

# ESOS and the wider context – Gary Shanahan - BEIS



# Clean Growth Strategy – our ambition

- The Clean Growth Strategy set an ambition to improve business productivity by enabling businesses to improve energy efficiency by at least 20% by 2030.
- This means that energy use would need to fall by 20% and energy intensity by 45% in 2030 compared to 2015 levels.
- This will deliver:
  - Up to £6bn in cost savings for businesses
  - Carbon savings of up to 22 MtCO<sub>2</sub>e



# Helping businesses with energy use

- Call for Evidence (Jul 2018) sought views on how to deliver the 20% ambition – response published on 13 March 2019
- Set out proposals and approaches to raise building energy efficiency:
  - Strengthening requirements, over time, for new and existing buildings
  - Use of more sustainable technologies
  - Benchmarking building performance
  - Tools to monitor and evaluate building energy use and performance
- But not just about buildings.....

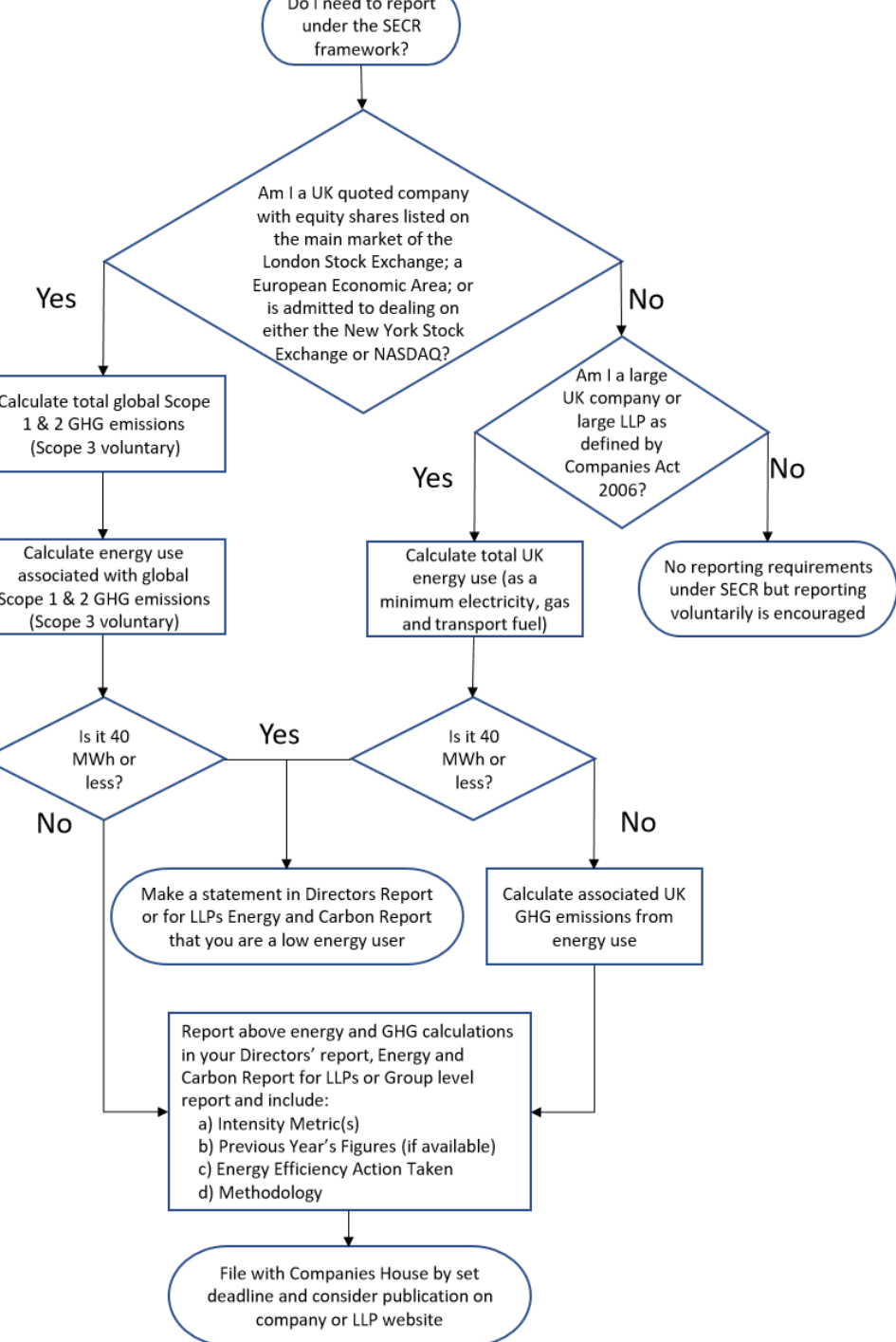
# Policy approach – realising the 20%

1. ESOS
2. Domestic and Non-Domestic Buildings
3. Streamlined Energy and Carbon Reporting
4. Boosting Access for SMEs to Energy Efficiency (BASEE) Competition
5. Call for evidence on an SME energy efficiency scheme
6. Support for Industrial Energy Efficiency (CCAs, IETF)
7. Buildings and Net Zero Cluster Missions

# SECR Framework

- SECR designed to be light touch in line with the UK Government's commitment to simplify the landscape
- Synergies with (unchanged) ESOS requirements for all large undertakings. [Note – large definition is different]
- Create more of a level playing field across UK
- Sits within the existing company law regime
- Builds on existing reporting requirements on MGHG
- Now in force (but CRC isn't dead yet...)





- Different approaches for:
- quoted companies – builds on existing MGHG – and doesn't just apply to large; and
- unquoted/LLPs
- Guidance published on 31 January 2019: <https://www.gov.uk/government/publications/environmental-reporting-guidelines-including-mandatory-greenhouse-gas-emissions-reporting-guidance>



Quoted companies of any size	Large unquoted companies and LLPs
Annual GHG emissions from activities for which the company is responsible including combustion of fuel and operation of any facility; and the annual emissions from the purchase of electricity, heat, steam or cooling by the company for its own use	UK energy use (as a minimum gas, electricity and transport, including UK offshore area)
Underlying global energy use	Associated greenhouse gas emissions
Previous year's figures for energy use and GHG emissions	Previous year's figures for energy use and GHG emissions
At least one intensity ratio	At least one intensity ratio
Energy efficiency action taken	Energy efficiency action taken
Methodology used	Methodology used



<b>Usual reporting year</b>	<b>The first financial year for which the relevant Report must comply with the new requirements under the 2018 Regulations</b>
1 January to 31 December	1 January 2020 to 31 December 2020
1 April to 31 March	1 April 2019 to 31 March 2020





# SECR Audit & Enforcement

## External verification or assurance

There is no requirement in the legislation for independent assurance; however, we would recommend it as best practice.

## Statutory Audit

As part of their overall responsibilities in an audit of financial statements, the auditor is required to state in the auditor's report whether, based on the work undertaken in the course of the audit, the information in the Directors' Report:

- Is consistent with the financial statements;
- Has been prepared in accordance with applicable legal requirements; and
- Contains any material mis-statements.

regulator responsible for audit, corporate reporting and corporate governance.





https://www.gov.uk/government/publications/environmental-reporting-guidelines-including-ma

Environmental reporting guid... x



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Published 12 June 2013

Last updated 29 March 2019 — [see all updates](#)

From: [Department for Environment, Food & Rural Affairs](#) and [Department for Business, Energy & Industrial Strategy](#)

## Documents



### [Environmental reporting guidelines: including Streamlined Energy and Carbon Reporting and greenhouse gas reporting](#)

Ref: PB13944

PDF, 1.88MB, 152 pages

This file may not be suitable for users of assistive technology. [Request an accessible format.](#)



Department for  
Business, Energy  
& Industrial Strategy

# Energy Savings Opportunity Scheme

- ESOS established in 2014 - a mandatory energy assessment scheme for organisations in the UK that meet the qualification criteria.
- Assessments carried out at least every 4 years to identify cost-effective energy saving measures.
- Updated UK Regulations - **The Energy Savings Opportunity Scheme (Amendment) (EU Exit) Regulations 2018**

# Energy Savings Opportunity Scheme

- The Government's guiding principles for implementing ESOS in 2013 to:
- ensure that ESOS provides high quality and well-targeted advice to large enterprises on cost-effective energy efficiency opportunities, driving significant net cost savings;
- ensure a proportionate approach to implementation is taken, minimising the administrative burdens placed on UK businesses;
- ensure ESOS fits with and is complementary to the landscape of existing energy efficiency and climate change policy instruments; and
- ensure our implementation of Article 8 does not disadvantage UK businesses relative to their European competitors.

# ESOS – Phase 1 Update

- Over 7000 Compliance Notifications
- 99.8% Notification Compliance
- 27 Civil Penalties issued – largest £45k

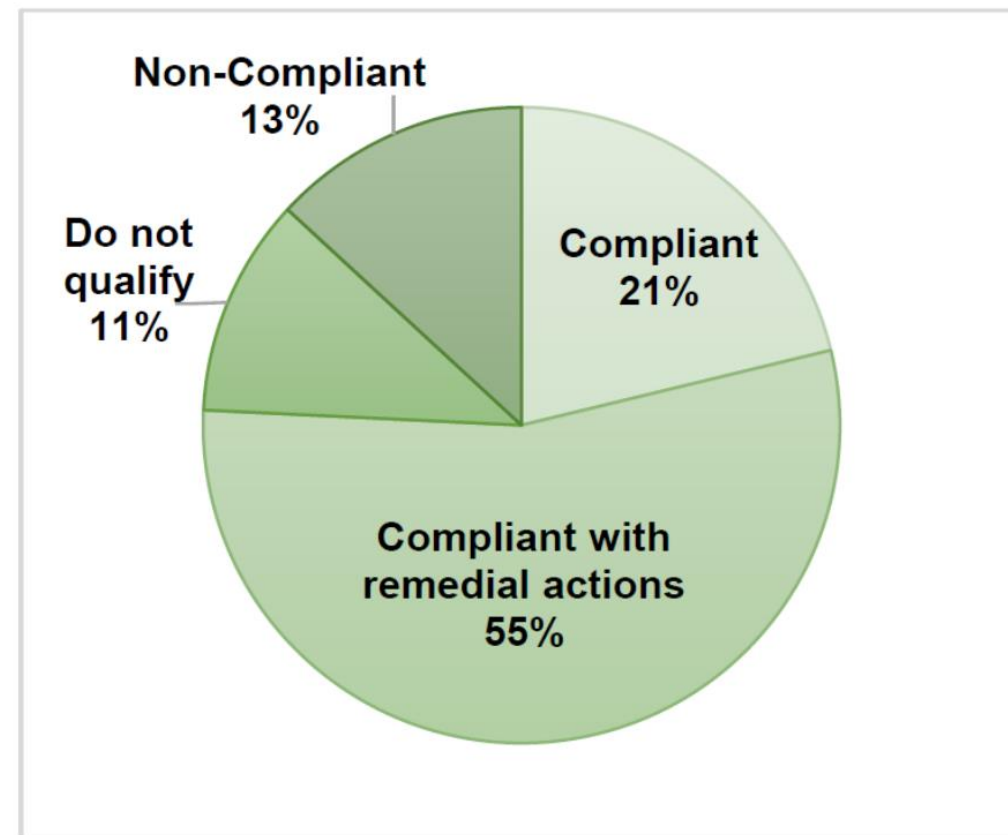


Figure 1. 2017/18 audits by grade.

# Research on Energy Audits and Reporting (including ESOS evaluation)

- This research aims to better understand the effectiveness of energy audits and reporting in driving energy efficiency savings
- Also includes a further evaluation to develop the understanding of the impact of ESOS, following on from the previous interim evaluation (2015-2017)
- Being carried out in 2 phases.

Phase 1 of the Research which started in November 2017 carried out evidence and policy review of energy audits and reporting, through:-

- Literature review of international schemes
- Workshops with SMEs, trade bodies, ESOS organisations and assessors, and public sector organisations
- In-depth interviews with ESOS organisations, EU counterpart organisations, SMEs, assessors and trade bodies

Now completed. - will be disseminated as part of the final evaluation report in summer 2019.



# Phase 2 research, focus on impact of ESOS

Work is now underway on the main evaluation of ESOS and further research on energy audits and reporting.

Due for completion in April, with publication in Summer 2019.

Key research in this Phase includes:

- Telephone survey with 500 organisations in scope of ESOS to better understand:
  - experiences since complying with ESOS;
  - approaches to energy efficiency and energy management;
  - preparations made for the 2nd phase of ESOS;

The survey took place Nov-Dec 2018 and is now completed – many thanks to all who participated

- Case-studies with organisations on the impact of ESOS, including site visits and interviews with a range of relevant stakeholders – These are being carried out by our research contractors. This is a key part of understanding how organisations have responded to ESOS or similar energy efficiency audits etc.
- In-depth telephone interviews with lead assessors and supply chain organisations (Dec – Jan) to better understand their experiences of ESOS and energy audits more broadly

# ESOS – Phase 1 Issues

- Omitted transport consumption, where transport constituted significant proportion of the Total Energy Consumption
- ESOS Energy Audits did not meet minimum criteria stated in Regulations/Guidance
- Lead Assessor and or Board Director Signoff completely missing
- Sampling Approach not representative of Significant Energy Consumption
- Audited the 10% de-minimis instead of the 90% SEC
- Moved Premises between qual. & comp. date so thought didn't need to conduct energy audits





