Headline Actions – Existing non-domestic buildings

- PCC spends around £3 million on electricity, gas, liquefied petroleum gas (LPG), oil and biomass fuels each year in its non-domestic buildings – a figure that has held steady in the face of rapidly rising markets due to energy-efficiency work and the resulting reduced consumption.
- The procurement of energy has become increasingly complex, with prices volatile and linked to both UK and global factors. In order to minimise risk, the Council procures its energy using Crown Commercial Services Framework Agreements, via the National Procurement Service (NPS), for the vast majority of supplies.
  - The Council sits on the Welsh Government National Procurement Service (NPS) Energy Sub Group, shaping the NPS energy-procurement strategy.
  - All electricity procured via the NPS comes from renewable energy sources, with about 100% of this being sourced from within Wales *(**Note**: The consumption of this 'green' electricity is already reflected in the [decreasing] UK emission-conversion factor for electricity, and as a consequence the Council is currently unable to directly benefit from carbon savings resulting from its procurement of 'green' electricity as this would effectively amount to double-counting the carbon savings).*

REGO Type	% Split
Biomass	1.25%
Hydro	0.00%
Off-shore Wind	58.70%
Photovoltaic	7.65%
Wind	32.40%
Grand Total	**100.00 %**

    This is an excellent outcome, which highlights the increased drive in our Procurement contracts towards Welsh renewable generation of energy from 86% for 2020-21, to 100% for 2021-22.

  - The NPS is actively seeking low-carbon gas sources – e.g. bio methane from Anaerobic Digestion (AD) – and monitoring the hydrogen-gas agenda.
  - Purchasing occurs across a 24-month buying window, with the aim of buying at market lows.
- Since 2003, the Council has implemented over 400 energy-efficiency and energy-generation schemes at non-domestic council properties across the County. Together, these are estimated to be saving over £2,000,000 and 4000 tonnes of CO_2 (tCO_2) each year. This investment – coupled with the Council's ongoing property rationalisation, agile working and maintenance programmes – is producing financial and carbon savings in times of increasing utility prices.
- PCC is participating in the Welsh Government-supported Re:fit Cymru energy-efficiency programme:
  - Re:fit Cymru Phase 1 – A £1.3 million scheme (funded by WG Salix interest-free loans) that has seen the installation of 50+ energy-efficiency measures across 25 sites during 2019–2022, saving £200,000 and 416 tonnes of CO_2 annually. The scheme includes the installation of LED lighting, controls upgrades, variable-speed drives, valve insulation, combined heating and power (CHP), and solar PV.

- Re:fit Cymru Phase 2 – condensing-boiler upgrades at five further sites, completed by the end of 2021.
- Phase 3 being scoped for 2023 - 2025 – anticipated value £3 million.

- The Council is using Welsh Government education backlog maintenance funding to carry out LED lighting upgrades in schools and is investigating the potential for air source heat pumps.
- PCC has qualified staff producing Display Energy Certificates (DECs) in-house. DECs show the actual energy used by a building in one year of operation. An advisory report on how to reduce energy and water use accompanies the certificate. The average DEC performance of corporate buildings has improved year-on-year to the current score of 73, which gives an operational rating of 'C' (a score of 100, with a rating of 'D', being the default UK average).

Actions – New build

- The Council has one of the largest new-build programmes among local authorities in Wales. All major new-build projects incorporate renewable-energy technologies, with solar PV installations being incorporated into all recent Modernising Education Provision 21st Century Schools projects and into new housing developments. Battery storage is also being investigated, and has been proposed for inclusion in new housing developments (where provision for electric-vehicle charging is also being provided).
- Other low- or zero-carbon technologies that have been installed and evaluated for future inclusion, where viable, include:
  - air-source heat pumps;
  - biomass boilers (installed at Haverfordwest Leisure Centre); and
  - solar PV and solar thermal systems.

In addition, and in order to minimise energy use from new buildings, a 'Fabric First' approach to energy efficiency is also being progressed:

- *very high levels of insulation;*
- *extremely high-performance windows with insulated frames;*
- *airtight building fabric;*
- *'thermal-bridge-free' construction; and*
- *mechanical ventilation systems with highly efficient heat recovery.*

- PCC's design team is currently working with the contractor, consultants and the Welsh Government to establish the practicality and costs of building the new Pembroke Welsh Medium School to net zero-carbon standard.
- The design team are now working to standards that minimise the embodied carbon in a buildings life cycle.
- The Council routinely implements measures across its new-build programme, including:
  - designing:
    - to BREEAM 'Excellent' sustainability standards
    - for optimal orientation for passive heat gain/shading/ventilation
  - incorporating:
    - PV solar panels as standard
    - community benefits from projects (local use/employment)

- site-waste management plans
- site emissions tracking
- biodiversity surveys and landscaping measures to mitigate any impacts on wildlife

- specifying:
- recycled floor coverings
- WWF ‘chain of custody’ certification for all timber
- recycled glass bottle and hemp loft insulation
- recycled aggregates
- concrete blocks from ISO14001 EMS certified suppliers
- vernacular local species of plants that require only rainwater for all external planting

- monitoring:
- ‘materials miles’ for all materials

- The Stark ID energy-management system has been procured in order to achieve better monitoring of PCC’s energy consumption and better management of billing (potentially via paperless systems) – and to allow web-based access to individual sites. Accurate data is critical for planning, monitoring and reporting progress towards becoming net zero carbon. Accordingly, ‘smart’ and sub-metering technology will be extended to ensure the timely capture of energy-consumption data.
- Half-hourly (HH) electricity metering has been rolled out for all feasible buildings, and HH gas metering is installed for all larger supplies. This data feeds into Stark ID.

Streetlighting – Headline Actions

- Since 2008, PCC has taken the bold decision to convert 12,726 of 15,747 streetlights to ‘part night’ (i.e. lamps are automatically switched off from midnight to 5:30 am) which has generated annual savings of £178,000, 1,229,000 kWh and 563 tCO2. This policy followed rigorous consultation and has led to a number of compliments from biodiversity and ‘dark skies’ advocates.

- In 2019, it was agreed in Cabinet to decommission streetlights that no longer comply if the Council cannot economically repair them – i.e. if their repair requires more than the cost of a new lamp.

- In March 2020, PCC agreed to undertake a Welsh Government-supported Salix interest-free-loan-backed streetlighting project. This entails a three-year upgrade scheme using the Council’s streetlighting maintenance framework contactor to convert all remaining high-power-demand streetlight fittings to LED between 2020 and 2023. This will ensure that Pembrokeshire County Council operates a 100% LED-based streetlighting network. This project focuses on luminaire replacement only, with no column replacement. The project will reduce carbon emissions by 322 tonnes annually, and save £205,000 per year in electricity costs. Due to the inherent longevity of LED technology, there will also be a significant additional saving in ongoing maintenance costs associated with existing deteriorating fittings.

Fleet – Headline Actions

Condition/age of fleet

- As of summer 2022, PCC operates a fleet of approximately 500 vehicles and over 1,100 items of plant. The fleet has an average age of twelve years – the oldest being a 42-year-old bus, and the youngest vehicles being one-month-old 2.8 tonne Battery Electric vans.

- PCC has a seven-year vehicle renewal policy. During renewal, vehicle functions and use are scrutinised and, where appropriate, smaller vehicles that are more efficient and lower in cost are being procured. For example, where 3.5-tonne vehicles have been used in the past, these are now being reduced to 2 tonnes or lower if possible.
- The Council's tyre policy is to fit premium brand tyres, to reduce pollution through better wear and rolling resistance.
- On average, PCC has an annual renewal of 40 vehicles, to the value of an estimated £1.5 million. Replacing a percentage of these vehicles with ULEVs each year is required to reduce the fleet's overall CO_2 emissions.

Emissions/fuel

- Diesel-engine emission values are measured using European emission standards – ranging from Euro 1, introduced in 1992, to the most current Euro 6d (introduced in September 2019). PCC fleet vehicle engines range from Euro 2, introduced in 1997, to Euro 6d. Thirty-one Euro 6d vehicles are currently on fleet, making these vehicles the Council's most emission-effective diesels. As vehicles are replaced, they are renewed to the lowest emissions standard.
- In 2021/22, £1.4 million was spent on fuel – producing 3,665 tonnes of CO2.

