

Learning from evaluation of a low carbon community in Blacon, Chester

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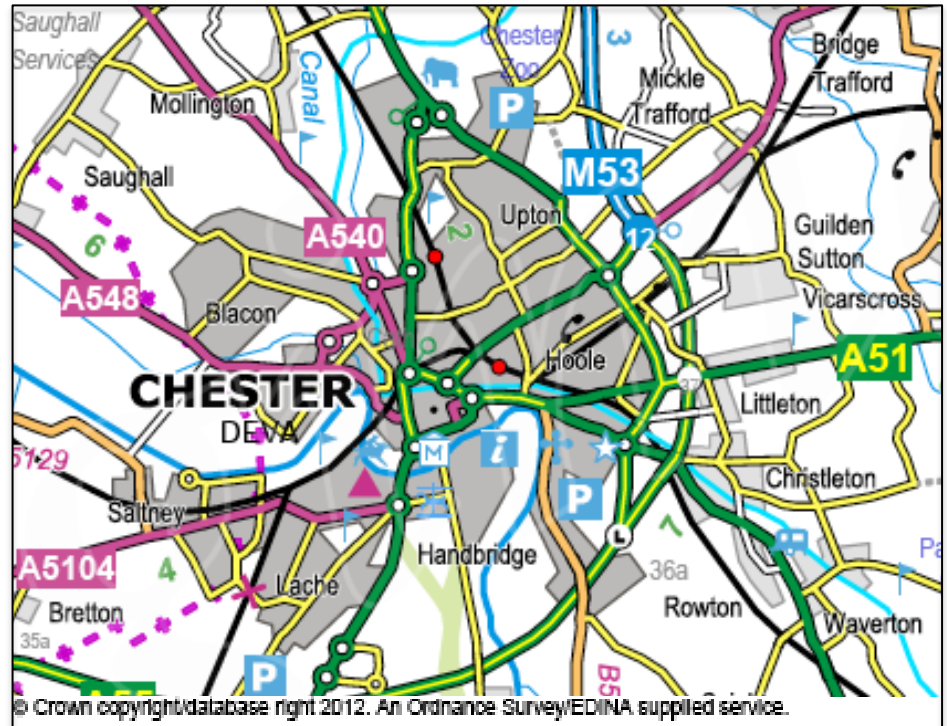
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Blacon background

- NW Chester dormitory suburb
- 16,000 in 5,200 households
- 2/5ths in top 10% disadvantaged wards; other areas more affluent
- Discrete area
- Strong community infrastructure



Context

- The Blacon Smart Energy Programme ran as part of Blacon's DECC-funded Low Carbon Communities Challenge Project from April 2010 to March 2011.
- It explored changes in household energy use and behaviour in response to a community education and intervention programme.

Design

- 150 Households divided into three groups:

- “Control” - education programme only



- “Passive” – education prog. plus energy display system: Wattson™



- “Active” – education prog. plus energy display and control system: AlertMe™



Timeline

- Historic (2009-2010) Energy data from suppliers
- April 2010
 - 8 Education/Awareness/Discussion Sessions
 - Households provide monthly meter readings
 - Questionnaires: April, September 2010, March 2011
 - Monthly data download from Wattson™ meters
 - Continuous data download from AlertMe™ systems
- March 2011
- April 2011 – March 2012 Follow-up programme

Opportunities

- Working closely with a large group of households representing a cross-section of Blacon's population and community groups. Qualitative discussion and feedback
- Quantitative data on:
 - behaviour, opinion, perception via questionnaires
 - energy use from energy monitors and utility bills
- Comparison of perceived and actual changes
- Evaluation of 'soft' v. 'hard' interventions

