

**MINUTES OF THE FOURTH MEETING OF THE
ENSG TRANSMISSION STUDIES PROJECT WORKING GROUP
Held at BERR, 1 Victoria Street, London SW1 0ET
10.00 AM, THURSDAY 18th DECEMBER 2008**

Present

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| DECC | John Spurgeon (Chairman) |
| DECC | Phil Hicken |
| Ofgem | Stuart Cook |
| National Grid | Chris Bennett |
| National Grid | Andy Hiorns |
| SKM | Floren Castro (advisor to DECC) |
| Scottish Power | Colin Bayfield |
| Scottish & Southern Energy | Mike Barlow |
| RES | Richard Ford |
| EdF | Dave Openshaw |
| Eon | Guy Phillips |
| RWE | Nic Rigby |
| British Energy | Rob Rome |
| Trade Associations | Tim Russell |
| AEA | Chris Naish (Secretariat) |

Apologies for absence

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| Trade Associations | Robert Longden |
| Scottish & Southern Energy | Keith Maclean |
| DECC | John Overton |

1. Welcome and Introduction

- 1.1 The Chairman welcomed the participants to the meeting and noted apologies for absence. The agenda was reviewed and the key items for discussion were highlighted.
- 1.2 The Chairman briefly noted recent appointments and changes in the new Department for Energy and Climate Change (DECC) The Chairman informed the group that there would be a wider announcement on the structure of the new DECC Department in the next few weeks.

2. Minutes and Actions

- 2.1 The Chairman asked the Secretariat to review the actions from the last meeting.
- 2.2 **Action 1:** The secretary reported that action 1 'The Study Team and the Secretariat to aim to circulate key papers to the working group prior to submission to the ENSG' was ongoing. This meeting, the one on January 13th 2009 and the papers associated with the meetings were part of this process.
- 2.3 **Action 2:** 'DECC to provide figures for the value of carbon consistent with previous studies.' The Chairman reported that he had reviewed the relevant numbers with DECC economists. There was no single standard value that had been used, the effect of ROC values etc has been taken into consideration in some assessments. Generally DECC uses a value that includes the social impacts and this leads to a relatively high figure. It was suggested that one approach when considering the value of system losses could be to use the retail price of electricity as a marker, as this takes into account the value of ROCs. The following points were made:
- The value will change with time
 - A figure of the order of 40€/tonne appeared high at the present time but could be seen as conservative in the longer term
 - The value of losses could reduce with the addition of more wind and nuclear to the system.
- 2.4 **Action 3:** 'The Study Team to circulate a report template for comment by mid-November'. This action was complete – the template had been circulated ahead of the meeting.
- 2.5 **Action 4:** 'The Study Team to provide an update on progress with the analysis work for the working group meeting on 18th December'. This action would be completed by the presentation. The team were to make under agenda Item 4.
- 2.6 This completed the review of actions from the last meeting. The Secretariat asked the group to confirm they were content with the minutes and for their agreement that they could be published on the ENSG website. This was agreed.

- 3. SKM Study for the Scottish Executive: Grid Issues Arising from Changes to the Generation Background in Scotland**
- 3.1 The Chairman introduced this item which had been included on the agenda to ensure that the Group had sight of this recently published work and so could take it into account in the context of the 2020 study. SKM gave a presentation summarising the work carried out in 2006 and 2007 for the Scottish Executive.
- 3.2 The study was based on future generation scenarios developed by AEA in association with the Scottish government. SKM made the important point that the study was carried out from a Scottish perspective and that there had been significant changes to the policy and support scene since the study was carried out.
- The study has three core scenarios – (1) 2007 base case, (2) ‘dominant renewable energy’ and (3) ‘limited investment’.
 - The study suggested at the level of 6.6GW of additional capacity the limited reinforcements underway would accommodate the required flows from Scotland to England and Wales. However outside of this range, depending on the future plant retirements and new wind construction in Scotland, the transfers across the Scotland – England & Wales boundary resulted either in plant being constrained off in Scotland through lack of interconnected capacity or, more surprisingly, significant flows from England & Wales to Scotland to provide supply at times of low wind. The interconnectors at certain times would be unable to meet the demand for such flows, potentially resulting in generation demand in Scotland not being met.
- 3.3 In the discussion of the study the following points were made:
- The constraints on import and export across the Scotland-England interconnectors were not symmetrical as they appeared to be in the SKM study results, as the scope of study was confined to Scotland and assumed that additional reinforcements would be undertaken in England to achieve full use of the interconnector capacity;
 - The SKM study is not comparable with the present NG/TO 2020 system study and many of its conclusions have been superseded because of the particular generation mix and other assumptions made in the study that were relevant for the remit of the study when made in 2006/7.
- 3.4 The Chairman asked SKM to make the second presentation summarising results from the Committee on Climate Change, pointing out that the Group may wish to take this into account when considering Phase 2 of the 2020 study.
- 3.5 The work examined trends in de-carbonising UK energy consumption. In the electricity area the following key points came out:
- The work, based on ‘Markal’ modelling using long run marginal prices, forecasts a significant decrease in the carbon intensity of the grid between 2020 and 2030. The carbon figure falls from the present value of around 500g/kWh to nearer to 200g/kWh. Below this figure it becomes beneficial to switch from gas fuelled heating to grid electricity, 200g/kWh being around the

carbon intensity of a condensing gas boiler.

