Energy Supply Strategy

Net Zero Aberdeen

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1. Purpose

1.1 How is the Energy Supply Strategy relevant to Net Zero Aberdeen?

Energy generation and consumption produce a significant proportion of total carbon emissions and therefore the decarbonisation of the energy system is a priority. However, conventional sources of energy underpin the global economy and the everyday life of people. Change of the kind required will be disruptive and it is imperative that individuals be protected from marginalisation and that new opportunities are created. Decarbonisation cannot be achieved through removing carbon emissions from supply alone. Therefore, there are linkages with buildings, heat, mobility, and demand reduction.

2. Context

2.1 What is the context for the energy supply theme

In 2019 Aberdeen's energy consumption was 5,003 GWh or 3.5% of the Scottish total of 144.8 TWh. Sources were Petroleum (1,510 GWh and 30.2 %), Gas (2,278 GWh and 45.5%), Electricity (1,073 GWh and 21.4%%), Bioenergy and Waste (119 GWh and 2.4%) plus other minor sources (22 GWh and 0.4 %).

Demand sources were Domestic (36%), Transport (23%), Industrial, Commercial, and other (41%).

Emissions

In 2019 Aberdeen City's territorial CO2 emissions were 1,154 ktCO2 or 3.7% of the total across Scotland. These are spread across the following categories: Domestic (341 ktCO2 30%), Transport (328 ktCO2 28%), Industrial, Commercial and Other (484 ktCO2 42%).

2.2 Key Challenges for Energy Supply

How do we:

1. **Support national grid decarbonisation** and ensure that all new and existing networks city networks are zero carbon.
2. **Ensure** affordable energy and reduce fuel poverty in the move to net zero.
3. **Support network growth** for local decentralised and micro-renewable systems across all energy sectors.
4. **Support growth of green hydrogen** production and usage, including local demand and export
5. **Capitalise on North Sea skills** from industries to grow the supply chain and net zero economy.
6. **Secure maximum economic benefit** and output from Scotwind leasing round and Innovation to Oil and Gas (INTOG) projects.
7. **Support Carbon Capture Usage and Storage** (CCUS) development, financing, ownership, and funding models appropriate for new types of energy projects.

1 https://www.gov.uk/government/statistics/total-final-energy-consumption-at-regional-and-local-authority-level-2005-to-2019

2 https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019

2.3 What is already happening

Aberdeen already has three important offshore wind developments in the area; Hywind, EOWDC and Kincardine Floating Offshore Wind Farm. The ScotWind sites numbers one to six directly east of Aberdeen provide significant new potential.

There is an award-winning Aberdeen Heat and Power network in place, with expansion potential to incorporate additional heat and energy opportunities. Aberdeen has significant opportunities to develop and expand energy networks across the city, with several existing heat networks already in operation.

The development of the new Energy from Waste site in Altens provides opportunity for locally generated energy to feed into new and existing networks in the form of heat and power. The anaerobic digestion plant at The Event Complex Aberdeen (TECA) is another example of local network that can be developed.
The Acorn Carbon Capture Utilisation and Storage (CCUS) and Aberdeen Vision hydrogen proposals also offer significant opportunities.

3. Strategic drivers

UK	UK Industrial decarbonisation strategy 2021
	UK Hydrogen strategy 2021 - targeting 5GW low carbon hydrogen production capacity by 2030
	Energy white paper: Powering our Net Zero Future Dec 2020 – including potential to treble the amount of bio-methane in the grid between 2018-2030
	Biomass policy statement (2021): a strategic view on the role of sustainable biomass for net zero. Bio-mass strategy to be published (2022).
Scotland	Home Energy and Fuel Poverty Policy
	Energy Efficiency Policy
	Offshore Wind Policy Statement (2020)
	Hydrogen Policy Statement (2020) and Hydrogen Action Plan (2021)
	Local Energy Policy Statement (2021)
	Heat Networks (Scotland) Bill (2022)
	Upcoming - Updated Electricity Generation Policy statement (by 2022)
	Upcoming - Bio-Energy Action Plan to be published (2023)
Regional	City Region Hydrogen Strategy & Action Plan (2015 – 2025)
Aberdeen	

