



# SAFE ENERGY E-JOURNAL No.61

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This briefing does not 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/NuClearNewsNo58.pdf>

If you would like to receive Daily Nuclear News updates by e-mail you can sign up here:

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## 1 Scotland's Future White Paper

### GB-wide energy market

The "Scotland's Future" White Paper says Independence would be used to build a clean, green and nuclear-free Nation which is a beacon of environmentalism and sustainability. The Scottish Government would promote *"decarbonisation of electricity generation, supporting Scotland's climate change ambitions, maintaining Scotland's non-nuclear stance, and delivering greater long-term stability in energy prices for consumers"*.

An independent Scotland expects to be able to continue to take part in a Great Britain-wide energy market and continue with a system of shared support for renewables, because Scottish renewables *"will continue to be the most cost-effective means for the rest of the UK to meet its renewable ambitions"*. (1)

Scottish Labour's finance spokesman, Iain Gray, warned: *"Scotland receives around a third of the available UK subsidies for renewables despite having less than 10 per cent of the population. If independence were to become a reality we cannot assume the costs of developing renewable energy in Scotland would continue to be borne by consumers across the UK."* (2)

Nick Butler, writing in the Financial Times, says Scotland could not afford to pay the current subsidies to wind farms from its own resources: *"Hence the sudden redefinition of independence"*. Investors in Scottish renewable projects will be considering whether they should sell out before independence undermines their existing very comfortable business model. (3)

However Energy Minister Fergus Ewing is convinced that England would need Scotland to maintain a secure energy supply in the event of independence: *"From the discussions I've had with the National*



*Grid, the Scottish and English markets are, and have been since 2005, increasingly inter-dependent. In other words, England needs Scotland's electricity to maintain security of supply." (4)*

A report published by the Jimmy Reid Foundation argues that Scotland should withdraw from the UK-wide energy market and put control over its own resources into public hands. A new public corporation should be put in charge of running the grid, pricing electricity and investing in new energy infrastructure. It would then pour billions of pounds into boosting Scotland's green energy potential, and also reduce the flow of oil coming from the North Sea, in a bid to cut CO<sub>2</sub> -emissions. Backed by the Scottish Greens the authors argue that in private hands the UK energy market is on the point of collapse, lacks investment and is pushing up bills for hard-pressed consumers. Critics dismissed the idea as "fanciful", saying any plan which ended the UK-wide energy market would mean the vast cost of subsidising expensive green energy would fall on households in Scotland, but because renewable projects would all be owned by the government or community groups, the paper claims bills could be lower because government could borrow at a lower rate and would not have to make a profit. (5)

Another group of academics say Scottish consumers could have lower prices in an independent Scottish electricity system because of the expensive system set up to subsidise nuclear reactors south of the border. (6)

### Future of nuclear in Scotland

An Independent Scotland would not allow Scottish generation to be "compromised" by "expensive, long-term contracts for new nuclear generation" in England.

*"... as a substantial supplier to the rest of the UK, an independent Scotland will require a far greater degree of oversight of the market arrangements for energy and firmer safeguards over Scottish energy security ... the Scottish Government will ensure that new investment in Scottish generation is **not compromised by the Westminster Government's proposals to overhaul the structure of the electricity market and enter into expensive, long-term contracts for new nuclear generation.**"*

[emphasis added]

Meanwhile Fergus Ewing has written to Ed Davey to accuse the UK government of being "hell-bent on ploughing billions of pounds" into nuclear power stations but restricting support for renewables, after the three Scottish offshore wind farms were left off a list for fast-tracked funding. (7) Ewing said "Scotland is leading the development of an exciting, new renewables industry. Developing a new industry is challenging under any circumstances but the UK Government is increasing those challenges. They should be supporting the release of our green energy potential instead of being hell-bent on ploughing billions into nuclear power stations – which restricts the funds available to support renewables." (8)

An independent Scotland would ensure that there are market incentives to deliver the mix of generation, as set out in the Scottish Government's Electricity Generation Policy Statement. (9) This does not preclude life extensions for Scotland's existing nuclear stations, although it does suggest that Torness is not expected to remain open in 2030, despite the fact that if it were able to obtain the same life extension as Hunterston B, it would continue operating until at least 2033. Nuclear



Engineering International describes the policy as one which will “phase out nuclear power” in Scotland. (10) On the other hand there doesn’t appear to be any political reason why Torness should not attempt to achieve its ambition to operate beyond 2040, as reported in the Edinburgh Evening News in 2005. (11)

The Office for Nuclear Regulation (ONR), says keeping nuclear reactors open is fine by them. The stations are constantly monitored, and periodically have major safety reviews. As long as they remain safe, they can remain in operation, provided EDF wants them to. It is a commercial decision. (12)

### **The future of nuclear regulation, and dividing up the liabilities.**

The future of ONR or the NDA does not appear to have been addressed in the White Paper. However, on page 364, the Committee on Radioactive Waste Management is used as an example of what might happen to various organisations, and officials have indicated that the position on ONR and NDA would be similar. The White Paper says shared services would be maintained where it makes sense to do so and “there will need to be adjustments to the governance of these bodies to ensure there is appropriate accountability to the Scottish Government and Scottish Parliament.” Negotiations prior to Independence would agree how to apportion nuclear liabilities and the costs of nuclear decommissioning.

### **Fuel Poverty**

The White Paper says the Scottish Government would transfer schemes to address fuel poverty and improve energy efficiency, such as the Energy Company Obligation (ECO) and Warm Homes Discount from the energy companies to the Scottish Government. The Government will retain the statutory target to eradicate fuel poverty. The reduction of emissions from housing would also continue to play a key role in meeting our climate change targets.

