SOUTH EAST ENERGY AGENCY

Energy Master Plan

HAIL SEC

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DATE: August 2023

The SEC Programme is Supported by:

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Document Revision History

Revision	Date	Prepared By:	Reviewed By:	Action Taken/Comments
Rev A	10-05-2023	**Initials**: JF **Date**:	**Initials**: **Date**:	
Rev B	11-08-2023	**Initials:** JF **Date:**	**Initials**: **Date**:	
Rev C	20-09-2023	**Initials**: GD **Date: 20-09-2023**	**Initials**: **Date**:	
Rev D		**Initials**: **Date**:	**Initials**: **Date**:	
Rev E		**Initials**: **Date**:	**Initials**: **Date**:	
Rev F		**Initials**: **Date**:	**Initials**: **Date**:	

1.0 HAIL HOUSING ASSOCIATION– COMMUNITY CHARTER

The Housing Association for Integrated Living (HAIL) was founded in 1985 as a nonprofit organization, driven by the findings of the "Let's Look at Housing" report. The organization emerged from the initiative of St. Brendan's Mental Health Association members and others who recognized the housing needs of socially vulnerable individuals, especially those with mental health issues. HAIL has grown into an approved housing body, offering quality social and affordable rented accommodations primarily to individuals with mental health challenges on local housing waiting lists.
Governed by a dedicated volunteer Board of Directors, HAIL's core focus is on fostering integrated community living. They achieve this through a team of Mental Health Tenancy Sustainment Workers who provide tailored support for individuals with mental health difficulties, enabling them to lead independent lives within the community.

HAIL Housing currently manages a portfolio of 406 social homes across the country, catering to various housing needs in both urban and rural settings. Our offerings include general needs and family housing, as well as specialized supported housing for the elderly and individuals with special needs.

Among the homes we manage, approximately 309 properties have a BER rating below B2 and have been identified as needing energy upgrades. This underscores our commitment to improving the energy efficiency and sustainability of our housing stock.

In addition to our housing responsibilities, we oversee four satellite offices situated in Dublin and manage around 27 communal cores within apartment developments. This includes energy procurement for these sites, demonstrating our comprehensive approach to sustainable management.

HAIL Housing is fundamentally a service-oriented organization, dedicated to providing housing solutions while actively engaging with local communities. Our core objective revolves around maintaining homes in an environmentally responsible manner, ensuring residents can thrive peacefully within their communities.

Our aspiration is to lead by example in showcasing effective decarbonization strategies within our operational framework. By prioritizing the decarbonization of our housing activities, our central focus will be on upgrading housing units to achieve BER ratings of B or higher. This mission will involve implementing energy-efficient enhancements and embracing micro-renewable energy sources on a wide scale.

We commit to sharing the insights gained from the Energy Master Plan with our members. Through collaboration with our members, we intend to identify projects that align with our sustainability goals and contribute to the realization of net-zero emissions, serving as a testament to our commitment to sustainable practices.

2.0 GLOSSARY OF TERMS

At times, the language used in reports can be complicated and confusing. Below is a list of terms used throughout the report and their meanings.

kWh – Kilowatt hours. This is the equivalent of one kilowatt being used continually for one hour. You will recognise kilowatt hours (kWh) as the unit of energy detailed on a home electricity bill, where you are charged for each kilowatt hour (kWh) used.

CAPEX - **Capital Expenditure** is money spent by an individual or organization in acquiring or maintaining fixed assets, such as land, buildings, and equipment.

Energy Efficiency – Simply put, this means doing more with less. Energy efficiency is achieved when a change in technology or behaviour leads to a reduction in energy consumption. For example, insulating a home allows that building to use **less energy** to maintain a comfortable temperature.

Energy Savings – Energy costs money, therefore when energy efficiency is increased, energy savings are made in the form of Euros. It is for this reason that when discussing energy savings in this report it is done in Euros.

Register of Opportunities (ROO) – The Register of Opportunities is the record of all opportunities (measures) for energy savings in the building

Renewable Technologies – These are system that use natural resources such as sunlight, wind, or geothermal heat, which are naturally replenished, to generate electricity or useful heat.

Simple Payback Period – This is the number of years it will take for the total initial investment in a project to be paid by the savings made.
Example: Initial Investment = €1,000
Annual savings as a direct result of investment = €100

Simple Payback Period = $\frac{Initial\ Investment}{Annual\ Savings}$ = $\frac{€1000}{€100}$ = 10 yrs.

Thermal Energy – defined as energy used to generate heat. Examples include oil or natural gas being used in a boiler, or wood in an open fire.

3.0 EXECUTIVE SUMMARY

A Sustainable Energy Community (SEC) refers to a collaborative community effort aimed at enhancing energy efficiency, integrating renewable energy sources, and exploring intelligent energy solutions. HAIL has embraced this concept and is actively involved in this transformative journey. As part of this initiative, we have established a foundational energy profile for the residential properties and community facilities under our ownership and management.

Figure 1 illustrates a comprehensive breakdown of the heating fuel types employed within the HAILs housing stock. Meanwhile, Figure 2 offers insights into the associated costs of energy consumption, considering both financial expenditures and carbon emissions.

By engaging in this process, we are committed to fostering sustainable practices, minimizing our environmental impact, and contributing to a more energy-efficient and ecologically responsible community.

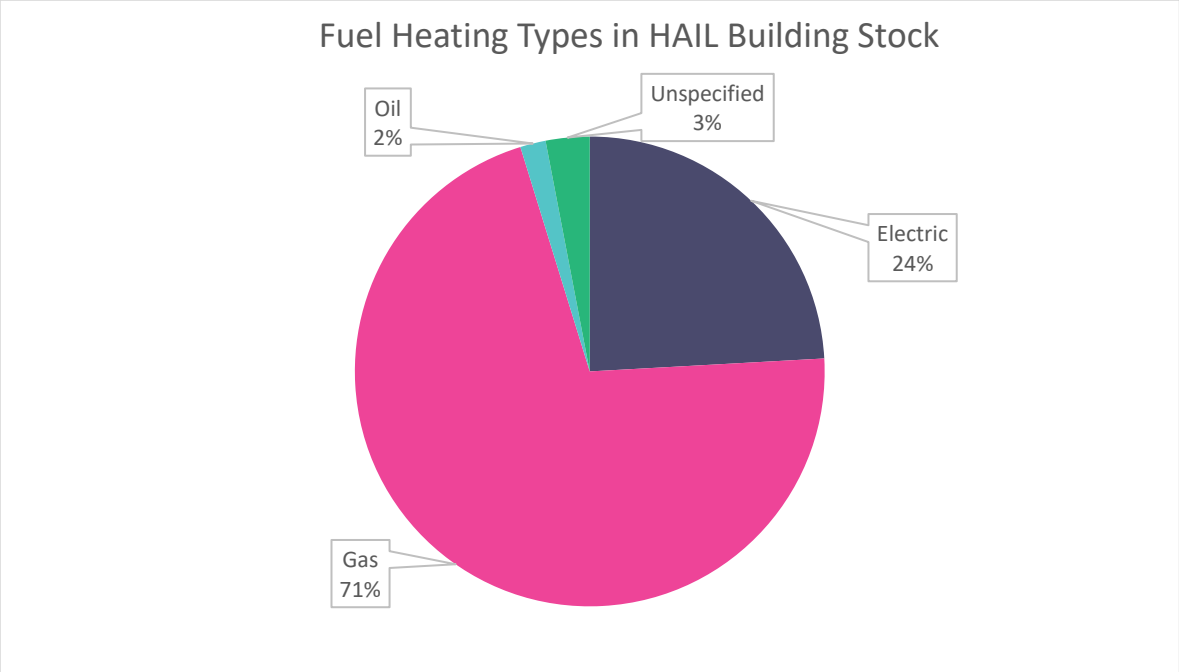


Figure 1 - Overview of Baseline Energy profile

The energy demand analysis for HAIL indicates that the primary source of energy consumption is from the direct use of Gas, constituting the largest portion of energy demand. Other thermal fuels like electric heating contribute to the remaining energy consumption.

This data showcases our commitment to understanding the environmental impact of our energy consumption and provides valuable insights for our ongoing efforts to minimize carbon emissions and foster sustainability within our housing community.

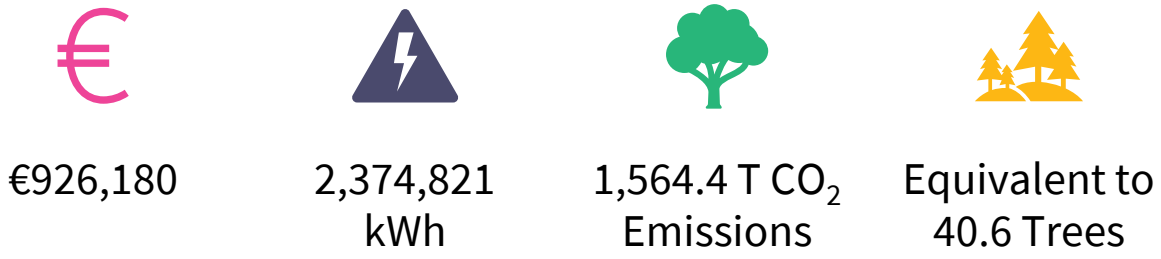


Figure 2 - Summary of Baseline Energy profile

This report highlights numerous opportunities for enhancing energy efficiency within the domestic buildings and community buildings owned or managed by HAIL. By implementing retrofitting measures, these buildings can experience improved thermal performance, heightened comfort levels, and reduced operational costs.

The proposed energy upgrades for domestic buildings encompass the following initiatives:

- **Roof Insulation:** Enhancing thermal comfort by bolstering insulation in roofs.
- **Cavity & External/Internal Wall Insulation**: Elevating thermal comfort through improved insulation for walls.
- **Windows/Doors Upgrade:** Elevating thermal comfort by upgrading windows and doors for better insulation.
- **Lighting Improvement:** Enhancing lighting levels while concurrently reducing electricity expenditures.
- **Heating Upgrade (Heat Pump):** Enhancing efficiency and lowering heating costs through the adoption of heat pump technology.
- **Solar Photovoltaic (PV) Integration:** Generating eco-friendly electricity and reducing overall electricity expenses.

House no.	Initial BER Rating	BER Rating after Proposed Works	Energy saving (%)	Estimated Space Heating Energy Bill after works (€/yr)	Estimated Annual CO_2 after works (Tonnes)	Max Grant Value Through SEAI Individual Grants (€)	Max Grant Value Through SEAI One Stop Shop (€)	Year of Construction
1	E1	A3	42.8%	€190	1.5 tonnes	€8000	€14,300	2002
2	C1	A1	94.1%	€370	2.5 tonnes	€9,600	€15,900	1960
3	D1	A3	194.4%	€90	0.9 tonnes	€8,000	€12,800	1970
4	E1	A3	81.2%	€80	2.1 tonnes	€8,000	€12,800	1880
5	C1	A2	356.3%	€140	1.5 tonnes	€8,000	€12,800	2003
6	D1	B1	65.8%	€250	1.7 tonnes	€6,000	€12,800	1900s
7	B3	A2	485.6%	€50	1.1 tonnes	€8,000	€12,800	2001
8	C1	A1	80.0%	€380	4.3 tonnes	€11,400	€17,700	2001
9	E2	A3	83.0%	€90	1.6 tonnes	€8,000	€12,800	1880
10	D2	A3	79.4%	€50	1.1 tonnes	€8,800	€12,800	1998

The proposed energy upgrades for non-domestic buildings include:

- Lighting – improved lighting levels and reduce electricity costs
- Boiler upgrades – improved efficiency and reduced heating costs
- Roof / wall / attic insulation – improve thermal comfort
- Solar PV – generating green electricity and reduced electricity costs
- EV charge points – offer new service for client/users

Building name	Kilowatt-hour savings
HAIL Edenmore	4,196 kWh
Total	**4,196 KWh**

4.0 INTRODUCTION

This report was commissioned by the Sustainable Energy Authority of Ireland (SEAI) on behalf of HAIL through the SEAI Sustainable Energy Communities (SEC) program.

HAIL currently manages a portfolio of 406 social homes distributed across the nation. Our focus primarily revolves around providing general needs and family housing in both urban and rural settings. Additionally, we offer specialized supported housing tailored to the elderly and individuals with specific needs. Among the homes managed, approximately 309 properties exhibit BER ratings below B2, indicating the need for energy upgrades. Furthermore, we oversee four satellite offices located in Dublin and are responsible for managing around 27 communal cores within apartment developments, including energy procurement.