Tracking / limiters

- In order to optimise the use of fleet vehicles, 80% of PCC fleet vehicles are fitted with telematics (tracking). The existing telematics system has been in operation since 2010, and provides regular reports; a new system is currently being procured. Interrogating the telematics systems would aid the identification of vehicles that could be suitable for ultra-low emission replacements. New, up-to-date reporting systems can provide more detailed analysis on CO2 emissions, and support the reduction of whole-fleet emissions.
- Vehicles are specified with speed limiters, restricting the speed to 62mph – and, where appropriate, engine rev limiters.

Battery power

- Petrol-powered hand tools are now being replaced with battery-powered ones. The advantages of these include lower emissions, noise reduction and less hand-and-arm vibration. Newly procured vehicles are specified with battery-charging facilities, while older vehicles on fleet are being retrofitted with inverters to charge battery-operated hand tools.
- Walk-behind diesel sweepers are being replaced with battery-powered ones. Advantages of battery-powered sweepers include lower whole-life costs; reduced noise pollution, enabling PCC's Maintenance Department to sweep from 6:00 am onwards in built-up areas; lower emissions; and less hand-and-arm vibration.

Buses

- Buses are now parked at optimum locations; historically, they were taken home and commenced from home. Vehicles – where and when appropriate, and if more efficient – are parked at Thornton.
- Pembrokeshire CC has very recently procured a local coach company comprising of 33 coaches and buses and 2 vans. The average age of this fleet is 12.5 years. These are mainly operated on home to school runs and local service routes, there are a few

contracted long distance educational trips. As there are a few old vehicles in this fleet the renewal program will start as early as next year giving a great opportunity to introduce ULEV buses into local school and service routes.

Vans

- BEV small car-derived vans have a reported range of up to 240 miles, and are a proven alternative to the existing diesel-fuelled small vans on fleet. In 2023 PCC are rolling out rapid charging infrastructure in depots and other strategic sites across the County to aid this transition.

- PCC has initial introduced 6 BEV vehicles into fleet comprising of 3 Renault Zoe vans and 3 Citroen Berlingo vans, these are operated by building maintenance and environmental officers. The feedback has been mainly positive with the only concerns being charging points and the duration of charging. To alleviate this concern 124kw chargers are being installed at 4 operational depots across the county in Q1 of 2023, all vans will have the capability to charge from 20% to 80% in 30 minutes, just topping up will obviously be quicker. Scheduled to replace up to 30 small diesel vans with BEV's in 23/24.
- PCC will consider installing home charging points, as a high percentage of its van-fleet vehicles are taken home at the end of the working day. Smart meters would need to be included here, directing all charging costs back to the Authority.
- Demonstrator BEV vans, which were trialled for a period of four weeks in 2019, received positive feedback from officers. The average framework price for these vehicles is £21,000, in comparison to an estimated price of £11,000 for an equivalent diesel model.
- Larger BEV panel vans are also available, and have a range of up to 225 miles per charge and a payload of nearly 2 tonnes. Research suggests that some vans will take a 60-mile charge in 30 minutes. Costing of these vehicles is still relatively high; they currently retail at approximately £75,000 prior to framework discounts, against a £16,000 diesel equivalent.
- 8 Vauxhall Vivaro e vans were delivered in December for the building maintenance department, these will replace 7 year old diesel vans. Scheduled to replace up to 15 3.1T diesel vans with BEV's in 23/24.
- PHEVs could be considered as a 'quick fix' alternative for the larger panel vans on fleet. PHEV vans are reported to have a 35-mile range before switching to petrol/diesel. Their main downside is that charging could be neglected, resulting in the vehicle continuously running on petrol/diesel. With strict management, PHEV vans would result in reduced emissions overall in comparison to diesel vehicles. PHEVs currently retail at around £30,000, prior to framework discounts, against £14,000 for diesel equivalents.

HGVs

- Renewing the Council's HGV fleet with alternative fuel is more problematic due to demographics, infrastructure and cost:

- BEV trucks are being introduced onto the market, with a leading manufacturer recently launching a 26-tonne refuse-collection vehicle with a range of 60 miles, eight-hour charge and limited to a maximum of 1:20 gradient for a price of £400,000. PCC recently purchased three of these trucks in a diesel variant for £160,000 each.
- Hydrogen or CNG is another potential option, but local infrastructure is not available as yet to facilitate its use. PCC are engaged in ground-breaking work with partners and other stakeholders in developing a hydrogen / CNG infrastructure in Pembrokeshire.

- Following the recent renewal of its refuse fleet, 49% of PCC's HGV fleet are operating on Euro 6d engines, which are all under 12 months old. On replacement in seven years,

technology and local infrastructure will have developed significantly, opening up further avenues of alternative fuel options.

Gritters

- Since 2012, the Council has procured stainless-steel gritter bodies. Despite being, on average, £10,000 more expensive than mild-steel equivalents, their 25-year body-corrosion warranty allows the body to be re-fitted to new chassis at least twice – thus saving CO_2 in the production process and realising a reduction in whole-life cost.
- PCC's dedicated and existing gritter chassis fleet of four vehicles is approximately 15 years old. These vehicles are fixed gritter bodies, as opposed to gritter bodies being dropped into tipper trucks during winter months. They would be classed as 'dirty engines' (Euro 3) by today's standards, but as they are relatively low mileage and high cost (£100,000 per chassis) they are kept on fleet for an extended life. This is a compromise for PCC – vehicles can either change every seven years to keep up with engine technology at £100,000 per chassis or have their life extended.

ULEVs

- Welsh Government's stated objective is for all public-sector road transport to transition to ULEV by 2030.
- PCC could give consideration to alternative ULEV options, or to setting emission levels for chief officers' leased cars.
- To repair and maintain ULEVs, the workforce needs to be upskilled. All the authorities' vehicle technicians have gained Level 3 qualification in Electric Vehicle Repair and Replacement. The technicians will progress to Level 4 once the course is introduced locally.
- At PCC Cabinet of 6th September 2021 the Cabinet discussed the fleet ULEVs – as follows: https://mgenglish.pembrokeshire.gov.uk/documents/s62386/10%20-%2020210906%20Decarbonising%20the%20Fleet.pdf . The resolution was: *That the development and submission of applications for grant funding as outlined in the report to fund the replacement of the Fleet with electric and hydrogen vehicles as the opportunities arise, be approved.*
- The Council has engaged (May 2020) with the Welsh Government Energy Service (WGES) to undertake a full review of fleet and business transport in order to ascertain the business and environmental case for switching to ULEVs. WGES aims to help organisations meet the WG's stated objective of all public-sector road transport transitioning to ULEV by 2030 and to support the move to Net Zero.

Other sources

- PCC has installed a rainwater-harvesting system at its Thornton Depot automated vehicle washer, which recycles rainwater that has been captured from the roof of the vehicle workshop.
- LED lighting has been installed in the vehicle workshop.
- The Council installed a hydrogen-vehicle refueller at Milford Marina under the Milford Haven: Energy Kingdom (MH:EK) project, and two Riversimple Rasa Hydrogen Fuel Cell Electric Vehicles (HFCEV) were used by PCC and Port of Milford Haven staff for highways duties and business trips. The project gathered data to support the business case, and demonstrate usability and the demand for HFCEV vehicles.

Business Mileage - Headline Actions

- CO2e emissions from business mileage dropped by 11% form 2019/20 into 2021/22. The switch to many staff working from home is expected to continue in a hybrid home/office fashion, and this has seen a significant reduction in staff commuting mileage.
- The Council is preparing a Green Travel Plan. As part of the Local Transport Plan and Annual Progress report, the Authority is committed to reducing car-related traffic and demonstrating good practice. The travel plan is aimed at promoting sustainable travel choices and reducing reliance on the car. For the benefit of the employer and the employee, PCC intends to encourage staff and others visiting County Hall to use more environmentally friendly and healthier alternatives than driving alone. It is further intended to include commuter journeys, business travel and visitor travel within this approach. Travel plans tackle the financial waste and environmental damage caused by our society's over-reliance on private motor transport. The Green Travel Plan will cover commuter journeys, business travel, pool cars and visitor travel to and from the Council's workplaces, and will explore alternatives to travel such as video conferencing, home working and flexible/Agile/Smart working hours. This plan should aim to take advantage of the lower pollution and emissions levels resulting from the COVID-19 pandemic in order to argue that these should be maintained for the good of people and the environment.
- The Council is aiming to increase the number of its electric pool cars as an alternative to existing diesel-powered cars.
- ULEV grant funding from the Welsh Government has enabled Pembrokeshire County Council and Pembrokeshire Coast National Park Authority to create an EV charging network which by summer 2023 will consist of 180 fast electric-vehicle charging points and 21 rapid chargepoints across multiple geographically dispersed car parks, offices, attraction centres, leisure centres and depots in Pembrokeshire.
- PCC have made a bid for further WG funding for a Phase 6 planned for roll out of EV charging (27 further fast chargers and 3 further rapid charger) in our car parks, at certain schools and office locations.
- PCC are also currently designing a new transport interchange on the site of Haverfordwest Multi Storey where we will install 31 number (10% of spaces) EV charging points on day one and we are making future provision for expansion to a further 62 number (30% of total spaces) EV charging points including all electrical incoming services.
- The installation of more electric-vehicle chargepoints, including the expansion of charging at County Hall and potentially charging at the Depots, will encourage greater use of electric fleet and pool cars.
- Greater EV charging provision will also encourage wider uptake of ULEVs in the staff 'grey' fleet (the fleet of drivers who use their own cars for business purposes – including commuting). The EV charging rolled out so far is aimed at meeting the needs of residents and visitors, and primarily to support and encourage the transition to electric vehicles. Given Pembrokeshire's established and vital tourism industry, the project also enables the County to promote the concept of 'eco-tourism' to visitors.
- PCC has engaged (May 2020) with WGES to undertake a full review of fleet and business transport, in order to ascertain the business and environmental case for switching to ULEVs.

