

Newport City Council

# Newport's Local Area Energy Plan

March 2022



## Contents

---

Executive summary	3
Glossary	4
1. Introduction	5
2. Where we are now	7
3. Our vision for Newport's future local energy system	13
4. What needs to happen?	21
5. What are we going to do?	24
6. Governance, monitoring and review	32
Bibliography	33



Llywodraeth Cymru  
Welsh Government

**ARUP**



This Plan was prepared by Arup and Afallen on behalf of Newport City Council and funded by Welsh Government.

## Executive summary

In November 2021, we at Newport City Council declared an Ecological and Climate Emergency, and committed to supporting the city's journey to net zero carbon by 2050.

This Local Area Energy Plan for Newport sets out a vision for what a zero carbon energy system could look like in 2050, and describes key immediate actions for us as Newport City Council to support our journey.

Our vision for Newport's future local energy system is to:

***Develop a net zero energy system for Newport, as a city on the rise.***

We will build on our existing strengths as a city, such as our industrial and innovation history and achieve this in line with our well-being plan,

creating job opportunities and being affordable for all. For our analysis we identified a variety of future whole energy systems scenarios for 2050, to help understand the choices and preferred pathways for a net zero local energy system.

There are some uncertainties on the pathway to 2050, but we have identified priority intervention areas, taking these into account (see right). This plan sets out our key actions for the first five years under each of these areas. We will monitor progress towards the end point by monitoring progress towards key outputs.

We recognise that we will need support from a wide range of stakeholders and partners to deliver this plan, and look forward to working with you.

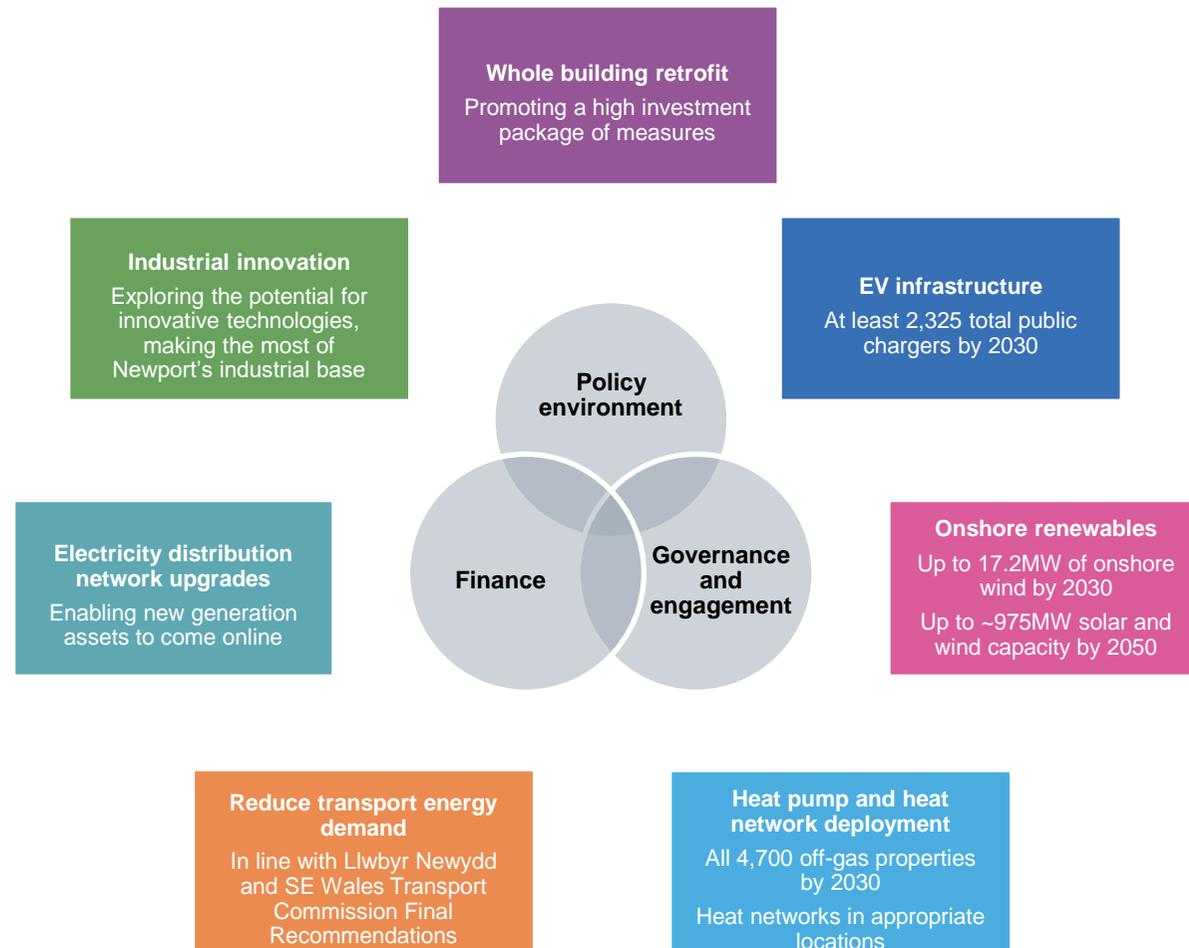


Figure 0: Priority intervention areas in Newport

## Glossary of terms

Term	Definition
Anaerobic digestion	Processes biomass (plant material) into biogas (methane) that can be used for heating and generating electricity
Batteries	Store electrical energy to be used at a later time
Biomass boiler	A boiler which burns wood-based fuel (e.g. logs, pellets, chippings) to generate heat and/or electricity
Carbon, Capture & Storage (CCS)	The process of capturing and then storing carbon emissions before they enter the atmosphere
Electrolyser	Use electricity to split water into hydrogen and oxygen
Heat pump	Use a heat exchange system to take heat from air or ground and increase the temperature to heat buildings
Hydro-electricity	Use water falling between two reservoirs to turn turbines to generate electricity
Hydrogen	A flammable gas that can be burned, like natural gas, to generate heat or power vehicles. The by-product is water. Hydrogen can also be used in fuel cells to generate electricity.
Landfill gas	Micro-organisms in a landfill site produce gases such as methane that can be used as a source of energy

Term	Definition
LAEP	This is used interchangeably for “Local Area Energy Planning” and “Local Area Energy Plan.”
Methane reformation	Process of producing hydrogen by heating methane from natural gas and steam, usually with a catalyst
Microgeneration	Small-scale generation of heat and electricity by individuals, households, communities or small businesses for their own use
Purchase Power Agreement (PPA)	A contract between two parties where one produces and sells electricity and the other purchases electricity.
Renewable Energy Guarantees of Origin (REGO) Agreement	A scheme that tells consumers what proportion of their electricity comes from renewable sources
Resistance heating	Generate heat by passing electrical currents through wires
Sewage gas	Use a reciprocating gas engine to convert sewage gas into heat and electricity
Solar PV	Convert solar radiation into electricity using photo-voltaic (PV) cells
Wind power	Harness wind to turn a turbine to generate electricity

## Introduction

### Overview

#### Introduction

In November 2021, we at Newport City Council declared an Ecological and Climate Emergency and pledged to:

- Continue the good work that we have started and reduce our carbon emissions to net zero carbon by 2030.
- Review the services we provide to ensure they support the city's journey to both net zero carbon and adapting to the impacts of climate change by 2050.
- Develop a clear Climate Change Organisational plan, in consultation with our citizens, for the next five years that will set out the actions we need to take to achieve this.
- Develop a city-wide Local Area Energy Plan, in collaboration with experts from the public, private and third sector to develop innovative solutions to decarbonise heat, electricity and local transport and realise local renewable energy production.
- Work with One Newport partners and the public to develop a city-wide Climate Strategy

to enable city-wide net zero carbon and adaptation to climate change by 2050 and integrate best ecological practice into each area of the council's activity, allowing us to lead the city by example.

- Publicise this declaration of an ecological and climate emergency to residents and businesses in Newport and support and influence action by partners through partnerships and support and enable action by citizens to reduce their own carbon emissions.
- By recognising global, national and local climate change trends and taking measured action now through preparation of a Local Area Energy Plan (LAEP), Newport not only contributes to the decarbonisation of Wales but also sets the standard for net zero carbon planning in local authorities across the United Kingdom.

#### What is a LAEP?

Our LAEP provides us with an understanding of the nature, scale, rate, and timings of changes that need to be made for Newport's transition to a

net zero energy system.

Following Ofgem's 2020 method, the LAEP process combines robust technical analysis with comprehensive stakeholder engagement to create a routemap for delivering decarbonisation as effectively as possible, identifying actions required by groups including local and national government, energy providers, regulators, industry, and residents.

This process aims to account for the local and national wider conditions to achieve net zero, considering how co-operation with adjacent areas can help to bring success to decarbonising the wider area.

This plan also aims to facilitate increased local stakeholder awareness in Newport, resulting in more widespread and meaningful consent for the changes required and credible commitments to deliver the plan.

**Please see the technical report for additional detail about the methodology followed, modelling scope, analysis completed and the results of this analysis.**

## Introduction

### Plan contents

Our LAEP presents our vision for a net zero local energy system in Newport, together with a summary of the evidence to support our vision and a routemap to get there, including a set of actions for us at the Council, whilst recognising the role of other key actors in government, the energy sector and across the community.

### Plan structure

This plan is structured in three main topic areas:

1. **Where we are now** - Description of Newport's existing energy system and relevant policies and objectives.
2. **Our future vision** - Presentation of future scenarios for a net zero local energy system, including risks and "low regrets" measures, which are very likely to be part of the future energy system regardless of uncertainty around certain aspects of the future.
3. **How will we get there?** - A routemap and action plan for us to use to drive the local energy system transition in Newport, including what needs to happen and what we will do.



Figure 1: An aerial view of the city of Newport

## 2. Where we are now

### Socio-economic context

#### Newport's socio-economic context

This section provides an overview of Newport through a socio-economic lens, including key statistics on demographic and employment.

#### Demographic baseline

- The estimated population in 2020 was 156,447 which accounts for almost 5% of the population of Wales. This makes Newport the second most densely populated authority in Wales after Cardiff, at 821.5 people per square kilometre.<sup>1</sup>
- Newport sits on the river Usk, close to its confluence with the Severn Estuary.
- The majority of the area is low-lying (< 310m above sea-level,<sup>2</sup> especially near the river banks and where marshland has been reclaimed, though there are some smaller hills.
- In 2018, fuel poverty affected 9% of households in Newport - lower than the national average for Wales at 12%<sup>3</sup>.
- Newport constitutes both urban and rural areas, with the city itself bounded by more sparsely populated fringe areas.

#### Employment

- The city remains an important manufacturing and engineering hub, and is to be part of the M4 high-technology cluster.
- Across Newport and Monmouthshire, the service industry constitutes roughly three quarters of the local economy (measured by Gross Value Added (GVA)), higher than for the rest of Wales where this is ~70%.<sup>4</sup> Main sectors include health and social care, administrative and support services, retail trade and real estate.
- A slightly lower than average proportion of the economy comes from production, at 19% compared to the national 22%. Manufacturing accounts for 80% of this sector – above average in Wales.<sup>4</sup>
- Construction constitutes a lower than average proportion of the economy, at 6% relative to 7% across Wales,<sup>4</sup> with a high relative proportion of this from civil engineering.



Figure 2: Location of Newport in Wales

Description	Information
Area	21,770 hectares
Population (2020)	156,447
Population density	Medium – second highest in Wales
Character	Urban and rural
Off-gas properties	Low - 7%
Fuel poverty (2018)	9% of households

Table 1: Newport profile – key statistics

## 2. Where we are now

### Policy context

#### Newport's policy context

We already have some ambitious plans and commitments currently in place relating to decarbonising the energy system, and also contribute to wider regional and national objectives.

