

REPORT OF THE LEADER OF THE COUNTY COUNCIL**VIA EAST MIDLANDS AND CHEESECAKE ENERGY PARTNERSHIP****Purpose of the Report**

1. That the Committee endorses the emerging partnership between Via East Midlands and Cheesecake Energy Ltd to demonstrate a world first energy storage system at Bilsthorpe Depot.
2. To demonstrate that as owner of Via East Midlands, the County Council is encouraging the Company to nurture a culture that prioritises commercial and environmental innovation.

Information

3. The transition to greener energy is creating new challenges and opportunities. As demand for electricity inevitably grows, the ability to store energy cheaply will enable increased reliance on renewable generation, ensure local resilience and help alleviate grid constraints. This will make energy storage a key enabling technology, underpinning the solution to many of the challenges presented by the energy transition.
4. Cheesecake Energy Ltd (CEL) is a spin-out company from the University of Nottingham, based on energy research led by Prof. Seamus D. Garvey at the University's Faculty of Engineering. CEL's core mission is to bring a state-of-the-art energy storage system to market to resolve many of these energy transition challenges.
5. The CEL energy storage system is unique as it takes an established compressed air energy storage system and revolutionises it by storing two-thirds of the electricity in the form of heat which can be stored at far lower cost.
6. To store the energy, electric motors are used to drive compressors, which push high pressure air & heat into storage units. When the electricity is required, the high-pressure air and heat is pushed back through the same compressor (but now working as a turbine), which turns a generator to produce electricity.
7. The system works like a rechargeable battery, where excess electricity is stored and then released when demand for electricity is high. CEL believe their system could cut the cost of storing energy by 30-40% and offers a solution that can be used in several sectors including electric vehicle (EV) charging, heavy industry and renewable energy generation. In addition, CEL is seeking to become a world leader in supporting developing nations harness cheap solar power and move away from expensive and polluting fossil fuels.

8. CEL has secured funding from several notable sources including Shell Gamechanger, Highways England Digital Roads and the Advanced Propulsion Centre Accelerator Programme. The University of Nottingham is an equity investor, a partnership has been established with Volvo Trucks to supply recycled hardware, and CEL are in talks with a major bus operator for depot charging.
9. CEL continues to maintain an excellent relationship with the education sector. The University of Nottingham and CEL have successfully bid for several grant opportunities and the company has created a number of student and graduate internships since 2019. CEL also aspires to engage with schools and colleges in the East Midlands, providing opportunities for students to study topics manifested in their storage system.
10. An emerging partnership with Via East Midlands (Via), a company wholly owned by Nottinghamshire County Council, has enabled CEL to secure the significant backing of Highways England by identifying a partner that will enable CEL to demonstrate the system in a live environment, enabling them to progress to commercial deployment and scale-up.
11. Commercial deployment is targeted for late 2023, by which time CEL project they will have a workforce of around thirty, composed largely of engineers, technical salespeople, and project managers.
12. By 2025, CEL expect to be a strong SME, achieving annual revenues in excess of £20 million.
13. Via & CEL propose to go live with a prototype phase one storage facility at Bilsthorpe Depot in Spring 2021, using it to charge Via's first few electric vehicles and store energy generated at weekends that would otherwise be lost. The facility will also support charging of the electric bus fleet, purchased through the low emission bus scheme and maintained by Via at Bilsthorpe Depot.
14. Taking the partnership to phase two and beyond could see the establishment of a micro grid where smart technology and additional onsite or local solar generation could be stored, enabling Via to significantly reduce its reliance on the grid as it grows its EV fleet.
15. In addition, the facility should save up to £60,000 in grid upgrades and could be used to generate income through flexibility services- providing energy back to the grid at peak times. Conservative estimates put savings at 270,000 kgCO² and £35,000 per annum, with additional income generation through the flexibility services still to be determined.
16. Throughout the County Council brokered negotiations with Via, CEL have emphasised the value they place on partnering with courageous and like-minded organisations, set on pushing forwards the green energy transition.
17. The County Council has encouraged Via to nurture a culture that prioritises commercial and environmental innovation and this emerging partnership is evidence of this at work. The partnership meets five of the County Council's Environmental Strategy commitments; puts both Via and the County Council on the map as leaders in the emerging energy storage agenda; and demonstrates that both organisations are keen to do business with a local SME that has global export potential.

Other Options Considered

18. The alternative would be to discourage Via's partnership with CEL. This option would result in the loss of an opportunity to support a local SME in demonstrating a world first energy storage system as well as facilitating Via's transition to electric vehicles as well as the significant savings in carbon and electricity costs.

Reason/s for Recommendation/s

19. To endorse the partnership between Via and CEL.

Statutory and Policy Implications

20. This report has been compiled after consideration of implications in respect of crime and disorder, data protection and information governance finance, human resources, human rights, the NHS Constitution (public health services), the public sector equality duty, safeguarding of children and adults at risk, service users, smarter working, sustainability and the environment and where such implications are material they are described below. Appropriate consultation has been undertaken and advice sought on these issues as required.

Financial Implications

21. Financial implications for the County Council have been limited to £20k of consultancy costs, paid to Via and their sub contractors to undertake feasibility work into the viability of locating the energy storage facility at Bilsthorpe Depot.

22. The capital set up costs for installing the energy storage facility are in the process of being finalised and will be jointly met by Via and CEL. As Via expands its EV fleet, it is estimated it could save £60,000 in grid upgrade costs.

23. The storage facility's annual running costs are expected to be minimal and will be met by Via and CEL.

24. Upon completion of the final phase of the partnership, it is estimated Via will save up to £35,000 per annum and could generate, as yet unknown income, through grid flexibility services.

Implications for Sustainability and the Environment

25. The partnership will be constructed on sustainable principles and has no known negative environmental impact. Instead it will help meet five of the County Council's Environmental Strategy commitments.

RECOMMENDATION/S

- 1) That the Committee endorses the emerging partnership between Via East Midlands and Cheesecake Energy Ltd to demonstrate a world first energy storage system at Bilsthorpe Depot.

Councillor Mrs Kay Cutts MBE
Leader of the County Council

For any enquiries about this report please contact: Adrian Smith, Corporate Director, Place.
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Constitutional Comments (KK 06/11/2020)

26. The proposal in this report is within the remit of the Policy Committee.

Financial Comments (SES 06/11/2020)

27. The financial implications are set out in paragraphs 20 -23 in the report.

28. The financial implications of £20,000 for consultancy costs to be paid to Via and their sub contractors will be made from existing Highways Client budgetary provision.

Background Papers and Published Documents

Except for previously published documents, which will be available elsewhere, the documents listed here will be available for inspection in accordance with Section 100D of the Local Government Act 1972.

- None

Electoral Division(s) and Member(s) Affected

- All