Scotland's Energy - Scotland's Future

a balanced energy strategy for Scotland

PUBLIC WORKS:

UNISON Scotland

Introduction

Scotland is an energy rich nation and its energy industry is a key resource. 18% of the UK power sector workforce is based in Scotland. Four of the six major power firms in the UK have major operations here; Scottish & Southern Energy (SSE), ScottishPower (Iberdrola), Centrica and EDF, although only SSE can properly be described as a Scottish based company. Energy is a major Scottish export, provides high quality employment and contributes significantly to the Scottish economy. It is also an industry that has huge potential, particularly in the renewables sector. However, the industry faces a number of challenges in the so called energy market including infrastructure investment and workforce skills.

There is also a major challenge for government at UK and Scottish levels in combating climate change, eliminating fuel poverty and most importantly ensuring security of energy supply. Most of Scotland's existing generating capacity will close in the next 15 years without a clear replacement plan in place. This could expose Scotland to an energy crisis or reliance on insecure supplies.

UNISONScotland, as the largest power industry trade union in Scotland, has long argued that as a nation we need to develop a planned, sustainable and balanced Scottish energy strategy. In this publication we set out the challenges facing the industry and our view of the actions needed to deliver a secure energy future for Scotland.

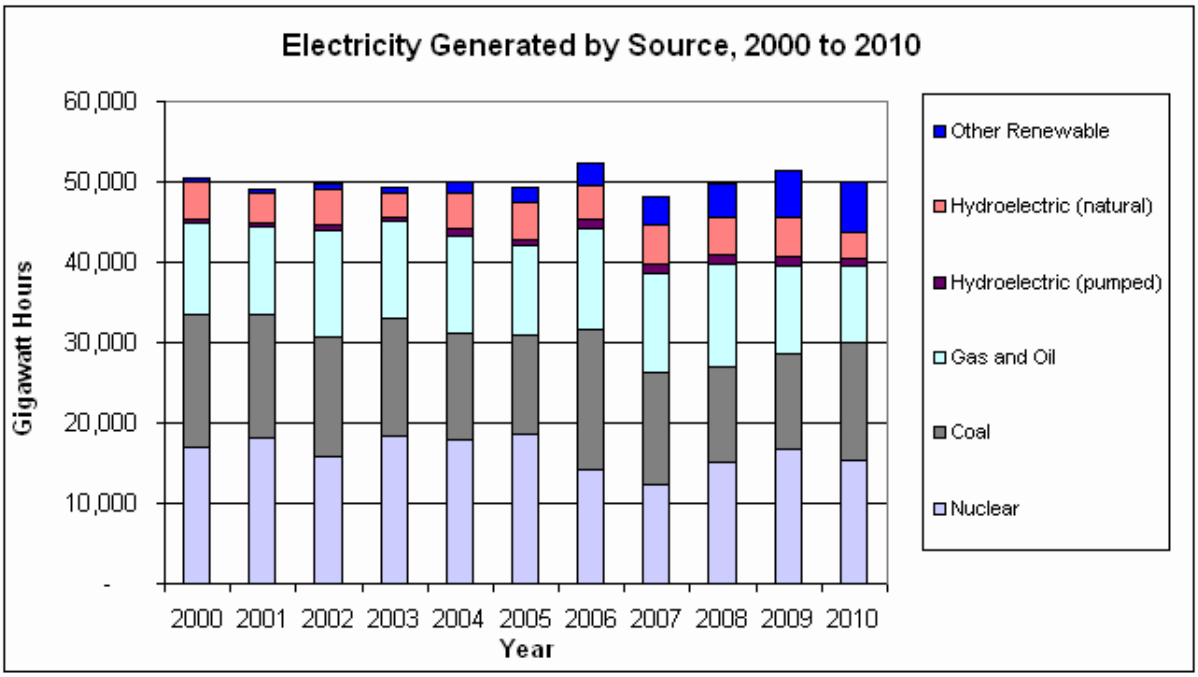
Background

Energy generation and nuclear regulation are reserved but planning, aspects of energy efficiency and renewable energy are devolved to the Scottish Parliament. The Scottish Government has set challenging targets for generating electricity from renewable sources and has rejected nuclear power. The UK Government's energy strategy recognises the contribution Scottish renewables can make to the UK's energy needs, but aims at a more diverse range of supply, including nuclear.