HAIL's core mission centers on being a service-oriented organization, catering to individuals in need of housing solutions. Our efforts are devoted to managing homes while actively engaging with local communities, fostering social housing that positively impacts the lives of residents. Sustainability is a fundamental tenet of our operations, allowing families and individuals to experience peaceful and comfortable living within their communities.

Aligned with the Climate Action Plan, we recognize the urgency of achieving 2030 decarbonization targets. Key focuses include increasing the share of renewable electricity, adopting electric vehicles, and decarbonizing building heating systems. Among the strategies to achieve these goals, heat pump deployment and building fabric upgrades are paramount. The Housing for All plan also acknowledges the connection between housing expansion and improved energy efficiency. The plan mandates that new homes adhere to nearly zero energy building standards, aligning with cost-effectiveness and reduced environmental impact.

The Climate Action Plan's target of retrofitting 500,000 existing structures by 2030 extends to local authority, social, and Approved Housing Body homes. Overcoming challenges in retrofitting rental properties is a common issue, wherein incentives for energy upgrades can misalign between landlords and tenants. To address this, the Government's Housing for All Plan pledges to introduce a minimum Building Energy Rating (BER) for private rental properties by 2025. The Department of Housing, Local Government, and Heritage is leading this initiative.

SEAI offers robust support for building owners to enhance the energy efficiency of rental properties. These resources are accessible to non-corporate landlords and Approved Housing Bodies (AHBs), with higher grant levels available for AHBs. In recent years, several AHB-owned homes received SEAI grant support for home energy upgrades, highlighting the progress in this direction.

This report will provide the framework upon which a variety of energy related projects can be undertaken. The report is constructed around three main stages:

Stage 1: Establishing an Energy Baseline

In this initial phase, our focus is on establishing a comprehensive energy baseline for the domestic dwellings and community buildings under the control of HAIL. This involves gathering data on the various energy types currently utilized and breaking down energy demand across different sectors. Our approach integrates both top-down data from National Authority databases and bottom-up data collected through surveys and energy audits conducted with residents.

Stage 2: In-Depth Energy Analysis

Building upon the baseline established in Stage 1, this phase involves a detailed examination of energy consumption patterns within the HAIL. By delving into each sector, we aim to create a customized representation of energy usage. Our methodology combines data sourced from National Authority databases and insights derived from energy audits conducted among residents.

Stage 3: Identifying Energy Opportunities

In this stage, our primary focus is identifying and highlighting opportunities for enhancing energy efficiency, reducing energy demand, and exploring the integration of renewable energy sources.

The overarching goal of this report is to empower HAIL with the insights required to embark on an energy transition journey. By providing a deep understanding of energy consumption patterns within HAIL and identifying key areas for improvement, we aim to facilitate the formulation of a roadmap for sustainable energy practices. This roadmap will prioritize energy-saving projects aimed at curbing energy usage and minimizing CO2 emissions, ultimately contributing to a greener and more environmentally conscious community.

5.0 Methodology and Baseline Data

A Top down data analysis was completed using data from national authority databases, as listed below.

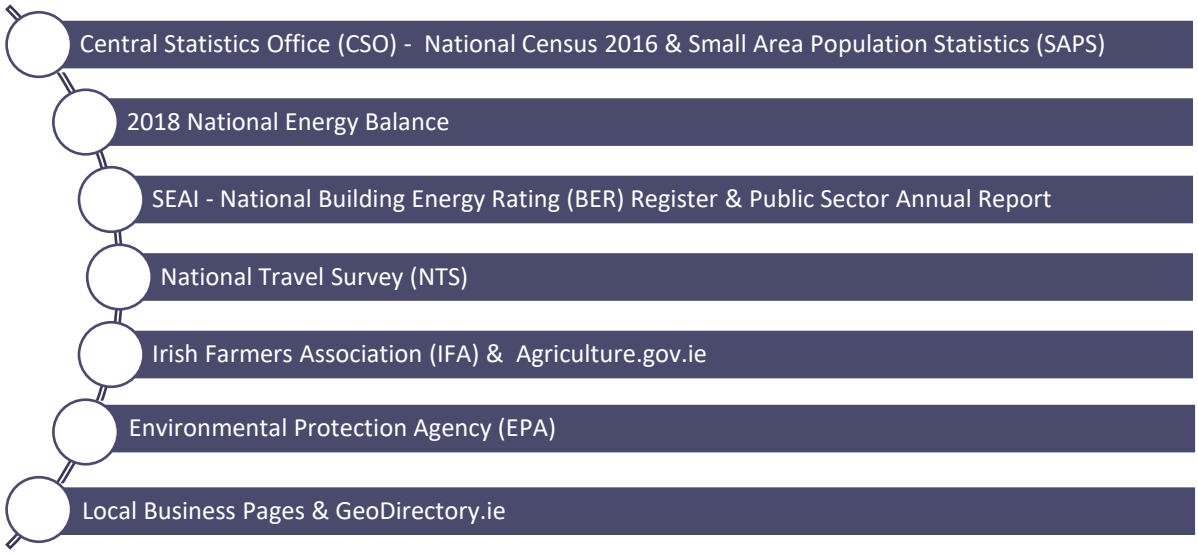


Figure 3: Data Sources

The baseline year selected for the top-down method was 2018, due to the availability of the 2018 National Energy Balance data.

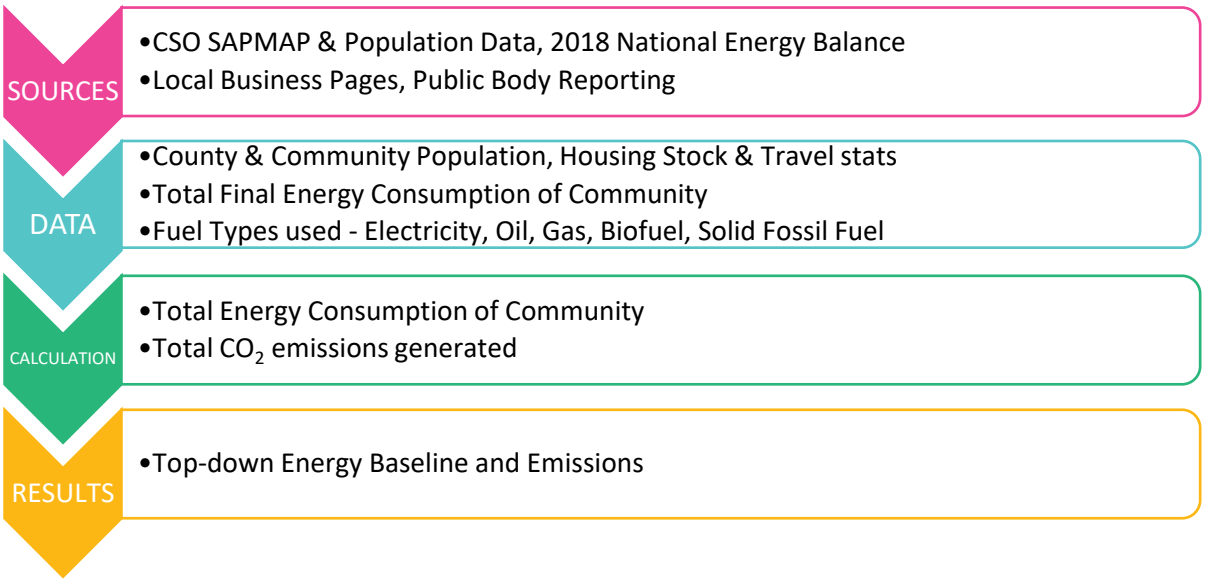


Figure 4: Top-down analysis flow chart

A Bottom-up data analysis was used to analyze locally collected data. This was collected directly from the residents and community buildings managed by HAIL through Energy audits. The baseline year selected for the bottom-up method was 2022/2023 as this was when the energy audits were performed.

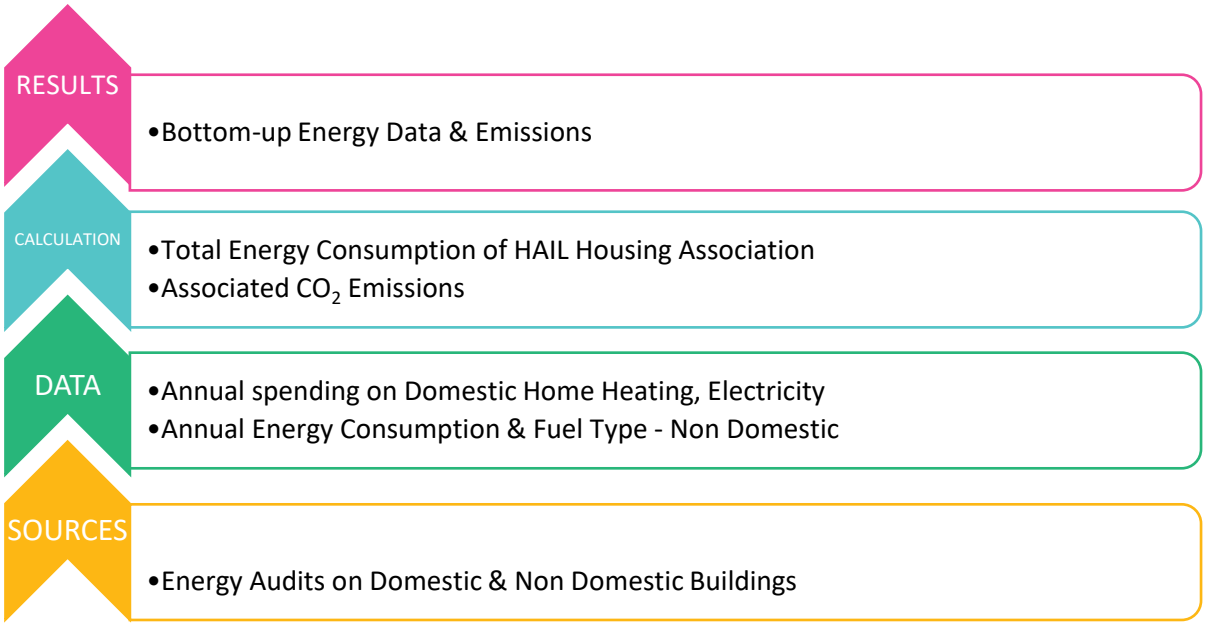


Figure 5: Bottom-up analysis flow chart

Bottom-up analysis can provide a clearer picture of actual fuel consumption and energy usage by sector within a region. However, this is dependent on the number of energy audits performed. This report includes the data collated from both top-down and bottom-up methods, a summary of which is illustrated through a series of graphs in Section 6.0.

6.0 Baseline – Fuel Type & Sector Energy Demand

The energy baseline provides a high-level breakdown of energy usage of HAIL. This baseline is based on Housing stock information provided by HAIL and energy audits performed at a select number of HAIL Housing Association members homes.

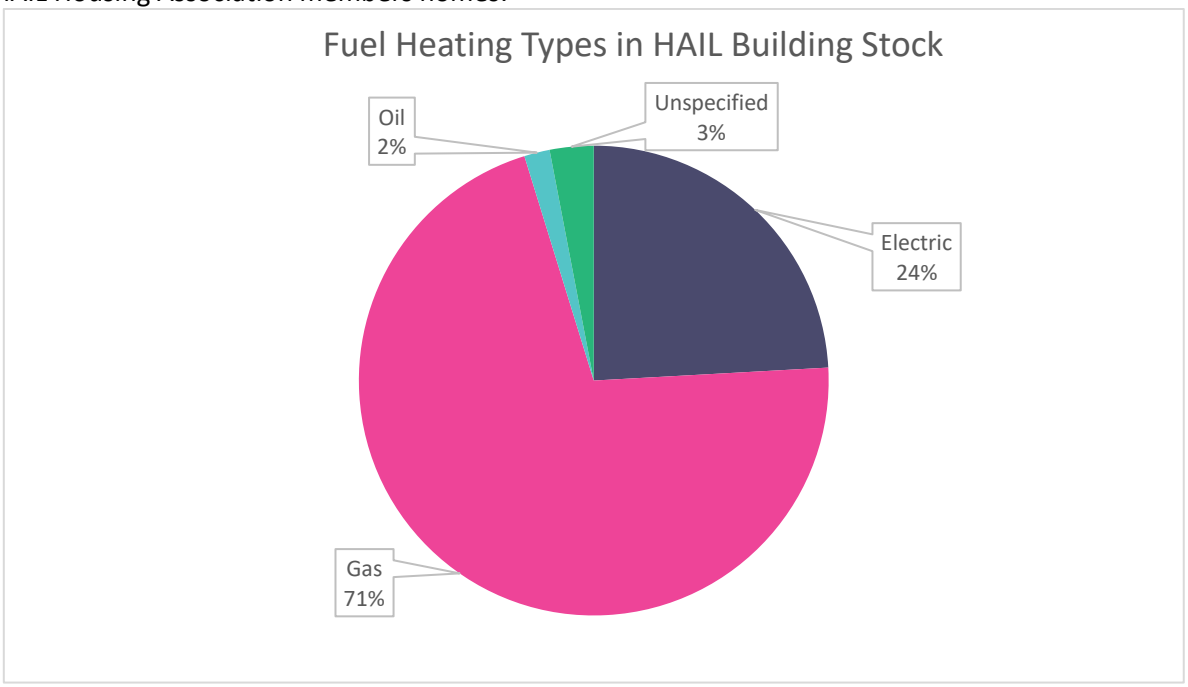


Figure 6: Breakdown of fuel type in HAIL Building Stock

Energy demand analysis was broken down into sectors

- Residential – energy used for space and water heating in domestic settings
- Community & Public Sector – community centres and other buildings owned managed by HAIL.