4. Approach

4.1. Overview

Strategic Aim: We will develop affordable low-carbon energy choices for our citizens and use our strengths as a global energy capital to put ourselves at the front of the energy transition; focusing on developing globally recognised centres of excellence for green hydrogen and off-shore wind.		
Key Outcomes	**Strategic objectives**	**Measures**
No exacerbation of fuel poverty	Ensure fuel poverty does not increase from these objectives	% households in fuel poverty
Increase decentralised energy	Establish Aberdeen as a leading UK city for decentralised energy.	Growth in decentralised networks
Commercialise green hydrogen	Establish Aberdeen as a global centre of excellence for hydrogen	Volume produced People employed Patents lodged
Expand micro renewables	Develop projects that meet SEG support while developing options to meet future support.	Projects supported Generation capacity Project pipeline
Ensure a skills transition	Aberdeen is a globally recognised centre of excellence for energy transition training	Number of publicly funded training places Number of new qualifications introduced Number of placements from outwith Aberdeen

Secure carbon capture, and utilization and storage	Explore potential for carbon capture from waste to heat and from direct air capture	Reports on potential
Capitalise on offshore wind	Establish Aberdeen as an offshore wind global centre of excellence	Creation of offshore wind centre of excellence
Secure investment	Achieve the investment required to deliver decarbonised energy supply	New ownership, finance models Capital investment
Diversify the energy supply chain	Engage in renewable energy generation, distribution, operations and maintenance.	Alternative energy economic activity Number new markets penetrated

4.2. About the approach

Fuel poverty

- Work with generators and utilities to ensure that prices do not rise for those in fuel poverty or at risk of it
- Support the creation of an “at risk of fuel poverty” register

Decentralised energy

- Develop decentralised energy master plans to cover area-specific opportunities including existing and new projects
- Work with generators and utilities to develop decentralised generation/consumption projects
- Identify and promote opportunities for community ownership/participation

Green hydrogen

- Deliver Aberdeen Hydrogen Hub (AHH) production and distribution infrastructure
- Develop integrated training and accreditation offer (AHH)
- Develop integrated supply chain development programme (AHH)
- Marketing campaign to promote Aberdeen as a global centre of excellence in hydrogen (AHH and partners)

Micro renewables

- Undertake an assessment of micro renewable deployment opportunities at commercial, residential, and industrial and public sector sites
- Define technologies and ownership and funding options

Skills transition

- Explore facilities/policy needed to secure jobs in Aberdeen
- Produce integrated training and accreditation offer to be marketed globally (AHH and partners)
- Create an energy transition skills hub

Carbon capture, and utilization and storage

- Support local projects – Acorn, Aberdeen Vision
- Encourage transfer of skills, expertise and assets from our oil and gas industry
- Develop small scale CCS deployment opportunities in Aberdeen

Offshore Wind

- Offshore Wind and Floating Offshore Wind Centres of Excellence
- Support transfer of skills from oil and gas and supply chain development programmes
- Innovation and commercialisation
- Secure maximum local content in Scotwind 1 and 2

Investment

- Development of ownership, investment, and funding models suitable for new types of projects
- Support investor understanding of new types of energy project
- Access public funding sources for new technology and project development, skills and training

Supply Chain

- Support the supply chain in diversification and accessing new business
- Ensure that the supply chain is linked to skills, training, skills transfer and project opportunities
- Support the supply chain in the development of marketable new technology, products and services
- Promote international business opportunities to the supply chain and promote supply chain capabilities in new markets

5. Risks for this theme

Failure to engage the drive for net zero will lead to significant loss of market share and economic activity through:

- Loss of city and local energy leadership
- Failure to invest in technology and project development
- Failure to develop new workforce skills and supply chain capability

The drive for energy transition and net zero also creates certain risks for the public and private sector, communities, and individuals:

- The scale of investment required
- Exposure to pre-commercial technologies
- The range of investment required such as in infrastructure, assets, facilities and skills/ reskill
- New funding and financial models are required, or the development of decentralised projects be constrained developers put at risk

Rapid structural change in the energy market, supply chain and skills required also poses risk for citizens and individuals:

- Possible rising energy costs, an increase in fuel/power poverty and exclusion
- Exclusion from the workforce and could also increase energy poverty
- The drive for smaller, decentralised projects

There are also reputational risks for government, utilities, developers, and landlords:

- If the transition is not handled fairly and leads to loss of opportunity and exclusion
- If momentum is not built and progress maintained
- If a just energy transition not achieved

6. Theme synergies

Mobility	Link to green hydrogen, carbon capture/utilisation and storage.
Energy Supply	Link to fuel poverty, decentralised energy, green hydrogen, micro renewables
Circular Economy	Link to decentralised energy (Energy from solid waste and wastewater).
Natural Environment	Link to decentralised energy, green hydrogen, micro renewables and carbon capture/storage (embed green infrastructure)
Empowerment	Skills transition and green jobs across; carbon capture, utilisation and storage, offshore wind and supply chain (green jobs).

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