

Communication strategies to encourage energy conservation

Recommendations based on a rapid review of behavioural
science literature



SEAI Behavioural Economics Unit
Behavioural insights for policy: evidence review

Communication strategies to encourage energy conservation

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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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Executive Summary

Introduction

Given the current energy crisis and long term need to mitigate climate change, it is important to use effective communication strategies that promote energy saving behaviour and improve policy acceptance. This document outlines 14 recommendations based on a rapid review of the behavioural science literature related to this topic, along with some illustrative case study examples of strategies adopted elsewhere.

This review is intended for anyone communicating with consumers to encourage energy conservation. This includes governments and other organisations that work directly or indirectly with energy users, particularly utilities that often engage with their customers.

Summary of recommendations

Detailed recommendations and case studies are provided in the main body of this report. High level recommendations for government, other organisations and utility companies communicating to consumers on how they can conserve and reduce energy demand are summarised below.

1. Give people a range of energy saving tips but don't overwhelm them.
2. Identify energy saving tips that are more likely to be adopted and that have the highest expected impact.
3. Use messages that emphasise loss rather than gain.
4. Be careful if appealing to financial motivations.
5. Highlight positive social norms and avoid drawing attention to negative behaviour.
6. Appeal to people's sense of social identity.
7. Use language that emphasises collective action.
8. Show that you are leading by example.
9. Address concerns around fairness.
10. Remember that information alone is unlikely to drive behaviour change.
11. Use relevant and timely reminders.
12. Provide frequent feedback on both individual and collective behaviour.
13. Use trusted messengers.
14. Take a local, community-based approach.

Introduction

Background

Given the current energy crisis and long term need to mitigate climate change, it is important to use effective communication strategies that promote energy saving behaviour and improve policy acceptance. However, previous energy saving campaigns in Ireland have not delivered expected measurable results [1]. It is vital therefore that any new campaigns incorporate the best available evidence to maximise their chance of success.

Aim of this research

This document outlines 14 recommendations based on a rapid review of the behavioural science literature related to designing communication strategies that encourage behaviour change and public acceptance in an energy crisis scenario and a wider decarbonisation imperative. This review was originally undertaken to support the Irish Government in its energy crisis communication planning. There is a distinction between recommendations relating to the message content of communications, and recommendations that relate to the overall communication approach.

Please note that, even though recommendations are based on the best available evidence, there is never a guarantee that what has worked in one context will work in another. To maximise the chance of success, we recommend using scientific research methods (i.e., experiments) where possible to pre-test any future approaches as they are rolled out.

Scope of the review

The evidence was synthesised as a rapid review to produce timely recommendations designed to meet the needs of end-users and decision-makers. The literature review covered peer-reviewed behavioural science papers that either (i) applied behavioural science theory to make informed recommendations, (ii) pre-tested potential communication strategies (such as online experiments) or (iii) evaluated actual communication strategies in the field. The primary focus of this review was energy conservation, but insights were also drawn from literature on related topics such as water conservation and the COVID health pandemic.

The review was limited to evidence from OECD countries with a particular focus on Ireland, the UK and Western Europe. This document also includes case study examples of communication strategies used in other relevant contexts. These examples are included to illustrate some of the principles described, but these strategies were not empirically tested so any observed reductions in energy demand cannot necessarily be attributed to them.

Message content

Choosing target energy saving tips or behaviours

Recommendation 1: Give people a range of energy saving tips but don't overwhelm them

In order to reduce energy consumption, people need to understand what actions to take and feel capable of taking them – a concept known as “self-efficacy” [2] [3] [4]. Giving people clear and achievable energy saving tips may therefore increase feelings of self-efficacy which in turn will increase the likelihood of behaviour change. This is especially true in a crisis situation – messages that appeal to people's fear of a threat are most effective when combined with messages about what actions can be taken to mitigate that threat [5] [6].