#### Newport

- Newport accounts for 4.6% of the total carbon emissions from Wales.<sup>5</sup> The One Newport Partnership is currently developing a response to the climate change agenda for the local authority area.
- The current local development plan (LDP), adopted in 2015, is in effect until 2026. This LDP favours renewable energy schemes, encourages microgeneration sites, and prioritises the development of brownfield sites. As part of this, new development proposals will be assessed, inter alia, in terms of their wider environmental impacts. Work on a replacement LDP, to be adopted in 2026, is currently underway.<sup>6</sup>
- Our Local Well-being Plan aims to improve the city through sustainable development, centred around five key areas:

1. The Newport “Offer” (including a step to support clean local energy use)
  2. Strong, resilient communities
  3. Right skills
  4. Green, safe spaces
  5. Sustainable travel.<sup>7</sup>
- We are a partner in the Western Gateway, which aims to bring sustainable growth and additionality to Wales and the South West. As part of this project, a tidal lagoon proposal is in development in the Severn Estuary area.

#### Cardiff Capital Region

- Regional economic frameworks such as the Cardiff Capital Region (CCR) City Deal<sup>8</sup> have climate action as central themes. Note that Newport falls within the CCR.
- A regional energy plan for the CCR Region has been developed that focuses on key decarbonisation measures including reducing emissions from domestic heat and power, industrial and commercial heating, and road transport. The actions in the regional energy plan align with many of those in this LAEP, a

more detailed comparison can be found in the technical report.

#### National

- Both the UK and Welsh governments have set net zero emissions targets for 2050, and the Welsh public sector has set a net zero target by 2030.
- The Welsh Government has set its low carbon delivery plan for 2021-25 and is targeting a reduction of 44% against a 1990 baseline. It considers a just transition key, and sees decarbonisation as a means to deliver social and economic justice.<sup>9</sup>
- The Well-being of Future Generations (Wales) Act 2015 provides the legally binding framework for public sector activities to be in line with sustainable development principles in Wales, outlining seven goals for prosperity and sustainability.<sup>10</sup>
- The Net Zero Wales plan, published in October 2021, includes details on how Wales will achieve the second carbon budget, which sets out the goal to reduce emissions by 37% by 2025.<sup>9</sup>

## 2. Where we are now

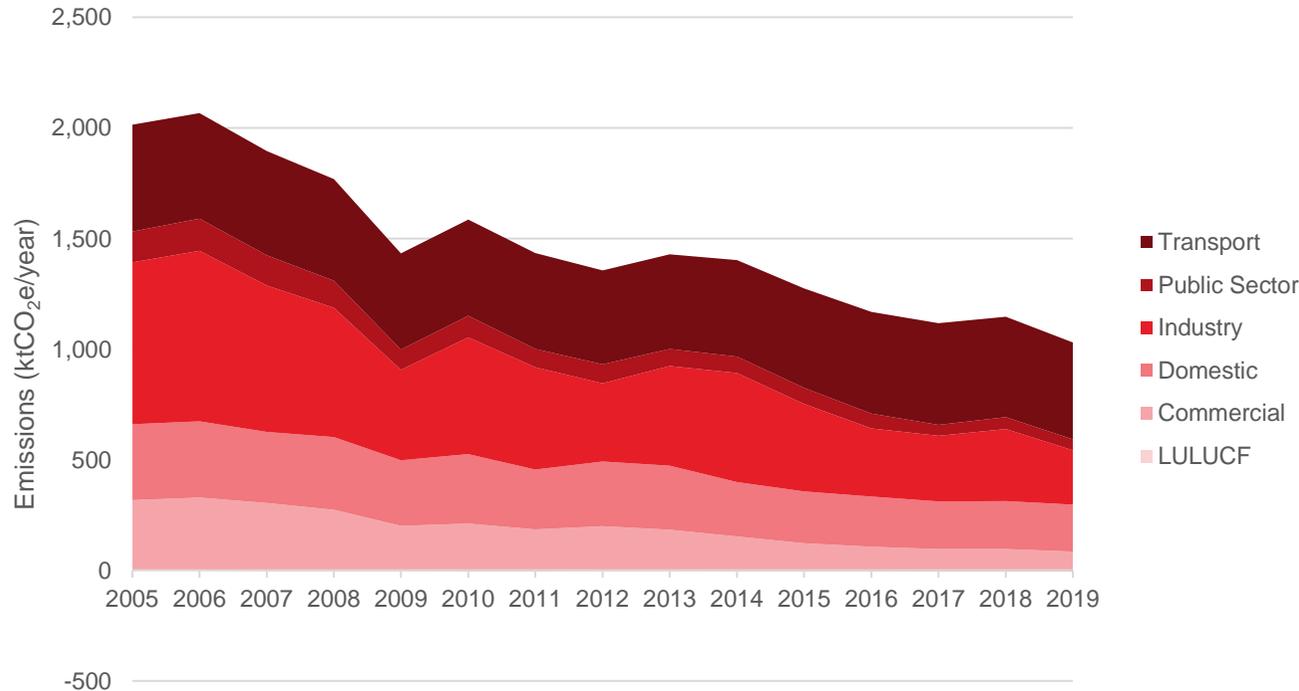
### Greenhouse gas emissions context

#### Historic greenhouse gas emissions

Newport's greenhouse gas emissions have been decreasing over the past 15 years, following the trend of the wider UK emissions. Figure 3 shows emission by sector in Newport since 2005, based on data published by the UK Government.<sup>5</sup>

This trend is due to a reduction in industrial

emissions, as well as decarbonisation of the electricity grid, leading to reductions across the domestic, industrial and commercial sectors. Note that land use, land use change and forestry emissions (LULUCF) are negative and small compared to other sectors (-5.9 ktCO<sub>2</sub>e in 2019).<sup>5</sup>



**Figure 3: Newport greenhouse gas emissions 2005-2019**

## 2. Where are we now

### Local authority control and influence

#### The boundaries for our modelling and LAEP

We have a varied degree of control and influence over emissions sources. The UK Government reports emissions that are within the boundary of the local authority (territorial emissions), and also notes those that are within the scope of influence for that local authority. In Newport, 16.6% of industry emissions in 2019 were from large industrial installations, which are outside local authority control, (yet still within our scope of influence).

The same is true for emissions from the through journeys on the M4 motorway, which accounts for almost half of Newport's transport emissions, shown in Figure 4. The table to the left shows what was included in the modelling boundary (in green) and what was not (in red), grey shows not applicable.

The LAEP recognises the importance of supporting and influencing elements that are outside our control as the local authority.

Sector	Heat demand included in modelling boundary	Electrical demand or generation included in modelling boundary	Included in LAEP
Industry	Green	Red	Green
Through traffic on M4	Grey	Red	Grey
Offshore wind and tidal lagoons	Grey	Red	Green
National generation assets (over 100MW)	Green Locations were considered for heat networks	Red	Green

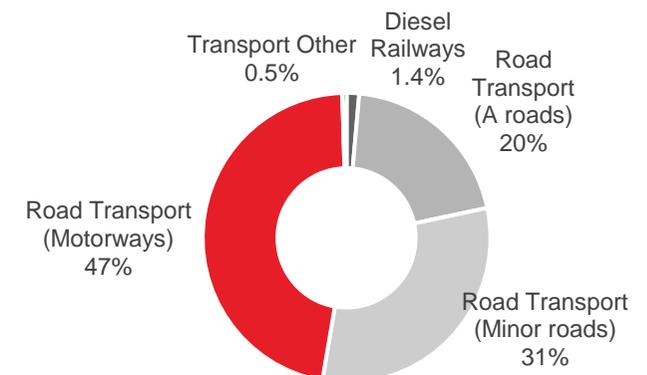


Figure 4: Newport transport emissions split 2019

## 2. Where we are now

### Energy system context

#### Understanding the energy system in 2021

Newport's energy system today comprises three mainly separate systems for heating, electricity and transportation. Figure 5 provides a "Sankey" diagram which, when read from left to right, shows how different energy sources (i.e. fuels and renewable energy resources) meet various types of demand via energy vectors or conversion technologies. Sankey diagrams are a way of visualising energy transfers between sources and demands via carriers.

The majority of heating comes from gas, while almost all transport demand is currently met by petrol and diesel. Electricity is predominantly imported to Newport from the National Grid.

In this diagram, local sources of renewable electricity have been shown separately from National Grid imports, even where these local sources are connected to the grid.

In order to achieve our net zero ambitions, we need to move away from using natural gas, diesel and petrol. This poses a challenge.

Demand for electricity in transport is excluded from this diagram because it is currently negligible.

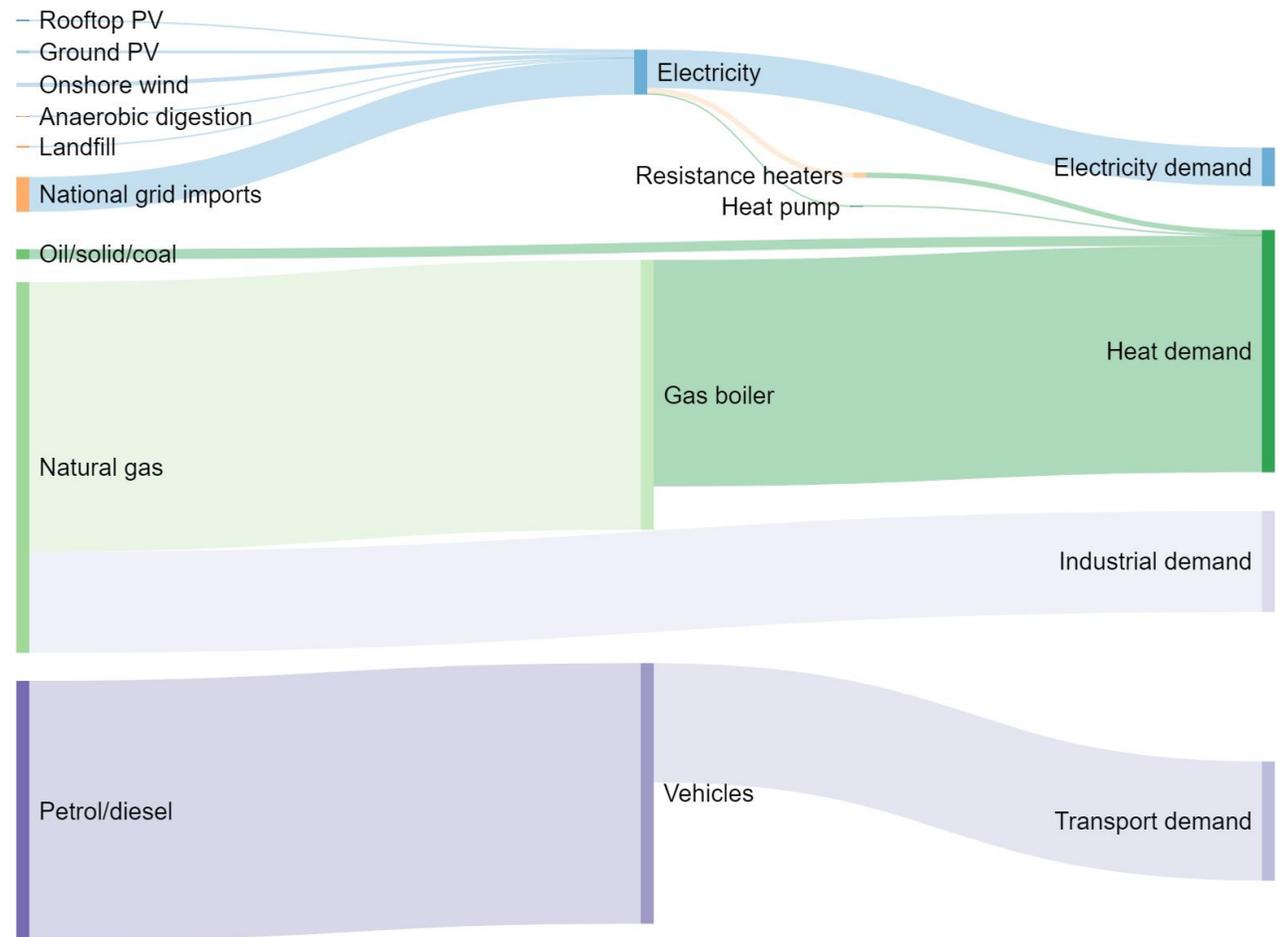


Figure 5: Sankey diagram of energy flows

## 2. Where we are now

### Energy system context

#### Current energy consumption

In 2018, Newport's total energy consumption from all fuel types across commercial, domestic and all industrial sectors totalled 4,500GWh, about 5% of Wales's annual consumption.<sup>11</sup> This amounted to 1,100ktCO<sub>2</sub> of emissions in 2018.<sup>12</sup>