Outcomes - Participation

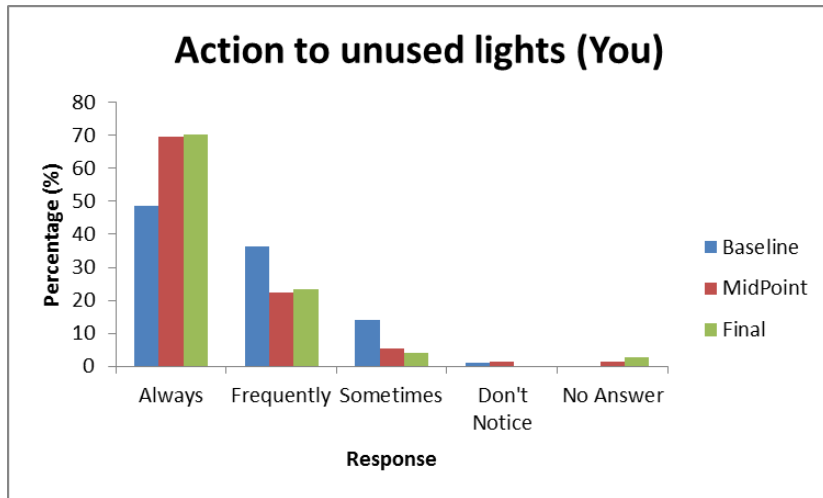
- Despite initial recruitment of 150 households and the incentive of an ‘energy efficiency makeover’ the programme suffered attrition.

Group	Baseline	Midpoint	Final	No. in common Baseline/Final
Control	38	24	16	15
Passive	40	31	33	29
Active	27	17	27	26
Total	105	72	76	70

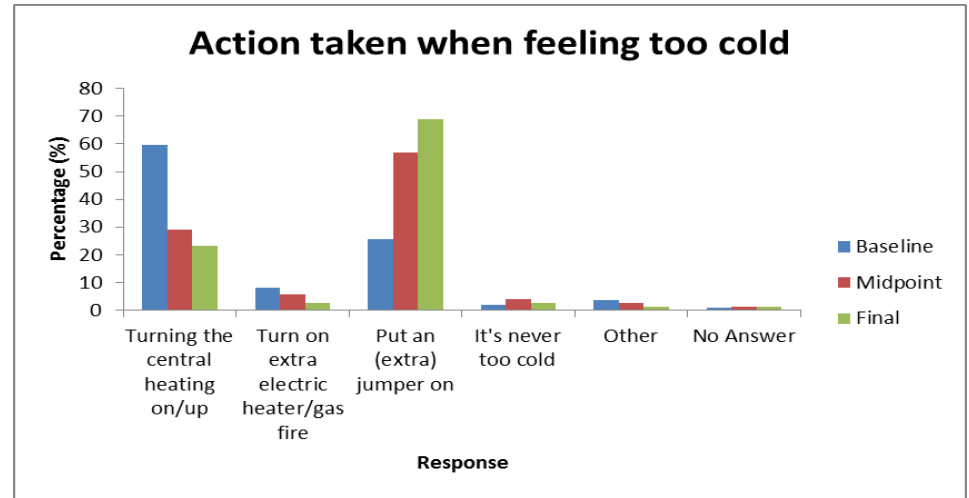
Table 1 Questionnaire Response Rates throughout the programme

Outcomes – Behaviour Change

Positive behaviour change occurred during the programme.



