

MEASURING, MONITORING AND ANALYSIS PROCEDURE



**THIS DOCUMENT SUPPORTS THE COUNCIL'S ENERGY POLICY
(ENPOL2013)**

Contents

VERSION CONTROL

This document is reviewed annually to ensure it is accurate and up to date.

No.	Version	Date	Initials	Description
1	1.0	27 August 2013	JF	Approved by Transport & Environment Committee

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1 APPLICATION

This procedure applies to all elected members, employees and contractors of the City of Edinburgh Council (CEC).

The City of Edinburgh Council has put this procedure in place to outline the measuring and monitoring practices relating to energy management within the Council and associated resources which are available. This document has been created to support the Council's energy management policy (ENPOL2013).

2 DRIVERS OF ENERGY USE

The drivers of energy use come from our service provision. The main drivers are as follows

- Corporate Buildings
- Education Estate
- Street and stair lighting

We also have other requirements for energy which are less significant than those listed above but are addressed in our actions to reduce energy consumption and improve efficiency.

3 SIGNIFICANT ENERGY USES

Significant energy uses are the following:

- Gas (for heating);
- Electricity; and
- Gas Oil (for heating – limited sites)

4 MEASURING

The Council's street lighting portfolio is administered by Roads Services and is traded on a passive half hourly basis.

The Technical Support Services team receive information from a number of different sources to enable them to build up a profile of energy use within each property.

Measurement methods used by the Technical Support Services team include:

Direct meter reads from sites/ Systems Link portal

The Council recognises that it is important to ensure that measurement from both personnel and equipment is as accurate as possible. Personnel are provided with training and guidance in order to provide accurate meter readings. A number of sites have the ability to directly enter their meter readings into an online portal for the energy management software (SystemsLink). This information can be used to inform billing and the verification process. All billable meters are licensed by our supplier and approved by Ofgem. Suppliers are required to read and inspect meter(s) at least every two years.

Automatic Meter Reading (AMR)

The roll out of AMRs across the Council's operational estate has improved the accuracy of invoice data for gas and electricity. The Council currently has 203 gas and 343 electricity AMR devices across an estate of around 1000 supplies.

The Council has a policy of installing AMR equipment on electricity supplies where there is a dynamic consumption profile and annual consumption will be greater than 10,000 KWh per annum and 73,200 KWh per annum for gas supplies. AMRs communicate using GSM signals to allow remote reading of consumption data and meter registers.

This results in the elimination of estimated reads with the benefit of more accurate bills. It also allows for more accurate and automatic monitoring and reporting of consumption data (including half hourly consumption profile data) and carbon emissions. This has increasing importance with greater demands for accurate reporting on internal carbon emission reduction targets and also for external reporting.

Energy Bills / Delivery notes for fuel

Accurate billing is vitally important and action has been taken to support this goal through training for staff taking direct readings (as mentioned above) and implementation of AMR. In addition to this, bills are verified based on consumption and financial spend. Sites are also encouraged to notify the Technical Support Services team of errors found in bills so that this can be raised and rectified with the supplier timeously.

Building Energy Management Systems

The Property Management team also collect information through the Building Energy Management Systems (BEMS). BEMS allow for more sophisticated control strategies with remote monitoring and adjustments to ensure that faults and energy waste is identified early and that potential energy savings are maximised. A strategic review of the BEMS is currently underway. This will inform a programme of BEMS upgrade across the estate. This will increase the energy efficiency of buildings and allow for better monitoring.

Street lighting

Supplies to street lighting are un-metered. Energy is charged on a passive half hourly trading profile based on dusk to dawn burning. This method does not use any actual recorded data and instead relies on the calculated sunrise/sunset times. Passive Half Hourly cannot use any data from a Photo Electric Cell Unit (PECU) Array or a Central Management System (CMS). The Council does not currently operate a CMS system for street lighting.

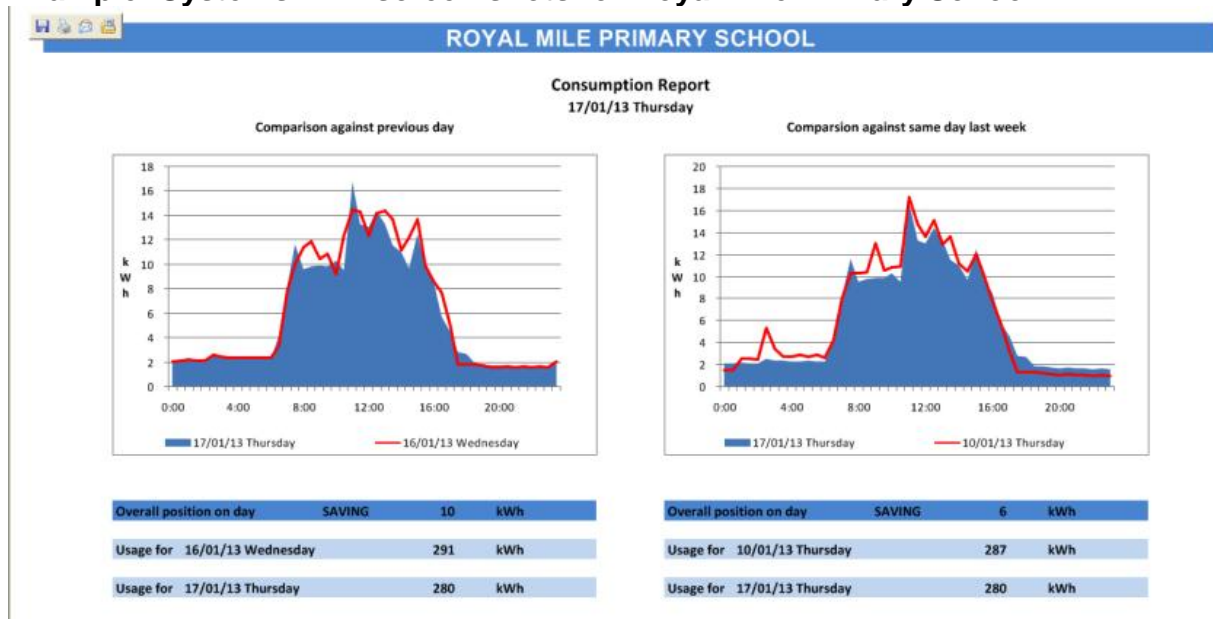
Energy consumed is declared by the Council on a monthly basis based on data contained within "Hilight Horizon" the Street Lighting Asset Management database. This data is updated daily as the inventory (street lighting, illuminated signs and bollards asset) changes.

