Energy Efficiency in Buildings

Update on Standards development
and "Each Home Counts"

14.00-14.45

Chair: Clare Price, BSI

Peter Rickaby, BSI Retrofit Task Group
Dr Jason Palmer, National Energy Foundation

Energy Efficiency in Buildings

Agenda

1. Clare Price — *Each Home Counts Implementation Update*
2. Peter Rickaby — *An outline of Retrofit Standards Framework*
3. Jason Palmer — *Review of Retrofit Standards: Research project*

4. Questions

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Implementation Phase

Clare Price

Co-lead Standards work stream

Introduction

- Independent Review of Consumer Protection, Advice, Standards and Enforcement for Energy Efficiency and Renewable Energy installations for existing UK Housing
- Report published 16 December 2016
- Howard Porter, BEAMA took as over Chair of Review Implementation Board in February 2017
- Implementation event held 12 July to update on progress - over 100 stakeholders

High level recommendations in the report

also:

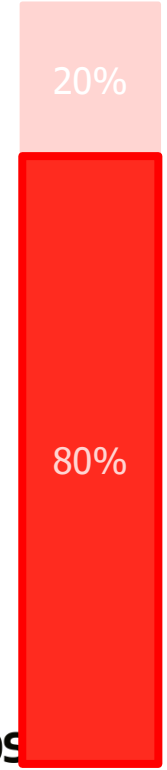
Advice: a central *advice portal* and property-level *data warehouse* to advise consumers

Redress: a single *point of contact* for consumers

Skills: *stronger skills requirements* covering technical and consumer facing competencies

Governance: industry-led organisation providing governance and overseeing compliance, backed by strong sanctions for non-compliance (including removal of the quality mark)

Principles for implementation: 80% industry, 20% Government



Market driver requirements - Private investors, social housing, ECO

Implementation progress:

Quality mark: Model developed, shared with wider stakeholders and further refined. Model principles agreed by Implementation Board.

Code of Conduct: A draft Code of Conduct has been drafted and reviewed by Board

Code of Practice: Research and Gap analysis on standards across the sector

Info Hub/Data Warehouse: initial Hub interface developed

Next Steps

- All work streams developing detailed implementation plans
- Ongoing engagement with stakeholders –

  - email us at EachHomeCounts@beis.gov.uk or

  - register interest on the website www.eachhomecounts.com
- Implementation Board sub-groups to discuss:

  - Quality mark delivery options – report to board November

  - Financing
- Website further developed - work stream updates being added
- Accelerating work on the Data Warehouse
- Continuing to explore how future ECO and Each Home Counts can be aligned – ECO consultation due early 2018