The UK energy landscape is changing dramatically. While supplies of gas and oil, primarily from the seas around Scotland, will be significant for years to come, they are a declining resource. Gas from UK sources will constitute only 25% of total supplies by 2020. Existing power station closures constitute 25% of total capacity by 2020. Under the EU Industrial Emissions Directive (IED) it is unlikely that any current British coal fired power station will be able to run after 2023. It is assumed that new nuclear, carbon capture and storage plant (CCS), gas fired plant and renewables will fill the gap. However, there are huge uncertainties over market reform, investment and technology.

Something like £200bn investment is required and that is hugely ambitious in the current financial climate. Scotland is a net exporter of electricity. We consume 10% of the UK's electricity and generate 13%. However, our share of UK generation has been declining from 13.7% to 13.1% in 2009-10. This is reflected in a drop in export capacity from 23.6% to 20.8%.

The Scottish Government believes Scotland should generate the equivalent of 100% of our electricity from renewables by 2020. In 2010, Scotland generated 30% from nuclear, 29% from coal, 24% from renewables and 17% from gas. As elsewhere in the UK that is about to change. Hunterston nuclear power station should close in 2016. Longannet appears doomed by 2018/20 due to the UK Government failing to support the CCS project. Moving the CCS project to Peterhead would still offer transferable technology to a coal plant, but even that may be delayed as a consequence of spending cuts in the Autumn Statement. Cockenzie will, subject to planning permission, switch from coal to gas. The life expectancy of the remaining nuclear and fossil fuel capacity is unlikely to stretch much into the next decade. There is a proposal for a new



coal power station at Hunterston, but its CCT credibility has been undermined and the planning application rejected by North Ayrshire Council.

Increasing demand means that the capacity of electricity transmission networks will have to grow from 75GW to 110GW by 2020. National Grid is planning £22bn of investment across the UK to 2021 with 92 projects (17GW) in Scotland. These include the Beauly-Denny link, links to the islands, South West Scotland reinforcement and High Voltage Direct Current links to England on the West and East coasts. The recent Ofgem announcement on network investment will support many of these plans.

Energy efficiency and micro generation is another method of addressing security of supply. Planning assumptions at UK level assume that Scotland's annual electricity consumption will increase significantly to 2030. Others argue that this assumption could be seen as unduly pessimistic because both Scottish and UK energy policy aims for a significant reduction in electricity demand, and the Scottish Climate Change Act puts Scotland's energy efficiency action plan on a statutory footing. However, given the history of increasing demand for power it would be unwise to rely on this.

Climate Change

UNISON believes that tackling climate change must be the over-riding priority of a sustainable energy policy, with democratic accountability ensuring that the long-term public interest is put ahead of short-term commercialism.

Despite the best efforts of industry-funded climate change sceptics there is a clear scientific consensus on the facts of climate change.

- The rise in global surface temperature has averaged more than 0.15°C per decade since the mid-1970s.
- Central England temperatures have increased by 1°C since the 1970s.
- The 10 warmest years on record have occurred since 1997.
- Sea levels around the UK have risen 10 cm since 1900. If emissions continue to grow at present rates global temperature could rise as much as 7°C above preindustrial temperature by 2100.

The Scottish Parliament unanimously agreed to ambitious 42% (2020) and 80% (2050) targets in the Climate Change (Scotland) Act, one of the

strongest legislative actions on climate change in the world. That cross-party political support will now have to be reflected in how our politicians work together in the coming years to make the often difficult decisions that must be taken for a just transition to a low-carbon economy. The recent report of the Committee on Climate Change (CCC) shows that whilst some progress has been made as expected during a recession, much more action will be required to meet Scotland's targets.

These decisions should include major energy efficiency initiatives across all sectors, substantial investment in renewable energy, a shift in transport spending from aviation and roads to public and active transport, using procurement to help drive sustainable green policies and initiating green workplace action across Scotland.