Providing a certain level of choice between different energy saving actions and using choice-enhancing language can ensure the message is relevant to a broader group of people and also reduce any perceived threat to personal freedom [7] [8]. For example, framing messages as ‘Consider taking the following steps to save energy’ or ‘Choose the options that best fit your lifestyle’ instead of ‘You must take the following steps to save energy’. Using qualifiers such as ‘perhaps’, ‘possibly’ and ‘maybe’ are other ways to explicitly emphasise that message recipients are free to choose which actions among a list of alternatives they wish to adapt. This may improve acceptance of the message and increase the likelihood of behaviour change.

On the other hand, providing too many options can lead to ‘choice overload’, causing people to avoid taking a decision altogether [9]. It is important to strike a balance between the two.

Case study

In 2004, damage to a transformer station led to a 10% reduction in electricity supply capacity in Arizona. In response, the Arizona Public Service initially asked the public to set air conditioner thermostats no lower than 28°C. The instruction was later modified to ask everyone to increase their thermostat's temperature by 1°C, which was considered less restrictive. The Arizona Public Service later confirmed that its customers reduced total demand by 6% during that period. [54]

Recommendation 2: Identify energy saving tips that are more likely to be adopted and that have the highest expected impact

The potential impact of an energy saving behaviour is a function of the actual energy saved by undertaking that behaviour and the number of people willing to adopt it. Pre-campaign research can help identify energy saving actions that people will be more likely to take. For instance, an SEAI study from April 2022 that recorded people's intentions to carry out various energy saving behaviours found that more people were likely to reduce their home heating than take shorter showers [10].

People often have a poor understanding of the relative energy used by different behaviours, and the potential impact of taking different actions on their energy use [11] [12]. Research should therefore also be conducted to identify key knowledge gaps, in order to choose energy saving tips that are likely to have the biggest impact overall¹.

¹ See appendix for more information on energy savings actions and potential impacts

Framing the message

Recommendation 3: Use messages that emphasise loss rather than gain

People are generally more sensitive to losses than equivalent gains [13]. “Loss-framed” messages that highlight the cost of not performing a behaviour therefore tend to be more effective than “gain-framed” messages that highlight the benefit of performing that behaviour [14] [15].

For example, telling people that “driving at 120 kmph will cost you €20 more on your journey” may be more effective at getting them to slow down than telling them that “driving at 100 kmph will save you €20 on your journey”. Similarly, in a household context, it may be more effective to communicate that ‘Every degree increase in your room temperature will increase your heating bill by 10%’ than saying ‘You can reduce your heating bill by 10% by lowering your room temperature by just one degree’.

Recommendation 4: Be careful if appealing to financial motivations

Although energy conservation is often framed in terms of potential financial savings, evidence supporting the effectiveness of financial incentives to encourage energy saving and other pro-environmental behaviours is mixed. Highlighting financial motivations for energy saving can backfire if people believe the potential savings will be low, “crowding out” intrinsic environmental motivations [16] [17] [18].

In an SEAI experimental pre-test of the ‘Reduce Your Use’ campaign earlier this year, exposure to advertising that used a financial frame had no effect on people’s intentions to perform energy saving behaviours, and in fact reduced the time frame over which participants said they would continue performing them [10]. Furthermore, energy saving intentions and behaviours were driven much more strongly by concern about climate change rather than concern about the cost of living. However, different results may be found if the experiment were run again this winter when energy costs are likely to become more salient.

Related to this, providing monetary incentives such as cash rewards or rebates can be less effective at inducing energy conservation than non-monetary incentives, and may even lead to increased energy use [19] [20]. However, providing monetary rewards can sometimes reduce energy consumption, particularly for lower income households [21].

Case study

The California 20/20 electricity rebate programme in 2005 offered customers a 20 percent discount on their entire summer bills if their consumption over the summer months was 20 percent less than their consumption over the summer months in 2004. Results revealed that the intervention had no causal effect in areas where income levels were relatively higher while a significant four percent consumption reduction was achieved in areas where income levels were relatively low [22].