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Thank you

EachHomeCounts@beis.gov.uk

www.eachhomecounts.com

10 October 2017

BSI Construction Week 2017
Each Home Counts

An Outline of the Retrofit Standards Framework

Dr Peter Rickaby
BSI Retrofit Standards Task Group
Version H, 9 October 2017

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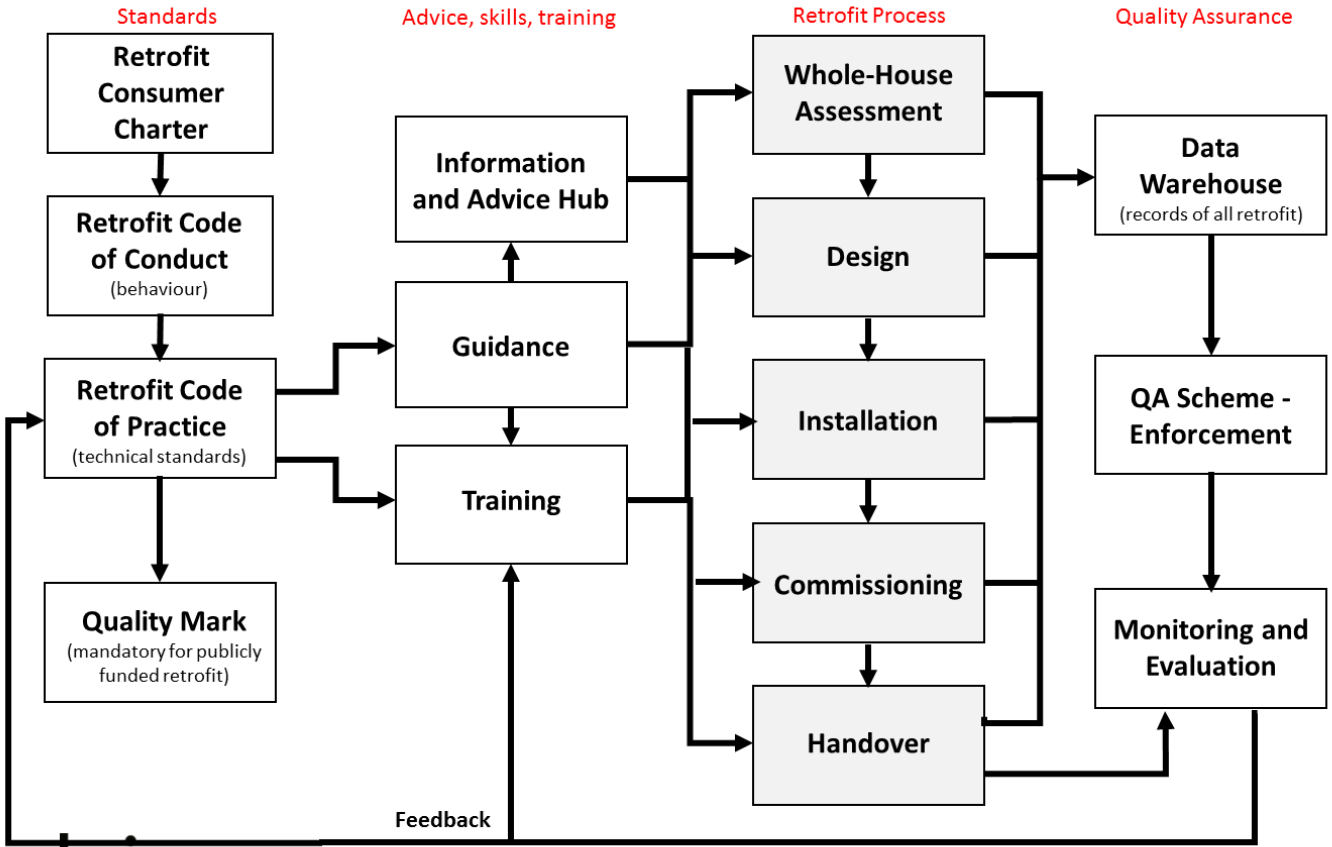
Each Home Counts



BSI Retrofit Standards Task Group

- **Develop a framework of retrofit standards**
  - Improve functionality and durability of buildings
  - Improve the comfort and well-being of occupants
  - Improve energy efficiency
  - Reduce environmental impact
  - Protect and enhance architectural heritage
  - Minimise the ‘performance gap’
  - Avoid unintended consequences of retrofit
- **Focus**
  - Technical characteristics of retrofit
  - Processes that are used to plan and carry out retrofit

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Scope

- Assessment of buildings for retrofit
- Improving insulation and air tightness
- Improving building fabric performance and resilience
- Establishing safe dynamic moisture equilibria in buildings
- Providing or upgrading ventilation and ensuring good IAQ
- Minimising overheating risk and cooling demand
- Providing efficient and responsive services (heating, DHW, lighting)
- Providing locally generated renewable heat and power
- Providing on-site energy storage
- Installing ‘smart’ metering and monitoring to promote efficiency
- Commissioning and handover of retrofit measures
- Advising occupants on efficient and appropriate use of retrofitted buildings
- Monitoring and evaluation of retrofit, and feed-back

