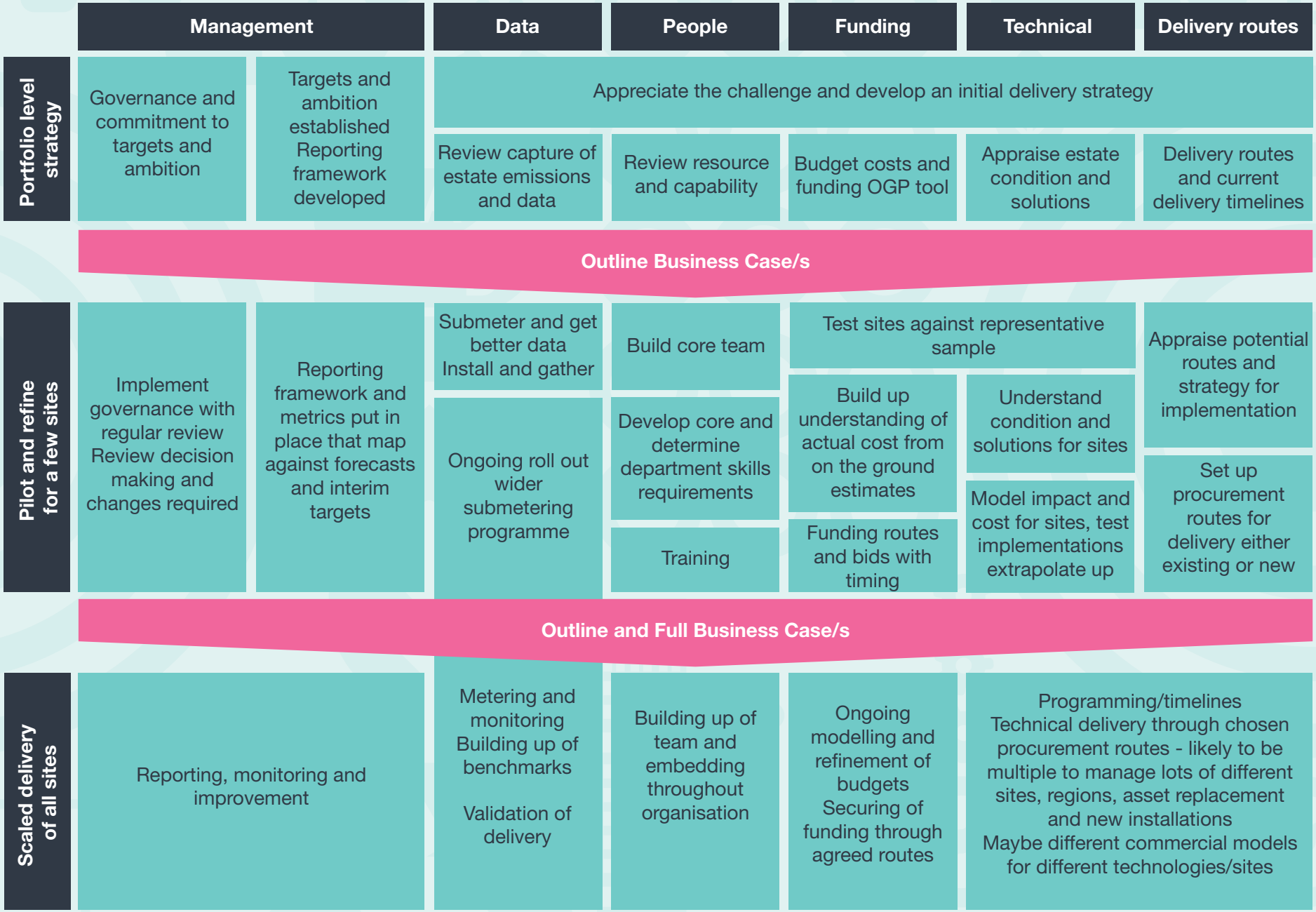
It reflects that there are three typical phases to development and deployment. It focused on an ideal situation where there is at scale deployment of decarbonisation measures over a portfolio of buildings. Implementation progressed in this way is more likely to deliver value for money. Often at present projects are rolled out on site-by-site basis rather than across the whole estate, an approach which can miss out on economies of scale and lessons learnt.

