



**Energy Management
Strategy for NI Central
Government**

**Annual Energy
Progress Report -
2019-2020**

March 2020

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1. EXECUTIVE SUMMARY



1. EXECUTIVE SUMMARY

2019-20 has been an exceptionally busy year with the Energy Management Unit taking forward a range of different actions. These actions sit under the main management and cost reduction recommendations of the Central Government Energy Management Strategy and Action Plan to 2030. Below is a summary of progress:

- Total consumption in the 2016-17 base year was 2032 Gwhr. This has reduced marginally (c2%) to 1994 Gwhr in 2018-19
- Total Cost in the 2016-17 base year was £122.6m. This increased by 18% to £144.6m in 2018-19
- Ownership for strategic energy management across central government is delivered by SIB on behalf of DfE
- An Energy Management Unit has been established in SIB to support this delivery
- Annual reporting of data continues but data collection remains a challenge as a result of manually collecting the volume of data involved
- Work on developing a pipeline of investment projects has progressed slower than expected as a result of COVID-19 however work is now underway
- SIB has produced a set of monetary and non-monetary investment criteria to assist with prioritising spend however to date no ring-fenced budget has been allocation for project delivery to support the EMS
- Better buying is progressing well with much greater collaboration between CoPEs and the appointment of an external market adviser to support this work
- The EMU continues to prepare an evidence base for costs associated with building to higher energy standards

At the end of FY 2019-20 covid-19 has resulted in delays to a small number of actions that required physical access to both staff and sites. The impact of these delays has sought to be mitigated through virtual site visits and use of video conferencing. Also the normal use of the sites has been dramatically altered by COVID-19 with many sites either shut or partially shut and thus under-occupied. Inevitably this will have a serious impact on energy usage particularly when considered longitudinally. It will be important for the 2020-21 data collection exercise and Annual Report to consider how to normalise this reduction and to consider if actions need to be revisited as a result of changed working/occupancy patterns caused by COVID-19.

The background features a dark blue architectural wireframe of a building structure. A large, semi-transparent triangle with a yellow-to-white gradient is positioned on the right side of the page, pointing towards the center.

2. INTRODUCTION



2. INTRODUCTION

1. The purpose of this paper is to provide a yearly progress report to the Executive on the implementation of the NI Central Government Energy Management Strategy and Action Plan to 2030. (EMS). SIB is delivering this work on behalf of the Department for the Economy, who is acting as sponsor Department.
2. The EMS commits the Strategic Investment Board through its Energy Management Unit to produce an annual energy report.
3. This is the first annual report covering the period 1 April 2019 – 31 March 2020. The report will be published at www.sibni.org.



Image 1: Formal launch of the EMS – Ormeau Baths (May 2019)

The background features a dark blue architectural wireframe of a building structure. A large, white-to-yellow gradient triangle is positioned on the right side of the page, pointing towards the center.

3. BACKGROUND

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In January 2019, the NICS Board approved the EMS. The EMS was the result of an intense 2-year period of work with over 110 Government bodies (Departments and their ALBs) which covered over 3000 publically occupied assets.

The EMS offers the opportunity to provide leadership on energy efficiency, drive downward pressure on costs and improve decarbonisation efforts for NI Central Government. The EMS has two key strategic objectives:

- To establish effective energy management processes that unlock value
- To reduce net energy consumption by 30% by 2030 across Government (from a 2016/17 baseline).

This strategy is primarily a cost saving one and the 30% energy consumption reduction target was selected to ensure that Government does not spend any more on energy in 2030 than it does today. This target maximises the opportunity to offset expected price increases and the risk posed by energy market volatility.

The Strategy¹ was formally launched in May 2019.



Image 2: Formal launch of the EMS – Ormeau Baths (May 2019)

¹ <https://sibni.org/project/energy-management-strategy-and-action-plan-to-2030/>



4. UPDATE ON ACTIONS



4. UPDATE ON ACTIONS

The EMS proposes a series of recommendations and corresponding time bound actions. These actions were categorised and time bound to highlight the magnitude of change required to deliver them. Progress against these recommendations and actions is presented below:

	Recommendation	Actions	Action Status
1.	Ensure that ownership for strategic energy management across the estate is aligned with wider energy policy responsibilities	1.1 By the end of 2018/19 DfE and DoF should agree arrangements for the ownership and oversight of energy management in Government.	<u>Complete</u> DfE is the sponsor Department for this work and has provided funding for 2 years (with review after Year 1). Governance and oversight is through a DfE chaired Programme Board, of which DoF is a member – ToR agreed.
		1.2 By the end of 2024/25 DfE to undertake a midterm review	<u>Future Action</u>
		1.3 In 2019/20 commence an energy behavioural change campaign across NI Central Government	<u>Complete</u> A behaviour change working group has been established made up of officials from SIB, DoF, DfE and DAERA. A behavioural change specialist was appointed Feb 20 and has produced a wide ranging literature review. Behaviour change pilots that were due to commence early in 2020-21 have been delayed as a result of COVID-19. These are still under consideration however it is possible that they will be delayed beyond FY 2020-21.
		1.4 Legislate for mandatory responsibility if	<u>Not Necessary at this stage</u> Whilst legislative responsibility for the promotion of energy efficiency in public sector buildings is the statutory duty of DoF in reality since



		necessary and when appropriate.	the adoption of the EMS this is now largely delivered by the Energy Management Unit within SIB sponsored by DfE.
2.	Adopt a net energy consumption reduction target of 30% by 2030	2.1 By the end of 2018/19 agree to implement an energy consumption reduction target of 30% by 2030 against a 2016/17 baseline of 1867 GWh, reviewed annually.	<u>Complete</u> The January 2019 NICS Board approved the draft EMS which contained a 30% consumption reduction target.
		2.2 Introduce legislation for a mandatory energy consumption reduction target if necessary and when appropriate.	<u>Not Necessary at this stage</u> The 30% target has been adopted across NI Central Government and progress against it is being reported annually.
3.	Establish an Energy Management Unit (EMU) to help Departments develop potential energy-saving opportunities, and maximise energy efficiency skills and measures across Government	3.1 Continue the established Energy Management Forum for information sharing, collaborative working and skills/capacity building to sustain momentum for energy efficiency.	<u>Ongoing</u> The cross Government Energy Management Forum that was established for the development of the EMS met in October 19 to continue to share information, collaborate on skills and learning and to sustain momentum. This has created an in-house energy network which didn't exist prior. A meeting was scheduled for April 2020 but had to be postponed due to COVID-19 and will be rescheduled to later in 2020. An updated ToR for this group was agreed.
		3.2 By the end of 2018/2019 DfE and DoF to agree with SIB the roles, responsibilities and resourcing of an EMU.	<u>Complete</u> An Energy Management Unit within SIB has been established and in 2019-20 was staffed by 3 FTEs (Head of the EMU, a Project Manager and an Energy Technical Specialist). Additional data analytics resource and procurement expertise is provided via SIB associates.



		<p>3.3 By the end of 2019/20 an EMU will establish project support requirements with Departments, and work with stakeholders to bring forward immediate behavioural change, through low and no-cost measures, where possible.</p>	<p><u>Complete</u></p> <p>This has been included as part of the behavioural change work</p>
<p>4.</p>	<p>Mandate annual reporting of energy consumption against a 30% reduction target to the NICS Board and/or NI Executive</p>	<p>4.1 From April 2019 Government bodies will be responsible for collecting energy consumption data annually at building/facility level, including across all their ALBs to improve and sustain monitoring, targeting and reporting across Government, and should utilise existing departmental Asset Management Plans to present key energy data and ensure alignment with operational investment initiatives.</p>	<p><u>Ongoing</u></p> <p>SIB Data analysts have developed a bespoke web-based energy reporting tool (supported by the energy data) which allows all NI Central Government energy staff to view various building attributes (floor area, energy consumption, building use/occupier etc.) from individual building level right up to aggregated universal energy data together with reporting functionality. It allows users to compare their asset with other similar assets in their own Department/ALB as well as the wider NICS on an asset and longitudinal basis. Access to the tool has been provided to all Departments and ALBs and they are using it to record their energy consumption.</p> <p>Three years of energy consumption data (2016/17, 2017/18 and 2018/19) is now available.</p> <p>SIB is a member of the Asset Management Plan Working Group (AMPWG) and provides advice to that group on how best to display energy data in Departmental AMPs.</p>