#### Electricity

Newport's domestic electricity consumption, in 2018 totalled 200GWh.<sup>11</sup> The distribution of electricity consumption is shown in Figure 6. Note that industrial electricity (totalling 600 GWh combined with commercial) is assumed to be a national asset and has been excluded from our modelling because the local authority has limited control over it, and it impacts the national system rather than the local system. In 2018, Newport generated 175GWh of renewable energy (65% of its demand). The majority of this was generated from biomass, with other contributions from onshore wind, solar PV, and landfill gas.<sup>11</sup>

#### Heat

Newport's 2018 heat demand was 1,900GWh, including domestic demand, non-domestic demand, and the demand from large industrial

actors that are included in the LAEP boundary. The geographical distribution of this heat demand is shown in Figure 7. The heat demand was met by a combination of fuel types including mains gas, electricity, biomass, and other fossil fuels. Approximately 7% of homes are off the gas grid, compared to 19% off gas properties for the whole of Wales.<sup>13</sup>

#### Transport

In 2019, the total energy demand from transport in Newport was 1,600GWh, of which 99% was accounted for by road transport. This figure does not include demand for vehicles passing through Newport on the M4, which has been excluded from the analysis in this study. Our technical report shows the distribution of transport demands across Newport, split by mode type.<sup>14</sup>

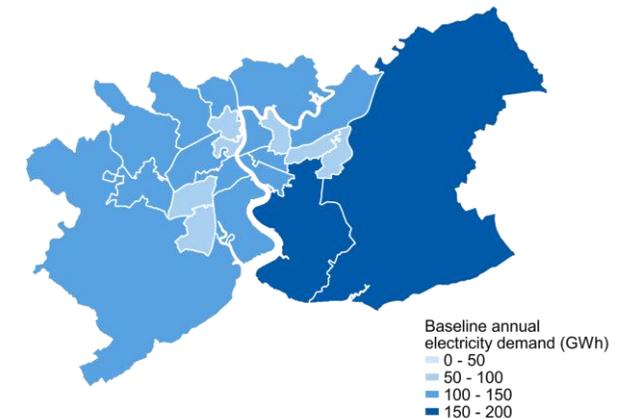


Figure 6: Baseline electricity demand by MSOA

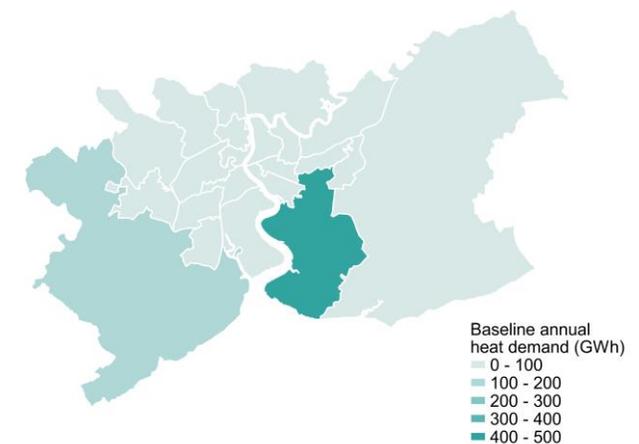


Figure 7: Baseline heat demand by MSOA

## 2. Where we are now

### Energy system context

#### Key energy projects

There are existing and proposed energy assets in Newport that make a significant contribution to the local and national energy system.

The now-dormant fossil fuel power stations at the Severn Power and Uskmouth sites have large grid connections and present an opportunity for development of a new low carbon energy generation facility to make use of this underutilised grid resource.

An energy from waste plant has been proposed at the Uskmouth site that would be fuelled by waste-derived fuel pellets.<sup>15</sup> The project has been referred to Welsh Government for approval.<sup>16</sup> If approved, the facility would be a source of low carbon heat which could serve local heat loads in place of more carbon intensive gas heating.

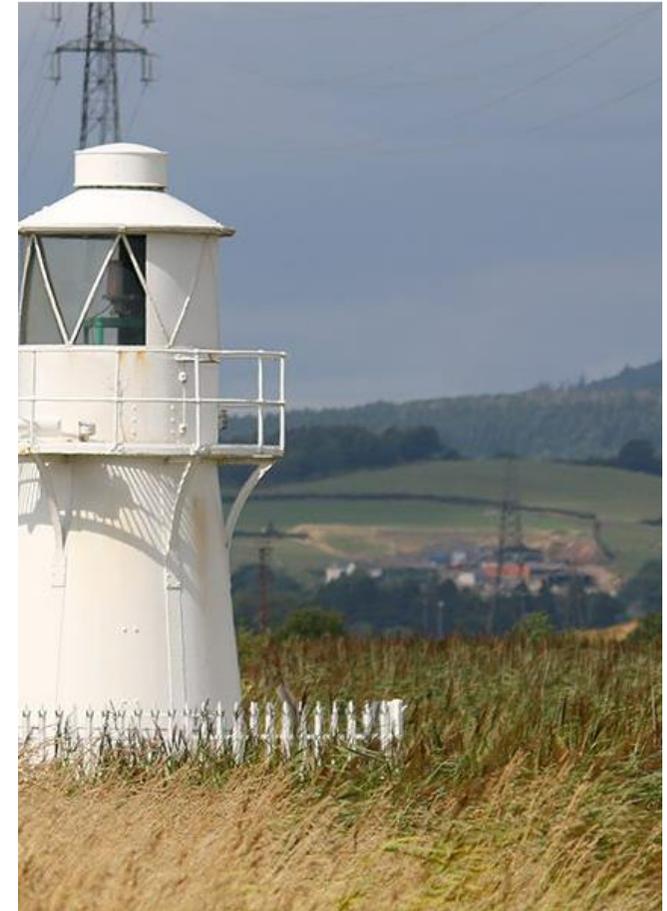
Heat network studies have identified two areas of Newport where low carbon heat networks would be feasible. These are described in more detail in the technical report.

Recently in 2020, planning applications were submitted for two solar farms that were considered Nationally Significant Infrastructure

Projects (NSIPs).<sup>17</sup>

Planning permission was granted in 2020 and construction completed in 2021 for a 75MW solar farm at Llanwern, which is claimed to be the largest subsidy free solar farm in the UK.<sup>18</sup>

The planning application for the other large solar farm, a proposed 62.5MW installation with solar PV and battery located on the Gwent Levels, was not approved. While the planning inspector recommended that planning permission be granted, in September 2021, Welsh Ministers rejected the application on the basis of unacceptable impact to the Gwent Levels landscape of outstanding historic interest.<sup>19</sup>



**East Usk Lighthouse and Newport Wetlands on the Gwent Levels**

### 3. Our vision for Newport's future local energy system

#### Our vision

*To develop a net zero energy system for Newport, as a city on the rise.*

#### Objectives of the plan

- *To maximise reductions in carbon emissions while minimising financial costs.*
- *To provide a resilient energy system capable of meeting future energy demand.*
- *To empower the local economy, through increasing access to local employment and promoting local ownership and supply chains.*
- *To support the creation of quality and long-lasting local job opportunities.*
- *To provide community engagement, leadership, and ownership.*
- *To deliver affordable solutions for all.*

As a local plan, this LAEP focuses on actions and objectives at a local scale rather than accounting for national interventions beyond our influence as the council. We will need to work collaboratively with partners across the public, private and third sectors in order to deliver on our objectives.

#### Understanding the future energy system

We know that we need to transition our energy system in Newport to net zero by 2050.

However, we know that there are multiple plausible and attractive future energy systems for Newport, depending on a range of factors. This includes how the cost of technologies might change over time, as well as wider policy decisions that will be made by Welsh and UK Governments. These factors will influence the uptake of hydrogen, for example.

In order to inform our plan, we modelled a range of scenarios, and from this we identified a number of technologies that are consistently deployed across all future scenarios. These technologies represent low- and no-regrets actions which are

very likely to be important parts of the future energy system, regardless of the uncertainty around certain aspects of the future. These low- and no-regrets actions can be taken now to set Newport on track to a net zero carbon future.

Through this analysis, we identified the commonalities that will support us in meeting our vision and objectives. This forms the basis of our plan. We know that these actions will be required regardless of any future uncertainties.

### 3. Our vision for Newport's future local energy system

#### Future scenarios and pathways

##### 2050 system scenarios

For our analysis we identified a variety of future whole energy systems scenarios for 2050, to help understand the choices and preferred pathways for a net zero local energy system. The scenarios built on a pair of energy demand scenarios (high and low, see figure 12). The projections incorporated both different projections of growth in Newport and different scenarios for energy efficiency through building retrofit.

The Sankey diagrams on the following pages (Figures 8-11) show a mix of energy sources and vectors that most optimally meet the projected demand over the year, given the conditions set in each scenario. We have optimised for the lowest whole system costs to achieve net zero. Careful consideration will be required in order to distribute these costs fairly in order to deliver a just transition.

Each of these diagrams represents a potential energy future for Newport, and these have been considered alongside local and regional strategic priorities to identify the actions described in this report. The four main scenarios modelled were:

- High demand – high population and economic growth and shallow retrofit
- High demand with high hydrogen uptake
- High demand in an islanded scenario (i.e. where Newport is not connected to the national electricity grid)

- Low demand – low growth and deep retrofit

Comparison of all of these with the baseline scenario shown in figure 5 highlights a key fundamental change in the energy system: moving from three semi-isolated systems for heat, electricity and transport to a single energy system with the complex interconnections between energy vectors.

Note that the industrial demands shown in the Sankey diagrams correspond to gas consumption. Electricity demand for large industrial installations have been excluded from this modelling.

For more information, please refer to the technical report for additional detail about the methodology followed, analysis completed and

the results of this analysis.

##### Energy transition pathway scenarios

We developed a set of pathway scenarios to show the rate at which the energy system change impacts on our ability to reduce associated carbon emissions. These scenarios have been prepared using estimates for the rate of demand increase and potential decarbonisation deployment rates.

The central future emissions projection is based on National Grid Future Energy Scenarios (FES) projections of national grid decarbonisation<sup>20</sup>, with two additional scenarios, showing a higher and lower ambition. These scenarios demonstrate the rate and scale of change required at both a local and national level.

The pathways scenarios are illustrated in figure 13 on page 17.

