

Submitted: 1st October 2018

Please find attached a response to the open consultation: [Capacity Market and Emissions Performance Standard review: call for evidence](#)

I am writing on behalf of the organisation *Sandbag*, an environmental think tank. We have chosen to provide evidence to chapter 6 regarding the Emissions Performance Standard.

Question 34

To what extent has the EPS been achieving its objective? Please provide evidence to support your views.

The EPS is only partly achieving its objective. With its current design, the EPS only prevents one type of new fossil-fueled electricity generation - large baseload coal power stations not equipped with CCS. While the EPS has been successful in this regard, a sizeable capacity of other, **non-coal**, high emissions fossil-fuelled generation has either been built or contracted since the EPS came into force. In total, ~ 3GW of new small gas generators and ~ 1GW of new small diesel generators with average emissions intensities of ~ 510gCO₂/kWh [1] and 770gCO₂/kWh [2] respectively, has been built or been awarded a Capacity Market contract since the EPS came into force. All of this new capacity is “peaking” capacity, designed to support the electricity system by generating during periods of high demand or low renewables output. None will fall within the scope of the EPS as it will not operate baseload.

Historically, running hours (and therefore emissions) from peaking plants were very low. However, they are now increasing rapidly [3] due to a combination of higher variable renewables output and reforms to the balancing market [4]. In its current form, the EPS is unable to regulate this rising source of emissions from new fossil-fuelled generation.

Question 35

Is this current objective of the EPS still appropriate? Could it be achieved in a way that imposes less regulation? Please provide evidence to support your views.

The objective of the EPS is still appropriate - but its design is no longer fit for the modern electricity system. As we show in our Coal To Clean report [5], any new fossil fuelled electricity generation built in the UK will likely be designed to run peak load and therefore will not fall within the scope of EPS. If unregulated, growth in emissions from peaking capacity could undermine the UK's decarbonisation targets.

We propose modifying the EPS to an *instantaneous* emissions intensity limit and lowering the capacity threshold such that small generators are included. This would ensure that all new fossil fuelled electricity generation meets a minimum carbon emissions standard - regardless of size or planned running hours. We view 450gCO₂/kWh as an appropriate limit given current available technology; this is equivalent to a gas peaking unit operating at at least **45.5%** (LHV) efficiency. Modern, good quality gas peaking units operate above this efficiency level and best available technology is now reaching **50%** (LHV) [6]. The Government should retain the option to tighten the emissions intensity limit in future, or apply it to existing generation as carbon budgets shrink and technology improves.

In implementing the UK's coal phase-out, the Government has proposed an *instantaneous* emissions intensity limit of 450gCO₂/kWh for solid fuels. Adapting this proposal presents an opportunity to streamline regulation. We propose that the Government expands the scope of the planned legislation to include **all fuels** for **new** plants and solid fuels only for existing plants. We also propose significantly lowering the capacity threshold to 1MWth, in line with the Medium Combustion Plant Directive. This would render the current EPS redundant, allowing for its removal and fewer overall regulations.

In a previous Sandbag publication [7], we have estimated that emissions from peaking generation could soon be in the region of 2.5 million tonnes a year. If the current fleet had been built to a instantaneous 450gCO₂/kWh standard, emissions would be approximately 0.5 million tonnes a year lower. With the capacity of the peaking fleet expected to grow significantly over the coming years (Timera, a specialist energy consultancy, forecast 5-10GW of new gas engines built across the 2020s), the potential for further emissions savings from prudent regulation is clear.

To recap, we recommend that instead of the current EPS, the Government expands the instantaneous 450gCO₂/kWh emissions limit proposed in the coal phase-out legislation to include **all fuels** for **new** plants, and lowers the capacity threshold to 1MWth.

Question 36

Have any issues arisen in the operation of the EPS which should be considered? Please provide evidence to support your views.

Answered above.

References

- [1] 2.56 GW of small gas reciprocating engines and 0.4GW of OCGT - both with an estimated electrical efficiency (LHV) of ~ 40%. Please see our Coal To Clean report for more details <https://sandbag.org.uk/project/coal-to-clean/>
- [2] 850MW of small diesel reciprocating engines with an estimated electrical efficiency (LHV) of ~ 37%. Please see our Coal 2 Clean report for more details <https://sandbag.org.uk/project/coal-to-clean/>
- [3] According to Green Frog Power, a major operator of small distribution connected peaking capacity, expected running hours for a small peaking gas reciprocating engine have more than doubled in just “three to four years”. *Source: Platts Power in Europe issue 774.*
- [4] System cash-out prices are now based on a more marginal unit of electricity required to balance the system: <https://www.ofgem.gov.uk/ofgem-publications/87782/electricitybalancingsignificantcodereview-finalpolicydecision.pdf>
- [5] <https://sandbag.org.uk/project/coal-to-clean/>
- [6] <https://www.ge.com/power/gas/reciprocating-engines/jenbacher/j920-flextra>
- [7] <https://sandbag.org.uk/2018/05/31/how-can-we-reduce-emissions-from-small-fossil-fuel-generators>
- [8] Pg.7 <https://timera-energy.com/wp-content/uploads/2018/01/Timera-UK-power-client-briefing-Q118.pdf>