

19 DECEMBER 2019

CCR ENERGY VISION AND DELIVERY APPROACH - EARLY WORK

REPORT OF CCR CITY DEAL CHIEF OPERATING OFFICER

AGENDA ITEM 10

Reason for this Report

1. There is a strong consensus across the Cardiff Capital Region (CCR) that a huge transformation is needed in the way in which energy is generated, transported and utilised. This shift is needed in behavioural change; commercial and industrial operating models and in the way we educate, learn and challenge.
2. The Welsh Government Energy Service (WGES) is offering each region, a support package up until March 2020. This will help shape a regional energy vision with key stakeholders and consider future scenarios around which to inform and develop action plans. The ambition is that Regional Energy Plans outline a long-term plan for whole-energy system decarbonisation.
3. This report presents a draft vision for CCR. In recognising the limitations of the jurisdictions covered by the CCR City Deal Joint Working Agreement, it is suggested that this report is noted and endorsed with key activities to catalyse low carbon delivery that may require CCRC support, being brought through the Investment Framework for appropriate decision-making at the relevant time.

Background – Energy Challenges and Opportunities in CCR

4. Analysis shows that within all sectors in the region, energy use is 33 terawatt hours each year across heat, electricity, transport and fuel. This is significant and compared to Mid Wales which uses 5 terawatt hours – demonstrates the hive of industrial and consumer activity in CCR. Currently only about one sixth of this comes from renewable sources, predominantly electricity. The challenge of decarbonising the remaining five sixths is significant. The analysis pertaining to this is captured at Appendix 1.
5. The areas of most significant challenge are around decarbonising transport and heating to retro-fit with low carbon measures in homes and premises and take steps to ensure new build is ideally, carbon positive. Government policy has a big role to play. Welsh Government has declared its own climate emergency and identified carbon budgets in seeking to support the low carbon transition.

6. In the Analysis of Priority Sectors undertaken in 2018, Energy and the Environment was highlighted as an area of growth potential for the economy. The opportunity exists therefore to urgently consider how we align objectives with the City Deal, raise ambition on the agenda, support activities and initiatives and stimulate pipeline investments. The benefits to the economy and society could be significant with increased local ownership of renewable energy assets, strong supply chains; public-private ventures; 'clean growth' businesses and jobs and creation of a resilient and sustainable region.
7. To date, WGES has supported CCR and stakeholders in:
 - describing the state of play;
 - completing a baseline assessment of current carbon;
 - drafting a vision and gauging ambition;
 - energy system modelling and scenario planning;
 - starting to scope a delivery plan – further work is needed following endorsement of vision.
8. An initial CCR stakeholder workshop was held on 12/04/19 where feedback from the region was collected in order to inform the development of a strategic vision for the future energy system in the region. Twenty six stakeholders from government, industry and commerce, third sector and academia attended the workshop and shared their vision, hopes, and concerns about the renewable energy future in the Cardiff Capital Region.
9. This was followed in July 2019, when in conjunction with WGES, colleagues from the Greater Manchester Combined Authority and the Energy Systems Catapult were invited to share their Climate led Mission approach. This reflected the urgency around energy efficiency and heat; electricity and flexibility; decarbonising transport, the opportunity to adopt clean growth principles and grow companies, supply chains and jobs all alongside the importance of leadership, co-ordination and ownership of the challenges. Follow-up to the Regional Economic Growth Partnership has demonstrated a strong desire for an approach that addresses carbon, bio-diversity and renewable energy challenges – whilst simultaneously growing economic opportunity.
10. The vision produced as a result of this work is *'to create conditions for a shift to a carbon neutral economy and society in the CCR, growing regional income whilst maintaining guardianship of our environment through a targeted focus on clean growth'*.
11. Through the remainder of the process, a stakeholder survey will be undertaken to share the vision statement and seek ideas and thinking around what transformational projects could be developed in the region that could be furthered through public, private and community partnerships.
12. The last output from the WGES work will be an economic analysis to understand the level of investment required for the region to be on a net zero pathway by 2035. This will include an estimate of the GVA and jobs contribution and will be an important evidence base for CCR-driven work as well as to serve as a

powerful reminder of the scale of the challenge, ensuring this is embedded as a core aspect of programmes, projects and partnerships. Given the development of the CCR 'challenge fund' scope also exists to shape challenge funds and prizes around zero carbon transport, air quality, active travel and green growth. This could build upon the evidence base developed to support added value delivery in Metro Plus, as one example.

Key issues

13. The WGES package of support will cease in April 2020 and it is not known at this time, if further assistance will be available. However, there is a clear responsibility to continue what has been started. Moreover, given the opportunities presented by a region-wide approach in terms of resources, critical mass and shared purpose, there is potential to build upon and reinforce the work being done at a local level. The leverage potential into UK Government Industrial Strategy Challenge Fund will be a core consideration in this. Councils in the region have declared climate crises; there are examples of recognised strong practice in areas such as Bridgend and Monmouthshire and the Cardiff transport decarbonisation plan has received largescale public support. Metro Plus and the work commenced around EV and LEV strategies, the plan for taxis and infrastructure modelling income – all provide a springboard for this critical work.
14. The clock is ticking and with young people demonstrating the energy, aptitude and passion to contribute to this moral imperative – this is an opportunity for multi-level civic and business engagement on an unprecedented scale.
15. Effective governance in achieving the enactment of the vision will be key. This will mean a commitment to shared purpose, cross-sector engagement and a focus on outcomes. Once the economic analysis is available from the WGES work there will need to be a further evaluation and assessment of future options to complement the vision. The resultant plan will need to be fully costed in terms of resource and delivery capacity. This will be brought back comprehensively to Cabinet at the end of this initial period of work.

Reasons for Recommendations

16. To consider and endorse the vision in order to give shape, structure and purpose to the work that now needs to be developed to provide a foundation from which to develop and deliver a 'clean growth' plan for the decarbonisation of the region and help align with and foster links to CCR City Deal.

Financial Implications

17. This report presents to Regional Cabinet an Energy Vision for the Region and as such does not seek any funding at this time and therefore has no direct financial implications. Should funding for this initiative be required at a future point such a request will need to be subject to a further report to Regional Cabinet.

Legal Implications

18. This report sets out the Energy Vision and the proposed next steps of progressing a Regional Energy Plan. The development of a Regional Energy Plan is not a matter delegated to the Cardiff Capital Regional City Deal (CCRCD) in the approved JWA in regards to the delivery of the CCRCD. As such, the Accountable Body is not providing legal advice to the 10 Local Authorities on this matter and each Authority will need to satisfy itself as to the implications of any proposed Regional Energy Plan going forward.

Well-Being of Future Generations (Wales) Act 2015

19. The Well-Being of Future Generations (Wales) Act 2015 ('the Act') is about improving the social, economic, environmental and cultural well-being of Wales. The Act places a 'well-being duty' on public bodies aimed at achieving 7 national well-being goals for Wales - a Wales that is prosperous, resilient, healthier, more equal, has cohesive communities, a vibrant culture and thriving Welsh language, and is globally responsible. In discharging their respective duties under the Act, each public body listed in the Act (which includes the Councils comprising the CCRCD) must set and published well-being objectives. These objectives will show how each public body will work to achieve the vision for Wales set out in the national well-being goals. When exercising its functions, the Regional Cabinet should consider how the proposed decision will contribute towards meeting the 'well-being duty' and in so doing assist to achieve the national well-being goals.
20. The well-being duty also requires Councils to act in accordance with a 'sustainable development principle'. This principle requires Councils to act in a way which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs. Put simply, this means that the Regional Cabinet must take account of the impact of their decisions on people living their lives in Wales in the future. In doing so, the Regional Cabinet must:
 - look to the long term;
 - focus on prevention by understanding the root causes of problems;
 - deliver an integrated approach to achieving the seven national well-being goals;
 - work in collaboration with others to find shared sustainable solutions;
 - involve people from all sections of the community in the decisions which affect them.
21. The Regional Cabinet must be satisfied that the proposed decision accords with the principles above.
22. To assist the Regional Cabinet to consider the duties under the Act in respect of the decision sought an assessment has been undertaken, which is attached as an Appendix to this report (Well-being of future generations assessment) for Member's consideration.
23. In preparing reports due regard must be given to the Statutory Guidance on the Act issued by the Welsh Ministers, which is accessible using the link below:

Equality Act 2010

24. In considering this matter, regard should be had, amongst other matters, to the Councils' duties under the Equality Act 2010. Pursuant to these legal duties the Regional Cabinet must in making decisions have due regard to the need to (1) eliminate unlawful discrimination (2) advance equality of opportunity and (3) foster good relations on the basis of protected characteristics. Protected characteristics are:

- age;
- gender reassignment;
- sex;
- race – including ethnic or national origin, colour or nationality;
- disability;
- pregnancy and maternity;
- marriage and civil partnership;
- sexual orientation;
- religion or belief – including lack of belief

RECOMMENDATIONS

25. It is recommended that the Cardiff Capital Region Regional Cabinet:
- (1) notes the Energy Vision and the next steps of the process regarding stakeholder engagement, economic modelling and the development of the plan; and
 - (2) notes the final outcomes of this work along with a fully costed plan to support and co-ordinate delivery and implementation will be reported to the Regional Cabinet.

Kellie Beirne
Director, Cardiff Capital Region City Deal
19 December 2019

Appendices

- Appendix 1 Scenario Modelling – CCR
- Appendix 2 Draft Vision
- Appendix 3 Debrief Stakeholder Report
- Appendix 4 Future Generations Assessment Evaluation



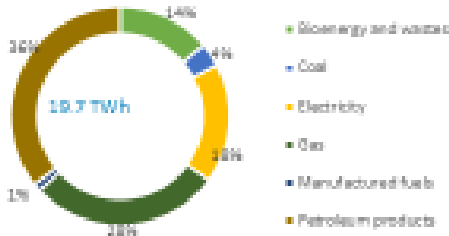
Gwasanaeth Ynni
Energy Service

Energy Consumption

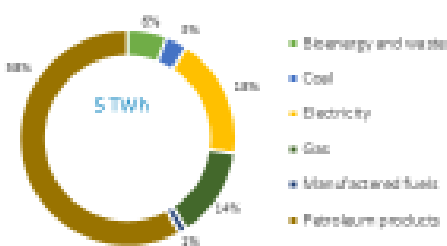


Energy Consumption by Fuel

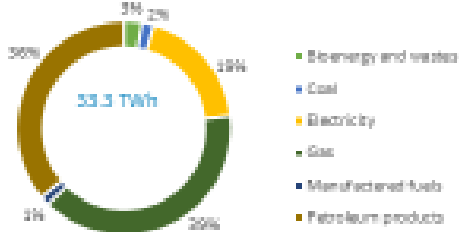
The **North Wales** region consumes around 22% of all energy consumed in Wales.



