

<b>Title: The Emissions Performance Standard (EPS) Secondary Legislation</b>  <b>IA No: DECC0181</b>  <b>Lead department or agency: Department of Energy and Climate Change (DECC)</b>  <b>Other departments or agencies:</b>	<b>Validation Impact Assessment (IA)</b>
	<b>Date:</b> 28/11/2014
	<b>Stage:</b> Validation
	<b>Source of intervention:</b> Domestic
	<b>Type of measure:</b> Secondary legislation
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<b>Summary: Intervention and Options</b>	<b>RPC: Fast Track Approved</b>
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Cost of Preferred (or more likely) Option					
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCB in 2009 prices)	In scope of One-In, Two-Out?	Measure qualifies as	
£-0.76 m	£ -0.76 m	£ 0.05 m	Yes	IN	

**What is the problem under consideration? Why is government intervention necessary?**

The Emissions Performance Standard (EPS) was introduced in the 2013 Energy Act<sup>1</sup>. The EPS places a limit on the carbon dioxide emissions produced by new fossil-fuel generation plants. It works alongside other policies to ensure that the construction of new coal and gas generation plants are consistent with over-coming market failures to meet the UK's emissions reduction objectives. The EPS also acts as a regulatory backstop to the National Planning policy, which requires new coal fired power station to be equipped with CCS.

There is a duty in section 60(1) of the Energy Act to establish practical arrangements for monitoring compliance with and the enforcement of the emissions limit. Therefore, secondary legislation is now required to make those practical arrangements relating to the EPS primary legislative provisions that Parliament has already determined should be brought into force.

**What are the policy objectives and the intended effects?**

The objective of the secondary legislation is to provide a clear framework for the application of the EPS provisions (as set out under the Energy Act 2013) while minimising the administration costs for compliant businesses. For this reason, the secondary legislation sets out the requirements that will be placed on new fossil fuel-fired generation plants to monitor and report their annual carbon dioxide emissions. It also establishes the characteristics of the penalty regime that will apply in the event of breach of the Emissions Limit and makes technical arrangements clarifying the application of the EPS in particular circumstances.

<sup>1</sup> <http://www.legislation.gov.uk/ukpga/2013/32/contents/enacted/data.htm>

**What policy options have been considered, including any alternatives to regulation?  
Please justify preferred option (further details in Evidence Base)**

Two options have been considered:

- **Option 0:** Do nothing
- **Option 1:** Establish a process for monitoring, reporting and verifying plants' emissions in relation to the EPS requirements. (Preferred option)

The EPS primary legislative provisions do not establish practical details for the administration of the EPS regime. Therefore "doing-nothing" at the secondary legislation stage implies not providing clarity to operators on how to comply with the EPS, how compliance is monitored and, if necessary, enforced.

Under the preferred option, for the new fossil-fuel generation plants that are subject to monitoring and reporting, there will be an initial information exchange between the Regulator (the Environment Agency in England) and the plant operator to agree the plant's EPS value (the methodology for the calculation of which is established under primary legislation). The plant will then report its emissions annually. This reporting will, broadly speaking, use the same process currently used for the EU-ETS thereby minimising creation of additional reporting burdens. In the event of a breach of the EPS limit, the regulator will be able to charge a fair and proportionate financial penalty negating the benefit derived from the breach of the emissions limit. Therefore the preferred option will provide clarity to fossil fuel plant operators regarding the application of the EPS primary provisions while minimising the administration costs for compliant businesses.

**Will the policy be reviewed?** It will not be reviewed. **If applicable, set review date:** n/a

Does implementation go beyond minimum EU requirements?			N/A		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	<b>Micro No</b>	<b>&lt; 20 No</b>	<b>Small No</b>	<b>Medium Yes</b>	<b>Large Yes</b>
What is the CO2 equivalent change in greenhouse gas emissions? (Million tonnes CO2 equivalent)			<b>Traded: 0</b>	<b>Non-traded: 0</b>	

*I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.*

Signed by the responsible Minister: Matt Hancock Date: 12.1.2015

## Summary: Analysis & Evidence

## Policy Option 1

Description: 'Establish a process of monitoring, reporting and verification of plant emissions in relation to the EPS requirements.'