- Staff pool bicycles are provided in and around Haverfordwest to help reduce business mileage associated with short journeys. In addition, the Council operates a staff cycle-to-work scheme with the intention of these bicycles being used for commuting and business journeys.

- The Council installed a hydrogen-vehicle refueller at Milford Marina under the Milford Haven: Energy Kingdom (MH:EK) project, and two Riversimple Rasa Hydrogen Fuel Cell Electric Vehicles (HFCEV) were used by PCC and Port of Milford Haven staff for highways duties and business trips. The project gathered data to support the business case, and demonstrate usability and the demand for HFCEV vehicles.

- Staff are encouraged to car share during commutes, wherever possible. In order to facilitate this, PCC has signed up to the 'Take me Too!' Car share programme, which matches people who need transport with someone going their way. Over the course of the Travel Plan, PCC expects to increase staff uptake within this programme by up to 25% by 2025, 30% by 2027.

Renewable Energy & Carbon Offsetting

PCC has the following levels of renewable and low-carbon energy measures installed:

- Solar photovoltaic (PV) panels: 549 kW at 34 separate buildings, including schools.
- Solar PV-powered signs, lamps and street furniture – various locations.
- Solar hot-water panels: 40 kW at ten separate buildings, including schools.
- Biomass wood-pellet heating and hot water: 410 kW
- Small wind turbine: 6 kW at Mary Immaculate School, Haverfordwest.
- Gas-fired combined heating and power (CHP): 260 kWe/520 kWthermal at 15 separate buildings, including schools.

Over recent years, the Council has sought to significantly increase the amount of renewable electricity that it generates but has been frustrated by the limited capacity of the local electricity-distribution network (National Grid). Previous applications to the electricity-distribution network operator – National Grid Electricity Distribution – for connecting to the electricity network have resulted in unviable costs due to significant reinforcement costs having to be met by prospective developers such as the Council.

Therefore, while PCC's preferred primary method of compensating for its residual carbon footprint is to significantly increase the amount of renewable energy generated on its buildings and land, this depends on enhancements to the capacity of the local electricity-distribution network. Unfortunately, this is beyond the direct control of the Council – and discussions are ongoing with National Grid Electricity Distribution and the Welsh Government to seek the necessary improvements.

Carbon offsetting involves compensating for carbon dioxide (CO_2) emissions arising from industrial or other human activity by participating in schemes designed to make equivalent reductions of CO_2 in the atmosphere. Because one unit of CO_2 has the same climate impact wherever it is emitted, the benefit is the same wherever it is reduced or avoided. Achieving verified carbon reductions could include protecting rainforests in South America or, potentially, local tree planting. This can be a complex issue and represents the option of last resort unless tree planting/peatland enhancement on Council-controlled land is deemed to qualify for carbon offsetting *(**Note:** This to be confirmed when the Welsh Government publishes its land-use guidance as part of the carbon-neutral public services reporting framework)*.

PCC is working with the Welsh Government Energy Service to explore and deliver opportunities for large-scale renewable-energy projects. The WGES supports the public sector in Wales to bring tangible projects to fruition and advises on energy-related issues. It is currently undertaking a review of the Council's land in order to identify potential opportunities for ground-mounted solar PV and wind turbines. Historically, similar exercises have been undertaken with the Partnerships for Renewables and

Local Partnerships – but while potential sites were identified, they were not deemed financially viable due to cost/local grid and/or land-use constraints. Major renewable-energy projects typically take several years to develop to completion *(**Note**: 'Energy Generation in Wales 2018', October 2019, sets out the current energy-generation capacity of Wales and analyses how it has changed over time)*. It is notable that the County of Pembrokeshire has 20% of all installed solar PV capacity in Wales, which is testament to the excellent solar irradiance found at Pembrokeshire's latitude compared with other areas of the country. Future renewable-energy generation on Council-owned land will depend on grid capacity (or having a local off-loader for power generated), and will also need to be satisfactory in planning terms.

The Council is working, and in some cases leading, on a number of regional initiatives that are aimed at creating a Pembrokeshire-based market and centre of excellence for renewable-energy technologies e.g. Milford Haven : Energy Kingdom https://www.pembrokeshire.gov.uk/mh2-energy-kingdom and SWIC https://www.swic.cymru/

Headline Actions:

- As mentioned previously, 100% of the electricity procured via the NPS comes from renewable energy sources, with about 86% of this being sourced from within Wales. This purchasing provides a market for renewable generators and thus stimulates the renewable-electricity market. *(**Note**: The consumption of this 'green' electricity is already reflected in the [decreasing] UK emission-conversion factor for electricity, and as a consequence the Council is currently unable to directly benefit from carbon savings resulting from its procurement of 'green' electricity as this would effectively be double-counting the carbon savings)*.
- The NPS is actively seeking low-carbon gas sources – e.g. bio methane from Anaerobic Digestion (AD) and monitoring the hydrogen-gas agenda.
- The Council Development Plans team completed a Renewable Energy Assessment in 2017, which forms part of the Local Development Plan (LDP) 2 evidence base. It has informed the emerging General Policies GN 4 and GN 5 of LDP 2.
- PCC continues to monitor the situation to assess the emergence of market mechanisms such as the Smart Export Guaranteed (SEG), which allows negotiations with electricity suppliers in order to secure an agreed level of payment for exported renewable electricity.

Solar

- In 2019/20, PCC agreed to enter into a partnership with Egni Community Co-op, who provided capital-free rooftop solar PV systems to six schools at Saundersfoot, Lamphey, Prendergast, Ysgol y Frenni, Golden Grove and Ysgol Bro Ingli. These schools are provided with the renewable electricity from the solar systems at a 20% cheaper cost than that offered by the school grid electricity tariff. The Council is currently seeking to expand this partnership to install solar at multiple further sites.
- In 2023 PCC will deliver a scheme for an additional 1,700 kW of solar PV across circa 30 rooftops. The overall environmental benefit to PCC of the 2023 scheme will be overwhelmingly positive. It is estimated that an additional 1,600,000 kWh of solar electricity will be generated per annum, representing an additional 325,000kg (325 tCO2e) of avoided CO2e emissions which reduces PCCs overall emissions from electricity consumption in corporate buildings by a further very significant 13%.
- In 2016, the Council entered into a partnership with British Gas and Generation Community, who provided capital-free rooftop solar PV systems to Greenhill and Milford Haven secondary schools. These schools are provided with the renewable electricity from the solar systems for free.
- Solar PV systems have been installed on an invest-to-save basis in multiple schools; across PCC's sheltered accommodation; at Fishguard Leisure Centre; and at Glan-Yr-Afon Library and Gallery, Haverfordwest.
- Solar PV systems are installed at all new 21st Century Schools.

