

# NFLA Policy Briefing No.184



Date: 9<sup>th</sup> January 2019

Subject: Closure of Hunterston B: a Just Transition and Local Energy Supply

## i. Introduction to the Briefing

This NFLA Policy Briefing has been written by the NFLA Scotland Policy Advisor to complement his presentation to a special briefing to Members of the Scottish Parliament held at the Parliament on the 9<sup>th</sup> January. The briefing looked at safety concerns at Hunterston B in North Ayrshire, as outlined by Dr Ian Fairlie in NFLA Policy Briefing 181 – the link can be found at:

[http://www.nuclearpolicy.info/wp/wp-content/uploads/2018/11/A294\\_NB181\\_Hunterston\\_reactor\\_issues.pdf](http://www.nuclearpolicy.info/wp/wp-content/uploads/2018/11/A294_NB181_Hunterston_reactor_issues.pdf)

As a companion presentation to this safety briefing, the NFLA Scotland Policy Advisor was asked to consider how jobs at the site could be protected using NDA decommissioning and waste management strategies, the emerging ‘Just Transition’ strategies of the Scottish Government and the work of local government decentralised energy strategies. This report, like Dr Fairlie’s report, has been sent to all MSP’s for consideration.

## 1. Introduction

After successful trade union lobbying the 2015 Paris Climate Change Agreement included reference to “a just transition of the workforce and the creation of decent work and quality jobs”.

According to the Public and Commercial Services Union most definitions of a ‘just transition’ refer to:

*“...a framework developed by trade unions and environmental campaigners which encompasses a host of social interventions essential for protecting workers jobs and livelihoods when economies are shifting from their dependency upon the burning of fossil fuels to a zero carbon sustainable economic model.” (1)*

But over the next decade we can also expect most of the UK’s nuclear reactors to close down. By 2030 only Sizewell B is expected to still be operating and of the proposed new fleet of reactors only Hinkley Point C has started construction. Given that nuclear reactors are generally located in fairly remote areas there are strong arguments in favour of “social interventions” to protect workers jobs and livelihoods as these local economies shift from their dependency on nuclear power generation.

The UK’s oldest fleet of nuclear reactors – the Magnox reactors – which include Chapelcross and Hunterston A are already closed.

The Bradwell nuclear plant, in Essex, is the first Magnox reactor in the UK to enter its ‘care and maintenance’ state. The station ceased generating in 2002 – 16 years ago. Since then all the

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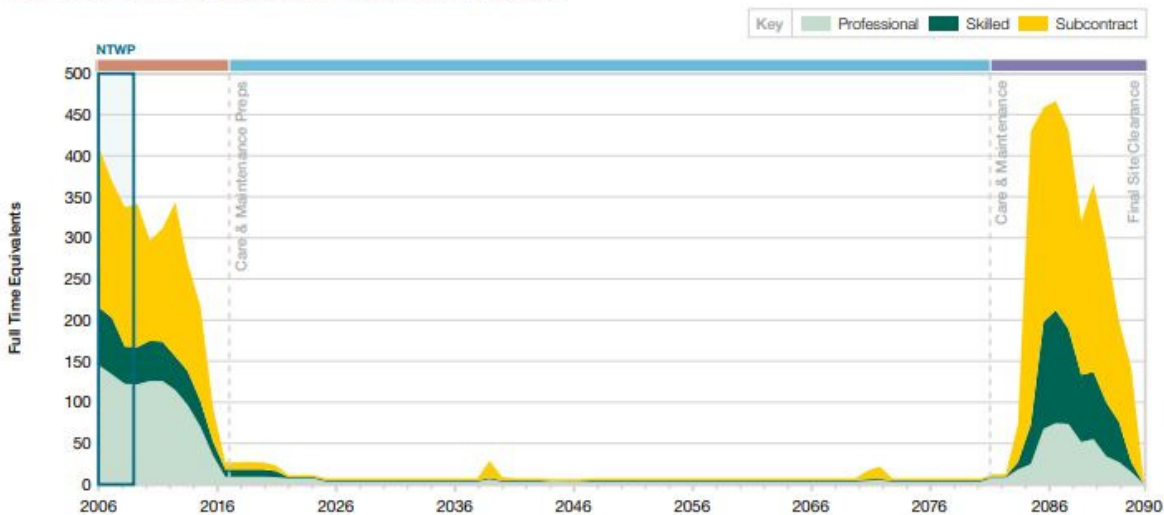
fuel has been removed from the site, and the reactors have been prepared for the C&M phase. De-fuelling took until 2005. Many of the other Magnox reactors will take longer to reach the care and maintenance stage.

