An Roinn Tithíochta, Pleanála, Pobail agus Rialtais Áitiúil
Department of Housing, Planning, Community and Local Government

Roinn Cumarsáide, Gníomhaithe ar son na hAeráide & Comhshaoil
Department of Communications, Climate Action & Environment

# Environmental Services Training Group

## LOCAL AUTHORITY ENVIRONMENT CONFERENCE 2018

Climate Change and the Environment A New Reality

Minella Hotel, Clonmel Wednesday 25th. April 2018.

# Climate Change and the Environment A New Reality

## Building Regulations and Near Zero Energy Buildings (NZEB)

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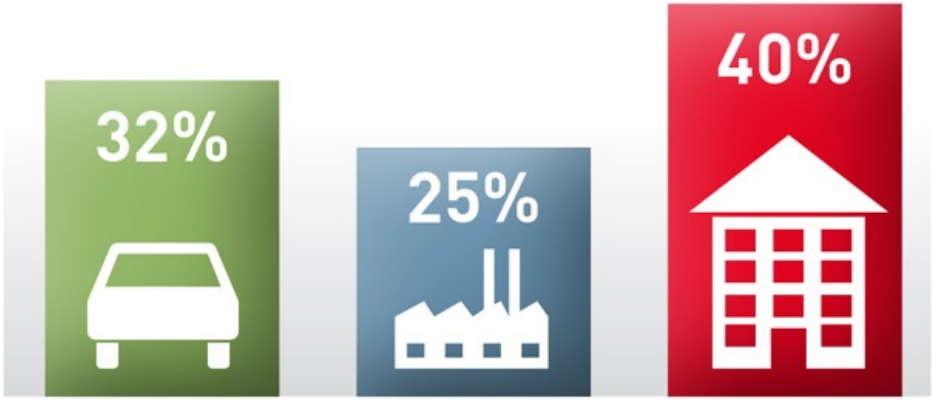
# Programme

- Buildings in Ireland
- Building Regulations
- Near Zero Energy Buildings (nZEB)
- Part L – the History
- Part L
- Compliance with Part L
- Current Issues
- The Future

# Buildings in Ireland

- How much energy is used
- Age and efficiency of buildings
- Drivers – EU targets since 1997, cost, economy etc




*Note: Energy consumption in agriculture, fishing and "other" makes up 3% of final energy consumotion, and is not included in the above figure*

*Source: DG Energy: EU Energy in Figures 2012*

- 32% of all energy in the EU is used for transport
- 25% of all energy in the EU is used by industry
- 40% of all energy in the EU is used by buildings

# Building Regulations


- Second Schedule Part A to M
  - Part A Structure
  - Part B Fire Safety
  - Part C Site preparation and resistance to moisture
  - Part D Materials and workmanship
  - Part E Sound
  - Part F Ventilation
  - Part G Hygiene
  - Part H Drainage and waste water disposal
  - Part J Heat producing appliances
  - Part K Stairways, ladders, ramps and guards
  - Part L Conservation of fuel and energy
  - Part M Access and Use.

# Near Zero Energy Buildings (nZEB)

- **European Energy Performance of Buildings Directive** (Recast EPBD 2010/31/EU)
  - all new buildings should be nZEB by 31st December 2020.
  - all buildings acquired by public bodies by 31st December 2018.