Meanwhile, GMB Scotland, the union for energy workers in Scotland, has warned that Scotland runs the risk of missing out on a new generation of nuclear power stations as there are no plans to replace Hunterston B and Torness. Salmond’s “pie in the sky energy policy” risks Scotland missing out on new nuclear power stations. The Union says a nuclear build programme is vital to the Scottish economy. It has a proven track record of clean and carbon free vital for the balanced energy policy Scotland needs. (13)

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1. Utility Week 26th Nov 2013 <http://www.utilityweek.co.uk/news/independent-scotland-wont-pay-for-new-nuclear/950312>
  2. Scotsman 14<sup>th</sup> January 2014 <http://www.scotsman.com/news/environment/record-number-of-scots-working-in-renewables-1-3267043>
  3. FT 27<sup>th</sup> August 2013 <http://blogs.ft.com/nick-butler/2013/08/27/alex-in-wonderland-scotlands-energy-policy/>
  4. Holyrood Magazine 9<sup>th</sup> Sept 2013 <http://www.holyrood.com/2013/09/england-needs-scotlands-energy-claims-minister/>



5. Scotland on Sunday 6th Oct 2013 <http://www.scotsman.com/news/uk/scottish-independence-split-from-uk-energy-market-call-1-3128409> and Herald 5th October 2013 <http://www.heraldscotland.com/politics/referendum-news/independence-could-mean-lower-power-bills-for-scots.22343130>
6. Dave Toke's Blog 4th Dec 2013 <http://realfeed-intariffs.blogspot.co.uk/2013/12/scottish-electricity-consumers-to-get.html> & Guardian 5th Dec 2013 <http://www.theguardian.com/politics/2013/dec/05/scottish-independence-boosted-cost-green-energy-reforms-ageing> & Herald 5th Dec 2013 <http://www.heraldscotland.com/news/home-news/energy-experts-in-u-turn-on-union.22875552> & Dave Toke's Blog 5<sup>th</sup> Dec 2013 <http://realfeed-intariffs.blogspot.co.uk/2013/12/why-doesnt-labour-criticise-nuclear.html>
7. Business Green 20<sup>th</sup> Dec 2013 <http://www.businessgreen.com/bg/news/2320193/scottish-minister-accuses-uk-of-choosing-nukes-over-wind>
8. Energy Live News 20<sup>th</sup> Dec 2013 <http://www.energylivenews.com/2013/12/20/scotland-hits-out-at-decc-for-supporting-%e2%80%98nuclear-over-wind%e2%80%99/>
9. Electricity Generation Policy Statement – 2013, Scottish Government 28th June 2013 <http://www.scotland.gov.uk/Resource/0042/00427293.pdf>
10. Nuclear Engineering International 2nd Dec 2013 [http://www.neimagazine.com/news/newsindependent-scotland-would-phase-out-nuclear-power\\_4139286/](http://www.neimagazine.com/news/newsindependent-scotland-would-phase-out-nuclear-power_4139286/)
11. Edinburgh Evening News 8<sup>th</sup> December 2005. <http://www.scotsman.com/news/torness-nuclear-plant-life-to-be-extended-1-968728>
12. Climate News Network 9<sup>th</sup> September 2013 <http://www.climate newsnetwork.net/2013/09/uk-confusion-over-nuclear-future/>
13. GMB 15<sup>th</sup> Jan 2014 <http://www.gmb.org.uk/newsroom/scotland-no-new-nuclear-stations>

## 2 Dounreay Notes

### Consultations on Future Plans

The NDA has set out key milestones for the Dounreay site over the next three years in its draft business plan for 2014-17. (1) The plan sets out the progress needed on major projects to complete the closure of the site by 2022-25. (2) The NDA has consulted on the plan and wanted responses by 24<sup>th</sup> January, with the final plan scheduled for approval by UK and Scottish Ministers by the end of March. The draft plan identifies a number of key milestones over the next decade:

2014 – Operations commence at new low-level waste disposal facilities

2017 – Liquid metal residues destroyed at Dounreay Fast Reactor

2018 – Liquid metal residues destroyed at Prototype Fast Reactor

2020 – All material for disposal removed from shaft

2021 – PFR dismantled



Key activities for 2014/15 include the start of transports of exotic fuels to Sellafield and completion of the immobilisation of waste which resulted from material test reactor reprocessing. (In fact the last batch was cemented into a drum on 7<sup>th</sup> November 2013. (3))

For 2015-17, key activities include completion of immobilisation of waste from the Dounreay Fast Reactor and the Prototype Fast Reactor and the start of operations to remove waste from the shaft and silo.

The Management at Dounreay has, however warned that because the NDA has asked them to carry out more work whilst maintaining the same annual spend, the final closure date for the site may get delayed. The additional work has arisen because activities that were not sufficiently developed by the NDA at the time the competition was run in 2012 have now reached a state of maturity that allows them to be added to the existing programme of work. (4)

Highland Council has also consulted on a new Dounreay Planning Framework which presents an up-to-date overview of the policy context, regulatory regimes, site restoration programme and decommissioning works, providing an explanation of the wider context for the component developments that are anticipated to be required. This consultation closed on 7<sup>th</sup> January

### **Dounreay Transports**

The Nuclear Decommissioning Authority (NDA) is considering using ships to transport material known as “exotics” – including highly-enriched uranium. The body is already under fire for taking 44 tonnes of “breeder material” containing weapons-grade plutonium the length of Scotland by rail. This material formed the uranium-238 blanket in the Prototype Fast Reactor at Dounreay, so it is not thought to be terribly radioactive, but there is concern the plutonium formed by the neutron bombardment of the uranium could be a prime target for theft. (5)

For a reminder of the plans for various transport from Dounreay to Sellafield see the April report here [http://www.no2nuclearpower.org.uk/documents/SAFE\\_ENERGY\\_No59.pdf](http://www.no2nuclearpower.org.uk/documents/SAFE_ENERGY_No59.pdf)

The possibility of a terrorist attack, or an accident with regard to transporting the “exotics” by train from Dounreay to Sellafield was raised again in the Dundee Courier in January. (6) These transports are not expected to start until towards the end of this financial year.