# ESOS in Scotland: Encouraging Implementation of Measures

## National Carbon Reduction Unit

Fiona Graham



# Compliance Checks Approach

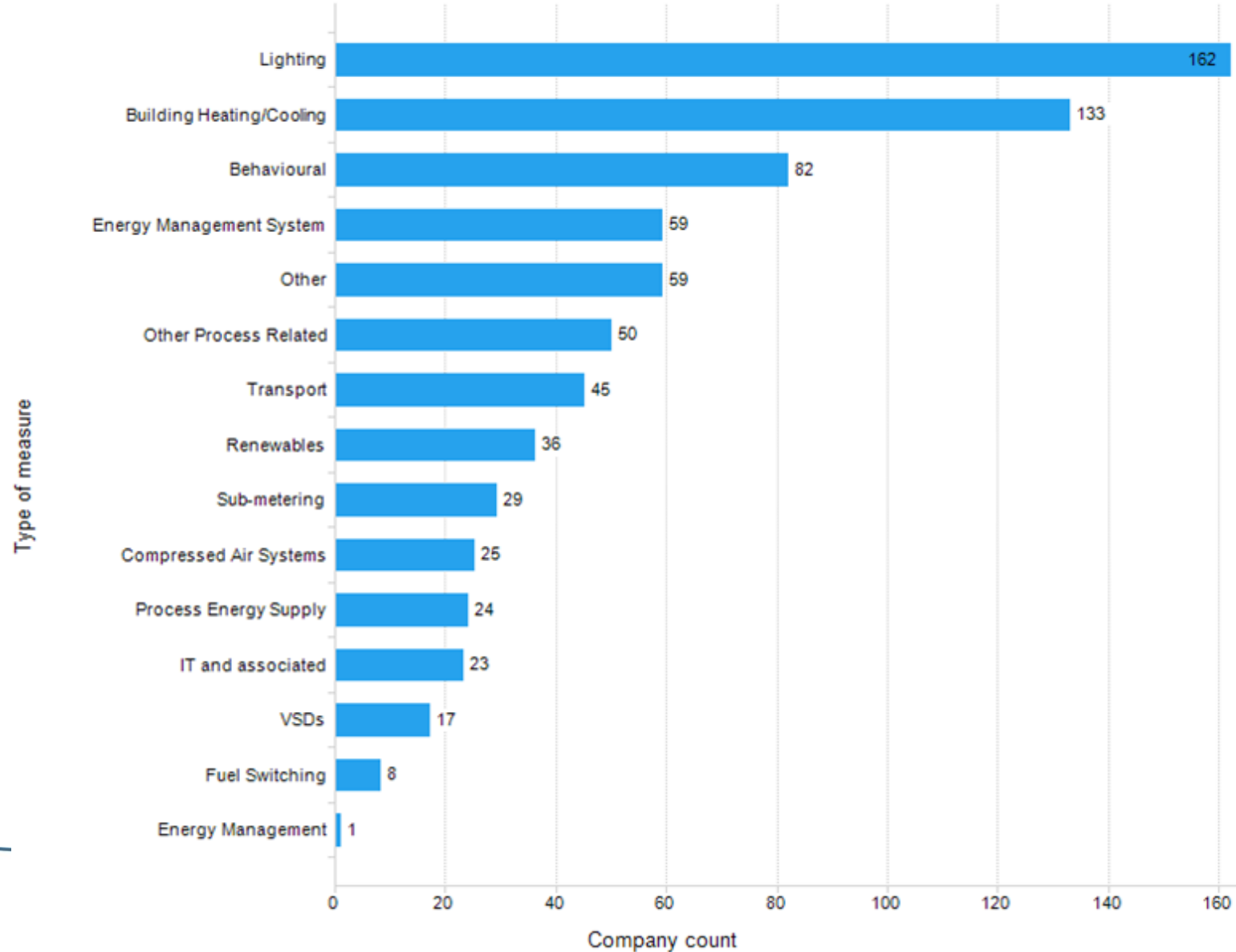
- Compliance exercise requesting data return from 396 companies
- Received 290 returns – Allowed basic compliance checks to be completed on 73% of ESOS population in Scotland
- Small number of full audits carried out; no formal enforcement action taken;

## Example of Questions in Data Return:

Total Energy Consumption	Units	Other units (if applicable)	Total Energy Savings Identified	Units	Other units (if applicable)	Dates which the TEC covers
						e.g 01/01/2014 - 01/01/2015

Description of Energy Saving Measures Identified by your ESOS Audit (Enter each on a separate line - this could be copied & pasted in)	Category	Savings Identified	Unit of savings (Cost/Energy)	Other unit type
	Type_of_Measure			
	Type_of_Measure			
	Type_of_Measure			

# Type of Measures Identified in Companies ESOS Assessments

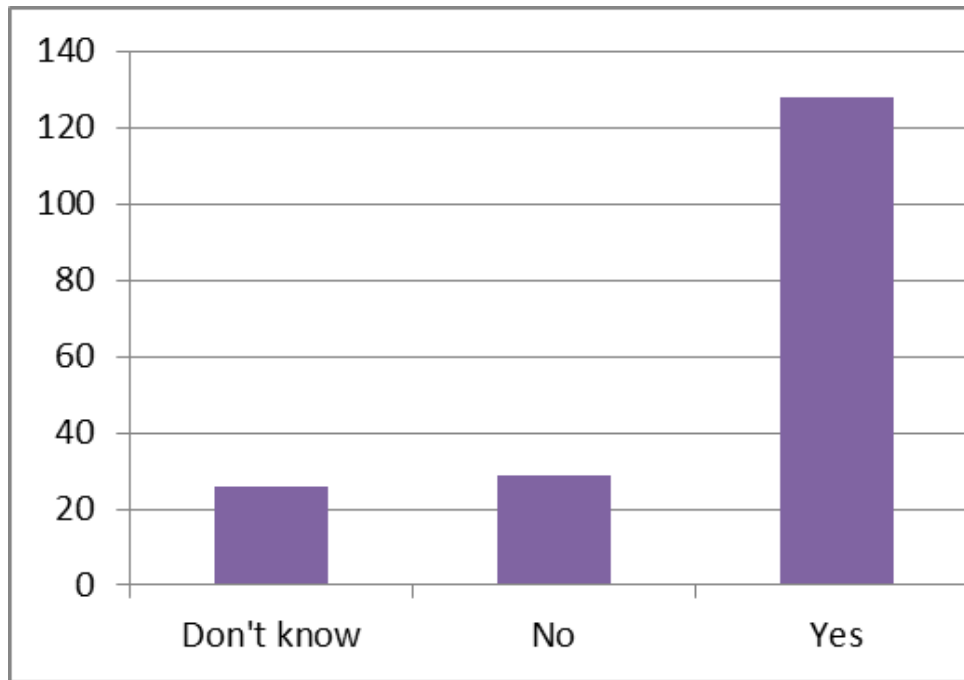


# Going beyond compliance?

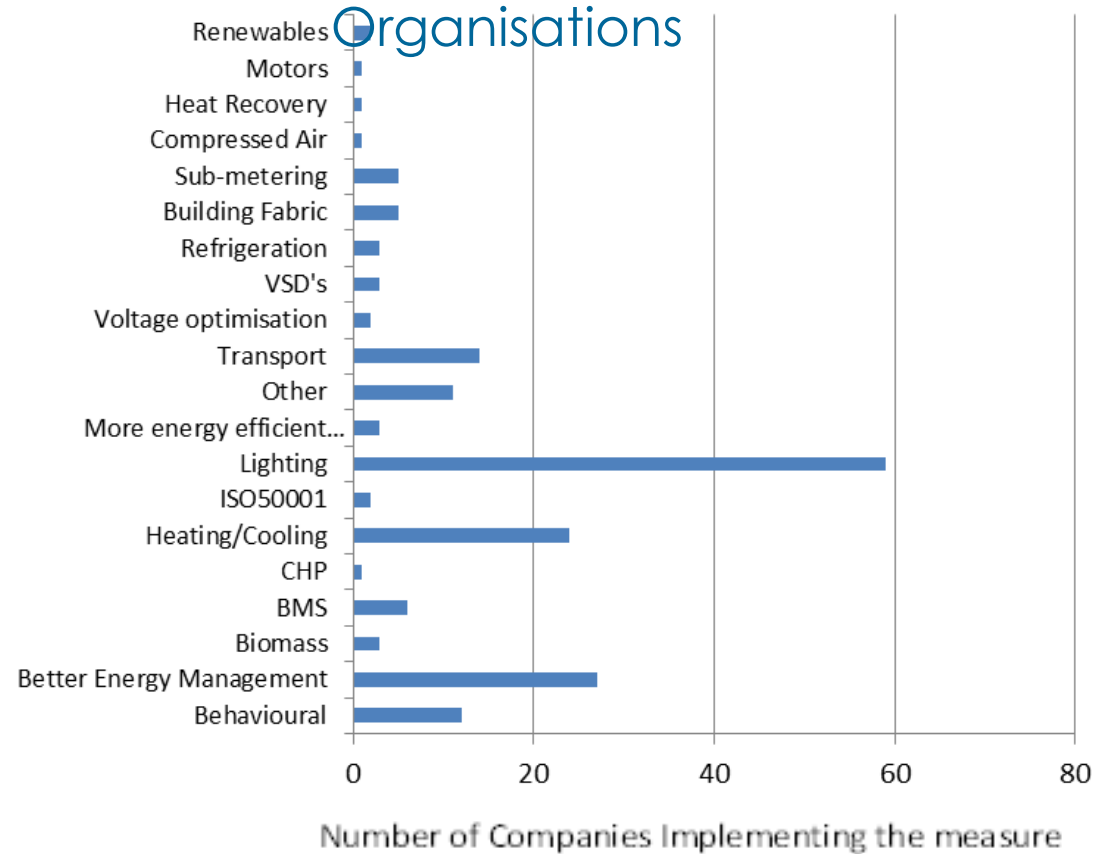
- SEPA wanted to explore how we could assist companies going beyond compliance;
- Working in partnership with other agencies we sent out a voluntary survey to participants in April 2017
- 183 responses (47% response rate)

# Voluntary Survey

127 (69%) advised that they are planning to implement measures from their ESOS assessment

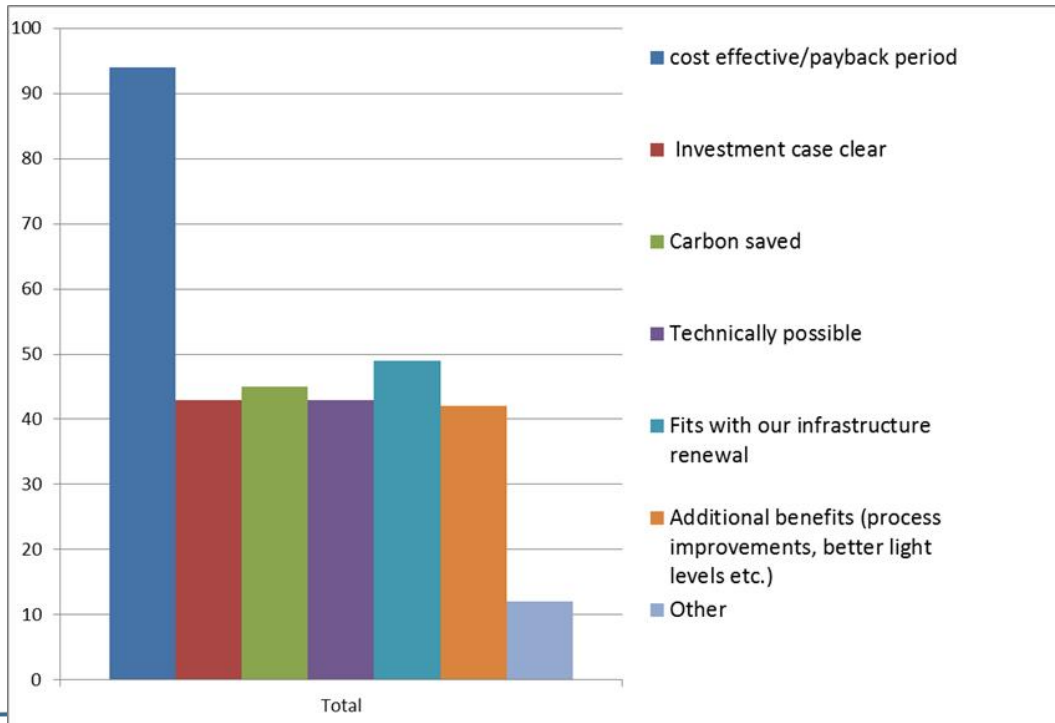


Types of Measures Stated as being implemented by

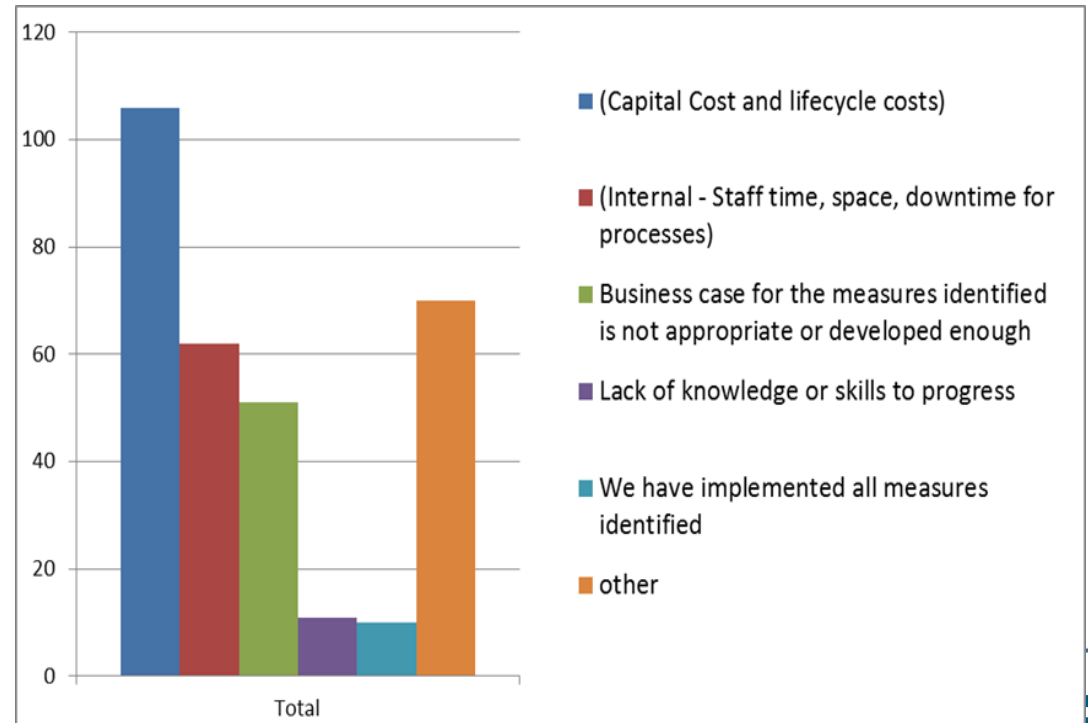


# Reasons for implementing/not implementing

If you have implemented a measure, what was the reason?



If you do not intend to implement the measures identified, please indicate what is preventing you?



# Other Reasons?

70 respondents provided other reasons for not implementing measures, the following summarise reasons which occur more than once:

- We don't own the building/the landlord is responsible for improvements to the buildings/the lease is up in 6 years no point;
- Significant business changes/industry downturn/property no longer owned by participant;
- Waiting for time when upgrades are needed through breakdown;
- Financial restrictions on capex
- Other projects have greater priority
- Don't agree with the assessor
- Under CCA regime;

# Next Steps?

- Compliance Checking for Phase II
- We are continuing to use this information to develop, in conjunction with partners – how ESOS participants' can get more value from ESOS
- We will use ESOS to support implementation of Scotland's energy strategy & SEPA's energy framework where possible;
- We are also using ESOS to understand energy efficiency opportunities of different sectors across Scotland to support beyond compliance in partnership.



