

# The Institute for Integrated Energy Systems



*Charting Feasible Paths to Sustainable Energy Systems*

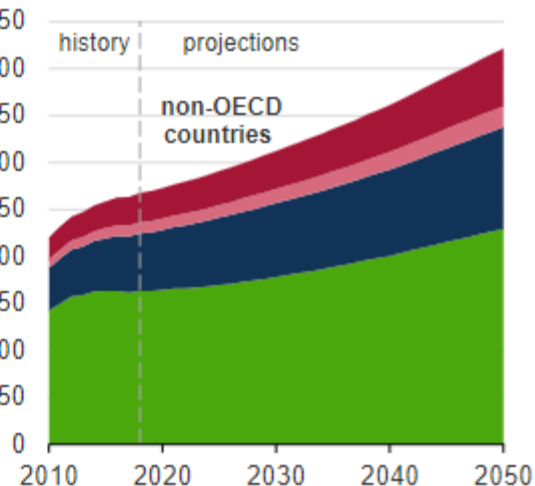
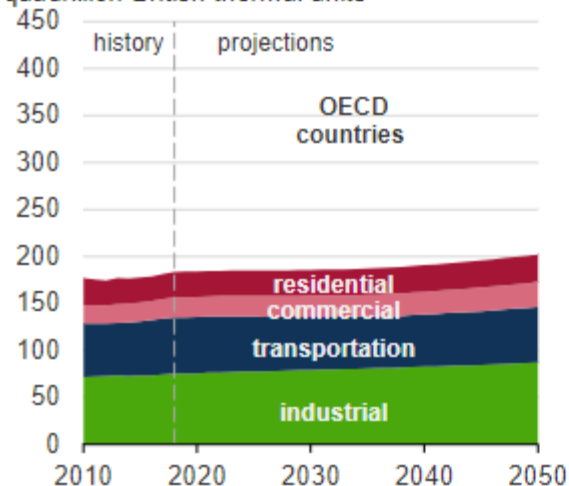


Energy Modelling Initiative — Initiative de modélisation énergétique  
*Bringing the Tools to Support Canada's Energy Transition — Outiller le Canada pour réussir la transition*

# EIA Reference Case Global Energy Use

Global energy consumption by sector (2010-2050)

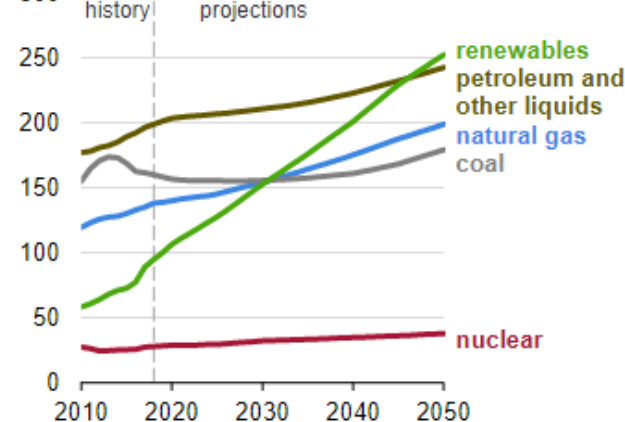
quadrillion British thermal units



Source: U.S. Energy Information Administration, *International Energy Outlook 2019* Reference case

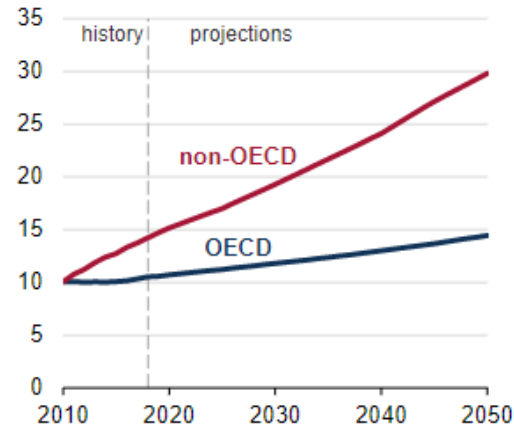
Global energy consumption by source (2010-2050)

