Report to:	Place Panel
Date:	24 October 2018
Subject:	**Energy Strategy and Delivery Plan**
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1. Purpose of this report

1.1. To provide the Place Panel with a report on the development of the Leeds City Region Energy Strategy and Delivery Plan and to receive feedback on its contents.

1.2. To gain feedback from the Place Panel on the setting of a science-based carbon dioxide (CO_2) emissions reduction target for the Leeds City Region.

2. Information

Background

2.1. This report presents a summary of the draft version of the Leeds City Region (City Region) Energy Strategy and Delivery Plan (ESDP) for comment by the Panel.

2.2. The City Region Strategic Economic Plan (SEP) sets out the ambition 'to become a resilient zero carbon energy economy underpinned by high quality green infrastructure'. To understand how the City Region could achieve the SEP energy ambition the ESDP was commissioned, with support from the Department of Business, Energy and Industrial Strategy (BEIS).

2.3. The ESDP is a named delivery plan of the SEP and is aligned with current thinking on the emerging Local Inclusive Industrial Strategy (LIIS) and policy framework for the City Region (**Appendix 1**). In line with the national Industrial Strategy, which acknowledges the need to maximise the advantages for UK industry of the global shift to clean growth, further work will be undertaken to strengthen the LIIS to ensure carbon reduction is an integral part of everything we do in the City Region.

2.4. The purpose of the ESDP is to demonstrate how the City Region can begin to meet the objectives of the SEP and gain an economic advantage from the global transition to a clean, low carbon economy.

2.5. The ESDP is likely to contribute to a wide range of benefits in the City Region including:

- Reduced CO_2 emissions
- Lower energy costs for businesses and organisations
- Increased competitiveness through lower energy costs for businesses
- Reduction in fuel poverty and increase in associated health benefits
- Regional approach to delivery of new clean growth economic opportunities i.e. supply chains and jobs and increase productivity
- Clear articulation of City Region energy strengths and opportunities
- Improved air quality
- Increased revenue
- Retention of businesses
- Increased inward investment

2.6. The ESDP and its actions will also help to address the national energy trilemma which, in addition to the decarbonisation of the energy system, aims to address energy security and affordability

2.7. ESDP is made up of four work packages:

- **Work Package 1**: Energy state of the Leeds City Region
- **Work Package 2**: Technology Options Appraisal
- **Work Package 3**: Energy Opportunity Areas

- **Work Package 4**: Delivery Plan

2.8. A summary of the headline outputs of the four work packages is set out below:

<u>WP1: Energy state of the Leeds City Region</u>

2.9. The emissions produced in the City Region are a direct result of the energy consumed. This means that emissions from electricity generated within the City Region are excluded from the analysis presented below. The emissions considered are emissions as a direct result of fuel burnt and electricity consumed by end users.

2.10. The City Region consumed 64,232GWh of energy in 2015 a decrease of 22 percent compared to 2005 levels. Consumption was roughly equal across the domestic, industrial and commercial, and transport sectors.

2.11. As would be expected given the intrinsic link between energy consumption and emissions, between 2005 and 2015 CO_2 emissions (emissions) also decreased by 38 percent to 16,472ktCO_2.

2.12. While overall emissions are forecasted to decrease by 2036 the transport sector is expected to reverse this trend with a 28 percent increase in emission

over the period to 2036. This is likely to be caused by minimal changes to the internal combustion engine, the move back to petrol cars from diesel, and to date poor market penetration from electric vehicles. Further work is underway to explore this trend further.

2.13. Please note forecasts are in line with BEIS central projections for the key drivers of energy and emissions, such as fossil fuel prices and take account of the estimated impact of implemented, adopted and agreed (as of July 2017) Government policies. As such there is reasonable confidence in the accuracy of the forecasts.

2.14. The energy sector in the City Region represents 1.5 percent of the economy (£918 million) and employs approximately 7,900 people. This is forecast to increase by 1.5 percent per year to £1.237 billion and to 10,200 people by 2036.

2.15. A more comprehensive overview of the key findings of the work package is contained at **Appendix 2**.

WP2: Technology options appraisal

2.16. A technology options appraisal was commissioned to understand the most significant energy technologies that would allow the City Region to meet the energy ambition set out in the SEP.

2.17. A total of 18 technologies were identified as having the most likelihood of enabling the ambition to be met. Each technology was scored against a series of criteria and ranked according to its performance against these criteria. The top five scoring technologies were:

- Energy efficiency
- Electric and plug-in hybrid vehicles
- Heat networks
- Hydrogen
- Solar PV

WP3: Energy opportunity areas

2.18. The technologies identified in WP2 have been mapped to understand the broad spatial opportunities for locating them in the City Region. These included energy storage, carbon capture and storage, and renewable heat.

2.19. The outputs of the work package will feed into the Leeds City Region Infrastructure Map.

2.20. The opportunity maps allow house buildings, local authorities, investors etc. interested in developing specific energy technologies to hone into specific areas of the City Region where they can undertake more specific detailed project feasibility work.

