Public sector M&R-2030 framework

M&R-2030 methodology guidance

Ref: 469-22X0012 R02

3 May 2023

Summary Contents

This document provides guidance on key methodologies for SEAI's public sector energy monitoring and reporting framework for the period to 2030 (M&R-2030). Aspects of these methodologies are still under development and this document will be updated as these aspects are refined.

Contents

ABBREVIATIONS

BEV: battery electric vehicle

CO_2: carbon dioxide

CO_2eq: carbon dioxide equivalent

CHP: combined heat & power

CPPA: corporate power purchase agreement

CVD: clean vehicles directive

DECC: Department of Environment, Climate & Communications

DVA: data verification assessment

EE: energy efficiency

EPBD: energy performance of buildings directive

ESCo: energy supply company

EU: European Union

ETB: education & training board

FCEV: fuel cell electric vehicle

GHG: greenhouse gas

GWP: global warming potential

HFC: hydrofluorocarbon

IATA: International Air Transport Association

ICT: information & communications technology

IT: in-target (emissions)

LPG: liquefied petroleum gas

M&R: monitoring & reporting

PB: public body

PB ID: public body identification number

PPP: public private partnership

PSO: public sector organisation

SEAI: Sustainable Energy Authority of Ireland

SI: statutory instrument

TFC: total final consumption

TPER: total primary energy requirement

WWTP: wastewater treatment plant

ZEV: zero emission vehicle

The glossary on page 51 provides explanations for several terms used in this document.

1 INTRODUCTION

1.1 About this document

1.1.1 Purpose

1.1.1.1 The purpose of this document is to set out guidance on the principles and rules on key aspects of SEAI's public sector energy monitoring and reporting framework for the period to 2030 (M&R-2030).

1.1.1.2 It is intended that future iterations of this document will set out comprehensive guidance on all the principles and rules that underpin the full set of methodologies for the M&R-2030 framework, including those for the 2030 energy and climate targets for the public sector.

1.1.1.3 This document will be updated as policy evolves and as aspects of the M&R-2030 methodology are refined. These methodologies are currently under development by SEAI. SEAI envisages that this document will be updated several times throughout 2023.

1.1.2 Revision history

1.1.2.1 This is version R02 of this document, dated 3 May 2023.

1.1.2.2 The full revision history of this document is summarised on page 55.

1.1.2.3 Readers should ensure that they have the latest version of this document, which is available from the SEAI website at https://www.seai.ie/business-and-public-sector/public-sector/monitoring-and-reporting/supports/ ('downloads' section).

1.2 Policy & legislative context

1.2.1 Scope of public sector

1.2.1.1 The public sector is made up of approximately 350 public bodies and approximately 3,700 standalone schools[1]. The formal definition of a 'public body' is set out in Regulation 4 of SI 426 of 2014 [1], which originally transposed[2] the Energy Efficiency Directive [2] into Irish legislation.

1.2.1.2 Collectively, public bodies (PBs) and standalone schools are referred to as public sector organisations (PSOs) in this document.

1.2.2 Public sector climate and energy targets

1.2.2.1 The Climate Action and Low Carbon Development (Amendment) Act 2021 [3] commits Ireland to reach a legally binding target of net-zero greenhouse gas (GHG) emissions no later than 2050, and a cut of 51% by 2030. The Act requires all public bodies to perform their functions in a manner consistent with Ireland's climate ambition.

1.2.2.2 The 2021 Climate Action Plan [4] sets out two high-level targets for the public sector:

- The public sector must improve its energy efficiency by 50%. This target builds on the previous 33%-by-2020 efficiency target and is based on PSOs' existing energy efficiency baselines.
- The public sector must reduce its GHG emissions by 51%[3]. Every public body is being assigned a public-body-level target on this basis. An overall sectoral target of 51% applies for schools. These GHG targets are based on absolute emissions reductions and apply from a 2016-18 baseline.

1.2.3 Obligation to report data

1.2.3.1 Regulation 5(3) of SI 426 of 2014 [1] requires public bodies to report energy-related data to SEAI in accordance with procedures and methodologies specified by SEAI.

1.2.3.2 Regulation 5(5) of SI 426 requires public bodies to publish an annual energy statement in accordance with a format specified by SEAI.

1.2.3.3 The 2021 Climate Action Plan [4] sets out a requirement for the public sector to report GHG emissions data to SEAI. This includes emissions that fall within the scope of the 51%-by-2030 GHG reduction target and emissions related to business travel.

[1] In addition to the ~3,700 standalone schools, there are approximately 260 schools that come under the aegis of 16 regional education & training boards (ETBs), each of which is designated as a public body by SEAI. The remaining ~3,700 schools are 'standalone'.

[2] SI 426 of 2014 has been updated via several amendments.

[3] The 2019 Climate Action Plan [11] initially introduced a GHG reduction target of 30% by 2030. This was subsequently increased to 51% in the 2021 Climate Action Plan.

2 M&R-2030 DATA REPORTING FRAMEWORK

2.1 Background & purpose

2.1.1 M&R-2020

2.1.1.1 SEAI and the Department of Environment, Climate & Communications (DECC) have worked closely since 2009 to develop and implement a suite of methodologies and software system to monitor and report public sector energy performance. Since 2010, public bodies have been required to report on their energy usage and actions taken to reduce energy consumption to SEAI via the M&R system. The reporting framework was initially developed to track the sector's progress towards the 33%-by-2020 energy efficiency target.

2.1.2 New framework for 2030 target period

2.1.2.1 The M&R-2030 data reporting framework is currently under development. SEAI is updating the M&R methodologies and software for the period to 2030.

2.1.2.2 The 'M&R-2030 framework' refers to the updated data reporting framework through which PSOs report energy and related data to SEAI over this period. M&R-2030 will fulfil several functions, including:

- Tracking PSOs' progress towards the 2030 energy efficiency target.
- Tracking PSOs' progress towards the 2030 GHG emissions reduction target.
- Enabling PSOs to comply with their obligation to report data annually to SEAI.
- Enabling PSOs to comply with their obligation to publish annual energy statements.
- Providing a rich source of data and insight to inform decision making by PSOs with respect to energy efficiency and decarbonisation.
- Tracking progress towards related policy goals and targets, including those related to the recast Energy Performance of Buildings Directive (EPBD) [5] and the Clean Vehicles Directive (CVD) [6].
- Providing a robust dataset to inform energy and climate policy development and implementation.

2.1.2.3 All data previously reported via the M&R-2020 software system will be migrated by SEAI to the new M&R-2030 software system.

2.2 High-level principles

2.2.1 Web-based software system

2.2.1.1 PSOs are required to report data to SEAI via the web-based M&R software system in accordance with the M&R-2030 data reporting framework.

2.2.1.2 The online system is available at https://psmr.seai.ie/.

2.2.2 Organisation-level reporting

2.2.2.1 PSOs must report on an organisational basis, i.e. each PSO must report data for the entire organisation.

2.2.3 Annual reporting cycles

2.2.3.1 PSOs are required to report annually, via M&R *reporting cycles*. Each reporting cycle is named with reference to the recently completed calendar year, which is referred to as the *reporting cycle year* or *reporting year*. This is the year for which PSOs report most data during the reporting cycle. For example, the 2021 reporting cycle commenced in December 2021 and concluded at the end of April 2022. During the 2021 reporting cycle PSOs reported data for 2021 and, where appropriate, for previous years.

2.2.3.2 Each reporting cycle is defined by key cycle dates, including deadlines by which PSOs must complete aspects of their reporting obligations. These dates are published on the M&R section of SEAI's website[4].

2.2.4 Data years & calculation of annual values

2.2.4.1 Where values reported by or calculated for a PSO correspond to a specific year, these years are referred to as *data years*. For example, if a PSO reported a value for diesel consumption for 2020, then 2020 is the data year. The earliest data year for which a PSO can report data is 2001[5].

2.2.4.2 Annual values for data years are carried forward from reporting cycle to reporting cycle. For example, the value reported by a PSO during the 2020 reporting cycle for diesel consumption in 2020 carries forward to subsequent reporting cycles, to become the 2021 reporting cycle value for 2020 diesel consumption and then the 2022 reporting cycle value for 2020 diesel consumption, and so on.

2.2.4.3 Subject to certain restrictions, PSOs can edit data for historical data years in the current reporting cycle. Consequently, a data value reported for a data year can be different for different reporting cycles. For example, during the 2021 reporting cycle a PSO could have updated the value previously reported for diesel for 2020, in which case the 2021 reporting

[4] https://www.seai.ie/business-and-public-sector/public-sector/monitoring-and-reporting/

[5] 2001 is the earliest data year for which PSOs can report data. However, most PSOs do not report data back to 2001. The earliest data year for which most PBs report data is 2009, while the earliest data year for standalone schools is 2013.

cycle value for 2020 diesel consumption would be different to the 2020 reporting cycle value for 2020 diesel consumption.

2.2.4.4 Every reporting cycle, the M&R system (re)calculates results for every PSO for every data year from the reporting year back to the first year for which the PSO reported data *using the latest data in the system*. So, if a PSO changes a value that was previously reported for an earlier data year, the system calculates updated results for that data year. In the example discussed in §2.2.4.3 where a PSO edits the value reported for 2020 diesel consumption, the system would calculate a different subtotal for 2020 total energy consumption for the 2021 reporting cycle than it had for the 2020 reporting cycle. This would affect the calculated values for energy efficiency saving and GHG emissions for 2020, as calculated during the two reporting cycles.

2.3 Core reporting requirements

2.3.1.1 The M&R-2030 data reporting framework will initially comprise eight elements, each of which corresponds to a core reporting requirement and has a documented methodology. The eight elements are listed in Table 1 and the methodologies are described in the remainder of this document.

2.3.1.2 Some of the elements were in place for the 2020 target period ('M&R-2020') and are being updated for the 2030 target period ('M&R-2030'), while others are new for the 2030 target period.

Table 1: M&R-2030 data reporting framework – main elements

Element	Methodology description	M&R-2020	M&R-2030 methodology changes
Energy consumption & energy efficiency	§3 & 4	Comprehensive methodology	*2022 reporting cycle*[6]*:* limited methodology changes.
GHG emissions	§5, 6 & 7	Rudimentary calculations only	New methodology under development. *2022 reporting cycle:* PSOs must report business travel; SEAI will do preliminary calculations using new methodology. *2023 reporting cycle:* core aspects of new software functionality for GHG reporting. *2024 reporting cycle (or later):* additional methodology & functionality.
Vehicle inventory & vehicle procurements	§8	N/a	*2023 reporting cycle:* new methodology & functionality.
Energy-related projects	§9	Comprehensive methodology	*2023 reporting cycle:* refined methodology & functionality.
Building register	§10	N/a	*2022 reporting cycle:* pilot underway. *2023 reporting cycle:* refined methodology & functionality.
Exemplar energy management	§11	Comprehensive methodology	*2023 reporting cycle:* refined methodology & functionality.
Energy spend	§12	N/a	*2023 reporting cycle:* new methodology & functionality.
Asset-level energy & GHGs	§13	N/a	*2023 reporting cycle:* new methodology & functionality.

[6] It is anticipated that the 2023 reporting cycle will commence in late 2023/early 2024.

2.4 Scope of the organisation

2.4.1 Summary

2.4.1.1 The scope of the organisation refers to the range and extent of data relating to energy consumption, activity and GHG emissions that a PSO must report to fulfil its obligations under the M&R-2030 framework. It defines the boundary of the PSO, for the purposes of reporting data and tracking progress towards its targets.

2.4.1.2 The public sector comprises diverse energy users, organisational structures and contractual arrangements with respect to the provision of services and the operation of assets. The sector is also continually evolving, with many PSOs exiting legacy activities, functions and service areas, and taking on new ones. PSOs are also embracing new contractual models. This complexity presents a challenge when seeking to establish a simple set of hard-and-fast 'rules' for all PSOs.

2.4.1.3 SEAI's approach is to define a set of key principles that it considers to be important in relation to establishing the scope of the organisation, and to augment these principles with clear determinations with respect to the inclusion or exclusion of specific activities or scenarios from the scope.

2.4.1.4 The key principles with respect to the scope of the organisation are set out in §2.4.2.

2.4.1.5 Annex A provides a list of determinations with respect to specific activities and scenarios. This list is *not* exhaustive.

2.4.1.6 SEAI is working to develop additional determinations for other activities and scenarios, including for less common scenarios. In doing so, it will endeavour to align such determinations with the principles listed below.

2.4.1.7 In instances where a specific determination, or other specific aspect of methodology, does not fully align with a principle set out in §2.4.2, then the specific determination or methodological aspect should be considered to take precedent over the principle. If in doubt in such circumstances, PSOs are encouraged to seek clarification from SEAI.

2.4.2 Key principles

2.4.2.1 This subsection sets out key principles that SEAI considers to be important in relation to the scope of the organisation. Unless explicitly stated otherwise, these principles apply to energy consumption, energy efficiency and GHG emissions.

2.4.2.2 All energy types and fuel types are included. This includes *inter alia*: all fossil fuels; all renewable fuels and energy sources, including non-fuel renewables, bioenergy and renewable fuels of non-biological origin; blended mixtures of fossil and renewable fuels; gases, liquids and solids; electricity (all sources); hydrogen (all sources); and district heat.

2.4.2.3 All final energy consumption is included.

2.4.2.4 Energy that is considered *transformation input* from a national statistics perspective is excluded. This includes fuel used for the manufacture of secondary fuel products and fuels burned to generate electricity and heat *for sale*.

2.4.2.5 Asset ownership, asset location and being the energy bill-payer are less important for determining inclusion in scope than whether consumption is attributable to a PSO.

2.4.2.6 When PSOs report data for energy efficiency, the scope of activity data reported must be the same as the scope of the energy consumption data reported.

