

INAUGURAL RESEARCH SHOWCASE

of the Climate Action Research for Transportation Network

Sponsored by the Climate Action and Awareness Fund

Friday, February 9th, 2024

Paul O'Regan Hall at the Halifax Central Library

This project was undertaken with the financial support of: Ce projet a été réalis avec l'appui financier de:



Environment and Climate Change Canada









Thank you to our Project Partners

































Transports Canada Transport Canada



INAUGURAL RESEARCH SHOWCASE of the Climate Action for Transportation Network



10:30 am	Welcoming Remarks	S
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11:00 am Keynote Speaker: David Miller

12:00 pm Lunch and Sustainable Transport and Climate

Action fair

1:00 pm Panel Discussion: Moving People as we Grow

in the Wake of the Climate Crisis

2:30 pm Research Showcase & Networking

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KEYNOTE SPEAKER

11:00am

David Miller

David Miller is a leading thinker on urban issues. He is the author of "Solved: How the World's Great Cities are Fixing the Climate Crisis," and the is currently the Director of International Diplomacy at the C40 Climate Leadership Group.

PANEL DISCUSSION

1:00pm



Tanya Davis

Senior Director, Joint Regional Transportation Agency



Shannon Miedema

Director of Climate Change & Environment, HRM



Leslie Taylor

Coordinator, Nova Scotia Community Transportation Network



Paul Mackinnon

CEO, Downtown Halifax Business Commission



Dr. Ahsan Habib

Scientific Director, CART Network & DalTRAC





Please remember to put cellphones on silent



Washrooms are outside the doors at the top of the stairs

Land Acknowledgement



Dalhousie University, The Halifax Central Library, and the Halifax Regional Municipality are located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq people. We acknowledge the Peace & Friendship Treaties signed in this Territory and recognize that we are all Treaty People.



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Honourable Minister Timothy Halman, M.L.A.

Minister of Environment and Climate Change, Government of Nova Scotia

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What is the Cart Network?





Home About Research CanTRAC Survey

Hackathon

Reports & Data

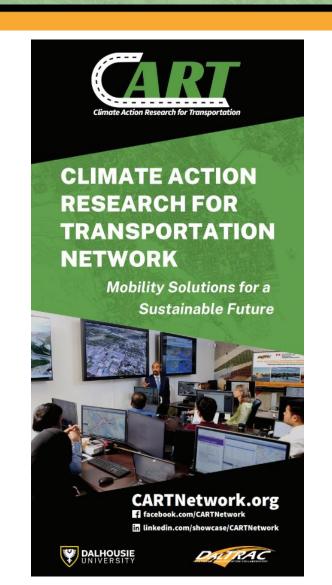


Q Search...

CART Network is a multi-disciplinary team of researchers and academics striving to advance Climate Action Research for Transportation and the quantification of greenhouse gas (GHG) emissions at a municipal level. CART is sponsored by Environment and Climate Change Canada. This network emerged as part of Dalhousie Transportation Collaboratory (DalTRAC), combining the expertise of multiple disciplines including civil and resource engineering, urban planning, computer and data science, and risk management.







A Multi-University Initiative





Dr. Darren Scott

McMaster University

School of Earth, Environment &

Society



Dr. Mahmudur Fatmi
University of British Columbia
Faculty of Applied Science:
Civil Engineering



Dr. Jeffrey R. Brook
University of Toronto
Dalla Lana School of Public
Health

A Multi-Disciplinary Approach





Dr. Peter Van BerkelDepartment of Industrial Engineering



Dr. Ali ÜlküFaculty of Management



Dr. Masud RahmanFaculty of Computer Science



Dr. Kevin QuigleyFaculty of Management



Dr. Hamid AfshariDepartment of Industrial Engineering



Dr. Chad Walker School of Planning



Dr. Daniel RainhamSchool of Health and Human
Performance

Our Graduate Students





The Heart of the Program







Goals & Objectives



Project Goal

Develop a theoretical and empirical foundation for multi-scale integration of bottom-up quantification of greenhouse gas (GHG) and air pollutant emissions at finer-grained levels in multiple Canadian municipalities.

Objective #1



Development of an activity-based, tour level travel demand, supply chain and emissions modelling framework

Objective #2



Explore changes in activity travel, local delivery, and emissions during and post COVID-19 transitions

Objective #3



Assess and predict emissions through testing of scenarios, including established climate mitigation strategies and emerging opportunities

Project Partners











Transports Canada

Transport Canada

















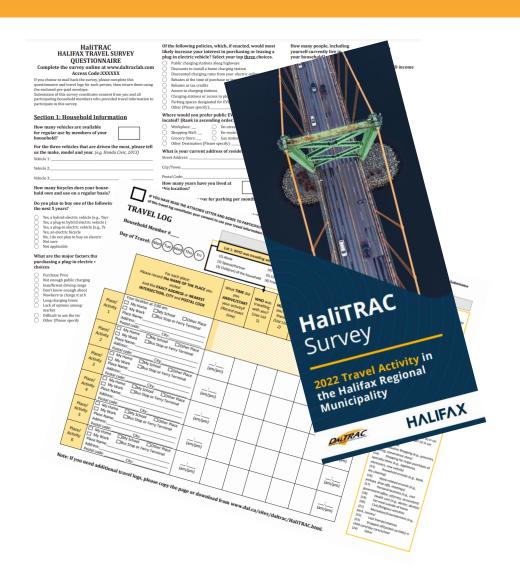






Outcomes





HaliTRAC and NovaTRAC Surveys

Travel Activity Survey

Halifax

July 2022 – March 2023 Completed 3,731 households, 5,095 individuals, and 14,327 trips recorded

Nova Scotia

= 80%

Physical

September 2023 – November 2023 Completed 805 households, 884 individuals, and 2,332 trips recorded

= 20%

Virtual

Activity Participation in Physical and Virtual Space

Work Activity (Employed Workforce)



Physical Virtual = 88.6% = 11.4%

Maintenance & Discretionary Activity

= **93.5%** = **6.5%** Virtual

Outcomes – Critical Issues



Percentage of Modes Used in the Province of Nova Scotia



Auto Drivers



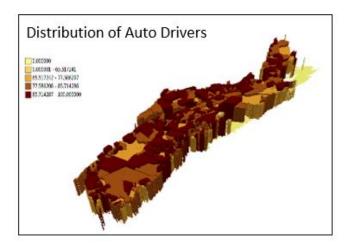
Transit

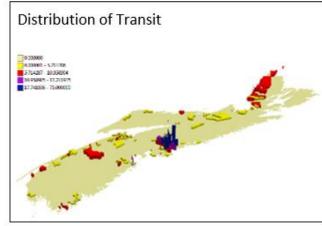


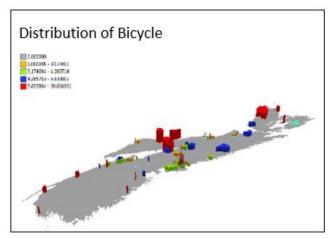
Bicycle

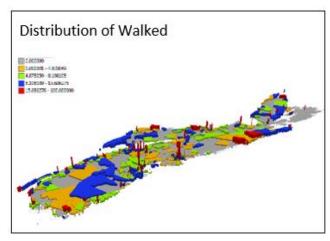


Walking









Outcomes – Critical Issues



Activity Duration by Type of Telework

Physical Space

Work from Office (Exclusively)



= 465.2 minutes

Hybrid Work Model

Work from Office

Work from Home



= 357.0 minutes



= 145.3 minutes

Virtual Space

Work from Home (Exclusively)



= 279.3

Passenger & Commercial Electric Vehicle Fleets

	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7
Workplace	35.3%	11.4%	9.5%	7.9%	8.6%	15.9%	11.4%
Shopping Mall	8.0%	13.7%	16.5%	18.1%	19.9%	19.3%	4.5%
Grocery Store	10.7%	23.6%	21.3%	19.6%	15.3%	7.8%	1.7%
On-street	12.0%	14.9%	18.4%	18.7%	17.5%	14.3%	4.3%
En-route	16.6%	20.7%	17.0%	16.3%	17.1%	10.8%	1.6%
Gas Station	22.2%	17.7%	17.5%	13.3%	11.9%	13.1%	4.2%