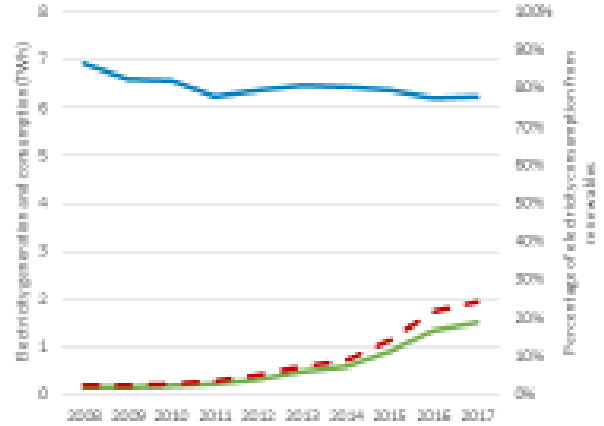
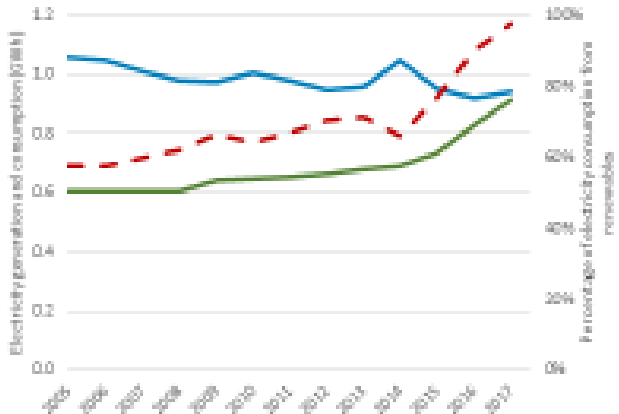
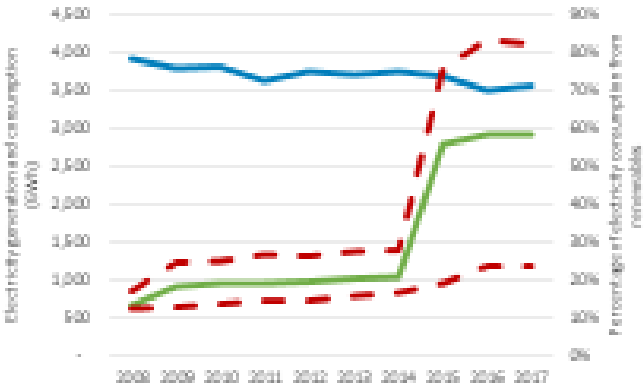
The **Mid Wales** region consumes around 6% of all energy consumed in Wales.



Cardiff Capital Region consumes around 37% of all energy consumed in Wales.



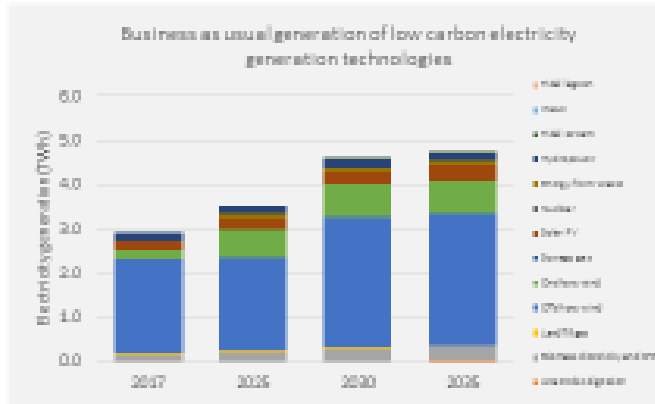
Percentage of electricity consumption from renewables



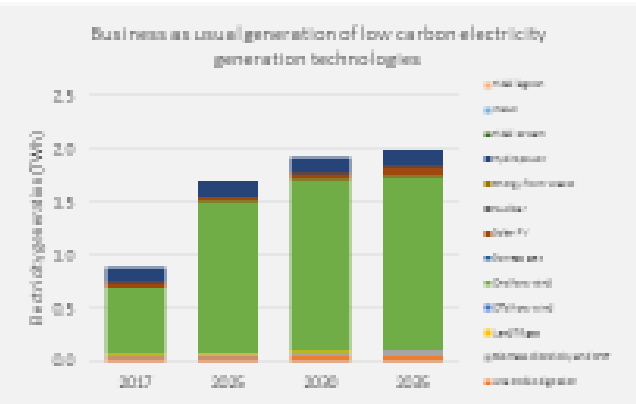


Low carbon electricity generation (BAU and Energy System Vision)

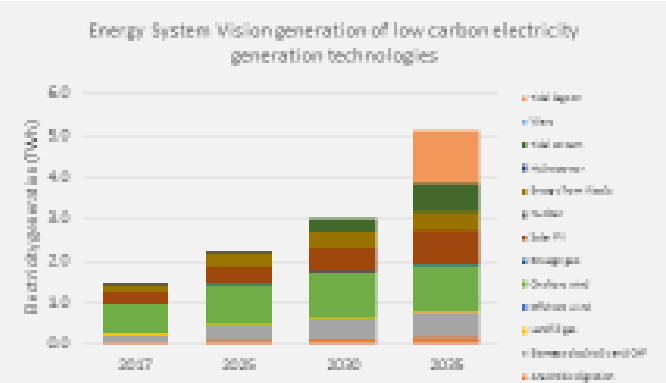
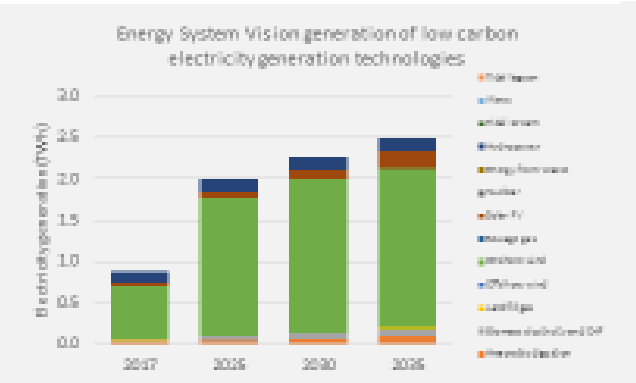
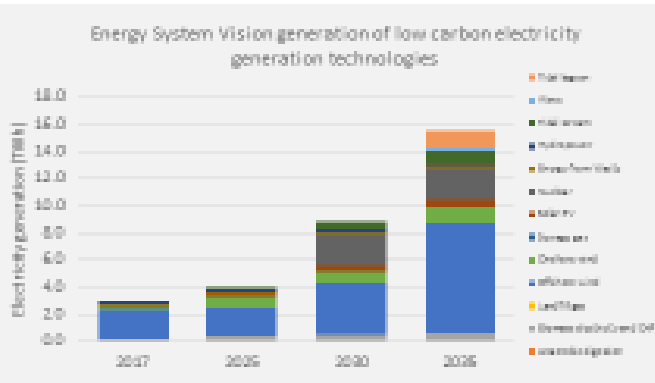
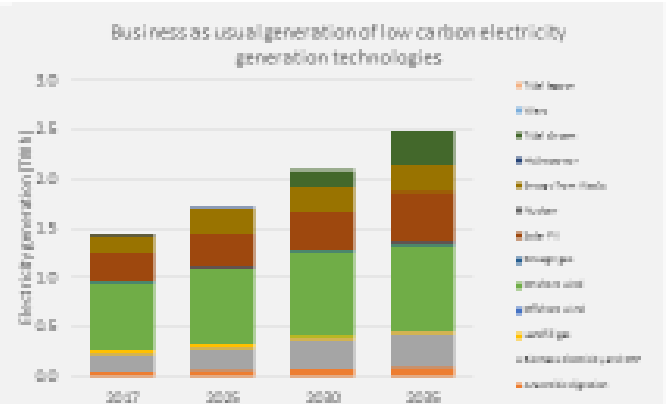
North Wales



Mid Wales



Cardiff Capital Region



Cardiff Capital Region Energy Strategy and Delivery Plan - Draft Vision Statement

To create the conditions for a shift to a carbon neutral economy and society in the CCR, growing our regional income whilst maintaining guardianship of our environment through a laser-focus on clean growth.

A vision guided by three core principles:

- **An enabler to a sustainable regional economy:** deliver inclusive employment, profits and skills, lower costs and open up markets, and stimulate public and private investment in carbon reduction across the region.
- **Contribute wider benefits to the region:** including alleviating fuel poverty, spark innovation and develop local training and skills for people and businesses.
- **Decarbonisation of the energy system to meet national targets as a minimum:** make significant carbon reductions across all sectors, to have energy efficiency as a core focus, and to have a multi-vector system that meets needs affordably and balances the best use of existing assets and resources.

Context:

The Regional Energy Strategy and Delivery Plan is formed in the context of International, UK and Welsh legislation relating to climate change, energy use and well-being. The Welsh Government has published Prosperity for All: A Low Carbon Wales (2019) which describes 100 policies and proposals from the Welsh Government, UK Government and the EU. The Environment (Wales) Act 2016 sets out a decarbonisation target of 80% reduction in emissions by 2050, which is in line with UK targets. Subsequent to this, the Welsh Government has also declared a climate emergency. Furthermore, in May 2019, the Committee on Climate Change recommended that the Welsh target be increased to 95% reduction by 2050; in June 2019 the Welsh Government accepted this target and has stated an ambition to go further and reach “net zero” emissions by 2050. Within the region, Caerphilly County Borough Council, Cardiff Council and Monmouthshire County Council have all declared climate emergencies. The regional energy strategy and plan is being developed by the Cardiff Capital Region with the support of the Welsh Government Energy Service. The strategy and plan will be “owned” by the region who will deliver against its objectives.

The Cardiff Capital Region is characterised as containing a diverse mix of economic activities and geographies, with a range of socio-economic conditions ranging from the more prosperous coastal areas to the more deprived locales in the Heads of the Valley area. As a whole, the region has more Lower super output areas (LSOAs) that are in the top 10% most deprived LSOAs in Wales than all of the other regions combined and while deprivation does concentrate in the Heads of the Valleys areas, urban areas are also home to the most deprived LSOAs. The region accounts for approximately 50% of the total economic output of the Welsh economy & 48% of total Welsh employment. Additionally, it is home to important clusters of economic activity, including the cities of Cardiff and Newport, aerospace and manufacturing economic zones in Cardiff Airport and St Athan and Ebbw Vale, and larger towns such as Barry, Bridgend, Caerphilly, Caldicot, Cwmbran, Merthyr Tydfil, and Pontypridd that serve as important centres for local service. Apart from these economic centres, the region is also home to areas of outstanding beauty that are known throughout the UK, such as the Wye Valley. Nonetheless, in October 2018, the labour market

statistics for the CCR were generally weaker than the Welsh average with higher unemployment rates and a lower Gross disposable household income (GDHI), though a higher Gross value added (GVA) per capita.

A vision delivering key benefits to the local economy:

- Increase local ownership of renewable energy assets and supply chain to retain value, create jobs in local communities while reducing the amount consumers and businesses spend on energy
- Encourage public-private projects to maximise the economic benefits across all sectors
- Build on the existing strengths of the CCR economic core and extend throughout the region
- CCR to be a world class destination for investment in jobs and business

Five priority areas

1. Energy efficiency and heat

- Deliver fabric improvements to the region's existing and new build building stock including retrofitting existing housing stock, and other parts of the built environment, to improve energy efficiency and deliver cost savings
- Build new homes to a zero carbon standard including developments currently with planning permission
- Help homeowners understand the benefits of energy efficient housing including cost savings, improved comfort and health
- Utilize alternative fuels for heat incl. hydrogen, bio-methane and solar thermal
- Develop flexible and hybrid heating solutions e.g. hybrid heat pumps, including building on the learning from the [Freedom](#) project based in Bridgend
- Implement role of a regional transactor whose role is to facilitate between local authorities and developers to deliver low carbon developments (also strengthen planning requirements) NB this would require Welsh Government support and action will be taken to secure this support

2. Electricity and flexibility

- Ensure there is a mix of generating technologies across the region to provide resilience and flexibility
- Encourage local authority development of renewable energy projects on publicly owned land to increase revenue generating potential for public bodies and to retain public ownership of RE assets
- Map renewable energy potential against upcoming developments, particularly developments of regional level scale
- Pilot energy/battery storage projects to maximise renewable energy potential and build on previous trials in [Cardiff](#) and [Bridgend](#)
- Encourage uptake of smart meters, including ensuring the public sector has smart meters installed across its estate, to open up the potential of load shifting and access to balancing/flexibility markets
- Adopt generation technologies and demand patterns which reduce loads on the distribution network and work with the DNO to maximise the capacity of the existing network
- Encourage low carbon technologies e.g. LED lighting, and invest in behaviour change programmes to reduce consumption