		<p>4.2 In 2019/20 the EMU will scope and develop a business case for the roll-out of automatic metering and analytics capabilities initially across the high energy users in the NI Central Government Estate.</p>	<p><u>Complete</u></p> <p>A two strand approach has been approved for this action by the Programme Board.</p> <p>Strand 1 is the development of a business case for the replacement of non-half hourly electricity utility meters i.e. NIE Networks meters that are manually read: This has been completed and DfE economist has concluded it delivers VFM. It is proposed that DfE Minister/Perm Sect will write to other Departments asking them to implement this across their own estates.</p> <p>Strand 2 is the development of a business case for automatic metering and analytics capability: This has been drafted and is being internally reviewed at present. DfE economist has concluded this delivers VFM</p>
		<p>4.3The EMU will produce an Annual Energy Report to provide the NICS Board and/or the Executive with a means of tracking progress and assessing performance.</p>	<p><u>Complete</u></p> <p>This first annual energy report has been completed and provided to DfE as sponsor Department.</p>
		<p>4.4 Prior to the closure of the CRC in 2019, DfE and DAERA should agree arrangements to co-ordinate and publish the annual collection of all NI Central Government large users' energy data, including mandatory emissions recording and reporting, in the same way DfE plans to do for the private sector.</p>	<p><u>Complete</u></p> <p>DAERA Environmental Policy Group has advised that SIB EMU should provide the energy and carbon emissions data for NI Central Government to the DAERA statisticians who co-ordinate the published Greenhouse Gas emissions inventory.</p>



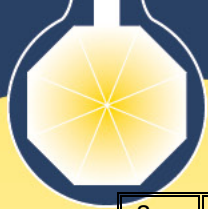
5.	Develop a pipeline of energy reduction projects	5.1 During 2019/20 the EMU will undertake co-ordination of the development of energy investment opportunities across Government and produce information of a quality suitable for business case preparation to inform future budget planning.	<p><u>Delayed</u></p> <p>In order to identify energy investment opportunities, SIB has commissioned comprehensive energy surveys and associated management and investment recommendation reports across 7 schools and 4 court service properties. The survey work commissioned in Q4 FY 2019-20 was due to be complete by year. The survey conclusions and associated reports would form the basis of future business cases in 2020-21.</p> <p>However access to the properties has not been possible in light of COVID-19 and this work has therefore been delayed. A further contract commencement meeting is scheduled for early August with a view to commencing surveys immediately.</p>
6.	Create an Energy Invest to Save fund	6.1 By the end of 2019/20 DoF and EMU agree to set investment criteria and benefits appropriate for an Energy Invest to Save approach to funding across Government.	<p><u>Complete</u></p> <p>SIB commissioned a piece of work to develop appropriate investment criteria to support the delivery of the EMS.</p> <p>This completed in March 2020 and is being reviewed by DoF Supply presently, with a view to having this agreed prior to tabling any business cases that require DoF approval.</p>
		6.2 By the end of 2021/22 the EMU, along with COPEs, will coordinate a review to develop potential energy efficiency frameworks and energy performance contracting opportunities.	<p><u>Ongoing</u></p> <p>SIB continues to work with partners to explore how we can access more innovative funding models such as Energy Performance Contracts. The adoption of IFRS 16 (Leases) from April 2020 has the potential to impact this however, working with industry and internal support, we hope to be able to recommend new contracting</p>



			<p>models consistent with IRFS 16 in due course..</p>
		<p>6.3 By the end of 2022/23 the EMU shall examine the potential for renewable generation and storage across the Government estate.</p>	<p><u>Future Action</u></p> <p>This has not been commenced formally.</p> <p>SIB continues to support ALBs who wish to initiate pilot project in this area.</p>
		<p>6.4 By the end of 2019/20 the EMU will work with DoF to agree the nature and timing of an “Energy Invest to Save” Fund.</p>	<p><u>Ongoing</u></p> <p>Discussions with DoF are ongoing and SIB are currently exploring the use of “transformation capital” with governance arrangements similar to the TEO Urban Villages programme.</p>
<p>7.</p>	<p>Develop better energy buying</p>	<p>7.1 By the end of 2019/20 the EMU will improve collaboration between COPEs and Departments focussing on the pre-procurement phase.</p>	<p><u>Complete</u></p> <p>There has been significant progress and a change of mindset since the adoption of the EMS in how Central Government buys energy. SIB supported CPD who recently put in place a collaborative arrangement for the provision of external expert energy market advisory services to support CoPEs in terms of pre-competition services, contract management, bill validation and a range of other market advisory services.</p> <p>This has resulted in a more collaborative approach during the recent procurement of metered and unmetered electricity, resulting in the procurement of 100% green electricity and with analysis indicating the potential for very</p>