7.0 Sectorial Energy Analysis

7.1 Residential Data

HAIL currently manages a portfolio of 406 social homes across the country, catering to various housing needs in both urban and rural settings. Our offerings include general needs and family housing, as well as specialized supported housing for the elderly and individuals with special needs.

Among the homes we manage, approximately 309 properties have a BER rating below B2 and have been identified as needing energy upgrades. This underscores our commitment to improving the energy efficiency and sustainability of our housing stock.

Most residents live in apartments with the highest percentage built between 1990 and 2005. A large percentage of housing stock was also constructed pre-1990. There is a large scope for implementing energy efficient measures in these dwellings.

Figures 7 – 11 show the dwelling types, age of construction, heating fuel source and average energy use per dwelling based on year of construction.

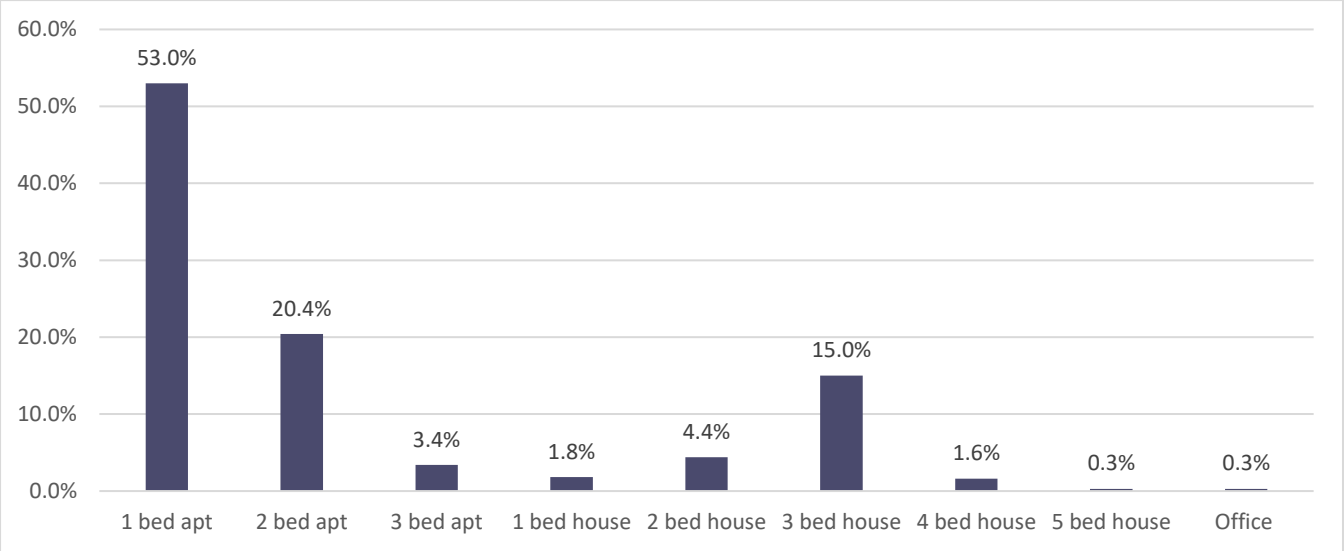


Figure 7: Housing Stock by Dwelling Type - Source: HAIL Housing Association

This figure provides an overview of the distribution of housing stock based on different dwelling types within the HAIL Housing Association. It offers insights into the variety of housing structures managed or owned by HAIL, highlighting the diversity of accommodation available to residents.

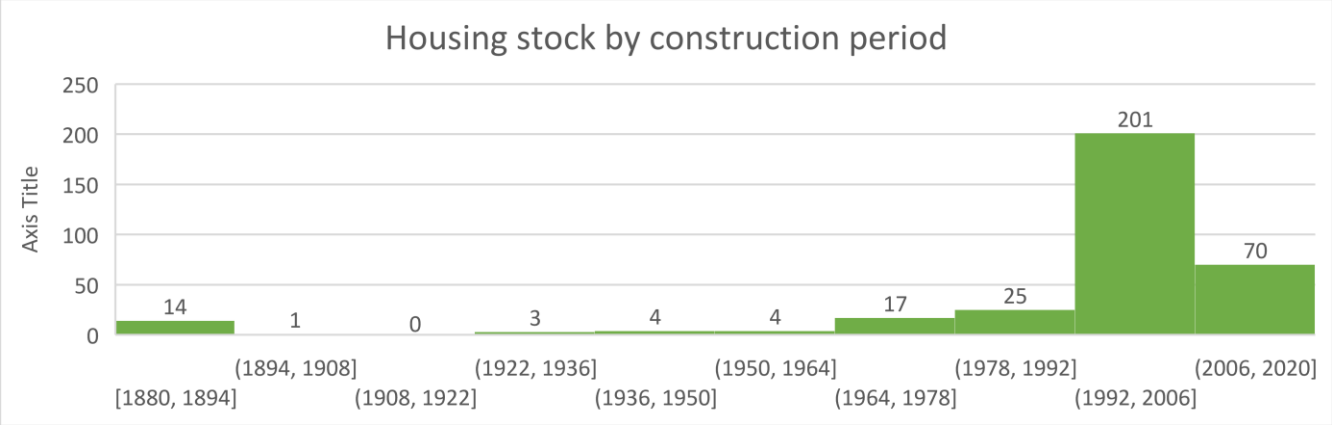


Figure 8: Housing stock by construction period - Source: HAIL Housing Association

Figure 8 illustrates the breakdown of the housing stock according to the period of construction. This valuable data sheds light on the temporal distribution of the properties managed or owned by HAIL, giving an understanding of the age and historical context of the buildings.

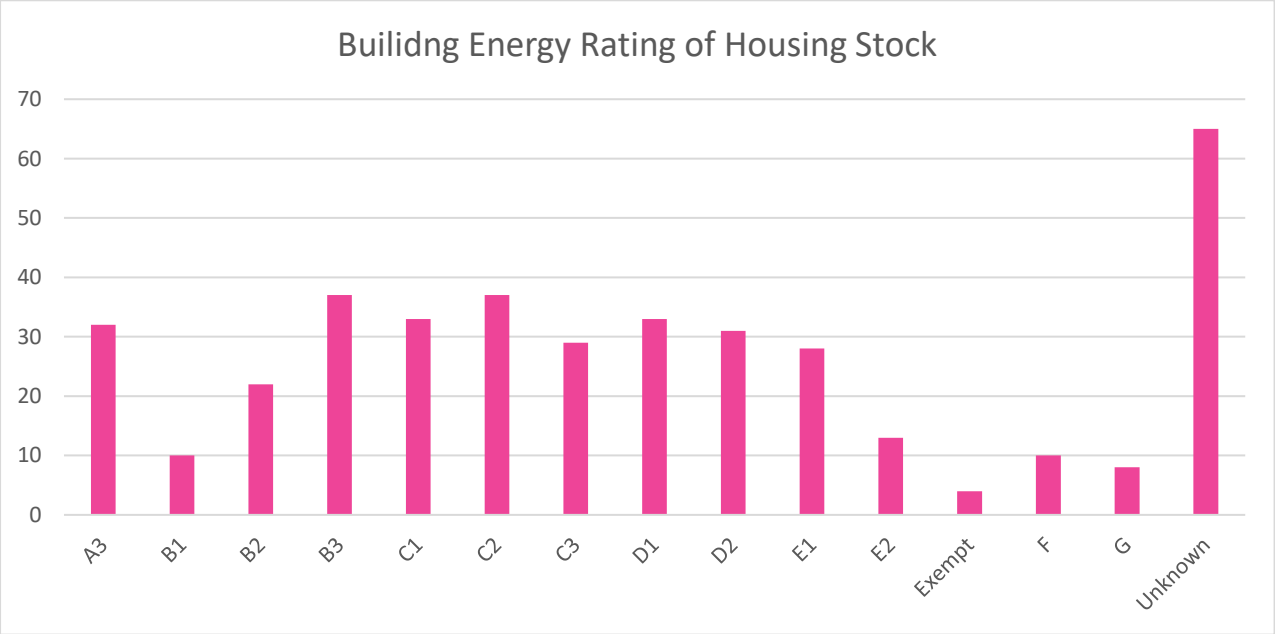


Figure 9: Housing Stock Building Energy Ratings - Source: HAIL Housing Association

The focus of Figure 9 is to present information regarding the Building Energy Ratings (BER) of the housing stock within HAIL. This graph showcases the distribution of BER ratings across the properties, indicating the energy efficiency levels of these buildings. This data serves as a crucial factor in assessing the potential for energy efficiency improvements and retrofitting initiatives.

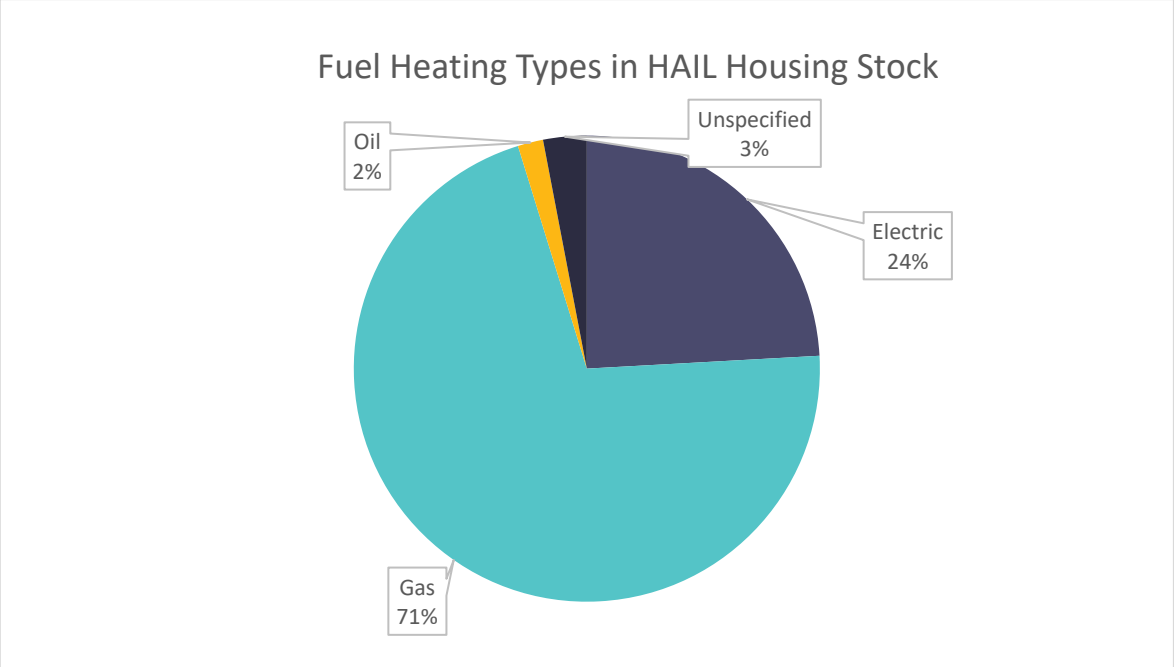


Figure 10: Breakdown of heating fuel type used – Source: HAIL Housing Association

Figure 10 provides an insightful breakdown of the different heating fuel types employed within the housing units managed or owned by HAIL. This graph offers a clear visual representation of the distribution of heating sources used to maintain indoor comfort in the housing stock. This information is pivotal for understanding the energy sources currently in use and lays the foundation for identifying opportunities to transition to more sustainable heating solutions.