Using social norms

Recommendation 5: Highlight positive social norms and avoid drawing attention to negative behaviour

People can be influenced by the behaviour of those around them. Highlighting the positive behaviour of others and presenting it as the norm can be an effective way to motivate behaviour change and boost public acceptability, whereas drawing attention to negative behaviour can have the opposite effect [23] [24] [25].

Examples that highlight positive, *dynamic* norms (for instance “More and more people are doing this”) can be particularly effective, as well as examples highlighting behaviours that people *avoid* (so “other people avoid buying halogen light bulbs” is more effective than “other people buy energy-efficient light bulbs”) [24] [26]. The use of social norms is further discussed below in Recommendation 12.

Recommendation 6: Appeal to people's sense of social identity

Social norm messaging is more effective when it refers to the behaviour of members of a social group or community that the message recipient feels a part of [27] [28] [29]. Highlighting “in-group” social norms is less likely to result in a backfire or “boomerang” effect, where message recipients do the opposite of what’s asked of them [30].

Case study

The “Bits and Bobs” program designed to reduce household water consumption in Norfolk, sent out letters encouraging people to sign-up for a free residential retrofitting service where a plumber visits homes and fits water efficiency devices. The standard control letter outlined why saving water was important in the region, information about the retrofit program, the benefits of signing up (saving water, energy, and money) and details of how to register. The intervention group received letters with an additional social identity appeal - an illustration of a windmill considered an icon of the local area. Results confirmed that households who received the letter with the additional ingroup norms appeal were approximately 2 times more likely to sign-up for the water-saving program than those who received the standard letter.

Fostering collective action

Recommendation 7: Use language that emphasises collective action

Emphasising the need to work together towards a common goal and using “we” instead of “you” can help activate the collective self and motivate people to take personal action for the collective good [24] [31]. For example, using ‘We are in this together’, ‘Join in’ and ‘Do it together’ are some ways to emphasise collective action.

Messaging should make a clear connection between individual actions and collective outcomes. As seen during the COVID-19 pandemic, compliance with isolation was improved by communicating how self-isolation in response to symptoms is the best way for all of us to prevent infecting each other [32]. For example, in the context of energy curtailment behaviour, a message could go along the following lines “Reducing our electricity consumption at peak hours will help us all avoid blackouts this winter”.

Recommendation 8: Show that you are leading by example

The public sector plays an important role in ‘leading by example’ to reduce energy demand and adopt energy efficiency measures [33] [34] [35]. Demonstrating the effort undertaken by the public sector may help to show how the government has acted consistently with its values and goals to influence change beyond its own estate [24]. Communicating these efforts may encourage a behavioural shift across the private sector and the general public.

Case study

In 2002, the shutdown of Tokyo’s largest electric utility led to an energy crisis due to peak summer demand. During this period, the Ministry of Economics, Trade and Industry implemented various energy saving measures in its own headquarters, including:

- Setting all thermostats (for air conditioning) to 28°C
- Switching off all unnecessary lights, including 75% of lighting in corridors and entrance halls
- Reducing elevator operation and encouraging staff to use the stairs to access nearby floors

Case study

In the aftermath of the 2011 Fukushima disaster, the government set up websites where energy users including households, enterprises and office buildings across the country could announce their action plans to save electricity. This was done to inform the people of the various savings actions taken by other energy users and to motivate them to evaluate the various opportunities and take energy savings actions for themselves [58].

Recommendation 9: Address concerns around fairness

The acceptance of climate policies such as carbon taxes is highly dependent on the perceived fairness of those policies and how costs and benefits are distributed across society [36]. In some cases, further education may be required to make the need and fairness of these policies apparent and thereby increase support [37] [38].

Maintaining trust between authorities and the public is particularly important in a crisis situation that requires collective adherence to certain rules or behaviours. Communications should demonstrate how the crisis response is both fair and compassionate. [39]. For example, during an energy crisis, government should clearly communicate what curtailment measures must be adopted and 'why' they should be adopted. This helps to emphasise the fairness of energy rationing measures.

Overall communication approach

Taking a behavioural science approach

Recommendation 10: Remember that information alone is unlikely to drive behaviour change.

