

SEAI Recommendation on the Minimum BER Uplift for Residential Savings under the Energy Efficiency Obligation Scheme



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Sustainable Energy Authority of Ireland

SEAI is Ireland's national energy authority investing in, and delivering, appropriate, effective and sustainable solutions to help Ireland's transition to a clean energy future. We work with the public, businesses, communities and the Government to achieve this, through expertise, funding, educational programmes, policy advice, research and the development of new technologies.

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Context

The Minister's final policy decisions in relation to the design of the Irish Energy Efficiency Obligation Scheme (EEOS) were published in October 2021 after a period of consultation.

The new residential delivery requirements being introduced for the EEOS are intended to help the scheme align with, and support, the Government's CAP objectives, supporting a transition to deeper retrofit delivery under the EEOS. As part of the new residential delivery requirements, the Minister has decided that savings from measures will only be eligible under the Residential Sub-target (excluding the Energy Poverty Sub-target) where a 'minimum BER uplift' is also achieved.

As set out in the decision paper, the introduction of a minimum BER uplift for the EEOS is to support the policy intent of:

- Moving the EEOS away from the installation of single, shallow measures towards deeper retrofit delivery but while not excluding (i.e. continuing to allow) the installation of:
- Single measures
- Shallow measures, including full heating controls
- Measures as part of a staged, or step-by-step, upgrade

The decision paper states that the Minister is minded to set the minimum BER uplift at 100 kWh/m²/yr (primary energy). This figure is based on initial analysis carried out by SEAI and aligns with the level of other minimum uplifts in place under SEAI's retrofit grants programmes. A commitment was also made in the decision paper that SEAI would complete further analysis, seeking input from stakeholders, with this work guiding the final decision on the uplift value and whether it should remain set at the minded-to value.

In this regard, SEAI set out to:

- Conclude the abovementioned analysis work on the BER minimum uplift value
- Investigate if the Minister's policy objectives, as set out in the decision paper, could be met with the implementation of a minimum BER uplift set at 100 kWh/m²/yr, as was the minded-to position, and
- Consult with obligated parties and other interested stakeholders on the proposed minimum BER uplift based on the outcomes of any further analysis.

Approach

The BER uplift is derived from the difference in the BER rating before and after an energy efficiency improvement has been carried out on a dwelling. In order to identify a minimum acceptable BER uplift that would meet the policy objectives of moving away from the installation of single shallow measures SEAI wanted to look at the effect that the application of the most common energy efficiency measures would have on a range of dwellings that already had BER ratings. This approach would also allow the impact of a 100 kWh/m²/yr uplift to be assessed.

The BER database contains ratings for more than 950,000 dwellings. From this database, SEAI planned to identify a range of BERs that were representative of the national dwelling profile, and once identified, to model energy efficiency upgrade on these dwellings. This would allow SEAI to identify the measures, or combinations of measures, that would meet the policy objectives as previously outlined.

Technical methodology and analysis

SEAI commissioned Fuinniv Independent Consulting to collate and analyse data from the domestic Building Energy Rating (BER) database and to use this data to determine the impact on primary energy when a series of upgrades are applied to different modelled dwellings. Broadly this involved the following:

- The BER dataset was first analysed to determine the median BER rating.
- Based on this, and using data from the BER dataset, a model of a 'typical' dwelling was constructed. The typical dwelling was found to have a C3 dwelling (218 kWh/m²/yr) and a floor area of 116 m².

- Once the typical dwelling was identified, the model was then used to develop three other test dwellings that covered a range of BER grades and different floor sizes.
- A series of common energy efficiency measures were then applied to each of the four dwellings modelled to determine the uplift effect the measures would have. For example, applying external wall insulation to the typical C3 dwelling gave an uplift of 25 kWh/m²/yr.
- The measures applied to the four test dwellings included:
 - Fabric measures, such as air tightness improvements, roof and wall insulation upgrades, as well as window and door replacements, and
 - Heating system upgrades, such as heating controls, hot water cylinders, high efficiency boilers and heat pumps.
- 'Shallow measures' included attic insulation, cavity wall insulation, heating controls and hot water cylinders. 'Deeper measures' included solid wall insulation (external and internal), window and door replacements, high efficiency boilers and heat pumps.
- A number of combinations of measures based on a fabric / heating system approach were also applied to each dwelling, including both individual measure installations and multi-measure installations (measure combinations).