2.21. The opportunity maps also allow a shared strategic approach to infrastructure development in the City Region e.g. EV infrastructure, allowing energy to be built into major strategic infrastructure projects.

2.22. It should be noted that the energy opportunity mapping is intended to provide a strategic spatial oversight for energy technology types in the Leeds City Region. It does not take precedent over existing local evidence or policies contained within local authority Local Plans and any associated development management policy.

WP4: Energy Delivery Plan

2.23. The work package brings together the evidence generated as part of the previous three work packages and supplements this evidence with target setting and future scenario modelling to produce a coherent Energy Delivery Plan for the City Region.

2.24. Through stakeholder workshops five priorities were identified which the ESDP should focus on. These were:

- Resource efficient business and industry;
- New energy generation;
- Energy efficiency and empowering consumers;
- Smart grid systems integration; and
- Efficient and integrated transport.

2.25. Underneath these five priorities are 17 action areas which provide more details on the areas which projects will be focussed around. **Appendix 3** provides details on these action areas.

2.26. To date 36 actions have been identified with partners to form the basis of this strategy's delivery plan. These are set out in **Appendix 4**. Further work is now underway with partners to explore these projects in detail. Where possible, emissions savings have also been estimated. The top ten actions that could potentially deliver the greatest CO_2 emissions reduction are:

- **Hydrogen vehicles**: Deployment of hydrogen buses on one City Region bus route, hydrogen refuelling stations, and hydrogen-powered cars into local fleets.
- **EV charging and infrastructure**: Deployment of dedicated taxi and public EV charging points across the City Region.
- **Advancing industrial energy efficiency**: Targeting the high emission industrial sectors of the City Region (thought to be chemicals, food and drink, and glass) with an energy efficiency innovation programme.
- **Industrial waste heat recovery (incl. heat recovery from refrigeration)**: Deployment of waste heat recovery infrastructure across the City Region, targeting energy from waste plants, energy intensive industries and key retail stores.

- **Carbon capture and storage (CCS)**: Deployment of new CCS installations across the City Region, supporting and building on the pilot bioenergy carbon capture and storage project at Drax.
- **District heat networks**: Continued support to develop district heat networks across the City Region.
- **H21**: Continued support for the development of the H21 project ensuring that the benefits are retained within the City Region as far as possible.
- **Public estate renewables programme**: Utilisation of the public sector portfolio of buildings for the installation of renewable energy generation.
- **Carbon budgets and carbon management plans**: Implementation of carbon budgets and carbon management plans across City Region partners.
- **Street lighting programme**: Accelerating LED lighting, smart lighting controls and networked solutions across local authority areas.

2.27. Please note there are various levels of confidence associated with the CO_2 emissions savings of each project. There is typically more confidence where projects are well developed e.g. district heat networks. As further work is undertaken (see 2.32) CO_2 emissions savings for projects will be refined, however the estimated savings quoted for projects are considered conservative and err on the side of caution at this early stage.

Science-based target

2.28. One way to achieve the SEP ambition could be to adopt the Paris Climate Change Agreement of limiting temperature rise to below 2ºC. If adopted the City Region would need to achieve an emissions reduction of 53 percent or 8,730 $ktCO_2$ by 2036 (against a 2015 baseline of 16,472 $ktCO_2$). Hypothetically:

- 3,304 $ktCO_2$ (38 percent) could be saved by delivering all of the projects outlined to date in the ESDP.
- 2,141 $ktCO_2$ (25 percent) is estimated to be achieved through business as usual measures such as confirmed government policies.
- 3,285 $ktCO_2$ (38 percent) to be found before 2036 through more accelerated programmes, new projects and radical policies.

2.29. Figure 1 illustrates the above[1].

[1] Please note due to rounding figures may not add up to 100 percent.