# ESOS Qualification

Neil Guthrie



Environment  
Agency

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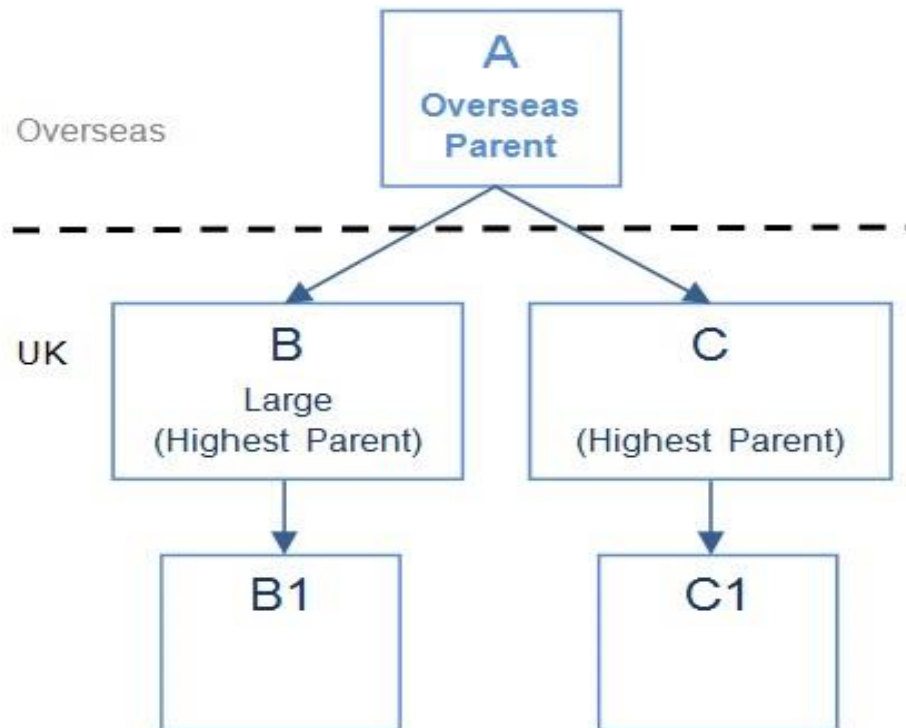
# ESOS Qualification

- Groups
- Public bodies
- Two year rule
- Group participation
  - Whole group
  - Disaggregated groups
  - Aggregated groups



# Groups

- A group is all subsidiary undertakings under the common highest worldwide parent
  - Only needs one large undertaking in the group



# Subsidiary

- One undertaking (A) is subsidiary of another (B) where B:
  - Holds the majority of the voting shares;
  - Has the right to dismiss and appoint the majority of the board;
  - Has control through a management agreement.



# Joint ventures

- Still is an undertaking
- No overall control by any of the parties
- Not part of a group
- Needs to assess whether or not it is a large undertaking

# Public Bodies

- Undertaking which is defined in:
- Regulation 3 of the Public Contracts Regulations 2006 in England, Wales and Northern Ireland for the first compliance period, replaced by Regulation 2(1) of the Public Contracts Regulations 2015 for the second and subsequent compliance periods.
- Public Contracts (Scotland) Regulations 3 replaced by Regulation 2(1) of the Public Contracts (Scotland) Regulations 2015 for the second and subsequent compliance periods.

# Public Bodies

- they are established for the specific purpose of meeting needs in the general interest, not having an industrial or commercial character;
- (b) they have legal personality; and
- (c) they have any of the following characteristics:—
- (i) they are financed, for the most part, by the State, regional or local authorities, or by

# Public Bodies

- (ii) they are subject to management supervision by those authorities or bodies; or
- (iii) they have an administrative, managerial or supervisory board, more than half of whose members are appointed by the State, regional or local authorities, or by other bodies governed by public law;



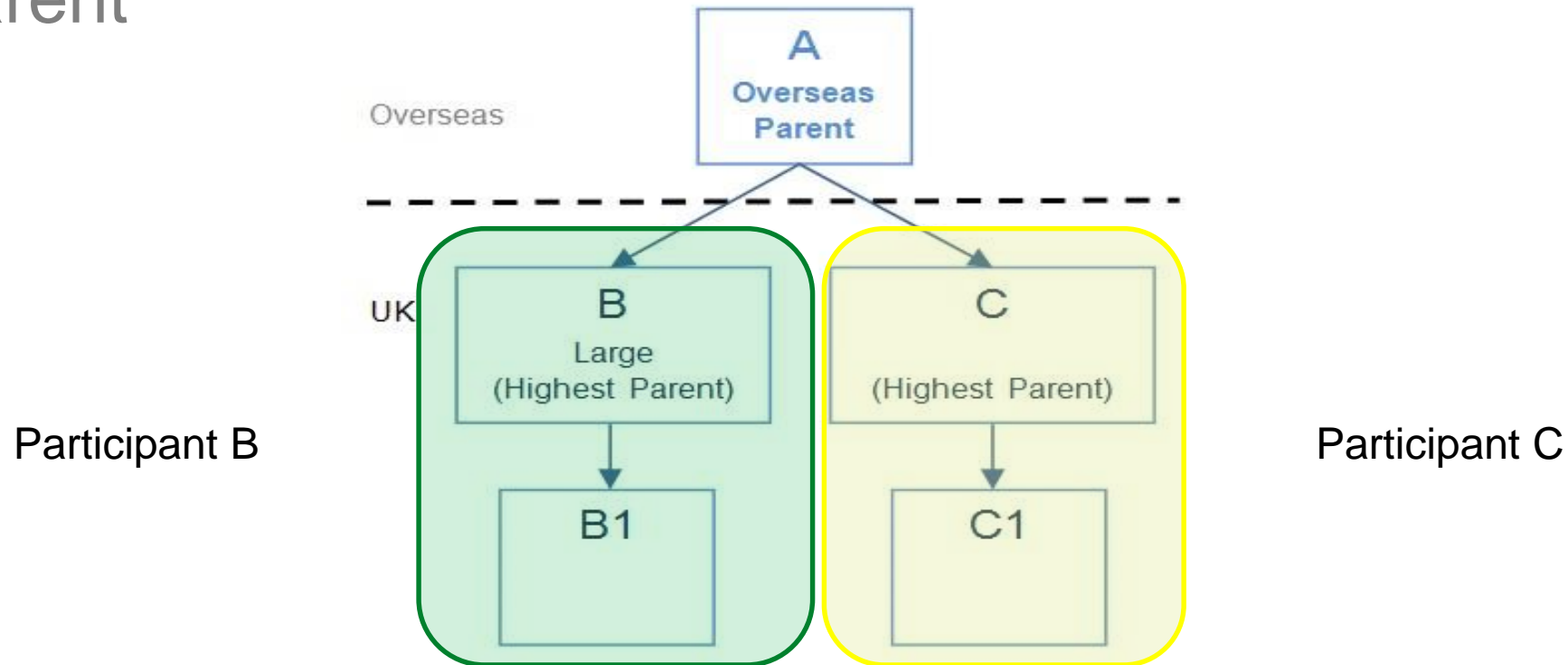
# 2 Year Rule

- In order to change status from SME to Large, or vice versa and undertaking has to have exceeded the criteria, or dropped below them, for two consecutive reporting periods.

Company	2014	2015	2016	2017	2018	Qualified for ESOS
A	YES	YES	NO	NO	YES	NO
B	YES	YES	NO	YES	NO	YES

# GROUP PARTICIPATION

- All undertakings in a group must be included in ESOS
- Default position is one participant under each highest UK parent



# DISAGGREGATION

- A group is able to disaggregate in any way they like.
- Need written agreement with highest UK parent
- Each undertaking must still participate
  - Full TEC /SEC
  - Audit
  - Energy savings opportunities
  - Lead Assessor and director sign off
  - Evidence pack

# AGGREGATION

- Where there are two or more UK highest parents these can be aggregated into one participant
- Need written agreement between the parties
- Each participant needs to do:
  - Full TEC /SEC
  - Audit
  - Energy savings opportunities
  - Lead Assessor and director sign off
  - Evidence pack

# Franchises

- Franchises and franchisees qualify independently (unless they are part of the same group)
- They can aggregate for participation if they wish.
- Written agreement needed



# Qualifying Criteria

- Have at least one large undertaking in your group
- Have 250 or more employees
  - Or
- Have a turnover of more than £44,845,000
  - And
- Assets of over £38,566,700

# Consolidated Accounts

- Some groups report consolidated accounts
- Need to be able to separate out the individual undertakings to see if they are qualify on their finances

# Employees

- Employees are all employees, manager and directors
- An employee is someone who has a contract of service
- A contract for service does not mean they are an employee
- Can be an issue for employment agencies



# Contract for Services

- Typically to do a finite job, i.e. painting or plumbing
- Usually the person doing the work is expected to provide their own tools and equipment
- Do not get employment rights
- Not an employee for ESOS purposes

# Contract of Service

- Normal employee employer relationship
- Becomes employed by the company
- Normally indefinite in period
- Have employment rights
- They are employees for ESOS purposes

# Questions?



# Lead Assessor Work Shop

## Total Energy Consumption (TEC)

Steve Smith, Senior Technical Officer  
Climate Change, Trading and Regulatory Services

# Total Energy Consumption (TEC)

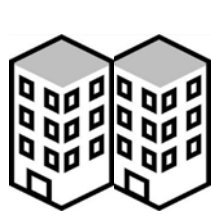
- Energy
- Reference Period
- Problem Areas
  - Site Moves
  - Multiple Occupancy
  - Transport
  - Power Generation
- Significant Energy Consumption (SEC)



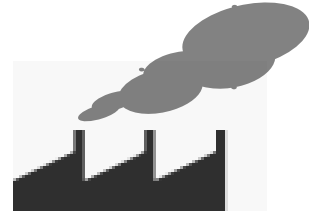
# Energy

Article 2 (1) of the Directive:

*'energy' means all forms of energy products, combustible fuels, heat, renewable energy, electricity, or any other form of energy.*



Buildings



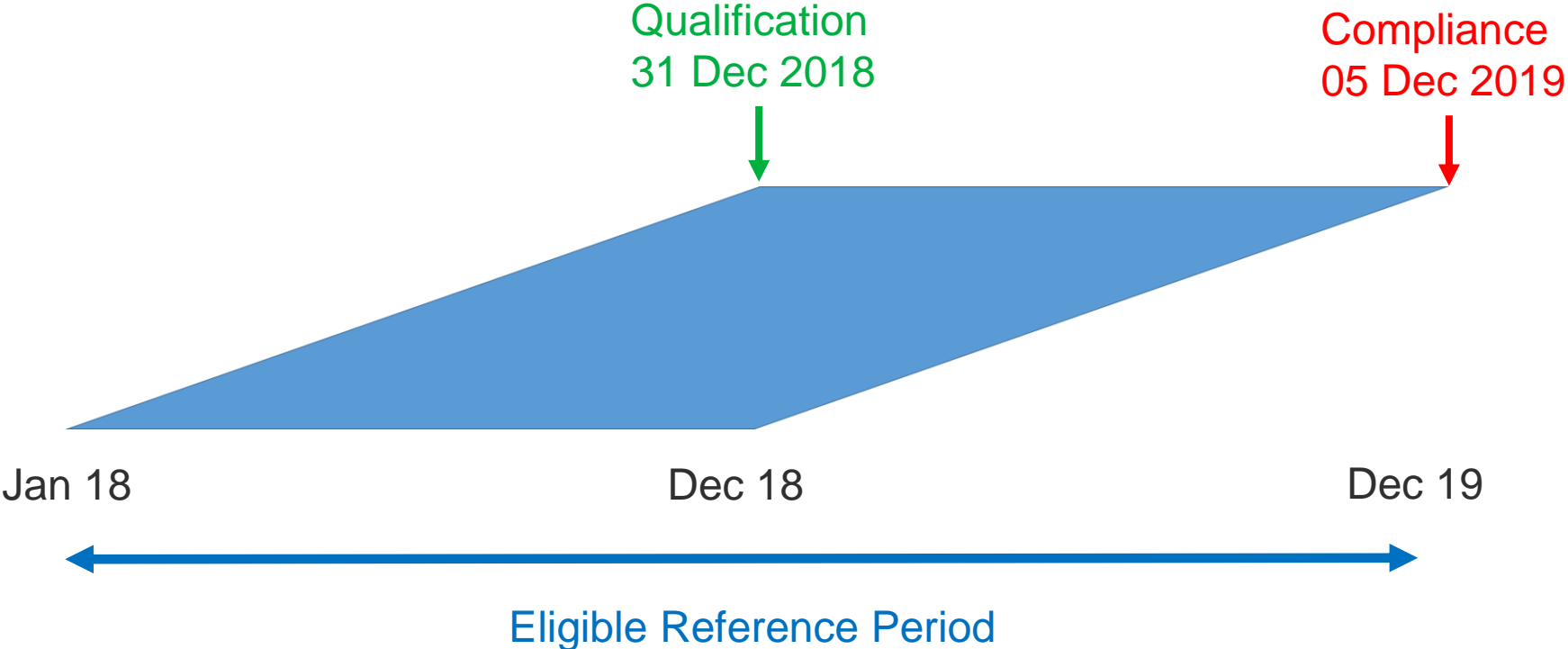
Processes



Transport

Exceptions where a fuel is not being used as an energy source, but its being used as an ingredient.

# Reference Period

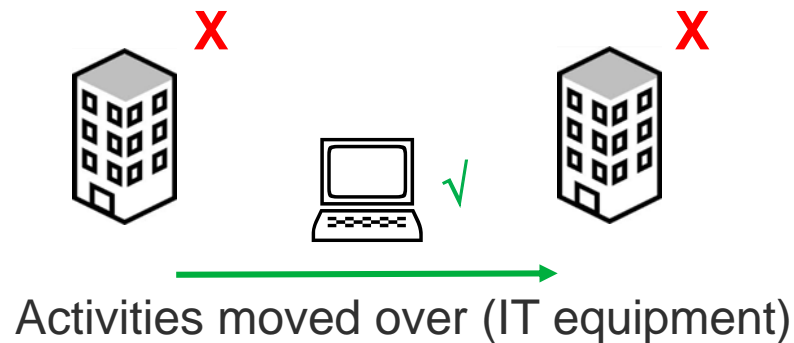


# Site Moves

**Activities** carried out and **Assets** held on the qualification date and still carried out/held on the compliance date.

e.g. Building move between qualification date and the compliance date:

Buildings energy (HVAC)



e.g. Construction companies, activity (generators and construction plant) used across both dates, irrespective of project/site.



# Multiple Occupancy

Responsibility determined by whether the participant is;

- supplied with that energy and
- consumes that energy by the assets it holds or by the activities it carries out.



To be claimed as unconsumed the supply has to be measured or be able to be reasonably estimated.

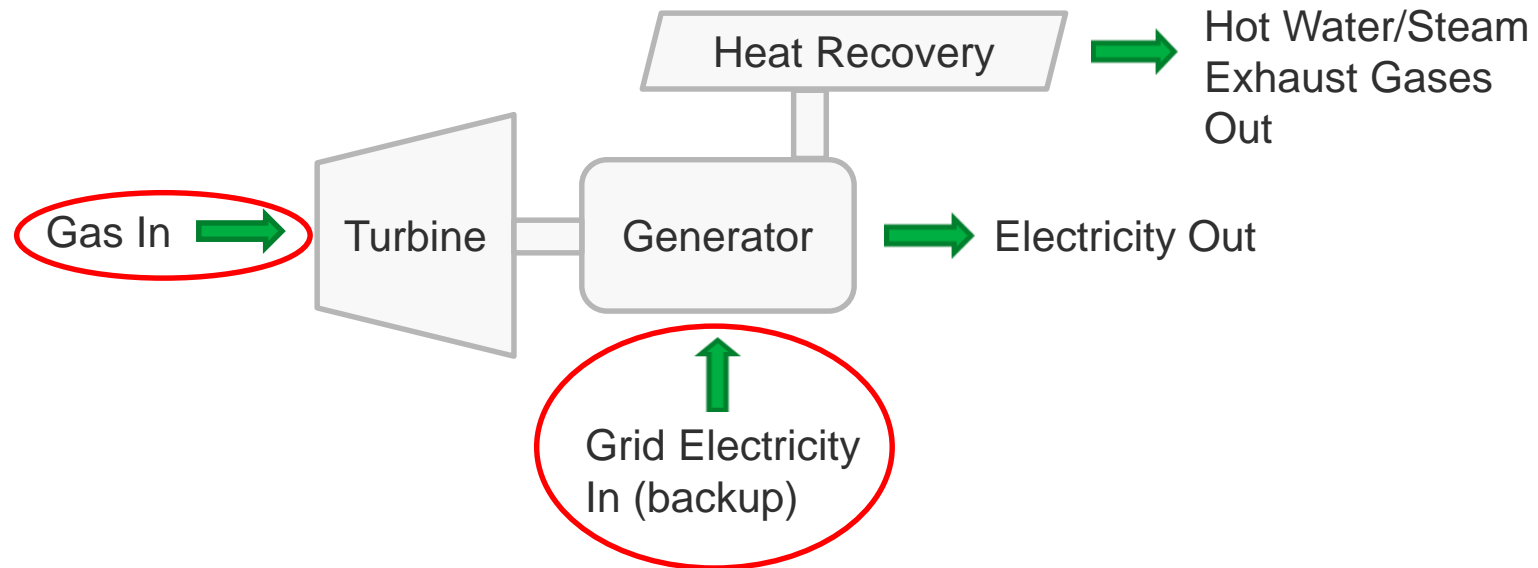
# Transport

<b>Include (business use)</b>	<b>Exclude</b>
Company Cars Grey Fleet Hire Cars Fleet Vehicles Private Jets (you operate) Fleet Aircraft (you operate) Trains (you operate) Ships (you operate) Drilling Platforms (you operate)	Taxi journeys where you do not operate the taxi firm Fuel used by third party logistic companies you do not operate Flights where you do not operate the aircraft Train travel where you do not operate the train Travel by ship where you do not operate the ship

For aircraft and vessels include energy for journeys which start, end, or both start and end in the UK.

