

# RESEARCH ON THE ENERGY EFFICIENCY OF MOBILE HOMES FOR IRISH TRAVELLER COMMUNITIES

COLLABORATIVE RESEARCH PROJECT BY  
ATLANTIC TECHNOLOGICAL UNIVERSITY,  
SLIGO AND NATIONAL TRAVELLER MABS

AUTHORED BY: DR. EHIAZE EHIMEN,  
CHARLOTTE ESSELING  
MICHELLE KEARNS  
AOIFE FOLEY



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## EXECUTIVE SUMMARY

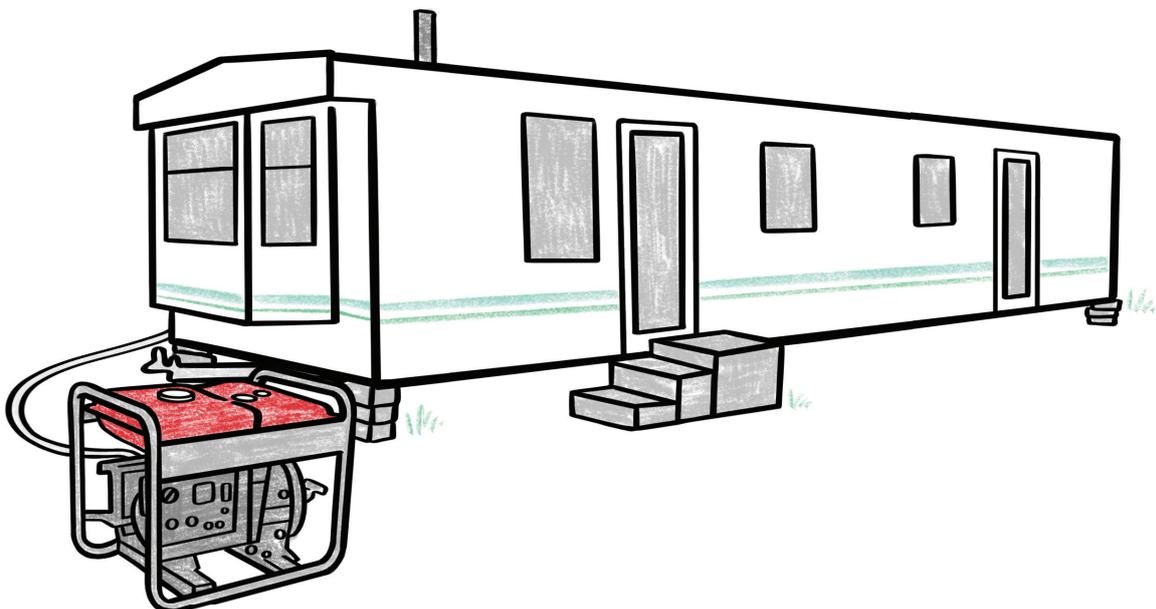
Travellers living in mobile homes currently face higher energy (electricity and heating) bills mainly due to issues of poor insulation and energy inefficiency in these dwellings. This has in turn resulted in higher levels of energy poverty. This report sets out to review the market in mobile homes with a view to understanding how, what is currently available, might address the accommodation element of energy poverty experienced by Travellers. As part of this study we also surveyed Travellers to get a snapshot of the patterns of energy usage.

The surveys carried out in this report showed that Traveller families in mobile homes were paying between €120-360 for electricity, and €105-€400 on heating fuels on a monthly basis. Most of the energy usage, including electricity consumption, was to meet space heating requirements (as there is low ownership of non-heating appliances in most mobiles).

The report concludes that the purchase of energy efficient mobile homes is the main route to addressing the accommodation element of energy poverty experienced by Travellers. There are international industry standards which could be used to specify the energy efficiency status of mobile homes suitable for year round living (i.e. the British standard BS 3632).

However, the significant cost (usually in the range of €60,000 and greater) of such standardised units which meet the minimum requirements of the BS 3632 standard limit the ability of most Travellers in acquiring them.

This report has seven recommendations to provide a mechanism for government and other agencies to support the inclusion of Travellers living in mobile homes in just energy transition plans. These include looking at alternative mechanisms for Travellers to access mobile homes, developing a ratings guide for energy efficiency for selection of mobile homes and incorporating green technologies into mobile home construction.





# 1 | OVERVIEW OF IRISH TRAVELLERS LIVING IN MOBILE HOMES

## 1.1. Energy efficiency and energy poverty situation of Irish Travellers mobile homes

Despite recognition of their status as an indigenous ethnic group, Irish Travellers remain one of the most marginalised groups in Irish society.

The marginalisation of Travellers has resulted in less favourable outcomes in a range of areas including access to and participation in education, healthcare and employment. Travellers experience social and financial exclusion and experience higher levels of energy poverty than the majority population. In the face of this, there are however currently no national targets to address energy poverty amongst Travellers as part of just transition plans for the country.

Of the estimated 30,987 Travellers<sup>1</sup>, ≈ 12% live in demountable units<sup>2</sup>. Here, Travellers who live in mobiles have to finance the purchase of their home either by their own means or through the loans available from local authorities. Given the financial situation of most Travellers, this results in the purchase of energy inefficient accommodations which are cheaper to procure, but further contribute to persistent energy poverty<sup>3,4</sup>.

In the Republic of Ireland, the energy efficiencies and expenditures of permanent dwellings have seen significant improvements in the past 20 years. This progress has mainly been achieved by new building regulations governing the energy efficiency of new dwellings and via the implementation of energy

efficiency retrofits to a large share of the existing dwelling stock. This progression has been supported by the advancement of a building energy ratings (BER) scale and mechanism which provides guidance and understanding related to the overall energy efficiency of dwellings. The BER provides a scale from A-G, with A-rated homes considered the most energy-efficient and comfortable (with the lowest energy bills). On the other end of the scale, G-rated dwellings are the least energy-efficient (with a greater requirement of energy to heat and usually have the highest energy bills). The availability of this rating scheme (and its supporting legislation) has in turn provided useful guidance to potential buyers of the indicative energy spend (heating and power), CO<sub>2</sub> emissions and likely comfort levels associated with such dwellings. However, unlike for standard residential homes there are currently no national data-driven guidelines, energy rating systems, recommendations or specifications applicable for mobile homes. This means there is no guide to help Travellers in making informed decisions when intending to buy energy efficient mobile homes suitable for year round living.

While the majority of Traveller families living in group housing and standard accommodation can avail of the existing ratings mechanisms and legislation, those who choose to live year round in mobiles do not have such supporting systems. Furthermore, Travellers living in mobiles are not included or captured in any existing low (or no) carbon future transition scheme put forward by the Irish Government. This has brought about the need for research and policy development focused on the Traveller community to guarantee the accessibility of greener, more energy-efficient dwellings, and the associated benefits.

<sup>1</sup> Census 2016. <https://www.cso.ie/en/csostatnews/pressreleases/2017pressreleases/pressstatementcensus2016resultsprofile8-irishtravellerethnicityandreligion/>

<sup>2</sup> 'able to be dismantled or removed from its setting and readily reassembled or repositioned' such as a caravan, mobile home or trailer.

<sup>3</sup> Central Statistics Office (CSO). "Irish Travellers – Socio-economic Aspects and Housing". 2021. <https://www.cso.ie/en/releasesandpublications/ep/p-cp8iter/p8iter/p8itseah/>.

<sup>4</sup> Money Advice & Budgeting Service (MABS), "Key Facts on Energy Poverty Amongst Travellers Living in Mobile Homes / Trailers," 2019. [https://www.ntmabs.org/publications/development/2019/nt-mabs-energy-report-factsheet\\_.pdf](https://www.ntmabs.org/publications/development/2019/nt-mabs-energy-report-factsheet_.pdf)



## 1.2. Culturally appropriate homes for Travellers

Prior to the start of this research it was pertinent to explore what type of home should be included in this study which would meet the cultural “mobility” needs of Travellers.

