



# SAFE ENERGY E-JOURNAL No.69

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This briefing does not necessarily deal with the UK Government's proposed new reactor programme. For an update on developments to do with new reactors see here:

<http://www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo85.pdf>

If you are keen to keep abreast of developments in energy at a local level in communities and local authorities around the UK, you can sign up to the weekly Micro Power News here:

<http://www.microgenscotland.org.uk/news/>

## 1 Higher Activity Waste Strategy

The Nuclear Decommissioning Authority has published a new Higher Activity Waste (HAW) Strategy. It is described as a strategy for converting Higher Activity Waste within the NDA estate into a form that can be safely and securely stored and managed for many decades.

The NDA is seeking views on the Strategy which should be sent to [strategy@nda.gov.uk](mailto:strategy@nda.gov.uk)

The strategy recognises that within the UK there are policy differences between England and Wales and Scotland. It is actually UK policy to investigate alternative options to a Geological Disposal Facility (GDF) for some of the inventory. To support this UK policy and the Scottish Government policy position of near-surface management of HAW the NDA is exploring a range of disposal options together with Radioactive Waste Management Ltd (RWM) and the Site License Companies (SLCs).

Current UK policy classifies radioactive waste into categories depending on the nature and quantity of radioactivity they contain and whether they generate heat or not. The NDA (with support from the nuclear site regulators) advocates an approach where wastes are managed based on their best means of disposal rather than what waste category they fall into. Although the Strategy won't replace the use of existing waste categories (e.g. ILW, LLW), it will take into account the nature of wastes (radiological, chemical and physical properties) and the most appropriate waste management route. It says "*considerable stakeholder engagement*" will be required as the strategy develops over the next few years.

The document recognises spent nuclear fuel, uranium and plutonium, which is not currently recognised as waste might be classified as HAW in the future time if it is decided they are of no further use. It also asks stakeholders to note that transport of HAW is a "*particularly significant enabling step*" within the waste management lifecycle.

The NDA wants to explore alternative management options for some types of waste – including near surface disposal.

The NDA says the waste hierarchy principle applies just as much to HAW as it does to LLW, especially if its application can reduce the number of stores to be built and the number of disposal vaults to be constructed in a disposal facility. The NFLA, however, has not been supportive of the use of the “waste hierarchy” seeing it as a way to justify transporting waste to other facilities and even other countries in order to carry out so-called “processing”, and diluting and dispersing waste through the unnecessary discharge of radioactive substances into the environment and spreading waste around in landfill sites and by the use of incineration.

A similar policy applied to HAW would indeed be a major concern.

The NFLA will be looking in more detail at the HAW Strategy over forthcoming weeks.

The NDA Higher Activity Waste Strategy 2016 can be found at:

<https://www.gov.uk/government/publications/nda-higher-activity-waste-strategy>

## 2 Decommissioned Nuclear Sites

The Nuclear Free Local Authorities (NFLA) has submitted (1) its views on a joint consultation by the Environment Agency, Scottish Environment Protection Agency (SEPA) and Natural Resources Wales (2) on its proposals to release nuclear sites from radiation substances regulation as they are reaching full decommissioning.

The joint proposal by the three national environmental agencies provides a set of requirements to enable site operators to make the decisions they need to bring a site to a state in which it can then be made available for other uses and eventually released from radioactive substances regulation (RSR) for unrestricted use.

The NFLA submission raised three key concerns about the proposals:

- The way of assessing the radiological hazard of a site which has been released from radioactive substances regulation appears to be too flexible.
- It is not clear who is expected to regulate a site which is being made available for restricted use. Local authorities are unlikely to have the resources to regulate such a site.
- The proposals appear to allow for the unrestricted use of sites which may have nuclear waste buried and which could be capable of administering doses of up to 20mSv/yr if human intrusion occurs, (compared with a more reasonable dose of 0.01 – 0.02mSv/yr derived from Health and Safety Executive and Environment Agency reports). It is the NFLA view that such sites should remain subject to radioactive substances regulation.

Meanwhile SEPA says monitoring for particles on the **Dounreay** foreshore and Sandside Beach should continue for the foreseeable future despite the fact that work carried out since the 1990s appeared to have successfully depleted the number of particles resting on the seabed. SEPA added

that additional monitoring would confirm if this was the case. SEPA also recommended that equipment used to find particles should be upgraded to improve detection rates and monitoring should also be carried out at Strathy Point and Murkle Beach. (3)

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1. NFLA Radioactive Waste Briefing 63, May 2016 <http://www.nuclearpolicy.info/briefings/rad-waste-policy-briefing-63-releasing-nuclear-sites-from-regulation>
  2. EA, SEPA and NRW joint consultation on 'Requirements for Release of Nuclear Sites from Radioactive Substances Regulation', February 2016 [https://consultation.sepa.org.uk/operations-portfolio/grr/user\\_uploads/2016\\_02\\_01-grr-published-consultation-document.pdf](https://consultation.sepa.org.uk/operations-portfolio/grr/user_uploads/2016_02_01-grr-published-consultation-document.pdf)
  3. Herald 5th April 2016  
[http://www.heraldscotland.com/news/homenews/14402244.Sampling\\_of\\_beaches\\_near\\_Dounreay\\_should\\_continue\\_for\\_foreseeable\\_future/](http://www.heraldscotland.com/news/homenews/14402244.Sampling_of_beaches_near_Dounreay_should_continue_for_foreseeable_future/)