Outcomes – Critical Issues





Data & Modelling Workshop

November 24, 2022

~ 40 participants

Local and federal stakeholders and organizations

Inaugural Research Showcase

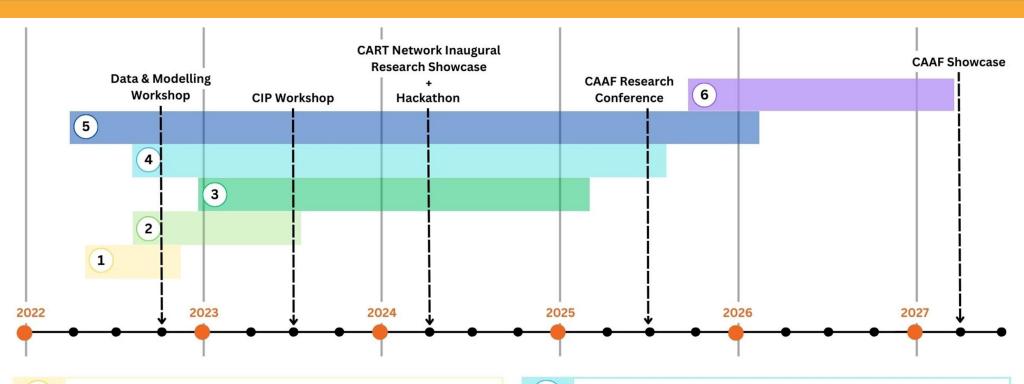
February 2, 2024
Mayor David Miller
Panelists from
JRTA, HRM, DHBC and NSCTN

CART Policy Dialogues

Forthcoming 2024-2027

Future Plans





- 1 Establishing Academic Practitioner Nexus
- 2 Developing a Common, Harmonized Data Management and Modelling System
- Collecting Household Level Travel Data and Change in Activity/Travel, Online Shopping, and Local Delivery during and post COVID-19 Transitions

- 4 Building Bottom-Up Modelling Tools for Halifax
- 5 Implementing Models for Multiple Cities
- 6 Developing and Testing Policy Scenarios Comprising of Established and Emerging Climate Mitigation Strategies



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Keynote Speaker





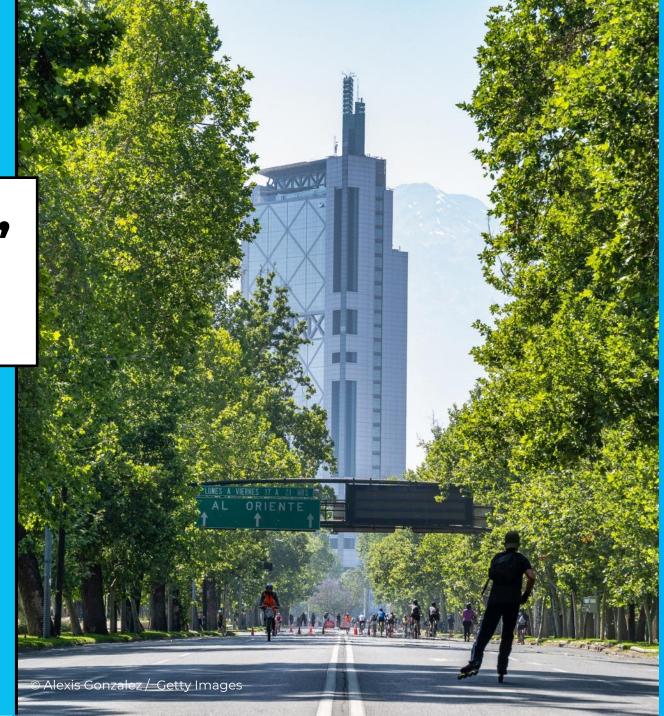
KEYNOTE SPEAKER David Miller

Former Mayor of the City of Toronto

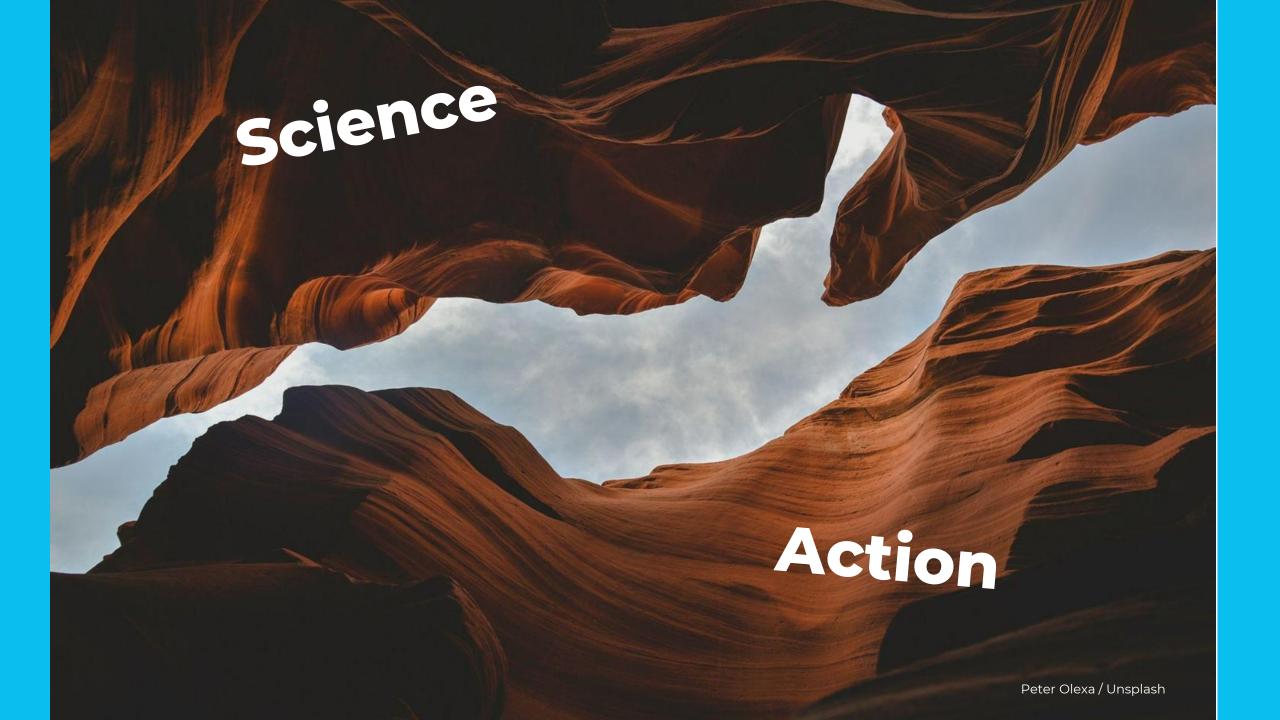
David Miller is a leading thinker on urban issues. He is the author of "Solved: How the World's Great Cities are Fixing the Climate Crisis," and is currently the Director of International Diplomacy at the C40 Climate Leadership Group.

While Nations Talk, Cities Act

Inaugural Research Showcase of the Climate Action Research for Transportation Network







SCIENTISTS AGREE

It's real.

It's us.

It's bad.

A third of Pakistan is underwater as deadly floods leave desperate residents facing 'doomsday'

China reports 'most severe' heatwave and third driest summer on record

or emergency funds, urging the world to give

Average temperature in August was 1.2C higher than norm, which caused widespread drought

Humanity faces 'collective suicide' over climate crisis, warns UN chief

António Guterres tells governments 'half of humanity is in danger zone', as countries battle extreme heat