During the initial research phase, consultations were held with several Traveller groups. This information was then used to guide this research.

While there were differences in preference with regard to construction modes, sizes and material types, one defining characteristic that all Travellers indicated should be available is the potential for “mobility” of the dwelling.

This is usually with the presence of a chassis with (or ability to quickly affix) wheels to the demountable unit, with the ability to tether the dwelling to a vehicle.

Mobile homes for this study were defined as:

- Pre-fabricated (site or factory built) structures (with or without a permanently attached chassis)
- Considered for use for year-round living
- Able to be placed on a site semi-permanently or permanently, but with the potential of being moved at short notice, if necessary.
- Having all/most of the mod-cons (amenities and appliances) characteristic of a modern house to facilitate comfortable living.

## 1.3. Aims and objectives of the research

The aim of the report is to produce valuable data driven information on what constitutes an energy efficient mobile home, suitable for year round living. The report outputs are also intended to inform future mobile home support schemes, in policy development and also by Travellers purchasing mobile homes.

The research leading to this report therefore also aims to shine a light on current issues relating to energy efficiency and energy poverty among Travellers, and proposes practical strategies to

address accommodation related issues that give rise to energy poverty.

The report findings further looks to inform the need for the development of a rating scheme for mobiles. This will contribute to filling observed gaps in practice in Ireland in relation to energy considerations for marginalised groups. This will support the inclusion of Travellers in the green transition goals of the Irish Government as detailed in the National Energy and Climate Action Plan (2021-2030), incorporated in any future National Energy Poverty Strategies.

The main objectives of the report are:

- To provide an overview of the energy efficiency and energy poverty issues affecting Travellers’ living in mobile homes.
- To assess the current state and practice in the EU and internationally on commercially available energy efficient mobile homes and standards guiding mobile home energy efficiencies.
- To propose a draft mobile home energy rating scheme.
- To recommend practical mechanisms to support the provision of energy efficient mobile homes for Travellers.



# 2

## ENERGY EFFICIENCY AND ENERGY POVERTY ISSUES OF TRAVELLERS IN MOBILE HOMES

### 2.1. Energy poverty in Travellers living in mobile Homes

Energy poverty is quantified in Ireland using an 'expenditure method,' where a household is considered to be energy poor if it spends more than 10% of its income on energy related costs. Overall, the prevalence of energy poverty is typically considered to be a direct consequence of three primary factors<sup>5</sup> :

- A comparatively low level of household or personal income.
- Household energy costs (electricity and heating), and
- Energy efficiency of a home.

A recent study reported 77% of Travellers living in mobile homes are deemed to be in energy poverty, with energy expenditures of over 26.1% of household income observed for respondents from that community<sup>6</sup>. With the average energy spend of the general Irish population at 4.6%, Irish Traveller communities living in mobiles spend roughly five to six times more than the general population. The informative research findings carried out and reported in "Accommodating Ethnicity – Addressing Energy Poverty Among Travellers Living in Mobile Homes and Trailers"<sup>5</sup>, underpinned the lack of resources and significantly lower household incomes, exacerbated by financial exclusion, as one of the key underlying factors causing energy poverty for Travellers. This was not just in terms of energy spend by this group, but also creates a barrier to the purchase of more energy efficient accommodation or the ability to make energy efficient changes that could have alleviated the energy poor state. The energy inefficiency and poor living conditions subsequently lead to a variety of negative impacts

on Travellers health, safety and quality of life.

66% of Travellers living in mobiles indicate that they had safety concerns related to their homes' electricity supply<sup>5,7</sup>. Other issues experienced included (i) poor air quality due to the use of unvented kerosene heaters, (ii) increased fire risk associated with the heavy reliance on candles at night, (iii) a high risk of food contamination or poisoning because of intermittent refrigeration, and (iv) dampness and mould due to inadequate space heating and ventilation<sup>6</sup>. These concerns are worsened by financial burdens associated with the higher energy spend, with most Travellers reported to be spending over €108 per week on fuel and electricity<sup>5</sup>. A major factor for this is the reliance on butane gas cylinders for heating and cooking.

With the continued use of heating sources such as heating oils, coal and gas cylinders in mobiles, the future spend on energy can be expected to increase, especially with unforeseen global conflicts (i.e war in Ukraine) and the future implementation of carbon taxes<sup>8</sup>.

With 91% of Travellers living in mobile homes surveyed indicating they had no central heating, they were nine times more likely to go without heat compared to the general population and 14 times more likely to be unable to keep their household warm<sup>5</sup>. The combination of energy inefficient structures and the significant financial implication brought about by increased spend and lower incomes has meant many Traveller families living in mobiles are unable to keep their homes warm (especially in winter periods), and have to sometimes make tough decisions on not heating their dwellings for periods, even when measures to carefully manage and use energy are put in place.

<sup>5</sup> [https://data.oireachtas.ie/ie/oireachtas/libraryResearch/2022/2022-03-04\\_l-rs-note-energy-poverty-in-ireland\\_en.pdf](https://data.oireachtas.ie/ie/oireachtas/libraryResearch/2022/2022-03-04_l-rs-note-energy-poverty-in-ireland_en.pdf) 3].

<sup>6</sup> D. S. Stamp and M. Kearns, "Accommodating ethnicity -Addressing energy poverty among travellers living in mobile homes and trailers: An Exploratory Study," 2019. [https://www.mabs.ie/downloads/reports\\_submissions/MABS\\_Energy\\_Poverty\\_Report\\_2019.pdf](https://www.mabs.ie/downloads/reports_submissions/MABS_Energy_Poverty_Report_2019.pdf)

<sup>7</sup> T. Lawlor and A. Fitzsimons, "Travellers' Health Matters- A retrospective health impact assessment of low-grade traveller accommodation," 2009. [http://www.publichealth.ie/files/file/Travellers'\\_Health\\_Matters\\_HIA.PDF](http://www.publichealth.ie/files/file/Travellers'_Health_Matters_HIA.PDF)

<sup>8</sup> [https://www.citizensinformation.ie/en/money\\_and\\_tax/tax/motor\\_carbon\\_other\\_taxes/carbon\\_tax.html](https://www.citizensinformation.ie/en/money_and_tax/tax/motor_carbon_other_taxes/carbon_tax.html)



# 3 OVERVIEW OF ENERGY EFFICIENCY AND CONSUMPTION SCENARIOS

The National Traveller MABS energy poverty report (2019) <sup>5</sup> was a small scale study which surveyed Travellers and found high levels of energy poverty among its sample population. The majority lived on authorised halting sites in mobile homes, chalets or combinations with day units. The survey showed that 77 % of the households could be considered to be in energy poverty, mainly due to low energy efficiencies of their dwellings and the resulting high energy bills.

The costs related to the space heating constituted the largest energy expenditure for the surveyed group. The use of gas bottles (i.e. butane) was observed to be the most predominant fuel type used by most dwellings at 71%. 41% of the dwellings also reported burning of logs, coal or sticks (either alone or in combination) to provide heat. 4.6% of respondents reported their heating appliances as energy efficient and 52.3 % stated them as inefficient.

The energy inefficiency observed in the surveyed mobile homes can mainly be attributed to significant heat losses from the poorly insulated dwellings, and the presence of outdated, inefficient and sometimes partly broken heating appliances installed in the homes. The majority of the homes were 10 years and older, with a third of the surveyed mobile dwellings older than 15 years. 77 % of the homes surveyed were deemed to be in need of repair and 69.2 % of the homes reported to not have any form of insulation in the walls and flooring, and only have single glazing on windows <sup>5</sup>.

Furthermore, there was a lack of awareness on the importance of insulation in the homes, with one in six respondents not knowing whether their home is insulated or not.

