

# THE EMA MAGAZINE

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ENERGY EFFICIENCY DURING ENERGY CRISIS



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SAVINGS  
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ESOS PHASE 3 - LATEST UPDATE



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# Dear Reader,

Welcome to the latest edition of The EMA Magazine, once again we bring you topical contributions and views on key subjects.

The EMA has always been acutely aware of the role, importance and benefits of energy management in organisations. The impact of last year's energy crisis on energy cost and security brought energy management and its significance to the attention of top management, not for the first time. Two public sector energy management professionals offer insight into how the energy crisis affected energy efficiency and the delivery of carbon reduction targets at their organisations on page 6.

For those concerned with ESOS, on page 10, we bring the latest update on ESOS Phase 3 from the Environment Agency and the Department for Energy Security and Net Zero. Whilst, the official guidance is yet to be published, with 6 months until the Phase 3 deadline, the update is likely to be crucial for informing on the compliance changes relevant to the current phase.

A large proportion of this edition is devoted to energy manager competencies and skills mapping to help those who work or wish to work as energy managers or fulfil a role associated with a delivery of energy and carbon management activities within organisations. The mapping was developed by the EMA Steering Group and can be a valuable resource for professionals and organisational team development. On pages 16-34, we are focusing on knowledge and skills inventory typically required by those with 0-2 years of experience in energy management.

The EMA Energy Management Awards 2023 are now open for entries and an overview of this year's categories is included on pages 38-41. The awards were established 9 years ago with the aim to enable everyone to celebrate their achievements without the need for a budget to enter or attend an awards' ceremony. A belief with which we continue to deliver the awards to you every year since then. This year we are even introducing two new categories to the list.

And last but not least, an article about 153 years old energy recovery technology that can be used as a step towards a low waste, low carbon future in unexpected places offers the perfect reminder of the need to think outside the box and share such experiences.

We hope you will enjoy this edition and find the articles helpful.

**The EMA Team**



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#### **EDITORIAL**

The Energy Managers Association  
www.theema.org.uk  
Tel: 0203 916 5516

#### **CONTACT**

Edita Krupova; Editorial Enquiries & EMA Membership Services Manager  
edita.krupova@theema.org.uk

#### **CONTRIBUTORS:**

Paul Graham, Michael Johnson and Mike Pedley

The EMA would like to thank to the above contributors for their time and effort in providing the content and making this issue possible. Their willingness to share experience and knowledge is exemplary and inspiring, and we hope it will encourage others to come forward and contribute in the future.

#### **ADVERTISING SALES**

The EMA Team  
Tel: 0203 916 5516  
enquiries@theema.org.uk

#### **ABOUT EMA**

The Energy Managers Association (EMA) was set up in February 2012 and represents Energy Managers across all industries. Our priority is to improve the position of energy management experts and their profession and act as their united voice. We aim to develop the skills, knowledge and experience of professionals through our training, high-quality peer to peer guidance and best practice exchange.

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# Energy Efficiency During the Energy Crisis

The effect of the energy crisis on energy management saw an increased eagerness for energy efficiency efforts and implementation of renewable electricity generation. Aside from the potential of cutting use of energy and generating onsite, it highlighted the role that those working in the industry so crucially play, and the importance and value they add to organisations and their operations. Two energy management professionals share their views on how the energy crisis affected energy efficiency and the delivery of carbon reduction targets at their organisations.



**Paul Graham, Utilities, Waste and Sustainability Manager at Kingston Hospital NHS Foundation Trust**

The NHS has set ambitious targets to reach net zero carbon emissions by 2045 in two stages (2040 for emissions we control, 2045 for emissions we can influence within the supply chain). The current energy crisis has highlighted the need to expand on-site generation, manage costs through controlling demand and recognise the impact of our supply chain, all of which contribute to this agenda.

On-site generation has paid off in big ways over the last year. Both combined heat and power (CHP) systems and on-site renewable electricity generation have become increasingly attractive

as a way to mitigate market price volatility. Most CHP engines run on natural gas so there is still vulnerability to consider as well as the direct carbon emissions produced. However, with the spark gap widening (as it has for our contracts), a new or refurbished CHP at Kingston would pay back in 1-2 years. Kingston Hospital is currently procuring a partner to deliver a low-carbon heating system and low temperature hot water ring to replace our steam pipework. We had also considered decommissioning our CHP early to get ahead of the NHS targets, but it is now likely that we will retain or refurbish our CHP and run it up to 2032 to smooth the cost increase from electricity generated heating. On a more positive note, the solar photovoltaic array we snuck into the roof replacement project for our maternity building is now likely to pay back in 4-5 years rather than the predicted 13-14 years. I hope to see more renewable on-site generation

across the NHS during this period of high prices.

The reduced payback period for energy efficiency projects is also a welcome benefit of the energy crisis. Such projects have been hard for NHS organisations to support due to the constraints on capital funding. The sometimes lengthy returns make packages of efficiency works a hard sell compared to immediate clinical priorities and other essential infrastructure works (whether repairing key equipment that broke or expanding critical services). I hope we will see more efficiency projects getting the go ahead in the coming year. We have included a phase of energy conservation measures in our energy services partnership. These are essential to reach the net zero carbon targets. In an ideal world, we would have reduced our heating demand before replacing the heat generation technology. However, with a hard deadline on the old solution we are making the most of this non-ideal order of

works by seeking to include some efficiency measures in the project. The impact of the energy crisis on our supplier contracts has highlighted which industries are the highest energy users and so most exposed to energy price rises. Some key services have seen price rises of 20% or more year on year and few suppliers were willing to discuss ways we might mitigate this cost pressure. Most of those effected use heat intense processes, so the uplift was driven by the rise in gas rates but some are also transport heavy and responded to the increase in petrol prices. While the initial pain of these cost increases is real, I think it has also helped us to consider which of our suppliers are the worthiest targets for decarbonisation. From April 2023, the NHS requires all contracts worth more than £5m per year to publish a carbon reduction plan which should help put pressure on these larger contributors.

NHS England is working very hard across the sector to help individual organisations to decarbonise well. Tools like the NHS Standard Contract Service Conditions are used to provide direction in which elements of sustainability and carbon reduction to prioritise each year. I find this approach helpful as I try to encourage my Trust to make good decisions in this area and allocate finite resources to deliver them. The Greener NHS teams'

briefings and data collections are making meaningful comparison possible between Trusts on a variety of metrics. The new Net Zero Building standards (published February 2023) introduces definition to what our future estate will look like. To further support us to deliver the NHS targets on time, I would like to see more funding structures that enable retrofit works, especially an easing of the capital rules where there is a clear benefit to the public (e.g. air quality and carbon reduction). The Public Sector Decarbonisation Scheme has helped many organisations to invest, not just in the NHS, but the first come first served delivery makes the choice of projects funded somewhat arbitrary (maybe I'm biased because we were unsuccessful in the Phase 3b round). I'd like to see continued sharing of good examples and learning from less successful ones. This is challenging because no-one wants to admit they made mistakes, but we need good, visible examples of failure to

avoid repeating them.

**Author's profile:**

Paul is the Utilities, Waste & Sustainability Manager at Kingston Hospital. He is a member of EMA who has been working in the sector for the last 7 years. He is currently working to set the Trust up for a low-carbon future by transforming how they heat their buildings.



**Michael Johnson, Environment & Sustainability Lead at Cheshire Constabulary and Cheshire Fire and Rescue Service**

The current increase in pricing has focused public sector minds, but more on the budgetary impact on medium term budgeting and future stages. Rising prices and the tendering of new contracts in our case, have looked at the



potential forecasts for medium term finance planning from stagnate or reducing budgets. This results in more significant projects to reduce consumption and therefore carbon projects are more difficult to propose and win approval. Although with longer term benefits, the initial and capital costs are not readily available.

