

The Impact of Land Use/Transportation Decisions on GHG emissions

Land use decisions made by local governments have a large influence on the environmental, social and economic health of communities. Density and land use mixes work together to determine travel distances between the places where residents live, work and play and the economic health of a neighbourhood and the potential for various energy sources and use are also influenced by the mix and density of land uses. Street design, combined with investments in transit and cycling infrastructure, greatly influence residents' transportation choices and the greenhouse gas (GHG) emissions that are produced from these choices. For example, higher housing density creates a foundation that enables a host of services and amenities that together reduce a community's GHG emissions. Without density, sustainable commercial modes become a challenge as transit is not supported enough to be frequent or reliable, walking and cycling distances are too far to make the case for an alternative to driving, and individual housing units and urban infrastructure are further distributed resulting in decreased energy efficiency. However, density alone is not enough to reduce GHG emissions. Density must be coupled with sustainable transit and a mixture of amenities needed for daily life¹.

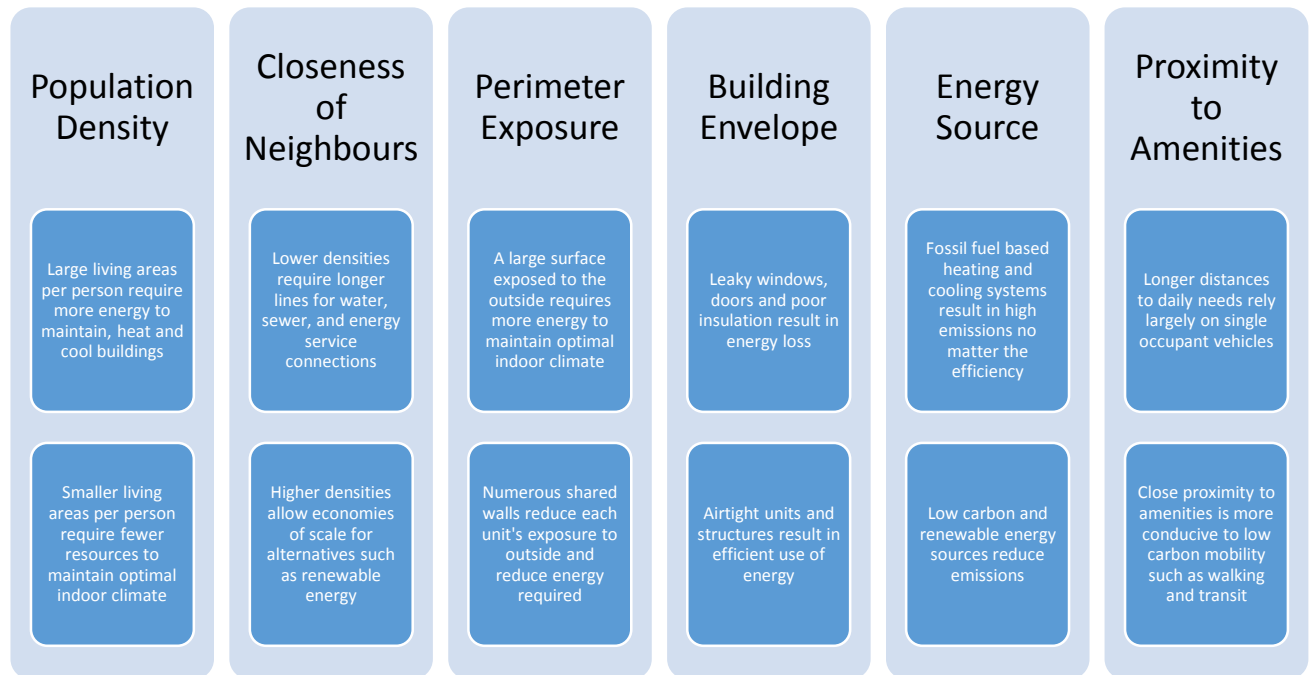
Port Moody is projected to grow to a population of 50,000 before 2050 and the Official Community Plan provides a vision of the form and location of housing to support this population growth, as well as the other components that shape our community including economic development, parks and recreation, arts and culture and more. Housing in Port Moody is shifting toward more multi-family development due to a dwindling supply of land suited for single-family homes; the promotion of compact growth patterns that support transit and preserve green space; and a desire to maintain housing affordability. This form of development is also central to reducing transportation emissions through modal shift away from single-occupancy vehicles to alternatives such as walking, cycling and transit. The completion of the Evergreen SkyTrain Extension has provided the City with a major opportunity to support a shift in modal split. More compact forms of housing need to be accompanied with planning for complete communities, where residents can live, work, play and shop, which has shown to reduce per capita greenhouse gas emissions from buildings and transportation. Figure 2 below demonstrates the relationship between urban form and GHG emissions.

Under the low carbon resilience lens, impacts of density on climate vulnerability should be addressed. Density is one of several major components affecting the ways in which urban areas will influence and be affected by a changing climate. Higher density areas can sometimes lead to concentrations of risk in particularly vulnerable locations such as health issues². On the other hand, density and complete community development can reduce risks and vulnerabilities associated with climate impacts such as improving social connectedness and closer proximity to daily needs and services such as healthcare and multiple modes of transportation.

¹ The Relationship Between Urban Form and GHG Emissions, 2010 : <https://open.library.ubc.ca/cIRcle/collections/facultyresearchandpublications/52383/items/1.0102495>

² United nations Population Fund, Urban Density and Climate Change, 2009: <https://www.unclearn.org/wp-content/uploads/library/unfpa14.pdf>

Figure 2: Relationship between Urban Form and Greenhouse Gas Emissions



**Figure adapted from "Bett et al. The Relationship Between Urban Form and GHG Emissions, 2010.*