### **Dounreay and bomb-grade uranium**

The Nuclear Decommissioning Authority (NDA) kept quiet about plans to ship a consignment of bomb-grade nuclear fuel from Dounreay to America, according to Cumbrians Opposed to a Radioactive Environment (CORE). CORE wants to know why the proposal was not mentioned in a recent consultation on how to deal with the stockpile of so-called “exotic” fuels at the Caithness site. CORE say there was not even an “oblique reference” to the material, which arrived at Dounreay in 1999 from the former USSR state of Georgia.

The NDA said there was no reference to it because it did not own the fuel. (7)

Friends of the Earth USA said the material should be handled at Sellafield rather than transported to America. (8)



The NFLA, in cooperation with CORE and Highlands Against Nuclear Transports (HANT), expressed alarm at the proposed shipment by sea of radioactive materials currently stored at the Dounreay site to a site in Savannah River in South Carolina, United States. It is not clear when this shipment will take place but it could be any time up to the end of 2014. (9)

### Dounreay Shorts

The waste transporting community (if there is such a thing) will have been spooked by an accident involving three empty High Level Waste flasks being transported from the Barrow docks to Sellafield. One of the three flasks derailed and a second flask partially derailed. Drawn by two Direct Rail Services locomotives (DRS – a wholly-owned subsidiary of the Nuclear Decommissioning Authority), the transport is said to have been travelling at approximately 5 mph when the derailment occurred causing a partial blockage of the line and forcing the cancellation of some main line services for several days. (10)

The Atlantic Osprey left Scrabster on 10<sup>th</sup> October to deliver radioactive waste to Antwerp where it will then be taken by road to the BR2 reactor at Mol. These shipments which began in August 2012, involve 21 shipments of 153 tonnes of waste being delivered to the Belgian reactor by the end of 2016. Four shipments were reported to have been made by April 2013. (11) It was announced in December that the Atlantic Osprey will be withdrawn from service. The ship was originally built as a roll on roll off car ferry, and converted for the transport of nuclear materials by BNFL. The only ship of the fleet not to have been custom-built for nuclear transports, the 27-year old Atlantic Osprey has long been the target of concern, criticism and direct actions from Greenpeace and CORE because of its age and lack of safety/security features compared to those deemed necessary for other ships of the fleet. (12)

The operators of the Vulcan nuclear submarine site at Dounreay are lining up work to keep its workforce of 300 employed until 2030. Junior defence minister Peter Luff said last year that the MoD did not see a future for the submarine reactor test facility at Vulcan after 2015, but Rolls-Royce has confirmed it hopes to have work for its Caithness payroll for another 17 years. The firm is continuing to support the submarine programme but is also getting involved in the civil nuclear industry – particularly planned new reactors in England. (13)

Dounreay's radioactive impact on the environment continues to fall, according to the annual report "*Radioactivity in Food and the Environment*" (RIFE 2012) published by SEPA, the Food Standards Agency and others. The report uses data obtained from samples of air, fresh water, grass, soil, and locally sourced meat, fish, milk and vegetables during 2012. It shows that the overall radiation dose to the public from eating food sourced around Dounreay has continued to decrease. (14) DSRL was issued with two warning letters last year from SEPA, according to the report. The first warning related to unauthorised disposals of radioactively contaminated effluent in March. The laboratory waste, which contained "very low levels of radioactivity" went into a disused drainage system that has an outfall at sea. SEPA also wrote to DSRL after a consignment of rubbish was removed from Dounreay without it going through the required process first. The incident in July involved waste that was not radioactive. (15)



Dounreay was named by the Office for Nuclear Regulation (ONR) as one of the top five nuclear sites which need the most regulatory effort because of safety problems: Sellafield, Aldermaston, Burghfield, & Devonport were the others. This is because of the radioactive hazards on the sites, the risk of radioactive leaks contaminating the environment around the sites and ONR's view of operators' safety performances, the ONR Annual Report says. (16)

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1. NDA Press Release 2<sup>nd</sup> Dec 2013 <http://www.nda.gov.uk/news/draft-bus-plan14-17.cfm>
  2. DSRL 3<sup>rd</sup> Dec 2013 <http://www.dounreay.com/news/2013-12-03/nda-sets-out-dounreay-cleanup-goals>
  3. DSRL 19th Nov 2013 <http://www.dounreay.com/news/2013-11-19/hazardous-liquid-waste-cementation-reaches-milestone>
  4. DSRL 22nd Jan 2014 <http://www.dounreay.com/news/2014-01-22/additional-work-may-mean-delay-in-dounreay-staff-rundown>
  5. Press & Journal 9<sup>th</sup> Dec 2013 Press & Journal 9th Dec 2013 <http://www.pressandjournal.co.uk/Article.aspx/3498448>
  6. Dundee Courier 17th Jan 2014 <http://www.thecourier.co.uk/news/scotland/environmentalists-warn-of-nuclear-train-dangers-1.177798>
  7. John O Groat Journal 30th Aug 2013 <http://www.johnogroat-journal.co.uk/News/Anger-over-secret-bomb-grade-fuel-shipment-to-US-30082013.htm> and CORE 28<sup>th</sup> August 2013 <http://www.corecumbria.co.uk/newsapp/pressreleases/pressmain.asp?StrNewsID=321>
  8. Augusta Chronicle 29<sup>th</sup> Aug 2013 <http://chronicle.augusta.com/news/metro/2013-08-29/groups-protest-plan-ship-uk-nuclear-waste-south-carolina>
  9. NFLA Press Release 3rd Sept 2013 [http://www.nuclearpolicy.info/docs/news/NFLA\\_nuclear\\_transport\\_joint\\_concerns.pdf](http://www.nuclearpolicy.info/docs/news/NFLA_nuclear_transport_joint_concerns.pdf)
  10. CORE 23rd Sept 2013 <http://www.corecumbria.co.uk/newsapp/pressreleases/pressmain.asp?StrNewsID=322>
  11. John O Groat Journal 11th Oct 2013 <http://www.johnogroat-journal.co.uk/News/Nuclear-waste-leaves-Caithness-bound-for-Antwerp-11102013.htm>
  12. CORE 5th Dec 2013 <http://www.corecumbria.co.uk/newsapp/pressreleases/pressmain.asp?StrNewsID=329>
  13. John O Groat Journal 30<sup>th</sup> October 2013 <http://www.johnogroat-journal.co.uk/News/Rolls-Royce-delivers-major-pledge-on-Caithness-jobs-29102013.htm>
  14. DSRL 31st October 2013 <http://www.dounreay.com/news/2013-10-31/radiation-dose-to-public-from-dounreay-reduces>
  15. BBC 5th Nov 2013 <http://www.bbc.co.uk/news/uk-scotland-highlands-islands-24817611>
  16. RobEdwards 5th Nov 2013 <http://www.robedwards.com/2013/11/five-nuclear-sites-with-most-safety-problems-named-by-government-watchdog.html>



