Swindon & Wiltshire
LOCAL ENTERPRISE PARTNERSHIP

GREEN HYDROGEN PLAN 2022-25

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THE 10 POINT PLAN FOR THE GREEN INDUSTRIAL REVOLUTION

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1. INTRODUCTION

The Swindon and Wiltshire Hydrogen Plan sets out Swindon and Wiltshire Local Enterprise Partnership's (SWLEP) pathway for encouraging the production and adoption of green hydrogen fuel for commercial use. SWLEP's aspiration for the use of hydrogen fuel as a low carbon energy source was set out in our Energy Strategy in 2018.

We developed this further through our Local Industrial Strategy with the development of three strategic outline business cases: hydrogen energy demonstrator; hydrogen bus and coach travel and hydrogen logistics demonstrator. We have also seen growing research and interest in the use of hydrogen for rail and aviation purposes which will be explored in more detail.

In November 2020, the government published its Ten Point Plan for the Green Industrial Revolution which acknowledges the role which low carbon hydrogen can play. The Ten Point Plan sets out the UK government's policies, worth £12 billion, to secure a further £42 billon of private sector investment into energy, buildings, transport, innovation and the natural environment by 2030. It seeks to decrease carbon emissions and in doing so increase the use of low carbon technologies to drive export activity and create green jobs and wider economic benefits.

Point two seeks to drive the growth of low carbon hydrogen however our Green Hydrogen Plan contributes towards delivering a further four national priorities, highlighted below as SWLEP's role in supporting decarbonisation and its Net Zero aspirations in the emerging Swindon and Wiltshire Plan for Growth.

In August 2021, UK Hydrogen Strategy was published. It reiterated the 2030 and 2050 ambitions set in The Energy White Paper (2020). It alo recognised the need to concurrently build hydrogen demand and supply markets alongside funding to stimulate the market growth. A number of investment programmes were included in the national strategy to help address the commercial risk and cost challenges associated with the production of low-carbon hydrogen.

The Swindon and Wiltshire Green Hydrogen Plan contributes towards the government's goal to make the UK a Net Zero economy by 2035 and compliments the activities of our two local authority partners, Swindon Borough Council and Wiltshire Council and their role in tackling the climate change emergency locally. The UK Hydrogen Strategy, alongside the Building and Heating Strategy, will add greater understanding on how the Government proposes to proceed in terms of the scale and speed of investment in hydrogen technologies.

2. ACHIEVEMENTS TO 2019/21

Our Energy Strategy, published in 2018, identified four work packages to progress to use of hydrogen as a low carbon energy source which we have progressed in a range of ways.

A. Grow the hydrogen economy, short term action

In 2019, we established an informal collaboration of LEPs which cover the wider M4 geography working with: Thames Valley Berkshire; Oxfordshire, Gloucestershire and West of England in order to deliver economies of scale and impact in terms of hydrogen infrastructure delivery. Since 2021, we have extended our partnership working to the whole Western Gateway geography by supporting activity to map the hydrogen ecosystem across this wider geography.

Further afield, as a partner in the EU Joint Undertaking in Fuel Cells and Hydrogen, we became, a member of its Observer Network which enabled SWLEP to access to examples of best practice from across Europe.

B. Hydrogen infrastructure and deployment, medium to long term action

In 2019/2020, we ran a series of workshops with businesses and operators associated with new energy vehicles to understand the barriers to adoption in order to stimulate the demand for them. Based on this consultation, we developed three strategic outline business cases for hydrogen demonstrators and a fourth on community electric vehicle charging.

We have consulted with a range of transport providers in relation to the potential to convert their fleet to hydrogen fuel along trial routes. As part of this engagement, we have written a number of letters of support for businesses applying for public funding where their new energy aspirations matched ours.

C. Hydrogen research and technology institutions, medium term action

We have established links within the University of Bath in a range of ways to better understand where its hydrogen research interests lie in hydrogen production, sustainable technologies development and new automotive applications.

We also maintain regular engagement with UKRI so we are better placed to match research and funding opportunities as our engagement with industry extends.