Rating	2 Bed Apartment		3 Bed Semi-D		4 Bed Semi-D		Detached House		Large house	
	Area (m^2)	75	Area (m^2)	100	Area (m^2)	150	Area (m^2)	200	Area (m^2)	300
	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)
A1	0.4	€140	0.5	€190	0.8	€280	1.1	€400	1.6	€600
A2	0.8	€280	1.1	€380	1.6	€560	2.2	€800	3.2	€1,100
A3	1	€350	1.4	€470	2	€700	2.7	€900	4.1	€1,400
B1	1.3	€440	1.7	€590	2.5	€900	3.4	€1,200	5	€1,800
B2	1.6	€570	2.2	€800	3.3	€1,100	4.3	€1,500	6.5	€2,300
B3	2	€700	2.7	€900	4	€1,400	5.3	€1,900	8	€2,800
C1	2.4	€800	3.1	€1,100	4.7	€1,600	6.3	€2,200	9.4	€3,300
C2	2.8	€1,000	3.7	€1,300	5.5	€1,900	7.4	€2,600	11	€3,900
C3	3.2	€1,100	4.2	€1,500	6.3	€2,200	8.4	€2,900	12.7	€4,400
D1	3.7	€1,300	5	€1,700	7.5	€2,600	10	€3,500	14.9	€5,200
D2	4.4	€1,500	5.8	€2,000	8.8	€3,100	11.7	€4,100	17.5	€6,100
E1	5	€1,800	6.7	€2,300	10.1	€3,500	13.4	€4,700	20.1	€7,000
E2	5.7	€2,000	7.6	€2,600	11.4	€4,000	15.1	€5,300	22.7	€7,900
F	6.8	€2,400	9.1	€3,200	13.6	€4,700	18.2	€6,300	27.2	€9,500
G	8.5	€3,000	11.3	€4,000	17	€5,900	22.7	€7,900	34	€11,900

Figure 11: Average annual energy consumption based of BER – Source: SEAI

Figure 11 offers an illustration of the average annual energy consumption correlated with Building Energy Ratings (BER). Sourced from the Sustainable Energy Authority of Ireland (SEAI), this graph depicts the relationship between energy usage and the energy efficiency levels of the buildings, as indicated by their BER ratings. This data helps to emphasize the impact of energy efficiency on overall energy consumption, guiding efforts to improve building performance and reduce energy usage.

7.2 Community Building Data

HAIL oversee four satellite offices situated in Dublin and manage around 27 communal cores within apartment developments. This includes energy procurement for these sites, demonstrating their comprehensive approach to sustainable management. This baseline is based on building stock information provided by HAIL and energy audits performed at a one of HAILs offices.

Analysis of the top-down data provides the following results:

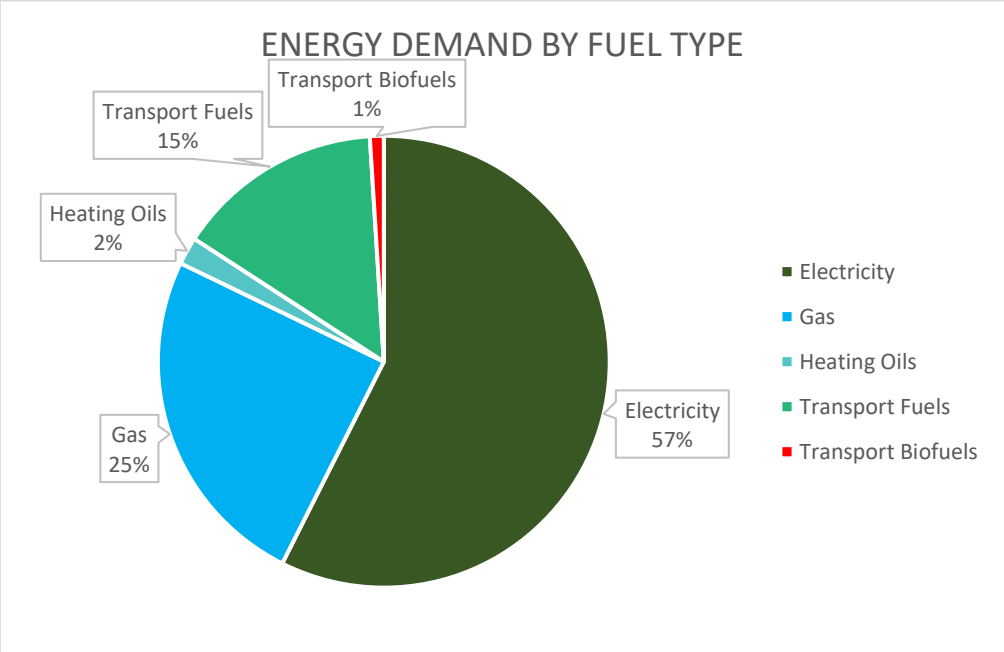


Figure 12: Community & Public Sector Energy Demand in the SEC Area by Fuel Type – Source: SEAI's Annual Public Sector report

The use of renewable technologies in conjunction with improving the efficiency of existing systems through enhanced controls, can have a significant impact on energy consumption. Having these features displayed in some manner and visible to the visiting public can help generate interest and appreciation for the steps being taken by the community e.g., solar panels on a community building. This could also inspire the younger generations to take an interest in sustainability and renewable technologies.

8.0 Register of Opportunities

The register of opportunities presents a list of opportunities for HAIL to consider in making their community more sustainable. Opportunities are listed for residential and community buildings.

South East Energy Agency carried out 10 domestic energy audits and 1 non-domestic energy audit across the HAIL building Stock. The Register of Opportunities was generated from these audits. The projects identified are based on availability of information, data and access to buildings.

It is recommended that when selecting suitable projects, the following criteria should be considered:

1. Capital cost of project and available funds
2. Payback period – The shorter the payback period, the quicker the initial capital investment will be paid back. Householders or businesses owners could then invest these energy savings in future energy efficiency or renewable energy projects.
3. Other priorities e.g. fuel poverty in vulnerable members of the community / serious issue with comfort levels of a building / issue with functioning / operation of building / facility

Please bear in mind that:

- The information and results shown in the following tables are based on data available at the time of the site visits.
- For each measure and before the start of any efficiency upgrade, the feasibility of works must be confirmed by a contractor. The contractor will be able to give the exact energy efficiency characteristics of the new product installed (efficiency of new equipment, thermal information of new insulation etc.).
- The capital costs of projects are estimated using SEAI Contractor rates and average rates of similar projects completed between 2013 and 2023 by SEEA. Please note that these are best practice estimates and may differ from actual quotes received for site specific projects. A quotation from a contractor is needed to confirm the feasibility and investment.
- The costs listed do not include professional or project management fees, and/or other incidental works which might need to be carried out before the energy efficiency works or are chosen to be carried out simultaneously by the client.

8.1 Register of Opportunities - Residential

8.1.1 Energy Efficiency Upgrades for Housing

Since 2009, Ireland has mandated the possession of a Building Energy Rating (BER) certificate and advisory report for various types of dwellings, such as those being sold, rented, and newly constructed. These assessments are also essential for qualifying for energy efficiency improvement grants. It's worth noting that protected structures are exempt from these assessment requirements.

The table below outlines the opportunities for upgrading homes. As each dwelling possesses unique characteristics, HAIL should examine this list and select measures that align with their home's specifics. The provided list follows a fabric-first approach, emphasizing improvements to fundamental building elements like roofs, walls, floors, and windows. This approach prioritizes these upgrades before considering mechanical or electrical building systems. Embracing a fabric-first strategy entails thorough insulation of the entire home, including the integration of high-performance double or triple glazed windows. Additionally, creating an airtight home is crucial to minimizing heat loss and preventing the entry of cold air. These steps contribute to creating healthier living spaces by raising indoor temperatures, promoting movement and metabolic health, reducing fall risks, mitigating mold growth, and improving air quality. They are ranked from 1 to 5 in the home upgrades list below.

1. Comprehensive insulation of building elements.
2. Installation of high-performance double or triple glazed windows.
3. Ensuring airtightness to minimize heat loss.
4. Implementing ventilation systems to maintain indoor air quality.
5. Addressing dampness and mold issues in the home.

Table 1: Register of Opportunities for Residential

Rank	Category	Measures	Estimated cost
1	Building fabrics	Roof insulation	15 – 20 €/m^2
2	Building fabrics	Cavity Wall Insulation	7 - 10 €/m^2
3	Building fabrics	Internal/ External Wall Insulation	90 – 140 €/m^2
4	Building fabrics	Floor insulation	150 – 450 €/m^2
5	Building fabrics	Window/ Door Upgrade	250 - 350 €/m^2
6	Others	Lighting Upgrade	20 €/Fitting
7	Heating systems	Heating upgrade - Heating control	900 - 1200 €/System
8	Heating systems	Heating Upgrade - Heat Pump	3,500 - 8000 €/System
9	Renewables	Solar PV	2,400 €/system (1.2 kWp)
10	Renewables	Solar Thermal	6,000 €/System

Each measure carried out on a domestic dwelling will increase the energy efficiency of the building and in turn will reduce energy consumption while maintaining comfort levels within the home.

8.1.2 LEVELS OF DOMESTIC UPGRADE

Different upgrade options are attainable, contingent on budget considerations and whether HAIL wish to carry out multiple improvements concurrently to achieve a BER of B2 or higher. The three upgrade levels below, all offer HAIL members so level of enhanced comfort and energy savings. These tiers can be undertaken either as a comprehensive Home Retrofit upgrade or by focusing on individual building elements:

Level 1: Basic Upgrade
An initial upgrade tier can be initiated with modest investment. This includes augmenting roof insulation, enhancing cavity wall insulation through bead injection, and substituting non-efficient lights with low-energy alternatives. These enhancements can be implemented without disrupting the house's operations. Grants from SEAI are available for standalone measures such as insulation, heat pumps, and heating controls. However, new windows and doors aren't eligible for grants under this category of upgrade.

Level 2: Advanced Upgrade
Stepping up, HAIL might consider upgrading the heating system. Potential enhancements encompass replacing an old boiler with a modern condensing boiler coupled with heating controls and zones, or swapping a fireplace for a new stove. While pricier than the Basic upgrade, this tier remains more affordable than the comprehensive Home Retrofit (Level 3). It's important to note that grants aren't available for new fossil fuel boilers, but they are applicable for heating control upgrades. Similar to Level 1, new windows and doors aren't eligible for grants under this style of upgrade.

Level 3: One Stop Shop
In 2022, SEAI launched the One Stop Shop initiative, designed to engage registered Housing Associations in providing a holistic energy efficiency service. This comprehensive upgrade tier anticipates improving over 5,000 homes to at least a B2 BER rating, with many homes incorporating heat pump installations.

This level of upgrade entails building fabric enhancements and system upgrades necessitating a minimum B2 BER rating achievement or an energy uplift/saving of at least 100kWh/m2/yr. For instance, a house rated C1 would require improvements to attain an A3 rating. Although Level 3 encompasses some of the enhancements listed in Levels 1 and 2, the distinction lies in the comprehensive nature of these improvements within a One Stop Shop Retrofit. This includes work on windows, doors, floor insulation, and ventilation improvements, all managed as part of a coordinated project. Savings are validated, and grant paperwork is submitted by the One Stop Shop provider.

Key measures for this level encompass wall insulation upgrades (internal or external), windows and doors upgrades, ventilation enhancements, open fire conversion to a stove, and heat pump installation. To attain the BER target, a photovoltaic system might be incorporated. This level garners significant grants through SEAI's One Stop Shop Retrofit scheme.

Payback calculations reflect the available grants at each level within this scenario. However, grant availability hinges on the specific combination of works undertaken. While Level 3 demands greater investment, it also attracts higher grant levels. Notably, Level 3, the One Stop Shop Home Retrofit Upgrade, affords the highest building comfort.

The summary below assumes a Level 3 Home One Stop Shop Retrofit upgrade (where suitable) for each dwelling to show a high level of improvement, to give an idea of all the measures available, and to reflect government policy.