As a follow-up to the findings in the National Traveller MABS report <sup>5</sup>, further research about the technical and energy-related conditions of the current Traveller

energy situations and mobile homes conditions was carried out. The methodology applied for the research underlying this study and the main findings are provided in the following sections.

## 3.1. Research Methodology

To address the study's objectives, an extensive desktop analysis of the current status of energy efficient mobile homes and existing guidelines and standards was carried out. This involved the assessment of national, EU and international considerations and specifications (if available) with regards energy efficiency measures for mobile homes suited for year round living. To facilitate this, the housing and residential guidelines in Ireland, selected European countries and the United Kingdom (UK) were scrutinised specifically looking at if there were any requirements to ensure energy efficiency for mobile homes. This set out to establish if there were any national specifications adhered to potentially afford energy efficiency for Travellers living in mobile homes. Previous academic research outputs as well as operational consultation and white papers on mobile homes energy efficiency and conditions (concentrating on those published in the last 10 years) were also assessed to garner relevant information on the previous work carried out in this area.

The desktop studies also covered an evaluation of the mobile homes market place locally and in the EU to identify the present day costs of acquiring an energy efficient mobile home (which meets or surpasses energy efficiency standards). The desktop research involved an analysis of websites of various suppliers. Phone calls, virtual online meetings and email exchanges were also carried out with the suppliers to ascertain standardised energy efficient mobile homes pricing and particular offerings of different mobile homes suppliers (including additional services and options).



To further delve into particular energy poverty and energy efficiency measures in current stock of Traveller mobile homes, mixed research approaches (a combination of consultations, questionnaires<sup>9</sup>, interviews and site visits) was performed with 60 Traveller participants (living in mobiles) across the country. The investigation covered issues including average energy expenses, age of mobile homes, energy security situation and overall efficiency status of the homes.

For the Traveller consultation sessions, virtual meetings organised by the NTMABS conveyed representatives of Traveller groups from different counties in Ireland from October-December 2021.

With regards the survey questionnaires, the questionnaires were distributed to targeted Travellers living in mobile homes between January 20 – February 8 2022. The survey was designed after conducting a detailed desktop review and following the findings from the consultation sessions. The eventual questionnaire consisted of an information page (introducing the aims and objectives of the study) and two pages with 18 questions. The questions in the questionnaires covered a range of issues from the number of mobile homes allocated to the respondent to the age and energy efficiency issues of the mobile home. The energy expenditure, as well as the energy requiring appliances in the mobile homes were also investigated. The study mainly used contacts from Traveller representative groups to distribute the questionnaires to the intended target, thus maximising the possible responses. Here, paper-based copies of the survey were handed out, and completed by hand by the respondents.

Statistical analyses was carried out using the software packages IBM Statistical Package for the Social Sciences (SPSS) (IBM SPSS Statistics for Windows, v26.0. Armonk, NY: IBM Corp) and Microsoft Office Excel (Microsoft Office 2016, Microsoft Corporation, Redmond, WA, USA). To identify data trends, statistical techniques were utilised, such descriptive statistics, frequency tables, chi squared tests, and means t-tests.

## 3.2. Main Findings

### 3.2.1. Mobile homes construction types and sizes

The majority of mobile homes found in Ireland are usually of one of two sizes:

- The single-wides which are mobile homes which are  $\leq 18\text{ft}$  (5.5m) wide and  $\leq 90\text{ft}$  (27m) long. These can be moved to the site as a single unit.
- The double-wides which are  $\geq 20\text{ft}$  (6.1m) wide and  $< 90\text{ft}$  in long, and are usually transported to site as two separate units which is then joined together.

### 3.2.2. Codes, regulations and standards guiding energy efficiency for year-round mobile dwellings

In the Republic of Ireland, there are currently no specific regulations or codes guiding the manufacturing and energy efficiency aspects related to the construction of mobile homes, in particular those intended for year round living.

In the European Union (EU), there are a number of specifications for leisure accommodation vehicles, including caravan holiday homes, which are covered by the EN 1647 standard. The EN 1647 is the European standard for caravan lodges, which are suitable for temporary, or seasonal holiday accommodation only. The scope generally contains specifications for safety and health requirements and provides specific grades of resistance to snow loads and the stability of the structure. Table 2 shows a classification of the thermal insulation and heating requirements which have to be met and the grades as specified by the standard.

<sup>9</sup> The questionnaire used for the study is attached to this document as Appendix 1.

<sup>10</sup> Johnston D., Farmer D & Miles-Shenton D. Quantifying the aggregate thermal performance of UK holiday homes. 2017. Building Services Engineering Research and Technology. <https://doi.org/10.1177/0143624416681614>


**Table 2: Classification of thermal insulation and heating for holiday homes according to EN 1647:2012<sup>10</sup>**

Classification	Average U-value of the construction elements (W/m <sup>2</sup> K)	Heating requirement
Grade 1	1.7	None
Grade 2	1.7	Average temperature difference of at least 20 K between the inside and outside temperature shall be achieved in the lounge, dining room and kitchen, when the outside temperature is 0°C
Grade 3	1.2	Average temperature difference of at least 35 K between inside and outside temperatures shall be achieved in all rooms, except toilet compartment, when outside temperature is -15°C.

The U-Value as indicated on the table (and standard) is a relevant and useful reference value to show the insulation capacity of mobile homes. Its function and use will be briefly explained here, and afterwards used to compare different standards.

The U-value reflects the effectiveness of a material as an insulator, and is the sum of the thermal resistances of the different layers in the home construction, for example a roof, wall or floor. It has the unit W/m<sup>2</sup>·K and shows the ability of the construction element to transmit heat from a warm space to a cold space in a building. The lower the U-value, the better insulated the building element, which in turn reduces energy costs. Mobile homes should therefore aim for U-values in the lower ranges.

The specifications of the U-values in the EN1647 standard only covers all construction elements together and does not differentiate between walls, windows, floors or roofs. The heating requirements

are also formulated vaguely and leave precise measurement and efficiency specifications open.

Furthermore, since the EN1647 standard is mainly applicable for temporary mobile home uses, it is not suitable as a useful standard for mobile homes which are to be occupied year round.

The BS 3632 is the British Standard to which residential park homes as well as some lodges for permanent residence are constructed. Its applicability covers a 12 month period, hence making it more relevant for year round living considerations. It provides minimum requirements for a number of factors influencing energy efficiency, thus ensuring that the accommodation is already designed and tested for winter conditions by the manufacturers. With the BS 3632 standard, specific U-values are defined for the various construction elements (Table 3). These have become more and more restrictive with each version of the standard, with the most recent version published in 2015.

**Table 3: Maximum average U-values according to BS 3632 for park homes<sup>9</sup>**

Standard	Maximum average U-value of the construction elements (W/m <sup>2</sup> K)			
	External wall	Floor	Roof	Windows and doors
BS 3632: 1970	1.70	1.70	1.70	–
BS 3632: 1981	1.00	1.00	0.60	Overall external wall U-value (including windows and doors) 1.8
BS 3632: 1989	1.00	1.00	0.60	Overall external wall U-value (including windows and doors) 1.8
BS 3632: 1995	0.60	0.60	0.35	Overall external wall U-value (including windows and doors) 1.0
BS 3632: 2005	0.50	0.50	0.30	2.00
BS 3632: 2015	0.35	0.35	0.20	1.60 (including frames)
Part LIA 2010	0.30	0.25	0.20	2.00



**Table 5: Excerpt on the energy efficiency increases through BS 3632 standard implementation from the Pemberton Park & Leisure Homes products sheets.**

	Typical EN1647 Holiday Home Specification	BS3632 Residential Specification Pemberton Home	Improvement in U-value* (Better Energy Efficiency)
Windows	2.70	1.60	<b>41%</b>
Walls	1.15	0.32	<b>72%</b>
Floor	0.56	0.32	<b>43%</b>
Ceiling	0.38	0.18	<b>53%</b>

It means walls built to comply with BS3632 standards have at least 2 to 3 times more insulation than those of typical EN1647 holiday homes. This is illustrated by a comparison of what other major competitors offer.