2.4.2.7 PSOs must adopt a consistent approach to defining the scope of their organisations year on year. This is imperative because progress towards the 2030 targets is tracked with reference to efficiency and emissions levels at historical baseline periods.

2.4.2.8 PSOs must not use contractual changes as a basis for materially changing the scope of their organisations. For example, a PSO cannot outsource a key function and claim this as an energy or emission reduction compared to the previous year or its baseline period.

2.4.3 Meter boundary of electricity connections

2.4.3.1 This subsection sets out working definitions related to the generation, import and export of electricity that are relevant to the scope of the organisation.

2.4.3.2 The meter boundary refers to the boundary point between a PSO's electricity connection and the public electricity network. It is the point at which a PSO's electricity consumption from the public electricity network, and its electricity exports to the public electricity network (if any), are metered.

2.4.3.3 All PSO electricity connections to the public electricity network are classified as being either PSO electricity end-users or PSO electricity generators.

2.4.3.4 PSO electricity end-users are connections for facilities or other end users that are supplied with electricity *for consumption*. While there may be some electricity generation within the meter boundary and some electricity exports to the public electricity network, the *primary function* of the connection is to *supply electricity to the PSO*. Examples of PSO electricity end-users include most electricity connections for buildings, campuses, public lighting networks, vehicle charging and water services facilities.

2.4.3.5 PSO electricity generators are connections for power generating facilities. While there may be some electricity consumption within the meter boundary (house load, etc.) and some electricity imports from the public electricity network, the *primary function* of the connection is to *export electricity from the generator to the public electricity network*.

2.4.3.6 The methodological treatment of GHG emissions arising from electricity generation inside and outside meter boundaries is described in §5.4.

2.4.3.7 Specific determinations with respect to the inclusion of electricity generation within and outside meter boundaries of different electricity connections are set out in Annex A.

2.5 Data quality & data verification

2.5.1 Onus on PSOs

2.5.1.1 PSOs are responsible for ensuring that they submit complete data each year, by the relevant deadline(s).

2.5.1.2 PSOs are responsible for ensuring that they submit data that meets SEAI's data quality criteria, as evaluated via SEAI's data verification assessment (DVA) framework.

2.5.1.3 PSOs are responsible for ensuring that they retain clear records that can be used as evidence in support of all data reported. This could include supplier documentation and internal records.

2.5.1.4 PSOs are responsible for ensuring that they document any calculations used to determine values that they report through the M&R system. This must include, where relevant, the rationale for any calculations, key assumptions, key inputs and the basis for calculations. PSOs must retain appropriate records of such calculations.

2.5.2 Data verification assessment (DVA)

2.5.2.1 The data submitted by PSOs must be verifiable by SEAI.

2.5.2.2 Data verification assessment (DVA) is SEAI's mechanism for maintaining data quality. A DVA is an assessment of specific aspect(s) of a PSO's submission via M&R. The PSO's data is evaluated against data acceptability criteria.

2.5.2.3 The outcome from a DVA is a formal classification of aspect(s) of the PSO's data submission via M&R.

3 ENERGY CONSUMPTION & ENERGY EFFICIENCY

3.1.1.1 All PSOs – public bodies and schools – must report energy consumption and activity data to SEAI each year via its M&R system.

3.1.1.2 The data reported via the M&R system is subject to verification by SEAI through its data verification assessment (DVA) process.

3.1.1.3 The reporting requirements for energy consumption and energy efficiency for M&R-2030 are broadly equivalent to those that have been in place for several years via the M&R-2020 methodology and system.

3.1.1.4 Limited methodology changes will be introduced for the 2022 reporting cycle, including:

- PSOs can report the percentage of their total electricity consumption that is used for transport.
- PSOs can report different activity metrics for different periods – see §4.2.1.
- Changes to reporting of electricity generation from landfill gas plants – see §4.2.2.

3.1.1.5 This document will be updated with the complete methodology for reporting energy consumption & energy efficiency data in due course.

4 2030 ENERGY EFFICIENCY TARGET

4.1 Overview

4.1.1.1 The methodology for the 50%-by-2030 energy efficiency target ('EE target') is broadly equivalent to that which has been in place for several years for the 33%-by-2020 energy efficiency target.

4.1.1.2 Limited methodology changes will be introduced for the 2022 reporting cycle. Two key changes are described in §4.2.

4.1.1.3 This document will be updated with the complete methodology for the 2030 EE target in due course.

4.2 Methodology changes for M&R-2030

4.2.1 Different activity metrics for different periods

4.2.1.1 SEAI recognises that public bodies evolve over time – in terms of the services they provide and the underlying activities they undertake. In some cases, the drivers for energy consumption within an organisation can fundamentally transform over a period, e.g. if a key energy-using activity that is currently undertaken by the organisation was not undertaken during its EE baseline period.

4.2.1.2 From the 2022 reporting cycle onwards, PSOs can request SEAI to use different activity metrics for different periods. For example, an organisation may request SEAI to track its energy efficiency using one activity from its EE baseline to 2020 and using a different activity from 2021 to 2030.

4.2.1.3 Such requests will be subject to review and approval by SEAI.

4.2.1.4 PSOs that use different activity metrics for different periods must report values for both activity metrics for one overlapping year. In the example discussed in §4.2.1.2, the PSO must report values for both activity metrics for the year 2020.

4.2.2 Landfill gas electricity generators

4.2.2.1 The methodology for reporting energy flows associated with PSO owned or operated landfill gas electricity generators, and for calculating the contribution of these flows to a PSO's energy efficiency, have changed since the M&R-2020 methodology. These changes bring the methodological treatment of such facilities in line with the treatment of other electricity generators that are outside the meter boundary of PSO electricity end-users[7].

4.2.2.2 There are separate methodology rules for landfill gas generators that have commissioning dates up to and including 31 December 2020, and those that were commissioned since then.

[7] The potential for these changes were initially highlighted for public bodies in SEAI's December 2019 consultation on the 2030 targets [12]. The decision was subsequently communicated at an SEAI briefing to the public sector on 10 March 2021 [9].

4.2.2.3 Electricity exported onto the public electricity network from landfill gas generators that were commissioned up to and including 31 December 2020 *may* be counted as a PSO's electricity consumption for the purposes of the 2030 EE target:

- PSOs can choose whether to include the generation from the landfill gas plant in the scope of their reportable energy consumption.
- The inclusion of generation from pre-2021 plants is aligned with the *M&R-2020* methodology for these plants and is the default approach. If a PSO chooses this approach, changes in the generation output over time can materially affect the energy performance indicator calculated for the PSO.
- The exclusion of generation from pre-2021 is aligned with the *M&R-2030* methodology for post-2020 landfill gas generators.
- PSOs must adopt a consistent approach year on year for each landfill gas generator, i.e. if generation is included for one year, it must be included for all years, and *vice versa*.
- PSOs should contact SEAI if they wish to change how they report data for a pre-2021 landfill gas generator.

4.2.2.4 Electricity exported onto the public electricity network from landfill gas generators that were commissioned after 31 December 2020 is not counted as a PSO's electricity consumption for the purposes of the 2030 EE target.

5 GHG EMISSIONS

5.1 GHG emissions reporting framework

5.1.1 Overview

5.1.1.1 All PSOs – public bodies and schools – must report energy consumption and GHG emissions data to SEAI each year via its M&R system.

5.1.1.2 The data reported via the M&R system is subject to verification by SEAI through its data verification assessment (DVA) process.

5.1.1.3 All GHG emission values and GHG targets expressed in this document are calculated, quantified and expressed in kilogrammes of CO2 (kgCO2), tonnes of CO2 (tCO2) or kilotonnes of CO2 (ktCO2)[8].

5.1.1.4 In due course, SEAI anticipates that it will *also* calculate GHG emissions in units of CO2 equivalent (CO2eq)[9] to also account for the non-CO2 GHGs that arise from energy use[10].

5.1.2 Categories of reportable GHG emissions

5.1.2.1 There are currently five *categories* of emissions in the public sector emissions reporting framework, as shown in Table 2.

Table 2: GHG emissions categories

Category	Methodology description	Reportable to SEAI	Included in 2030 GHG target
In-target non-electricity emissions	§5.3	Mandatory	✓
In-target electricity emissions	§5.4	Mandatory	✓
Business travel	§5.5 & 7	Mandatory	✗
Non-combustion direct emissions	Overview provided in Table 3	Optional	✗
Other indirect emissions		Optional	✗

5.1.2.2 The five categories are described in Table 3 and Figure 1, which both illustrate the extent of the alignment between these emissions categories and the scope 1-2-3 emissions reporting framework defined in the Greenhouse Gas Protocol [7].

[8] 1 ktCO2 = 1,000 tCO2 = 1,000,000 kgCO2.

[9] kgCO2eq, tCO2eq and ktCO2eq.

[10] Values for energy-related GHG emissions expressed in kgCO2 account for the CO2 emissions that arise from the use of relevant fuels, but they do not include other GHG emissions that also arise from the use of these fuels, notably methane and nitrous oxide. Emission values expressed in CO2eq do account for these other GHGs, as well as CO2. The difference between emission values expressed as CO2 and those expressed as CO2eq is very small for the energy-related emissions that are within the scope of the public sector target – typically of the order of 1%.

5.1.2.3 Only in-target non-electricity emissions and in-target electricity emissions are counted for the purposes of the 2030 emissions targets. Collectively, these emissions are referred to as in-target emissions.

5.1.2.4 The M&R emissions reporting framework may be expanded in due course to accommodate other categories of emissions.

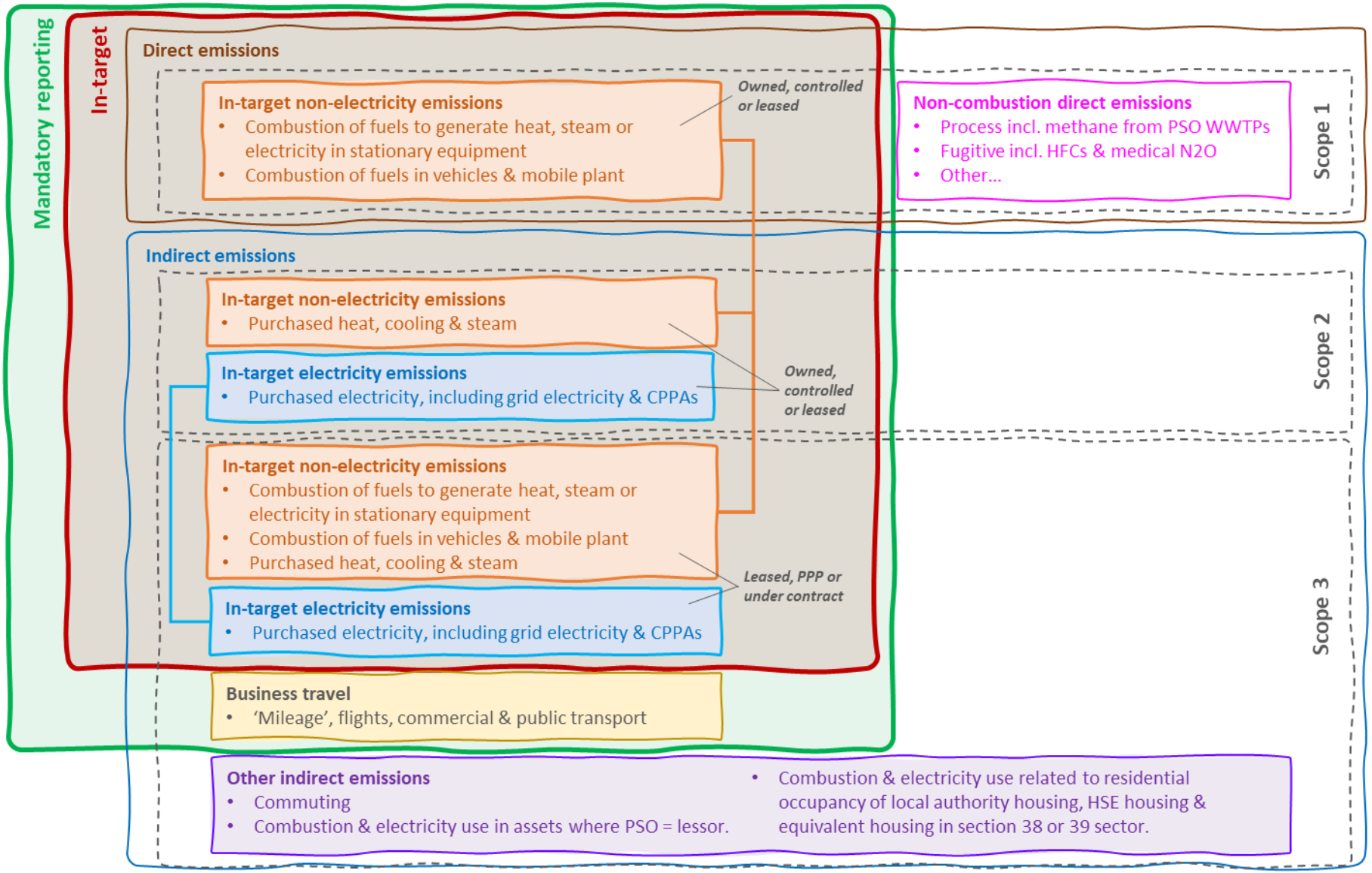
Table 3: GHG emissions categories - summary of reportable GHG emissions [see glossary on page 51 for explanation of key terms used in this table]