While it was operating Bradwell provided around 450 jobs (2), but at its peak during decommissioning there were as many as 980 people working on site. (3)

	<b>Ceased Generation</b>	<b>Expected to enter C&amp;M</b>	<b>Time spent preparing for C&amp;M</b>	<b>No. Jobs at April 2017</b>	<b>Jobs Jan 2018</b>
Berkeley	1989	2023	34 years	137	138
Bradwell	2002	2018	16 years	117	79
Chapelcross	2004	2025	21 years	218	216
Dungeness A	2006	2025	19 years	161	156
Hinkley Point A	1999	2027	28 years	162	165
Hunterston A	1990	2024	34 years	150	146
Oldbury	2012	2027	15 years	159	161
Sizewell A	2006	2027	21 years	201	202
Trawsfynydd	1991	2029	38 years	167	159
Wylfa	2015	2026	11 years	397	393

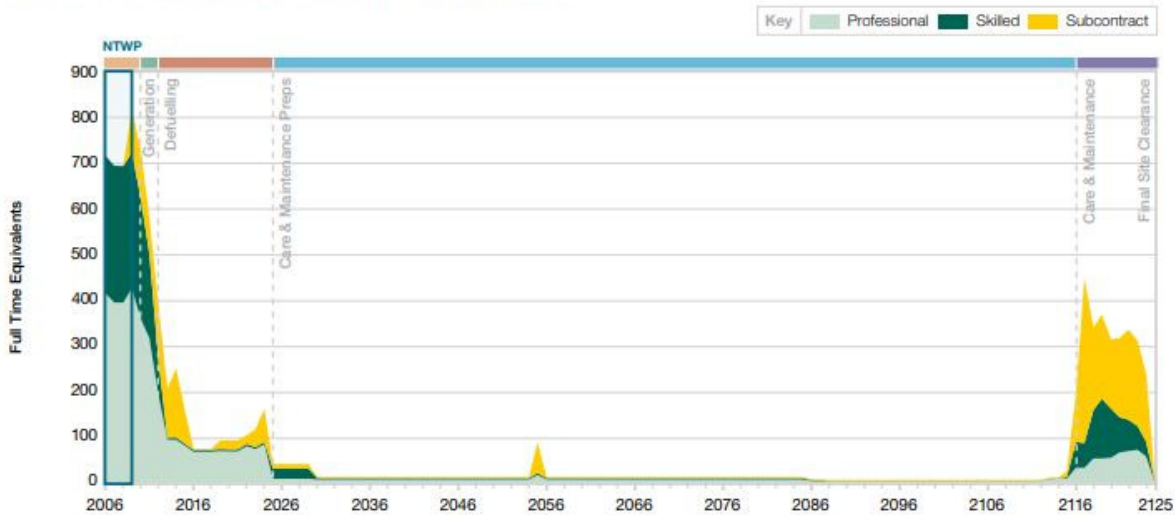
We can see from the table above that Bradwell was placed into Care and Maintenance relatively quickly after generation ceased. Only Wylfa is expected to be quicker.

Figure 25-28 – Staffing profile curve against time and key phases



We can see from this graph - taken from the 2006/7 Lifetime Plan for Hunterston A - when its C&M phase was expected to start in 2016 - that even after it had already been closed for 16 years it was still employing 400 people. (4) Waste Management and decommissioning techniques are likely to be much improved when it comes to decommissioning the AGRs like Hunterston B. So it may be more instructive to look at the lifetime plan for Wylfa which was the last of the Magnox reactors to be built and was the last to close.