- Following from this and other factors such as electric vehicle deployment, the modelling suggests a doubling in electricity demand from around 2025 through to 2050. Between the present time and 2025 the modelling suggests a near to flat or slightly decreasing electricity demand due to increasing deployment of efficiency measures.

- While the model can use current and forecast renewable costs based on present construction data, there is less certainty on the costs for Carbon Capture and Storage and Nuclear. The model suggests both of these are cheaper than renewable. The group felt it would be interesting to carry out some sensitivity modelling around a range of costs for these technologies given the uncertainties as there was no current relevant UK data for them.

4 GB Electricity Transmission Study: Progress update

- 4.1 The Chairman invited the National Grid, SHETL and SP Transmission Study Team to provide a progress update on the Cost / Benefit Analysis (CBA) being applied in the GB Electricity Transmission Study.
- 4.2 The Study Team introduced their presentation, reminding members that all 3 scenarios under consideration in the work had a 36% renewables component in the overall mix. The differences were that the wind component had 11.4GW of capacity in Scotland for scenario 1, 8 GW in scenario 2 and 6.6 GW in scenario 3. NG/TO's had provided a draft report of the CBA that will be produced as part of the Phase 1 final report. They asked all members to provide comments on the CBA results to the team via the Secretariat ahead of the next meeting on 13th January 2009.

Action 1: All members to review the draft CBA report and to provide comments to the Study Team through the Secretariat ahead of the next meeting on 13th January 2009.

- 4.3 The Study Team summarised the progress of the work and the analysis of the transmission investment required at the transmission boundaries defined by B1, B2 etc through to B7 in his presentation material.
- 4.4 The following points came out during the presentation and discussion:
- There would be clear benefits from coordinating on-shore and offshore transmission developments in terms of minimising the required investments.
 - The present Scotland- England boundary can achieve a max of 4.4GW based on upgrades currently underway and with compensators and re-wiring. Beyond this further lines or the alternatives of HV-DC sub-sea links are required to increase capacity across the boundary.
 - The boundary capabilities are sensitive to plant closures and life extensions to existing Scottish generation plant. It is also assumed that no new thermal plant is to be constructed in Scotland in the period covered by the study (up to 2020).

- 4.5 The initial conclusions of the work are that the following are required as a matter of urgency:
- Incremental reinforcements by 2015;
 - Hunterston to Deeside HV-DC link by 2015;
 - Peterhead to Hawthorn Pit HV-DC by 2018.
- 4.6 The Study Team made the point that these are entirely new innovations for the GB network and therefore to deliver these by 2015 would entail undertaking preliminary engineering early in 2009, developing new modelling techniques, control systems and equipment specifications – there would need to be a commitment to construct by the end of 2009 at the latest.
- 4.7 The presentation moved on to cover the study work relevant to the SHETL area. It was explained that current incremental work would deliver 6.6GW of capacity but that the work to date indicated that 11GW was required. Options could include an HV-DC link from Dounreay to Beaulieu and a further link from Peterhead to Hawthorn Pit.
- 4.8 The presentation then went on to cover the study work and initial conclusions in the SPTL area. Similar incremental upgrades to the SHETL area were outlined for the SPTL area. These included Kincardine – Harburn (North-South near to Edinburgh) and Strathaven – Patthead (East-West in the Glasgow-Edinburgh corridor).
- 4.9 In summary the point was made that applications of embedded HVDC and Series Compensation are mature technologies used throughout the world, however their use on the GB network, which is perhaps is more tightly meshed than in other countries, will require careful analysis to ensure that there are no undesirable interactions or resonance's between the cross section of plant technologies e.g. HVDC, Series Compensation, renewable and conventional generation etc.
- 4.10 The necessary/proposed transmission additions in the various regions of England and Wales were then identified. Key points were:
- North Wales:** No spare capacity, significant offshore development proposed, thermal and stability limits likely, mostly thermal at present. Recent Crown Estates proposals have indicated a number of offshore wind farms. There will be clear benefits from treating these as a group in developing both on-shore and offshore transmission solutions. However time pressures to deliver capacity may force sub-optimal technical and cost solutions to be progressed rather than wait for a more holistic solution at potentially minimum cost.
- Humberside:** A range of options are possible but as in North Wales, it would be desirable to integrate offshore and onshore designs to minimise costs.
- East Anglia:** Similar to previous North Wales and Humberside but also need to reinforce on-shore system between Sizewell and further inland.
- South West:** New line required from Hinkley to Seabank.
- Central Wales:** Significant new overhead line requirements.