### 3 Torness and Hunterston B Life Extensions

The Office for Nuclear Regulation (ONR) is currently looking at the Periodic Safety Review (PSR) for Hunterston B (1) and EDF Energy has announced that it plans to extend the life of Torness nuclear power station by 7 years to 2030. (2)

If ONR approves Hunterston's PSR the station will be almost 50 years old when it finally closes in 2023. The UK's ageing AGRs are suffering from cracking in their graphite cores which are a serious safety concern. In April 2005, a major Greenpeace study of reactor hazards concluded that risks from ageing reactors were higher than then accepted because age-related degradation mechanisms were not well understood and difficult to predict. AGRs do not have a secondary containment, so there is a high potential for large radioactive releases. (3)

The announcement about Torness's life extension along with several other AGRs in England has renewed fears about the capability of Britain's over-stretched nuclear safety regulator to cope with a growing workload. Professor Andy Blowers, a nuclear industry commentator, expressed concern that the ONR, Britain's under-resourced safety regulator, would not be able to manage its growing workload. A spokeswoman for ONR said that the organisation was comfortable with its present resources, but she acknowledged: *"We will need more inspectors and we are recruiting."* (4)

The Green MSP Alison Johnstone said in Parliament on 7<sup>th</sup> October 2014 that :

*"... it is important we challenge the fact that the public has no say in the Periodic Safety Reviews and lifetime extensions granted to our nuclear plants. International law says extensions require public consultation and must compare the potential impact of extending an old reactor with supplying energy from alternative sources such as renewable energy."*

She was referring to an international convention known as the UN Convention on Environmental Impact Assessment (EIA) in a Transboundary Context, or the Espoo Convention. Espoo has said that all ageing nuclear power stations in Europe should have an environmental impact assessment (EIA) before a licence renewal or the approval of a 10-year-periodic safety review. And the EIA will have to



compare the potential impact of extending the life of an old reactor with supplying energy from alternative sources such as renewable energy, as well as involve the public in the decision-making process. (6)

In response to a question at the Torness Local Liaison Committee meeting on 7th April 2016, about whether an Environmental Impact Assessment (EIA) had been carried out under the Espoo Convention before announcing the Torness Life Extension, EDF Energy wrote to members of the Committee (which includes local councillors) saying:

*“The life extension decision did not require EDF Energy to request any material change to the authorisation or the limits within which the station operates. With regards to the Espoo Convention, it applies to projects that are likely to cause a significant adverse trans-boundary impact, so across national boundaries. Life extension at Torness is not covered by this requirement. There is no similar UK or Scottish legislation that requires an EIA for a nuclear plant life extension.”* (7)

Yet the ESPOO Implementation Committee has said that:

*“...the lifetime extension of NPPs could be considered as a major change to an activity ... and thus fell under the scope of the Convention.”* And a lifetime extension is to be considered a major change *“even in the absence of any works”*. (8)

In May 2014 Greenpeace complained to the Secretariat of a related UN Convention - the Aarhus Convention - about non-compliance by the Netherlands in relation to the plant life-time extension of the Borssele nuclear power plant. (9) A decision on this complaint is due to be announced soon.

Greenpeace argued that the significant effects of a decision to allow a further 20 years of operation of the Borssele nuclear power plant include:

- an increasing risk of malfunction by ageing components and increased compatibility problems from the introduction of new replacement components, potentially escalating in a severe accident with emissions of radioactive substances into the environment;
- an increase of the time of exposure to potential terrorist attack, sabotage or acts of war;
- an increase of the time of exposure to extreme natural events that could alone or in combination with human failure or malevolent human acts lead to emissions of radioactive substances into the environment;
- an increased use of uranium and therefore increased environmental impacts from uranium mining, processing and fuel production;
- an increased production of radioactive waste;

One thing the Greenpeace submission doesn't mention is the opportunity cost of upgrading old reactors. For instance it could cost around €200bn to refurbish all of Europe's ageing reactors over the next decade and a half. (10) That is €200bn which could have been spent on energy efficiency and renewable energy sources.

By examining all applications to extend the life of nuclear reactors, whether in the UK or elsewhere in Europe through an Environmental Impact Assessment open to public participation, the public can see the potential impacts of extending the life of old reactors and compare these with the opportunities to supply energy from alternative sources.

Meanwhile, operator error was to blame for the unauthorised release of contaminated water into the Clyde from Hunterston B Power Station in November. Radioactive waste was discharged for half an hour longer than scheduled during the incident, which was immediately reported to the Scottish Environment Protection Agency. Waste should only be released within the period between one hour after high tide and one hour before low tide. This makes sure the waste is being drawn away from the shore. Operator error meant the discharge pump was left running for around half an hour longer than scheduled. This meant that it was stopped around half an hour before low tide. (11)

