Getting Ready for Zero Emissions and 100% Renewable Energy: Plans and Scenarios to Pave the Way for the Transition

10 December, 2015 - 11:15-12:45 - Room 2

Side event to the UNFCCC COP21, Climate Generation Area, Paris, France

Transitioning the UK to a Zero Carbon Society in 20 year by Paul Allen, Centre for Alternative Technology, UK

The event was organised by Nordic Folkecenter for Renewable Energy (Denmark) & NegaWatt (France) in cooperation with INFORSE, Track 0, Centre for Alternative Technology –CAT (UK).

The event was part of the “Climate Generation Area” Conference organised by the French Government parallel to the UNFCCC COP21 - www.cop21.gouv.fr/en/les-espaces-generations-climat/
Transitioning the UK to a Zero Carbon Society in 20 years
We now think of it as ‘normal’
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Powerdown
by 60% from our present extreme energy normality
Figure 3.4: Total annual energy demand by sector in the UK in 2010 (DECC, 2012) and in our scenario.
From: Figure 3.10: The change in energy demand for heating and hot water; cooking, lighting and appliances; and industry between 2010 (DECC, 2012) and our scenario: by amount and type of fuel.
Figure 3.7: The impact of measures that reduce a building’s heat loss and heating demand.
Figure 3.14: Change in total energy demand for transport and the types of fuel required in 2010 (DECC, 2012) and our scenario.
Figure 3.13: Reduction in energy demand for personal and commercial (freight) transport in our scenario (with initial figures from DECC, 2012).
Power up
We can use 100% renewable energy sources (no nuclear).
Key Question:

Can we “keep the lights on”?
The ZCB Energy Model:
Based on ten years of real-world hourly data
2002 - 2011
87,648 hours
ZCB Scenario demonstrates

- 82% of the time, the supply of renewable electricity exceeds demand (including electricity for heating and transport).
- However, 18% of the time, electricity supply does not fully meet demand.
- Short-term storage & ‘shifting’ demand can reduce this from 18% to 15%.
- Biogas and carbon neutral synthetic gas are burned in gas power stations to cover this.
- **Management of supply and demand with a 100% renewable energy system is possible with existing technology**
Land use
Figure 3.29: The Eatwell Plate. Government recommendations for a healthy balanced diet (FSA, 2007). Today’s average diet and the average diet in our scenario are shown (outside circle) relative to the Eatwell Plate recommendations (central circle).
WHO’S GETTING READY FOR ZERO?

A report on the state of play of zero carbon modelling

www.zerocarbonbritain.org