DDaT22528 - Hydrogen Economy Modelling Requirement

BEIS requires an ability to understand how policy options will impact the developing hydrogen economy. This is from both a strategic perspective, that is, what are the collective impacts of all existing and planned policies, and tactical perspective, that is, what is the impact of a specific policy.

Current analytical tools are unable to consider how interactions between supply and demand will occur at the system level. To meet this shortfall, the new model be required to interface with existing analysis from across BEIS. It will need to expand and develop as the sector evolves and new analytical questions become apparent.

1. BEIS are looking to procure a new model, which is used within the department to support policy making for the hydrogen sector.

2. We are open to either:
    i. The construction of a new model, or
    ii. Procurement of a proprietary model

3. BEIS must retain the ability to freely modify code, expand and further develop the model over the long term.

4. BEIS must have the right to publish or share the model

5. The model must initially be provided with sufficient development time factored in to test and redevelop the code to the standard set out in the specifications.

6. An ongoing package of support must be provided at an agreed hourly rate over the course of the year following product delivery.

Core Functionality

The model must have the ability to simulate the dispatch of hydrogen and be responsive to changes in the cost of production and level of demand.

*The model must be able simulate dispatch over the course of single year

*The model must be able to simulate the transport and storage of hydrogen

*The model must be able to simulate different sources of domestic production and demand

*The model must account for temporal and spatial variation in demand and supply

*The model must be able to simulate temporal and spatial variation in the hydrogen price.

*The model must be able to simulate the demand from blending hydrogen within the gas network

*The model must be able to simulate supply and demand from an import/export market

*The model must be able to output the volume, and where relevant the exchange price, of hydrogen moving through different parts of the system at any time.

*The spatial and temporal granularity in each part of the model should be sufficient to capture the key system dynamics

Outputs

*The model must output key information enabling the tracking of hydrogen volumes through the system and the price associated with any market exchanges taking place. Output should include:

*The volume of hydrogen stored in, or moving between, each component part of the system in each half-hour time interval.

*The price of hydrogen associated with any exchange within the system (e.g. production plant to storage unit, storage unit to export, production plant direct to demand etc..)

Taken together these fundamental outputs should be sufficient to summarise over the course of a year:

*The dynamics of production and sale price for each production unit
*The rate of hydrogen procured by each unit of demand and purchase price
*Actions taken by storage units
*The use of different transport connections
*Summary of import/export dynamics and prices
*The outputs must clearly summarise all parts of the system and their costs sufficient to enable the calculation of total system costs and benefits.

The estimated value of this requirement is £250,000.00 excluding VAT and will be for the period of 2023/24

We would like to invite suppliers to a pre-market engagement online session w/c 9th January 2023, via Teams.

An agenda will be agreed prior to the session however this session is an opportunity to engage with the market to discuss the requirement overall including specification and estimated budget.

If you could please register your interest in attending by emailing DDaTprocurement@uksbs.co.uk by no later than 12:00PM on Wednesday 4th January 2023 detailing your organisation's name and representatives of who will be attending on the day. When emailing if you could please reference in the subject "DDaT22528 Supplier Day". Upon registration you will be sent through a zoom code for attending the day.