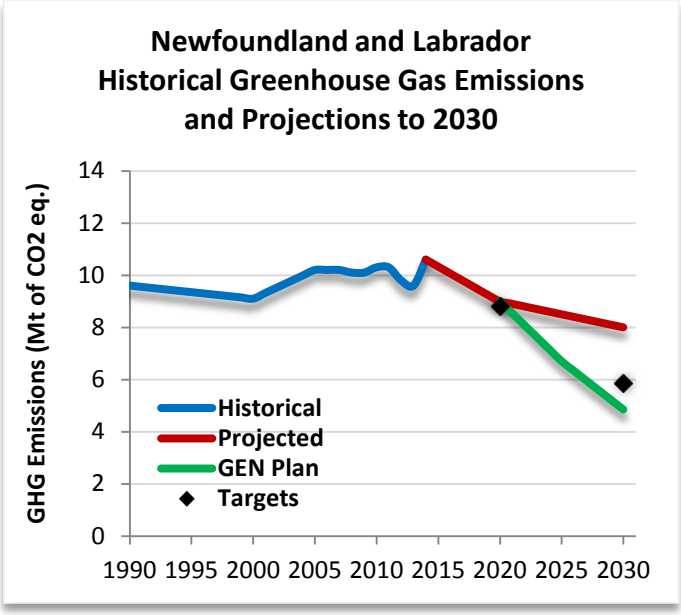
Green Economy Network Platform: *A Roadmap Toward 27,449 Jobs for Newfoundland and Labrador*



Source: Environment and Climate Change Canada[1]

The Green Economy Network (GEN) has calculated that Newfoundland and Labrador could create 27,449 person-years of employment over a five-year period through a total public investment of $2.02 billion in energy efficiency and conservation, renewable energy, and public transit. In addition, targeted public investment in these three priority areas will reduce Newfoundland and Labrador's annual greenhouse gas (GHG) emissions by up to 4.15 megatonnes (Mt). This action plan will help to transition the province to a lower-carbon economy, create a healthier environment, and strengthen communities, while reducing poverty and inequality.[2]

Unemployment

In 2016, Newfoundland and Labrador had an annual average of 36,100 unemployed workers and an annual average unemployment rate of 13.4%, the highest unemployment rate of any province and the second highest in Canada.[3] In some areas, **unemployment rates reached over 18% in 2016.**

Emissions

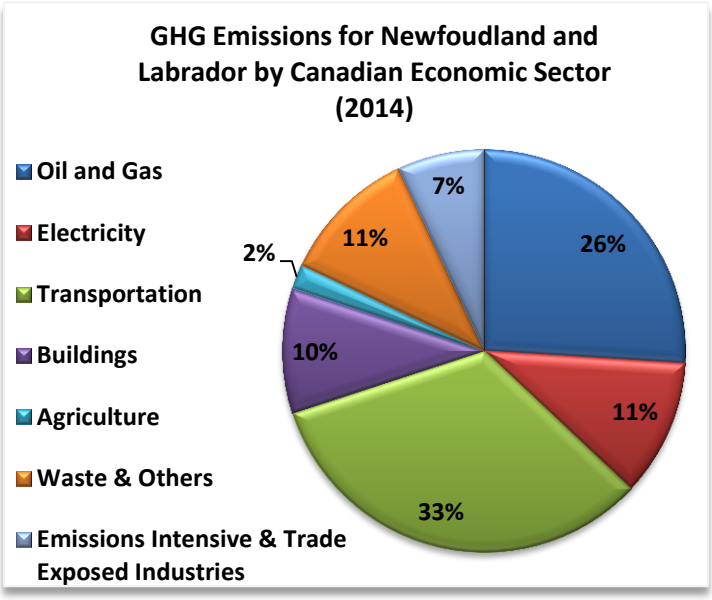
Newfoundland and Labrador's total GHG emissions were 10.6 Mt in 2014, which represents 1.4% of total national annual GHG emissions.[4] While the province's contribution to national emissions is low, Newfoundland and Labrador has the fourth highest emissions per capita in Canada.[5]

Newfoundland and Labrador has committed to reducing GHG emissions over the coming decades. Under the Conference of New England Governors and Eastern Canadian Premiers (NEG-ECP) 2013 Climate Change Action Plan, the province has committed to achieving GHG **reduction targets of 10% below 1990 levels by 2020; and 35-45% below 1990 levels by 2030.**[6]

