



Passivhaus Trust Conference

Adopting Passivhaus for New Build and Retrofit Projects

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ORBIT HEART OF ENGLAND



Building Brighter Futures...

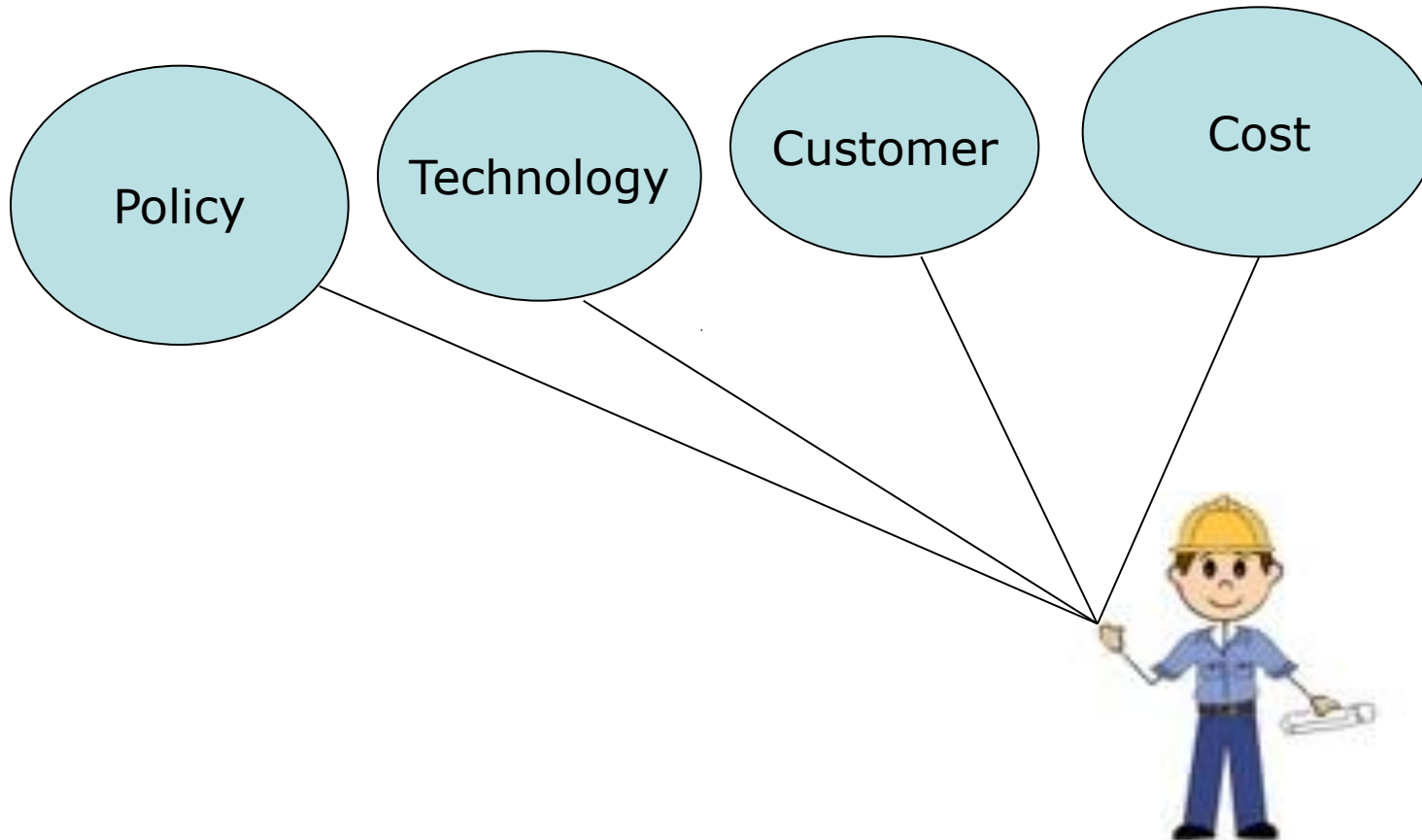
for people and communities



This session will cover :

- Context
- Low Carbon Projects
- Issues
- Moving forward

Low Carbon Challenge



Building Brighter Futures...

for people and communities

Can Social Housing = Low Energy Housing?

