



**SCCS**

# **Supporting the further development of Carbon Capture and Storage in Scotland**

**Implications for the Second Report on  
Proposals and Policies**

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# 1. Introduction

- 1.1 On 29 January 2013 the Scottish Government published *Low Carbon Scotland: Meeting our Emissions Reduction Targets 2013-2027*. This document is a draft of the second report on proposals and policies (RPP2) for meeting Scotland's annual greenhouse gas emissions targets that the Scottish Ministers must lay before the Scottish Parliament in accordance with the requirements in section 35 of the Climate Change (Scotland) Act 2009.<sup>1</sup>
- 1.2 The Scottish Parliament has considered RPP2 via scrutiny by four relevant Committees,<sup>2</sup> and a Parliamentary debate.<sup>3</sup> A number of points of relevance to CCS have been raised, and are considered below in Section 3.
- 1.3 During the course of the scrutiny of RPP2, a number of policy developments at UK and EU level have taken place that will have a bearing on the future development of Scottish CCS policy.
- 1.4 On 20<sup>th</sup> March 2013, the UK Department for Energy and Climate Change announced the names of the preferred projects it intends to take forward to FEED studies under the UK CCS Commercialisation Programme.<sup>4</sup> This identifies the proposed Gas CCS retrofit project at Peterhead as one of the preferred bidders. However, the Captain Clean Energy Project at Grangemouth has been named as a reserve project. Similarly held in reserve is the Teesside Low Carbon project, which had proposed to undertake CO<sub>2</sub> storage / CO<sub>2</sub>-EOR operations in an oil field located in Scottish waters.
- 1.5 On 27<sup>th</sup> March 2013, the European Commission released a Consultative Communication on The future of CCS in Europe,<sup>5</sup> seeking views on how CCS could be further supported at European level. The Communication sets out a number of potential policy and funding instruments that could be considered to support the deployment of CCS for both power sector and industrial sources of emissions.
- 1.6 On 28<sup>th</sup> March 2013, UK Department for Energy and Climate Change and Department for Business, Innovation and Skills published a report reviewing the potential cost of deploying CCS on industrial sources of CO<sub>2</sub> emissions.<sup>6</sup> This highlights the importance of the development of infrastructures for CO<sub>2</sub> transport and storage as a means of enabling

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<sup>1</sup> <http://www.scotland.gov.uk/Topics/Environment/climatechange/scotlands-action/lowcarbon/meetingthetargets>

<sup>2</sup> Of particular relevance for CCS is the report of the Energy, Economy and Tourism Committee, available at:

<http://www.scottish.parliament.uk/parliamentarybusiness/CurrentCommittees/61496.aspx#emissions1>

<sup>3</sup> [http://www.scottish.parliament.uk/parliamentarybusiness/28862.aspx?r=7896&mode=html#iob\\_71886](http://www.scottish.parliament.uk/parliamentarybusiness/28862.aspx?r=7896&mode=html#iob_71886)

<sup>4</sup> <https://www.gov.uk/government/news/preferred-bidders-announced-in-uk-s-1bn-ccs-competition>

<sup>5</sup> [http://ec.europa.eu/energy/coal/doc/com\\_2013\\_0180\\_ccs\\_en.pdf](http://ec.europa.eu/energy/coal/doc/com_2013_0180_ccs_en.pdf)

<sup>6</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/175504/bis-13-745-the-costs-of-carbon-capture-and-storage-for-uk-industry-a-high-level-review.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/175504/bis-13-745-the-costs-of-carbon-capture-and-storage-for-uk-industry-a-high-level-review.pdf)

the deployment of CCS on industry. It also identifies the Forth and St Fergus as shoreline hubs for CO<sub>2</sub> infrastructure and / or clustering that have high potential. As yet, specific policy measures to take forward this analysis have not been identified by UK government.

- 1.7 On 3<sup>rd</sup> April 2013, the European Commission will launch the second call for bids to the NER300 funding mechanism.<sup>7</sup> It is understood that the Commission intends to finalise project selection by mid-2014. The UK has already secured funding for two Renewables projects in the first round, limiting receipt of funds to one further project if selected. However it is understood that both of the preferred bidders in the UK commercialisation programme will be required to participate.
- 1.8 This submission from Scottish Carbon Capture and Storage provides some initial reflections on the place of CCS within the draft RPP2 and the potential implications of these related policy developments.