Climate change is a pressing issue for NL. Over 90% of Newfoundland and Labrador's population lives near the sea, facing exposure to many of the long-term impacts of climate change including sea-level rise, an increase in storm surges, greater coastal erosion and volatile changes in seasonal weather patterns.[7]

Summary of Calculations for NL

	$Billions Invested Over 5-Year Period	Total Person-Years Created	GHG Emission Reduction (Mt CO_2eq)
Renewable Energy	$0.987	12,636	1.9 – 3.3
Energy Efficiency (incl. building retrofits)	$0.900	13,140	0.3 – 0.7
Public Transit (improvement and expansion)	$0.132	1,673	0.12 – 0.15
5-Year TOTALS	$2.02	27,449	2.3 – 4.15



Source: Environment and Climate Change Canada[8]

Energy Efficiency and Conservation

Energy efficiency and conservation are our cleanest, cheapest and most productive methods for reducing GHGs, yet the vast majority of buildings in Newfoundland and Labrador have not been retrofitted. Energy efficiency is a smart investment that can be started immediately, using existing skills and technologies, to create jobs and save money.

Buildings are directly responsible for 10% of NL's annual GHG emissions. Over 60% of the energy used in buildings is for space heating. The majority of the remaining 40% is used for hot water heating and major appliances.[9] Therefore, there are significant opportunities to increase energy efficiency and conservation for homes and buildings in Newfoundland and Labrador. The cost of these mitigation strategies is offset by lower energy bills, and in the end, homeowners and businesses save money.

Nearly 60% of Newfoundland and Labrador's housing stock was built before 1980, and only 14% of the province's housing stock was built after 2000.[10] Although the Government of Newfoundland and Labrador has been offering energy efficiency programs for low-income households, such as the Residential Energy Efficiency Program, over 84% of the province's housing stock is still in need of energy efficiency retrofits.[11] Energy efficiency retrofits include new insulation, heating, ventilation or cooling equipment, and improvements to doors, windows, exterior siding and caulking.

Over 70% of the homes in need of retrofits were built before 1980.[12] Generally speaking, newer homes use less energy per square meter than older homes and houses built between 1946 and 1980 use significantly more energy per square meter than homes built after 1996.

Atlantic Canada has the highest incidence of energy poverty of any region in Canada as of 2013. Almost 21% of households are considered to be energy poor based on their within-the-home energy expenditure. Energy poverty in Atlantic Canada has grown by over 20% since 2010 when 17.1% of households were energy poor.[13]

Investing in energy efficiency and retrofitting programs can reduce energy poverty by lowering utility bills in response to energy savings, freeing up capital and discretionary income.

In addition to improved energy efficiency in Newfoundland and Labrador's housing stock, there are major financial and social gains to be made by retrofitting the province's industrial, commercial, business, and public buildings. Investing in retrofitting the province's homes and buildings will save a significant amount of energy, reduce GHG emissions, reduce energy poverty, create opportunities to complete apprenticeships, and generate employment.

Targeted public investment of $900 million in energy efficiency and conservation over a five-year period, in combination with complementary workforce development policies, could generate 13,140 person-years of employment in Newfoundland and Labrador while reducing annual GHG emissions by up to 0.7 Mt.

Types of Jobs in Energy Efficiency and Conservation:

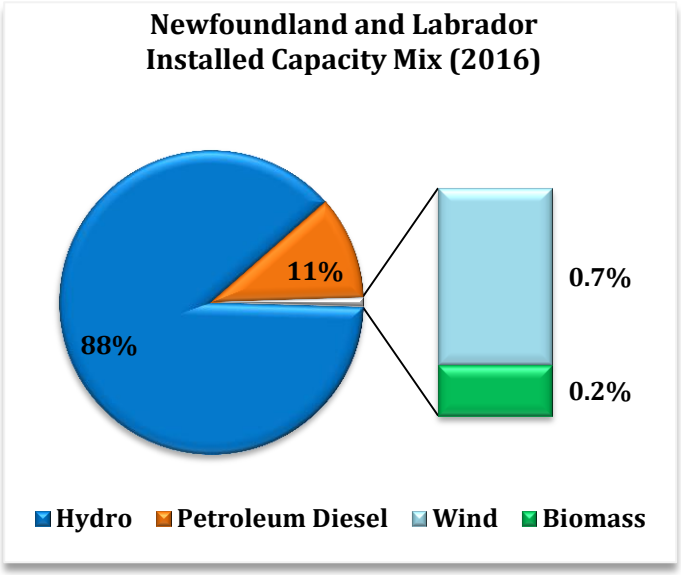
- Architect
- Boilermaker
- Carpenter
- Civil Structural Engineer
- Community and Social Services
- Construction Equipment Operator
- Construction Labourer
- Education and Health Services
- Electrical Engineer
- Electrician
- Energy Efficiency Auditor
- HVAC Installer
- HVAC Technician
- Ironworker
- Office and Administrative Support
- Pipefitter
- Plumber
- Roofer
- Service Industry Occupations
- Steelworker
- Weatherization Installer/ Technician