# Power Generation

TEC equals input energy only, e.g. CHP Plant.

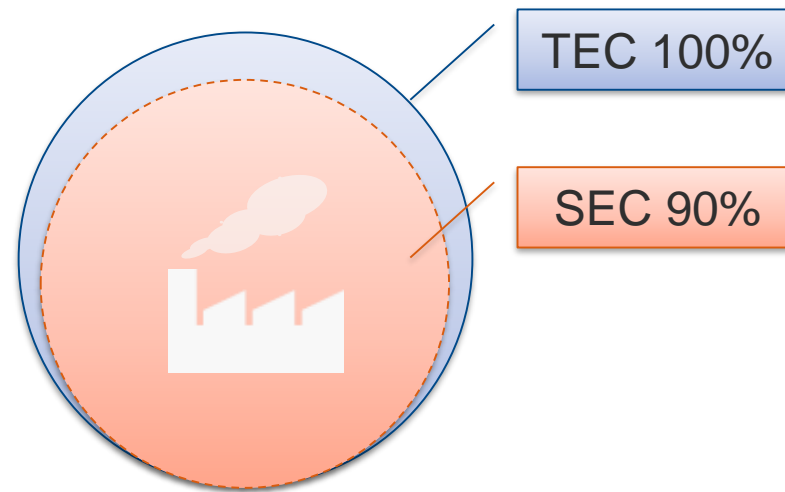


Same for fossil fuels, bioenergy, etc.

# Significant Energy Consumption (SEC)

Select 90% of your TEC to form your SEC.

The activities and assets that make up the SEC are then to be subject to an ESOS Energy Audit, or alternative route to compliance.



Optional 10% De-minimis energy consumption.

# Questions?



**Energy Auditing  
and  
Savings Opportunities**

**Glasgow 24 April 2019**

**Eur Ing John Mulholland BScTech CEng CSci FEI MIChemE**

**Director, Mulholland Energy**

[www.mulhollandenergy.co.uk](http://www.mulhollandenergy.co.uk)

# ESOS Audit/Background

- Lead Assessor Phase 1
  - LA 4 organisations
  - 36 ESOS Energy Audits
- Environment Agency ESOS Phase 1 Compliance Auditor
  - 30 compliance audits 2017/18
- Lead Assessor Phase 2
  - LA 5 organisations
  - 30 ESOS Energy Audits



# Outline

1. To what detail should ESOS Energy Audit be conducted?
2. When/what type of energy profiling is appropriate?
3. Energy Saving Opportunities
  - What should they look like?
  - How should they be presented?
  - When is Simple Payback appropriate?



# 8 Key Audit Questions

Question	Factor
1. <b>What</b> is the audit scope?	(SEC)/Sampling
2. <b>What</b> energy types are used?	Gas, oil, electricity etc.
3. <b>How</b> much of each type used in data period?	kWh/annum
4. <b>Where</b> is the energy used?	End use breakdown

Question	Factor
5. <b>Why</b> is it used?	Driving factors
6. <b>When</b> is it used?	Time profiles: day, week, month, HH
7. <b>How</b> efficiently is it used?	Performance EnPIs
8. <b>What</b> measures would improve efficiency?	Technical, data, behaviour

# 1. Level of Detail of Audits

- Must meet minimum audit requirements (5.4.1) (but no detailed methodology given).
- An audit methodology is implied.
- *A.4.4 Choosing an auditing methodology.*
- Must meet any methodology stated in audit, e.g. BS EN 16247 or ISO 50002. Not mandatory.
- Additional scope agreed with participant.

# BS EN 15247-1:2012

## Energy Audits

BS EN 16247-1:2012



**Energy audits**  
Part 1: General requirements

Part 1 General  
Requirements

Part 2 Buildings

Part 3 Processes

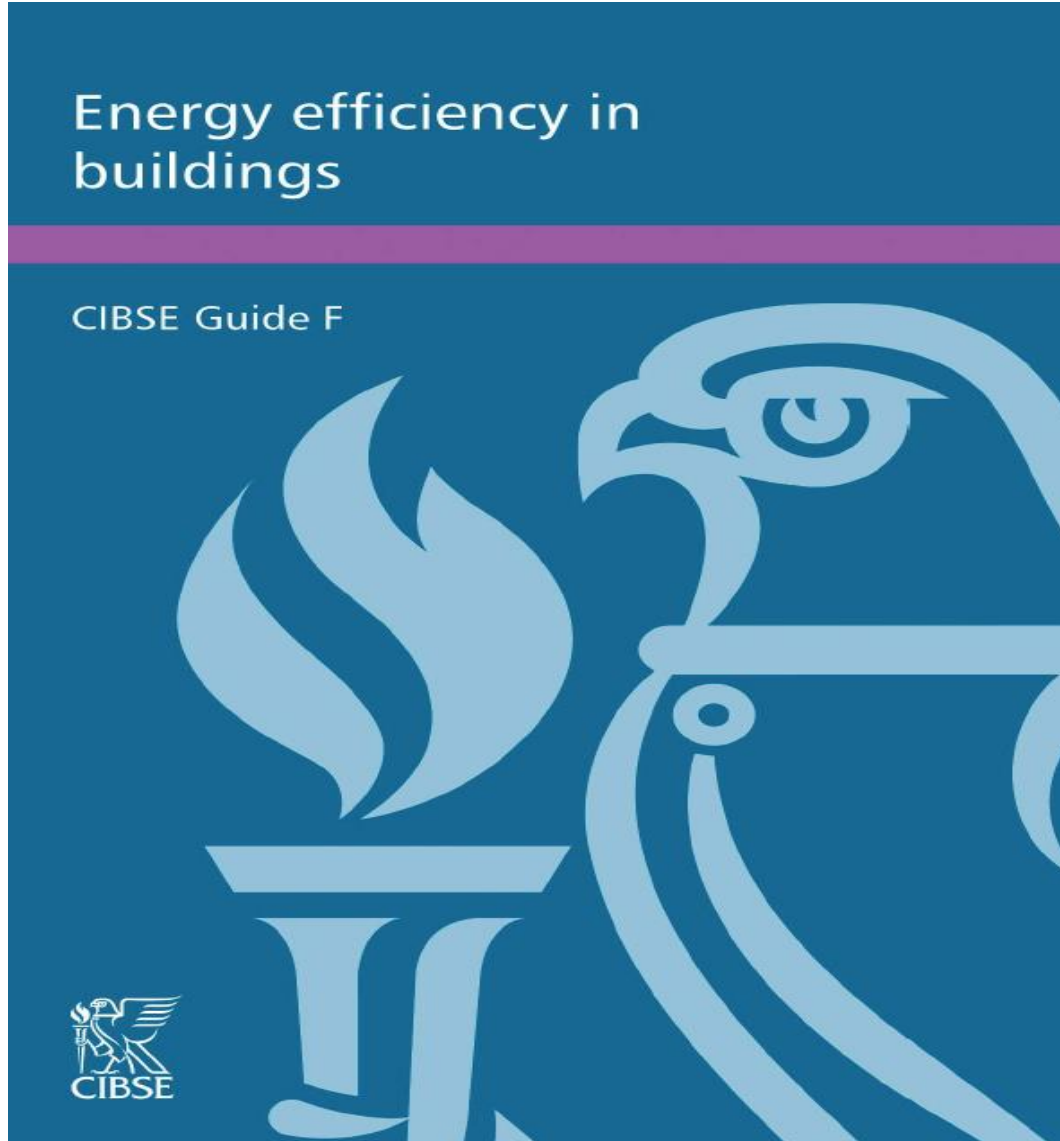
Part 4 Transport

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# CIBSE Guide F



## *Energy Efficiency in Buildings (2012)*

### Chapter 18 “Energy Audits and Surveys”

# Scope of Energy Audit (Example)

Included in the scope of the audit are the following:

- Natural Gas to Plants 1 and 2
- Electricity to Plants 1 and 2
- Steam to Plants 1 and 2
- Imported Compressed Air to Plant 1

The above four energy sources cover the Significant Energy Consumption (SEC) for the site. SEC is 98.33%.

**Excluded** from the scope of the audit, under de minimis, are the following:

- Steam to non-plant users
- Electricity to non-plant users including offices, warehouses, workshops and laboratories
- LPG (propane) and acetylene use in workshop
- Diesel for process and internal site transport
- Petrol for external site transport - three pool cars and one company car

De minimis is 1.67% of TEC.

# Site Visits/Sampling (5.7)

- *You **must** carry out site visits as part of your energy audit.*
- Sampling can be applied to multi-site organisations where sites are “identical or very similar”.
- Rationale to be agreed between LA and participant and recorded. Savings extrapolated.
- Methods is up to you but it has to be defensible and with a rational logic clearly explained.



# Questions

- As an LA can you sign off your own audits?
- What qualifications do you need
  - to be an Lead Assessor?
  - to be an ESOS auditor?

but BS EN 16247 says:

*The auditor shall be suitably qualified/experienced for the type of work being undertaken and for the agreed scope, aim and thoroughness.*

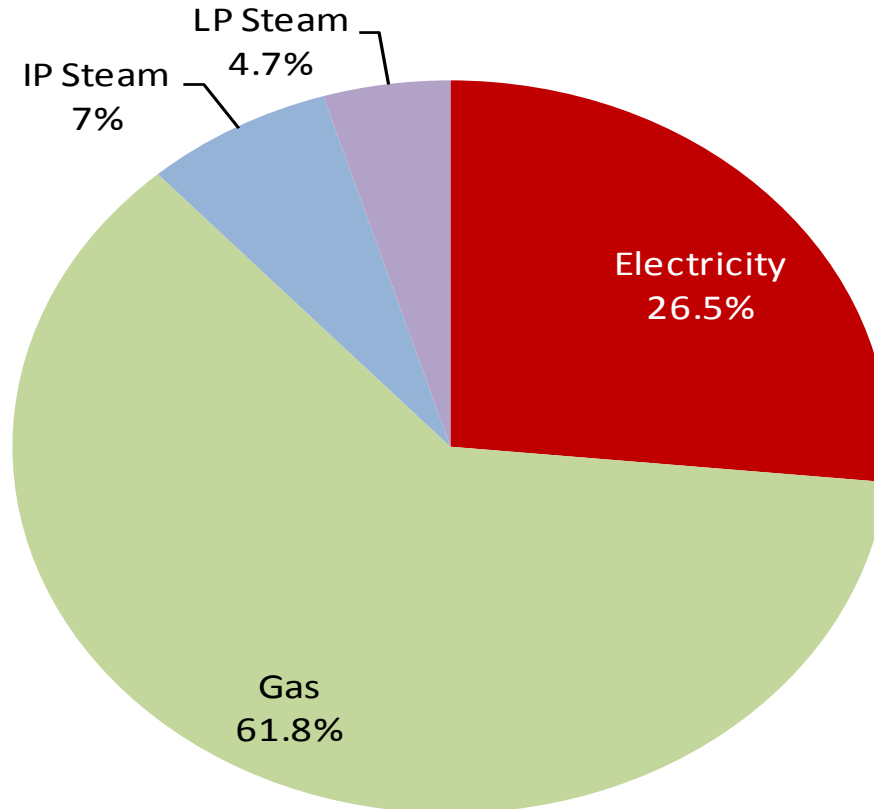
## 2. Appropriate Energy Profiling

### Guidance (5.2)

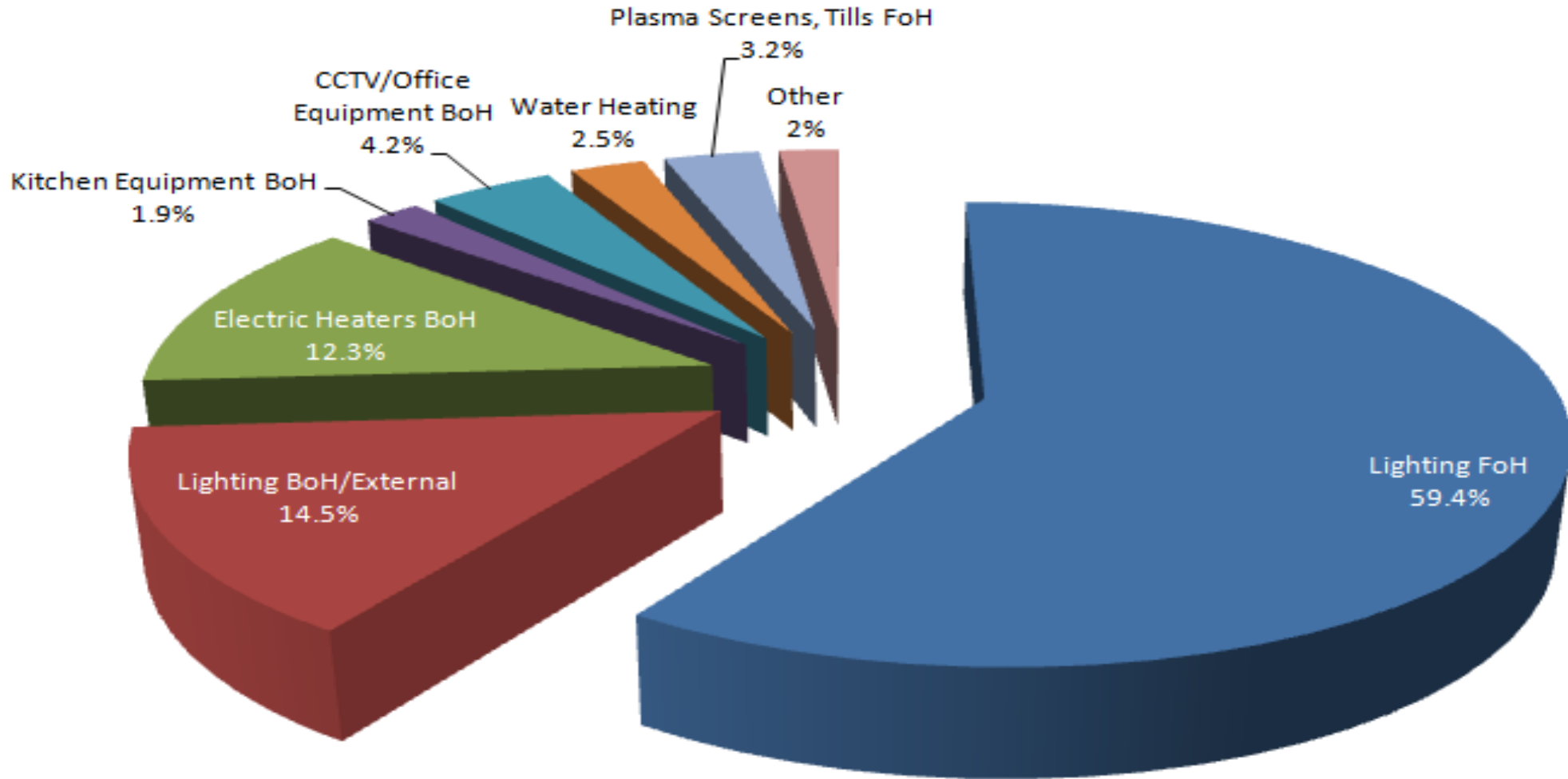
*Energy consumption profiles are a breakdown of how energy is used by a particular asset/activity and how that energy varies*