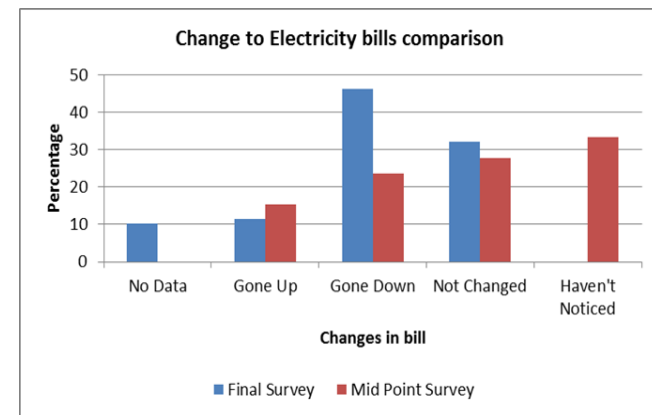
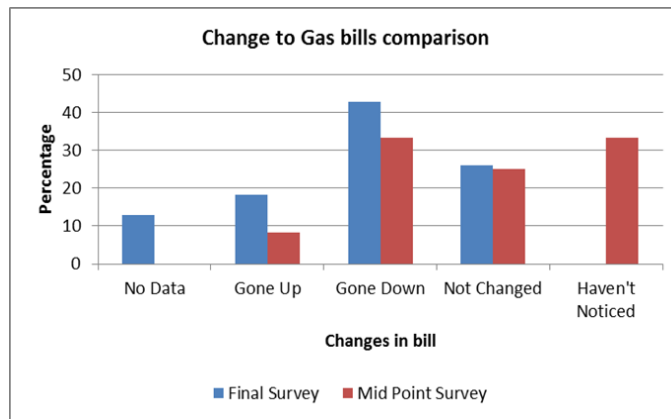
Changes to behaviour (Individual)



Action taken when feeling too cold

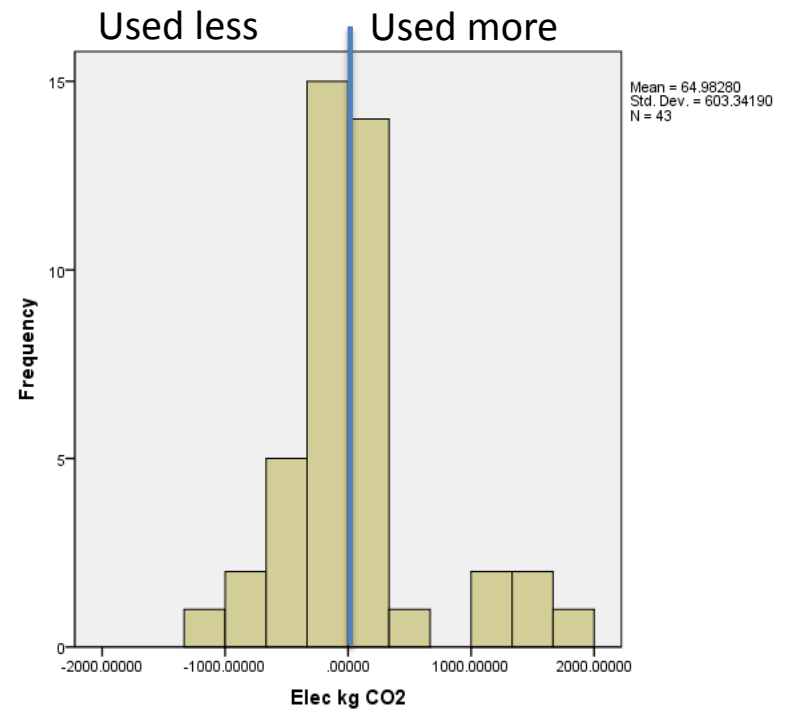
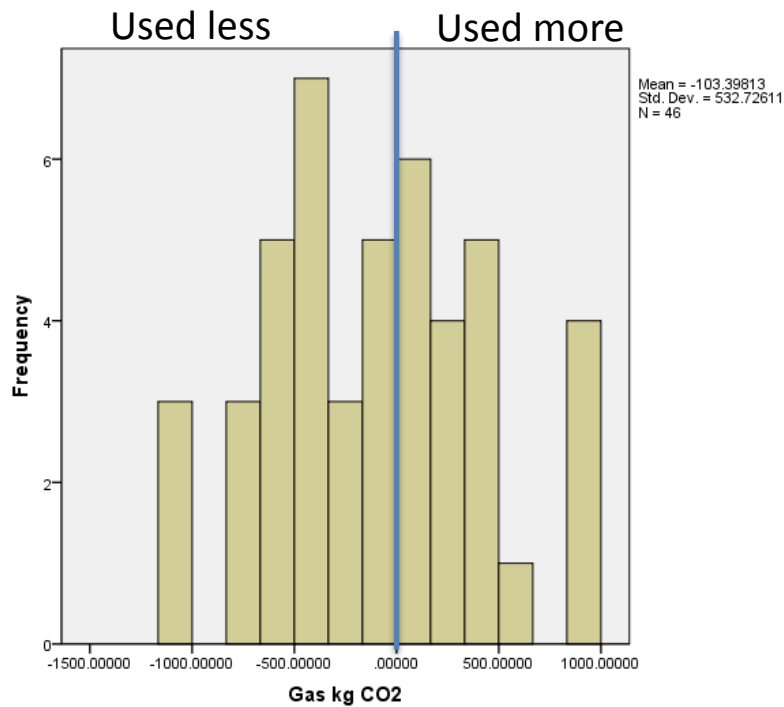
Perceived change in energy consumption