## 2. CCS policy and the draft RPP2

- 2.1 The Scottish Government has been a consistent and proactive supporter of CCS over the past decade. In addition to its technological, engineering and geological potential, Scotland is recognised internationally for its strong capabilities on CCS spanning academia, business, government and regulators.
- 2.2 Within the UK, the Scottish Government is recognised as being a strong advocate in support of CCS, providing significant political support to the sector. This contrasts with the situation in leading English regions keen to develop CCS. Through the development of the Scottish CCS Roadmap and other initiatives, the Scottish Government has helped position Scotland as an attractive location for potential investment in CCS.
- 2.3 At present, Electricity Market arrangements and the funding of CCS commercialisation efforts remain a reserved matter for UK government. The Scottish Government does however hold a number of relevant planning and regulatory functions, particularly in respect to the permitting of electricity generating stations.
- 2.4 The draft of RPP2 follows previous consideration of CCS in Scotland by noting that “Our 2020 energy targets set out our aim to make significant progress toward decarbonisation by 2020 (in line with those of the EU)” including an intention to “demonstrate carbon capture and storage (CCS) at commercial scale in Scotland by 2020 with full retrofit across conventional power stations thereafter by 2025-30.”<sup>8</sup>
- 2.5 Furthermore, the draft RPP2 highlights the adoption of the power sector decarbonisation target of 50gm/kWh by 2030 (as recommended by the Committee on Climate Change) and notes that “This target is non-

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<sup>7</sup> [http://ec.europa.eu/clima/news/articles/news\\_2013030401\\_en.htm](http://ec.europa.eu/clima/news/articles/news_2013030401_en.htm)

<sup>8</sup> Draft RPP2, 4.1.3

statutory, but will be used to guide our overall policy approach and will set the context for planning decisions under Section 36 of the Electricity Act going forward.”<sup>9</sup> This is of particular relevance in respect to how an Emissions Performance Standard (EPS) might be set and administered.

- 2.6 The draft RPP2 notes that given the overarching role of the EU ETS, power sector policies under RPP1 were considered as ‘enabling policies’ that were “vital to the achievement of Scotland’s long term goals.”<sup>10</sup> However given current uncertainties as to the future trajectory of the ETS, the draft RPP2 sets out potential net domestic emissions abatement, rather than employing a linear reduction.
- 2.7 In this context, draft RPP2 follows the draft Electricity Generation Policy Statement in setting out a scenario for power sector emissions reductions to 2030 that includes 2.5GW of upgraded thermal capacity. This assumes that 2GW of new unabated gas plant would come online by 2020 (replacing existing coal generation capacity) together with 500MW of CCS. A further 500MW of CCS is added by 2025, and an additional retrofit of CCS to existing gas equivalent to 600MW is added by 2027. This is stated as providing 1.6GW of CCS together with 1.6GW of unabated capacity.<sup>11</sup>
- 2.8 It is therefore appropriate to consider whether there are as yet sufficient policy drivers in place to secure investment in CCS at this intended scale, particularly in light of the current scrutiny of legislation in Westminster of the UK Government’s intended Electricity Market Reform arrangements. This is considered in section 4 below.
- 2.9 Additionally, the potential deployment of CCS on industrial sources of emissions is noted in passing in the draft RPP2:

Paragraph 6.2(3) states

“By 2027, we will have made significant progress in transforming energy use in industry and business - transforming the way energy and resources are used, through energy and resource efficiency measures and low carbon technologies such as CCS and fuel switching.”

Paragraph 6.4.19 states

“For some industrial processes, greenhouse gas emissions are an intrinsic part of the chemistry and can only be mitigated through innovative options such as carbon capture and storage. In the longer term, the deployment of sustainable biomass and further carbon, capture and storage should be able to address remaining combustion and the carbon dioxide component of process emissions.”

- 2.10 At present, however, it does not appear that any specific policies or proposals are identified in the draft RPP2 to advance the deployment of CCS on industrial sources of CO<sub>2</sub> during the period 2013-2027. This is considered further in Section 5 below.