Early strategy development - When a portfolio level strategy is developed, and plans against each of the core elements are considered and recorded in a strategy document. At this point, it is about understanding at a high level each element and how they could evolve.

Pilot strategy deployment – When the principle has been established and each of the different deployment areas are tested on projects to understand achievable savings, where a limited number of people in the organisation know and understand the subject matter, and funding is ad hoc. Savings are monitored and reported back on the projects delivered. Typically, this type of work is tendered/procured as a one off.

Scaled deployment – A vision for the future, where every member of staff involved in estates projects supports delivery, all framework contractors are involved in delivering across multiple sites, with multi-year funding secured for the whole estate upgrading, and high-quality data to report progress to an engaged management.

[2] ESC MEP Report Chapter 2


Management
Data
People
Funding
Technical
Delivery routes
Portfolio level strategy
Governance and commitment to targets and ambition
Targets and ambition established Reporting framework developed
Appreciate the challenge and develop an initial delivery strategy
Review capture of estate emissions and data
Review resource and capability
Budget costs and funding OGP tool
Appraise estate condition and solutions
Delivery routes and current delivery timelines
Outline Business Case/s
Pilot and refine for a few sites
Implement governance with regular review Review decision making and changes required
Reporting framework and metrics put in place that map against forecasts and interim targets
Submeter and get better data Install and gather
Ongoing roll out wider submetering programme
Build core team
Develop core and determine department skills requirements
Training
Test sites against representative sample
Build up understanding of actual cost from on the ground estimates
Funding routes and bids with timing
Understand condition and solutions for sites
Model impact and cost for sites, test implementations extrapolate up
Appraise potential routes and strategy for implementation
Set up procurement routes for delivery either existing or new
Outline and Full Business Case/s
Scaled delivery of all sites
Reporting, monitoring and improvement
Metering and monitoring Building up of benchmarks
Validation of delivery
Building up of team and embedding throughout organisation
Ongoing modelling and refinement of budgets Securing of funding through agreed routes
Programming/timelines
Technical delivery through chosen procurement routes - likely to be multiple to manage lots of different sites, regions, asset replacement and new installations
Maybe different commercial models for different technologies/sites

Test yourself on your strengths and weaknesses against this framework and work out how robust your strategy is.

	Management		Data	People	Funding	Technical	Delivery routes
Portfolio level strategy	Do you have commitment from your organisations senior management to deliver NZ and some targets set? **Want some help? You are in the right place ...keep reading**	Have you a good understanding of your GHG footprint, your BAU and have you set a target? **Want some help? You are in the right place ...keep reading**	What is the quality of the data you are collecting? Do you have a plan on how to improve it? **Want some help? Go to Theme 7**	Is it just you or a small team working on this? Are you limited by your capacity? Do you have a plan to expand the team or upskill others? **Want some help? Go to Theme 2 and 3**	Do you have an estimate of how much it is going to cost to decarbonise your estate? Do you know where the funding could come from? What funding rounds you might seek and when they are? **Want some help? Go to Theme 4**	Do you know what you are going to do to decarbonise your estate? What might you need to do or what to prioritise? **Want some help? Go to Theme 2**	Do you understand what the current delivery routes could look like for decarbonisation projects and others? What are the limitations of the current routes?! **Want some help? Go to Theme 3**

Are you able to put together business cases that are able to sew together all these elements coherently? Can you or have you already got sign off to deliver some projects as demonstrators to capture the benefits?