### FULL ECONOMIC ASSESSMENT

Price Base Year 2014	PV Base Year 2014	Time Period Years 16	Net Benefit (Present Value (PV)) (£m) £ - 0.76m		
			Low	High:	Best Estimate: £ -0.76m

COSTS (£m)	Total Transition (Constant Price) Year	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low			
High			
Best Estimate	£ 0	£0.1 m	£ 0.8 m

#### Description and scale of key monetised costs by 'main affected groups'

Total costs to business consist of both one-off and on-going costs. One-off costs comprise the administrative expenses incurred during the initial information exchange between the Regulator and each eligible operator to establish the EPS value of the new plant (£7,500 per plant). They also include a cost on the Regulator to make its central I.T. system fit for purpose (£45,000). On-going costs take into consideration the annual costs associated with monitoring the EPS for eligible plants. They are estimated to be £3,500 per plant per annum. There is also an expected annual cost of £500 for the Regulator to update their website. A total of 31 new fossil fuel plants are assumed to be built between 2014 and 2030.

#### Other key non-monetised costs by 'main affected groups'

N/A

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low			
High			
Best Estimate	£0 m		£0 m

#### Description and scale of key monetised benefits by 'main affected groups'

N/A

#### Other key non-monetised benefits by 'main affected groups'

The EPS secondary legislation does not give rise to any monetised benefits. However, it provides a clear framework for the application of the EPS primary provisions; therefore, it indirectly facilitates the achievement of the non-monetised benefits associated with the enactment of the EPS primary legislation. In other words, the secondary legislation will ensure that the EPS meets its intended purpose.

Key assumptions/sensitivities/risks

Discount rate (%)

3.5%

The key driver of the total costs of the EPS is the number of plants that will be subject to the initial information exchange (to establish the plant's emissions limit) and to on-going monitoring. All abated and unabated fossil fuel generation plants built after the Energy Act came into force (February 2014) are subject to this process; this will include CCGT, OCGT, gas CCS and coal CCS plants. Finally, the cost figures are based on estimates provided by the Environment Agency and they represent the best available cost information.

### BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OITO?	Measure qualifies as
Costs: £ 0.05 m	Benefits: £ 0.0 m	Net: £- 0.05 m	Yes	IN

## Evidence Base (for summary sheets)

### Rationale for intervention and intended effects

#### Introduction

1. The Emissions Performance Standard (EPS) formally limits the level of carbon dioxide emissions a new fossil-fuel generation plant is allowed to emit. In theory, emissions limits set out under the EPS are binding on coal plants. However, new coal plants are subject to other barriers that are more significant: they are required to be equipped with at least 300MW of Carbon Capture and Storage (CCS) under the National Policy Statement for Planning and will become progressively less profitable over time due to increasing levels of low-carbon generation and rising carbon prices<sup>2</sup>. Therefore no new coal plants are expected to be built (and no existing plants are expected to replace their boilers such that they would be considered to be a new plant), irrespective of the EPS. Only in the event of a change to current decarbonisation policies (e.g. removal of restrictions on new coal as stated in the National Policy Statement, as discussed in paragraph 16) could EPS emissions limits be binding on coal plants and only then in circumstances where prices are highly favourable to coal. Therefore, the EPS acts as a backstop measure against such a scenario.
2. The EPS primary legislation came into force in the 2013 Energy Act. The primary legislation was the subject of a Regulatory Triage Assessment (RTA) that was confirmed as a low-cost regulatory measure by the RPC in November 2013. Secondary legislation is now required to make practical arrangements relating to the primary legislative provisions that Parliament has already determined should be brought into force. The secondary legislation will establish a regime for monitoring, reporting and verifying plants' carbon emissions in relation to the EPS requirements. It will also set out enforcement measures to be taken in the event of non-compliance.
3. The secondary legislation was the subject of an RTA that was confirmed as a low-cost regulatory measure by the RPC in August 2014. This Validation Impact Assessment confirms that the EPS secondary legislation is expected to result in low costs to business. The EPS secondary legislation provisions are in scope of OITO and they represent a small IN of £0.05m.