Funding grants for the public sector are available but have not been very successful for the emergency services for assorted reasons. Unlike education, emergency services do not have ring-fenced funds to bid for. The NHS, including the Ambulance Service, has been more successful due to the size of building and work packages able to meet the criteria. Meeting criteria and being able to meet time constraints on delivery of projects from procurement to completion is challenging. First come, first served has also come in for criticism as many emergency services are under resourced in this area. We have asked as a national group for quality and more even spreading of funding as this would be beneficial. If you did not hit the button in 13 minutes you were too late!!

We have the strategy in place and a longer term plan for new buildings that will have a significant impact on our emissions. Old historical estate is difficult and expensive to bring up to the required standard but fortunately the planning around re-organisation of the estate is already in place.

Nationally, the Fire Service has just published its first national net zero sustainability strategy and toolkit. The Police Service will follow shortly, and this will allow for a wider national approach. This

national approach and clear guidelines is what benefits the NHS and further the Ambulance Service.

But in simple terms, there has not been much change in our progress due to the current energy crisis. We are slowly moving forward, not fast enough, but moving. The optimist says we are moving towards net zero or carbon neutrality. In reality, the speed is not enough, and I think the successful operations benefit from that drive from the top of the organisation.

There is still a gap in senior leadership across organisations in terms of education, the need for dramatic action. Do they fully understand what Zero or Neutrality means, even what it looks like in terms of their business or operation and how to achieve it? Many have knowledge but only some act!

The one benefit is senior people take notice of cost and want to know how to mitigate it and this gives us an opportunity. A big opportunity to demonstrate how to drive down consumption and cost and therefore emissions.

#### **Author's profile:**

Michael has worked with Cheshire Constabulary and Cheshire Fire and Rescue Service for six years now. Previously, he ran his own company after spending 25 years with the Carphone Warehouse plc Group in a range of environmental roles. Michael is a Member of the EMA since the beginning, IEMA, CIWM and chairs the National Emergency Services Environment and Sustainability Group.





# ENERGY AND CARBON MANAGEMENT COURSES

## ONLINE TRAINING SCHEDULE

### JUNE

15-16th Fundamentals of Energy Management  
30th Essential HVAC Control and Optimisation

### JULY

7th Become an ESOS Lead Assessor  
21st Energy Auditing Techniques

### SEPTEMBER

7th SECR Compliance  
15th Energy Procurement  
21-22nd Energy Management in Building Services  
29th Net Zero Fundamentals and Strategies

### OCTOBER

6th On-Site Electricity Generation  
13th Reaching Net Zero  
20th Energy Monitoring, Targeting and Validation

### IN-PERSON COURSES

In addition to the virtual training courses, the EMA delivers two in-person courses:

- Understanding and Delivering Behavioural Change Programme course
- Turning Data into Energy Savings course

These courses are scheduled on demand and to express your interest, please email [jana.skodlova@theema.org.uk](mailto:jana.skodlova@theema.org.uk)

**For an up-to-date list of all our courses visit our website at [www.theema.org.uk](http://www.theema.org.uk)**

*"A huge amount of information on various systems found in building services. Delivered in a nice way where questions were encouraged."*

**International BEMS Manager – WeWork**

*"Excellent knowledge transfer and applicable tools, techniques and methodologies."*

**Head of Purchasing & Contracts – Metroline**

*"Very helpful, targeted and specialised. A big help to my professional development."*

**Property Project Manager - Field Studies Council**

*"Well structured, well-paced, right depth."*

**Energy Manager - Tesco Stores Ltd**

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## PHASE 3 - latest update

**Whether you are a participating organisation subject to the Energy Savings Opportunity Scheme (ESOS) compliance, an ESOS Lead Assessor, a member of an ESOS assessment team or a professional body with a register of ESOS Lead Assessors, the 5th December 2023 has (no doubt!) been marked in your diary since at least the 6th December 2019.**

The time in between the two ESOS notification deadlines has been filled with the BEIS's consultation on Strengthening the ESOS, with dissecting and discussing the Government's response to the consultation and waiting for the changes, which as part of the Energy Bill are yet to pass the legislative scrutiny and somewhat clogged up Parliamentary timetable.

With less than six months to the ESOS Phase 3 compliance deadline, a number of key elements, crucial for the ESOS players, require finalisation. The Environment Agency (EA)'s Comply with the ESOS Guidance is in need of an update to reflect the Phase 3 changes, the notification system is being re-designed as we type which means that no notification submissions are possible at present to mention just a few. Undeniably, the missing pieces will fall into place when the regulation completes all the parliamentary stages in both

Houses. Rumours have it, it could be sometime in September or October. So, where does this leave the various ESOS players who rely on guidance to ensure their organisational compliance with Phase 3?

Thankfully, the regulatory approval limbo has been filled with sporadic EA's Newsletters adding some clarity on what is to come, even if not answering the burning question of 'When?'. Drawing on the latest (at the time of writing) [Newsletter](#)<sup>1</sup>, let us share with you a summary of the update from the Department for Energy Security and Net Zero (formerly BEIS) on ESOS Phase 3 implementation.

### **Phase 3 ESOS changes - What are they and do you have to comply with them?**

ESOS Participants are still required to comply with Phase 3 of ESOS and Government still intend to make the changes announced in the government response to the ESOS consultation. The changes will be subject to legislative scrutiny and timetable, with the enabling primary legislation (the Energy Bill) currently passing through Parliament. Government will update participants when the Energy Bill has received Royal Assent, and the draft regulations are introduced to ensure there is a reasonable amount of time to meet the new requirements.

The changes set out in the government response for Phase 3 are:

- **Requirement for a summary template to include compliance information in the ESOS report**
- **Requirement to submit additional data in the compliance notification (see Table on the next page)**
- **Requirement to include an energy intensity metric in ESOS reports**
- **A change to the de minimis exemption so that participants' Significant Energy Consumption covers at least 95% of their Total Energy Consumption (as compared to 90% in Phase 2)**
- **Requirement for ESOS reports to provide more information on next steps for implementing recommendations**
- **Requirement for participants to set a target or action plan following the Phase 3 compliance deadline, on which they will be required to report against annually**
- **Requirement to share ESOS reports with subsidiaries**

And yes, take these as given and consider them when preparing your ESOS Phase 3 compliance.

# Become an ESOS Lead Assessor



Play a fundamental role in the Energy Savings Opportunity Scheme (ESOS) cycle by ensuring that organisations complete their ESOS compliance in line with the regulatory requirements and by its deadline.

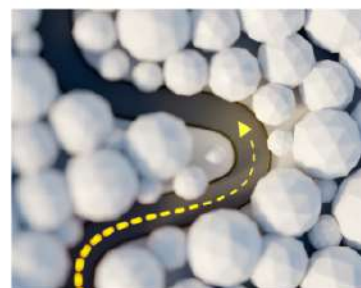
## Why

Becoming an ESOS Lead Assessor is a great way to demonstrate your professional ability and step up to the next level in your career. If you achieve this professional status, you can state your sector focus and specialism, allowing you to provide even more value and expertise to the organisation you are working for. ESOS Lead Assessors can be an employee of an organisation which qualifies for ESOS ('in-house') or a third party.



## How

Applicants who aim to become approved as ESOS Lead Assessors are expected to demonstrate a good quality and relevant professional energy assessment and energy auditing experience relevant to the PAS 51215 competencies and register with one of the ESOS Lead Assessor Registers.



## EMA ESOS Lead Assessors Approval Process

Applicants who opt to achieve their ESOS Lead Assessor approval and registration with the EMA will follow these steps:

1. Completion of an Application Pack
2. Attendance of the Become an ESOS Lead Assessor course
3. Completion of a written assessment
4. Completion of a Peer Review and Technical Interview



## What Next

As the ESOS Phase 3 compliance deadline is looming closer (5th December 2023), do not leave it too late to become an ESOS Lead Assessor. Email us or arrange a call to discuss the requirements of the EMA application and approval process.