### 3. Our vision for Newport's future local energy system

#### Future scenarios and pathways

#### Future Sankey diagrams

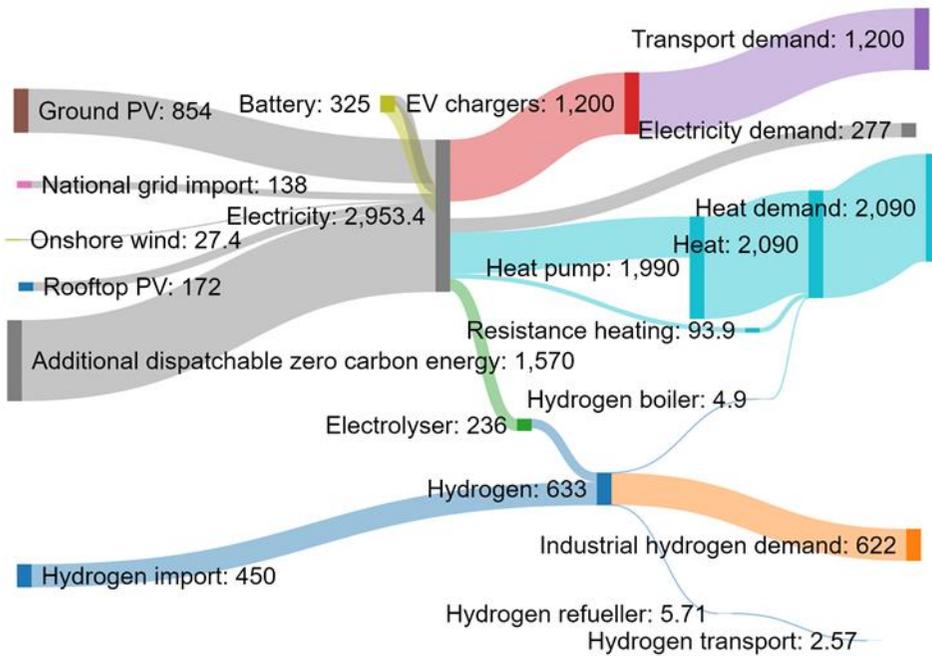


Figure 8: Energy flows in the 2050 high demand scenario (GWh/year)

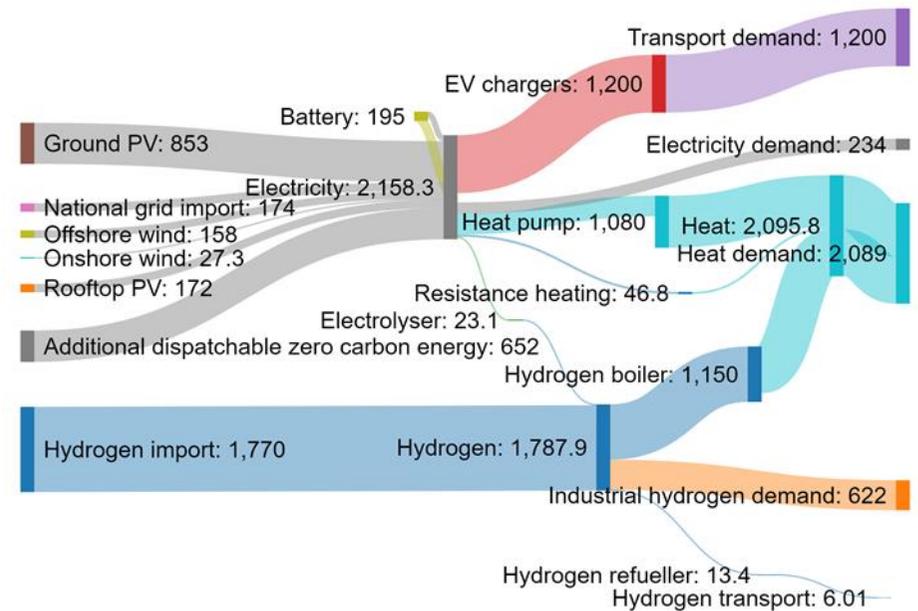


Figure 9: Energy flows in the 2050 high hydrogen scenario (GWh/year)

### 3. Our vision for Newport's future local energy system

#### Future scenarios and pathways

#### Future Sankey diagrams

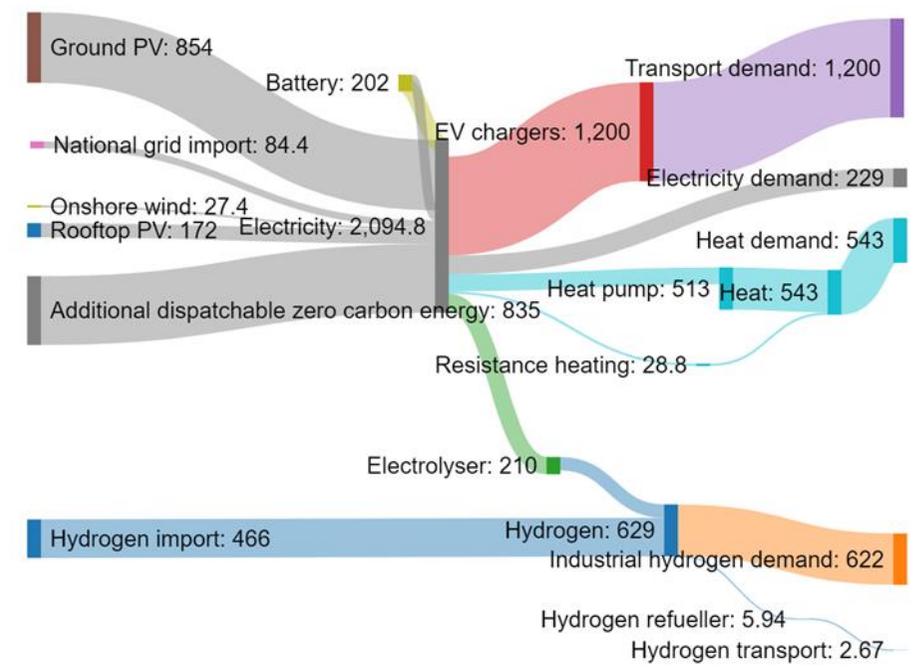
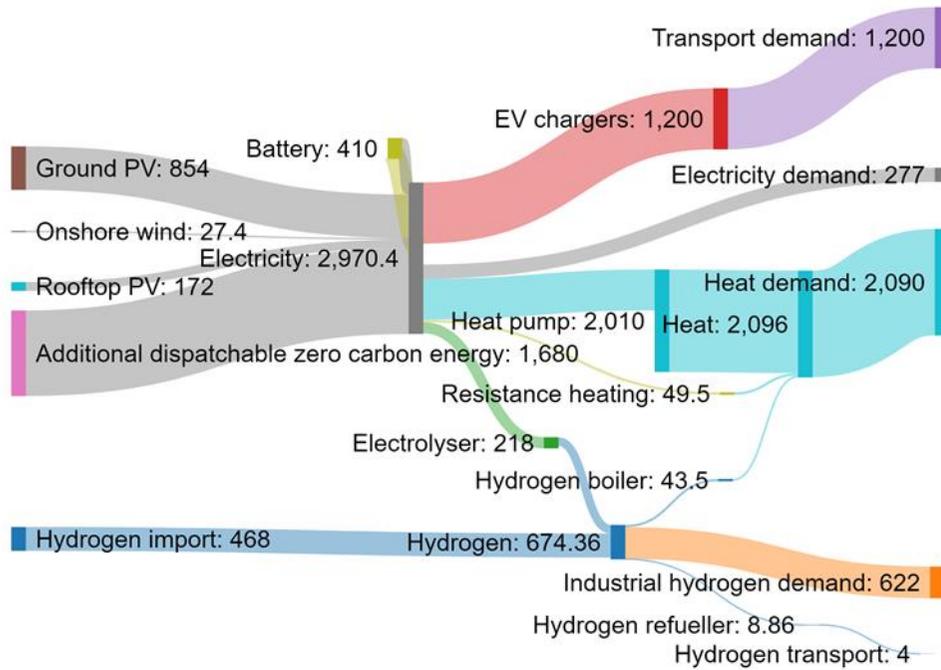


Figure 10: Energy flows in the Islanded 2050 high demand scenario (GWh/year)

Figure 11: Energy flows in the 2050 low demand scenario (GWh/year)