#### EPS primary legislation

4. Climate Change is a global market failure. In the 2008 Climate Change Act, the UK set itself a target to reduce greenhouse gas emissions by at least 80% on 1990 levels by 2050. The electricity system needs to be substantially decarbonised during the 2020s and beyond, particularly if it is to play its part in decarbonising the heat and transport sectors in the 2030s.
5. The EPS imposes an annual limit on the amount of CO<sub>2</sub> a fossil fuel generation plant can emit, equivalent to 450gCO<sub>2</sub>/kWh for plants operating at baseload<sup>3</sup>. In practice this limit means that new coal plants can only operate at baseload if using CCS. The EPS applies to fossil fuel-fired generation plants with a capacity above 50MWe and only applies to new fossil-fuel generation plants or existing coal-fired generation plants that significantly extend their life, by replacement or installation of a main boiler, for a period consistent with that of a new plant.

#### EPS secondary legislation

6. The secondary legislation will establish the framework<sup>4</sup> under which a Regulator<sup>4</sup> will be required to ensure that operators of fossil fuel generation plant are compliant with the EPS and so operate within the Emissions Limit imposed on a plant by section 57(1) of the Energy Act 2013.
7. The secondary legislation sets out the requirements that will be placed on new fossil fuel-fired generation plants to monitor and report their annual carbon dioxide emissions. It also establishes the characteristics of the penalty regime that will apply in the event of breach of the Emissions Limit and makes technical arrangements clarifying the application of the EPS in particular circumstances. The secondary legislation should ensure plants are disincentivised from breaching EPS limits, while minimising the administration costs for compliant businesses. The Government consulted on these arrangements and sought additional information on the administrative costs of secondary legislation. The cost assessments in this document reflect the results of this consultation.

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<sup>2</sup> The European Emissions Trading Scheme (EU-ETS) places a price on carbon emissions by electricity generators. The upward carbon price trajectory under the EU-ETS is reinforced by the UK's Carbon Price Floor policy.

<sup>3</sup> Baseload is a term commonly used to define a power plant that is operated almost continuously, bar any maintenance periods, over the course of a year. The EPS limit in the Primary Legislation is expressed based on an annual load factor (i.e. the hours that a plant generates electricity for, divided by available hours in the year) of 85% (net of availability).

<sup>4</sup>The Environment Agency will act in this capacity in England.

## Viable policy options (including alternatives to regulation)

### Option 0 - Do-nothing

8. There is a duty in section 60(1) of the Energy Act 2013 on the Secretary of State to make arrangements for monitoring compliance with and the enforcement of the emissions limit duty. As mentioned in paragraph 2, the secondary legislation is required to give clearer effect to the primary legislative provisions that Parliament has already determined should be brought into force.
9. Therefore “doing-nothing” at the secondary legislation stage means not providing clarity to operators on how to comply with the EPS, how compliance is monitored and, if necessary, enforced. That is, “doing nothing” would imply that the policy objective of the primary legislation was not met. Once regulations have made provision for the emissions limit, the Secretary of State is under a duty to ensure monitoring and enforcement.

### Option 1 - Establish a process for monitoring, reporting and verifying of plant emissions in relation to the EPS requirements

10. For the new fossil-fuel generation plants that are subject to the reporting, there will be an initial information exchange between the regulator and the plant to establish the EPS value<sup>5</sup> and then the plant will report its emissions annually (using the existing EU-ETS methodology). Therefore, after the initial exchange, there will be no additional reporting burden for plants; the Regulator will use emissions data already provided by businesses to the Regulator.
11. In the event of a breach of the EPS limit, the Regulator can levy a financial penalty which must remove the benefit derived from the given breach of the emission duty. The Regulator can exercise a degree of discretion, when taking enforcement action, but must always ensure that any penalty is consistent with the principles of fairness and proportionality.