The BS3632 standard is therefore more useful as a minimum marker for the specifications that a mobile home should have with regards energy efficiency and comfort.

Different manufacturers and websites, which inform people about the costs and expectations faced when buying a mobile home, state that more than 50 % of the heating energy costs can/or will be saved with the purchase of a mobile home that meets the BS 3632 standard in comparison to conventional mobile homes built without the standard and with lower levels of insulation.

For example, the following excerpt from one of the mobile home United Kingdom (UK), Pemberton Park & Leisure Homes shows how the U-value for the different mobile home building elements change with the upgrade to the BS 3632 standard compared to the EN1647 standard.

Willerby Ltd. also presents a statement about the

energy saving possibilities of the BS 3632 standard and how much less the running energy costs are when using mains gas.

Due to the lack of concrete data, it was not possible to present an exact calculation for the comparison of the energy demand achievable with the upgrade of mobiles to one meeting the BS 3632 as a minimum. However, statements from manufacturers and the basis on which the BS 3632 standard was developed show that the provision of mobiles meeting the standards specifications can result in reduced energy expenditure, as well as being more energy efficient and therefore more environmentally friendly.

Since no reliable energy demand values could be provided by the manufacturers, it is not possible at this point to determine the exact financial difference in running costs achievable between models with BS 3632 standard compared to non standardised mobiles equipped with the additional winter package<sup>11</sup>. However, based on the online references on the savings achieved by the standard, as well as

**Figure 1: Excerpt from the website of a mobile home manufacturer about the cost benefits provided by the BS 3632 standard (Willerby Homes, 2022)**

*Our homes are tested for airtightness too. The running costs of Willerby's park homes and lodges have been calculated using the domestic EPC/SAP method and, using mains gas, show estimated running costs of £1.37 a day. That's considerably less than a 1960's bungalow, which runs at around £2.65 a day – saving you nearly £450 each year.*

<sup>11</sup> A “winter pack is an option on a new mobile homes which includes Double Glazed Windows and Gas Central Heating these can vastly extend your winter usage but is not the all year round residential standard.” <http://harryfarrellsons.ie/mobile-home-on-your-property>.



the far more detailed energy efficient requirements that the BS 3632 standard places on mobile homes in comparison to the winter packages of mobile manufacturers, it can be assumed that the standard's guarantee on energy efficiency will indeed enable substantial savings.

### 3.2.3. Retrofitting Mobile Homes

While energy efficiency measures (for example the installation of double glazed windows, reduction of draught and leakages and the use of energy efficient appliances) can be implemented in existing mobile homes to reduce the overall energy spend by Travellers living in mobile homes the extent of their impact is limited.

This is due to the space and structural limitations associated with manufactured mobile homes which means extensive insulation and weatherproofing actions cannot be extensively applied for this dwelling type as used in conventional constructed homes. The ability to retrofit older energy inefficient mobiles to meet (and possibly) surpass the BS 3632 standard is therefore limited.

To meet the needs for energy efficient mobile dwellings, the purchase of mobile homes that already meet the BS 3632 standard as a minimum is a practical option.

### 3.2.4. Available suppliers and specifications

The current market offers a variety of different brands and models for mostly 2 to 6 person households. The findings from this research mirrored that which was previously outlined in the National Traveller MABS Small Scale Study on the Cost of Mobile Homes/Trailers<sup>12</sup> which was published in 2018. In that report, it was highlighted that a wide array of mobiles/trailers was available in the local and international market, ranging in price from less than €10,000 to in excess of €100,000. The particular conditions of these units for long-term living covered both used and new

mobile homes, and showed a variation of costs based on age and particular unit features. Additionally, the installation and disposal related costs were also investigated by that study, which were indicated to be between €1,000 and €5000<sup>12</sup>.

From our focus groups and the work of National Traveller MABS, it was revealed that the most commonly purchased mobiles by Travellers are non-standardised second hand mobiles. In addition to this, a web-based market analysis carried out by this study confirmed that the majority of mobiles for sale in Ireland were non-standardised second hand mobiles. Several adverts for new, made to order mobile homes suitable for year round living and available from Irish manufacturers were also found on different online marketplaces in Ireland<sup>13</sup>. These mobiles were advertised as having double glazed windows, thermal efficient doors, floors and wall insulation, energy efficient electrical installations (i.e. LED lighting) and electric heating. These units were further described to be potentially available on a chassis with wheels. These were advertised to be available from €62,000. The exact compliance to the BS 3632 standard or any energy efficiency standards was however seen to be lacking in most of the suppliers descriptions. The potential to source new mobile homes locally could save transportation costs compared to units purchased outside the country.

The majority of the production market for mobile homes which meet and surpass the BS 3632 specifications was seen to be in the UK. Various models, types and sizes can be found, with the majority in the price range from €60,000 (£50,000) to €84,000 (£70,000)<sup>14</sup>. However, most manufacturers do not publish their prices online, and even on request, a personal consultation or a visit at one of the showgrounds is usually offered first, which makes it difficult to research prices and to provide a detailed list of price options. This is especially important when investigating discount options that might be available when bulk purchases of energy efficient homes is intended to be carried out.

Approximate minimum price estimates was provided by some of the mobile homes manufacturers to this study following a phone or email consultation,

php#:~:text=Winter%20Pack%20is%20an%20option,all%20year%20round%20residential%20standard.

<sup>12</sup> National Traveller MABS, A Small Scale Study into the cost of Mobile Homes/Trailers for the Purpose of Social Housing for Travellers, 2018.

<sup>13</sup> www.donedeal.ie

<sup>14</sup> Using an exchange rate of 1GB£ = 1.2 €. Conversion rate correct as at 24<sup>th</sup> April 2022 (www.xe.com)



mainly on the basis of if the mobile homes met the BS 3632 standard. The quoted mobile homes were therefore classed as meeting year-round “residential specifications”. An alternative price estimate for alternative double glazed, insulated mobile homes with central heating which is suitable for year round living but did not meet the BS 3632 standard was also provided.

Many of the offers include delivery service within the country and the possibility of export by arrangement, or cooperation with partners to organise and manage the transport to the desired location. In addition, options to secure and support the financing or multiple order discounts are often offered, suggesting a willingness to negotiate individual payment systems. The costs of installation and disposal were however not included in this assessment.

Table 6 shows a sample list of mobile homes price estimates from several manufacturers and retailers, depending on specifications and configurations. The majority of mobile home manufacturers offer standard and non-standardised, because in addition to supplying residential mobile homes many also offer holiday lodges, which are designed for summer

use only. The prices of the standardised dwellings are significantly higher than those without, across all suppliers. Furthermore, the warranties and, in some cases, repair services advertised by the suppliers themselves on the offers are also interesting and could be considered on a case by case basis. Generally all suppliers offered a 12 month warranty for the mobile home, with a 3 year parts warranty, 5 year structural warranty and up to 15 year chassis warranty (on the basis of chassis type). Some of such services offered by the different suppliers are indicated in Table 6. It must however be noted that the price estimates presented in this report were obtained in the first four months of 2022. There might therefore be price increases brought about by global inflationary considerations.

On the average life expectancy of a new mobile home, the manufacturers indicated a wide range for the average life expectancy. This was on the basis of the installation, mobile home fabric, location and overall maintenance of the mobile. An estimate of 30-50 years for a properly installed, and well maintained mobile home was seen as the average period new mobile homes should last.




