



Edmonton Climate Hub

Contributors:

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*Review by 12 Edmonton Climate Hub members and 10 Edmonton
Community Organizations*

Presenter:

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CoE GHG emissions scope 1 & 2 (2018)

- 43% electricity
- 33% gasoline & diesel fuel
- = 76%

https://www.edmonton.ca/city_government/documents/PDF/EdmontonsConsumptionBasedInventory2016.pdf

Electricity

Production siting	City of Edmonton Electricity consumption	Edmonton					Southern Alberta			
		%	2030 [TWh]	Capacity [GW]	[\$M/MW capacity installed]	Annual GWh produced /MW capacity	Capital cost [CDN\$M]	Southern AB [\$ /W capacity installed]	Annual GWh produced /MW capacity	Capital cost [CDN\$M]
2030 projected electrical consumption	100%	9.90								
Wind turbines - production	80%	7.92	3.73	2.125	2.125	7,920	2.125	3.375	4,987	
Solar photovoltaics production	20%	1.98	1.72	1.500	1.150	1,518	1.500	1.300	2,285	
Total capital cost [\$M]						9,438			7,271	
Annual capital cost investment over 10 years [\$M]						944			727	

2030 electrical consumption: 9.9 TWh, https://www.edmonton.ca/city_government/documents/PDF/GreenElectricity-CommunityWideProcurement.pdf - page 3

- CoE Corporation funded by impact investors; net zero cost to CoE
- Carbon credits retired 100% for City of Edmonton
- Carbon emissions 43% → 3%, i.e. 94% reduction for electricity

Notes: Based on LCA emissions 2020 AB grid 630g/kWh CO2e to 40g/kWh for renewable mix – Storage+ may add 10+% to cost, but also profitable. 2020 capital costs; significant reductions expected by 2030 – More energy required for EV & heat pumps, reduced energy from energy efficiency. Energy modelling for Calgary renewables mix: Jacobson, M. et al. 2018. 100% clean and renewable Wind, Water, and Sunlight (WWS) all-sector energy roadmaps for 53 towns and cities in North America. Sustainable Cities and Society 42: 22-37.

On-road Transportation

Transport mode	Trips Baseline 2015 [%]	Assumptions				
		Scenario A 2030 [%]	Scenario B 2030 [%]	Scenario C 2030 [%]	Scenario D 2030 [%]	
ICE vehicle	57	25	20	8	6	0% electric 100% electric
BE vehicle	-	20	15	12	12	
Subtotal vehicle	57	45	35	20	18	
Shared/autonomous vehicle	20	25	28	40	30	80% electric by 100% electric
Public transit/school bus	10	13	15	15	20	
Bike, ebike, scooter*	2	5	10	13	20	100% electric
Walk	11	12	12	12	12	
Total Usage [%]	100	100	100	100	100	
GHG footprint [%]	100	40%	32%	14%	12%	
Private vehicle trips [%]	78	70	63	60	48	

Fig: City of Edmonton daily trips historic (2015) and low-carbon scenarios (2030)

Source: https://www.edmonton.ca/transportation/RoadsTraffic/2015_HTS_Overview.pdf

* Bike ridership increased 450% between 1994 and 2015

"According to the Downtown Bike Grid Monitoring website, the number of cyclists has increased by 81 per cent in May [2018] compared to a year ago [May 2017]."

Source: <https://www.thestar.com/edmonton/2018/06/14/one-year-later-bike-lanes-nearly-double-number-of-cyclists-in-the-city.html>

Note: not corrected for population growth

18 Policy Recommendations, e.g.

- Net zero procurement policy
- CoE vehicle procurement 100% emission free now, truck and transport by 2025
- Deadline for new building natural gas heating
- AI transport as public service
- Open source software and AI to future-proof our economy
- First Nations sustainable architecture
- Match Vancouver & California deadline for selling ICE vehicles within city limits by 2035
- Biodiversity: convert 90% of public lawns → native species or permaculture food production

Climate Justice, e.g.

- Ensure that a low-carbon transition does not unfairly impact vulnerable populations
- Help transition energy workers
- Social procurement policies
- “The City of Edmonton needs to explore how its energy transition can be leveraged to advance social justice objectives that prioritize the needs and rights of traditionally disadvantaged groups”