Category	GHG source(s)		Scope as per GHG Protocol [7]	Reportable	In GHG target
In-target non-electricity emissions See §5.3 for details.	Combustion of fuels to generate heat, steam, electricity or power in stationary equipment such as boilers, furnaces etc.	Owned or controlled by PSO	Direct-scope 1	Mandatory	✓
		Leased by PSO (PSO = lessee)	Direct-scope 1 *or* indirect-scope 3	Mandatory	✓
		Operated via PPP or under contract	Indirect-scope 3	Mandatory	✓
	Combustion of fuels in vehicles & mobile plant	Owned or controlled by PSO	Direct-scope 1	Mandatory	✓
		Leased by PSO (PSO = lessee)	Direct-scope 1 *or* indirect-scope 3	Mandatory	✓
		Operated via PPP or under contract	Indirect-scope 3	Mandatory	✓
	Purchased heat, cooling & steam	Owned or controlled by PSO	Indirect-scope 2	Mandatory	✓
		Leased by PSO (PSO = lessee)	Indirect-scope 2 *or* indirect-scope 3	Mandatory	✓
		Operated via PPP or under contract	Indirect-scope 3	Mandatory	✓
In-target electricity emissions See §5.4 for details.	Purchased electricity	Owned or controlled by PSO	Indirect-scope 2	Mandatory	✓
		Leased by PSO (PSO = lessee)	Indirect-scope 2 *or* indirect-scope 3	Mandatory	✓
		Operated via PPP or under contract	Indirect-scope 3	Mandatory	✓
	Onsite generation from non-fuel renewable generators	Owned or controlled by PSO	Direct-scope 1	Mandatory	✓
		Leased by PSO (PSO = lessee)	Direct-scope 1 *or* indirect-scope 3	Mandatory	✓
		Operated via PPP or under contract	Indirect-scope 3	Mandatory	✓

Category	GHG source(s)	Scope as per GHG Protocol [7]	Reportable	In GHG target
Business travel See §7 for details.	Business travel that is not included in in-target emissions, including via privately-owned vehicles ('mileage'), commercial flights and commercial and public transport services.	Indirect-scope 3	Mandatory	✘
Non-combustion direct emissions	Direct emissions from sources other than combustion sources, including process and fugitive emissions. Examples: fugitive emissions from refrigeration & air-conditioning systems (e.g. hydrofluorocarbons (HFCs)), fugitive emissions of medical N2O, methane emissions from PSO wastewater treatment plants.	Direct scope 1 *or* indirect scope 3	Optional[11]	✘
Other indirect emissions	Other indirect emissions that are not included in in-target emissions or business travel, including: • Combustion emissions in the PSO's upstream value chains, e.g. staff commuting, energy used in production of purchased materials • Combustion emissions in the PSO's downstream value chain, e.g. transportation of waste from a PSO's facilities • Non-combustion emissions in the PSO's upstream value chain, e.g. process emissions from production of cement used for construction of a new PSO facility • Non-combustion emissions in the PSO's downstream value chain, e.g. methane emissions arising from a PSO's waste products sent to landfill.	Indirect-scope 3	Optional[11]	✘

[11] These emissions cannot currently be reported to SEAI. The software system is currently under development. It is anticipated that PSOs will be able to report some of these emissions from the 2022 reporting cycle onwards.

Figure 1: GHG emissions categories - summary of reportable GHG emissions [see glossary on page 51 for explanation of key terms used in this figure]



5.2 In-target emissions

5.2.1 Definition

5.2.1.1 In-target emissions are GHG emissions that are counted for the purposes of the 2030 emissions targets.

5.2.1.2 In-target emissions comprise in-target non-electricity emissions and in-target electricity emissions.

5.2.1.3 The extent of each PSO's activity that is encompassed by the 2030 emissions targets is broadly equivalent to that included in the 2020 and 2030 energy efficiency targets, i.e., in general, the in-target emissions correspond to the energy consumption reportable to SEAI for the purposes of the 2020 and 2030 energy efficiency targets.

5.2.1.4 In-target emissions include emissions arising from energy use in facilities and vehicles that may not be owned or operated directly by the public sector[12]. Examples include, but are not limited to, the emissions arising from energy use in: buildings that are leased by PSOs from private landlords (PSOs = lessees); local authority-owned leisure centres that are operated by private contractors; facilities or services operated by private-sector entities via public private partnerships (PPPs).

5.2.1.5 Additional guidance will be published shortly with respect to specific energy uses, activities and scenarios that are included in, and excluded from, the 2030 emissions targets.

5.2.2 Methodology summary

5.2.2.1 In-target emissions must be reported by every PSO to SEAI each year.

5.2.2.2 Every PSO does this by reporting its final energy consumption of different energy types for each year. The M&R system calculates the PSO's in-target emissions for each year by multiplying energy-type-specific emission factors by the final energy consumption[13] reported by the PSO for each energy type.

5.2.2.3 The energy types are defined by SEAI. SEAI will add additional energy types to the M&R system as new fuels are supplied into the public sector.

5.2.2.4 An in-target emissions total is calculated for each PSO for each year. This is the sum of the PSO's in-target non-electricity emissions subtotal (§5.3.3.1) and its in-target electricity emissions subtotal for the year (§5.4.6.1).

[12] Depending on the circumstances, these emissions could be classified as scope 3 by PSOs.

[13] The emission factors are multiplied by the final energy consumption *before* any weather adjustment calculations. M&R methodology for energy efficiency incorporates a weather-adjustment calculation to account for changes to thermal energy use that may be driven by variations in weather conditions from year to year.

5.2.3 Emission factors

5.2.3.1 The emission factors used for the calculations are set by SEAI and are generally 'tailpipe', or 'tank-to-wheel', emission factors, i.e. emission factors that account for the emissions that arise from burning the fuel at the point of use, e.g. in a boiler, in a vehicle, at a power station. This approach is aligned with methodologies for preparing Ireland's national energy balance and national emissions inventory.

5.2.3.2 The emission factors currently used for calculating emissions for the purposes of the 2030 emissions targets account for CO2 emissions only, i.e. they are CO2 emission factors. They do not account for the non-CO2 GHG emissions that also arise from the use of energy, i.e. methane and nitrous oxide.

5.2.3.3 In due course, SEAI anticipates that it will also use CO2 equivalent (CO2eq) emission factors, which also account for the relatively small amounts of these other GHGs[14].

5.2.3.4 Emission factors can vary from year to year.

5.2.3.5 The latest emission factors are included in Annex B.

5.3 In-target non-electricity emissions

5.3.1 Description

5.3.1.1 In-target non-electricity emissions arise from the combustion of fuels ('energy types'):

- At PSO facilities, to generate heat, steam, electricity, or power in stationary equipment such as boilers, furnaces etc.
- In vehicles & mobile plant, including cars, trucks, trains, aircraft, ships, non-road mobile machinery.
- For the generation of purchased heat, cooling & or steam, including district heating.

5.3.1.2 For convenience, in-target non-electricity emissions can be categorised as being either thermal or transport. However, in-target non-electricity emissions also include emissions arising from the use of energy for purposes that may not always be neatly classified as being thermal or transport, e.g. non-road mobile machinery, onsite diesel generators, CHP. For the avoidance of doubt, in-target non-electricity emissions include emissions arising from such activities.

5.3.2 Blended energy types

5.3.2.1 Some fuels used by PSOs are mixtures of fossil and non-fossil energy types, i.e. the fuel consumed has a fossil component and a non-fossil component[15]. The approach for

[14] The difference between emission values for CO2 and those that also other GHGs (expressed as CO2eq) is very small for the energy-related emissions that are within the scope of the public sector target – typically of the order of 1%.

[15] The most prevalent current examples of a blended energy types is diesel. Almost all diesel used in public sector vehicles is a blended mixture of fossil diesel and biofuel (biodiesel). This is the standard diesel product available through forecourts. It is typically marketed as 'diesel'. Similarly, almost all petrol is blended with

calculating emissions from the consumption of energy types that have fossil and non-fossil components is to first split the consumption into the fossil and non-fossil portions and then use different emission factors to calculate the emissions from each portion.

5.3.3 Total in-target non-electricity emissions

5.3.3.1 An in-target non-electricity emissions subtotal is calculated for each PSO for each year. This is the sum of all the PSO's in-target non-electricity emissions for the year.

5.3.4 Detailed methodology

5.3.4.1 The full methodology for calculating and aggregating in-target non-electricity emissions, including the emission factors used and the methodological treatment of alternative fuels and energy types will be introduced for the 2022 reporting cycle.

5.3.4.2 The methodology will be published shortly.

5.4 In-target electricity emissions

5.4.1 Description

5.4.1.1 In-target electricity emissions arise from:

- Consumption of electricity purchased from the electricity network ('grid electricity').
- Consumption of electricity purchased via corporate purchase power agreement (CPPA).
- Consumption of electricity that is produced by a non-fuel-based generator *inside the meter boundary* of a PSO electricity end-user, e.g. solar PV, hydro, wind turbines (typically small)[16].

5.4.2 Grid electricity

5.4.2.1 In-target electricity emissions arising from the consumption of grid electricity are calculated by applying the average emission factor for electricity in Ireland for the year to the quantities of electricity reported by each PSO as being consumed from the electricity network. This emission factor is calculated annually by SEAI and accounts for the significant changes to Ireland's generation mix over time.

bioethanol and it is likely that other blended energy types, comprising fossil and non-fossil components, will become available for PSO energy users over the next decade.

[16] In practice, the emission factor used for non-fuel generators is zero, so such generators give rise to zero emissions.

5.4.2.2 The calculation of a PSO's emissions from its use of grid electricity does not distinguish between different electricity suppliers or different electricity products.

5.4.2.3 No emissions benefit is given to PSOs for purchasing 'green' electricity products.

5.4.3 CPPA electricity

5.4.3.1 There is currently no differentiation between grid electricity and CPPA electricity from a GHG emissions perspective, i.e. CPPA electricity is considered to be equivalent to grid electricity for the purposes of the calculating in-target electricity emissions. SEAI continues to monitor evolving policy with respect to CPPAs.

5.4.4 Electricity generation inside the meter boundary[17]

5.4.4.1 GHG emissions (if any) arising from the consumption of electricity that is produced by a fuel-based generator *inside* the meter boundary of a PSO electricity end-user are *not* categorised as in-target *electricity* emissions. Such emissions are categorised as in-target *non-electricity* emissions and are calculated by applying fuel-specific emission factors in accordance with the methodology set out in §5.3. This approach applies for all fuel types, including fossil fuels, biomass, etc.

5.4.4.2 GHG emissions (if any) arising from the consumption of electricity that is produced by a CHP generator *inside* the meter boundary of a PSO electricity end-user are *not* categorised as in-target *electricity* emissions. Such emissions are categorised as in-target *non-electricity* emissions and are calculated by apply fuel-specific emission factors in accordance with the methodology set out in §5.3. This approach applies for all fuel types, including fossil fuels, biogas, etc.

5.4.4.3 The emission factor for the consumption of electricity that is produced by a non-fuel-based renewable generator *inside* the meter boundary of a PSO electricity end-user is 0 kgCO2/kWh.

5.4.5 Electricity generation outside the meter boundary[17]

5.4.5.1 GHG emissions (if any) arising from the production of electricity by a PSO owned or operated generator *outside* the meter boundary of a PSO electricity end-user are *not* categorised as in-target emissions. This includes landfill gas generators, renewable generators and fossil-fuel generators.

5.4.6 Total in-target electricity emissions

5.4.6.1 An in-target electricity emissions subtotal is calculated for each PSO for each year. This is the sum of all the PSO's in-target electricity emissions for the year.

[17] See §2.4.3 for explanation of meter boundary and of different electricity connection classifications, including *PSO electricity end-user*.

5.4.6.2 If a PSO is a net exporter of electricity to the grid, at PSO level, over the course of a year, the in-target electricity emissions subtotal is calculated on the basis of 0 kWh consumption, i.e. even though the PSO has a negative consumption of grid electricity, the associated emissions are calculated as zero.

5.4.7 Detailed methodology

5.4.7.1 The full methodology for calculating and aggregating in-target electricity emissions will be introduced for the 2022 reporting cycle.

5.4.7.2 The methodology will be published shortly.

5.5 GHG emissions from business travel

5.5.1.1 GHG emissions from business travel are not counted for the purposes of the 2030 emissions targets.

5.5.1.2 The reporting requirements for business travel are described in §6.

5.6 Non-combustion direct emissions

5.6.1.1 *Non-combustion direct emissions* are not counted for the purposes of the 2030 emissions targets.

5.6.1.2 The methodology for non-combustion direct emissions is under development and is not yet described in detail in this document. See Table 3 on page 16 for summary description.

5.7 Other indirect emissions

5.7.1.1 *Other indirect emissions* not counted for the purposes of the 2030 emissions targets.

5.7.1.2 The methodology for other indirect emissions is under development and is not yet described in detail in this document. See Table 3 on page 16 for summary description.

6 2030 GHG EMISSIONS TARGETS

6.1 GHG baseline

6.1.1 GHG baseline period

6.1.1.1 Progress towards the 2030 greenhouse gas emissions targets ('GHG targets') is tracked from a baseline period referred to as the GHG baseline period[18]. With very few exceptions, a PSO's GHG baseline period is different to its energy efficiency baseline period.

6.1.1.2 No emissions reductions (or any emissions increases) achieved in the year(s) prior to the start of a PSO's GHG baseline are counted for the purposes of tracking progress towards a PSO's 2030 emissions targets.

6.1.1.3 The default GHG baseline period for most PSOs is the three-year period 2016-2018.

6.1.1.4 PSOs that were established after certain dates may be deemed new entrants by SEAI. The GHG baseline period for a new entrant is dependent on the PSO's first full calendar year of operation, as determined by SEAI – see Table 4.

Table 4: GHG baseline periods for new entrants

First full calendar year of operation as determined by SEAI for the purposes of M&R	GHG baseline period
2016 or earlier[19]	2016-2018 (average)
2017	2017-2018 (average)
2018	2018
2019 or later	First full calendar year of operation

6.1.2 Calculation of emissions for GHG baseline period

6.1.2.1 Emissions for the GHG baseline period are calculated as averages (arithmetic mean) of the relevant annual values for the GHG baseline year(s).