The public sector is vital in taking a lead and promoting best practice. The considerable employment benefits from these policies should be maximised through a 'Green New Deal'. This should be not just about creating jobs in new areas such as renewable energy, but about greening the economy as a whole. UNISON has commissioned a report 'Green Team' that highlights what could be achieved. The jobs potential is enormous but requires government policies that support and encourage that potential instead of the crazy situation last summer when the Vestas factory in the Isle of Wight was closed, leaving the UK with no major wind turbine manufacturing facility. There is only one of any scale in Scotland, although the recent Samsung announcement of 500 jobs at a plant in Fife is welcome.

Trade unions see climate change as an urgent health and safety issue for the planet. With the Scottish Trades Union Congress (STUC), we are calling for a comprehensive low carbon industrial strategy for Scotland, a transitional skills strategy, a Just Transition strategy and a green workplaces strategy. These should also take in adaptation measures. We welcome the May 2009 STUC/Scottish Government Communiqué on Climate Change but that rhetoric needs to be turned into action.

We look forward to the partnership working promised in the communiqué and welcome the support for quality secure employment, skills/ training, green workplaces, Just Transition and for government policy on climate change contributing to "community cohesion and reducing inequalities". However, the Scottish Government's public duties guidance is weak and fails to direct all parts of the public sector to the necessary actions. At UK level the 'Green Conservatism' promised by the Prime Minister in opposition has turned out to be little more than political spin.

Regulation

Implementation of Brittish Electricity Trading and Transmission Arrangements (BETTA) in 2005 created for the first time a competitive British-wide market for the trading of electricity generation (the wholesale market). The gas and electricity regulator Ofgem believes that BETTA enables more competitors to enter the Scottish wholesale and retail markets, putting increased pressure on prices to the benefit of consumers. Ofgem also believes that these transmission arrangements allow Scottish electricity generators improved access to a wider British market to sell electricity.

However, UNISON contends that Ofgem argued for and justified the implementation of BETTA on a description of the electricity market in Scotland which is unrecognisable by the either the industry or consumers. We argued that, previously to BETTA, wholesale prices were essentially the same on both sides of the border. It is distribution, transmission and metering costs that account for any difference in price and that is due to geographic and demographic factors.

UNISONScotland does not believe that BETTA is capable of delivering the promised cost savings to electricity customers. Meanwhile many customers have been switching supplier, then returning, with evidence that they wish they hadn't bothered. The competitive market led to many accusations of high-pressure sales tactics and mis-selling. UNISON energy call centre members deal with countless phone calls from confused customers.

Probably the only strong argument in favour of BETTA was that the cost of strengthening the transmission network would be shared across the UK, thus encouraging the development of renewable capacity. However, there is real concern that discriminatory locational transmission charges (aimed at siting generating capacity close to demand i.e. English conurbations) could hamper the development of Scottish renewable energy. The current TransmiT review may propose some improvement but it is likely to fall far short of what UNISON believes is the best way forward – the 'postage stamp' principle, meaning they should cost the same wherever you are.

Further essential elements in boosting renewable energy in Scotland are high voltage upgrades to the national grid, including the Beauly-Denny power line and strengthening the Scotland-England interconnector.

UNISONScotland believes that the regulatory 'settlement' that was made at the time of privatisation is no longer relevant, and that the present regulatory model is redundant because of the challenges currently facing the UK and Scottish energy industries. Reform is long overdue and a regulatory system designed primarily to resolve problems that are not adequately addressed by the market place should be adopted.

On an international level, UNISON believes there should be a pan European network of gas and electricity supply infrastructure that is publicly controlled, with access regulated by the European Commission in the interests of all European energy users.

Renewables

Scotland has 25% of the European wind resource, 25% of the European tidal resource and 10% of the European wave resource. In contrast Scotland has 0.6% of the European population and is therefore rich in renewable energy sources on a per capita basis.

UNISONScotland strongly supports the emerging renewables industries and realistic targets and incentives to increase generating capacity from renewables. However, this has to be as part of a balanced energy policy.


Aigas power station, River Beauly

The Scottish Government's target of delivering 100% of Scotland's electricity from renewables by 2020 is by any standards challenging. There is currently no detailed plan for delivering this and the minister has recently confirmed that there are no targets for individual technologies. Of the current 24% generated by renewables, 13% comes from hydro that we have to thank the vision of politicians in the 1940s for. This means we have only delivered 11% in the last ten years.