3. Decarbonize transport

- Investment in public transportation is a key priority
- Make public transport more affordable to encourage a modal shift from private transport
- Promote electrification of public transport and build on trials including electric buses in [Caerphilly](#) and [Cardiff](#), and the decarbonisation of the [South Wales Metro](#)
- Encourage use of active travel modes e.g. walking and cycling
- Develop an electric vehicle charging infrastructure, including taking a coordinated approach across the region e.g. the [Gwent](#) study, and encourage public sector fleet transitions to EVs
- Lobby for additional Metro nodes to increase rural accessibility and connectivity
- Ensure metro stations are integrated with other economic priorities and housing
- Address the Newport/Cardiff trunk road bottleneck and consider addition of a dedicated bus lane
- Consider hydrogen as an alternative fuel source where electrification is less suitable e.g. HGVs

4. Grow business and jobs

- Create a commercial property strategy which incorporates access to renewable energy sources and access to public transport links
- Promote continued research into battery and hydrogen technologies, and continue to develop academic excellence in this field
- Develop supply chain opportunities for energy efficiency retrofit and renewable energy manufacturing
- Build on the region's strong reputation for research and innovation through engagement with Higher Education Institutes, including developing digital and "smart" solutions to energy transitions, as well as future proofing ongoing developments

5. Coordination, planning and regional support and ownership of the plan

- Deliver against a shared vision and approach
- Demonstrate aligned ambition and leadership across the region with plans agreed and championed by Chief Executives and leaders
- Maximise economies of scale potential through the facilitating role of the region and through collaboration with other regions
- Governance to use the framework for the City Deal Investment operations and will consult with the Regional Economic Partnership, Regional Business Council and Regional Skills Partnership. This will provide an enduring organizational structure which will secure the long term delivery objectives of the plan

Cardiff Capital Region –Regional Energy Planning

Notes from Stakeholder Workshop 1 on 12 April 2019

Workshop attendees

<i>Organisation</i>	<i>Name</i>	<i>Title</i>
<i>Blaenau Gwent CBC</i>	Amy Taylor	Team Leader, Strategic Projects
<i>Bridgend CBC</i>	Dr Michael Jenkins	Principal Sustainable Development Officer
<i>Caerphilly CBC</i>	Allan Dallimore	Regeneration Services Manager
<i>Caerphilly CBC (representing CCRTA)</i>	Clive Campbell	Transportation Engineering Manager
<i>Cardiff University</i>	Mark Durdin	Maintenance Officer (Energy & Sustainability)
<i>Natural Resources Wales</i>	Gideon Carpenter	Senior Policy Advisor
<i>Newport CC</i>	Ross Cudlipp	Energy & Sustainability Manager
<i>Office of the City Deal</i>	Liz Fitzgerald	Cabinet & Partnership Support Officer
<i>Office of the City Deal</i>	Nicola Somerville	Strategic Lead
<i>Renewable UK</i>	Rhys Wyn Jones	Director
<i>Rhondda Cynon Taf CBC</i>	Jon Arroyo	Energy Manager - Corporate Energy Unit
<i>Rhondda Cynon Taf CBC</i>	Peter Mortimer	Funding and Implementation Manager
<i>Sutton Consulting</i>	Chris Sutton	Director
<i>Torfaen CBC</i>	Rachael O'Shaughnessy	Environmental and Sustainability Manager
<i>Transport for Wales</i>	Natalie Rees	Sustainable Development Manager
<i>Vale of Glamorgan Council</i>	Natasha Davies	Senior Regeneration Officer
<i>Wales & West Utilities</i>	Oliver Lancaster	Future of Energy Project Manager
<i>Welsh Government</i>	Helen Donovan	Business Energy Manager
<i>Welsh Government</i>	Jonathan Oates	Head of Clean Growth
<i>WGES (Carbon Trust)</i>	Brian Drysdale	Development Manager
<i>WGES (Carbon Trust)</i>	Emma Ashcroft	Development Manager
<i>WGES (Carbon Trust)</i>	Floriane Ortega	Development Manager
<i>WGES (Carbon Trust)</i>	Lisa Lafferty	Development Manager
<i>WGES (Energy Savings Trust)</i>	Paul Smith	Senior Manager
<i>WGES (Local Partnerships)</i>	Jane Forshaw	Strategic Lead
<i>WGES (Regen)</i>	Joel Venn	Head Analyst
<i>Welsh Government Smart Living Wales</i>	Eleanor Knight	Head of Energy Policy & Regulation
<i>Western Power Distribution</i>	Ian Sandford	Primary System Design Team Manager
<i>Ynni Glan (Hydrogen)</i>	Guto Owen	Director
<i>Newport City Council</i>	Matthew Sharp	Newport Planning Officer

Contents

Vision.....	3
Heat & Energy Efficiency.....	7
Electricity & Flexibility.....	10
Transport.....	11
Governance.....	13
Annex 1 - Feedback from Participants collected during the workshop.....	14
Annex 2 - Feedback from Roundtables.....	18
Annex 3 – Perspective Session Summary.....	26
Annex 4 – Introduction Sessions Summary	28

Introduction

Thank you very much for your participation at the April 12th workshop in Tredomen Business Park.

This was the first workshop organised to support the development of a Regional Energy Plan in the Cardiff Capital Region. During the workshop, we sought to obtain feedback from the region in order to inform the development of a strategic vision for the future energy system in the region.

26 stakeholders from government, industry and commerce, third sector and academia attended the workshop and shared their vision, hopes, and concerns about the renewable energy future in the Cardiff Capital Region.

We have summarised the feedback and ideas shared during the workshop. This document presents this summary using the following structure:

- First, we summarise the feedback collected during the Strategy Vision session (the flipchart session). During this session, workshop participants shared their thoughts on the strategy's direction of travel and level of ambition. As part of this, participants also shared their hopes and concerns for this Energy Plan.
- This section is followed by three sections that summarise the roundtable discussion on the key opportunities & challenges for transport, electricity and flexibility, and heat and energy efficiency.
- The subsequent section provides a recap on the morning discussion regarding the most appropriate governance structure for the energy plan.
- Finally, in annex 1, you will find a record of the flip chart responses received, annex 2 summarises the notes taken during the roundtable discussion, annex 3 summarises the session on the different perspectives session, and annex 4 summarises the introductions session.

Vision

DRAFT VISION STATEMENT

Workshop delegates stated that the vision statement for the CCR regional energy plan should include the following:

- To be innovative, affordable, secure, multi-vector, whole-system, ambitious, and challenging.
- To provide the region with an integrated energy system for the future that meets the region's needs.
- To minimise the region's energy demand.
- To make use of the region's resource to the greatest extent possible to support decarbonisation.
- To make sure that the energy solutions created are accessible.
- To improve the quality of wellbeing for residents and ensure wider benefits are created for the people of the region including enhancing skills and creating jobs.
- To take into account the timescales required for momentum to be achieved, including supply chain preparation time.
- To be a leading region delivering real change for citizens and business; to innovate and inspire with a worldwide impact.
- To work as ONE region! To minimise working as 10 separate authorities "attempting" to work as one.



Additional feedback on the vision statement cautioned against following Manchester's [recent target to be zero carbon by 2038](#). This participant felt that Manchester's target is unachievable.

SETTING THE LEVEL OF AMBITION

Carbon reduction targets

Feedback suggests that there is wide agreement that a CCR Regional Energy Plan should include a carbon reduction target. Fifteen out of the seventeen responses to this question were for a regional target, while two people did not support a regional carbon reduction target.

The two people that did not support a regional carbon reduction target expressed concerns that creating additional targets to the overall Wales target dilutes the overall Welsh national target. One respondent felt that many of the city-wide targets that have been set recently are unachievable and that cities are competing to set the lowest target without considering the practicalities. This respondent went on to say that if a target is set, it should be set with the same rigour that we consider health and safety (for example, discussing the target at the start of meeting).

Level of ambition

With 9 responses, there was wide support for a target that is aligned with the Welsh Government's carbon reduction target (80% reduction by 2050)¹. There were additional post-it notes that

¹ At the workshop, participants were made aware of the current Welsh carbon reduction target of 80% by 2050. It's worth noting that on May 2, 2019, the Committee for Climate Change has released [a report](#) that recommend that Wales adopts a new target of 95% reduction by 2050.

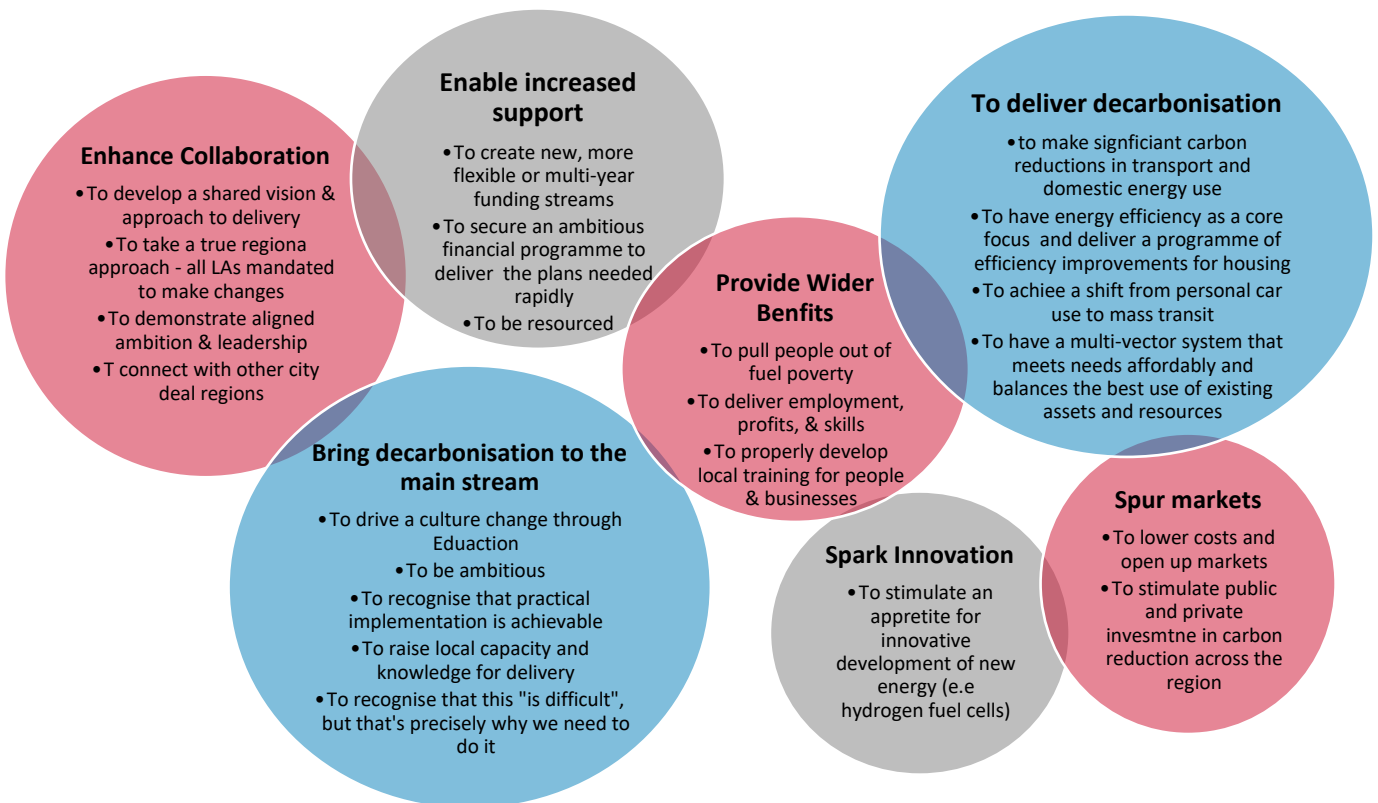
supported a target in line with Welsh Government Policy, however, to ensure that stickers and post it notes weren't double counted, we did not include these in the total tally. Meanwhile 4 people supported a 1.5 degree target and 1 person supported a more ambitious target than both a 1.5 degree target and the Welsh Government target.



