

# Energy Efficiency from Housing

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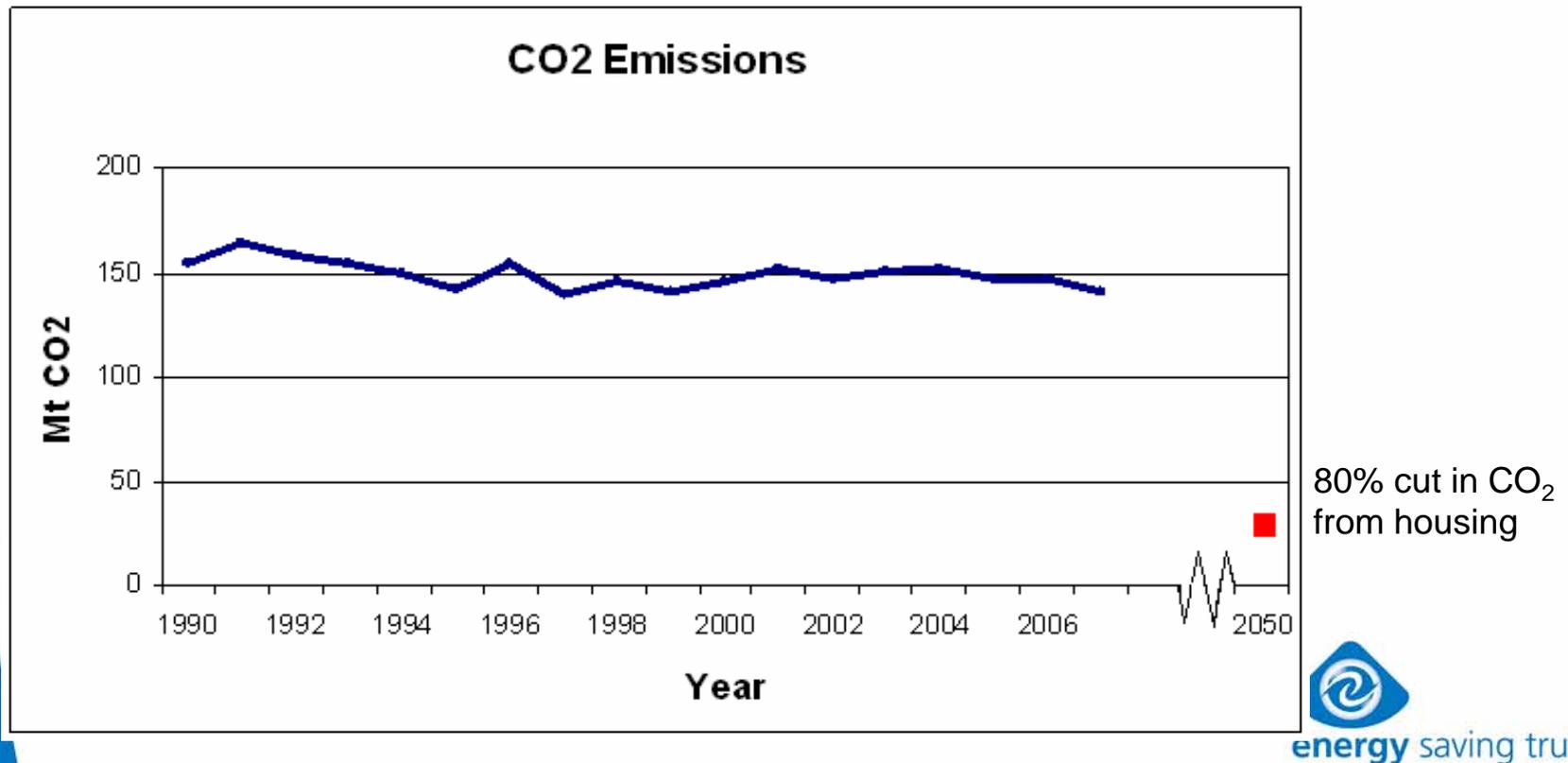


# Energy Saving Trust: Key services

- **Advice for citizens**
  - Target of 3.2m customer contacts this year
- **Local authority and communities programme**
  - Advice line dealing with 3,500 queries per year
  - In depth consultancy support to 80 LAs
- **(Technical and supply chain) Housing Programme**
- **Policy support to government & policy research on energy saving and microgeneration**