Principles

Focus

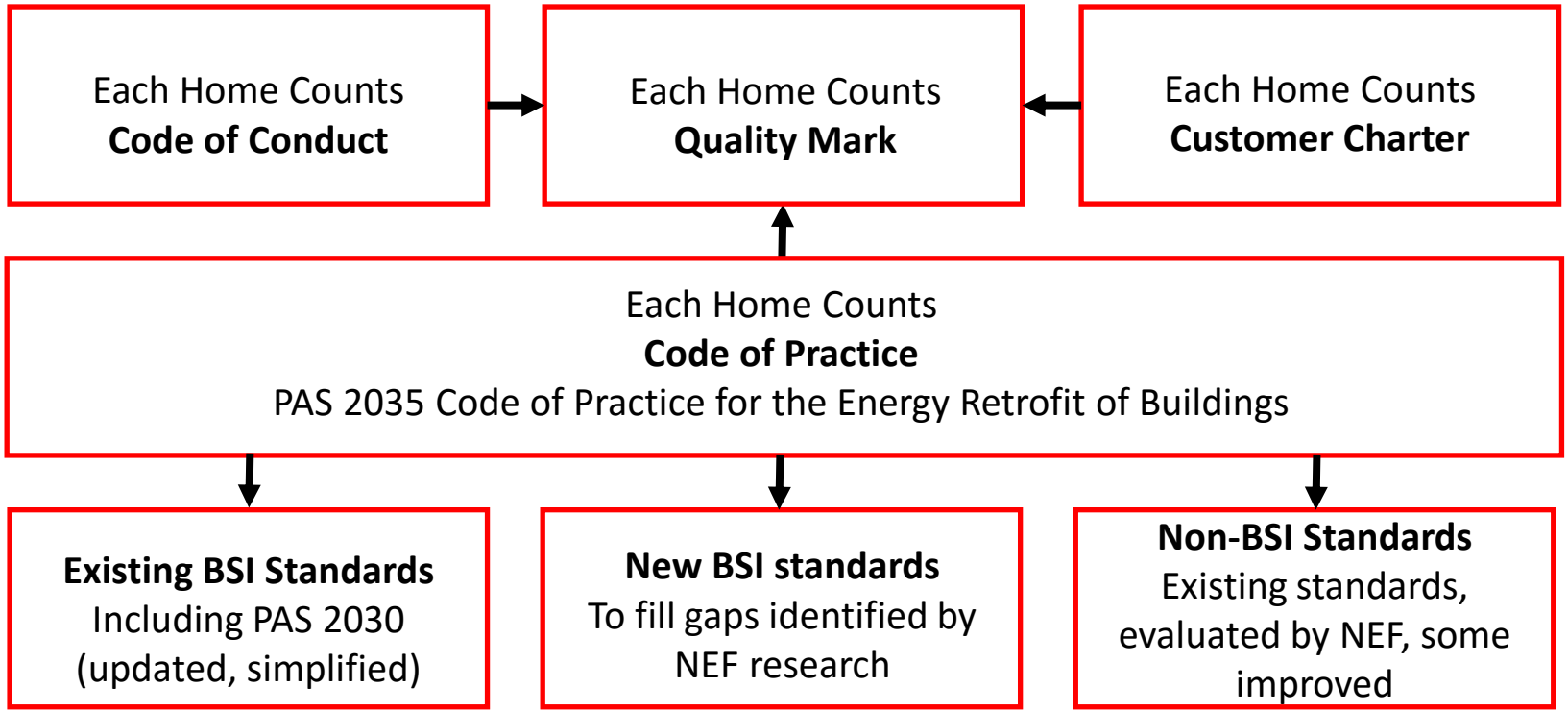
- Standards should focus on materials, workmanship and processes as well as installer competence
- Compliance of work should be certifiable

Accessibility

- Standards should be accessible to the whole industry, including small installers and their customers
- Publication should be online and inexpensive

Guidance

- Standards should be combined with guidance
  - See for example Irish NSAI SR54: 2014
- Clickable online expert commentary


Each Home Counts
Code of Conduct
Each Home Counts
Quality Mark
Each Home Counts
Customer Charter
Each Home Counts
Code of Practice
PAS 2035 Code of Practice for the Energy Retrofit of Buildings
Existing BSI Standards
Including PAS 2030
(updated, simplified)
New BSI standards
To fill gaps identified by
NEF research
Non-BSI Standards
Existing standards,
evaluated by NEF, some
improved

