

Education, Children and Families Committee

10.00am, Tuesday, 6 June 2023

Energy in Schools – Annual Report

Executive/routine	Routine
Wards	All
Council Commitments	18

1. Recommendations

- 1.1 It is recommended that Education, Children and Families Committee notes:
 - 1.1.1 The content of the report and the detail on current and historic energy use across the Council's learning estate; and
 - 1.1.2 The progress on initiatives focussed on supporting net-zero carbon in the learning estate.

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Executive Director of Place

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Report

Energy in Schools – Annual Report

2. Executive Summary

- 2.1 This report follows on from the Energy in Schools – Annual Report in [March 2022](#) and provides details on energy consumption in schools during 2021/2022 and 2022/2023. The report also outlines the current energy use across the learning estate, as well as providing details of key initiatives aimed at reducing energy use.
- 2.2 An update is also provided on the strategic programmes focussed on decarbonising the Council's learning estate (including the adoption of Passivhaus as a standard for Council buildings) including schools.

3. Background

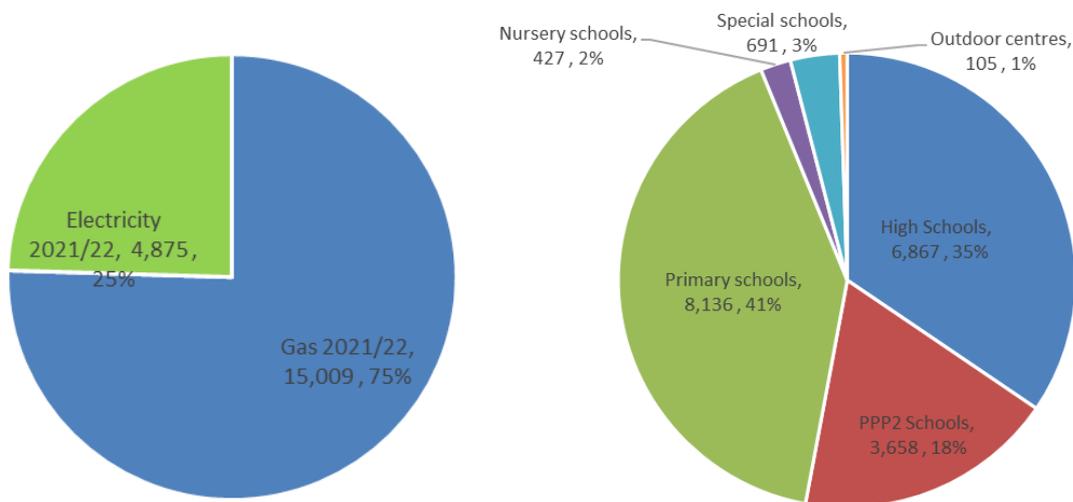
- 3.1 In 2021/2022, the Council spent £9.15m on energy across operational buildings, which was an increase of around 10% on 2020/2021 costs. In 2022/2023, the cost was £15.04m, which was an increase of around 63% on 2021/2022 costs.
- 3.2 This cost increase in 2021/2022 was due to the end of COVID-19 restrictions, the beginning of the war in Ukraine and the cost-of-living crisis. The increases in 2022/2023 were primarily due to the continuing cost-of-living crisis.
- 3.3 Due to the term of the councils' utilities contract through Scottish Procurement, a large proportion of the consumption is purchased up to three years in advance. As such, the Council has been protected against the very large cost increases but will continue to see cost increases over the next couple of years due to the purchasing policy.
- 3.4 Between 2020/2021 and 2021/2022, electricity prices increased by around 2% and gas prices increased by 7%. Between 2021/2022 and 2022/2023, electricity prices increased by around 15% and gas prices increased by 175%. Moving forward, the 2023/24 prices show an increase in the price of electricity of around 86% but with a decrease in gas prices of around 25%.
- 3.5 Forecasts indicate that there will be further cost increases in 2024/2025, with electricity costs projected to increase by around 15% and gas costs projected to increase by around 30%.

3.6 There are three strategic priorities in the latest Council Business Plan “[Our Future Council, Our Future City: Council Business Plan](#)” that will shape the way the Council works during 2023 to 2027, one of these priorities is to “Becoming a sustainable and net zero city”.