- By the end of the programme:
 - Most thought bills had gone down or not changed. These perceptions may relate to cost rather than consumption however.
 - everybody was aware of their energy bills



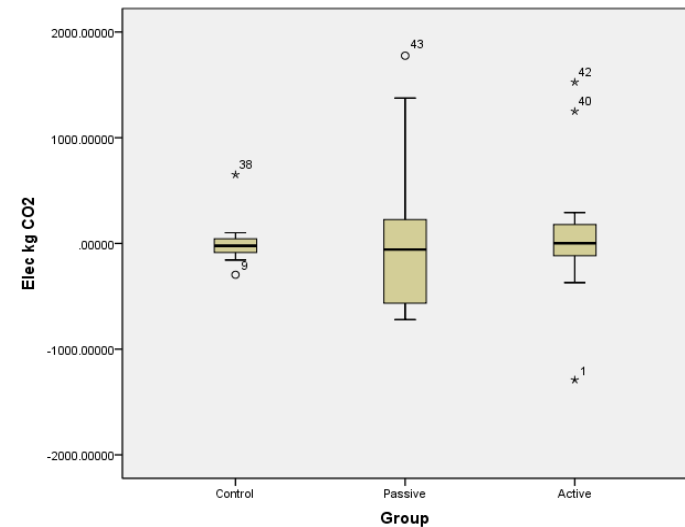
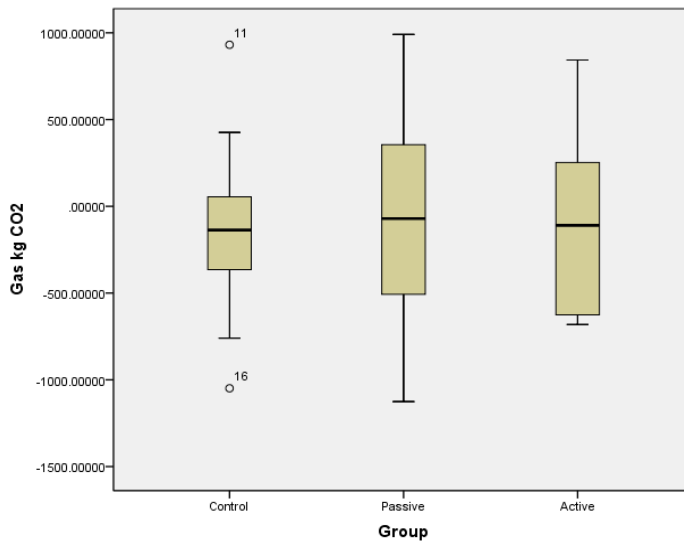
Actual change in energy consumption

- A majority of households reduced their energy consumption but these savings were almost matched by a minority's increases.



