Economic Implications of Electricity Connection Regulations in the Clean Energy Transition
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Research question

The student will:

1. Conduct a review of connection policies across Canadian provinces and territories at the transmission and distribution level of the electricity system.
2. Compare and contrast differences in connection policy approaches between the transmission and distribution levels to assess the economic efficiency implications in promoting electrification in the clean energy transition (e.g., EV charger adoption, installation of AI data centres).
3. Perform a jurisdictional scan of how provinces, territories and international jurisdictions are managing "high load growth" at both the electricity transmission and distribution levels through innovative policy and regulatory frameworks (ex. The Manitoba Affordable Energy Plan is prioritizing economic development in approving new load requests).

Scope of Work:

After familiarizing themselves with the role of electricity transmission and distribution systems, the student will conduct a literature review of connection policies across Canadian provinces and territories at the transmission and distribution level of the electricity system.

Using publicly available research (grey literature, white papers, and peer-reviewed studies), the student will then compare and contrast differences in connection policy approaches between the transmission and distribution levels to assess the economic efficiency implications in promoting electrification in the clean energy transition (e.g., EV charger adoption, installation of AI data centres). In particular, if a marginal (new) transmission or distribution customer connecting to the grid necessitates system upgrades to meet their increased demand, who is responsible to pay for these upgrades? How does this burden of payment influence the rate or type of infrastructure investments in the energy transition?

The student will perform a jurisdictional scan of how provinces, territories and international jurisdictions are managing "high load growth" (e.g., EV charger adoption, installation of AI data centres) at both the electricity transmission and distribution levels through innovative policy and regulatory frameworks, as different jurisdictions have unique strategies in managing high load growth. The Manitoba government's 2024 *Affordable Energy Plan,* for example, ended the first-come-first-served approach for large grid connections to prioritize economic development. Topics to explore include what criteria regions are considering when integrating high load growth into their grids, and how these criteria are influenced by connection policies. This work may involve interviews with policy and economic analysts.

Policy Analysis:

The student will gain an understanding of the electricity system and how both transmission and distribution connection policies and regulatory frameworks are seeking to manage high load connections for electrification. Case studies may include international examples where regulatory frameworks have successfully managed load growth.

Economic Analysis:

The student will gain an understanding of the economic considerations of electricity system upgrades and new load connections and how upgrades can be financed optimally to achieve positive outcomes for the electricity system and for customers.

Some Preliminary Research Sources:

1. Manitoba Affordable Energy Plan: Province of Manitoba | Manitoba Affordable Energy Plan
2. Utility Dive: Transportation electrification and EVs: Who pays for grid upgrades?
3. CBC: Ontario changes regulations on who pays to upgrade power lines