quadrillion British thermal units



Global net electricity generation

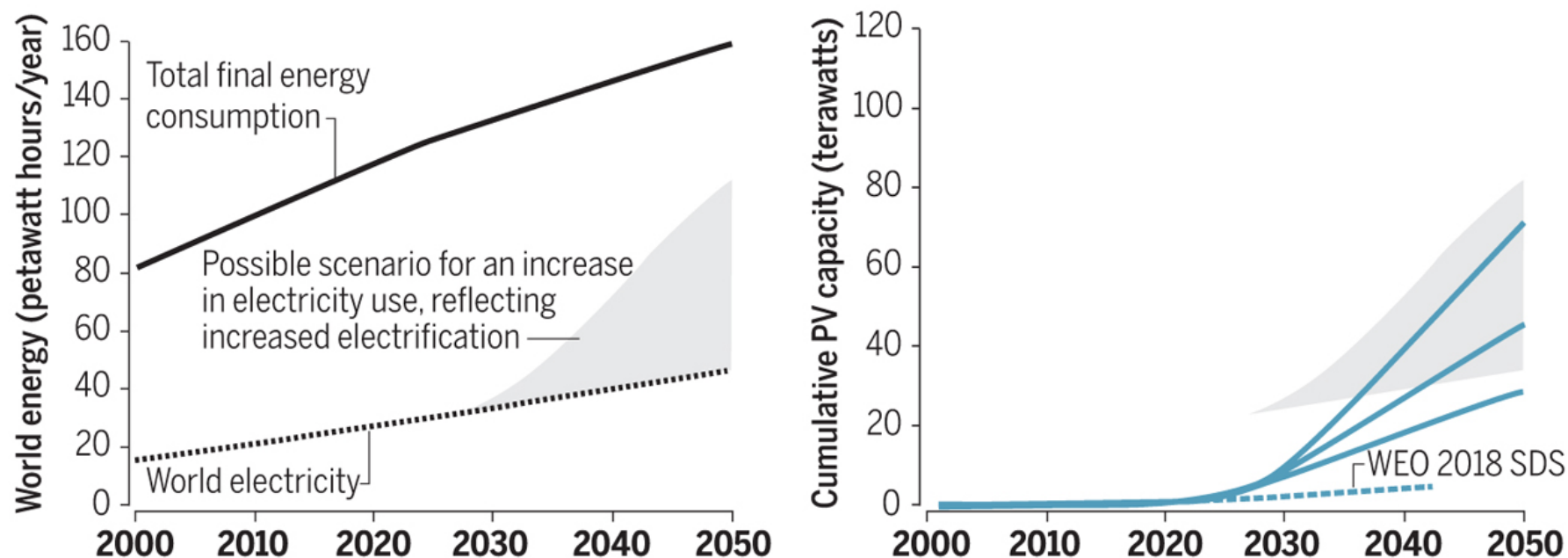
trillion kilowatthours





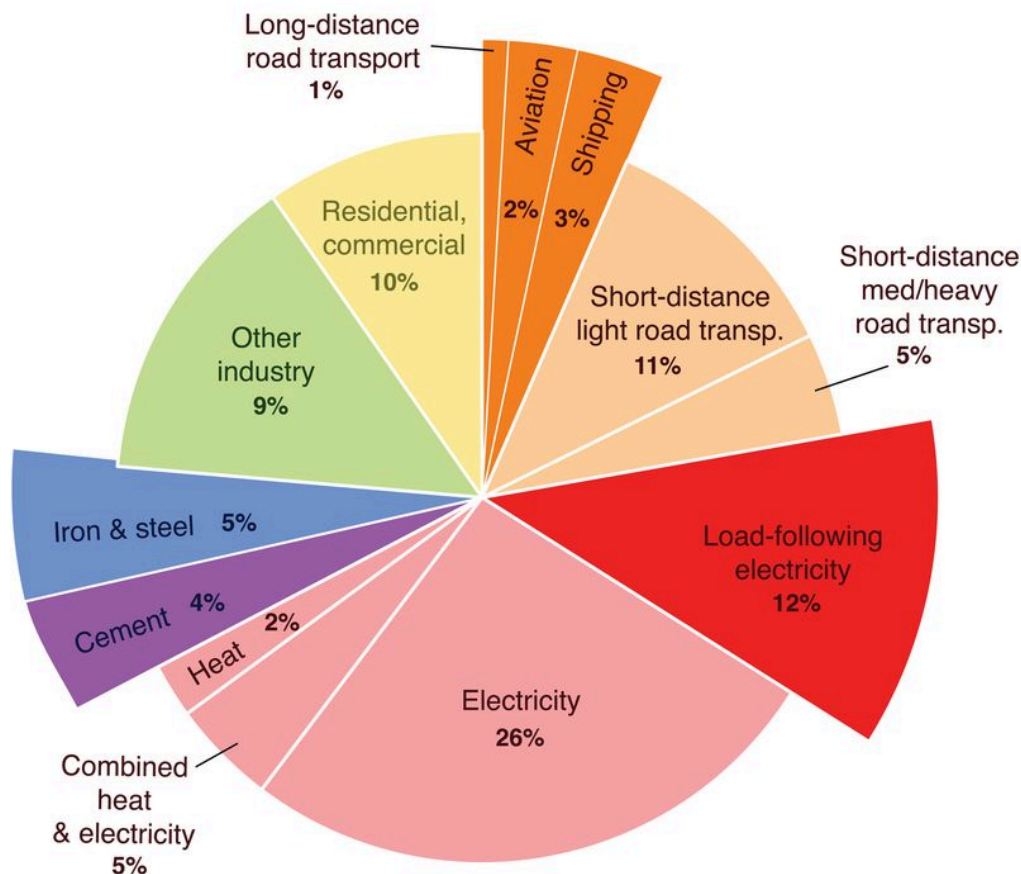
## Scenarios for growth of PV

Total final consumption and world electricity, according to the 2018 World Energy Outlook (WEO) New Policies Scenario. The three solid blue curves provide possible scenarios for growth of PV cumulative capacity and electricity generation. A global average energy yield of 1370 kWh/kWp was used to correlate the axes for the left and right figures. See supplementary materials for details.

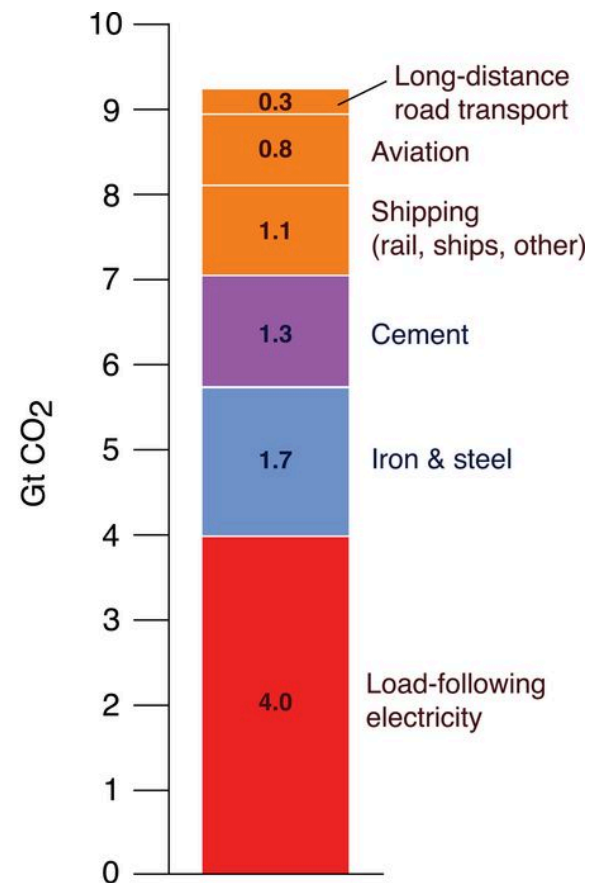


Nancy M. Haegel et al. *Science* 2019;364:836-838

# Difficult to Eliminate Emissions



**A** Global fossil fuel & industry emissions, 2014 (33.9 Gt CO<sub>2</sub>)



**B** Difficult-to-eliminate emissions, 2014 (9.2 Gt CO<sub>2</sub>)

Steven J. Davis et al. Science 2018;360:eaas9793

Energy Modeling Initiative Western  
Workshop 27 Sept 2019





## *Objectives*

- Convene the regional modelling community
  - modellers and users
- Lay out use and demand for modelling results for policy
- Capture an overview of models and their application
- Identifying gaps in modelling approaches
- Explore how to strengthen the community through:
  - Collaborations
  - Enhanced policy relevance