Finally, one participant wanted more information on what is achievable, how it could be achieved, and what achieving the target will look like before making a choice.

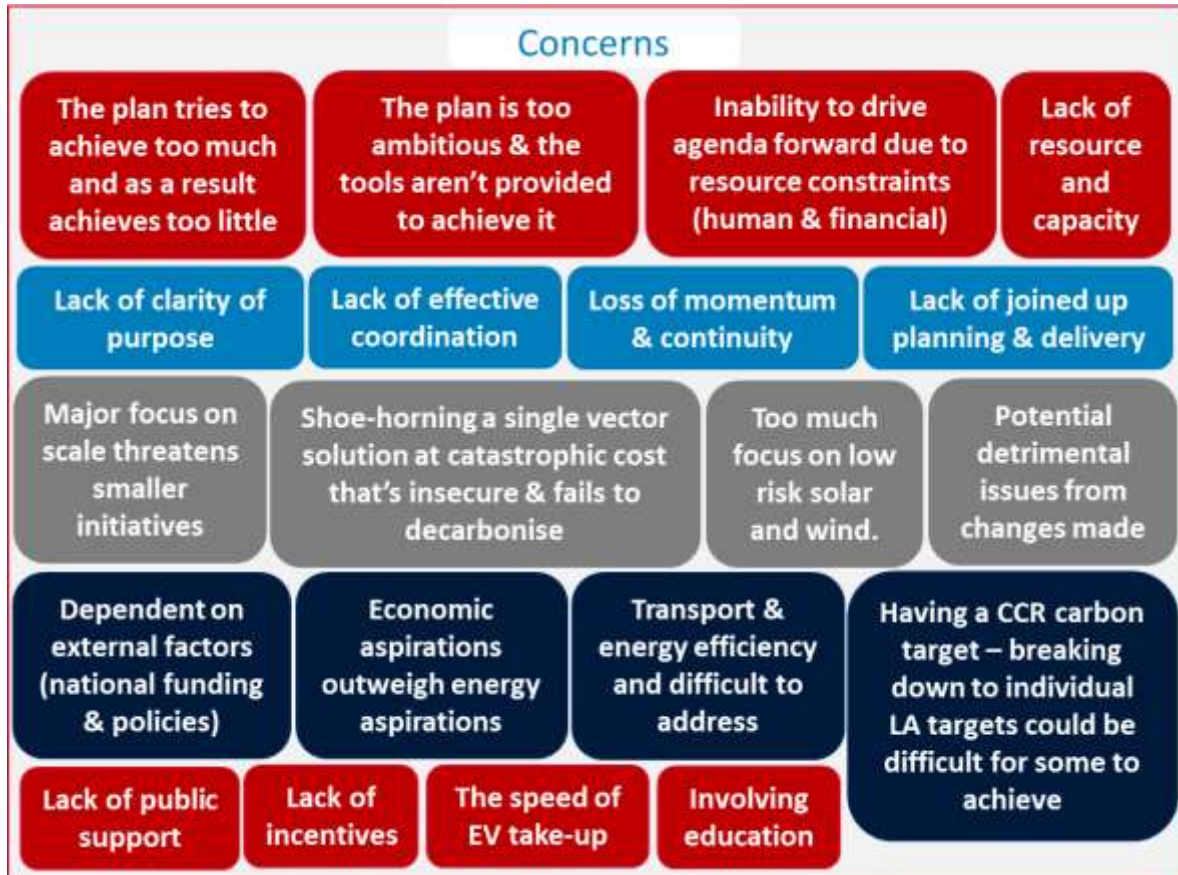
ENERGY STRATEGY HOPES

Participants hope the energy strategy and delivery plan will:



ENERGY STRATEGY CONCERNS

Workshop delegates expressed the following concerns:



EVALUATING THE SUCCESS OF THE REGIONAL ENERGY PLAN

Workshop participants identified six overall categories for how the regional energy plan could be judged: renewable energy and carbon targets, coordination and planning, jobs and business, support for the plan, increased understanding and a miscellaneous category. It is worth noting that many respondents indicated more than one way to evaluate the success of the regional energy plan.

Renewable energy and carbon targets

- Against the percentage of energy from renewables & the percentage energy from Wales.
- Accelerated percentage of renewable heat and electricity generation and usage.
- Energy generation from sustainable sources.
- Carbon reduction and energy consumption reduction.
- Achieving a clear pathway to zero emissions achieved – both carbon and air pollution.
- Against Welsh Government targets but also wellbeing standards.
- Both carbon reduction and economic growth. The two need to work hand in hand.

Coordination and Planning

- Clarifying roles and responsibilities for the development and delivery of the vision.
- Better coordination of all parties and stakeholders.

- More integrated, cross-functional delivery model. Joined up transport, energy, and housing.
- Developing an agreed action plan with clear timelines.
- Continuity of actual delivery.

Business and Jobs

- Jobs created.
- GVA input.
- The region is made more attractive to businesses wanting to locate in the CCR.
- Local increased job prospects above the national average salary across the whole of the region
- Measured against benefits, not just headline targets, but 'ripple' effects such as jobs, skills, training.
- Innovation development creating jobs for Wales.
- People of city region achieving well-being goals.

Support for the plan

- Shared vision of direction achieved.
- Agreed and championed by chief execs and leaders.

Developing an understanding of:

- Current and future demand.
- The technological options for meeting demand and the commercial options that relate to these technical options.

Miscellaneous

- Creation of infrastructure needed to enable decarbonisation to occur and businesses to grow
- How smart and flexible the integrated energy system is in meeting whole system demand at lowest cost to decarbonise growth.
- Against the visions and objectives.
- Key performance measures met
- Performance against long term goals.

Heat & Energy Efficiency

Examples, Current Projects, & Studies mentioned during the workshop

- [The Works](#) is a development in Blaenau Gwent that has a district heating network
- The [FLEXIS](#) project has undertaken some research on using mine water and heat pumps, for example this [report from a location in Bridgend](#). Not being done at scale.
- A study of 10,000 consumer in Bridgend suggested that ~80 – 81% of consumers were unable or unwilling to pay to make homes more efficient.
- Caerphilly are doing well at retrofitting their housing. Blaenau Gwent are also working to increasing energy efficiency of housing stock.

Key Priorities

- Fabric improvements need to be prioritised
- Important to help homeowners understand the benefits of energy efficient housing.
- Retrofitting housing and energy efficiency were seen as key priorities. Within this area, it's important to consider a whole house approach.
- Heat supply should be led by modelling

Strengths & Opportunities	Challenges & Concerns
Heat	
It is important to recognise that heat can be fully decarbonised.	There is a concern that a full electrification route for the decarbonisation of heat would hit a threshold where the cost increased catastrophically due to the grid infrastructure and the generation capacity required.
Green gas from anaerobic digestion and residual waste is an opportunity.	Green gases like bio-methane will never be enough to completely displace current gas and heating. However, they can be used in conjunction with smart hybrid systems. Nonetheless, there are concerns about competing needs on biogas.
Smart hybrid systems were viewed as having a very good potential for decarbonisation. Participants expressed that they liked the idea of hybrid heat pumps.	The low price of gas is a challenge for alternative heating fuels and systems.
Flexible heat solutions, like smart heat pumps, can provide additional value to customers/ aggregators. One potential opportunity to ameliorate the loss of the RHI for heat pumps would be to find a way to gain additional value from the flexibility a smart system can provide.	Concerns about the loss of the RHI and how this will affect the viability and deployment of heat pumps.
In the absence of hydrogen, bio-methane and wind is an option.	Lots of locations in the region are not high density which means heat networks are not appropriate. Hybrid Air Source Heat Pumps are a solution with minimal disruption, but less carbon reduction

<p>One potential opportunity to green the grid – local authorities could provide land assets to produce hydrogen from solar/wind and biogas from anaerobic digestion for heat.</p>	<p>Currently there is a lack of understanding surrounding the locations of waste heat and which are usable. No one is currently facilitating conversations about supply and demand.</p>
<p>The region is not doing enough to reduce waste. It's important to make the most use of the waste that is available. For example, anaerobic digestion is more efficient used to produce heat (gas) than used in combination with an engine. Food waste should be gasified rather than used for electricity.</p>	
<p>Energy Efficiency and retrofitting</p>	
<p>An opportunity to decrease fuel poverty would be to provide more support through subsidies and other programmes than the level of support available today.</p>	<p>Concern about those unable to pay to decarbonise or make homes more efficient and a concern about people in the grey area (in-between able to pay and unable to pay).</p>
<p>House ownership is longer than it was a decade ago - this could be a positive incentive for home owners to undertake an energy efficiency retrofit. In order to overcome preference to undertake other projects around the house, energy efficiency retrofits could be combined with the initial service (for example, when refurbishing a kitchen, energy efficiency could be included).</p>	<p>It's a struggle to get privately owned homes to reduce energy demand and retrofit poor quality housing. It's thought that that private home owners prefer to upgrade kitchen or bathroom than implement energy efficiency. Additionally, internal system changes (e.g. external wall insulation (EWI)/ internal wall insulation (IWI)) are difficult to sell.</p>
<p>Offsite construction for retrofit was considered an opportunity to reduce the intrusiveness of the process. This could have knock on supply chain benefits for new manufacturers. Other opportunities to decrease disruption of housing retrofit include pre-scanning buildings to determine needs, and buying in bulk to provide supplier certainty.</p>	<p>Engaging with homeowners is a big challenge that shouldn't be underestimated. The region needs better training and skills to support this. The third sector and community groups should also be brought in to support engagement, however it was felt that these organisations would also need training. It's important that other benefits are also communicated (such as the aesthetic value added by EWI) are communicated.</p>
<p>Social landlords are typically ahead of local authorities in terms of housing stock, particularly with new builds and access to innovation housing programme funding.</p>	<p>It's thought that it will take 5 – 10 years to embed the benefits of energy efficiency and retrofitting into the local culture. Pilot projects can help build confidence.</p>
<p>Caerphilly are doing well on retrofitting housing.</p>	<p>The local authority relationship with the body responsible for council housing can impede energy efficiency and retrofitting. For example, if this body is an arm's length body, the LA has less control.</p>
<p>Smart meters support public engagement with energy efficiency. In particular, platforms on smart phones were mentioned as a way that helped consumers translate temperature and comfort to money.</p>	<p>Another challenge for retrofitting is that poor installation of cavity wall insulation (CWI) and loft insulation (LI) give the sector a bad name.</p>
<p>Arbed has helped to develop and prioritise a pipeline of retrofit projects.</p>	<p>Local authorities have a lack of resource to support energy efficiency. For instance, they are</p>

	not maximising ECO funding due to lack of resources.
	When retrofitting homes, the problem of having scaffolding up for months on end can arise.

Comments from participants on where the market or policy may be heading

- In the future – potentially no gas connection to new homes
- At first people will need to pay upfront for heating and energy efficiency, but there is a view that, with time, a service market will be developed that will reduce upfront costs for consumers.
- 2025 – Lose the incentive to use wood waste to gasify heat – need to look for an alternative.