### 3. Our vision for Newport's future local energy system

#### Energy and emissions pathways

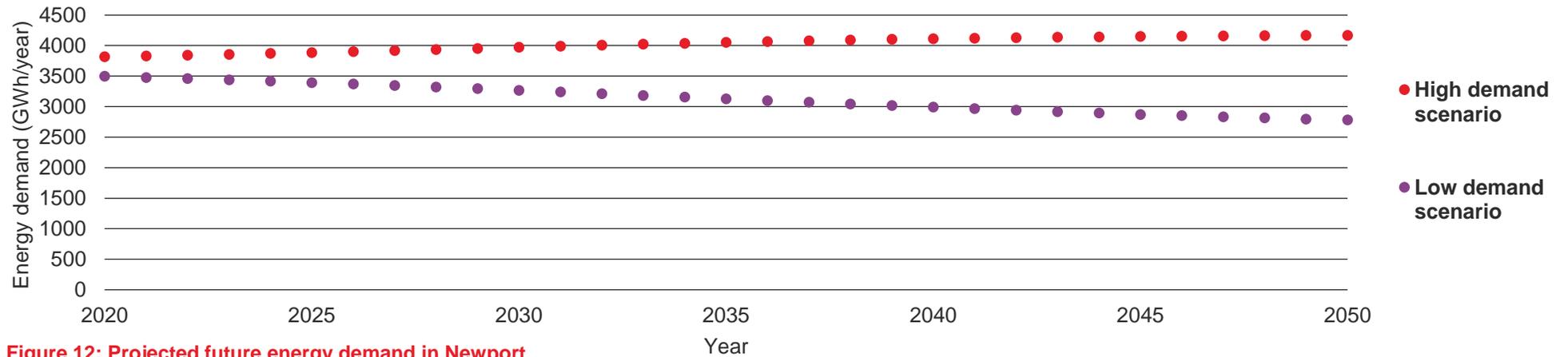


Figure 12: Projected future energy demand in Newport

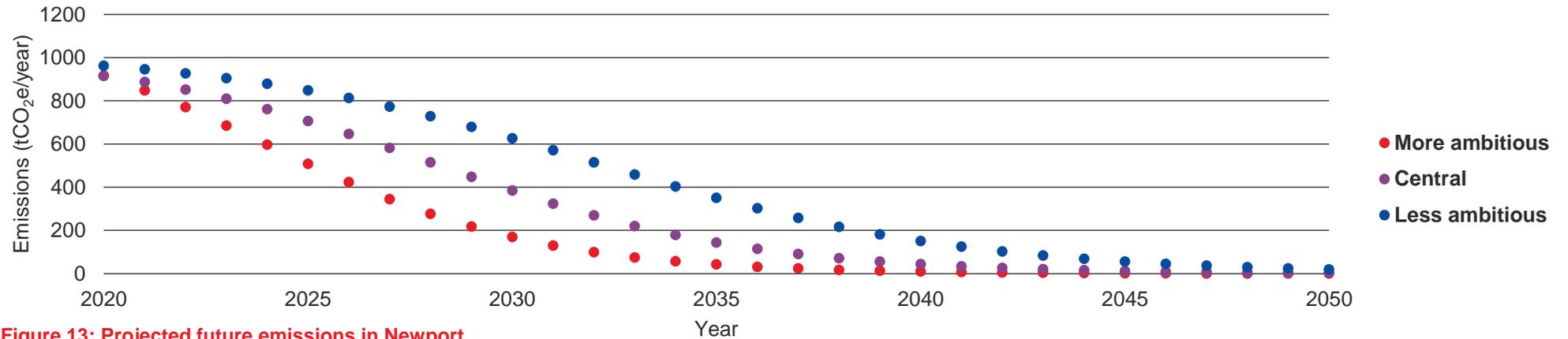


Figure 13: Projected future emissions in Newport

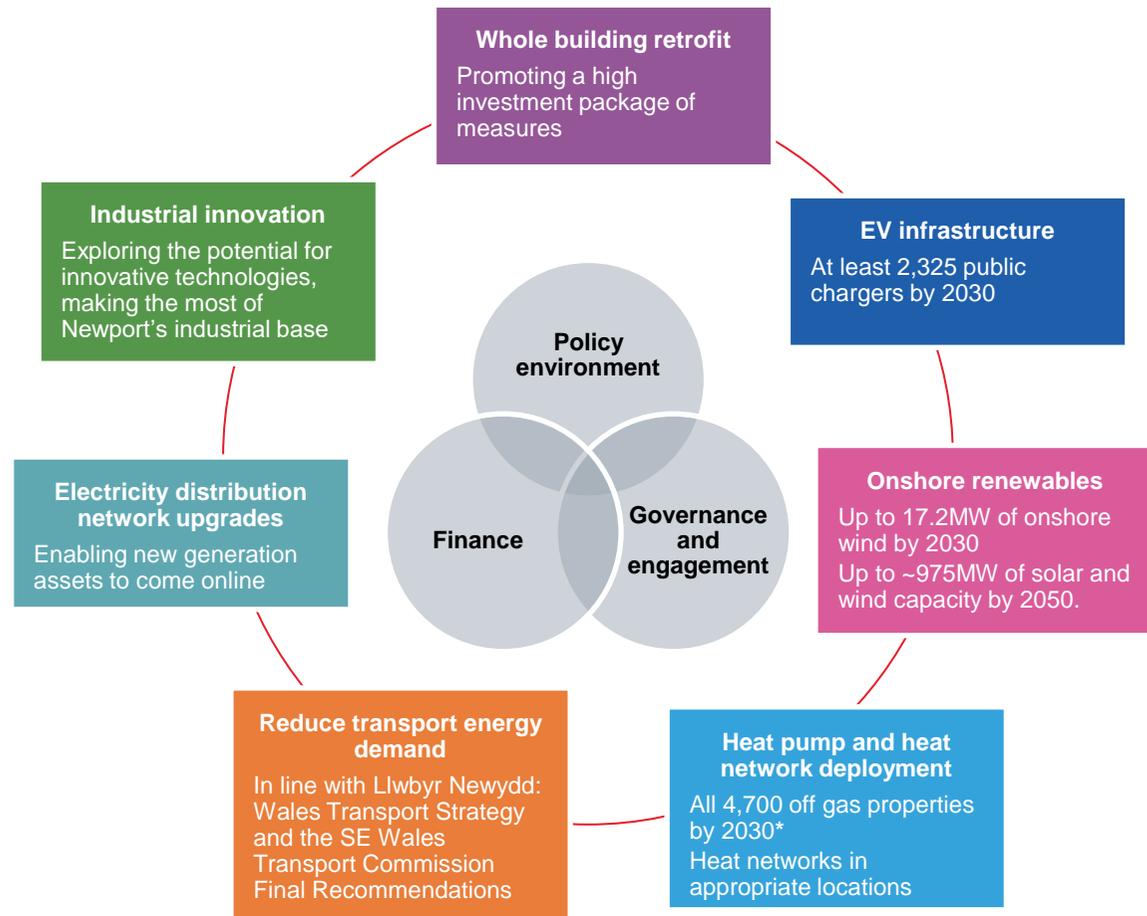
### 3. Our vision for Newport's future local energy system

#### Priority intervention areas

Based on the evidence developed for our plan (see our technical report), our priority intervention areas are set out to the right.

These represent the areas where we need physical changes to the energy system.

Delivery of the wider objectives of our plan will need to be supported by the right governance and engagement, policy environment and finance.



\* Following a decision by the UK Government on hydrogen for heating (expected in 2026), accelerated action can be planned for decarbonisation of heat in properties currently on the gas grid

Figure 14: Priority intervention areas in Newport

## 3. Our vision for Newport's future local energy system

### Priority intervention areas

We plan to deliver actions to support physical changes to the energy system as follows:

#### 1. Whole building retrofit

Reducing energy demand of buildings through retrofit minimises the need for development of new generation assets, and potential associated grid reinforcements. Reduction in energy demand will also reduce energy bills, which will help us to support fuel poor neighbourhoods across the city. With a high number of traditional and older buildings in Newport there are particular challenges around building upgrades.

There are a suite of interventions possible with varying levels of investment. Through community engagement, government incentives and planning measures we will encourage the private sector to pursue high investment in retrofit, which includes external, loft and under floor insulation measures, smart metering, window sealing, external solar devices, triple glazing and air tightness. We aim that by 2035, just over 1/3 of homes (21,500 properties) will have these measures installed, representing approximately £1.16 billion of investment. This exceeds CCR targets of raising Energy Performance Certificate (EPC) standards in 25% of homes by 2035.

#### 2. Development of public EV charging infrastructure

The Welsh Government EV strategy shows that Newport requires a mix of rapid and fast public chargers located at workplaces, destinations and other hubs. Our modelling results support the electrification of transport and thus the

scaling up of public EV charging infrastructure. The proportion of fast and rapid public chargers depends on which service emerges as dominant. However, by 2025, at least 80 rapid chargers and at least 1,120 fast chargers are needed, and by 2030 at least 145 rapid and a total of at least 2,325 public chargers will be needed.

#### 3. Electricity distribution network upgrades

Network upgrades are a priority intervention to allow new generation assets to connect to the distribution electricity network.

#### 4. Development of onshore renewables

Scaling up of onshore renewables is an essential component of meeting Newport's future energy demand. Current market conditions and trends suggest ground PV is the least expensive to deliver. In the highest electricity demand scenario, we project that up to 958MW of ground and rooftop PV and 17.2MW of onshore wind is needed. This represents an additional ~935MW of capacity in addition to current assets. There is limited capacity to extend the already existing 16.1 MW of onshore wind.

#### 5. Industrial innovation programme

Newport's industrial installations are projected to require significant amounts of hydrogen to decarbonise their processes. The proposed industrial innovation programme will explore innovative technology options including methane reformation with CCS. The historic grid connections in Newport provide an opportunity to encourage innovation and explore a range of zero carbon

energy options that will be required to meet the identified electricity need, and there are potential industrial symbiosis and waste heat opportunities.

#### 6. Decarbonisation of heat through heat pump deployment and heat networks

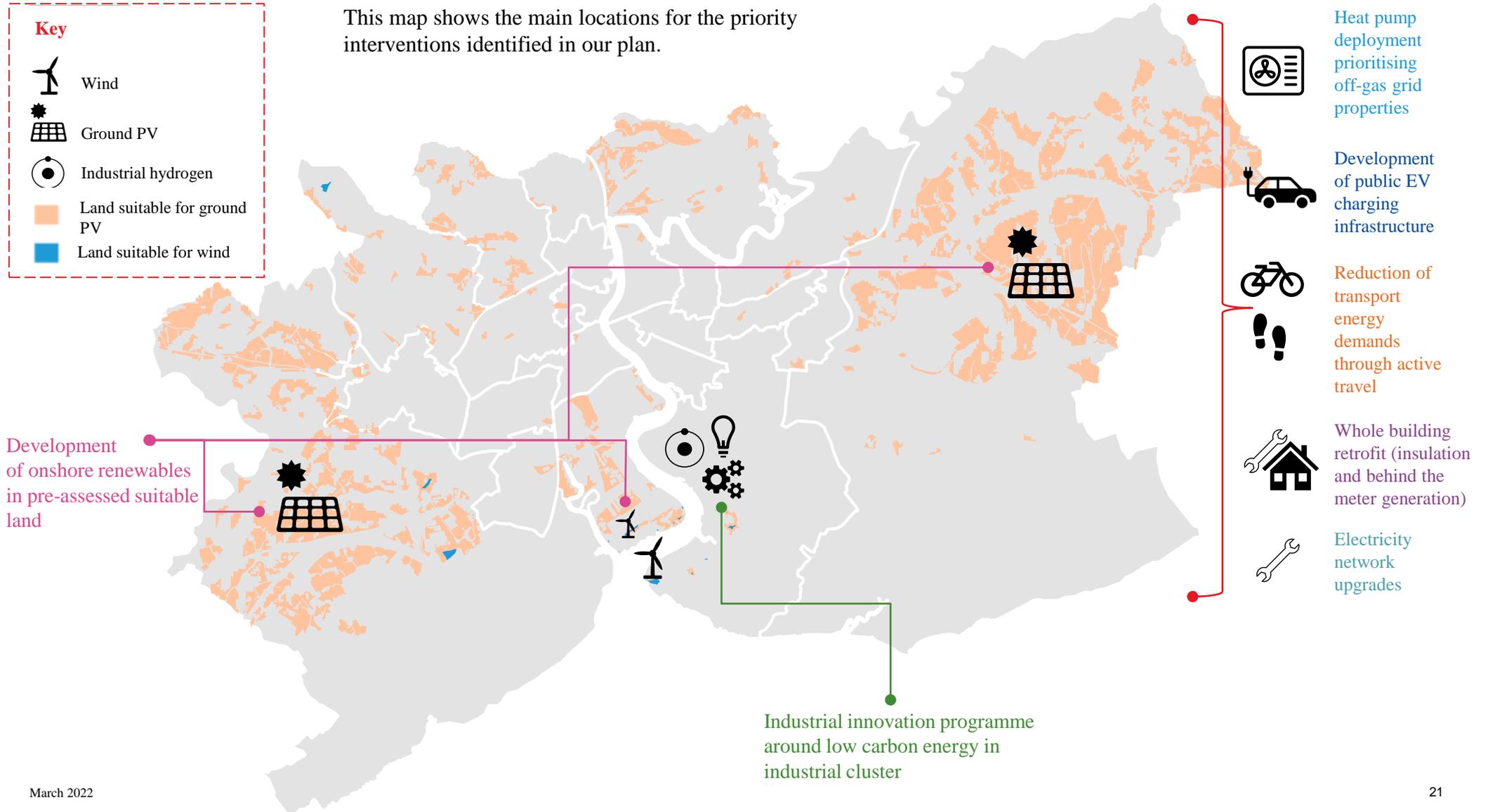
There are an estimated 4,700 properties off the gas network in Newport, many of which are heated by carbon intensive fuels. In order to maximise carbon savings and avoid the need for additional gas infrastructure, these properties will be prioritised for air and ground source heat pump installations. The uncertainty regarding hydrogen in the gas grid make off-gas properties our initial focus. Further information on the geographic focus for this is set out on page 28.

Heat networks could provide a valuable opportunity for decarbonising heat supply in Newport, including in properties already on the gas network.

#### 7. Reduction of transport energy demand through active travel measures

The Welsh Transport Strategy sets a transport hierarchy – giving priority to meeting transport demand through active travel and public transport, before private vehicles. As outlined in the SE Wales Transport Commission Final Recommendations, reducing our reliance on energy intensive modes of transport is critical, not only because it supports goals in the Well-being of Future Generations Act, but also because it will free up electrical energy needed for heating.

