

Remote Work: Environmental, Social & Economic Opportunities and Risks

May 2021



Alberta
ENERGY EFFICIENCY
ALLIANCE

Background: Research Project Overview

Identification of Research Theme

The goal of the research was to assess the positive and negative impacts of instituting a telework policy for City of Edmonton employees. The project was designed to complement the City's newly-formed Remote Work Program with additional research, data analysis, modelling, and employee survey information.

- Create a high-level inventory of the benefits and drawbacks telework policies
- Calculate potential transportation-related GHG emissions reductions from telework policy
- Create a list of “best practices” to inform policy
- Create a mini-Energy Efficiency Guidebook for distribution to employees working remotely
- Provide CoE with qualitative feedback from CoE employees through survey to assist with policy refinement

Key Objectives

Edmonton



Project Partners - AEEA Members



Inputs

- City of Edmonton - Program Materials and Employee Data
- Literature Review and Gap Analysis
- GHG Modelling and Calculations
- City of Edmonton Employee Survey
- Municipal Working Group – Benchmarking Opportunity



City of Edmonton – Remote Work Program

Background & Eligibility Criteria



- Initial Catalyst for Change
- Timing & Approach
- Program Materials
- Employee Supports

- Location
- Eligibility
- Health, Safety & Wellness
- Financial Considerations
- Technology / Equipment
- Insurance
- Application / Approval Process



Factors for Consideration

Opportunities

Environmental



- Reduced GHG Emissions from Transportation
- Reduction in Traffic Congestion
- Reduction in Disposable Container Use
- Less Office Waste
- Ownership of Personal Energy Use

Economic



- Productivity as a Resource
- Real Estate: Facility Downsizing, Relocation, Space Design
- Consumption Pattern Shifts in Transportation, Meals, Clothing, Office Equipment, Enhanced Connectivity
- Infrastructure Cost Reduction

Social



- Employee Satisfaction and Retention
- Employee Attraction / Talent Pool
- Rural and Remote Employment and Training Integration
- Autonomous Employees
- Ability to Care for Self and Dependents
- Reduced Stress Levels

*Are all risks felt equally – Short answer = no.

Space, money and time are all valued at different levels and impacts felt differently for each person and/or family

Risks

Environmental



- Rebound Effects: Single-passenger Vehicle Usage, Additional Local Travel, or Increased Travel from Relocation
- Increased Energy Use in Home Office, Cloud Storage, Video Streaming

Economic



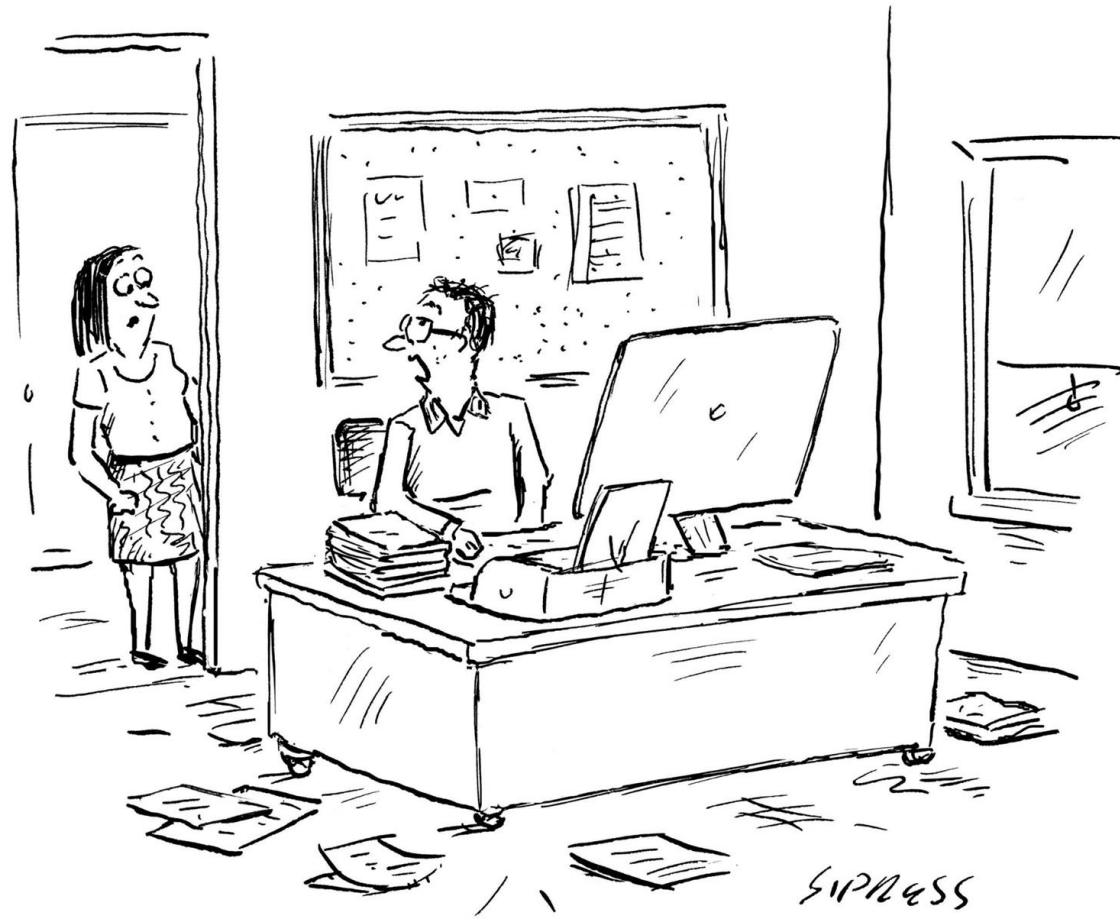
- Increased Home Energy Costs
- Increased Home Office Expenses
- Downtown Core, Small Business, and Service Company Impacts
- OHS and Liability Concerns