Moving Forwards

- In terms of energy efficiency in homes, it was recognised that working at the regional level should be promoted; it helps to insulate against local political changes through elections and provide more long-term support.
- Similarly, for heat and renewable projects, the role of a regional transactor to facilitate between local authorities and developers to develop projects would be beneficial. It would help with a lack of resource and bridge the gap between public and private sector.
- More broadly, the region should take a targeted approach for the evaluation of waste heat opportunities.
- Welsh Government could support mechanisms to de-risk the implementation of energy efficiency in homes unable to pay for retrofitting. Potential options include low rate loans or grants.
- Could the City deal challenge fund support innovation and research into ways of increasing the acceptability of energy efficiency measures in homes?
- Regional coordination on energy efficient homes is important. This includes sharing lessons. There was also interest to learn from the Dutch model/ [Energiesprong](#). Participants wanted to better understand if the Energiesprong approach is applicable for Wales given the diversity of housing types and lack of standardisation. This could lead to establishing a pilot and potentially scaling up.
- A dedicated housing energy efficiency specialist should be considered to support the region.
- The local authorities need legislation and policing of legislation to increase the energy efficiency of homes.
- Local authorities should be communicating with residents about the benefits of retrofitting and energy efficiency.
- It's important to find a way to "sell" homeowners on the benefits of energy efficiency and retrofitting.
- Freeing up cash for homeowners to retrofit homes could be considered. For example, a 0% loan to homeowners (c/w green deal and Scottish loans programme). Alternatively, it was also thought that the Welsh Government could give money to businesses to supply services, rather than homeowners to enable lower cost retrofits. This is thought to develop skills, create a hub for technologies, drive costs down, and to help to keep money locally.
- It was also thought that the region could support bigger retrofitting supply chains for South Wales

- Properties could be targeting by type – implementing the most effective measures for each category of property/building. This is more relevant to social housing than private housing.
- One group was curious to understand if there are opportunities for hydrogen storage in rock formations in the region. This is something that could be explored.
- Wrap around legislation could be considered (agriculture, waste, housing).
- Land transaction tax was mentioned as a mechanism that could be used to encourage energy efficiency.

Electricity & Flexibility

Examples, Current Projects, & Studies mentioned during the workshop

- Monmouthshire invested in a [5.7MW solar farm](#) a couple of years ago.
- Cardiff CC have a [8.7MW](#) solar PV scheme currently in planning.
- Cardiff have commissioned a feasibility study for the use of hydrogen in the city. The project hasn't started yet. A report could potentially be ready as soon as six months from now.

Key Priorities

- Ensure there is a mix of generating technologies

Strengths & Opportunities	Challenges & Concerns
An opportunity to reduce the burden of connection costs is to better coordinate between future demand and supply projects in order to share cost. This currently isn't really happening in Wales or anywhere else.	Grid constraints are a challenge that is very important. In Newport for example, it's very severe.
One group expressed interest in using excess renewable energy generation to create hydrogen.	It was expressed that it's important to understand granular electricity use changes (hour by hour and over the seasons).
One opportunity could be the Heads of the valley energy belt - could utilise that for resource.	It was felt that energy from waste was a short-term solution and not the way forwards.
New tariffs could replace the loss of FiTs (for example the Octopus export tariff).	It's important encourage a circular economy for nuclear waste.

Moving Forwards

- The benefits of a transactor role (mentioned in heat as well) between the DNO, public and private sector was re-iterated to secure deals for projects. Similarly, the idea of creating a TfW-like-body (arm's length developer) for new developments was discussed.
- It's important to engage with DSO to discuss constraints.
- Participants wanted to better understand if there is enough information around what the future demand will be.

- It was felt that local authorities need more information to make strategic decisions for infrastructure.
- Additionally, it was suggested that the region should be maximising generation on publicly owned land.
- It's important to feedback to Ofgem on price controls.
- The region should support better dissemination of information to facilitate behaviour change.
- It was suggested that the region could plan local energy infrastructure in tandem with economic growth across the region. For example, new housing sites could be paired with new solar projects that private wire electricity to development.
- Participants were also interested in mapping renewable potential against upcoming developments.
- In the future, there was also interest in piloting energy/ battery storage or creating innovative battery technology.

Transport

Examples, Current Projects, & Studies mentioned during the workshop

- Cardiff already have funding and are developing on street EV charging.
- Cardiff are also looking at introducing EVs to their own fleet.
- Gwent are undertaking a fleet review.
- Gwent are also looking at a network of EV charging.
- There was an initial review of infrastructure across the CCR. It looked at 11 sites and was fairly high level. A more comprehensive study has been commissioned – expanding work in Gwent to the rest of the region.
- A low emissions vehicle strategy is also being considered for the region: It is looking at both private vehicles and public transport and vehicles.
- The region has also commissioned a study looking at taxis.
- Caerphilly, Newport and Cardiff are looking at electric buses
- Stagecoach have received government funding to introduce a fleet of 60 electric buses.
- Caerphilly adopted an EV strategy last year.
- Caerphilly is also looking at a plan to develop a new interchange (bus and rail side by side) as part of a broader economic growth project.
- Hydrogen in the region:
 - Hydrogen Valley demonstrator
 - MCC hydrogen charging point in Abergavenny
- Relevant work being undertaken by the [Smart Living](#) programme
- MCC hydrogen charging point in Abergavenny
- Swansea fleet electrification was provided as a successful example that demonstrated the importance of having an enthusiastic fleet manager leading the project.
- TfW has made commitments to renewables; important that this is delivered.
- There is a trial project that is looking at smart charging EVs through the heating system.

Key Priorities

- Investment in public transportation is a key priority. It's important to recognise that the focus shouldn't only concentrate on electric vehicles.
- Affordability
- Metro connectivity & added additional nodes to increase rural accessibility. Additionally, make sure that the new metro station is integrated with other economic priorities and housing.
- Addressing the Newport and Cardiff trunk road bottleneck and lack of dedicated bus lane

Strengths & Opportunities	Challenges & Concerns
Flexible working can help reduce congestion and reduce the need to travel altogether.	Less densely populated, more rural areas are more challenging from a public transport perspective.
Electric pool cars in organisations was seen as another opportunity.	While there are good links from the Valleys down to Cardiff there are not good links between the Valleys. In other words, currently all transport leads to Cardiff and there is a need to link up the Heads of Valleys areas.
Wider policy objectives could include looking at how to reduce the need to travel. In terms of wellbeing, however, it's important this isn't at the cost of interaction because isolation and the high use of anti-depressants is a real concern in the region. Transport should facilitate social interaction.	Long journey times, infrequent trains, and low-quality rail journeys mean that it is important to improve the quality of existing rail network (invest in stations, interchanges, improve customer experience, improve frequency and quality of transport). Some of this is being addressed by the Metro programme.
Expanding infrastructure for cycling and potentially E-scooters is an important opportunity to decarbonise transport. Additionally, cycle lanes could be given priority to encourage cycling.	Currently cycle lanes are under developed and there aren't enough cycle lanes. This means that cyclists are contending with dangerous road conditions.
Furthermore, it was felt that there is a huge opportunity to ensure that public transport options are integrated. This could include including bicycles as part of an integrated ticket network.	The area is very hilly which may hinder the use of cycles.
There is an extensive off-road cycle network (but there isn't much visibility about where it is).	While West Cardiff has good cycling infrastructure and connectivity, East Cardiff is road based with little to no established cycle option. East Cardiff is also lacking rail options.
Likewise, it's important to improve infrastructure for pedestrians.	Fuel tax multiplier has been frozen for some time. Increasing tax would encourage use of public transport. This is out of the hands of Welsh Government.
Improving facilities in the work place could also facilitate more cycling (shower room, bicycle facility, and canopies).	While EVs are appropriate for smaller vehicles, it's less appropriate for larger vehicles which is a challenge. For buses and HGVs – transferring to compressed natural gas or biogas could be a lower carbon opportunity. Ultimately, heavy transport could move to hydrogen.

The public sector can act as leaders by using public transport and cycling: “be the change you want to see”.	One concern about implementing charging locations, and identifying sites to locate and charge fleets in, is the rapidly evolving nature of the technology – this can make it difficult to make decisions.
	Questions about how to incentivise operators to upgrade their fleets.
There is a good transport plan already in place. Need to make sure it is delivered.	Caerphilly faces the challenge of having one of the most polluted roads in the UK
Grid network capacity exists to be able to deploy many of the options (perhaps less in the Valleys).	Concern that low emission zones simply displace polluting vehicles.
There are contractual obligations in Wales to decarbonise transport with service providers.	From an air quality perspective, even if private cars are removed from a city or town centre, emissions from buses will still produce air quality issues.
Travel considering eco-tourism and tourism routes.	Concerns that the city deal employment and housing sites aren’t aligned with transport.
Future should consider vehicle sharing.	It’s worth noting that rail is outside of the region’s control.

Moving Forwards

- It's important to better profile people’s travel and journey habits to create a system that works for them. This includes seasonal changes (spring and summer months more active travel). Additionally, it would be worthwhile to undertake a strategic review of business properties to make sure that the hub serves these areas.
- It was suggested that the region studies what type of electricity supply is important for future homes given electric vehicles. If needed, changes could be made through planning or building regulations. Another group suggested that first it’s worth understanding if charging at home is the way to go with EVs or if money could be better spent to ameliorate range anxiety (spending money on at home charging or on more charging stations).
- It was thought that coordinating charging points regionally is a better approach than local authorities individually planning charging point.
- It was also suggested that all LA owned fleets should be electric, apart from refuse vehicles.
- There is also a need for visible leadership, using own land to get charging points in town centre, promoting it to people.

Governance

The governance for the regional energy planning will use the framework for the city deal investment operations. It will consult with the Regional Economic Partnership, Regional Business Council, Regional Skills Partnership.

Annex 1. - Feedback from Participants collected during the workshop

Flip Chart Discussion: Strategic Vision & Objectives

WHAT WOULD BE YOUR VISION STATEMENT FOR THE CARDIFF CAPITAL REGION ENERGY PLAN?

- Innovative, affordable, and accessible energy solutions enhancing skills, creating jobs in Wales
- Adopts use of all resources to support decarbonisation solutions. Acknowledges timescales including supplier preparatory timelines for the momentum to be achieved.
- To meet Welsh Government targets but ensure wider benefits are realised for the people of the region.
- Ambitious and challenging plan to provide the region with an energy system for the future, improving the quality of wellbeing for residents.
- Affordable, low carbon, secure, multi-vector, whole-system
- Don't follow Manchester – Heading for total failure
- The city region has minimised energy demand, is optimally managing and is delivering all possible energy through regionally beneficial low carbon sources
- Needs to be ONE region! At present, it's always 10 separate authorities “attempting” to work as one. In reality, local authority is coming first, then region. Governance crucial. Members looking out for their own patch!
- Be a leading region delivering real change for our citizens and businesses.
- High quality energy network that is integrated, affordable, accessible, and meets CCR's needs.
- Lead by example. Innovate/develop and inspire with a worldwide impact.

WOULD YOU LIKE TO SEE A CARBON REDUCTION TARGET IN THE REGIONAL ENERGY PLAN FOR NW? WHAT LEVEL OF AMBITION WOULD YOU AIM FOR?

Would you like to see a carbon reduction target in the regional energy plan for CCR?

Yes: 15

No: 2

Additional information was provided for the “No” responses:

- One person does not think that a target should be set for the region because creating more targets can dilute the overall target. It also creates more reporting requirements where time is spent reporting rather than doing
- Another person that responded “No”, said that he thought many of the city targets that have been set recently are unachievable and that cities are all competing to set the lowest target without considering the practicalities. If a target is set – it should be set with the same rigor that we consider health and safety (mentioning at the start of meetings, etc.)

What should be the level of ambition? High/Low? What target by what year? Zero carbon vs. net zero carbon?

Welsh Government target (80% by 2050): 9

1.5 degree target: 4

Above a 1.5 degree target: 1

Other comments:

- Yes, percentage of identified potential achieve or align with Wales wide carbon reduction targets.
- What is achievable? How? What will that look like? – Answer these questions for early target and I could make an informed choice about what the target should be.
- In line with Welsh Government Policy – all contributing to the same aims.
- The target should meet the aims of Welsh Government: 80% reduction in emissions (from 1990) by 2050

WHAT ARE YOUR HOPES FOR THE CCR REGIONAL ENERGY PLAN?