- Since 2015, there has been a decline in Feed-in-Tariff (FiT) subsidies for new solar PV installations, and FiT payments for solar PV ceased altogether in 2019. The removal of the subsidy resulted in a dramatic reduction in the number of applications for renewable-energy projects in the PCC planning area. However, the cost of solar PV systems has continued to decline (by around 70%) and battery technology has emerged as a potential mainstream application. Coupled with the rising cost of electricity at many sites, where there is adequate consumption there is a very viable solar PV solution without subsidy support.
- The Council has installed PV solar car-parking canopies at County Hall (70 kW) car park and plans to complete a canopy system at Pembrokeshire Archives (28 kW) and as part of the Re:fit Cymru Phase 1 scheme. PCC are scoping remaining car parks and trying to identify sites adjacent to our buildings that can use the energy.
- The Council are also scoping our land, including former brownfield sites such as landfills, for major renewable energy opportunities with priority given to sites adjacent to PCC buildings where the electricity can be used to decarbonise operations.
- The Council has installed solar hot-water panels at eight schools, one sports hall and a youth centre.

Biomass

- PCC was the first local authority in Wales to adopt biomass wood-pellet heating, with the Preseli biomass project in 2003. In 2015, the Council partnered with Pembrokeshire Bioenergy for a 20-year energy supply contract (ESCo) for the installation of a capital-free 410 kW biomass wood-pellet boiler system at Haverfordwest Leisure Centre, resulting in ultra-low-emission heating provision for its swimming pool and hot-water systems.

Tree planting / carbon sequestration

- The Council intends to review its tree strategy for implementation – including the future management of existing and proposed areas of woodland, management plans, removal of trees and life cycle.
- In recognising that the carbon-sequestration ability of soils and grasslands should not be overlooked, and that managed pasture for soil health instead of production gives benefits to carbon storage and the regulation of water runoff, the Council is reviewing practices for safeguarding and increasing carbon storage in soils and biomass, such as:
  - Changing agricultural practices on Pembrokeshire's County Farms to reduce emissions production and increase carbon sequestration through good soil management.
  - Engaging with the agri-food sector to gain an understanding of how the Council might be able to support more sustainable farming practices across the County.
  - Increased green infrastructure.
  - Coastal management – since 'coastal squeeze' is an issue in coastal habitats, exploring allowing habitats to retreat one field back from the shoreline in order to increase extent.

Working with Welsh Government – Headline Actions:

- Please refer to 'Our Carbon Footprint' to read about the work we have been doing with WG on the Welsh Public Sector Net Zero Carbon reporting.
- In 2017, the Welsh Government (WG) set the ambition of achieving a carbon neutral public sector by 2030

- The Council is working with the Welsh Government Energy Service to explore and deliver opportunities for large-scale renewable-energy projects and ULEVs.
- As outlined previously, the Re:fit Cymru project is a collaboration between Welsh Government and the Council using a WG pre-procured contractor framework and Salix invest-to-save funds.
- From 2014 to 2019, PCC collaborated on a WG-funded 'Smart Living' project looking at the creation of a zero-carbon area at Milford Waterfront. WG's 'Smart Living Initiative' funded the studies and the Council provided the 'governance' link to what was, in fact, a Port of Milford Haven (PoMH)-led project. The final report, via a consortium led by Cardiff University, recommends the use of renewable-energy generators to power a smart grid; battery storage for grid balancing; electrolysed green hydrogen production (for storage, heat and transport); biogas production from AD plant(s); and the use of heat pumps for hybrid heating. This project was the catalyst for the Milford Haven: Energy Kingdom (MH:EK) project which PCC now lead https://www.pembrokeshire.gov.uk/mh2-energy-kingdom and https://milford-haven-energy-kingdom.virtual-engage.com/.
- The Council is part of the WG Hydrogen Reference Group, which promotes discussions on the best way for Wales to progress this market. The group is closely linked into MH:EK and the South Wales Industrial Cluster (SWIC), as well as the broader hydrogen supply chain and networks. WG intends to develop its hydrogen policy position and identify funding opportunities. The outcomes from this group work will, in turn, feed through into the Welsh Government's internal hydrogen group, which includes representatives from across many departments with interests in hydrogen.
- The Council has led on a Regional Energy Plan for the Swansea Bay City Region with the vision of *"Harnessing the region's low carbon energy potential across its on and offshore locations, to deliver a prosperous and equitable net zero carbon economy which enhances the well-being of future generations and the region's ecosystems, at a pace which delivers against regional and national emissions reduction targets by 2035 and 2050."*
- PCC has produced a Local Area Energy Plan to *"develop a net zero energy system for Pembrokeshire by 2050, as the UK home of green energy"*.

Working with Pembrokeshire Public Services Board / Swansea Bay City Deal partners

- The Well-being of Future Generations (Wales) Act 2015 established a statutory board, known as a Public Services Board (PSB), in each local authority area in Wales. Each PSB is a collection of public bodies working together to improve the well-being of its county. The Pembrokeshire Public Services Board is currently undertaking a Climate Change and Environmental Risk Assessment for Pembrokeshire, via a working group of that name, in order to develop clear and defined actions that can be taken by individuals, communities and organisations.
- The Swansea Bay City Deal programme includes 11 projects across four key themes:

1. Economic Acceleration;
2. Life Science and Well-being;
3. Energy; and
4. Smart Manufacturing.

- These include the Pembroke Dock Marine (PDM) and Homes as Power Stations (HAPS) projects.
- Pembrokeshire County Council is the Lead Authority for the PDM project. The aim is to support the existing marine-engineering cluster in Pembroke Dock in order to benefit from inward-investment opportunities attracted to the area because of its unrivalled location, knowledge and expertise, supply chain and connectivity. PDM offers the opportunity for Pembrokeshire to create the right combination of terrestrial and maritime assets to become a UK leader in the developing global market in marine renewables, including floating offshore wind. PDM can also unlock future potential support for decarbonisation, with the UK-wide Offshore Renewable

Energy Catapult now cemented in the County and actively promoting the area through the UK Government's Industrial Strategy Challenge Fund. The project can also do so by hosting the Swansea Bay City Region's largest renewable-energy generating station in the Pembrokeshire Demonstration Zone.

- The regional HAPS programme aims to coordinate the delivery of smart, low-carbon, energy-efficient homes by encouraging the use of domestic HAPS technologies. The programme intends to coordinate the adoption of HAPS technologies for both new-build and retrofit developments across the public and private sectors, proving the concept in the public sector before rolling it out in the private sector.

Collaboration with Experts from the Private, Third and Community Sectors - Headline Actions:

The Well-being of Future Generations (Wales) Act 2015 requires public bodies in Wales to think about the long-term impact of their decisions; to work better with people, communities and each other; and to prevent persistent problems such as poverty, health inequalities and climate change. The Act requires public bodies to implement five key ways of working in future decision-making:

(1) looking to the long-term;

(2) taking an integrated approach;

(3) involving a diversity of the population;

(4) working with others in a collaborative way; and

(5) understanding the root causes of issues to prevent them from recurring.

The Council works in close collaboration with a vast range of private, third-sector and community partners. The following (non-exhaustive) lists give examples of some of the private- and third-sector organisations that it proposes to work with in order to deliver this Action Plan.

Led by Pembrokeshire County Council Milford Haven : Energy Kingdom (MH:EK) was a three-year £4.5 million project, which completed in 2023, and explored what a decarbonised, 'smart', local energy system could look like for Milford Haven, Pembroke and Pembroke Dock. The project partners were:

- PCC;
- The Port of Milford Haven;
- Offshore Renewable Energy Catapult;
- Riversimple;
- Wales & West Utilities;
- Arup; and
- Energy Systems Catapult.

Project supporters and collaborators are:

- RWE Generation UK plc;
- Simply Blue Energy;
- The Welsh Government Energy Service; and
- Community Energy Pembrokeshire.

The project is explored the potential of hydrogen as part of a multi-vector approach to decarbonisation. Central to the project, and to achieving net-zero, is a commitment to engage with the community and local industry, providing insight and opportunities for growth. PCC realised the ambition to gather detailed insight into the whole energy system around Milford Haven in order to identify and design a future, smart, local energy system based on a truly multi-vector approach (heat, electricity,

transport) and comprehensive energy-systems architecture. The project was multi-faceted, and the team is investigated the following areas:

- local renewable energy – including solar, onshore wind, future offshore wind and biomass for decarbonised gas transition;
- diversified seed markets for hydrogen across buildings, transport and industry;
- consumer trials of fuel-cell vehicles; and
- hydrogen-ready hybrid heating systems.

The project is showcased the far-reaching benefits of low-carbon energy and has the potential to lead the way and become the first of many Smart Local Energy Systems supporting the UK and its local communities in reaching the government's target of net zero greenhouse gas emissions by 2050. MH:EK was one of the chosen 'Detailed Design' projects within the Prospering from the Energy Revolution (PfER) programme of works funded by Innovate UK as part of its Industrial Strategy Challenge Fund (ISCF).

