# National Energy Infrastructure Commission

**Submission by the Sustainable Energy Association.**

**To be sent to: energyevidence@Infrastructure-Commission.gsi.gov.uk**

**Closing date for submissions: 8th January 2015**

**Commission questions;**

Prior to answering the questions raised by the Commission, the Sustainable Energy Association considers it important to discuss the context of energy services and infrastructure in a holistic context.

Section 1.2 of this call for evidence sets out the key intention of the Commission's regular National Infrastructure Assessment, which will identify: 'the UK's long-term infrastructure requirements and prioritise the most important projects…it will provide a firm basis for planning and investment.'

The SEA proposes that the National Infrastructure Commission considers the roll-out of domestic energy efficiency measures to be a National Infrastructure Priority.

Underneath, we set out why energy efficiency of households should be considered infrastructure, and secondly highlight the fact that it would represent one of the most cost-effective infrastructure schemes the Commission could pursue.

As discussed in the Frontier Economics report, *Energy Efficiency; A National Infrastructure Priority*, energy efficiency measures should be considered to be infrastructure.

Frontier Economics state[1]:

> ***"We conclude that domestic energy efficiency constitutes infrastructure investment.***
>
> - ***Domestic energy efficiency investments free up energy capacity for other uses, just as investment in new generation or network capacity would. In this way, they increase inputs to the production of goods and services across the economy.***
> - ***These investments also provide public services, by reducing carbon emissions and improving health and wellbeing."***

Not only is domestic energy efficiency infrastructure, should the Government invest in this class of infrastructure, it would be highly competitive with existing large projects, such as HS2.

[1] Frontier Economics, Energy Efficiency as Infrastructure, Sept 2015

The NPV (£bn, 2014 prices) of an Energy Efficiency roll out would be: £8.7bn
The Smart Meter roll out is estimated to be £6.5bn. HS2 and Crossrail are £7.5bn and £7.2bn respectively, albeit for a different requirement, transport. The benefit-cost ratios for these projects are 1.5 (energy efficiency), 1.6 (smart metering), 1.4 (HS2) and 2 (Crossrail).

More detailed information has been highlighted by Verco and Cambridge Econometrics' report: *Building the Future; The economic and fiscal impacts of making homes energy efficient*. It highlights the benefits of energy efficiency, for example:

- £3.20 returned through increased GDP per every £1 invested by government
- An 0.6% relative GDP improvement by 2030, increasing annual GDP in that year by £13.9bn
- £1.27 in tax revenues per £1 of government investment, through increased economic activity, such that the scheme has paid for itself by 2024, and generates net revenue for government thereafter
- Increased employment by up to 108,000 net jobs per annum over the period 2020-2030, mostly in the service and construction sectors. These jobs would be spread across every region and constituency of the UK.[2]

Furthermore, there are three key aspects pertinent to this energy efficiency (demand side) roll out which the Commission should seek to investigate.

1. Energy efficiency decreases demand for gas & requirements for gas infrastructure investment. Gas is essential to flexible generation, and should be economically and frugally used at points of 'peak demand.' In this way, intermittent renewables can combine with use of gas plant to create the most efficient, low-carbon and secure energy network possible. The Commission should establish the optimal trajectory for combined use of multiple technologies to satisfy our energy needs- this ought to take a holistic view. By 2020, the UK could be importing nearly 50% of its oil and 55% or more of its gas according to DECC's document, *The Carbon Plan; delivering our low carbon future.*[3] Reducing the volume of required gas not only reduces outgoings, it also improves the energy security of the UK.

2. Balancing of supply and demand; the long term (middle path) trajectory identified by the Climate Change Committee identifies that one in seven homes require a low-carbon energy efficiency heating system in 2030.[4] This will have an effect on required investment in the electrical grid. The National Infrastructure Commission should investigate.

3. Storage; the commission will need to investigate to what extent is cost-reduction feasible and how much will in-house storage systems have to fall in cost before becoming competitive with supply-side energy solutions. The Climate Change Committee states: "the demand side also has an important role in increasing the

[2] Verco and Cambridge Econometrics; *Building the Future; The economic and fiscal impacts of making homes energy efficient.*2014
[3] Department of Energy & Climate Change, *The Carbon Plan, Delivering our low carbon future*, 2011
[4] The Committee on Climate Change; *The Fifth Carbon Budge; the next step toward a low-carbon economy*. 2015

flexibility of the power system, alongside interconnection, storage and flexible back-up capacity".[5]

As such, the SEA would recommend that, prior to any final decision on which infrastructure priorities being made, that the Commission does investigate fully the potential offered by energy efficiency as a National Infrastructure Priority.

The Sustainable Energy Association is considering further the questions raised in the call for evidence, and may provide a further submission as appropriate.

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[5] The Committee on Climate Change; *The Fifth Carbon Budge; the next step toward a low-carbon economy*. 2015