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1. Hansard, Nuclear Power Stations: Safety: Written question – 200777, answered 23<sup>rd</sup> June 2014  
<http://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2014-06-16/200777/>
  2. BBC 16th Feb 2016 <http://www.bbc.co.uk/news/business-35583740>
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  4. Times 17th Feb 2016 <http://www.thetimes.co.uk/tto/business/industries/utilities/article4692218.ece>
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[http://www.theecologist.org/News/news\\_analysis/2430353/europes\\_ageing\\_nuclear\\_reactors\\_will\\_have\\_to\\_undergo\\_environmental\\_assessments.html](http://www.theecologist.org/News/news_analysis/2430353/europes_ageing_nuclear_reactors_will_have_to_undergo_environmental_assessments.html)
  7. Letter from Paul Winkle, Torness Station Director to LLC Committee Members dated 22<sup>nd</sup> April 2016.
  8. Report of the Implementation Committee on its thirtieth session; Meeting of the Parties to the Convention on Environmental Impact Assessment in a Transboundary Context, Geneva, 25–27 February 2014  
[http://www.unece.org/fileadmin/DAM/env/documents/2014/EIA/IC/ece.mp.eia.ic.2014.2.as\\_resubmitted.pdf](http://www.unece.org/fileadmin/DAM/env/documents/2014/EIA/IC/ece.mp.eia.ic.2014.2.as_resubmitted.pdf) page 13 paras 4 and 5.
  9. Communication to the Aarhus Convention's Compliance Committee Non-appliance with the Aarhus Convention by the Kingdom of the Netherlands in relation to the plant life-time extension of the Borssele nuclear power plant, Greenpeace 6<sup>th</sup> May 2014  
[https://www.unece.org/fileadmin/DAM/env/pp/compliance/C2014-104/Communication/Communication\\_Netherlands\\_Greenpeace\\_06.05.2014.pdf](https://www.unece.org/fileadmin/DAM/env/pp/compliance/C2014-104/Communication/Communication_Netherlands_Greenpeace_06.05.2014.pdf)
  10. FT 10th February 2016 <http://www.ft.com/cms/s/0/581cb61a-d00d-11e5-92a1-c5e23ef99c77.html>
  11. Largs & Millport Weekly News 14th March 2016  
[http://www.largsandmillportnews.com/news/14341811.Hunterston\\_warning\\_after\\_nuclear\\_waste\\_overspill/](http://www.largsandmillportnews.com/news/14341811.Hunterston_warning_after_nuclear_waste_overspill/)



## 4 Nuclear Transports

Two particular nuclear shipments have been the focus of attention in Scotland over the last few months, one which took place in March using a ship 5 years past its sell by date, and the other one which is proposed to traverse the Atlantic perhaps even by air.

In March the Oceanic Pintail, the only ship owned by the Nuclear Decommissioning Authority (NDA) travelled from Scrabster to Barrow-in-Furness with a cargo of 'exotic' nuclear materials including unirradiated plutonium/ highly enriched uranium fuels on their way from Dounreay to Sellafield.

This 'weapons useable' material would be a prime target for terrorists.

The use of the 29 year old Oceanic Pintail – now almost 5 years past her sell-by date (company practice has been to retire ships at or before 25 years of service) – and the sea route from Scotland via the often treacherous waters of the Minches from Cape Wrath southwards, has been much criticised as unnecessarily exposing such dangerous cargos to major risks. (1)

Highlands Against Nuclear Transport (Hant) said the operation was carried out before the NDA had given any information that could be open to public scrutiny, or before the UK Government had given a commitment about stationing an emergency towing vessel (ETV) at Stornoway to cover the west coast. Hant chairman Tor Justad told *The National*: "*Once again a secret and dangerous transport of highly radioactive cargoes is being carried out without any public consultation or scrutiny.*"

A spokeswoman for the NDA said "*Our priority at all times is to maintain the security of the fuel and ensure the public and our personnel are protected from harm. For those reasons, we are unable to provide information that could compromise our ongoing programme to defuel the site.*" (2)

The lack of an Emergency Towing Vessel on the west coast was raised at a meeting of the Dounreay Stakeholder Group on 16 March 2016. (3)

The proposed shipment across the Atlantic would be the world's largest ever shipment of weapons-grade uranium - sending 700kg of highly enriched uranium from the Dounreay to the United States. David Cameron announced the plans at the nuclear security summit in Washington. In return, a different form of used uranium will be transported from America to the European Atomic Energy agency (Euratom) where it will be turned into radio isotopes that are used to detect and diagnose cancer. "*It is an opportunity for us to show some leadership to the rest of the world,*" said a British official.

When this story originally broke it was thought to be about transferring only 5kg of HEU which had been brought to Scotland from Georgia in 1998. But it is, in fact, about transferring a much larger quantity of material – 700kg – which must originate from several of Dounreay's former clients. (4)

But campaigners warned against "*playing ping pong*" across the Atlantic with radioactive material. SNP MP Paul Monaghan branded the deal "*morally reprehensible*", raising concerns about the possibility of flights carrying "*highly toxic materials*" out of Wick Airport. And the Westminster government was accused of being "*at best misleading and at worst cynical*" in presenting the proposal as helping in the fight against cancer. Highland Council leader Councillor Margaret



Davidson said the development raised the risk of a “*potentially catastrophic incident to unacceptable levels*”.

She added: “*The Pentland Firth is notorious for the challenges it poses in terms of weather, tides and navigation. There needs to be adequate protection in place to respond in the case of an incident whilst the waste is being transported.*” (5)

Richard Dixon, director of Friends of the Earth Scotland, insisted nuclear waste should be dealt with as close as possible to where it was produced. He added: “*Only the nuclear industry could think it was a good idea to risk playing ping pong with large quantities of one of the most dangerous materials on the planet across the Atlantic.*” (6)

Tom Clements, director of Savannah River Site Watch in South Carolina, said: “*In reality this is nuclear dumping*”. He argued that the UK as a nuclear weapons state should look after its own waste. “*The US and UK must explain why they are engaged in commerce in nuclear weapons materials when, from a nuclear non-proliferation perspective, this material would best be left in the UK,*” he said. “*While the clean-up of the Dounreay site is essential, the UK can manage the clean-up of its own nuclear sites and not involve the US government.*” (7)

