Appendix 1

National Grid Response to Ofgem Consultation 35/09
Proposed disposal of part of NTS for Carbon Capture & Storage

CHAPTER 2: Proposal to dispose of assets for CO_2 transportation

Question 1: Do you think this proposal is a good idea in principle?

Yes. The need to take steps to tackle climate change and, to this end, the importance of meeting government emissions reductions targets requires all participants in the energy industry to seek to identify and bring forward innovative proposals. Facilitating the early adoption of Carbon Capture & Storage (CCS) technology is one of the ways in which carbon emissions from electricity generation can be reduced, allowing coal fired stations to be part of the generation mix into the future and reducing the need to construct entirely new thermal generation plant. In support of this, National Grid is proposing the re-use of NTS feeder sections in order to facilitate the introduction of CCS technology in the UK.

This proposal is, in our opinion, balanced in its approach both to re-using NTS assets in Scotland for CO_2 transportation, and to sharing the benefits of re-use with gas consumers. We would reiterate the points on the benefits of this proposal that we outlined in our original letter to Ofgem dated 25th November.

In addition to wider consumer and societal benefits, this proposal offers an opportunity for gas consumers to extract some residual value from pipelines that are otherwise expected to become lower utilisation assets in the medium term. The re-use of feeder sections for CO_2 transportation could secure a revenue stream for gas shippers over and above that received for gas transportation, by means of a royalty payment. The use of a royalty payment structure aligns the interests of shippers and consumers with the commercial success and environmental benefits of this proposal.

The potential impact on gas shippers has been a major consideration when developing this proposal and we are therefore not proposing any change to existing capacity baselines at this stage. By preserving baselines shippers would be able to book the same level of capacity at St Fergus in the auctions post-disposal, and any buyback costs would be borne by the CCS project (or shared with shippers should they favour a participatory royalty arrangement). While it is true that reduction of the St Fergus baseline could reduce CCS project risk, we consider the risk of missing this opportunity to be far greater, should we initiate what could become a very lengthy, and potentially contentious, baseline debate with Ofgem and industry players.

This consultation raises some fundamental questions such as whether respondents believe CCS should be developed as a tool to help meet government environmental targets, and appreciate the urgency with which we need to work cohesively as an industry to tackle Climate Change. The impact of this proposal and every detail therein could be debated at length, but we are conscious that there is a limited window of opportunity as a result of the DECC CCS demonstration project competition

We have endeavoured to propose something innovative that, with industry and regulatory support could help to position the UK as a global leader in tackling Climate Change.

Question 2: In the event that a feeder section is removed, existing compressors may be required to work harder to transport the same volumes of gas through fewer pipes. It is proposed to capture these additional compressor fuel costs and to introduce a capped volume for these additional fuel costs, based on pre-disposal levels, over which the new CO_2 transportation business would bear the costs and make payment to NGG. What is your view of this proposed treatment of these additional compressor fuel costs?

National Grid considers that in principle a volume cap set at the level of compressor fuel used in the year preceding the asset disposal provides a straightforward means of identifying any additional fuel used as a result of removing these feeders from the NTS.

The detail of this approach would be an area to explore with industry and we would welcome alternative suggestions as to how this should be managed.

CHAPTER 3: Regulatory issues

Question 1: Do you agree with our view of the regulatory issues of the proposed asset disposal?

Yes. National Grid agrees with Ofgem's views of the regulatory issues raised by the proposal. In preparing the proposal, National Grid gave careful consideration to its obligations under the Gas Act and its gas transporter licence in respect of the NTS. It also considered carefully the requirements of gas shippers and consumers, the NTS Safety Case and the broader benefits that CCS could bring to the UK. The proposed treatment of gas network considerations and commercial arrangements were developed with all stakeholders in mind, and offer industry players a range of options in the form of a greater or lesser share of risk and reward, which we anticipate to be further refined subject to industry views and the outcome of this consultation process.

The need to protect the interests of gas shippers and consumers, for example by avoiding the imposition of undue risk on them, is key to this proposal. The proposed framework allows this to be achieved, especially where a participatory royalty is used to determine the value of the assets transferred.