### 3 Torness

Torness was shut down again in November because its seawater cooling system became clogged with seaweed. This is the second time this year that reactors at Torness in East Lothian have been forced to close because of excessive seaweed. In 2011 it was closed by a swarm of jellyfish. EDF Energy was criticised by the government's nuclear safety inspectors over a seaweed blockage that closed down a Torness reactor in 2010. Inspectors identified "a number of areas where further enhancement may be possible" in the safety arrangements for dealing with seaweed. (1)

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1. Guardian 21st Nov 2013 <http://www.theguardian.com/environment/2013/nov/21/seaweed-torness-nuclear-reactor-east-lothian>

### 4 Submarine dismantling

The Ministry of Defence will soon announce a shortlist of sites for the storage of Intermediate Level Waste (ILW) from nuclear-powered submarines, but according to *The Dunfermline Press*, Rosyth has now been dropped from the list. (1) During a Commons debate on 17<sup>th</sup> December, (Hansard Column 722) the Parliamentary Under-Secretary of State for Defence, Dr Andrew Murrison, said "*Babcock is not interested in storing the intermediate level waste*".

Shortlisted sites are likely to be a combination of MOD owned, Nuclear Decommissioning Authority (NDA) owned and private contractor sites. All potentially affected local authorities will be invited to a pre-engagement workshop early in 2014 and this will be followed by a public consultation. (2)

The MOD's favoured option is to remove the Reactor Pressure Vessel (RPV) from decommissioned submarines and store them intact prior to disposal in a theoretical Geological Disposal Facility. Radioactive waste will be removed from submarines in-situ at both Devonport and Rosyth dockyards. The ILW will then be stored at a site or sites yet to be decided until a disposal route is available, which is not expected to be until 2040. Any ILW Storage facility will be designed for a 100 year life, so it is not dependent on a GDF being available by 2040.

Despite assurances from the MoD there are still fears that Rosyth and Devonport could become nuclear waste storage facilities "by default" especially now that it has been revealed the MoD proposes to remove low-level waste from the nuclear submarines. According to minutes of a submarine dismantling meeting, the "*early removal of low-level waste*" has been proposed. Experts warned that removing radioactive waste would need to be explained "*carefully*" to ensure dismantling sites on bases near major population centres did not become waste storage areas "*by default*".

John Large, an independent nuclear engineer and analyst, said: "*Stripping out the LLW components could compromise the final detailed strategy of decommissioning the submarines. I would not have thought it possible to separate some of the low level and intermediate level waste components. Any*



*decommissioning activity requires that the submarine reactor compartment containment be opened so this introduces a further risk of release."* (3)

## Faslane Safety Incidents

Meanwhile it has been revealed that Faslane and Devonport have suffered 11 significant safety incidents in the last five years, including human exposure to radiation. Radioactive waste has been spilled, workers exposed to radiation, power supplies lost, safety valves wrongly operated and a bag of waste mistakenly dropped overboard. Six of the incidents happened at the Faslane, and five at Devonport. The incidents have been admitted by UK defence minister, Philip Dunne, in response to a parliamentary question from Angus Robertson MP, the SNP's defence spokesman and Westminster leader. According to the MoD six incidents at Faslane since 2008 have been defined as Category B, which is the second worst category involving *"actual or high potential for a contained release within a building or submarine or unplanned exposure to radiation"*. (4)

Meanwhile SEPA has revealed that Faslane is under threat from flooding. (5)

1. Dunfermline Press 19th Dec 2013 <http://www.dunfermlinepress.com/news/rosyth/articles/2013/12/19/482630-no-nuclear-waste-dump-at-rosyth-dockyard/>
2. [http://www.nuclearpolicy.info/docs/radwaste/Rad\\_Waste\\_Brfg\\_44\\_MOD\\_SDP\\_ILW\\_storage.pdf](http://www.nuclearpolicy.info/docs/radwaste/Rad_Waste_Brfg_44_MOD_SDP_ILW_storage.pdf)
3. Independent 27th Oct 2013 <http://www.independent.co.uk/news/uk/home-news/naval-bases-could-become-nuclear-dumps-8906452.html>
4. Herald 26th Oct 2013 <http://www.heraldsotland.com/news/home-news/workers-exposed-to-radiation-at-faslane.22524875>
5. Sunday Herald 12<sup>th</sup> Jan 2014 <http://www.robedwards.com/2014/01/flooding-threatens-vital-transport-health-and-nuclear-facilities-warns-sepa.html>

## 5 Dalgety Bay

Four options to deal with radioactive contamination on the beach at Dalgety Bay in Fife have been unveiled by the Ministry of Defence (MoD). The first option listed in the document is to put up a fence and warning signs to keep people out. Other proposals include excavating the area or building stronger sea defences. The report said the preferred option would be chosen after further detailed appraisal and consultation. However it said a likely preferred solution would be the optimised option involving keeping people out with fences, modifying some of the pathways and excavating the material from some areas. The four options are:

**Option 1** - Exclude potential users of the beach by erecting a big fence.

**Option 2** - Coastal defences in key areas would be reconstructed to form a barrier. The aim would be to stop the sea releasing more radioactive materials on the beach. This could also involve a large concrete apron being constructed on the slipway. The radioactive materials would remain in situ.