UK heatwave: latest updates

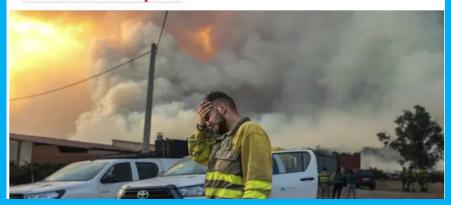




PHOTO SOURCE: NEW YORK

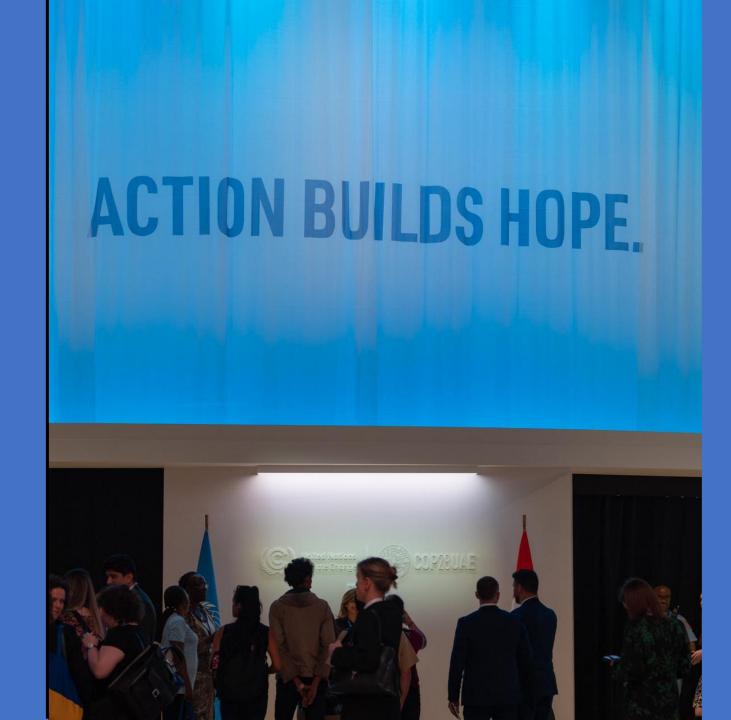
COP28

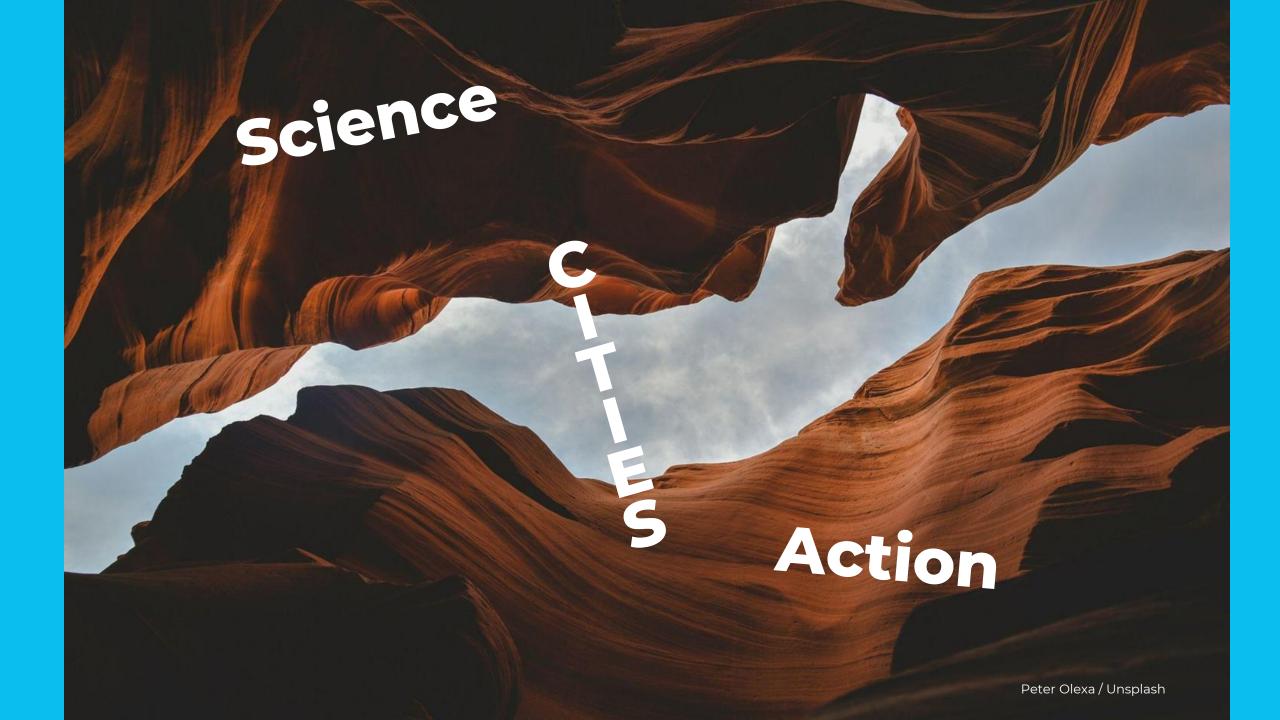
Wins

- Historic first-time consensus to transition away from fossil fuels
- L&D fund is a win but must go further
- Promise to work with local communities through initiatives such as CHAMP

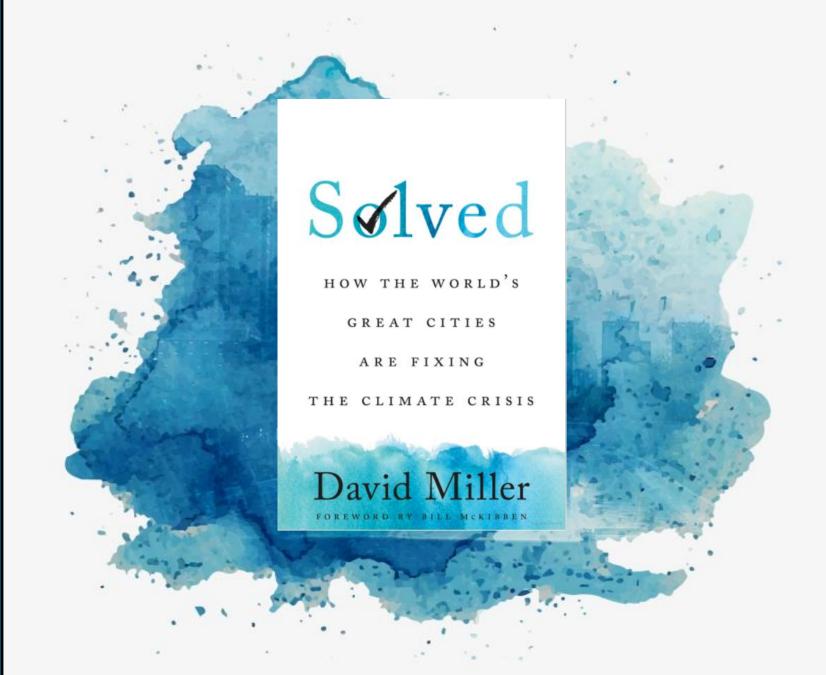
BUT

 Not progress at anywhere near the speed and scale the crisis demands



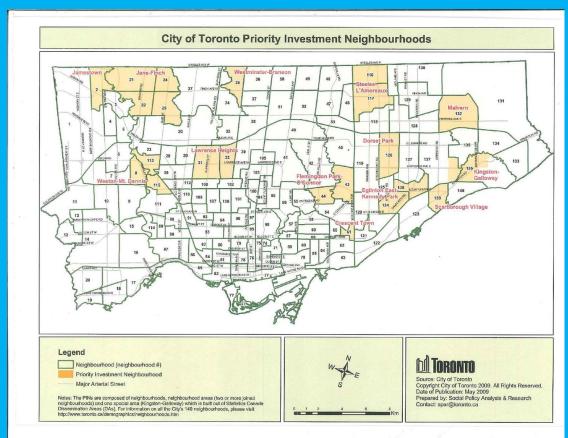


There is hope





Lessons from Toronto





Why do cities matter?

2%
of the world's landmass

75%
of the world's energy

Cities
create over
70%
of energy-related
greenhouse gas
emissions

Cities
generate over
80%
of the
world's GDP



C40 is a network of mayors of nearly 100 world-leading cities collaborating to deliver the urgent action needed right **now** to confront the climate crisis. Together, we can create a future where everyone, everywhere can thrive.





Key stats about C40 cities

96 cities

20% of the global economy





C40 supports mayors and city staff in building resilient, sustainable and equitable cities by tackling some of the highest-polluting sectors and integrating climate adaptation measures.

C40 has programmes and initiatives across the following areas:

- Adaptation & water
- Air quality
- Energy & buildings
- Food systems
- Transportation
- Urban planning
- Waste management



IC40 CENTRE

FOR
CITY CLIMATE POLICY
AND ECONOMY

The mission of the C40 Centre for City Climate Policy and Economy is to produce timely, evidence-based research which presents a clear narrative of the economic and political strategies necessary to stop climate breakdown and drives the urban climate agenda towards an equitable and resilient world well under 1.5°C.

> C40 CITIES



Johannesburg addresses social inequalities through a mandatory 30% inclusionary housing policy



hen's

Shenzhen has a fully electrified bus fleet





Jakarta has given 92% of population access to public transport within walking distance of their home.