Table 2: Summary table of Domestic Reports Results – to bring a building to the B2 BER standard or higher (where feasible)

House no.	Initial BER Rating	BER Rating after Proposed Works	Energy saving (%)	Estimated Space Heating Energy Bill after works (€/yr)	Estimated Annual CO_2 after works (Tonnes)	Max Grant Value Through SEAI Individual Grants (€)	Max Grant Value Through SEAI One Stop Shop (€)	Year of Construction
1	E1	A3	42.8%	€190	1.5 tonnes	€8000	€14,300	2002
2	C1	A1	94.1%	€370	2.5 tonnes	€9,600	€15,900	1960
3	D1	A3	194.4%	€90	0.9 tonnes	€8,000	€12,800	1970
4	E1	A3	81.2%	€80	2.1 tonnes	€8,000	€12,800	1880
5	C1	A2	356.3%	€140	1.5 tonnes	€8,000	€12,800	2003
6	D1	B1	65.8%	€250	1.7 tonnes	€6,000	€12,800	1900s
7	B3	A2	485.6%	€50	1.1 tonnes	€8,000	€12,800	2001
8	C1	A1	80.0%	€380	4.3 tonnes	€11,400	€17,700	2001
9	E2	A3	83.0%	€90	1.6 tonnes	€8,000	€12,800	1880
10	D2	A3	79.4%	€50	1.1 tonnes	€8,800	€12,800	1998

South East Energy Agency carried out 1 domestic energy audits across the HAIL building Stock. The Register of Opportunities was generated from these audits. The projects identified are based on availability of information and building access.

Detailed reports for each building, including costings and the impact of each improvement, can be found in the Appendix A.

8.1.3 REPLICATION IN YOUR BUILDING

A detailed list of the actions that can be taken and their impact on building energy efficiency are included in full refurbishment guides for each of the 10 dwellings in the Appendix.

These surveys cover houses built from 1880 to 2003. The house types were chosen as representative of building types across the HAIL building Stock. HAIL can compare their home to the surveys above and the detailed reports in the Appendix to see what interventions would work in each of the dwellings they manage.

Each house is different, and in some cases the houses surveyed have already had energy efficiency upgrades carried out. However, these surveys can still be taken as a guide for making energy efficiency improvements in similar households.

Table 3: Houses surveyed and years of construction

House no.	Year of Construction
1	2002
2	1960
3	1970
4	1880
5	2003
6	1900s
7	2001
8	2001
9	1880
10	1998

8.1.4 EXPERIENCE FROM OTHER APPROVED HOUSING BODIES

HAIL can gain valuable insights from the experiences of other approved housing bodies, such as Co-operative Housing Ireland (CHI). CHI's decarbonization journey serves as an illustrative example, offering lessons that can be applied to our efforts. The steps CHI took on their decarbonization journey include:

1. **Deep Retrofit Energy Upgrades:** CHI has undertaken a series of deep retrofit energy upgrades on its members' homes. This initiative improved residents' quality of life, extends housing lifespan, and aligns with national plans to reduce fossil fuel dependency. Upgrades include insulating walls and attics, installing new windows, doors, and air-to-water heat pumps. These enhancements help combat energy poverty by offering reliable, cost-effective, and sustainable heating solutions.

2. **Criteria for Retrofit:** CHI identified homes for retrofitting based on poor energy ratings. Properties with low Building Energy Ratings (BER) were prioritized, with the aim of upgrading to at least a B2 rating.

3. **Warmth, Wellbeing, and Member Benefits:** CHI's primary focus was on its members' wellbeing. Retrofitting improves home warmth and reduces living costs for residents, while also protecting the housing stock from issues like damp and structural degradation.

4. **Project Management**: CHI partnered with project management teams recognized by SEAI to carry out the retrofit project.
5. **Funding:** CHI received funding from the Sustainable Energy Authority Ireland (SEAI) and SSE Airtricity, covering a significant portion of project costs. The work done reduced both short-term and long-term maintenance expenses for homeowners.

6. **Project Execution:** CHI retrofitted 140 homes in 2021 and will continue with 216 more retrofits under its Improving Warmth and Wellbeing program.

This did not come without its challenges, despite increased financial support, during the retrofitting stage CHI faced challenges such as supply chain issues, material availability, labour demands, and market volatility.
By following these steps and learning from CHI's experience, HAIL could effectively upgrade their homes, improve residents' living conditions, and contribute to national sustainability goals.

8.1.5 HAIL MEMBERS ENERGY-SAVING TIPS

Important energy-saving tips for heating, domestic hot water, and lighting that can help reduce energy consumption in HAILs members homes:

Heating:

1. **Adjust Thermostat:** Lower your thermostat by just one degree to save 10% on your heating bill. Set living areas at 18-20°C and hallways/bedrooms at 15-18°C.
2. **Close Doors:** Keep doors shut between heated and unheated rooms to retain warmth.
3. **Furniture Placement:** Avoid blocking radiators with furniture; arrange beds, sofas, and desks near heat sources.
4. **Avoid Drying Clothes on Radiators:** Drying clothes on radiators reduces heat efficiency; use a drying rack instead.
5. **Tackle Draughts:** Seal gaps around skirting boards and floors to prevent cold air from entering.
6. **Curtains:** Close curtains in the evening to retain heat inside.
7. **Use Draft Stoppers:** Place draft stoppers or draught excluders at external doors.
8. **Bleed Radiators:** Regularly bleed radiators to remove trapped air and improve heating efficiency.

Domestic Hot Water:

1. **Choose Showers Over Baths:** Showers use 20% of the energy needed for a bath.
2. **Limit Shower Time:** Reduce shower time to save both energy and water, especially with pumped electric showers.

Lighting:

1. **Maximize Natural Light:** Open blinds and curtains to make use of natural daylight.
2. **Turn Off Lights:** Always switch off lights when leaving a room.
3. **LED Bulbs:** Replace old bulbs with energy-efficient LED options, using up to 90% less electricity and lasting longer.
4. **Consider Immersion Timer:** Install an immersion timer to heat water only when required.
5. **Choose Appropriate Wattage:** Select the lowest wattage bulb that adequately illuminates the room based on its size and natural light availability. Avoid using higher wattage bulbs than necessary.

6. **Maximize Natural Light:** Position furniture to take advantage of natural light sources, reducing the need for artificial lighting during the day.
7. **Use Task Lighting:** Use task lighting, such as desk lamps, for focused activities like reading or working. This allows you to illuminate specific areas without lighting up the entire room.
8. **Clean Lights Regularly:** Dust and clean light bulbs and lampshades regularly. Dust can reduce the amount of light emitted, so keeping them clean ensures optimal brightness.

Energy Saving Tips for Appliances:

1. **Washing Clothes:** Use lower temperature settings for washing machines to save energy. Run full loads in washing machines and dishwashers.
2. **Drying Clothes:** Opt for air-drying clothes on a clothesline or a rack near a sunny window.
3. **Fridge/Freezer:** Set fridge temperature at 3-5°C and freezer at -15-18°C. Defrost freezer regularly. Turn off appliances when not in use to avoid standby power consumption.
4. **Appliance Ratings:** Choose A+++ rated appliances for better energy efficiency over their lifetime. Only fill the kettle with the necessary amount of water.

Energy Saving Tips for Cooking:

1. **Oven Use:** Avoid opening the oven door frequently during cooking. Match pot/pan size with stove ring size.
2. **Cover Pots and Pans:** Use lids to boil water faster and reduce energy consumption.
3. **Kettle vs. Stove:** Boil water in a kettle instead of on the stove. Maintain a clean stove for effective heating.
4. **Microwave for Reheating:** Use the microwave to reheat small portions of food, saving 80% of energy compared to using the oven.

Managing Your Electricity Meter:

1. **Peak Usage Times:** Electricity demand is high between 7am-9am and 5pm-7pm. Reduce usage during these periods.
2. **Delay Start Timers:** Use delay start timers on appliances to avoid peak time usage.
3. **Meter Reading:** Submit regular meter readings to ensure accurate billing.

8.2 Register of Opportunities - Community & Public Sector

8.2.1 Register of Opportunities

The opportunities for non-domestic building upgrades are listed in the table below. As all buildings are different, with different usages, each owner could have a look at the list and pick up some measures depending on the characteristics of the building. The list below is ranked on a fabric first approach.

Table 4: Register of Opportunities – Community buildings

Rank	Category	Measures	Estimated cost
1	Energy management	Awareness campaign for staff and occupants	
2	Building fabrics	Roof insulation	15 – 30 €/m^2
3	Building fabrics	Cavity Wall Insulation	15 - 25 €/m^2
4	Building fabrics	Internal/ External Wall Insulation	90 – 140 €/m^2
5	Building fabrics	Floor insulation	90 – 150 €/m^2
6	Building fabrics	Window/ Door upgrade	375 - 900 €/m^2
7	Others	Lighting Upgrade	10 €/Fitting
8	Heating systems	Heating upgrade - Heating control	
9	Heating systems	Heating upgrade - Condensing boiler	Varies depending on size
10	Heating systems	Heating upgrade - Heat Pump	Varies depending on size
11	Heating systems	Heating upgrade - Biomass boiler	Varies depending on size
12	Heating systems	Heating upgrade – CHP Combined Heat and Power	Varies depending on size
13	Domestic Hot Water	Hot water heat pump	Varies depending on size
14	Renewables	Solar PV	
15	Renewables	Solar Thermal	Dependent on size
16	Others	Specific equipment upgrade (catering,…)	
17	Others	EV charger	€1,000 -€31,000 dependant on kW
18	Others	School programmes	

8.2.2 EXAMPLE OF EXISTING BUILDINGS

A summary of the recommended refurbishment works in community buildings across the HAIL building Stock is listed below. This section focused on one office building.

Building name	Kilowatt-hour savings
HAIL Centre	4,196 kWh
Total	**4,196 KWh**

Table 5: HAIL Centre

The Community Centre is a two-story building with a cavity wall construction, pitched roof panels, solid concrete flooring, double-glazed aluminum windows, and aluminum doors. The original building dates back to 1995, with the ground floor currently in use. The insulation level includes partial wall insulation, while no floor insulation is evident. Heating is provided by a gas boiler with radiators and thermostatic radiator valves (TRVs), controlled by a Horstmann digital controller. Lighting includes CFLs, LED 600x600 fittings, halogen area/floodlights, and LED area fittings. The building is occupied for approximately 500 hours per year and is connected to single-phase electricity. The facility primarily serves as an office for HAIL staff, operational for three days a week, about three hours per day, along with a small canteen, lobby area, and toilets. Energy consumption is mainly through electricity and gas.

In 2022, the estimated energy cost and consumption for the year are approximately €1,662 (excl. VAT) for 2,674 kWh of electricity and €1,052 (excl. VAT) for 2,781 kWh of natural gas, making a total energy consumption of 141,451 kWh.

The Community Centre could take multiple steps to improve energy efficiency. These initiatives encompass energy awareness efforts, a switch-off policy for plug loads and after-hours lighting, as well as the use of comparison websites to switch energy providers.

In terms of building upgrades, the Centre could enhance wall insulation, replace windows and doors with triple glazed units, and upgrade the heating system to a low carbon option. LED lights and absence detection

sensors should also be installed. Additionally, the Centre should consider the installation of a 2 KW On-grid PV system.

The combined total savings for all measures are 4,196 kWh of energy, €1,051 per year (exc. VAT) cost savings, and a reduction of 1.1 tonnes of CO2 emissions. The estimated total implementation cost is €39,811 (exc. VAT), with a post-grant cost of €28,398 (exc. VAT). The simple payback period following the grant is 27 years.

8.2.3 REPLICATION IN YOUR BUILDING

The buildings surveyed in this report are limited but should cover general community buildings upgrades across the HAIL building Stock.

For example, the register of opportunities proposed for HAIL Centre surveyed could be used for the three satellite offices situated in Dublin, taking into account the differing characteristics of the individual buildings.

8.2.4 SUPPORT SCHEME FOR ENERGY AUDITS

The SEAI Support Scheme for Energy Audits (SSEA) is a program designed to help businesses in Ireland, save energy and reduce their carbon emissions through energy audits. Here is a step-by-step summary of the SSEA process:

Applicant Eligibility:

- The SSEA is open to SMEs and non-obligated commercial or public sector entities.
- The residential sector and obligated entities, as defined by the European Energy Efficiency Directive, are not eligible.

2. Facility Eligibility:
   - The Facility must spend at least €10,000 per year on energy (excluding transport energy).
   - Derelict, unoccupied, or soon-to-be-demolished/re-purposed premises are not eligible.
   - Businesses that have already received an audit under the SSEA cannot apply for another voucher.
3. Auditor Eligibility:
   - Auditors must be registered on SEAI's Register of Energy Auditors and agree to the SSEA's Terms and Conditions.
4. Level of Support:
   - The support offered is a Voucher with a value of €2,000.
   - The Voucher can be used to acquire an Energy Audit for the Facility, with the cost covered either fully or partially.
   - Businesses spending more than €50,000 on energy may need to pay the difference between the Voucher value and the actual audit cost.
5. Eligible Expenditure:
   - The Voucher can only be used to obtain an Energy Audit from a registered Energy Auditor.
   - Eligible costs include preparation, analysis of energy bills, site visit and associated costs, advice on energy efficiency improvements, and preparation and submission of the Energy Audit report.
6. SSEA Process:
   - Pre-audit: Applicant confirms eligibility, contacts an Auditor from the list of registered Energy Auditors participating in SSEA, and applies through the SSEA Application Portal to receive the Voucher.
   - Audit: Site visit takes place, and the Auditor produces the SSEA Report within 10 working days after the visit.
   - Post-audit: Applicant and Auditor sign the Completion of Works form, and the Auditor submits the Audit Report to SEAI for payment.