Technical findings

The results of this analysis identified the level of uplift that could be expected across the different typical dwellings from applying different measures, some individually and some in combination, and whether an uplift of 100 kWh/m²/yr could be achieved in the different scenarios.

A detailed technical report was produced by Fuinniv¹ setting out the key technical findings from the analysis in detail, however in summary, the results showed that:

- The installation of the same individual measures or measure combinations was more likely to result in a higher BER uplift for:
 - Dwellings with 'worse' baseline energy usage compared to better energy performing dwellings; and
 - Larger dwellings compared to smaller dwellings.
- In turn, it was likely easier to achieve an uplift of 100 kWh/m²/yr from upgrades to dwellings with a higher energy usage in their baseline and/or those with a higher floor area.
- That said, it was shown to be possible to achieve the uplift of 100 kWh/m²/yr in a large variety of homes across a range of energy efficiency upgrades.
- For individual measures installations, a BER uplift of 100 kWh/m²/yr was shown to be possible, as follows:
 - In the case of heat pump installations, all dwellings with a rating worse than the median C3 rating
 - In the case of external wall insulation, in 19% of all dwellings (those with an F rating or worse or larger dwellings with an E2 rating or worse)
- It was possible to achieve a BER uplift of 100 kWh/m²/yr in dwellings with better baseline energy ratings than those noted above by combining different measures. However, the test dwelling with the 'best' starting point of C1 was unable to achieve a BER uplift of 100 kWh/m²/yr based on combinations tested.
- It was also shown to be possible to achieve a BER uplift of 100 kWh/m²/yr from combinations of shallow measures across Ireland housing stock and pre-BER conditions.
- A BER uplift of 100 kWh/m²/yr could almost certainly not be achieved from the installation of individual, shallow measures regardless of baseline energy usage or floor area of dwelling. The maximum uplift that was likely possible from the installation of single, shallow measures, even in the worst performing homes, was found to be 60 kWh/m²/yr.

¹ Entitled: Energy Efficiency Obligation Scheme Uplift Calculations Report

Proposal and supporting justifications

Guided by the technical findings from the analysis undertaken, and taking account of the policy objectives set out in the Minister's decision, it was concluded that by achieving a minimum BER uplift of 100 kWh/m²/yr, it would:

Incentivise deeper residential retrofit delivery

- As already indicated in Minister's decision, a minimum BER uplift of 100 kWh/m²/yr incentivises residential delivery that is ambitious and most closely aligned with the Climate Action Plan and aligns with the lowest minimum BER uplift required under SEAI's main retrofit grants programmes

Allow the installation of single measures

- The analysis shows that it is possible to achieve the uplift with single, typically deeper, measures, such as external wall installation or heat pumps.

Allow the installation of shallow measures

- A BER uplift of 100 kWh/m²/yr can be achieved from the application of combinations of measures, including shallow measures

Exclude the installation of single, shallow measures

- the analysis shows that installing single, shallow measures cannot achieve an uplift of 100 kWh

Therefore, it was proposed that the minimum BER uplift be set in line with the Minister's minded to position, at 100 kWh/m²/yr, supported by the analysis undertaken.

Consultation process

As part of its consultation with stakeholders on the proposed BER uplift value, SEAI held a workshop on 21st October 2021 to go through the proposal and the supporting analysis. This workshop was attended by 38 stakeholders, including current and potential obligated parties, and members of the domestic retrofit supply chain.

In the workshop, SEAI discussed:

- the policy context, objectives and scope of SEAI's uplift value work,
- the technical analysis undertaken as part of this work,
- the findings from the technical analysis,
- the key conclusions based on the analysis, and
- the proposed minimum BER uplift value and the relevant justifications for this proposal.

Written feedback was requested from all those invited to the workshop by 12th November. As part of their feedback, stakeholders were asked to comment on the analysis set out in the Fuinniv technical calculation report, which was circulated to all invitees, and on SEAI's proposal of 100 kWh/m²/yr and the supporting justifications for maintaining the uplift at this value.

