

The IEEE Society on Social Implications of Technology presents...

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**TECHNOLOGY-BASED  
SOLUTIONS TO CLIMATE  
CHANGE: DELIVERING  
SUCCESS OR FAILURE?**

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Public welcome — no entry charge



**Abstract**

There is global consensus on the need to reduce carbon emissions and consequently the planet's energy footprint. Organisation such as the "2,000-Watt Society" have articulated goals that each human consume energy at a rate of no more than 2000 watts in total (compared to the 6,000 watts consumed per person in Europe today and the 12,000 watts per person in the USA), without a fall in standards of living. While we can debate actual targets and objectives, it is clear that we should each be conscious of our quantified energy footprint, have the tools to reduce it, and address the issues that cause many technologies to fail. As governments impose regulations aimed at pursuing these carbon emission reduction goals, such as the Carbon Trading Scheme, the capability to measure and control institutional carbon emissions will become vital to all organisations.

The technological solutions to climate change can be categorised as either technologies that use information to make existing activities less energy intensive, or technologies that create new capabilities (such as 'clean energy' sources). While both approaches will undoubtedly be essential to achieve energy reductions, this presentation focuses on the former as, in the short term, this can yield more rapid savings.

Information can provide novel and efficient new ways to get more energy value out of current technology. Examples include:

- The Paris Autolib program, which allows cars to be shared as public transport within the city. This is an early exemplar of personalised public transport. Such systems are only made possible through the use of new mobile devices and networks (e.g. broadband data, GPS, etc) that provide more flexible, convenient and transparent management of such systems.
- The use of RFID tags, mobile networks and location based services can work with networked information management systems to improve the efficiency of freight systems by ensuring that journeys of freight vehicles are always optimised. Freight is a significant contributor to modern society's energy use.
- Mobile devices with location capabilities can be configured as carbon monitoring tools for transportation, the outputs of which can then positively affect behaviour.
- New technologies can enable the avoidance of unnecessary travel: a reliable and widespread national broadband network provides new capabilities for doing business remotely. Holograms, 3D TV and new remote collaborative tools will be many orders of magnitude more energy efficient than their 20th century counterpart of frequent long distance business travel. Such technologies will also provide more powerful options for telecommuting, which can drastically reduce urban auto use.
- Homes and buildings can be monitored and controlled through the use of network technologies to ensure that the consumption of energy in the home is minimised without impacting standards of living (for example, by using proximity - detected through a mobile phone - to only turn on heaters or air conditioners when they are absolutely required).

This presentation will consider the impact of such multi-fronted technological approaches - enabling increases in efficiencies, and downscaling of redundant activities - which will be a part of any solution to climate change.

**Dr. Hugh Bradlow**

Hugh Bradlow is Chief Technology Officer for Telstra and has been responsible for the Telstra Research Laboratories. He has been with Telstra since 1995, prior to that having been Professor of Computer Engineering at the Universities of Wollongong and Cape Town.

Dr Bradlow is a graduate in electrical engineering from the University of Cape Town and received the D.Phil. degree for research in experimental nuclear physics from the University of Oxford. He is a Fellow of the Australian Academy of Technological Sciences and Engineering, an Emeritus Professor of the University of Wollongong and a Professorial Fellow of the University of Melbourne.

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