Overview

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Platform for Monitoring Savings

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New Savings Opportunities

Introduction

Energy Efficiency Obligation Scheme (EEOS)

- Began in 2014

- EEOS accounts for 60% of Irelands Article 7 savings target

- EEOS savings targets are divided into three savings categories:
  – Energy Poverty (5%)
  – Residential (10%)
  – Cross-sectoral (85%)

- Cross-sectoral savings are made up of:
  – Non-Residential energy savings
 – Transport energy savings
  – Deemed domestic savings

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Platform for monitoring savings

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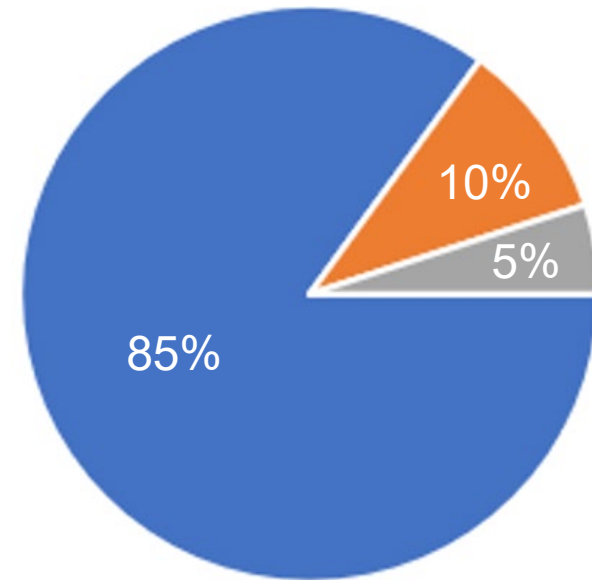
Energy Credit Management System (ECMS)

- ECMS is an online database where energy savings are uploaded and tracked for EEOS and domestic and non-domestic SEAI grant schemes

- Savings uploads are classified by:
  - Obligated party
  - Sector (Energy poverty, Residential, Cross-sectoral)
  - Energy savings category and measure
  - Obligation period

- Supports monitoring of policy interaction through tracking of energy savings for individual homes and business addresses (avoiding double counting of savings)

- Each Obligated Party can track their uploads, as well as their progress to targets

- Allows SEAI to track overall progress and effectively monitor energy savings, as well as exchanges between Obligated Parties

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Savings Evaluation: SEAI assessment
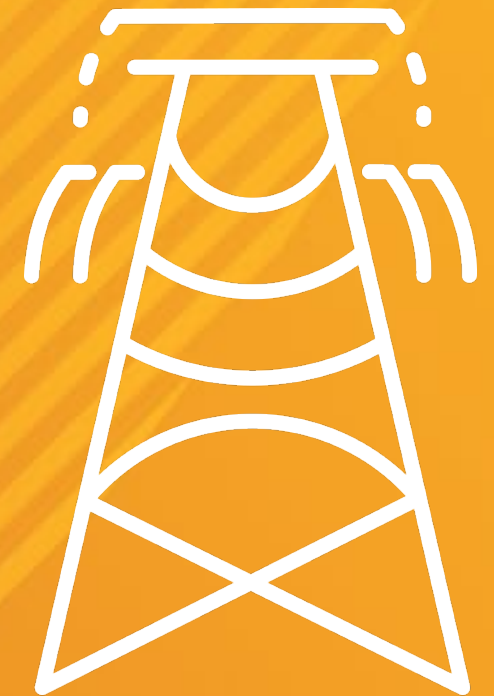
Project Evaluation Platform (PEP)

- After works are completed and saving are quantified, obligated parties notify SEAI of Non-residential energy savings

- All submissions are made online through PEP, via a non-residential energy credit application, or NREC.

- NRECs contain detail on:
    - Information on the obligated party and client organisation (beneficiary)
    - Project summary with technical details
    - Calculation methodology, measurement and verification
    - Annual energy savings and savings attributed by technology
    - Materiality of contribution by energy supplier to savings achieved
    - Signed declaration of client organisation
    - Supporting documentation (M&V report, datasheets, calculations, etc)

- After submission, PEP is used to move projects through the EEOS evaluation process

- Applicants are notified of the progress of the project throughout

- Once projects are approved, savings are automatically transferred to ECMS and counted towards the obligated parties cross-sectoral target

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EEOS QMS – NREC Evaluations

- All NREC applications are subject to a desktop audit. This audit will:

  - Ensure the application has been completed correctly

  - Ensure the relevant supporting documents are included

  - Complete a risk assessment of the project

- The risk assessment process is used to select the most relevant portion of applications for a further evaluation.