	Management		Data	People	Funding	Technical	Delivery routes
Pilot and refine for a few sites	Do you regularly update senior management on proposals and work with them to start to deliver? Are you communicating widely the intention and proposed plans? **Want some help? Go to the Stakeholder engagement and communications guidance**	Do you have a way of measuring and reporting back on progress? Do you have interim milestones that map against your plan you can measure success against?	Are you starting to get access to better data - either half hourly or sub metered? Do you know how to implement a wider plan for when projects are delivered?	Do you have a plan to expand the team or upskill others? Have you engaged with other teams who could support delivery and are already involved in similar projects? Can you upskill or train wider team members to support scaled decarbonisation?	Have you been able to gain funding to deliver a few projects of different types across your estate with increased frequency? **Want some help? Go to Theme 4** For the pilot projects you are undertaking are you monitoring and learning about how much are the projects are costing? Are you updating your estimates for how much decarbonisation is going to cost. Is this helping you with bidding for funding?	Are the solutions working as you would expect them to? Do you know what they would deliver if scaled against the rest of your estate?	How did the pilot go? Was the contracting route sufficiently suitable to repeat? Can you work out with procurement an improved repeatable process to get best value? **Want some help? Go to Theme 3**

Are you able to put together business cases that are able to sew together all these elements coherently?

	Management	Data	People	Funding	Technical	Delivery routes
Scaled delivery of all sites	Are you regularly reflecting on the success of your programme to senior management based on really good information and data. Are you meeting your milestones?!	Is your data so good that you are now thinking about how you can use AI to start to influence and control energy use?!	Is the whole organisation working together to deliver decarbonisation as business as usual embedded within all maintenance and capital projects?	Do you know your longer-term funding route and have access to ongoing funding rounds? **Want some help? Go to Theme 4 and 5**	How is delivery looking against your timelines? Are you going to manage to meet Net Zero or interim targets you have set? **Want some help? Go to Theme 3 and 5**	

Action Summary

Actions

The actions required to build your decarbonisation strategy have been grouped into three areas. It may be that for your organisation some of these actions have been completed or have less relevance. The order in which you work through these areas may also vary depending on your individual circumstances.

Strategic fit, governance and engagement actions:	1: Strategic fit 2: Stakeholder engagement and comms 3: Governance
Baselining and target setting actions:	1: Defining scope and boundaries 2: Data collection 3: Baselining 4: Target setting
Developing your plan:	1: Prioritising areas for action 2: Understanding your timelines 3: Resourcing

Strategic fit, governance and engagement

Actions

The first set of actions ensure your strategy aligns with your organisation's direction of travel and stakeholders are effectively engaged.

1: Action – Understand how decarbonisation fits with your organisation's broader strategy

To make sure that a decarbonisation strategy is as effective as possible it is important to make sure it fits with your organisation's broader strategy, aims and objectives. This activity should include understanding your organisations motivation to act on climate change, as well as existing published internal and external strategies, any business plans, organisational priorities or values. You will need to consider how decarbonisation fits within these and identify any synergies or conflicts to help you align your developing strategy, identify any key risks and develop mitigating actions from the start.

Examples of things to look for, beyond thoroughly understanding your organisation's estate/portfolio strategy, include any existing publicly stated commitments on sustainability or climate change, planned changes to your service delivery model that will affect how you use your estate, or a change of approach regarding buildings, moving to more outsourcing which could lead to loss of direct control over site.

The following table provides links to useful resources when aligning decarbonisation with your organisation's broader strategy:

Resource	What does it provide you with?
Decarbonisation strategy documentation checklist	This checklist sets out the content you may wish to consider including when developing a high-quality decarbonisation strategy.
Net Zero Estate Playbook	Step 1 covers establishing high-quality governance.
Salix's Heat Decarbonisation plan Guidance	This guide supports public sector organisations wishing to upgrade, improve or create their first heat decarbonisation plan through Phase 3 LCSF.

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2: Action – Identify your key stakeholders and engage effectively

Actions

There will be key stakeholders that you will need to engage with throughout your decarbonisation programme. These are likely to fall into three broad categories.