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<sup>9</sup> Draft RPP2, 4.2.3

<sup>10</sup> Draft RPP2, 4.3.5

<sup>11</sup> Draft RPP2, Box, p75 and discussion on p76

### 3. Parliamentary scrutiny of draft RPP2

- 3.1 The report on draft RPP2 from the Economy, Energy and Tourism Committee of the Scottish Parliament makes three recommendations of specific relevance to CCS:<sup>12</sup>

RECOMMENDATION 9: We note the Scottish Government's decision to agree to the UK-wide EPS target. However, as highlighted by WWF Scotland, the high EPS level and expected timescale for implementation could put at risk the achievability of the Scottish Government's 2030 decarbonisation target, as it reduces the incentive for power stations to fit CCS. The Committee asks for clarification in the final RPP2 on how the Scottish Government will address this risk.

RECOMMENDATION 10: We are concerned to hear from witnesses that the high costs of CCS could mean that the Scottish Government's CCS 2020 target may not be achieved.

RECOMMENDATION 11: We recognise that the decision on which demonstration CCS schemes will proceed is one for the UK Government. We therefore ask the Scottish Government to continue pressing the UK Government for a decision on whether the CCS schemes at Grangemouth Port and Peterhead will receive funding.

- 3.2 These recommendations flow from the evidence presented to the Committee. The report notes that these included conflicting views on the potential role of an EPS and discussion of the extent to which consideration of CCS deployment in the 2020s could yet be considered in detail.
- 3.3 Rather than diving into these specific discussions, we approach these questions from a broader perspective of how CCS might be supported in the period covered by RPP2.

### 4. Approaches to CCS deployment

- 4.1 We note that the scenario for CCS deployment set out in the draft RPP2 combines both the construction of new build CCS plants and the construction of unabated gas generation that is progressively retrofitted with CCS technology. This latter approach differs from the current requirement for any new coal power station to fit CCS to at least 300MW of capacity, which thereby requires that investors in new coal power stations actively develop CCS from the outset.
- 4.2 The consequence of the policy of 'no new coal without CCS' and further changes to the outlook for coal generation and underlying construction costs has resulted in all four of the coal CCS projects entered into the UK Commercialisation Programme proposing to be 'full CCS' from the outset, without requiring future retrofit of any

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<sup>12</sup> <http://www.scottish.parliament.uk/parliamentarybusiness/CurrentCommittees/61496.aspx#emissions1>

unabated capacity. Such an approach limits the commercial exposure to future retrofit costs<sup>13</sup> and is compatible with the scenario set out in the draft RPP2. Unfortunately the proposed Captain Clean Energy Project has not been selected as a preferred bidder in the UK Commercialisation Programme, requiring further consideration as to how it might be supported as a 'follow-on' project if it is to move forward to investment. If this project were not to be maintained, it would further set back the deliverability of a series of CCS investments as envisaged under the draft RPP2 scenarios.

- 4.3 The challenge currently facing policy makers and potential investors in gas plant is that the UK is still looking to secure the construction of new unabated gas plant in the near term. All new plant over 50MW must be 'capture ready' but as yet there is no firm requirement for the retrofit of CCS technology. Instead, investors are required to consider whether future carbon prices under the ETS might incentivise this. However given currently expected prices for carbon under the ETS this is not considered a strong possibility. This does not yet therefore provide a route to the retrofit of any new gas capacity during the 2020s, which is at odds with the intentions of the draft RPP2.
- 4.4 There are therefore open questions remaining as to how further CCS new build and retrofit might be incentivised through a combination of financial incentives and policy requirements. As yet, detail is lacking at UK level as to how the interplay of Contracts for Difference (CfDs), Capacity Payments, the EPS and the Carbon Price Support will enable this to happen.
- 4.5 We welcome the Scottish Government's continued proactive engagement on these matters. We would highlight that further clarity on the potential access to CfDs for 'follow-on' CCS projects is an essential means of enabling continued development of projects such as those proposed for Grangemouth, Teesside and Don Valley.
- 4.6 While all low-carbon technologies are under competitive pressure to reach a CfD level of around £100/MWh it may be that CCS in particular could receive additional support from capacity payments to reflect its ability to provide flexible generating capacity. Given that the Scottish Government seeks to enable the integration of large scale Renewables, it may be appropriate to consider whether any specifically Scottish approaches to capacity payments might help further incentivise investment in CCS – thereby addressing the current disincentive to investment stemming from transmission charging arrangements.
- 4.7 At present, the proposed UK EPS would be grandfathered at a level that would not require new gas plants to fit CCS until at least 2045

