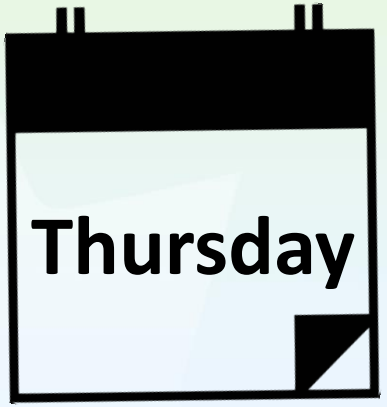
Natural Resources Canada | Ressources naturelles Canada

Workshop – Development of an Open Modelling Platform for Electrification and Deep Decarbonisation Studies

BAnQ | Grande Bibliothèque
Montréal, QC
February 21-22, 2019

Canada

Day 1



Welcome

8:30 – 8:45

Steven Wong & Véronique Delisle
Natural Resources Canada, CanmetENERGY

Natural Resources Canada

Minister's Office

Deputy Minister's Office

- Canadian Forest Service
- Lands and Minerals Sector
- Energy Sector (REED, OEE)

Innovation and Energy Technology Sector (IETS)

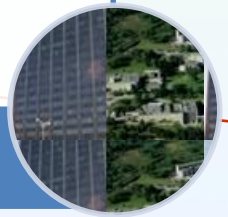
- **Office of Energy Research and Development (OERD)**
- **Canmet Research Centres**
- **Policy and Planning Branch (PPB)**

Canmet Laboratories Across Canada under NRCan's IETS

- Oil sands & heavy oil

Devon

- Buildings & communities
- Industrial processes
- Clean electricity
- Bioenergy
- Renewables
- Transportation



Ottawa

- Buildings
- Industrial processes
- Renewable energy integration
- RETScreen International

Varennes

- Transportation (materials)
- Pipelines
- Manufacturing

Hamilton

General Information

- Breakout session tables
- Time keeping
- Washroom locations
- Dinner tonight 19:30 @ Vieux-Port Steakhouse *(for those who have RSVP'd; limited seating)*

Workshop Context

- Several ongoing renewable integration and electrification R&D projects
- However, no coordinated effort at the national level to leverage the work of key players and avoid duplication
- Additionally, desire to leverage and contribute to common American and Mexican initiatives

Objective

- Identify the key components of a proposed “Open Modelling Platform for Electrification and Deep Decarbonisation Studies”
  - Clarify platform needs
  - Identify gaps in existing models and data
  - Determine the main elements
  - Propose a common development approach

Agenda - Thursday

08:30 – 08:45	Welcome
08:45 – 10:10	Setting the Table: Problems and Needs
10:10 – 10:30	Break
10:30 – 11:15	Setting the Table: Problems and Needs (continued)
11:20 – 11:35	Participant Introductions
11:35 – 12:30	Discussion Panel: Motivations and Goals
12:30 – 13:30	Lunch
13:30 – 14:55	Breakout Session: Identifying the Needs
14:55 – 15:05	Break
15:05 – 16:30	Building the Elements

Setting the Table: Problems and Needs

08:45 – 09:10 *Need for Modelling Tools*
Normand Mousseau, Institut de l'énergie Trottier

09:15 – 09:35 *Canada's Mid-Century Strategy*
Ken Eng, Environment and Climate Change Canada

09:40 – 10:05 *Electrification Futures and Evolving Questions*
Maxwell Brown, National Renewable Energy Laboratory

Break

10:10 – 10:25

During the break, think about…

- What you could contribute to the platform
- What you could take from the platform

Setting the Table: Problems and Needs

10:30 – 10:55 *Vision for the Development of Applications for Electrical Systems Planning*
Julio Hernández Galicia, Instituto Nacional de Electricidad y Energías Limpias

11:00 – 11:15 *Drivers for Electrification Studies and Policy Integration*
Brad Little, Renewable and Electrical Energy Division, Natural Resources Canada

Participant Introductions

11:20 – 11:35

In 20 seconds, state

- Your name
- Your affiliation
- What can you contribute to the platform?
- What can you take from the platform?