1. Stakeholders involved with the oversight and governance of your programme, from whom you will require buy-in and sign off
2. Stakeholders and delivery partners who will help you deliver the installation of decarbonisation measures
3. Wider stakeholder groups affected by your programme

At the initial stages of developing your strategy you should focus on those stakeholders who need to input to and approve your strategy. This is likely to involve discussing the organisation's appetite to act, any constraints to the strategy and anticipated risks and mitigations. As you move through your programme the frequency with which you engage with the different stakeholders is likely to change. To help you think about engagement across your programme we have developed a high-level Stakeholder Engagement and Communications Guide.

As you develop your strategy there are three key pieces of information that your stakeholders will need to understand to be able to help you effectively. These are:

- The current levels of organisational emissions
- The level of ambition the organisation is targeting and by when
- An outline of the interventions that are going to be delivered and by who and by when

You will also need to consider the governance arrangements for your programme. This will include both how your organisation is set up and how you report on progress.

The following table provides links to useful resources for stakeholder engagement:

Resource	What does it provide you with?
Stakeholder engagement and communications guide	Provides further detail on how to identify, engage and communicate with your key stakeholders.
Salix's Heat Decarbonisation plan Guidance	This guide supports public sector organisations wishing to upgrade, improve or create their first heat decarbonisation plan through Phase 3 LCSF.

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3: Action – Build a robust governance structure

Actions

During the Modern Energy Partners programme the Energy System Catapult undertook some research into the attributes organisations needed to successfully set themselves up for delivering Net Zero. This highlighted the importance of strong governance and set out 16 conclusions.

Robust governance has multiple benefits including:

- Identified leadership for the decarbonisation programme
- Clear accountability and responsibility for decisions
- Clear sign off processes enabling faster delivery
- Team members understanding their roles and responsibilities

Effectively engaging with your governance structure once set up is also critical, ensuring that your programme remains credible, making delivery easier.

The current governance arrangements in your organisation might not be suitable for a decarbonisation programme, and new processes may need to be developed. It is advisable to spend time at the beginning of your strategy development to clarify the governance structures that will be used, document them and ensure they are signed off as part of the strategy.

The following table provides links to useful resources for building a robust governance structure:

Resource	What does it provide you with?
Stakeholder engagement and communications guide	Provides further detail on how to identify, engage and communicate with your key stakeholders.
Supporting local authority senior leaders to tackle the climate emergency	Provides advice for local authorities on developing climate action plans and ensuring the appropriate governance and leadership frameworks are in place to support delivery.
Net Zero Estate Playbook	Step 1 covers establishing high-quality governance.
Salix's Heat Decarbonisation plan Guidance	This guide supports public sector organisations wishing to upgrade, improve or create their first heat decarbonisation plan through Phase 3 LCSF.

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Baselining and target setting

Actions

These actions help you understand your emissions and set your targets.

1: Action – Define your emissions through understanding the scope and boundaries

An important early step is to understand your current emissions. To do this you will need to consider two points:

1: What emissions sources are to be captured, for example which scopes (direct, indirect or supply chain)?

2: What do you count as emissions that are your responsibility to report on and reduce (your organisational boundaries)?

At this point it is also worth considering any reporting requirements that are either mandatory or any voluntary approaches your organisation wishes to adopt.

The following table provides links to useful resources for baselining your emissions and setting targets:

Resource	What does it provide you with?
Greenhouse gas reporting guide	The guide explains the basics of GHG reporting and compares all the different reporting frameworks you may wish to consider using.
Greenhouse Gas Protocol	GHG Protocol have developed guidance that provides clarity on how specific sectors can apply the GHG Protocol standards and further support organisational reporting.
Net Zero Estate Playbook	Step 2 details how to define the scope of your organisation and calculate your emissions footprint and includes additional helpful links.
The Carbon Trust A guide: Carbon Footprinting for Businesses	This introductory guide is designed to help businesses understand organisational and product carbon footprinting and gives some good context on managing emissions.

