Report to:	Climate and Environment Advisory Committee (CEAC) 6th December 2022
Lead Cabinet Member:	Lead Cabinet Member for Environment
Lead Officer:	Head of Climate, Environment and Waste

Waterbeach Renewable Energy Network (WREN) Business Case Update

Executive Summary

1. This report presents a summary of the business case and implementation plan for Waterbeach Renewable Energy Network (WREN). WREN is a microgrid solution to increase electricity capacity at the Greater Cambridge Shared Waste Depot. The microgrid integrates smart technologies to maximise the use of solar generated electricity on site and minimise mains grid electricity. The business case headlines are electricity capacity to power 20-24 electric refuse Collection Vehicles (e-RCVs), lower cost of energy than upgrading the grid (without solar or battery components), independence from both national grid decarbonisation and the cost of main grid electricity, displacement of at least 1,345 tonnes CO_2e over lifetime of project and on-site renewable electricity generation of at least 65% of the site demand.

2. The Council has allocated funding from the capital programme for this project and therefore no funding consideration is required. However, this update shows the business case review undertaken and the next steps for implementation.

Recommendations

3. The Committee are asked to make comments and recommendations to the Lead Cabinet Member for Climate and Environment, to Cabinet or to officers as required.

Reasons for Recommendations

4. The update has been brought to CEAC to allow the Committee to fulfil its role advising Cabinet on policies, actions and resources required to deliver on the Council's climate change and environmental ambitions.

Details

5. The Greater Cambridge Shared Waste Service (GCSWS) for Cambridge City Council and South Cambridgeshire District Council (SCDC) has made firm policy commitment to decarbonise the fleet of refuse collection vehicles by 2030. The Council has declared a Climate Emergency, and has established targets and an Action Plan to reach net zero carbon by 2050. The Council has a fleet decarbonisation target of 50% reduction by 2025 and a 90% reduction by 2030, based on 2018-19 levels.

6. This requires significant fleet decarbonisation for the 50 vehicles currently in operation by the Service. It will require a mix of alternative fuels including electric Refuse Collection Vehicles (e-RCVs) making up approximately half of the fleet. However, electricity grid capacity is constrained due to local/national increase of electricity for transportation and space heating within buildings. Therefore, there is an urgent need for grid capacity at the Depot as once the third e-RCV (currently on order, whilst two e-RCVS are already in operation) is operational no further e-RCVs can be charged on-site.

7. The Waterbeach Renewable Energy Network (WREN) is a microgrid solution to increase electricity capacity at Waterbeach depot. The microgrid is comprised of:

    *   a ground-mounted solar photovoltaic (PV) array 825kWp on adjacent land to the depot (planning consented),
    *   an Energy Storage System (ESS) 2MWh storage capacity to maximise the use of renewable energy from the solar PV array,
    *   an Energy management System to control energy and optimise performance,
    *   20 x 50kW smart e-RCV chargers and associated infrastructure,
    *   new electrical infrastructure across site,
    *   and a point of connection to the electricity distribution network

8. The total project cost is projected at £6m with £2.7m from Cambridgeshire and Peterborough Combined authority (CPCA) and the residual funding from Cambridge City Council and South Cambridgeshire District Council (£1.67m per authority). The final ratification of the project and agreement to move to contract and project initiation will be recommended to SCDC Cabinet on 12 December 2022.

9. The business case has concluded that to achieve net zero, investment in the WREN project is required, as grid capacity limits curtail our fleet decarbonisation. The WREN microgrid option modelled a lower cost of energy, 26p versus 35p per unit energy, than upgrading the grid (without solar or battery) and provides independence from both national grid decarbonisation rates and cost unpredictability of mains grid electricity. The business case estimates at least 1,345 tonnes carbon saving on current fleet emissions. The microgrid solution will also enable the addition of more 'generating assets' i.e. further solar photovoltaic arrays or other sources of renewable energy which can accommodate additional electricity demand on-site.

10. With the business case reviewed, and subject to ratification by Cabinet, the project team will proceed to review the design and implementation phase as well

as agree commercial contracts with the delivery team. The indicative programme is to complete commercial contracts/procurement exercise by Q4 2022/23 with start-on-site Q1 2023/24 and completion by Q4 2023/24.

Options

11. The business case options have included a comparison between the WREN microgrid solution with the counterfactual which is an upgrade to the mains electricity grid without solar PV and battery storage components. The long-list options assessment did assess 'do nothing' option however achieving net zero carbon targets requires investment and change to current operations. A relocation option was considered however there are strong co-location benefits of the current GCSWS operational site.

Implications

12. There are no significant implications.

Consultation responses

13. The Lead Member for Environment has been consulted on this report.

Alignment with Council Priority Areas

Being green to our core

14. The WREN project will enable the significant decarbonisation of SCDC carbon emissions from fleet enabling the Council to move towards their carbon reduction targets.

Background Papers

Waterbeach Renewable Energy Network (WREN) Investment Grade Proposal Summary – commercially sensitive

Appendices

None

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