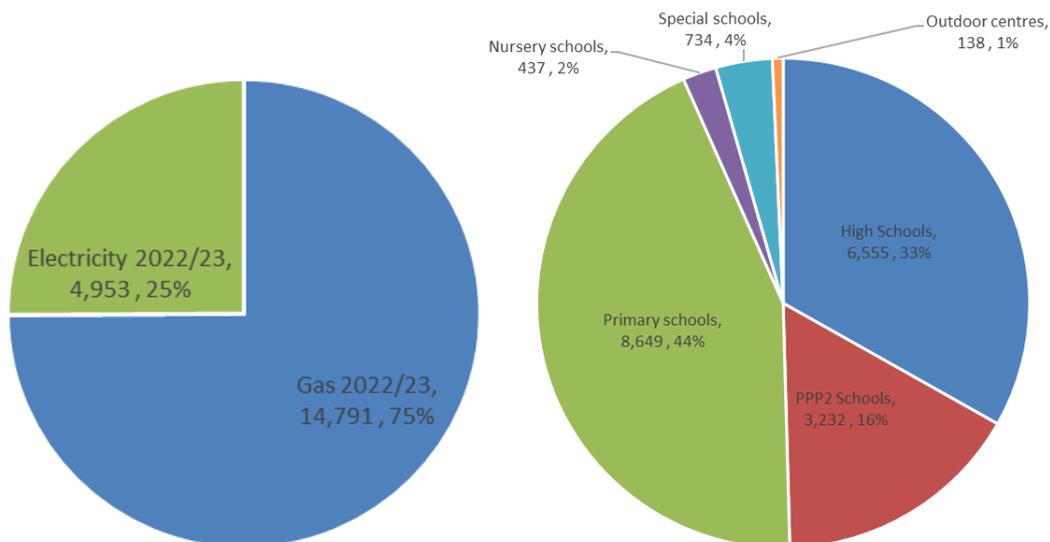
4. Main report

4.1 The charts below provide a breakdown of energy related carbon emissions across the Council’s learning estate in 2021/2022 and 2022/2023. The data includes details on the Council’s PPP2 estate, where the Council pays directly for energy consumed, but excludes detail from Edinburgh Partnership schools (PPP1), as energy costs are factored into the unitary charge.