Former Chair of the Government’s Committee on Radioactive Waste Management, Prof Gordon Mackerron said the decision to move this radioactive waste out of the UK has been presented as making it harder for nuclear materials to get into the hands of terrorists, but this is implausible. The UK is capable of managing homegrown highly enriched uranium itself. The plan also contradicts the principle that countries are responsible for managing their own nuclear legacy. (8)

Cumbrian group, Core, complained that options for the management of Dounreay’s Exotic HEU were assessed in Public Consultations in 2012 and 2013, with NDA announcing in 2013 its preferred option as transferring the material to Sellafield for long-term management. This has now been ditched without consultation in favour of sending the material to the US. (9)

It now appears that the NDA is carrying out “*clandestine*” work to upgrade Wick airport. Even though no deal has been signed, the NDA is spending £8 million to upgrade the runway. Paul Monaghan MP said “*This upgrade is to allow highly enriched uranium with a cash value of several billion dollars to be flown to the United States in very large military transport aircraft. There will be about eight or nine flights in total, working out at around £1 million per flight.*” (10) The NDA say all options will be considered for transporting the material from Dounreay to the USA including using Wick John O’Groats Airport which the NDA’s working on improving. (11)

Paul Monaghan MP has referred the plan to transport nuclear waste from Dounreay to the US to the European Commission. He has written to its president, Jean-Claude Juncker, claiming the arrangement contravenes the Euratom Treaty. Signed in 1957, it established the European Atomic Energy Community as a way of coordinating member states’ research programmes for the peaceful use of nuclear energy. It also guarantees high safety standards and prevents nuclear materials intended principally for civilian use from being diverted to military purposes. (12)

A longer article on the this proposed transport by Ernie Galsworthy is available in the [Ecologist 3rd May 2016](#)



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2. The National 19th March 2016 <http://www.thenational.scot/news/radioactive-waste-is-being-transported-in-secret-by-sea-claim.15260>
3. HANT 23rd March 2016 <http://hant.co.uk/news-item-7>
4. Sunday Herald 22<sup>nd</sup> May 2016 [http://www.heraldscotland.com/news/14508724.How\\_to\\_tackle\\_Dounreay\\_nuclear\\_reactor\\_\\_Use\\_Blu\\_Tac\\_K/](http://www.heraldscotland.com/news/14508724.How_to_tackle_Dounreay_nuclear_reactor__Use_Blu_Tac_K/)
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12. Energy Voice 20th May 2016 <https://www.energyvoice.com/otherenergy/109992/mp-questions-safety-dounreay-waste-transfer/>

## 5 Dalgety Bay

Plans to clean up Dalgety Bay's radiation-contaminated beach have taken another step forward after the Ministry of Defence asked Fife Council to screen its proposals to remediate the site to see if an environmental impact assessment will be required. The request comes on the back of the signing of the first of the necessary access agreements between the MoD and Dalgety Bay Sailing Club, paving the way for the start of essential wildlife surveys before future remediation projects get underway. (1)

In July 2014 the MoD agreed in principle to remove the radioactive particles and take other measures to deal with the contamination, if it received firm agreement from Fife Council. Work is expected to be carried out in phases and completed by the end of 2018. Costs have not been finalised but have been reported to be around £10million. The plans, endorsed by the Scottish Environment Protection Agency (SEPA), include the reinforcement and replacement of coastal rock

armour, and a replacement slipway at the sailing club. The MoD has been criticised for “dragging their heels” over the length of time it has taken to clean up the polluted beach. (2)

1. Dunfermline Press 6<sup>th</sup> April 2016  
[http://www.dunfermlinepress.com/news/dalgetybay/14406632.Bay\\_clean\\_up\\_progresses\\_with\\_screening\\_request/](http://www.dunfermlinepress.com/news/dalgetybay/14406632.Bay_clean_up_progresses_with_screening_request/) and Dundee Courier 5<sup>th</sup> April 2016  
<https://www.thecourier.co.uk/news/local/fife/67819/progress-on-dalgety-bay-radiation-clean-up/>
2. Dunfermline Press 25<sup>th</sup> Feb 2016  
[http://www.dunfermlinepress.com/news/dalgetybay/14301327.MoD\\_dragging\\_their\\_heels\\_over\\_Bay\\_clean\\_up/](http://www.dunfermlinepress.com/news/dalgetybay/14301327.MoD_dragging_their_heels_over_Bay_clean_up/)

## 6 Scotland's Energy Strategy

Now that the Scottish Parliamentary elections are over environment groups have been calling on the newly elected Government to seize the moment and put in place policies to deliver the promises made in the Climate Change Act and in the historic Paris climate deal. Policies will need to decarbonise how we heat our buildings and homes and ensure that no one should live in a cold home. (1)

The Climate Change Committee (CCC), which advises both the UK and Scottish Governments, has recommended that Scotland should aim to cut greenhouse gas emissions by 61% by 2030 relative to 1990. If it does nothing emissions are likely to rise by about 7% between 2013 and 2030. Meeting this new stretching target will require Scotland to deliver a highly ambitious programme with a significant strengthening of existing policies, using devolved powers, as well as measures implemented at a UK and EU level to drive take-up of low-carbon technologies and behaviours. The CCC recommends, amongst other things, aiming for the installation of heat pumps in 18% of homes by 2030, supplemented by significant roll-out (2.6 TWh) of heat networks; an increase in the rate of new tree planting to 16,000 hectares per year; and further measures to reduce emissions from waste disposal.