E: [jana.skodlova@theema.org.uk](mailto:jana.skodlova@theema.org.uk) - W: [www.theema.org.uk](http://www.theema.org.uk) - T: 0203 916 5516

**ESOS Guidance for Phase 3 to be published after the new ESOS regulations have been approved**

Final guidance will be published on GOV.UK once the new ESOS regulations have been laid in Parliament. This will happen after the Energy Bill, which contains the regulation making power, has been passed by Parliament. The Environment Agency / Department for Energy Security and Net Zero (DESNZ) will communicate via newsletters and other communications before final publication of the guidance to make you aware of the changes to the scheme to enable quotations and to allow assessors to carry out assessments before the compliance deadline.

**Summary report template for submitting reports to the Environment Agency – THE TEMPLATE that everyone has been after**

A table has been provided by the DESNZ and is shared below setting out the information that will need to be notified to comply with the expected Phase 3 requirements, subject to Parliamentary approval of the legislation. The idea is that the listed information will be required to input into the new notification system (when available) and any specified format for providing the information in the table will be finalised and published once the new ESOS regulations are laid. Details will be provided on how to submit the notification on the new digital service currently under development.

Information to be provided	New Phase 3 requirement	New reporting requirement (collected but not reported in Phases 1-2)
<b>1. Responsible undertaking information</b>		
Name, address, contact details and company registration number of organisation		
Details of global parent and relevant trusts		
Standard Industrial Classification (SIC) code(s) of the responsible undertaking	✓	
Reason for qualification in ESOS in Phase 3 (i.e. based on employee numbers, turnover, balance sheet or inclusion in corporate group)	✓	
<b>2. Corporate group information</b>		
Number of undertakings in the notification		
Names and company registration numbers (where applicable) of all undertakings covered by the notification	✓	
Details of any agreement to consolidate or disaggregate corporate groups (including franchises) and details of any changes to corporate groups		
Additional information on corporate group structure, for example a chart that sets out the structure etc of the group and information on e.g. what type of control	✓	
Standard Industrial Classification (SIC) code of other undertakings in the corporate group, where different to the responsible undertaking	✓	
<b>3. Responsible officer details</b>		
Name, position and contact details (not to be published)		
Confirmation that they have reviewed the results of the assessment and that the organisation has met scheme requirements		
Confirmation that results of the energy audit or alternative compliance route have been shared with subsidiaries		
<b>4. Lead assessor and other assessors</b>		
Name of lead assessor (not to be published)		
Relevant approved register		
Whether the lead assessor is employed by the participant (or participant group)	✓	
Names of other personnel who have carried out site visits, gathered data and/or drafted parts of the report (not to be published) and whether they are employed by the participant (or participant group)	✓	
<b>5. Use of alternative compliance routes, estimates and sampling</b>		
Use of alternative compliance routes, where applicable		
Notification of estimates used for calculating energy consumption, where applicable		
Notification that the energy audit does not include an analysis based on energy consumption profiles, where applicable		
Details of site sampling – number of site visits, proportion of total and rationale for method	✓	
<b>6. Energy consumption information</b>		
Total Energy Consumption (TEC) in kWh Plus a breakdown in kWh by fuel type and use category (buildings, transport or industrial processes)		✓

Significant Energy Consumption (SEC) in kWh (based on de minimis of 5%) Plus a breakdown in kWh by fuel type and use category (buildings, transport or industrial processes)		✓
If ISO 50001 certification is used, an explanation of how certification scope matches (or otherwise) the scope required by the Significant Energy Consumption and what proportion of the SEC is covered by ISO 50001	✓	
An energy intensity ratio (see Q5 above) for each of buildings, transport and industrial processes and information on estimates used Any additional ratios the organisation elects to include	✓	
<b>7. Energy savings opportunities identified</b>		
Total estimated energy savings in kWh from energy savings opportunities identified in Phase 3, through the energy audit and/or alternative compliance routes		✓
A breakdown in kWh of the opportunities identified by: • organisation (for group level reports); • use category (buildings, transport or industrial processes); and • type of opportunity (data quality, energy management practices, behaviour change interventions, training, controls, zero/low cost measures, short-term investments paying back in 3 years or less, longer term investments paying back in more than 3 years)	✓	
Total estimated savings in kWh achieved by the organisation during Phase 3 (i.e. since the previous ESOS compliance deadline) This can be from opportunities identified through ESOS reports, through alternative compliance methods, or through any other means unrelated to ESOS.  The estimation of energy savings can either be based on the original estimate in the ESOS report or alternative compliance method, on a subsequent more detailed feasibility study, or by a post-hoc analysis of savings achieved. It should be stated which is used.	✓	
A breakdown in kWh of the savings achieved by: • organisation (for group level reports); • use category (buildings, transport or industrial processes); and • type of opportunity (data quality, energy management practices, behaviour change interventions, training, controls, zero/low cost measures, short-term investments paying back in 3 years or less, longer term investments paying back in more than 3 years)	✓	
<b>8. Implementation considerations and government support</b>		
Details of government support received in relation to investments in energy efficiency and/or carbon emissions	✓	
Details of implementation considerations (see Q7 above)	✓	
<b>9. Historic information from Phase 1 and 2 of ESOS (where the participant was required to comply in these phases)</b>		
Total Energy Consumption (TEC) in kWh for each of Phases 1 and 2 Where this is available, broken down by use category (buildings, transport or industrial processes)	✓	
Significant Energy Consumption (SEC) in kWh for each of Phases 1 and 2 Where this is available, broken down by use category (buildings, transport or industrial processes)	✓	
Total estimated energy savings in kWh from energy savings opportunities identified in the ESOS report or alternative compliance method for each of Phases 1 and 2. Where this is available, broken down by use category (buildings, transport or industrial processes)	✓	
Where this is available, total energy savings in kWh achieved in each of Phases 1 and 2	✓	
Voluntary additional information to describe any changes to the organisation between Phases 1,2 and 3	✓	

Table: The table sets out the information that will need to be notified to comply with the expected Phase 3 requirements. Where kWh is mentioned above, participants can use more other Wh units e.g. MWh, GWh or TWh where appropriate.

**Notifications for Phase 3 cannot be submitted yet**

Until the Phase 3 requirements have been finalised in legislation and the updated IT system which is currently being developed has been appropriately tested, the Phase 3 notifications cannot be submitted. The notification system will be made available in time to enable participants to meet notification requirements.



**Metrics for ESOS reporting and how they relate to metrics required for Streamlined Energy and Carbon Reporting (SECR)**

The Government Response to the ESOS consultation stated that Government will require ESOS reports to include an overall energy intensity ratio in terms of kWh/m<sup>2</sup> for buildings, kWh/unit output for industry and kWh/miles travelled for transport.

- For buildings, the metric should use Gross Internal Area (GIA)
- For transport the metric should use kWh/person mile for passenger transport and kWh/tonne mile for freight
- For industrial processes the metric should be based on kWh per measure of production output. Use mass (ie kWh/tonne) if possible. Alternatively, if this is not an option you can use volume (ie kWh/litre) or unit (kWh/unit) whichever is the most relevant to the process
- In addition, please provide a measurement of overall energy intensity in terms of turnover (ie kWh/£)

Government will provide more detailed guidance following legislation. Organisations may choose to provide additional metrics, for example providing a more detailed breakdown by fuel type. Organisations should bear in mind that whatever metric is chosen for Phase 3 should be reported against in future phases, as one of the purposes of the metric is to allow comparisons to be made between phases. If organisations need to use estimates to calculate

metrics (for example to estimate missing floor area data or estimate the energy split between buildings and processes), details should be kept in the evidence pack.

The intensity ratio required for SECR is a similar kind of metric as this compares emissions data with an appropriate business metric or financial indicator, such as square metres of floor space or sales revenue. However, the SECR



metric relates to greenhouse gas emissions, while the ESOS energy intensity metric would relate to energy consumption.

**Significant Energy Consumption (SEC) de minimis change**

Changes to the SEC de minimis mean that organisations must calculate areas of SEC that cover at least 95% of a participant's total energy consumption, rather than 90% as currently referred to in regulation 25 of the current ESOS Regulations. This is to reflect a reduction to the de minimis exemption from 10% to 5%.

This change was set out in the Government Response to the ESOS consultation of 28 July 2022, but the final guidance will not be provided until the Parliamentary process for new ESOS regulations is complete.

