

Education, Children and Families Committee

10.00am, Tuesday, 10 December 2019

Energy in Schools Annual Report

Executive/routine Wards Council Commitments	Routine All
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1. Recommendations

- 1.1 That Committee notes the content of this report and the positive steps underway to improve energy efficiency and reduce carbon emissions across the Council's school estate.

Stephen S. Moir

Executive Director of Resources

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Energy in Schools Annual Report

2. Executive Summary

- 2.1 This report presents an overview of 2018/19 energy use, associated carbon emissions and energy expenditure across the Council's School Estate. The report follows on from the Energy in Schools Report ([Item 7.3](#)) in December 2018. The report provides detail on active projects and initiatives to improve energy management and reduce energy and carbon emissions across the school estate.

3. Background

- 3.1 The Council spent over £9m on energy across operational buildings in 2018/19, an increase of under 3% on 2017/18 costs.
- 3.2 Electricity and gas prices increased by over 10% between 2017/18 and 2018/19 placing further pressure on energy budgets and emphasising the continuing importance of appropriate management of energy.
- 3.3 In August 2019, Policy and Sustainability Committee approved a new [Energy Management Policy](#) for operational buildings. This aligned the Energy Management Policy with wider documentation being prepared as part of Property and Facilities Management's pursuit of [BS EN ISO50001](#) accreditation.
- 3.4 The Council has approved a new [Sustainability Approach](#) which sets a net zero carbon target for Edinburgh by 2030. Under the Sustainability Approach, the Council has commissioned independent research to inform a roadmap for meeting the 2030 targets.

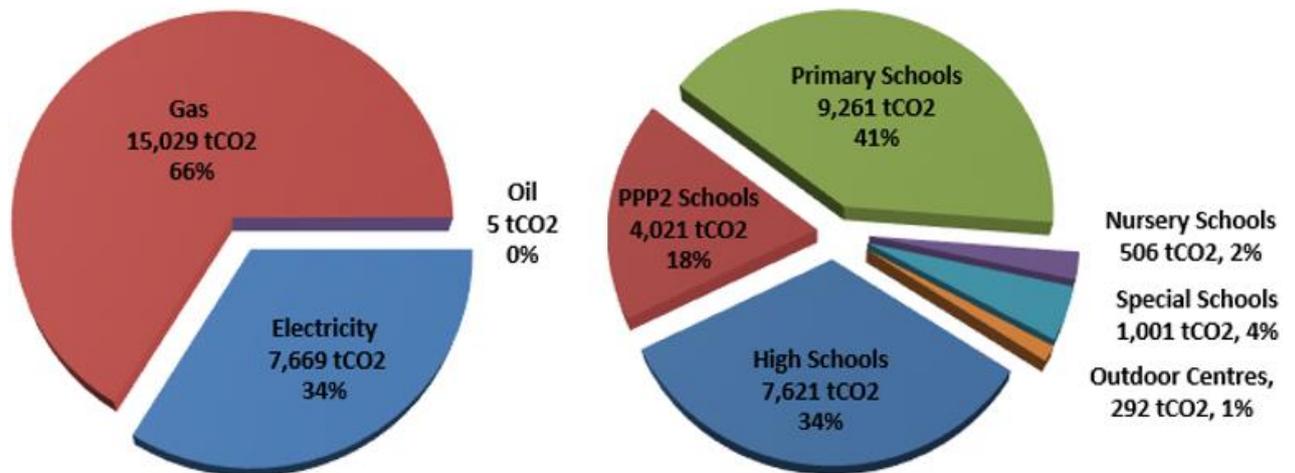
4. Main report

Consumption Monitoring

- 4.1 This section of the report gives an overview of energy consumption, and associated carbon emissions across the school estate in 2018/19. The data includes details on the Council's PPP2 estate, where the Council pays directly for energy consumed, but excludes details from Edinburgh Partnership schools (PPP1), as energy costs are factored into the unitary charge.