- Innovative and not constrained by short term views
- Pull people out of fuel poverty and improve quality of life
- Integrated delivery model
- That we have a multi-vector system to meet our needs affordably and balance the best use of our existing assets and resources
- To stimulate an appetite for innovative development of new energy such as hydrogen fuel cells.
- A true regional approach – All LA's mandated to make significant changes
- Wider benefits to be felt by local communities (skills, employment, profits)
- That it will be possible to make significant carbon reductions in transport and domestic energy use.
- That it's possible to achieve a shift from personal car use to mass transit (replacing current cars with EVs doesn't solve everything).
- That energy efficiency is a core focus and a programme of efficiency improvements can be delivered for domestic housing.
- More flexible/multi-year funding streams
- To raise local capacity and knowledge for delivery
- Bring decarbonisation into mainstream
- Lower costs and open up markets
- Create new funding streams
- Decarbonisation - increases in renewables
- That is will develop a shared vision and approach to delivery
- Collaborative
- Joined up to reduce cross boundary opportunities
- Ambitious
- Resourced

- Education – culture change needed to help drive missions approach
- It can help stimulate programme of public and private investment in carbon reduction across the region
- Practical implementation is achievable
- We work across our organisational boundaries and demonstrate consistent and aligned ambition and leadership
- That the plan can properly develop local training for people and new businesses (e.g. zero carbon timber homes built in new factories)
- That an ambitious financing programme can be secured to deliver the plans needed rapidly
- Connect to other city deal regions
- We don't fall back on the excuse "it's difficult" because it is, but it's precisely why we need to do it!

WHAT ARE YOUR CONCERNS FOR THE CCR REGIONAL ENERGY PLAN?

- Involvement of education
- Understanding Welsh policy
- Inability to drive agenda forward because of resource constraints (both human and financial)
- Lack of joined up planning and delivery
- Too much focus on low risk solar and wind. Too much electric generation = lower returns
- Transport and domestic energy use are difficult areas to address!
- Lack of clarity of purpose
- Major focus on scale threatens smaller initiatives that could prove important
- Lack of resources and capacity where only internal officials can do.
- The plan tries to do too much and as a result achieves too little.
- Lack of effective coordination
- Loss of momentum and continuity
- Having a CCRC carbon reduction target – breaking down further to individual LA targets could be more difficult to achieve for some
- Too ambitious - Tools aren't provided to facilitate this. At present developers meet "standards" – no incentive to go better/higher.
- Economic aspirations may outweigh energy aspirations.
- Any changes made - does it create detrimental issues in other areas?
- The plan will be very dependent on external factors, such as national funding and policy.
- The speed of EV take-up
- Shoe-horning a single vector solution at catastrophic cost that's insecure and fails to decarbonise and deliver clean growth
- Lack of public support

HOW SHOULD THE REGIONAL ENERGY PLAN'S SUCCESS BE JUDGED

- More integrated and cross functional delivery model. Re-joined up transport, energy & housing.
- Success should be judged against the vision and objectives.
- Success: plan

- shared vision of direction achieved
- Clearer understanding of roles/responsibilities for development and delivery of vision
- Key performance measures met
- People of city region achieving well-being goals
- Better coordination of all the parties and stakeholders
- Continuity of actual delivery
- Clarifying roles and responsibilities
- Developing an agreed action plan with clear timelines
- How smart and flexible the integrated energy system is in meeting whole system demand at lowest cost to decarbonise growth
- Accelerated percentage of renewable heat and electricity generation and usage
- An understanding of:
 - Current demand
 - Future demand
 - Tech options for meeting demand
 - Commercial options for the tech options
 - Agreed and championed by chief execs and leaders and preferred options
- Against the high-level targets for:
 - Energy generation (from sustainable sources)
 - Carbon reduction and energy consumption reduction
 - Jobs created
 - Input on GVA, etc.
- By:
 - 1) the region made attractive to business wanting to locate here
 - 2) creation of infrastructure needed to enable decarbonisation to occur and businesses to grow
- Local increased job prospects above the national average salary across the whole of the region
- Economic growth and reduction in carbon at the same time. Two need to work hand in hand.
- Percentage of energy from renewables, percentage energy from Wales.
- Measured against benefits, not just headline targets but ‘ripple’ effect such as jobs, skills, training.
- A clear pathway towards zero emissions achieved – both carbon and air pollution
- Success should be judged against Welsh Government carbon targets but also social and wellbeing standards.
- By:
 - Performance long term goals,
 - innovation development creating jobs for Wales,
 - focus on 80% by 2050.

Annex 2 - Feedback from Roundtables

Key questions that informed the round table discussion for each area:

- **What are the priorities for the CCR?**
- **What are the key local strengths & opportunities?**
- **What are the key sector weaknesses & barriers?**
- **What needs to change and what actions should be taken to enable this change?**

TRANSPORT

Group 1 Notes

- 11 strategic hubs
- Gwent transport
- OLEV on street charging
- Caerphilly and Newport looking at electric buses (and Cardiff)
- Hydrogen – Gwent
- MCC hydrogen charging point in Abergavenny
- Riversimple
- Jacobs (?) WG funded
- LA targets for EV fleet
- Public transport – applicable to urban areas/valley metro
- Swansea fleet electrification – led by fleet manager
- Priority for CCR?
 - Metro connectivity and additional nodes
 - Newport and Cardiff trunk road – bottleneck no dedicated bus lane
 - Priority to invest in public transport
 - Affordability
 - Carbon footprint
 - 5% increase of GVA

Group 2 Notes

Principles - not to just replace fossil fuel cars with EVs - need to travel less and modal shift, EVs should be last resort- car is a luxury

Metro/train/bus - need to improve quality of existing rail network (invest in stations and interchanges, improve customer experience, improve frequency and quality of transport) - some of this will be achieved through new metro

Long journey times - waits at station - better profiling of transport habits to look at routes people travel

Ebbw Vale to Cardiff only once an hour - lots of long waits, not very flexible

Need more regular transport

Transport for Wales - franchise renewed (not for profit) - need to do what they've said they're going to do

Infrastructure for cycling (e scooters)

Better for pedestrians

Need more money and investment

Active travel - better separate cycle lanes - give them the priority - gradually force the change

CCR is very hilly

Dealing with the problems of dangerous road conditions (not enough separate cycle lanes)

Fuel tax multiplier - been frozen for last decade - WG don't really have strings to pull here but doing that would influence massive change if fuel prices went up - people would use public transport.

Should we add more tax on car fuel b/c it's been frozen.

See a change in spring and summer months with outdoor/active travel too

Improving facilities in work places - shower room, bicycle facility, canopies and schools for parents who are waiting etc.

Role of public sector as leaders to set an example - how many people in the CCR are public sector employees - be the change you want to see

Flexible working to change working hours, reduce congestion and reduce travel altogether (videoconferencing, using skype)

travel hierarchy - better fleet practices/cleaner fleets

Agreement across PSB partners - this is a standard travel plan model (e.g. pool cars, procurement, standards)

Electric pool cars in organisations

Considering what type of electricity supply goes into properties - through planning or building regs

Put a visible network of charging out there and make a song and dance about it

Challenge to get fleet

Smaller vehicles - EVs fine, larger is harder

Identifying sites to locate and charge fleet, nervousness about making decisions - particularly when tech is changing. (Some kind of regional coordination to make those decisions jointly and plan out charging infrastructure and sites – it makes sense to do it at a regional scale).

All LA owned fleet should be electric, apart from maybe refuse vehicles

Need visible leadership, using own land to get charging points in town centre, promoting it to people

More demand than supply for EVs

Enforce low emissions zone - Cardiff etc. - influence change (double check low emissions zone in Cardiff)

Issue with low emission zones is displacement of polluting vehicles

There is an area that is one of the most polluted areas in the UK (low lying valley)

Group 3 Notes

- It shouldn't all be about private vehicles – it should also be about public transport
- Even if you strip out private cars from the city and town centres, you have buses which are an air quality issue
- Integration of public transport option
- Bike (part of integrated ticket network?)
- Start with the things that you can make the biggest impact on investment with – what evaluation appraisal will you have for any investment (e.g. achieve x% lower emissions, x% carbon emissions, jobs, GVA) – the scoring is important.
- It shouldn't be about electrifying all of transport. For buses and HGVs – transferring to compressed natural gas – lower carbon emissions but even lower if it is a biogas bus. Ultimately, his vision is that heavy transport will go to hydrogen.
- Need to adopt a sub-regional view and to decentralise economic activities. Within transport for Wales, there is a drive to move the Cardiff hub out so that when you look at train travel in the metro area. At the moment- everything has to come into Cardiff – make it so you don't have to come into Cardiff. Reduces need to travel so far. A better spread in terms of getting people around is a priority

- Wider policy objectives: travel demand or restraint – look at how to reduce the need to travel.
- In terms of well-being and things like working from home can be isolating – so it's important to realise that social interaction shouldn't be lost. Transport should facilitate that (currently region spends massively on anti-depressants so important to consider isolation).
- Strategic review of business properties – look at location. If you want to create the hub, it needs to be closer to where the public services are.
- City deal employment and housing sites are not aligned with transport
- New metro stations – make sure that everything is integrated and that it makes sense

What are the strengths and opportunities?

- The transport plan in place already was considered to be good – it needs to be delivered. Challenges on how to make this happen
- Contractual obligations in Wales to decarbonise
- Grid network capacity exists to be able to deploy those options (maybe less so up the valleys).
- Extensive off-road cycle network (but no one knows where it is)
- West Cardiff can cycle everywhere

What are the weakness and challenges?

- How to green fleets
- From a Cardiff perspective- east of Cardiff everything is road based (no rail, scared of bicycle options)
- Heads of the Valleys areas – challenge to get stuff from east to west and west to east. (currently stuff goes north to south).
- Need to link up the Valleys areas
- Hubs aren't connected very well.
- Absence of cycling infrastructure
- City Deal's sites and housing sites are not aligned

What needs to be changed to facilitate this?

- How do you incentivise operators to upgrade their fleets?

Other

- Rail is outside of the region's control
- Almost like you need an eco-tourism travel.
- Charging at home – is that the way we want to go with EVs, or do we want to plough money into the technology to ameliorate things like range anxiety. Are we going to put our efforts into charging in residential areas or putting the money into more charging stations?
- Future: moving forward to vehicle sharing.

Group 1 Notes

- Fabric improvements need to be prioritised
- Mine water GWHP – Flexis –Cardiff University
- Taffswell – thermal well
- Heat networks – public ownership of infrastructure
- Blaenau Gwent heat network – The Works
- Biomass and Hydrogen

Group 2 Notes

Retrofitting homes

Demand reduction - retrofit of poor-quality housing - struggle in the private sector

Need to sell benefits to homeowners

Modelling Energiesprong - free kitchen - built into whole house costs

Internal system change (e.g. ewi/iwi) difficult to sell

Modelling the Dutch way of doing things

Providing incentives

Innovation/research into doing this a different way to make it more acceptable/easier for the homeowner/increase understanding of benefits - could this be part of the city deal challenge fund??