### 3. Our vision for Newport's future energy system



## 4. What needs to happen?

### Joined up action and ensuring conditions for success are met

A high level routemap showing the actions that we will undertake, in the context of Welsh and UK Government targets and decisions, is shown overleaf. This provides an overview of how the LAEP fits in the wider policy context and direction of travel for energy system decarbonisation.

The actions fall under the following priority interventions areas as set out in Section 3:

#### Enabling actions

#### 1. Whole building retrofit

#### 2. Development of public EV charging infrastructure

#### 3. Electricity distribution network upgrades

#### 4. Onshore renewables

#### 5. Industrial innovation program

#### 6. Heat pump and heat network deployment

#### 7. Transport energy demand reduction

The priority interventions identified sit within this high level routemap. They require joined up but differentiated efforts by the stakeholders identified in this LAEP.

Although the exact form of the decarbonised energy system in 2050 is uncertain, there are actions we can take now to maintain the ability to meet our 2050 and interim targets, and to reduce the longer term carbon output of the system.

The routemap provides a focused view of actions that will be taken in the coming decade, while also showing key milestones on the decarbonisation trajectory to 2050.

Each intervention requires four key elements to be successful:

1. Mobilising finance
2. Strong and consistent policy frameworks
3. Delivery owners
4. Community engagement.

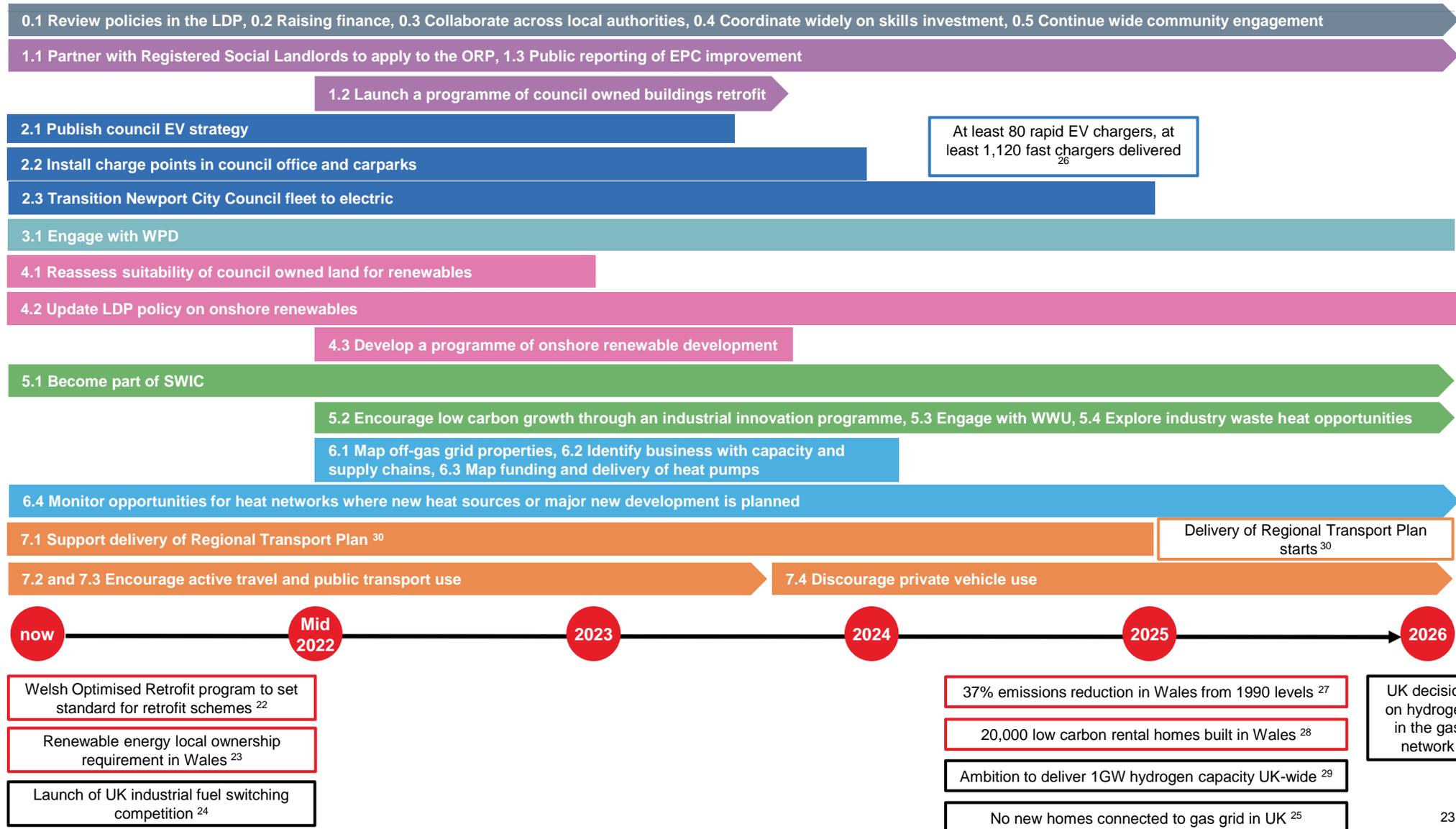
As Newport City Council, our role in each intervention will vary. Some interventions call for council action in the material delivery of

programmes, whilst other interventions require the council to act more as a facilitator for market driven change.

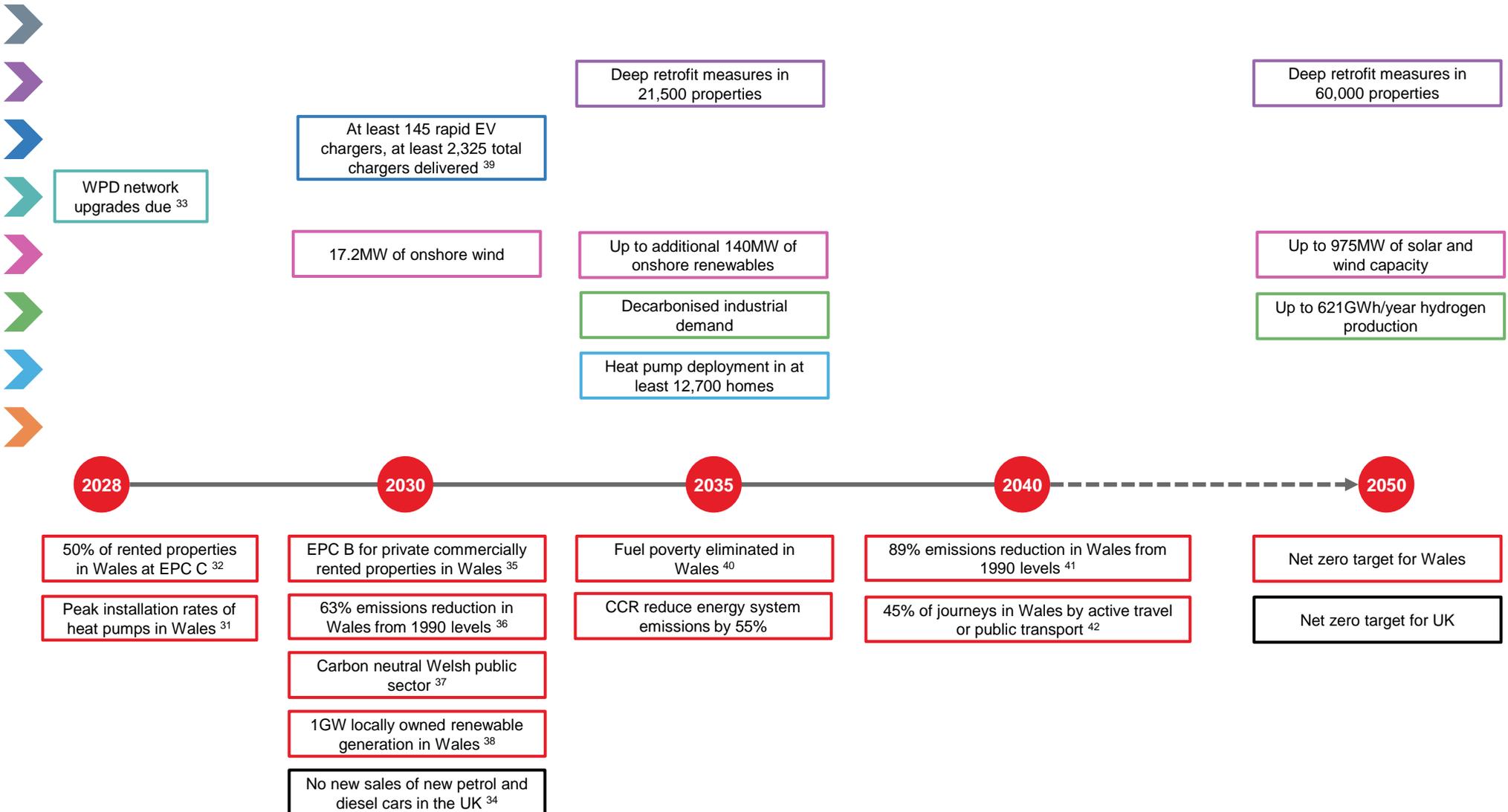
We recognise and support Welsh Government's local ownership ambitions on renewable energy<sup>21</sup>. We also believe that local ownership and direct engagement in other decarbonisation technologies, such as EV charging and retrofit will help speed up the transition.

The following section provides further detail on each of the actions that we will undertake in the first five years under each intervention area, as well as our key asks of others. We recognise that we will need to learn from these initial actions and quickly scale up to deliver more in order to respond to the pace of change required.

## 4. What needs to happen? Short term routemap



## 4. What needs to happen? Medium-long term routemap



## 5. What are we going to do?

### Our actions and asks from others

#### 1. Action on whole building retrofit (insulation, efficiency measures and behind the meter generation)

We need to retrofit all homes and buildings, across different tenures and ownership types. Our initial actions will target those where we have greatest influence.

**Action 1.1 Partner with Registered social landlords (RSL) to apply to the Optimised Retrofit Programme (ORP).** We will partner with registered providers of social housing to monitor plans for future phases of the ORP and put in an application if/when appropriate.

**Benefit** Learnings from retrofitting the social housing sector will support the development of approaches to decarbonising private rented and owner occupied sectors. Prioritising work on social housing properties is progressive and will also help accelerate the growth of Welsh small and mid-sized enterprises (SMEs) in this market.

**Timescale** 2022-ongoing

**From others we need** Co-ordinated efforts by Welsh Government and skills bodies to address the skills and materials shortage in the construction sector. Funding may be needed for a dedicated role to coordinate this action.

---

**Action 1.2 Launch a programme of council owned buildings retrofit.** We will design and

launch a programme of building retrofit focusing on council owned buildings.

**Benefit** This will support the CCR priority area to deliver fabric improvements in existing buildings. Learnings from retrofitting public sector buildings will support the development of approaches to decarbonising the private sector.

**Timescale** The development of the programme and establishing costs is already underway, and the programme of works will launch in 2022.

**From others we need** Grant funding to support the transition to low carbon heat from gas boilers.

---

**Action 1.3 Public reporting of level of EPC improvement.** We will publicly report against progress to improve the privately rented domestic and commercial building stock

**Benefit** Public reporting will hold us to account and ensure that minimum requirements are met.

**Timescale** Underway and ongoing



## 5. What are we going to do?

### Our actions and asks from others

#### 2. Action on development of public EV charging infrastructure

##### **Action 2.1 Publish council EV**

**strategy/approach.** As Newport City Council we will set out priority geographical areas for the roll out of EV charging infrastructure.