# By Energy Type

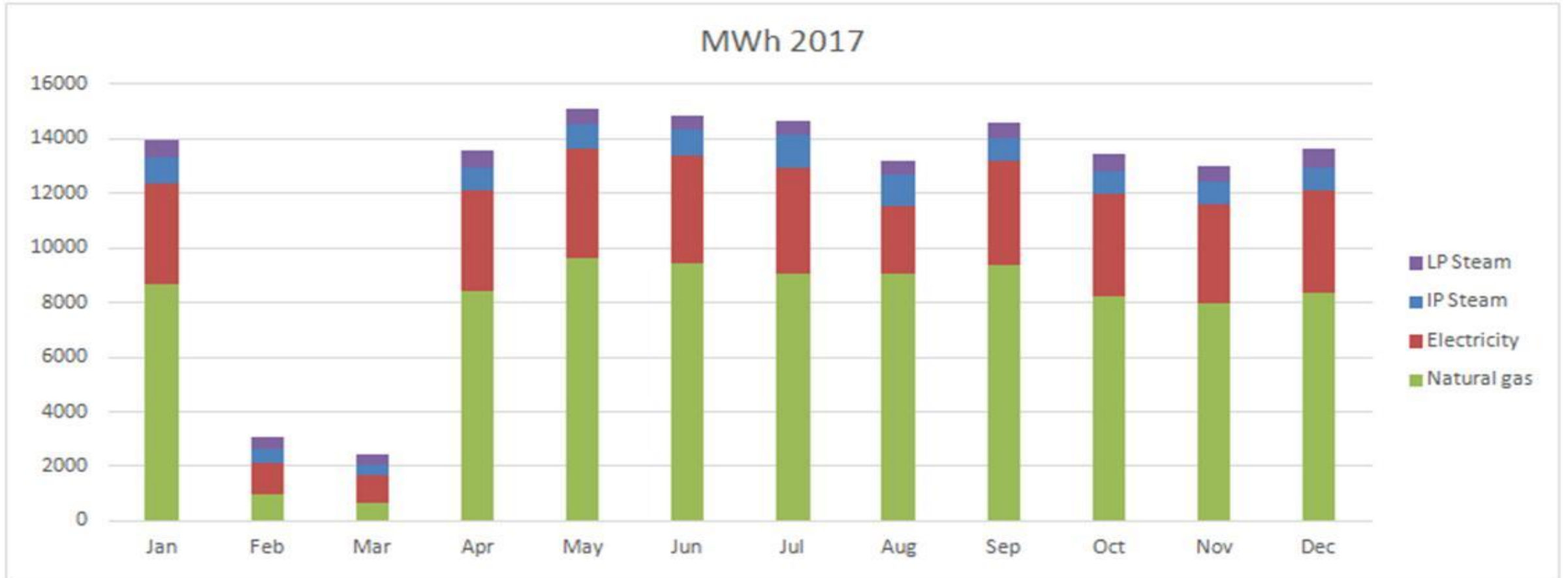
Energy Type	Annual MWh
Electricity	38,626
Gas	89,944
IP Steam	10,141
LP Steam	6,850
<b>Total</b>	<b>145,561</b>



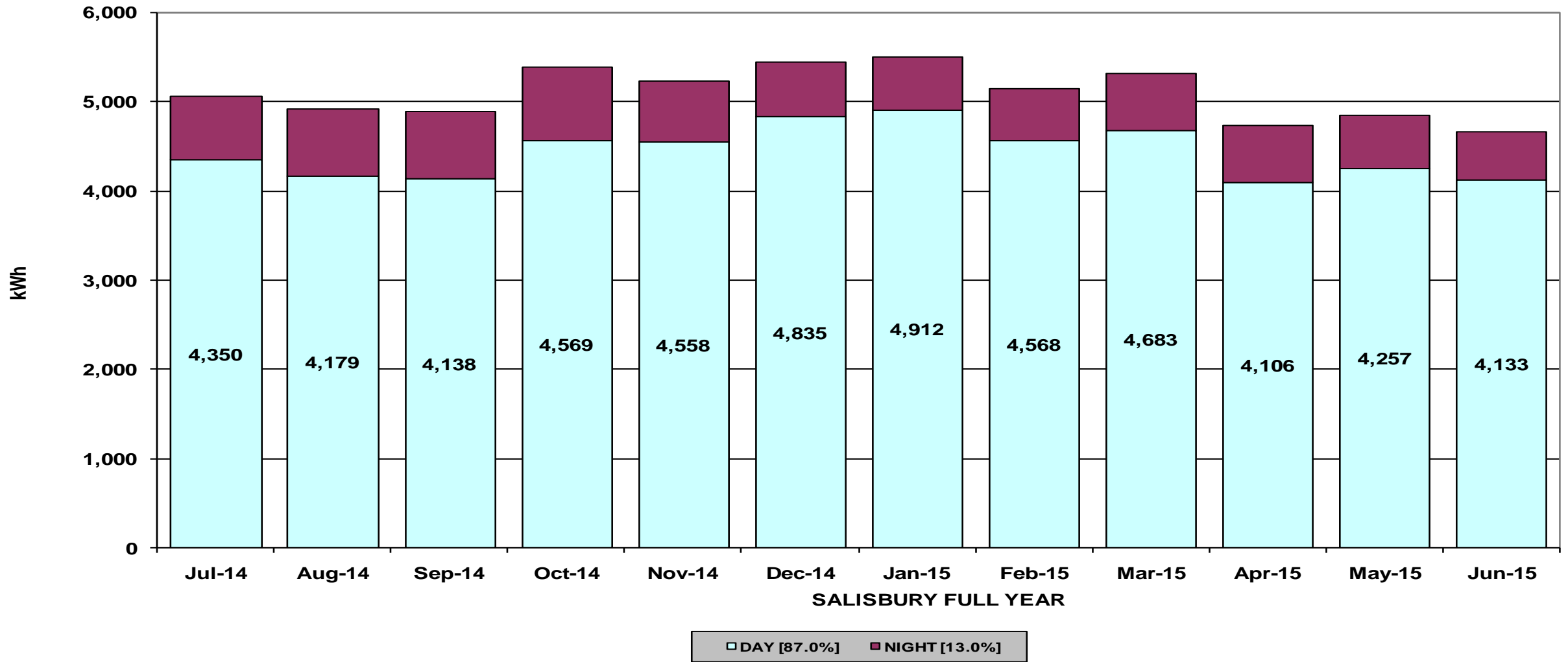
# By Energy End Use



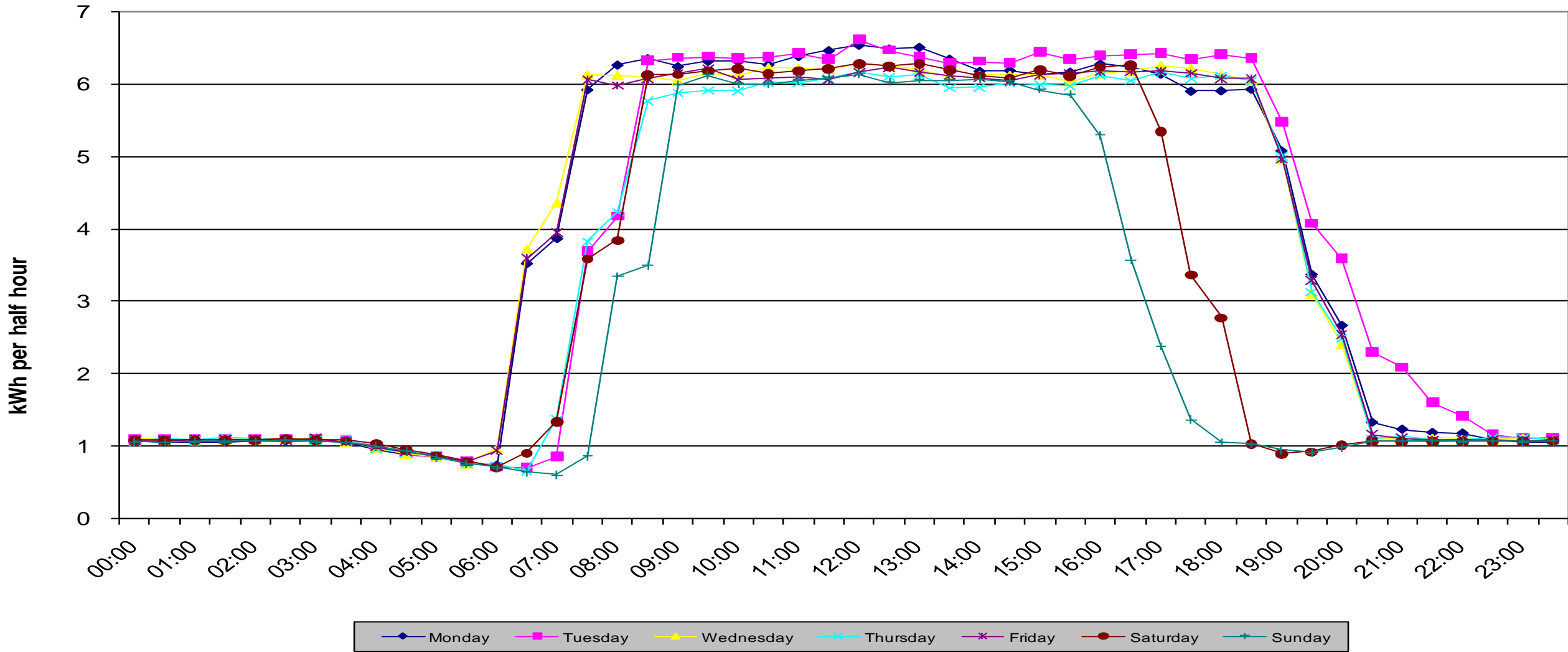
# By Month



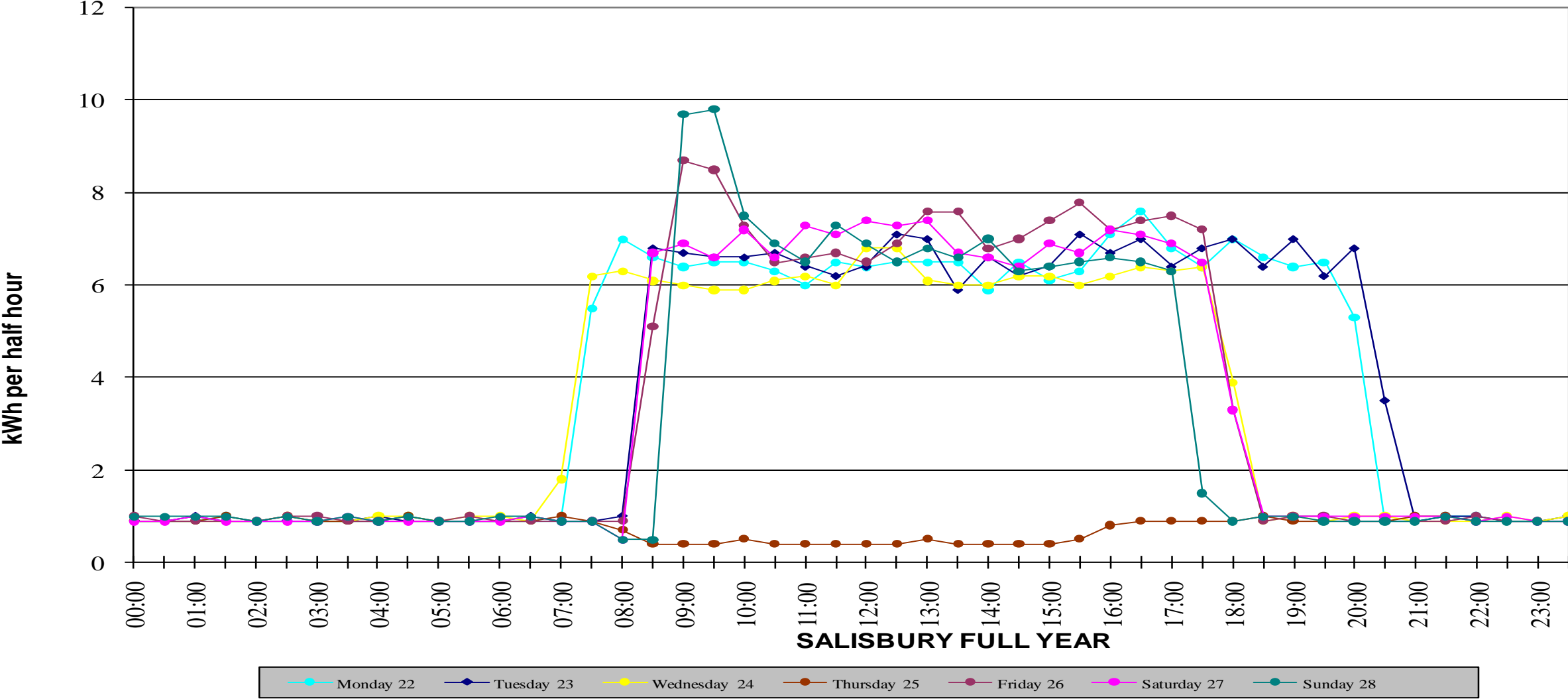
# MONTHLY CONSUMPTION - DAY / NIGHT SPLIT