The Council has been a non-funded collaborator on the South Wales Industrial Cluster (SWIC) Roadmap project, which has identified the best options for the cost-effective decarbonisation of industry in South Wales – including the industrial cluster on the Milford Haven Waterway. An excellent video can be viewed here. The project looked at the infrastructure required for the development of the hydrogen economy; for large-scale carbon capture, utilisation and storage (CCUS) and transport; as well as on-site strategic opportunities specific to each industry. Key partners for the Phase 2 £1.5m bid will be industry, infrastructure providers, power generators and councils – bodies such as:

- Wales and West Utilities;
- National Grid Electricity Transmission plc;
- Western Power Distribution;
- Calon Energy;
- RWE Generation UK plc;
- Pembrokeshire County Council; and
- Neath Port Talbot County Borough Council.

- CR Plus Limited
- Costain Limited
- Progressive Energy Limited
- Siemens plc
- ITM power
- University of South Wales (USW)
- Environmental Resources Management Limited
- Capital Law Limited
- Tata Steel
- Valero Energy Limited
- Vale Europe Limited
- Celsa Manufacturing (UK) Limited
- Milford Haven Port Authority (MHPA)
- Tarmac Trading Limited
- Confederation of Paper Industries
- Associated British Ports
- National Farmers' Union (NFU)
- BOC
- Rockwool Limited
- Calor

PCC has established working relationships with locally based private and community groups, and with regional and national groups operating locally, in the arena of clean energy and sustainability –including:

- Community Energy Pembrokeshire (CEP)
- Transition Bro Gwaun (TBG)
- The Environmental Network for Pembrokeshire (TENP)
- Planed
- Pembrokeshire Coastal Forum (PCF)
- Pembrokeshire Association of Voluntary Services (PAVS)
- Ynni Sir Gar
- Cwm Arian Renewable Energy (CARE)
- Egni Co-op
- Awel Aman Tawe
- Marine Energy Wales (formerly Marine Energy Pembrokeshire)
- ateb (formerly Pembrokeshire Housing Association)
- Western Solar – Tŷ Solar
- Silverstone Green Energy (PV Solar) and Dragon Charging (EV charging)
- Bourne Leisure Ltd, Bluestone Resorts Ltd and Folly Farm Ltd (all members of the Pembrokeshire Energy Forum)

Integration, Communication and Behaviours – Headline Actions:

In partnership with Pembrokeshire Coastal Forum and Cardiff University (using funding from their Coastal Communities Acting Together [CCAT] project), a staff climate-change-awareness baselining survey has been undertaken. A key observation from the analysis is that members of the general community appear to have higher levels of awareness and concern about climate change in their local area and are more knowledgeable about climate change action being taken at a local authority level. There is therefore clearly an opportunity for PCC to increase internal efforts to foster climate awareness and climate action among its employees and councillors.

In 2022 the Council consulted on the 'Action Plan Towards Becoming a Net Zero Local Authority by 2030'. The Big Green Plan consultation response produced 116 ideas. A 'Big Green Plan Feedback Response' was issued and the vast majority of suggested ideas/ actions are being implemented or facilitated via regional partners

Following public demand the Council are looking to create dedicated webpages and social media channels to promote the climate change, net zero and biodiversity work that PCC and partners are engaged in.

PCC has been implementing agile and smarter working since 2018. For desk-based staff, this resulted in a relatively simple migration to home working when the COVID-19 pandemic commenced. The Council have consolidated smarter working practices in order to create further decarbonisation efficiencies – specifically around the smarter use of workplaces, home working and reduced commuting mileages.

The Council have constructively engaged with local environmental campaign groups – for example, hosting a climate youth forum and meeting with representatives of the West Wales Climate Coalition at County Hall.

PCC runs the successful Sustainable Schools Award Scheme (SSAS). The scheme was set up in 2003 to help schools embed Education for Sustainable Development and Global Citizenship (ESDGC), in both teaching and learning and the sustainable management of Pembrokeshire's schools. The Council are ensuring that the SSAS aligns with the objective in WG's 'Prosperity for All: A Low Carbon Wales' for 'working with partners to include more about sustainability and decarbonisation in the new curriculum'.

Housing – Headline Actions:

PCC maintains around 5,650 dwellings for the provision of social housing. Following comprehensive energy-efficiency retrofit measures as part of the Council's progress under the Welsh Government's current Welsh Housing Quality Standard (WHQS), it has achieved a very good average Standard Assessment Procedure (SAP) rating of 75 (in the middle of the 'C' band).

There will be a new WHQS imminently, which will probably place demands on PCC to further improve in stages towards zero-carbon housing stock. Therefore, the Council has not yet set its own target pending further guidance and targets from the Welsh Government. It is apparent that WG is finding it harder and more expensive than expected to achieve this new standard. For example, an air-source heat pump (ASHP) might improve energy efficiency over oil but actually costs more to run; however, the Council cannot pass that cost on to the tenant if trying to tackle fuel poverty.

In 2023 the Council will procure a contractor for the installation of solar panels and battery storage in Council homes. This is to ensure the delivery of the Optimised Retrofit Programme Grant conditions and timely installation of retrofit measures on council housing stock

The Pembrokeshire Energy Company Obligation (EcoFlex 3) grant scheme commenced in April 2019. It covers energy-inefficient homes that either spend more than 10% of their income on fuel or are vulnerable to the cold. The grant goes towards home energy-efficiency measures involving heating upgrades and insulation.

PCC has recently committed to the provision of new affordable and energy-efficient homes, and is integrating solar PV, battery storage and EV chargepoints.

The 'Homes as Power Stations' project aims to deliver smart, low-carbon, energy-efficient homes through a coordinated approach across the Swansea Bay City Region. The project will deliver a programme of new-build developments, the retrofitting of existing buildings and local supply-chain development support. It aims to help tackle fuel poverty, cut carbon emissions and meet the need for more housing. The project will monitor the health and well-being aspects of warmer homes and the impact of the 'homes as power stations' concept on fuel poverty

Planning, Development, Land Use and Biodiversity – Headline Actions:

The Pembrokeshire Local Development Plan (LDP) is used to determine all planning applications in the PCC planning area and to guide development. The current LDP is underpinned by the overriding principle of achieving sustainable development. It also has a key objective linked to reducing / tackling the causes and impacts of climate change. This is delivered in the Plan's strategy: a settlement hierarchy is used to ensure that development is directed to locations that have good levels of services. This aims to reduce the need for travel, and therefore to reduce carbon production. The principle of sustainable development is carried through all policies within the Plan, including promoting energy-efficient design and ensuring that new proposals such as community facilities are well related to existing settlements.

PCC has prepared a Biodiversity and Ecosystems Resilience Plan to detail how the Authority intends to fulfil its duties under Section 6 of the Environment Act to enhance biodiversity and the resilience of ecosystems. The plan sets out a number of corporate actions that, when undertaken, will also help with reducing PCC's impacts on climate change – including how it manages Council land.

The Council has produced a Green Infrastructure Study for Pembrokeshire (which includes PCNPA and PCC Plan areas). This identifies opportunities to enhance green infrastructure across the main settlements in the County through a range of actions including tree planting. Some projects are already progressing elements of this study – e.g. the

Haverfordwest Green and Blue Infrastructure project. LDP 2 will include a specific policy on Green Infrastructure.

The Council is currently reviewing the Tree and Woodland Strategy to take account of the climate crisis, loss of biodiversity and consequent need for greater tree planting, protection of biodiversity and other associated beneficial approaches.

PCC hosts the Pembrokeshire Nature Partnership is one of 25 sister partnerships around Wales, collectively referred to as the Local Nature Partnership, and supports these initiatives both financially and through the allocation of officer time. The partnerships consider a whole range of projects, which support biodiversity/tackling habitat fragmentation and addressing climate change and has written and published a Nature Recovery Action Plan.

The Council works with two marine groups who are engaged with the marine environment, and supports these historically through the Single Revenue Grant (SRG) and directly through officer time and limited financial contributions. They are the Milford Haven Waterway Environmental Surveillance Group and the Pembrokeshire Marine Special Area of Conservation Relevant Authorities Group. The former primarily gathers evidence of the conditions of the waterway, and is critical in providing information on changes to the waterway over time. The latter group is focused on a range of projects and actions around the Marine Special Area of Conservation – including work with schools about reducing plastic/marine litter and a recent study using citizen science to monitor nitrate levels in the Marine SAC.