4.2 Further detail on energy consumption across the school estate can be found in Appendix 1.

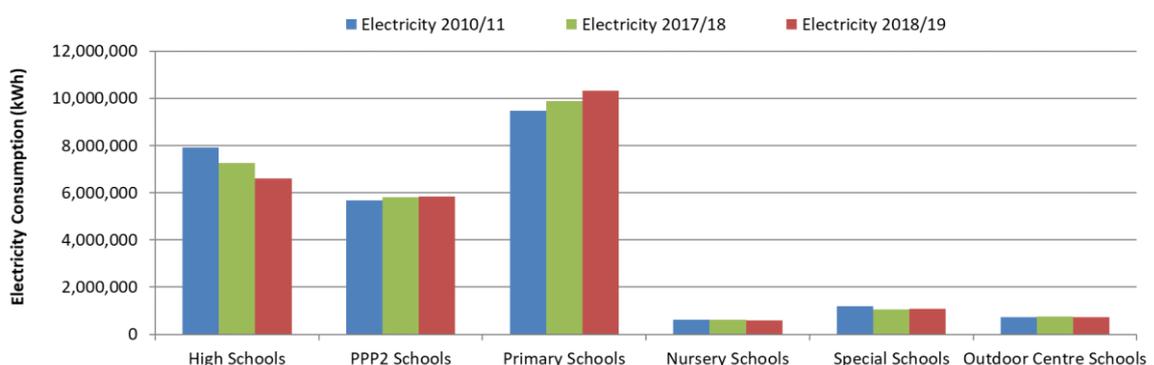
Graph 1: 2018/19 Carbon Emissions by Fuel and Property Type



4.3 The charts above provide a breakdown of energy related carbon emissions across the Council's school estate. In total, energy consumption in the school estate accounts for 22,703 tonnes of CO2 equivalent (CO2e). This is a decrease of 3,066 tonnes or just under 12% on 2017/18 emissions. The carbon emission factor for grid electricity has reduced by around 20%, leading to a significant drop in emissions relating to electricity use. The carbon emissions associated with gas use have reduced by 6% compared to 2017/18.

4.4 Schools accounted for £5.3m of energy spend in 2018/19. This is an increase of over 6% on 2017/18 costs. An additional £0.39m was spent on the purchase of carbon allowances under the [Carbon Reduction Commitment Energy Efficiency Scheme](#).

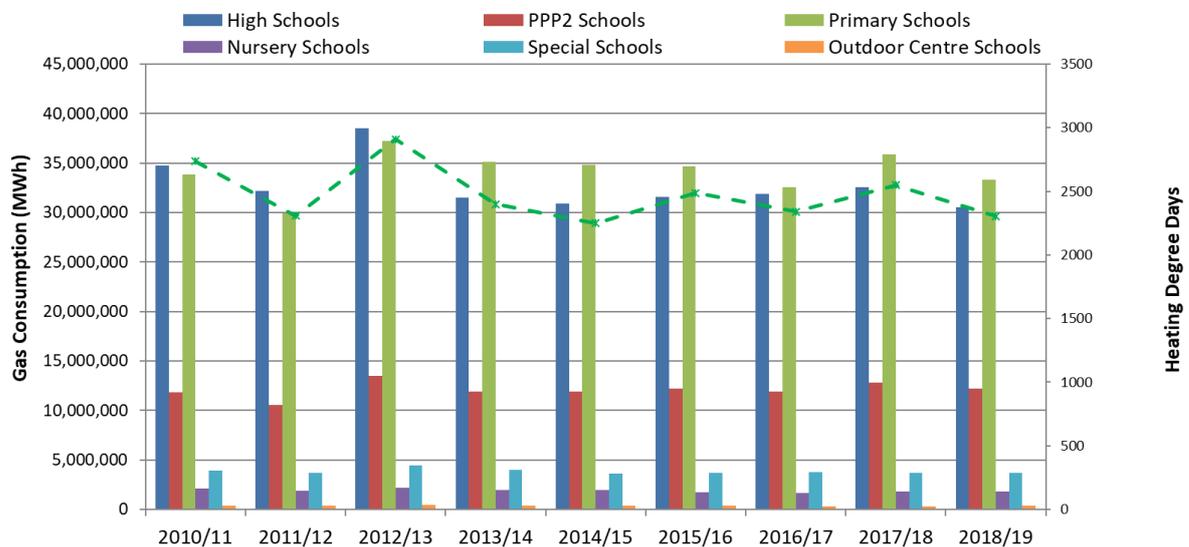
Graph 2: 2018/19 Grid Electricity Consumption against 2017/18 & 2010/11 Baseline



