

## SUBMISSION FROM INSTITUTION OF CIVIL ENGINEERS SCOTLAND

The Institution of Civil Engineers (ICE) is a global membership organisation which qualifies civil engineers, exchanges knowledge and best practice, and provides expert advice to government. Our Royal Charter binds us to act in the public interest, and our 8,000 Scottish members design, build and maintain Scotland's infrastructure.

ICE Scotland welcomes the opportunity to respond to specific questions raised as part of the Economy, Energy and Tourism Committee's inquiry into Security of Supply in Scotland.

*Information in this submission is drawn from ICE Scotland's Policy Paper: Scottish energy policy (Summer 2014). In November 2015 ICE Scotland will publish its State of the Nation Infrastructure Scotland 2015 report, which includes consideration of Scottish energy issues.*

**The Scottish Government aims to have a “largely decarbonised electricity system by 2030”. What does this mean in practice, and are there sufficient tools in place to bridge the move from fossil fuels to renewables?**

A significant proportion of Scottish generating capacity - mainly from fossil fuels and nuclear - is expected to be retired during the course of the next decade. UK capacity margins are expected to tighten considerably in the coming years unless measures to support investment in new capacity are successful. ICE supports a portfolio approach to securing electricity supply, in which electricity is generated from a variety of sources.

In the absence of new nuclear and the increased deployment of renewables to support Scotland's climate change commitments, this places increased emphasis on ensuring that gas becomes an economically attractive investment proposition for generators. Over time, the development and commercialisation of Carbon Capture Storage (CCS) will make it possible to retain fossil-fired backup generation in the Scottish power generation mix without further exacerbating climate change.

Scotland has huge potential for the wider development and deployment of renewable generation, in terms of both its natural resource and in the policy support provided by government. These should enable Scotland to make a disproportionately higher contribution to the UK's renewable generation targets for 2020 and, with the increased deployment of new technologies, support our longer-term decarbonisation targets

However, a number of uncertainties and constraints have been identified as a barrier to further deployment. These include issues associated with variable output, electricity storage and interconnector capacity to larger demand centres elsewhere on the GB mainland. Also policy uncertainty over the lack of binding renewable generation targets beyond 2020 has recently been cited as a factor in the scaling back or cancellation of several projects across the UK. In addition, the relatively high cost of renewable generation, transmission and distribution (particularly on the Scottish islands) has been identified as a further barrier to development.

Electricity storage is one way of dealing with increasing amounts of intermittent generation alongside demand-side measures and increased interconnection. Pumped hydro-electric storage offers the greatest potential in the short-medium term, with proposals to double capacity at Cruachan being considered alongside Coire Glas in Lochaber. The Institution of Mechanical Engineers (IMechE) have outlined a variety of storage technologies which could

be developed, but notes that progress to date has been slow due to an array of technological, regulatory and commercial factors.

The development of gas generation and the deployment of Carbon Capture and Storage (CCS) technology provide the best option for a bridge between higher polluting hydrocarbons and renewables. Electricity storage issues should also be considered at an early stage.

**A number of new transmission network projects are currently under construction or being planned. *What role will these have in securing electricity supplies, and where should future investment be directed? What role might the distribution network, and a single European electricity market play in securing supplies?***

With the loss of significant amounts of baseload (minimum amount of power required to meet demand), and dispatchable (flexible generating capacity, adjusting power to meet demand) capacity, Scotland could choose to import electricity from the rest of the UK (rUK).. However, this assumes that rUK has sufficient electricity to export and that there is sufficient cross-border transmission capacity. The proposed sub-sea electricity link between Scotland and Wales is expected to increase maximum cross-border capacity by 2.2GW to 6.6GW. If operating at maximum capacity, and presuming sufficient rUK exportable capacity, this would support only 40% of Scottish peak demand. It therefore follows that, even with this cross-border capacity, in the short-medium term; Scotland will continue to require new thermal plant.

***Any other matters concerning security of supply that you would like to bring to the Committee's attention.***

**Policy certainty:** The support of successive Scottish administrations for the development of renewable technologies and the policy flexibility to encourage innovation has been crucial to the success achieved in decarbonisation following devolution. However, the lack of binding UK and European renewable targets beyond 2020 has been identified during ICE Scotland's research and engagement as a potential barrier to future growth, creating political uncertainty and reducing investor confidence.

**Encouraging behavioural change and limiting the impact of reform on consumers:** Supply side measures alone will be insufficient to change the ways in which we consume energy. Demand side interventions will have an important role to play in helping us to reduce emissions and tackle issues related to energy affordability. The pace and support offered for its deployment may need to be accelerated if our long-term carbon reduction commitments are to be met and progress is to be made in the decarbonisation of heat and transport. ICE recognises that energy affordability will remain a key concern of both voters and policymakers, but urges politicians to ensure that a balance is struck between ensuring consumer affordability in the short-term and, in the longer-term, tackling the UK's looming energy gap, particularly in light of its legally binding commitments to reduce carbon emissions and plans to decarbonise its supply efficiently and cost-effectively.

**Institution of Civil Engineers Scotland**

**6 May 2015**