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Government urged to back intelligent appliances to help stabilise the electricity grid

A Parliamentary Bill urging the Government to put its weight behind new technology to help curb climate change is being tabled in the House of the Lords today.

The Dynamic Demand Appliances Bill [1], being introduced by Lord Redesdale, Liberal Democrat Energy Spokesman for the House of Lords, would pave the way towards intelligent electrical appliances that are able to sense power shortages on the electricity grid and alter their consumption accordingly.

Millions of such appliances acting together would cut carbon emissions [2] by reducing the need for back-up generation on the system. Such generation is generally less efficient because it has to run partly-loaded and at variable rate.

Lord Redesdale said:

“This is one of those simple yet powerful ideas with a huge potential to help curb climate change. As customers we would notice no difference in the performance of our domestic appliances. Yet our refrigerators and air conditioners would be providing a continuous stabilising service to the electricity grid, reducing our dependence on inefficient back-up generation and preparing the system for variable renewable energy sources.”

Joe Short, Director of Dynamic Demand [3], a not-for-profit group promoting the technology, said:

“What we need now is commitment from the Government to investigate the full potential of this technology and to set in train a process to provide incentives to appliance manufacturers. National Grid spends millions each year to ensure our electricity system can handle short-term spikes in supply or demand. I believe we could provide this stability using domestic or industrial appliances at a fraction of the cost.”

Dynamic demand control unlocks the energy-storage potential inherent in certain electrical appliances, like refrigerators, freezers and air conditioners. Such appliances use electricity only some of the time, switching on and off in regular cycles. With a low-cost micro-controller, the timing of these cycles can be adjusted to avoid times of shortage on the grid.

Given main-stream application, it is also believed that dynamic demand control could facilitate the connection of large amounts of variable energy sources such as wind power by smoothing out some of the short-term fluctuations common in these sources. Also, by providing greater stability, it is hoped the technology could help prevent a system-wide blackout in the event of a power station failure or deliberate sabotage.

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NOTES FOR EDITORS

[1] The Dynamic Demand Appliances Bill calls on the Government to stimulate the technology by creating a standard for dynamic demand appliances and ensuring financial reward for manufacturers who meet this standard.

[2] A recent briefing sheet by Dynamic Demand estimated the carbon savings that would result from replacing “frequency response”, a current method of smoothing very short-term fluctuations on the grid. The savings were around 2 million tonnes of carbon dioxide which is the same as the Government’s target for energy saving in public sector buildings. Download from <http://www.dynamicdemand.co.uk/news.htm>

[3] Dynamic Demand is a not-for-profit organisation set up by engineers, environmental advocates and academics keen to see more innovative solutions to climate change. Dynamic Demand is supported by a charitable grant from the Esmée Fairbairn Foundation. For more information, see www.dynamicdemand.co.uk

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