Social



- Engagement Levels
- Team Collaboration
- Innovation
- Career Advancement
- Culture Erosion
- Managerial Supports
- Work life balance

I can't remember - Do I work-from-home or live at work?

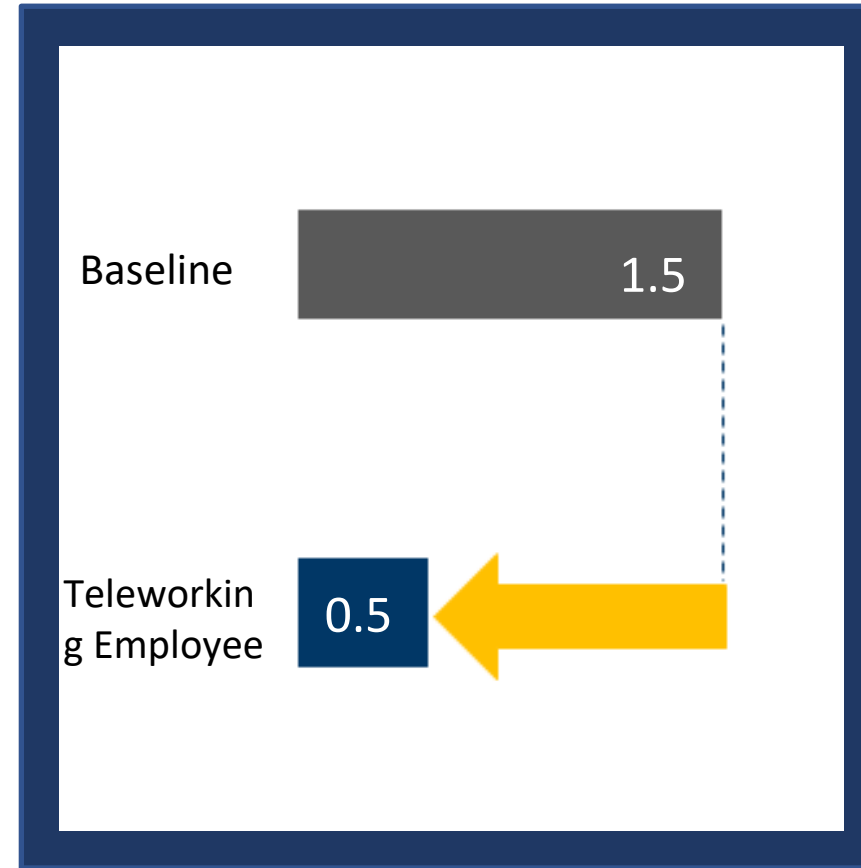


GHG Emissions Reduction Analysis

Implementing a teleworking policy could reduce direct commuting GHG emissions by **70%** for teleworking employees, to an estimated 0.5 tCO₂e / per year – a 1.08 tCO₂e / per year saving per employee.

