**Draft proposal for REA thought leadership item on forecast grid emission factors**

Policy landscape:

Various policy discussions rely heavily on future grid emission factors persistently decreasing as it assumes that grid emissions will fall. These policies include various demand side increases in domestic and industrial heat as well as surface transport. There is a general conceptual understanding that investment in low carbon generation and grid balancing is needed, but no clear policy to enable investment by stakeholders, including national grid and district network operators as well as generators.

While future grid emission factors are assumed to fall, current low carbon supply chain services in heat, power and transport are frustrated by a pervasive view that they are all transient and therefore should not perhaps be encouraged too much or for too long. These technologies include active biogenic supply chain investors. While future generation relies on instantaneous generation from wind and solar without grid storage, biogenic services provide primary energy vector storage and despatch-able capability.

We are in a position where no clear future policy for future grid management and no future policy for biogenic energy vectors leaves fossil sources dominant and grid emission factors likely to increase at a marginal level.

Current situation:

UK grid electricity emission factors are heavily dependant on various factors. These include the prime energy vector providing the power, such as wind, wave, solar, biomass, coal, gas, hydropower, oil, energy from waste, storage and where imported power may come from. They also include demand side effects that impact on emissions because of the way the market functions, providing marginal despatch-able power subject to demand. We often see that as demand increases, grid emission factors increase as generation reverts to coal and gas.

Demand side balancing is limited and the likelihood of it being effective in helping reduce emissions is unknown as the impact of various postulated demand side efficiency factors are unclear. We do not know whether a world of electric domestic and industrial heating can be modelled through assumptions that consumers will be happy to have their properties heated when supply is available. Similarly, we do not know the extent to which consumers will be happy to have their cars charged when low carbon generation is available. And we have no clear plans for investment in the infrastructure required for effective demand side management at community level or the consequent District Network Operator and National Grid operator. The concept is well supported, but there is no clear policy to provide investment.

Proposal:

REA should develop a forecast annual grid demand, supply forecast and consequential grid emissions factors in order to show what type of emissions we should expect. It may be useful to use the National Grid Future Energy Scenarios as a basis for scenario assessment and consideration of grid emission factors under each scenario. The output of this work will provide consistency in thought leadership to support policy making across the heat, power and transport sectors.

REA is well placed, and arguably the only place in the UK, where stakeholders with appropriate competence can work together to consider on an annual basis, considering potential low and high demand and investment scenarios what a future grid emissions factor may look like.