[18] This is to distinguish it from the baseline period that applies for the public sector energy efficiency target, which is 2009, or earlier, for most PSOs. The baseline period for the energy efficiency target is referred to as the energy efficiency baseline (EE baseline).

[19] Not a new entrant.

6.2 PSO-level emissions targets

6.2.1 2030 emissions targets

6.2.1.1 Every PSO has two emissions targets for 2030:

- 2030 non-electricity emissions target.
- 2030 total emissions target.

6.2.1.2 Both targets are calculated on the basis of absolute reductions in emissions from GHG baseline levels, i.e. there is no adjustment for changes in activity levels, service levels or demographics.

6.2.1.3 Both targets are expressed as maximum levels of absolute in-target emissions, in tonnes, below which each PSO must operate in the year 2030, i.e., to achieve each target the PSO's actual emissions in 2030 must be less than or equal to the target.

6.2.2 2030 non-electricity emissions target

6.2.2.1 The first target applies to the PSO's in-target *non-electricity* emissions: every PSO must reduce its in-target non-electricity emissions by 51% by 2030. A PSO's non-electricity emissions target for 2030, in tonnes, equals its in-target non-electricity emissions at GHG baseline, multiplied by 49%:

$GHG\_target_{non\text{-}elec,2030} = GHG_{non\text{-}elec,GHG\ baseline} \times 49\%$

Where:

$GHG\_target_{non\text{-}elec,2030}$ is the non-electricity emissions target for 2030.

$GHG_{non\text{-}elec,GHG\ baseline}$ is the in-target non-electricity emissions at the PSO's GHG baseline.

6.2.2.2 Every PSO must achieve its non-electricity emissions target through its own action, which encompasses:

- Energy demand reduction through efficiency improvements in heat and transport.
- Decarbonisation of heat and transport through electrification and fuel-switching to renewables.

6.2.3 2030 total emissions target

6.2.3.1 The second target applies to the PSO's *total* in-target emissions: every PSO's total in-target emissions target for 2030, in tonnes, equals its non-electricity emissions target for 2030

plus its in-target electricity emissions at GHG baseline less the projected supply-side emissions reduction from electricity by 2030, in tonnes[20]:

$$GHG\_target_{total,2030} = GHG\_target_{non\text{-}elec,2030} + GHG_{Elec,GHG\ baseline} - \Delta GHG_{Elec\ supply\text{-}side,2030}$$

Where:

$GHG\_target_{total,2030}$ is the total emissions target for 2030.

$GHG\_target_{non\text{-}elec,2030}$ is the non-electricity emissions target for 2030.

$GHG_{Elec,GHG\ baseline}$ is the actual electricity emissions at GHG baseline.

$\Delta GHG_{Elec\ supply\text{-}side,2030}$ is the projected supply-side emissions reduction by 2030.

6.2.3.2 The projected supply-side emissions reduction from electricity by 2030 is the difference between the PSO's actual in-target electricity emissions at its baseline and the in-target electricity emissions that would be generated in 2030 if the PSO consumed the same amount of purchased electricity in 2030 as it did at its GHG baseline and Ireland's electricity network decarbonises in accordance with policy objectives. This can be expressed as follows:

$$\Delta GHG_{Elec\ supply\text{-}side,2030} = GHG_{Elec,GHG\ baseline} - (TFC_{Elec,GHG\ baseline} \times GHG\_factor_{Elec,2030})$$

Where:

$\Delta GHG_{Elec\ supply\text{-}side,2030}$ is the projected supply-side emissions reduction by 2030.

$GHG_{Elec,GHG\ baseline}$ is the actual electricity emissions at GHG baseline.

$TFC_{Elec,GHG\ baseline}$ is the actual electricity consumption at GHG baseline.

$GHG\_factor_{Elec,2030}$ is the estimated CO2 emission factor for Ireland's electricity system for 2030. This is based on an SEAI projection that is subject to change as SEAI updates its forecasts[21].

6.2.3.3 The percentage reduction required between the GHG baseline and 2030 to meet each PSO's total emissions target total differs for different PSOs because the overall percentage is dependent on each PSO's fuel split during its GHG baseline period.

6.2.3.4 Every PSO must achieve its total emissions target through a combination of its own action *and* electricity supply-side decarbonisation. For this target, own action encompasses:

- Energy demand reduction through efficiency improvements in heat, transport and electricity.
- Decarbonisation of heat and transport through electrification and fuel-switching to renewables.
- Additional supply-side decarbonisation of electricity through dedicated on-site renewable electricity generation.

[20] A worked example of a GHG emissions target calculation for a hypothetical PSO, including an explanatory diagram, is presented in Annex C.

[21] The emission factors currently used for M&R-2030 are set out in Annex B.

6.2.4 Worked example

6.2.4.1 A worked example of a GHG emissions target calculation for a hypothetical PSO is presented in Annex C.

6.2.5 Recalculation of PSO-level emissions targets

6.2.5.1 Because the target calculations are based on energy consumption data reported to SEAI by each PSO for its GHG baseline period, a PSO's two targets (in tonnes) will be recalculated by SEAI if the PSO updates its GHG emissions baseline by changing the energy consumption data reported by it to SEAI for this period. SEAI's M&R methodology allows PSOs to edit historical data in instances where more robust data has become available, i.e. to improve data quality. Any such changes are subject to SEAI's data verification procedures.

6.2.5.2 Every PSO's total emissions target (in tonnes) is a function of its consumption of grid electricity at its GHG baseline and the forecast rate of electricity supply-side decarbonisation over the period to 2030. The actual rate of electricity supply-side decarbonisation is outside the control of PSOs. Therefore, every PSO's total emissions target (in tonnes) will be periodically recalculated by SEAI, to account for the latest emissions forecasts data for 2030[21].

6.2.5.3 It is intended that such recalculation of a PSO's total emissions targets will apply the latest emissions forecasts for 2030 to the PSO's grid electricity consumption at its GHG baseline to recalculate the projected supply-side emissions reduction from electricity by 2030, in accordance with the methodology set out in §6.2.3.2. A possible exception to this is outlined in §6.2.6.

6.2.5.4 Any future recalculation of a PSO's total emissions target arising from changes to the forecast contribution from electricity supply-side decarbonisation will have no impact on the calculation of the PSO's non-electricity target.

6.2.6 Review of target methodology for large electricity users

6.2.6.1 It is expected that PSOs with emissions profiles that are heavily dominated by electricity will be driven towards own action through the parallel energy efficiency target. It may be necessary to review the approach to setting total emission targets for PSOs with very large in-target electricity emissions relative to their in-target non-electricity emissions if there is demonstrable lack of progress on own action from such PSOs.

6.3 Public sector emissions targets

6.3.1 2030 emissions targets

6.3.1.1 There are two emissions targets for the public sector for 2030. The public-sector-level and PSO-level targets are calculated in the same way, with the former being aggregations of the latter.

6.3.1.2 Both targets are expressed as maximum levels of absolute in-target emissions, in tonnes, below which the public sector must operate in the year 2030, i.e., to achieve each target the public sector's actual emissions in 2030 must be less than or equal to the target.

6.3.1.3 The first target applies to the public sector's in-target non-electricity emissions: the sector's in-target non-electricity emissions target for 2030, in tonnes, equals its in-target non-electricity emissions at GHG baseline, multiplied by 49%. This means that the sector must reduce its in-target non-electricity emissions by 51% by 2030. This target (in tonnes) is calculated as the sum of all PSOs' individual non-electricity emissions targets (in tonnes).

6.3.1.4 The second target applies to the public sector's total in-target emissions: the sector's total in-target emissions target for 2030, in tonnes, equals its in-target non-electricity emissions target for 2030 plus its in-target electricity emissions at GHG baseline less the projected supply-side emissions reduction from electricity by 2030, in tonnes. This target (in tonnes) is calculated as the sum of all PSOs' individual total emissions targets (in tonnes).

6.3.2 Preliminary calculation of public sector targets

6.3.2.1 A preliminary calculation of the public sector GHG emissions targets is presented in Annex C.

6.3.3 Recalculation of public sector emissions targets

6.3.3.1 Arising from the provision by which PSOs can edit historical data (§6.2.5.1), and because the public-sector-level targets are aggregations of all PSOs' targets, both emissions targets for the public sector will be recalculated as better data becomes available. It is likely that the magnitude of <u>both</u> of public-sector-level targets (in tonnes) will change slightly every year.

6.3.3.2 The periodic recalculation of all PSOs' total emissions targets, as described in §6.2.5.2, will also result in a recalculated value for the public sector's total emissions target. These periodic recalculations will <u>not</u> affect the calculated value for the public-sector-level non-electricity emissions target.

6.4 Tracking progress towards 2030 emissions targets

6.4.1 PSO-level progress

6.4.1.1 The progress of each PSO is tracked using data reported to SEAI via the M&R system.

6.4.1.2 Every PSO's progress towards the 2030 targets is tracked annually.

6.4.1.3 Each year, each PSO's progress is tracked against both of its emissions targets, as follows:

- Its in-target non-electricity emissions in the year (in tonnes) are compared with its 2030 in-target non-electricity emissions target (in tonnes) and with its in-target non-electricity emissions (in tonnes) at its GHG baseline.
- Its total in-target emissions in the year (in tonnes) are compared with its 2030 total emissions target (in tonnes) and with its total in-target emissions (in tonnes) at its GHG baseline.

6.4.1.4 A PSO must achieve both targets by 2030 to be deemed to have achieved the overall 51%-by-2030 GHG reduction target set out in CAP 2021. Both targets carry equal weighting in terms of governance.

6.4.1.5 Each year, each PSO's total change in in-target emissions arising from its *own actions* is also calculated. This is calculated as the difference between its total in-target emissions in the year and what its total in-target emissions would have been if its energy consumption in that year had been as per its GHG baseline period. It indicates the level of emissions reductions (or otherwise) achieved across thermal, transport and electricity through the PSO's own actions, excluding electricity supply-side savings. It is calculated as follows for the year 202X:

$$\Delta GHG_{Own\text{-}action,\ 202X} = GHG_{IT,202X} - \sum (TFC_{i,GHG\ baseline} \times GHG\_factor_{i,202X})$$

Where:

$\Delta GHG_{Own\text{-}action,\ 202X}$ is the calculated emissions reduction from own action by 202X.

$GHG_{IT,GHG\ baseline}$ is the total in-target emissions at GHG baseline.

$TFC_{i,GHG\ baseline}$ is the actual consumption of energy type *i* at GHG baseline.

$GHG\_factor_{i,202X}$ is the emission factor for energy type *i* for the year 202X.

$\sum$ is the summation across all energy types used by the PSO.

6.4.1.6 All of a PSO's in-target non-electricity emissions are treated in aggregate for the purpose of tracking progress towards the PSO's non-electricity emissions target. There are no sub-targets for thermal, transport or other emissions within the non-electricity emissions target. A PSO can achieve its non-electricity emissions target through any combination of reductions in thermal and transport emissions that reduce its in-target non-electricity emissions in aggregate by 51%, compared to its GHG baseline.

6.4.1.7 All of a PSO's in-target emissions are treated in aggregate for the purpose of tracking progress towards the PSO's total emissions target. A PSO can achieve its total emissions target through any combination of reductions in thermal, transport and electricity emissions.

6.4.1.8 Each PSO's progress may also be tracked against a calculated trajectory between its GHG baseline and its targets:

- Its in-target non-electricity emissions in a year may be compared with a calculated trajectory between its GHG baseline and its 2030 non-electricity target.
- Its total in-target emissions in a year may be compared with a calculated trajectory between its GHG baseline and its 2030 total emissions target.

The methodology for this is still to be developed, including the basis for calculating such trajectories and the intervals at which progress against the trajectories might be tracked.

6.4.2 Public sector progress

6.4.2.1 The public sector's progress towards the 2030 targets is tracked annually.

6.4.2.2 The progress of the sector as whole is tracked by aggregating the progress of individual PSOs.

6.4.2.3 Each year, the public sector's progress is tracked against two targets:

- The sector's non-electricity emissions in the year (in tonnes) are compared with its 2030 in-target non-electricity emissions target (in tonnes) and with its in-target non-electricity emissions (in tonnes) at the GHG baseline.
- The sector's total in-target emissions in the year (in tonnes) are compared with its 2030 total emissions target (in tonnes) and with its total in-target emissions (in tonnes) at the GHG baseline.

6.4.2.4 The public sector's total change in in-target emissions arising from *own action* by PSOs is also calculated. This is calculated as the difference between the sector's total in-target emissions in the year and what the sector's total in-target emissions would have been if every PSO's energy consumption in that year had been as per its GHG baseline period. It indicates the level of emissions reductions (or otherwise) achieved across thermal, transport and electricity through all PSOs' own actions, excluding electricity supply-side savings.

6.4.3 Sub-sector progress

6.4.3.1 The progress made by sub-sectoral groups and departmental groups towards the 2030 targets can also be tracked annually.

6.4.3.2 The progress of the sub-sectoral / departmental groups is tracked by aggregating the progress made by the individual constituent PSOs within each group.

6.4.3.3 The progress made by such groups against the two emissions targets, and the change in emissions arising from own action, are calculated in a manner equivalent to that described for the entire public sector in §6.4.2.3 & 6.4.2.4.

7 BUSINESS TRAVEL

7.1 Overview

7.1.1 Definition

7.1.1.1 Business travel occurs when people travel from one place of work to another place of work as part of their work duties.

7.1.1.2 For reporting purposes, SEAI has defined three categories of business travel:

- Private road vehicle
- Commercial flights
- Commercial and public transport

7.1.2 Scope of 'business travel'

7.1.2.1 This section (§7.1.2) sets out the scope of business travel in the context of the M&R-2030 reporting framework.

7.1.2.2 Business travel includes travel to a place that is not a normal place of work.

7.1.2.3 Business travel does not include travel to and from a person's normal place of work, i.e. commuting. This is a person's own private travel and is not a business journey. Additional information on what constitutes business travel is available from the Revenue website [8].