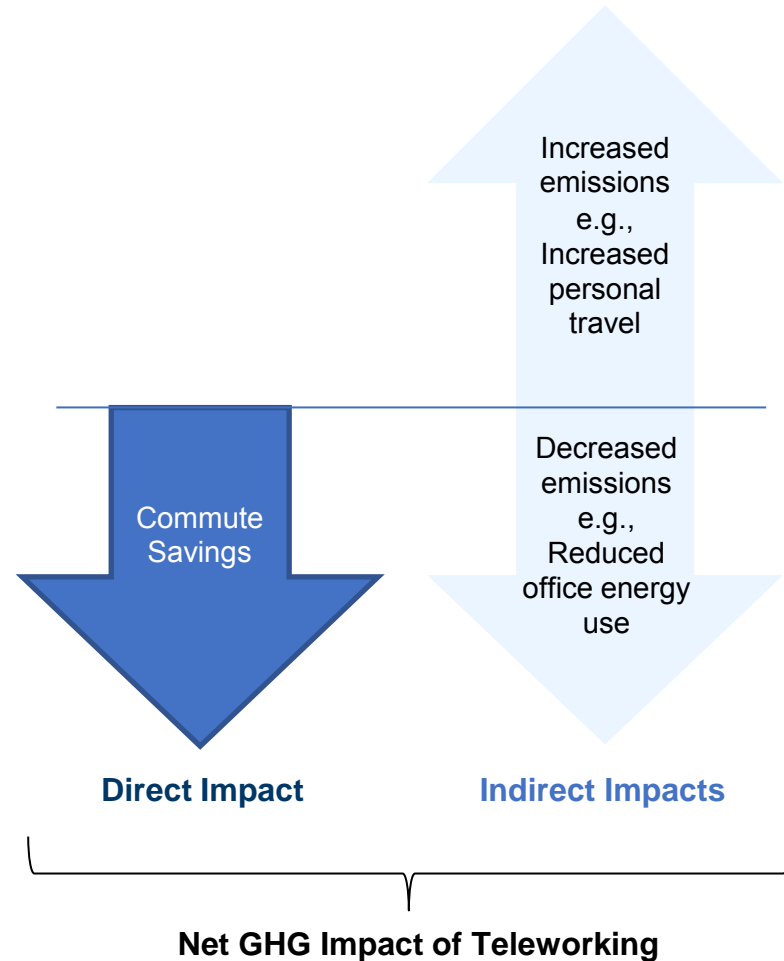
Key Input Assumptions:

- 1) How many employees does the CoE have, and how do they commute?
- 2) How polluting are the modes of transportation used to commute?
- 3) How many employees are expected to work remotely, and at what frequency?



Direct Commute Emissions: Per employee (tCO₂e/yr)

GHG Emissions Reduction Analysis: Indirect Effects of Telework



The rebound effects from teleworking are numerous and varied; and several effects which currently have little impact may become more significant in the mid-to-long term.

Indirect impacts could increase emissions, in turn reducing, neutralizing or even reversing direct GHG savings. Further analysis is required to estimate the net climate benefits resulting from the policy.

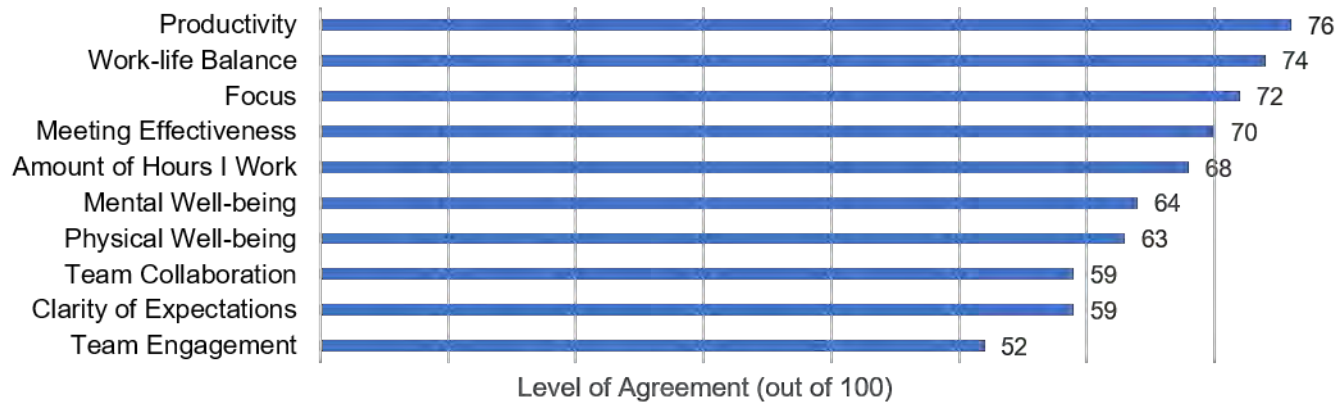
Indirect Effects and Further Research Potential