**Table 6: Market research on energy efficient mobile homes from different EU suppliers.**

Manufacturer	Location	Quality standards	Price <sup>15</sup>	Additional information
Sunrise Lodges <a href="https://sunriselodges.co.uk">https://sunriselodges.co.uk</a>	Weeley, UK	recommended for year-round living in cold locations with floor & roof insulation, central heating, double glazing	From £28,995 (€34,995)	Export service
		BS 3632	From £60,995 (€73,194)	
Kvadra Mobil (tm-mobilheime.de) <a href="https://tm-mobilheime.de">https://tm-mobilheime.de</a>	Rötgesbüttel, DE	Comply with the energy saving regulations (DE) à winter proof: Double glazing, Central heating (optional), Air-air-heat pump	From €31,726	
Willerby Ltd <a href="https://www.willerby.com">https://www.willerby.com</a>	Hull, UK	Central heating (gas/electric) Double glazing	from 23,513 £ (€28,215)	Delivery service
		BS 3632	From £57,322 (€68,786)	
Knight Mobile Homes Ltd. <a href="https://www.knightmobilehomes.com">https://www.knightmobilehomes.com</a>	London, UK	Winter pack: Double glazing, Central heating (gas), LED lights	From £26,000 (€31,200)	Finance options available (i.e. through Lombard Direct)
OMAR Park and Leisure Homes <a href="https://www.omar.co.uk">https://www.omar.co.uk</a>	Brandon, UK	BS 3632	Available on request	Cooperation with various companies for transport and siting 10-year GoldShield structural warranty <sup>16</sup>
Pioneer Caravan (different brands) <a href="https://www.pioneercaravans.co.uk">https://www.pioneercaravans.co.uk</a>	Peterborough, UK	BS 3632 Central heating, Double glazing	On request	Manufacturer's warranty Service and repair center
CS Vanguard Ltd <a href="https://csvanguard.co.uk">https://csvanguard.co.uk</a>	Kidderminster, UK	Without standard	From £26,200 (€31,440)	Delivery in UK Multiple orders discounts Standard 10-year structural warranty
		BS 3632	From 44,495 £ (€53,394)	
ATLAS Leisure Homes <a href="https://atlasleisurehomes.co.uk">https://atlasleisurehomes.co.uk</a>	Dealers in Ireland (x4) and UK	possibility to add winter warm package (central heating and double glazing)	From 26,218 £ (€31,461)	Warranties divided on structure (5yrs), parts and labour (1yr), additional (3yrs) and galvanized chassis (10yrs)
		BS 3632	From 63,183 £ (€75,819)	

<sup>15</sup> The price equivalents for € provided here was based on a conversion rate of 1GP£ =1.2€ (correct as at 24 April, 2022)

<sup>16</sup> The GoldShield 10-year warranty is for park home owners. It is provided and administered on behalf of the manufacturers and the NCC, the industry's trade body.

GoldShield operates an independent financial reserve, financed by park home manufacturer members, which ensures that homes registered under the warranty benefit from full structural cover for a 10-year period. These benefits are provided alongside and in addition to a purchaser's rights under the law.



To illustrate currently available mobile homes with the BS 3632 standard, some models from different manufacturers are shown below.

Figure 2: Sunrise lodges, model ABI Ambleside Log Cabin for 4 people



Figure 3: WILLERBA, model Astori for 4 people



Figure 4: ALTAS leisure homes, model Wisteria lodge for 4 people





### 3.2.5. Results of Follow-up Energy Poverty and Efficiency Survey on Travellers Living in Mobile Homes

The main finding from this study which follows-up from the findings of the National Traveller MABS report showed that a large majority of the Traveller families living in mobiles surveyed ( $\approx 75\%$ ) were paying between €120 - €360 on electricity, and €105- €400 on heating fuels (i.e. gas, coal wood) on a monthly basis. The energy expenditure estimates from the survey carried out in this research is similar to that in the previous National Traveller MABS report, showing that there has not been any significant improvement in reducing energy costs for Travellers living in mobiles in the last 4 years.

To further breakdown the energy efficiency findings, the mobile homes surveyed in this study were grouped on the basis of their age i.e. 0-10, 11-20 and 21+ years (Table 1). No consistent trend for the average heating fuel and electricity expenditure on the basis of the ages of the homes was observed. This indicated that the newer mobile homes (i.e. less than 10 years old), did not necessarily have energy efficient improvements in the home fabric and structures. They also did not contain appliances which would make the mobile any more efficient than the older surveyed homes.

The questions about the energy sources used for heating show that the newer mobile homes were more often equipped with central heating systems, mainly gas. The 11-20+ year old mobile homes were predominantly equipped with stoves, while almost two thirds of the 21+ old mobile homes mainly used electricity for heating.

With electricity consumption observed to be higher than the national average, the factors contributing to this higher expense was further explored. To examine this, the types of electrical appliances used in the responding Traveller mobiles were investigated. It was observed that “non-heating” electrical appliances

and power demands in Traveller mobiles were less than those available in conventional housing stock. In some cases, only room lighting, a television and a refrigerator were powered in sample mobile homes using electricity. The significant electricity spend by Travellers living in mobile homes was therefore seen to be directly related to higher electricity consumption to meet the heating requirements of the poorly insulated mobile homes. This was despite the availability of other heating methods used in those mobile homes as evidenced by the heating fuel costs also reported by the surveyed households.

The importance of the need to minimize heat loss through improving the insulation and energy efficiencies of the mobiles thus becomes clear, especially considering that almost all the respondents indicated that their mobiles were heated for some hours year round, even during the summer months.

More research is however needed to specifically identify electricity use patterns by Traveller families in mobile homes, to get a clearer picture on energy consumption. This will involve a longer term monitoring of habits around the use of appliances, and will in turn illuminate strategies that can be employed to potentially reduce energy spend.

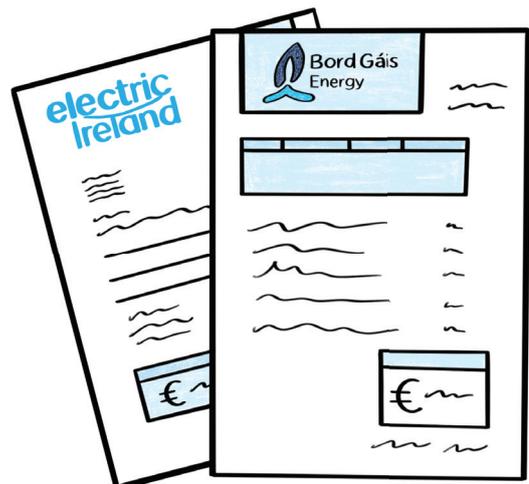
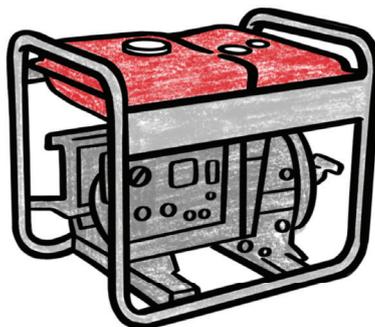
With regards the energy efficiency of the mobile homes, most Travellers who took part in the survey did not have double glazing or adequate ventilation in their mobiles, with only 16% of the 0-10 year old ones equipped with double glazing. With regard to other energy efficiencies measures which have the potential of reducing energy consumption, around 40% of the respondents indicated that they do not use LED lighting. This demonstrated that there is a need to provide information and education about energy efficient products that can reduce utility costs or make them available at a lower cost to Travellers experiencing energy poverty.

**Table 1: Evaluation of selected questionnaire answers regarding the energy efficiency depending on the age of the mobile homes**

Age of Mobile Home		0-10	11-20	21+
average monthly expense for fuel/gas [€]		156	192	169
average monthly expense for electricity [€]		147	121	175
Heating	Stove	16%	38%	25%
	Electricity	12%	25%	63%
	Oil	8%	0%	0%
	Gas	8%	25%	6%
	central heating with gas	20%	0%	0%
central heating with electricity		16%	19%	0%
central heating with oil		16%	0%	13%
Fire place		0%	0%	13%
double glazing		16%	0%	13%
sufficient ventilation		4%	6%	0%

The use of fossil fuel driven generators to provide electricity was also observed for a number of the surveyed respondents. In addition to the environmental implications of the use of such generators, this is also a significant cost. With an increased call for the integration of renewable

energy systems in the housing stock in Ireland, the potential to meet the electrical demands of such mobile homes using renewable energy systems could be fully explored with the aim of reducing the costs associated with fossil fuels.