7.1.2.4 Business travel generally involves travel by persons that have an employee-employer relationship with the public body.

7.1.2.5 The following are also considered to be business travel reportable by relevant public bodies:

- Business travel by agency staff, where that travel is paid for / reimbursed by the public body.
- Business travel by elected public representatives, where that travel is paid for / reimbursed by the public body.
- Business travel by a person that is employed by a public body other than the reporting public body, but for which the reporting public body is also reporting.

7.1.2.6 Business travel generally excludes travel by persons that do not have an employee-employer relationship with the public body, including independent or self-employed contractors. In any instances where this principle is inconsistent with circumstances specified in §7.1.2.5, then the principles set out in §7.1.2.5 take precedence.

7.1.2.7 Business travel includes relevant travel by all modes, including private road vehicles, vehicles hired by staff, commercial flights, bus, rail, taxis and ferries.

7.1.2.8 Business travel includes travel within Ireland, travel to/from Ireland, and travel outside Ireland.

7.1.2.9 Notwithstanding the inclusion of international travel (see §7.1.2.8), SEAI recognises that public bodies may find it difficult to collate some data for travel outside Ireland and that calculation methodologies established for Ireland's transport network may not be appropriate for other jurisdictions. There is also a trade-off between the level of effort required to gather some data and the scale of the emissions. For these reasons, the scope of business travel reportable to SEAI is limited to:

- Travel by private road vehicle within the island of Ireland.
- All commercial flights, including those between locations outside Ireland.
- Travel by road and rail-based commercial and public transport within the island of Ireland.
- Ferry travel within Ireland and to/from the island of Ireland.

This scope is summarised in Table 5. Data for business travel that is outside this scope is not reportable to SEAI. However, public bodies can include relevant data for travel in other jurisdictions if they wish, e.g. if it is difficult to disaggregate data between Ireland and other jurisdictions.

Table 5: Scope of domestic and international business travel that is reportable to SEAI

Category		Within island of Ireland	To/from island of Ireland	Outside island of Ireland
Private road vehicle		✓	N/a	×
Commercial flights		✓	✓	✓
Commercial & public transport	Road & rail	✓	N/a	×
	Ferry	✓	✓	×

7.1.2.10 Business travel excludes any travel journeys for which the public body reports the relevant energy consumption as part of the organisation's energy consumption.

7.1.3 Reporting obligations

7.1.3.1 All public bodies (PBs) must report annual data on business travel to SEAI for the years 2021 onwards. The requirement to report data for business travel was originally communicated to public bodies at an SEAI briefing to the public sector on 10 March 2021 [9] and is set out in the 2021 Climate Action Plan [4].

7.1.3.2 The obligation to report data on business travel does not apply to standalone schools.

7.1.3.3 The data reporting methodology requires public bodies to report data annually to SEAI on the distance travelled by mode of transport. SEAI uses this data to calculate each organisation's GHG emissions from business travel. Wherever possible, SEAI has sought to align the data reporting requirements with data sources that are already available to public bodies.

7.1.3.4 The following is a summary of the data that is reportable by public bodies for each category of business travel:

- Private road vehicle: total distance travelled in year (km), by type of vehicle. See §7.2 for details.

- Commercial flights: list of flight segments undertaken in year, including to/from airports and cabin class. See §7.3 for details.
- Commercial and public transport: total distance travelled in year (passenger.km), by mode of transport. See §7.4 for details.

7.1.3.5 The following timeline applies for the reporting of data for business travel:

- In 2022 public bodies must report data for travel by private road vehicles and commercial flights for the year 2021.
- In 2022 public bodies are also encouraged to report data for travel by commercial and public transport for the year 2021.
- From 2023 onwards, public bodies must report data for all three categories of business travel for all years from 2021 onwards.
- Public bodies may also report data for all three categories of business travel for years prior to 2021. Reporting data for the years prior to 2021 will remain optional.

This timeline is summarised in Table 6.

Table 6: Timeline for reporting data on business travel

Category	Reporting in 2022 (aka 2021 reporting cycle)	Reporting in 2023 onwards (2022 reporting cycle onwards)
Private road vehicle	Must report data for 2021 Optional for pre-2021	Must report data for 2021 onwards Optional for pre-2021
Commercial flights	Must report data for 2021 Optional for pre-2021	Must report data for 2021 onwards Optional for pre-2021
Commercial & public transport	Mandatory for 2021 Optional for pre-2021	Must report data for 2021 onwards Optional for pre-2021

7.1.4 Business travel & public sector targets

7.1.4.1 The energy consumption associated with business travel is not within the scope of the 2030 energy efficiency target.

7.1.4.2 The GHG emissions arising from business travel are not within the scope of the 2030 emissions targets.

7.1.4.3 Notwithstanding this, transport is a significant source of GHG emissions in Ireland and emissions from business travel represent a significant proportion of some PSOs' wider carbon footprints. Reducing emissions from business travel will contribute to reducing Ireland's overall emissions reduction targets.

7.1.5 How to report

7.1.5.1 In 2022, public bodies should use SEAI's *M&R-2030 Business Travel* spreadsheet-based reporting template, which is available via this web page ('downloads' section).

7.1.5.2 Public bodies must select their public body name in worksheet 1.

7.1.5.3 Public bodies must also complete the three declarations in worksheet 1 by selecting either 'Yes (data complete)' or 'No (data incomplete)' for the relevant category of business travel.

7.1.5.4 **The completed spreadsheet must be submitted to mandr@seai.ie[22].**

7.1.5.5 Public bodies that did not undertake any business travel in 2021 can make a declaration of this effect by sending an email to mandr@seai.ie by 5pm on Friday 29 April 2022, quoting their public body name and public body identification number (PB ID), and including the following text:

We have reviewed the SEAI M&R-2030 methodology guidance with respect to business travel and declare that {Public body name}{PB ID:}

- *Did not undertake any business travel in 2021 by private road vehicle*
- *Did not undertake any business travel in 2021 by commercial flights*
- *Did not undertake any business travel in 2021 by commercial & public transport.*

In these circumstances, it is not necessary to complete or attach the spreadsheet template. Public bodies can look up their PB via this web page (click 'public body IDs').

7.1.5.6 From 2023 onwards, public bodies will be able to report data for business travel via the online M&R system. Data previously reported to SEAI via spreadsheet will be migrated to the online system by SEAI.

7.1.6 Data quality & verification

7.1.6.1 Data reported for business travel must be complete, valid and robust. And public bodies must be able to demonstrate this.

7.1.6.2 Public bodies should retain records of both the approaches they use to access and collate data (including data sources, key assumptions and basis for any calculations) and their underlying data (input data, calculations (if any)). These will be required if the data reported for business travel is examined via the data verification assessment (DVA) process. It will also help ensure that public bodies collate and aggregate their data in a consistent manner year on year.

7.1.6.3 Data reported for business travel in 2022 (2021 reporting cycle) will not be subject to DVA by SEAI.

7.1.6.4 Data reported for business travel in 2023 (2022 reporting cycle) and in subsequent years will be included in the annual DVA process. This will include data that is reported for business travel undertaken in 2021.

7.1.6.5 If public bodies cannot currently access robust data, they should establish appropriate systems to record robust data for future years.

[22] The cycle dates for the 2021 reporting cycle are available on this web page.

7.1.6.6 §7.4.3.3 sets out a provision whereby public bodies may prioritise their data-gathering efforts on more material sources of emissions. This provision applies for business travel by commercial and public transport only.

7.2 Private road vehicles

7.2.1 Scope

7.2.1.1 This section (§7.2.1) sets out the scope of business travel in private road vehicles in the context of the M&R-2030 reporting framework. The scope of 'business travel' is set out in §7.1.2.

7.2.1.2 This category of business travel generally involves travel in a privately owned vehicle for which an individual is reimbursed by the public body on a per-km basis (aka 'mileage').

7.2.1.3 The following are also considered to be included in the scope of business travel by private road vehicle:

- Business travel in a privately owned vehicle for which an individual is compensated by the public body via a car allowance.
- Business travel in a vehicle hired by an individual (hire car).
- Business travel in an employer-provided vehicle, where the energy consumption is not reported by the public body as part of the organisation's energy consumption.

7.2.1.4 The following are excluded from the scope of business travel by private road vehicle and should not be reported as such:

- Any journey for which the fuel use is reported by the same public body as part of the organisation's energy consumption. This is not reportable as business travel.
- Private use of employer-provided vehicles. This is not reportable as business travel.
- Business travel in taxis and other forms of commercial or public road transport services. This should be reported as business travel by commercial & public transport (see §7.4).

7.2.1.5 See Table 5 in §7.1.2.9 for scope of domestic and international business travel by private road vehicle that is reportable to SEAI.

7.2.2 What to report

7.2.2.1 Business travel by private road vehicle is reported as the total distance travelled in a year, in kilometres (km), by vehicle type:

- Car (internal combustion engine)
- Car (electric vehicle)
- Motorcycle

7.2.2.2 For business travel by **car (internal combustion engines)**, public bodies must report the total km travelled in each year, broken down by engine size:

- Engine capacity ≤1,200cc (≤1.2 litre)
- Engine capacity 1,201cc-1,500cc (1.2-1.5 litre)
- Engine capacity ≥1,501cc (>1.5 litre engine)
- Unknown engine size

This subcategory includes all cars and light commercial vehicles[23] powered by engines based on petrol, diesel, hybrid, plug-in hybrid or LPG technologies. It excludes fully electric vehicles.

7.2.2.3 For business travel by **car (electric vehicles)**, public bodies must report the total km travelled in each year by fully electric vehicles. This category includes battery electric vehicles (BEV), fuel cell electric vehicles (FCEV) and zero emission vehicles (ZEV). It excludes hybrids and plug-in hybrids.

7.2.2.4 If the distance travelled by electric vehicles is unknown, then it can be included in the subtotal reported for cars of unknown engine size.

7.2.2.5 For business travel by **motorcycle**, public bodies must report the total km travelled in each year by, broken down by engine size:

- Engine capacity ≤150cc
- Engine capacity 151cc-250cc
- Engine capacity 251cc-600cc
- Engine capacity ≥601cc

7.2.2.6 If more than one person travels in the same vehicle on the same journey, the journey distance should be counted once, e.g. if 3 people travel together in the same car for 150 km, the distance should be counted as 1 x 150 km = 150 km.

7.2.3 Accessing & collating data

7.2.3.1 The data required should be available from public bodies' employee expenses systems, i.e. from 'mileage' records. The breakdown of vehicle types for which km data is reportable to SEAI is as per Revenue's 'civil service' rates for travel expenses[24] [8].

7.2.4 How to report

7.2.4.1 Public bodies should enter relevant data in worksheet 2 in SEAI's *M&R-2030 Business Travel* reporting spreadsheet. There is additional detailed guidance provided at the top of the worksheet.

[23] Only if travel constitutes business travel.

[24] Except for the electric vehicle category. See §7.2.2.4.

7.2.4.2 If public bodies undertook no business travel via a specific type of vehicle in 2021, they should enter 0 in the relevant cell (instead of leaving it blank).

7.2.4.3 From 2023 onwards, public bodies will be able to report this data via the online M&R system. Data previously reported to SEAI via spreadsheet will be migrated to the online system by SEAI.

7.3 Commercial flights

7.3.1 Scope of 'commercial flights'

7.3.1.1 This section (§7.3.1) sets out the scope of business travel via commercial flights in the context of the M&R-2030 reporting framework. The scope of 'business travel' is set out in §7.1.2.

7.3.1.2 This category of business travel involves business travel by commercial airline. It includes:

- International and domestic flights.
- Scheduled and unscheduled services.

7.3.1.3 See Table 5 in §7.1.2.9 for scope of domestic and international business travel via commercial flights that is reportable to SEAI.

7.3.2 What to report

7.3.2.1 Business travel via commercial flights is reported as a list of flight segments.

7.3.2.2 If a journey comprises multiple segments, then each segment must be reported separately, e.g. if a person flies from Dublin to Singapore via Amsterdam, then the Dublin-Amsterdam and Amsterdam-Singapore legs should be reported as separate segments. This applies whether the segments are connecting flights or not.

7.3.2.3 If more than one person travels on the same flight segment, the segment should be counted separately for each passenger, e.g. if 3 people fly from Dublin to Amsterdam, this should be counted as three flights/segments.

7.3.2.4 Public bodies must report the following data for each flight segment:

- Date or year
- Departure airport
- Arrival airport
- Cabin class
- 'One-way' or 'return'
- No. passengers

7.3.2.5 Public bodies may also report the CO2 emissions arising from each flight segment, in kgCO2. This is optional and values reported for this parameter are not used in the calculation of public bodies' emissions from commercial flights. Instead, SEAI calculates the CO2 emissions from the mandatory data reported for each segment (as listed in §7.3.2.4) and it is this SEAI-calculated value that is counted when determining public bodies' GHG emissions from the segment. Values reported by public bodies can be used for comparison purposes with the SEAI-calculated value.

7.3.3 How to report

7.3.3.1 Public bodies should enter relevant data in one or both of worksheets 3(a) and 3(b) in SEAI's *M&R-2030 Business Travel* reporting spreadsheet:

- Worksheet 3(a) 'segment list' is for reporting flights when public bodies have a list of flight segments by IATA airport code[25]. This sheet is better suited for public bodies that undertake a significant amount of air travel and have access to a list of flight segments undertaken, e.g. via a travel agent.
- Worksheet 3(b) 'manual entry' is for reporting flights when public bodies prefer to select departure and arrival airports from drop-down menus. This sheet may be better suited for public bodies that undertake air travel on a more *ad hoc* basis.

While public bodies can use one or both of worksheets 3(a) and 3(b), it is important that each journey (segment) is reported in only one the worksheets, i.e. the same journey must not be reported in both worksheets.