	Indirect Effect	Estimated Impact (% of Commute Emissions)
Short Term	Office Energy Use	-2.4% to -107%
	New Daily Mobility	24.9%
	House Energy Use	7.6%
	Video Conferencing	1.1%
	Relocation	Null in short-term; may <i>significantly increase</i> in long term
	Traffic Congestion	May reduce
	Virtual Professional Network	May reduce
	New Long Mobilities (Flexibility and Leisure Travel)	Could significantly increase in long term (e.g., +400%)
	Larger Professional Geographic Zone	Could increase in long term
	Increased Purchasing Power (Carbonized Purchases)	Could increase in long term
Long Term	Increased Home Footprint (Building Modifications)	Could increase in long term
	Centralized Headquarters (Longer Occasional Travel)	Could increase in long term
	New Equipment	Undetermined
	Digital Work (Reduced Office Supply Use)	Undetermined
	Lifestyle Changes (Food Waste, e-Commerce)	Undetermined

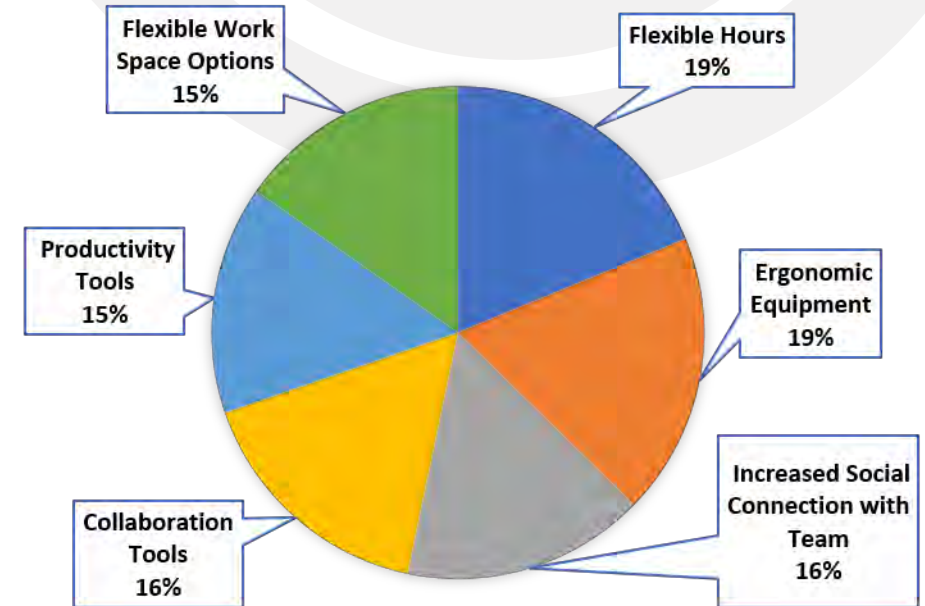


City of Edmonton Employee Survey

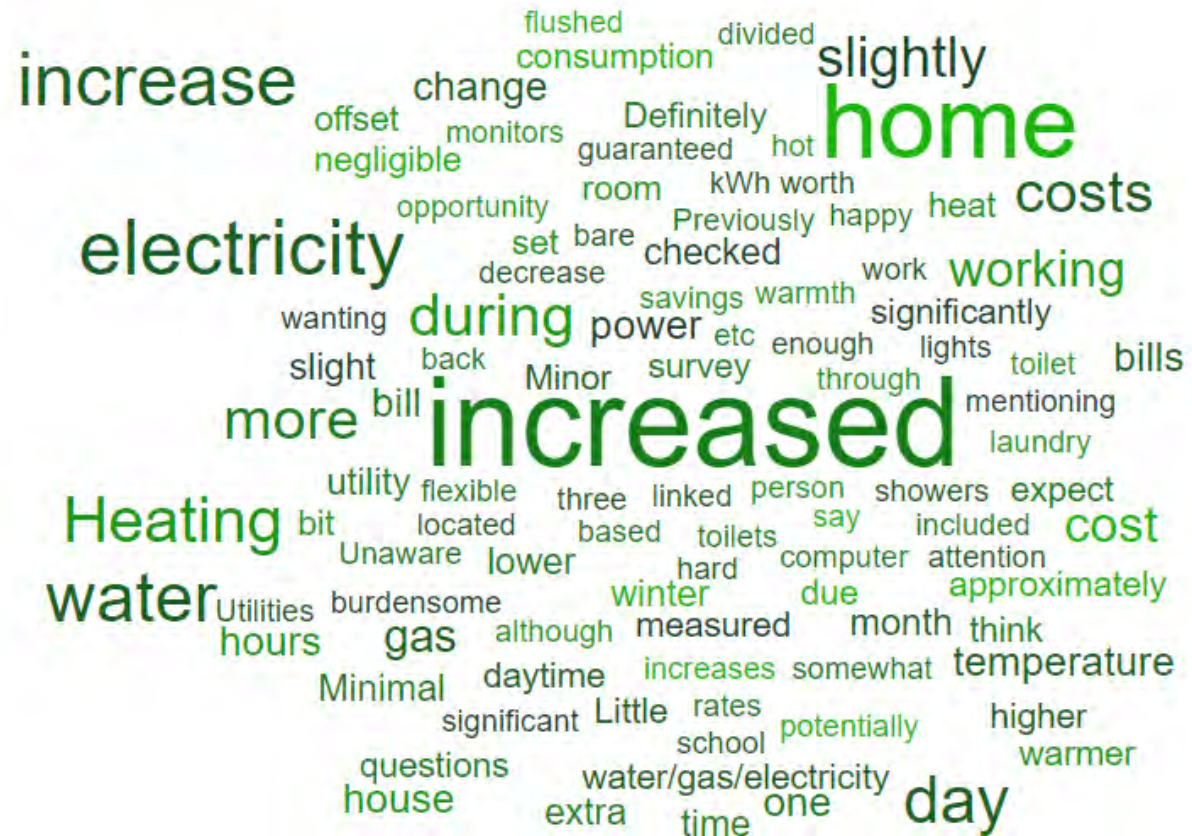
Increases by Effect Category



What Would Enhance Your Experience?



Home Energy Use



“While the utility bills have increased somewhat, it hasn't been overly burdensome and is more than offset in the savings on transportation costs.”

“I can't say how much is linked to me working from home or having my kids at home during the school shut-downs. And even so, it's not enough of an increase to deter me from wanting to work from home. And increase is still outweighed by decrease in commuting costs.”

“Cost has increased but not a concern, I believe this to be included with the opportunity to be flexible.”



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Municipal Remote Work Benchmarking