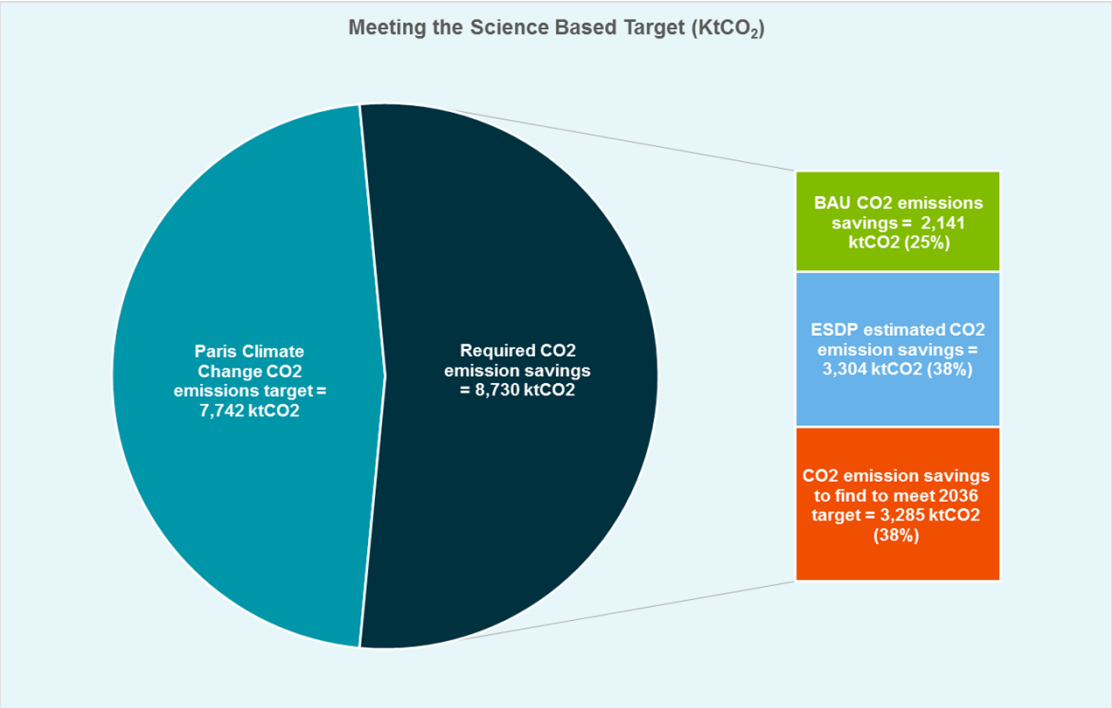

Figure 1. Outline of how to meet the 53 percent emission reduction target

2.30. It is worth stating that at this moment in time the above is based on estimates and a range of assumptions. The majority of the projects needed to meet the science based target are also not fully developed with allocated funding to deliver them. While the projects identified to date would not achieve the target, the majority of these interventions are currently led and implemented by the public sector only. There are likely to be significant additional emissions savings available through private sector programmes.

2.31. Future CO_2 scenario modelling undertaken to understand the benefits of meeting the 53 percent reduction target has indicated that doing so could generate approximately 100,000 jobs and be worth over £11 billion in GVA[2]. The capital spend to achieve these outcomes is estimated to be between £46 and £50 billion. Please note this is a high-level assessment and requires further work. See below.

2.32. Further work is needed to understand:

- Emission reduction requirements in detail.
- Refine scenarios to better reflect regional activity and their estimated benefits.
- Planned ESDP actions and their emission savings contributions in detail, and with a higher level of confidence.
- New programmes and new innovative technology that could help meet a regional emission reduction target.
- How realistic it is to meet the science based target.

[2] Please note that this is not an indication of the maximum GVA which is retained in the City Region, but instead the maximum GVA expected from the capital spend on converting to new technologies.

2.33. The Panel are asked for their comments on setting a science based target for the City Region.

2.34. Leaders of the West Yorkshire Combined Authority have been initially briefed on the opportunity to explore setting a regional carbon reduction target in line with global emission reduction targets. A Leeds City Region summit / event is now proposed to explore setting a regional emission reduction target and how to meet it.

2.35. More immediately there are also a number of delivery mechanisms that partners across the City Region will be able to access to deliver projects identified in the ESDP. Some of these include the Combined Authorities Energy Accelerator and Resource Efficiency Fund.

2.36. Furthermore the new North East, Yorkshire and Humber (NEYH) Energy Hub will also provide project development support to implement some new projects arising from the City Region's ESDP.

2.37. The draft summary of the ESDP is contained at **Appendix 5**. Please note this document will be designed up prior to being presented to the LEP and CA.

2.38. The table below outlines the next steps for the ESDP.

Action	Timescale
1. Approval of the ESDP from the LEP and Combined Authority.	October – December 2018
2. Devise detailed work plans for prioritised actions within the ESDP.	October 2018 – Spring 2019
3. Suitable actions from the ESDP to be immediately fed into the Energy Accelerator and new Energy Hub.	October 2018 onwards
4. Stakeholder engagement and possible City Region event to explore the science based target and how to meet it.	October 2018 – Spring 2019
5. Commission further work to support the exploration of the science based target.	October 2018 – Spring 2019

Action	Timescale
6. Subject to 1, 4 and 5 above, gain approval for the science based target from the GEP, LEP and Combined Authority.	Summer 2019

3. Financial implications

3.1. Given the scale of the projects identified in the ESDP there are likely to be financial implications for the Combined Authority. Further work will be undertaken to understand the scale of the financial ask, and this will be reported at a future Panel meeting.

4. Legal implications

4.1. No legal and compliance implications have been identified.

5. Staffing implications

5.1. No staffing implications have been identified.

6. External consultees

6.1. None.

7. Recommendations

7.1. That the contents of the Energy Strategy and Delivery Plan be noted and feedback provided.

7.2. To provide feedback on the setting of a science-based CO_2 emissions reduction target for the City Region.

8. Background documents

8.1. None.

9. Appendices

Appendix 1 – Contribution to achieving the key challenges of the LIIS

Appendix 2 – Energy state of the Leeds City Region: Summary of key findings

Appendix 3 – Priority Action Areas

Appendix 4 – Project summaries

Appendix 5 – Summary of the ESDP