7.3.3.2 Worksheet 3(a) '**segment list**': public bodies that report flights using worksheet 3(a) must report the following data for each segment on a separate row:

- Date
- From city/airport – select IATA code from drop-down list (alphabetical)
- To city/airport – select IATA code from drop-down list (alphabetical)
- Cabin class– either 'economy', 'premium economy', 'business', 'first' or 'unknown'
- 'One-way' or 'return'
- No. passengers, i.e. the number of passengers that undertook business travel on behalf of the public body on that flight segment on the same date. (In worksheet 3(a), separate rows must be used for repeat journeys on the same segment on different dates.)

Public bodies may also optionally enter CO2 emissions (see §7.3.2.5). There is additional detailed guidance provided at the top of the worksheet.

7.3.3.3 Worksheet 3(b) '**manual entry**': public bodies that report flights using worksheet 3(b) can report multiple journeys on the same route (segment) in a single row. Public bodies must enter the following data in each row:

- Year
- From city/airport – select from drop-down list (Irish airports listed first, then alphabetical)
- To city/airport – select from drop-down list (Irish airports listed first, then alphabetical)
- Cabin class– either 'economy', 'premium economy', 'business', 'first' or 'unknown'
- 'One-way' or 'return'

[25] An IATA airport code or IATA location identifier is a three-letter code allocated to airports around the world by the International Air Transport Association, e.g. Dublin = 'DUB', Cork = 'ORK', Shannon = 'SNN'.

- No. passenger journeys, i.e. total number of business travel journeys being reported for that flight segment for that year on that worksheet row. (In worksheet 3(b), the same row can be used for repeat journeys on the same segment on different dates.)

Public bodies may also optionally enter CO2 emissions (see §7.3.2.5). There is additional detailed guidance provided at the top of the worksheet.

7.3.3.4 From 2023 onwards, public bodies will be able to report this data via the online M&R system. Data previously reported to SEAI via spreadsheet will be migrated to the online system by SEAI.

7.3.4 Accessing & collating data

7.3.4.1 Public bodies that use travel agents or similar travel services can request all the data required to complete worksheet 3(a) from these service providers.

7.3.4.2 Public bodies that do not use travel agents and do not have flight records that include IATA airport codes can select airports from the drop-down menus in worksheet 3(b) or can look up IATA airport codes [10] and use worksheet 3(a).

7.3.4.3 Some travel agents and airlines provide values for CO2 emissions attributable to flights. As noted in §7.3.2.5, the reporting of this data is optional.

7.4 Commercial & public transport

7.4.1 Scope

7.4.1.1 This section (§7.4.1) sets out the scope of business travel by commercial & public transport in the context of the M&R-2030 reporting framework. The scope of 'business travel' is set out in §7.1.2.

7.4.1.2 This category of business travel generally involves business travel on public transport services. It includes:

- Services provided by public and private operators.
- Scheduled and unscheduled services.
- All modes of transport (except air), i.e. it includes travel by road, rail and water.

7.4.1.3 The following are excluded from the scope of business travel by commercial & public transport and should not be reported as such:

- Business travel in a vehicle hired by an individual (hire car). This should be reported as business travel by private road vehicle (see §7.2).
- Business travel by commercial flight. This should be reported as business travel by commercial flight (see §7.3).
- Any journey for which the fuel use is reported by the same public body as part of the organisation's energy consumption. This is not reportable as business travel.

7.4.1.4 See Table 5 in §7.1.2.9 for scope of domestic and international business travel by commercial and public transport that is reportable to SEAI.

7.4.2 What to report

7.4.2.1 Business travel by commercial & public transport is reported as total distance travelled in a year, in passenger-kilometres (passenger.km), by mode of transport:

- Road
- Rail
- Ferry

7.4.2.2 If more than one person travels in the same vehicle on the same journey, the journey distance should be counted separately for each passenger, e.g. if 3 people take a 150-km train journey together, the distance should be counted as 3 x 150 km = 450 km.

7.4.2.3 For commercial & public transport **by road**, public bodies must report the total passenger.km travelled in each year, broken down by vehicle type:

- Taxi
- City bus, e.g. Dublin Bus, Go Ahead, Cork City Bus
- Coach, e.g. Bus Éireann, Expressway
- Local bus

7.4.2.4 For commercial & public transport **by rail**, public bodies must report the total passenger.km travelled in each year, broken down by type:

- Diesel trains, including all Iarnród Éireann intercity and diesel suburban services
- Electric, including Dart
- Light rail & tram, including Luas
- Unknown rail type

7.4.2.5 For commercial & public transport **by ferry**, public bodies must report the total passenger.km travelled in each year, broken down by type:

- Foot passenger
- Car passenger
- Unknown passenger type

This subcategory includes all ferry types, including sea ferries, island ferries and river ferries.

7.4.2.6 Public bodies can optionally record travel data (passenger.km) in each year for active mobility, broken down by type:

- Walking
- Bicycle
- Electric bicycle

This functionality is provided for public bodies' own purposes. SEAI does not envisage using data reported for active mobility for calculating emissions arising from business travel.

7.4.3 Accessing & collating data

7.4.3.1 Travel by public transport is often quantified by time or stages, rather than km, so data on passenger.km can be difficult to determine. Mapping and journey planning tools may be useful for working out distances.

7.4.3.2 The reporting spreadsheet includes a ready reckoner for rail distances between stations in Ireland.

7.4.3.3 There is a trade-off between the level of effort required to gather passenger.km data and the value of the data. Public bodies should focus on gathering robust data for the modes of travel by commercial and public transport that are likely to be most material to their organisation's emissions from business travel. If necessary, public bodies can estimate distances travelled for modes that are less material to their organisation and/or where robust data is unavailable. Public bodies must retain a record of the basis for all estimates, including relevant assumptions and calculations. See also §7.1.6.

7.4.4 How to report

7.4.4.1 Public bodies should enter relevant data in worksheet 4 in SEAI's *M&R-2030 Business Travel* reporting spreadsheet. There is additional detailed guidance provided at the top of the worksheet.

7.4.4.2 If public bodies undertook no business travel via a specific mode of commercial & public transport in 2021, they should enter 0 in the relevant cell (instead of leaving it blank).

7.4.4.3 From 2023 onwards, public bodies will be able to report this data via the online M&R system. Data previously reported to SEAI via spreadsheet will be migrated to the online system by SEAI.

7.5 Key calculations

7.5.1 GHG emissions from business travel

7.5.1.1 SEAI is currently finalising the methodology for calculating GHG emissions arising from business travel. The final methodology will incorporate emission factors that will be applied to the distance and flight segment data reported by public bodies.

7.5.1.2 The calculation methodology, including relevant emission factors, will be published in due course in an updated version of this document.

8 VEHICLE INVENTORY & VEHICLE PROCUREMENTS

8.1.1.1 All public bodies must report information on their fleet of vehicles from the 2022 reporting cycle onwards. A PB's vehicle inventory is a list comprising the number of different vehicles of different vehicle type owned/operated by the PB in a year.

8.1.1.2 All public bodies must report information on their procurement of new vehicles from the 2022 reporting cycle onwards, for the purposes of tracking compliance with the Clean Vehicles Directive (CVD) [6].

8.1.1.3 The full methodology for reporting data for a PB's vehicle fleet and vehicle procurements will be introduced for the 2022 reporting cycle.

8.1.1.4 This document will be updated with the complete methodology in due course.

9 ENERGY-RELATED PROJECTS

9.1.1.1 All PSOs – public bodies and schools – must report data on projects that they have implemented to improve energy efficiency and/or reduce energy-related emissions.

9.1.1.2 All PSOs – public bodies and schools – must also report data on projects that they plan to implement to improve energy efficiency and/or reduce energy-related emissions.

9.1.1.3 The reporting requirements for energy-related projects for M&R-2030 are broadly equivalent to those that have been in place for several years via the M&R-2020 methodology and system.

9.1.1.4 Limited methodology changes will be introduced for the 2022 reporting cycle, including a requirement to break down the reported energy savings by energy type.

9.1.1.5 This document will be updated with the complete methodology in due course.

10 BUILDING REGISTER

10.1.1.1 All public bodies must report information on their portfolio of buildings from the 2022 reporting cycle onwards.

10.1.1.2 All public bodies may also optionally report information on their portfolio of buildings on a pilot basis during the 2021 reporting cycle.

10.1.1.3 The full methodology for reporting data for a PB's building register will be introduced for the 2022 reporting cycle.

10.1.1.4 This document will be updated with the complete methodology in due course.

11 EXEMPLAR ENERGY MANAGEMENT

11.1.1.1 All public bodies must report information on their energy management programmes.

11.1.1.2 The reporting requirements for exemplar energy management for M&R-2030 are broadly equivalent to those that have been in place for several years via the M&R-2020 methodology and system.

11.1.1.3 Limited methodology changes will be introduced for the 2022 reporting cycle.

11.1.1.4 This document will be updated with the complete methodology in due course.

12 ENERGY SPEND

12.1.1.1 All public bodies may optionally report data on their energy spend from the 2022 reporting cycle onwards.

12.1.1.2 The full methodology for reporting data for energy spend will be introduced for the 2022 reporting cycle.

12.1.1.3 This document will be updated with the complete methodology in due course.

13 ASSET-LEVEL ENERGY & GHGS

13.1.1.1 All public bodies may optionally report energy, activity and GHG emissions data at asset level from the 2022 reporting cycle onwards.

13.1.1.2 The full methodology for reporting data at asset level will be introduced for the 2022 reporting cycle.

13.1.1.3 This document will be updated with the complete methodology in due course.

GLOSSARY

Activity metric is a measure of the activity that an organisation undertakes that should be directly relevant to what drives energy consumption in the organisation.

Bioethanol or **pure bioethanol** is a biofuel that is typically blended with petrol (fossil) by fuel suppliers. The bioethanol blend rate is expected to increase over time.

Biodiesel or **pure biodiesel** is a biofuel that is typically blended with diesel (fossil) by fuel suppliers. Some forms of biodiesel can also be used as standalone (unblended) fuels. The biodiesel blend rate is expected to increase over time.

Bioenergy is an umbrella term for energy produced from biological material including solid biomass, biogas and liquid biofuels.

Biogas is a mixture of methane (50-75%), carbon dioxide (25-45%) and small amounts of water (2-7%), as well as trace gases such as hydrogen sulphide, oxygen, nitrogen, ammonia and hydrogen. Anaerobic digestion plants convert feedstocks into biogas. Typical feedstocks include agricultural waste, municipal waste, industrial waste and energy crops. After some purification biogas can be combusted in boilers or CHP plants to provide heat and electricity. It can also be upgraded to natural gas quality, known as biomethane.

Biofuels are liquid fuels produced from biomass and used for transport. They are renewable alternatives to fossil fuels in the transport sector. Biodiesel, bioethanol and sustainable aviation fuel are all biofuels.

Business travel: business travel occurs when people travel from one place of work to another place of work as part of their work duties.

Carbon dioxide equivalent (CO2eq) refers to a method used to calculate and compare the emissions from different GHGs based on their global warming potential (GWP). A quantity of a GHG can be converted to an equivalent amount of CO2 by multiplying the quantity of the gas by its GWP. For example, 1 tonne of CO2 equals 1 tCO2eq, 1 tonne of methane equals 28 tCO2eq and 1 tonne of nitrous oxide equals 265 tCO2eq.

Combined heat & power (CHP) refers to plants which are designed to produce both heat and electricity. CHP plants may generate for their own use only (auto-producer), may export electricity to the grid, or may also export heat via a district heating network.

Combustion emissions are emissions arising from stationary combustion or mobile combustion.

Corporate power purchase agreements (CPPA) refers to an agreement for a large electricity user, such as business or a PSO, to purchase electricity directly from a generator, most often for a fixed price over a long-term contract.

Data verification assessment (DVA) is a key element in SEAI's approach for maintaining data quality. A DVA is an assessment of specific aspect(s) of a PSO's submission via M&R. The PSO's data is evaluated against data acceptability criteria. The outcome from a DVA is a formal classification of the PSO's data submission.

Direct emissions are emissions from sources that are owned or controlled by the reporting organisation.

Emission factor is a figure that is used to calculate the quantity of emissions per unit of energy consumption or activity. All emission factors used in this document are in units of kgCO2 'per X', where X is a unit of energy or activity. Different energy types (fuel types) have different emission factors, e.g. heating oil (gasoil) has a higher emission factor than natural gas does. The emission factors for some energy types remain largely unchanged over time. The factors for some energy types, especially electricity, change from year to year. These changes can have a material impact on GHG emissions calculated via M&R.

Final energy consumption or **total final consumption (TFC)** is the energy used by public bodies and other final consuming sectors of the economy, e.g. industry, transport, residential, etc. It excludes the energy used in the energy sector, e.g. for electricity generation, oil refining, etc.

Fugitive emissions are emissions that are not physically controlled but result from the intentional or unintentional releases of GHGs. They commonly arise from as leaks through joints, seals, packing, gaskets, etc. [7]

GHG source or **emission source** is a physical unit or process which releases GHGs into the atmosphere [7].

Global warming potential (GWP) describes the relative potency of a GHG. The larger the GWP, the more potent a GHG is from a global warming perspective. CO2 is the reference gas and has a 100-year GWP of 1. The GWPs for methane and nitrous oxide, both of which are emitted from burning fossil fuels, are 28 and 265 respectively. This means that 1 tonne of methane emissions is equivalent to 28 tonnes of CO2 and 1 tonne of nitrous oxide emissions is equivalent to 265 tonnes of CO2. These equivalent amounts are expressed as carbon dioxide equivalent (CO2eq), i.e. 1 tonne CO2 = 1 tCO2eq; 1 tonne methane = 28 tCO2eq; 1 tonne nitrous oxide = 265 tCO2eq.