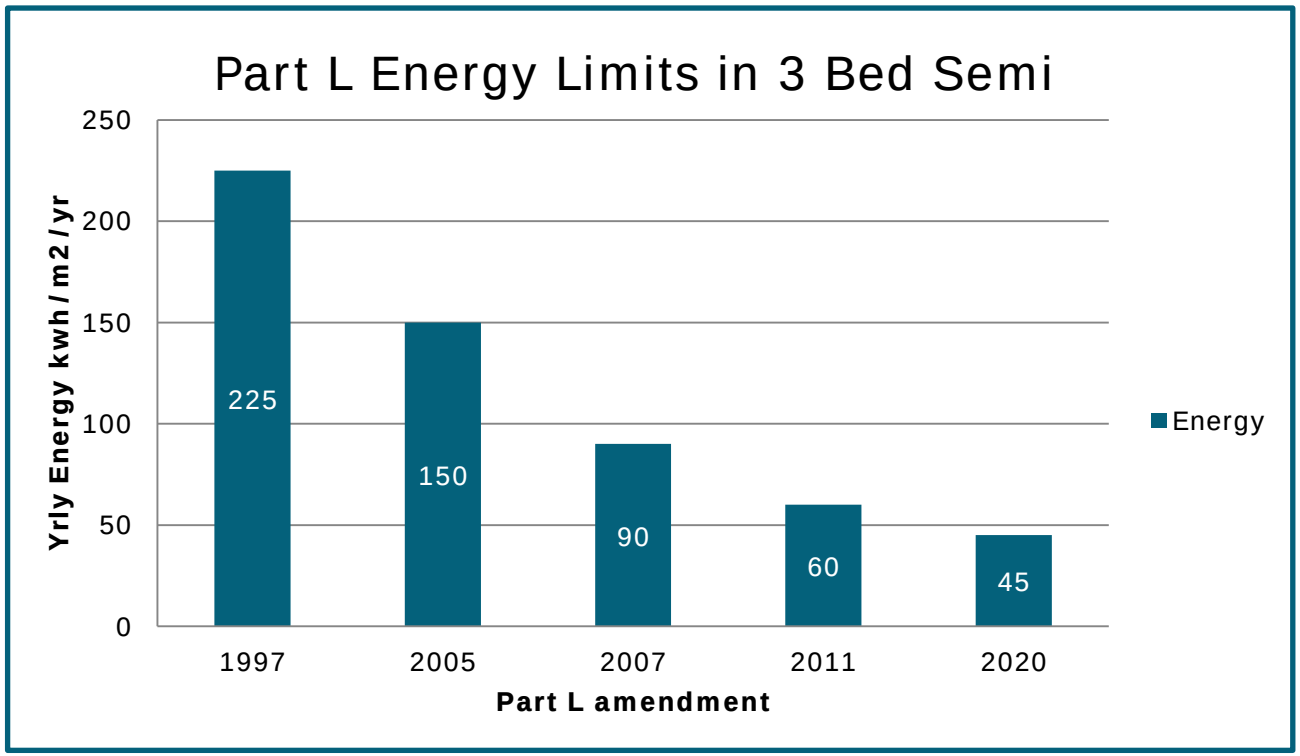
- **Definition:** '**Nearly Zero Energy Buildings**', **nZEB**
  - a building that has a very high energy performance where the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources including energy from renewable sources produced on-site or nearby.

- **Energy harvest vs Energy conservation**

- **implemented through the Building Regulations**
  - The conservation of energy section of the Building Regulations for non-dwelling buildings was amended in **January 2017** to include the requirements for nZEB. The Amended Regulation for dwellings is currently out on public consultation.

# Part L – the History

- **B Rgs part L 1991**: A building shall be so designed and constructed as to secure, insofar as is reasonably practicable, the conservation of fuel and energy.