# AVERAGE LOAD FOR EACH DAY

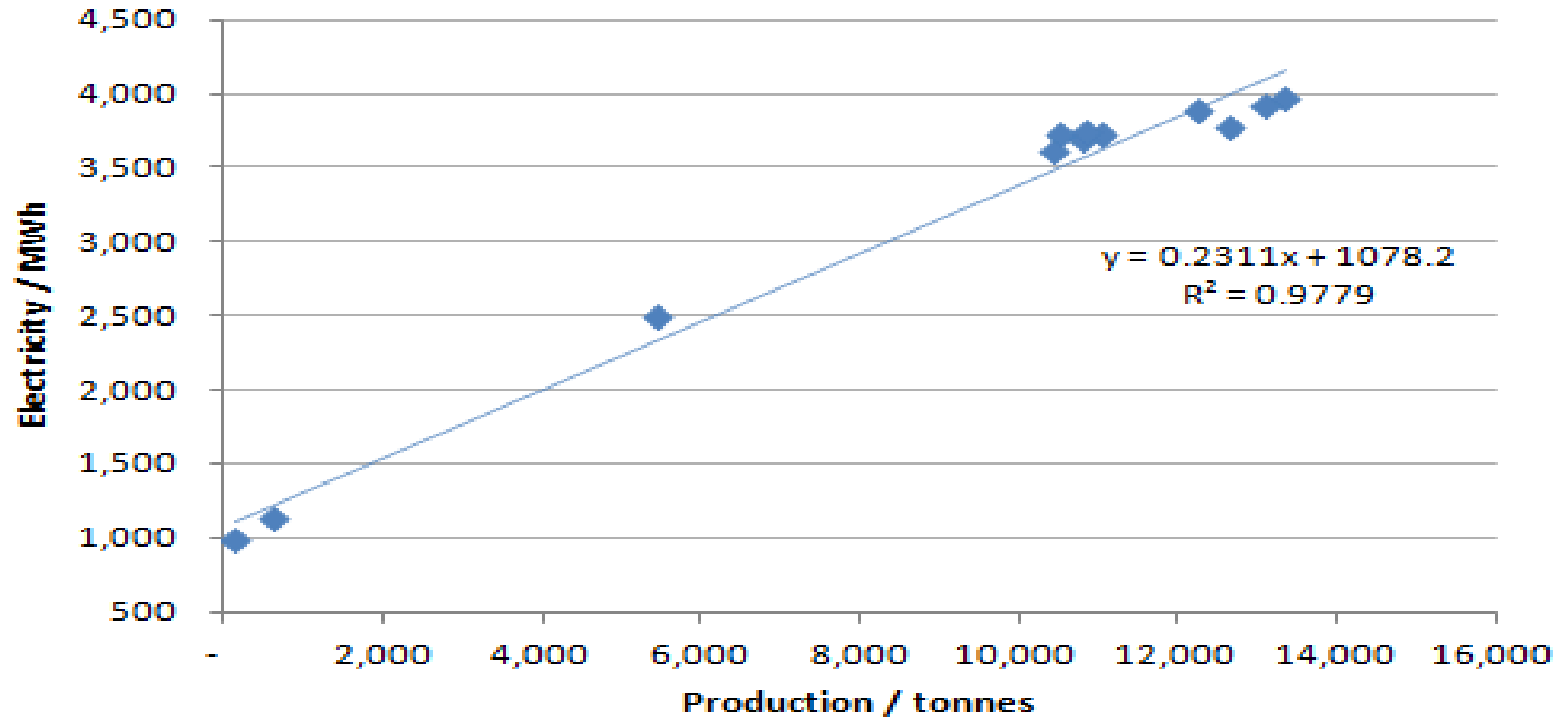


# HALF HOUR LOAD PROFILE [December-2014; week 4]





## Production v Electricity (Monthly)

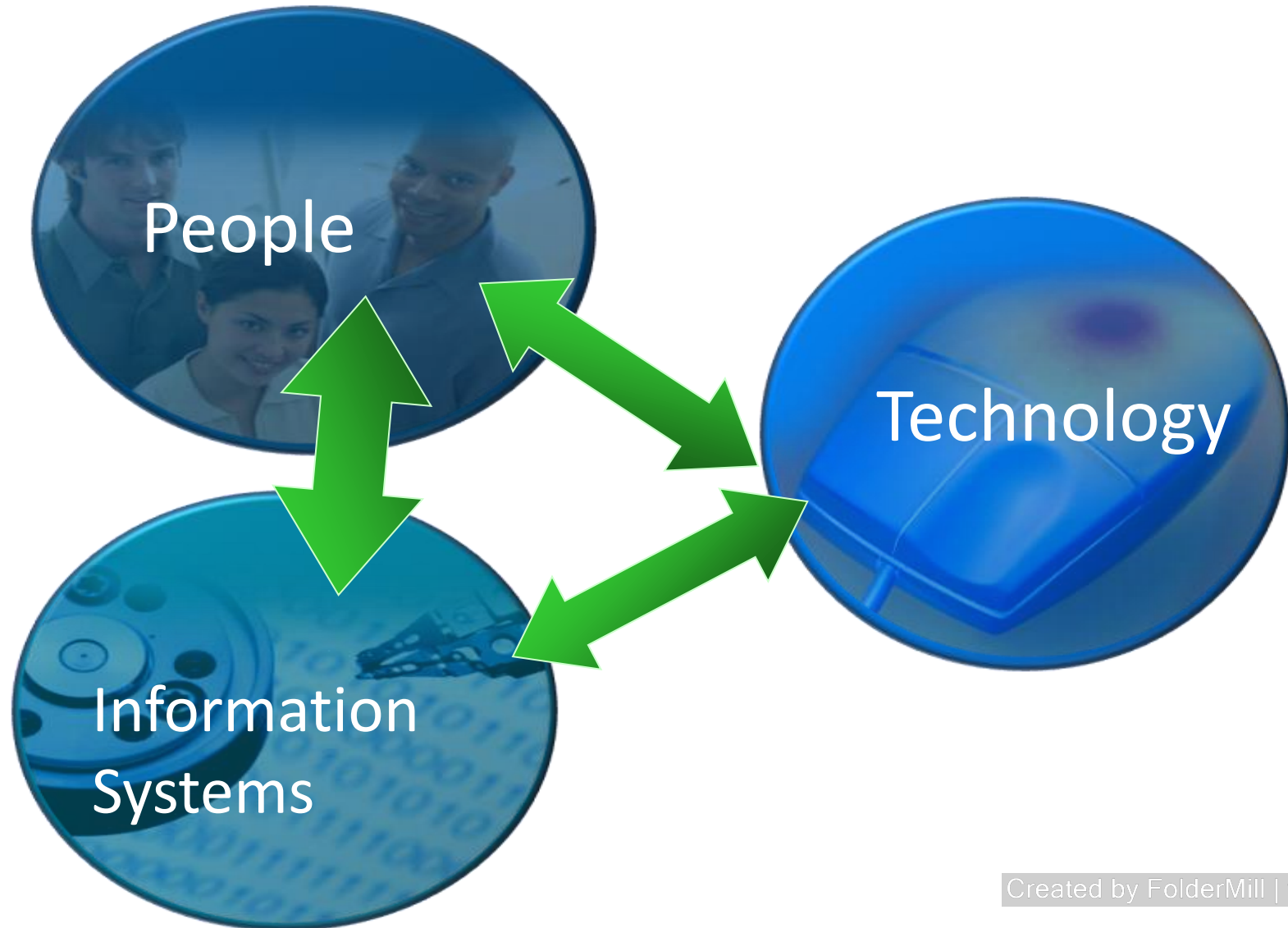


# 3. Energy Saving Opportunities

**As a minimum:**

- Guidance Section 5.5  
*Identify energy saving opportunities*
- Any methodology employed, e.g. BS EN 16247 (Clauses 5.5 and 5.6.2)
- Criteria agreed with participant

# Types of Opportunities



# Presenting Opportunities (Guidance A.7.2)

**Description:** Replace 600x1200 T8s with LED panels

**Annual Energy Saving:** 12,527 kWh

**Annual Cost Savings:** £1,398

**Investment Cost:** £3,600

**Payback:** 2.6 years

**Details:** Section 7.2 and Table 3

## 7.2 Replace 600x1200 T8 fittings with LED panels

The store has 30 modular 600x1200 T8 4ft x 4 tube fittings which should be replaced by 600x1200 LED panels rated at 65W.

Current annual consumption:	20,432 kWh (See Table 3)
Proposed annual consumption:	$30 \times 65\text{W} \times 4,054 = 7,905 \text{ kWh}$

Savings:  $20,432 - 7,905 = 12,527 \text{ kWh/annum}$  valued at  $\pounds 1,398 \text{ p.a.}$   
(11.16p/kWh)

Installed cost of 30 panels =  $\pounds 3,600$

Payback  $\frac{\pounds 3,600}{\pounds 1,398 \text{ p.a.}}$  = 2.58 years

# When is Simple Payback appropriate?

- Guidance A.6
- Pros/cons of SPP (Guidance A.6.4)
- Pros/cons of LCCA (Guidance A.6.2)

Guidance 5.5:

*Where practicable, an ESOS energy audit should use LCCA instead of SPP for cost benefit analysis.*

# Using LCCA or SPP

In Guidance A.6.1:

*You should usually assess the costs and benefits of energy saving measures you identify using LCCA.*

*For some organisations, it might not be practical to undertake an LCCA for all identified energy saving measures.*

*In this case, you can use SPP calculations.*

**State what you are doing and why in the ESOS audit.**

# Opportunities:

- Criteria for selection
- Priority order for implementation

**State your assumptions**



# ESOS Documents: Audience

- Participant staff move on
- LAs and auditors move on...

Therefore write all ESOS documents stating all assumptions, rationale and decisions as if written for an outsider, e.g. ESOS Compliance Auditor or a new participant employee.

# BS EN 16247-1:2012

## Energy Audits

### Clause 4.1.4 Transparency

*If the energy auditor has business goals and process or marketing involvement that might be in conflict with the energy audit, the energy auditor shall disclose any conflict of interests in a transparent way.*



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Efficien:ology

An improvement a day keeps consumption at bay

ecagroup<sup>o</sup>

independent energy cost advice

# Engaging companies to implement energy savings

What can ESOS Lead Assessors do?



# Kit Oung

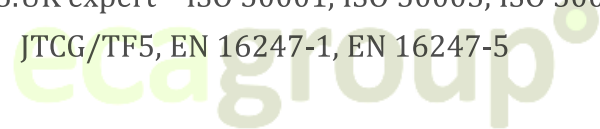
B.Eng. M.Sc.(Eng.) C.Eng MIChemE C.EnMgr. MEI FEMA

## Current roles

- Energy and resource efficiency consultant
- Trainer – ISO 14001, ISO 45001, ISO 50001, Integrated Management
- IChemE congressman for UK South East
- Board member – IChemE Energy Centre, University of Ghent EPOS
- Award Judge – Global Energy Management Leadership Award, and IChemE Energy and Sustainability Awards

## Previous roles

1. Energy/Environment Engineer/Consultant/Manager
2. Key Accounts and Engineering Consultancy management
3. Board member – EMA, 2degrees
4. Convenor – ISO 50002, EN 16247-3, PAS 51215
5. UK expert – ISO 50001, ISO 50003, ISO 50004, ISO 14001, JTCG/TF5, EN 16247-1, EN 16247-5



independent energy cost advice

## Qualification

- General Management – Judge Business School, Cambridge
- M.Sc.(Eng.) and B.Eng. – University of Sheffield
- Lead Auditor – BSI
- ESOS Lead Assessor – IChemE, Energy Institute

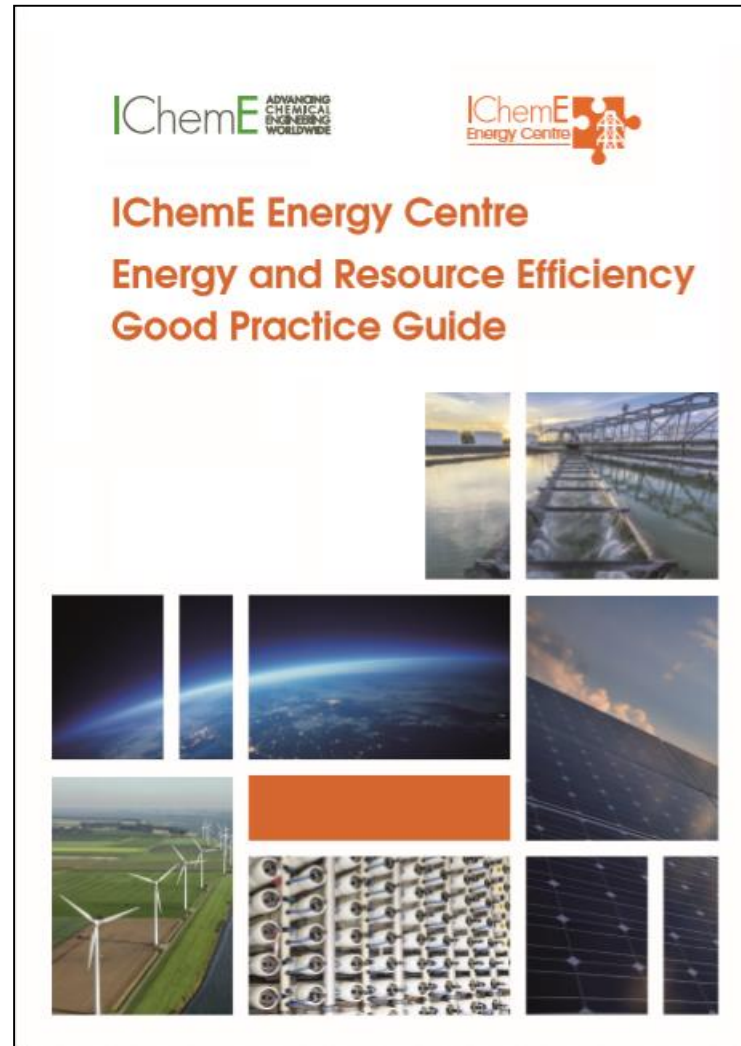
## Selected experience

1. Policy development
2. Corporate energy/resource/sustainability strategy development and execution
3. Resource productivity management, audits, and implementation planning
4. Aligning strategy to execution, including ISO 14001, 45001, 50001, and integrated management
5. Design, operate, troubleshoot, and optimise steam, hot and chilled water, CHP, and district heating/cooling plants