Most importantly the Committee recommends **the continued expansion of renewable generation to ensure that Scotland remains a net exporter of low-carbon power after existing nuclear power stations close.** (2) Unfortunately, since the May 2015 General Election the UK Government has set about cutting subsidies for renewables in a variety of ways making it difficult to see how the Scottish Government can continue their expansion.

### SNP Manifesto

The SNP Manifesto promised a new Climate Change Bill to implement the Paris Climate Change Agreement and set an ambitious new target for Scotland to reduce emissions by more than 50% by 2020 (up from the current 42% target). Richard Dixon, director of Friends of the Earth Scotland, pointed out that up until now, the government has struggled to meet annual targets, so this strong pledge will have to be matched by strong proposals for action on more efficient homes, shifting



transport priorities and reducing emissions from waste. (3) On energy issues the Manifesto promised:

- A Warm Homes Bill to help tackle fuel poverty, and invest £103 million in 2016/7 in energy efficiency improvements for 14,000 homes.
- The Government will work closely with the Solar Trade Association (STA) to advance proposals for expanding solar energy in Scotland.
- Government will continue to promote biomass as a good use of our forestry products for energy.
- Government will also explore the creation of a Scottish Renewable Energy Bond in order to allow savers to invest in and support Scotland's renewable energy sector.
- Government will work with Scotland's Islands communities to ensure they can release their huge renewable energy potential and continue to press the UK Government to progress the necessary EU permissions and bring forward a viable package of support that will facilitate the vital grid connections to the Orkney, Shetland and Western Isles.
- A new target for community energy of 1GW by 2020 – up from 500MW – and 2GW by 2030.
- The Government will explore the potential to create a government owned energy company to help the growth of local and community energy projects.
- By 2020 the SNP says it will ensure that at least half of all newly consented renewable energy projects will have some element of shared ownership.

### A new holistic energy strategy

On 15<sup>th</sup> March Fergus Ewing, the Scottish Minister for Business, Energy and Tourism, set out plans to develop a new holistic energy strategy if re-elected in May. The strategy will encompass demand reduction, energy efficiency, a balanced energy generation mix, a role for storage, and the requirement for a low carbon transition in transport and heat use.

#### **A consultation will be published before the end of 2016.**

Whilst celebrating the groundbreaking tidal energy project in the Pentland Firth and the world's largest floating offshore wind farm, which should be in place by 2018, the Minister said we now face stiff headwinds to continued progress across the full range of Scottish energy priorities. Indecision and inconsistency in energy policy from Westminster are now placing Scottish investment and jobs at risk.

*"We face an onslaught against renewables from the UK Government with its abrupt and irrational termination of financial support for the best-value technologies, which places Scottish jobs and investment at risk and jeopardises further progress towards our 2020 renewable energy targets. The UK Government has, in effect, chosen nuclear power over carbon capture and storage with its abrupt cancellation of the CCS demonstrator competition, which could have done so much for Peterhead."*

*“Scotland cannot wait for the Department of Energy and Climate Change and the Treasury to get it right. ... I hope that I can rely on the support of members as this important work to develop Scotland’s energy strategy progresses.” (4)*

In response WWF Scotland says research suggests that Scotland will need to produce at least 45% of its energy needs (electricity, heat and transport) from renewables by 2030 if it is to meet its climate targets. (5) Independent research, undertaken by internationally-renowned engineering consultancy firm DNV GL, has shown that almost fully-renewables based electricity generation in Scotland is technically feasible and achievable by 2030, with Scotland playing to its strengths by continuing to export electricity to the rest of the shared and secure Great Britain grid. **Scotland’s refreshed energy strategy should embrace this vision, which could make Scotland the EU’s first entirely renewable electricity nation.** <sup>1</sup>

## Renewable Targets

57.7% of Scotland’s electricity needs now come from renewables – exceeding the target of 50% by 2015. The target for 2020 is to produce the equivalent of 100% of Scotland’s electricity demand with renewables. The Government will now seriously and carefully consider the proposal from industry body Scottish Renewables for Scotland to set a target of 50% of all energy (not just electricity) to come from renewables by 2030.

## Solar Scotland

One way the Scottish Government is looking at to boost the contribution from renewables in the face of Westminster cuts, is to support the growth of solar energy in Scotland. Callum McCaig MP, the SNPs spokesperson for Energy & Climate Change in Westminster, says solar deployment is set to ramp up over the next decade in Scotland. Meeting the 100% renewable electricity target means there will be a huge opportunity for solar deployment over the next five to ten years or so. (6)

The Government says it will work closely with the Solar Trade Association (STA) to advance proposals for expanding solar energy in Scotland. The STA says (7) this is a reference to looking at the Association’s 20 key solar asks for the Scottish Government. (8)

The STA wants to see solar panels installed on all new public buildings, and retrospectively a roll-out of solar panels across the Scottish public estate, including installations on schools, leisure facilities, police stations, prisons and local authority offices. And it wants the Scottish Government to say that solar should be explored with all new builds and refurbishments in the public sector. (9)

## Meeting the 100% by 2020 target

Scottish Renewables’ latest estimate on progress towards the 100% target by 2020 disappointingly shows that Scotland will fall short of the 100% target, thanks to UK Government cuts in subsidies.

