



Sectoral GHG Targets Modelling Methodology

Sectoral Targets Modelling Methodology

Sectoral targets were determined based on modelling from Navius Research's gTech model. The gTech model is also used by the B.C. government to [assess CleanBC's progress of our reduction targets](#). The model's structure and key inputs are documented in the [methodology book](#).

There are many different pathways that B.C. could take to achieve its 2030 greenhouse gas (GHG) reduction target of 40% below 2007 levels. The sectoral targets were established based on how the province could reduce emissions at the lowest possible cost to the economy. To identify this pathway, the model implemented a rising shadow price on emissions across the economy (i.e. the same level on every emission source in every sector) until the target was reached. The modelling team then assessed the level of reductions each sector achieved based on this common price signal.

Because each sector's abatement opportunities and costs are different, each sector reduced a different percentage of their total emissions to achieve the economy-wide target. The percentage by which each sector reduces emissions is the point estimate around which the sectoral targets were based. The rationale for the use of a target range was to allow for flexibility as real world results on the cheapest pathway to the 2030 target are likely to diverge from the modelled projections

Minor adjustments were made to align model results with the 2030 target, such as adjustments to incorporate B.C.'s net deforestation emissions (which are accounted for in the Provincial Inventory and Progress to Targets but are not modellable within the Navius model).

The sectoral targets are:

- Transportation: 27% to 32%;
- Oil and gas industry: 33% to 38%;
- Industry other than oil and gas: 38% to 43%; and.
- Buildings and communities: 59% to 64%.

The cumulative effect of these targets result in a reduction of B.C.'s emissions of between 38 and 43 percent below 2007 levels by 2030.

Like any model, the outcome is dependent on the input assumptions, particularly those of the emission reduction technologies and their costs. The model only includes technologies that have reached at least an early stage of commercialization. Other emerging or breakthrough technologies that could play a role in meeting B.C.'s targets but whose costs and timeline are uncertain are not included in this analysis.

Key assumptions:

- Declines in industrial output in response to the increased policy cost for any sector have been restricted. This limitation of production declines was implemented to ensure a viable pathway to achieving the target that does not constrain economic growth.
- Deforestation emissions are not modelled and are added to modelled totals at a constant annual rate of 2.4 megatonnes of carbon dioxide equivalent (MtCO₂e) out to 2050.
- The Model is aligned with the Ministry of Energy, Mines and Low Carbon Innovation's 2020 natural gas production forecast.
- The Province has 14 million tonnes per year of LNG production by 2025.

The Climate Change Accountability Act gives the Minister the ability to adjust the sectoral targets and it requires the targets be reviewed before the end of 2025 and at least once every 5 years after the first review.

GHG breakdown by sectoral target groupings

Note that the comments below detail how sectors achieved the 2030 reduction level at the lowest cost in this modelling run. They do not indicate final policy direction. The roadmap that is currently being developed will detail how B.C. intends to meet the 2030 target.

GHGs by IPCC Sectors (Mt CO ₂ eq)	Actual emissions		Modelling results	2030 reduction (from 2007 levels)
	2007	2018	2030	
Oil and Gas	12.3	13.3	7.9	-35%
Comments				
<ul style="list-style-type: none"> • By 2030, oil and gas fugitive emissions decline 79% from 2007 levels due to B.C.'s methane regulations, electrification and other factors. • By 2030, 42% of formation CO₂ is captured and sequestered. Methane venting is also reduced significantly due to the methane regulations. • Electrification grows to 16% of sector energy demand facilitated by expansion of electricity transmission lines. • Continued technology efficiency gains reduce the energy required to produce oil and natural gas 				
Industry	14.1	14.4	8.5	-40%
Comments				
<ul style="list-style-type: none"> • By 2030, GHG reductions in manufacturing industries comprise around half of the abatement towards industry's target. <ul style="list-style-type: none"> ○ Manufacturing reductions are achieved by a mix of CCS, increased energy efficiency and fuel switching. Industry's use of low-carbon energy increases as a share of total energy use--electricity (36%) and renewable natural gas (3%). • By 2030, GHG emissions from electricity generation are nearly eliminated by the near phase-out of fossil fuel cogeneration. • Industrial HFC emissions are cut in half from 2007 levels. 				
Buildings & Communities	14.7	12.8	5.8	-61%
Comments				
<ul style="list-style-type: none"> • Heat pumps drive GHG reductions in this sector, with a 36% market share in commercial buildings and 10% in residential buildings by 2030. • The renewable gas mandate under CleanBC displaces 15% of residential and commercial natural gas consumption. • A significant reduction in waste emissions is caused by incremental measures to the organics diversion policy and gas capture policy (75% capture from large site landfills by 2025) under CleanBC. 				

Transportation	22.3	27.4	15.7	-29%
Comments				
<ul style="list-style-type: none"> • Reductions in GHG emissions from heavy-duty freight transport and off-road vehicles (e.g., mining trucks) are the largest contributors towards achieving the transportation target. <ul style="list-style-type: none"> ○ These vehicles adopt low-carbon fuels at a rate that exceeds the level required under the low-carbon fuel standard by 2030. The market share of hydrogenation-derived renewable diesel (HDRD) and biodiesel is 44%. ○ There are more heavy-duty electric vehicles (EVs) and fuel cell electric vehicles (FCEVs) on the road. • Light-duty vehicles are also a significant source of emission reductions. B.C.'s zero-emission vehicle (ZEV) mandate helps to achieve a 32% EV share of light-duty vehicle sales in 2030. 				
Total	63.4	67.9	38.0	-40%