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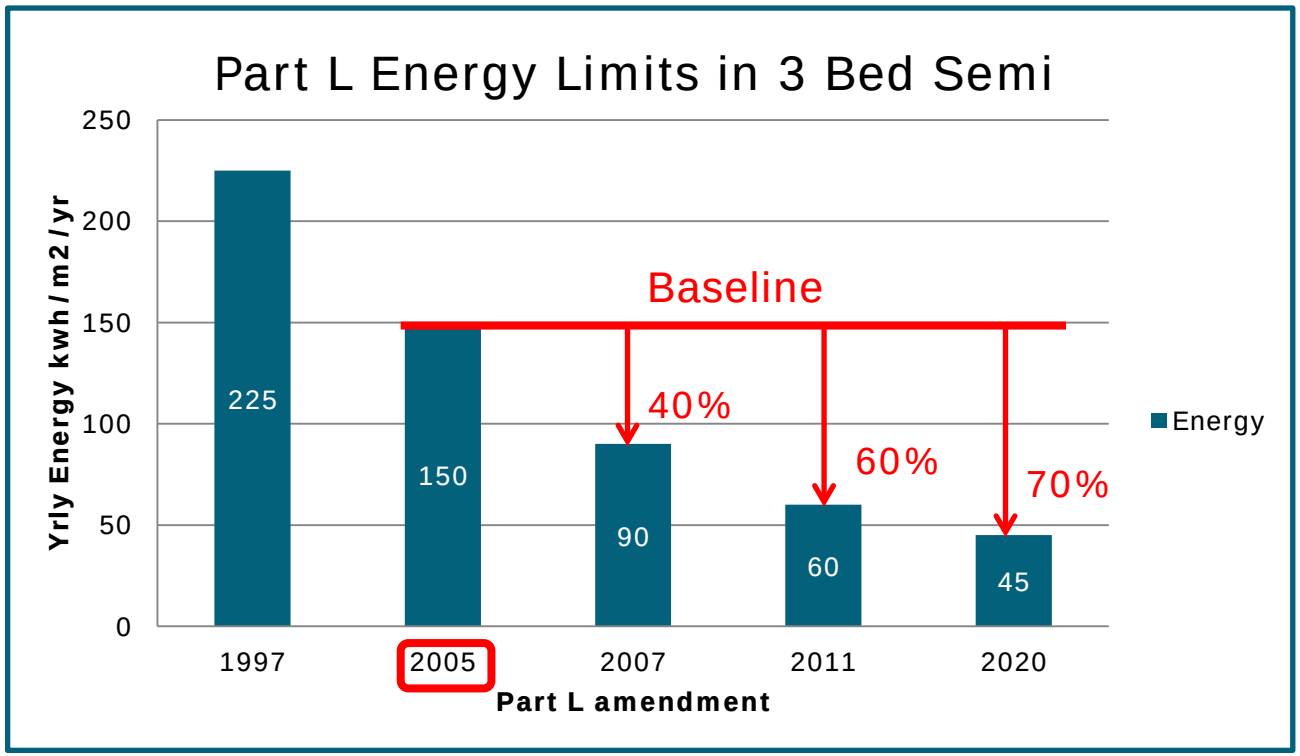


# Part L

- L1 Conserve Energy and CO2 emissions
- L2 Existing dwellings
  - Material Alterations
  - Change of Use
  - Extensions
  - Replacement Boilers
  - Replacement doors and windows
- L3 New dwellings
  - Use of DEAP
  - Renewables RER
  - Building Fabric
  - Heating and cooling systems
  - Controls
  - User information
- L4 Existing Buildings other than dwellings
- L5 New Buildings other than dwellings