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2: Action – Collect relevant information and data

Actions

Once you understand the operational emissions you are targeting with your strategy, the next action is to collect relevant data to start to build up a picture of what the total emissions are and where they are coming from. Typically, that would be through collecting energy usage data alongside other information like building use, type, size and age.

Energy data can come from a variety of places like bills and meter readings and may or may not be accessible. If data is not available estimates will need to be made.

The following table provides links to useful resources for collecting your energy data:

Resource	What does it provide you with?
Theme 7 guide – Monitoring and evaluation	This guide helps determine the level and quality of data already available across your estate. It will also be useful for identifying areas to address when developing your data monitoring plan.
Understanding your energy data	This guide provides more information about energy data and how it can be collected and used to inform your strategy.
Business as usual estimator and guide	An estimator that allows input of building, site or portfolio level energy consumption data. It will provide a baseline of energy use over time from which decarbonisation interventions can be assessed. It also allows for known future changes to the site to be captured and incorporated into the future assessments.
Net Zero Estate Playbook	Step 2 details how to define the scope of your organisation and calculate your emissions footprint and includes additional helpful links.
Salix's Heat Decarbonisation plan Guidance	This guide supports public sector organisations wishing to upgrade, improve or create their first heat decarbonisation plan through Phase 3 LCSF.

3: Action – Calculate the baseline and model forward as "business as usual" (BAU)

With all the energy data collected or estimated the next step is to calculate your emissions.

For any given current year this can be calculated by using the Government conversion factors for company

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Actions

reporting of greenhouse gas emissions. However, for a Net Zero strategy we advise that the Green Book factors are used.

It is also useful to calculate emissions on a granular level so that the emissions attributed to each building or asset can be understood. This enables the "large" emitters to be identified and potentially prioritised for decarbonisation, and/or other efficiencies identified.

At this point you will also need to understand your future estate plan and take into account any planned changes to your estate. Buildings that are going to be demolished or disposed of, built, extended or acquired will need to be factored into your forward look.

The following table provides links to useful resources for calculating your BAU emissions:

Resource	What does it provide you with?
Business as usual estimator and guide	An estimator that allows input of building, site or portfolio level energy consumption data. It will provide a baseline of energy use over time from which decarbonisation interventions can be assessed. It also allows for known future changes to the site to be captured and incorporated into the future assessments.
Office of Government Property Tools	The OGP has a range of helpful tools available from the Government Property Portal.

4: Action – Set targets and outcomes with an understanding of the interventions and their indicative costs, understand how you will report on progress

Sometimes emission reduction targets are set without an understanding of how they are going to be met. Examples include where a climate emergency has been called, a Net Zero ambition laid out, or even set by an oversight body. Whether determining a target or seeking out how to meet it, it's good to be able to demonstrate what the cost of meeting a target would be, and how it could be achieved.

This can be done by understanding at a high level:

- What the baseline year is (the year the target is set against) – more information on this is included in the Greenhouse gas reporting guide
- What the target year is (i.e. the UK's goal net zero in 2050)
- What the potential actions are, and when they will be delivered
- What the cost is likely to be for the actions required

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Once these are known then an initial high-level strategy can be developed and approved. The strategy will need to be refined as better information becomes available and more detailed planning is completed.

At this point you should integrate your chosen reporting requirements, making sure that things like baseline year, scopes etc. align where possible to make future reporting easier.

You may also want to consider at this point any other outcomes you are seeking to achieve with your programme, for example cost savings, replacing end of life or older equipment or showing climate leadership amongst your peers.