The inclusion of wider issues in the consultation document such as sustainability, environmental benefit and the potential economic growth from positioning the UK as a leader in CCS deployment is wholly appropriate. These factors should be considered alongside the implications of the proposal for the gas network in order to ensure that the sustainability benefits are given appropriate weight in Ofgem's decision making process.

We agree with the other network considerations contained within Ofgem's consultation document. Our analysis to date does not indicate any unmanageable impact on gas operations, indeed some areas of additional benefit have been found. The value of linepack in the assets proposed for disposal, for instance, would be returned to gas shippers. We are committed to working with industry to identify and work through issues identified.

TPCR4

We acknowledge that the disallowed St Fergus-related capex (TPCR4) resulted from a decision to invest based upon the best supply information available at the time, the volumes of which, however, subsequently failed to materialise. We recognise the difference between information (e.g. supply forecasts) provided by industry, and capacity requirements signalled and backed by financial commitment from Users. Following the TPCR4 decision made by Ofgem it is clear to us that Ofgem regard user commitment as the only basis for determining future network requirements, and as a result we must place considerable importance on long-term capacity bookings as a means of indicating future gas supply flows to St Fergus (and other supply terminals).

We consider that where assets have the prospect of not being fully utilised, then our duty to act in an economic and efficient system manner requires us to look for alternative uses for these assets.

Question 2: Do you agree with the projected forecast flows at St. Fergus?

Yes. The forecasts in the proposal and subsequent consultation document represent National Grid's view of St Fergus supplies based on the best data available at the time of publication. The projections are taken from our Ten Year Statement, which is compiled with information provided via the industry-wide Transporting Britain's Energy (TBE) consultation process and we therefore believe them to be consistent and transparent to the industry as a whole.

It should be noted that the forecast of gas supplies so far into the future is inherently difficult given the number of uncertainties that exist in such a global market influenced by economic, physical, commercial and even political factors, and the possibility of new gas discoveries. The forecast flows will be updated as new information becomes available, and in line with our annual TBE process. They will also be compared to an external, independent view, similarly to the Wood Mackenzie view of supplies that was to verify the forecasts used within our initial proposal.

We encourage producers and generators to share future plans such that any risks to industry can be properly evaluated and can correctly inform Ofgem's decisions in relation to the asset disposal. However we refer back to the importance placed by Ofgem on future user requirements being backed by a financially firm commitment through the entry capacity auctions.

Question 3: Are there other flow forecasts or scenarios which should be taken into account?

It would be appropriate to take into account any new supply information provided by industry alongside the timescales and probability of these supplies materialising. It would also be appropriate to monitor UKCS production to ensure that any difference between the expected and actual rate of decline is included in future forecasting.

We believe the analysis provided to date gives a balanced view of future St Fergus supplies although there is undoubtedly a wider range of scenarios that could be modelled. We would welcome suggestions from industry as to the scope of further work and will continue to progress our internal review to determine whether additional analysis could further inform the issues raised by this proposal.

External consultants have been used in the past to provide an independent view of future UK supplies and demands as a means of verifying or challenging our information and assumptions. We support the suggestion for an external consultant to conduct an independent view of forecast supplies to St Fergus and assume that Ofgem would undertake this on behalf of the industry as part of the next stage of consultation process. Notwithstanding the outcome of any independent analysis, or National Grid's own forecasts, we consider that the evidence of user commitment should be a key feature of any assessment for the reasons outlined in our response to Question 1, TPCR4.

Question 4: What is your view of the indicated capability at St. Fergus with the feeder removed, with and without additional compression?

As for Question 3, we believe the data provided to be a robust indication of St Fergus capability and will seek to identify other scenarios that could be analysed. We would reiterate that although capability will be reduced, the preservation of baselines allows shippers to book the same capacity volumes as pre-disposal, and also to choose whether to share in the residual risk of physical flows exceeding capability.