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<sup>13</sup> It has also positively assisted in making a positive case for CCS to be considered as a low-carbon technology option, avoiding public opposition to projects as had occurred at Kingsnorth and Hunterston.

(unless the operator desired to do this in response to a higher carbon price). The intention of this policy is to effectively exempt new gas plants from the need to consider retrofit of CCS for the whole of the plant lifetime.

- 4.8 This policy and the associated length of the grandfathering period has been criticised in Parliamentary Scrutiny of the Energy Bill in Westminster, as it has been viewed as being incompatible with carbon budgets.<sup>14</sup> If followed in Scotland (and particularly if there were not to be any strong countervailing incentive for CCS retrofit), such an approach would lock-in unabated generation and run counter to the proposed decarbonisation target and envisaged investment scenario.
- 4.9 Furthermore, the existing commitment of the Scottish Government to a decarbonisation target of 50gm/kWh by 2030 already strengthens the case for accelerated action to deploy CCS at scale and to minimise investment in unabated fossil generation, particularly if there is an absence of a clear pathway to the retrofit of CCS. This strengthens the case for consideration of how a differentiated approach to the setting of an EPS might be a valuable policy tool for Scottish policy makers.
- 4.10 We note however that evidence heard by the Economy, Energy and Tourism Committee highlighted concerns that a stronger EPS in Scotland would simply result in any new investment in gas-fired generation taking place south of the border due to concerns over security of supply.<sup>15</sup> This situation is however already in existence due to the transmission charging regime, as noted above. This already creates a disincentive against any new investment in new thermal capacity in Scotland – whether unabated or with CCS – with subsequent implications for the scenario set out in the draft RPP2.
- 4.11 Any decision on an EPS would therefore need to be considered as part of the broader set of measures being put in place to incentivise investment in new thermal capacity in general, and CCS in particular – both North and South of the Border.
- 4.12 In addition to any consideration of a differentiated approach to an EPS to guard against lock-in to unabated fossil plant, in our view it would also make sense to consider how appropriate incentives could be developed that would actively encourage investment in CCS within Scotland. As noted above, capacity payments could potentially

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<sup>14</sup> See <http://www.publications.parliament.uk/pa/cm201213/cmpublic/energy/130131/am/130131s01.htm> Column 424, debate on clause 38. It is worth noting that the Labour Party put forward amendments that would shorten the grandfathering period to 2030 and introduce a lower level for the EPS for new plant consented from 2020 onwards so as to require CCS. Additionally, they proposed a clarification of the means of reviewing the EPS in line with the proposed 5-yearly cycle of delivery plans, and the inclusion of old coal plant undertaking significant investments in pollution control equipment so as to extend operating lifetimes further into the 2020s.

<sup>15</sup> Report of the Economy, Energy and Tourism Committee on draft RPP2, paragraph 94

play a role in this. Moreover, Section 5 below sets out how practical enabling measures on CO<sub>2</sub> transport and storage could help de-risk investment and increase the attractiveness of CCS.

- 4.13 An issue not seemingly raised in Parliamentary Scrutiny of the draft RPP2 is the potential impact of continued operation into the 2020s of the existing coal fired power station at Longannet. The scenario set out in the draft RPP2 indicates that Longannet is expected to close in 2020. However in evidence to the Economy, Energy and Tourism Committee, Scottish Power representative Rupert Steele stated:

“As far as Scottish Power is concerned, we have not set a closure date for Longannet. As of today, we have not taken a decision about whether Longannet will opt out of the industrial emissions directive. I do not want anyone to think that there is a fixed end date for Longannet; we certainly do not have one. We are investing in the plant and are improving its efficiency and performance.”<sup>16</sup>