Summary of feedback

Six written responses were submitted by the feedback deadline, with submissions coming from both obligated parties and the supply chain. Feedback was also received as part of the workshop session. Below provides a summary of the main points raised in both the written responses and the workshop feedback relating to the proposed minimum uplift value put forward and the supporting analysis:

- No comments were received in relation to the methodology employed or the technical findings set out in the Fuinniv report. In addition, no alternative methodologies or approaches for determining the minimum uplift were submitted.
- No objections were raised regarding the ability to achieve an uplift of 100 kWh/m²/yr with some respondents agreeing with the uplift and commenting that it aligns with other SEAI programme requirements.

- One respondent believed it would likely be difficult to achieve the 100 kWh/m²/yr uplift in smaller, terraced dwellings and apartments, while acknowledging that it could be achieved in larger dwellings. In this regard, this respondent suggested that solar PV should potentially be allowed to contribute to the minimum uplift under the EEOS.
- In the main, respondents agreed that the 100 kWh/m²/yr uplift could be implemented at some point in the scheme or achieved for most property types. However, one respondent suggested that the minimum uplift value should be set at a lower value of 40 kWh/m²/yr as they felt this, in their opinion, would allow those who cannot afford heat pumps to also benefit. This respondent did not offer a view on whether the 100 kWh/m²/yr uplift could be achieved.
- While outside the scope of SEAI's analysis/consultation, which related specifically to the value at which the new minimum BER uplift should be set, a number of respondents did raise concerns, from a supply chain and skills perspective, regarding how the uplift is introduced on the EEOS. In this regard, some respondents put forward suggestions on means of staggering the introduction of this new requirement, including offering a longer lead in time; a trial period; overlapping old and new requirements; and a gradual ramping up.

SEAI's response to feedback

In response to the points raised by respondents relating to the proposed uplift value:

Point raised by respondent(s): Difficult to reach the uplift in smaller dwellings and apartments:

- The analysis undertaken shows that the minimum uplift of 100 kWh/m²/yr can be achieved across a wide range of dwellings. While it is shown that for better performing dwellings (i.e. those with a rating better than the C3 BER median) it will be easier to achieve an uplift of 100 kWh/m²/yr by focussing on larger properties (and/or with more than one measure), the analysis also shows that the uplift can still be achieved in smaller properties with lower energy ratings.
- In most cases, the installation of a heat pump on its own, even in small properties, will achieve the required minimum uplift.

Point raised by respondent(s): The minimum BER uplift should be set at 40 kWh/m²/yr:

- The analysis undertaken shows that single, shallow measures can achieve uplifts of up to 60 kWh/m²/yr. Given the policy is intended to move the EEOS away from the installation of single, shallow measures, any uplift value set lower than 60 kWh/m²/yr (such as one set at 40 kWh/m²/yr) will immediately fail to meet this key policy objective, with the potential for single, shallow measures to be installed.

While beyond the scope of the analysis/consultation undertaken, regarding other broader points raised by respondents, it should be noted:

Point raised by respondent(s): Introduction of the uplift requirement:

- The timing and introduction of the new minimum uplift itself is a matter for the Minister and the Department. However, most of the issues raised by respondents have been addressed by the staggered introduction of new residential requirements, which was set out in a communication from the Department in November 2021 sent to all potential obligated parties.

Point raised by respondent(s): Measures relating to uplift:

- The type of measures that can be used to contribute towards the minimum BER uplift is also a matter for the Minister and the Department. However, in the decision paper, it was clearly indicated that the uplift value to be introduced, while separate from the final energy savings that can be claimed, was to ensure that a minimum level of savings would be achieved specifically from the measures being delivered under

the EEOS. This denotes any measure that can deliver Article7-eligible final energy savings which does not include solar PV.

Final position and recommendation

Following the consultation on SEAI's proposal and analysis of the relevant feedback received, SEAI has decided to maintain the proposal, which was based on the detailed analysis undertaken. Therefore, **it is recommended that the value of the minimum BER uplift being introduced for the EEOS is set at 100 kWh/m²/yr**, in line with the Minister's minded to position.

w: www.seai.ie
e: info@seai.ie
t: 01 8082100



Rialtas na hÉireann
Government of Ireland