- Outreach with immediate response - Nearly 20 municipalities in 7 provinces across Canada
- Opportunity for collaboration and sharing on program development, reducing barriers to adoption
- Over 85% of employees in surveyed municipalities support a flexible work program.
- Town hall - topic focused meetings and national network / community for support



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Productivity

Possible Best Practices (Survey Comments)

- Maintain a results-oriented culture
- Set clear goals and deadlines
- Connect with employees in different ways
- Form plans to increase accountability
- Analyze important tasks
- Track progress on priorities
- Learn from other industries or companies
- **Trust your employees**

“Anyone can show up as “active” on a computer just as they can be “present” at a desk”



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Energy Efficiency Tips for Working at Home

- Unplug devices, including laptops
- Consider powerbar or smartstrip
- Turn off your monitor - Sleep mode still draws
- Put on a sweater, blanket or energy star heater
- Natural or task lighting
- Turn down the thermostat - Consider geofencing



Project Recommendations

Additional research is required to further assess:

1. GHG modelling and measurement
2. Economic impact to communities and downtown cores (commercial facility space, road cost-savings from reduced peak demand and residential purchase practices)
3. Best practices that include an environmental lens and standards in facility downsizing, space usage and re-design
4. Surveying and analysis to further assess risks to all demographics
5. Development of supports for employee, manager and organizational level



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