Code of Practice for the Retrofit of Buildings

- Introduction
  - Scope and focus
  - Retrofit cultural context and technical objectives
  - Overall performance standards and constraints
- Retrofit building physics
  - The building as a system: flows of heat, moisture and air
  - Thermal comfort and internal air quality
- Approaches to retrofit
  - Whole-house retrofit v incremental measures
  - Medium-term whole-house retrofit plans
  - Retrofit strategies: Fabric first, etc
  - Retrofit at scale
- The retrofit process
  - Quality assurance: the *Each Home Counts* process
  - Assessment | Design | Installation | Commissioning | Handover
  - Retrofit coordination and risk management
  - Quality assurance monitoring and evaluation
- References and appendices

Code of Practice: The Retrofit Process

- Assessment
  - Context assessment | Energy audit | Whole building assessment
- Design
  - Improvement option evaluation
  - Heritage issues and statutory approvals
  - Design and specification of retrofit measures and packages
  - Interactions between measures: the *Measures Interaction Matrix*
    - Thermal bridging | Air tightness | No Insulation without Ventilation
- Installation
  - Retrofit procurement procedures and standards
  - The role of PAS 2030: installation procedures and competences
  - Briefing of contractors and installers: ‘toolbox talks’
  - Sequencing of work
- Commissioning
  - Building fabric | Building services | Renewable energy systems
- Handover
  - Handover procedures and standards

Existing BSI standards

- PAS 2030: new simplified edition
- Other standards identified by NEF research (see RSD)

Existing Non-BSI standards (see RSD)

- NIA and other fabric insulation standards
- MCS standards: renewable energy systems
- CIBSE technical standards and guidance
- HET standards (various technologies)

New BSI Standards

- Assessment of dwellings for retrofit [with accreditation bodies]
- Retrofit advice [with EHC advice and information hub]
- Thermal comfort, indoor air quality and overheating
- Air-tightness and ventilation for domestic retrofit [with BEAMA]

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Each Home Counts

An Outline of the Retrofit Standards Framework

Dr Peter Rickaby
BSI Retrofit Standards Task Group
peterrickabyconsultancy@gmail.com

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improving energy use
in buildings

Construction Week | NEC, 10th October 2017

Review of Retrofit Standards

For the Retrofit Standards Task Group

Dr Jason Palmer EngD BSc

National Energy Foundation

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Outline

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Research Into Standards For Retrofit

1 – Our brief

2 – What we did

3 – What we found

4 – Unanswered questions

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NEF's brief – review standards used for retrofit

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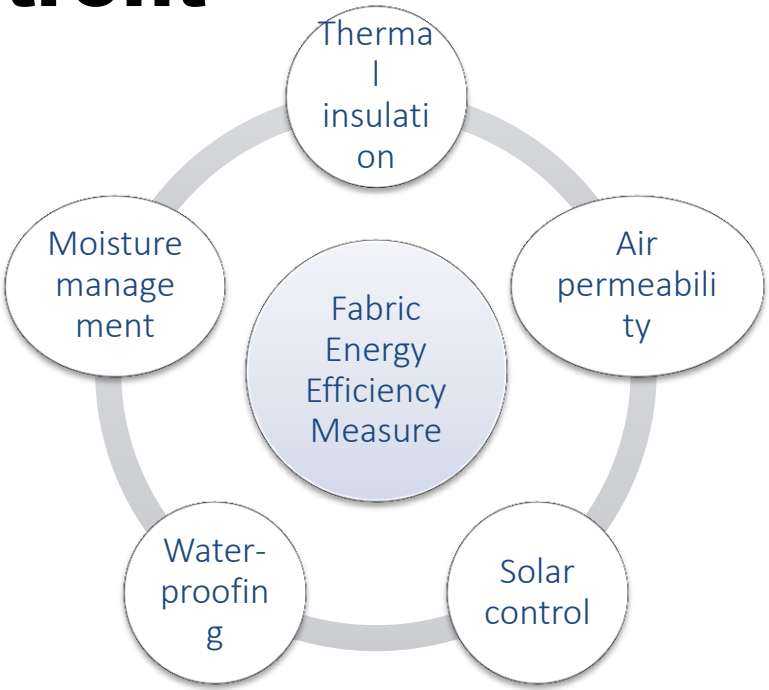
Research Into Standards For Retrofit