			<p>significant financial savings (£41m over 2 year contract period). The majority of these savings are derived from the new contracting strategy and not underlying wholesale price reductions.</p> <p>The same approach will be taken in respect of the gas procurement for NI Central Government. This procurement exercise is due to commence in August 2020.</p>
		<p>7.2 By the end of 2020/21 the EMU, working with COPEs and Departments shall facilitate a risk review of buying strategies to include consideration of renewable energy procurement across the Government estate</p>	<p><u>Ongoing</u></p> <p>SIB appointed an Associate Adviser (procurement specialist) in March 2020 to look at risk appetite, local content requirements, requirement for increased procurement of renewable energy (for electricity and heat) and to drive greater collaboration between CoPEs and structural/governance arrangements for energy procurement and ongoing management.</p>
		<p>7.3 By the end of 2019/20 the EMU shall facilitate access to specialist market intelligence and seek to establish an Energy Buyers Group.</p>	<p><u>Delayed</u></p> <p>SIB is issuing a tender in April 20 for the procurement of an energy market adviser that can provide specialist market intelligence advice to Departments and COPEs at no cost to them. The delay was caused due to SIB staff working on the new electricity contracts early in 2020 and due to an extended tender response time caused by COVID-19. The contract was awarded in July 2020 for 2 years with the option to extend by a further 2 years.</p> <p>Meetings with Energy Buyers have occurred on an ad-hoc basis during 2019/20 as required.</p>



8.	Work in collaboration with relevant partners to ensure building standards contribute to the 30% energy consumption reduction target	8.1 By the end of 2019/20 COPEs should include operations and facilities management staff at pre business case stage to ensure energy reduction considerations are embedded into the design upfront.	<u>Delayed</u> This will be instigated once the evidence base for low energy non-domestic buildings study has been completed.
		8.2 By 2021/22 the EMU will in collaboration with COPEs and Departments, undertake a review of energy specifications, standards and guidance in use across Government essential to support and sustain the delivery of the 30% energy consumption reduction by 2030.	<u>Ongoing</u> In March 2020 SIB commissioned a piece of work that will provide an evidence base for low energy non-domestic buildings in NI. In particular this work will consider the impacts on capital and whole-life costs from building exemplar low energy buildings in NI with NI supply chain and contractors. An initial long-list of buildings was reviewed and 5 short-listed buildings agreed. The contractor intends to commence virtual site visits in August 2020. SIB are collaborating with Scottish Futures Trust on this work who are in the process of concluding a very similar exercise. Once complete, the findings will inform discussions with CPD in relation to specifications, standards and guidance for new buildings including presenting findings to the Procurement Board.

What does success look like?
A significant reduction in energy consumption will:

		
save money	mitigate risk and uncertainty	help deliver PfG outcomes.

The background features a dark blue wireframe grid pattern, resembling a 3D architectural or technical drawing, overlaid on a yellow-to-white gradient that transitions from the top right towards the center.

5. ENERGY DATA UPDATE



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A key element of the Energy Management Strategy for NI Central Government is ongoing data collection and analysis. The 30% energy consumption reduction target by 2030 that has been adopted across NI Central Government was based on a 16/17 energy consumption dataset and was based on the mean energy consumption for each building use type using targeting and forecasting.

The richness of the data collected has allowed us to build a modelling tool (complete with a user interface) that means that disaggregation is possible to individual building level and helps to prioritise poorly performing buildings and high energy users by building type and use. The collected data has highlighted the significant diversity across building use groups.

The methodology used to set the target accounts for the variability in building use type by setting dynamic targets according to the mean energy consumption for each building use type. This allows poor practice, typical practice and best practice for each building use group to be identified and compared within their group. Integral to this methodology is the use of annual reviews of progress against the 2030 target.

CURRENT POSITION – ENERGY CONSUMPTION DATA

Data collection has now been ongoing for 3 years and we have a robust, validated and verified data set that can now be statistically analysed to derive trends and patterns. The collected consumption data has been validated against supplier data (primarily electricity and gas supplier data) to further improve accuracy and reliability, and where possible it was collected directly from suppliers. This process has added an increased confidence level to the data that ensures that any spurious readings could be quickly identified, investigated and rectified.