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<sup>1</sup> Portugal is reported to have run entirely on renewable electricity alone for 4 straight days in May. This 100% was preceded by more than 70 percent of its electricity from renewable sources during the first quarter of 2013, and 63% for all of 2014. Portugal stopped burning coal in 1994. Electrek 16th May 2016  
<http://electrek.co/2016/05/16/portugal-ran-entirely-on-renewable-energy-for-4-consecutive-days-last-week/>



The predicted capacity will only be sufficient to generate 87% of Scotland's equivalent annual demand for electricity. (10)

There is significant offshore wind capacity – around 2.8GW which could proceed if offered appropriate support in the necessary timescales. But these projects have not yet secured a Contract for Difference. The industry had expected an auction round for contracts in autumn 2015 but this was postponed. Energy secretary Amber Rudd now says the next contracts for difference (CfD) auction will take place by the end of 2016, paving the way for up to 10GW additional offshore wind (across the UK), but there is no way of knowing if any of the winners will be in Scotland, and it will be too late to meet the 100% target by 2020. (11) Of course it would be better to be late than never.

Now the Neart na Gaoithe windfarm in the outer Forth estuary, which did have funding through the Contract for Difference system for around 450MW of offshore wind has had its contract terminated following delays in the project while a judge considers its impact on bird life. The Royal Society for the Protection of Birds, which says it and three other offshore wind projects threaten the lives of thousands of seabirds. Edinburgh's Court of Session held a hearing in May 2015 to review the Scottish government's approval of the projects, but judge Lord Stewart has yet to issue his ruling. (12)

### Island Energy

Some 700MW of onshore wind projects on the Scottish islands are waiting for suitable grid connections before construction can begin. George Osborne's last budget left these island projects in limbo, with no signal that they will be able to bid for future contracts at a price that enables them to absorb the massive grid charges that projects on the islands will face. (13) Together with offshore wind projects waiting for Contract for Difference contracts from the UK Government these projects could get Scotland much closer to its 100% target by 2020.

The SNP Manifesto says the Government will work with Scotland's Islands communities to ensure they can release their huge renewable energy potential and continue to press the UK Government to progress the necessary EU permissions and bring forward a viable package of support that will facilitate the vital grid connections to the Orkney, Shetland and Western Isles.

Scotland's islands could enjoy a £725m boost to their economies over the next 25 years from renewables, according to a new report by energy consultancy Baringa. The report, which was commissioned by the Scottish Government, found if investments were made in grid infrastructure and generating assets, the amount of renewable energy deployed on the islands could be growing rapidly by the early 2020s. At its peak, renewables deployment could provide an extra five per cent boost to local economic output on average across the islands. The economic benefits would include up to £225m in community benefits and revenues of up to £390m for community-owned island generation projects, according to the report, while up to 2,000 jobs would also be created in the peak development phase. (14)

Council leaders from the Western Isles, Orkney and Shetland have called on UK ministers to connect their renewable energy projects to the national grid. Scottish energy minister Fergus Ewing and the respective council leaders have written to UK energy secretary Amber Rudd asking for progress on European Union (EU) permissions to connect to the grid. (15)

Last year David Cameron gave a commitment to resolve the issue but DECC remains in talks with Brussels. Industry insiders have been told an agreement has been reached informally but that DECC has so far failed to make a formal bid to go ahead with the subsidy scheme, known as the Remote Island Wind Contract for Difference (CfD). The delay has prompted fears the UK Government is preparing to scrap the plan. Unless a deal is struck soon, the islands will miss out on the next round of Government-backed green power contracts. (16)

## Hydrogen

Orkney isn't sitting on its hands while it waits for a Westminster decision. The Islands have been awarded more than 2 million euros in EU funding as part of a new European-wide hydrogen project. Called BIG HIT (Building Innovative Green Hydrogen systems in an Isolated Territory: a pilot for Europe) it is a five-year project, involving 12 participants based across six EU countries. The local authority partner in BIG HIT is Orkney Islands Council, providing local input together with the Shapinsay Development Trust (SDT), Community Energy Scotland (CES), and the European Marine Energy Centre (EMEC).

The Orkney Islands have over 50 MW of installed wind, wave and tidal capacity generating over 46 GWhr per year of renewable power, and has been a net exporter of electricity since 2013. Energy used to produce the hydrogen for BIG HIT will be provided by the community-owned wind turbines on the islands of Shapinsay and Eday, two of the islands in the Orkney archipelago. At present the Shapinsay and Eday turbines are often 'curtailed', losing on average more than 30% of their annual output, with their electricity output limited by grid capacity restrictions in Orkney. The otherwise curtailed capacity from the locally owned Shapinsay wind turbine will be used to produce low carbon 'green' hydrogen and oxygen by the electrolysis of water. 10 electric vans will be fitted with equipment which means they can use the hydrogen fuel to extend their range. (17)

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## 7 Renewable Heat

Scotland still needs a huge “acceleration” of investment in and adoption of renewable energy to help it to hit climate change targets by 2030, according to WWF Scotland. About 45% of energy (not just electricity) needs would have to come from renewable sources by 2030. At present it is 13% “Huge acceleration is needed to hit the targets. It needs direction, vision, leadership and support.”

WWF Scotland is eager to find ways to reduce the risk and cost of district heating schemes, which can distribute heat to homes from a central source. (1)

In Norway, the introduction of legislation to support district heating has stimulated a 150% increase in the installed capacity for district heating over the last 10 years. This has helped make it possible for the city of Drammen to create a district heating network that supplies several thousand homes and businesses with clean, affordable heat. This system didn't rely on Scandinavian engineering but the expertise of Glasgow-based Star Renewables; Norway simply provided the right environment. Scotland must do the same if it wants to attract the same level of investment.