The city has also expanded its electric bus fleet and infrastructure to reduce emissions and passenger costs, while upskilling workers to keep them up to date with bus electrification.



Curitiba creates a densified, livable city and reduces its emissions by integrating land use and transport planning

The city has also launched the first solar plant built on a former landfill in Latin America. The project has delivered 8MW of installed energy capacity across **Curitiba's bus stations and** landfill sites and is expected to reduce CO2 emissions by 90,000 tonnes from 2020 to 2050.





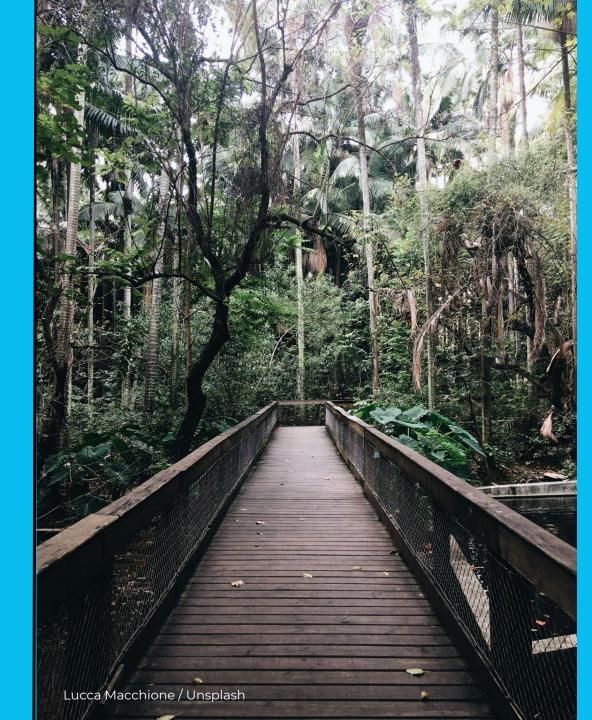
Solar City Seoul is providing solar PV to 1 million households

How to get involved

- Listen to the
- Subscribe to the
- Access our academic
- Students: Join C40's

in value avardava

 You tell us! What are your spheres of influence at work or



LUNCH!



Sustainable Transport & Climate Action Fair



















Enjoy the provided lunch buffet!

Upcoming at 1:00PM...

A moderated panel discussion on how we grow our communities and move people in the wake of the climate crisis

Upcoming at 2:30PM...

Graduate Student Research Showcase & Poster Session

Our Panelists





TANYA DAVIS
Vice-President, Nova Scotia Joint
Regional Transportation Agency



Coordinator, Nova Scotia Community Transportation Network



SHANNON MIEDEMA
Director of Environment and Climate
Change, Halifax
Regional Municipality

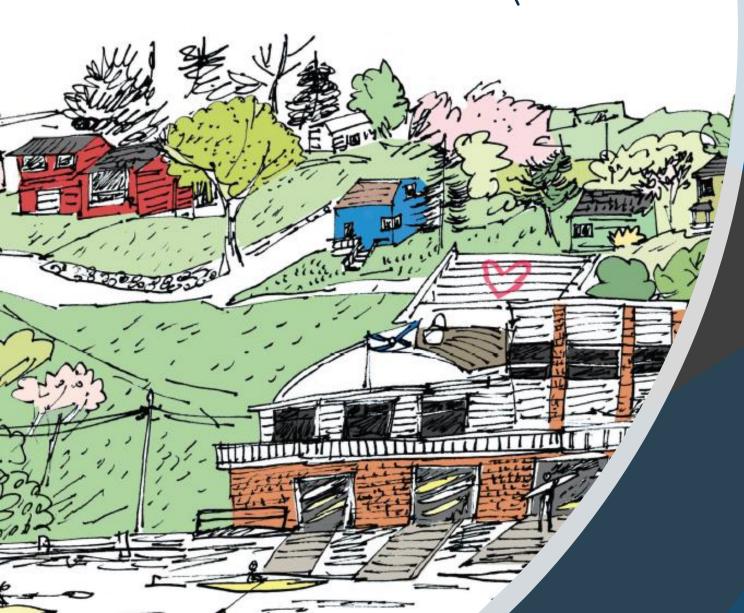


PAUL MACKINNON
CEO, Downtown Halifax
Business Commission



DR. AHSAN HABIB (Panel Moderator)
Professor, School of Planning and School of Civil and Resource Engineering (cross),
Dalhousie University

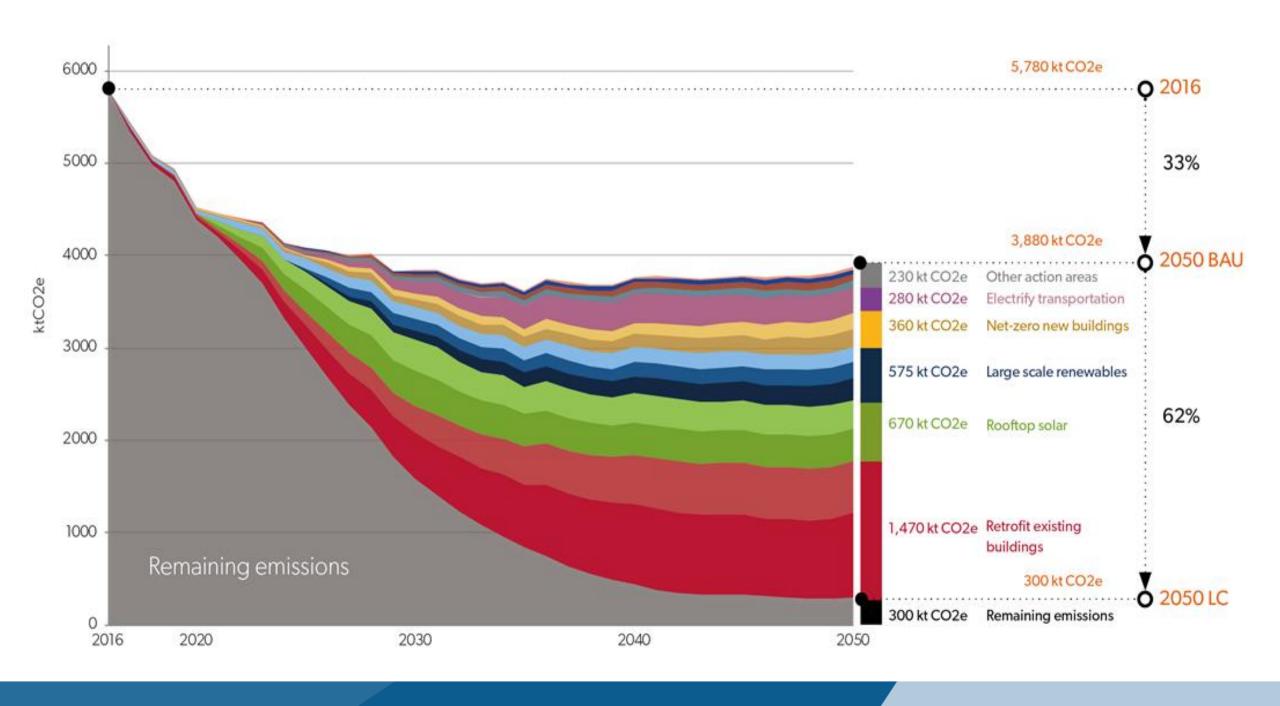
Acting on Climate Together



HALIFAX

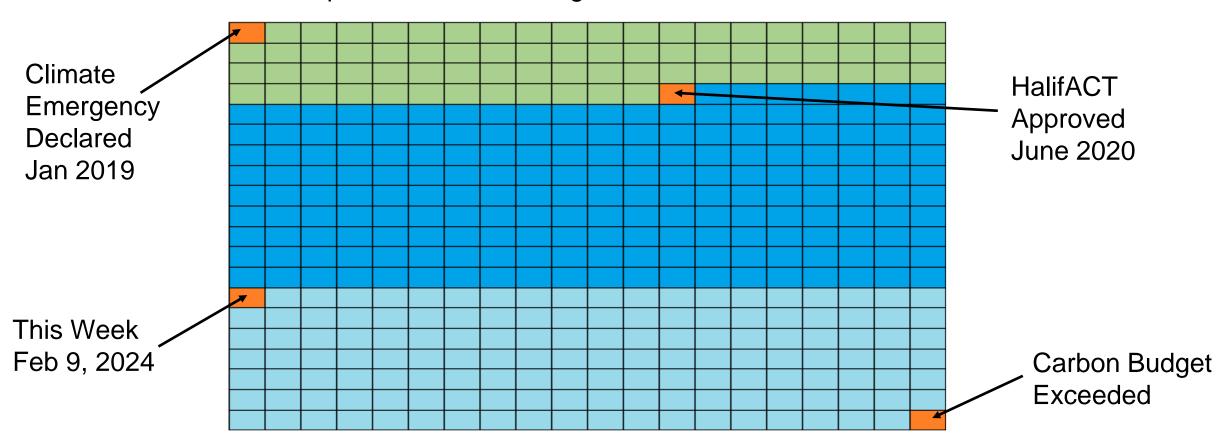
Climate Action Research for Transportation Network