D. Hydrogen heating trials, long term action

We have kept a watching brief on the lessons-learned from the range of hydrogen demonstrators which have received public funding. These have predominantly looked at industrial processes and heating trails across northern England and Scotland. In 2020, we applied for project development funding from the EU to look at the feasibility of a community heating trial but were unsuccessful. However, as a result of this bid, we have developed strong links with the South West Energy Hub and the Science Museum Group to understand the feasibility of its site at Wroughton as a site for green hydrogen generation to meet on-site energy requirements as well as small scale off-site use as a demonstrator project.

We will look to our local authority partners to lead on decarbonising domestic and commercial heating through their planning and regulatory powers as part of their response to the local climate change emergency.

3. SWLEP'S GREEN HYDROGEN PLAN 2022/25

Through the work we have undertaken so far, we have developed our understanding of hydrogen technologies and the contribution which Swindon and Wiltshire can make to UK PLC in this field. Our focus for 2022-2005 will be centred on small scale green hydrogen trials, that is hydrogen which is produced using renewable energy sources. In doing so SWLEP's role will be to:

▶ 1. Convene private and public sector stakeholders to identify hydrogen-related opportunities and work in collaboration to facilitate delivery.

▶ 2. Lead on selected local projects which deliver our business priorities

SWLEP's goal for 2022-2025 is to establish demonstrators to decarbonise commercial transport and logistics operations across using hydrogen. To achieve this goal we will work in collaboration with neighbouring LEPs, and the Western Gateway to develop the business cases for hydrogen production and application. We will:

1. Stimulate small scale production by:

▶ A. Identifying suitable locations for the installation of small scale electrolysers in the range of 2MW to 20 MW (or higher depending on market demand) aligned to sources of low carbon electricity;

▶ B. Supporting the completion of the feasibility study for the Science Museum Group site at Wroughton; and

▶ C. Identifying sources of public and private sector investment to deliver the plant and phase energy generation.

2. Stimulate the demand for hydrogen fuel in phases by:

▶ Engaging with a range of transport and logistics users and identify sources of public and private sector finance to support adoption.

▶ Phase 1 2022-2023
- Long-distance buses and coaches
- Major logistics and distribution centres

▶ Phase 2 2024-2025
- Rail along routes in rural areas
- Heavy goods vehicles
- Aviation

3. Increase investment in green hydrogen R&D by:

▶ A. extending our collaborative activity along the M4 LEPs to include the Western Gateway geography and partners;

▶ B. Encouraging SMEs to collaborate with university research partners on hydrogen technologies; and

▶ C. Promote competitions and opportunities for innovation technology funding.

4. MONITORING AND EVALUATION

Our Energy Strategy, published in 2018, identified four work packages to progress to use of hydrogen as a low carbon energy source which we have progressed in a range of ways.

Grow the hydrogen economy, short term action

In 2019, we established an informal collaboration of LEPs which cover the wider M4 geography working with: Thames Valley Berkshire; Oxfordshire, Gloucestershire and West of England in order to deliver economies of scale and impact in terms of hydrogen infrastructure delivery. Since 2021, we have extended our partnership working to the whole Western Gateway geography by supporting activity to map the hydrogen ecosystem across this wider geography. Further afield, as a partner in the EU Joint Undertaking in Fuel Cells and Hydrogen, we became, a member of its Observer Network which enabled SWLEP to access to examples of best practice from across Europe.

Hydrogen infrastructure and deployment, medium to long term action

In 2019/2020, we ran a series of workshops with businesses and operators associated with new energy vehicles to understand the barriers to adoption in order to stimulate the demand for them. Based on this consultation, we developed three strategic outline business cases for hydrogen demonstrators and a fourth on community electric vehicle charging. 4.2 Evaluation Where external funding is secured for delivery, SWLEP will follow the evaluation requirements specified by the funder. This may extend from an informal internal evaluation or a formal, independent evaluation exercise. If no evaluation is required, this will be undertaken by SWLEP internally. In addition, the Joint Scrutiny Panel may, at its discretion, request to undertake a deep-dive into delivery.