There are impressive reports, even more regular Scottish Government press releases and even by the First Minister's standard ("a great leap forward for mankind"), stirring rhetoric. However, detailed plans are missing. Onshore wind is a proven technology but the best sites have already been used and there is growing pressure on new planning applications. The recent Highland Council decision on the Cairngorms fringe application illustrates this well. However, the Scottish Government is putting considerable effort into renewables and this has been boosted by Scotland being granted permission to invest around half of the funds available in the UK's fossil fuel levy (£100m) on renewable energy sources such as wind farms.

In its first year, the Feed In Tariff scheme encouraged the development of 107.7 MWe of renewable energy capacity in the UK, 20% of which was in Scotland. Compared with the rest of the UK, Scotland has many more wind and hydro

schemes, particularly larger schemes over 500 kWe that have been developed by community and commercial investors. In total, 75% of the UK hydro capacity is in Scotland as is 63% of the wind capacity.

Offshore renewables has major potential with a range of companies developing demonstration projects like the European Marine Energy Centre (EMEC) in Orkney. But the technology is far from mature and the Scottish Government has no idea if it will be in place at the scale required by 2020. The view of credible industry experts is that there is no objective evidence to support this. The UK government also wants to change the support system for the tidal energy sector in 2017, moving away from renewable obligation certificates (ROCs) that renewable power companies can sell to the big utilities and instead using a form of feed-in tariff. The industry is concerned that other countries could provide a more attractive fiscal regime.

The decision to change the solar panel funding regime could aso undermine investor confidence and is currently the subject of litigation to the Supreme Court. Slashing the domestic tariff for solar panels is likely to cripple the market and result in thousands of job losses. While the renewables industry remains over-dependent on subsidy it is vital that regulation remains constant throughout the life of a project. Less well publicised is the need to enlarge and strengthen UK port facilities costing upwards of £5bn. A decision is awaited from the UK Government this year.

The fiscal climate is not the best to encourage the necessary investment in new technologies. In addition renewables are undermined by the regulatory environment. The transmission charging regime continues to discriminate against Scotland and the North of England and the TransmiT review is unlikely to make a huge difference. The review of the ROC scheme risks destabilising the market.

Consumer willingness to subsidise renewables cannot be taken for granted in the context of rising energy bills and fuel poverty. Wind farm subsidies add at least 20% to our energy bills. However, we do require to move to a low carbon economy and we should not forget that most of Scotland's existing power stations were built with public investment.

Many organisations who claim to support renewables all too often undermine their case by supporting the next technology rather than the proven ones that the industry can realistically develop. Others then object to the infrastructure that is required to transmit the energy. Such an approach inevitably places security of supply at great risk.

Gas

As conventional gas reserves decline there will be a demand to consider unconventional reserves like shale gas. Gas shales are formations of organic-rich shale, a sedimentary rock formed from deposits of mud, silt, clay and organic matter. The shales are relatively impermeable, so that reserves of natural gas can be trapped in their pores. Drilling techniques known as 'fracking' enables the gas to be extracted. Although estimates vary, the UK has significant shale gas reserves (0.15 trillion cubic metres), the equivalent of 15 years of liquefied natural gas (LNG) imports. Recent drilling proposals have included South West Scotland.

However, fracking is not without controversy, based on problems raised in the USA where reserves are very large. It requires huge amounts of water and the process is a risk to water quality. The storage and disposal of the flowback liquid produced during the process is another problem together with gas leakage and minor earth tremors. UNISON recognises that shale gas may be able to contribute to our demand for energy. However, a robust regulatory approach is needed to address the scientific and engineering uncertainties. The British Geological Survey is conducting surveys in the Bowland shale and should report this year.

Domestic gas sources now meet less than half of Britain's natural gas requirements. Some of the shortfall is met through pipelines from Norway

and Holland together with LNG from across the world. This can expose the UK to market price volatility as happened following the earthquake in Japan. Wholesale gas prices last summer were 40% up on last year and were the cause of the series of retail price increase announcements by the main suppliers. More recently the economic downturn and milder weather has resulted in a fall in liquefied petroleum gas prices, but this will need to be sustained if it is to impact on retail prices.

In the longer term it has been argued that gas use in domestic heating needs to be reduced by 90% if the UK is to meet carbon emission targets. This means 60 to 90% of all homes being driven by heat pumps by 2050 according to a report commissioned by Ofgem. The Gas industry argues that this is unrealistic and retaining gas in the mix would be more cost effective saving £700m.