4.5 The graph above compares 2018/19 grid electricity consumption against both the 2010/11 baseline and 2017/18 consumption. There has been a significant reduction in grid electricity use across High School Properties in 2018/19. This can principally be attributed to on site generation through combined heat and power engines and targeted efficiency works. There has been an overall increased to electricity use across the primary school estate. This is predominantly due to the increased

footprint of the school estate and the continued increase in the use of electricity to meeting thermal demand.

Graph 3: 2010/11 to 2018/19 Gas Consumption correlated against Heating Degree Days



- 4.6 The graph above details 2018/19 gas use against recent years and the 2010/11 baseline year. Data has been correlated against heating degree days (HDD), which is a metric for quantifying the severity of weather conditions in relation to space heating requirements. On average 2017/18 was 6% colder than 2018/19 which accounts for the majority of the reduction to 2018/19 gas use. Property investment, and specifically boiler and controls upgrades have contributed to substantial reduction to gas use on targeted sites.

ISO50001 – Energy Management System Accreditation

- 4.7 Property and Facilities Management have implemented an energy management system in line with [BS EN ISO 50001](#), an international standard for energy management systems. The system is currently going through a series of external audits, conducted by [BSI](#), with the aim of receiving ISO certification. The implementation of the energy management system will help drive the continued improvement in energy management across the Council estate including schools and also demonstrates the Council’s commitment to best practice and establishes the Council as a sector leader and exemplar within local authorities in Scotland.

Passivhaus and the Schools Estate

- 4.8 Property and Facilities Management have led on the identification of Certified [Passivhaus Classic](#) as the appropriate standard to reduce energy demand and carbon emissions in Council new builds. Passivhaus is a proven standard which addresses the recognised performance gap between projected new building energy consumption and actual, operational, energy consumption, an issue recognised at a national level. In October 2019, Finance and Resources Committee approved the [award of a contract](#) for the design of three new Certified Passivhaus Primary

Schools. Work is also underway on the feasibility of building a new Council High School to Passivhaus standards.

- 4.9 An action was raised by Policy and Sustainability Committee in August 2019 requesting that the Council explore the feasibility of undertaking a deep energy retrofit for Council buildings. A report has been prepared for December Finance and Resources Committee seeking approval of a budget to progress the feasibility study. A focus of the feasibility study will be to seek to establish the parameters under which a deep energy retrofit delivers best value across representative building archetypes. The subsequent outcomes would help inform future strategies for energy and carbon reduction across the school estate.

Solar Proposals

- 4.10 The Friends of Duddingston Primary School have submitted a proposal for the installation of 30kW of solar photovoltaic panels on the roof of Duddingston Primary School. A report has been prepared for December Finance and Resources Committee seeking approval to grant a licence for the scheme. The Friends of Duddingston Primary School are a charitable organisation with strong links to the school. If the project progresses, profits from the scheme would be used to advance the educational experience of children attending Duddingston Primary School.
- 4.11 Edinburgh Community Solar Co-operative, who already have 1.4MW of solar PV across 24 Council owned buildings (including 19 schools), have submitted a proposal for the expansion of this scheme for up to a further 11 Council owned buildings including the new St John's Primary School. Details on the proposal were presented to [Finance and Resources Committee](#) on 15 August 2019, with decision making delegated to the Executive Director of Resources in consultation with the Convenor and Vice-Convenor.