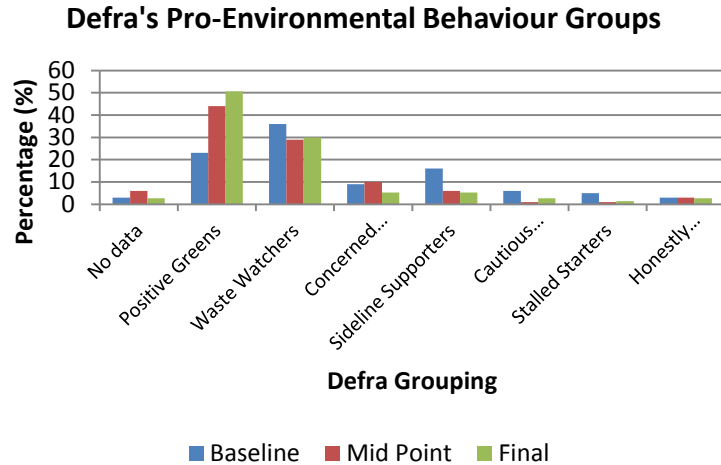
Actual change in energy consumption

- Gas savings were greatest in the control group (no technological interventions) and this group also had the least increase in electricity use.
- The Passive group (Wattson™ displays) generally outperformed the Active group (AlertMe™ system) in terms of electricity savings but with some notable exceptions.

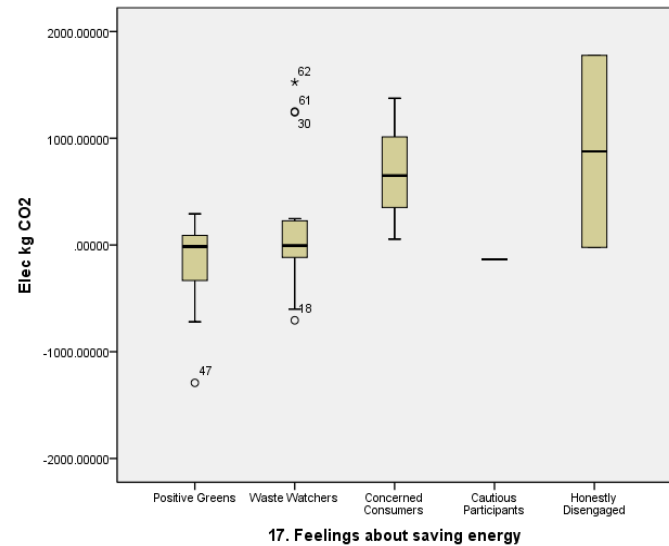


Awareness of climate change

- A clear shift towards pro-environmental attitudes occurred during the programme and this appeared to have a positive influence on energy saving.