Coal

Scotland is still rich in coal reserves and coal will continue to meet a significant proportion of future Scottish and global energy demand. Carbon capture and storage (CCS) has the potential to substantially reduce carbon dioxide (CO_2) emissions to atmosphere from large power plants. Both the UK and Scottish Governments have committed to maintaining coal as part of the energy mix in Scotland. Coal generation, primarily from Longannet, is the lynch pin of the Scottish power industry. It provides base load and flexible generation that can easily be switched on when other forms of generation are not available.


Longannet power station

The UK Committee on Climate Change has highlighted the importance of decarbonising the energy generation sector by 2030 to ensure that government emission reduction targets are met. The committee has also stated that conventional coal-fired power generation should only be built on the expectation that it will be retrofitted with CCS equipment by the early 2020s.

UNISONScotland agrees that new build power stations should not be permitted to operate without implementation of suitable CO_2 abatement in the future. To assess whether or not CCS will prove to be a viable method for reducing CO_2 emissions to the atmosphere there is a need to deliver CCS demonstration plants. The technology is viable but it needs to be tested on an industrial scale.

Sadly the UK government pulled the plug on the Longannet project and has deferred spending on an alternative site. The Peterhead gas plant is the best prospect using technology that could transfer to coal. However, we also believe that alternative solutions exist for Longannet.

Nuclear

Nuclear power stations provide the electricity base load in Scotland with fluctuations in demand met by generation sources which are easier to turn on and off like coal. There are two operational nuclear power stations in Scotland owned by EDF Energy at Hunterston and Torness.

EDF and others, with UK Government support, argue that the UK must replace at least existing capacity. Others, including the Scottish Government and the environment lobby argue that nuclear power is not the answer to tackling climate change or security of supply. The Committee on Climate Change (CCC) has noted that nuclear currently appears to be the most cost-effective of the low carbon technologies, and should form part of the mix assuming safety concerns can be addressed.

However, full reliance on nuclear would be inappropriate, given uncertainties over costs, site availability, long-term fuel supply and waste disposal, and public acceptability Decommissioning of existing nuclear plants is likely to cost £56.7bn.

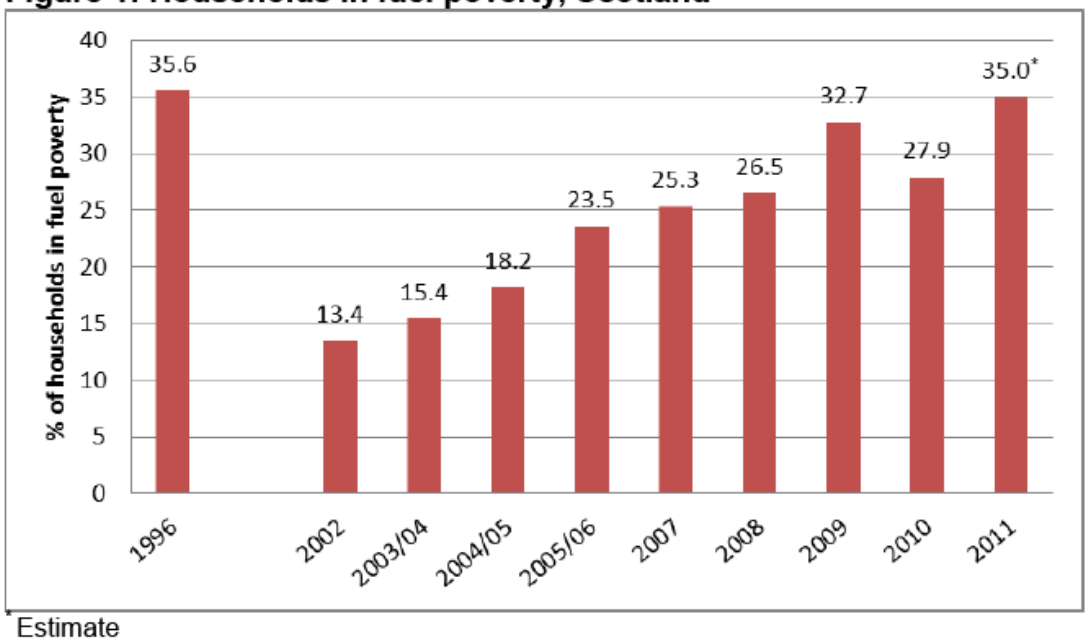
UNISONScotland has argued that at least one nuclear power station should be replaced to provide low carbon base load generation. In practice this is not going to happen. Scottish Ministers have powers to approve new nuclear power stations and that coupled with discriminatory transmission charges means that it is unlikely that there will be any proposal to build a new nuclear power plant in Scotland for the foreseeable future. However, nuclear remains an essential element of Scotland's generating mix and life extensions of existing plant means it will remain so for some time.