The following table provides links to useful resources for setting targets and reporting your progress:

Resource	What does it provide you with?
Greenhouse gas reporting guide	It explains the basics of GHG reporting and compares all the different reporting frameworks helping you to consider which approach you are going to use.
High – level decarbonisation intervention estimator and guide	The estimator will provide a snapshot of the application of a standard set of decarbonisation project and their potential benefits at a building or site level. This will be based on a reference year of consumption which can be used as a first step in identifying potential solutions for your building/site/portfolio.
Decarbonisation intervention estimator and guide	An **estimator** that provides a range of key decarbonisation options, including heat, renewables and energy efficiency, which can be applied to a building/site/portfolio. This allows for quick assessment of potential benefits of implementing these interventions. This **estimator** uses the baseline data from the **Business as usual estimator**.
Net Zero Estate Playbook	Step 3a covers how to set and refine a Net Zero target, as well as additional helpful links to other sources of information.
Office of Government Property Tools	The OGP has a range of helpful tools available from the Government Property Portal including one called the Net Zero Trajectory tool which enables a cost estimate to be developed based on the size, energy consumption, and type of estate.

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Developing your plan

Actions

The following actions help you prioritise areas for action and set out your plan.

1: Action – Identifying and investigating your priority interventions and developing an action plan

With an understanding of the options that will deliver on your targets, specific projects can then be prioritised for further investigation to check their feasibility, identify risks and gain further details on costs. These are likely to be projects that decarbonise heating sources. Projects can be prioritised based on a variety of criteria, but the following are likely to be helpful:

- Age of asset or equipment, prioritising those near end of life
- Projects that are likely to gain funding and meet criteria of schemes such as PSDS
- Projects that will have a high impact and deliver large emissions or financial savings

Using the list of the sites, their energy consumption and these metrics, take your time to review and select groupings of projects which could be taken forward. This could include:

- A group of buildings that could have a series of simple interventions such as LED or BMS replacement which to date have not been completed or are only part completed
- A list of prioritised assets due for replacement which are already in a maintenance programme and can be decarbonised as part of their renewal
- A large site which if decarbonised would contribute a significant emissions reduction to the whole portfolio
- A test of a less known technology which could if rolled out across the estate offer significant contribution but is unproven or risky

It may be worthwhile selecting a number of groups or buildings as each may be taken forward at a different rate and pace, meaning that some can be implemented more quickly than others. Similarly, some projects may prove to be not feasible on physical, financial or economic grounds. It is useful to record the rationale for prioritisation in case of challenge. The priority projects should then be taken forward for more detailed assessment.

Theme 2 covers feasibility and design in more detail.

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The following table provides links to useful resources to help with prioritisation of projects:

Resource	What does it provide you with?
Theme 2 guide - Feasibility and design	Guidance on assessing feasibility of projects will help prioritise interventions to take forward.
Decarbonisation intervention estimator and guide	An **estimator** that provides a range of key decarbonisation options, including heat, renewables and energy efficiency, which can be applied to a building/site/portfolio. This allows for quick assessment of potential benefits of implementing these interventions. **This estimator** uses the baseline data from the **Business as usual estimator**.
Net Zero Estate Playbook	Step 3b covers how to develop your decarbonisation plan.
Salix Low Carbon Skills Fund	Provides guidance on the steps you need to take to apply for each funding round. Also includes the timelines required for delivery.

2: Action – Understand and set indicative project timelines

Throughout your decarbonisation programme understanding your timelines will be critical to success. This not only includes time to deliver the projects, but also time to collect and analyse data, develop your initial strategy, undertake procurement and adjust plans as new information becomes available.

Having a grip on timelines will help you understand if you are on track, give you credibility with important stakeholders and enable effective planning and communications.

A typical decarbonisation project timeline from inception to completion should not be underestimated. From experience delivering the Modern Energy Partners programme, it typically takes two years. Factors that influence the speed at which a project can be delivered include:

- Resources to deliver
- The annual planning cycle and budgeting
- The availability of commercial contracting routes

Developing a robust project plan with mechanisms to monitor progress, risks and issues is vital.