February 9, 2024



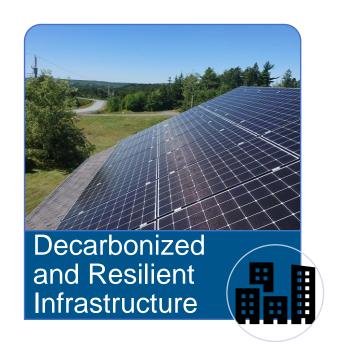
Carbon Budget & Time Crunch

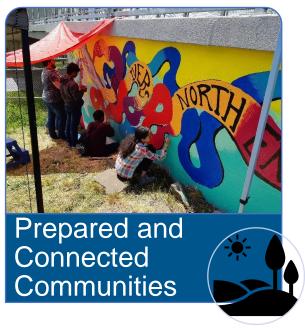
- 260 weeks since Regional Council declared a Climate Emergency
- 140 weeks until we surpass our carbon budget under the Business-As-Usual scenario



HalifACT – Acting on Climate Together













Transportation & land use planning are critical to successful climate action



Transportation also critical for climate adaptation & resilience

- Roads, bridges, rail, ferries are all considered critical infrastructure
 - Evacuation routes
 - Egress considerations
 - Flooding risks
 - Delivery of goods and services, emergency services
- HRM completing climate and critical infrastructure risk mapping
 - To prioritize investments to increase resilience of critical infrastructure
 - Estimated that \$1 spent on adaptation can save \$15+ in future impact costs



Thank You

Shannon Miedema Director, Environment & Climate Change

miedems@halifax.ca 902.266.4056 www.halifax.ca/climate



Our Panelists





TANYA DAVIS
Vice-President, Nova Scotia Joint
Regional Transportation Agency



Coordinator, Nova Scotia Community
Transportation Network



SHANNON MIEDEMA
Director of Environment and Climate
Change, Halifax
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DR. AHSAN HABIB (Panel Moderator)
Professor, School of Planning and School of Civil and Resource Engineering (cross),
Dalhousie University



Climate Action Research for Transportation Network

February 9, 2024

- 1 Introduction & Background
- 2 Governance & Alignment
- Regional Transportation Plan
- 4 What's Next
- 5 Discussion/Questions





What is the JRTA?

New Crown Corporation

Created in Fall 2021 (Bill 61) mandated to address transportation issues associated with rapid growth in Halifax and surrounding communities.

Mission

Championing regional collaboration to advance transportation solutions through joint planning, partnerships, data-driven analysis, and strategic investments.

Mandate

Plan for all modes of transportation consistent with the region's growth and development to ensure the safe, efficient, and coordinated movement of people and goods.



Core Partners











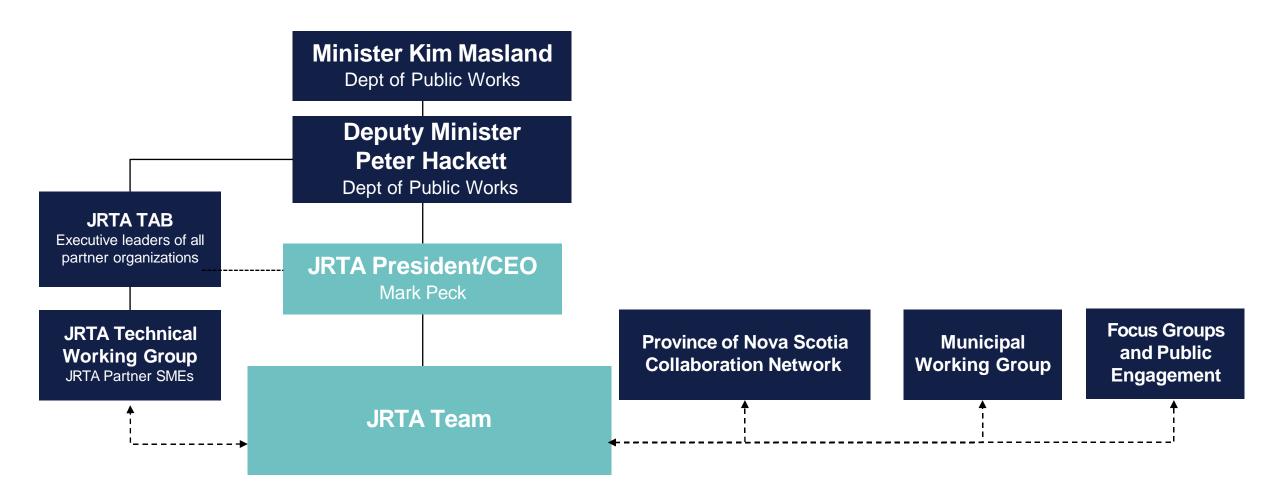








Governance & Team





Background & Alignment

2x Nova Scotia Population

Target of 2M people by 2060



Net-Zero by 2050

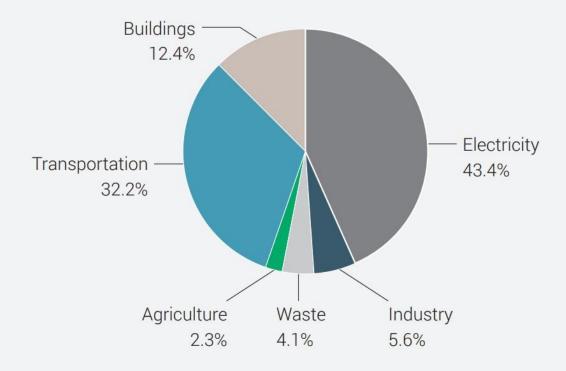
Targets set by province and HRM



Climate & Transportation

In 2020, nearly all (88 per cent) of greenhouse gas emissions came from the use of fossil fuels for electricity generation, transportation, and heating buildings.

Nova Scotia's Greenhouse Gas Emissions, 2020

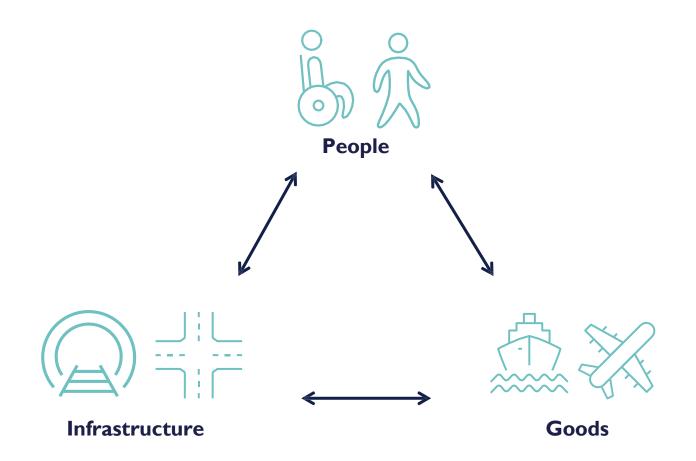


Source: Our Climate, Our Future: Nova Scotia's Climate Change Plan for Clean Growth