**Information requirements for next steps**

When providing information on next steps (referred to as 'implementation considerations' in the Table), ESOS reports should cover considerations relating to how the opportunities identified could be implemented. ESOS reports should:

- Provide an indicative programme of options which combines a selection of options recommended in the ESOS report and outlines the combined costs, benefits and payback period for the package
- Suggest appropriate intervention points for any opportunity identified which is not suggested to be implemented immediately. This could be for example when renewing a transport/equipment lease or when replacing existing equipment

• Signpost where buildings covered by the report are also covered by the Minimum Energy Efficiency Standards (MEES) for non-domestic buildings and whether this is relevant to the recommendations in the report (for example where there may be a requirement on landlords to carry out work that would affect a recommendation)

• Provide information on government schemes which could support businesses to implement energy savings opportunities recommended in the report

Where relevant –

- Include information on financing options to implement energy savings opportunities
- Include information on how building, transport or equipment leases can affect an energy savings opportunity identified in the report
- Provide detailed guidance on what actions to take next, where this is useful for the organisation e.g. what type of contractor, and terms of reference, might be required to implement recommendations

This information is expected to be required for both participants that commission energy audits and those that use the alternative compliance routes. For participants using an alternative compliance route that do not have a dedicated ESOS report, this should be recorded in the evidence pack.

### Action plans

The action plan does not need to be completed until after the compliance deadline and is expected to be required by December 2024. The details on how to complete the action plan will be published in final guidance on GOV.UK once the new ESOS regulations have been laid in Parliament in advance of the Phase 3 compliance deadline.

### ESOS reporting to subsidiaries

Where an ESOS participant is part of a corporate group, the 'responsible undertaking' that is responsible for ESOS compliance for that corporate group will be required to disseminate certain relevant information contained in the ESOS report, or the whole of the report, to subsidiary undertakings within the corporate group

and to report that they have done so. There may be some cases where information in the ESOS report cannot be shared without breach of another legal obligation. Participants should seek their own advice as to whether this is the case and, if so, may be able to redact or summarise parts of the report so as to avoid such breaches.

The information received by the subsidiary in relation to the ESOS report should be at a minimum:

- Details of any site visits, data gathered or energy consumption profiles specifically for that subsidiary
- Relevant energy savings opportunities for that subsidiary, either specifically or as part of a general recommendation across multiple parts of the organisation
- Costs and benefits of such opportunities
- Implementation considerations relevant to those opportunities (as set out in answer to Q8 about next steps)

### PAS 51215 requirements for Phase 3

In the Government Response to the

ESOS consultation it was set out that any net zero reporting would be voluntary for Phase 3. In the response Government outlined the intention to develop a PAS standard to cover the additional net zero requirement that is intended to be introduced for Phase 4 of ESOS and BSI consulted on this standard (PAS 51215-1) from 6 February to 20 March 2023. Using this PAS will not be required for Phase 3, though participants may use it on a voluntary basis.

**There is no question about it; the wait for the ESOS changes to go through the Parliamentary scrutiny continues. But while the regulation might be set in stone only a few weeks ahead of the Phase 3 deadline, you can get ready and act now. Read all the available information carefully and prepare your organisation or client thoroughly. For those who have already completed some or all of the work for Phase 3, do revisit it now, you have been equipped with some more detail. Lastly, don't forget to keep an eye on any further announcements from the Environment Agency and DESNZ.**

*Source: The information shared in this article is based on the [Environment Agency's ESOS Newsletter – May 2023 \(Issue 12\)](#)*



## ENERGY MANAGERS ASSOCIATION

ENERGY MANAGER  
COMPETENCY  
MAPPING

## ABOUT THE ENERGY MANAGER COMPETENCY MAPPING

The purpose of the Energy Manager Competency Mapping is to set out competencies of professionals who work as energy managers or fulfil a role associated with a delivery of energy and carbon management activities within an organisation.

One of the main goals is to raise awareness of the necessary energy and carbon management knowledge and skills inventory, and enable organisations and professionals to use the competencies for assessment purposes during:

- Further professional development planning
- Upskilling and career path
- Team development and/or expansion
- Unifying knowledge and skills across sites and organisations
- Recruitment and hiring decisions
- Employee review and promotion
- Strategic business development

The mapping was developed by the members of the EMA Steering Group.



2023



## INTRODUCTION

The Energy Manager Competency Mapping identifies the specific skills, knowledge, abilities, and behaviours required to operate effectively as an energy manager, or of those in associated roles delivering energy and carbon management in an organisation. It offers guidance on what essential competencies an energy manager should possess.

The key principles used during the development of the competency mapping were:

- to identify the essential competencies that are required to perform the energy management well and address organisational requirements in the areas of energy and carbon management
- to focus on the general areas to perform job responsibilities, which we refer to as core competencies or ancillary competencies. These represent the work that energy managers perform. Each core or ancillary competency is split into objectives which cover skills, knowledge, abilities or behaviours required for each competency
- to create standards for professional development and energy managers' training

The Energy Manager competencies are divided into professional years of experience.

0-2  
YEARS

3-6  
YEARS

6+  
YEARS

The years of experience are an indicator for a guidance only, the competencies can overlap and the listed years are not necessarily a reflection that fits every organisation or business site.

Similarly, the role titles listed in each experience period are not exhaustive and tend to vary across organisations.

In this issue we will focus on competencies identified for 0-2 years of experience.





# ENERGY MANAGEMENT COMPETENCIES

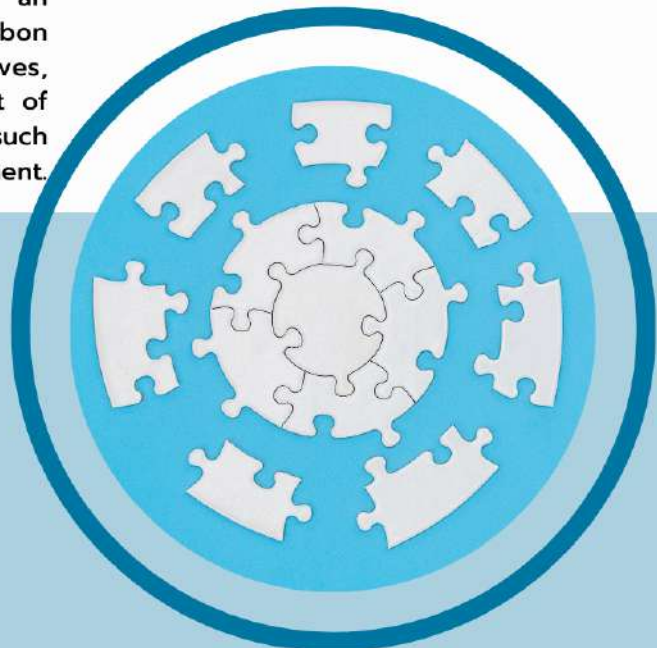
EXPERIENCE: 0-2 YEARS

**TYPICAL ROLES AND POSITIONS: JUNIOR ENERGY  
MANAGER, ENERGY OFFICER, JUNIOR ENERGY MANAGER  
APPRENTICE**

There has never been a more exciting time to work in energy management as the UK embarks on its commitment to become net zero carbon country by 2050 and tackles challenges of volatile energy costs and energy security with the race for alternative energy supplies. The UK needs people with a passion for sustainability and reduction of energy consumption to tackle climate change and make its ambitious plans a reality.

To drive forward sustainability and net zero commitment, an energy manager beginner works with energy, sustainability and/or estates team, to deliver all aspects of energy and carbon management for an organisation. The projects an energy manager at this level gets involved in are broad ranging and represent the breadth of an organisation's energy and carbon management reduction objectives, including targets within the context of wider sustainability commitments, such as carbon, water and waste management.

After practicing the energy management role for two years, it would be expected to have a broad range of technical knowledge and skills such as understanding the economics of energy consumption, environmental and regulatory requirements relevant to energy and climate change as well as hands-on activities such as conducting onsite energy and water audits. With the skills and knowledge, the energy manager will help drive behaviour change on the ground, shifting energy usage and the wider teams' perspective of energy consumption.