A Warm Homes Act could bring clean and affordable warmth to households and businesses, by supporting the growth of district heating and renewable heat, while improving the energy efficiency



of our buildings. It would reduce heat demand, cut fuel bills and create jobs in a new district heating industry.

Public investment in energy efficiency could create up to 9,000 new jobs around every part of Scotland, and ensure 1.25million homes in Scotland will be made warm, affordable to heat, and lower carbon. By making the improvement of energy efficiency a long-term national infrastructure project, no one in Scotland would have to live in a hard to heat, draughty home by 2025. (2)

Three innovative heating projects have been awarded a total of £1.75 million by the Scottish Government. The schemes, in Shetland, Clydebank and Glasgow, will use water source heat pump technology to extract heat from water – even on the coldest days – to supply low carbon heat efficiently. These are:

- A £1.6 million loan for a large scale sea-water source heat pump scheme in Lerwick, to allow 225 more households to join the existing heat network
- Funding of £75,000 for the Queens Quay Development on the site of the former John Brown Shipyard, Clydebank, to develop an investment prospectus for a district heating network using a water source heat pump in the River Clyde basin, and
- Funding of £75,000 for the University of Glasgow Western Campus to develop an investment grade proposal to install a water source heat pump in the River Kelvin to ensure the existing district heating network can service new buildings planned for the site of the former Western Infirmary hospital. (3)

## Heat Pumps

Star Renewables has now launched the world's largest industrial air source heat pump (ASHP) which can be integrated with a district heating network. It is the latest in a long line of innovations that have been brought to life by the joint thinking of a team of experts from Star Renewables, Glasgow Housing Association (GHA), British Gas and consultants WSP Parsons Brinckerhoff. (4)

A 400kW/h air source heat pump is now going to be installed at the energy centre and connected to a centralised district heating network serving 350 households in the Hillpark Drive scheme run by Glasgow Housing Agency. This will be the first time an air-source heat-pump installation in Britain has provided central renewable heating for a block of high rise buildings. (5)

## Geothermal

Plans to drill a deep geothermal well below Aberdeen could help position the region as a global energy hub and highlight the potential from this form of energy for the rest of the UK. A report by Iain Stewart, professor of geoscience communication at Plymouth University, says Scotland could do more with the geothermal resources on its doorstep as part of a push for clean, renewable energy. Stewart's study into the feasibility of installing a deep geothermal single well (DGSW) at the new site of the Aberdeen Exhibition and Conference Centre (AECC), at a cost of £1.5m-£2.5m, concludes that it represents a unique opportunity.



He said it would supply low-carbon heat to the AECC and nearby homes, be a catalyst for deep geothermal energy in Scotland by acting as a showcase project, work as an educational tool to raise public awareness, and help develop crossover skills with the oil and gas industry.

The project does not require fracking and so it is more likely to be acceptable to the public than some other geothermal projects involving “stimulation techniques”. Aberdeen is one of five areas where geothermal feasibility studies have been backed by the Scottish government. The others are Guardbridge in Fife, Polkemmet in West Lothian, Hartwood in North Lanarkshire, and Hill of Banchory in Aberdeenshire. (6)

Last summer, the Scottish Government released a new policy roadmap which set out its approach to decarbonising the heat system. The Heat Policy Statement outlined a number of new approaches to renewable heat, such as the designation of energy efficiency as a national infrastructure priority, and the funding of feasibility studies into the potential for geothermal energy in Scotland. Scotland has a target to produce 11% of its heat from renewable sources in 2020, but the latest figures show Scotland produced enough heat from renewable sources to meet between 3.7% and 3.8% of non-electrical heat demand in 2014. (7)

The Scottish Government published the independent scientific reports it commissioned on the prospects for four geothermal energy sites – just hours before parliament was dissolved for the Scottish general elections to Holyrood. Geothermal energy may be included in the next iteration of the Scottish Energy Strategy which Scottish Energy Minister (at the time) Fergus Ewing has announced will open for consultation when the new parliamentary session opens in August. (8)

Another pioneering scheme in North Lanarkshire could see around 700 households benefit from a source of warmth from the legacy left behind by Scotland’s coal-mining past. In a joint effort with local councillors, scientists from the James Hutton Institute are exploring the possibility of creating a cutting-edge geothermal district heating system by tapping the warmth of underground floodwater at the disused Kingshill Colliery at Allanton. (9)

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## 8 Energy Efficiency

The Scottish Government's pledge to carry out energy efficiency improvements in 14,000 homes in 2016/7 contrasts with the 130,000 a year needed over the next decade, according to Stop Climate Chaos Scotland (SCCS).

All the parties represented in the Scottish Parliament have already committed to making energy efficiency an infrastructure priority. But the challenge is to move from commitments to reality, by setting out a clear goal for the project, a clear plan for how it would be delivered, and a clear budget and financing strategy. Civic organisations across Scotland, including SCCS and WWF, and other groups campaigning around health, poverty, business, and children, recently set out their vision for what this approach should look like.