With a three year longitudinal dataset now available more in-depth statistical validation has now been possible which has led to a more accurate representation of the 2016/17 baseline figure. Also by being able to compare multiple years against each other, energy managers at site level have revalidated earlier responses (in particular 2016/17 as base year). This has resulted in an increase in the original 16/17 baseline date from 1867GWhrs to 2031GWhrs. The fuel split for NI Central Government in 18/19 is set out below in Figure 1:



2018/19 Fuel Split across NI Central Government

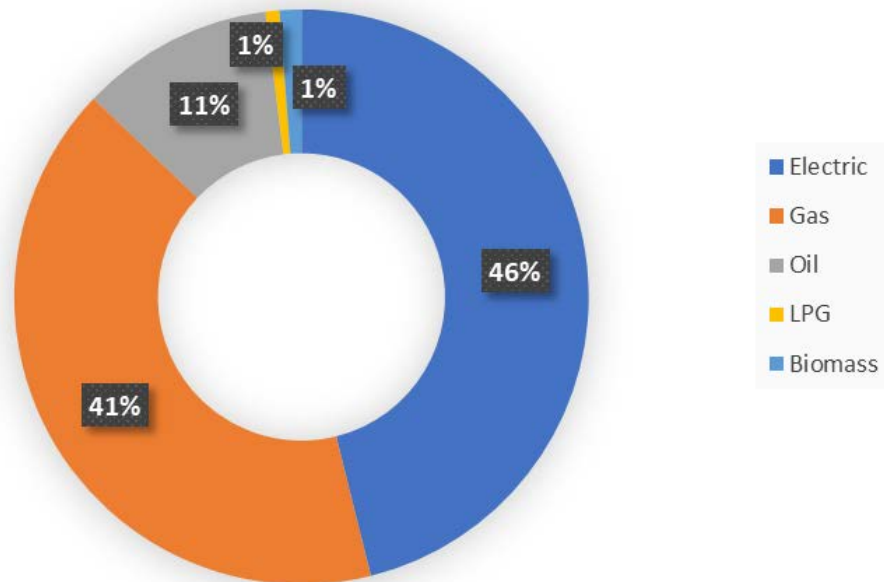


Figure 1: Energy fuel split percentage (kwhr)

EMERGING FINDINGS

The statistical analysis of 3 years of data has identified:

- A small increase to the original reported baseline consumption.
- A reduction of 1.9% in overall energy consumption from the adjusted 2016/17 figure compared to 2018/19 data.
- A 9.9% reduction in the use of oil across NI Central Government (from 241GWhr to 217GWhr)
- An increase of 4% in the use of LPG across NI Central Government (from 14.4GWhr to 15.0GWhr).
- A reduction of 22% in kgCO₂e across NI Central Government.

It is important to note that the energy consumption data that has been collected has not been adjusted for weather or occupancy and the trends identified are based on analysis of raw energy consumption data.



DEPARTMENTAL POSITIONS

Indicative comparisons of raw consumption data by Department indicate that the biggest reduction in consumption of 9% has been achieved by DOJ. There is anecdotal evidence to suggest that PSNI, as one of the few organisations identified at the outset with a robust energy strategy in place and an outsourced facilities management contract, is now seeing the out workings of this strategy.

DfC, DE, DFI and DAERA have also seen reductions in total energy consumption while DOH, TEO, DfE and DoF have seen small increases in total energy consumption. Further validation of the DoF owned and occupied buildings is required to ensure that Departmental allocations are correctly allocated. The graph below in Figure 2 sets out the indicative position at this point, but may be subject to review following further validation:

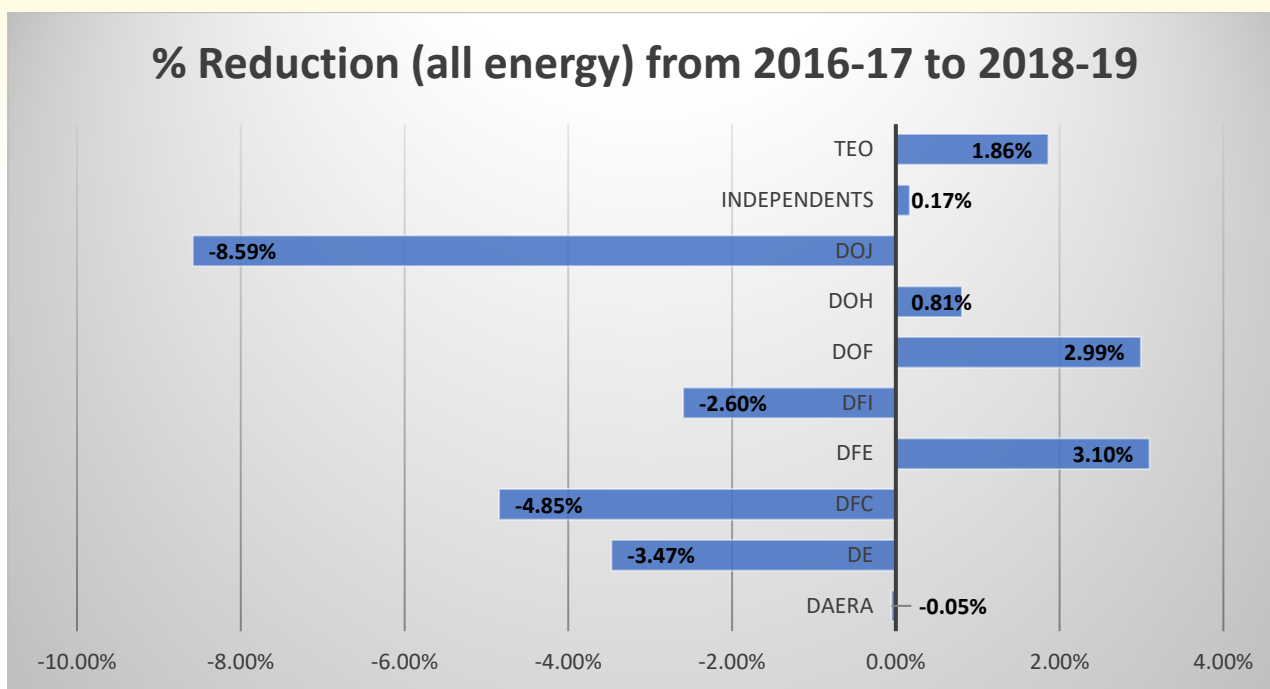


Figure 2: Percentage change in departmental energy use

BENCHMARKING

A more accurate representation of comparative Departmental performance is to analyse the energy density in kWh/m² for each Department. This work is currently ongoing, and it is



important to note that the accuracy of this measurement is greatly impacted by the accuracy of the floor area provided by Departments.

This is a particular issue with respect to the education estate and consideration of an alternative measure such as kWh/pupil may be a better indicator to use for that estate. In addition, this estate has considerable challenges in relation to the provision of energy consumption data from non-Education Authority controlled schools and this has impacted each year's data collection. Going forward these school sectors (largely voluntary grammar schools and grant maintained integrated schools) may have to be removed from the analysis due to uncertainty about their data returns.

CARBON EMISSIONS

During the period over which data has been collected (2016/17 – 2018/19) decarbonisation of the electricity grid has been proceeding at pace.

In line with the more accurate representation of the 2016/17 baseline figure for all fuels, the original CO₂e estimates for NI Central Government have also been further refined. Applying the UK Government's greenhouse gas reporting factors gives a reduction in kg of CO₂e of approximately 22% from 2016/17 – 2018/19.

This is largely attributable to the decarbonisation of electricity over the time period due to higher levels of renewable electricity generation as well as a movement away from oil based heating.

ENERGY COST UPDATE

Energy Costs have been collected over the 3 year period 2016/17 -2018/19, although some organisations were unable to provide robust figures for their energy costs (See Figure 3 below).

If the remaining costs can be provided and are as expected, it appears that there is an increase in the overall cost of energy across this 3 year period of approximately 18%. This would be in line with the increase in fuel costs that was seen globally during this period² as well as

² OFGEM Historic gas trends <https://www.ofgem.gov.uk/data-portal/all-charts/policy-area/gas-wholesale-markets>



significant increases in use of system charges and others non-fuels costs. Organisations that followed a market driven approach to buying their energy during this period saw increases in costs accordingly. This trend is further illustrated in Figure 4 below.