**Benefit** Setting out the priority areas will enable the systematic and transparent roll out of the technology, in order that it reaches residents without off street parking. This will support the CCR ambition to develop EV charging infrastructure.

**Timescale** Already underway and to conclude in summer 2023.

**From others we need** Advice from the Local Government Association and others on considering different management and ownership frameworks will be valuable. Continued funding to support rollout and access to non-council owned parking areas.

---

**Action 2.2 Install charging points in council offices and car parks.** We will install fast and rapid EV chargers across council owned offices and car parking facilities

**Benefit** This will signal council intent, and provide a testing ground for the delivery of public EV infrastructure in the local authority, supporting the wider take up in market driven schemes elsewhere.

**Timescale** All council car parks already have EV charging in place. We will continue to deliver charging points in all council office parking spaces from January 2022 to January 2024.

**From others we need** We need technical advice on grid connections from WPD and installers, access to funding sources to support charging infrastructure, as well as extra resources (capital and revenue) to increase the pace of installation.

---

##### **Action 2.3 Transition our owned fleet of vehicles to electric.**

**Benefit** This will signal council intent on the transition to electric vehicles.

**Timescale** This is already well underway. We will transition the fleet of council owned vehicles by 2025.



## 5. What are we going to do?

### Our actions and asks from others

#### 3. Action on electricity distribution network upgrades

**Action 3.1 Engage with WPD.** We will engage early with WPD regarding the connection of new generation assets in advance of their next price control - RIIO-ED3 (Revenue, Incentives, Innovation & Outputs: Electricity Distribution) which will run from 2028 – 2033. We will endeavour to share this plan as part of a consultation for ED-2.

**Benefit** This will ensure network upgrades for Newport are prioritised.

**Timescale** To start now, ongoing until 2026.

**From others we need** More detailed programme design needs to be undertaken to finalise delivery plans for network enhancements.

---

#### 4. Action on onshore renewables

**Action 4.1 Reassess suitability of council owned land for renewables.** We have already been through our council land and identified areas for development – we will continue to look at LA land and identify opportunities.

**Benefit** This will maximise the opportunity for

renewable energy development whilst minimising the expenditure of the public sector.

**Timescale** This will be a year-long process starting in early 2022.

**From others we need:** Support and buy in from the local community for enhancing the generation assets around Newport.

---

**Action 4.2. We will update policy in the local development plan (LDP) on the development of onshore renewables** and produce clear guidance to potential developers on our expectations for local ownership, commercial arrangement, environmental stewardship and co-benefits

**Benefit** Updating policy in the LDP will provide the market with a clear signal about the appetite for development within Newport.

**Timescale** Already underway, to conclude by 2026.

---

**Action 4.3 We will develop a programme of renewable energy development with appropriate commercial models.** We will learn from the successes and failures of previous renewable energy planning applications and consider the merits of different ownership strategies and commercial models from self-developing land, to acquiring a finished or a commissioned project from a third party. This evidence can be used to support the development of the LDP update to consider the most appropriate models to meet the needs of Newport.

**Benefit** Developing a plan for renewable energy development and the risks and benefits of different ownership models will streamline council decision making. This will support the CCR action to encourage local development of renewable energy projects.

**Timescale** This will be completed in financial year 2022-2023.

## 5. What are we going to do?

### Our actions and asks from others

#### 5. Action on industrial innovation program

**Action 5.1 Become part of SWIC to enable greater collaboration with industry.** We will work towards partnering with the South Wales Industrial Cluster to ensure that Newport priorities are met.

Through connections made, we will facilitate introductions and seek opportunities for pilot projects on industry decarbonisation across our geography.

**Benefit** Gaining a seat in discussions about the future direction of industry in South Wales more broadly will enable us to link up with industry, ensure co-ordinated action and joined up priorities.

**Timescale** Immediate start and ongoing with the SWIC programme.

**From others we need** Co-operation from SWIC.

---

**Action 5.2. Promote Newport as a potential site for innovation around low carbon energy.**

We will engage innovative energy technology stakeholders and encourage them to consider

Newport as a potential site for cutting edge renewable generation technologies. We have large industrial users who could be pilot sites for hydrogen use and production, we have assets such as the Severn Power and Uskmouth sites which have large grid connections, which could be attractive investment opportunities. We also recognise that road freight transport has significant impact on emissions and we will look for opportunities in industrial innovation to decarbonise in this area.

**Benefit** An investment in innovative renewable energy technology in Newport would site generation assets in a cluster of demand and also retain the economic benefits.

**Timescale** 2022 and ongoing

---

**Action 5.3 Engagement with WWU.** We will engage early with WWU regarding the hydrogen network required to support industry and the potential for hydrogen fuelled vehicles (likely HGVs) in advance of their next price control - RIIO-GD3 (Revenue, Incentives, Innovation &

Outputs: Gas Distribution) which will run from 2028 – 2035.

**Benefit** This will support the prioritisation of appropriate network upgrades for Newport

**Timescale** To start now, ongoing until 2028.

**From others we need** More detailed programme design needs to be undertaken to finalise delivery plans.

---

**Action 5.4 Explore industry waste heat opportunities.** We will seek opportunities for industrial symbiosis and use of waste heat.

**Benefit** This will enable efficient use of waste heat, minimising the need for additional new generation.

**Timescale** Ongoing.

**From others we need** Industrial waste heat producers to share plans with potential heat users to enable opportunities to be captured.

## 5. What are we going to do?

### Our actions and asks from others

#### 6. Action on heat pump and heat network deployment

**Action 6.1 Map off-gas grid properties and their ownership types.** We will map in more granular detail the off and on gas grid properties and their ownership types to prioritise properties for fuel switching.

**Benefit** This mapping exercise will enable us to prioritise properties for intervention based on ownership type and heating fuel source. It will also allow us to identify the extent of electric infrastructure upgrades needed to enable heat pump installation.

**Timescale** Commit to start in Summer 2022.

**From others we need** We ask that Welsh Government further incentivises households off the gas grid to switch their domestic heating system, either through taxes on solid fuels, incentives, or mandating heating retrofit measures in critical parts of the buildings lifetime such as change of owner or tenant. We also require funding for a post to lead on heat pump deployment across Newport.

---

**Action 6.2 Identify business with capacity and wider supply chains.** We will identify and champion local businesses and SMEs with the capacity and skills to deliver installations of heat pumps in off-gas grid properties, prioritising those transitioning from high carbon intensive industries.

**Benefit** This will support the development of low carbon jobs in Newport and a just transition.

**Timescale** Commit to start in Summer 2022.

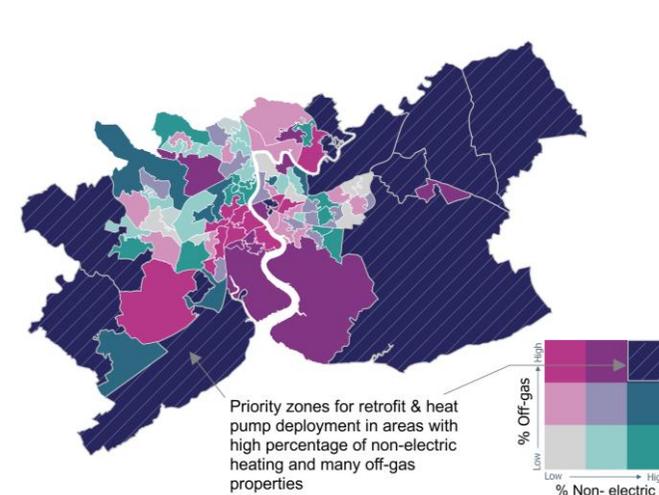
**From others we need** Support from further education colleges and providers to analyse training needs, develop and deliver courses for heat pump installations.

---

**Action 6.3 Map out funding and delivery options.** We will map out existing funding and delivery opportunities for heat pump deployment at both a national and local level.

**Benefit** This exercise will help us identify and unlock potential funding opportunities for heat pump deployment across Newport.

**Timescale:** Commit to start in Summer 2022.



**Figure 15: Priority zones for heat pump deployment**

## 5. What are we going to do?

### Our actions and asks from others

#### 6. Action on heat pump and heat network deployment

**Action 6.4. Heat networks for new developments.** We will monitor opportunities for heat networks where major new development is planned.

**Benefit** This will enable us to roll out heat networks where they prove to be the most effective means of decarbonising heat.

**Timescale** Ongoing.

**From others we need** We ask that developers consider heat networks as a possible energy solution for new developments.

---

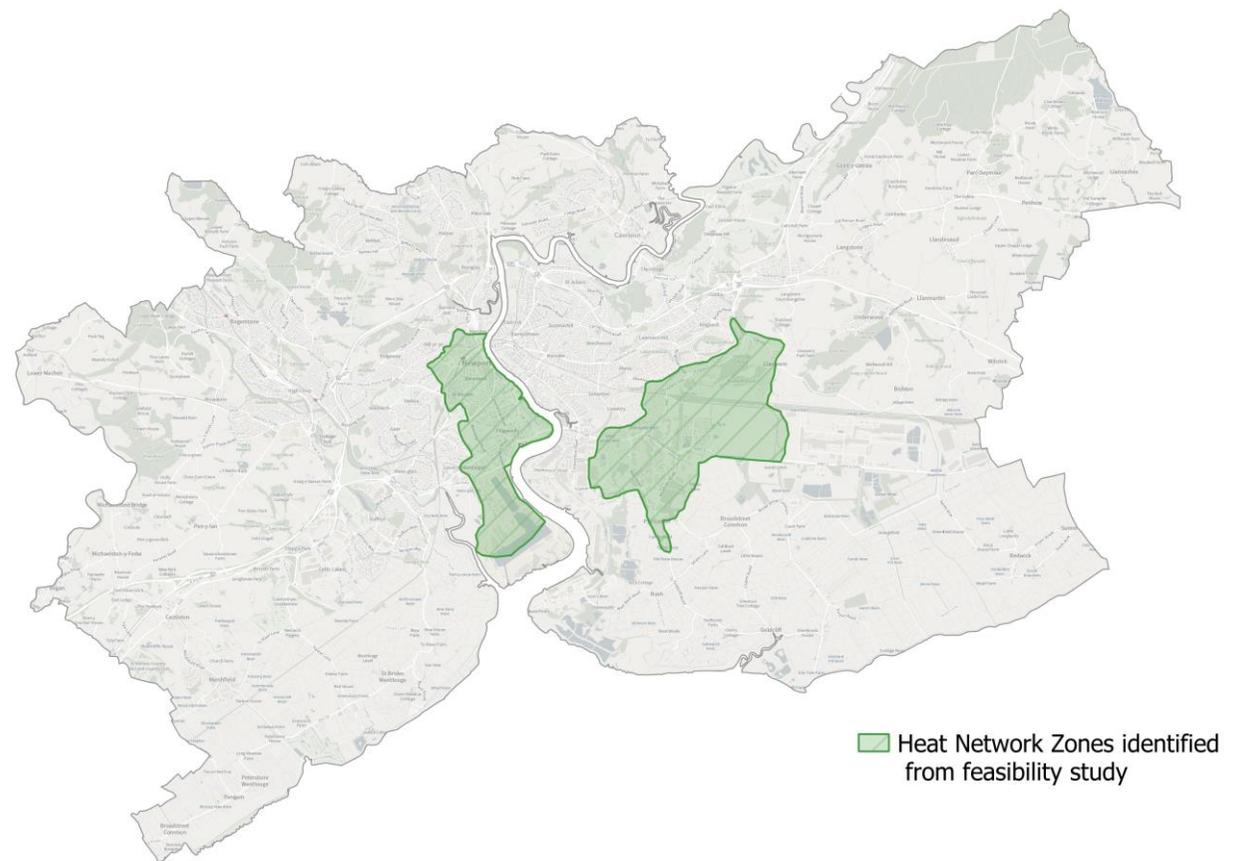


Figure 16: Map of identified zones for heat network potential

## 5. What are we going to do?

### Our actions and asks from others

#### 7. Action on transport energy demand reduction

**Action 7.1 Collaborate and support the delivery of the South East Wales Regional Transport Plan.** We will play an active role in the shaping of our regional transport plan, building on the evidence in this plan and in the SE Wales Transport Commission Final Recommendations report.