- This further evaluation involves an in-depth look at the project with respect to the EEOS requirements, and an evaluation of the energy savings measurement.

- Site inspections are also completed on a sample of projects.

- Projects which undergo this detailed evaluation then undergo a sign-off procedure within the SEAI.

- Detailed evaluations are also conducted on a sample of project, regardless of risk score.

NREC Risk Assessment

The following seven criteria are reviewed for each NREC application, with a score is assigned for each criteria:

	Risk Factors	General Rules	Scores (Low, Med, High)
1	Project Size	< 0.1 GWh = "low", 0.1 to 0.5 GWh = "med", > 0.5 GWh = "high"	1, 2, 3
2	Savings as a % of PES Sectoral Target	< 5% = "low", 5 to 20% = "med", > 20% = "high"	1, 2, 3
3	Technology	Proven vs Unproven, unusual application of technology etc.	1, 2, 3
4	Complexity (e.g. multi-technology project)	Single site / single technology vs multiple sites / multiple technologies, potential for interactive effects	1, 2, 3
5	Previous Inspection Record	QS Audit, Inspection and Evaluation history. Deductions applied to recent projects, etc	1, 5, 9 (full range)
6	Savings Calculation Method	Clarity, Appropriateness, Practitioner competence, etc,	1, 3, 6 (full range)
7	M&V Report	Clarity, Comprehensible, Aligned standard (e.g. ISO50015, IPMVP)	1, 3, 6 (full range)

NREC Evaluation Process

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Savings Approaches: Scaled and Metered
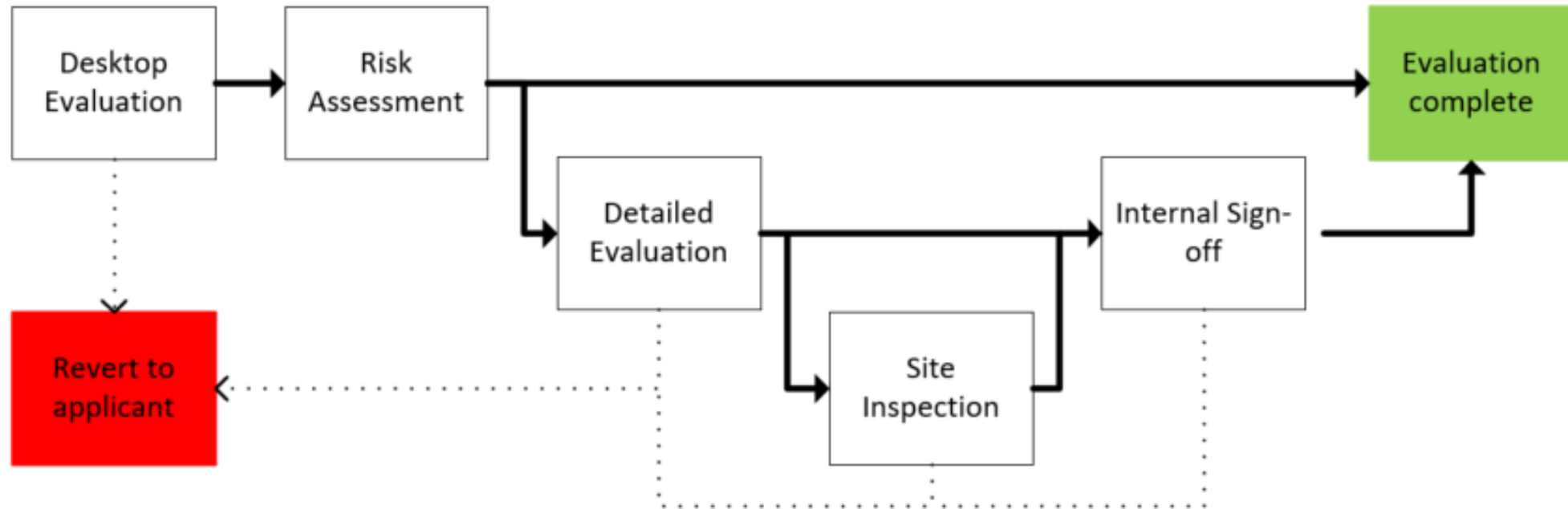
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Savings Types