# 4 | WAY FORWARD AND CONCLUSIONS

## 4.1. Government buy-assistance or rent-to-own schemes for energy efficient homes

From the findings following several consultations and interviews carried out in this study, the primary causes for the prevailing energy poverty and the significant energy expenditure experienced by Traveller families is energy inefficient mobiles. This problem is exacerbated by issues of inadequate income, high unemployment, and financial exclusion. This means that the purchase of second hand, energy inefficient mobile homes is a matter of necessity rather than choice for the majority of Travellers. There is therefore a need for focused government initiatives and mechanisms to support Travellers in acquiring energy efficient homes.

There are two schemes that enable the purchase of caravans/mobiles for Travellers. The National Caravan Loan Scheme and the scheme for Funding for Emergency Replacement Mobile Caravans. At the time of writing, The Pilot Preferential Caravan Loan Scheme, (an updated version of the National Caravan Loan Scheme) has been piloted in a number of areas. It is expected that the updated Caravan Loan Scheme will be rolled out nationwide later in 2022. The scheme is operated through local authorities, and Travellers can apply for a loan to finance the purchase of a mobile through approved dealers. The pilot scheme offered loans of up to €30,000, and loan repayments were based on the borrower's income. The Pilot Preferential Caravan Loan Scheme included a guidance document to assist in assessing a home for purchase under the scheme. The document mentions the BS 3632:2015 standard but does not mandate that homes purchased under the scheme are built to this standard.

The Replacement Scheme is available to local authorities. They can apply for funding to the Department of Housing Local Government and Heritage for up to 50% of cost of replacing a mobile under emergency circumstances. The local authority contributes the other 50%. This scheme stipulates that demountables or chalets purchased under this scheme must be BS 3632:2015 standard.

There are numerous reports that outline the difficulties with the previous Caravan Loan Scheme. While the Pilot Preferential Caravan Loan Scheme seeks to address some of these difficulties, there is a question as to whether a loan scheme is the best mechanism to provide Travellers with energy efficient accommodation. This is because the scheme puts the emphasis on the individual to navigate the private market to get the best deal in terms of energy efficient accommodation. This report will focus on the best mechanism to provide Travellers with energy efficient homes which is in line with government policy's commitments to provide greener more energy efficient homes.

The terms of the Replacement Scheme and Caravan Loan Scheme, do not however specify the state of the mobile units (i.e. new or second hand), allowing the purchaser the freedom to source a unit suitable to their needs.

The inadequacies of the previous and current caravan loan schemes have been widely presented in several publications<sup>17</sup>, stakeholder consultation documents<sup>18</sup> and forums. As highlighted by such documents, the existing loan scheme structures (including repayment periods) and considerations appended to the loan scheme do not appear to put into context the high unemployment rates (~80%), and lack of accessibility and liquidity of intending Traveller purchasers. This report will therefore only concentrate on the issues

<sup>17</sup> Community Law & Mediation, The Legal Implications and Lived Experiences of the Caravan Loan Scheme, 2018. <https://communitylawandmediation.ie/wp-content/uploads/2020/08/The-Legal-Implications-and-Lived-Experiences-of-the-Caravan-Loan-Scheme-FINAL.pdf>

<sup>18</sup> The Housing Agency for the Department of Housing, Planning, Community and Local Government. "Review of the Scheme of Loans and Grants for the Purchase of Caravans by Travellers", 2017.



related to the ability of providing energy efficient mobile homes with the use of such schemes.

The current loan scheme stipulations do not mandate that the purchased units meet energy efficiency standards or minimum specifications. This in direct opposition to the drive towards greener, more energy efficient homes for the general public. Even the requirement for purchase from a registered supplier does not indicate the need for them to supply energy efficient units.

A refinement of the caravan loan scheme to capture the real world circumstances related to the ability of Travellers to be able to afford energy efficient mobile home units would be beneficial.

One useful option could be through the introduction of a “rent to own” scheme that provides for the purchase of energy efficient mobiles and includes guidelines for purchasers.

The Irish Government recognises the need for improving the energy efficiency of homes, and has made retrofitting and energy efficiency of the country’s conventional housing stock a key pillar of its Climate Action Plan. This plan has a stated goal to upgrade the energy efficiency of 500,000 homes between up to 2030 (i.e. over a quarter of the current housing stock). Traveller specific accommodation including mobile homes however is not named in any official action plans with regards to achieving household energy efficiency.

As previously stated, the existing mechanism for providing mobile homes for Travellers does not guarantee the purchase of energy efficient homes. An alternative mechanism would be to provide a rental scheme (with an option to buy). Such a scheme would entail the Department of Housing Local Government and Heritage providing funding to local authorities to operate a rental scheme. Local authorities would be provided with sufficient funding to procure energy efficient homes that could be rented to families. The scheme would operate a purchase option for families who had the financial means to buy their home. With this type of scheme, the onus to ensure the provision and procurement of energy efficient homes is with local authorities and not individuals. Local authorities would be in a better position to achieve discounts as they would be bulk purchasing homes. The terms of such a scheme would need to be further worked out, but

the basis of the scheme seeks to provide affordable accommodation in a more sustainable manner protecting families from the volatility of the private market. Further consultations with key stakeholders is needed to develop the detail of such a scheme.

In addition to the proposed rent-to-own scheme, an expansion of the Better Energy Warmer Home Scheme<sup>19</sup> managed by the Sustainable Energy Authority of Ireland (SEAI) to cover Travellers living in mobiles is proposed.

The refinement of this scheme could be presented in the form of providing grants to further offset the contributions of this group to the final purchase price of the energy efficient mobile units in the rent-to own scheme.

The Government can therefore aim to guarantee the provision of energy efficient homes for Travellers living in mobile homes, while also addressing the problem of home ownership disparity when compared to the general population.

## 4.2. Implementation of a Useful Energy Ratings Scheme for Mobile Homes

One of the main issues regarding the purchase and understanding of the energy efficiency issues related to mobile homes is the lack of information on what constitutes an “energy efficient mobile home”. While there are currently certain international standards available (i.e. the BS3632 standard, as described in Chapter 3) highlighting energy considerations to afford improved comfortability and energy efficiency in the construction of mobile homes suited for year round living, the content and information contained in them have not been adequately explained to and taken up by Travellers considering the purchase of mobile homes. Consequently this has meant that apart from widely known indicators such as, the presence of double glazing and central heating, potential buyers do not have access to better information of the energy efficiency features of mobile homes on sale.

As mentioned in Chapter 1, there is currently no rating guide or scheme similar to the BER which could be used by potential Traveller buyers intending on purchasing energy efficient mobiles. In order to be

<sup>19</sup> free home energy efficiency upgrades for homeowners on low incomes



able to categorise new or previously owned mobiles according to their energy efficiency into different grades, the following classification presented in this section, was established using concrete values, based on the criteria defined in the BS 3632 and EN 1647 standards. This information could be used to inform a draft guide for purchasers.

The requirements for an ideal mobile home are based on the minimum requirements defined in the standards but are intended more as an orientation

and assessment tool that provides buyers with an accessible and practical guide to simplify the evaluation process.

A simplified three pronged traffic light guide (i.e. Grade 3- **red** only satisfying the minimum insulation requirements for mobile dwelling units, Grade 2- **orange** meeting certain requirements of the EN1647 standards, and, Grade 1- **green** satisfying and possibly surpassing most of the energy efficient requirements of the BS3632) is presented in Table 7.