- 4.14 An extended life for the Longannet plant into the 2020s would require a reconsideration of scenarios for meeting both the 2030 decarbonisation target, and the achievement of annual carbon budgets throughout the 2020s. This matter may also require further consideration of how an EPS could be most appropriately configured to act as an incentive towards investment in new low-carbon generation capacity.
- 4.15 In our view, this set of issues regarding the investment framework for CCS will also affect the rest of the GB electricity market over the coming decade. Scotland therefore has an opportunity to develop a suite of practical actions and differentiated policy levers that in combination would position Scotland as the most attractive location for investment in CCS, thereby enabling desired investment in associated thermal plant. The final version of RPP2 could play a useful role in advancing this agenda.
- 4.16 Furthermore, the European Commission's Consultative Communication on CCS suggests not only that Member States might be required to set out the approach to decarbonisation of fossil fuels, but also that some form of Emissions Performance Standards or enhanced capture readiness requirements could be introduced. Scotland is already well advanced on all of these policy elements. We would therefore underline that they should be noted in the final RPP2, and form a core part of the Scottish Government's continued engagement on EU CCS policy.

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<sup>16</sup> Economy, Energy and Transport Committee hearing 27/02/13, Official Report column 2566

## 5. Enabling measures for CCS

- 5.1 It is being increasingly recognised that access to CO<sub>2</sub> transport and storage is an essential enabler of the cost-effective deployment of CCS at scale. Projects in the USA and Canada have been able to move forward more rapidly in part due to the existence of CO<sub>2</sub> pipelines and readily available storage options as a result of decades of experience with CO<sub>2</sub>-EOR.
- 5.2 The UK's CCS Cost Reduction Taskforce has highlighted the importance of access to CO<sub>2</sub> transport and storage as an essential means of both reducing capital costs and the effective de-risking of investment for follow-on projects. Previous work by SCCS has highlighted the benefits associated with clusters of emitters sharing access to clusters of CO<sub>2</sub> storage formations.
- 5.3 The Central North Sea is the best location geologically for the development of such storage clusters. Early efforts to prove and validate this CO<sub>2</sub> storage are essential. Such actions are additionally underlined as a key enabler for CCS by the International Energy Agency and the forthcoming DECC CO<sub>2</sub> storage strategy.
- 5.4 The outcome of the selection of two projects in the DECC CCS Commercialisation Programme is that there is now a de facto development race between Eastern England and Scotland to advance CO<sub>2</sub> infrastructure and storage capabilities. If Scotland is to maintain its overall attractiveness for investment in CCS (and counteract the disadvantages of higher transmission costs) it must look at how it can leverage both the favoured bidder and reserve projects to maintain momentum across a range of projects and build economies of scale.
- 5.5. As a means of supporting the continued development of the Grangemouth project, it could be encouraged to lead a consortium to make a very early test injection of CO<sub>2</sub> into the Captain aquifer, using existing pipes and boreholes. That could be as early as Q1 2015, and would additionally gain learning of value to the Peterhead project. This would be further assisted if an additional well could be drilled into the overlying Mey aquifer, as this would further develop the case for clusters of storage options accessed via shared infrastructure.
- 5.6 Additionally, the option to create a CO<sub>2</sub> import terminal at Peterhead should be actively investigated, by means of temporary facilities to enable the CO<sub>2</sub> imports needed to test more than one CO<sub>2</sub> reservoir. That would place Scotland in a leading UK and EU position on storage, forging links with high carbon regions on Continental Europe.
- 5.7 Both of these potential actions are near term enablers of emissions reductions across the period of RPP2, and would benefit from inclusion

of specific reference to enabling actions on CCS infrastructure beyond the UK EMR framework.