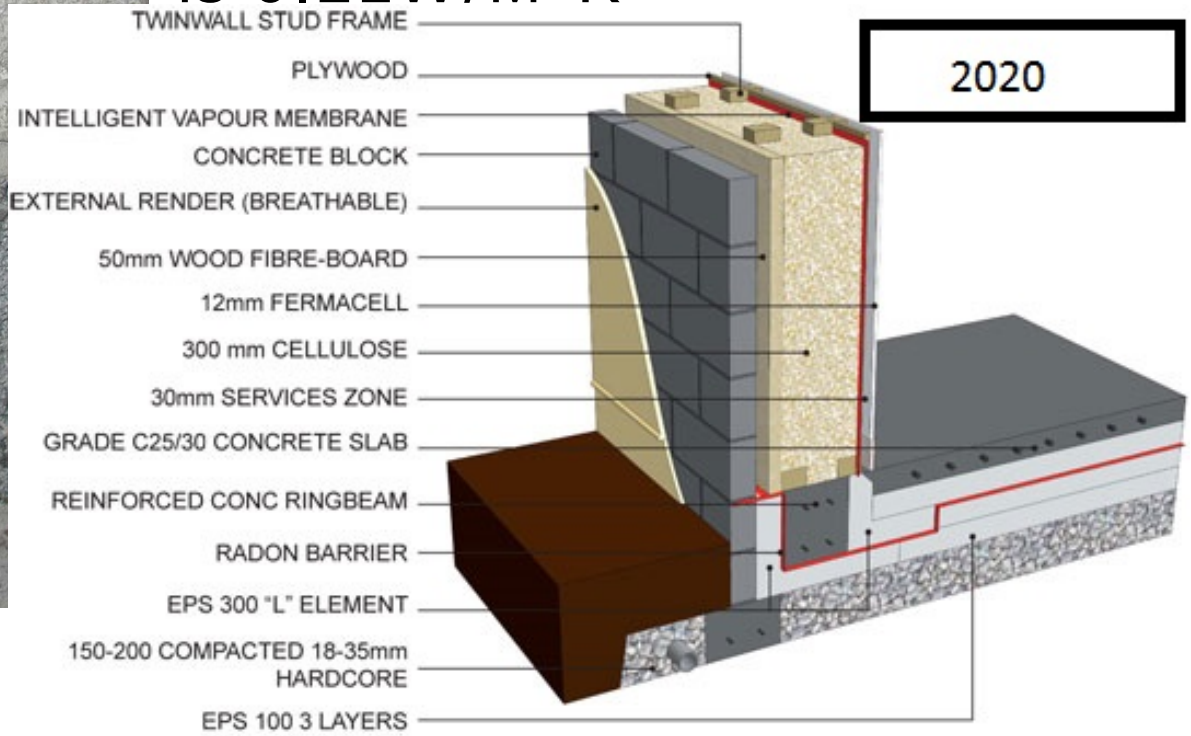
# Compliance with Part L

- **DEAP-Dwelling Energy Assessment Procedure**
  - MPEPC and MPCPC
  - BER rating

- **Design and Construction of the Building – Min standards**
  - Building Fabric - Insulation
  - Renewables
  - Air Tightness
  - Thermal Bridging
  - Heating and cooling efficiencies
  - Controls
  - User Information

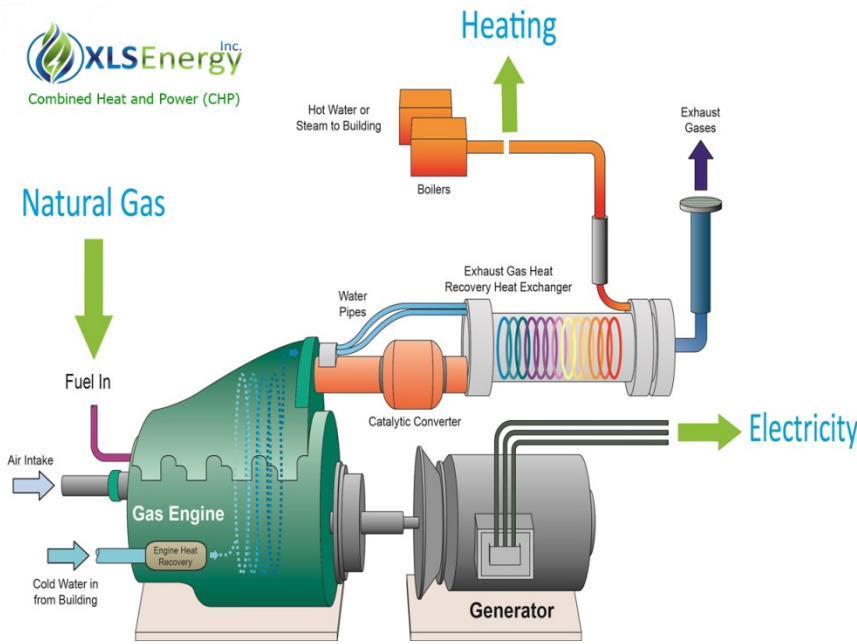
# Compliance with Part L


- or roof, wall, ground,
  ooflights etc
- is 0.21W/M²K



# Compliance with Part L

- **Renewables**
  - Solar Panel
  - Photovoltaic Panel
  - Wind turbine
  - CHP – combined Heat and Power
  - Heat Pumps