Fuel Poverty

For many people in Scotland fuel poverty is an everyday reality with older people, those with disabilities or long term illnesses and those on low incomes all especially at risk. The consequences are misery, discomfort, ill health and debt.

Around 900,000 households in Scotland – more than 1 in 3 – are estimated to be in fuel poverty, which means they are unable to afford adequate warmth in the home. The usual definition of fuel poverty is the need to spend 10% or more of income to pay for fuel bills. The causes are a combination of poor energy efficiency of the dwelling, low disposable household income and the high price of domestic fuel. For every 5% increase in energy prices as many as 2% of households in Scotland are pushed into fuel poverty.

Figure 1: Households in fuel poverty, Scotland



*Estimate

The high levels of fuel poverty in Scotland are unacceptable and require action as

part of a Scottish energy strategy. Despite some excellent fuel poverty programmes, the recent fuel price rises have undone nearly all the good achieved. In Scotland the longer heating season and consequent higher heating costs exacerbate the scale of fuel poverty and emphasise the need for additional support for households in Scotland in terms of both energy efficiency funding and support with fuel costs.

The Scottish Government has a statutory duty to end fuel poverty by 2016. A new package of measures was announced in the Autumn of 2011 with a budget of £66m. There will be some more cash for the Energy Assistance Package (EAP) and a second phase to the Universal Home Insulation Scheme (UHIS) that should reach 200,000 homes. However, campaign groups have pointed out that this only partially reverses earlier spending cuts.

Of the three main causes of fuel poverty, low disposable household income and the high price of domestic fuel are matters reserved to Westminster. Welfare reform measures are likely to exacerbate fuel poverty in Scotland. The EU also has a role in issuing directives that affect, for example, energy performance and consumer regulation.

UNISONScotland totally rejects the idea that price competition alone is sufficient to assist those in greatest need. Instead it has exacerbated long-standing inequalities between low-income groups and more affluent customers. The latest UK Government proposals may address some long standing complaints about the market including complex multiple tariffs, but they again place too much emphasis on switching. Ofgem has been particularly toothless in this field with a series of market reviews that achieve very little. There are some signs of a more interventionist approach in the latest Retail Market Review, but market dogma runs deep at Ofgem and we will not be holding our breath.

SSE has recently published plans to tackle complexity, transparency and customer service and other firms should follow this lead. It is perhaps no surprise that SSE has the best Consumer Focus rating in the latest figures that show a 25% increase in customer complaints. UNISON represents customer service staff in energy companies and the pursuit of cost savings has put increased pressure on staff in recent years.

Smart meters with in-home displays will be rolled out across the UK by 2020. These should assist consumers to make energy savings, although a recent study indicated that the effect wears off after the initial burst of action. The down side is the loss of meter reading jobs.

Smart meters should also assist the grid to support higher levels of intermittent generation from renewables. However, there are huge challenges for the Distribution Network Operators (DNO) in building the necessary smart grids. Much of the technology is not yet available or a clear vision of what will be required as photovoltaics, heat pumps and electric vehicles become more widely used.

Even without smart meters much more could be achieved through energy efficiency. Scotland has some of the worst housing stock in Northern Europe with nine out of ten solid walls and four out of ten cavity walls not being insulated. Simple loft insulation could save the average household £175 per year with a further £135 through cavity wall insulation. For a fraction of the cost of the Scottish Government's road programme every home in Scotland could be insulated for free. This would improve health, cut emissions and create thousands of jobs.