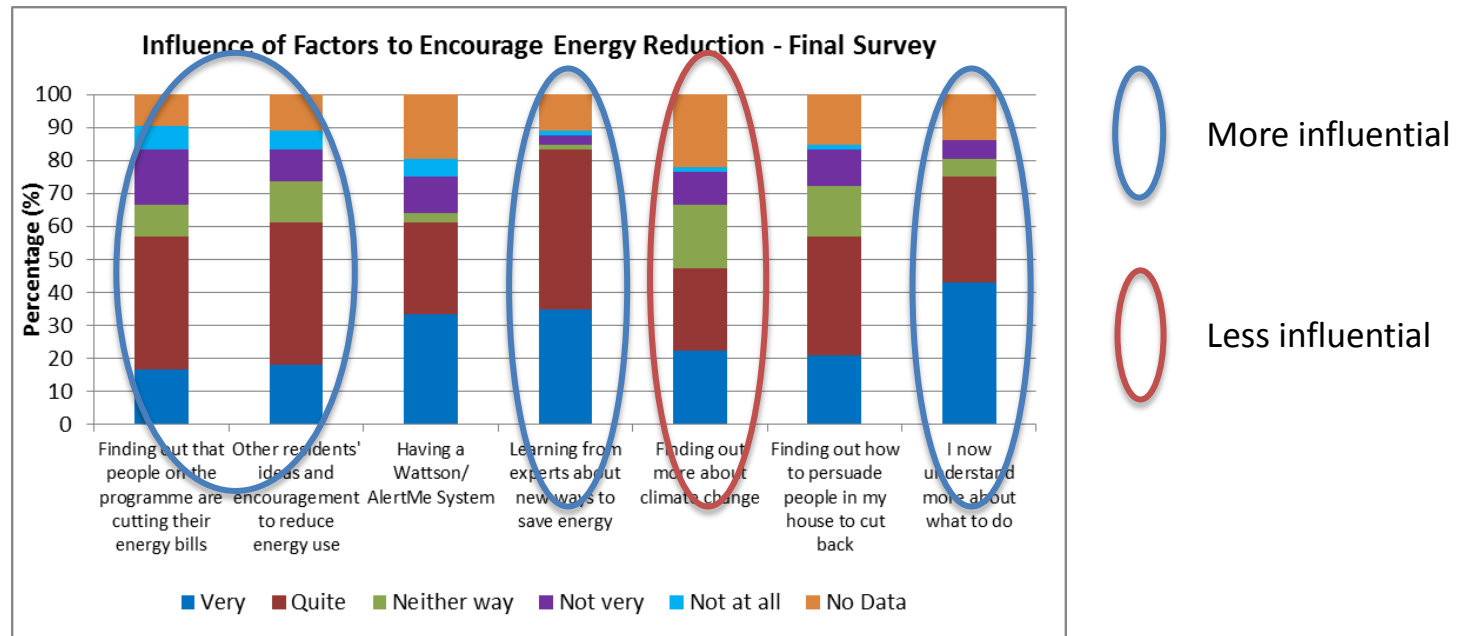
Alignment with Defra's Pro-Environmental Behaviours during the course of the programme



Actual change in electricity consumption (kg CO₂) against Pro-Environmental attitude group

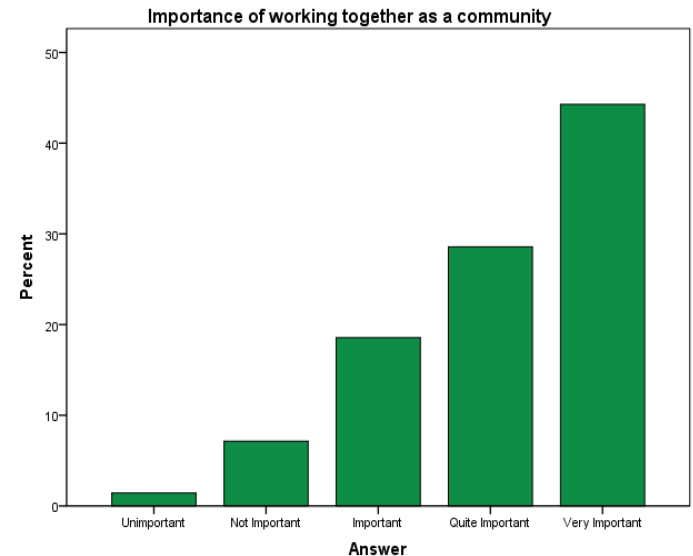
Influencing factors

- However, all other factors, especially learning from experts, increased personal knowledge and working with others, were considered more influential in encouraging energy reduction than learning more about climate change.



