

#### The SAP Methodology SAP 2009

Austin Baggett & Dyfrig Hughes, National Energy Services

## SAP – energy performance of dwellings

#### SAP 2009 consultation – issued last week

- www.bre.co.uk/SAP2009
- Closes 12 August
- Will be used in Part L in October 2010
- Further amendments to SAP in 2012 and 2015

### Use of SAP and BREDEM

#### CLG

- Existing homes EPCs (RDSAP)
- New build homes EPCs (full SAP)
- Part L compliance (Criterion 1 - DER/TER)
- Code for Sustainable Homes
- Roadmap to zero carbon homes
- Treasury's stamp duty rebate
- Decent Homes / EHCS
- RSL's RSR reporting

#### DECC

- EST's Home Energy Reports and energy efficiency advice provision (1 million a year?)
- Warm Front
- Fuel Poverty Strategy
- HECA reporting
- Carbon Calculator
- Carbon Emissions Reduction Target (CERT)

#### SAP – are we taking it seriously enough?

## £5,000,000,000

£5 billion – the extra investment every year to build zero carbon homes compared to 2006 Part L

#### £500,000

Approximate development budget each year to develop, test, administer and maintain SAP (non official estimate) ?

- Long term roadmap for development of the national calculation methodologies
- Development funding appropriate to the desired outcomes
- Transparency

### Rubbish In... Rubbish Out







## Equal focus on the quality of the inputs

- DER/TER undertaken only by On Construction
  Domestic Energy Assessors
- Standard conventions
- More intensive QA

#### SAP 2009 Changes

#### More accurate

#### **More flexible**





#### SAP 2009: More Accurate

- Low and zero carbon homes
- Heating energy use up
- Additional energy for cooling
- More CO<sub>2</sub> emissions per unit
- Affect both the TER and DER
- Harder to reach zero carbon





### **SAP 2009**

But what do the changes mean for house builders?



SAP 2005 Party Wall U Values

 $U = 0.0 W/m^2 K$ 

#### Research: Stamford Brook 2007

![](_page_11_Figure_1.jpeg)

- Leeds Metropolitan University
- Effective Party U = 0.50 to 0.63
- Compared to Wall U = 0.23

#### SAP 2009: Party Wall U values W/m<sup>2</sup>K

- Solid: U = 0.0
- Unfilled cavity no edge sealing U = 0.50
- Unfilled cavity with edge sealing U = 0.20
- Filled and sealed cavity U = 0.0

![](_page_12_Picture_5.jpeg)

### **Thermal Bridging**

![](_page_13_Picture_1.jpeg)

#### SAP 2005: Thermal Bridging

- 'y value' is effective U value of the thermal bridges
- Default y = 0.15
- Accredited Details y = 0.08
- Optional calculation from psi values & lengths

![](_page_14_Picture_5.jpeg)

![](_page_15_Picture_1.jpeg)

- 1. 'y value' = 0.15 **default**
- Accredited Construction Details: measured lengths x standard psi values
- Measured lengths x calculated psi values
- Calculate 'y' for specific dwelling types

#### SAP 2009: Higher bridging heat losses

- Party Wall junctions
- 25% increase on calculated values when not Accredited Construction Details

![](_page_16_Picture_3.jpeg)

## SAP 2009: Space Cooling

![](_page_17_Picture_1.jpeg)

![](_page_17_Picture_2.jpeg)

#### SAP 2009: Cooling calculation

- Cooling down to 25 °C
- A to G Rating
- External Temperature
- Varies with region

![](_page_18_Picture_5.jpeg)

#### SAP 2009: Regional Variation

![](_page_19_Picture_1.jpeg)

- Cooling load varies with region
- Should heating, solar radiation vary with region too?

#### SAP 2009: Thermal Mass

![](_page_20_Picture_1.jpeg)

- Lightweight timber frame
- Heavyweight heavy blocks & concrete floors
- Reduced cooling demand
- Solar gains more useful

#### SAP 2009: Database of Heat Pumps

![](_page_21_Picture_1.jpeg)

![](_page_21_Picture_2.jpeg)

#### SAP 2009: CO<sub>2</sub> Emission Factors

- Electricity + 40%
- Anthracite + 15%
- Mains Gas + 6%
- Community heating: waste -17%
- Community heating: biomass -24%

#### SAP 2009: More Flexible

![](_page_23_Picture_1.jpeg)

#### SAP 2009: Individual Heating x2

![](_page_24_Picture_1.jpeg)

![](_page_24_Picture_2.jpeg)

#### SAP 2009: 2 Community Boilers and CHP

![](_page_25_Figure_1.jpeg)

#### SAP 2009: Mechanical Ventilation x2

![](_page_26_Picture_1.jpeg)

![](_page_26_Picture_2.jpeg)

#### SAP 2009: Multiple Wind Turbines

![](_page_27_Picture_1.jpeg)

#### SAP 2005: Heat Recovery from Showers

![](_page_28_Picture_1.jpeg)

![](_page_28_Figure_2.jpeg)

#### SAP 2005: Heat Recovery from Flues

![](_page_29_Picture_1.jpeg)

#### SAP 2009: Multiple 'Special Features'

![](_page_30_Picture_1.jpeg)

![](_page_30_Figure_2.jpeg)

- SAP 2009 has significant changes
- The most significant for builders are probably:
  - Party Walls
  - Thermal Bridges
- We await Part L...

To take away .....

#### **NHER Paper :**

# "10 things you should know about SAP 2009"