London: Potential for beneficial strategic reinforcement but also potentially big problems.

4.11 Following the presentation the following point was raised:

- Did supply chain issues remain a significant factor? It was thought that these had eased with the reduction in the availability of capital for project development in recent months however this could well be a relatively short term effect and while there may be an opportunity to take forward developments at present that window could close over the next year or so.

4.12 In conclusion to this agenda item DECC asked that the presentation slides were circulated to the group members and that they review the proposals particularly from the point of view of:

1. Investments;
2. Timescales;
3. Potential Constraints;

and that members come along to the next meeting on 13th January 2009 prepared to indicate whether they agreed broadly with the NG/TOs proposals and ready to ask questions or raise points where they had concerns or did not agree with the conclusions.

Action 2: All members to review (1) the Update Report / emerging conclusions and (2) the Phase 1 report template (provided by the Study Team ahead of the current meeting) in the light of the presentation made by the team at today's meeting and to come to a view ahead of the next meeting as to whether they endorse the conclusions to date and the proposed report structure. Any questions or concerns they have should be sent to the Study Team via the Secretariat ahead of the next meeting on 13th January 2009.

4.13 In closing the discussion the Chairman thanked the Study Team for all the work they had been doing to what were clearly tight timescales and the working group members for a very useful discussion.

5 Forward Plan and Next Steps

- 5.1 The Chairman noted that the next ENSG meeting was set for 18th February when the ENSG would review the output of the GB Transmission Study.
- 5.2 The question was raised as to what was needed ahead of the ENSG meeting in February.
- 5.3 DECC suggested that the ENSG-PWG group should be clear and reach a consensus on:
 - The methodology and results of the NG/TO 2020 study so that they were in a position to advise/report to the ENSG accordingly;
 - The funding position related to the required work (Ofgem input required here) particularly in respect of the critical path for individual investments taking into account the timelines involved.
 - Other commercial or regulatory factors e.g. planning, that the ENSG needs to consider in producing its final 'vision' for the networks.

5.4 In the discussion of these points the following comments were made:

- Ofgem were publishing their proposals¹ related to funding in the next few days (this document has subsequently been circulated to the group).
- The group endorsed the view that the risk of work being done that later proved to be not required was outweighed by the risks associated with doing nothing.
- The output from the ENSG related to the ENSG-PWG work needs to be defined – there was a clear need for an authoritative report by Summer 2009.

Action 3: Study Team to prepare and present at the January meeting final estimates for the costs of the proposed transmission system work and TNUOS charges for transmission zones.

DECC suggested that as a key item on the agenda for the meeting on 13th January would be consideration of Ofgem's proposals on funding for transmission related work (see document published by Ofgem on 19th December 2008¹ and sent to group on 22nd December 2008). Members may like to consider nominating additional attendees from their organisations for the 13th January meeting who are expert in the area of regulation planning and costs.

Action 4: Members to consider nominating additional attendees from their organisations for the 13th January meeting who are expert in the area of regulation planning and costs and to notify any names to the Secretariat and DECC by January 9th 2009.

5.5 In looking at the forward dates for the working group meetings, it was agreed that the working group would need to meet twice ahead of the ENSG meeting, to provide a further opportunity to review progress and discuss the study results. It was essential that the group had enough information and was able to form a clear position to be able to advise the ENSG of its views of the NG/TO study and recommendations.

5.6 Related to this, it was requested that the group review the presentation on '2030 transmission scenarios' (which unfortunately could not be presented at the meeting because of time constraints) ahead of the 13th January meeting and provide any comments and feedback at or before the meeting.

Action 5: All members to review the '2030 scenarios' presentation material in the light of the presentations made by the Study Teams at today's meeting and to come to a view ahead of the next meeting as to whether they endorse the conclusions. Any questions or concerns they have should be sent to the Study Team via the Secretariat ahead of the next meeting on 13th January 2009.

Action 6: The Study Team to provide a further update on progress with the analysis work for the working group meeting on 13th January 2009.

¹See:http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?file=081219_TOincentives_consultation_FINAL.pdf&ref=Networks/Trans/ElecTransPolicy/tar

6. Future Meetings and AoB

6.1. Dates for the next two meetings of the working group were confirmed / agreed as:

- Tuesday 13th January 2009
- Tuesday 4th February 2009 (**NB NEW MEETING**)

Further details to be circulated with agendas.

6.2. The Chairman opened the meeting for any other business. No other business items were raised, the Chairman therefore thanked the members for their attendance and input and closed the meeting.

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