New Skills

# ENERGY MANAGEMENT OVERVIEW COMPETENCIES

0-2 YEARS OF EXPERIENCE\*  
(Junior Energy Manager, Energy Officer, Junior Energy Manager Apprentice)

## Core Competencies

Technical & Operational

Energy Auditing

Monitoring, Targeting & Validation

Regulation, Compliance and Voluntary Schemes

Carbon Management

Behavioural Change, Motivation, Communication

Energy Management Strategy & Plan

Energy Procurement

Onsite Energy Generation

## Ancillary Competencies

Water Management

Waste Management

Fuel Efficient Transport

IT

\*practitioners with 0-2 years of energy management experience would be expected to meet the listed competencies towards the end of the two year period, and they should be able to interpret and understand the competencies' objectives.



# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

CORE COMPETENCY					
TECHNICAL & OPERATIONAL					
Fundamentals of Engineering	Energy & Heat Transfer	Lighting	HVAC (Heating/Cooling/ Refrigeration)	EV Infrastructure	General Controls, Optimisation & Retrofits
Objective 1: Understand how energy is consumed in different types of buildings and/or processes					
Objective 2: Understand the common energy technologies and systems					
Objective 3: Understand how energy technologies and systems operate					
Objective 4: Understand how to use operational and maintenance controls to operate the energy technologies and systems efficiently					
Objective 5: Understand the role of design, installation and commissioning of energy technologies and systems					
Objective 6: Understand the role of low unregulated small power systems (e.g. computers, AV, kitchen units, etc)					

**Available courses:**



**FUNDAMENTALS  
OF ENERGY MANAGEMENT**



**ESSENTIAL HVAC  
CONTROL AND OPTIMISATION**



**ENERGY MANAGEMENT  
IN BUILDING SERVICES**

New Skills

# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

## CORE COMPETENCY

### ENERGY AUDITING\*

Objective 1: Understand the basic process for energy auditing

Objective 2: Be able to prepare and conduct an energy audit (Practitioners at this stage of experience should be able to undertake an onsite energy audit, and as a minimum be able to identify and understand the typical and largest energy uses.)

Objective 3: Be able to scope and interpret site data before an audit commences

Objective 4: Be able to grasp auditing techniques that will be addressed for the systems below, but they can be applied to most energy consuming items:

- Heating and Water systems
- Cooling systems
- Pumping systems
- Air handling systems
- Lighting
- Compressed air
- Small power (IT, kitchen, etc)

Objective 5: Be aware and able to identify appropriate control systems (e.g. time, clocks, pressure, etc)

Objective 6: Understand basic reporting techniques and report writing (In their report writing, practitioners at this stage of experience should be able to acknowledge different needs of stakeholders and what is relevant, e.g. investment grade audit.)

Objective 7: Be able to conduct basic calculations of savings and return on investment

#### Available course:



#### ENERGY AUDITING TECHNIQUES

\*ENERGY AUDITING IS A CORE SKILL OF AN ENERGY MANAGER AND MUST GO BEYOND A MINIMUM DESKTOP AUDIT. UNDERSTANDING OF SITES, SYSTEMS AND CONTROLS THAT AN ENERGY MANAGER HAS AVAILABLE IS CRUCIAL FOR THE ROLE.



# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

CORE COMPETENCY

**ENERGY MONITORING, TARGETING AND VALIDATION**

- Objective 1: Understand what monitoring and targeting is
- Objective 2: Understand data gathering techniques, data quality, accuracy and resolution
- Objective 3: Understand the basics of using data
- Objective 4: Be able to perform basic analysis of data
- Objective 5: Understand non-energy data such as weather, temperature, occupancy, footfall, etc.
- Objective 6: Understand how to interpret data and create value
- Objective 7: Understand baselines and benchmarking (also incl. temporary monitoring such as weather, temperature, occupancy, footfall, etc.)
- Objective 8: Understand measurement and targeting software
- Objective 9: Understand how to sustain ongoing M+T
- Objective 10: Understand how to report data and in what format
- Objective 11: Be able to compare different energy assessment methods
- Objective 12: Be aware of simple and complex data validation (such as IPMVP)
- Objective 13: Understand project validation

Available course:



**ENERGY MONITORING, TARGETING  
AND VALIDATION**

New Skills

# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

## CORE COMPETENCY

### REGULATION, COMPLIANCE AND VOLUNTARY SCHEMES

Objective 1: Be aware of key UK legislations, policies and directives relevant to energy and climate change

Objective 2: Understand what key UK legislations, policies and directives are and what they do

Objective 3: Be aware of ancillary regulations and policies

Objective 4: Be aware of voluntary schemes, standard and specifications relevant to energy and climate change

Objective 5: Be aware of economic incentives and taxes for energy management

Objective 6: Be aware of penalties for non-compliance

Objective 7: Be aware of reputational risk

Objective 8: Be able to quantify the impact of legislation on an organisation

Objective 9: Be able to anticipate broad changes that might affect long-term organisational plans

Objective 10: Know where to find current legislation and regulatory information

#### Available courses:



**SECR COMPLIANCE**



**BECOME AN ESOS LEAD ASSESSOR**

*New Skills*

# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

CORE COMPETENCY

**CARBON MANAGEMENT**

- Objective 1: Understand organisation's carbon emissions and scopes
- Objective 2: Understand emission scopes 1, 2 and 3
- Objective 3: Understand factors influencing carbon reduction
- Objective 4: Be able to calculate and assess simple carbon footprint
- Objective 5: Understand where carbon reporting and carbon sit under legislation (SECR, Net Zero)
- Objective 6: Understand the terms 'carbon neutral' and 'Net Zero', and the difference between them
- Objective 7: Understand the concept of developing a cost of carbon
- Objective 8: Understand drivers for carbon management (climate change, reputational damage, etc.)
- Objective 9: Understand biodiversity (broader understanding)
- Objective 10: Understand carbon offsetting and integrity of carbon offsetting projects
- Objective 11: Understand carbon insetting

**Available courses:**



**NET ZERO  
FUNDAMENTALS  
AND STRATEGIES**



**REACHING  
NET ZERO**



New Skills

# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

## CORE COMPETENCY

### BEHAVIOURAL CHANGE, MOTIVATION AND COMMUNICATION\*

Objective 1: Understand why people behave the way they do, why people behave differently

Objective 2: Be able to identify, understand and engage the potential and key audience for change

Objective 3: Understand organisation's drivers and what/who influences them

Objective 4: Understand different options for a behavioural change programme (personnel awareness, campaigns, competitions, posters, etc.)

Objective 5: Understand leadership skills and how to motivate people as a leader

Objective 6: Be able to prepare a business case using tangible and intangible elements

Objective 7: Understand how to get a proposal approved

Objective 8: Understand the key elements of delivering the programme – how to plan the delivery

Objective 9: Understand how to measure the success and report effectively on the programme

Objective 10: Be able to identify what next steps to take to ensure a successful completion to the programme and set the foundations for future programmes

Objective 11: Understand supplier engagement

#### Available course:



#### UNDERSTANDING AND DELIVERING BEHAVIOURAL CHANGE

\*WHILST AT THE 0-2 YEARS OF EXPERIENCE THE UNDERSTANDING OF THE OBJECTIVES IS CRUCIAL, IT IS NOT EXPECTED FROM PRACTITIONERS TO RUN/MANAGE BEHAVIOURAL CHANGE IN A WORKPLACE/ORGANISATION AT THIS STAGE.