Graph 1: 2021/2022 Carbon Emissions by Fuel and Property Type



Graph 2: 2022/2023 Carbon Emissions by Fuel and Property Type

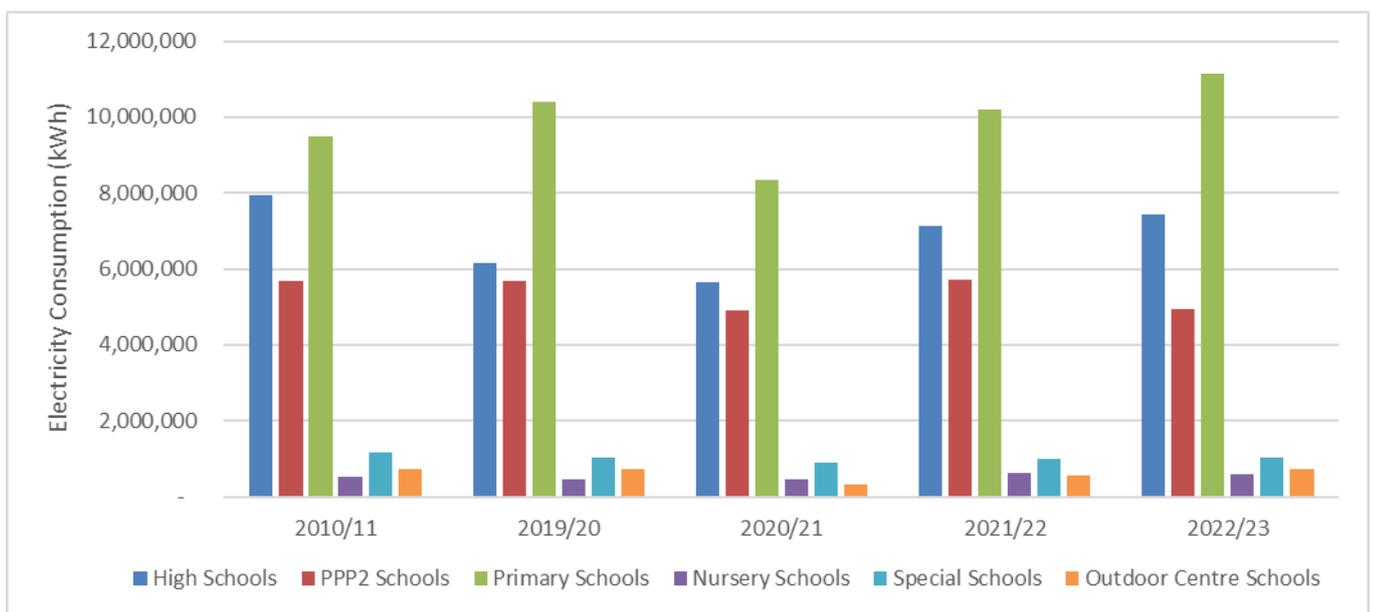


4.2 In total, energy consumption in the learning estate in 2021/2022 accounts for 19,884 tonnes of CO2 equivalent (CO2e). This is a decrease of 48 tonnes or just over 0.25%

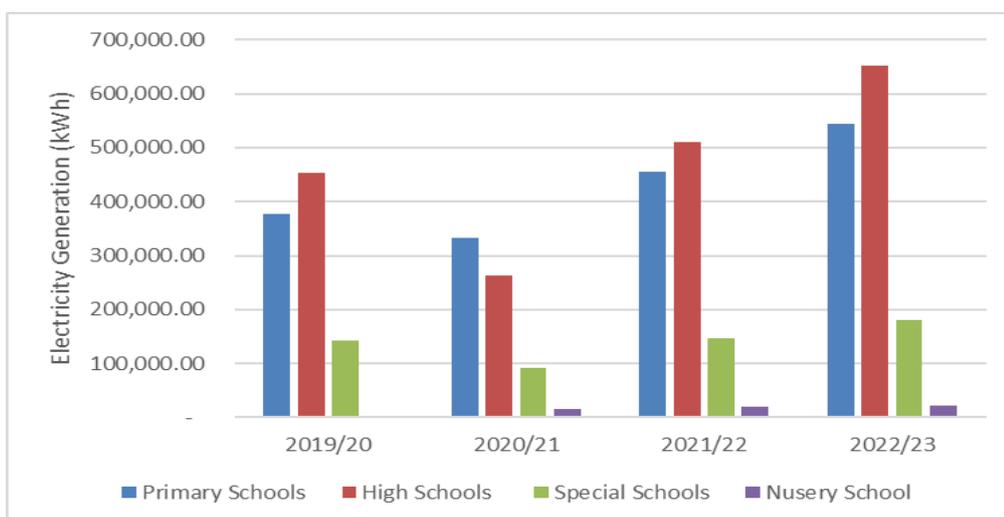
on 2020/21 emissions. In 2022/2023, the estate accounts for 19,744 tonnes of CO2 equivalent (CO2e) which is a decrease of 140 tonnes or just over 0.7% on 2021/2022 emissions. The learning estate accounted for around 62% of total Council emissions from operational buildings.

- 4.3 The carbon emissions associated with grid electricity have continued to drop, with electricity now representing around a quarter of total emissions from the learning estate. This is a pattern that is set to continue as electricity generation continues to decarbonise.
- 4.4 Energy costs across the learning estate totalled £5.7m in 2021/2022 and £9.4m in 2022/2023. This cost increase is against the reduction in energy consumed across the estate that has been seen in both years.

Graph 3: 2021/2022 and 2022/2023 Grid Electricity Consumption against 2018/2019, 2019/2020 and 2010/2011 Baseline.