The Council have been working on a project with NRW regarding living sea walls/ ecological enhancements. NRW have contacted PCC highlighting some surplus ecological structures, and to understand what structures PCC own, and their suitability based on tides, access, submersion etc. With partners Port of Milford Haven have already deployed a range of ecological enhancement structures in and around Milford Haven. Some installed by Aberystwyth University in experimental deployments, and some installed by NRW as straightforward habitat enhancements. These are essentially artificial rock pools (the shape of soap dishes) bolted to the quay wall on Mackerel Quay at Milford Waterfront.

The Council are working with Pembrokeshire Coast National Park Authority to explore the opportunities to improve the quality of its dark skies and attain appropriate designation by the International Dark Sky Association (“IDA”).

PCC/PCNPA have been looking at light pollution in Pembrokeshire and potential actions to reduce this. The team has recently finalised mapping of light pollution in the County against recorded bat roosts/flight paths. This will be included in a forthcoming Biodiversity Supplementary Planning Guidance document, and will provide additional information when planning applications are considered. This should ensure that the authorities can design out unnecessary lighting on schemes where this is a planning matter. Separately, PCC has been working on a lighting standard for HRA (Housing Revenue Account) schemes in conjunction with the local Secured by Design advisor. This standard is based around the criteria that HRA schemes have to meet in order to minimise lighting and also to use lamps of a wattage and colour temperature (sub 3000 K ‘warmer’ light) designed to minimise carbon production and impact on bats.

PCC has a range of evidence that it uses to inform decision-making with the intention of reducing the causes and impacts of climate change. This includes the Land Use Mapping tool, which shows habitats and species. The Council has also, via the LDP, developed further evidence on flood risk through the recently completed Strategic Flood Consequence Assessment, which is taking a precautionary approach and building in an allowance for climate change and for sea-level rise to the current WG flood maps. This precautionary approach will inform LDP allocations

The Council is seeking to identify key habitats and species at risk from climate-change impacts, and to review its biodiversity plan in order to ensure that it is climate proof. It is recognised that resilience to pressure (such as climate change) is increased by improving the diversity, extent, condition, connectivity and adaptability of ecosystems (The DECCA

Framework): any work on any or all of these attributes increases resilience. The Council note that whilst healthy and resilient ecosystems are resilient to the effects of climate change, conversely, ecosystems in poor health can actively add to climate change by releasing carbon (Peat, wetlands, denuded soils, drying out wetlands etc). They also amplify the effects of climate change by failure of ecosystem service – so for example climate change may create increased storm events, but loss of habitat and ecosystem function will translate that into a flood. The Council's Biodiversity Supplementary Planning Guidance (SPG) is currently being reviewed jointly with PCNPA.

PCC is considering opportunities to increase pollinator areas in parks and open spaces via methods such as increasing the use of wildflowers in highway verges and roundabouts, and creating wildflower meadows. A wildflower-meadow harvest can occur just once a year in order to produce hay/compost, reducing land management and therefore reducing the use of petrol/diesel emissions. It also provides wildlife benefits and colour for people to enjoy with all the associated wellbeing improvements.

Reduced frequency of grass cutting in strategic areas is being considered in order to complement initiatives such as the Wales Biodiversity Partnership Action Plan for Pollinators and Buglife B-Lines Wales.

The Council recognises that there is scope to explore opportunities for enhancing or creating nature reserves in the County, and to create nature-based tourist attractions – e.g. high-rope activities and camping. A key message from the recent Ministerial Deep Dive into Biodiversity was the commitment to 30% of land and inshore waters effectively protected for conservation.

Examples of nature-enhancing projects undertaken by PCC and its partners include :

- The Council has worked with a number of community groups to establish community allotments on both PCC land and land donated by local owners. It aims to continue identifying land for local produce and supporting the use of allotments so that communities can grow their own food and reduce food miles and waste – e.g. community gardens, orchards, 'produce pockets' where space is limited. This increases community resilience and is also good for health, well-being and biodiversity.

- PCC supports a Pembrokeshire Coastal Forum and Pembrokeshire Marine Special Area of Conservation pilot project to restore underwater seagrass meadows at Dale Bay in order to tackle climate change. Despite experts saying that it acts as a 'nursery for a wide variety of marine life', 92% of seagrass has been lost over the last 100 years. The World Wide Fund for Nature (WWF), Sky Ocean Rescue and Swansea University are partners in the Dale Bay scheme. Seagrass is key to reducing levels of carbon dioxide, a gas that contributes to global warming, as it absorbs carbon dioxide from the atmosphere up to 35 times faster than tropical rainforests can. It also accounts for 10% of annual ocean carbon storage globally, despite only taking up 0.2% of the seafloor.

- A tree-planting event occurred at Wolfscastle that showcased best practice in working together across public bodies and the third sector to deliver real benefits for people and the environment. The event was volunteer led and aimed to plant 1,000 trees in a day, with the intention of repeating this each year to match the number of births in Pembrokeshire annually. This event has occurred every year since and at 2023 is up to a total of 6,560 new trees planted. This ties in with the Welsh Government Plant Scheme, but delivers planting to create a woodland in Pembrokeshire, for the people of the County, celebrating births in Pembrokeshire and taking the opportunity to engage new parents in issues of sustainability. It is a collaboration between PCC (which has made land available for the project), Hywel Dda Health Board (engaging new parents in sustainability and the benefits of access to natural areas), Tir Coed and PCNPA (both engaging

volunteers in planting and maintaining the trees), the Woodland Trust (advising on and sourcing suitable mixes of local-provenance trees) and Pembrokeshire Lamb (preparing and maintaining the land). The project is funded through the Pembrokeshire Nature Partnership, which is supported by the Welsh Government's Enabling Natural Resources and Well-being (ENRaW) fund.

- Cleddau Walk, Haverfordwest Green and Blue infrastructure – a key regeneration project that delivered a new route around Haverfordwest, improving access, leisure and recreation opportunities. The path highlights biodiversity and includes a European protected-species habitat.
- Hayscastle Community Woodland – the community was supported and received funding through PCC to purchase a one-acre (roughly half-hectare) site upon which they established a community woodland.
- Johnston Millennium Park Community Woodland – the community was supported and partly funded through PCC to manage an established community woodland and ponds.
- Jubilee Park East Williamston – the community was supported and, in part, funded by PCC to purchase and enhance 22 acres (9 hectares) of land, delivering eight key habitats and planting in excess of 8,000 trees. Additionally, a team of over 40 local volunteers has been established to 'grow' Jubilee Park.
- Orchard Mawr, Haverfordwest – PCC supported and, in part, funded a volunteer group in Haverfordwest to plant approximately 550 fruit and nut trees on PCC-accessible land. This included planting on the urban streetscape, and resulted in the establishment of three orchards.
- PCC Woodlands, county-wide – enhanced 33 PCC native broadleaved woodlands through the Better Woodland Wales grant for biodiversity, thus creating public access to 15 woodlands and, through linkages with Norman Industries, managing PCC timber stocks through thinning, resulting in a supported income-generation scheme through biomass sales.
- Saltings, Haverfordwest – the enhancement, in collaboration with Haverfordwest Town Council, of an old landfill site, transforming it into a public country park. It is now planted with Pembrokeshire wildflower seed and 300 broadleaf trees, with much-enhanced public access opportunities.
- Village Green/Common Land, county-wide – working with a wide range of community groups to access funding, which was used to adopt and manage PCC's Section 9 Common Land, incorporating the enhancement of many village greens through tree planting.
- Scolton Country Park – enhanced the wooded site through the Better Woodland Wales grant for biodiversity, creating public access and introducing 5 one-acre (roughly half-hectare) coppice compartments.
- Mount Woodland, Milford Haven – supported the community association to manage the 18-acre (7-hectare) woodland site and gain funding to provide community access and deliver learning outcomes for NEETs (young people Not in Employment, Education or Training).
- Tidy Towns, county-wide – delivered many community enhancements through this PCC scheme, including the establishment of community gardens and community tree planting.
- Withybush Woods, Haverfordwest – delivering a historical enhancement, which creates better public access and leisure/recreational opportunities together with biodiversity gain. The latter included de-silting the main pond

with further management of European protected species, along with community tree and wildflower bulb planting.

- Milton Marsh, Milton – actively managing and working with the community to enhance this special community nature reserve, including tree planting.
- Railway Terrace, Neyland – supported the community to access funding for this site to establish a wildflower meadow while eradicating invasive plants.