# Energy Modelling Initiative — Initiative de modélisation énergétique

*Bringing the Tools to Support Canada's Energy Transition — Outiller le Canada pour réussir la transition*

*Objective 1 : Establish an inventory of Canadian energy modelling expertise*

Modelling inventory

*Objective 2 : Convene the modelling community in order to foster collaboration*

**Regional workshops**

Centre : September, 12

West : September, 27

Atlantic : November, 12

**National forum**  
December, 17-18

Call for projects

Projects summary report

*Objective 3 : Showcasing modelling relevance and value*

*Objective 4 : Planning for a sustainable modelling community*

Draft long-term proposal

Final long-term proposal

July

August

September

October

November

December

January

February

March

2019

2020

Canadian  
Center  
for  
Energy  
Informati  
on

Canadian  
Institute  
on  
Climate  
and  
Clean  
Growth



# Energy Modelling Initiative — Initiative de modélisation énergétique

*Bringing the Tools to Support Canada's Energy Transition — Outiller le Canada pour réussir la transition*

## **Executive Team**

Madeleine McPherson, University of Victoria  
Normand Mousseau, University of Montreal  
Louis Beaumier, Polytechnique Montréal

## **Staff**

Moe S. Esfahlani, Project Management &  
Coordination  
Marie-Maude Roy, Edition & Communications

## **Support**

Natural Resources Canada  
Polytechnique Montréal  
Institut de l'énergie Trottier

## **Advisory Council**

Rupp Carriveau, University of Windsor  
Francesco Ciari, Polytechnique Montréal  
David Foord, University of New Brunswick  
Brad Little, Natural Resources Canada  
Yi Liu, Federation of Canadian Municipalities  
Lindsay Miller-Branovacki, University of Windsor  
Greg Peterson, Statistics Canada  
Andrew Rowe, University of Victoria  
Dave Sawyer, EnviroEconomics  
Kathleen Vaillancourt, ESMIA Consultants  
Mark S Winfield, York University  
Steven Wong, Natural Resources Canada



## 09:00-9:45 **Opening Remarks**

- The Energy Modeling Initiative, **Normand Mousseau**, University of Montreal
- Workshop Overview, **Andrew Rowe**, Director, Institute for Integrated Energy Systems (IESVic)
- Introductions – Participants