Greenhouse gases (GHGs) are the six gases listed in the Kyoto Protocol, i.e. carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6) [7]. CO2, methane and nitrous oxide are all emitted from the use (burning) of fossil fuels. Different GHGs have different effects on the Earth's warming.

IATA airport code: an IATA airport code or IATA location identifier is a three-letter code allocated to airports around the world by the International Air Transport Association, e.g. Dublin = 'DUB', Cork = 'ORK', Shannon = 'SNN'.

Indirect emissions are emissions that are a consequence of the operations of the PSO, but occur at sources owned or controlled by another organisation [7].

Lifecycle emissions or **well-to-wheel emissions** are the emissions that arise from the extraction, processing and refining of a fuel, as well as from burning it at its point of use. The latter are referred to as tailpipe emissions.

Meter boundary refers to the boundary point at which a PSO's electricity consumption (imports) from the public electricity network, and its electricity exports to the public electricity network (if any) are metered.

Primary energy or **total primary energy requirement (TPER)** accounts for energy that is consumed and/or lost in transformation, transmission and distribution processes. It is calculated by applying primary energy conversion factors, which vary by fuel type, to final energy consumption values.

Primary energy conversion factors are factors for converting quantities of final energy consumption to quantities of primary energy. The conversion factors for thermal and transport fuels typically remain unchanged over time. The conversion factor for electricity changes from year to year as the efficiency of the electricity system changes. These changes can have a material impact on energy savings calculated via M&R.

Process emissions are emissions generated from manufacturing processes, e.g. the CO2 that arises from the chemical reaction during cement manufacture. [7]

PSO electricity end-user is a classification of electricity connection for facilities or other end users that are supplied with electricity for consumption.

PSO electricity generator is a classification of electricity connection for power generating facilities.

Reporting cycle refers to the annual cycles through which PSOs are required to report data to SEAI via M&R. Each reporting cycle is named with reference to the recently completed calendar year. For example, the

2021 reporting cycle commenced on 6 December 2021 and concluded on 29 April 2022. During the 2021 reporting cycle PSOs reported data for 2021 and, where appropriate, for previous years.

Scope 1 (emissions inventory) refers to a reporting organisation's direct GHG emissions, as per the GHG Protocol [7].

Scope 2 (emissions inventory) refers to a reporting organisation's emissions associated with the generation of electricity, heating/cooling, or steam purchased for the organisation's own consumption, as per the GHG Protocol [7].

Scope 3 (emissions inventory) refers to a reporting organisation's indirect emissions *other than* those covered in scope 2, as per the GHG Protocol [7].

Tailpipe emissions or **tank-to-wheel emissions** are the emissions that arise from burning the fuel at the point of use, e.g. in a boiler, in a vehicle. These are the emissions that are generally counted for the purposes of Ireland's emissions inventory and for the public sector targets.

REFERENCES

[1] "SI 426 of 2014 - European Union (energy efficiency) regulations 2014," 2014.

[2] European Parliament & European Council, "Directive 2012/27/EU on energy efficiency, ammending directives 2009/125/EC and 2010/30/EU and repealing directives 2004/8/EC and 2006/32/EC," 2012.

[3] "No 32 of 2021 - Climate action and low carbon development (amendment) act 2021," 2021.

[4] Government of Ireland, "Climate Action Plan 2021 - Securing our Future," 2021.

[5] European Parliament & European Council, "Directive 2010/31/EU on the energy performance of buildings (recast)," 2010.

[6] European Parliament & European Council, "Directive (EU) 2019/1161 amending Directive 2009/33/EC on the promotion of clean & energy-efficient road transport vehicles".

[7] World Business Council for Sustainable Development & World Resources Institute, The Greenhouse GAs Protocol - a Corporate Accounting & Reporting Standard - Revised Edition.

[8] Revenue, "Travel & subsistence," [Online]. Available: https://www.revenue.ie/en/employing-people/employee-expenses/travel-and-subsistence/index.aspx. [Accessed 18 01 2022].

[9] SEAI, "Public body briefing on M&R-2030 system: part 2," [Online]. Available: https://www.youtube.com/watch?v=YSut14TSYQA&t=174s. [Accessed 24 01 2022].

[10] IATA, "Airline and Location Code Search," [Online]. Available: https://www.iata.org/en/publications/directories/code-search/. [Accessed 24 01 2022].

[11] Government of Ireland, "Climate Action Plan 2019 - to tackle Climate Breakdown".

[12] SEAI, "Public sector energy efficiency and CO2 reduction targets 2030 - consultation paper," 2019.

REVISION HISTORY

The revision history of this document is summarised in Table 7.

Table 7: Document revision history

Document rev	Date	List of *major* updates incorporated in revision (non-exhaustive)	Superseded
R00	28 February 2022	Methodology for reporting business travel	13 September 2022
R01	13 September 2022	Updated: existing content on business travel relocated to §7 New: §2 M&R-2030 data reporting framework New: §3 Energy consumption & energy efficiency New: §4 2030 energy efficiency target New: §5 GHG emissions New: §6 GHG emissions targets New: §8 Vehicle inventory & vehicle procurements New: §9 Energy-related projects New: §10 Building register New: §11 Exemplar energy management New: §12 Energy spend New: §13 Asset-level energy and GHGs Updated: glossary New: Annex A – Scope of the organisation New: Annex B – Conversion & emission factors New: Annex C – Worked examples of GHG emissions target calculation	3 May 2023
R02	3 May 2023	Updated: §2 M&R-2030 data reporting framework – revised dates in Table 1 Updated: Annex B – Conversion & emission factors	

ANNEX A: SCOPE OF THE ORGANISATION

A.1. Table 8 (overleaf) provides a list of determinations with respect to the inclusion or exclusion of specific activities or scenarios from the scope of PSOs. See §2.4 for additional information on the scope of the organisation.

A.2. The list in Table 8 is not exhaustive and will be expanded over time.

A.3. All references to 'the PSO' in Table 8 refer to the PSO that is reporting data via M&R and to which the 2030 targets apply.

Table 8: Scope of the organisation

Energy use, activity or scenario	Reportable by the PSO	PSO's 2030 EE target	PSO's 2030 GHG targets
Energy use in assets that are owned by the PSO			
Energy consumed in buildings (or parts thereof) and other assets that are owned and used by the PSO.	✓	✓	✓
Energy consumed in buildings (or parts thereof) and other assets that are owned by the PSO and leased to another entity for which the PSO is not reporting data (PSO = lessor).	×	×	×
Energy consumed in assets operated via public private partnerships (PPPs) that come under the aegis of the PSO, including design build operate (DBO) projects and close variants, concession projects and design-build projects.	✓	✓	✓
PSO-owned energy plant and facilities that are operated and maintained by private contractors, including ESCOs.	✓	✓	✓
Energy use in assets that are *not* owned by the PSO			
Energy consumed in buildings (or parts thereof) and other assets that are leased by the PSO (PSO = lessee)	✓	✓	✓
Energy consumed in vehicles and non-road mobile plant & machinery that are leased by the PSO (PSO = lessee)	✓	✓	✓
Energy consumed in buildings (or parts thereof) and other assets that are leased to another entity for which the PSO is not reporting data (PSO = lessor).	×	×	×
Energy consumed in assets operated via public private partnerships (PPPs) that come under the aegis of the PSO, including design build operate (DBO) projects and close variants, concession projects and design-build projects.	✓	✓	✓
PSO energy facilities that are operated, maintained *and owned* by private contractors, including ESCOs.	✓	✓	✓

Energy use, activity or scenario	Reportable by the PSO	PSO's 2030 EE target	PSO's 2030 GHG targets
Energy use in residential settings			
Energy consumption related to the residential occupancy of local authority housing.	×	×	×
Energy consumption related to the residential occupancy of HSE housing and of equivalent housing operated by section 38 or 39 organisations in the healthcare sector.	×	×	×
Energy consumption in student accommodation provided by boarding schools and third-level institutions.	✓	✓	✓
Energy consumption in barracks & similar facilities.	✓	✓	✓
Energy consumption in nursing homes & similar facilities (owned or operated by a PSO).	✓	✓	✓

Energy use, activity or scenario	Reportable by the PSO	PSO's 2030 EE target	PSO's 2030 GHG targets
Electricity generation *within* meter boundary of PSO electricity end-user[26]			
Electricity generated by wind, solar PV, hydro and other non-fuel renewable generators that are located within the meter boundary of a PSO electricity end-user.	✓	✓	✓
Fuel (fossil & renewable) used to generate electricity via any fuel-based generator that is located within the meter boundary of a PSO electricity end-user.	✓	✓	✓
Fuel (fossil & renewable) used to generate electricity & heat via any CHP facility that is located within the meter boundary of a PSO electricity end-user.	✓	✓	✓
Electricity generation *outside* meter boundary of PSO electricity end-user[26]			
Electricity purchased from an electricity supplier (grid electricity), including 'green' and renewable electricity products.	✓	✓	✓
Electricity generated by a landfill gas generator (owned/operated by the PSO) that was commissioned *prior to 2021* and is outside the meter boundary of a PSO electricity end-user and the output from which is *not* supplied to the PSO.	Optional[27]	Optional[27]	×
Electricity generated by a landfill gas generator (owned/operated by the PSO) that was commissioned *after 2020* and is outside the meter boundary of a PSO electricity end-user and the output from which is *not* supplied to the PSO.	×	×	×
Electricity generated by a generator (any other technology, owned/operated by the PSO) that is outside the meter boundary of a PSO electricity end-user and the output from which is *not* supplied to the PSO.	×	×	×
Electricity generated by a generator (any technology) that is outside the meter boundary of a PSO electricity end-user and the output from which is supplied to the PSO via a corporate power purchase agreement (CPPA).	✓	✓[28]	✓[28]

[26] See §2.4.3 for explanation of meter boundary and of different electricity connection classifications, including *PSO electricity end-user*.

[27] See §4.2.2 for explanation of methodology for landfill gas generation for 2030 EE target.

[28] Electricity consumption purchased via CPPA is counted for the purposes of both targets. However, there is no efficiency gain attributed to the provenance of the electricity, i.e. it is considered to be equivalent to grid electricity for the purposes of the EE target. Furthermore, there is currently no differentiation between grid electricity and CPPA electricity from a GHG emissions perspective, i.e. CPPA electricity is considered to be equivalent to grid electricity for the purposes of the GHG targets.

Energy use, activity or scenario	Reportable by the PSO	PSO's 2030 EE target	PSO's 2030 GHG targets
District heat			
Heat supplied to (imported by) the PSO from a district heating system.	✓	✓	✓
Heat supplied by (exported from) the PSO to a district heating system.	✓	✓	✓
Energy & fuel supply			
Fuels supplied to other organisations (public or private) for which the PSO is not reporting via M&R.	×	×	×
Electric vehicles			
Electricity supplied for charging electric vehicles owned or operated by the PSO.	✓	✓	✓
Electricity consumed by electric vehicles that are operated by the PSO or by contractors for maintenance activities, including routine activities and periodic or occasional activities.	✓	✓	✓
Electricity supplied to members of the public for charging electric vehicles.	×	×	×
Electricity supplied to staff for charging non-PSO electric vehicles, for personal use by staff or for business travel.	×	×	×
Business travel by electric vehicle (private road vehicle).	✓	×	×
Business travel			
Business travel by private road vehicle	✓	×	×
Business travel by commercial flight	✓	×	×
Business travel by commercial or public transport, including road, rail, sea, river, etc.	✓	×	×

Energy use, activity or scenario	Reportable by the PSO	PSO's 2030 EE target	PSO's 2030 GHG targets
Activity outside Ireland			
Energy consumed by North-South bodies in Republic of Ireland	✓	✓	✓
Energy consumed in the international offices (located in other jurisdictions) of PSOs.	✓	✓	✓
Energy consumed directly by PSO vehicles (PSO owned/operated fleet) that operate outside Ireland. Excludes business travel.	✓	✓	✓
Business travel outside Ireland	✓	×	×
Construction, operation & maintenance			
Energy consumed directly in the construction of capital projects.	×	×	×
Energy consumed for the operation of facilities, equipment & vehicles.	✓	✓	✓
Energy consumed directly by the PSO in undertaking maintenance activities, including routine activities and periodic or occasional activities.	✓	✓	✓
Energy consumed directly by contractors in undertaking maintenance activities, including routine activities and periodic or occasional activities.	✓	✓	✓

ANNEX B: CONVERSION & EMISSION FACTORS

Grid electricity

B.1. SEAI uses statistical data to calculate annual values for past years for the primary energy conversion factor and the emission factor for electricity. Sometimes, historical values are refined (updated) as better statistical data becomes available.

- Table 9 (overleaf) presents statistical values for the primary energy conversion factor for electricity for past years.
- Table 11 (overleaf) presents statistical values for the emission factor for electricity for past years.

B.2. SEAI prepares forecasts for future values of the primary energy conversion factor and the emission factor for electricity, which are refined continually. The forecasts incorporate a large number of variables and assumptions[29].

- Table 10 (overleaf) presents forecast values for the primary energy conversion factor for electricity for future years.
- Table 12 (overleaf) presents forecast values for the CO2 emission factor for electricity for future years.

[29] Careful consideration should be given to the appropriateness of different forecasts for different circumstances, particularly if using the forecast values for making investment decisions.

Note that the values shown on the bottom rows on the tables in this Annex are most recent and are the values currently used in the M&R methodology, as of the date of this document. The values shown in all other rows have been superseded.