## Assessment of business impact

### Recap of business impacts of EPS primary legislation

12. As discussed below, the EPS primary legislation is not expected to have any impact on investment decisions or plant running hours, for either unabated coal or gas generation plants.
13. Table 1 shows that only Open Cycle Gas Turbine (OCGT) and unabated coal (i.e. without Carbon Capture and Storage (CCS)) would have emissions equal to or higher than the ones permitted by the EPS when running as baseload.

**Table 1. Comparison of the emissions from a new 1GW fossil fuel plant of different technologies compared to the constraint imposed under the EPS (assuming plants operate at baseload)<sup>6</sup>.**

	<b>EPS (equivalent to 450g CO<sub>2</sub>/kWh)</b>	Gas (Combined Cycle Gas Turbine - CCGT)	Gas (Open Cycle Gas Turbine - OCGT)	Unabated Coal <sup>7</sup> (Advanced Supercritical Coal - ASC)	Coal (ASC fully fitted with CCS – 90% CO <sub>2</sub> Capture)
Total Annual Emissions (million tonnes)	<b>3.4</b>	2.6	3.4	5.9	0.8

14. In practice the EPS primary legislation will not impact OCGT. The very high operational costs of OCGT mean that OCGT plants would not (and do not) operate at baseload i.e. they only generate for a limited number of hours per year when electricity prices are at their peak<sup>8</sup>, with correspondingly low total annual emissions.
15. In addition, irrespective of the EPS, no construction of new coal plants (nor boiler replacement in existing coal plants) is expected. This is because coal plants will become progressively less profitable over time due to the combined effect of increasing levels of low carbon generation, rising carbon prices<sup>9</sup> and planning restrictions in

<sup>5</sup> The EPS value is the emissions limit value applicable to a relevant fossil fuel generation plant. It is a function of the plant 's installed capacity and of the statutory rate of emissions (450 g/kWh) as defined in section 57(1) of the Energy Act; its interpretation and application is subject to section 4 of the 2015 Emissions Performance Standard Regulations

<sup>6</sup> Emission levels based on plant load factor of 85%.

<sup>7</sup> Advanced Supercritical Coal (ASC) is the most environmentally efficient (i.e. lowest emissions) type of coal generation plant currently available in the market. It therefore provides a lower bound to unabated coal's emissions

<sup>8</sup> Modelling for DECC's EMR Delivery Plan (December 2013) projected that average annual load factors for the OCGT fleet would be less than 1% in both 2020 and 2030 in the reference case.

<sup>9</sup> The European Emissions Trading Scheme (EU-ETS) places a price on carbon emissions by electricity generators. The upward carbon price trajectory under the EU-ETS is reinforced by the UK's Carbon Price Floor policy.

the National Policy Statement (NPS)<sup>10</sup>. The only new coal generation capacity will be plants that are fitted with Carbon Capture and Storage.

16. Therefore only in the event of a change to current policy (e.g. the removal of planning restrictions on unabated coal as described above) would the EPS be binding, and only then in circumstances where fossil fuel prices are highly favourable to coal plants. In such a scenario the EPS would act as a backstop to prevent the deployment of new unabated coal plant. The global warming market failure and the associated need for the UK to decarbonise is so significant that we should have this backstop in place even though it will only be required in the event that other policies no longer apply.
17. In summary, the EPS primary legislation is expected to have no impact on fossil fuel plant investment decisions. Rather, the EPS will act as a backstop measure.
18. Therefore the only cost to business from the EPS legislation will be the administrative costs associated with the monitoring and enforcement regime defined in the secondary legislation.