The assumptions behind the St Fergus post-disposal input capability levels currently include a provision for compressor reliability. These assumptions should reflect actual and forecast NTS compressor performance and we will endeavour to capture the impact of developments such as the replacement of gas with electric compression, within future analysis.

We do not believe that the addition of more gas compression would be economic and efficient given:

- our expectation of supplies;
- the remaining St Fergus capability;
- and our projections and evaluations on the level of buyback risk.

It would therefore be difficult to justify this investment without any financially-backed user commitment that would otherwise form the basis of such a decision.

Question 5: What is your view of the projected buyback costs which have been identified?

We consider the projected buyback costs to be a reasonable estimate of the costs National Grid is likely to face as a result of forecast flows to St Fergus because both volumes and prices are based upon actual historic and best available forecast data.

The buyback price used within these calculations (1p/kWh) is broadly consistent with other incentives analysis provided to industry and in line with prices seen previously, albeit when commodity costs were considerably lower. Using a unit price also allows easier scaling of buyback costs if different buyback price assumptions are made.

It should be recognised that the buyback costs identified are a function of forecast supply flows and as such should be viewed in the light of the same caveats in terms of accuracy and certainty, and may need revision if new information becomes available.

Question 6: Are there any other issues that you believe are relevant?

We appreciate the need to explore all the implications of this proposal thoroughly and support the need for robust analysis to support any decision made. We would however like to reiterate the need to provide an indication of whether the asset is likely to be considered for release as soon as possible, and before this time limited opportunity is missed.

We believe agreement to the principle of asset release would allow progression of a competitive bid in the DECC competition and could help to secure the return of residual value from these NTS assets through the transportation of CO_2. An "in principle" decision would mark the beginning of more detailed discussions with industry around how to best manage and construct operational and commercial arrangements resulting from disposal of these NTS assets.

National Grid's participation in the DECC competition could reduce the costs to government (through the competition) and ultimately to electricity consumers through the use of existing assets where they are available. The re-use of existing assets would create a far smaller carbon footprint compared to new infrastructure as well as allowing gas consumers to take a fair share of the benefits arising from the potential CO_2 transportation revenues. If successful as a competition solution, the CCS chain would be likely to be the first such power-based project on this scale to become operational world-wide and demonstrate the technology for future deployment not only within the UK, but also across the EU and around the world. As such, National Grid regards the proposed project and its own involvement in it, as contributing significantly to the government's aim to meet the UK's strict emissions reduction targets, as well as providing a technical solution to underpin tough targets to be set elsewhere, whilst maximising the continuing utilisation of existing assets.

Question 7: What is your view of the proposed disposal of these assets?

It is our view that the disposal of these assets could allow an efficient solution for NTS customers by deriving more residual value from assets that would otherwise be expected to have a declining utilisation and which, ultimately, would give rise to decommissioning costs for gas consumers. In addition, re-use of these assets will permit a more efficient demonstration of CCS, with a lower environmental impact than a new-build pipeline solution and ultimately lower cost to consumers[1].

[1] This is based on our understanding of a proposal to fund CCS demonstration projects through some form of electricity consumer levy

The analysis conducted to date suggests an inevitable excess of capacity in Scotland from 2018, with a potential tightness from 2013. We consider this to be both manageable and acceptable given the potential wider benefits that could be realised through this proposal for gas consumers and shippers, the CCS industry and the economy of the United Kingdom in general.

We consider asset disposal for re-use in CCS is a unique opportunity for the gas industry to support Government emissions reduction targets and large scale CCS demonstration whilst capturing residual value of the assets and ensuring future security and diversity of supply for consumers.

CHAPTER 4: Valuation of assets

Question 1: Do you agree with the possible ranges of valuations for the assets which have been identified?

We agree that some of the valuations included in the consultation document represent a fair and reasonable approach to asset valuation.

In considering all asset valuation methodologies, a key factor is the change in geographical source of gas supplies to the UK and resultant decrease in reliance on, and importance of, feeders north of the Central Belt. We consider the fairest valuations to be those which also consider the age of the assets, as these reflect the near fully depreciated nature of the feeders in Scotland and recognise the value they have already returned to shippers and consumers. These valuations provide a range of £0.2m - £98.5m.