SCCS says all homes need to be upgraded to a Energy Performance grade C rating by 2025, backed by funding of upwards of £10 billion over the next decade, split between the public and private sectors. Those who can't pay must be supported with grants to improve their houses; those who are able to pay should have access to low or zero interest loans. This would help to slash fuel bills, address fuel poverty, reduce climate emissions, tackle excess winter deaths and ease pressure on NHS budgets, and stimulate up to 9,000 net jobs a year, spread across Scotland. (1)

An estimated 1.48 million or 62% of households currently live in homes rated below Energy Performance Certificate (EPC) band C, according to data compiled for the Existing Homes Alliance. There are seven parliamentary constituencies in Scotland where more than 75% of households are estimated to be living in a cold home: Na h-Eileanan an Iar; Skye, Lochaber and Badenoch; Caithness, Sutherland and Ross; Shetland Islands; Orkney Islands; Argyll and Bute; Banffshire and Buchan Coast. The Western Isles is the worst affected area with an estimated 88% of homes rated band D or above for energy efficiency and 74% of households living in fuel poverty. Only three constituencies in Scotland have more than half of the properties in the target A to C bands for energy efficiency: Glasgow Anniesland, Glasgow Shettleston and Edinburgh Northern and Leith. (2)

Meanwhile, nearly one-third of Scotland's streets will be LED-lit by April 2017 as local councils have announced that a further £56m will be invested in a nationwide lighting replacement programme over the next 12 months. The number of Scotland's LED streetlights will double to 250,000 and more than 65,000 tonnes of CO<sub>2</sub> will be saved thanks to the new public-sector funding announced this week. With support from Scottish Government and Zero Waste Scotland, £82m has already invested in LEDs over the past three years, with Scotland's councils at various stages of installing the more energy-efficient lights. South Lanarkshire Council has installed the most LEDs in Scotland – 19,000 street lights – which are generating annual savings of £550k. The Council is on target to replace all of its 58,000 street lights to LEDs in the next two years.



A new innovation - the Monopole – which converts sunlight to streetlight via photovoltaic (PV) panels could start appearing on UK streets soon. The energy they generate during daylight can be stored in a battery and used during the night to power the lamps. As a result, the “zero-emission streetlight” eliminates electricity costs. Not only do they generate enough energy to light themselves, they create a surplus which can be sold to the National Grid, potentially making millions of pounds for Britain’s local authorities. (4)

From September, the Assessment of Energy Performance of Non-Domestic Buildings (Scotland) Regulations 2016 will come in to force. This means that commercial property owners in Scotland – for buildings larger than 1,000 square metres who sell or rent out their property – will have to provide an Action Plan laying out measures they will take to improve the energy performance of the building and reduce greenhouse gas emissions. They are also required to submit energy improvement data to the Scottish Energy Performance Certificate (EPC) register. The improvements specified in this action plan must be carried out within 42 months of the date on which it is issued. (5) But new analysis by property consultancy Tuffin Ferraby Taylor, found that around 70 per cent of those required to complete Action Plans have yet to do so. While property owners still have time to complete the plans before they come in on 1 September, the consultancy warned that landlords who fail to comply with the regulations could face enforcement action from local authorities. (6)

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## 9 Baseload & Energy Storage

Former Labour MP Tom Greatrex, now Chief Executive of the Nuclear Industry Association continues to insist that nuclear power “*has an important part to play in providing the bedrock of low carbon, baseload power.*” (1)

Similarly, DECC argues that despite the higher costs of electricity from new nuclear reactors, they are needed because cheaper forms of low carbon electricity generation are less reliable, and that other forms of baseload power (such as gas or coal) are less green. (2)

Green Hedge, a leading developer and operator of low carbon electricity generation and storage projects, has looked at whether it is possible to replicate the electricity generation of Hinkley Point C with a cheaper, equally low carbon combination of a) onshore wind and solar, b) energy storage and c) backup gas generation at costs that would allow their deployment today. Their analysis shows that it is indeed possible to get new reliable generation with a low carbon footprint at a substantially lower cost to consumers and deployed now rather than in the mid-2020s. Transforming weather-dependent solar and wind into a stable generator is possible because the weather variations between wind turbines and solar panels largely cancel each other out. Any remaining variation is managed with energy storage and with backup natural gas generators. (3)

Keith Barnham, Emeritus Professor of Physics at Imperial College goes one step further and proposes the use of “green gas” rather than fossil gas. He argues that renewable power has made new nuclear unnecessary and that statement about new nuclear being the only proven low-carbon technology that can provide continuous power is demonstrably incorrect. Proven renewable technologies, such as hydropower and biomethane produced from the anaerobic digestion (AD) of farm and food waste can provide the flexible, rather than continuous, power generation which is needed to back up wind and photovoltaic (PV) power. (4)

### Electricity Storage

Scottish Power has completed a two-year feasibility study to determine whether it is possible to expand its 440 megawatt (MW) Cruachan Pumped Storage hydro plant near Oban. The study confirmed that it would be possible to develop between 400-600 MW of additional capacity, for a cost of between £300 million to £400 million. Scottish Power will now consider the next steps for the project, including discussions with government on potential support mechanisms. Cruachan can act as a ‘battery’. When the turbines are reversed they use excess electricity from the national grid to pump water back in to the upper reservoir, ultimately storing this energy. (5)

Scotland could become a world leader in developing new technologies to store excess electricity production from wind farms, creating thousands of jobs, according to the Scottish Chambers of Commerce. East Lothian-based Sunamp, for instance, is one company which is trying to pursue opportunities in this field. It has developed batteries that store renewable energy as heat for future use. In April it raised a further £3.2 million development funding from investors as it eyes growth in international markets. (6)

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## 10 Local Energy

The Nuclear Free Local Authorities (NFLA) has launched a new initiative called Get it from the Sun (GIFTS) which aims to provide information and encourage cooperation among local authorities, town councils, charities, community energy groups, environmental NGOs and individuals working towards all-renewable electricity supplies at the local level, in spite of the extensive subsidy cuts to renewable energy. In the NFLA's view, such local initiatives can overcome government opposition.

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