New Skills

# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

## CORE COMPETENCY

### ENERGY MANAGEMENT STRATEGY AND PLAN

Objective 1: Understand the global energy and sustainability trends and their impact on business operations

Objective 2: Be able determine suitable objectives and targets for improvement

Objective 3: Be able to develop an action plan around energy, carbon and water

Objective 4: Understand how to liaise with other parts of business to ensure organisation wide strategy

Objective 5: Understand who is responsible for setting and delivering the strategy

Objective 6: Understand who the key stakeholders are

Objective 7: Understand what financial elements the strategy/plan requires: what would be accepted/ what would be not, what payback would it bring, what ongoing funding is required

Objective 8: Understand how to deliver and implement the strategy, and what steps need to be taken to turn the strategy/plan into reality – what needs to be done

Objective 9: Be able to influence any applications for the delivery of the strategy

Objective 10: Understand what the processes for embedding the strategy within a business are

Objective 11: Understand how success of the aspects of the strategy will be measured and verified

#### Available courses:



**NET ZERO  
FUNDAMENTALS  
AND STRATEGIES**



**REACHING  
NET ZERO**

New Skills

# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

## CORE COMPETENCY

### ENERGY PROCUREMENT

- Objective 1: Understand the UK electricity and gas industry structures
- Objective 2: Understand what makes up delivered energy tariffs
- Objective 3: Understand wholesale energy cost and how the final cost is calculated
- Objective 4: Understand the basic drivers of energy prices in the UK
- Objective 5: Understand the basic contract types available in the UK
- Objective 6: Be able to run a basic procurement exercise (e.g. single site pricing tender or a small value contract)
- Objective 7: Understand the risk management associated with energy purchasing and energy security
- Objective 8: Understand bill validation
- Objective 9: Understand how to offset energy demand (PPAs, renewable gas & electricity, REGOs, RGGOs)
- Objective 10: Understand what third party intermediaries do and how they are compensated

Available course:



**ENERGY  
PROCUREMENT**

*New Skills*

# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

## CORE COMPETENCY

### ONSITE ENERGY GENERATION

Objective 1: Be able to define the main technologies used for on-site electricity and heat generation

Objective 2: Be able to identify appropriate technology for deployment in a building

Objective 3: Understand how to size the generation technology required

Objective 4: Be able to assess how and where to connect the generation technology

Objective 5: Understand finance options (community energy, PPA)

Objective 6: Be able to evaluate the financial incentives, constraints and returns on investment available for each technology

Objective 7: Understand appropriate technology for deployment and practical considerations with this (incl. what may prevent on-site generation from being deployed)

Objective 8: Understand key stakeholders involved in the generation project delivery

Objective 9: Understand the process of dealing with DNOs to gain permission for generation and the possibility of exporting to the grid

**Available course:**



**ON-SITE  
ELECTRICITY  
GENERATION**

New Skills

# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

## ANCILLARY COMPETENCY

### WATER MANAGEMENT

Objective 1: Understand the structure and basic operation of the UK water industry

Objective 2: Understand water, drainage and sewage charges on water billing and be able to challenge them

Objective 3: Understand how the business retail water market changed and available choices to purchase water

Objective 4: Understand how to run a basic water procurement exercise

Objective 5: Be able to identify the main uses of water within buildings

Objective 6: Be able to identify water use in the workplace and undertake a basic water audit

Objective 7: Understand how water use and energy costs may be related

Objective 8: Be aware of water accreditations and standards such as the Carbon Trust Standard for Water or International Water Stewardship Standard

Objective 9: Be aware of some basic techniques to change staff behaviour towards water use

Available course:



**WATER  
MANAGEMENT**

*New Skills*

# ENERGY MANAGEMENT COMPETENCIES

## EXPERIENCE: 0-2 YEARS

### ANCILLARY COMPETENCY

### WASTE MANAGEMENT

- Objective 1: Understand what waste streams there are
- Objective 2: Understand benefits of good waste management
- Objective 3: Understand the carbon impact of waste
- Objective 4: Understand what is involved in a waste disposal procurement exercise
- Objective 5: Understand technologies associated with waste management, treatment and storage (equipment to reduce packaging, how to minimise waste collection, waste treatment on site)
- Objective 6: Understand energy and heat waste reduction
- Objective 7: Understand waste hierarchy, the circular economy, key waste legislation, waste documentation
- Objective 8: Be aware of the UK Waste Performance
- Objective 9: Understand what happens to collected waste, waste disposal and recycling
- Objective 10: Be able to undertake waste audits
- Objective 11: Understand waste prevention
- Objective 12: Be able to collect, monitor and report waste data and performance
- Objective 13: Understand Environmental Management Systems (ISO 140001)
- Objective 14: Be aware of the Waste and Resources Action Programme (WRAP)

New Skills

# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

## ANCILLARY COMPETENCY

### FUEL EFFICIENT TRANSPORT

Objective 1: Understand key challenges associated with the transport and logistics within an organisation

Objective 2: Understand how to audit fuel consumption within an organisation

Objective 3: Understand travel hierarchy

Objective 4: Be able to collect and interpret the collected transport data

Objective 5: Understand various vehicle technologies to reduce fuel use (Electric cars, Telematics, Dashboard technology, Intelligent car/ 'Smart' cars, Traffic management system, etc.)

Objective 6: Understand the human element in fuel efficiency (e.g. drivers' behaviour)

Objective 7: Understand EV infrastructure, charging infrastructure and storage

Objective 8: Understand various fuel alternatives and their pros and cons

Objective 9: Understand the carbon emissions' impact and air pollution issues, and wider impact of transport on the climate change (present, new and emerging trends)

Objective 10: Understand local, regional, national and international initiatives/policy associated with organisational transport

New Skills

# ENERGY MANAGEMENT COMPETENCIES

EXPERIENCE: 0-2 YEARS

## ANCILLARY COMPETENCY

### IT

Objective 1: Understand the energy and water usage by ICT within an organisation

Objective 2: Understand various evolving systems employed for IT systems

Objective 3: Be able to estimate the carbon footprint of ICT infrastructure within a workplace, including offsite services

Objective 4: Understand carbon impact of IT waste

Objective 5: Understand various cooling systems and their efficiency

Objective 6: Understand lifecycle impact of portable IT

Objective 7: Understand proper IT disposal and repurposing of IT electrical equipment





# OVERVIEW

# ENERGY MANAGEMENT COMPETENCIES

3-6 YEARS OF EXPERIENCE (Senior Energy Manager, Energy Manager, Energy and Carbon Manager)	6+ YEARS OF EXPERIENCE (Head of Energy Management, Head of Energy, Director of Energy)
<b>Core Competencies</b>	<b>Core Competencies</b>
Technical & Operational	Technical & Operational
Energy Auditing	Energy Auditing
Monitoring, Targeting & Validation	Monitoring, Targeting & Validation
Regulation, Compliance and Voluntary Schemes	Regulation, Compliance and Voluntary Schemes
Carbon Management	Carbon Management
Behavioural Change, Motivation, Communication	Behavioural Change, Motivation, Communication
Energy Management Strategy & Plan	Energy Management Strategy & Plan
Energy Procurement	Energy Procurement
Onsite Energy Generation	Onsite Energy Generation
Project Management	Water Management
Financial Management / Budgeting	Project Management
<b>Ancillary Competencies</b>	Financial Management / Budgeting
Water Management	Fuel Efficient Transport
Waste Management	Waste Management
Fuel Efficient Transport	IT
IT	Leadership
Leadership	

*ENERGY MANAGERS ENSURE THAT ORGANISATIONS' ENERGY-RELATED ACTIVITIES ARE EFFICIENT, COST-EFFECTIVE AND RISKED ASSESSED.*

*GOOD ENERGY MANAGERS SHOULD NOT COST A PENNY.*

*ENERGY MANAGERS ENSURE ORGANISATIONS MEET THEIR ENERGY, CARBON AND WATER REDUCTION RESPONSIBILITIES.*

**DOWNLOAD THE FULL ENERGY MANAGER COMPETENCY MAPPING DOCUMENT [HERE](#).**



# Recovering Invisible Waste a.k.a “Can you really put a hydro there?!!”

**Large businesses are getting good at spotting their waste and minimising it: Reducing it; Recycling it. Yet for many of these, if they are large water users, there may be another waste that they don't see: the excess water pressure in their pipes...**

We are probably all familiar with the concept of hydro-electric generation. We may have seen the large turbine houses by the dams of Scottish lakes or smaller, community scale, units on lakes and rivers. Perhaps you have visited one of the UK's pump-storage sites like “electric Mountain” in North Wales... but have you heard about a hydro down a mine, a hydro in a processing plant and even a hydro on a cooling system? All three, and more, are sites benefiting from new developments in hydro-energy-recovery.