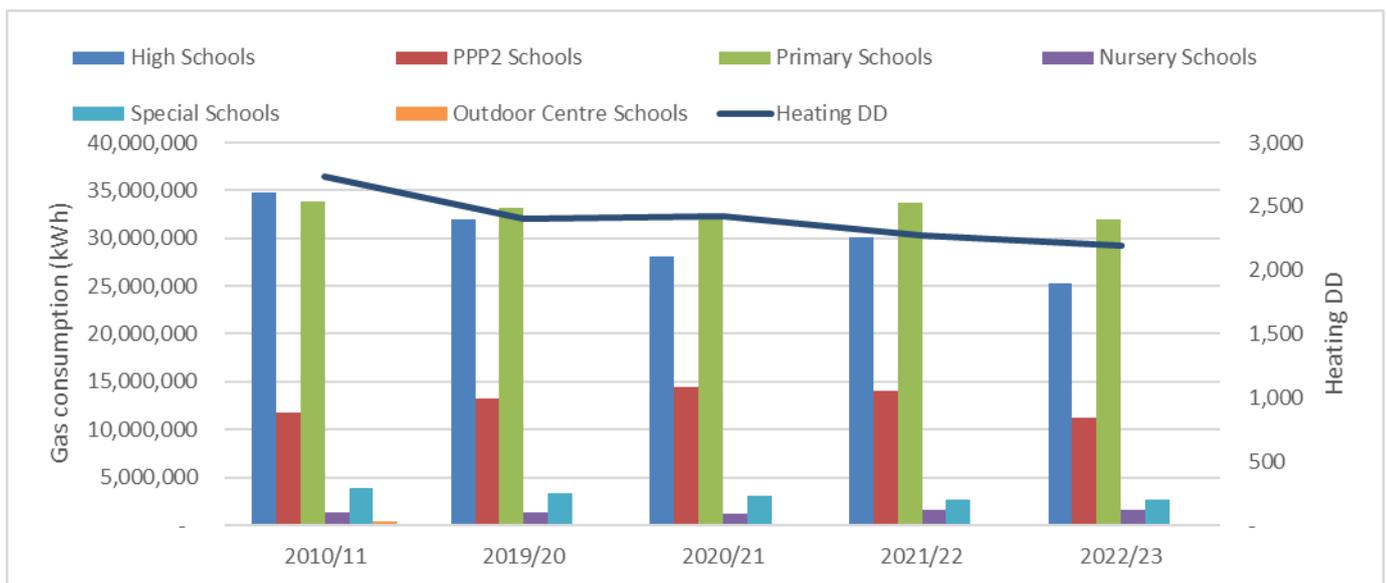


Graph 4: 2021/2022 and 2022/2023 Solar Photovoltaic Electricity Consumption on Educational Properties against 2018/2019 and 2019/2020



- 4.5 Graph 3 compares 2021/2022 and 2022/2023 grid electricity consumption against both the 2010/2011 baseline and 2019/2020 and 2020/2021 consumption. There has been a reduction from 2020/2021 to 2022/2023 in most sections, including Primary Schools where there has been an increase in the estate and a move to electrify heat in these new buildings, and in High School there has been an issue with the maintenance of the Combine Heat and Power units that limited the electricity generated on site to around a third of the expended. The new buildings in the estate use less electricity due to being energy efficient compared to the properties they are replacing. The High School estate increase in electricity consumption is due to new properties being added to the estate but also because there has been issue with the maintenance of the Combine Heat and Power units that limited the electricity generated to around a third of the energy expended. This has seen an increase of electricity imported from the grid of around 1,100,000 kWh.
- 4.6 Graph 4 shows the increase of the Solar Photovoltaic generation on educational properties across the city. There has been an increase in Solar PV generation across all sections.

Graph 5: 2010/2011 against 2019/2020, 2020/2021, 2021/2022 and 2022/2023 Gas Consumption correlated against Heating Degree Days



- 4.7 Graph 5 shows there was an increase in gas usage in 2021/2022 compared to 2020/2021, this has primarily been associated to COVID-19 arrangements that were put in place across the educational estate. There has been a reduction in gas consumption across all sections in 2022/2023 compared to 2020/2021 which has been attributed to the electrification of heating systems across the estate, new efficient properties being added to the estate, an updating of property heating/hot water schedules and a reduction in the set point to 19°C. The High School gas consumption reduction is artificial due to the issue with the maintenance of the Combine Heat and Power units, if these units had operated as expected there would have been an additional gas consumption of around 2,500,000 kWh.

- 4.8 There has been an overall reduction in the demand for energy across the learning estate over 2021/2022 and 2022/2023. However, in order to meet the Council emissions reductions target, more work is required to reduce the demand further.