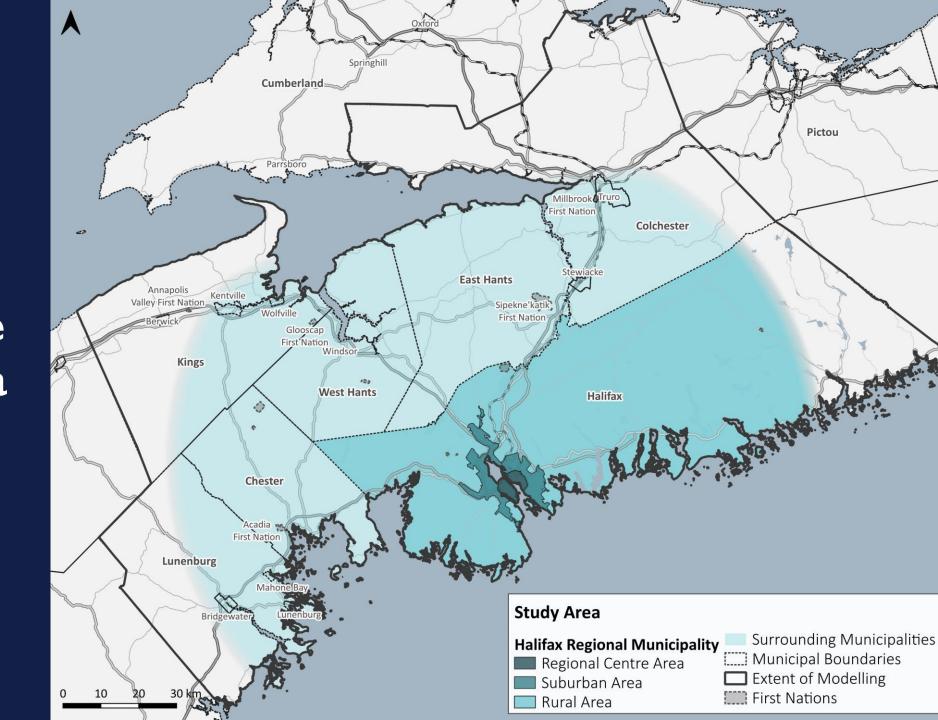




What is the Regional Transportation Plan?



Plan Purpose & Study Area



Technical Working Group

Subject matter experts from our six Core Partners.

Municipal Working Group

CEOs / Directors of Planning from the fifteen municipalities in the study area.

Engagement & Outreach

Province of Nova Scotia Collaboration Network

60+ provincial staff across departments whose work intersects with the JRTA.

Focus Groups

Four external groups including community transit operators, community organizations, advocacy groups, industry, major employers, and educational institutions.

Public Engagement

In-person and virtual sessions across three stages to support plan development.

Additional Outreach

Supporting trusted, community-rooted organizations for first-person accounts and perspectives on transportation issues.

Vision, Goals, and Principles

Vision

Nova Scotians have a **safe**, **efficient**, **equitable**, and **resilient** regional transportation system. Our people and communities are **healthy**, **connected**, and **prosperous**, powering a strong regional economy.

Goals

- Strengthen regional connections
- Enable efficient and sustainable goods movement
- Lead strategic investments, alignment, and implementation
- Coordinate and collaborate on sustainable land use
- Develop a future ready regional transportation system

Principles

Accessibility Collaboration Equity Resiliency Sustainability Well-being



What's Next

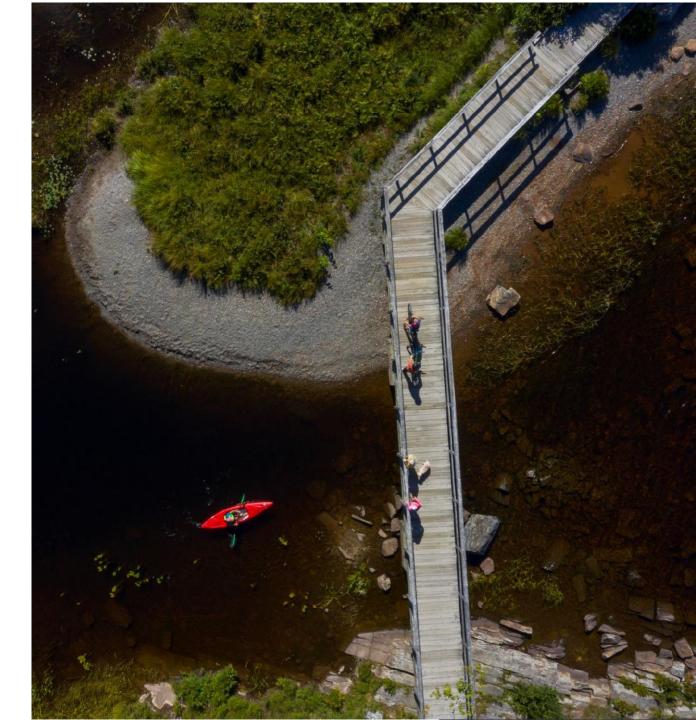


What's Next

Detailed Scenario Analysis & Additional Stage 2 Engagement

Parallel project work to support RTP

Implementation Planning/Future planning for the JRTA



Public Engagement

Virtual Information Session

- February 13, 6:30-8 p.m. via Zoom
- Presentation on plan progress since last public engagement + moderated Q&A
- ASL interpretation available

In-person Drop-ins

- February 20-29, 2024
- Twelve sessions planned across the Study Area

To register, and for drop-in locations, visit engage.jrta.ca





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Moving People as we Grow in the Wake of the Climate Crisis

Climate Action Research for Transportation
February 9, 2024

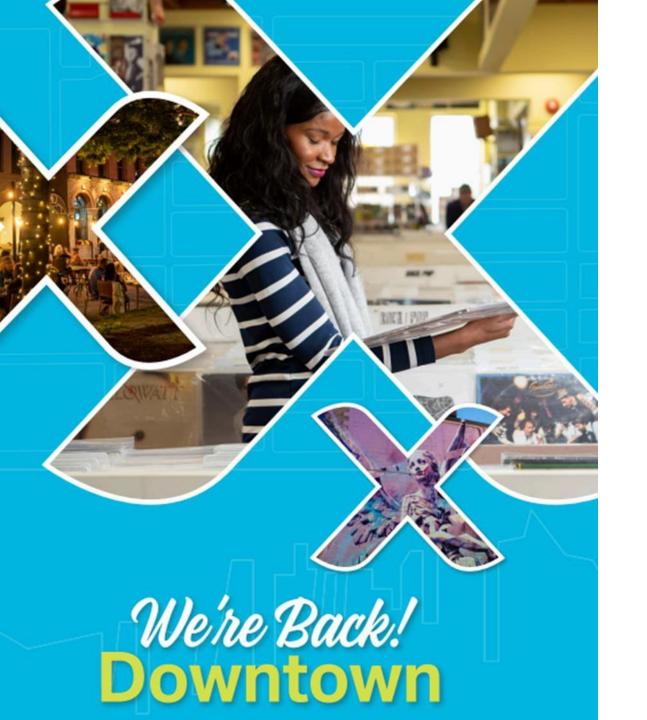






DOWNTOWN BUSINESS COMMISSION HALIFA

- ED of Spring Garden Area Business Association 1996-2001
- CEO of Downtown Halifax Business Commission 2001-present
- 2-time Dalhousie graduate (B.Comm '93, MBA '96)
- Certification in Leadership in Place Management ('21)
- First time panelist on climate and/or transportation





- Formed as a Business Improvement District (BID) in 1987
- Funded by all 1,600 Downtown businesses
- Largest BID in Atlantic Canada
- Family of BIDs: 50 in Atlantic Canada, 500 in Canada, thousands worldwide
- Annual budget of \$2m
- Mission: "We passionately pursue a more vibrant and prosperous downtown"
- Functional areas: Advocacy, Marketing, Membership Engagement, Placemaking
- 16 board members, 9 staff

Vision: Canada's Favourite Downtown

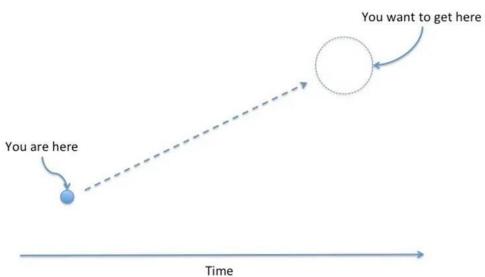








DOWNTOWN HALIFAX V | S | O N 2 0 3 0





What the Vision will be:

A better future for Downtown Halifax that can be actioned asap Multi-jurisdictional
Brief, inspirational, understandable, doable
Contain themes as well as specific solutions
Created and owned via public input, but curated by DHBC

What the Vision will not be:

A new Municipal Planning Strategy
Detailed Action Plan
Budget document





Brent Toderian

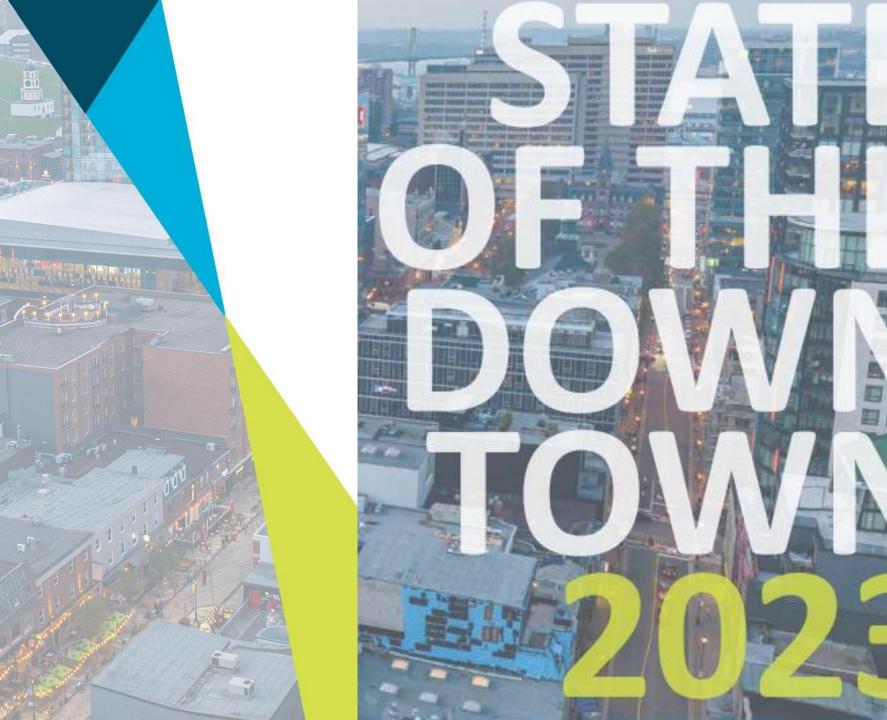
@BrentToderian Follows you

City planner + urbanist leading @TODUrbanWORKS. Global cities advisor. Past Vancouver chief planner. Past/founding @CanUrbanism president. Speaker.

Vancouver, British Columbia otoderianurbanworks.com

1,923 Following 152.5K Followers

"When it comes to actually realizing better cities, having "vision" comes down to being able to see things for your city that aren't currently there, that may seem impossible or just too hard to achieve, but that are not only possible, but necessary."





- Hybrid and 'WFH' is here to stay
- Tourism the last two years has led visitation rebound in Downtown, vs other Canadian downtowns
 - Residential demand is very strong, development cannot keep pace
- Retail sales are essentially stagnant (across NS)
 - Development: 17 private and 7 public underway. Cogswell district
 - Visible homelessness is rising exponentially; public safety concerns are rising (even if crime may not be)
 - Climate change needs to be part of every conversation



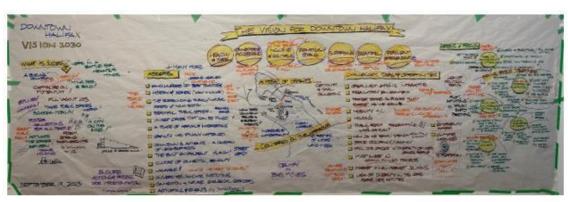


URBAN EXPERTS WORKSHOP SUMMARY REPORT

September 19, 2023

"You must create a sense of confidence in a city's future. This involves long-term investments and creating a vision."

Daniel Doctoroff, New York City Deputy Mayor of Economic Development and Rebuilding (2001-2008)











Our Themes

Mobility, Accessibility and Infrastructure
Placemaking and Activation
Economic Development, Business Attraction, and Fiscal Policy
Housing, Homelessness and Public Safety
Tourism and Events



Bus Rapid Transit (BRT) system
Separated, connected commuter bike network
Major Transit Terminal downtown (Cogswell?)

Free 24/7 ferries (Downtown Dartmouth, Bedford, George's Island, Woodside)
FRED the bus / return of the old tram network
Resilience for Sea Rise along Waterfront
Where does Downtown fit into the 15 minute city concept?







We Need Your Input!

Downtown Halifax Vision 2030 is a report currently being created by Downtown Halifax Business Commission (DHBC). As we consult with experts, we also want broad perspectives. If you are a business owner or a resident of our city, you have a stake in the future of our Downtown.

What do you think are the big moves to ensure our Downtown is vibrant and prosperous in 2030 and beyond?

CLICK HERE to have your say in the future of Downtown Halifax!

info@downtownhalifax.ca www.downtownhalifax.ca

Social media: @downtownhalifax

Our Panelists





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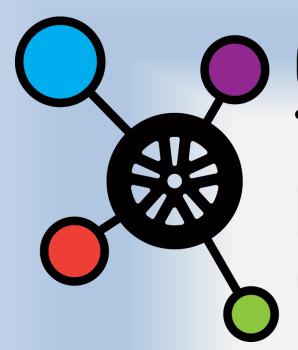
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Community Transportation Network

Connecting Nova Scotians

Transit Options in Nova Scotia

Who we are ...

... A vital link between government, the transportation sector, and Nova Scotians.

- A non-profit advocate for accessible transportation.
- A connector of providers and supporters to share information, build networks, and identify innovative solutions to transportation gaps in the province.
- An advisor for policy development that supports growth for underserved areas of the province.

What we do ...

OUR WORK COVERS FIVE AREAS: We in

We advocate and work toward a more integrated transportation sector to address the needs of Nova Scotians.



3

Promotion and Education

We provide information about, and support for, the many flexible, affordable transportation options available to Nova Scotians. (communitytransitns.ca)





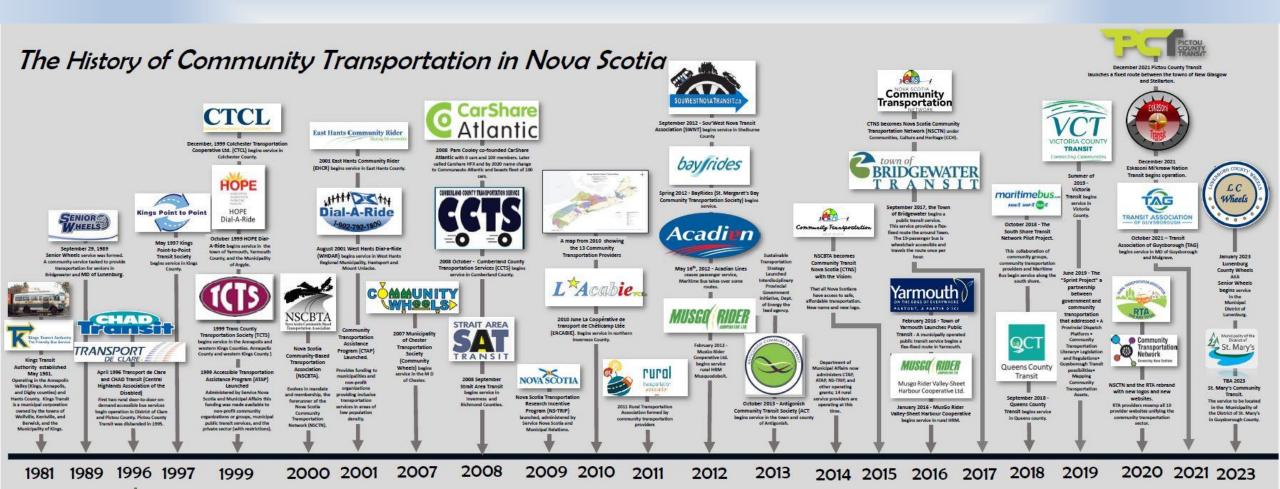
We work to improve mobility and social inclusion for people who cannot drive by enhancing accessible services. This has a direct impact on mental health and happiness.

Transportation connections

enhance rural life.