**Option 3** - Excavation of the area to remove the radioactive materials. The report worries that this would take a long time and may not be 100% effective. This option would incur very high costs both for the removal and treatment of the material

**Option 4** - Optimised approach - This could be a combination of the above options such as excavating part of the site and covering some of it. (1)

According to the report, written for the MoD by Amec, the potential risk to those using the area for recreation is "significant". Amec concluded that no single technique was best suited to the management of radium contamination, "*rather a combination of techniques is likely to be required*". It proposed permanent use of "robust" fencing and warning signs, a "clean cover layer" over the site and excavation of source material. The best approach would be a "suitable combination" of the three, it said.

A new NFLA report on radioactive particles strongly criticised the MoD's repeated attempts to wriggle out of paying for a clean-up at Dalgety Bay. The MoD has been resisting increasing pressure from the Scottish Environment Protection Agency (Sepa) to accept liability for the contamination. More than 2,500 radioactive hotspots have been found on the foreshore in the last 23 years, causing areas to be closed to the public and the harvesting of shellfish to be banned. (3) (4)

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1. BBC 22nd Jan 2014 <http://www.bbc.co.uk/news/uk-scotland-edinburgh-east-fife-25834837>
  2. Scotsman 23rd Jan 2014 <http://www.scotsman.com/news/environment/dalgety-bay-beach-will-be-concreted-over-1-3279153>
  3. Sunday Herald 13th Oct 2013 <http://www.robedwards.com/2013/10/mod-under-attack-for-not-cleaning-up-dalgety-bay.html>
  4. The Radium Legacy and Other Contamination Problems, NFLA, October 2013  
[http://www.nuclearpolicy.info/docs/radwaste/Rad\\_Waste\\_Brfg\\_42\\_Dalgety\\_Bay\\_%26\\_the\\_wider\\_radium\\_legacy.pdf](http://www.nuclearpolicy.info/docs/radwaste/Rad_Waste_Brfg_42_Dalgety_Bay_%26_the_wider_radium_legacy.pdf)

## 6 Renewable Energy

### Tidal Power

The Pentland Firth could provide enough renewable energy to power about half of Scotland, according to new research. The study narrowed down earlier estimates that the firth could produce anywhere between 1GW and 18GW of power. They calculated as much as 4.2GW could be harnessed, but because tidal turbines are not 100% efficient the estimate of 1.9GW was a more realistic target. (1)

In September the Scottish Government approved plans to construct an 86MW (megawatt) tidal project in the Firth. This will be Europe's largest tidal stream energy project. (2) The first phase involving six vast underwater turbines will generate up to 9MW to prove the technology works, and



then more than 50 of the machines will be installed. (3) Another demonstration project by Scottish Power Renewables in the Sound of Islay, involves a 10MW installation using eight large turbines. Once these machines are tested, Scottish Power Renewables hopes to build a 95MW tidal power scheme off Duncansby in Caithness, just east of the Pentland Firth using the same devices. (4) The Islay project will permit the two leading tidal power technologies to be proven side by side taking both to the point of commercialisation. (5)

### Wave Power

Fergus Ewing also announced in September that developers Aquamarine Power Limited and Pelamis Wave Power are to share a slice of a £13m wave "first array" support programme, part of the Scottish government's marine renewables commercialisation fund. (6)

A groundbreaking new project could see a prototype wave energy device used to power a salmon farm on the Isle of Muck. Devices such as this could offer a solution for producing electricity at remote sites far removed from the grid. Known as the WaveNET, the device will be held in place by 160m mooring legs which will sit within the existing mooring footprint. The generator consists of six individual modules, known as SQUIDs, each able to produce 7.5KW, giving a total of 45KW installed capacity. The device is a prototype which has been developed by AlbaTERN. (7)

### Offshore Wind - Floating Turbines

A floating windfarm, which could hold the key to cutting the cost of offshore wind, has been given the go-ahead by the Crown Estate. The Buchan Deep project will see five turbines with a combined power of 30 MW installed by the Norwegian oil company Statoil off the coast of Aberdeenshire in 100 metres of water. Statoil has been experimenting with one floating turbine, the Hywind, off the coast of Norway since 2009. The Scottish project allows the company to test the system as an "array", or farm, to see how it will work with half a dozen turbines operating simultaneously in close proximity. (8)

Scotland's offshore wind potential is huge, with around a quarter of the entire European resource. The problem is that much of the resource is sited in deep waters, which are more difficult (and therefore more costly) to develop than the shallower seas around England and Wales. Working in these conditions, though, has put Scotland at the forefront of the design, development and installation of deep water structures – like the support structures built by Burntisland Fabrications for the two 5MW Beatrice demonstration turbines in the Moray Firth and since installed in other European offshore wind farms.