Property Investment

- 4.12 The Council is investing significantly in its schools estate through the asset management works programme. Whilst the primary focus of these works remains the improvement in the condition of the Council's buildings, there has been a consequential benefit on energy efficiency through works such as boiler replacements, controls upgrades, lighting replacements, window replacements and roof replacements.
- 4.13 From an energy management perspective, there is a continued focus on investment and management of the Council's Building Energy Management Systems. In addition to capital funding routes, Property and Facilities Management draws on both the inhouse [SALIX](#) fund and Council spend to save funding to support energy efficiency and renewables projects.

5. Next Steps

- 5.1 Progressing the design of new school buildings to Certified Passivhaus 'Classic' Standard is a critical step in the reduction of energy demand in the schools estate.

To meet the Council's carbon targets, it will be necessary to look at enhanced solutions for new builds with options including Passivhaus 'Plus' (producing onsite energy to balance consumption) and Passivhaus 'Premium' Standard (producing more energy than required on site).

- 5.2 Detailed review of the feasibility of deep energy retrofits will be essential in helping the Council determining the balance between targeted demand reduction and the decarbonisation of energy supply.
- 5.3 Property and Facilities Management will report annually to Policy and Sustainability Committee on progress on the implementation of the Energy Policy and the Energy Management System (BS EN ISO50001) including detail on any revisions to documentation to align with the Council's 2030 Roadmap for net zero carbon.
- 5.4 Work will continue to further the expansion of renewable energy and energy efficiency works across the Council's estate.

6. Financial impact

- 6.1 The wholesale cost of energy is continuing to increase. This is compounded by increases to non-energy costs relating to grid infrastructure and the decarbonisation of energy generation.
- 6.2 Whilst increasing costs will place a pressure on budgets, they will also impact positively on the payback period for investment in energy conservation. With the acceleration of energy targets, there is a possibility that carbon related tariffs will rise further.
- 6.3 Given the scale of carbon reduction targeted across the Council's estate, consideration will be increasing need to be given to projects that sit out with traditional payback periods.
- 6.4 Best Value is a clear focus of current energy management strategy. Robust energy management practices and a clear vision for energy reduction is essential for continual improvement. This is supported by the pursuit of ISO50001 accreditation.

7. Stakeholder/Community Impact

- 7.1 The Energy and Sustainability Team works closely with colleagues in both Property and Facilities Management and across the wider Council on energy projects. In addition, the team works with a wide range of stakeholders, suppliers and organisations to ensure that the Council's practices are focussed towards delivering best practice.
- 7.2 By leading on the investigation of innovative and rigorous best practice energy efficiency solutions the Council can demonstrate further opportunities for carbon reduction across its estate and set a positive example for organisations within Edinburgh and more widely.

8. Background reading/external references

- 8.1 [Education, Children and Families Committee, 11 December 2018, Energy in Schools Annual Report](#)
- 8.2 [Corporate Policy and Strategy Committee, Tuesday 14 May 2019, Sustainability Approach](#)
- 8.3 [Policy and Sustainability Committee, Tuesday 6 August 2019, Energy Management Policy for Operational Buildings](#)
- 8.4 [Finance and Resources Committee, Thursday 10 October 2019, Appointment of specialist design team to deliver three new primary schools to Certified Passivhaus standard](#)

9. Appendices

Appendix 1. Energy Consumption and Baseline Data

Appendix 1 – Energy Consumption and Baseline Data

Property Type	2018/19						Heating Degree Days	
	Electricity		Gas		Oil			
	MWh	% Change (Baseline)	kWh	% Change (Baseline)	MWh	% Change (Baseline)		
High School	6,600	-17%	30,545	-12%	0	0%	2010/11	2735
PPP2	5,840	3%	12,205	3%	0	0%		
Primary Schools	10,321	9%	33,303	-2%	0	-100%	2018/19	2304
Nursery Schools	594	-2%	1,770	-15%	0	0%		
Special Schools	1,077	-9%	3,666	-6%	0	0%	% Change	-16%
Outdoor Centres	727	0%	357	-12%	19	-53%		
TOTAL	25,159	-2%	81,847	-6%	19	-99%		