Renewable Energy

Newfoundland and Labrador's installed energy capacity mix includes almost 90% renewable energy. The province also has tremendous potential to develop additional renewable energy capacity with the possibility of profiting from energy exports.

Large-scale electricity is generated four ways in Newfoundland and Labrador: hydroelectricity, thermal (oil-fired generation), wind, and diesel. While over 85% of electricity is generated through hydropower, there are still many communities in NL that rely on diesel. The province's 25 diesel plants provide electricity to many communities along the coast of Newfoundland and Labrador, with the majority located in coastal communities in Labrador.[14] There are significant renewable energy opportunities for these communities, including wave, tidal, and wind.

Newfoundland and Labrador has the highest onshore wind potential in all of Canada, and the third highest renewable potential in both tidal and wave energy, totaling over 6.25 terawatt-hours a year (TWh/yr) of net capacity.[15] The province has yet to take advantage of this potential with no installed capacity in tidal and wave energy, and minimal studies and development taking place. Investing in wind, tidal, and wave energy will significantly reduce GHG emissions while also creating employment opportunities and reducing dependency on diesel for coastal communities.



Source: Natural Resources Canada[16]

Transitioning to a lower-carbon economy will require an increase in electrification. This electricity must be derived from renewable sources to reach the level of decarbonization required for Newfoundland and Labrador to meet its emissions reduction targets. The transition to a renewable energy economy must be a Just Transition that respects the rights of Indigenous Peoples, revitalizes communities, and ensures that workers in carbon-intensive industries are protected and able to support their families.

With a total public investment of $987 million in renewable energy – including investments in modernizing electricity infrastructure, such as smart grids and microgrids, and large-scale and small-scale energy storage systems - GEN has calculated that 12,636 person-years of employment could be created over five years in NL. In addition, this investment will result in an annual GHG emission reduction of up to 3.3 Mt.

Types of Jobs in Renewable Energy:

- Boilermaker
- Community and Social Services
- Construction Worker
- Drilling Equipment Operator
- Education and Health Services
- Electrician
- Engineer
- Excavator
- Heavy Equipment Operator
- Ironworker
- Land Surveyor
- Machinist
- Mechanic
- Office and Administrative Support
- Pipefitter
- Plumber
- Service Industry Occupations
- Scientist
- Sheet Metal Worker
- Steelworker
- Surveyor
- Welder

Public Transit

The government of Newfoundland and Labrador has shown leadership on reducing emissions from new public vehicles by exceeding the commitment made in the Energy Plan (2007) that 25% of all new car and SUV purchases be energy-efficient or hybrid vehicles. Since April 2008, 41% of the provincial government's new car and SUV purchases have been hybrid vehicles. The provincial government also maintains anti-idling zones around public buildings.[17] However, increasingly ambitious actions to reduce emissions from the transportation sector are required, as transportation remains Newfoundland and Labrador's single highest source of GHG emissions.

The transportation sector was responsible for 33% of Newfoundland and Labrador's GHG emissions in 2014. While some funding from the Newfoundland and Labrador Green Fund was invested in installing hybrid devices on six buses, the government has claimed its cities are not large enough to support mass transit.[18]

The 2011 Climate Change Action Plan relied almost exclusively on public education and consumer choice to achieve any reduction in GHG emissions from transportation, rather than making targeted investments in expanding and improving public and active transportation networks.

The lack of accessible transit is becoming an issue in the province, where the need for affordable and reliable transportation for seniors, as well as other groups who are transport disadvantaged, has been stressed in several local studies. In Newfoundland and Labrador, public transit services are offered only in the St. John's metro region. In comparison to other Atlantic Provinces, Newfoundland and Labrador is lagging. Public transit services are available in 26 communities in New Brunswick, 12 communities in Nova Scotia, and nine communities in Prince Edward Island.

