

ABERDEEN CITY COUNCIL

COMMITTEE	Communities, Housing and Infrastructure
DATE	7 January 2016
DIRECTOR	Pete Leonard
TITLE OF REPORT	Hydrogen Fuel Cell Bus Commercialisation Procurement Framework
REPORT NUMBER	CHI/15/341
CHECKLIST COMPLETED	Yes

1. **PURPOSE OF REPORT**

Aberdeen City Council has been nominated to be the lead partner for the UK consortium to procure and deploy hydrogen fuel cell buses and hydrogen refuelling infrastructure within eight UK cities and regions from 2017 and beyond.

The purpose of this report is to seek Council's agreement to participate in this project and to lead on the development of a procurement framework. This does not commit Aberdeen City Council to procuring hydrogen fuel cell buses or hydrogen refuelling infrastructure on behalf of any partner within this project nor will the Council participate without full funding in place and appropriate committee approvals to proceed.

2. **RECOMMENDATION(S)**

That Committee agrees:

- I. Aberdeen City Council's participation in the project subject to officers presenting a further detailed business case which outlines the Council's financial implications;
- II. To Aberdeen City Council leading on the development of the procurement framework that can be utilised by other local authorities and named bus operators who are participating in this project;
- III. To instruct officers to present a detailed business case for Aberdeen City Council's participation in the commercialisation project under the proviso that European and external funding sources are secured.

3. **FINANCIAL IMPLICATIONS**

Aberdeen City Council's involvement in this project is fully funded through the Scottish Cities Alliance (SCA).

4. **OTHER IMPLICATIONS**

Aberdeen City Council, working as the lead authority under a joint procurement process with other local authorities, is seeking to put in place a framework agreement that all participating cities/named operators can utilise to purchase hydrogen fuel cell buses. A Request for Information will be issued as the next stage of the procurement process. Responses to the Request for Information will greatly assist in informing the project partners on the current and emerging market and financial implications.

5. **BACKGROUND/MAIN ISSUES**

Through the Scottish Cities Alliance (SCA), Aberdeen City Council was appointed lead partner for the Fuel Cells and Hydrogen Joint Undertaking (FCH-JU) Commercialisation Study project in 2013. Over the last 15 months a number of Scottish Cities (Aberdeen, Dundee, Inverness, Glasgow, Perth & Kinross and Stirling) have worked collaboratively with other UK cities (London, Cardiff, Birmingham, Leeds, Nottingham, Sheffield and Tees Valley) to form a UK Cluster for the procurement and deployment of hydrogen fuel cell buses and hydrogen refuelling infrastructure within cities and regions across the UK from 2017 and beyond.

The Fuel Cells and Hydrogen Joint Undertaking Commercialisation Study (100 Fuel Cell Bus Project) seeks to supply cities/regions with commercially viable zero emission fuel cell buses that provide the same range and operational flexibility as diesel buses, leading to improvements in local air quality, and offering a route to decarbonising public transport. By working in collaboration and using joint procurement, the group of participating cities and their bus operators will acquire and deploy a total of circa 100 hydrogen fuel cell buses.

Following a detailed local feasibility stage, the project is now in a funding acquisition phase. A robust funding strategy is in place and 2016 will see a series of applications made at a European and national level (all of which are believed to have a good chance of success).

During 2016 (and in parallel with the funding acquisition), the project partners (local authorities/operators) intend to complete a procurement framework exercise in readiness to place orders with the selected Hydrogen Fuel Cell bus manufacturer at the end of 2016 or start of 2017. The aim of the framework is to allow partners access to the

economies of scale which will arise from a large and coordinated procurement process, however, contractual negotiations/awards will be carried out separately by each local authority/bus operator.

Given the level of experience Aberdeen City Council has gained over the last 4 years in hydrogen projects and the city's ambition to become a Centre of Excellence for Hydrogen Technology, a request was put forward by the project partners for Aberdeen City Council to lead on developing the procurement framework.

Having stated the above, this project provides the opportunity for Aberdeen to increase the number of fuel cell buses operating in the City. Investing in the expansion of the fuel cell bus fleet is consistent with Aberdeen's Hydrogen Strategy, which includes an ambition to continue operating the existing fuel cell bus fleet beyond 2018 and to deploy an additional fifteen fuel cell buses from this date. Steps towards delivering other aspects of the strategy have already been taken (e.g. the installation of a new hydrogen refuelling station in Cove (south of Aberdeen) through the ACHES project), along with introducing a number of Council and passenger fleet vehicles (HyTrEc). This project provides the opportunity to continue the momentum in this evolving sector and reinforce Aberdeen's position as a global leader in hydrogen and fuel cell technologies.

The Fuel Cell Bus Commercialisation Project provides a unique opportunity for Aberdeen to work with other cities and industrial partners to transition this sector from technical demonstration phases towards the ultimate aim of fully commercialised zero emission hydrogen technologies across Europe and beyond. This type of collaboration lowers the risk to individual cities and offers excellent opportunities to share lessons and best practice. Aberdeen City Council's investment in a fuel cell bus project along the lines described above will lead to a range of other social, environmental, and economic benefits, including:

1. **Centre of Excellence** – Aberdeen City Council has the opportunity to build on its reputation as a leader in Energy, thereby attracting inward investment from OEMs, enabling local companies to diversify and utilise their wealth of energy, manufacturing and engineering expertise to place Aberdeen City truly at the forefront of Hydrogen and Fuel Cell technologies.
2. **Wider energy system benefits** – this project is built on the concept of using hydrogen produced from renewable electricity, which provides tangible links and benefits to the wider energy system. Water electrolyzers offer a variety of energy system benefits, including security of supply, a flexible source of demand for intermittent renewable generators, the ability to provide valuable balancing services to electricity grids, and a versatile energy vector that can be used for cross-sector

decarbonisation. Increased generation and use of electrolytic hydrogen will benefit Scotland's electricity system by helping to manage intermittent generation and allowing increased deployment of renewable generators.

