

The Living Without Oil Series: An Elder Academy Event
The Role of Hydrogen and the Fuel Cell in
Future Energy Transition



**University
of Victoria**
Retirees
Association

Nicolas Pocard

Saturday, February 8
10:00am – 12:00pm,
David Turpin Building, Room A110

Hydrogen is the single most abundant substance in the universe. Perhaps due to this abundance, we sometimes forget how useful hydrogen is. From being used in the very first internal combustion engines as an inflammable fuel, to powering flight by airships, hydrogen has once again taken center stage in mankind's quest for energy sources in the form of fuel cell applications.

This presentation will examine the future role of hydrogen in the decarbonisation of our economy, from transportation to industrial sectors. We will look at the current state of the art of fuel cell technology and its current deployments worldwide. Closer to home, hydrogen will be required if Canada and BC are to meet their reduction of emissions targets. The discussion will include technology developed by companies like Ballard Power Systems to achieve these goals.



The Director of Marketing and Business Operations at the Vancouver Corporate Headquarters of Ballard Power Systems, Nicolas Pocard brings more than 20 years of experience in business development and marketing at the international level. He joined the fuel cell industry in 2004 and Ballard Power Systems in 2012. Among his present responsibilities, Nicolas looks after market strategy, marketing activities, and government relations for Ballard. He is a board member of the California Hydrogen Business Council co-chairing the Public Transit group. He also represents Ballard with various Industry Associations and Government forums.

To register: <https://www.eventbrite.ca/e/oil-part-one-tickets-85417396733>. Students may register for free by emailing uvraevents@uvic.ca

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Nuclear Re-visited - Canadian SMRs (Small Modular Reactors)

John Stewart

Saturday, February 15

10:00am- 12:00pm

David Turpin Building, Room A110

What is the pathway to a decarbonized energy system, and how much electrification would that would require? How much growth in clean electricity capacity is needed, and how much of this can be provided by renewables? John Stewart asks why 20 years of investment in renewables has not produced transformative change. He will suggest ways to address this, in reference to data and analysis from the International Energy Agency.



John Stewart is the Director of Policy and Research at the Canadian Nuclear Association. He leads the development of policy and research products to support the CNA's mission, and, he co-chairs the Public Affairs Advisory Committee. He was project manager of the 2018 Small Modular Reactor Roadmap and has been Canada's representative to the Washington-based Global Nexus Initiative. He worked with the U.S. Embassy in Ottawa from 1990 to 2010, where he was a member of a Climate Outreach Team that received a Superior Honor Award for effectively communicating U.S. foreign policy on the environment and climate change. An advocate for the productive integration of immigrants into Canadian society, he has led two of Ottawa's immigrant services organizations. John is on the teaching faculty of the Max Bell School of Public Policy at McGill University and is the author of *Strangers with Memories: The United States and Canada from Free Trade to Baghdad* (McGill-Queen's University Press, 2017).



To Register: <https://www.eventbrite.ca/e/oil-part-two-tickets-85419466925>. Students may register for free by emailing uvraevents@uvic.ca

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Wind Energy Opportunities: Terrestrial, offshore and airborne variants

Curran Crawford

Saturday, February 22

10:00am – 12:00pm

David Turpin Building, Room A110



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Wind energy has emerged as a key low-carbon electricity generation technology through progressive development starting in earnest in the 1970's. Wind resources are widely distributed around the world, and, in some energy markets, are now on-par with conventional fossil fuel generation prices.

This talk will provide an overview of the wind resource and international electricity market relative to the integration of wind energy. It will explore the engineering drivers that have led to the emergence of the 'Danish concept' 3-bladed wind turbine. Aspects of terrestrial wind energy deployments will be presented, including siting considerations and both global and systemic environmental impacts. We will look at developments in emerging technologies, starting with bottom-mounted offshore turbines and the push toward floating offshore concepts, and consider the promises and challenges of airborne wind energy.



Dr. Crawford is a Professor in Mechanical Engineering at UVic, a member of the Institute for Integrated Energy Systems (IESVic) and co-director of the Pacific Institute for Marine Energy Discovery (PRIMED). His research focuses on developing advanced models and optimization-based design tools for a range of low-carbon technologies ranging from advanced wind energy concepts, to tidal and wave energy, through to energy systems analysis of electrified transportation, batteries and demand response. The objective of this research is to enable a transition to a low-carbon future by connecting renewable generation with end-use services.

To register: <https://www.eventbrite.ca/e/oil-part-one-tickets-85417396733>. Students may register for free by emailing uvraevents@uvic.ca

This event is presented in partnership with IESVic



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Cleaning BC: The role of Wave Supplied Power in a Low-Carbon Energy System

Brad Buckham

Saturday, February 29

10:00am- 12:00pm

David Turpin Building, Room A110



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As a renewable energy technology, wave energy converters (WECs) suffer a unique dichotomy: wave energy is accepted as a vast untapped natural energy supply with some competitive advantages, but they remain an undervalued technology when compared to land-based renewable options. In BC, development of wave energy resources is hindered by a saturated energy market and cost-of-energy constraints that apply to any new generation capacity. However, there are a large number of communities that remain reliant on diesel fueled energy generation and there is a push at all levels of government to mitigate diesel consumption at these locations. For many of these communities, wave supplied power is the predominant renewable resource and presents the best opportunity to eliminate diesel consumption— provided the technology can be operated without undue risk.

This presentation describes recent developments in WEC design and control, the state of new international standards for the WEC industry and how these efforts can serve BC communities.



Dr. Buckham is a Professor in the Department of Mechanical Engineering and a member of IESVic at the University of Victoria. Specializing in offshore mechanics, he directs the West Coast Wave Initiative (WCWI) and co-directs the Pacific Regional Institute for Marine Energy Discovery (PRIMED). WCWI research focuses on wave energy resource assessment, wave energy converter technology, and developing GIS-based methods for identifying strategic wave energy sites. PRIMED assists BC coastal communities and marine energy technology developers in planning mutually beneficial marine energy demonstration projects.

To register: <https://www.eventbrite.ca/e/oil-part-one-tickets-85417396733>. Students may register for free by emailing uvraevents@uvic.ca

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USEFUL INFORMATION

PARKING: On Saturday parking is \$3.50 for all day. Cash or Credit Card. New parking regulations require you to enter your license plate number when purchasing your ticket. You do not have to return to your car to place the ticket on the dash as it is all done electronically.

SUGGESTED PARKING: Lot 6 at McGill Road and Ring Road

CAMPUS MAP: www.uvic.ca/home/about/campus-info/maps/pdf/parking-map.pdf

BUS ROUTES: www.uvic.ca/home/about/campus-info/maps/maps/

NEED HELP? Please contact: [http://uvra@uvic.ca](mailto:uvra@uvic.ca)