



## Pricing Carbon

Pricing carbon is widely accepted as the most effective means of reducing carbon emissions in an economy.<sup>1</sup> By putting a price on each tonne of carbon emitted by a business or industry, it is given a value. This means there is now a cost to emitting carbon. Firms and households will seek to avoid that cost by reducing their own carbon emission, or by investing in new low-carbon technology or energy efficiency measures.

There are two main ways of pricing carbon: through carbon taxes or carbon emissions trading systems. In the case of carbon taxes, government sets a price on carbon emissions through the tax system. In emissions trading, or cap-and-trade, systems, government puts a limit on or “caps”, the amount of emissions that are allowed by a carbon-emitting entity, such as a factory. Firms “trade” carbon emissions permits with other entities based on whether they have met their capped limit, and have carbon permits to sell, or have exceeded their capped limit, and need to buy carbon permits. The actual price on carbon is then set by the market as a result of supply and demand through trading.

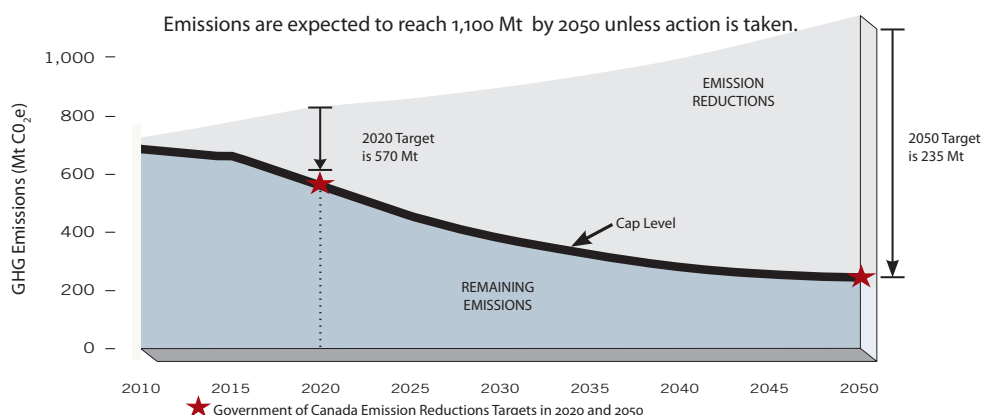
In general carbon tax-based systems offer greater price certainty in reducing carbon emissions, allowing for long-term business planning. Cap-and-trade systems deliver greater emissions reduction certainty, but with the potential of business uncertainty caused by price fluctuation.



In order to address the complex realities of real economies, most current or proposed systems blend aspects of cap-and-trade systems with those of carbon tax systems.

## The Cap

The cap sets a limit on the overall amount of emissions from all the covered types and sources of emissions in the system. The cap is set by government to reach its emission reduction targets. The lower the cap, the greater the carbon emission reductions or abatement. The Government of Canada’s targets are set out in the Turning the Corner plan. The government forecasts emissions drop from the 2006 level of approximately 721 Mt to 570 Mt in 2020, and 235 Mt in 2050.<sup>2</sup>



In practical terms, the government sets the cap level by issuing permits for each allowable tonne of carbon emissions to firms or industrial sectors in the economy. The number of tradable carbon emissions permits will be equal to the system cap—if the cap were to limit emissions to 100 million tonnes of carbon in a particular year, 100 million emissions permits would be issued for that year. The permits are typically issued for a compliance period of about three to five years. At the end of each compliance period businesses must be able to produce permits to cover their actual emissions. The cap is reduced over time in order to generate fewer carbon emissions in the economy and meet environmental targets.

## Carbon Trading

Once the permit level is set, the trading system starts. Firms are not allowed to exceed the carbon emissions cap that they have been given. Firms that exceed their allowable carbon emission cap must buy carbon permits from another entity that has excess permits to sell since it emitted fewer tonnes of carbon than its capped limit.

At the beginning of each compliance period, carbon emissions permits could enter the market either by auction or by administrative allocation. Permits represent a significant source of value that can be given directly to recipients to be used or sold, or permits can be auctioned and the revenue channeled to a variety of groups and uses. With permit auction, market participants bid on permits based on their anticipated needs; initial prices depend on supply and demand in the auction. During the compliance period market participants continue to buy and sell permits as their actual needs change. In this way the price of carbon continues to change, representing actual progress in reducing emissions.

## Low-Carbon Innovation

The price of carbon means that higher emissions will carry a business cost that emitters will want to avoid. This will drive innovative solutions to emission reductions. The market will reward technologies which are actually successful, ensuring businesses identify the most cost-effective emission reductions quickly. Over the long-term the system will continue to drive innovation. Fewer and fewer permits will be available, ensuring the cost of those permits will be sufficient to drive continuing emission reduction action.

## International Carbon Trading

Cap-and-trade programs can be designed to link with other similar trading systems in other jurisdictions. This has the advantage of expanding the market, leading to more opportunities for low-cost emission reductions. International permit trading can help address competitiveness issues for some trade-intensive and carbon-intensive industries by aligning market prices of carbon between trading partners.

1 Each reference to carbon in this backgrounder implies changes in the level of all greenhouse gases specified in common units of CO<sub>2</sub>e (carbon dioxide equivalent).

2 Figures for emission in 2006 are from Environment Canada. Emission reduction targets are from *Turning the Corner*, the government of Canada's GHG emission reduction plan.