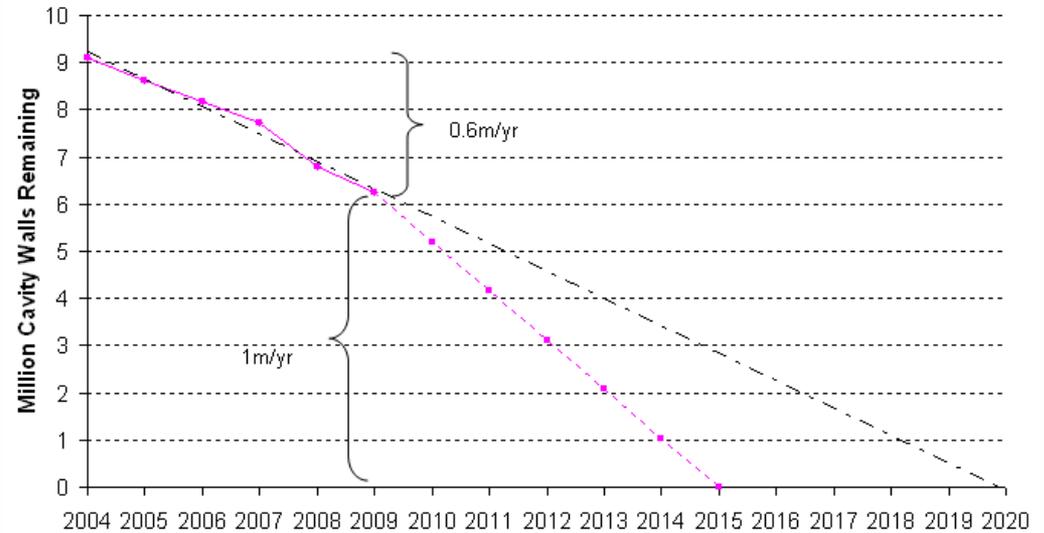
# How are we doing? the 2050 80% target

- Carbon dioxide emissions from housing will need to be less than 80% and 'almost zero' by 2050