Discussion Panel: Motivations and Goals

11:35 – 12:30

Moderator: **Louis Beaumier**, Institut de l'énergie Trottier

Madeleine McPherson, University of Victoria
Guillaume Tarel, Hydro-Québec
Lindsay Miller-Branovacki, University of Windsor
Tracey Kutney, Natural Resources Canada

Lunch

12:30 – 13:30

At 13:25…

Please take a seat at your assigned table for **Breakout Session 1** (refer to the back of your name tag)

Breakout Session: Identifying the Needs

13:30 – 14:55

Introduction: *State of the Art: A Continental Modelling Framework*

Gregory Brinkman, National Renewable Energy Laboratory

Objective: Identifying the platform needs including models and data

Questions:

- **Identify the requirements** of an ideal platform including assumptions/ bounds, models, data, inputs and outputs
- **List the elements** that should be included in the platform and the interactions between them

Table 1: ***Evolving Canada's electric grid to accommodate for 80% electrification by 2060***

Louis Beaumier (Facilitator)
Diane Desjardins (Rapporteur)
Andrew Rowe
Bo Cao
Cristobal Miller
Hajo Ribberink
Jesus Andres Rodriguez
Jody Dillon
Lindsay Miller-Branovacki
Tracey Kutney

Table 2: ***Keeping the lights on: maintaining reliability and resiliency of next-generation grids***

Dave Turcotte (Facilitator)
Viviane Aubin (Rapporteur)
Bryson Robertson
Guillaume Tarel
Indrajit Das
Julio Hernández Galicia
Kankar Bhattacharya
Ken Eng
Maxwell Brown
Ryan Kilpatrick

Table 3: ***Rolling out 100% clean and renewable energy solutions in the face of technological, economic and climate uncertainty***

Véronique Delisle(Facilitator)
Nazak Soleimanpour (Rapporteur)
Brad Little
Gregory Brinkman
Christina Ross
David Foord
Jose Luis Ceciliano Meza
Kankar Bhattacharya
Peter Wild
Sebastien Debia

Table 4: ***Taking on load: the role of users (e.g. prosumers, buildings, industry) in the new grid paradigm***

Alexandre Prieur (Facilitator)
Valérie Provost (Rapporteur)
Aboutaleb Siddiqui
François Bouffard
Kathleen Vaillancourt
Kodjo Agbossou
Normand Mousseau
Peggy Trousseau
Philippe Descheneau
Pierre-Oliver Pineau

Table 5: ***Money matters: Designing a market, economic, and policy framework to aid adoption of 100% clean and renewable energy***

Tom Levy (Facilitator)
Elizaveta Kuznetsova (Rapporteur)

Franciso de la Chesnaye
Madeleine McPherson
Magdy Salama
Mark O'Malley
Matthew Hansen
Nic Rivers
Raj Ghosh

Break

14:55 – 15:05

Building the Elements

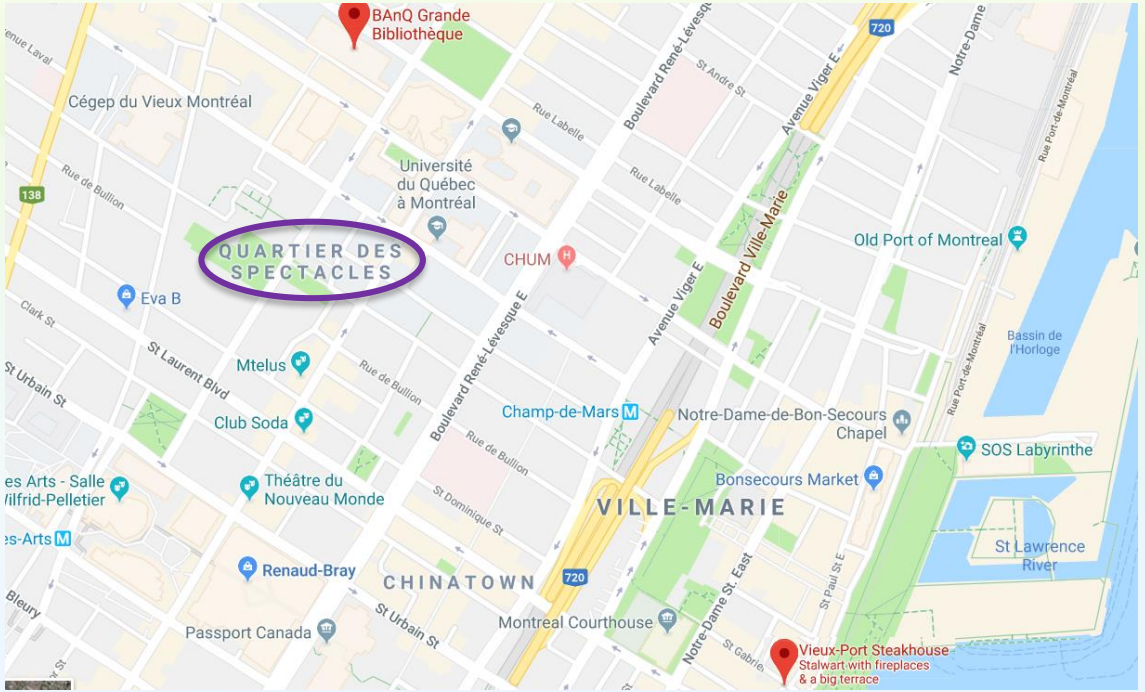
15:05 – 15:30 *CLEEN2040 – Are you Ready for an Energy rEvolution?*
Lindsay Miller & Rupp Carriveau, University of Windsor