Workforce Issues

The Scottish Government predicts that 130,000 jobs will be created in green technology industries by the end of the decade. UNISONScotland remains sceptical about these claims as they follow in the wake of previous estimates that have not been realised. When the oil industry was being developed in the 1970s at least 70% of the equipment was made in the UK. With wind farms it is the other way round with about 80% being imported. We do have an advantage in marine technologies, but large scale job creation could be 20 or 30 years away.

In the next 15 years the sector will lose 80%

of today's workers through retirement or natural wastage. This means recruiting and training 6,300 people in Scotland by 2024 just to maintain the status quo. The National Skills Academy for Power estimates that a seven fold increase in the current number of skilled workers is required to meet renewable targets.

The so called energy market places great pressures on UNISON members in the retail sector of the industry. It is contact centre staff in the energy companies that deal with the confused customer. Cost pressures add to that burden with some companies adopting poor management practices in contact centres.

Realism & Sanity

There needs to be a new realism in the energy debate in Scotland. Far too many organisations oppose proven energy generation in favour of future technologies that are not contributing the capacity required to meet our energy needs. Such an approach will inevitably lead to a crisis in security of supply with devastating economic consequences. For probably the first time in our history Scotland will be importing energy and exporting the associated jobs.

The time has come to call a halt and bring some sanity back to Scotland's energy structures. Liberalised and competitive markets are not the panacea that governments believe them to be. We need a planned energy policy that provides safe, secure and sustainable generation, which contributes to the economic future of Scotland and eliminates fuel poverty.

for further information on the issues covered in this booklet visit the UNISONScotland website www.unison-scotland.org.uk or contact:
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A Scottish Energy Strategy

UNISONScotland wants to see a unique Scottish Energy Strategy within the context of UK strategy. The Scottish Parliament has an important role to play in supporting a Scottish energy strategy, having devolved responsibilities that both impact and interface with UK energy policy. These include the environment, planning, education and training, economic development and, not least, sustainable development. UNISONScotland has supported many initiatives in these areas, while arguing for increased funding to support clean-coal, the full range of renewables and investment in the right skills and specialities. We would urge the Scottish Parliament to pursue policies that support a balanced and sustainable approach to energy generation and use, and which promote future investment across the energy sector in Scotland. UNISON would also support the devolution of energy powers to the Scottish Parliament.

We believe a sustainable Scottish energy strategy should be based on a planned market for energy combined with security of supply, as well as social, employment and environmental objectives. Key principles should be:

- **Prioritising tackling climate change in line with the targets for reducing emissions set out in the Climate Change (Scotland) Act. This includes stronger public duties and more support for Green Workplaces.**
- **A balanced electricity generation policy from a number of sources to minimise volatility and ensure security of supply.**
- **For the foreseeable future, to continue gas and coal generation at current levels, subject to the introduction (with government support) of new clean 'green' coal technologies. We believe that other alternatives exist to bring Longannet within emission regimes as well as Peterhead developing a CCS project for gas.**
- **The Scottish Government targets for generating electricity from renewable sources are very challenging and not even desirable. However, the ambition to develop renewable generation is a sensible objective and governments should support the development of the sector with a more realistic 60% target by 2020. Local authorities could play a larger role particularly through microgeneration.**
- **Whilst in England it is arguable that nuclear power can be replaced by renewables - this is not the case (at least in the medium term) in Scotland where traditionally a greater proportion of our base load generating capacity is delivered by nuclear. However, despite the likely need for the replacement of one nuclear power station it seems unlikely that the market will want to build in Scotland given the discriminatory transmission charges and political resistance. Operating extensions for existing nuclear stations should be agreed where safe and practicable.**
- **Scotland should aim to continue to produce an energy surplus to export, recognising the importance of the industry in providing high quality jobs and with specific investment in sector-based skills.**
- **Demand for electricity should be reduced by promoting and incentivising energy efficiency for individuals, the private and public sectors, with new resources for local government and revised targets including new building standards.**
- **A better co-ordinated drive against fuel poverty together with new initiatives to ensure that fuel poverty is eradicated.**
- **Privatisation and liberalisation of the energy market will not deliver a planned energy policy and has not enabled alternative generation to make a significant new contribution to our energy requirements. The integrated Scottish electricity industry remains the most efficient method of delivering Scotland's energy needs.**

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