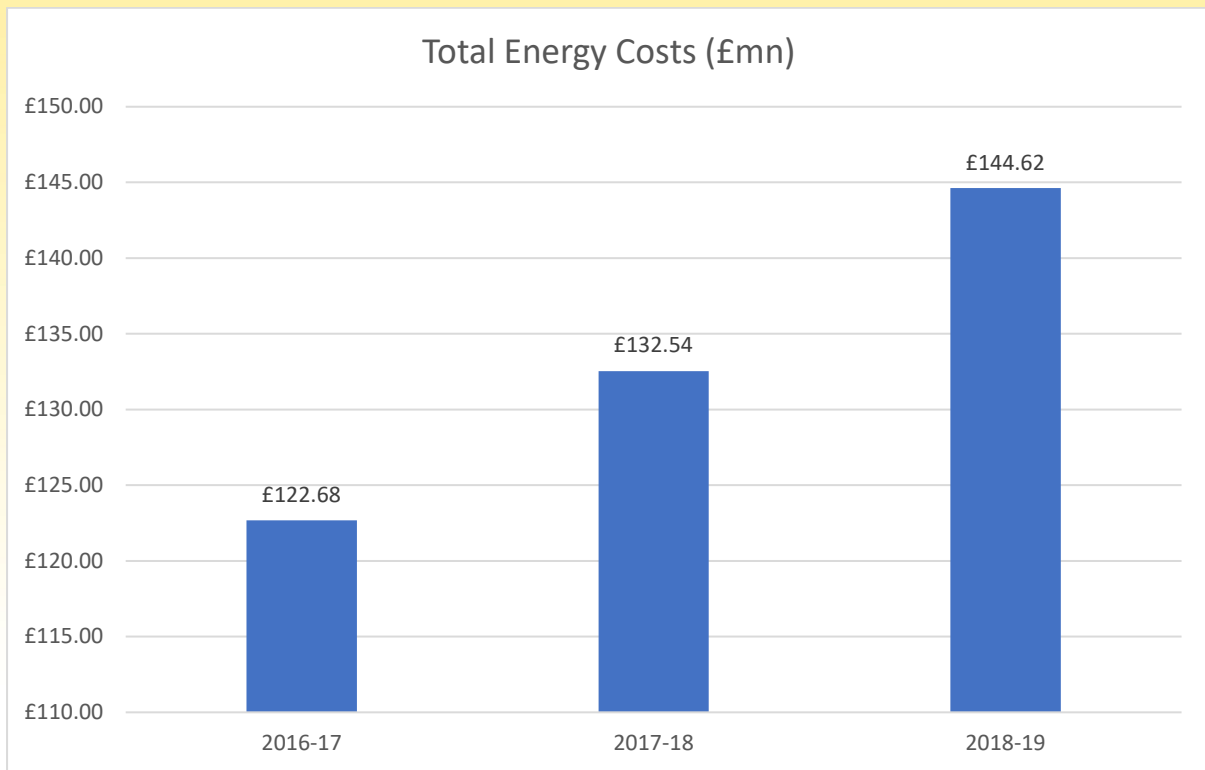


Figure 3: Total Energy Costs (Note Vertical Axis does not start at zero)

