

LCN Fund Full Submission

Supplementary Answer Form

Tick if this answer is Confidential: ☐

Tick if this answer has been provided verbally: ☐

Project code:	WPDT205	Question Number	20
Question date	03/10/13	Answer date	08/10/13
Submission section question relates to	Expert Panel Bilateral		
Topic	Benefits		
Question	Please explain how you consider that the economics and roll out opportunities of this project differ from the proposed LCN Fund Tier 2 project PATHS (which was submitted to the 2012 LCN Fund competition).		
Notes on question			
Answer	<p>Fundamentals</p> <ul style="list-style-type: none"> • PATHS – Powering Agriculture, Transport and Heat Systems <ul style="list-style-type: none"> – Rollout solution to be DNO funded not commercially funded – Looking to enable the connection of a very large wind farm hence options to reproduce are limited – Hydrogen for both transportation and gas injection for decarbonisation of heat, hence beneficiaries beyond DNO customers – Specific Fixed Methods/associated commercial model leading to limited learning points not all of which relate to DNOs/DNO customers – Slow electrolyser responsiveness limiting DSM potential • CEB – Clean Energy Balance <ul style="list-style-type: none"> – Rollout solutions to be either commercially funded or DNO 		

funded based on circumstance

- Looking to allow connection of smaller sets of renewable generation (wind, PV, etc)
- Hydrogen for time shifting electricity generation and/or gas injection for electricity network constraint avoidance – Hence all benefit to DNO customers
- A toolkit of discrete, configurable Methods and associated potential commercial models leading to considerable learning points relevant to DNOs/DNO customers
- Responsive electrolyser maximising DSM potential (essentially self-funding)

Economics/Rollout Opportunities

- **PATHS – Powering Agriculture, Transport and Heat Systems**

- DNO funded Constraint Scheme for renewable connection of large wind farms – Target wind farm size limits rollout potential
- DNO funded Gas production for Transport – Rollout limited by local hydrogen fuel demand
- DNO funded Gas for Injection – Not the best commercially Method in all scenarios – rollout potential reduced

- **CEB – Clean Energy Balance – A Toolkit of options**

- A commercial-funded 'constraint scheme as a service' model to offer generators wanting to connect in constrained areas – Minimises cost to generator and maximises rollout opportunities
- Commercial utilisation of a gas engine to maximise wind generation by time shifting it to maximise total generation output through the available connection – Maximises generation potential and rollout options where gas network not available
- Commercial utilisation of gas injection to maximise wind farm export on a constrained connection – As above
- Commercial models for CHP rollout and technical management of the systems to reduce urban reinforcement – Discrete Method to reduce reinforcement with considerable rollout potential and economic benefits, once proven

Key PATHS Challenges

- **PATHS Issue:** Doubt over rate of growth of hydrogen market

- We are not using hydrogen for vehicles, just as an energy medium, hence market growth is irrelevant
- **PATHS Issue:** Unclear that production of hydrogen will be an economic production method
 - SSE Stated hydrogen production costs would be 1.5 to 2 x conventional means
 - Generating hydrogen fuel is not a requirement of CEB. Hence cost of H2 production is irrelevant
 - We can, however, demonstrated that the electrolyser can be made cost-effective as part of a wider solution (e.g. Method 2)
- **PATHS Issue:** Some activities have a tenuous link to distribution customers
 - We have moved gas related activity to NIC and NIA
- **PATHS Issue:** Not all funding in place
 - All funding sources identified
 - Wind farm funding progressing through standard processes
 - Remainder subject to LCNF & NIC success
- **PATHS Issue:** Unclear what H&S issues may arise from hydrogen injection
 - We are fully aware of and understand the potential issues and consequences
 - HS L are part of related NIA project
- **PATHS Issue:** The largest component of cost is SSE's labour cost at £5.331m (revised down to circa £3.5m)
 - Our LCNF labour costs are £432k. Although contractor costs are £6.8m, PATHS contractor costs were £4.3m hence overall we are still below PATHS revised costs (CEB labour + contractor of £7.2m Vs PATHS £7.8)
 - A key CEB contractor cost is IT. This was tendered and the selected partner had the most competitive price
 - We will review costs post detailed design in the hope of reducing them further
- **PATHS Issue:** The Proposal doesn't seem to recognise the project management challenge
 - We understand fully the need for Programme Management rigour and the need to follow best practice
 - We have engaged a specialist in this area, Cornwall Development Company (CDC), to undertake this role
 - CDC has a track record in delivering EU and other funded

	projects within Cornwall
Attachments	
Verbal Clarifications (Consultants)	