The SSEA could be suitable for satellite offices situated in Dublin as it provides financial support to obtain energy audits, which can identify energy-saving opportunities, improve energy efficiency, and reduce carbon emissions. By participating in the SSEA, HAIL can gain more valuable insights into their energy usage and receive recommendations on how to make their operations more energy-efficient, leading to cost savings and environmental benefits.

8.3 REGISTER OF OPPORTUNITIES - SUSTAINABLE TRANSPORT

It is quite challenging to have an impact on transport at a local level. It requires an examining and adjustment of local infrastructure (related to electric cars and cycling) and engaging with members to encourage alternative modes of transport such as walking, cycling, and carpooling.

This section discusses the Register of Opportunities for Transport for HAIL members. These opportunities are not based on firm facts and figures as with those identified for buildings, but are developed from knowledge, experience and understanding.

8.3.1 ELECTRIC VEHICLES

Electric Vehicles (EV's) are not a new technology. They have been commercially available for almost 15 years. Over this time, advances in battery technology and innovations in design have all but ironed out teething problems associated with EV's. Certain models have even become more popular than their fossil fuel counterparts and are fast becoming a viable and popular option for the environmentally conscious family.

The move to electric vehicles is not a simple switch as there are a variety of factors for a person to consider. These factors include local e-charging infrastructure, typical journey lengths, e-charging infrastructure along typical routes travelled and the cost of purchasing an electric vehicle. Technological improvements in electric cars are being made each year. New electric cars in 2022 have a range of up to 400 km (250 miles) per charge - all but eliminating concerns around "range anxiety".

HAIL members may be able to avail of funding when it comes to electric vehicles. For those interested in purchasing an electric car there is a grant available through SEAI.
A full list of the available EV associated grants can be found in Chapter 9.1.2 Transport – Electric Vehicles below.

8.3.2 WALKING

This opportunity is simply based around encouraging and motivating the HAIL members to walk when and where possible. Walking provides a range of benefits and opportunities, such as:

1. Improved health (through exercise)
2. Reduction in transport related emissions (that contribute to health issues as well as climate change)
3. Reduced demand on available parking
4. Increased opportunity for members of the community to walk through and see all parts of their town and surrounds
5. Increased opportunity for people in HAIL housing to meet and connect on a day-to-day basis.

School children in particular benefit from an active start to the day be it on foot or by bike.
There are some great programmes that help promote walking in your community, such as Get Ireland Walking, and the Move More Walking Challenge. In addition to this you could engage with your local Doctor's offices, HSE clinics etc. to put up promotional material on walking or arrange to deliver short informative talks designed to inspire the community to get walking. The provision of safe and joined

up footpaths and cycle ways will encourage more people to consider these options for short trips, which will in turn reduce short unnecessary car journeys.

8.3.3 CYCLING

Cycling is a great form of exercise that brings lots of health benefits. As with walking, it also reduces the reliance on travelling by car, which then reduces, traffic congestions and transport related emissions. Cycling requires more specific infrastructure compared with walking, such as cycle lanes and bicycle shelters.

HAIL should encourage locals to take up cycling as an alternative form of travel, HAIL could do this by:

- Organising social events that are family friendly, accessible to new cyclists, fun & visible.
- Advocating for infrastructure that supports specific and widely used needs e.g. school bike parking
- Developing cycle buddy projects that increase accessibility and social inclusion with cycling
- Partner with cycling and bicycle repair to deliver youth inclusion projects e.g. working with young people to develop skills and confidence.

If cycling isn't an option due to distance or fitness level, then HAIL could encourage the use of electric bicycles for some people. The benefits of electric bicycles include:

- They allow you to travel longer distances and navigate steeper routes
- If you worry about your fitness level, an electric bicycle can be integrated into your journey to help you recover when you are tired.
- Electric bikes can be a much cheaper alternative to a car.

Funding for public cycle parking is currently administered by the National Transport Authority through the councils. Businesses who install cycle parking at their premises could benefit from the business of the cyclists that travel through the area. Secured parking that can be monitored will appeal to cyclists.

For those who are ready to take to two wheels purchasing a bike is easier than ever. The Cycle to Work Scheme allows employees to purchase a new bike, tax free, and pay for it through their wages each month.

8.3.4 CAR POOLING, CAR SHARING AND PARK&RIDE

Carpooling can be an option for sharing work commutes or school drop offs. Both offer commuters and parents the chance to take turns driving. This can lead to a significant reduction in the volume of traffic around the school gates, which creates a safer local environment around the school, reduces congestion and allows parents to have days / weeks where they can get to work earlier than normal.

8.4 Register of Opportunities – Renewable Energy

The renewable energy options for HAIL Housing Stock are reviewed below: This section contains a brief description of the domestic renewable energy opportunities that are suited to urban area like many of the dwellings HAIL manage. There is also a short introduction to some other renewable energy technologies that are available in Ireland but might not be suitable given the urban setting. These technologies are included because they are important for the HAIL to understand given the ambitious renewable energy targets Ireland aim to achieve by 2030.

8.4.1 Domestic Renewable Energy Opportunities

Solar Energy

Solar Power is energy from the sun that is converted into thermal and electrical energy. Figure 13 below shows the average solar radiation over Ireland.

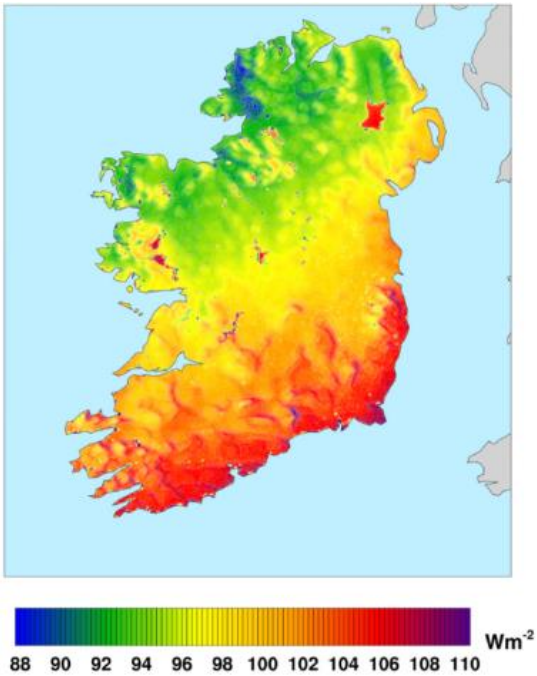


Figure 13: Average surface radiation for the period 1981 – 2000

The south of Ireland has the best solar resource in Ireland, with average horizontal irradiation levels of over 1000 kWh/m2. The term 'solar panel' is often used interchangeably to describe the panels that generate electricity and those that generate hot water. Solar panels that produce hot water are known as solar thermal collectors or solar hot water collectors. Solar panels that produce electricity are known as solar photovoltaic (PV) modules. These panels generate DC (Direct Current) electricity when exposed to light.

For domestic power users Solar PV panels can save a homeowner upwards of €400 per year on their domestic electricity bills. To have a quality solar PV system installed, it will typically cost between €6000 to €15,000, including batteries. However, if the home that was built and occupied before 2021, the homeowner can apply for a solar PV grant to pay for up to €2400 of the installation cost. VAT for domestic solar installations is now 0.0%.

All dwellings which were built and occupied before 2021 can apply for a solar water heating grant of up to €1200. Another advantage of thermal solar panels is that they are very suitable for houses in remote locations not connected to the gas network.

Planning Permission Exemptions for rooftop solar panels on homes and other buildings (October 2022):
For solar panel installations on houses: which can be installed on rooftops of homes, anywhere in the country. there is no limit to the area of solar panels.

For solar panel installations on rooftops of all other existing classes of development (Industrial; Light Industrial and Business Premises; Agricultural, Apartments; educational building/ health centre or hospital/ recreational or sports facility/ place of worship/ community facility or centre/ library/ certain public utility sites): rooftop solar installations covering the entire roof are exempt from requiring planning permission.

However, in the 43 designated Solar Safeguarding Zones, a rooftop limit remains:
Exemptions for wall-mounted and free-standing solar panel installations: free-standing solar panel installations for houses are exempted from the requirement to obtain planning permission subject to a 25 square metre area limit and conditions requiring a certain amount of private open space to be maintained for the use of occupants.

Heat Pump Systems
Heat pump systems are an alternative to fossil fuel heating systems, heat pumps are devices that transfer, or 'pump', heat from one place to another. Heat pumps are used as a greener alternative to efficiently heat your home. Heat sources used by heat pumps include warm air (which is the most common), ground, and water (such as lakes and rivers).

In the table below, you'll find the Individual SEAI grant values available for each type of heat pump system.

Table 6: Individual SEAI grant values available for each type of heat pump system

Heat Pump System	Grant Value
Heat pump technical assessment	€200
Air to air	€3,500
Air to water	€6,500

This type of system works very efficiently at low temperature making it ideal for underfloor heating systems where heat is released gradually over long periods of time. Heat pumps operate using electricity meaning that no fossil fuel is burned in heating the home, greatly reducing emissions, and increasing the BER of the home.

It is important to note that heat pumps work best in a well-insulated building so a fabric first approach is required by SEAI before installing a heat pump, reduce the energy requirement of the house with installation and then install a heat pump. Heat pumps work by producing 3 units of heat for every one unit of electricity used and therefore have a very high efficiency of up to 300 – 400%. There is savings in replacing an old inefficient boiler operating at 65% efficiency with a heat pump.

Please note that uninsulated homes built more than 30 years ago may require substantial and costly upgrades to qualify for a heat pump system grant. Heat pumps can only be installed in homes which are already energy efficient, (well-insulated, for example) and a registered technical advisor will need to inspect your home prior to commencing work.

Before applying for a heat pump system grant, the homeowner must engage an independent, SEAI Registered Technical Advisor. The Technical Advisor will carry out a technical assessment of the home, and will advise the homeowner on what steps to take to make their home "heat pump ready", i.e. to reduce the heat loss in their home. They will provide the homeowner with independent guidance on measures necessary to ensure that the dwelling fabric heat loss is lowered to an acceptable level for a heat pump system to perform effectively and efficiently. The required heat loss level is expressed as a Heat Loss Indicator of 2 Watts/Kelvin/m2. In some cases, where upgrades may not be cost-optimal, a value of HLI up to 2.3 Watts/Kelvin/m2 can be accepted provided additional requirements are met. The homeowner will receive an additional grant of €200 towards the cost of the registered technical advisor's inspection after completing the heat pump installation. As with other SEAI grants, this grant can be applied for online. Note that in order to qualify for a grant, the home must have been built and occupied before 2011.

Micro Generation

The Micro-generation Support Scheme (MSS) has been announced by Minister Eamon Ryan of the Department of the Environment, Climate, and Communications. The scheme aims to provide various supports for homes, businesses, farms, and communities to develop renewable energy generation for self-consumption. It introduces payments for micro-generators who export electricity to the grid. The target is to support 380MW of installed micro-generation capacity, contributing to the overall goal of 2.5GW of solar renewables. Domestic applicants can receive a Clean Export Guarantee (CEG) tariff, while non-domestic applicants between 6kW and 50kW can receive a Clean Export Premium (CEP) tariff per kWh exported for 15 years. The MSS will be gradually phased out starting from 2024, and community enterprises can also participate in the scheme. The initiative aims to empower energy citizens, reduce energy costs, and contribute to carbon reduction targets.

The Clean Export Premium (CEP) will be €0.135/kWh in 2022. Any difference between the CEP tariff and wholesale electricity prices will be supported by the Public Service Obligation (PSO) levy. Exported volumes of electricity eligible for the Clean Export Premium (CEP) tariff will be capped at 80% of generation capacity – to incentivise self-consumption. Businesses, farms, community buildings such as schools, sports clubs, generating up to 5.9kW are also eligible for a Sustainable Energy Authority of Ireland (SEAI) grant at the same levels as domestic customers for Solar PV.

Who can benefit for the MSS?