Statoil's Hywind turbine offers an innovative way to install large turbines in waters up to 200 metres deep. The device, anchored to the ocean floor by cables, is iceberg. A third of the structure stands above the waves, while the majority, a ballast tank filled with water and rocks, hangs below, keeping the tower stable in North Sea gusts of up to 140 mph. (9)

### Offshore Wind – Future Prospects

Scotland will need a "significant" number of offshore windfarms to meet renewable energy targets. The Country appears to be on track to meet its target of half of electricity use coming from



renewable sources by 2015, but to reach the 100% goal by 2020 much more offshore wind will be needed. (10) Yet there has been a “worrying” dip in investment in offshore wind from £63.6 million in down to £28.9 million in 2013. (11)

The economy will benefit most from offshore wind development if there is sufficient certainty about future plans for windfarm developer to establish a manufacturing base here rather than importing turbine from countries like Denmark and Germany. Unfortunately, the future of Scotland's offshore wind industry has been thrown into doubt after none of the Scottish projects which applied for early financial support through the UK government's new subsidy regime were successful. (12)

On the positive side a £2m test centre for further developing marine renewable energy will be created in Dundee. The Marine Renewables Test Centre at the University of Dundee will become a facility for the development design and testing of construction materials and prototype foundations for offshore wind farms. It is being supported by more than £800,000 of funding from the European Regional Development Fund. (13)

In Edinburgh the offshore wind turbine manufacturer, Spanish firm Gamesa, announced plans in 2012 for a £125 million production base in Leith, but this was put on ice soon afterwards while the UK Government reviewed energy markets. Now that the Government has signalled a switch in subsidies from onshore to offshore developments, hopes have been raised of reviving the scheme, which has the potential to create 800 jobs. (14) But Gamesa is in talks with Areva about a joint venture. Areva said in November 2012 that it wanted to build a plant which could create up to 750 jobs probably in Dundee. (15) Dundee City Council leader Ken Guild says that infrastructure issues at the port of Leith could “reopen the door for Dundee”. (16)

The number of people employed in Scotland’s burgeoning renewables industry has soared to record levels. A report published trade body, Scottish Renewables, reveals a 5 per cent growth in employment in companies involved in offshore and onshore wind, bioenergy and hydro, wave and tidal schemes across the country. The report shows that more than 540 Scottish-based firms now employ a total of at least 11,695 men and women. (17)

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  3. Guardian 16<sup>th</sup> Sept 2013 <http://www.theguardian.com/environment/2013/sep/16/tidal-energy-scheme-northern-scotland>
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13. STV 14<sup>th</sup> Jan 2014 <http://news.stv.tv/scotland/260153-the-marine-renewables-test-centre-is-to-be-created-in-dundee/> and Herald 13<sup>th</sup> Jan 2014 <http://www.heraldscotland.com/news/home-news/2m-marine-energy-centre-to-be-created-in-dundee.1389619812>
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15. BBC 20th Jan 2014 <http://www.bbc.co.uk/news/uk-scotland-scotland-business-25818347>
16. Evening Telegraph 24th Jan 2014 <http://www.eveningtelegraph.co.uk/news/local/dundee-still-in-running-for-wind-turbines-1.183662>
17. Scotsman 14th Jan 2014 <http://www.scotsman.com/news/environment/record-number-of-scots-working-in-renewables-1-3267043> Scottish Renewables 13th Jan 2014 <http://www.heraldscotland.com/business/markets-economy/renewable-energy-jobs-hit-record-levels-and-employers-continue-to-hire.23154561> and BBC 14<sup>th</sup> Jan 2014 <http://www.bbc.co.uk/news/uk-scotland-scotland-business-25715851>

## 7 Scotland's Heat – Geothermal Energy

The UK Government expects the use of gas heating in the domestic sector to fall rapidly from around 2020 as electric-powered heat pumps largely take its place. (1) This, along with the need for increasing electrification in the transport sector, is the main reason why total electricity consumption is expected to double by 2050. (2)

Not everyone is happy about this electrification of heat. It will disproportionately increase peak demand for electricity, obliging the UK to waste large sums on capacity payments for electricity generating plant that will work for a few hours or days a year. The installation of large numbers of heat pumps will significantly increase electricity use at peak times. One million heat pumps, might add between 10 and 15 GW to the UK's peak need, adding about a quarter to the level of electricity demand at around 5-5.30pm on the coldest weekdays in December and January.

An alternative would be to introduce district heating networks which take heat from several sources including gas-fired Combined Heat & Power (CHP) plants, renewable energy such as geothermal, solar and biomass, stored heat from intermittent renewable electricity generation and heat



recovered from industrial processes. Scotland now has district heating schemes varying in size from a handful of buildings on farm steadings to thousands of homes in urban areas like Glasgow and Aberdeen. And there is even greater opportunity for expansion, to create large-scale integrated heat networks to heat our towns and cities. (3) We could even be making gas from electricity at times when the grid is in surplus. Turning spare power into hydrogen through electrolysis and then reacting the hydrogen with CO<sub>2</sub>, to create methane (natural gas). (4)

As much as a third of the heat needed to keep Scotland warm could be provided by tapping geothermal energy from old coal mines across the central belt, according to a major new study for the Scottish Government. (5) Warm water piped up from abandoned mine shafts between Glasgow and Edinburgh and in Ayrshire and Fife could help heat many thousands of homes and other buildings for decades. The report, published by the Scottish Government, urges ministers to embark on an ambitious attempt to make geothermal energy a major new source of clean, renewable power within a few years.

The study recommends a series of actions by Scottish ministers in the next three years, including the development of a national geothermal energy strategy. It suggests two major new "demonstrator" projects, at the Clyde Gateway in eastern Glasgow and at Shawfair in Midlothian, by 2016. It points out that two small geothermal schemes in Scotland that tap the warmth of mine water have been running since 2000. One is at Shettleston in Glasgow and the other at Lumphinnans in Fife, each serving fewer than 20 homes. (6)

### Heating the Clockwork Orange

Meanwhile, the Glasgow Underground is at the centre of a pioneering scheme to warm its stations by using the water leaking into its tunnels as a sustainable heat source. The 117-year-old Subway has been blighted by water seeping through the tunnel walls and tracks since it opened. Now there are plans to use that water to create what could be a first in subway heating systems. Scientists at Glasgow Caledonian University are to work with Strathclyde Partnership for Transport (SPT) to change "a negative into a positive" by developing a financially and environmentally effective method of harvesting heat from the ingress water. The plans involve using heat pumps to suck up the water and the heat which can be used to warm the stations and nearby buildings. If successful, the technique would cut both heating and maintenance costs and reduce disruption for passengers. (7)

### District Heating Update

In October 2013 the Scottish Government announced £1.5 million in funding for district heating projects. The District Heating Loan Fund has been awarded to seven local communities that will use the support to install renewable heating technologies such as biomass boilers and heat pumps. Six of these projects provide affordable warmth to social housing or private homeowners, in off-gas grid areas, delivering significant savings on energy bills and carbon emissions. (8) The seven projects stretch from Wick to Lockerbie and all will use renewable heat generated by woodfuel or air source heat pumps. Six of the projects provide affordable warmth to social housing or private homeowners, in off-gas grid areas, delivering significant savings on energy bills.