Regeneration - Headline Actions:

The Economic Recovery & Regeneration Strategy for Pembrokeshire, 2020 to 2030, is in place. The strategy maps out what is intended in response to COVID-19 and post Brexit. It includes working with PCC's partners to deliver the next generation of clean, green engineering jobs focused around the Milford Haven Waterway; carbon-neutral building methods linked to carbon-offsetting projects; and using the opportunity created by COVID-19 and enhanced connectivity to benefit from agile working and reduced travel.

Carbon reduction is at the heart of the £1.3 billion Swansea Bay City Deal, which is being delivered by the four Swansea Bay City Region local authorities, including Pembrokeshire, with the area's two regional health boards and two regional universities.

- Among the projects forming part of the City Deal programme of investment is a pan-region 'Homes as Power Stations' initiative. Under this project, it is proposed to retrofit 7,500 homes with state-of-the-art energy-efficiency technology and build 3,500 new, highly energy-efficient homes over a five-year period. As well as helping the region to cut its carbon emissions, Homes as Power Stations will also tackle fuel poverty and meet the need for more housing while benefitting/creating low-carbon supply-chain businesses throughout Pembrokeshire and South West Wales.
- Also part-funded by the City Deal is the Pembroke Dock Marine project, which is considerably boosting the region's 'blue economy' through major investment in the advancement of marine energy. Made up of elements including a Marine Energy Test Area and a Pembrokeshire Demonstration Zone for marine-energy developers to trial, de-risk and commercialise their devices, this project also includes infrastructure upgrades at Pembroke Dock Port and a Marine Energy Engineering Centre of Excellence to which industry and academia can co-locate. This is placing South West Wales at the forefront of a growing global industry.

Great potential exists in the Celtic Sea for the floating offshore-wind industry. The Council is working with a number of floating offshore-wind developers to establish a base and supply chain in the county for this important renewable-energy source.

Led by PCC, Milford Haven: Energy Kingdom (MH:EK) has explored what a decarbonised smart local-energy system could look like for Milford Haven, Pembroke and Pembroke Dock. The project explored the potential of hydrogen as part of a multi-vector approach to decarbonisation. Two demonstrators were undertaken, including green hydrogen electrolysis and refuelling of two Hydrogen Fuel Cell Electric Vehicles at Milford Waterfront, and the operation of an hybrid hydrogen ready boiler and air source heat pump systems at Port of Milford Havens Offices.

The Council is a non-funded collaborator on the South Wales Industrial Cluster (SWIC) Roadmap project, which has identified the best options for cost-effective decarbonisation of industry in South Wales – including the industrial cluster on the Milford Haven Waterway. The project looked at the infrastructure required for the development of the hydrogen economy; for large scale carbon capture, utilisation and storage (CCUS) and transport; as well as on-site strategic opportunities specific to each industry.

PCC is exploring facilitating a move to a circular economy, whereby waste is avoided and the things that we use are kept in use as long as possible. The Council is considering

providing a materials-reuse facility to coordinate the collection, storage and reuse (including transport) of excess materials from PCC projects and to support community organisations to establish workshops/resources to mend, repair, upcycle and extract materials from items destined for waste.

In March 2023 the proposal for the Celtic Freeport was approved by UK and Welsh Governments. Freeport status will accelerate development of FLOW, hydrogen, carbon capture, utilisation, and storage (CCUS) and biofuels in the SW Wales Region.

Coastal Protection, Flooding and Drainage – Headline Actions:

All coast-protection and flood-alleviation schemes undertaken by the Council are designed to include climate-change allowances in accordance with Welsh Government guidelines.

Surface-water drainage systems are also designed to cater for a 1-in-100-year Annual Exceedance Probability (AEP) event plus 30% allowance for climate change.

Alongside the planning process, the Council oversees Schedule 3 under the Flood & Water Management Act 2010, (which came into effect in Wales on 7 January 2019) as the Sustainable Drainage Approval Body (SAB). The SAB is a statutory function, and it ensures drainage proposals for all new developments to include Sustainable Drainage Systems (SuDS) features. This may require on-site provision of swales, attenuation ponds, etc. for developments of more than one house or where the construction area is over 100m2. If the development meets the criteria, then a SAB application must be submitted alongside the planning application.

Flood-risk areas are identified in the emerging Local Development Plan (LDP) 2. This local plan identifies areas where coastal change may occur and provides a policy on this: GN 36. The LDP 2 evidence base includes a Strategic Flood Consequences Assessment (SFCA) for south west Wales. The primary source for flood-risk mapping remains the Natural Resources Wales (NRW) website.

Transportation and Highways – Headline Actions:

In recent years, PCC has constructed over 11 km of footways and 76 km of shared-use paths (walking and cycling) as part of active-travel development in the ten main settlements around the County.

As part of the Council's statutory duties under the Active Travel Act 2014, it has developed an 'Integrated Network Map' (INM) for Pembrokeshire that sets out its long-term aspirations for active-travel route development for the next 15 years. Around 170 routes are identified on the INM for improvement.

Web information promoting 20 cycle routes across the County has been developed, with additional routes and promotional information being added.

Pembrokeshire has a good track record of obtaining WG Safe Routes in Communities funding for developing safe walking and cycling routes.

Over 1,809,000 passenger journeys to schools and college are provided every academic year by PCC.

Over 1,800 pupils receive Safe School Transport training every academic year to encourage and promote the use of school buses.

The Council supports 22 local bus services, which provide over 970,000 passenger journeys annually.

There are 13 ‘Dial-a-Ride’ services operating in Pembrokeshire, which provide over 26,000 passenger journeys a year.

‘My Train Wales’ is a project developed by PCC and funded by Great Western Railway, which promotes rail travel and track safety to primary- and secondary-school pupils. Each year, over 7,500 pupils across the region benefit from this promotional initiative.

Waste and Environmental Services – Headline Actions:

In March 2018, the Cabinet agreed that the Authority would move to a much-improved recycling service. The changes came into effect in autumn 2019. Householders can now recycle a greater range of plastic as well as paper, cardboard, glass, cans and food. Recycling collections take place every week, and households will be provided with free boxes and bags in which to collect the items.

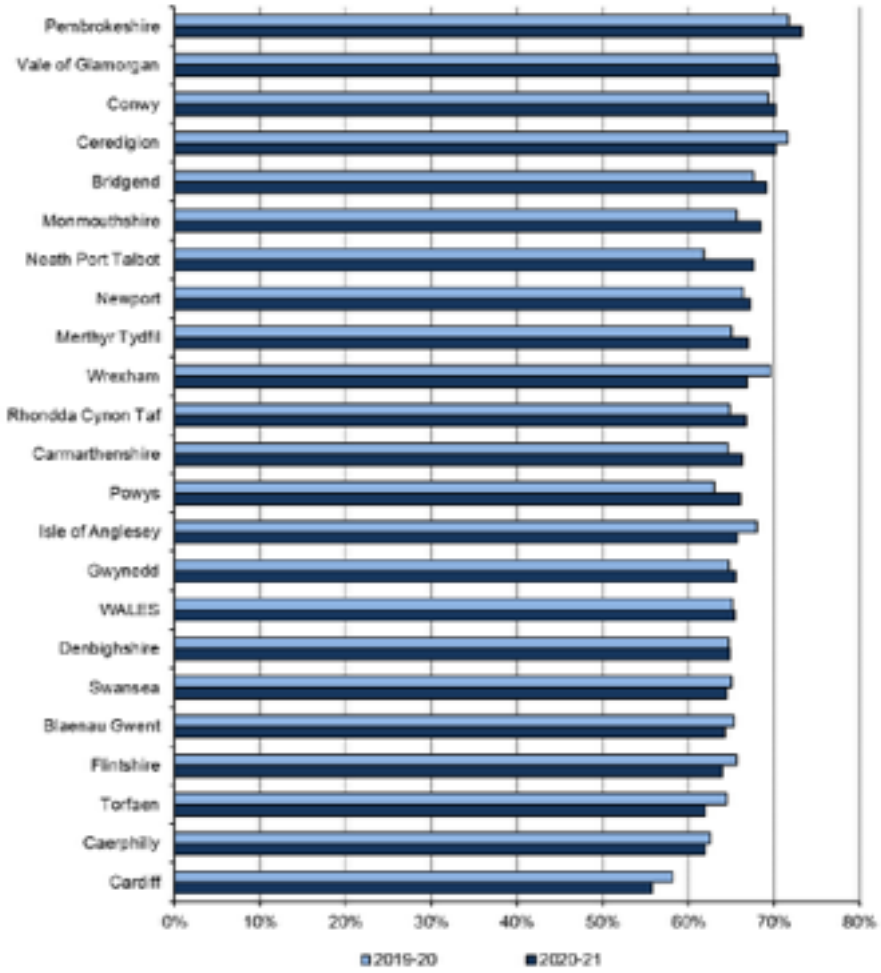
Cabinet also approved a move to three-weekly bin-bag collections, on the basis that householders will need to place fewer items in refuse bags thanks to the increased recycling opportunities.