Table 9: Statistical values for primary energy conversion factor for *past* years - electricity

Period during which used for M&R	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
May 2016 – Apr 2017	3.010	2.896	2.750	2.682	2.670	2.563	2.461	2.354	2.332	2.361	2.221	2.288	2.213	2.179	2.113							
Apr 2017 – May 2018	3.010	2.896	2.750	2.682	2.670	2.563	2.461	2.354	2.332	2.361	2.221	2.288	2.214	2.179	2.132	2.163						
May 2018 – Apr 2019	3.010	2.896	2.750	2.682	2.670	2.563	2.461	2.354	2.332	2.361	2.221	2.288	2.214	2.179	2.120	2.139	2.066					
Apr 2019 – Apr 2020	3.010	2.896	2.750	2.682	2.671	2.563	2.462	2.354	2.333	2.361	2.222	2.288	2.214	2.179	2.120	2.139	2.066	1.963				
Apr 2020 – Apr 2021	2.998	2.887	2.742	2.673	2.657	2.553	2.450	2.340	2.315	2.361	2.221	2.281	2.208	2.172	2.114	2.132	2.059	1.939	1.896			
Apr 2021 – May 2022	2.998	2.887	2.742	2.673	2.657	2.553	2.450	2.340	2.315	2.361	2.221	2.281	2.208	2.172	2.114	2.132	2.060	1.940	1.882	1.830		
May 2022 – Sep 2022	2.998	2.887	2.742	2.673	2.657	2.553	2.450	2.340	2.315	2.361	2.221	2.281	2.208	2.172	2.113	2.133	2.059	1.940	1.880	1.834	1.958	
Sep 2022 – Apr 2023	2.998	2.887	2.742	2.673	2.657	2.553	2.450	2.340	2.315	2.361	2.221	2.281	2.208	2.172	2.113	2.133	2.059	1.940	1.880	1.834	1.941	
May 2023 –	2.998	2.887	2.742	2.673	2.657	2.553	2.450	2.340	2.315	2.361	2.221	2.281	2.208	2.172	2.113	2.133	2.059	1.940	1.880	1.834	1.949	1.896

Table 10: Forecast values for primary energy conversion factor for *future* years – electricity

Period during which used for M&R	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
May 2020 – May 2021		2.057	1.982	1.961	1.911	1.790	1.714	1.686	1.657	1.648	1.625
May 2021 – Sep 2022		2.001	1.976	1.939	1.856	1.773	1.644	1.629	1.562	1.548	1.546
Sep 2022 – Apr 2023			2.014	1.950	1.817	1.766	1.647	1.559	1.493	1.433	1.392
May 2023 –				1.950	1.817	1.766	1.647	1.559	1.493	1.433	1.392

Table 11: Statistical values for CO2 emission factor for *past* years – electricity (kgCO2/kWh)

Period during which used for M&R	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
May 2016 – Apr 2017	0.832	0.787	0.731	0.704	0.715	0.658	0.612	0.580	0.559	0.558	0.518	0.555	0.522	0.510	0.494							
Apr 2017 – May 2018	0.832	0.787	0.731	0.704	0.715	0.658	0.613	0.580	0.560	0.558	0.518	0.554	0.518	0.509	0.497	0.497						
May 2018 – Apr 2019	0.832	0.787	0.731	0.704	0.715	0.658	0.613	0.580	0.560	0.558	0.518	0.554	0.521	0.509	0.492	0.485	0.440					
Apr 2019 – Apr 2020	0.832	0.787	0.731	0.704	0.715	0.658	0.613	0.580	0.560	0.559	0.518	0.556	0.521	0.509	0.492	0.485	0.440	0.385				
Apr 2020 – Apr 2021	0.829	0.785	0.729	0.702	0.711	0.655	0.610	0.576	0.555	0.558	0.518	0.553	0.517	0.508	0.493	0.484	0.439	0.377	0.338			
Apr 2021 – May 2022	0.829	0.785	0.729	0.702	0.711	0.655	0.610	0.576	0.555	0.558	0.518	0.553	0.517	0.508	0.493	0.484	0.439	0.377	0.332	0.294		
May 2022 – Sep 2022	0.829	0.785	0.729	0.702	0.711	0.655	0.610	0.576	0.555	0.558	0.518	0.554	0.520	0.509	0.491	0.484	0.440	0.377	0.332	0.298	0.357	
Sep 2022 – Apr 2023	0.829	0.785	0.729	0.702	0.711	0.655	0.610	0.576	0.555	0.558	0.518	0.554	0.520	0.509	0.491	0.484	0.440	0.377	0.332	0.298	0.356	
May 2023 –	0.829	0.785	0.729	0.702	0.711	0.655	0.610	0.576	0.555	0.558	0.518	0.554	0.520	0.509	0.491	0.484	0.440	0.377	0.332	0.298	0.357	0.328

Table 12: Forecast values for CO2 emission factor for *future* years – electricity (kgCO2/kWh)

Period during which used for M&R	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
May 2020 – May 2021		0.336	0.300	0.291	0.277	0.236	0.196	0.194	0.187	0.185	0.175
May 2021 – May 2022		0.303	0.294	0.282	0.253	0.218	0.174	0.169	0.146	0.142	0.142
Sep 2022 – Apr 2023			0.339	0.314	0.256	0.239	0.191	0.159	0.134	0.112	0.098
May 2023 –				0.314	0.256	0.239	0.191	0.159	0.134	0.112	0.098

ANNEX C: GHG EMISSIONS TARGETS – WORKED EXAMPLES

PSO example

C.1. An example GHG emissions target calculation for a hypothetical PSO with 300 tCO2 of emissions at its GHG baseline is shown in Table 13 and Figure 2:

- This PSO must reduce its in-target non-electricity emissions from 200 tCO2 to 98 tCO2 by 2030 to achieve its non-electricity emissions target, which is highlighted in orange, i.e., it must reduce these emissions by 102 tCO2 (51% of 200 tCO2).
- Based on current SEAI forecast data, electricity supply-side decarbonisation could result in a 77 tCO2 reduction in emissions if the PSO consumed the same amount of purchased electricity in 2030 as it did during its GHG baseline period[30].
- Therefore, this PSO must reduce its total in-target emissions from 300 tCO2 to 121 tCO2 by 2030 to achieve a total emissions target, which is highlighted in purple, i.e., it must reduce its total emissions by 179 tCO2 (102 tCO2+ 77 tCO2).

Table 13: GHG emissions targets for hypothetical PSO with 300 tCO2 emissions baseline

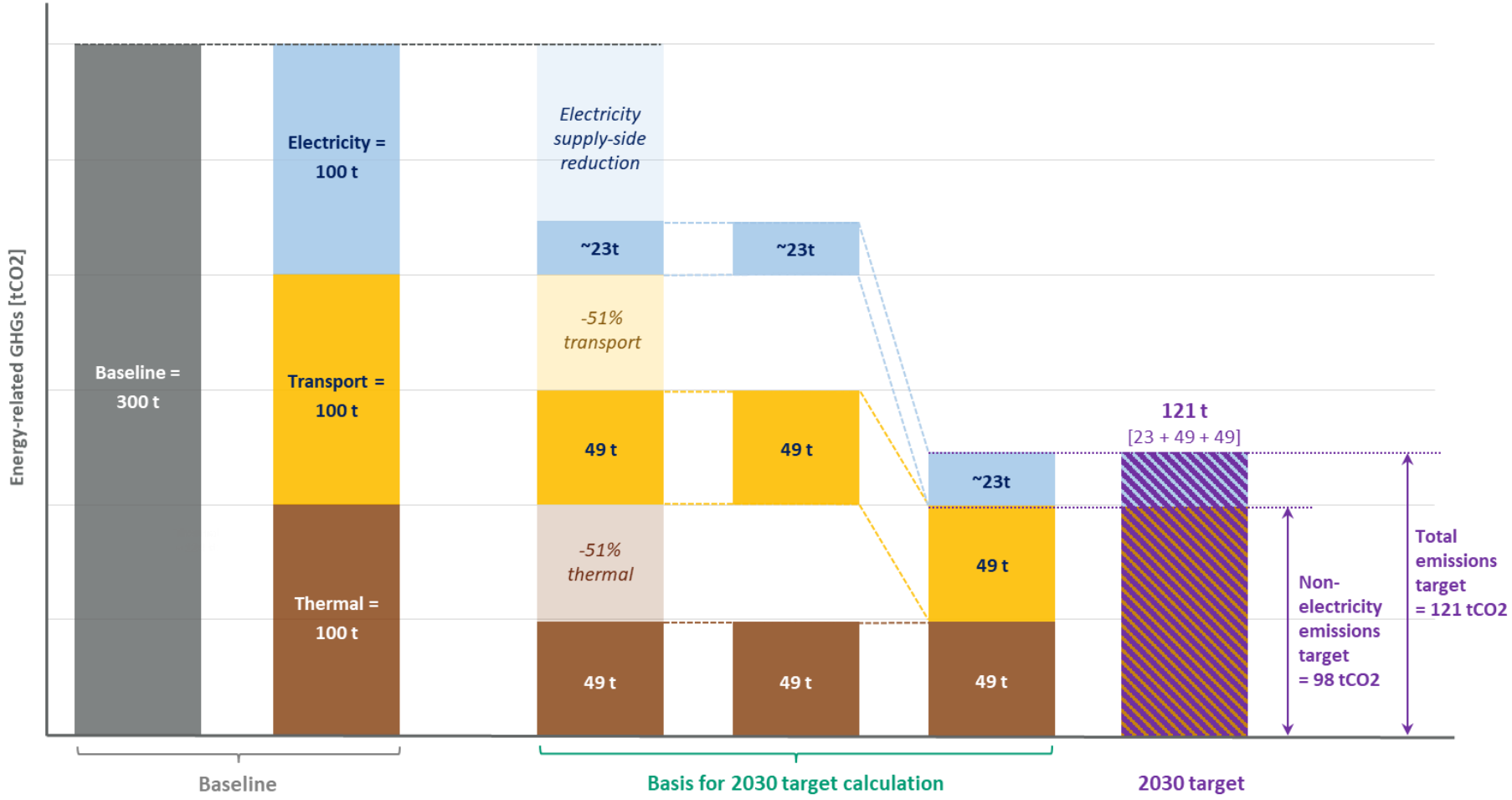
Emissions	2016-2018 baseline	2030 target emissions level	
In-target non-electricity (thermal)	100 tCO2	49 tCO2	= 100 tCO2 less 51%
In-target non-electricity (transport)	100 tCO2	49 tCO2	= 100 tCO2 less 51%
In-target non-electricity (total)	200 tCO2	**98 tCO2**	= 200 tCO2 less 51% = non-electricity emissions target
In-target electricity	100 tCO2	23 tCO2	= 100 tCO2 less projected supply-side decarbonisation
In-target emissions total	300 tCO2	**121 tCO2**	= 98 tCO2 + 23 tCO2 = total emissions target

C.2. In the example shown in Table 13 and Figure 2, the 169 tCO2 reduction in total emissions amounts to a 60% reduction in the PSO's total emissions.

C.3. The equivalent percentage reduction required to meet each PSO's total emissions target total differs for different PSOs because the overall percentage is dependent on each PSO's fuel split during its GHG baseline period. Percentages range from just over 51% for PSOs with a very low proportion of electricity in their GHG baseline fuel split to 77%[30] for PSOs that only consumed electricity during their GHG baselines.

[30] This is based on current forecast data. SEAI estimates Ireland's electricity network could decarbonise by 77% between 2016-18 (average) and 2030 – as fossil fuels are phased out of power generation. This value is subject to change as SEAI updates its forecasts.

Figure 2: GHG emissions targets for hypothetical PSO with 300 tCO2 emissions baseline



Public sector

C.4. SEAI estimates that supply-side decarbonisation could reduce in-target electricity emissions from the public sector by 787.5 ktCO2e – or 77% – between the GHG baseline and 2030, i.e. if the public sector consumed exactly the same amount of purchased electricity in 2030 as it did at the GHG baseline, its in-target electricity emissions would be 77% lower than at GHG baseline[31].

C.5. SEAI has calculated a preliminary GHG baseline and preliminary values for both emissions targets, at public sector level, using the latest data reported to SEAI through its M&R system[32,33]. Table 14 summarises this calculation – the public sector non-electricity emissions target is shown in orange and the total emissions target is shown in purple. This data is also presented in Figure 3.

Table 14: Public sector emissions target in ktCO2 (preliminary)

Emissions	2016-2018 baseline	2030 target emissions level	
In-target non-electricity (thermal)	499.0 ktCO2	244.5 ktCO2	= 499.0 ktCO2 less 51%
In-target non-electricity (transport)	493.1 ktCO2	241.6 ktCO2	= 493.1 ktCO2 less 51%
In-target non-electricity (total)	992.1 ktCO2	**486.1** ktCO2	= 992.1 ktCO2 less 51% = non-electricity emissions target
In-target electricity	1,017.1 ktCO2	229.6 ktCO2	= 1,017.1 ktCO2 less 787.5 ktCO2 supply-side decarbonisation
In-target emissions total	2,009.2 ktCO2	**715.7** ktCO2	= 486.1 ktCO2 + 229.6 ktCO2 = total emissions target

C.6. Based on the calculation summarised in Table 14, the public sector must reduce its emissions by 1,293.5 ktCO2, or approximately 64%, to achieve its total emissions target of 715.7 ktCO2 by 2030. SEAI anticipates that electricity supply-side decarbonisation will result in a 787.5 ktCO2 reduction, meaning that the sector must reduce its emissions by a further 506.0 ktCO2 through its *own action*.

[31] SEAI estimates Ireland's electricity network could decarbonise by 77% between 2016-18 (average) and 2030 – as fossil fuels are phased out of power generation. When the anticipated rate of decarbonisation is applied to the public sector's actual (preliminary) in-target electricity emissions for each of the years 2016, 2017 & 2018, the projected impact of supply-side decarbonisation on the public sector's in-target electricity emissions is also 77%.

[32] 2020 M&R reporting cycle (data reported to SEAI in 2021).

[33] The preliminary GHG baseline and targets exclude allowances for approximately 25% of standalone schools because these schools have not reported up-to-date data to SEAI. SEAI estimates that these outstanding schools account for less than 2% of public sector energy consumption.

Figure 3: Public sector emissions targets in ktCO2 (preliminary)