- Identify-evaluate-gap analysis
- Fabric, Services, Management (from survey to implementation and maintenance)



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1 – NEF's Brief

2 – What we did

3 – What we found

4 – Missing links

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What we did

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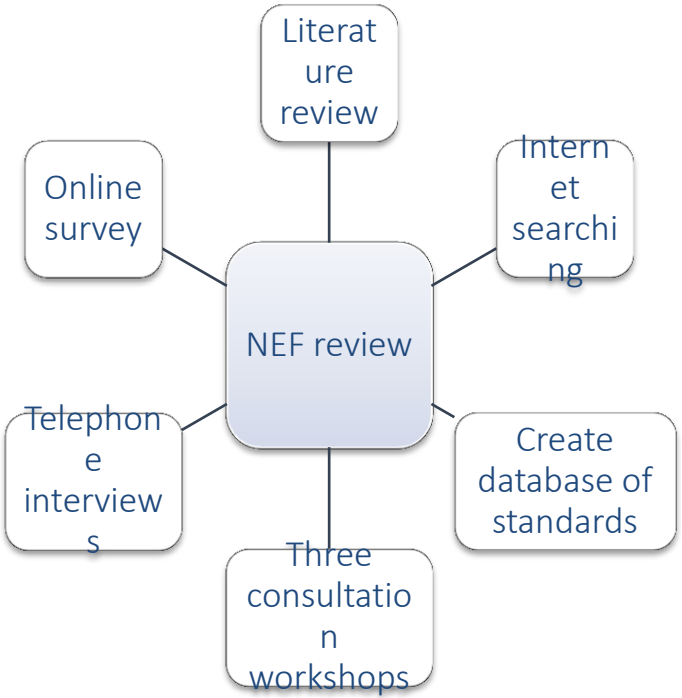

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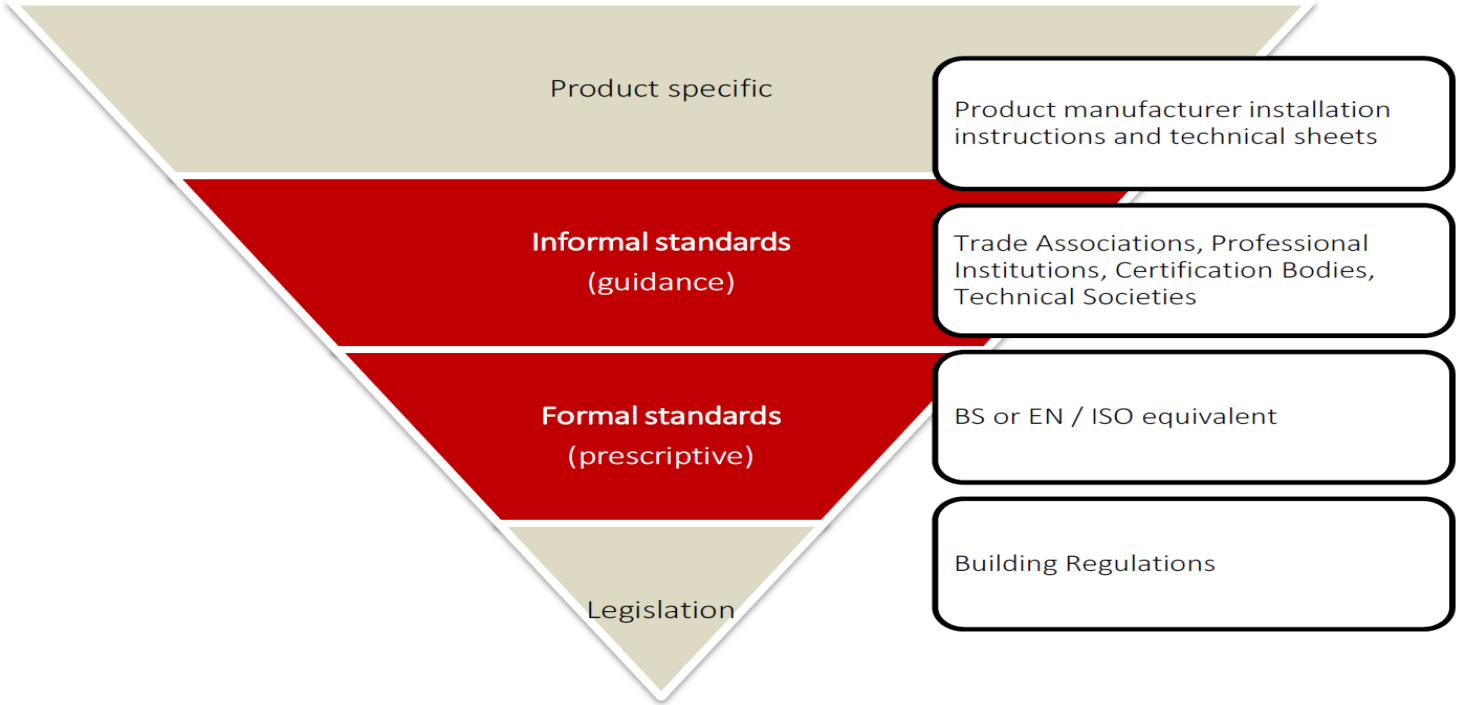
Hierarchy of retrofit literature