The scheme is targeted at domestic (homes) and non-domestic sites generating up to 5.9kW. This equates to approx. 18 solar panels on a roof. It is also aimed at larger, non-domestic sites, farms, business properties, community buildings, generating between 6kW and 50kW. This equates to between 18 and 150 solar panels on the roof of community buildings, or a small factory.

Where to apply?

For applicants generating up to 5.9kW, homeowners and small businesses can completed a Micro-Generation NC6 form to begin the process.

For the larger applicants, generating between 6kW and 50kW, the payment process can be started by firstly completing the Mini-Generation NC7 application proc

9.0 Funding and Support Options

To develop projects, the HAIL should consider investigating options for interest finance loans and grants for energy upgrades.

For finance options, Clann Credo run a Community Loan Finance Scheme. The Community Loan Finance Scheme is aimed at community and voluntary groups, charities, social enterprises and amateur sports club with affordable rates and repayments not available from traditional lenders. Credit unions and banks can also provide Green Loans at a lower interest rate than traditional borrowing.

A full list of other grants available for each sector is listed below.

9.1 Residential – Home Grants

Individual SEAI Energy Grants:

Table 7: Individual SEAI grant values

Grant name	Description	Types of home	Value
Attic insulation		Apartment (any)	€800.00
		Mid-Terrace	€1,200.00
		Semi-detached or end of terrace	€1,300.00
		Detached house	€1,500.00
Cavity wall insulation	Cavity walls are injected from the outside with insulation.	Apartment (any)	€700.00
		Mid-Terrace	€800.00
		Semi-detached or end of terrace	€1,200.00
		Detached house	€1,700.00
Internal Insulation (Dry Lining)		Apartment (any)	€1,500.00
		Mid-Terrace	€2,000.00
		Semi-detached or end of terrace	€3,500.00
		Detached house	€4,500.00
External Wall Insulation (The Wrap)	Insulating materials are fixed to the outer surface of external walls.	Apartment (any)	€3,000.00
		Mid-Terrace	€3,500.00

		Semi-detached or end of terrace	€6,000.00
		Detached house	€8,000.00
Heating Controls upgrade			€700.00
Air to Water heat pump system	The most common heat pump system extracts heat from external air using an outside unit.	Apartment (Any)	€4,500.00
		Semi-Detached/End of Terrace/Detached/Mid Terrace	€6,500.00
Ground Source to Water heat pump system	A ground source heat pump system uses the earth as a source of renewable heat.	Apartment (Any)	€4,500.00
		Semi-Detached/End of Terrace/Detached/Mid Terrace	€6,500.00
Exhaust Air to Water heat pump system	Similar to air to water but includes mechanical extract ventilation and heat recovery from the property.	Apartment (Any)	€4,500.00
		Semi-Detached/End of Terrace/Detached/Mid Terrace	€6,500.00
Water to Water heat pump system	This system uses open water, such as lakes, rivers or streams, as a heat source.	Apartment (Any)	€4,500.00
		Semi-Detached/End of Terrace/Detached/Mid Terrace	€6,500.00
Air to Air heat pump system	This system distributes heat through air units. They do not provide hot water.	Apartment/Semi-Detached/End of Terrace/Detached/Mid Terrace	€3,500.00
Heat pump Technical assessment	This assessment is required before you apply for a heat pump grant.		€200.00
Solar PV grant	per kWp up to 2kWp		€900.00

Solar PV grant	for 2kWp solar panels		€1,800.00
Solar PV grant	for 3kWp solar panels		€2,100.00
Solar PV grant	for 4kWp solar panels		€2,400.00
Solar water heating grant			€1,200.00

SEAI One Stop Shop Grants:

Table 8: SEAI One Stop Shop Grant grant values

Grant name	Types of home	Value
Heat Pump Systems	All Houses	€6,500
	Apartments	€4,500
Central Heating System for Heat Pump	All Houses	€2,000
	Apartments	€1,000
Heat Pump Air to Air		€3,500
Heating Controls		€700
Launch bonus for reaching B2 with a Heat Pump		€2,000
Solar Hot Water		€1,200
Attic insulation	Apartment (any)	€800
	Mid-Terrace	€1,200
	Semi-detached or end of terrace	€1,300
	Detached house	€1,500
Rafter insulation	Apartment (any)	€1,500
	Mid-Terrace	€2,000
	Semi-detached or end of terrace	€3,000
	Detached house	€3,000
Cavity wall insulation	Apartment (any)	€700
	Mid-Terrace	€800
	Semi-detached or end of terrace	€1,200
	Detached house	€1,700

Internal Insulation (Dry Lining)	Apartment (any)	€1,500
	Mid-Terrace	€2,000
	Semi-detached or end of terrace	€3,500
	Detached house	€4,500
External Wall Insulation (The Wrap)	Apartment (any)	€3,000
	Mid-Terrace	€3,500
	Semi-detached or end of terrace	€6,000
	Detached house	€8,000
Windows (Complete Upgrade)	Apartment (any)	€1,500
	Mid-Terrace	€1,800
	Semi-detached or end of terrace	€3,000
	Detached house	€4,000
External Doors (max. 2)		€800 per door
Floor Insulation		€3,500
Solar PV	0 to 2 kWp €900/kWp	
	2 to 4 kWp €300/kWp	
Mechanical Ventilation		€1,500
Air Tightness		€1,000
Home Energy Assessment		€350
Project Management	Apartment (any)	€800
	Mid-Terrace	€1,200
	Semi-detached or end of terrace	€1,600
	Detached house	€2,000

The Communities Energy Grant

The **Communities Energy Grant** opens doors to funding and support for energy efficiency and renewable energy projects in homes. Through this grant program, approved housing bodies like HAIL can access fixed grant values, ensuring clarity and ease of funding for their energy efficiency initiatives.

The Communities Energy Grant takes a community-oriented and cross-sectoral approach, supporting various sectors, including domestic, public, private, and community buildings.

This grant program operates year-round, providing consistent opportunities for approved housing bodies like HAIL to secure funding. The support available for home energy efficiency is as follows:

Domestic: Fixed grant values (Same as the One Stop Shop Grant values)

Domestic Measures

	Communities Grant Scheme
Home energy assessment	✓
Project management	✓
Wall and roof insulation	✓
Floor insulation	✓
Windows	✓
Heating controls	✓
Heat pump systems	✓
Solar water heating	✓
Solar electricity	✓
Ventilation	✓
BER assessment	✓

Vacant Property Refurbishment Grant: The Vacant Property Refurbishment Grant provides funding for refurbishing vacant and derelict homes in Ireland. The grant can be used to make the property suitable for living or renting. The amount of the grant ranges up to €50,000 for a vacant property and up to €70,000 for a derelict property. To qualify, the property must be vacant for at least 2 years, built before 2008, and either owned or in the process of being bought. The grant covers various types of work, and the local authority assesses the cost. The application process involves submitting forms and supporting documents, and the grant is paid after the work is inspected. If the property is sold or not used as intended within 10 years, repayment may be required based on the duration of residence or rental.

The Vacant Property Refurbishment Grant is administered by the Department of Housing, Local Government, and Heritage in Ireland. Here are the eligibility criteria for the grant:

1. Property Eligibility:
    - The property must have been vacant for 2 years or more.
    - It must have been built before 2008 (before 1993 for applications before May 1, 2023).
    - You must own the property or be in the process of buying it.
2. Intended Use:
    - You must live in the property as your principal private residence after the refurbishment OR make it available for rent.
    - If renting, you must register the tenancy with the Residential Tenancies Board.
    - The property must meet minimum standards for rental accommodation.
3. Financial Requirements:
    - You must have tax clearance from Revenue and have your tax affairs in order.
    - Local Property Tax, if applicable, must be paid.
    - You must not be a registered company or developer.

The grant amounts up to €50,000 for refurbishing a vacant property and up to €70,000 for a derelict property. The grant covers various types of work, such as demolition, substructure works, superstructure works, external and internal completions, services, extensions, and more. The local authority assesses the cost of the work.

To apply for the grant, you need to complete an application form and provide supporting documents, including proof of property vacancy, ownership documentation, planning permission (if required), and quotes for the work. The local authority reviews the application, inspects the property, and issues a letter of approval if successful.

If your application is unsuccessful, you can appeal the decision within 3 weeks. Repayment of the grant may be required if the property is sold or not used as intended within 10 years, with the amount depending on the duration of residence or rental

9.1.1 COMMERCIAL / SME

Support Scheme for Energy Audits (SSEA) supports SMEs registered in Ireland with an annual energy spend of at least €10,000. The audit will review electricity, gas, oil, diesel, and any other energy sources used at their facility. It will also look at the company fleet, if applicable.

SEAI will provide the business with a €2,000 (ex. VAT) voucher towards the cost of an energy audit. This should cover the full cost of the audit for the majority of SMEs. The business then 'pay' the auditor with the voucher once the audit is complete. The auditor will claim the cost of the voucher from SEAI. https://www.seai.ie/business-and-public-sector/small-and-medium-business/supports/energy-audits/

SEAI Electric Vehicle grant: The grant is up to €3,800 for a vehicle of €18,000 or more. There is also a grant of €600 towards the purchase and installation of a home charger unit. https://www.seai.ie/business-and-public-sector/ev-for-business/grants-and-supports/

There are various initiatives and funding opportunities available to businesses for energy-related purposes:

1. Climate Toolkit 4 Business: SMEs can estimate their carbon footprint and receive a personalized action plan to reduce their carbon footprint and energy costs.
2. SEAI Energy Academy: An online e-learning platform that helps businesses enhance energy efficiency and reduce energy-related expenses through interactive modules.
3. Water conservation for business hub: Irish Water provides resources and guidance to businesses on conserving water and cutting costs.
4. EPA resources: The Environmental Protection Agency offers greening resources, carbon footprint calculators, and a tool for resource efficiency.
5. Skills to Advance: SOLAS provides green skills programs to boost awareness of environmental sustainability issues and equip employees and employers with the necessary skills.
6. Green for Micro: Local Enterprise Office offers intensive mentoring and green transition advice to micro-enterprises with 10 or fewer employees.
7. Climate Ready Programme (Skillnet): Skillnet Ireland offers leadership and skills support for enterprises seeking to enhance sustainability.
8. Climate Action Voucher - Climate Planning Fund for Business: A grant of €1,800 to engage consultants in developing sustainability or circular economy action plans.
9. Temporary Business Energy Support Scheme (TBESS): Designed to assist businesses with increased electricity or natural gas costs, with eligible businesses able to claim for a portion of the increase in their energy bills.
10. Energy Efficiency Loan Scheme: The SBCI provides loans of up to €150,000 for eligible SMEs to invest in energy efficiency improvements.

11. Microfinance Ireland loan packages: Microfinance Ireland provides loans to start-ups and established microenterprises with fewer than 10 employees and an annual turnover of less than €2 million.

12. Energy Efficiency Obligation Scheme: Under the Energy Efficiency Obligation Scheme by SEAI, energy providers (gas, electricity, and solid fuel) are obligated to assist customers in decarbonizing. Businesses can contact these obligated parties to assess available support options and explore opportunities for energy efficiency improvements.

These initiatives cater to businesses of various sizes and sectors, providing opportunities to improve energy efficiency, reduce costs, and contribute to environmental sustainability.

9.1.2 TRANSPORT – ELECTRIC VEHICLES

SEAI Electric Vehicle grant:

A grant of up to €5,000 for private EV buyers or up to €3,800 for commercial EV buyers to offset the purchase cost of a new electric car.
Approved EVs with a full price of more than €60,000 and less than €14,000 will not receive a grant.
**Note: The maximum grant for a private M1 (passenger car) will change to €3,500 from the 1st July 2023.*

EV Home Charger Grant: A grant of up to €600 towards the installation cost of an electric vehicle home charger for private EV owners.
The grant is now open to homeowners to apply for a grant, whether they own an electric vehicle or not. This charge point can also be used for visitor use or at rented accommodation.

When purchasing your new electric vehicle, the car dealer will apply for this EV grant for you. The amount will then be deducted from the total price of your new EV. Note that SEAI grants are not available for second-hand EVs.

Other benefits: EVs receive VRT relief and a reduced motor tax of €120. Revenue also allows for Benefit in Kind exemption for company electrical cars.

Table 9: Corresponding cost of different EV chargers

Size	Description	Charging time	AC/DC	Estimated cost
3 kW	Domestic charger –off street	8 hours	AC	Less than €1,000
3–7kW	On streetcharging from a streetlight	8 hours	AC	€2,000 - €4,000
22 kW	Fast charger in a residential area	3hrs	AC	€10,000 - €15,000
22 kW	Fast charger on a community property	3hrs	AC	
50 kW	Rapid charger – needs special infrastructure	30 minutes	DC	€15,000 - €25,000

9.1.3 COMMUNITY & PUBLIC SECTOR

Communities Energy Grant: Community and voluntary organisations can receive funding of 30% of capital costs for energy efficiency and renewable energy programmes through this scheme. This figure could rise to 50% following SEAI approval.