Addressing the barriers/disruption a/w disruption

Problem of scaffolding being up for months on end

Pre scan buildings - decide what it needs

Key thing is "how is it done" - less intrusive

Model of offsite construction

Supply chain benefits - can we set up new manufacturers

Buying in bulk to provide supplier certainty

Roles: local authority, need for legislation and policing, need for communication to help people see the benefits

Blaenau Gwent - transferred housing stock to community landlord - have the same aspirations as Caerphilly (who are doing really well on retrofitting housing) but not the same control

Social landlords typically ahead of Las on housing stock, particularly with new build (access innovation housing programme funding)

Challenge is private housing - e.g. persimmon for new build, but 80% homes need retrofitting

Engaging with homeowners a big challenge

Needing better training/skills

Freeing up cash - e.g. a 0% loan to home owner (c/w green deal and Scottish loans programme)

Could WG give money to businesses to supply service (rather than to homeowners) and enable them to do the upgrade at lower cost rather than direct to homes - investing in the company - creating a hub to create technology/skills etc - drive costs down - upskilling and replication - help to keep money and investment locally - money into supply chain rather than end user

Helping with future inward investment - creating bigger supply chains for South Wales - region could take a stake in this

Trying to mimic the growth of PV - market stimulus initially driven by public sector, then private sector - then neighbours want to replicate

Marketing other benefits - EWI adding value to house, making it look nicer

Public are apprehensive - would need 5-10 years for this to embed to culture

Issues of CWI and LI - poor installations gives the sector a bad name

Need to do pilots to build confidence

Can't underestimate the engagement difficulty - bringing in third sector/community groups to help with engagement

Smart meters helping with engagement on energy - platforms on smart phones - understanding how money translates to comfort

SMETS2/HIVE systems

Good product and sound plan / build engagement strategy

Consider fuel poverty angle - subsidised

Investing in tech to make it easier to retrofit

Needing to train up orgs (e.g. third sector)

Regional coordination of this across CCR - bring Las together - learn from Dutch/Energiesprong

Establish and pilot a concept then look to scale up

Need some specialist, dedicated resource to manage this across the CCR

Reflecting the variation between LA structures / housing stock ownerships

Individual Las don't have resource to do this on private housing

Not maximising even ECO funding because of lack of resource in LAs

Arbed in WG - use to develop and prioritise pipeline

Working on a regional level helps insulate against local political changes through elections which is in flux

Whole house approach to energy efficiency retrofit

How applicable is energiesprong to housing types in Wales - given not much standardisation of housing types

Heat supply

Needs to be led by modelling

Lots of on gas grid properties - like the idea of hybrid heat pumps if limited impacts

Lots of locations not high density - likely looking at hybrid ASHP - minimal disruption, less CO2 reduction

Greening of grid - Las could provide land assets to produce hydrogen (from solar/wind) and biogas (from AD) for heat

What opportunities are there for hydrogen storage in rock formations in CCR?

Energy storage in battery storage - could CCR invest into piloting / creating innovative battery technology

Need a transactor role - facilitate between LA and the developers to develop projects, help with lack of resource (e.g. manifested in viridor EfW) - bridging gap between public and private sector e.g. in Newport - there are new developments but no resource to go and talk to developers about developing projects

Heat networks - where are sources of waste heat, who's facilitating the conversation between supply and demand

Focused on waste heat from private sector

Focus on decarbonising heat in the industrial sector - pick hitters

Group 3 Notes

Strengths and opportunities

- It can be fully decarbonised. Frequently people talk about full electrification and hydrogen. The full electrification route – there is a threshold where cost increased catastrophically (due to the grid infrastructure and the generation capacity required).
- Green gas – from anaerobic digestion & residual waste
- Existing infrastructure and processes – you can do it, except for the questions that remain on hydrogen
- Without hydrogen you can do bio methane and wind for everybody.

- Changes in the regulatory environment: Energy System Catapult is looking at electrification for homes at a long term 2050; BEIS – no new gas connection to new home

Challenges and weaknesses

- Green gases – bio methane – will never be enough to displace current gas and heating. Smart hybrid systems
- Fuel price ratio of gas is a huge issue for any alternative energy
- Suppression of RHI for heat pumps
- Competing needs on bio gas

What can be done for it?

- Wrap around legislation (agriculture, waste, housing)
- Land transaction cost
- Low cost loans
- Create incentives for people to invest in more flexible/hybrid systems
- Target property by types and see which types of measures can be applied for each types: social housing can allow these changes, more than private dwellings.

Other

- Look at the consumer side – the split between those who are able to pay and those who can't and those in the grey area in between. A real issue in this particular area – to incentivise people to decarbonise or make their homes more fuel efficient – no cash to spend.
- 10,000 consumers in Bridgend: 80 – 81% were unwilling or unable to change. Welsh Government can put things in place to de-risk these things. Maybe low rate loans or grants/loans.
- There is a period of time where paying upfront costs for things will exist until the services market comes in. the more we get flexibility value coming through – flexible systems like hybrids give.... Can be flexibility value through to customers and the aggregators.
- House ownership is longer than it was a decade ago. Cost of moving could be a positive- if someone knows they will be in a house, they are more likely to invest in it b/c they can see the difference. Also, the difference between a private landlord and a registered social landlord.
- Private owner/occupiers other ticket items like a new bathroom and a kitchen often take preference of EE.
- Struggling b/c gas is so cheap that it's not driving change.
- If the fuel price ratio is a huge ratio for the uptake of other heating systems, also a heat pump is an added load being fed from flexible sources to meet the added load. Its decarbonising the existing heat sources and increasing flexible sources.
- What do we do about the RHI and heat pumps?
 - Find a way to get more flexibility value with heat pumps

ELECTRICITY AND FLEXIBILITY

Group 1 Notes

- Transport and Electric Space and Hot water heating (ESWH)
- RE to create biogas (and hydrogen)
- Requirement for a mix of generating technologies
- Monetize social benefit – not generally used/viewed
- Monmouthshire
- Cardiff 8.7MW Scheme

Group 2 Notes

Maximising publicly owned land

Transactor role between DNO, public and private sector to secure deals for projects

Cost of upgrading goes onto connection

If generating elec, it's to decarbonise, export etc.

Come up with local network arrangements - engagement with DSO to say we're constrained

Mapping resource against demand

Forward thinking - where do we want new development and housing - this is where you dedicate land for local energy schemes

Create TFW type arm's length developer for new development

Heads of the Valleys energy belt - could utilise that for resource?

Grid constraints - Newport particularly bad

Need to facilitate the infrastructure planning - joint discussion between projects (share cost of connection across project)

Group 3 Notes

- FiTs not there anymore – but there is a new Octopus agile tariff (prices for electricity). There is also an agile export tariff so if you have solar on your roof you could have the agile tariff (which is just ahead of the FiTs)
- Looking at your home as a power station.
- Question: is there enough information around what the future demand will be?
- Hour by hour and over the seasons. Important to understand the minute by minute changes (inter-seasonal issues)
- View on nuclear as a source of electricity: personal views.
 - The greater the baseload of nuclear, the lower volumes of intermittent capacity things you need. The higher the baseload, the lower the capacity of intermittent renewables.
- What about - Short term energy from waste? At the moment there are 2 incinerators in Wales that are running flat out. The feedstock going there will have to reduce. Ultimately some members of the group didn't think that this was a good way forward.
- We're not doing enough to reduce waste.
- Important to make the most use of what waste we do have. Anaerobic digestion with engine next to it is very inefficient. You use the heat at the end of it rather than Food waste gasified rather than used for electricity.
- 2025 lose the incentive to use food waste to gasify heat need to look for an alternative.

- Somebody needs to make strategic decisions on future infrastructure. Need more information to make these decisions?
- It's also important to consider who owns the decision and what are the drivers behind it

Strengths and opportunities

- A lot of opportunity.

Changes and Priorities

- Need to understand the hourly profile of electricity consumption
- Feedback to Ofgem on price controls is important
- Need to encourage a circular economy for nuclear waste
- Better disseminate information to allow behavioural change

Annex 3. – Perspective Session Summary

IAN SANDFORD

- DNO - they operate distributing power across 7.9 million homes
- Network changes: Renewable energy and how to operate a smart system and a 2 way movement of power. Moving from DNO (Distribution Network Operator) to DSO (Distribution System Operator) - includes involvement in flexibility market and finding ways to manage the network to reduce need to invest in network infrastructure.
- So far in SW they have connected 2.1 GW of generation
- Max demand in South Wales: peak demand 1.9GW (last year 1.7GW)
- How will generation grow? - different scenarios
- Consumer Power is the scenario that aligns with the Welsh Government Policy ambition
- What will happen to demand from EVS? - different scenarios.
- There is a new WPD strategy out to 2030 and it looks at investment for these different scenarios.

CHRIS SUTTON, SUTTON CONSULTING

- What does business look for from property - employment property is part of the business environment includes skills, infrastructure labour, planning, regulation. Skills and infrastructure most important but property is something that is very particular to a region
- At the heat of our region, we have a premier league city. The same amount of office space built in Leeds, Birmingham. It is successful. It's viable in terms of employment property - new floor space being built. Public sector hub (dominated by HMRC), this starts to compete with other policies - you get economy of scale - new buildings, efficient buildings, life at the heart of the region except draining the life of the rest of the region. The exception is Taff Vale in Pontypridd.
- How are we going to generate more office space in the region? Newport has advantage that - Bristol is closer & London is closer (than Cardiff). A focus on larger towns and cities. The days of the old business park on motor way junctions are struggling.
- Industrial - grade A building leading to a grade A occupier (Aston Martin). Building drove decision to locate. They came to South Wales because they couldn't get the labour in Mid Wales.
- The stock of building in Wales - creeping obsolescence - properties become obsolete after 40 - 50 years. We are living with an aging stock of buildings. When new buildings do happen it is where there is a bespoke requirement for a building (high bay dock, distribution unit, or a rail connected building). We need a selection of sites. Issues with sites - they take a lot of time to prepare and deliver. Example: Bought in 2003 - it took 15 years to prepare site for the market (a leading regeneration specialist).
- Obsolesces: state of the art 1948
- Key policy changes? UK 2011 energy act - April 2018 - we are asking people to improve EE of properties. No prosecutions. We need to enforce legislation.
- Taxes. We've got a Government that want to put tools in the Welsh Government.
- Land Transaction Tax: 6% for a development over 1 million pounds - the same tax is 5% in England and 4.5% in Scotland – a disincentive to development in Wales
- Vacant Land Tax – vacant land required as part of development process. 3 – 7% VLT disincentivises development
- Prescribing cost of development not incentivising development

- Planning Act: Strategic Development Plan is a key win - give economies of scale in delivering LDP and gives direction.
- The Compound semi-conductor IQE is one of the first developments.
- Expectation management - slide on this was an IWA workshop on metro and what metro might do. We're electrifying a rail way line, but we are going to deliver the world.
- Conclusion: We need a property strategy. It needs to be done on a demand perspective cross cut with a sectoral perspective, but also making sure that we don't leave communities behind.
- Occupiers are pressing for more EE buildings = There is a demand perspective. There is a cost with achieving a BREAM Excellent building vs. a BREAM very good. There is a cost problem with delivering BREAM excellent floor space.
- Service sector has generally seen a move to city and town centres.
- We need a balanced portfolio of sites.

CLIVE CAMPBELL, CCRTA

- From a transport perspective there is growing momentum on EVs (but we are early days). There aren't a huge number of early examples - they are doing a lot of feasibility work. Caerphilly adopted an EV strategy last year and are encouraging others to do so. Looking at network of EV charging across Gwent. It will focus on the public sector facilities. They are looking to work with private sector, third sector. Also looking at greening their own fleet. Across the wider CCR, there are other studies going on. There was an initial review of infrastructure across the regions. It only looked at 11 sites - looking at infrastructure and EV demand. When they look at this field the technology and innovation is moving at quite a pace. Important to have more collaboration.
- Initial study was constrained and limited, they have now commissioned a more comprehensive study - what they are doing in Gwent, they have expanded to the rest of the region. It will lead to developing proposals that they can target to implement. Also looking at a local emissions vehicle strategy. It is looking at both private vehicles and public transport and vehicles. That will give next steps, timelines, and benefits. Throughout these strategies, they want a more coordinated approach.
- They have also commissioned a feasibility study looking at taxis.
- Focusing back on Caerphilly, one of their projects is looking at Caerphilly town. They have a broader project looking at economic growth - part of that is looking at the transport infrastructure required. Looking at developing a new interchange (bus and rail side by side). Linked to that Stagecoach have received government funding to introduce an electric bus fleet of 60 vehicles. This will make a real contribution to improving air quality and towards electric vehicles. They are also keen to talk to taxi drivers about opportunities for EVs.
- Cardiff already have funding and are in the process of developing on street EV charging (areas without off-street parking). Also looking at introducing EVs in their own fleet (about 92 vehicles). Developed guidance for developers on EV charging. They also have the core valley transformation programme - high-level outcomes - 100% electrified network and service from 100% sustainable energy. That is the target - they don't have the details on how that is going to be achieved.
- Out of all of this there will be issues and opportunities. How can we develop strategic hubs? What opportunities are there for energy generation? Options for LAs to use their own land holdings.
- Funding is a key issue, as is air quality.
- Along with issue of reducing carbon emissions, important to reduce energy demand. Some LAs have implemented street lighting initiatives that have achieved substantial energy and carbon savings.