3. **Employment opportunities** – continued expansion of Aberdeen's fuel cell bus fleet will lead to additional opportunities for highly skilled technicians to maintain state-of-the-art vehicles and hydrogen generation / refuelling equipment. Continuing to build a hydrogen economy in Aberdeen along with other Scottish cities will also provide opportunities to develop local supply chains in this area to support the deployment and operation of hydrogen fuel cell technologies.
4. **Greenhouse gas emission reductions and air quality improvements** – an additional fleet of ten/fifteen zero emission buses fuelled by low carbon hydrogen will provide emissions savings of around 630 tCO₂/yr, and reduce concentrations of harmful pollutants such as NO_x and PM₁₀ along the routes served. This is consistent with the legally-binding framework of the Climate Change Act (2008), which requires greenhouse gas emission reductions in the UK of 34% by 2020 and 80% by 2050, in addition to the Scottish Government's ambition to produce 100% of its electricity from renewable sources by 2020.
5. **Domestic fuel production** – producing hydrogen from locally generated renewable electricity leads to economic advantages (a high proportion of the value chain within Scotland) and security of fuel supply (reduced reliance on imported fossil fuels).

The project is now in a funding acquisition phase, expected to last until late 2016, by which time the outcome of the various funding applications will be known. EU funding will be sought from an FCH JU Call expected to be launched in early 2016. The outcome from this bid will be known by late summer of 2016. Ideally, a decision on whether match funding can be made available from cities will be made in advance of submission of the bid to the FCH JU in spring 2016.

In terms of the procurement framework the following timetable has been proposed. This is subject to agreement by all project partners.

Milestone	Indicative date
Release of the Prior Information Notice	Early January 2016
Release of the Request for Information (RFI)	January 2016
Deadline for RFI responses	18 th February 2016, 12 noon
Supplier forum	4 th March 2016

Procurement strategy approved	1 st April 2016
PQQ, ITT, draft contract issued	4 th April 2016
Completed PQQs received	5 th May 2016
Full tender responses received	22 nd July 2016
Contract award	October 2016

6. **IMPACT**

Improving Customer Experience –

This proposal will assist other local authorities/operators greatly both now and in the future as they can utilise the framework and learn from Aberdeen City Council’s experience within this sector.

Improving Staff Experience –

Working within this technically challenging but rewarding sector has broadened the knowledge, improved project management and negotiation skills of the staff involved in the various projects. It certainly brings job satisfaction.

Improving our use of Resources –

The reasons for spending public funds must always be analysed to ensure that they are valid and are necessary. This particular project has gone through the validation process and the outcome from this project will reap the rewards for Aberdeen City Council moving forward in terms of providing the general public with clean, quiet, zero emission buses, improving the air quality within the city and the travel and wellbeing of its citizens.

Corporate –

This project links to Aberdeen City Council’s Hydrogen Strategy and the transport and energy priorities within Aberdeen – the Smarter City Vision to “define the image of an international 21st century energy city, leading a new leaner, cleaner industrial revolution using the intensity of our social, business and community connections” and taking “a European lead in adapting new transport technologies” to “provide and promote a sustainable transport system, including cycling, which reduces our carbon emissions”.

This project also links into the North East’s Regional Economic Strategy - “Further diversification into alternative energy technologies must be accelerated to complement work already being undertaken in shale gas, tar sands, hydrogen fuel cell supply chain opportunities,

energy and carbon capture and storage and decarbonising food production.”

This project is also detailed within the Strategic Infrastructure Plan as one of the projects with substantial direct involvement from Aberdeen City Council that contribute to economic growth. It will also offer many opportunities for joint working with partner organisations on projects. One of the key successes of the hydrogen projects to date is the public, private consortiums which have been built. Without this collaborative approach the aims of Aberdeen’s Hydrogen strategy cannot be delivered. The External Funding Plan reinforces the importance of joined up partnerships at local, national and international level.

Public –

This project may be of interest to the public in terms of the potential economic and environmental benefits that hydrogen and fuel cell technologies can bring to the City including job creation as well as air quality improvements. Significant local and national air quality benefits can be derived from the deployment of low carbon vehicles offering zero exhaust emissions, reducing harmful pollutants such as nitrogen oxides (NOx), sulphur oxides (SOx) and particulate matter (PM₁₀).

Hydrogen technologies are also on the agenda for the Scottish Government. “The alliance, collaboration with the Scottish Government, is looking at hydrogen refuelling station infrastructure across cities and the production of green hydrogen. It wants to see Scotland become one of Europe’s leading early adopters of hydrogen technology and attract investment into manufacturing, engineering and energy.” Infrastructure, Investment and Cities Secretary Keith Brown.

7. MANAGEMENT OF RISK

The returns from the Council’s investment to date in hydrogen technologies (in relation to economic growth, business diversification, energy security, environmental and air quality benefits) will be reduced without the continuation of investment in Hydrogen and Fuel Cell technologies;

The Council’s ambition to continue to be at the forefront of hydrogen technologies will not be met and securing external investment will become more of a challenge;

The development of hydrogen and fuel cell technologies is a key action in the Council’s Strategic Energy Action Plan. It will be difficult to influence policy without a clear and evidence based rational.

8. **BACKGROUND PAPERS**

N/A

9. **REPORT AUTHOR DETAILS**

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