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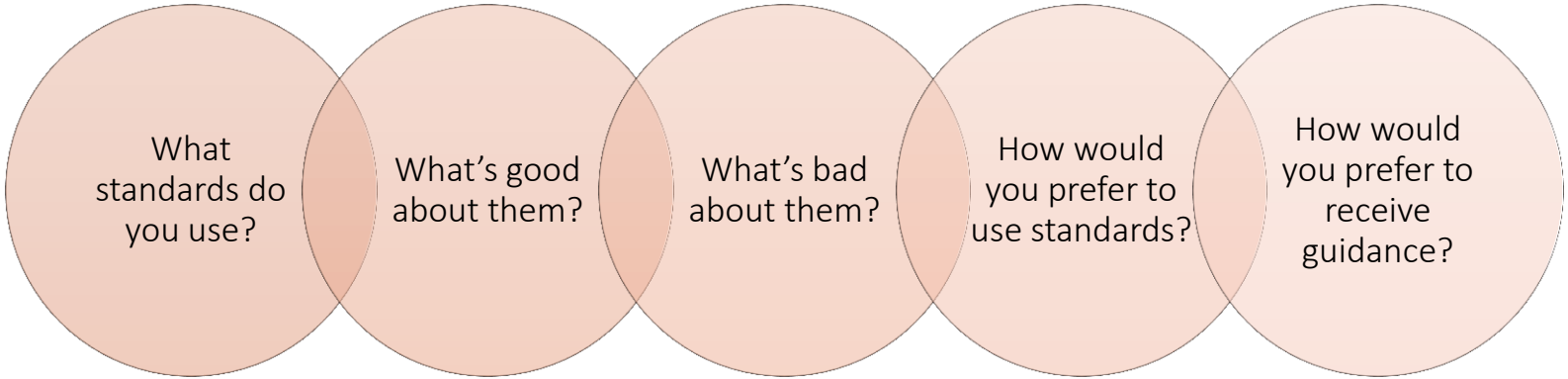
Three facilitated industry consultation workshops

1. BPE Specialists → **2.** Fabric Specialists → **3.** Services Specialists



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Online survey and Interviews

