The Living Without Oil Series: An Elder Academy Event

University of Victoria Retirees Association

Presentations to series conclusion

Saturdays, October 3, 17, 24, 31, 2020
10:00am- 12:00pm
Online via Zoom

The Living Without Oil series began with a Keynote Address January where a case was made for "Living Without Oil". As the series progressed in February, our presenters described the current status of various technologies. These included the hydrogen fuel cell, nuclear, wind energy and wave energy. Phase 2 of the series concluded in March by looking at BC's future electrification plans and the province's capability of meeting these needs using hydro generated power. On March 13, Elder Academy postponed the remainder of the series due to the COVID 19 pandemic. We are now pleased to offer the remaining presentations as listed below using Zoom software. The series was originally planned to conclude with a panel discussion, however this has been replaced with an additional lecture.

Oct 3: **"Review of Presentations Given Prior to Postponement in Mid March",**
Presenter: John Gunton, UVRA EA

Oct 17: **"Energy Storage and Electrification",**
Presenter: Dr. Andrew Rowe, IESVic

Oct 24: **"Solar: Cost and limiting Efficiency of Silicon Solar Panels",**
Presenter: Dr. Tom Tiedje, UVic ECE Faculty

Oct 31: **"Impact on Society of Life Without Oil",**
Presenter: David Yager, Energy Policy Analyst and Author

Registration is available on **Eventbrite** **here**. **Cost:** $20.00 for four sessions
Students are free to attend but must email uvraelderacademyevents@uvic.ca using their UVic Netlink ID to register and receive the meeting links.
These are online webinars hosted on Zoom. Meeting entry available starting at 9:45am.

*Presented in partnership with **IESVic***

University of Victoria | Institute for Integrated Energy Systems

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Review of Series to Postponement

John Gunton
Saturday, October 3
10:00am- 12:00pm
Online webinar (details below)

In January, John Gunton opened the series with a keynote address, where he made a case for "living without oil." The series continued with four lectures on the role of hydrogen and the fuel cell in future energy supply, nuclear power and Small Modular Reactors, wind turbines, and the contribution of wave supplied power in a low-carbon energy system.

The series continued in March with lectures on low carbon electrification, the use of solar in strata developments, and BC Hyrdro's CleanBC Plan. In the face of increasing concern over the COVID 19 pandemic, Elder Academy decided to postpone the remainder of the series. John will restart the new iteration of the series by summarizing what we have learned so far.

John Gunton, is a retired businessman, consulting geologist, and Yorkshireman who studied geology at Durham University and completed a PhD in geochemistry at Queens University. He worked for Shell in Calgary before spending 40 years travelling the world exploring for and developing oil and gas deposits for various companies. In retirement he became involved in ElderCollege in the Nanaimo - Parksville - Qualicum area where he taught numerous courses and became Chairman of ElderCollege for a few years. He also formed a private company, SyncWave Energy ,which developed a patented technology to extract ocean wave energy, with the potential to supply remote off-grid communities and connect with the power grid. He is currently the UVRA Elder Academy Programming Committee Chair.

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Energy Storage and Electrification

Andrew Rowe

Saturday, October 17

10:00am- 12:00pm

Online webinar (details below)

Numerous policy, technology, and market forces are driving the need for energy storage. Increased penetrations of variable energy sources are changing the structure and operation of electrical systems. Electrification of heating and transportation, and deployment of distributed energy resources such as PV, are altering historical patterns of net electricity demand. The flexibility provided by storage can help manage variable energy resources and respond to new and more dynamic loads. This seminar will examine various ways of providing energy storage and review grid-scale storage services and their characteristics. The economics of storage are presented with a focus on learning rates and projections of future costs.

Dr. Andrew Rowe is the Director of the Institute for Integrated Energy Systems and a Professor in the Department of Mechanical Engineering at the University of Victoria, Canada. He served as an Engineering Officer in the Canadian Navy where he was involved in the operation and maintenance of propulsion, power generation and ancillary systems. He earned an M.A.Sc. degree for research on fuel cell performance modeling and went on to complete a Ph.D. in magnetic cycles for heat pumping and hydrogen liquefaction. His current research areas include energy system analysis, caloric cycles, electrification, hydrogen systems, and energy storage. Dr. Rowe is a member of the editorial board for Cryogenics, the scientific committee of THERMAG, a registered Professional Engineer in the province of British Columbia, and a member of the Electrochemical Society.

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Solar: Cost and limiting efficiency of silicon solar panels

University of Victoria Retirees Association

Tom Tiedje

Saturday, October 24
10:00am- 12:00pm
Online webinar (details below)

Over the last 40 years the cost of silicon solar panels has decreased by more than a factor of 300, annual production has increased by five orders of magnitude and energy conversion efficiency has doubled. Recent power purchase agreements in the Middle East, Brazil and the US have come in at less than 2 cents/kwh. The net result is that "wind and solar have won the race to produce the lowest cost bulk electricity" (Bloomberg, New Energy Finance, 2018).

This seminar will explain what is likely to happen in the future with respect to solar panel cost, production volume and efficiency. Future projections for efficiency are guided by thermodynamics and the optical and electronic properties of silicon; cost can be projected with a learning curve, similar to Moore's law for integrated circuits. A recent innovation is the bifacial panel which is sensitive to light incident on both sides and gives 10-30% more output power than a single-sided panel.

Dr. Tiedje is a faculty member in the Electrical and Computer Engineering Department at the University of Victoria. Before coming to Victoria in 2008 as Dean of Engineering, he was a faculty member in the Faculties of Science and Applied Science at the University of British Columbia and before that he worked for ExxonMobil in New Jersey. He is a fellow of the American Physical Society, the Royal Society of Canada and the Canadian Academy of Engineering.

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Impact on Society of Life Without Oil

David Yager

Saturday, October 31
10:00am- 12:00pm
Zoom (details below)

What better way to end the series "Living Without Oil" than to hear from an Albertan who has spent his life in the industry? Energy Policy Analyst and Oil & Gas Writer David Yager will bring a perspective grounded in the history of the industry and offer a viewpoint on how we will be challenged living in a world without oil. What is the vision for society as we move away from oil, and hydrocarbons in general?

A resident and native of Calgary, Alberta, David Yager was born into Alberta's oil and gas industry. An entrepreneur since 1979, he has been a founder, executive and director of three successful TSX listed oilfield service companies. David's journalism career began 40 years ago as co-owner of an oilfield trade magazine. For decades he has been analysing and writing about oil and gas, politics and energy policy. He remains a frequent contributor to trade publications, newspapers, radio and television and has written background papers and policy positions for oil service trade associations since 1991. He is the author of *From Miracle to Menace: Alberta, A Carbon Story.*

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NEED HELP?

If you have any questions or want more information about these events, please contact **uvraelderacademyevents@uvic.ca**