- If we change all vehicles from diesel to EVs - great from an environmental perspective. From a transport perspective, that doesn't ease congestion and it also doesn't encourage the use of public transportation i.e. modal shift is required.
- From their perspective, they would like to get clear roles and responsibility - there are a lot of actors in this space.

Annex 4. – Introduction Sessions Summary

INTRODUCTION NICOLA SOMERVILE & JANE FORSHAW

Nicola

- Overview of the CCR and the City deal within the region and the relationship between energy and the partners in that process
- Important to acknowledge the work being done in Bridgend
- Important to look at the bigger energy picture throughout the region through generation, demand and distribution
- Very keen as a capital region
- Taking a holistic approach - energy cuts across housing, transport, infrastructure etc themes
- Recently, CCR has obtained in principal approval to take forward a strategic development plan
- We want to understand our strengths, opportunities, threats, and weaknesses for the region
- CCR is Developing a Wider Investment Framework (WIF) for further investment: infrastructure, challenge, and innovation are the core themes - energy could fit into any of these themes

Jane

- Mission driven approach. Suggested a low carbon theme, inclusive and competitive growth. Key: how can we take the good work from this energy planning and make it real (inclusive and competitive). Because the city deal has had a few years now - to what extent can we still push for existing initiatives to include low carbon.

INTRODUCTION TO WGES – JONATHAN OATES

- Published their first statutory decarbonisation plan. Interim carbon budgets and targets. By 2020 they will have decarbonised by 27%. Target of 80% reduction by 2050.
- The first statutory plan described a range of actions for meeting the first carbon budget and proposals to see the decarbonisation journey through the 2030. The Committee for Climate Change has said we need to decarbonise everything everywhere. Some sectors will decarbonise less than others, but all need to decarbonise. Housing will need to achieve 95% reductions to compensate for harder to deal with sectors such as agriculture and steel. The question becomes at what period. We have technologies but there are practical challenges. CCS and CCUS are part of that.
- A number of years ago, a number of people started asking the question: what are the benefits to Wales in decarbonising? You can decarbonise by opening up your land for wind turbines for multinationals - while there are jobs in that, the people who benefit are the investors. In paying energy bill, Wales exports ~15% of GDP (15% of GDP is paid out of Wales through bills). In the old centralised energy system, we had little choice in how we an effect that. With distributed generation, EVS, electric heating, demand management and reduction we have a clear opportunity to affect that 15% if we want to. That is the challenge that we have. It will happen to us, it is a case of how much Wales benefits.
- 4 years ago they started investing in a programme (Green Growth Wales) that has become the WGES. It started because there was a pipeline that wasn't going anywhere due to a

perceived lack of capital, a lack of capacity, and a lack of capability. WGES provides investment routes for projects through Salix funding. To put in context Salix were investing 1.5 million pounds a year. And now they invest ~23 million a year.

- 2 things they are trying to achieve: let's start doing the easy stuff (changing light bulbs - but not 10 at a time, 10,000 at a time) but with the view that a new energy system is coming down the track. They looked to Europe where community retains more benefits. They look to see what kind of model they can achieve. In Jonathan's opinion, they are now at the pivot from doing the easy stuff.
- The regional energy mapping is about taking a whole systems view. What is the demand now, what might it be in the future, how can we deliver it through Welsh-owned infrastructure. We won't do that without demand reduction and response. Once we understand this, we can understand the commercial options. Part of what they are doing with the decarbonisation is to send signals to the supply chains in Europe. For example, in his opinion, you will not be able to sell high carbon cement in Europe in 20 years time. So, how can we help our cement supplier to produce low carbon cement.
- His colleagues are doing work to map where the carbon emissions occur from procurement. If they can send the signals to the supply chain, they can support them.
- Reiterated importance of whole systems view.
- Jane: In parallel there is the economic action plan
- Helen added in: Economic Action Plan. Economy department has had a restructure - there is a regional approach (Mid, North, South and South East division) there are also pan-Wales elements. They have a thematic and foundations group: business and energy side of things. One of the things that they are looking to do is to put some additional support for decarbonisation and EE to fill a gap. Some stuff that the Carbon Trust do for them and some stuff for energy production and they are trying to fill the gap. Working Group going forward to get more of a feel. Working with the property team also and they are taking that forward. Very new team and will be seeing a lot more in the region. The Economic action plan says that the Welsh Government will not support any company that isn't reducing their carbon footprint. Look at if the company is delivering low carbon products or if they have an ambition to do so. They want to support organisations that are supporting decarbonisation.
- The budgets have about £20 million to allocate - projects are chomping to use it (heat networks, etc.). The £70 million will achieve £240 million of savings in the public sector & they get their money back. If the projects come forward and they can support them, they will.

Future Generations Assessment






<p>Name of the Officer completing the evaluation:</p> <p>Kellie Beirne</p> <p>Phone no: 07826 919286 E-mail: kellie.beirne@cardiff.gov.uk</p>	<p>Please give a brief description of the aims of the proposal</p> <p>Setting out stakeholder-informed energy vision for CCR</p>
<p>Proposal: Energy vision</p>	<p>Date Future Generations Evaluation form completed: 09 December 2019</p>

1. Does your proposal deliver any of the well-being goals below? Please explain the impact (positive and negative) you expect, together with suggestions of how to mitigate negative impacts or better contribute to the goal.

Well Being Goal	Does the proposal contribute to this goal? Describe the positive and negative impacts.	What actions have been/will be taken to mitigate any negative impacts or better contribute to positive impacts?
<p>A prosperous Wales Efficient use of resources, skilled, educated people, generates wealth, provides jobs</p>	<p>The energy vision work sets out a clean growth agenda – the potential to safeguard planetary life support systems whilst growing regional income.</p>	<p>The vision has bene stakeholder informed and analysis of issues independently informed by data, evidemnce and insights.</p> <p>To optimize potential for impact this will be incorporated into a full action plan with a resultant ‘energy mission’.</p>
<p>A resilient Wales Maintain and enhance biodiversity and ecosystems that support resilience and can adapt to change (e.g. climate change)</p>	<p>The report goes to the heart of the sustainability and resielineec mandate.</p>	<p>More work needs to be done to show sustainability and economic growth are not mutually exclusive and CCR has the opportunity to demonstrate this.</p>

Well Being Goal	Does the proposal contribute to this goal? Describe the positive and negative impacts.	What actions have been/will be taken to mitigate any negative impacts or better contribute to positive impacts?
<p>A healthier Wales People's physical and mental wellbeing is maximized and health impacts are understood</p>	<p>Direct impact in terms of health, wellbeing and environmental benefits.</p>	<p>Climate crisis is causing worry and concern. More work will be needed in future to understand the link between anxiety and mental health and the state of the environment.</p>
<p>A Wales of cohesive communities Communities are attractive, viable, safe and well connected</p>	<p>Safeguarding environment and world key to ensuring communities can thrive</p>	<p>ROI assessments need social and environmental dimension and 'clean growth' aims to be more clearly understood. Work ongoing with Prof Max Munday to draw this out as part of wider approach to alternative economic intelligence.</p>
<p>A globally responsible Wales Taking account of impact on global well-being when considering local social, economic and environmental wellbeing</p>	<p>The report is a demonstration of CCR-wide responsibility to the planet</p>	
<p>A Wales of vibrant culture and thriving Welsh language Culture, heritage and Welsh language are promoted and protected. People are encouraged to do sport, art and recreation</p>	<p>Our City Deal is uniquely Welsh – but pitches towards being world leading in areas of competitive strength. This enables a strong reflection on our rich culture and heritage which is drawn from our natural environment and resources.</p>	
<p>A more equal Wales People can fulfil their potential no matter what their background or circumstances</p>	<p>The environment and climate crisis is a leveler – we are all responsible – we can all make a difference.</p>	

2. How has your proposal embedded and prioritized the sustainable governance principles in its development?

Sustainable Development Principle	Does your proposal demonstrate you have met this principle? If yes, describe how. If not explain why.	Are there any additional actions to be taken to mitigate any negative impacts or better contribute to positive impacts?
 <p>Long Term</p> <p>Balancing short term need with long term and planning for the future</p>	<p>This is both a short, medium and long term goal and a golden thread running through all projects and programmes.</p>	<p>Continued work on data/ evidence and generating in equal measure, insight and foresight.</p>
 <p>Collaboration</p> <p>Working together with other partners to deliver objectives</p>	<p>The report sets out the different partners and sectors engaged in this work and the challenge process is about collective endeavor- civil society, business, HE, public services and community sectors.</p>	<p>More work to develop, align and promote shared purpose on this agenda.</p>
 <p>Involvement</p> <p>Involving those with an interest and seeking their views</p>	<p>The report sets out the different partners and sectors engaged in this work</p>	
 <p>Prevention</p> <p>Putting resources into preventing problems occurring or getting worse</p>	<p>Report and resultant action plan should create conditions for this to happen – at scale.</p>	
 <p>Integration</p> <p>Considering impact on all wellbeing goals together and on other bodies</p>	<p>This will be undertaken on a case by case basis through the new assessment process.</p>	

3. Are your proposals going to affect any people or groups of people with protected characteristics? Please explain the impact, the evidence you have used and any action you are taking below.

Protected Characteristics	Describe any positive impacts your proposal has on the protected characteristic	Describe any negative impacts your proposal has on the protected characteristic	What has been/will be done to mitigate any negative impacts or better contribute to positive impacts?
Age	As with all those categories below – the impacts will relate to specific delivery that underpins the execution and operation of this Plan	None arising at this time.	
Disability	As above	As above	
Gender reassignment	As above	As above	
Marriage or civil partnership	As above	As above	
Pregnancy or maternity	As above		
Race	As above		
Religion or Belief	As above		
Sex	As above		
Sexual Orientation	As above		
Welsh Language	As above		

4. Safeguarding & Corporate Parenting. Are your proposals going to affect either of these responsibilities?

	Describe any positive impacts your proposal has on safeguarding and corporate parenting	Describe any negative impacts your proposal has on safeguarding and corporate parenting	What will you do/ have you done to mitigate any negative impacts or better contribute to positive impacts?
Safeguarding	Not directly relevant –however, building the future economy in a sustainable way should have a profoundly positive impact on ability to safeguard the future of our residents		
Corporate Parenting	Not directly relevant – however building strength in the economy should create opportunities for all of the young people entrusted in our care – in particular in safeguarding the environment for their futures.		

5. What evidence and data has informed the development of your proposal?

- Analysis of energy consumption
- Mazzucato work on energy mission for GMA and UN
- Collaboration with Energy Services catapult
- Collaboration with GMA CA

6. SUMMARY: As a result of completing this form, what are the main positive and negative impacts of your proposal, how have they informed/changed the development of the proposal so far and what will you be doing in future?

As above, the main implications will be in the delivery of this work.

7. MONITORING: The impacts of this proposal will need to be monitored and reviewed. Please specify the date at which you will evaluate the impact, and where you will report the results of the review.

The impacts of this proposal will be evaluated on:	Quarterly 2019/20 and beyond
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