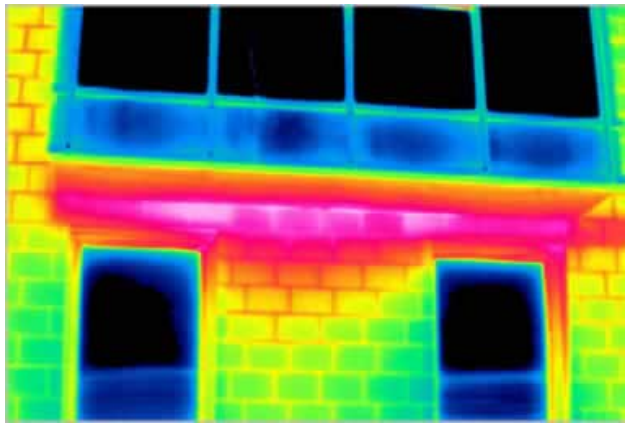

- **RER** – Renewable energy ratio

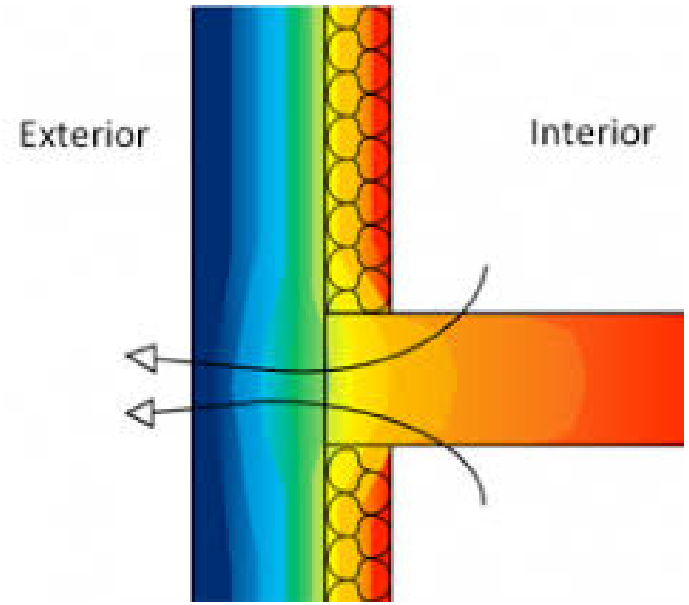
# Compliance with Part L

- **Air Tightness** – 2011 Part L is 7m³/hr/m²
  - nZEB proposed to be 5m³/hr/m²
  - Below 3m³/hr/m² requires Mechanical Ventilation – normally MVHR

# Compliance with Part L

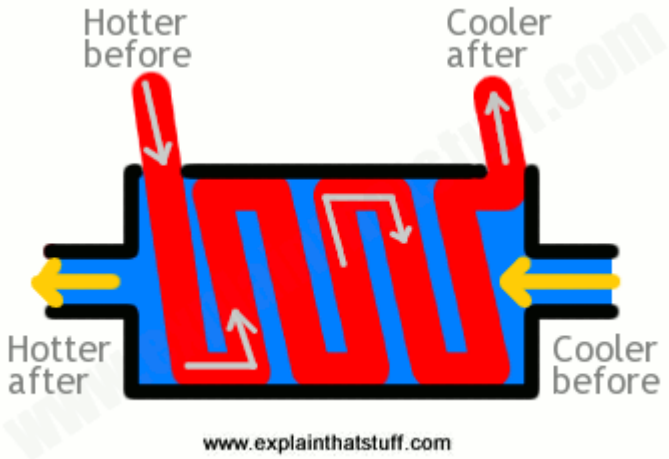
- **Thermal Bridging**
  - Means ‘Break in the insulation’ or Thermal bypass
    - Default value 0.15 for DEAP
    - ACDs (acceptable construction designs) 0.08
    - Thermal model
  - Dew point = mould





# Compliance with Part L

- Heating and cooling efficiencies
- Energy Controls
- Lighting
- User Information




# Current Issues

- **Modern Methods of Construction**
  - Timber frame
  - Precast Concrete
  - ICF
  - Steel framed
  - Modular
- **M&E reliance**
- **Solar overheating**
- **Workmanship** – TB and Air tightness
- **USERS**
- **Existing stock**

# The Future

- **Renewable technology advances**
  - Solar Glass
  - Solar Tiles
  - Heat Pump technology
  - Heat Exchangers
- **Thermal Bridging**
  - Passive design
- **ZEB**