Let's take a brief look at the theory. How much water does a business use when it is operating? Big industrial plants usage can be well into the millions of litres a day (1 million litres per day is just over 10 litres per second). The water often arrives pressurised from a lake or storage pond and then gains further momentum as it flows down and

around the site to the locations where it is needed.

Take a mineral processing plant (this one happens to be in Italy). It uses 150 litres a second when operating. Being mindful of waste, this plant recycles its water in a closed loop cleaning it up and then pumping it back to the start of the cycle. From the last stage of the treatment process there is an 11m drop to get to the storage pond from where



it is then pumped back. That drop is around 16kW of potential energy (i.e., in a perfect system). The question is: how can that energy be recovered and used in a commercially viable way?

Technically, there are many well established ways of recovering this energy. Small scale, or micro-hydro, has been around for years - 153 years to be precise. The first system was installed in

1870 at Craggside in Northumberland, UK, by William Armstrong, a scientist and entrepreneur. Though upgraded and refurbished since, there is still a hydro at Craggside. Hydro-turbines now come in a huge variety of shapes and sizes and are very efficient ways of recovering energy. However, most need to be made to measure which can make them too expensive for most businesses who may want to take steps towards a low waste, low carbon future but still

need to keep a close eye on costs.

There are also hydro energy recovery devices that can be bought “off-the-shelf”. For example, it has long been known that a pump and motor can, in theory, also work backwards as a turbine and generator. Pumps are widely used and relatively easy to source and maintain.

However, unlike the made-to-measure turbines such as a Pelton, Francis or Kaplan, they have a reputation for often being inefficient in converting the potential energy to electrical energy and for being inflexible for situations where the flow or pressure varies. Yet, if the right pump can be selected combined with the right controls and right design then much of the energy

can be recovered and used to offset the power needed to be used on site.

Researchers at Trinity College Dublin have since 2010 been studying how to enable pumps-as-turbines to be used efficiently and cost effectively in these energy recovery situations. That learning is feeding through into the wider, commercial world and pumps as turbines are now being used in an increasingly wide variety of energy recovery situations, from water treatment plants to industrial plants and underground mines as well as more traditional settings such as small lakes. Systems using this sort of devices can range from just a few kW to a several hundred depending upon the flow and pressure (drop) available.

Back to the mineral plant in Italy, instead of simply letting the water fall into the pond,

a new energy recovery turbine is being installed to generate 11kW of electricity from the flow. That 11 kW will be fed straight into the site's electricity system where it will help power the pumps that recirculate the same water once it has been cleaned.

Large power companies are very familiar with hydro-generation. One operating in northern Spain operates sites totalling several GW of capacity. Some of its turbines are water-cooled for which it uses water from the reservoir. That cooling water arrives at high pressure which has to be dissipated before use. Whilst the energy dissipated (i.e., lost) from the cooling system seemed tiny compared to that produced by the big turbine, all the big turbine's electricity was exported at high voltage

and the site still had to import (and pay more per kWh for) low voltage power for the site's local needs such as lights, heaters, etc. Now, instead of wasting that energy, they have an energy recovery turbine to reduce the pressure of the cooling water and supply power to run their domestic facilities.

Such industrial systems make use of the existing pipe network with usually only small modifications to create space for the turbine and add the valves and bypasses necessary for the particular needs of that site. Good design of such a system is critical especially in this application where if the cooling



system goes offline then the big (25MW) turbine has to be shutdown. The design must ensure the turbine, generator, control system and the valves in the pipework around the turbine all operate in a way that does not affect the primary function of the water network (in this case, cooling). At this reservoir in Northern Spain, the design (combined with a wet winter!) has ensured the energy recovery turbine has been operational throughout the 2023 winter season.

Water treatment works are places where, by definition, there is plenty of water and often a constant demand for that water. Many already use traditional made-to-measure hydro turbines but for some, particularly smaller, plants

this has not been seen as economically viable. One such plant serves the town of Fethard in Ireland. There, the water starts its journey to the customer by being abstracted from a local stream, flowing down a pipe and into a tank at the head of a small treatment works. With a pump-based energy recovery turbine installed just before the water enters the tank, the site has significantly reduced its external electricity needs and providing a rapid return on the investment.

How do these energy recovery solutions compare to other renewable energy investments? Given that most companies are retrofitting this type of

solution into their existing pipes, there can be quite an element of variability for the enabling work such as pipe modifications needed to fit in a turbine.

The cost per kW may be a little above a similar capacity solar array but, unlike a solar array, these solutions are often generating non-stop

around the clock in an industrial setting where water is being used '24/7'. So, a 120kW energy recovery hydro working from a constant flow of water could produce similar annual energy as a 1MW solar array in the UK and cost a lot less. As a consequence, payback periods are typically under five years and in some circumstances where existing sites need very little modification, or were installed as part of a new build, payback periods can be as low as one year.

These solutions work best where there is either a large volume of water or a smaller volume but with a large drop to where it is needed. Typically, a site needs at least 10 litres/s and at last a 10m drop, preferably much more of one or both of these. It doesn't have to be clean water either. If you can pump

whatever type of water you have, then you can probably generate from it given the right conditions. Some industrial waste water for example can have a variety of chemicals in it and be quite acidic or alkaline but this does not stop the energy from being recovered. Just as pumps are available in a range of materials, so are turbines.

One place where there is a lot more 'drop' is down a mine shaft. In an underground zinc mine in Ireland they need water for a variety of uses. On

each line, up to 22 litres arrives 300m below ground every second whilst they are operating. The pressure is huge at that depth and so they needed a series of pressure reducing valves before using the water. Now, after installing an energy recovery turbine they generate 30kW which is used in-situ deep underground to help power the machinery, taking a step on their carbon reduction journey and reducing their electricity bill.

So, if you use a LOT of water that has a

pressure, or 'drop', that you don't need for your process, are you missing an energy recovery opportunity?

**Author's profile:**

Mike Pedley is Commercial Director for Easy Hydro. He has many years' experience in both water and energy, and is a former Board director of the Energy Managers Association. If you would like to explore the possibilities for recovering energy from the water you are using, he can be contacted at [pedley@easyhydrosolutions.com](mailto:pedley@easyhydrosolutions.com).



**28 JUN**  
11:00-12:00  
ZOOM

### GROUND SOURCE HEAT PUMP PROJECT – FROM FEASIBILITY TO COMMISSIONING, AND BEYOND

The heat pump revolution is under way with the technology being the go-to solution to decarbonise heat. This workshop will focus on a ground source heat pump installation project at Electricity North West Limited (ENWL)'s Oldham depot which is helping the company to reduce CO2 emissions and cut energy bills. Installed in October 2021, the heat pump has already contributed to a 25% reduction in their site energy use. During the session, the distribution network operator's Net Zero Carbon Manager, Daniel Shanley, will offer an overview of the entire heat pump project from inception to commissioning, cover any practicalities of ongoing operation and discuss any lessons learned since the installation some 20 months ago.

**5 JUL**  
11:00-12:00  
ZOOM

### PSDS PROJECTS – FROM APPLICATION TO VERIFICATION

The Public Sector Decarbonisation Scheme (PSDS) has so far rewarded over 2 billion pounds in grants to public sector bodies to fund heat decarbonisation and energy efficiency measures. The next application window to the scheme, Phase 3c, is expected to open to applications in autumn 2023, and we have invited representatives from Brent Council, University of West London and Kingston Hospital NHS Foundation Trust to share their tips and lessons learnt from taking their organisations through the processes.