Figure 29-27 – Staffing profile curve against time and key phases



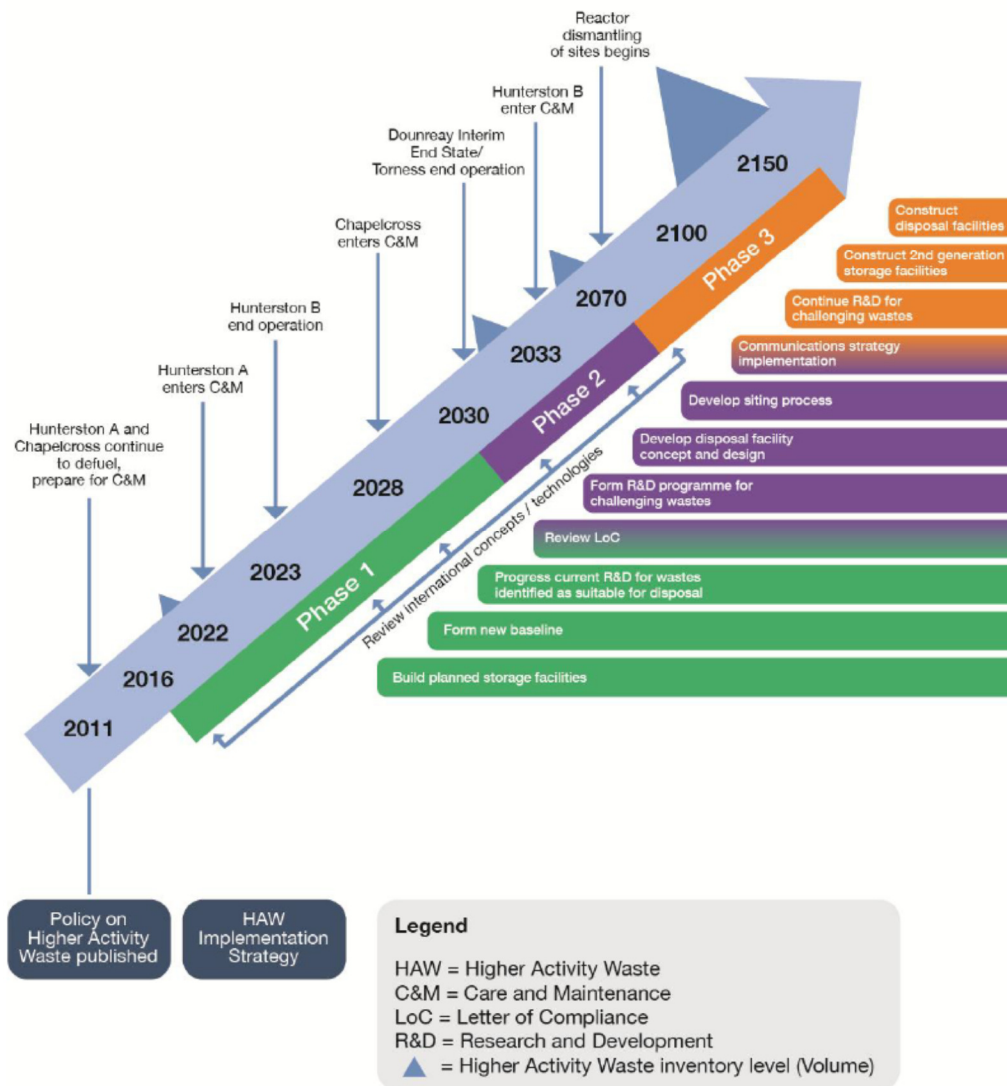
We can see that the number of jobs was expected to fall from around 700 to around 250 in the first decade after closure. (5) In the event Wylfa didn't close completely until 2015, and there were still almost 400 working there as of January 2018.

## 2. Hunterston B

A back of envelope calculations for Hunterston B suggests that: as each reactor is rated at 495 MWe, heat output rate (when operating) was ~1500 MW (of which 1/3 was converted to electricity and 2/3 was thrown away). The rule of thumb is that when a reactor is shut down, initially the decay heat rate is about 20% of the heat rate when fissioning. After one year's closure, this will decline to about 15%.

So one year after the reactor is closed it will still put out heat at the rate of about 220 MW (heat). This is quite a high heating rate. Obviously this rate will decline as the main radionuclides decay. But for the first say 5 years, the reactors' gas and water cooling systems will still be working at 15% capacity. And this means jobs.

The Scottish Government's Higher Activity Waste Implementation Strategy (6) shows Hunterston B entering its C&M phase ten years after closure with final dismantling delayed until around 2070. But the completion date for decommissioning all of Scotland's nuclear sites is not expected to be until 2120.



The Nuclear Decommissioning Authority says it is increasingly questioning whether the baseline strategy – of deferring reactor dismantling for around 85 years following shutdown – is appropriate as a blanket strategy for all reactors. On current plans there will be a period of around 30 years where all Magnox sites are in quiescence at the same time before reactor dismantling begins at the first site.

Deferred reactor dismantling means workers can benefit from radioactive decay enabling dismantling to be undertaken with significant worker access, and reduced dose rates. On the other hand the lengthy deferral period means there is likely to be a loss of skills, knowledge and capability to carry out final site clearance. With advances in robotics that have been made in recent years perhaps the lengthy deferral period is no longer necessary. The NDA says:

*“...advances in remote decommissioning techniques and international experience demonstrate that nuclear power reactors can be dismantled promptly without the need for significant worker access.” (7)*

It is not clear, yet, what role the NDA might play in the decommissioning of EDF Energy’s AGR nuclear stations. Financially speaking it will be in EDF’s interests to delay final dismantling as long as possible so that the money they have set aside for decommissioning can accrue in the bank for half a century. But this might not be the best thing for the Ayrshire economy, so could be something the Scottish Parliament wants to look at.