**Benefit** The regional transport plans have the opportunity to deliver transport that works for Newport and the community. This will support the delivery of behaviour change in order to reduce transport energy demand.

**Timescale** Well underway and ongoing. New regional transport plan to be in place no later than 2025.

**From others we need** Engagement and buy in from other stakeholders in the Corporate Joint Committees identified in Llwybr Newydd.

---

**Action 7.2. Encourage active travel.** We will work to improve cycleways and footpaths, connecting homes, workplaces and leisure, and consider pilot schemes for electric bikes and possibly scooters. We will get buy in at the local level to design these interventions such that it

meets our needs and circumstances.

**Benefit** Greater uptake of walking and cycling for short journeys removes cars from the road encourages the community to be more active and ultimately enhances well being.

**Timescale** Well underway and ongoing.

**From others we need** Campaigning and marketing by active travel charities, such as Sustrans and Living Streets, can work to positively influence the public perception of walking and cycling.

---

**Action 7.3 Encourage public transport patronage.** In line with Llwybr Newydd: Wales Transport Strategy, we will work with Transport for Wales and the Welsh Government to deliver and improve the Fflecsi on demand bus service, work with transport providers to deliver an integrated ticketing service, work with the private sector to create rapid bus corridors between Newport and Cardiff, that are affordable, reliable and desirable, and continue the transition to ULEV.

**Benefit** Increasing public transport patronage will reduce the overall energy use of the transport

system, reduce emissions and increase air quality.

**Timescale** Starting immediately and ongoing.

**From others we need** A joined up approach to public transport investment across government and in regional planning.

---

**Action 7.4. Discourage private vehicle use.** We will consider a range of options to discourage private vehicle use, such as encouraging working from home, hub working, public transport and active travel use.

**Benefit** This demonstrates the Council's intent to deliver the transport hierarchy by incentivising a modal shift in transport towards more sustainable forms of travel.

**Timescale** Following the successful introduction of alternative transport options, we will consider options to discourage private vehicles use where fair and progressive.

**From others we need** Encouraging our community to adopt more sustainable transport options will require consistent two-way engagement and consultation.

## 5. What are we going to do?

### Our actions and asks from others

#### Enabling actions

**Action 0.1 Review policies in the LDP** We will review and update our policies on energy - including EVs, local generation, and energy efficiencies. We will build on the evidence developed to support this plan. We will undertake a detailed review of the LDP policies and allocations.

**Benefit** The review will ensure aligned local policy and clear signal of intent to developers in the private sector.

**Timescale** To conclude by 2026 following update of the LDP.

---

**Action 0.2 Raise finance and enable procurement.** We will develop a plan for funding arrangements to support the delivery of local authority programme of works to enable the delivery of the LAEP. This may be from usual capital markets or through more innovative financing mechanisms such as community municipal investments. As a local authority, we also have the opportunity to consider our own purchase of energy and economies of scale to

support the plan.

**Benefit** Funding and procurement arrangements will facilitate the delivery of this plan.

**Timescale.** Immediate start plan to be in place by mid 2026.

**From others we need** Initial gap funding to deliver a pipeline of works.

---

**Action 0.3 Collaborate across local authorities.**

We will work with local authorities across Wales to develop opportunities for investment in energy projects at scale.

**Benefit** Pooling potential investable opportunities across multiple local authorities will make them more attractive to potential investors. This will also potentially provide local employment opportunities.

**Timescale** Immediate start, ongoing.

**From others we need** Other local authorities to work with us and Welsh Government's support in the roll out of their LAEP programme, and support as the facilitator of these collaborations.

The delivery of the CCR Energy Strategy will support this action, through promoting collaboration across the 10 local authorities of South East Wales to deliver actions that predominantly support LAEP actions. If virtual PPA agreements are established, develop offsetting ability, e.g., with REGO agreements.

## 5. What are we going to do?

### Our actions and asks from others

---

#### Enabling actions (continued)

**Action 0.4 Coordinate widely on skills investment.** We will work with our regional skills partnership to understand employer needs, skills gaps and funding requirements. The transition to net zero requires coordinated skills investment, with a priority in retraining those in sectors that are likely to be impacted more by the transition.

**Benefit** In order for Newport to benefit from the net zero transition we can be proactive in encouraging government and the private sector to release funds for developing skills and expertise in established and emerging low carbon technologies, building retrofit, and heat pump installations.

**Timescale** Immediate start, ongoing.

**From others we need** Welsh Government to publish a Net Zero Wales Skills Action Plan in Spring 2022. CCR will develop training opportunities and incentives for supply chain development. We need defined industry requirements, regulation to stimulate skills demand, consistent National Occupational

Standards.

---

**Action 0.5 Community and stakeholder engagement.** As we progress with this plan, we will continue to engage widely with our community and stakeholders. We will need to listen to changing priorities, encourage action by others, work together to secure investment, buy-in and deliver beneficial solutions for all.

**Benefit** The development of this LAEP has started a process of engagement and collaboration, recognising the multiple partners who have a role to play in achieving our net zero ambitions for Newport. This action will enable us to harness this initial work, expanding to cover additional stakeholders and the wider community.

**Timescale** Immediate start, ongoing.

## 6. Governance, monitoring and review

### Governance

Delivery of our Local Area Energy Plan will be overseen by Our Climate Change Project Board. We will appoint a delivery programme manager, to lead the delivery of the actions in this plan.

Recognising the number of different stakeholders who play an important role in delivering the change that will be required to meet the objectives set out in this plan, we will also work with partners across different sectors and across the Cardiff City Region to set up an advisory board to enable wider input into our plan.

### Our ask of others

*“We will need others to work with us as part of our advisory board.*

*We will need a delivery programme manager to support the delivery, monitoring and update of this plan. We request that Welsh Government considers how it could support this resource requirement.”*

### Monitoring and review

This plan sets out our key actions for the first five years that will set us on the right journey to achieve the ambitions in our longer-term routemap. The plan needs to be flexible to adapt to changes in the future.

We will produce an annual monitoring report, building on the Welsh Government's *Energy Generation in Wales* reports, which will describe our progress against the actions set out in this plan, and also against key output metrics as follows:

- Number of homes retrofitted
- Number of non-domestic buildings retrofitted
- Number of EV charging points installed
- MW's of renewables installed
- Heat pumps installed
- Number of low carbon energy innovations

To monitor these metrics we will make use of publicly available datasets such as the Energy Performance Certificate Register, the Micro Generation Certification Scheme and the Renewable Energy Planning Database.

We will develop a baseline understanding of these metrics based on existing data and monitor changes annually.

We will also track carbon emissions reduction, but recognise that available data will lag a few years behind.

The whole plan will be updated at least every five years to take account of key factors, including:

- Policy changes at a UK and Welsh Government level
- Changes in costs and effectiveness of technologies
- Progress to date.

## Bibliography

- [1] [Lower layer Super Output Area population estimates \(supporting information\) - Office for National Statistics \(ons.gov.uk\)](#)
- [2] [Newport topographic map, elevation, relief \(topographic-map.com\)](#)
- [3] [Welsh Housing Conditions Survey 2017-18 – Welsh Government](#)
- [4] [Regional gross value added \(balanced\) by industry: all ITL regions - Office for National Statistics](#)
- [5] [UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2019 - GOV.UK \(www.gov.uk\)](#)
- [6] [Local Development Plan | Newport City Council](#)
- [7] [Local Well-being Plan 2018-23 \(English Final Revised Aug 21\) \(newport.gov.uk\)](#)
- [8] [The City Deal - Cardiff Capital Region](#)
- [9] [Climate change targets and carbon budgets | GOV.WALES](#)
- [10] [Well-being of Future Generations \(Wales\) Act 2015 \(legislation.gov.uk\)](#)
- [11] [Subnational total final energy consumption statistics.xlsx](#)
- [12] [2005-19 UK local and regional CO2 emissions.xlsx \(live.com\)](#)
- [13] [MSOA estimates of properties not connected to the gas network 2015-19 FINAL.xlsx](#)
- [14] [Transport for Wales](#)
- [15] <https://theenergyst.com/simec-atlantis-pellets-to-power-plant-snags-in-welsh-red-tape-takes-huge-lse-hit/>
- [16] <https://renewablesnow.com/news/simec-atlantis-mulls-complementary-renewables-at-uskmouth-site-766358/>
- [17] <https://www.energylivenews.com/2021/04/06/nextenergy-completes-two-new-subsidy-free-solar-farms/>
- [18] <https://dns.planninginspectorate.gov.uk/projects/wales/llanwern-solar/?ipcsection=docs>
- [19] <https://dns.planninginspectorate.gov.uk/projects/wales/wentlooge-renewable-energy-hub/?ipcsection=docs>
- [20] [Downloadable Future Energy Scenarios resources | National Grid ESO](#)
- [21] <https://gov.wales/sites/default/files/publications/2021-11/cooperation-agreement-2021.pdf>
- [22] [Written Statement: The Optimised Retrofit Programme 2020-21 \(6 November 2020\) | GOV.WALES](#)
- [23] [Local ownership of energy generation in Wales: policy statement | GOV.WALES](#)
- [24] [Industrial Fuel Switching competition - GOV.UK \(www.gov.uk\)](#)
- [25] [Gas heating ban for new homes from 2025 - BBC News](#)
- [26] [Electric Vehicle Charging Strategy \(gov.wales\)](#)
- [27] [Climate change targets and carbon budgets | GOV.WALES](#)
- [28] [£250 million towards 20,000 low carbon homes for rent | GOV.WALES](#)
- [29] [UK Hydrogen Strategy \(publishing.service.gov.uk\)](#)
- [30] [Llwybr Newydd: the Wales Transport Strategy 2021 \[HTML\] | GOV.WALES](#)
- [31] [HM Government – Heat and Buildings Strategy \(publishing.service.gov.uk\)](#)
- [32] [42949 Second All Wales Low Carbon Delivery Plan \(2021-2025\) \(gov.wales\) Proposal 5](#)
- [33] [WPD communications](#)
- [34] [Government takes historic step towards net-zero with end of sale of new petrol and diesel cars by 2030 - GOV.UK \(www.gov.uk\)](#)
- [35] [The non-domestic private rented sector minimum energy efficiency standards: the future trajectory to 2030 \(publishing.service.gov.uk\)](#)
- [36] [Climate change targets and carbon budgets | GOV.WALES](#)
- [37] [Welsh public sector to be carbon neutral by 2030 | GOV.WALES](#)
- [38] [Local ownership of energy generation in Wales: policy statement | GOV.WALES](#)
- [39] [Llwybr Newydd: the Wales Transport Strategy 2021 \[HTML\] | GOV.WALES](#)
- [40] [Tackling fuel poverty 2021 to 2035 \[HTML\] | GOV.WALES](#)
- [41] [Climate change targets and carbon budgets | GOV.WALES](#)
- [42] [Llwybr Newydd: the Wales Transport Strategy 2021 \[HTML\] | GOV.WALES](#)