**12 JUL**  
11:00-12:00  
ZOOM

### DECARBONISATION AUDIT – STEPS AND CONSIDERATIONS

Decarbonisation audit, a fairly recent term in the context of energy management, could complement any energy audit if GHG emissions' assessment is also the desired outcome in addition to energy uses. This workshop will outline what a decarbonisation audit can look like in an organisation, how to complete it, what typical outcomes and opportunities could be identified and how to establish the right decarbonisation paths to move forward towards the ultimate goal of reaching net zero or carbon neutrality. The workshop will conclude with an opportunity to ask questions or discuss your decarbonisation challenges.

Register at: <https://www.theema.org.uk/ema-online-workshops/>



**ema** energy  
managers  
association

**ENERGY  
MANAGEMENT  
AWARDS 2023**



The EMA Energy Management Awards give prominence to those leading the energy management industry and inspire other professionals to follow in the same footsteps.

## 2023 Awards' Categories:

- **Energy Manager of the Year - Private and Public Sector**
- **Energy Management Team of the Year - Private and Public Sector**
- **Sustainability Manager of the Year - Private and Public Sector**
- **Utilities Manager of the Year - Private and Public Sector**
- **EMA Member of the Year - nominated by the EMA**
- **Young Energy Management Professional of the Year**
- **Net Zero Strategy of the Year**
- **Decarbonisation Project of the Year**
- **Energy Efficiency Project of the Year - NEW CATEGORY**
- **Organisation of the Year - NEW CATEGORY**
- **Energy Management Consultancy Partnership of the Year**

### **Energy Manager of the Year - Private and Public Sector**

#### **Nominees**

We are seeking applications from professionals who have been working in energy management for several years. The entry should reflect the entrant's industry knowledge and experience, their achievements and initiatives to promote energy efficiency, and include overall savings and energy reduction achieved for their organisation. We are seeking entries from professionals who believe they meet these criteria and those who wish to nominate their colleagues and peers. Entrants will be expected to evidence their impact and achievements with examples and results.

#### **Why enter?**

This Award is a unique opportunity for professionals to showcase their expertise in energy management, celebrate their successes and achievements, and at the same time raise their profile in the energy management industry and within their organisations.

### **Energy Management Team of the Year - Private and Public Sector**

#### **Nominees**

We are seeking applications from teams of two or more people who are engaged in daily energy management activities for their organisation or clients. The teams should be able to demonstrate clearly defined roles, collaboration between the roles that is beneficial to the performance of the team, development of individuals within the team and successful performance outcomes. We are seeking entries from teams who believe they meet these criteria and those who wish to nominate their colleagues and peers. Entrants will be expected to evidence their impact and achievements with examples and results.

### **Why enter?**

This Award recognises the teams' contribution to their organisation or clients, celebrates their successes and achievements, and demonstrates the benefits of a structured approach to energy management.

## **Sustainability Manager of the Year - Private and Public Sector**

### **Nominees**

We are seeking applications from professionals who have been working in sustainability for several years. The entry should reflect the entrant's industry knowledge and experience in developing, implementing and monitoring company or organisation's sustainability strategies. We are seeking entries from professionals who believe they meet these criteria and those who wish to nominate their colleagues and peers. Entrants will be expected to evidence their impact and achievements with examples and results.

### **Why enter?**

This Award is a unique opportunity for professionals to showcase their expertise in sustainability, celebrate their successes and achievements, and at the same time raise their profile in the industry and within their organisations.

## **Utilities Manager of the Year - Private and Public Sector**

### **Nominees**

We are seeking applications from professionals who have been working as utilities managers for several years. The entry should reflect the entrant's industry knowledge and experience, their achievements in the areas of energy, water and other supplies to sites. We are seeking entries from end-users who manage utilities for their employer and believe they meet these criteria and those who wish to nominate their colleagues and peers. Entrants will be expected to evidence their impact and achievements with examples and results.

### **Why enter?**

This Award is a unique opportunity for professionals to showcase their expertise in utilities management, celebrate their successes and achievements, and at the same time raise their profile in the industry and within their organisations.

## **EMA Member of the Year**

### **Nominees**

This special category is nominated by the EMA team. This Award seeks to reward a member of the EMA for their support throughout the year.

## **Young Energy Management Professional of the Year**

### **Nominees**

We are seeking applications from professionals who have been working in the energy management industry for no more than three years. The entrants should be able to demonstrate their impact on energy reduction and achieved savings at their organisation. We are seeking entries from professionals who believe they meet these criteria and those who wish to nominate their colleagues and peers. Entrants will be expected to evidence their impact and achievements with examples, showcasing their role in the achieved results/savings.



**SUBMIT  
BY  
18 AUGUST**

### **Why enter?**

This Award recognises new talent in the energy management industry, showcases and highlights energy management as a rewarding career option for new and upcoming energy managers.

### **Net Zero Strategy of the Year Nominees**

We are seeking applications from organisations with clearly defined Net Zero strategy and targets. The entry should include the organisation's short and long-term plans for achieving the set goals, expected timelines, progress to date and any achievements so far. We are seeking entries that offer a clear pathway and consider all scopes of carbon emissions that occur directly or indirectly from the organisation's activities. Entrants will be expected to share their strategy documents as part of the submission.

### **Why enter?**

This award is a unique opportunity for organisations to showcase their commitment to the Net Zero agenda, celebrate their successes and achievements, and at the same time raise their profile in the industry.

### **Decarbonisation Project of the Year Nominees**

We are seeking applications on energy, sustainability and/or engineering projects that have been successfully implemented and savings achieved can be demonstrated. All projects, including but not limited to, optimisation, upgrading, replacing or behaviour change that, have been implemented and resulted in a reduction of carbon emissions for the organisation will be accepted. The project results should be able to demonstrate successful implementation, reduction and savings achieved.

### **Why enter?**

This Award recognises the organisational effort that is needed for leading a decarbonisation project of any size, celebrates successful implementation and achieved savings.

### **Energy Efficiency Project of the Year Nominees**

We are seeking applications on energy, sustainability and/or engineering projects that have been successfully implemented and where any achieved energy reduction can be demonstrated. All projects, including but not limited to optimisation, upgrading, replacing or behaviour change, that have been implemented and resulted in an energy reduction for the organisation will be accepted. The project results should be able to demonstrate successful implementation, reduction and savings achieved.

### **Why enter?**

This Award recognises the organisational effort that is needed for leading an energy efficiency project of any size, celebrates successful implementation and achieved energy reduction and savings.



## Organisation of the Year Nominees

We are seeking applications from organisations that can demonstrate their commitment to energy and carbon emission reduction through an organisation wide approach and application of core areas of energy management. This category is open to end-user organisations of any size that are able to showcase their organisational approach to energy management with robust policies, strategies and results in each area. Organisations with small and large teams are encouraged to apply.

### Why enter?

This Award recognises the overall organisational effort needed to achieve the best and sustainable results, celebrates organisations that have achieved a high level of engagement to reduce energy consumption and carbon, and increases visibility of the achievements.

## Energy Management Consultancy Partnership of the Year Nominees

We are seeking applications from in-house teams and service providers about collaborative partnerships of two or more parties that can demonstrate the benefits of delivering energy management in a partnership. We are seeking entries from partnerships that have been in place for a period of time that allows for the evidence to be presented. Entrants will be expected to evidence their impact and achievements with examples and results.

### Why enter?

This Award seeks to recognise a successful partnership where a collaborative approach to delivering energy management has been successfully implemented. The Award offers a unique opportunity to showcase a successful partnership and highlight benefits for all parties.

## WINNERS AND HIGHLY COMMENDED

The winners and highly commended in each category will be announced during a virtual awards' ceremony on 12 October 2023.

# ema ENERGY MANAGEMENT AWARDS

- IN THEIR 9TH YEAR
- 11 CATEGORIES
- NO ENTRY OR CEREMONY FEES



AUG  
18

Entry  
deadline

AUG-  
SEP

Judging  
period

SEP  
18

Shortlist  
announced

OCT  
12

Awards  
ceremony

# Company Membership

Join the Energy Managers Association as a Company Member

## Benefits

Access the EMA resources



Tap into advice and support



Develop your team



Raise your profile



Become an EMA Company member. Discover the full benefits of EMA membership.



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+44 203 916 5516