Energy Minister Fergus Ewing also praised the Commonwealth Games Athletes Village where a £10 million district heating energy system has been installed to provide heating and hot water through underground pipes.

To support planning and develop heat projects the Scottish Government aims to produce a Scotland heat map by spring 2014.

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  2. National Policy Statement on Energy (EN-1), DECC 2011  
<http://webarchive.nationalarchives.gov.uk/20121217150421/http://decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/1938-overarching-nps-for-energy-en1.pdf>
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## 8 Transmission Costs

Delays have hit plans to reduce transmission charges for renewable schemes in parts of Scotland. Ofgem had expected to make a decision on Project TransmiT before Christmas, but has pushed the date back to March 2014. That in turn has delayed the proposed introduction of lower costs from April 2014 to April 2015. The move gives energy companies more time to prepare for the proposed overhaul, but Friends of the Earth said the situation was "frustrating". Scottish Enterprise Minister Fergus Ewing said he was "extremely disappointed" by the delays. (1)

Scottish Energy Minister Fergus Ewing and the leaders of Scotland's three island councils have announced plans to hold a summit on the future of wind power on the islands, after the Department of Energy and Climate Change (DECC) announced a guaranteed power price of £115/MWh for Scottish island wind. (2) That is higher than the £95/MWh offered on the mainland, but although it is expected to be enough to bring on Orkney and Shetland projects it falls short of the £129/MWh independent consultant Baringa said the Western Isles needed.



The long-delayed undersea cable to the Isle of Lewis could be snuffed out as a result. The £780 million link can only go ahead if there is guaranteed to be enough generation on Lewis to make it worthwhile. The high costs to connect to the transmission network are one of the main barriers to more than 300MW of consented projects getting investment. (3) In 2010, Scottish Hydro-Electric Transmission Ltd (Shetl) missed the deadline for ordering the cable to have it operational by an October 2013 target date. Since then further delays have emerged. There were hopes to start work in 2015, but this was pushed back, and the cost of the cable also rose by 75% to over £700m. (4)

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  4. Scotsman 18<sup>th</sup> Dec 2013 <http://www.scotsman.com/news/environment/western-isles-subsea-cable-plan-suffers-setback-1-3238013>

## 9 Solar in Scotland

In Scotland the solar energy industry is celebrating hitting the 100MW milestone of installed photovoltaic capacity. Analysis of Ofgem figures for December reveal Scotland now has 106MW of solar PV, an increase of 36% since this time last year. The figures also reveal that 465 businesses, more than 28,000 homes, 56 communities, and 22 industrial sites have fitted solar arrays in the country. The numbers are in stark contrast to 2010, when 429 solar installations were recorded, offering just 2MW of capacity. Now the Scottish Solar Energy Group, Energy Technology Partnership, and WWF Scotland are calling on the government to ensure its policies deliver even more solar. (1)

In Edinburgh solar panels could be installed in disused quarries and former bings. Nine target sites have been identified within early blueprints – including a 279-hectare swathe of Bonaly Country Park. Many of the identified sites are privately owned and while no decision has been made, it is understood all will be investigated for their solar-energy potential. Planning and environmental advice will also be taken to ensure “they are fit for the proposed purpose”. There are also plans to fit the roofs of about 25 publicly-owned buildings across Edinburgh with solar panels in a joint project with a new community solar co-operative. (2)

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1. Business Green 27th Dec 2013 <http://www.businessgreen.com/bg/news/2320521/scottish-solar-industry-hits-100mw-milestone> and Herald 27th Dec 2013 <http://www.heraldscotland.com/news/environment/campaign-calls-for-more-solar-power-use.22999384>
  2. Edinburgh Evening News 12th December 2013 <http://www.edinburghnews.scotsman.com/news/bright-idea-as-solar-power-sites-identified-1-3230432>



## 10 Hydro in Scotland

There are around 120 hydro schemes of various sizes operating in Scotland. These produce around 5TWh of electricity each year which represents roughly 12% of current demand. The Scottish Government recently reported a potential for up to 7,000 hydro developments across the nation which could generate around 3TWh of additional electricity per year. Because many of these would be micro-site developments there is great potential to deliver real benefits to local communities across Scotland. (1)

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1. Scotsman 23rd Dec 2013 <http://www.scotsman.com/news/hydro-power-can-help-scotland-s-energy-goals-1-3242592>

## 11 Energy Storage

A massive 600MW hydro power scheme in the Highlands has been given the green light by the Scottish Government. Scottish & Southern Energy (SSE) has been granted planning permission for a 600MW pumped storage hydro electric scheme to the north-west of Loch Lochy in the Great Glen, near Lochaber. The energy giant says the Coire Glas scheme, which is estimated to require around £800 million investment, is the first new large-scale pumped storage scheme to be developed in Great Britain for more than 30 years. It will provide electricity to the grid during peak demand and have the ability to switch off at times when demand is lower. SSE says it will help balance the flow of electricity to the National Grid. (1)