- 5.8 The provision of CO<sub>2</sub> transport and storage infrastructure is further highlighted as an essential enabler for the deployment of CCS on industrial emitters, which are typically not of a scale that would enable them to bear the costs of a full point-to-point CO<sub>2</sub> chain. This analysis is supported by the review of costs undertaken for BIS and DECC noted in point 1.6 above, and by recent studies on behalf of specific industry sectors.<sup>17</sup>
- 5.9 The policy approach to CCS in the UK (and indeed EU) to date has been centred on the power sector as a means of undertaking the demonstration of CCS at scale (via financing support) to be followed by deployment (driven by the carbon price). However this has overlooked the potential catalytic role that could be played by accelerated efforts to engage with CCS on industry.
- 5.10 In particular, some industrial sectors such as gas processing or the production of Ammonia or Ethylene provide low-cost and readily available streams of CO<sub>2</sub>. These can be used to kick-start the testing of CO<sub>2</sub> storage formations and the development of enabling CO<sub>2</sub> infrastructures (including both pipeline networks and transportation of CO<sub>2</sub> by ship).
- 5.11 Scotland is ideally placed to accelerate such an approach thanks to existing and well known options for CO<sub>2</sub> transportation and storage resulting from both the Longannet and Grangemouth projects. This could additionally offer a means of engaging with industrial emitters of CO<sub>2</sub> on Teesside.
- 5.12 Furthermore, the existing Feeder 10 pipeline continues to provide an option for the transportation of CO<sub>2</sub> from emissions sources located on the Eastern side of Scotland. This could provide the focal point for efforts to fast-track the integration of industrial sources of CO<sub>2</sub> into a Scottish network.
- 5.13 Given that the free allocation of ETS allowances for industrial sectors is being phased out from 2013 onwards, we believe that such an approach could rapidly become a valuable option that would enable industrial emitters to maintain production capacity within Scotland. Over 3,600 jobs are associated with existing sites with potential for industrial CCS. If these industries remain high carbon, these associated jobs will be at risk. By contrast, if industry can be formed into a "low carbon development zone" via access to CO<sub>2</sub> infrastructure, Scotland will not only be able to maintain those jobs but also attract new industrial investment, beating EU and UK high carbon competition.
- 5.14 The rapid acceleration of efforts on CO<sub>2</sub> transportation infrastructure

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<sup>17</sup> See for example the recent strategy for the UK cement industry for reducing emissions to 2050 [http://cement.mineralproducts.org/documents/MPA\\_Cement\\_2050\\_Strategy.pdf](http://cement.mineralproducts.org/documents/MPA_Cement_2050_Strategy.pdf)

and the characterisation of CO<sub>2</sub> storage options would provide significant value added to the Scottish CCS 'offer', enabling the de-risking of power sector projects and the achievement of associated cost reductions. They would also provide a means of supporting the continued development of projects such as the reserve projects at Grangemouth and Teesside.

- 5.15 While at present the UK government proposes to support CCS projects that have a focus on electricity generation, there is potential for future developments in EU CCS policy to take a more proactive approach to the financing of industrial CCS.
- 5.16 The European Commission's Consultative Communication on CCS published this week includes a number of financing proposals, including via the use of auction revenues from the ETS, as per the existing NER300 mechanism. The likely inclusion of the Peterhead project in NER300 round two will provide Scotland with further useful experience of engagement in such approaches.
- 5.17 A more novel funding approach set out in the Communication is for a system of CCS Certificates. Such an approach could provide an attractive means of incentivising the early take up of CO<sub>2</sub> capture from industrial sectors where pure CO<sub>2</sub> streams are already present. Scotland would be ideally placed to benefit from any such EU-wide approach, which would effectively see fossil fuel producers and consumers from other member states paying for CO<sub>2</sub> abatement to take place in Scotland.
- 5.18 As noted above, the timescales for such developments lies firmly within the period to be covered by RPP2. While we acknowledge that firm policies may not yet be possible, we would recommend that specific note is taken of the ability of accelerated action on industrial CCS to both address emissions of CO<sub>2</sub> across the Scottish economy and act as a practical means of incentivising the deployment of CCS on thermal plant.

