

Presentation 3 – Session 1

Framework for Decarbonising Australian Energy

Professor Stephen Wilson

Centre for Energy Futures, The University of Queensland

Biography

Professor Stephen Wilson is an engineer and an energy economist. He is a faculty member in the School of Mechanical and Mining Engineering at the University of Queensland, where he leads the energy research programme in the Centre for Energy Futures and contributes to the Rapid Switch research initiative on the pace of global decarbonisation in collaboration with colleagues from the Dow Centre for Sustainable Engineering Innovation at UQ, and a number of international universities. His research focuses on the system integration of renewable energy and other emerging forms of energy generation and their impacts on competition, electricity market design, regulation and policy. Stephen teaches *Energy Markets, Law and Policy* for the Masters in Sustainable Energy, and *Professional Practice and the Business Environment* for final year undergraduate engineering students.



Stephen's work has ranged from energy efficiency and demand side management, through electricity and gas transmission and distribution networks and storage, to power generation and all of the major primary energy sources, including uranium for nuclear power generation.

Prior to joining UQ at the start of 2017, Stephen's career spanned more 25 years with consulting firms in Melbourne, Hong Kong and London and Brisbane and five years as General Manager — Market and Industry Analysis for Rio Tinto Energy, which was a major independent producer of uranium, as well as of coal, to international markets.

Stephen has led work on global energy and emissions scenarios and has worked on energy and environment studies in the electricity, gas and transport sectors in Australia and more than 30 other countries, providing policy and strategy advice to international development banks, governments, utilities and corporate clients.

Email: stephenjwilson@uq.edu.au

Abstract

There is a view that appears to be gaining an increasing number of serious adherents that without nuclear power generation in the system it will be difficult, or perhaps even practically impossible, to deeply decarbonise the Australian economy. Whether or not that observation is well-founded, it merely scratches the surface of the challenges.

It is becoming clear that we (Australians) face some very big choices about energy. These are probably our most momentous energy policy choices since Federation. In other words, these are the most momentous energy policy choices in Australian history. To discuss seriously any “**Framework for Decarbonising Australian Energy**” we first need to be sure that we have identified the options and that we understand them properly. Then, as a society, we need to know what we want, and what trade-offs we are willing to make, because we won’t be able to have our cake, and eat it, and give it to a friend. Once we know what we want as a society, and there is broad understanding of what the options are for achieving that, we will need to resolve the question of how we achieve it. Not all possible means are capable of reaching any possible outcome. For example, a *laissez faire* fully market-based approach is more likely to drive towards some outcomes over others. A return to central planning is likely to favour yet other outcomes. Engineering, economics and politics all need to be considered.

This presentation will provide an overview of our current physical electricity system, with an emphasis on Eastern Australia. It will discuss the National Electricity Market and the symptoms of stress it is exhibiting. The ‘investment problem’ in electricity—identified long ago by Joskow and Schmalensee (1983) and making its presence felt now—will be addressed. Finally, some contrasting scenarios will be sketched out to provide a framework for exploring how various policy settings tend to influence our technical options, or how a preference for a desired technical outcome tends to imply a corresponding approach to policy settings, particularly with respect to the roles of the market and of governments in both short- and long-term time horizons.