We believe that some of the methodologies presented in the consultation document result in an unrealistic valuation of the assets. The methodologies based on a Modern Equivalent Asset are inappropriate and do not recognise the value of investment already returned to gas shippers and consumers through the use of these pipelines over the last thirty years. Furthermore, a new-build solution for the CCS demonstration would be of a different design and construction from the existing assets and optimised for transport of CO_2 rather than natural gas. (By this rationale an MEA-based valuation is irrelevant given the intention to use these assets for CO_2 transportation.) These valuations provide a range of £57m - £182m.

It should be noted that an excessively high valuation could result in a transportation solution that is considered economically unfavourable to the DECC competition entrant. In this scenario the asset re-use proposal would not be pursued and no value would be returned to NTS customers and therefore consumers: rather, in the medium to long term, those customers and consumers would be left with the need to fund a network which no longer optimally fitted the pattern of gas flows and to pay for the eventual decommissioning costs of the assets when they come to the end of their useful life.

It is our view that any valuation in excess of the residual value of these assets to NGG and NTS users should be in the interests of consumers. This residual value has been described in our proposal and we believe that the additional considerations to recognise alongside this residual value would include:

- the potential market worth, given alternative CCS transportation options;
- the potential impact to gas operations in the form of buyback risk;
- costs of restoring capability such as through the addition of extra compression; and
- the level of investment needed before any revenue can be returned from CO_2 transportation.

We have given these and other factors due consideration, and believe a fair asset valuation would fall in the £10m – £20m range. We would note though that this valuation is intrinsically linked to the risk/reward package and as such difficult to determine in isolation.

The cost of investment needed to re-use the feeders for CO_2 transportation is an important aspect of the asset valuation. Without this investment the assets will not be capable of providing a CCS demonstration solution, and as a result will not generate any revenue. Whilst we cannot disclose details of the cost of works required, the items would include, but not be limited to:

- connecting infrastructure from the emitter to the existing feeder;
- modification works to ensure transportation of CO_2 in a manner compliant with relevant legislation;
- physical separation of the existing feeder from the gas network; and
- the addition of new operating and monitoring equipment along the transportation route.

Also relevant when considering a fair valuation are the costs that could be associated with the assets at the end of their natural gas life. These would include the ultimate cost of decommissioning these assets from gas use, at the point when supplies at St Fergus no longer warrant four feeders connecting to the Central Belt. The CCS project also protects gas shippers from the potential for higher operating and maintenance costs that could result from the continued use of aging assets.

Question 2: Do you agree with the assumptions which underpin the asset valuations?

We consider that the assumptions are fair and reasonable in the case of those where the value is derived from National Grid Gas's balance sheet, using projected depreciation and valuing the feeder sections proposed for disposal as a proportion of the whole NTS.

We would add the comment that some methodologies, if applied to the whole NTS would result in a valuation for the assets far in excess of the current RAB.

Question 3: Is there an alternative method of asset valuation which should be considered?

We recognise the difficulty in identifying a fair and reasonable basis on which to value the assets and for this reason we consider that a participatory royalty structure provides a fairer mechanism by which to share the residual value of these assets with gas consumers. We would welcome suggestions from Ofgem and industry as to alternative methodologies that should be considered.

Question 4: Do you agree with the assessment of benefits associated with asset disposal and alternative use?

We agree with the associated benefits of asset disposal and would reiterate the potential for wider benefits to the economy of the United Kingdom generally and Climate Change targets in particular.

Question 5: Are there any other considerations that should be taken into account?

We are not aware of other considerations at this point.

CHAPTER 5: Commercial options

Question 1: Do you consider that the opportunity to potentially share in the benefits of CCS using ex-NTS assets represents an appropriate balance of risk and reward?

We consider the opportunity to share in CCS revenues allows additional value to be earned from the assets for the benefit of gas shippers and consumers.