Increased public investments are needed to expand and improve public transportation networks, specifically to help with the capital costs for smaller municipalities and for rural locations in Newfoundland and Labrador. Regional public transportation presents an attractive option to reduce vehicle-related emissions for densely populated areas, such as northeast Avalon.[19]

Newfoundland and Labrador has the second lowest transit ridership per capita in Canada, accounting for 0.15% of Canada's public transit ridership share.[20] Presently, just 3% of commuters in St. John's take public transit, over 5% choose active transit, and 90% commute by car, truck, or van.[21]

In order to attract more people to make use of public transportation, the province must ensure that public transit is affordable and accessible, especially for low-income individuals, families, and workers. Implementing these priorities as part of a public transportation strategy will ensure that underserved communities and individuals – including (but not limited to) women, people of colour, Indigenous Peoples, youth and students, seniors, and persons with disabilities – will benefit from increased access to health services, education, recreation, and employment, including the employment opportunities that are created through the creation and expansion of transit services.

With an investment of $132 million in public transit - including investments in transportation demand management[22] - GEN has calculated that 1,673 person-years of employment would be created in Newfoundland and Labrador. Targeted public investment in public transit will also reduce the province's annual GHG emissions by up to 0.15 Mt, with the potential for greater emissions reductions over time.[23] Complimentary policies and regulations to reduce emissions from freight transport will create additional employment opportunities and further reduce emissions from the transportation sector.

Types of Jobs in Public Transit:

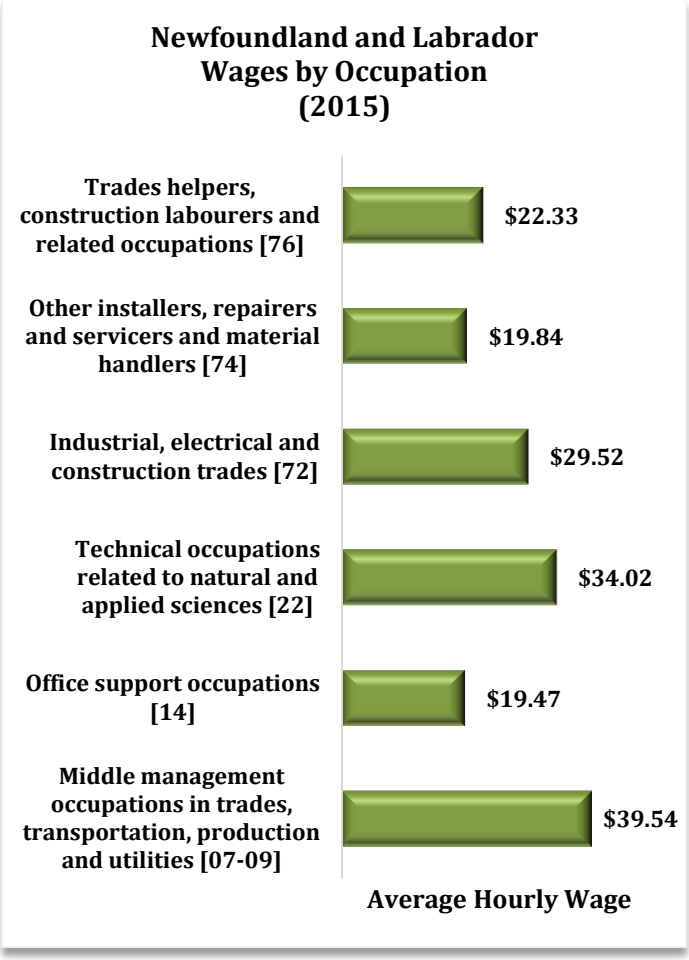
- Automotive Technician
- Bus and Transit Driver
- Civil Engineer
- Community and Social Services
- Construction Equipment Operator
- Construction Labourer
- Education and Health Services
- Electrician
- Industrial Engineer
- Machinist
- Mechanic
- Mechanical Engineer
- Metal Fabricator
- Office and Administrative Support
- Service Industry Occupations
- Transportation Planner
- Urban Planner
- Welder

27,449 Climate Jobs in NL

The transition to a low-carbon economy in Newfoundland and Labrador could create 27,449 person-years of employment over five years while reducing annual GHG emissions by up to 4.15 Mt. The jobs that will be created from this transition are good jobs with decent wages, across many sectors. The average hourly wage for a sample of these occupations is outlined in the graph on the right.