The Nuclear Liabilities Fund (NLF) is worth approximately £9bn to meet cost of decommissioning AGRs & the Sizewell PWR. EDF Energy makes regular payments into the

fund. It estimates that the cost of decommissioning its 7 AGRs and one PWR would be £19.9bn. It will rely on accrued interest up to 2090-2100 to fund much of these liabilities. (9)

It's worth noting that the NLF paid for the Sizewell B Spent Fuel Dry Store. (10)

### 3. Caithness and North Sutherland Regeneration Partnership

The Caithness and North Sutherland Regeneration Partnership (CNSRP) is an informal partnership of all the public agencies in the area around Dounreay looking at what will happen to the economy after decommissioning. Recently the area has seen a range of infrastructure improvements including to ports and harbours at Wick and Scrabster as well as educational facilities. Between all the partners they have so far achieved around 165 new jobs. Nearly £20m of inward investment is taking place at Wick Harbour as a result of the Beatrice Offshore Wind Development. (11) CNSRP is confident Beatrice will create 160 new jobs over the next two years, and it hopes this will be followed up by 250 over the next four years at the Moray offshore wind venture. (12)

CNSRP has targeted renewables – offshore wind and tidal, tourism and space, amongst other things. (10) There are potential job opportunities locally in the renewable energy sector, and at the planned new spaceport in Sutherland. Also the 1,100 Dounreay Site Restoration Limited (DSRL) employees have been offered the chance of a new job once their work at Dounreay is finished with one of Cavendish Dounreay Partnership's firms. Alternatively, employees have been offered training to place them in the "strongest possible position" to take up a role with a local company. (13)



<https://www.cnsrp.org.uk/the-future-economy/>

#### 4. The NDA's Socio-Economic Plan

The NDA's Magnox Socio-Economic Plan (2016-19) says the Authority's objective is "to support the creation of dynamic, sustainable local economies for communities living near our sites." (14)

NDA thematic principles:

- Employment - with a preference for higher value job creation;
- Education / skills - both to support decommissioning and clean-up and diversification into other sectors;
- Economic and social infrastructure - including environmental remediation and improvements and cultural and natural heritage;
- Economic diversification;
- Diversification into other industries and sector - including support for the local supply chain.

The NDA spent around £705,000 on projects such as re-opening the Marine Studies Centre on the Isle of Cumbrae; funding quayside offices at Adrossan, and funding the construction of public toilets at Portencross Castle to ensure that the castle can remain open and keep bringing tourists to the area.

A 2010 Study for the Hunterston A licence holders at the time – called Magnox North - by Hall Aitken (15) said:

*"Without employment growth, the reduction in jobs at Hunterston will exacerbate a challenging situation with likely outcomes outmigration and increasing competition for jobs and ultimately worsening deprivation ... With low business start-up rates, a depressed commercial property market and increasing youth unemployment, the prospect of generating replacement jobs is remote without targeted intervention."*

The report highlighted a series of themes and opportunities for investment including:

- Marine leisure development – marine leisure tourism is a key policy objective for North Ayrshire Council;
- Hunterston Competitive Advantage study; leading to a clear plan for investment and marketing for the Hunterston Port;
- Energy & Utility Skills Audit; to see how transferable Hunterston A skills are, and the skills and development needs required by the local workforce to take advantage of them;
- Creative industries support – branding West Kilbride as a Craft Town;
- Three Towns Business (Ardrossan, Salcoats and Stevenston) Incubator Unit; availability of flexible business space in the three town to be improved;
- Enterprise Outreach – a proven outreach coaching model from deprived communities in England suggests half a million a year could deliver around 115 business start-ups annually.

Figures from 2012 showed that 10.8% of young people in North Ayrshire were claiming unemployment benefit, compared to the Scottish average of 6%. In some parts, the figure was twice the Scottish average. The local authority began to look for ways to reverse this and boost the area's economic fortunes, concluding that support was needed for smaller businesses and, in particular, for young people. Working with a range of regeneration partners, North Ayrshire's innovative Youth Employment Scheme (YES) was forged, focusing on the government's Modern Apprenticeship programme. Uniquely, YES combines training for young people in work-related softer skills plus tailored vocational training together with wage subsidies of up to 60% for a fixed period, enabling smaller businesses to recruit and grow. Launched for a trial three-year period in 2013, the YES formula has exceeded its targets and proved so successful that it is being continued by the Council. There is now a commitment to achieve youth employment above the national average by 2020. (16)

## 5. Other Ideas

If Hunterston were successful in pushing for accelerated decommissioning then it would be worth assessing the potential to develop the area as a centre of excellence for robotics.

