

Gas Network Innovation Competition Full Submission
Supplementary Answer Form

Project: Commercial BioSNG Demonstration Plant

Tick if this answer has been provided verbally: ☐

Project code	NGGDGN02/1	Question Number	6
Question date	25/8/2015	Answer date	27/8/2015
Submission section question relates to	3.2		
Topic			
Question	The business case states that a 658GWh (full scale) facility can achieve a return if gas price is £18MWh and a smaller facility requires a gas price of £26/MWh. How are the project partners justifying the savings due to a larger scale facility?		
Notes on question			
Answer	<p>The performance of the BioSNG process improves significantly with size because of capital and operating cost economies of scale.</p> <p>The cost of most equipment used in the facility is driven by the gas volumes processed. However, this is not a linear relationship, as doubling the gas volume does not double the amount of materials required or the amount of design and fabrication effort required. For the simplest equipment, such as pipes and vessels, increasing volumes only results in a small increase in costs.</p> <p>A common engineering estimate is to assume that doubling the throughput of a process plant will increased costs by 50-60%. A detailed review of the costs of a BioSNG plant shows that moving from 328GWh/a to 658GWh/a increases cost by 57%. This means that the capital cost per MWh of gas produced produced by the larger plant is 22% lower than the smaller plant.</p> <p>The key operating costs for a facility are labour, maintenance, consumables, parasitic load, insurance, rent and rates. Consumables, parasitic load and rent vary linearly with scale, but others show economies of scale.</p> <p>A significant operating cost, Labour, only increases marginally with scale as a similar number of staff are required to run a large facility as a small one.</p>		

	<p>Other operating costs such as maintenance, insurance and rates follow capital cost, so also benefit from economies of scale.</p> <p>Overall, operating costs for a large plant are 19% lower per unit of production, than the 328GWh/a facility.</p> <p>The combination of lower capex and opex costs results in the difference in required gas price.</p>
Attachments	