Operational Update

- 4.9 The Energy and Sustainability Team was re-accredited ISO 50001 for its Energy Management System. A reaccreditation audit provided an opportunity to have external experts review the steps to make sure that the Council's approach is in line with best practice guidelines and also with the strategic priorities set out in the Council's Business Plan.
- 4.10 ISO50001 continues to form the baseline for energy management systems and provides the framework through which objectives are set and performance reviewed. The updated [Energy Management Policy for Operational Buildings](#) (presented to the Policy and Sustainability Committee in early 2023) updated the Council's aims to minimise, monitor and promote effective use of energy.
- 4.11 A standardised temperature set point of 19°C across the whole of the council estate (excluding Special Schools and Residential Properties) was agreed by the Corporate Leadership Team on 7 September 2022.
- 4.12 An audit of the building energy management schedule of all educational properties took place in November 2022 to ensure that the properties were being heated, ventilated and provided with hot water when required. The required changes to the Set Point and any schedule changes were instructed to the controls contactor in December 2022.
- 4.13 In the Council budget approved in February 2023 there is a commitment to look at reducing the standardised set point from 19°C to 18°C.

Strategic Update

- 4.14 As reported previously, the Council has set a default requirement to deliver new build properties to Certified Passivhaus Standard. This will ensure that schools are designed to a high level of energy efficiency. The Passivhaus approach also accommodates the addition of low carbon heating plant which will ensure the Passivhaus schools support net zero targets. The first Passivhaus Educational Building will be delivered in August 2023 at Sciennes Primary School, with further schools due in the next couple of years (including the new Maybury Primary School and the new Currie High School which are both due for completion in 2024).
- 4.15 In [August 2022](#), Policy and Sustainability Committee approved the initiation of the EnerPHit Tranche 1 Programme. The programme includes an investment of £60.85m, which is included in the Council's [Sustainable Capital Budget Strategy 2022-2032](#), and support of up to £10m via the Scottish Government's [Green Growth Accelerator](#). The programme focuses on energy retrofit whilst drawing on the principles of EnerPHit. Unlike the Passivhaus standard for new build, where a commitment can be given to achieving certification, the approach to retrofit is more nuanced, and prioritises taking an informed approach to energy retrofit, balancing best value with thermal and low carbon improvements. This investment places the

Council at the forefront of deep energy retrofit and will act as a pathfinder and exemplar for future Council operational buildings. Two projects, Brunstane Primary School and Liberton Nursery School are in design, with plans for retrofit work to start in 2024.

5. Next Steps

- 5.1 Energy consumption in the learning estate will continue to be monitored.
- 5.2 Later in 2023, an external audit on the ISO50001 Energy Management System will be carried out. The system is subject to annual compliance audits to check that it is being updated in line with best practice guides and also that it is being followed.

6. Financial impact

- 6.1 Financial efficiencies remain a clear driver for energy management and investment in energy efficiency projects. The significant utility price increases in 2021/2022, 2022/2023 and going forward bring into focus the importance of prudent management of energy as well as long-term strategies to reduce demand in the learning estate which include the adoption of Passivhaus (detailed in 4.10).
- 6.2 Despite the increases, natural gas remains a cheap source of heat when compared to electricity. Current strategies for decarbonising heat in the learning estate focus on both demand reduction and electrification of heating plant. The use of heat pumps can deliver an efficiency gain, returning more heat than the electricity used to drive the system, however, in many cases the cost per unit heat is still higher than that from gas fired plant.

7. Stakeholder/Community Impact

- 7.1 The Energy and Sustainability Team works closely with colleagues in both Facilities Management and across the wider Council on energy and carbon reduction 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 The Energy and Sustainability Team will continue to engage with FM and Education to run awareness campaigns that focus on Energy Awareness. Currently these campaigns run just before Holiday Periods to remind Staff, Pupils and other building users to switch off lights, computers, smart screens, etc. when not in operation.

8. Background reading/external references

- 8.1 Energy in Schools – Annual Report - Education, Children and Families Committee, [1 March 2022](#).
- 8.2 Council Emissions Reduction Plan – final version - Policy and Sustainability Committee, [30 November 2021](#).
- 8.3 Energy Management Policy for Operational Buildings - Policy and Sustainability Committee, [17 January 2023](#).
- 8.4 Approved Budget Motion – City of Edinburgh Council, [23 February 2023](#).

9. Appendices

- 9.1 None.