Also, in a similar way to the development of the North 500 tourist route in Caithness and Sutherland there is much more that could be done to promote the Carlisle to Glasgow Cycle Route No.7.

## 6. Electricity Supplies

According to EDF Energy's submission on the Scottish Government's Draft Energy Strategy, Scotland's two operating nuclear stations at Torness and Hunterston produced around 17.8TWh of electricity in 2015.

This was 35% of the total amount generated – 50.9TWh. (17)

But Scottish electricity demand was only 36.3TWh - so almost enough of a surplus (14.9TWh), in theory, to cope without nuclear at all.

Scotland's wind power output in November surpassed 2.2 TWh for the first time – enough to meet 109% of the nation's monthly electricity demand. (18)

In October renewables managed to produce 97% of Scotland's electricity demand. (19)

Scotland's wind energy sector has enjoyed a record-breaking 2018. Onshore wind generated 5.4 TWh between January and March 2018. (20)

Over the next few years offshore wind will be making an increasing contribution with 950MW of capacity added by 2022 at the Moray East windfarm (21) And the NnG wind farm located in the Firth of Forth should add another 450MW by 2023. (22)

Onshore wind is now the cheapest source of new electricity and, despite the lack of UK Government support new projects are expected through Corporate Power Purchase Agreements. (23)

The UK solar industry has slashed costs faster than anticipated and could be on track to become the lowest cost form of new generating capacity over the next decade. A significant increase in solar farm development is expected in 2019 again through the wider use of Power Purchase Agreements (24)

And progress is being made on Pumped Hydro Storage schemes which can use excess power generated at times of low demand to pump water uphill to be used to generate electricity later when demand is higher There are already two pumped storage hydro plants operating north of the border – the 440MW Cruachan scheme in Argyll, and the 305MW Loch Mhòr, at Foyers in Inverness-shire. Three more schemes are planned – 450MW near Dores, 600MW at Loch Tay and 520MW at Loch Awe. (25)

## 7. Local and Community Energy

The Nuclear Free Local Authorities (NFLA) has been keen to promote community and local energy projects partly as a solution to fuel poverty and climate change, but also because a smart, decentralised energy revolution is already happening and local authorities need to be at the forefront.

Nottingham City Council has been leading the way with over 40 projects. The council now has 12MW of solar capacity installed. Bristol City Council has 6MW of wind and 8MW of solar capacity including a solar farm.

In Scotland, Stirling Council has installed solar on over 2,600 council homes - over 7MW of capacity. The Council has also installed batteries in 94 properties. Home-sized batteries allow householders to sell electricity at peak using time of use tariffs.

In the near future Councils will be able to use Vehicle to Grid (V2G) technology to allow their vehicle fleets –once converted to electricity - to offer flexibility services to the grid.

Similarly community projects such as Surf n’ Turf on Orkney and Garmony Hydro on Mull are able to convert surplus renewables to hydrogen or stored heat. In Cornwall Centrica is using blockchain so consumers can buy & sell from each other.

UK electricity generation has fallen by 16% since 2005, mainly thanks to improved energy efficiency. And, as is well known, we need to get on with decarbonising heat. So speeding up efficiency schemes – like the one run by the Energy Agency and South Ayrshire Council could help to reduce consumption and provide jobs. (26)

## 8. Conclusions

In the NFLA’s view:

1. Jobs are not going to disappear at Hunterston B as soon as it stops generating.
2. It will take ten years to prepare the station for a period of care and maintenance over which time the number of people employed will fall gradually.
3. We could argue for accelerated decommissioning, which would involve developing robotics to dismantle the reactors more quickly rather than waiting 60 years for radioactivity to decay.
4. We could argue for a role for the NDA to support accelerated decommissioning.
5. Nevertheless a host of ‘social interventions’ will be required to protect workers jobs and livelihoods.
6. We can learn from the Caithness and North Sutherland Regeneration Partnership.
7. Electricity supplies are not threatened in the immediate future by the closure of Hunterston B.
8. We can promote decentralised and smart energy projects as a way forward for the future.
9. There should be a particular focus on whole house retrofits to continue the downward trend for energy demand.
10. Speeding up efficiency schemes – like the one run by the Energy Agency and South Ayrshire Council - would not only help to reduce consumption but it would also help to provide jobs.

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