**Table 7: Criteria catalogue for the classification of mobile homes according to their energy efficiency**

Criteria	Grade 1	Grade 2	Grade 3												
Insulation	Walls and floor: U-value < 0.35 W/m <sup>2</sup> K Roof: U-value < 0.2 W/m <sup>2</sup> K Doors and windows: Double glazed; U-value < 1.6 W/m <sup>2</sup> K	Average U-value of floor, walls, windows, doors and roof < 1.2 W/m <sup>2</sup> K	Average U-value of floor, walls, windows, doors and roof < 1.7 W/m <sup>2</sup> K												
Heating system	A central heating system shall be installed, which is capable of raising and maintaining the internal temperature, when the external temperature is -1°C, as follows: <table border="1" style="margin-left: 20px;"> <tr> <td>Living room, dining room</td> <td>22 °C</td> </tr> <tr> <td>Bathroom, shower room</td> <td>22 °C</td> </tr> <tr> <td>Kitchen</td> <td>18 °C</td> </tr> <tr> <td>Bedroom</td> <td>18 °C</td> </tr> <tr> <td>Hallway</td> <td>19 °C</td> </tr> </table>	Living room, dining room	22 °C	Bathroom, shower room	22 °C	Kitchen	18 °C	Bedroom	18 °C	Hallway	19 °C	An average internal temperature of at least 20 °C shall be achieved in living room, dining room and kitchen, when the outside temperature is 0 °C			
Living room, dining room	22 °C														
Bathroom, shower room	22 °C														
Kitchen	18 °C														
Bedroom	18 °C														
Hallway	19 °C														
Ventilation	Inside: <table border="1" style="margin-left: 20px;"> <tr> <td>Number of bedrooms</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>Minimum total ventilation rate</td> <td>13 L/s</td> <td>17 L/s</td> <td>21 L/s</td> <td>25 L/s</td> <td>29 L/s</td> </tr> </table> Roof ventilation: Pitched roof: high level and low level ventilation Flat roof: cross ventilation of the whole roof; min. 5 cm air gap Unventilated roof: breathable underlay membrane	Number of bedrooms	1	2	3	4	5	Minimum total ventilation rate	13 L/s	17 L/s	21 L/s	25 L/s	29 L/s	Where there is an air gap between the external roof skin and the insulation material this air gap shall be ventilated to the external air	
Number of bedrooms	1	2	3	4	5										
Minimum total ventilation rate	13 L/s	17 L/s	21 L/s	25 L/s	29 L/s										
Lights	LED bulbs > 45 lumens per Watt														



Grade 1 mobiles have to meet or exceed the concrete values of the BS 3632 for their insulation, the heating system, the ventilation as well as the lights. Since the EN 1647 also defines maximum U-values derived into different grades of insulation and therefore energy efficiency, Grade 2 and Grade 3 are based on these values.

For Grade 2, the achievement of a certain temperature difference is still mandatory as well as the guarantee of a sufficient roof ventilation.

Grade 3 mobile homes only do have to meet the Insulation criteria of an average U-value lower than 1.7 W/m<sup>2</sup>K. It is not divided into the different building components and therefore only eliminated greater heat losses and a decent insulation.

All grades put forward by the draft guide should ensure the minimum conditions required for habitation especially with regards to energy efficiency and dwelling comfort. Any unit that does not satisfy the minimum criteria as indicated in Grade 3 should not be considered as desirable for purchase.

The authors however recognise that this draft guide is only positioned as an initial idea template, and will need to be further developed, and made more practical before it can be fully utilised by the intended stakeholder groups. This is especially since some of the energy efficiency metrics are difficult to be easily perceptible, relate to and measured by such groups when selecting mobile homes for purchase. The buyers will therefore have to rely on the information supplied by the mobile home manufacturers and suppliers, which sometimes can be unreliable.

### 4.3. Integration of Renewable Energy Systems

While there is a growing recognition of the role of the use of household clean renewable energy systems (RES) to meet the generation of electricity and heat to meet all or part of the domestic energy requirements, the opportunities of implementing such systems in mobiles have remained largely unexplored and overlooked.

The main benefit for the use of RES by Travellers living in mobile homes is cost savings. The Traveller families living in mobiles as have been outlined in the preceding sections experience a high energy burden, meaning that a larger share of their household income goes towards energy expenses. Subsequently, lessening the household's energy burden of Travellers would free up much needed funds for other expenses. Mobile homes currently lived in by Travellers are generally energy inefficient and have high electric loads, so with the right policies and incentives, the potential for cost savings from RES could be significant.

On the basis of the average monthly electricity expenditures of €148, and with an estimated electricity cost of 17.83€c/Kwh<sup>20</sup>, a monthly power usage of 830 kWh was approximated for the average mobile home. The potential integration of micro renewable energy systems (micro-RES) as a source of heat and/or electricity to power part or all of the consumption could be a possible route to reduce the overall long-term household spend on energy by Traveller families.

For the Irish scenario, and given the particular space and environmental conditions on sites where mobiles are usually situated, three main types of micro-RES could be beneficial: Solar photovoltaic (PV) and wind conversion systems (for electricity production), and solar thermal panels (for hot water and heating).

As a case study, the potential use of solar photovoltaic (PV) systems will be presented as a means to reduce long-term energy bills. The potential amount saved by the use of such systems depends on its size, or the size of electricity and/or heat usage in the mobile; the current recommendation from the SEAL is that a solar system should be sized to cover a maximum of 50% of annual electricity usage.

To illustrate the potential impacts on energy spend that the use of RES in mobile homes could have, to meet 50% of the mobile annual energy usage, a 3kW installation (equal to about 10 solar panels) will be required.

<sup>20</sup> Average cost of electricity as at January 20 2022



A ≈3kW solar PV system with a quoted price of €6,800, would be eligible for an SEAI grant of €2,400, bringing the total costs to €4,400, and this would provide:

System	Estimated Annual production <sup>21</sup>	Annual Savings <sup>22</sup>	Return on investment	Annual reduction in CO <sub>2</sub> emissions
3kW	2898 kWh	€550.50	8 years	1.19 tonnes

Assuming the PV systems last the standard life expectancy of 25 years, the solar installation would produce about 72,450 kWh by the end of its life. The use of such RES could therefore significantly reduce the overall energy spend, especially after the payback period.

There are however several challenges to the adoption of RES (and in particular solar PV systems). Some of these challenges are the same as those that the general low-income Irish households face. These include:

- The high upfront costs of the RES technologies i.e. solar panels and installations
- Inability to take the financial risks and low liquidity
- Difficulty in taking advantage of the available grants
- Being ignored by RES marketers and manufacturers. For this study, not a single service or product-offering, focused on use in mobiles was found on the entire island of Ireland.
- The intended Traveller stakeholders were largely unfamiliar with RES operation, use and maintenance.

Other challenges specific to the mobile home market:

- Roofs may not be able to support solar panels.

Solar panels and the associated equipment required for their functioning are quite heavy, with each panel weighing ≈ 15kg. There is also the need to account for the additional weight of the railings (usually aluminium) that the panels sit on, the flashing and attachment points that are bolted to the roof, as well as the electrical conduit that protects the wires running to the breaker box.

Using the case study of the 10-panel system above would add an additional 150 kg to a roof where

it is installed. Hence anyone living in a mobile contemplating solar panels would need a strong roof structure to ensure their own safety and the safety of the dwelling.

Before solar PVs can be installed, suppliers must follow building codes, ensuring that any home's roof joists are strong enough to handle all the weight. The issue with most mobile homes is that they typically have smaller roof joists than conventional homes. This means they cannot safely hold the weight of the installation.

- Limited space for ground-mounted solar or other RE systems.

As an alternative to roof mounted solar or RES, such systems could potentially be mounted on the ground in the proximity to the mobile homes. Due to the space limitations usually associated with Traveller sites, there is currently restricted space for such installations.