Online survey

54 responses to online survey

Interviews

10 telephone interviews with installers

1 – NEF's Brief

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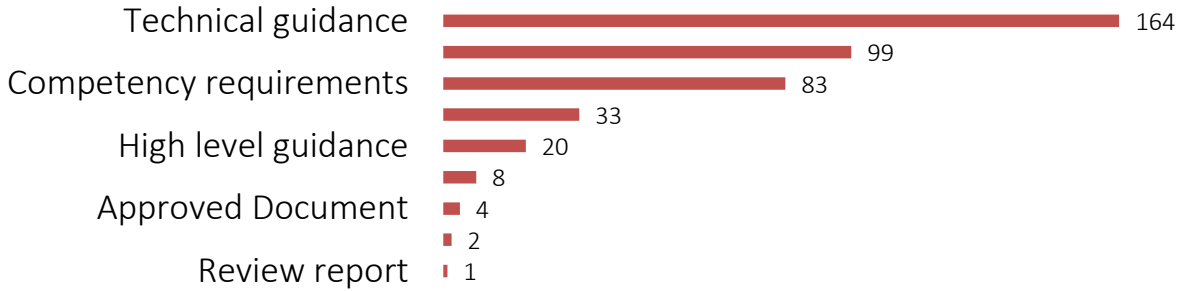
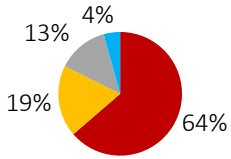
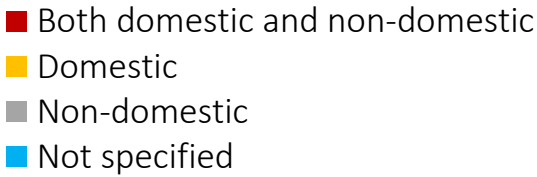
Overview of standards

Publication type

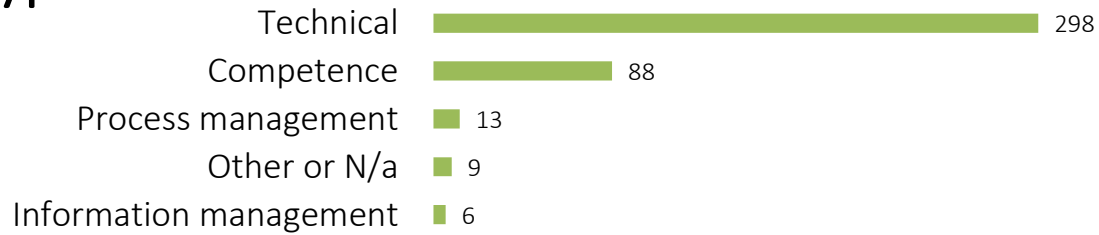


Sector

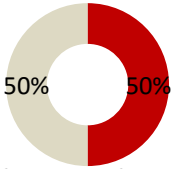




Type of standard



Format



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Retrofit Standards Database

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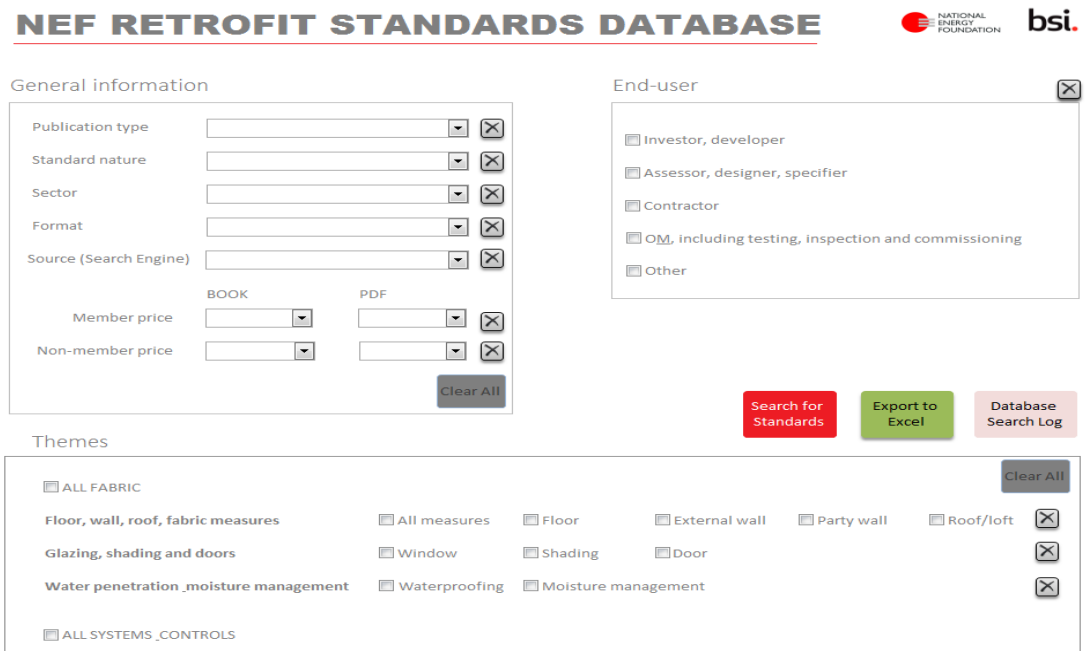
Research Into Standards For Retrofit