The following table provides links to useful resources to help with this exercise:

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Resource	What does it provide you with?
Theme 2 guide - Feasibility and design Theme 3 guide - Procurement, Theme 4 guide - Funding and Theme 5 guide - Installation	These guides help you understand the other activities required for a successful decarbonisation programme, supporting you to develop your plan.
Understanding your timelines - template and guide	A **template** with accompanying **guide** that you can use to plan out your activities including developing your strategy, implementing projects at a site level and monitoring your portfolio as a whole.
Salix Low Carbon Skills Fund	Guidance on the steps you need to take to apply for each funding round and the timelines for delivery if successful with funding.
Salix Public Sector Decarbonisation Scheme	Guidance available on the steps you need to take to apply for each funding round and the timelines for delivery if successful with funding.

3: Action – Planning resource and the associated capabilities

Having sufficient people with the right capacity and capabilities to deliver your programme is essential to its success. If there isn't any resource available, it may be possible to seek it externally. For more support with procuring project resources see the **Theme 3 guide – Procurement.**

It should be recognised that different skills and experiences are likely to be required throughout the different stages of delivering your programme. For example, the skills require to devise a strategy will be very different to the experience needed to oversee the installation of a ground source heat pump.

Funding is also a key resource required for delivery. Identifying and securing funding is covered in detail in the **Theme 4 guide - Funding**.

As part of the Modern Energy Partners programme the Energy Systems Catapult tested specific aspects of delivery. Whilst this was at a small scale, it exposed what is required for a large-scale project. **Chapter 4** of the **final report** on the Modern Energy Partners Programme sets out in detail the recommendations about skills and capabilities required. The following figure from that report sets out the relative percentage of effort required across the different teams involved in any programme.

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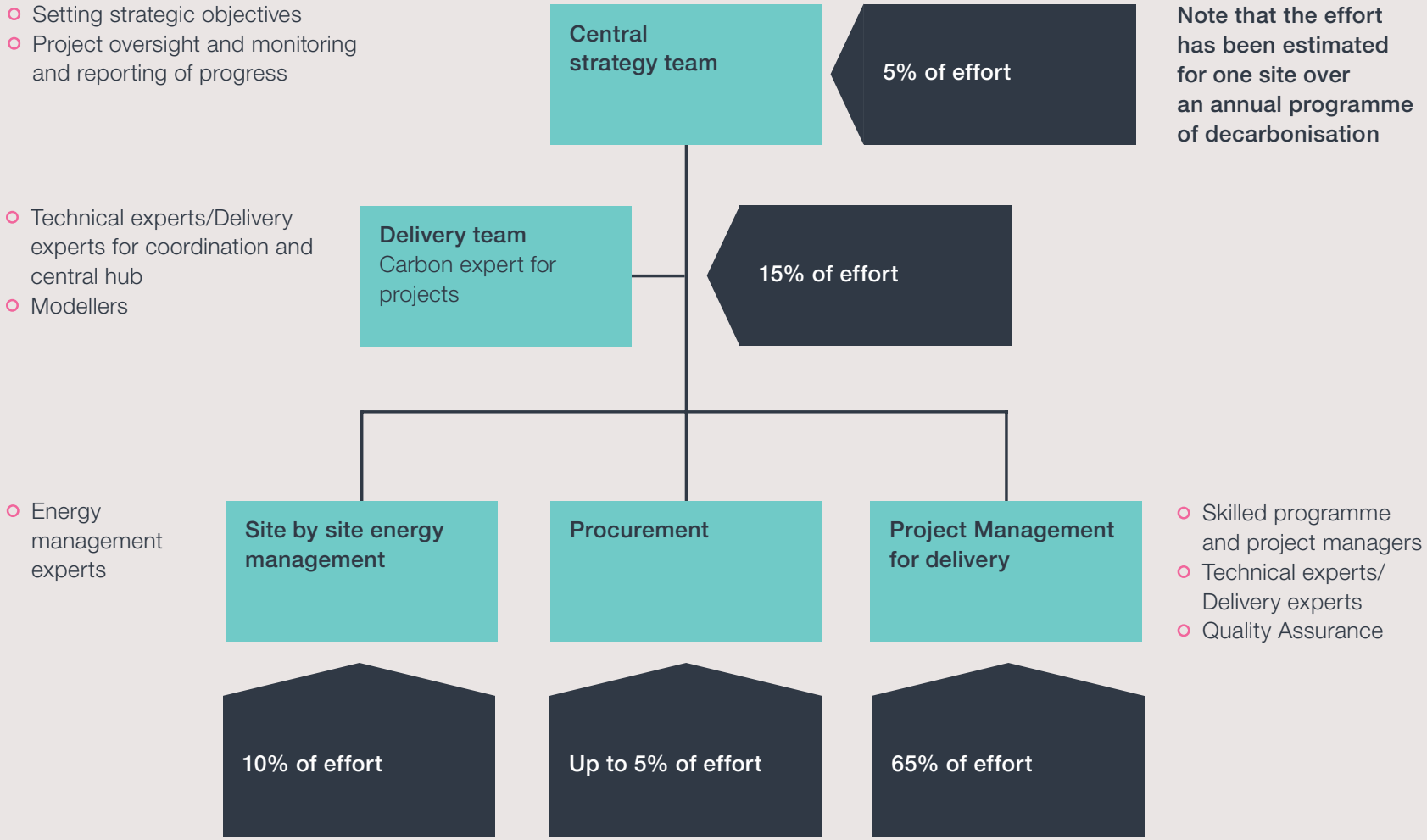