## **Business impacts of EPS secondary legislation**

### *Cost to business of administering EPS*

19. There will be an administrative cost associated with the EPS. All the quantified costs have a direct impact on business<sup>11</sup> and they will be borne by the Regulator and the generation plants. To avoid creating additional administrative burdens, EPS monitoring and reporting will broadly follow the same processes for monitoring and reporting of carbon emissions used for the EU Emissions Trading System (EU-ETS).
20. It is assumed that plants comply with the EPS and do not illegally breach their emissions limits. Breaches are unlikely because (i) new electricity generation plants are not expected to be built with emissions levels close to EPS limits (i.e. unabated coal), and (ii) the Regulator will have very good information on plant emissions levels, and thus plants will know that breaches will very likely be caught. Therefore, the costs below represent administrative costs only.
21. The estimated costs are based on the Environment Agency's experience of administering the EU-ETS, which provides the monitoring and enforcement framework on which the EPS will be based. The total cost to business will consist of the following components:
  - i. **One-off costs:** One-off costs are needed for the EPS monitoring and reporting arrangements to be implemented for the first time. An initial information exchange will be required to establish the emissions limit value for each new eligible fossil fuel-fired generation plant. This cost is estimated to be £7,500 per plant in total i.e. including costs incurred by the plant and by the Regulator. The Regulator is expected to incur £5,000 per plant based on the cost of 0.05 full-time equivalents (FTE), while the plant is expected to incur £2,500 for the initial regulatory information exchange<sup>12</sup>. There is also assumed to be a one-off cost of £45,000 on the Regulator to make the central I.T. system fit for purpose.
  - ii. **On-going costs:** There may be annual costs associated with administering the EPS for eligible plants. These are estimated at £3,500 per plant per annum, based on Regulator staff costs i.e. 0.03 FTE at Senior Manager grade. This is considered a high-end estimate. In addition to this, the Regulator is expected to incur £500 per annum to update their website. No on-going costs to the plant are expected, as plants will not be generating new information beyond what is already required for the EU-ETS.

<sup>10</sup> The NPS requires new coal to be equipped with at least 300MW of Carbon Capture and Storage (CCS). The cost of installation of 300MW of CCS on a standard 1600MW coal plant is significant, and renders investment in new coal plants unprofitable. ([https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/37046/1938-overarching-nps-for-energy-en1.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/37046/1938-overarching-nps-for-energy-en1.pdf))

<sup>11</sup> According to the Better Regulation Framework Manual, a direct impact (cost or benefit) on business is defined as "an impact that can be identified as resulting directly from the implementation or removal/simplification of the measure" (<https://www.gov.uk/government/publications/better-regulation-framework-manual>)

<sup>12</sup> Cost to plant assumed to be 50% of the cost on the Regulator (£2,500 = £5,000 \* 0.5). This is considered to be a conservative estimate; the true cost to the plant may be lower since the Regulator will be leading the work to establish the EPS value.

**Table 2. Total cost to business per year resulting from secondary legislation <sup>13</sup>**

Cost component		Cost, £
I	<u>One-off costs</u> Cost of initial information exchange to determine plant-specific emissions limit	2,500 (cost incurred by business, incurred once for each new plant)  5,000 (cost incurred by Regulator, incurred once for each new plant)
	One-off I.T. upgrade for Regulator	45,000  (15,000 supply of I.T. system + 30,000 implementation costs, expected to be incurred in 2020 to coincide with the updates that will take place for phase 4 of the EU-ETS)
II	<u>On-going costs</u> EPS administration cost imposed on Regulator	3,500 (EPS administration cost per plant, per annum);  500 per annum (website costs)