- Traveller owners of mobile homes do not usually own the land they reside on.
- While most mobile homes remain in one location (i.e. semi-permanent or permanent), they are technically mobile units, and there can be hesitancy to add due to the potential need to move the home in the future.

Despite these challenges, there are potential opportunities driven by the local county councils and in collaboration with the Traveller communities living in mobiles which can be used to successfully implement RES schemes.

There have been demonstrated examples of mobile home communities (especially in the United States) taking up micro-grid RES.

<sup>21</sup> Estimated by PVGIS software.

<sup>22</sup> Assumes electricity cost of €0.19 incl. vat / kWh.



For example, the Mascoma Meadows Cooperative, in Lebanon, New Hampshire, US is a 50-unit resident-owned mobile home community, which uses solar power to generate some of its electricity. The 384-panel solar array (installed in 2018), which consists of a 100 kW AC / 132 kW DC Solar Panel Array and generates approximately 170,000 kWh/year is estimated to save each of the co-op's participating low and moderate income households US \$270 annually<sup>23</sup>.

The scheme makes use of the cooperative structure of resident-owned communities, funded through a \$168,000 grant from the New Hampshire Renewable Energy Fund, under the New Hampshire SB129 Low-Moderate Income Solar program. The energy generated from the solar array is sold to the utilities, which pays the Mascoma Meadows Cooperative each month based on the amount of electricity produced. This has resulted in greener environmental footprint for each member-participant through the overall project benefits and energy efficiency education measures, as well as the added net revenue benefit which is distributed among the participating community members<sup>23</sup>.

Drawing from such a successful scheme, opportunities exist for collective action from all relevant stakeholders to develop strategies that would help Travellers living in mobile homes in reducing overall energy expenses, and helping achieve a green and environmentally sustainable future.

#### 4.4. Future perspectives (redefined culturally appropriate energy efficient mobile homes for Travellers)

While the emphasis of this report and previous studies and documents have been focused on fabricated mobile homes available in the market place, there is definitely a need for more creative and innovative tailored solutions to address the need for more affordable energy efficient mobile homes suitable for year round living by Travellers.

Along these lines, out-of-the-box local Traveller driven approaches to meet the provision of culturally

relevant accommodation would be useful to meeting this goal. Here, the role of Approved Housing Bodies led by Travellers, who have knowledge and understanding of the accommodation need and preferences of Travellers would be beneficial.

Approved Housing Bodies (AHBs) are independent, not-for-profit organisations, which provide affordable rented accommodation for people who cannot afford to pay private sector rents or buy their own homes; or for particular groups. As a designated ethnic group, Travellers have the right to specific accommodation requirements. Hence, Traveller led AHBs could play a significant role in not only providing suitable accommodation for Travellers, but could also provide focused approaches for the provision of energy efficient housing models and infrastructures (including mobile homes consideration) aimed at Travellers.

Cena, Culturally Appropriate Housing Ltd, is an example of a Traveller driven AHB which has been developing options and concepts for culturally appropriate accommodation for Travellers including the consideration for mobile home units. Under its remit, Cena aims to design and deliver with Travellers a range of culturally appropriate innovative, energy efficient and sustainable accommodation (standard housing, group housing, halting sites, provision for Nomadism) that meets the needs of Travellers. The successful attainment of such aims could provide very practical, Traveller appropriate rental approaches which will ensure the accessibility to modern energy efficient dwellings.

#### 4.5. Conclusion

With retrofitting options for existing mobile units limited, the ability of Travellers to avail of energy efficient mobile homes is highly dependent on the provision of standardised energy efficient dwellings with the opportunity to rent, or mechanisms put in place to support ownership. The financial implications of out-rightly purchasing such high-spec energy efficient mobile homes provides a significant setback which hinders Travellers benefiting from any energy efficiency, and energy cost reduction benefits accruable from such standardised dwellings.

<sup>23</sup> <https://www.vermontlaw.edu/sites/default/files/2020-02/Mascoma%20Meadows%20Community%20Solar%20Flyer%20%283%29.pdf>



There is however an observed lack of national mechanisms and policies to ensure a minimum standard for energy efficiency levels for mobile homes aimed for year round living by Travellers. The recognition of the need for dedicated and improved mobile acquisition funding and supporting schemes focused on Travellers (especially considering the particular financial and cultural considerations facing this group) is paramount to guarantee that they are not left behind in the “Green Future” aspirations of the government.

Following the focused research and assessments on energy efficient mobile homes suitable for year round living by Travellers carried out in this study, seven recommendations for advancing the accessibility, acquisition, implementation and realisation of improved energy efficiencies in mobile homes are put forward.

## 4.7 Recommendations

National Traveller MABS recommends that:

- The Department of Housing Local Government and Heritage reconsider the current caravan loan schemes, requirements and repayment structures. The current pilot caravan loan schemes need to be independently and comprehensively evaluated.
- The Department of Housing, Local Government and Heritage examine the potential use of alternative mechanisms for the provision of mobile homes for Travellers such as a caravan rental scheme. A framework and rationale for a caravan rental scheme is available from [www.ntmabs.org](http://www.ntmabs.org)
- As Sustainable Energy Authority of Ireland (SEAI) administers the BER system in accordance with the European Union Energy Performance of Buildings Regulations 2012 they should work with stakeholders to develop a national guide (similar to the BER system) to support the selection of energy efficient mobile homes for potential buyers.
- SEAI in collaboration with the Department of Climate and Communications and the Department of Housing Local Government and Heritage should support efforts to incorporate renewable energy systems into new manufactured mobile homes. As with other housing types, this is the simplest route to incorporating RES (especially solar) in terms of financing and manufacturing, but there is an important limitation to keep in mind: *most Travellers residing in mobile homes live in older units, especially those who are most in need of electricity cost savings*. Such an effort will therefore work mainly with manufacturers and suppliers to make the incorporation of RES as part of the features when supplying a mobile home. This could be afforded with an expansion of the current SEAI Home Energy Grants Schemes, to include year round occupied mobile homes considerations.
- SEAI in conjunction with the Department of Climate and Communications and the Department of Housing Local Government and Heritage and local authorities should facilitate energy efficiency information initiatives for Travellers living in mobiles. This will start with modest targeted efforts and will hopefully produce a track record of success by focusing on accessible energy efficiency measures (i.e. the use of LED lights) that would contribute to reduced energy spend.
- There is a need for more practical demonstration and pilot activities with regards energy efficiency measures focused on Travellers. While a lot of reports have been produced decrying the limitations of current approaches relating to mobile home inefficiencies, there is a significant lack of reproducible energy efficiency research-driven proposals that identifies ways to combat this issue to ensure a minimum energy mobile homes standard is available to Travellers. Specific research funding calls on such topics could therefore be instituted by relevant national bodies to effect such studies. This could be through specific research projects funded by the Department of Housing, SEAI or the Department of the Environment, Climate and Communications.
- Stakeholders should work together to find the best avenues for pursuing a collaborative renewable energy systems strategy (a community led and based education/marketing campaign working closely with local county councils and relevant energy authorities and housing agencies in Ireland). This could be funded by tailored Government incentives and grants and can address Traveller’s limited familiarity with RES. Such strategies will also need to be well matched to individual and community mobile home energy requirements.



# 5

## ACKNOWLEDGEMENTS

### 5.1. Appreciation for involved community groups

Groups who contributed to the Research

Blanchardstown Traveller Development Group

Clondalkin Travellers Development Group

Kerry Travellers Health Community Development Project

Laois Traveller Action Group

Longford Community Resources Traveller Primary Healthcare Project Irish Traveller Movement

Involve Traveller Youth Project

Limerick Travellers Women's Network

Limerick Traveller Primary Health Care Project

National Traveller Women's Forum

Navan Traveller Workshops Ltd. Primary Health Care for Travellers Project

Offaly Traveller Movement

Parish of Travelling People

Pavee Point Traveller and Roma Centre

Tallaght Travellers Community Development Limited