The Scottish island of Gigha is to be the focus of a £2.5m experiment aimed at solving a major technological problem: how to store energy generated by wind, tide and wave power plants. The project, which will involve building giant batteries containing 75,000 litres of sulphuric acid mixed with vanadium pentoxide, is intended to allow power generated by the island's wind turbines to be stored for later use. At present, while Gigha's turbines are running, their power is used to run households on the island and excess is transmitted by cable to the mainland electricity grid. When winds are low, and Gigha's turbines do not turn, the grid feeds power to the island. But the cable link has an upper power limit. As a result, much of the island's excess power cannot be transmitted to the mainland and is wasted. The battery project, backed by the Department of Energy and Climate Change, is intended to get round this problem. (2)

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1. Press and Journal 13<sup>th</sup> Dec 2013 <http://www.energyvoice.com/2013/12/scottish-government-gives-green-light-massive-600mw-hydro-scheme>
  2. Observer 9th Nov 2013 <http://www.theguardian.com/environment/2013/nov/09/gigha-watts-scottish-island-energy-wind-turbines>



## 12 Lighting Efficiency

Thousands of energy efficient and eco-friendly street lamps are to be installed in Glasgow (1) and Edinburgh to replace outdated sodium lights, cut carbon emissions, and save council tax payers money on electricity costs. (2)

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1. Central Scotland Green Network 25th Nov 2013 <http://www.centralscotlandgreennetwork.org/news-and-events/news/667-climate-ready-clyde>
  2. Edinburgh Evening News 8th Jan 2014 <http://www.edinburghnews.scotsman.com/news/30m-led-lights-project-to-save-city-millions-1-3260632>

## 13 Fossil Fuels

### Shale Gas

The UK Government has published a map of areas, including vast swathes of Scotland that could be exploited for shale gas and coalbed methane extraction. The maps have been published by DECC as part of a strategic environmental assessment into its plans to offer licenses for onshore oil and gas extraction later this year. The Government announcement also contained details of a voluntary industry initiative to offer communities up to £100,000 where shale gas drilling takes place. (1)

### Airth Public Inquiry

Stirling Council has voted unanimously to oppose an application for coal bed methane extraction by Dart Energy. There will be a public inquiry next year. Dart Energy wants to pump gas from a series of wells and boreholes at Airth - three of which are in the Stirling area, with a further 11 in Falkirk. (2)

### Midlothian Opencast Mine Proposals

Proposals for a huge new opencast coal mine in Midlothian have been given the go-ahead. The plans will see 10 million tonnes of coal excavated over 10 years at the 500-acre Cauldhall site near Penicuik. Nine councillors voted in favour of the mine, which planning officers recommended be approved because it is in the national interest. (3)

FoE Scotland says "*It doesn't matter how much [fossil fuel] is under our feet because the fact is it isn't safe to burn it. We already know of five times more fossil fuels than we can burn without causing catastrophic climate change, so it doesn't make sense to keep looking for even more. We urge the Scottish Government [to] focus instead on making the most of our abundant renewable resources, to ensure a cleaner, safer future for all.*"



## Underground Coal Gasification in Fife

The UK Government has signalled its support for coal gasification which would use major coal seams which run under the seabed off Britain's coast. By pumping oxygen and steam into the seams, gas is released from the coal. Algy Cluff, one of the pioneers of North Sea oil exploration in the Seventies, and who proposed burying nuclear waste beneath the North Sea in the 1980s is looking at commercial models for extracting gas from the coal seams. (4)

It emerged in the summer that the Firth of Forth – Largo Bay and near Kincardine - could be used as test sites for the UCG technique, which involves drilling a 12-inch vertical borehole into a coal seam below the sea bed. Cluff Oil has been granted a licence to set fire to coal underneath Largo Bay and pipe the gas back to shore. The coal seam is flushed with oxygen and ignited with a burner with the resulting gas piped to onshore power stations. Concerns have been raised by several Fife politicians that pollution of mine water could result. A meeting was held to discuss the issue at Fife Renewables Centre, Methil Docks on 10<sup>th</sup> December. (5)

Cluff says that coal is not only there but, thanks to the astonishing evolution of horizontal oil drilling technology, it can also be cheaply, quickly and safely converted into gas and piped ashore. (6) He told a packed audience at the meeting on 10<sup>th</sup> that his plans were essential to ensuring that the lights did not go out in Britain, despite strong objections from some residents and environmental campaigners. (7)

For more information see Carbon Brief 16<sup>th</sup> December 2014

<http://www.carbonbrief.org/blog/2013/12/could-burning-coal-under-the-sea-provide-200-years-of-clean-energy/>

## Liabilities

Local authorities are missing a massive £200 million from the funds they need to clean up the mess made by 32 opencast coal mines across central Scotland, according to the Sunday Herald. The cash set aside by two major coal companies before they collapsed this year amounts to only a quarter of the sum now needed to restore scarred landscapes as local communities were promised. As a result, most of the mines that are disfiguring large areas of East Ayrshire, Lanarkshire, Dumfries and Galloway, Fife and Midlothian are likely to remain derelict, or to be cleaned up on the cheap. (8)

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  2. Daily Record 4th Dec 2013 <http://www.dailyrecord.co.uk/news/local-news/stirling-coal-bed-plan-blocked-2881293>
  3. BBC 20th Nov 2013 <http://www.bbc.co.uk/news/uk-scotland-edinburgh-east-fife-24999916>
  4. Telegraph 14th Dec 2013 <http://www.telegraph.co.uk/finance/newsbysector/energy/10518369/Coalition-backs-coal-based-energy-revolution.html>
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6. Telegraph 14th Dec 2013 <http://www.telegraph.co.uk/finance/newsbysector/energy/10518072/UKs-next-offshore-energy-fortune-lies-in-coal.html>
7. Dundee Courier 11<sup>th</sup> Dec 2013 <http://www.thecourier.co.uk/news/local/fife/oil-baron-algy-cluff-claims-forth-ucg-energy-scheme-will-save-britain-from-darkness-1.163992>
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