# Energy and Resource Efficiency Good Practice Guide

<https://www.icheme.org/knowledge/policy/energy-centre/publications/>





Reducing **WASTE**

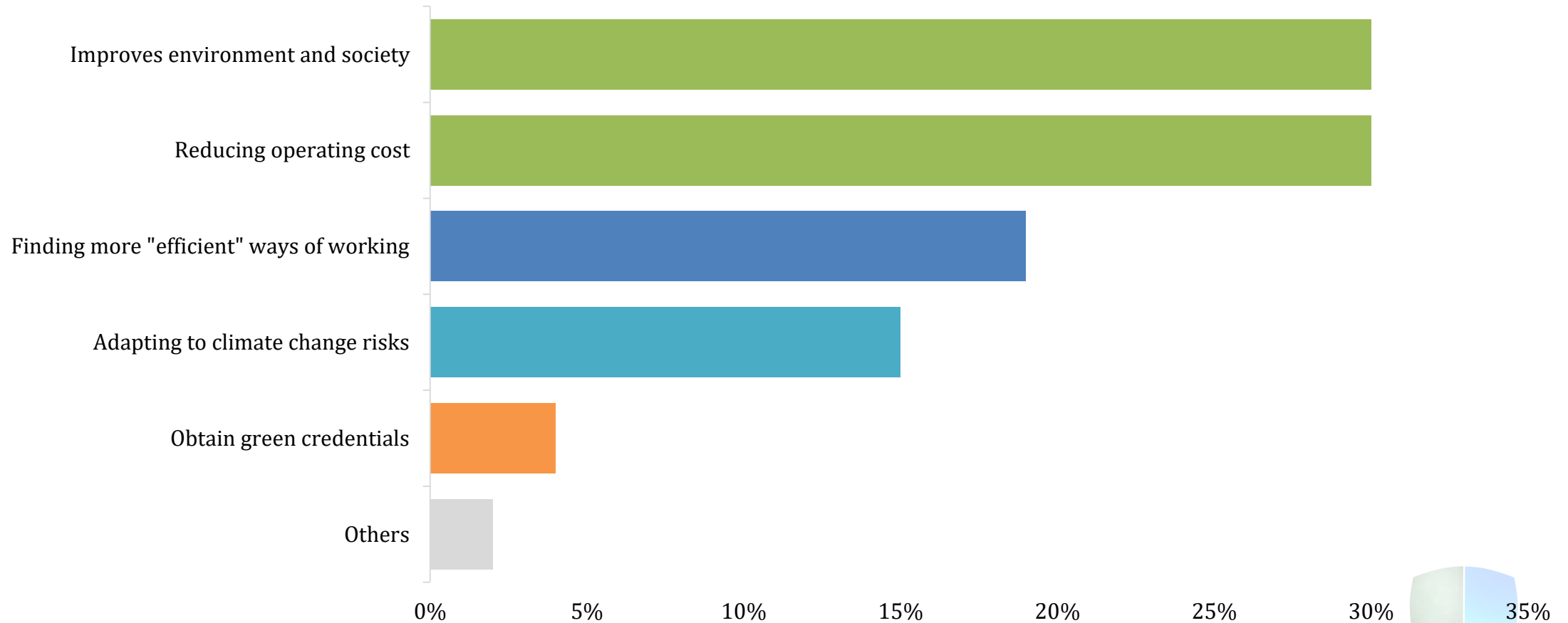
Reducing **ENERGY**

Complying with **REGULATION**

Reducing **WATER**



# Reasons energy, environment, and sustainability is a priority





# Visualising the state of play in energy management

**25%** **McKinsey & Company**  
No-cost, low-cost and no significant operating changes

**73%** **UNIVERSITY OF CAMBRIDGE**  
All known techniques and technologies

**100%**  
Total energy consumption

**≈ 2.6%**

Global increase in consumption



**< 1%**

Global real-term year-on-year energy reduction

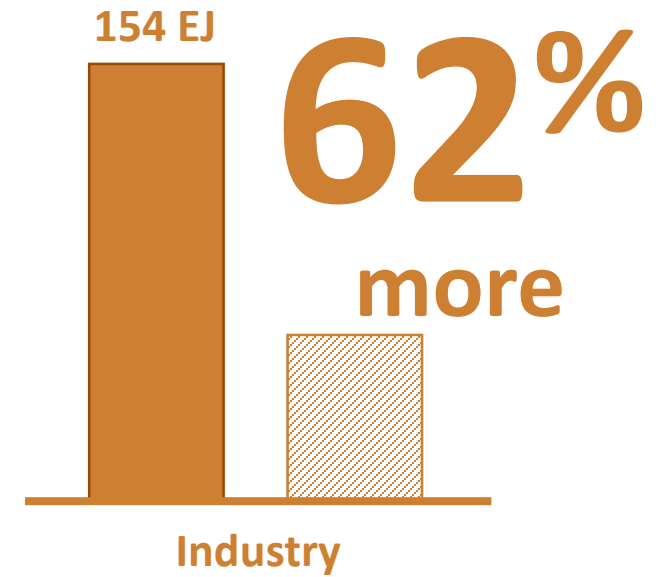
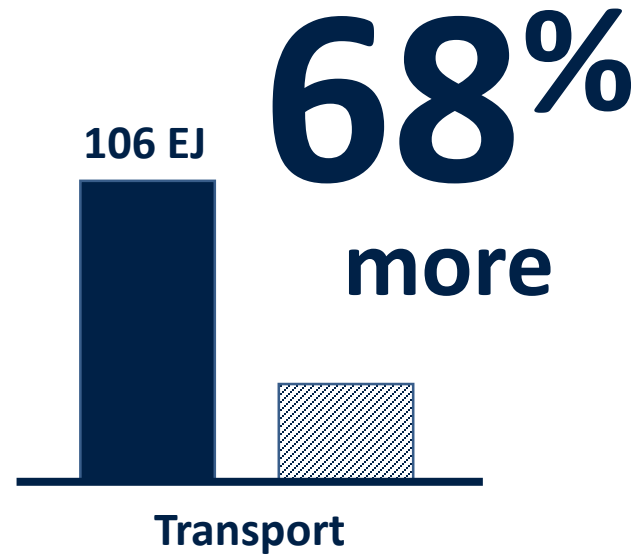
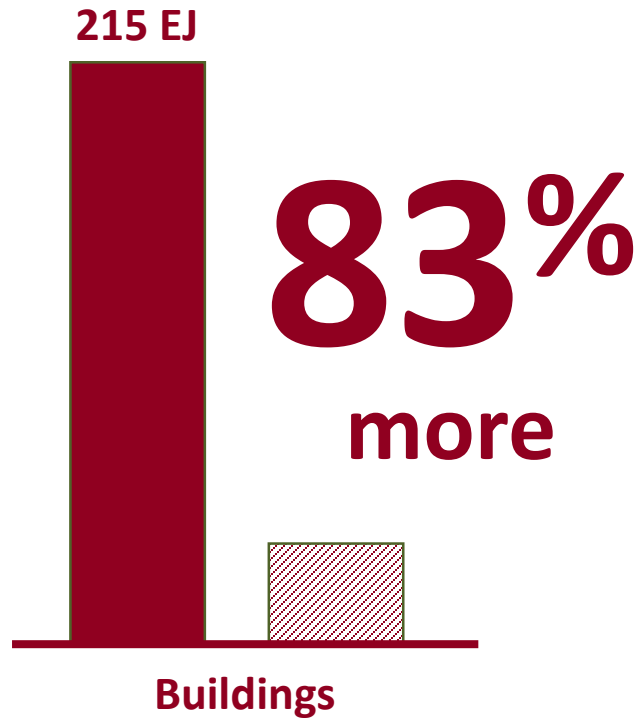


**27%**

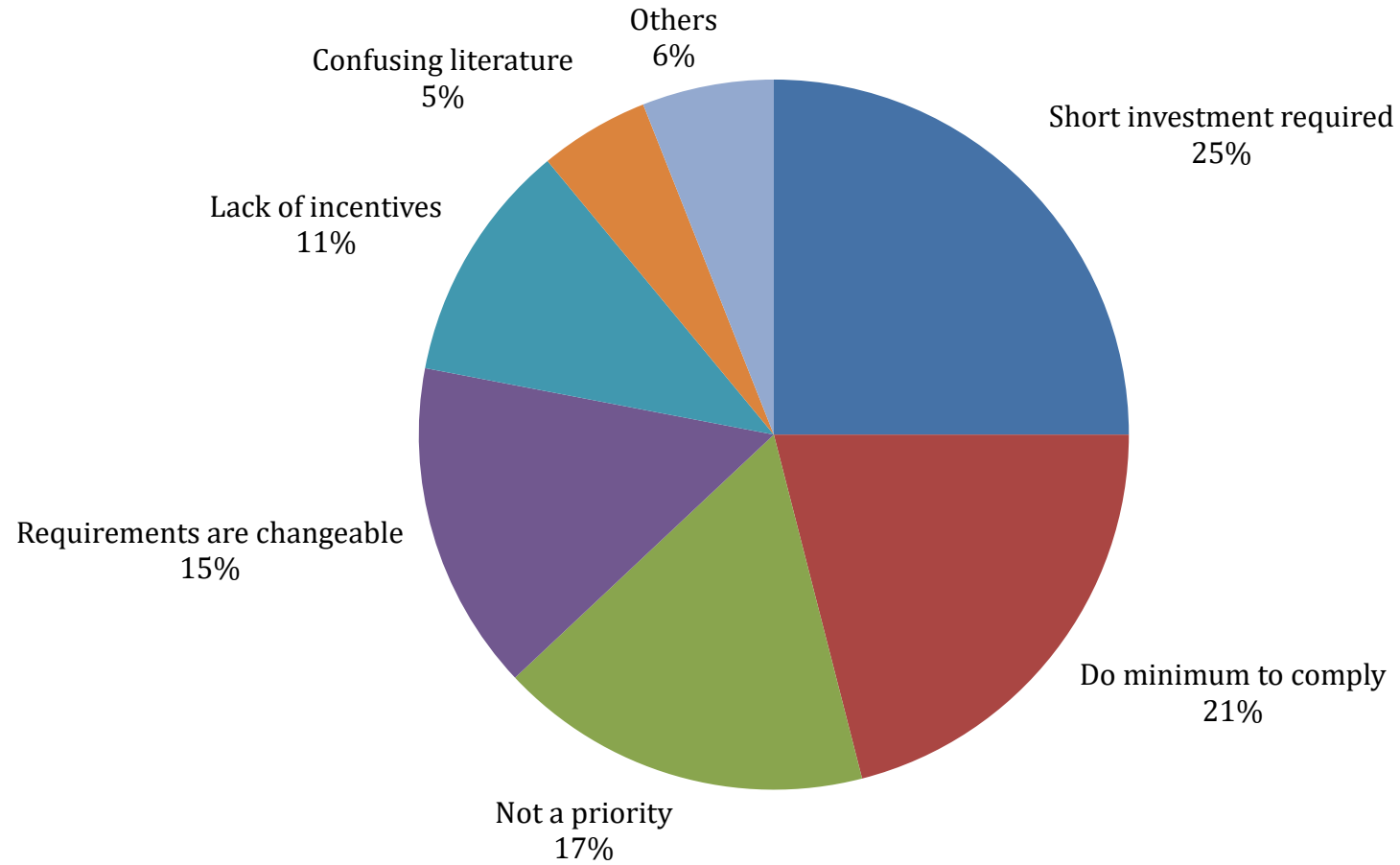
Utilise renewable energy sources and decarbonise energy supply



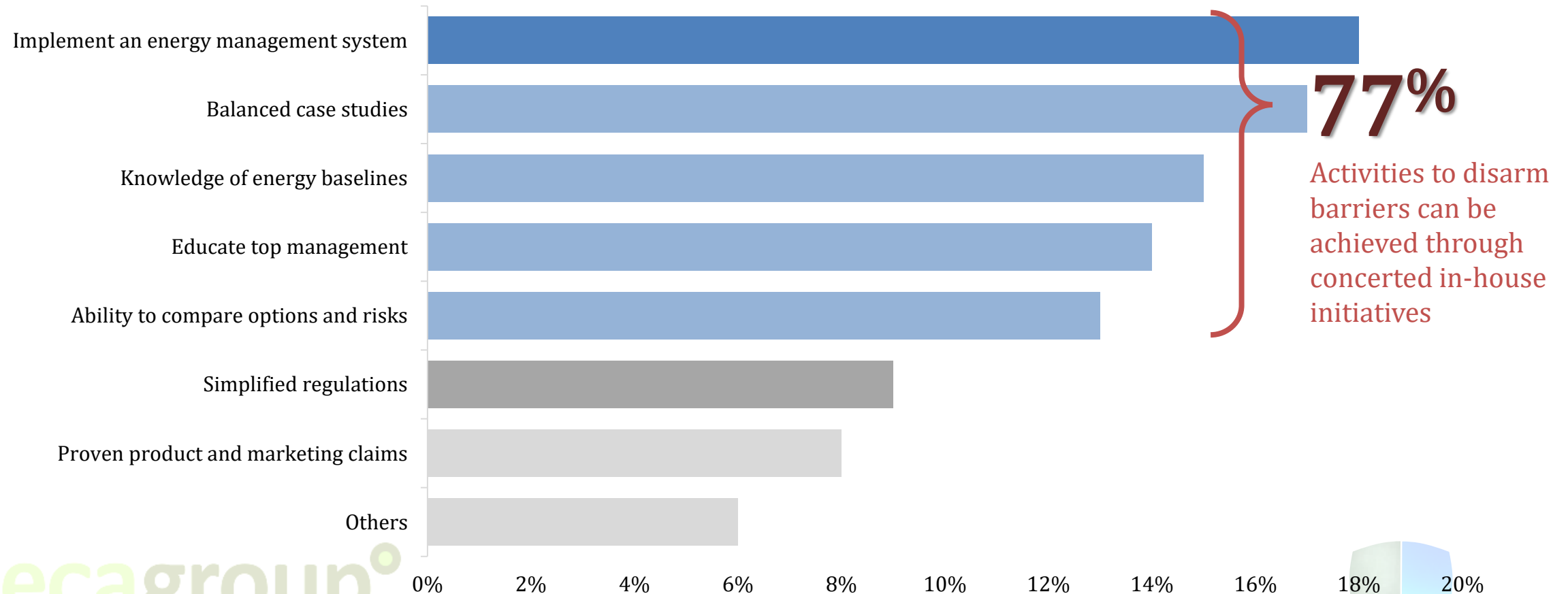
Source: Reducing energy demand: What are the practical limits?