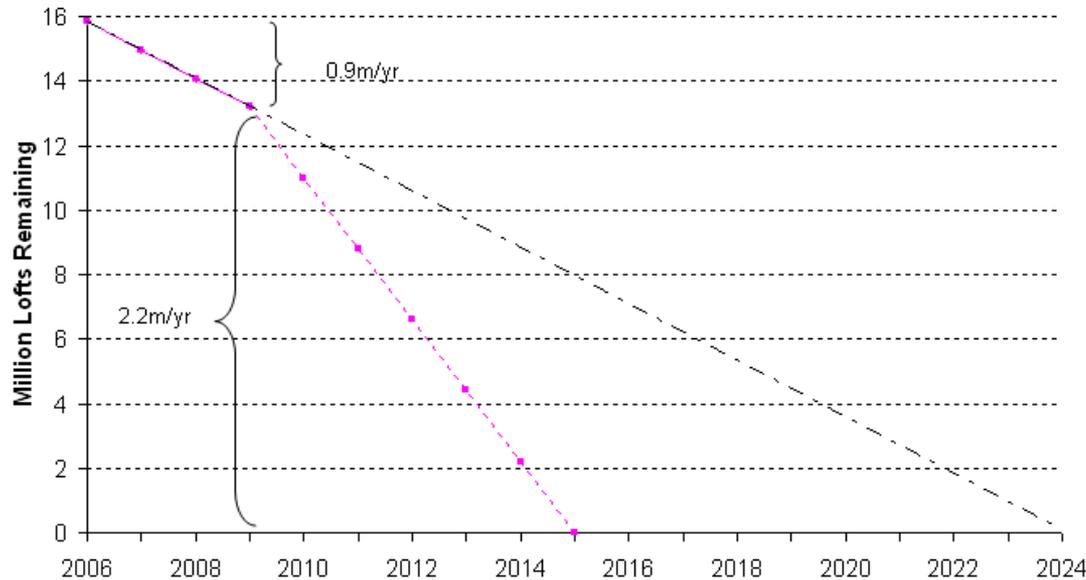


# How are we doing? Progress through CERT

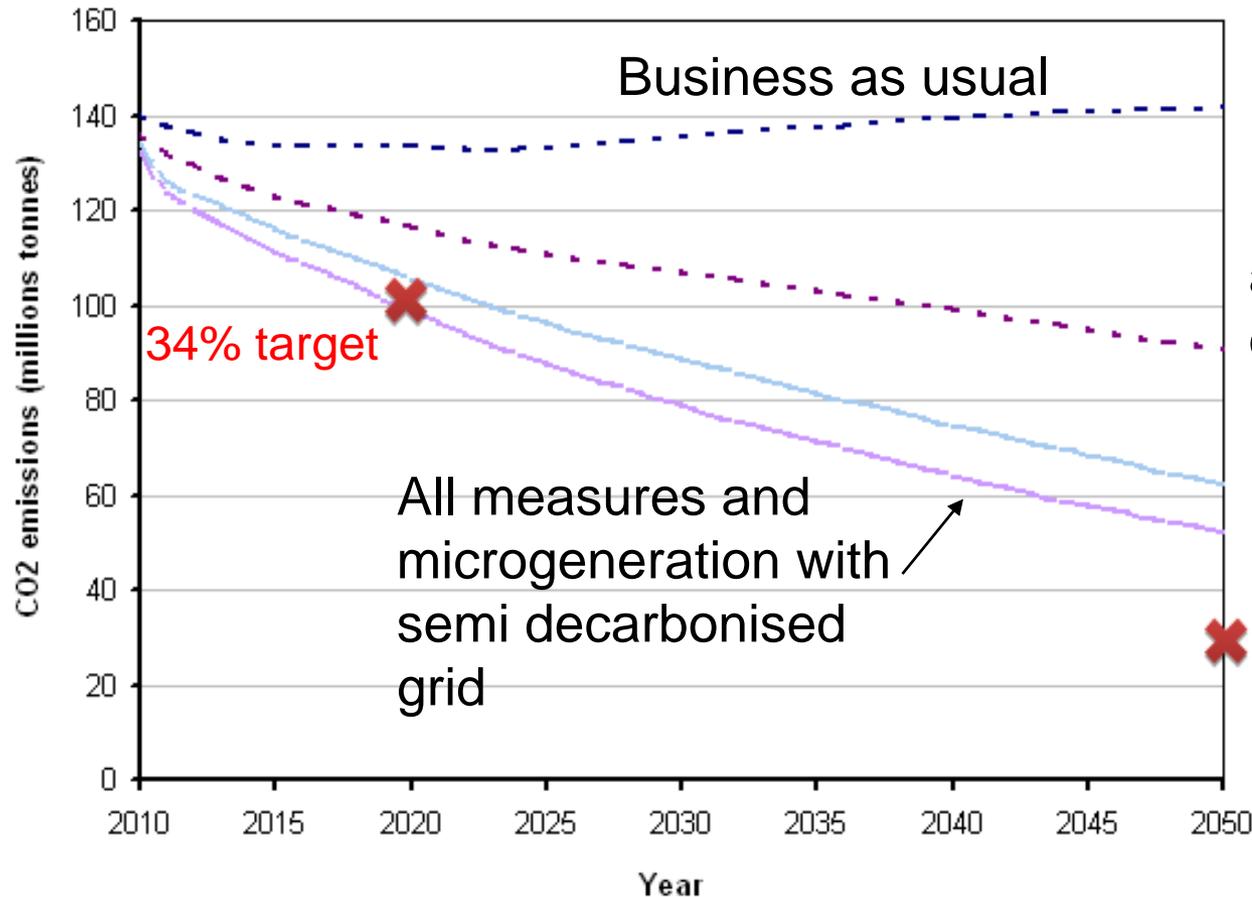
Estimated Remaining Uninsulated Cavity Walls



Estimated Remaining Underinsulated Lofts ( $\leq 150\text{mm}$ )



# How far can we go: all measures and microgeneration



Business as usual and semi decarbonised grid

All measures and microgeneration

— 32% reduction by 2020, 60% by 2050

— 36% reduction by 2020, 66% by 2050

# Why think about F&G rated homes?

- Energy Saving Trust tasked with writing to the owners of F&G rated homes (left);
- Links between F&G rating and environmental health/Decent Homes banding;
- Analogy with other energy using products where bottom bandings have been removed from the market;
- Carbon saving potential: 9.4MT CO<sub>2</sub> .
- Strong correlations between F&G rated homes and fuel poverty.