The proposals for public investment outlined in this plan must be complemented by a suite of policies aimed at reducing emissions and creating jobs. These policies should include targets for investment, GHG reductions, and job creation, and increase in ambition over time.[24]

The transition to a green economy in Newfoundland and Labrador will require significant investments in major infrastructure projects. To ensure that the economic, environmental, and social benefits from investments in major infrastructure projects are accrued locally, Community Benefits Agreements (CBAs) should be included as part of all significant infrastructure projects. Depending on the infrastructure project, CBAs can provide benefits including employment, training, apprenticeships, local supplier and social procurement opportunities, neighbourhood improvement, and affordable housing.[25]



Source: CANSIM 282-0152

This plan for Newfoundland and Labrador lays the foundation for tackling climate change while creating jobs. It also provides a strategy to address poverty and inequality. The proposals outlined in this plan will not only serve displaced workers from polluting industries, but will also create opportunities for workers from industries suffering the impacts of climate change, the unemployed, the working poor, as well as Indigenous Peoples, racialized communities,

women, youth, LGBTI individuals, and persons with disabilities. Let's act now to make this plan for Newfoundland and Labrador a reality, get people back to work, and give our children the future that they deserve.

[1] Environment and Climate Change Canada (2015). *Newfoundland and Labrador : Environment Profile* https://www.canada.ca/content/canadasite/en/environment-climate-change/briefing/newfoundland-and-labrador-environment-profile.html

Environment and Climate Change Canada (2016). *Canada's Second Biennial Report on Climate Change* https://www.ec.gc.ca/GES-GHG/default.asp?lang=En&n=02D095CB-1#BR-Sec5-1;

Environment and Climate Change Canada (2016). *Greenhouse Gas Emissions by Province and Territory* https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=18F3BB9C-1

[2] One person-year of employment is the equivalent of one full-time job for one year.

These are direct, indirect and induced jobs. The method for calculating job creation is based on the formula developed at the Center for American Progress, outlined in "Green Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy," [September, 2008]. The formula encompasses jobs created in three categories for each $ one billion of investment: [i] direct employment in primary industries; [ii] indirect employment in secondary industries and suppliers; and [iii] induced employment in retail and service industries.

The investment of $2.02 billion comes from a regional breakdown of the national One Million Climate Jobs Campaign, which is a total investment of $80.9 billion over five years. The $2.02 billion over five years ($0.4 billion/year) cited for Newfoundland and Labrador is the allocation of funding required for NL alone in relation to the total pan-Canadian investment. Green Economy Network has proposed that the annual investments be split 50/40/10 among federal, provincial, and municipal governments. The investment required for each province was calculated starting with the population as a base model and then adjusting the investment for each pillar (energy efficiency, renewable energy, and public transportation) based on regional differences.

Calculating GHG reductions is a work in progress. The calculations cited here [Mt = one million tonnes] are based on the formula used by federal government departments for every $ one billion of public investment. Each calculation includes two figures. The first figure is based on observable evidence of GHG reductions resulting from these types of public investments so far, while the second figure is based on calculated predictions for GHG reductions in year 5 of the projects and beyond, taking into consideration numerous variables. Citing the low and the high of GHG reductions shows what could be anticipated.

[3] Statistics Canada (2017). *Average Annual Unemployment Rate Canada and Provinces 1976-2016* http://www.stats.gov.nl.ca/statistics/Labour/PDF/UnempRate.pdf; and

Statistics Canada (2017). *Labour force, employment and unemployment, levels and rates, by province* CANSIM, table 282-0002 http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labor07a-eng.htm

[4] Environment and Climate Change Canada (2016) National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada.

[5] Pembina Institute (2016). *Race to the Front: Tracking pan-Canadian climate progress and where we go from here* https://www.pembina.org/reports/race-to-the-front-english-final1.pdf

[6] Environment and Climate Change Canada (2015). *Newfoundland and Labrador : Environment Profile* https://www.canada.ca/content/canadasite/en/environment-climate-change/briefing/newfoundland-and-labrador-environment-profile.html

[7] Government of Newfoundland and Labrador (2011). *Climate Change Action Plan 2011* http://www.exec.gov.nl.ca/exec/ccee/publications/climate_change.pdf

[8] Environment and Climate Change Canada (2016). *National Inventory Report 1990-2014: Greenhouse Gas Sources and Sinks in Canada,* Canada's Submission to the United Nations Framework Convention on Climate Change, Section 3.