Annex V sets out a number of energy saving calculation methodologies.

a) **deemed savings,** by reference to the results of previous independently monitored energy improvements in similar installations. The generic approach is termed 'ex ante'

b) **metered savings**, whereby the savings from the installation of a measure, or package of measures, are determined by recording the actual reduction in energy use, taking due account of factors such as additionality, occupancy, production levels and the weather which may affect consumption. The generic approach is termed 'ex post'; **M&V Report**

c) **scaled savings**, whereby engineering estimates of savings are used. This approach may be used only where establishing robust measured data for a specific installation is difficult or disproportionately expensive, e.g. replacing a compressor or electric motor with a different kWh rating than that for which independent information about savings has been measured, or where those estimates are carried out on the basis of nationally established methodologies and benchmarks by qualified or accredited experts that are independent of the OP involved **Engineering calculations**

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Metered Savings - M&V Report

- SEAI requires:

  - that the M&V approach adopted is broadly similar to the IPMVP or an equivalent protocol such as International Standards ISO:50015 and that it strives to deliver results that are **accurate, complete, conservative, consistent, relevant and transparent.**

  - that the M&V Report be completed by a **professionally competent individua**l (i.e. understanding the subject matter, underlying theory and the ability to apply these) who must be independent of the project

- SEAI have developed an M&V Guidance document for obligated parties and their consultants for preparation of an M&V Report and M&V Plan.

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Scaled Savings – Standardised Calculation Tools

- SEAI have developed standardised approaches to determine energy savings from certain project types

- All standardised approaches require the collection of project specific data, and as such, are not classed as deemed savings.

- Standardised approaches are based on engineering principals

- The accuracy of the savings returned from these approaches has been verified using data from detailed M&V of projects in the past.

- These standardised approaches replace the need for detailed M&V of savings, which would otherwise impact the financial and technical viability of certain projects.

- These tools have brought small projects into the scope of EEOS non-residential support

- Two examples of these SEAI calculation tools are:

  - Lighting Calculator
  - Pipe Insulation Calculator

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Scaled savings approaches - Lighting upgrade projects

- The lighting project calculation tool can be used to determine the savings arising from upgraded lighting projects

- The tool requires users to input specification of existing lighting fixtures and replacement lighting fixtures, from which the savings are calculated.

- The user must also specify the facility type and usage hours

- A completed SEAI lighting project tool is required when submitting a commercial lighting upgrade project where energy savings have not been metered.

- The tool is accompanied by guidance on its correct use, and on the SEAI requirements for lighting upgrade project.

- In 2022, the improved viability of lighting projects was demonstrated with almost 50 projects submitted, covering 300 sites, the majority of which were small. This accounted for 5% of all non-residential savings.

Lighting Upgrade Calculation Tool

Site Details

Site name:	Centre 1
Site number:	S1
County:	Kildare
Eircode:	W90 H7Y4
Site contact - Name:	John
Site contact - Position:	Smith
Site contact - Phone:	085 123 4567
Site Activity:	Community Centre
Total site project cost:	€0
Recent bill **Day** rate (€/kWh):	
Recent bill **Day** usage (kWh):	
Recent bill **Night** rate (€/kWh):	
Recent bill **Night** usage (kWh):	
Floor area upgraded (m²):	

Operating Hours

Hours Usage basis:	Medium

Individual Zone Details:

Zone name	Zone photo ref	Zone Activity [Selection must be made]
1		Entrance halls
2		Reception
3		Common room/staff room
4		Hall/Assembly area
5		Hall/Assembly area

Original Luminaire:

Luminaire Photo ref	Lighting type [Selection must be made]	Description	Lamp Watts (ex control gear)	Total No. of luminaires	Total No. of lamps	Daylight control fitted?	Occupancy control fitted?	kW before
	Fluorescent 2D EB	twin fittings	80	5	10	No	No	0.8
	Fluorescent 2D EB	single fittings	80	5	5	No	No	0.4
	Fluorescent Compact	twin fittings	60	8	16	No	No	1.0
	Fluorescent T5	quad fittings	100	4	16	No	No	1.6
	Fluorescent T5	quad fittings	100	4	16	No	No	1.6
								0.0
								0.0
								0.0
								0.0

Lighting Upgrade Calculation Tool

Summary Information

Original luminaires kWh pa:	33,197
New luminaires kWh pa:	3,014
Saving kWh pa:	30,183
Saving kWh (PEE)	52,820
% Saving kWh pa:	91%
CO_2 reduction (t/a):	7
Cost saving (€ pa):	€ 0
Upgraded W/m² :	