Cabinet also approved a fortnightly collection service for bulky, absorbent hygiene products, including discreet collections where requested.

The Council’s waste plans are driven by relevant legislation, which sets targets for Wales. The Welsh Government has published Towards Zero Waste, the new Waste Strategy for Wales, which forms part of a suite of documents setting out how Wales will comply with legislation. Towards Zero Waste is the overarching waste strategy for Wales, and identifies high-level principles, policies and targets.

Pembrokeshire has the best recycling rate in Wales, improving from 72% to 73.5% in 2020/21. Notably this is one of the best recycling rates in the world.

Chart 3: Combined local authority municipal waste reuse/recycling/composting rates, by local authority, 2019-20 and 2020-21



Procurement – Headline Actions:

PCC is represented in regional procurement networks, and engages and consults with various groups such as WRAP Cymru and the Welsh Local Government Association. It does so to ensure that climate-change considerations are incorporated within strategic procurement documentation and associated best-practice guidance in order that all specifications, tender documents and award criteria address climate-emergency commitments.

The Council has engaged with WRAP Cymru and requested a spending review to address better use of resources in its own current procurement portfolio. The project focuses on how the standard of reuse (RU) and recycled-content (RC) materials (plastic, textiles paper and card) can improve in future procurement exercises. The project considered how future changes are assessed, tested and tasked with continued improvement, and how to influence consistent application across the different departments and supply chains involved. The principles applied during the review follow those of a circular economy and the waste hierarchy. Approaches aim to reduce (buy less), reuse (no single-use items), recycle (collect and sell), recover and repurpose into newly designed goods. It is recognised that when considering how to buy appropriately for the economic, environmental and social well-being goals of Wales' Well-being of Future Generations Act, it is critical that new thought paths are applied, upfront, at the procurement-design phase and product-design stages. This approach will require timely tracking of re-procurement timelines and robust contract-management processes.

Resulting from the review is an Action Plan which is being included as part of the Council's new Procurement Strategy which will be considered by Cabinet in early 2023.

PCC carries out a Sustainable Risk Assessment (SRA) on all tenders over the value of £25,000, where appropriate, which incorporates environmental, social and economic issues.

The Council sits on the Welsh Government National Procurement Service (NPS) Energy Sub Group, shaping the NPS energy-procurement strategy.

PCC and the majority of Welsh local authorities already source 100% of their electricity needs from certified renewable generation sources (86% of that renewable power is currently sourced from within Wales).

The NPS authorities are part of the seventh-largest purchase (after the 'Big 6') of electricity and gas in UK markets, taking advantage of the Crown Commercial Service's professional energy-trading desks.

The NPS is actively seeking low-carbon gas sources – e.g. bio methane from Anaerobic Digestion (AD) – and monitoring the hydrogen-gas agenda.

Education – Headline Actions:

The Council runs the successful Sustainable Schools Award Scheme (SSAS). The scheme was set up in 2003 to help schools embed Education for Sustainable Development and Global Citizenship (ESDGC), in both teaching and learning and the sustainable management of Pembrokeshire's schools. PCC is seeking to ensure that the SSAS aligns with the objective in WG's 'Prosperity for All: A Low Carbon Wales' for 'working with partners to include more about sustainability and decarbonisation in the new curriculum'.

Finance – Headline Actions:

PCC is one the employers that are part of the £3 billion Dyfed Pension Fund.

The Fund is a long-term investor, responsible for looking after the interests of beneficiaries over many decades into the future, and has long been concerned about climate- and carbon-related risks to the underlying investment portfolios of member funds. The fund takes the approach of engaging actively and productively with companies in the sector through its participation in the Local Authority Pension Fund Forum (LAPFF). LAPFF considers that companies should report on their approach to carbon management in the context of how they are factoring climate change into their business strategy. When engaging, the forum encourages companies to align their business models with a 2°C scenario in order to push for an orderly transition to a low-carbon economy. LAPFF is a member of the Ceres Investor Network on Climate Risk and Sustainability, participates in the Climate Action 100+ initiative and is in partnership with the Climate Majority Project.

Also, via the fund's investment managers, LAPFF votes on resolutions at global AGMs, seeking transparency and disclosure of climate risks and setting emission-reduction targets. In this manner, the fund's view is directly communicated to individual boards.

The Dyfed Pension Fund has an increasing level of investment in renewable and low-carbon energy production via pooled funds. It is also interested in investment opportunities afforded by a low-carbon future that increase asset diversification and provide long-term returns. The fund will continue to make such investments where the risk/return profile fits its investment strategy. It also has investments in the BlackRock UK Strategic Alternative Income Fund, some of the core strategies of which are in the renewable-energy sector and a number of different sectors that have a direct impact on local communities – including healthcare and social housing.

During 2021/22, the Pension Committee approved a Responsible Investment Policy which considers many issues including climate change and rebalanced its assets which increased the allocation to SAIF and reduced its high-carbon regional equity holdings (Canada, Australia, some Emerging Markets) resulting in estimated 7% reduction in carbon-intensity.

The Fund has a comprehensive Investment Strategy Statement and is engaging regularly with divestment groups and the Welsh Government.

The Fund also utilises the expertise in the Wales Pension Partnership (the investment pool for the 8 LGPS in Wales) and is investing 5% of the Fund in the Sustainable Equity Fund which will be launched in 2023.

Information and Communications Technology (ICT) – Headline Actions:

The Council continues to introduce ICT good practice to actively help reduce carbon emissions, including:

- reducing energy consumption at its data centres and across its network through the virtualisation and rationalisation of hardware and the adoption of energy-efficient servers and ICT infrastructure;

- facilitating a reduction in staff travel through the implementation of agile working practices across the Authority, including the use of laptops, online video-conference meetings and calls using softphone technology and MS Teams and remote assistance were appropriate;

- reducing printing across the Authority by facilitating the adoption of paperless working through better use of technology; and

- applying centrally administered, powered management systems to ensure that all devices such as laptops and PCs are powered-down overnight and when not in use during the day

Civil Contingencies and Emergency Planning – Headline Actions:

PCC's civil-contingency and emergency-planning role aims to help mitigate the effects of climate change by writing and testing contingency plans for the various risks involved. These risks include:

- more extreme weather events causing severe fluvial flooding;
- rising sea levels causing an increase in coastal flooding; and
- hotter, dryer summers causing water shortages, an increase in 'wild fires' and effects on the health of the population (especially the elderly).

The Council is a member of the Dyfed-Powys Local Resilience Forum (LRF), whose members include the emergency services, health bodies, other local authorities, government agencies and utility companies. Dyfed-Powys LRF members work together to ensure that arrangements are in place to help mitigate the effects of any emergencies, including those caused by climate change. The role of PCC during emergencies includes providing support for the emergency services, support and care for the local and wider community and coordination of the response by organisations other than the emergency services. As time goes on, and the emphasis switches to recovery, the Council takes a leading role in rehabilitating the community and restoring the environment. The LRF produces the Dyfed Powys Community Risk Register, which can be viewed in the 'downloads' section of the LRF website.

Alignment with the Welsh Government Public-sector Outline Decarbonisation Route Map

Route-map-for-decarbonisation-across-the-welsh-public-sector.pdf

The Welsh Government has produced a decarbonisation route map for the public sector. The route map aligns very well with PCC's Action Plan Towards Becoming a Net Zero Carbon Local Authority by 2030, showing that we can begin to 'move up a gear', be 'well on our way' and then be ready for 'achieving our goals 2026 to 2030'.

Climate change adaptation

Pembrokeshire County Council have produced a climate adaptation strategy. Currently the only Welsh Local Authority to do so. The plan was developed in partnership with Pembrokeshire Coastal Forum, the Public Service Board and Netherwood Sustainable Futures. The strategy has 39 climate adaptation priorities split into four key areas: Infrastructural, Natural Environment & Agriculture, Communities and Business & Industry. This work has since extended into the development of a Climate Risk and Communities Protocol.