Although information campaigns can increase public awareness of energy security issues, awareness does not necessarily translate to behaviour change. This is evident from an evaluation of the 2006 'Power of One' campaign as well as a pre-test of the current 'Reduce Your Use' campaign [1] [10]. The 'Power of One' campaign led to increased awareness of the potential savings associated with decreasing thermostat settings, but had no lasting measurable effect on either self-reported behaviour or natural gas consumption. The existence of an "intention-action gap" for pro-environmental behaviours is well established and is best addressed through behaviourally-informed interventions, not information alone [40].

Recommendation 11: Use relevant and timely reminders

Communications are more likely to drive behaviour change if they target where the behaviour takes place [41]. Clear examples of this approach were seen during the COVID-19 pandemic (such as 2m markings in public spaces to encourage social distancing). Similarly, motorway signs can deliver messages about reducing speed while people are actually driving.

The timing of communications may also be important. For example, radio or TV reminders to avoid home energy use at peak times may be more effective if aired at those times. Personal reminders to shift peak energy use through in-home displays, mobile phones and other messaging that warns 'your peak hours are starting now' can also help reduce energy demand [42]. These type of reminders are effective both for households on time-of-use tariffs by making price more salient, but also in settings where residents are not billed for their usage such as hospitals, dormitories, etc [43] [44].

Reminders could also be communicated by strategically placing them and delivering the message at optimal timings. For example, the 'Green Light Signal' bulb glows green when the electricity in the local area is supplied mainly from clean or green energy sources. These bulbs are typically used with any lamp which is placed in a room that is most often used and serves as a reminder at the right time and place where the behaviour is carried out.

Case study

In the aftermath of the 2011 Fukushima disaster, there was a national electricity saving movement in Japan known as "Setsuden" (Saving electricity). Posters of cartoon light bulbs that read "Setsuden-chuu" (Now conserving electricity) were strategically placed to announce electricity saving measures undertaken. For example, these posters were used to signal closed escalators in railway stations and turned off power hand driers in restrooms to name a few. Other Setsuden reminders include "setsuden no tame" (for the sake of setsuden) which was put up on elevators at railways stations operating for the sake of disabled and elderly, urging people to refrain from using them as much as possible.

A government survey indicated that 78.6% of household customers were aware of the campaign [57]. In the post-disaster summer, the whole country achieved a 7.6% reduction in household electricity use compared to the previous year's figures [56].

Recommendation 12: Provide frequent feedback on both individual and collective behaviour

People tend to underestimate how much energy they use compared with others. Providing individual-level comparative feedback on energy consumption can help promote lasting behaviour change, particularly where an individual's consumption is higher than others [45] [46] [47].² More frequent feedback may also help to achieve lasting effects even after the intervention ends [43]. Utility companies could provide this feedback to customers through their bills.

Case study

Opower is software as a service company (recently acquired by Oracle) that helps utilities connect with their residential customers through highly personalised Home Energy Reports (HERS). Among other features, these reports show customers how their energy use compares with that of others like them and offers tips and strategies to reduce their consumption. Over a period of 13 years, Opower has sent nearly 1 billion reports, saving 25 terawatt-hours of energy in the US [55].

Case study

Norway experienced an electricity shortage during the winter of 2002. As part of the crisis response, local utilities initiated their own programmes. The Stavanger utility began reading meters once a month instead of quarterly and provided customers with more frequent feedback about their energy use and conservation. By March 2003, electricity prices fell and electricity savings recorded were roughly 8%. [54]

Societal-level feedback can also be effective, in a similar way to how COVID case numbers were reported during the pandemic. Providing frequent and real-time information during a crisis can lead to greater acceptability of crisis policies [48] [49]. In this way, providing regular updates on the country's energy supply and current demand may help the public perceive energy security risks and adopt more conservation behaviours.

Case study

A cold spell in Sweden in 2001 led to electricity shortages. In response, authorities set up a website as a means of communicating with consumers in case of a future shortage. The website displayed total electricity demand and showed three possible electricity supply conditions – “normal”, “strained situation” and “a warning that a power shortage may be announced” [54].