15:35 – 16:00 *Decarbonizing the Electricity system: Technologies and Strategies*
Madeleine McPherson, University of Victoria

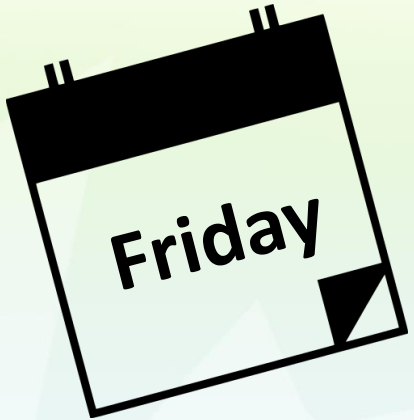
16:05 – 16:30 *Modelling the Northeast Region: Hydropower, Capacity Constraints and Transmission*
Pierre-Oliver Pineau, HEC Montréal

Closing Remarks – Thursday

- Self-funded dinner at 19:30: Vieux-Port Steakhouse,
  39 St-Paul St East
- Montréal en Lumière: Quartier des spectacles



Day 2



Agenda – Friday

08:30 – 08:30 Breakfast
08:30 – 08:50 Plenary: Review of Yesterday's Findings
08:50 – 10:15 Harmonizing the Elements
10:15 – 10:35 Break
10:35 – 11:30 Breakout Session: Stitching it Together
11:35 – 12:30 Discussion Panel: Struggles, Barriers and Challenges
12:30 – 13:30 Lunch
13:30 – 13:45 Plenary: Arranging the Solutions
13:45 – 15:10 Discussion Panel: Continuing the Momentum
15:15 – 15:20 Closing Remarks

Plenary: Review of Breakout Session 1

8:30 – 8:40

Moderator: **Steven Wong,** Natural Resources Canada

Key Notes/Themes

- Data: Inaccurate, missing, hard-to-find, conflicting
- Assumptions: Need to simplify the problem
- Limits: Setting an achievable scope
- Answers: Informing policy, not testing it; digestable
- Linking of models: First come the humans

Harmonizing the Elements

08:50 – 09:15 *The 2060 Project*
Andrew Rowe, University of Victoria

09:20 – 09:45 *Clean Energy and Electrification Assessment*
Francisco de la Chesnaye, Electric Power Research Institute

09:50 – 10:15 *Spine: Bringing together Tools, Data & Models*
Jody Dillon, Energy Reform Ltd.

Break

10:00 – 10:20

At 10:30…

Please take a seat at your assigned table for **Breakout Session 2** (refer to the back side of your name tag)

Breakout Session: Stitching it together

10:20 – 11:20

Objective:

Clarify what we know, what we need to know and what we need to do

Questions:

- What can be done in **2 years. (What question can be answered.)** What would be key steps, (i.e., What can you answer today – why do you need two years? What is a **1-year** milestone?.) What would be the study (scope) and outputs. What is a success?
- What are the limits (scope/assumptions)? Uncertainty? What are the **gaps**, and what can be filled?
- Given your assigned model, how would you integrate the various components and work together and towards a common goal?
- How could you consider and integrate superordinate systems (not just energy)? What might be some conflicts?

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Discussion Panel: Struggles, Barriers and Challenges

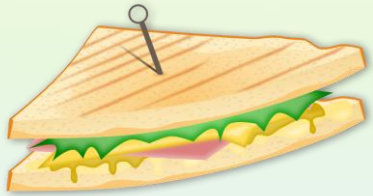
11:35 – 12:30

Moderator: Mark O'Malley, National Renewable Energy Laboratory

Tom Levy, Natural Resources Canada
Gregory Brinkman, National Renewable Energy Laboratory
Normand Mousseau, Institut de l'énergie Trottier
Pierre-Oliveau Pineau, HEC Montréal

Lunch

12:20 – 13:20



Plenary: Arranging the Solutions

13:30 – 13:45

Steven Wong
Natural Resources Canada, CanmetENERGY

Discussion Panel: Continuing the Momentum

13:45 – 15:10

Introduction: Building an Open Energy Modelling Platform
Maxwell Brown, National Renewable Energy Laboratory

Moderator: Tom Levy, Natural Resources Canada
Peter Wild, University of Victoria
Kankar Bhattacharya, University of Waterloo
François Bouffard, McGill University
David Foord, University of New Brunswick
Alexandre Prieur, Natural Resources Canada

Closing Remarks

15:15 – 15:20

Alexandre Prieur, Natural Resources Canada