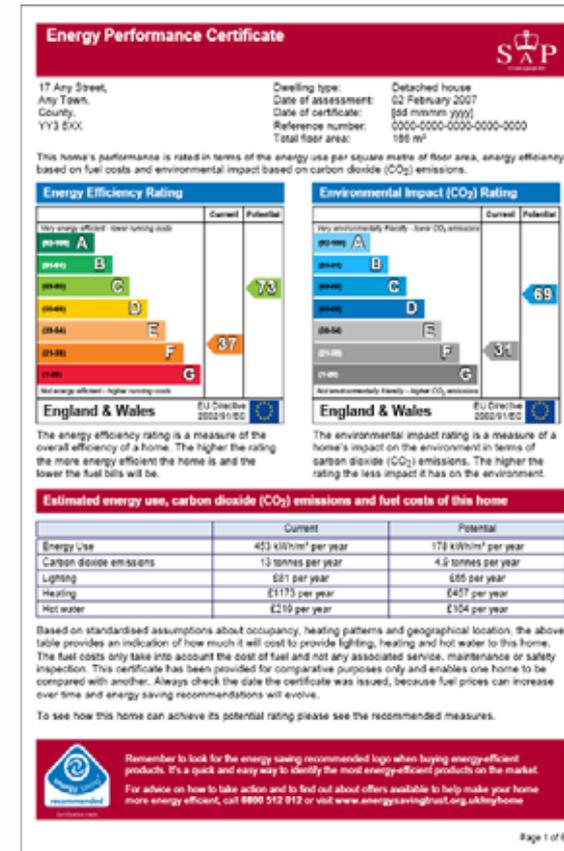
BUT

- Tackling F&G's not sufficient to eliminate fuel poverty;
- Bringing homes to an E rating may not be the most cost-effective action, if the long term objective is to go further.

The image shows a letter from the Energy Saving Trust. At the top left is the Energy Saving Trust logo with the tagline 'Here to help everyone save energy in the home'. To the right of the logo is the address: 'Energy Saving Trust advice centre, 100 Manor Way, Belsize Hill Technology Park, Bilsbygham, TS23 4HN'. Below the logo is the recipient's address: 'To the resident, Address 1, Address 2, Address 3, Postcode'. The date is 'October 31, 2008'. On the right side, it says 'Your Energy Performance Certificate number: 0000-0000-0000-0000-0000' and 'Access your certificate at [epcregister.com](http://epcregister.com)'. Below this is a graphic titled '10 Chanton Road's energy efficiency rating' showing a scale from A (green) to G (red). The current rating is F, and the potential rating is E. The text says 'Save up to £175 and reduce your carbon footprint.' and 'Your home was rated: F'. It explains that by following energy-saving measures, the resident could save up to £175 a year and reduce their carbon footprint by 1.3 tonnes of carbon dioxide (CO<sub>2</sub>). At the bottom, it says 'To start saving today call 0800 512 012 or visit [energysavingtrust.org.uk/epc](http://energysavingtrust.org.uk/epc)'. The letter is signed by Guy Robinson, Centre Manager, London. There is a blue button at the bottom left that says 'Save energy today. Visit [energysavingtrust.org.uk/epc](http://energysavingtrust.org.uk/epc) or call 0800 512 012'. At the bottom right is the 'ACT ON CO<sub>2</sub>' logo. The text 'Continued overleaf' is at the bottom right of the letter content.

# F&G rated homes: Key Findings

- Well over 80% of homes in the F&G banding can be brought into the E banding using measures that cost less than £3,000
  - 37% of British F&G rated homes can be brought into the E banding using basic insulation measures – full lost insulation and cavity wall insulation - that cost less than £1000
  - A further 47% can be brought out of the F&G banding by changes to the heating system usually at a cost of less than £3,000
- Solid wall insulation is not required as a measure to achieve the target for these 85% of homes
- The remaining 15% of homes are expensive to treat – costs rise from £5,000 to £8,000 and higher in some cases. Expensive combinations of measures such as installing whole new heating systems, fitting double glazing and installing solid wall insulation are required.