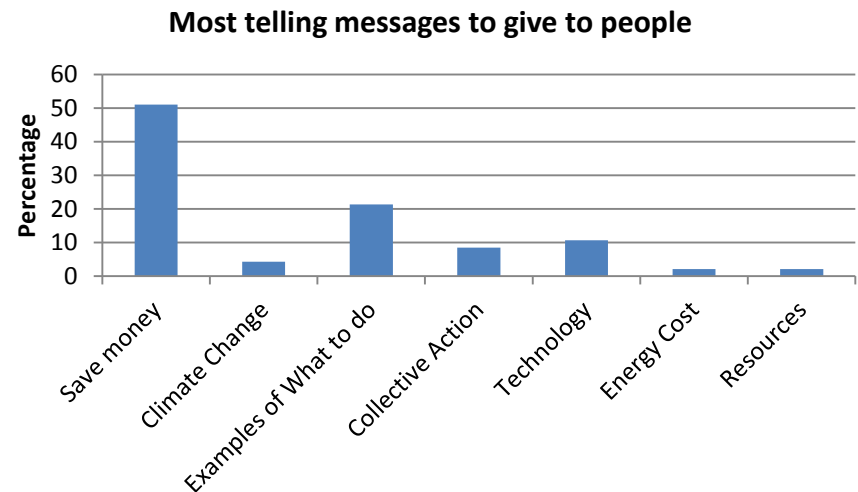
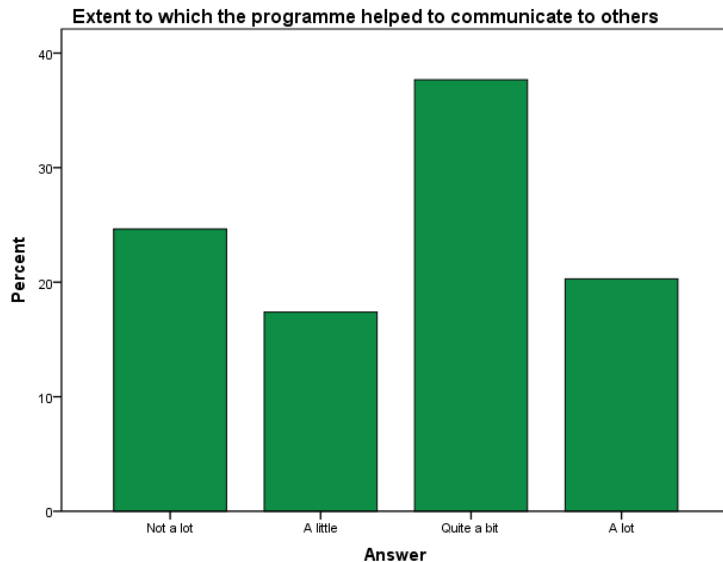
Community approach

- A clear majority favoured the community approach to an energy saving programme.
- There was evidence of increased awareness and normalisation: *“It made you think twice about what you were using and was a way to share ideas giving more confidence to talk to others as you know what you are talking about”.*



Spreading the word

- Most felt the programme had increased their ability to influence family members and communicate with others more widely. “Saving money” was seen as the most effective message to give.
- Some 100 volunteers assisted with the programme.



Challenges

- Maintaining participation rates
- Obtaining historical energy bill data from suppliers
- Understanding the reasons for the small number of households with a large increase in energy consumption
- Maintaining behaviour change beyond the programme. We have run a “Next Steps” initiative and carried out a follow-up study (questionnaire and energy meter readings) from April 2011 to March 2012 to explore the continuing impact of the programme

Summary of outcomes

- Total direct savings from energy reduction during programme (extrapolated from sub-sample's historical consumption data to all households completing programme):
15.9 tonnes CO₂.
- Savings from energy efficiency makeover (based on EST Guidelines):
61 tonnes CO₂, £12,213p.a.
- Energy consumption stable in 2011/12 for those households in follow-up survey.

Acknowledgements

- The Sustainable Blacon team and an army of volunteers were essential to the completion of the work.
- Lena Kiefer (University of Oldenburg) carried out the follow-up study
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 - Oxford Brookes/EVALOC – Jo Hamilton, Priyanka Arora
 - University of Strathclyde – Bruce Stephens, Stuart Galloway
 - University of Southampton – Milena Buch
 - University of East Anglia – Richard Baldwin