Project costs (ex VAT)

Fittings:	€0
Installation:	
Project Management:	
Hired access:	
Other:	
Total:	€0

Summary of new fittings

New luminaires (non-emergency):	24
New bulbs:	0
Emergency lighting:	0
Total:	24
Other fittings	
Number of daylight controls:	0
Number of occupancy controls:	0
Number of highbay fittings:	0
No. of energy meters or monitors:	0

New Luminaire:

Lighting type [Selection must be made]	Description	Enter Luminaire Watts	No. of new luminaires:	Cost per luminaire (ex VAT)	Enter Triple E LIG code	Daylight control?	Occupancy control?	Triple E Luminaire Details	Triple-E Watts ±5%	kW after	New luminaire entered
New fitting (Triple E or equivalent)		30	5			No	No			0.2	Yes
New fitting (Triple E or equivalent)		30	5			No	No			0.2	Yes
New fitting (Triple E or equivalent)		20	6			No	No			0.1	Yes
New fitting (Triple E or equivalent)		40	4			No	No			0.2	Yes
New fitting (Triple E or equivalent)		40	4			No	No			0.2	Yes

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Lighting Upgrade Calculation Tool – Summary Tab

SEAI Lighting Upgrade Credits Calculation Tool

SEAI Programme name: EEOS
Obligated Party:

Project Summary

| Site No.	Site Name:	County:	Eircode:	Site Activity:	Hours Profile: High/Medium/Low or User defined:	Original luminaires kWh pa:	Different types of fitting (Before):	Average (€/kWh):	Replaced luminaires € pa:	No. of luminaires removed:	Zones with controls before:	New luminaires kWh pa:	Saving kWh pa:	% Energy Saving:	Primary energy saving (kWh pa):	No new fitting installed	Total Cost (ex VAT)
S1	Centre 1	Kildare	W90 H7Y	Community Centre	Medium	22,830	3			26		3,014	19,816	87%	34,678	0%	€0
S2	Centre 2	Dublin		Community Centre	Medium	33,197	3			34		3,014	30,183	91%	52,820	0%	€0
S3				----Select----		-	-					-	0	0%	0		€0
S4				----Select----		-	-					-	0	0%	0		€0
S5				----Select----		-	-					-	0	0%	0		€0
S6				----Select----		-	-					-	0	0%	0		€0
S7				----Select----		-	-					-	0	0%	0		€0
S8				----Select----		-	-					-	0	0%	0		€0
S9				----Select----		-	-					-	0	0%	0		€0
S10				----Select----		-	-					-	0	0%	0		€0
S11				----Select----		-	-					-	0	0%	0		€0
S12				----Select----		-	-					-	0	0%	0		€0
S13				----Select----		-	-					-	0	0%	0		€0
S14				----Select----		-	-					-	0	0%	0		€0
S15				----Select----		-	-					-	0	0%	0		€0
S16				----Select----		-	-					-	0	0%	0		€0
S17				----Select----		-	-					-	0	0%	0		€0
S18				----Select----		-	-					-	0	0%	0		€0
S19				----Select----		-	-					-	0	0%	0		€0
S20				----Select----		-	-					-	0	0%	0		€0
S21				----Select----		-	-					-	0	0%	0		€0
S22				----Select----		-	-					-	0	0%	0		€0
S23				----Select----		-	-					-	0	0%	0		€0
S24				----Select----		-	-					-	0	0%	0		€0
S25				----Select----		-	-					-	0	0%	0		€0
S26				----Select----		-	-					-	0	0%	0		€0
S27				----Select----		-	-					-	0	0%	0		€0
S28				----Select----		-	-					-	0	0%	0		€0
S29				----Select----		-	-					-	0	0%	0		€0
S30				----Select----		-	-					-	0	0%	0		€0
Overall						56,027	6		€0	60	-	6,028	49,999	89%	87,498		€0

Lighting Upgrade Calculation Tool – Results Tab

Business Overview

Date: 23/01/2023

Annual Savings Indentified: €0

Annual Energy Use (kWh)

