

# Council Refuse Fleet Low Carbon Refuelling

Invest Net Zero Cheshire

IKIGAI



CATAPULT  
Energy Systems



**Project reference number:** 024

**Project name:** Council Refuse Fleet Low Carbon Refuelling

**Project type:** The proposed replacement (by way of purchase or leasing) of Cheshire West and Chester (“**CW&C**”) Council's refuse collection vehicle fleet (one of the largest of any local authority in the UK, with up to 76 vehicles earmarked for replacement) and the development and installation of CNG refuelling infrastructure at CW&C Council's two local depots and/or collocated with (and supplied by) an anaerobic digestion plant at Ellesmere Port.

**Project maturity:** Feasibility assessment. CW&C is in parallel undertaking a detailed fleet review with their independent transport advisors, in order to determine the optimal fleet vehicle choices and timeframe for rollout, with the first phase of vehicle orders to be placed by July 2021. CNG is currently the preferred option due to the maturity of the technology when considering the tight timescales for the fleet renewal. Hydrogen/Hybrid vehicles are also under consideration, but are unlikely to be economically viable for this first phase except as a demonstrator project with public/OEM support (see Opportunities below).

**Key strategic drivers:**

- CW&C's ambitious Net Zero targets and the refuse fleet coming to the end of its useful life.
- A desire to act as a pathfinder project for (a) conversion of other types of CW&C's HGVs (e.g., road maintenance vehicles); (b) other councils in the region; (c) new business models for off-balance-sheet financing for “mobility-as-a-service” (as compared with Public Works Loan Board or other municipal bond financing solutions).

**Locations:**

- Biomethane refuelling infrastructure must be located in close proximity to, or at, existing CW&C depots at two sites: Ellesmere Port (Dock Yard Rd, Ellesmere Port CH65 4EF) and Winsford (Browning Way, Woodford Park Industrial Estate, Winsford CW7 2RB).
- Discussions are underway with an anaerobic digestion plant (which is already planning to generate biomethane-to-grid) in late-stage development at Ellesmere Port to determine whether it could be suitable, in preference to the Ellesmere Port depot site, to host captive CNG refuelling infrastructure and supply biomethane to the CW&C vehicles.
- The Winsford depot is intended to be supplied via connection onsite to the gas grid, or alternatively (if more financially or technically viable) via fuel trailer.

**Proposed phases:** Funding, development and installation of biomethane (CNG) refuelling infrastructure at the two chosen sites will proceed in parallel with the procurement timetable for the refuse collection vehicles (“**RCV**”) (such procurement process to commence in July 2021).

**Emissions impact:** 100% (assuming a “sleeving” arrangement for biomethane supplied), calculated on a well-to-wheel lifecycle emissions basis and assuming displacement of diesel emissions at kgCO<sub>2</sub>e/100 km.

**Total estimated biomethane demand:** Estimated for 70-80 RCVs in service by Autumn 2022 to be approximately 5,000 – 6,000 kg/day.

**Estimated project costs (assuming 100% of the fleet is converted to CNG):**

1. CNG refuelling infrastructure: based on a desktop study without confirmation of technical specifications (including inlet pressure of gas) or consideration of the benefits of packaging of refuelling infrastructure with other elements of the project/biomethane supply:
  - o circa. £800,000 - £1.4m for the Ellesmere Port depot (serving a refuse fleet of 57). These costs may be able to be optimised if the refuelling infrastructure is collocated with the anaerobic digestion plant rather than only a grid connection.
  - o circa. £530,000 - £721,000 for the Winsford depot (serving a RCV fleet of 19).
2. RCV replacement (for 76 vehicles): circa. £14-£15m\*.

\*Costs for hydrogen/hybrid RCVs are currently estimated to be substantially higher than the equivalent CNG vehicle, but these costs are projected to reduce over time and hence are being considered on a phased basis.

**Technology, construction and operation\*:**

- RCVs and refuelling infrastructure technology: Subject to outcome of fleet review. Multiple options are being evaluated using ‘House of Quality’ methodology.
- Installation and O&M of refuelling infrastructure: Opportunity open for discussion, including as part of RCV and biomethane packages. Only highly experienced operators with strong sustainability credentials will be considered.

\*Cheshire West Recycling (“**CWR**”) is CW&C’s wholly owned waste management company and operator of the current fleet of RCV.

**Revenue streams:** This will vary depending on the chosen funding structure / scope of the assets to be funded (e.g., on-balance sheet funding by CW&C / municipal bond, vendor financing / financing leasing of RCV, fuel distributor provision of refuelling infrastructure by a CNG fuel supplier, non-recourse financing of all in mobility-as-a-service). CWR, owned by CW&C, is open to discussions re: contracts with relevant counterparties for the purchase/leasing of RCVs, purchase of biomethane (certified with Renewable Transport Fuel Certificates) and ownership/lease/availability of refuelling infrastructure, or a package of services, as appropriate.

**Initial stakeholders:** CW&C (local authority) and its subsidiary, waste collection company, CWR.

**Professional advisors to date:** Ikigai (stakeholder engagement and bankability); Atkins (biomethane transport refuelling), Integrity Energy Services (AD technical) and Gowling (legal).

**Opportunities\*:**

- RCV and refuelling infrastructure technology/solution providers
- Biomethane suppliers
- Funding for all elements of the project, noting that:
  - CW&C is actively considering public grant funding options for part of the associated costs in order to improve the bankability of the project for private sector investors/suppliers).
  - If it were to be determined that refuelling infrastructure for the Ellesmere Port depot would ideally be collocated with the anaerobic digestion plant, this would be provided on a fully funded basis under a supply contract with CWR.

\*Subject to CW&C procurement processes.

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