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Objectives: Stimulate Small Scale Green Hydrogen Production

Inputs

Identify suitable locations for the installation of small scale electrolysers in the range of 2MW to 20 MW (or higher depending on market demand) aligned to sources of low carbon electricity

SWEH funds feasibility study for green hydrogen production at Wroughton

Identify sources of public and private sector investment to deliver the plant and phase energy generation

Outputs

Clear understanding of scale and scope of work which can be progressed in collaboration or in partnership across a super-geography (M4 and/or Western Gateway)

Recommendations developed regarding suitability to progress to business case development

Bids to public funding sources attracts private sector investment.

Outcomes

Basis for collaborative working established for a network of demonstrators the across a super-geography M4 and/or Western Gateway
Clear understanding of scale and scope of work which can be progressed in collaboration or in partnership across a super-geography (M4 and/or Western Gateway)

Outline business case for the demonstrator developed and fundable business case proven or disproved as a basis to secure funding.

Financial resources and confidence to progress with scheme/s delivery

Impact

Recognition of Swindon and Wiltshire/ M4/Western Gateway as a green hydrogen production trailblazer area contributing to UK's transport decarbonisation and Net Zero targets

Stimulation of green hydrogen supply contributing to Net Zero targets

Green hydrogen supply begins contributing to UK's Net Zero and transport decarbonisation targets

Measurement and timeline

- Database complete September 2022
- Feasibility Study completed by March 2023
- 1 energy demonstrator by March 2024
- Bid to the Net Zero Hydrogen Fund

Sept 2022

4. MONITORING AND EVALUATION

Objectives: Stimulate the demand for hydrogen fuel with a focus on transport and logistics users

Inputs

▶ Phase 1

long-distance bus and coach operators identified and engaged

major logistics and distribution centres focussing on forklift trucks initially identified and engaged

▶ Phase 2

Rail operators interested in trialling hydrogen trains in rural areas identified and engaged

heavy goods vehicle operators identified and engaged

Hydrogen aviation operators identified and engaged

Outputs

Options appraisal and business case developed by private sector. Demonstrator project/s are identified to prove or disprove the commercial use of hydrogen fuel for this mode of transport

Recommendations developed regarding suitability to progress to business case development

Options appraisal and business case developed by private sector. Demonstrator project/s are identified to prove or disprove the commercial use of hydrogen fuel for this mode of transport

Funding secured to delivery demonstrators

Outcomes

Demand for green hydrogen fuel stimulated

Demand for green hydrogen fuel stimulated Financial resources and confidence to progress with scheme/s delivery

Impact

Contribution towards UK transport decarbonisation and Net Zero targets achieved

Contribution towards UK transport decarbonisation and Net Zero targets achieved

Measurement and timeline

▶ Phase 1: Completion of 1 bus demonstrator, 1 logistics demonstrator March 2024

▶ Phase 2: Targets; Completion of 1 rail demo, 1 HGV demo, 1 aviation demo (if its wider geography)
March 2025

Objectives: Increase Investment in Green Hydrogen R&D

Inputs

Extending our collaborative activity along the M4 LEPs to incorporate the whole Western Gateway geography and partners

Encouraging SMEs to collaborate with university research partners on hydrogen technologies

Promote competitions and opportunities for innovation technology funding

Outputs

Formal partnership arrangements agreed to progress delivery and raise awareness among private sector

Recommendations developed regarding suitability to progress to business case development

Collaborative projects brokered and funded e.g. UKRI.

Secure additional resource to support technology advancement

Outcomes

Knowledge and awareness raised as best practice shared nationally

Innovation and knowledge increased and brokered

Closer relationship with neighbouring universities established

Awareness raised and reputational gain for partners

Impact

Recognition of M4/Western Gateway geography as a green hydrogen trailblazer areaStimulation of green hydrogen supply contributing to Net Zero targets

Green hydrogen production improved for commercial application contributing to transport decarbonisation and Net Zero targets

Green hydrogen production improved for commercial application contributing to transport decarbonisation and Net Zero targets

Measurement and timeline

▶ Partnership working with development funding agreed March 2022

▶ Hydrogen Skills workshops commence 2022/23

▶ Promotion campaign commences 2022/23

Target businesses engaged TBC