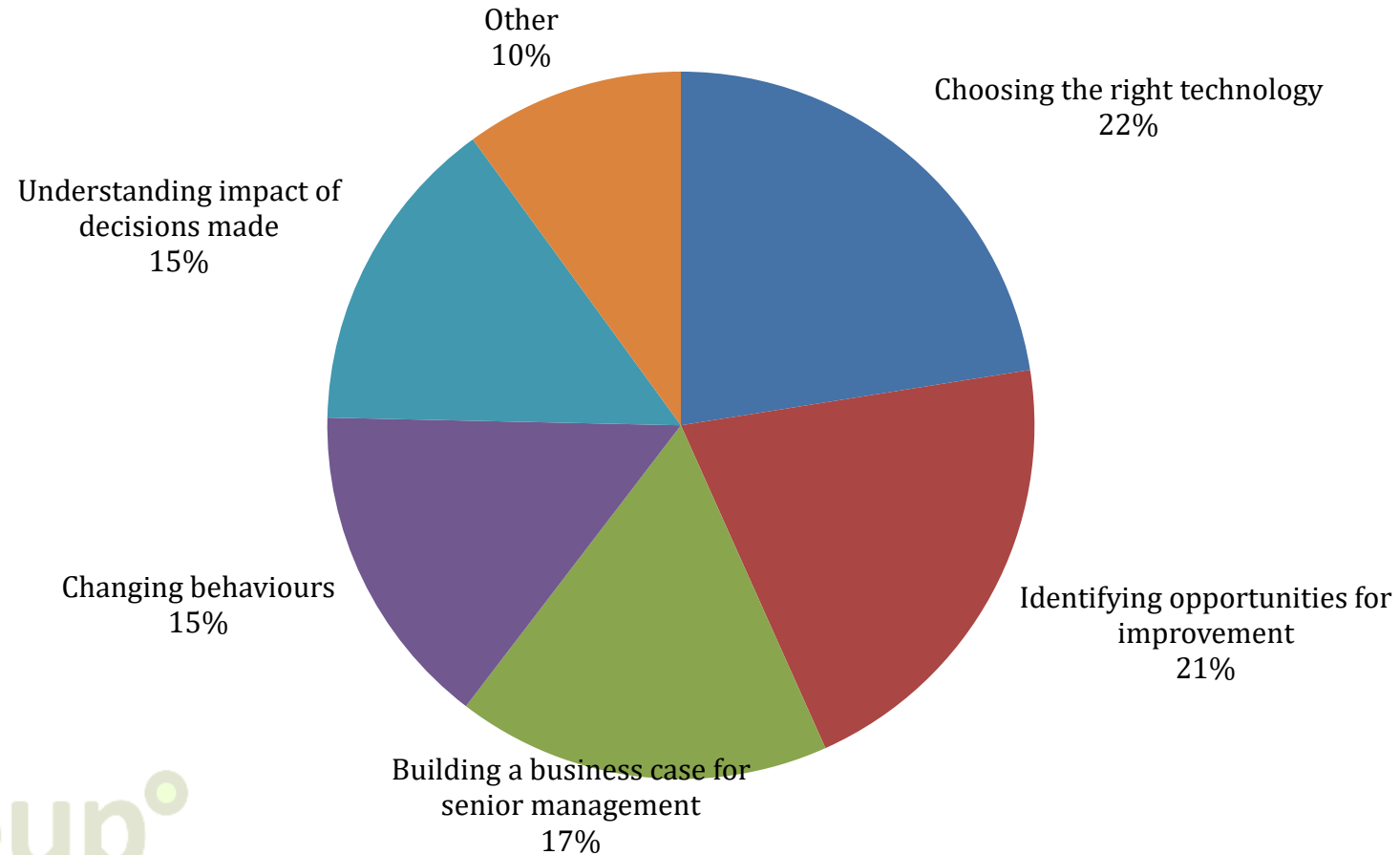
# Barriers from doing more



# Activities to disarm barrier and accelerate action

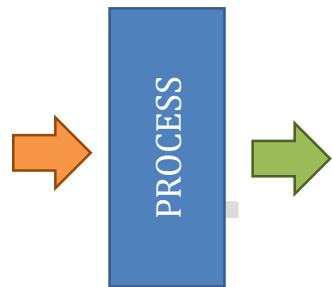


# Types of guidance required



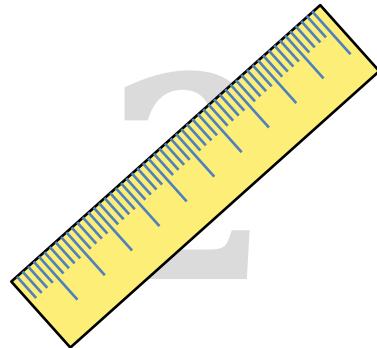
# Engaging with leaders and managers in real organisations

## Business process



Understand where and how your core and support business process – manufacturing, service and/or both – consume energy and how it is supplied to them.

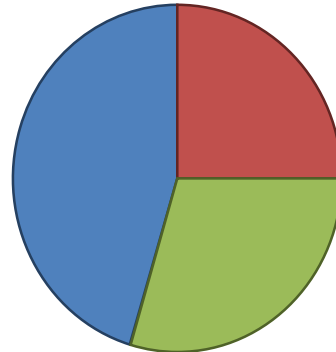
## Measure and benchmark



Use energy data and other relevant data to analyse the energy consumption pattern.

Benchmark it with the best available to determine the relative energy performance against those of your competition.

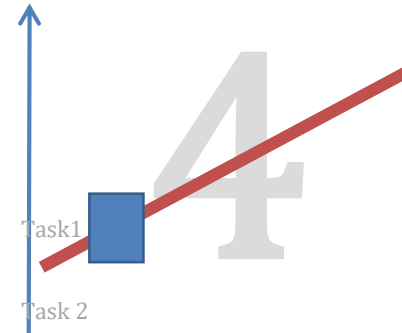
## Profiles



Determine, based on data, the relative energy consumption of various users within the organisation.

Use the visual representation to identify statistically significant areas to focus on.

## Baselines



Establish the relationship between energy consumption and key variables within the organisations' purpose: business process outputs and other weather parameters.

Baselines are key to explain energy as a variable and controllable cost.

Use it to establish high-level performance indicators.

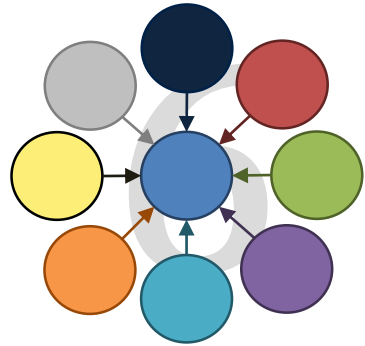
## Opportunities

Opportunity	Cost	Benefit
Blah		
...		
...		
...		

Identify and prioritise a list of energy saving opportunities that are relevant to your organisation, based on up-to-date data, cost effective, and is deliverable with confidence.



### Strategic fit



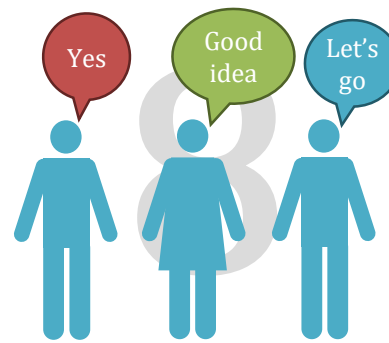
Present the energy savings opportunities inline with your organisations' strategic intent, vision, mission, values, and priorities.

### Change leadership



Gather and align the leadership team so that everyone is on-board with energy savings, commit to, and actively pursue actions to deliver energy savings in addition to the day-to-day operations.

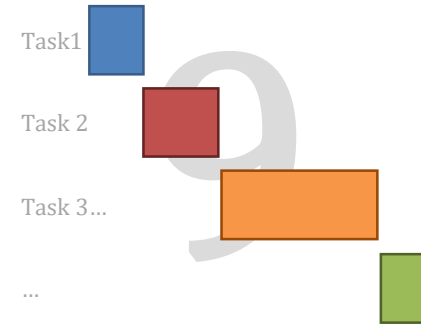
### People engagement



Provide the appropriate resources and structures to create a psychologically safe environment where employees can work together and accelerate energy savings actions and energy saving projects.

Move the whole organisation along to deliver the projects.

### Managing delivery

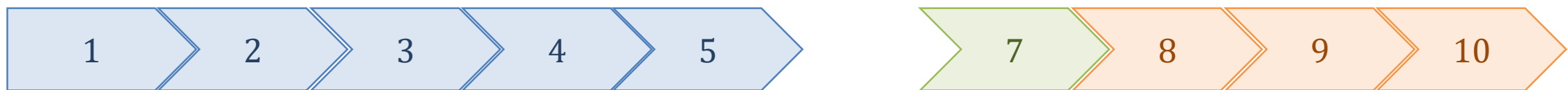
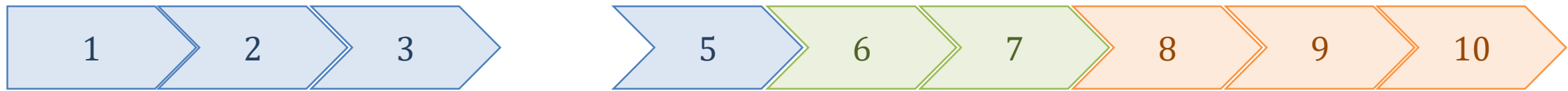
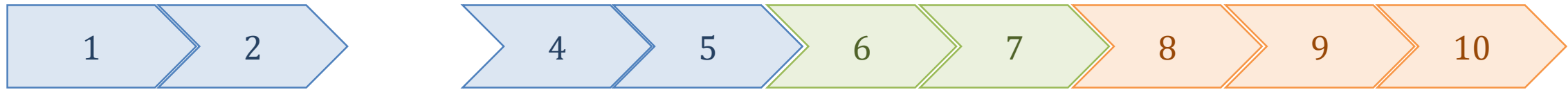
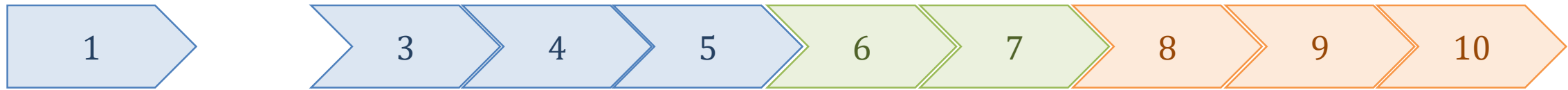


Actively take part and manage the implementation of energy saving projects to ensure they are fit-for-purpose, installed based on design, and delivers the intended energy savings without losing the business process capabilities.

### Celebrate, learn and repeat



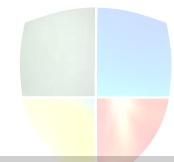
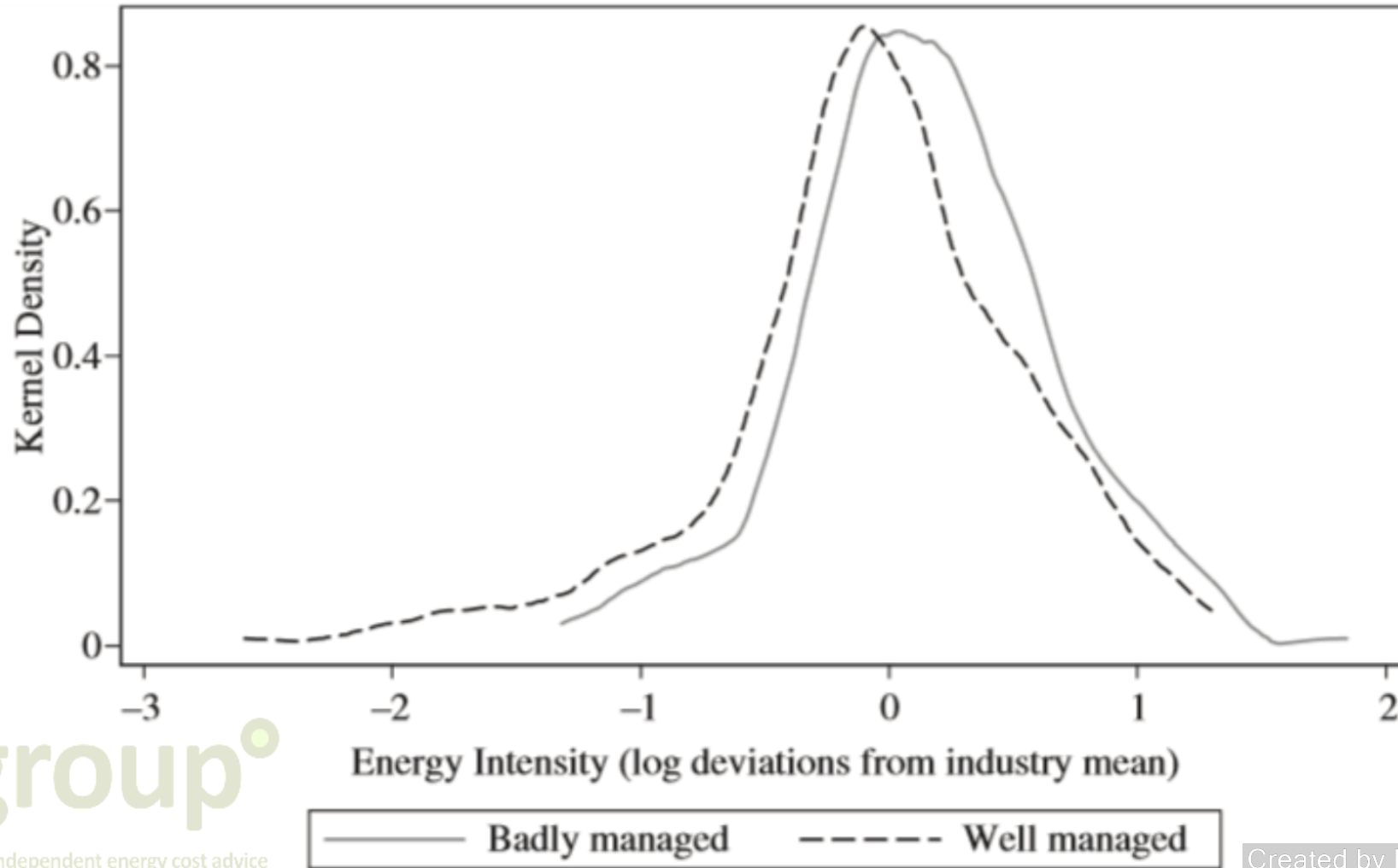
Review the results to determine if it achieved the intended energy savings, if corrections and learnings can be gleamed for the future. Celebrate the results and contributions, renew and revitalise the efforts.





# Good management matters !!!

Source: Bloom, N, et.al., Modern management: Good for the environment or just hot air?





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**Scottish Enterprise**

**Sustainability  
Support, April 2019**

# Sustainability Team Support

Sustainability Specialist team = Team  
Leader + 6 Specialists

Expert Support – Business Improvement  
Business Improvement Project Support  
Aid for Environmental Protection  
Business Improvement Academy



# Expert Support – Business Improvement

2 days fully funded consultancy support (framework contractors).

All businesses eligible: SMEs and non-SMEs.

Four Lots:

1. Energy systems and environmental technology.
2. Sustainability strategy development and environmental management.
3. Lifecycle analysis, circular economy and environmental footprinting.
4. Sustainable business practices.

# Business Improvement Project Support

Contribution to eligible costs for project implementation, e.g.

- Detailed feasibility studies and trials.
- FEED studies.
- Project management costs.
- Development and implementation of Environmental and Energy Management Systems: ISO14001, 50001.
- Temporary Specialist salary costs, for technical projects.

(regulatory compliance costs and audit costs are not eligible)

Available to SE Account Managed and Business Gateway Growth Pipeline businesses.

# Aid For Environmental Protection

- Capex funding to support companies to invest in environmental improvement, beyond EU standards.
- Sustainability Specialist led product – early engagement is crucial.
- Large grant product associated with large scale capital investment.
- Projects must demonstrate significant and quantifiable environmental outcomes.
- Support is typically for the additional cost of an enhanced environmental performance option over a credible base case.

Available to SE Account Managed businesses only.



# Business Improvement Academy

- Programme based on Lean Management / Six Sigma principles.
- Manufacturing programme led by SMAS + non-manufacturing programme led by Sustainability team.
- Supports companies to embed the concept of continuous improvement by combining tools and techniques with cultural and behavioural change.
- Focus on productivity improvement.
- Delivered through a series of workshops with one-to-one support.



## Example 1: Manufacturing business West of Scotland

- Large site with significant demand for heat and power
- ESOS report highlighted a range of efficiency and renewable energy opportunities (inc VO, PV, BEMS, lighting, heating)
- Good data from report on baseload and energy usage patterns
- SE provided four days support for high level feasibility assessment focusing on a few opportunities highlighted.
- Included high level assessment of CHP feasibility
  - Technical feasibility
  - Sizing (500 kW)
  - Approximate costs
  - Savings and payback period
  - Carbon savings (250 tpa)

## Example 2: Electronic equipment business East of Scotland

- Business fully ESOS compliant by late 2015.
- Already had ISO 9001 and 14001 accreditation: Facilities & SHEQ Manager wished to develop formal Energy Management System - ISO 50001.
- Received proposals from qualified consultants.
- Application submitted and funding contribution approved.
- Work commenced ~ 12 months duration; included energy aspects, objectives, procedures, comms support, internal auditor training, etc.
- Business benefits from planned programme of efficiency measures:
  - 12% energy reduction forecast
  - Financial savings > £55k pa
  - Carbon emissions reduction 140 tpa

# Contact

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**Thankyou for your participation:**  
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