IEEE CHICAGO SECTION

Institute for Environmental Science and Policy

Technology and Policy Options for a Low-Emission Energy System in Canada

Findings of an Expert Panel on Energy Use and Climate Change

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3:00-4:30pm Friday, November 3rd, 2017
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Abstract: A synopsis is presented on the key findings of the October 2015 Council of Canadian Academies' Expert Panel Report on energy use and climate change (www.scienceadvice.ca). The evidence is clear: increased greenhouse gas emissions from human activity are causing pervasive changes to the Earth's climate, and significant and rapid efforts will be needed to reduce these emissions in the coming decades. The report reviews options for reducing greenhouse gas emissions and moving Canada toward a low-emission future. It describes Canada's energy system, an analysis of different energy sources and technologies, and an exploration of the public policies available to support a shift toward low-emission energy sources and technologies. Moreover, the investigation is guided by a systems thinking approach, recognizing the interconnectedness of society and the natural environment. Overall, the Panel acknowledged that the technologies needed for a low-emission energy system and the policies required for promoting their use, already exist, are well-understood and are constantly improving. Optimal strategies and policies for advancing reductions in greenhouse gas emissions will need to adapt to new technological developments, and other social, economic, and political changes. The report constitutes an indispensable resource for private sector decision-makers, government, and the public as they seek to better understand energy use and options to combat climate change.

Keith W. Hipel is *University Professor* of Systems Design Engineering at the University of Waterloo where he is *Coordinator* of the Conflict Analysis Group. He is *Past President* of the Academy of Science within the Royal Society of Canada, *Senior Fellow* of the Centre for International Governance Innovation, *Fellow* of the Balsillie School of International Affairs, and *Past-Chair* of the Board of Governors of Renison University College. Dr. Hipel thoroughly enjoys mentoring students and is a recipient of the *Distinguished Teacher Award*, *Faculty of Engineering Teaching Excellence Award*, and the *Award of Excellence in Graduate Supervision* from the University of Waterloo, as well as the *Outstanding Engineering Educator Award* from IEEE Canada. His research interests include conflict resolution and decision-making methodologies for complex interdisciplinary system of systems engineering problems lying at the confluence of society, technology and the environment. He has authored books, 300+ journal papers, and many conference articles. Dr. Hipel is the recipient of the *Japan Society for the Promotion of Science (JSPS) Eminent Scientist Award*; *Joseph G. Wohl Outstanding Career Award* from the IEEE Systems, Man and Cybernetics (SMC) Society; IEEE SMC *Norbert Wiener Award*; three *Honorary Doctorate* degrees; *Sir John William Dawson Medal* (Royal Society of Canada); *Jiangsu Friendship Medal*; *Engineering Medal for R&D* from Professional Engineers Ontario; and *Foreign Member* designation of the National Academy of Engineering, USA.

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