WE ARE FINDING RIDES FOR NOVA SCOTIANS BY: With a collaborative approach, NSCTN will continue to build a strong working Manage and host the Dispatch relationship with Public Works to move Software project the Community Transportation file forward. Manage and support the Maritime Bus project Manage and host (South Shore). a Sector wide/RTA Strategic Planning project Support sector focused education a) Change management - RTA b) Board Governance-RTA c) Fleet Electrification Continue to build the awareness of Community Transportation by assisting with a) the promotion of the RTA and the Rural Rides website, b)the promotion of the "Find a Ride" webpage, c)outreach and **EHS Out of Scope** awareness of transport project: support research and pilot development. transportation issues to the broader community. Support of the St. Mary's Transportation Project, along with an established board of directors, to build an affordable, accessible, and sustainable transportation option for the residents of Municipality of the District of St. Mary's, Guysborough County.

Our work began in 2000



The Age of Community Transportation (1996 - Present)

The Age of the Automobile (1902 - Present)

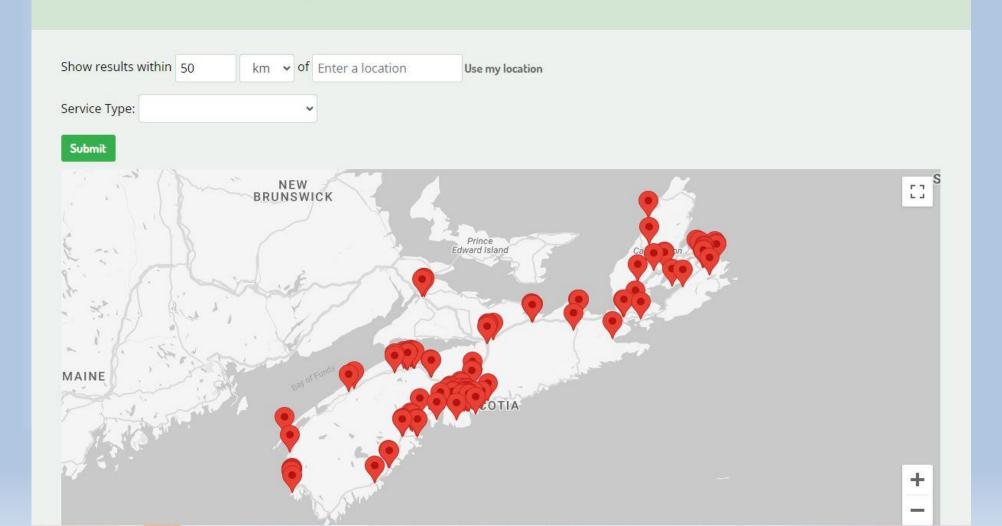


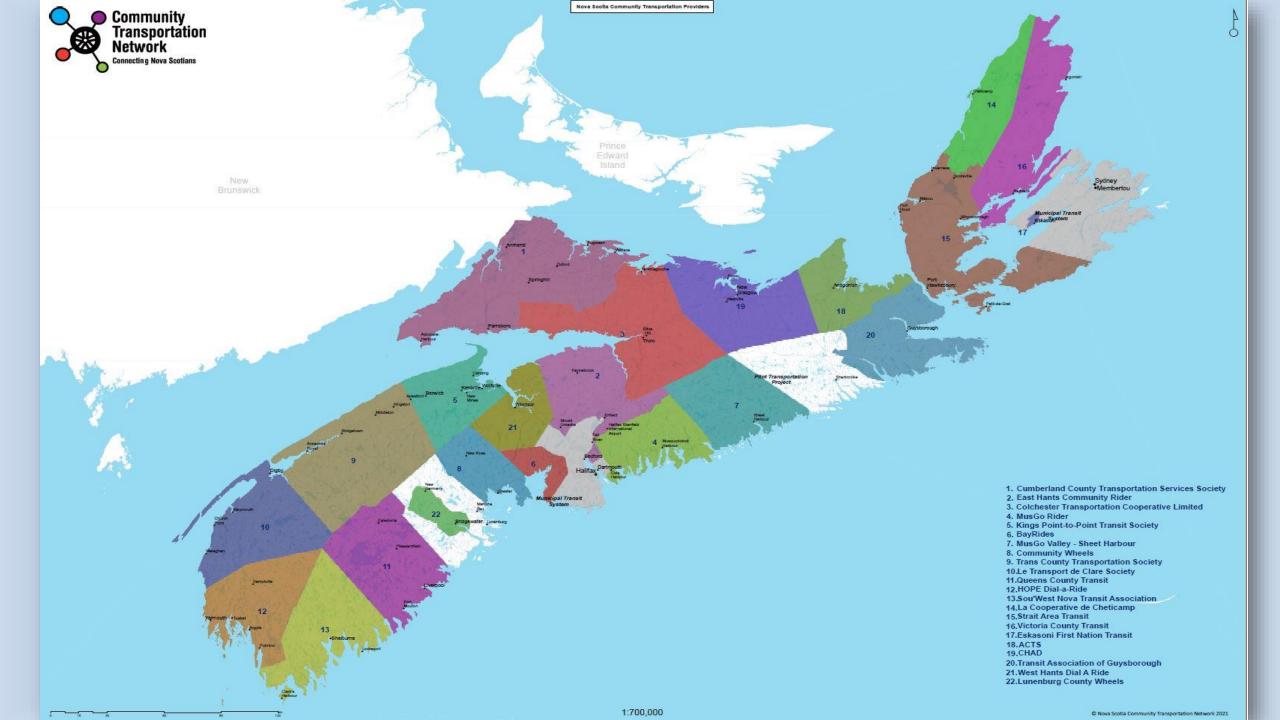


Q y

Find a provider near you

Search for what services are available near you. Then choose from the list below to find out more information.





2022 – 2023 RTA collective stats

- 133, 130 hours on the road
- 5, 454, 299 kms driven

RTA Fleet info

- 120 vehicles ranging from small cars to 20+ passenger buses
- Most common vehicle type ranges from 4/5 passenger vans to 8/9 passenger vans
- Combination of wheelchair accessible and non-wheelchair accessible *

*currently most electric vehicles are not able to be converted to be wheelchair accessible

RTSF* impact on fleet growth

- \$11.9 million investment
- 62 vehicle increase to total fleet size
- 36 were either EVs or Hybrid
- To date less than half of these vehicles are in operation due to supply chain issues

*1st round of RTFS. 2nd round of RTFS saw approval of funding for 2 more vehicles; 1 EV & 1 Hybrid

Nova Scotia's Electric Vehicle Charging Network

Charging an EV is as easy as plugging in your phone at home. When you're traveling you can take advantage of the fast-charging network available across the province.



Level 2

Level 2 charging stations use a 240 Volt outlet and add about 30 km of range per hour.



Level 3 (DC Fast-Charge)

Level 3 charging stations, also known as Direct Current Fast-Chargers (DCFCs), use a 480 Volt system and can charge up to speeds of 250-950 km of range per hour.



Level 3 Coming Soon

Level 3 charging stations currently under construction.



Level 3 Tesla Supercharger (DC Fast-Charge)

Harbour

Level 3 Tesla Superchargers (DCFC) use a 480 Volt system and can charge at speeds of up to 950 km of range per hour.



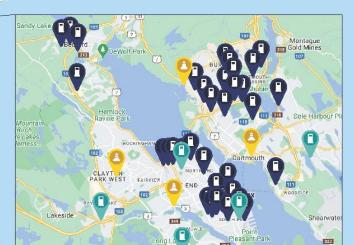
Halifax

Did you know?

- There are over 150 Level 2 chargers and more than 25 Direct Current Fast-Chargers across Nova Scotia, with more being added every year.
- Nova Scotia will be adding an additional 250 Level 2 chargers across the province in 2023.













Fleet Electrification Study

- 22 RTA services & 4 Fixed Route services
- Being conducted by the Clean Foundation
- Data collection tools in 32 vehicles
- Collecting data on:
 - Distance traveled
 - Idling time
 - Speed
 - # of trips
 - Vehicle emissions

Any Questions?

Our Panelists





TANYA DAVIS
Vice-President, Nova Scotia Joint
Regional Transportation Agency



Coordinator, Nova Scotia Community
Transportation Network



SHANNON MIEDEMA
Director of Environment and Climate
Change, Halifax
Regional Municipality



PAUL MACKINNON
CEO, Downtown Halifax
Business Commission



DR. AHSAN HABIB (Panel Moderator)
Professor, School of Planning and School of Civil and Resource Engineering (cross),
Dalhousie University





INAUGURAL RESEARCH SHOWCASE STUDENT POSTER AND NETWORKING SESSION



THANK YOU

for attending the

INAUGURAL RESEARCH SHOWCASE

of the Climate Action Research for Transportation Network

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