Bryson Energy Retrofit Scheme
Whole House Solutions

Barbara Gray
Majority of participants living in areas of significant deprivation, living on lower than average incomes, with few exceeding the NI average income

Households at risk of experiencing extreme fuel poverty

[Average residents in severe fuel poverty (Walker et al., 2014)]

Extremely poor access to essential services

[Helps account for some of the energy practices and energy purchasing practices]

Rural areas with low spatial density

[Lack of resources and inability to pursue a hobby or leisure activity might mean that individuals spend more time at home]

*data accessed from NINIS
Who: House and household

240 households who had previously received energy measures via Warm Homes scheme were invited to complete an eligibility survey –

100 eligible for Whole House Retrofit

100 households - 288 people, including
33 families with children up to age 16 years
41 households with people of retirement age
29 households with one or more people living with a long-term disability

Type of property
Bungalow (46)/detached/semi-detached/end-terrace/mid-terrace (8)
Included large homes (2-5 bedrooms)
Homes largely under-occupied: 26 single occupant; 21 two occupants
Guided customers through:
- All aspects of application
- Terms of agreement
- Supporting documents required
- Visits by surveyors and contractors
- Installation of measures
- Building Control
- Post-installation checks
- Customer satisfaction forms

In addition, advice was given on:
- Energy efficiency in the home
- Budgeting
- Oil brokering
- Switching electricity supplier
- Payment methods
## What: Retrofit measures installed

<table>
<thead>
<tr>
<th>Retrofit measures</th>
<th>Number installed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil boiler*</td>
<td>100</td>
</tr>
<tr>
<td>Heating controls package</td>
<td>100</td>
</tr>
<tr>
<td>Pipework and insulation</td>
<td>100</td>
</tr>
<tr>
<td>Feeding and expansion tank</td>
<td>47</td>
</tr>
<tr>
<td>Cylinder jacket</td>
<td>15</td>
</tr>
<tr>
<td>Radiator</td>
<td>141</td>
</tr>
<tr>
<td>Thermostatic radiator valve (TRV)</td>
<td>776</td>
</tr>
</tbody>
</table>

*Oil boilers installed in all properties owing to changes in Renewable Heat Incentive*

From confirmed eligibility to completion of installation averaged 126 days (4 months)
Impact of the retrofit scheme: Main evaluation undertaken by Ulster University

Focus on what value can be added to the more basic energy efficiency packages (already received through Warm Homes scheme), through deployment of a whole house solution

- 100 baseline surveys (Bryson Energy Project Officer - first home visit – Jun-Oct 2014)
- 52 follow-up (post-retrofit) surveys (Bryson Energy Project Officer – final home visit one year later - Jun-Aug 2015)
- Energy bills (storage boxes provided by Bryson Energy)
- 6 Case Study interviews (conducted by UU)
- 100 Customer Satisfaction surveys (posted back to Bryson Energy)
SAP ratings

75 properties assessed before and after retrofit –
Post-retrofit average increase of 17 SAP points

NI average SAP (57)

Below NI average

Before

62

After

6
Thermal comfort and Affordability of heating the home

<table>
<thead>
<tr>
<th></th>
<th>Before retrofit (%)</th>
<th>After retrofit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>House felt too cold at times</td>
<td>79</td>
<td>33</td>
</tr>
<tr>
<td>Never went without heating</td>
<td>63</td>
<td>90</td>
</tr>
<tr>
<td>Never worried about the cost of heating</td>
<td>21</td>
<td>33</td>
</tr>
<tr>
<td>Never felt the heating was affordable</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

Had original heating systems been fully effective, supplementary heating would not have been required.
## Impact on oil purchasing, budgeting and payment method

<table>
<thead>
<tr>
<th>Circumstance</th>
<th>Before WHS retrofit</th>
<th>After WHS retrofit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequently buying 20-litre oil drums</td>
<td>39%</td>
<td>21%</td>
</tr>
<tr>
<td>Payment by Direct Debit</td>
<td>2%</td>
<td>17%</td>
</tr>
<tr>
<td>Fuel brokering participation</td>
<td>10%</td>
<td>23%</td>
</tr>
</tbody>
</table>
Impact on energy use

Most households felt they had saved “a lot/some” on both heating ($\frac{3}{3}$) and electricity ($\frac{1}{4}$)

- Less room for electricity reduction – supplementary heating from sticks/turf rather than electric fires
- However, water heating no longer required immersion heater

Household behaviour played a role:

- Some could possibly have saved more on electricity, but sometimes forgot they no longer needed the immersion heater for hot water
- Supplementary forms of heating were used by preference (e.g. coal/turf fire)
**Actual savings (n=12)**

Direct comparisons using actual bills and prepayment meter readings covering similar lengths of time before and after boiler installation, taking into account heating degree days for baseline and post retrofit years

**Electricity: 18% decrease** in no of units (kWh) and 20% less spend

**Oil: 40% decrease** in no of litres (N.B. no exact indication of how much was in the tank when the new boiler was installed)

<table>
<thead>
<tr>
<th></th>
<th>Before retrofit (£)</th>
<th>After retrofit (£)</th>
<th>Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average spend</td>
<td>1115.00</td>
<td>510.37</td>
<td>54%</td>
</tr>
<tr>
<td>Ave NI household</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>spend*</td>
<td>1430.00</td>
<td>840.00</td>
<td>43.35%</td>
</tr>
<tr>
<td>Conventional boiler</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condensing boiler</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other fuels (coal/logs/sticks/turf)</td>
<td>358.00</td>
<td>202.00</td>
<td>43.5%</td>
</tr>
</tbody>
</table>

*Sutherland Tables July 2014 and July 2015*
Impact on physical health and mental wellbeing

Physical health

• At baseline, 84 different health conditions were mentioned, some requiring more than average heating
• Post retrofit, the percentage of respondents in “very poor”/“poor”/ “fair” health had halved

Mental wellbeing (GHQ-12)*

• At baseline, 2 aspects for energy stress were exerting a significant burden on mental wellbeing (worry about bills; buying small amounts of fuel at a time)
• Post retrofit, the number of participants in excellent mental health had almost doubled (from 17 to 29), radically transformed by the affordability of energy and the reduction of energy stressor points

*Goldberg and Williams (1988)
Customer Satisfaction Survey (100% return)

100% customers “very satisfied”/ “satisfied” with:

• Experience with Bryson Energy (89% very satisfied)
• Overall performance of the scheme (84% very satisfied)

Regarding the Contractor’s performance:

• 73% were “very satisfied”
• 7% were “not satisfied” – all were rectified (minor) issues, highlighting the need for careful selection of contractors and vigilance of their performance throughout
Case Studies: (n=6) including families with children/retired people/people living with disabilities

“We sit out here a lot now, which we never did, because it was always so cold.”

“She is very, very good, and did a survey, you know, on areas where I could maybe save... giving advice even that electricity.”

“I know that we can turn up the heating in the winter time and it leaves you just...it’s lovely!”

“If I know myself now well, this month I have enough oil for next month, I’m less stressed.”

“It was kind of wasted until I got in the oil heating... Once the two jobs were done, it was a great job.”

“You can put on the oil and the water’s at the right temperature...keeps me from getting up to put it on.”
Thank you!

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