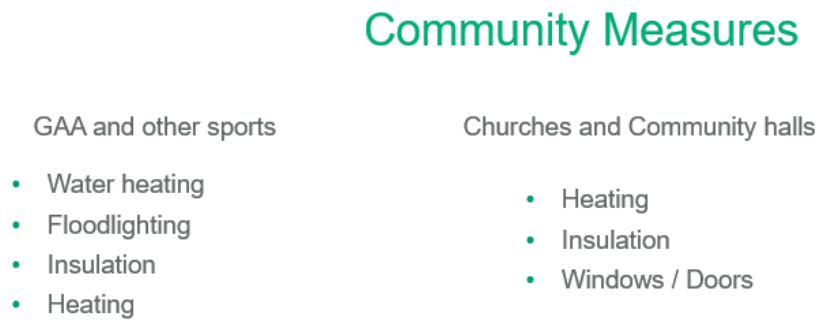
Works must be paid in full, and the grant is refunded by SEAI. No works should commence until grant has been confirmed by SEAI after the application has been submitted. An energy audit is required for all grant applications to SEAI. An Energy Audit should include all relevant information requested at application stage.

Projects must be community orientated with a focus on cross-sectoral approach. Successful Community projects must demonstrate some or all of the following characteristics.

- Community benefits
- Multiple elements, not a single focus
- Mix of sustainable solutions
- Innovation and project ambition
- Justified energy savings
- An ability to deliver the project

The following list outlines the types of measures that SEAI want to support through the Communities grant program:

- Building Fabric Upgrades
- Technology and System upgrades
- Integration of renewable energy sources
- Domestic Combined Fabric Upgrade
- Single Building Demonstration projects will be considered under the Communities Grant



It is recommended that prospective fund applicants check for the latest processes and funding levels at the time of enquiry. The latest information available at the time of publication of this document can be accessed at: https://www.seai.ie/grants/community-grants/project-criteria-andfunding/Communities-Grant-Guidelines-2022.pdf.

Community Centres Investment Fund: The 2023 Community Centres Investment Fund - New Builds Measure aims to allocate approximately €20 million for the construction of new multi-functional community centres. The grants available for this measure range from a minimum of €1,000,000 to a maximum of €6,000,000.
To be eligible for funding, projects must be "shovel-ready," meaning they have obtained all necessary permissions and consents, such as planning consent. The proposed sites should be green or brownfield locations.

Applications must be led by a State-funded body. Those interested in applying can request an application form by contacting ccif@drcd.gov.ie.

The deadline for submitting applications is 12 noon on July 3, 2023.

For comprehensive information on the application process, interested parties can refer to the Application Guidelines, which can be accessed for full details.

10.0 Action Plan

The following action plan is given as an example on how to put in place the recommendations listed in the Registers of Opportunities in Year 1. The scale of the action plan is directly related to the ambition of the community, the homeowners and the owners to implement energy efficiency improvements.

10.1 Year 1

Table 10: List of possible actions for year 1

Action type	Actors	Action	Measures	Grant scheme	Payback
All	HAIL	Energy awareness campaign to promote the HAIL and the Master Plan	- Energy awareness day		Short term
Domestic	HAIL	Level 1 Basic upgrade - Assess feasibility and cost for implementation of measures - Create economy of scale for costs by grouping the works per contractor	- Roof insulation upgrade - Cavity wall insulation upgrade - Lighting upgrade	Home energy grant	Short term
Transport	HAIL	Assess electric vehicle ownership in HAIL Buildings and find out if many plan to purchase electric in the future. Based on your findings consider applying for funding for a lamppost EV charger of up to 6kW		Public charger grant	Short Term
Domestic	HAIL	Level 2 Advanced upgrade - Assess feasibility and cost for implementation of measures - Create economy of scale for costs by grouping the works per contractor	- Level 1 + - Heating system upgrade	Home energy grant	Medium Term
Domestic	HAIL	Begin the process for Level 3 One Stop Shop Retrofit upgrade - Engage an energy agency or project coordinator to submit your proposed projects in a grant	- Make residents aware of support and funding - Identify buildings for improvement	BEC, SEC funding, National Home Retrofit	Long term

		application for one of the national schemes (Communities Energy Grant, National Home Retrofit Scheme). - Assess feasibility and cost for implementation of measures for a Home Retrofit upgrade. - Preparation of application in submitting in year 2	and list the improvements that are needed. - Decide upon funding stream		
Non-Domestic	HAIL Community Buildings/ Offices	Begin the process for energy efficiency upgrades - Engage an energy agency of any trusted intermediary to include your proposed project in an application for one of the national grant/funding schemes (Better Energy Communities, National Home Retrofit Scheme). - Assess feasibility and cost for implementation of measures. - Preparation of an application in year 2			Long Term
Renewable Energies	SEC/ Business owners/ Communities	Carry out feasibility studies on renewable energy projects - Solar PV			Long Term

10.2 YEAR 2

Table 11: List of possible actions for year 2

Building type	Actors	Action	Measures	Grant scheme	Payback
Non-Domestic	Business owners/ Communities	Energy efficiency upgrades	- Energy awareness - Building fabric upgrades - PV Systems - Heating system upgrades - Lighting upgrades	Better Energy Communities	Long Term
Renewable Energies	SEC/ Business owners/ Communities	Tendering process and works	- PV system - Other renewable energy generation systems		Medium/Long Term

10.3 Next Steps

Moving forward, HAIL's next steps should be:

1. Share Results: Decide how to tell members about the findings of the Energy Master Plan – maybe through social media, events, newsletters, or radio.

2. Inform the Community: Let the HAIL members know about the energy plan results and what comes next.

3. Pick Projects: Choose projects from the plan that can start in 2023 and beyond.

4. Get Support: Avail of the SEAI Community Energy Grant program and other SEAI support and guidance.

5. Find Funds: Explore how to pay for projects.

6. Stay Connected: Keep updating the members on HAILs climate action progress, gather support, and listen to members ideas and pursue new opportunities.

These steps will help HAIL make energy improvements and involve the HAIL members in the process.

10.4 Getting Started

10.4.1 Applying for SEAI Community Energy Grant: Incomplete

The procedure to apply for an SEAI Community Energy grant is relatively painless and consists of a clear series of steps, these may vary slightly depending on the grant you are applying for. Steps to follow include:

1) **Choose your energy upgrades** — We advise you to contact a BER* assessor, building contractor or energy advisor to discuss the suitability of the upgrades you have in mind.

2) **Contact an SEAI registered technical advisor** — The advisor will provide you with a written contract for undertaking a technical assessment. This step only applies if you are applying for a heat pump grant.

3) **Choose a registered contractor** — The contractor you choose should provide you with a contract for any work before the actual work begins. You will need this contract later for the grant application process.

4) **Apply for the corresponding grant or grants** — You can apply either online via the SEAI website or by submitting a postal application. Online applications will receive grant offers immediately. Postal offers will be issued within five working days. You must accept the offer within the 30-day period after receiving it.

5) **Have the work on your home carried out** — You must make sure all work is carried out within the following eight-month period. Your grant offer letter will contain the final date for completing the work. Be sure all work is carried out by an SEAI registered contractor. Either pay the contractor outright or organise financing with them, then complete a BER assessment and have a BER certificate published.

6) **Receive the grant you applied for** — You must fill out and submit a Declaration of Works form, which the SEAI should have sent to you by post. You will need one form for each upgrade, and each form needs to be filled in by you, your contractor and your BER assessor. Payment will usually be lodged in your bank account within four weeks of submitting the form.

11.0 CONCLUSION

The Energy Master Plan is a core document for HAIL to manage, build upon and use in their plans a vision for their members. It is important that progress is monitored to

- help identify any obstacles that may arise and develop the solutions needed.
- see projects through to completion.
- ensure the ultimate goals are achieved.

HAIL manages 406 social homes across the country, focusing on general needs, family housing, and specialized support for the elderly and those with special requirements. Approximately 309 properties under HAIL's care have BER ratings below B2, highlighting the necessity for energy upgrades. The organization also oversees four offices in Dublin and manages around 27 communal cores within apartment developments, which includes responsibilities for energy procurement.

In alignment with the Climate Action Plan, HAIL recognizes the imperative of achieving 2030 decarbonization targets. This involves fostering the adoption of renewable electricity, integrating electric vehicles, and pursuing the decarbonization of building heating systems.

Currently, it is estimated that the HAIL and its members are spending in the region of €926,180 per year on energy and using 2,375 MWh per year.

If the residential projects are implemented for the 10 houses surveyed through this plan, this would equate to an average energy reduction of almost 98% across the 10 homes. There are over 400 dwelling managed by HAIL. If they were all retrofit to at least a B2 the energy savings could equate to over €565,000 in energy costs per year.

If the 1 non-domestic commercial projects which were surveyed were implemented, this would equate to a 4,196 KWh energy saving or 1.1 tonnes of CO2 per year. Reaching out to the wider community and identifying projects in the commercial, public sector and community will increase energy and cost savings.

HAIL is fully committed to assuming a leadership role in shaping a sustainable future and offering guidance to stakeholders within its area. The successful execution of the Energy Master Plan relies on robust engagement, dedicated time, the commitment of the core team, active community participation, and securing financial support.

In essence, HAIL is dedicated to the improvement of homes, the advancement of sustainability, and the contribution to a cleaner and more sustainable future.

12.0 Reference Data

- Census 2016 Population Figures obtained from Central Statistics Office (CSO) [available online] https://www.cso.ie/en/

- National Energy Balance 2019 data obtained from the Sustainable Energy Authority of Ireland (SEAI) [available online] www.seai.ie

- Small Area Population, Housing and Commuting Data obtained from Central Statistics Office (CSO) [available online] http://census.cso.ie/sapmap/

- Building Energy Rating (Ber) data obtained from the Sustainable Energy Authority of Ireland (SEAI) BER Research Tool
- [available online] https://ndber.seai.ie/BERResearchTool/Register/Register.aspx

- Data on commercial building stock and energy consumption obtained from the Sustainable Authority of Ireland's (SEAI) 'Extensive Survey of Commercial Building Stock in the Republic of Ireland' report. [available online]
- https://www.seai.ie/publications/Extensive-Survey-of-Commercial-Buildings-Stock-in-the-Republic-of-Ireland.pdf

- Data on travel/commuting habits of population obtained from the Central Statistics Office (CSO) 'National Travel Survey (2016)' report.
- [available online] https://www.cso.ie/en/releasesandpublications/ep/p-nts/nts2016/keyf/

- Energy Consumption data across all sectors at national level taken from the Sustainable Authority of Ireland (SEAI) 'Energy in Ireland 2019' report
- [available online] https://www.seai.ie/publications/Energy-in-Ireland-2019-.pdf

- Agricultural data including number and size of farms, number and type of livestock obtained from the Irish Farmer Association's (IFA) 'Value of Agriculture' report.
- [available online] https://www.ifa.ie/wp-content/uploads/2014/08/Value-of-Agriculture.pdf.

- Data on emissions generated in agriculture and the breakdown thereof obtained from the Environmental Protection Agency (EPA) Greenhouse Gas emissions in Agriculture report. [available online] https://www.epa.ie/pubs/reports/air/airemissions/ghgemissions2017/Report_GHG%201990-2017%20April%202019_Website.pdf

- Energy Consumption and Emissions in the Public Sector data for national level obtained from the Sustainable Authority of Ireland's (SEAI) 'Public Sector Annual Report' 2019 [available online] https://www.seai.ie/publications/Public-Sector-Annual-Report-2019.pdf

  Resource Maps including Biofuel Crop suitability maps, Wind Speed maps, Hydro Electricity suitability maps, Solar Irradiation maps, all obtained from the Sustainable Authority of Ireland (SEAI) [available online] https://www.seai.ie/technologies/seai-maps/

- Emission Conversion Factors obtained from the Sustainable Authority of Ireland (SEAI) [available online] https://www.seai.ie/data-and-insights/seai-statistics/conversion-factors/

We at South East Energy Agency wish to express our thanks to all who participated and returned energy data to us.

13.0 APPENDICES

APPENDIX A – DOMESTIC ENERGY SURVEYS

SOUTH EAST
ENERGY AGENCY

Driving sustainability today and tomorrow.

SOUTH EAST
ENERGY AGENCY

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