5 MONITORING

Technical Support Services Team

The Technical Support Services team record consumption data and monitor consumption on Systems Link. The team has recently set up online access to Systems Link’s web reporting system and are rolling out access across the operational estate. The website will be used as a platform from which to engage with and encourage energy users’ awareness of consumption and associated cost. Furthermore, the ability for property users to submit actual meter readings through the system will increase the accuracy of billing and consumption data where AMR installation has not been feasible. Where users agree to submit monthly readings through the system non-AMR, quarterly billed supplies will have the option of moving to monthly billing. Through the web portal, sites will be able to review half hourly profile consumption data to analyse the impact of changes to the operation of the building, to monitor out of hours and peak consumption and to validate efficiency savings through improved housekeeping.

Example: Systems Link screen shots for Royal Mile Primary School



EDINBURGH THE CITY OF EDINBURGH COUNCIL

Powered by SystemLink

Administration
 Site List
 Contact Us
 Log Out

ROYAL MILE PRIMARY SCHOOL
 Data Sets
 Site Reports
 Add New Readings

Data Sets For Site

Site Name: ROYAL MILE PRIMARY SCHOOL
 Site Code: PSC/C&F/ROYAM
 Address: 06 CANONGATE, EDINBURGH, EH8 0BZ

View detailed site information

Edit Table Layout

Type	Meter Serial Number	Custom 3	MPAN/MPRN	Units		
Electricity	K10UP00057	smart meter	1800022289753	kWh		→
Electricity	K10UP08058	smart meter	1800035161812	kWh		→
Electricity	P908845869		1800022289744	kWh		→
Gas	920203		19046705	kWh		→
Gas	7534230		18863205	kWh		→
Gas	707180		18863104	kWh		→
Water	06M273798	Water		Cubic metres		→
Water	12M101958	Water		Cubic Metres		→

As part of the Council's Energy Awareness Campaign it is planned that Systems Link's web reporting system will be used to provide monthly reports across all supplies to key managers. League table reporting will be one mechanism employed to raise awareness and motivate properties to reduce energy use.

Funding has been secured from the Carbon Trust to carry out energy audits on Council buildings and there is an ongoing relationship with the Carbon Trust to develop further support for strategic low carbon advice and support. A rolling programme of audits across the estate is also undertaken by the Technical Support Services team.

CCS team

The CCS team use an Excel based database ('Carbonstat') for recording corporate Council carbon emissions year on year. The CCS team holds the database and is responsible for collating information from other Service Areas across the organisation. The database was reviewed and updated as part of the Carbon Management Revisited programme (2011).

Street lighting team

All street lighting data is contained within the asset management database "Hilight Horizon" which holds a complete inventory of street lighting, illuminated signs and bollards assets. It is not a monitoring system in terms of being "active" (i.e. a Central Management System (CMS)), it simply holds all the data relating to the type of lighting installation.

Consumption (kWh) and CO₂ emissions are monitored on a monthly basis and can be compared annually. Numerical half hourly data and daily demand are also provided.

6 ANALYSIS

In addition to the data produced from the various measuring and monitoring regimes, analysis is conducted on the building energy data to further determine any issues or areas for improvement.

This includes the following activities:

Degree Day analysis;
Operating period analysis (i.e. identifying wastage); and
Comparison between actual and expected usage (including target setting).

Data is also analysed after an energy efficiency project had been implemented to determine the savings that have been made in terms of money, energy and carbon. This information is recorded within the project register (ENPOL_PROJREG) and available for all relevant parties to view.

7 ENERGY PERFORMANCE INDICATORS

The following energy performance indicators (EnPI) have been established in line with the Council's energy policy objectives and targets:

kWh per m²;
kWh per occupant; and
kWh per hour open.

Performance of buildings in terms of these indicators will be included as part of the monthly reports to management.

8 CONTINUOUS IMPROVEMENT

A proposal has been developed by the Technical Support Services team with a number of recommendations that will have positive impacts on energy consumption and its management. These are:

- to set performance targets for building tenures;
- to locate the Building Energy Management System (BMS) operations with the Technical Support Services team;
- the Technical Support Services team develop a replacement strategy for the BMS targeting energy savings, best value and building performance.
- the Technical Support Services develop a performance specification for their BMS to deliver on the BMS strategy including procurement, operation and maintenance of the Council's BMS.

These proposals will be reviewed annually by the Technical Support Services team and following decisions made all relevant procedural documents shall be amended. In order to ensure continual improvement the actions taken within this document shall be reviewed annually with an aim to further support the objectives of the energy policy.