Using the right channels

Recommendation 13: Use trusted messengers

Messages identified as originating from a high credibility source (expert or trustworthy) result in greater attitude change than if the same message originates from a source of lower credibility [50]. A recent study by the EPA identified scientists, the EPA, educators, family and friends, and community leaders as being among the most trusted sources of information about climate change, while political representatives were less trusted [51]. By conducting research that identifies high credibility sources in the context of the current energy crisis, appropriate messengers can be chosen.

² Note that this also leverages the power of social norms, as outlined earlier in Recommendation 5.

Recommendation 14: Take a local, community-based approach

Communication campaigns that are run on a community level, using trusted local intermediaries and fostering grass-roots action, may be particularly effective for making issues feel relevant to people and can boost acceptability and stimulate behaviour change [52, 53].³ This could involve, for example, encouraging local businesses to promote energy conservation by highlighting how they are doing so themselves [54].

Case study

In 2001, California launched its 'Flex Your Power' campaign in response to an electricity crisis caused by a mix of factors including a drought, a natural gas shortage and bankruptcies among major utilities. The campaign encouraged thousands of grocery stores, restaurants and other commercial outlets to save energy by switching off lights and reducing air conditioning. Flex Your Power gave them signs to display in windows and at entry points to explain the measures. This allowed businesses to show that they were playing their part while also deflecting potential complaints. The signs and dimmed lights also served as a reminder to others to conserve energy [54].

³ This is related to Recommendation 6, which advised using messages that appeal to people's sense of social identity.

Conclusion

Inducing behaviour change requires careful consideration of both what to communicate and how to communicate. Simple changes to the content of energy conservation appeals can help to increase behaviour change and energy savings. These include: (i) communicating a range of actions people can take based both on what will be impactful and what people find acceptable; (ii) thinking carefully about how messages are framed; (iii) highlighting positive social norms and appealing to people's sense of identity; and (iv) emphasising the need for collective action.

It is important to use behaviourally informed interventions that go beyond information provision. These can range from providing simple timely reminders to reduce driving speed or shift peak electricity use, to giving consumers feedback on their energy use compared to more energy efficient neighbours. The channel through which people receive information also affects their confidence in the message. It is important to identify trusted messengers and foster a bottom-up community approach to behaviour change. The above approaches can also be combined to boost effectiveness.

Limitations

There are some limitations to this research that should be acknowledged when considering the recommendations. First, the recommendations were made on the basis of a rapid review of available evidence rather than a thorough systematic literature review. Second, the recommendations are based on evidence from a variety of different contexts, and there can never be a guarantee that what has worked in one context will work in another. Third, the focus of this review was solely on strategies that encourage energy conservation. The energy crisis also has an important cost of living dimension, which may require a different communication approach to help vulnerable households cope and make them aware of supports available.

The recommendations made in this document should prove useful in devising communication strategies in response to the current energy crisis. However, we always recommend conducting further research to test whether an approach is likely to have the desired outcome in this particular context, and to monitor the effectiveness of campaigns once deployed.

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Appendix

Information sources communicating energy savings actions and their potential impact

No.	Source	Information available	Link
1	SEAI	Provides information on various energy savings actions that can be adopted at home and for travel	https://www.seai.ie/reduceyouruse/consumer/
2	University College Cork	Provides information on potential avenues to save money and reduce high energy bills	https://www.ucc.ie/en/eri/news/how-to-save-cash-on-your-energy-bills.html
3	Bonkers.ie	Provides information on various household appliances and their corresponding energy usage and cost	Which appliances use the most electricity? bonkers.ie
4	Electric Ireland	Provides information on saving energy when working from home	https://www.electricireland.ie/news/article/top-tips-on-saving-energy-when-working-from-home
5	IEA	Provides measures to reduce residential and commercial electricity use	https://iea.blob.core.windows.net/assets/4cb1d29e-1ecc-4f5c-950a-6b66e2073d9c/savingelec.pdf



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