Meeting The Net Zero Decarbonization Challenge: Virtual Ideation Workshop

Date: June 23, 2021 (12-2pm PST)
Location: Zoom

In response to our federal *Clean Canada* plan to be carbon neutral by 2050 and BC's legislated 80% reduction target, considerable efforts must be made by governments, academia, and private sector to create, find and implement innovative solutions to reduce atmospheric carbon. The Cascadia region, with its wealth of clean-energy assets, nature-based carbon capture opportunities and culture of environmental stewardship is well poised to be a North American leader in this effort. It was from Vancouver, BC that in 1971 a crew of twelve set sail in an old fishing boat to initiate what would become the world's most visible environmental organization, Greenpeace.

The task of getting from 51 billion tons of greenhouse gas emissions to zero is so difficult that incremental improvements in efficiency will not get us the results we need. Instead, what we need are breakthroughs in construction, energy, transportation, agriculture, infrastructure, and the ways in which we work and live. For this we will also need to collect and manage complex data to help us understand the environment, optimize our supply chains to eliminate waste, and put the efficiency of our buildings on a totally new level.

The Cascadia Innovation Corridor, Canada's Digital Technology Supercluster and the University of Victoria have teamed up to an expert panel and ideation workshop to talk about a few of these challenges and their related opportunities. The session will include:

- the digital opportunities for net zero innovation in the critical sectors
- the economics and data that will ultimately drive innovation adoption
- new institutions, infrastructure, regulations and innovations required to meet net zero targets

The objectives of this ideation workshop are as follows:

1. Inspire big ideas and bold thinking
2. Create a forum for new partnerships and collaborations that can forge projects
3. Educate members and consortia on the path to successful collaborative R&D

The ideation workshop will have three parallel tracks that will focus on three different challenges where we will explore how the combination of our digital technology and clean technology leadership can lead to global solutions that we can pioneer.

Track 1: Net Zero Buildings and Infrastructure

In this track we will explore the transition from fossil fuels (direct and indirect) in existing buildings and infrastructure. As one of the biggest challenges to meeting our targets, the complexity centres around retrofit vs. new construction, how we can utilize new technology + new construction materials to promote carbon reduction, and how to utilize digital technologies to support the transition. We will use digital technologies (e.g. blockchain, earth observation, digital twinning, etc.) to support planning and construction, and consider related issues such as smart grid technologies (with demand-response controls), onsite storage and generation, and resilient microgrids to support reliability.

The Challenge:
How might we best…

- Build upon the leadership of local governments around performance benchmarking, improvements in energy efficiency, carbon reduction, climate adaptation and seismic resilience to standardize best practices to the entire Cascadia region with leadership by Provinces and States?
- Integrate data sets across institutions, including asset and operations data, to benchmark energy performance and GHG emissions of buildings across diverse sectors and geographies in a trustworthy manner so we can better optimize emission reduction opportunities?
- Develop data-driven energy efficiency codes and emissions standards? (similar to the ASHRAE 100 standard referenced by the WA-State Clean Buildings regulation)
- Support improved real estate valuation of higher performing buildings through a risk mitigation lens?
- Address persistent market barriers to stimulate investment in ultra-low energy building retrofits that achieve GHG reduction targets and improve the resilience of buildings in critical sectors such as purpose-built rental and other affordable housing?
- Incorporate information technologies that allow smart demand/supply balancing that maximizes the use of zero-carbon energy resources?
-

Track 2: Clean Energy and Smart Usage

In this track we will explore how to build a new clean economy by incentivizing and enabling the move to clean energy, better managing energy resources, predicting and matching supply and demand, minimizing waste and adopting circular economy practices, deploying negative emissions technology and using smart technologies to optimize loads aligned with zero-carbon supplies. When we all switch to electricity the demand will be huge and a potentially a global control of supply and demand, storage and transportatuion can only be done digitally and will ideally be fully automated. And we will need a solution for all sectors and all geographies.

The Challenge:
How might we best…

- Build a complete digital (and economic) twin of energy supply and demand, which factors in wind farms, solar, ocean (wave/tide), hydro, fuel cells?
- Minimize the need to store energy and reduce long distance energy transportation by matching demand and supply, producing just in time and closer to the demand?
- Build a new energy web – a smart grid network which factors in the possibility for clean energy to be generated from anywhere, eg. by the photovoltaic panels of consumers who would trade in their surplus?
- Predict not only energy demand but also conditions that affect the energy supply – remember the frozen windmills in Germany in February?
- Provide energy solutions for large scale mobility of cargo in marine, rail, aviation, port operations, heavy-duty trucks, etc.

Track 3: Nature-based Solutions for Decarbonization

In this track we will explore how to leverage digital technologies to track the way we as humans affect the climate and the environment and what tools we might use to build a network of stakeholders that collectively adopt sustainability practices through aligned incentives for Clean Growth. We can consider technologies and paradigms like digital twinning, data common, sensors, earth observation, blockchain, DeFi (Decentralized Finance), etc. We will need massive data to be able to take decision in which sectors to invest and which sectors to divest, as well as how to leverage our natural resources in carbon capture and turning it into an economic advantage of our region.

The Challenge:
How might we best…

- Track GHG emissions of human activities across businesses, industries, supply chains and geographies in a trustworthy manner so we can better identify possible emission reduction opportunities?
- Connect the way individual businesses are tracking their emissions into a common network that allows us to understand how activities across sectors are related?
- Quantify the health of the environment by objectively measuring and tracking key elements such as biodiversity and water quality, so that we can better understand our impact on the environment?
- Establish a Carbon marketplace that operates better than a zero-sum game? i.e. Create economic incentives for businesses to reduce emissions not only individually but also as a complete network?
- Utilize our natural resources (the forest, ocean, fresh water, soil, etc) as ways to capture carbon from the atmosphere and create economic drivers to further expand their use.

WORKSHOP AGENDA

Time	Event Description
12:00 PM PST	Opening Remarks
12:10 PM PST	Expert Panel
12:55 PM PST	Setting the Context for the Breakouts / Instructions
1:00 PM PST	Ideation Breakout • Track #1 – Net Zero Buildings and Infrastructure • Track #2 – Clean Energy and Smart Usage • Track #3 – Nature-based Solutions for Decarbonization
1:50 PM PST	Ideation Outcomes
1:50- 2:00 PM PST	Summary and Wrap-up