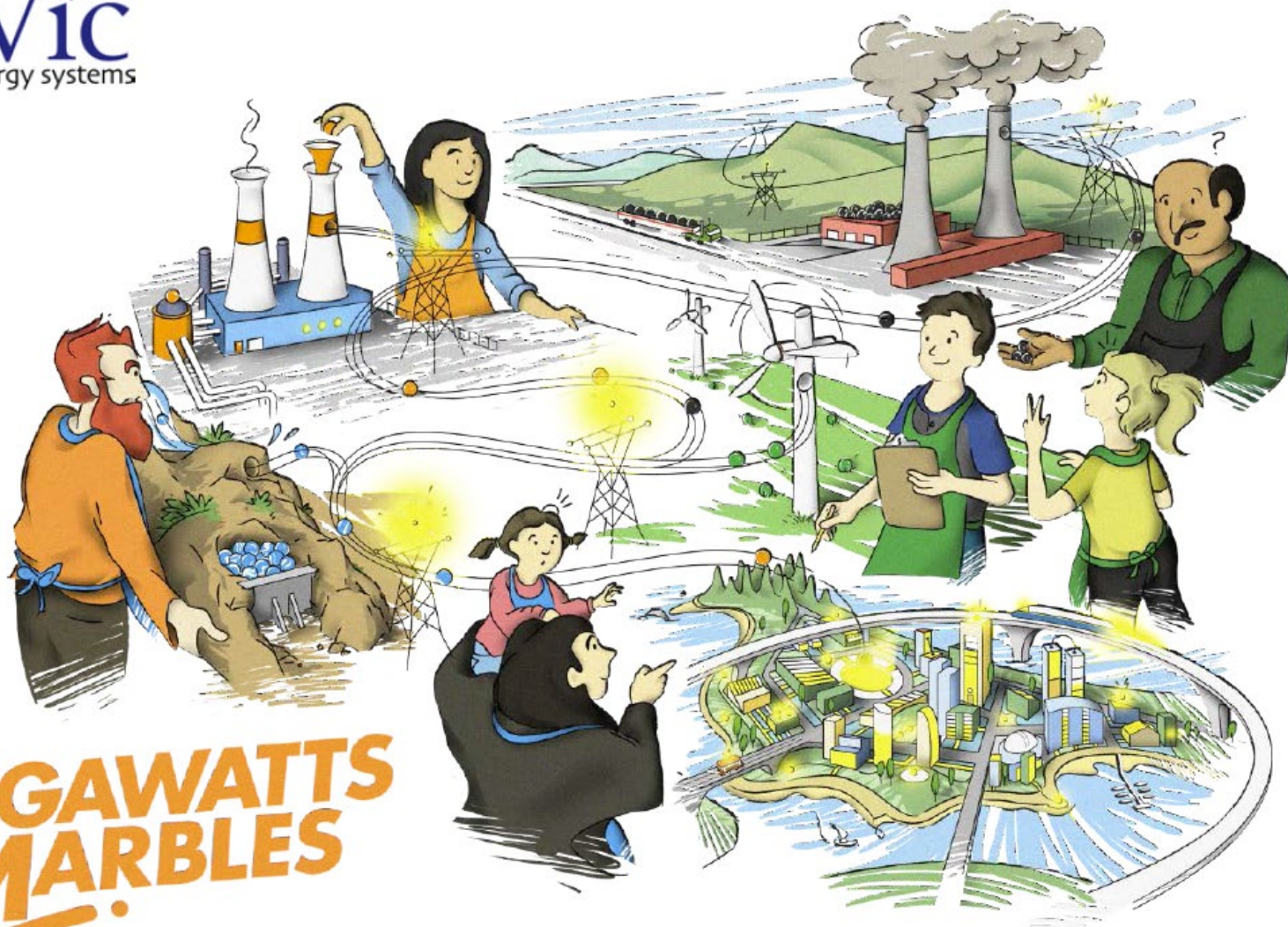
## 9:45-10:45 **PANEL *Meeting Climate Action Goals: The view from policy makers***

## 10:45-11:00 Coffee Break

## 11:00-12:00 **PANEL *An Overview of Energy Models***

## 12:00 **LUNCH – *Megawatts and Marbles Demonstration***

**IESVic**  
integrated energy systems



**MEGAWATTS  
& MARBLES**

## 13:00-13:10 **Case Study: Identifying the Needs**

- Introduction, **Normand Mousseau**, Director, Trottier Energy Institute, UMontréal.

## 13:10-13:40 Roundtable 1

- How can modelling be applied to reach our decarbonization objectives?

## 13:40-14:10 Roundtable 2

- How do we increase synergies between modeling for policy making?

## 2:10-2:30 Coffee Break

## 14:30-14:40 Report Back and Discussion

## **Next Steps**

## 14:50-15:20 Roundtable 3

- What resources, frameworks, tools, institutions, support, etc. would be helpful for creating an effective national modeling platform to serve policy-making?

## 15:20-16:00 Building the Community

- What are the next steps to further develop national modeling capacity?