Key challenge and focus is to:

- Reduce energy demand/CO2 emissions/fuel poverty
- Create sustainable communities
 - Group Sustainability Framework
 - Orbit Homes Sustainability Strategy – New homes
 - OHE's Warmer Homes Standard – Existing homes
- Identify capital investment/grant funding/other income
- Define Residents' priorities
- Ensure residents maximise potential of design/technology

Low Tech V High Tech

Low technology

- High levels of insulation
- Air-tightness of envelope
- High performing window and doors
- Passive ventilation
- Electric heating systems
- Simple (Nil?) controls
- Resident education

High technology

- Solar thermal
- Solar photo voltaic
- Mechanical ventilation & heat recovery systems
- Ground/air source heat pumps
- Bio-mass boilers
- CHP/district heating
- Wind turbines

Monitoring/review/reappraise

Resident Behaviour & Influence

- Assess usability of new design/technology – ease of use?
- Determine internal environmental conditions:
 - pertinent to occupants – specific needs/living habits
 - electronic data monitoring – Coventry University
 - face to face survey – household/behaviour
 - before refurbishment – support requirements
 - post refurbishment – identify acceptance/benefit/savings

Orbit Low Carbon Projects

- Sampson Close, Coventry – New build Passivhaus standard
- Foleshill Road, Coventry – EnerPHit retrofit
- Newdigate Road, Coventry - EnerPHit retrofit
- Elliott Drive, Wellesbourne – EnerPHit + ‘Affordable’ retrofit
- Rolling renewable heating/PV programmes
- Carbon reduction assessment – milestone targets
- Knowledge Transfer Partnership (KTP) – Coventry University
 - Technology
 - Education
- Partnerships – Phoenix Low Carbon Enterprise

Orbit Heart of England - Passivhaus

New build development:

- **Sampson Close, Coventry:**
- 23 apartments & houses
- German designed timber framed construction
- **Woodland Road, Stratford-on-Avon**
- 12 houses – rebuilt Unity homes
- **Canley Eco-Homes, Coventry**
- 1x passivhaus & 1x Code 6

- 4000 home development plan



OHE Low Carbon Retrofit programme

- OHE existing stock numbers: <14K
- Diverse age, archetype, low-rise
- Average £16m annual investment
- Average SAP: 69
- Decent home standard failure: <2%
- EPC rated at 'F' & 'G' – 320 homes



Programme objectives:

- Create low carbon 'shopping list' – product life cycle/cost/CO2
- Define property archetype template
- Link to stock data/investment programme – one off/sequenced
- Monitor performance of design/equipment/behaviour

OHE Low Carbon Retrofit programme

- **Tanyards Farm, Coventry**
 - 150 homes (part of 250No on estate)
 - Built circa 1970
 - Difficult (compact) layout/design
 - Part communal heating schemes
 - Common archetype within Orbit
 - Develop 'affordable' retrofit template
 - Heating energy consumption - <100KwHr/M2/year



OHE Retrofit Programme

- **Elliott Drive, Wellesbourne, Warwickshire**
- 1955 Wimpey No-fines
- 50No OHE homes, overall 80No on estate
- 4No pilots to be refurbished:
 - 2No to EnerPHit standard – 25KwHr/m²/year
 - 2No to 'affordable' standard (template) -100kwhr/m²/year
 - High performance windows and doors
 - Air tight environment – mechanical ventilation
 - External wall insulation – 180+mm
 - Traditional v prefabricated refurbishment solution



OHE Retrofit Programme

- **2 Newdigate Road, Coventry**
 - 2 bed end-terrace
 - Built Pre-1900
 - Single storey kitchen extension
- EnerPHit standard
 - High levels of insulation – internal/external
 - High performance windows and doors
 - Air-tight construction
 - MVHR system
- Possible CESP project for whole street



OHE Retrofit Programme

- **Foleshill Road, Coventry**
 - 2 bed end-terrace, converted to 3 bedroom
 - Built Pre-1900
 - Single storey kitchen extension
 - Suspended timber ground floor
 - 'Affordable' retrofit solution
- Adopt passivhaus principles
- High levels of insulation – internal/external
- High performance windows and doors
- Air-tight construction
- MVHR system + gas boiler, wet radiator system





Issues:



Requirement or Guidance?

Moving Forward - Learning Points

- Develop programming of investment works linked to low carbon agenda – templates + sequencing
- Develop low carbon product 'knowledge' & life cycle costings
- Use new/renewable technology with discretion
- Share/develop low carbon concept within sector?
- Identify/develop local supply base – VFM?
- Ask the question
 - Why are we doing it?
 - What is desired outcome?



Thank you

Any questions?