# F&G rated homes: measures required to bring to an “E” standard

Key Measure	Cost	Overall Stock	Private rented Stock
Loft and Cavity wall insulation	<£1000	37%	20%
Change to heating system (esp. new gas boiler)	£2000 - £3000	47%*	40%
Changes to glazing	£3,000-£5,000	2%	
Large scale glazing and heating system improvements	>£5,000	15%	40%

*\*costs of changes to heating systems may be over £3,000 in a small percentage of homes in rural, off-gas areas which cannot be switched to gas.*

# Some principal types of F&G rated homes

Large and medium sized, gas heated, solid wall, double glazing

17% of F&G homes

**Key action: new condensing boiler**

**(sub £3000 cost)**

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Large and medium sized, gas heated, cavity wall (unfilled), double glazing

19% of F & G homes

**Key action: cavity wall and loft insulation (sub £1000 cost)**



# Some principal types of F&G rated homes

Large and medium sized, oil heated, solid wall, single glazing

3.4% of F&G homes

**Key actions: Full double glazing, loft insulation (over £5000 cost)**

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Small and medium sized, electrically heated, cavity wall (unfilled), double glazing

5% of F & G homes

**Key action: cavity wall and loft insulation (sub-£1000 cost)**



# The policy environment for energy saving from homes

- **Owner occupiers:**
  - Private sector market for advice on basic measures is developing rapidly
  - More people wanting advice on the advanced measures
  - Need to communicate the whole house message
- **Supply chain** for energy saving goods and services– is developing, but there remain key skills gaps, especially for advanced measures and among general builders;
- **Social landlords** - to continue to play a leading role, but how far can they afford to act? Feed in Tariff could be key funding mechanism here;
- **Private landlords** – still a lack of clear solutions to tackle this most difficult to reach sector.