Figure 1: Ratios of effort, skills and roles

Source: ESC MEP Report Chapter 4

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The following table provides links to useful resources for planning your resource and capabilities:

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Resource	What does it provide you with?
Modern Energy Partners Phase 2 Chapter 4: Capacity and capability	This report makes recommendations on how to achieve scalable decarbonisation activity in an organisation with details on roles and responsibilities.
The Energy Managers Association (EMA)	EMA offer information on energy management competencies, a skills review which enables an individual to assess their skills gaps.
The Government Property Framework (GPCF)	This framework offers insight into the types of skills expected by someone operating in a sustainability role. It also includes a learning and development curriculum.

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Other useful sources of information

Can't find what you are looking for here?

Here are some other organisations that have good resources worth checking out for more.

Organisation	Type of information
Office of Government Property Tools	The OGP has a range of helpful tools available from the Government Property Portal including one called the Net Zero Trajectory tool which enables a cost estimate to be developed based on the size, energy consumption, and type of estate. They also developed and published the Net Zero Estates Playbook.
Salix	Salix provides funding and has guidance on how to approach decarbonisation, including heat decarbonisation plan guidance and a number of case studies.
Net Zero Go	Net Zero Go has all the tools and features Local Authorities need to start energy projects, build a successful business case, and deliver a portfolio of smart, successful local energy projects. Requires a log in.
Net Zero Hubs	Five Net Zero Hubs have been established across England, funded by the Department for Business, Energy & Industrial Strategy. The hubs are small teams working with organisations and communities across their areas to identify, develop and implement low carbon energy projects. Greater South East Net Zero Hub Local Energy North West Hub Midlands Net Zero Hub North East and Yorkshire Net Zero Hub South West Net Zero Hub

Greener NHS	The Greener NHS Programme works with NHS staff, hospitals and NHS partners. It builds on the work done by trusts across the country, sharing ideas on how to reduce the NHS's impact on public health and the environment, save money and reach net carbon zero.
The Carbon Trust	The Carbon Trust has a repository of guides on all sorts of Net Zero and energy management activities.
Zero Waste Scotland	Zero Waste Scotland has built up a repository of good guidance including carbon management plan templates.
The Energy Institute	The Energy Institute offers energy manager training and some comprehensive modules that can be learnt.
The Energy Managers Association	The Energy Managers Association (EMA) offers a skills assessment and training, it also has a suite of guides.

Department for Energy Security & Net Zero

Cabinet Office

Government Property Function

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