## 6. CO<sub>2</sub>-Enhanced Oil Recovery

- 6.1 We note that the draft RPP2 highlights that "At present, direct emissions from the [Oil and Gas] sector do not form part of Scotland's emissions inventory, but the Scottish Government is committed to continued membership of the EU Emissions Trading Scheme (EU ETS) as the best way to ensure the industry recognises and manages the wider carbon costs of their activity."<sup>18</sup>
- 6.2 CO<sub>2</sub>-EOR is not mentioned with draft RPP2, however it is actively supported by the Scottish Government, and would likely to be considered for inclusion in CCS investments over the coming decade. SCCS is currently undertaking detailed work on a range of CO<sub>2</sub>-EOR issues on behalf of Scottish Government, Scottish Enterprise and

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<sup>18</sup> Draft RPP2, 4.8.1

industry partners.

- 6.3 Initial work undertaken by SCCS on public perceptions of CO<sub>2</sub>-EOR has highlighted how it is perceived as complicating the view of CCS as a low-carbon technology option. This finding is in line with the approach outlined in draft RPP2 section 3.5.12 in respect to the importance of perceptions of consistency for engaging and influencing behaviour of citizens.
- 6.4 Media coverage has already highlighted the perceived inconsistency between efforts to decarbonise the electricity sector while maximising oil and gas production. This has also been linked to the perceived need for greater action on transport and heat within the draft RPP2.
- 6.5. To address this perceived inconsistency, SCCS is undertaking work on the carbon budget of CO<sub>2</sub>-EOR. It is clear that the lifetime carbon budget of a CO<sub>2</sub>-EOR project can be structured to ensure that either oil is produced with a much lower carbon footprint than at present, or that legislation can mandate sufficient CO<sub>2</sub> injection so that the project overall produces oil, but stores more carbon than it produces. This is important, because CO<sub>2</sub>-EOR in the USA and Canada is both enabled by CO<sub>2</sub> from CCS, and can make payments to purchase CO<sub>2</sub> which can assist in CCS project economics.
- 6.6 It would therefore be appropriate for RPP2 to note the potential development of CO<sub>2</sub>-EOR in the North Sea, and to better contextualise how emissions from the oil and gas sector are accounted for. This would help to clarify the contribution CCS would make to reducing emissions, and the approach to accounting for end use of produced oil and gas.

## 7. Conclusions

- 7.1 The UK and European CCS policy landscape is in a period of change, with new approaches to the commercialisation of CCS being considered. Scotland is ideally placed to reap the benefits of accelerated action to develop CCS for both industry and power generation.
- 7.2 Action on the early appraisal of CO<sub>2</sub> storage formations and the development of shared CO<sub>2</sub> transport infrastructures would be key enabling measures that strengthen Scotland's attractiveness as a location for investment in CCS. They would additionally provide an effective means of reducing CO<sub>2</sub> emissions from across the economy on a timescale that matches the period covered by RPP2.
- 7.3 However this potential must be considered against the backdrop of continued uncertainty as to the final form of the UK Energy Bill currently under consideration at Westminster. This will impact on how financial support will be delivered for both the preferred projects within the Commercialisation Programme and any follow on projects seeking funding via CfDs. In particular it is absolutely essential that a visible CfD

strike price for follow on CCS projects becomes visible (and accessible) to project developers as soon as possible - or the follow on projects will migrate overseas to North America. In addition it is imperative that the negative effect of transmission charging on Scottish CCS projects is offset. One way of doing that is by improved capacity payment under the EMR, to balance the Transmission Charge and so to rebalance the incentives in favour of ease of access to CO<sub>2</sub> transport and storage, rather than on location of generating plant. Further engagement with Whitehall and Westminster will of course be required, but more localised Scottish solutions may also need to be considered.

- 7.4 In combination, these issues would suggest that the revised RPP2 will need to clarify how Scotland will look to actively encourage investments in CCS (in both individual projects and the enabling infrastructure). This may require further clarity on how Scottish policy and planning levers can be deployed to advance this agenda alongside UK and European measures.
- 7.5 In so doing, the RPP2 can indicate continued Scottish leadership on CCS. We recognise that RPP2 would need to be supplemented by further detailed consideration of policy levers and practical investment support options. The inclusion of strengthened references to CCS alongside the existing commitments to power sector decarbonisation and support for renewables would firmly position Scotland as the preferred location in Europe for investment in CCS. In so doing, Scotland would be well placed to secure investment in both the existing Peterhead project and unlock additional funding streams from new EU CCS incentive measures.