MS Access

Graphic User Interface

559 formal/informal standards



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Composition of the Database

Standard type
34% informal technical guidance
31% formal standards and ADs
35% misc - competency, scheme-supporting …

Nature
69% technical
16% competency
10% process/information management

Target audience
40% designers and specifiers
31% installers
20% O&M

Sector
65% all buildings
18% domestic
10% non-domestic

Publisher
30% BSI
15% CIBSE
8% NOS
7% DCLG

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Industry Consultation - Structure

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Two-tier mandatory/voluntary system

But leaning towards aspirational standards
More engaging, not just ‘threat of punishment’

Retrofit Standards Framework

Central point of access to retrofit standards
Overarching standard à la NSAI S.R. 54:2014
Dynamic search facilities
Links to BIM?

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Improvements/re-orientating standards

Whole-building retrofit strategy

Components and interfaces
Effect on air quality
Traditional buildings

In-use performance

Outcome-focussed standards
NABERS, Energiesprong approach
Overarching in-situ testing standard (IEA Annex 58)

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SMEs ‘at the coalface’

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Difficult to reach / engage
Mostly use manufacturers’ guidance
Cost and resources are the main barriers to formal standards

Guidance that is comprehensive, ‘transferable’, accessible
Videos – best for practical site work
Telephone support – especially new technical areas

Non-specialists

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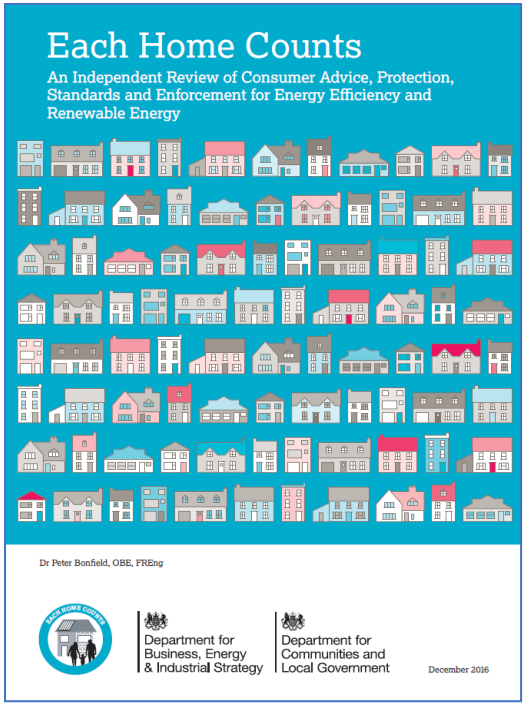
Research Into Standards For Retrofit

- Consistent with Each Home Counts: put consumer at the centre
- Wikipedia entries for retrofit? Good for version control
- Free checklists accompanying technical information



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Further research

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Research Into Standards For Retrofit

- Which insulation materials to use, when?
- Suspended floor (moisture from the ground)
- Ventilation with deep loft top ups
- Demand controlled ventilation
- Risk in retrofit works (unintended consequences)
- Evidence-based guide to the benefits of retrofit

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Thank you

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