[9] Government of Newfoundland (2011) Market Transformation Framework 2011-2015, p. 7

[10] Canadian Home Builders' Association. 2008. Energy Use and Greenhouse Gas Emission Performance in Saskatchewan Homes: 1990 to 2005, p.5; and

Canada Mortgage and Housing Corporation (2012). *Dwelling Condition by Tenure and Period of Construction, Canada, Provinces, Territories, and Metropolitan Areas, 2001, 2006, 2011* https://www.cmhc-schl.gc.ca/en/hoficlincl/homain/stda/data/data_008.cfm

[11] Statistics Canada (2011) *Households and the Environment: Energy Use* http://www.statcan.gc.ca/pub/11-526-s/11-526-s2013002-eng.pdf

[12] Statistics Canada (2012). *Households and the Environment: Energy Use* http://www.statcan.gc.ca/pub/11-526-s/11-526-s2013002-eng.pdf; and

Canada Mortgage and Housing Corporation (2012). *Dwelling Condition by Tenure and Period of Construction, Canada, Provinces, Territories, and Metropolitan Areas, 2001, 2006, 2011* https://www.cmhc-schl.gc.ca/en/hoficlincl/homain/stda/data/data_008.cfm

[13] Fraser Institute (2016). *Energy Costs and Canadian Households: How much are we spending*? P.14

[14] Hydro Newfoundland, http://www.poweryourknowledge.com/timeline.html#generation

[15] Barrington-Leigh, C. P., & Ouliaris, M. (2016). *The renewable energy landscape in Canada: a spatial analysis* http://wellbeing.ihsp.mcgill.ca/publications/Barrington-Leigh-Ouliaris-IAEE2015.pdf

[16] Natural Resources Canada (2016). *Newfoundland and Labrador's Electric Reliability Framework* http://www.nrcan.gc.ca/energy/electricity-infrastructure/18834

[17] Newfoundland and Labrador (2011). *Charting the Course: Climate Change Action Plan 2011* http://www.exec.gov.nl.ca/exec/ccee/publications/climate_change.pdf

[18] Holmes, M. (2012). *All over the map 2012: a comparison of provincial climate change plans*. David Suzuki Foundation.

[19] Holmes, M. (2012). *All over the map 2012: a comparison of provincial climate change plans*. David Suzuki Foundation.

[20] Fraser Institute (2013) Transportation Performance of the Canadian Provinces. Retrieved from: https://www.fraserinstitute.org/sites/default/files/TransportationPerformancePart2.pdf

[21] Statistics Canada (2011) Table 1.a Proportion of workers commuting to work by car, truck or can, by public transit, on foot, or by bicycle, census metropolitan areas.

[22] The use of policies, programs, services and products to influence whether, why, when, where and how people travel. TDM measures help shape the economic and social factors behind personal travel decisions.

Transport Canada (2011). *Transportation Demand Management for Canadian Communities: A Guide to Understanding, Planning and Delivering TDM Programs* https://www.fcm.ca/Documents/tools/GMF/Transport_Canada/TDMCanComm_EN.pdf; and

Federation of Canadian Municipalities (2008). *Improving Travel Options with Transportation Demand Management (TDM)* https://www.fcm.ca/Documents/tools/GMF/Improving_Travel_Options_with_Transportation_Demand_Management_EN.pdf

[23] The emissions reductions cited here are the direct reductions. Indirect reductions from the promotion of compact development and an increase in urban density will result in up to four times the GHG reductions in the long-term

[24] For policy recommendation see:

Canadian Labour Congress (2016). *Green Jobs for Tomorrow*, Submission by the CLC to the Working Group on Clean Technology, Innovation and Jobs https://d3n8a8pro7vhmx.cloudfront.net/broadbent/pages/5454/attachments/original/1480433751/Green_Jobs_For_Tomorrow_Report.pdf?1480433751;

Green Economy Network (2016). *Making the Shift to a Green Economy: A Common Platform of the Green Economy Network* http://greeneconomynet.ca/wp-content/uploads/sites/43/2014/07/GEN-Common-Platform-2016-EN1.pdf; and

Green Economy Network (2016). *One Million Climate Jobs: A Plan for a Sustainable and Equitable Economy*, Submission to the Working Group on Clean Technology, Innovation and Jobs http://greeneconomynet.ca/wp-content/uploads/sites/43/2016/07/GEN-Submission-Working-Group-on-Clean-Technology-Innovation-and-Jobs-July-2016.pdf

[25] For more information on CBAs, see:

A. Galley (Mowat Centre, August 2015). *Community Benefits Agreements* https://mowatcentre.ca/community-benefits-agreements/

Toronto Community Benefits Network (2013). *Jobs and Opportunities through Community Investment* http://www.communitybenefits.ca/