

# LCNF Full Submission

## Supplementary Answer Form

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<b>DNO Name:</b>	SHEPD	<b>Question Number:</b>	SSE029
<b>Question Date:</b>	17/09/10	<b>Answer Date:</b>	20/09/10
<b>Question Topic:</b>	Storage Heater Deployment		

<b>Original Question No:</b>		<b>Original Answer Date:</b>	
<b>Original Question:</b>			
<b>Original Answer:</b>			

<b>Question:</b>	CLARIFICATION OF QUESTION SSE007 (as discussed between DNO and consultants). The project involves the purchase of frequency responsive storage heaters and immersion heaters (£4,500 each). In what percentage of UK households would it be feasible to deploy these technologies? What assumptions have you made in the commercial case/level of penetration for wider roll-out of these units?
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**Answer:**

The quoted figure of £4,500 is the anticipated cost of a 210 litre immersion tank and 4 storage heaters (1x18kWh + 3x12kWh) with applicable communications infrastructure including installation costs. This figure is based on tendering the required communications infrastructure with a separate tender for the installation works. This figure has been calculated as a conservative estimation for the 1000 home deployment; it is expected that this per home figure would reduce as the rollout increases and the installation works can be done as a single tender.

In terms of further rollout of the technology there are currently over 1 million UK households on Time of Use (TOU) tariffs with Dynamic Teleswitching functionality on their multi-rate meters\*. The 1 million existing customers would provide a simple transition to demand responsive heating. However there are no fundamental barriers stopping customers with wet heating systems changing to a dry storage heater set-up, and as such there is no feasible limit to the number of possible deployments.

It would also be possible for the customer to retain their wet central heating and simply deploy a controllable immersion tank. It must be noted that the learning associated with the project is applicable to all forms of thermal energy storage and as such is not restricted to domestic storage heater technology, for example it could be applied to centralised thermal storage in a wet system, or the storage of heat for cooling purposes.

In the UK today approximately 250,000 new immersion tanks are sold each year\*\*. If all these tanks were controllable it would provide the UK grid with approximately 875MW\*\*\* of additional flexible demand per annum. SSE anticipate that with the decarbonisation of the generation portfolio electric heating will become the key element of the future domestic heating mix; this is consistent with the D.E.C.C. carbon transition plan\*\*\*\*. The flexible demand allows the network operator to efficiently manage the load against generation and network constraints and hence allow an increase in intermittent renewable generation such as wind. In addition to being dispatchable the equipment will *also* respond to frequency signals, e.g. if the frequency drops the heaters will ramp down reducing the need to employ the existing levels of spinning reserve. If rolled out on a wider scale it is anticipated that the network operator has the potential to make significant savings in this area; which in turn are passed onto the customer.

\* OFGEM paper, Demand Side Response, Ref:82/10

\*\* Figure quoted by Glen Dimplex (project partners) on market estimate sales figures per annum

\*\*\* Calculated figure based on average 210 litre immersion heater at 3.5kW

\*\*\*\* Department of Energy & Climate Change 'UK's National Strategy for Climate and Energy: Transition to a Low Carbon Society'


<b>Attachments:</b>	
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