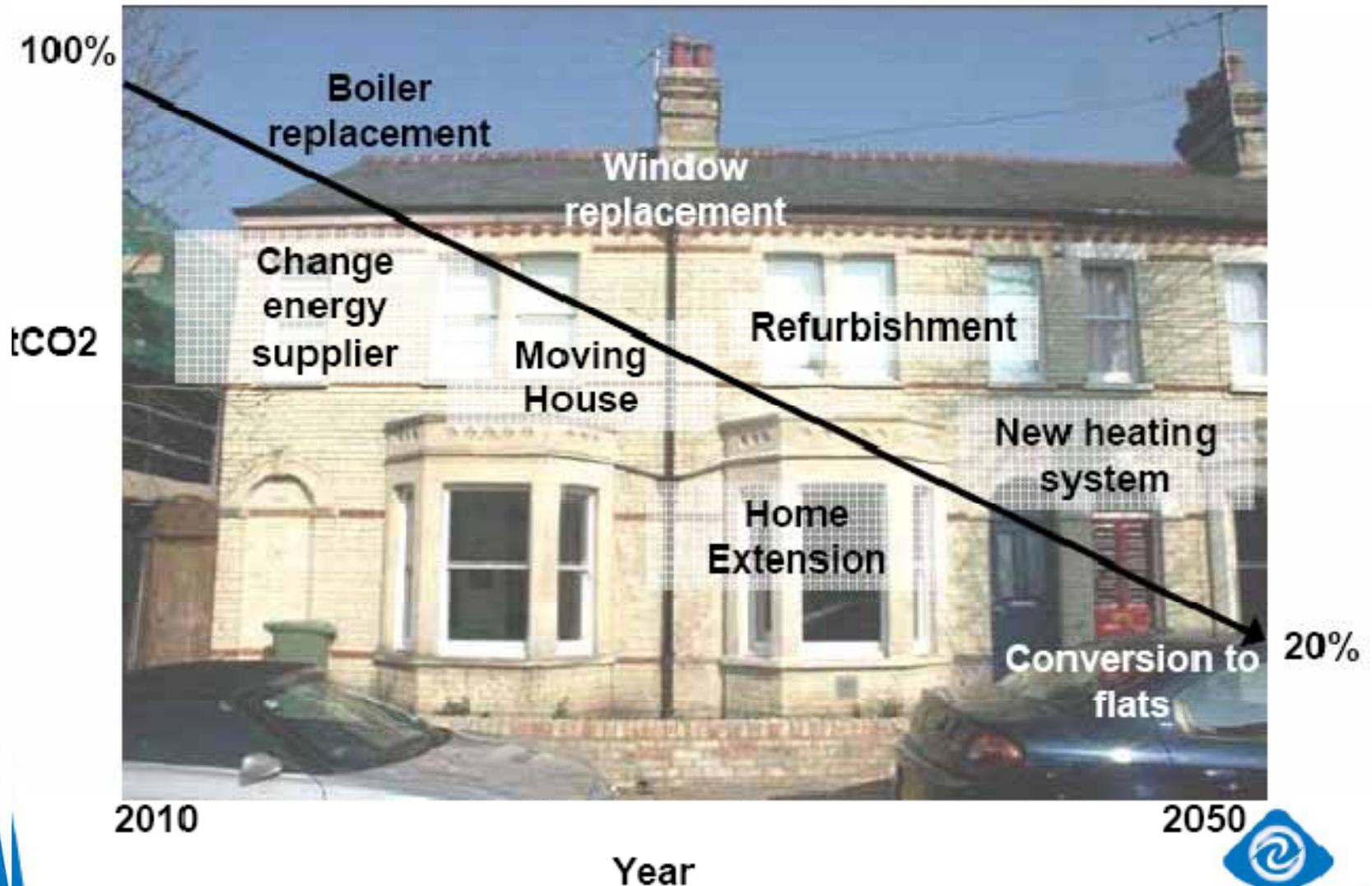
# What's needed

- An overarching national strategy for reducing carbon emissions from our homes;
- A clear, long-term regulatory framework and timetable – this could include a target for F&G rated homes;
- Household finance packages to overcome the upfront capital costs;
- A national evidence and knowledge base which underpins advice and delivery;
- Nationally coordinated local delivery and installation which provides for both demand-led (ie trigger points) and area-based schemes;
- A skilled and trusted supply chain which is able to undertake whole-house retrofits and exploit the opportunities presented at trigger points;
- A comprehensive monitoring and evaluation programme to measure progress, guide activity and ensure targets are being met;
- A pipeline of new technologies which are tested and certified prior to installation in homes.

# Energy Saving Trust Actions

- 1. Supporting area based delivery;**
- 2. Enabling home owners to understand and act on the whole house energy use of their home;**
- 3. Developing new financing models;**
- 4. Building the skills and trust around the delivery of more advanced energy efficiency measures;**
- 5. Develop the evidence base about real performance of technologies;**
- 6. Identifying the full potential of trigger points.**

# Trigger points



Questions?

## Straw Bale Houses in NK

Phil Roberts – Head of Communities  
Mick Gadd – Property Services Manager

# Contents



## Part 1 – Background

- Where did we get the idea from?
- Why did we choose this method of construction?

## Part 2 – Straw House Construction



## Where did we get the idea from?

- High levels of need for affordable housing in North Kesteven
- Housing Market Assessment – 850 units required per annum
  - Delivered – 116 in 2008/9 with approximately 168 planned for 2009/10.
- Climate Change Strategy – seeks to establish sustainability principles throughout the Council:
  - Domestic buildings produce 27% of the UK's overall carbon footprint and over half of this amount is due to the demand for space heating.
- The challenge is to build properties that reduce the need for space heating while ensuring that development is economically viable.

## Where did we get the idea from? (2)

- Research undertaken - identified that some properties had been built using straw bales as the main construction component of the walls.
- We considered the advantages of using this approach and decided to invest in a pilot scheme for two properties.
- First authority to invest in the development of straw built properties.
- Properties will be let to people on the Housing Register.
- If successful - use the scheme as an exemplar for other developments locally.
- Recent development - Homes and Community Agency (HCA) funding.



## Why did we choose this method of construction?

- Straw bale buildings have been constructed in America since the first baling machine was invented in the late 1800s.
- The first straw building in the UK was built in 1994.
- A straw built property was the winner in the eco build category of Channel 4's 2008 Grand Designs Awards.
- There are now well over 100 straw buildings constructed in the UK.

## Why did we choose this method of construction? (2)

- High insulation values
  - 3x better insulated than Building Regulations requirements
  - Code for Sustainable Homes Level 4
  - Reduction in carbon emissions (1.9 tonnes a year)
- Sustainable materials
  - Using local supplies of sustainable materials such as straw bales and sheep wool, lime based concrete and render.
  - Potential for self build schemes
  - 200 year design life
- Cost
  - Planned cost for the project was equivalent to the costs of standard construction
  - Having learnt some lessons from this scheme it could be 20-25% cheaper in the longer term



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## In summary

Our reasons for building straw bale properties are:

- Reduced carbon emissions
- Sustainable materials
- Affordable costs

This will not be the only solution to make the construction industry sustainable.

Our message is to encourage housing providers to develop their own pilot schemes

For more information about the straw bale project -  
[www.n-kesteven.gov.uk](http://www.n-kesteven.gov.uk)