22. The above figures are based on estimates provided by the Environment Agency. This is the best available cost information. It is expected that once the EPS value is determined for a single plant, it will not change over time (subject to there being no material change in the plant's installed generating capacity). Therefore the administrative burden per plant should not grow over time. The administrative costs (including I.T. costs) incurred by the Environment Agency will need to be funded. It is expected that businesses will be subject to a charge from the Regulator to enable it to recover the administrative costs incurred. These regulator costs are therefore assumed to accrue to businesses and are therefore included in the equivalent annual net costs to businesses (EANCB) calculation.
23. The estimated administrative costs per plant (discussed above) are a fundamental part of the EANCB calculation. The other key driver of the total costs of the EPS is the number of plants that will be subject to the initial information exchange needed to determine the plant-specific emissions limit. All abated and unabated fossil fuel generation plants built after the Energy Act came into force (February 2014) are subject to this one-off cost. It is estimated that 31 such plants will be built between 2014 and 2030 (see table 3). This includes CCGT, OCGT, gas CCS and coal CCS plants. This assumption is based on the latest reference case scenario from DECC's Dynamic Dispatch Model (DDM) (October 2014)<sup>14</sup>.
24. The period 2014 to 2030 is used as the appraisal period. The EPS secondary legislation gives rise to on-going costs with no expected end date (assuming no change to the policy) and plants are built relatively infrequently. Therefore a short appraisal period of ten years was deemed not appropriate. It was felt that appraising the period out to 2030 (16 years) would give a better reflection of the impact of the policy.

**Table 3. Number of fossil fuel generation plants subject to the initial information exchange**

2014-2018	2019-2022	2023-2026	2027-2030
3	9	11	8

25. Based on the estimated number of eligible plants and the one-off and on-going cost items above, the net present value of the policy over 2014-2030 is estimated at £0.7 million (2014 prices and 2014 present value

<sup>13</sup> All itemised cost estimates are in 2014 prices. Overall EANCB presented in 2009 prices in accordance with EANCB calculator.

<sup>14</sup> The Dynamic Dispatch Model (DDM) is a comprehensive fully integrated power market model covering the GB power market over the medium to long term. The model was peer reviewed by external independent academics to ensure the model is fit for the purpose of policy development.

base year). The equivalent annual net cost to business (EANCB) over 2014-2030 is £ 0.05 million (2009 prices and 2010 present value base year)<sup>15</sup>.

#### *Impact on bills*

26. In theory, there could be a very small indirect impact on electricity bills, assuming the cost of setting up and administering the EPS were passed through from business to electricity consumers. However, the costs are sufficiently small compared to the number of consumers (e.g. around 27 million households) that any impact on average bills as a result of secondary legislation would be negligible.

#### *Potential benefits of the proposed measure*

27. The EPS works alongside other decarbonisation policies to ensure that the construction of new coal and gas generation plants addresses both the objectives of security of supply and emissions reduction. The EPS also acts as a regulatory backstop to the National Planning policy, which requires new coal fired power station to be equipped with CCS.

28. The EPS secondary legislation does not give rise to any monetised benefits. However, it provides a clear framework for the application of the EPS primary provisions; therefore, it indirectly facilitates the achievement of the non-monetised benefits associated with the enactment of the EPS primary legislation. In other words, the secondary legislation will ensure that the EPS meets its intended purpose.

#### **Summary**

29. The EPS primary legislation is not expected to have any impact on investment decisions or plant running hours, both for coal and gas plants. For coal, this is because no new investment in unabated coal plants is expected due to market conditions for coal-fired generation. For gas, the level of annual emissions will be lower than the limit set by the EPS.

30. The EPS secondary legislation is expected to result in some administrative costs for business. The equivalent annual net cost to business is approximately £0.05m in 2009 prices (present value base year 2010), appraised over the period 2014-2030.

#### **One-in, Two-out status**

31. All of the monetised costs of this policy have a direct impact on business. Moreover, none of the existing out-of-scope exemptions apply to the EPS secondary legislation. Therefore, the provisions are in scope of OITO.

32. In line with the Better Regulation Framework Manual, the equivalent annual net cost to business (EANCB) is estimated to be £0.05 million (price base year 2009, present value base year 2010). For this reason, the policy represents a small IN of £0.05 million.

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<sup>15</sup> The figure for EANCB has been estimated using the EANCB calculator provided by the Better Regulation Executive.