These commercial options have been developed to align the interests of National Grid and consumers, and the participatory royalty arrangement demonstrates this particularly strongly.

Question 2: What is your view of a lump sum payment, in the event that consent is granted for disposal?

Our view of the lump sum payment is that it allows gas consumers to benefit from the asset disposal without exposure to any associated risk – however as noted above we consider there are considerable difficulties in determining a fair value.

The political support for CCS has strengthened since the payment option proposals were developed and we believe there is a greater likelihood of growth in CCS volumes that could generate revenues in excess of a lump sum payment, over time. However, this is our view and other stakeholders will need to make their own assumptions consistent with their appetite for risk.

Question 3: What is your view of a participatory royalty arrangement, in the event that consent is granted for disposal?

Our view is that a participatory royalty provides a flexible basis for sharing the risk and reward and allows gas shippers and consumers to maximise their potential earnings through growth in CO_2 volumes transported.

This is our preferred option as we consider that a participatory royalty aligns the value returned to shippers and consumers with the commercial benefit derived by the CO_2 transportation business from its acquisition of the assets. Given that CO_2 transportation would be a start-up business in a new technology field, it is difficult to determine the value of the acquired assets to the CCS business, at this stage. The value will only become clear once that business has commenced and there is some volume of CO_2 flowing through the pipe. As such, a participatory royalty allows shippers and consumers to share in the success of this new venture while allowing potential buyback risk to be dealt with through the level of the royalty payment. This payment would, in the case of the participatory royalty be higher than a simple royalty that did not cover the buyback risk.

This methodology could also allow a more competitive transportation solution to be offered in the DECC competition. The cost of CO_2 transportation will contribute to the overall cost of the CCS supply chain and could determine the attractiveness of the bid to DECC. The extent to which the bid progresses in the competition will determine the possibility of the assets generating revenue from CCS.

We would welcome suggestions from industry of alternative structures that could be explored and are keen to develop a risk/reward framework that benefits all parties involved to an appropriate level.

Question 4: Are there other risks / benefits which should be taken into account?

We are not aware of any other risks/benefits at this stage. While we have assessed the main areas we recognise that more may be identified through responses to this consultation and that these should be explored through more detailed analysis and incorporated into commercial arrangements.

We believe the proposed royalties may need to be re-evaluated if the level of risk identified changes as a result of new supply information becoming available. This could result in an increase or decrease to the proposed royalty payments, especially if a participatory royalty approach were adopted

We appreciate the complexities of this proposal, but consider that these should not create a barrier to releasing the asset for re-use. This could simply be a missed opportunity if either perceived or real difficulties delay the decision beyond the point when the asset could be used within a DECC competition solution. We have therefore tried to encourage debate around the principle of asset re-use as opposed to the lower-level details, as we see this consultation exercise as an initial stage of the disposal debate.

There are many component parts of this proposal and some may take time to work through in detail, such as the asset valuation and commercial arrangements, and the design of any royalty arrangements. We reiterate that the supply chain for the DECC competition must be both viable and deliverable, and an indication as to the release of the asset and potential terms will be key to realising its future value.

In summary, National Grid is fully supportive of this proposal for the following key reasons:

- We believe in CCS is a key strategic tool in tackling Climate Change and meeting government targets set for the UK.
- Demonstration of CCS at scale is an important next step in proving the technology and encouraging industry commitment.
- These assets could provide a lower cost solution for DECC within their competition, which ultimately benefits taxpayers. (We understand that electricity consumers could benefit more specifically from this given there was a proposal to fund the demonstration competition through an electricity consumer levy.)
- The potential revenues from CO_2 transportation could return value to gas shippers and thus consumers, from assets that would otherwise be under utilised.

- The preservation of baselines and proposal structure can ensure that NGG, and gas shippers and consumers are kept whole.
- The commercial arrangements could contain sufficient flexibility that a balance of risk and reward could be developed with industry.
- Asset re-use allows us to demonstrate our commitment to current and future consumers and shareholders, through an innovative proposal.