## 16:30 **RECEPTION** (cash bar) – Fireside Lounge, **University Club**

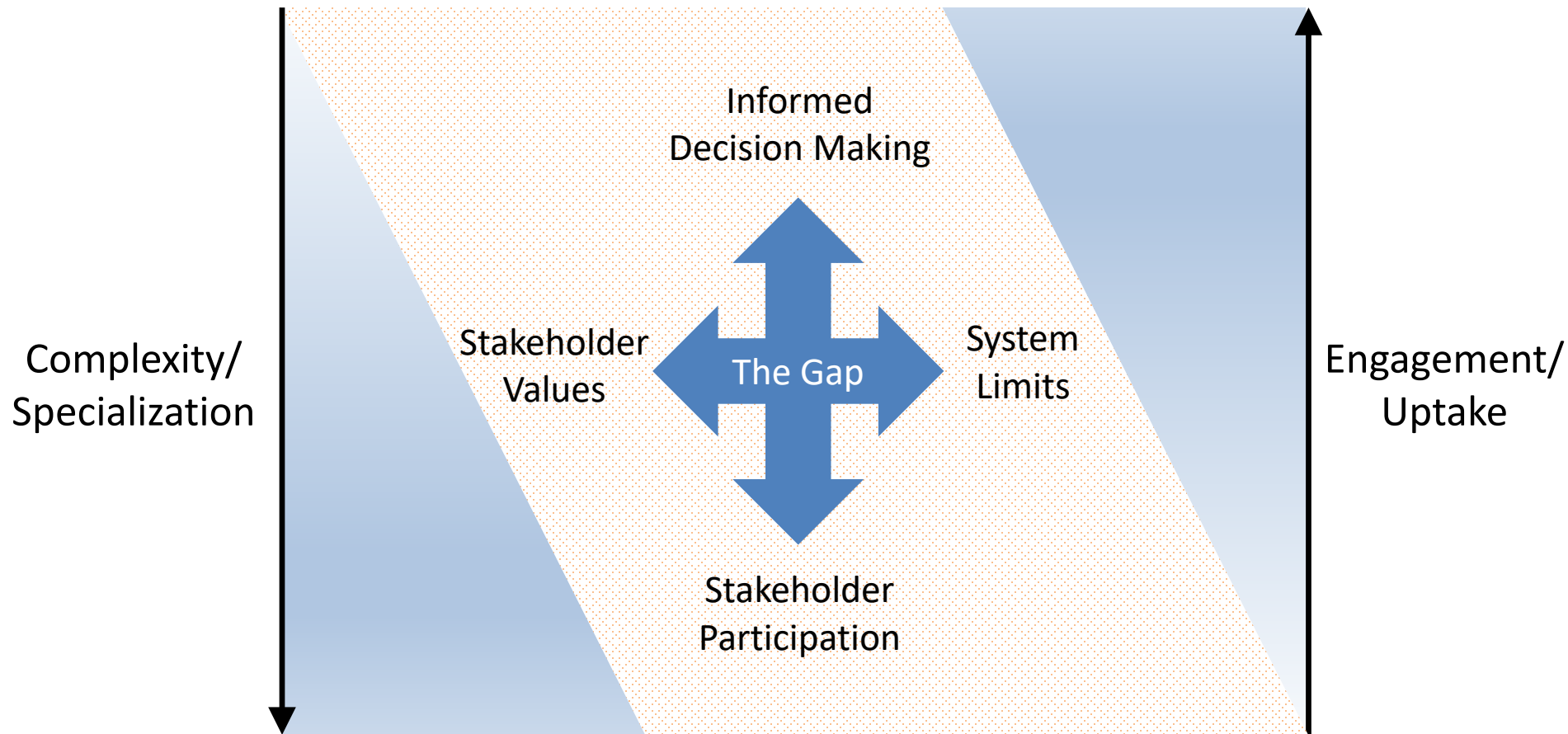
## 18:00 **DINNER** - Dining room, **University Club**



## *Policy Panel*

- **Amy Sopinka**, Director, Transmission and Interjurisdictional Branch, BC Ministry of Energy, Mines, Petroleum Resources (BC MEMPR)
- **Brad Little**, Renewable and Electrical Energy Division, Natural Resources Canada
- **Derek Olmstead**, Director, Markets, Alberta Market Surveillance Administrator
- **Guy Gensey**, Director, Energy and Industry Decarbonization, BC MEMPR

## *A View from Policy Makers*



## *Charting Feasible Paths to Sustainable Energy Systems*



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