Annual Electricity Cost
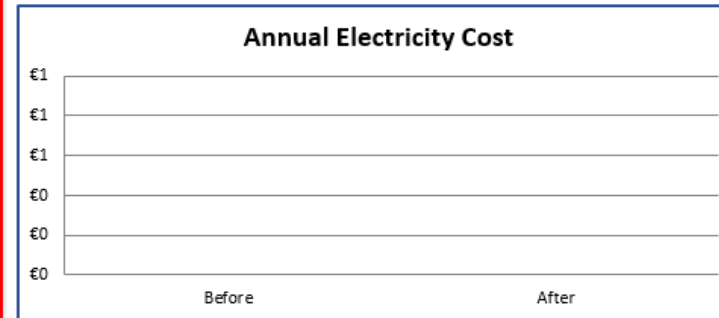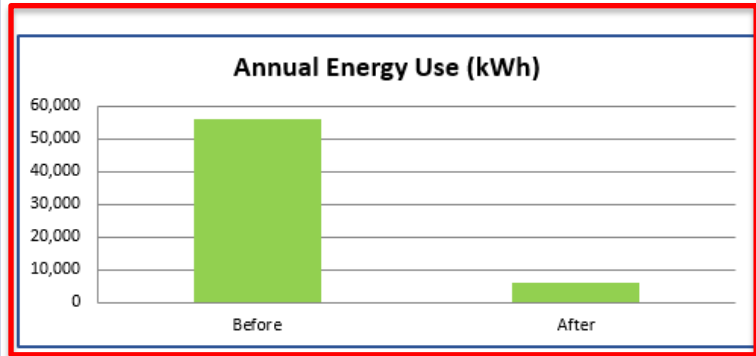
Survey Information	Before	After
Number of fittings:	60	48
Total Wattage kW	13	1
Watts/m^2	0	0
Zones with controls	0	0

Energy Consumption	Before	After
Annual kWh	56,027	6,028
Annual Cost	€0	€0

Savings Identified		
Annual Savings		
Primary Energy kWh	87,498	kWh
CO_2	19.6	tonnes
Energy Cost Saving	€0	
Final Energy kWh	**49,999**	**kWh**
Economics		
Capital Costs	€0	
Payback		years

Scaled savings approaches - Pipe insulation projects

- The Pipe insulation tool has been developed to standardise the methodology for calculations around energy savings achieved by insulating pipework.

- The tool requires users to input data relevant to the pipe/thermal system and the insulation, from which the savings are then calculated.

- The tool calculates savings for individual pipework groups, which are defined by the input data.

- Savings calculations and supporting data must be uploaded to the "supporting data" tab to support the savings for each pipe group.

- SEAI pipe insulation calculator will be required for submission as part of all pipe insulation projects where energy savings have not been metered.

- The tool is accompanied by guidance on its correct use, and on the EEOS requirements for lighting upgrade project.

Pipe Insulation Calculator - Required Inputs

1 Pipe Linear Length — m

2 Pipe internal diameter — mm

3 Pipe external diameter — mm

4 Fluid operating temperature — ºC

5 Ambient temperature — ºC

6 Pipe thermal conductivity — W/mK

7 Thermal system efficiency factor — %

8 Insulation thermal conductivity — W/mK

9 Surface Emissivity of insulation

10 Insulation thickness — mm

11 Outside diameter of insulated pipe — mm

12 Annual operating hours

Pipe Group - Input Data

Pipe Group Reference:

Pipe:

Linear Length	m
Inside Diameter (D1)	mm
Outside Diameter (D2)	mm
Fluid Operating Temperature	°C
Ambient Temperature	°C
Pipe Material	
Pipe material Thermal Conductivity (W/mK)	
Thermal System Efficiency factor	
Insulation Material	
Thermal Conductivity of Insulation	
Surface Emmisivity of Insulation	
Insulation Thickness	mm
Outside Diameter (D3)	mm
Annual operatal Hours	

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Pipe Group 1

Please insert photos of before and after for pipe upgrade, along with Screenshot of Pipe Calculator results

Pipe Group Reference	

Before	After	Calculator

Pipe Insulation Calculator – A New savings Opportunities

- The pipe insulation tool has been developed this year to target energy savings in SMEs

- Obligated parties previously submitted a mixture of M&V and engineering calculations for pipe insulation projects. The tool has now standardised the approach for all obligated parties to determining energy savings from these projects.

- The tool was developed following increased interest in this project type over recent years

- SEAI actively engage with obligated parties, who are engaging with energy end user, to discuss new savings opportunities

- There is scope for the development of further tools to increase the viability of projects in the future

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Thank you

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2014-2020

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