

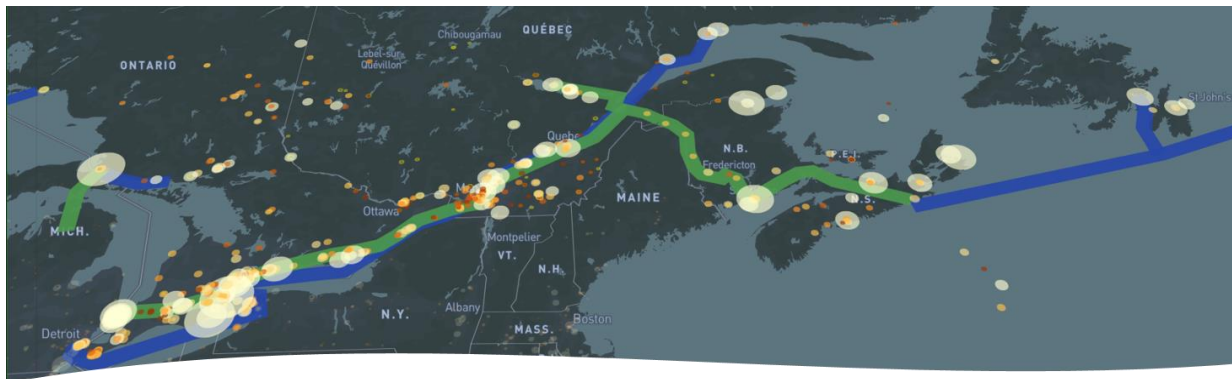
Optimal design of a Canadian network for CO2 capture and storage

About us

We are looking for a dynamic and motivated individual who wants to use mathematical programming to contribute to the fight against climate change. CanmetENERGY is the Canadian government's main research and technology institution in the area of clean energy with research centers in Quebec, Alberta and Ontario. It is part of the Natural Resources department (NRCan).

Internship description

Carbon capture and sequestration (CCS) is part of Canada's plan to achieve net zero CO2 emissions. In a CCS network, CO2 is captured at source sites (e.g. industrial sites like steel, cement, pulp and paper, power plants), transported via pipelines or ships to be stored in geological reservoirs (e.g. saline aquifers, depleted oil fields, sedimentary basins). Realizing such a network involves billions of dollars invested over several decades to generate hundreds of kilometers of pipeline transporting millions of tons of CO2 per year.



CanmetENERGY has started the development of modeling tools to optimize Canada's CCS strategy. Such tools are targeted to be used by federal government stakeholders, industry, academia and even the general public (e.g. for education purposes). This internship involves working with a multidisciplinary team across Canada towards the development of a mathematical programming model for the cost-optimized design of a CO2 network.

Start and end date

This teleworking internship ranges from 25 hours/week to 37.5 hours/week, depending on availability. It starts as soon as possible and ends March 31st 2022.

Tasks

- Literature review
- Model development and validation
- Occasional summary progress reports or presentations to team.

Requirements

- Being a registered M.Sc. or Ph.D. student in operations research, computer science or a related field in a Canadian University.

- Knowledge and experience developing mathematical programming models, namely mixed integer linear models.
- Experience programming in Python.
- Oral and written language: French or English.
- (Optional) Experience using Pyomo for MIP models is an asset.
- (Optional) Experience collecting geographic information system (GIS) data to feed an optimization model is an asset.
- (Optional) Experience using Azure Databricks is an asset.

Contact

To apply send your CV and academic transcripts to etienne.ayotte-sauve@canada.ca