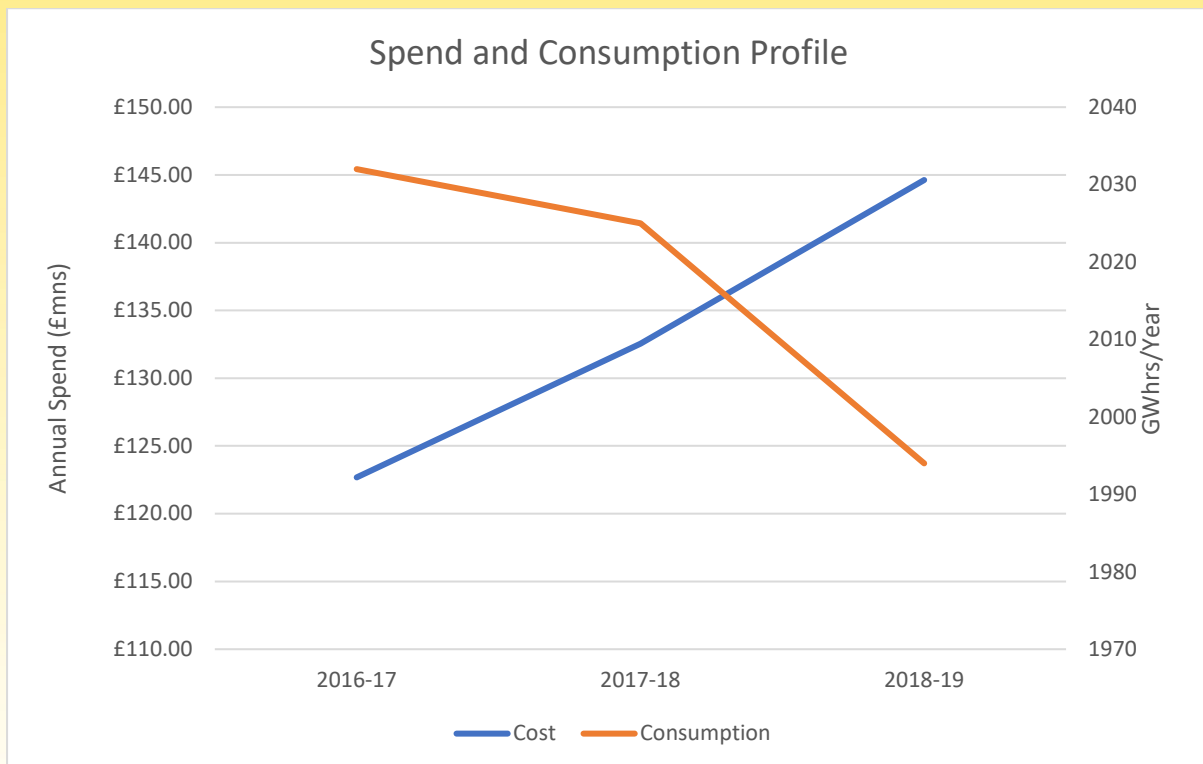


Figure 4: Total Energy Cost and Consumption (Note Vertical Axis does not start at zero)

COST BY FUEL TYPE AND ORGANISATION

From the cost data collected from all procurement organisations it can be seen that electricity (both metered and unmetered) accounts for the vast majority of energy costs at approximately 68% each year. This is followed by natural gas at approximately 22% and then oil at 10%.

As detailed above in the Action Update section, SIB and CPD recently awarded 2 significant contracts. The first was to procure a specialist energy advisor who, along with CPD, assisted with the procurement of the new electricity contracts which will see electricity procurement more actively managed for the coming 2 years.

A similar procurement exercise will also be carried out when the natural gas contracts expire in 2021.

By actively managing energy procurement the intention is ultimately to reduce costs incurred by central government.



2016/2017 Cost by Fuel Type	
	Cost (£ Million)
Biomass	0.92
Electricity	71.86
Gas	29.29
LPG	0.08
Oil	10.97
Unmetered electricity	9.55
Grand Total	122.68

2017/2018 Cost by Fuel Type	
	Cost (£ Million)
Biomass	0.82
Electricity	79.25
Gas	27.43
LPG	0.04
Oil	13.45
Unmetered electricity	11.56
Grand Total	132.54

2018/2019 Cost by Fuel Type	
	Cost (£ Million)
Biomass	0.86
Electricity	86.91
Gas	30.05
LPG	0.57
Oil	14.64
Unmetered electricity	11.60
Grand Total	144.62

In terms of which organisation spends the most on energy it can be seen that BSO has the largest spend at approximately 30% of the total costs. This is followed by CPD at approx. 22% and then EA at 20%.

2016/2017 Cost by Organisation/CoPE	
	Cost (£ Million)
BSO	36.04
CPD	30.92
EA	23.98
NI Water	25.15
PSNI	4.40
Translink	2.19
Grand Total	122.68

2017/2018 Cost by Organisation/CoPE	
	Cost (£ Million)
BSO	39.88
CPD	27.13
EA	28.40
NI Water	28.25
PSNI	6.57
Translink	2.31
Grand Total	132.54

2018/2019 Cost by Organisation/CoPE	
	Cost (£ Million)
BSO	44.47
CPD	28.17
EA	29.37
NI Water	32.62
PSNI	7.26
Translink	2.73
Grand Total	144.62

FUTURE DATA COLLECTION

Going forward it is planned to collect as much energy data as possible directly from energy suppliers. For the 19/20 data collection exercise, which will commence in April/May 2020,



the electricity element of the data collection exercise can largely be collected directly from suppliers meaning that organisations will only have to report their oil, gas, lpg and biomass usage manually. This should speed up the process and lessen the burden on organisations.

From 1 April 2020, the new NI Central Government electricity contract will require the successful supplier to provide CPD and SIB with monthly electricity usage reports, and this can be incorporated into the energy management tool to allow almost complete automation of the data collection of NI Central Government's electricity use from then onwards.

It is hoped that this will also be a requirement of future gas and oil purchasing contracts in the future to allow the collection of these fuels to be automated as well.

EMU continues to collaborate with LPS on their development of the NI Asset Register and with DoF on their concerto system as they plan for new computer systems, to ensure that connectivity with the Energy Management tool can be maintained and that the energy data already collected can be incorporated into future systems.



6. STAFFING REQUIREMENTS



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In 2019-20 there were 3 FTEs in the Energy Management Unit

- Head of the EMU
- Project Manager (seconded from NICS)
- Energy Technical Specialist

Additional data analytics resources and procurement expertise is provided via SIB associates

In April 2020 the EMUs Project Manager returned to the NICS leaving 2 FTEs in the EMU. Plans are progressing to fill this vacancy.