PEMBINA institute

Carbon price vintaging of credits in the Output-Based Allocation System

Technical Note

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Recommendations

In order to maintain its economic efficiency and ensure effective carbon reductions in the output-based allocation policy, the Pembina Institute recommends that offsets and Emissions Performance Credits (EPCs) that were generated under Alberta's Specified Gas Emitters Regulation (SGER) system be transitioned into the new system at a value that reflects a reasonable expectation of permit holders through carbon price vintaging (see Annex 1) while avoiding windfall profits.

Similarly, the Output-Based Allocation (OBA) system should allow banking of allocations and offsets under the same carbon price vintaging system, allowing firms the flexibility to maximize emissions reductions at minimum cost, while retaining the policy stringency and avoiding economic inefficiencies.

Summary

- Banking of allocations/offsets should increase flexibility in the system to lower cost of emissions reductions and/or increase emissions reductions, while maintaining policy stringency and efficiency.
- Unrestricted banking and use of Emissions Performance Credits (EPCs), allocations and offsets under the Output-Based Allocation (OBA) system with a set ramp-up of carbon prices creates the potential for windfall profits, leading to a less economically efficient policy.
- Excess availability of credits may lower the effective carbon price, eroding the intended policy stringency and the ability of the policy to spark transition across industry.
- Linking the carbon value of EPCs/offsets created under the Specified Gas Emitters Regulation (SGER) system to the carbon price in the year in which they were created — a method of "price vintaging" — will allow for a transition to the new system that reflects

the reasonable expectation of value for EPC/offset holders while avoiding windfall profits due to the policy change.

- A similar carbon price vintaging approach can be taken for allocations/offsets in the new OBA system to avoid windfall profits and ensure policy stringency, while maintaining the desired flexibility and certainty in the market.

Background

- The SGER was introduced in Alberta in 2007 and is scheduled to end in December 2017. SGER sets specific emissions target for each facility based on its historical emissions. There are four compliance options for emitters:
  - Emission intensity reductions.
  - Payment into carbon fund at a fixed rate (started at $15/tonne, increased to $20/tonne in 2017). The fund is used to pay for carbon reduction motivated innovation funding.
  - Offsets from sectors not covered by SGER.
  - Emissions Performance Credit (EPC) granted in any previous year to any firm that emits below its target.
- The Output-Based Allocation (OBA) system is being introduced to replace SGER to price emissions from large emitters in Alberta.
- The OBA system will phase in full carbon price on EITE sectors to protect competitiveness between Alberta and jurisdictions without carbon pricing. This will be achieved by providing free allowances up to a benchmark output value (emissions/output) to lower the average cost of emissions to industry while keeping the marginal carbon price at the full value to maintain the market signal to reduce emissions. The four compliance options for emitters remain similar under OBA:
  - Emission intensity reductions.
  - Payment into carbon fund at a fixed rate ($30/tonne Jan 2018, Federal price rising to reach $50/tonne Jan 2022). Fund is used to pay for other carbon reduction policies (as well as rebates/tax cuts).
  - Offsets from sectors not covered by the OBA or economy-wide carbon levy.
  - Unused allocations (additional details on rules still TBD).
- The OBA policy is a unique hybrid policy, combining aspects of both carbon taxation and cap-and-trade policies. Unlike cap-and-trade policies, the price is set exogenously by policy at the stated carbon tax level, and does not depend on the total emissions or emissions reductions achieved across the economy. This is done via the compliance mechanism of direct payments at the fixed price available to all covered emitters.
- The OBA policy represents a shift away from SGER under which substantial emissions performance and offset credits were issued and remain ‘banked’.

- The carbon price for large emitters under SGER started at $15 in 2007 with no plan to increase the carbon price until 2016. The policy introduced in 2016 lays out an increase to $20 in 2017 and $30 in 2018, and the federal compliance price is now $50 by 2022.

Considerations

Existing EPCs and offsets under the new OBA system

- In the transition from SGER to OBA, EPCs and offsets banked under the old policy should receive a reasonable value that both respects the policy stringency and carbon value when the EPCs and offsets were generated and provides reasonable returns — but not windfall financial gains— to permit holders.
- The value of existing EPCs and offsets can be adjusted to reflect the carbon value under which they were created. This "carbon price vintaging" preserves a fair value for the owners, while avoiding the creation of windfall profits and economic inefficiencies (see Annex 1).
- In addition to creating economic inefficiencies, failure to transition EPCs and offsets in this way risks flooding the market with a large supply. This would lead to a gap between the market price and the set carbon price, effectively lowering the marginal price for large emitters and eroding the policy stringency (see Annex 2).
- Carbon price vintaging will be simple to implement given the information and verification rules that are already present in the offset and EPC protocols, and the existing GoA regulations on rate of return.

Creation and use of allocations and offsets under the new OBA system

- Cap-and-trade policies around the world have established limits on the banking and use of allocations and offsets to maintain policy stringency.
- OBA policy rules must provide the same benefits that are intended under a cap-and-trade policy without eroding policy stringency or economic efficiency. The goal of any compliance flexibility provisions, such as credit banking, must be aligned with the policy objectives of either generating greater emission reductions or reducing the cost of emission reductions while maintaining the marginal price of the policy.
- In addition, the carbon price ramp in the first years of the OBA system, which is intended to provide a smooth phase-in of the price, creates the potential for windfall profits that do not contribute to policy goals that must be addressed.
- Allowing unrestricted banking creates the potential for outsized returns and subsidies for market participants. New banked offsets and allocations will appreciate in value much more quickly than a typical market return, because the starting price is low and the price is scheduled to rise by more than typical rates of return. Also, the certainty of

this return is high, unlike in cap-and-trade systems, because the price is set exogenously by policy.

- Allowing unrestricted banking also creates a risk to the marginal price under the OBA policy. If a large supply of offsets/EPCs becomes available on the secondary market, as would likely happen if the price increases are scheduled to stop after a period of time, the market price could run lower than the set carbon price — effectively lowering the marginal price for large emitters (see Annex 2).
- In cap-and-trade systems, the appreciation of allocations is beneficial as it incentivises early action, while the firm cap ensures that the targeted emissions reductions are achieved. The OBA system has no firm cap, so the extent to which the rising value of allocations and offsets incentivises additional early action must be weighed against the risk of lowering the marginal price and reducing the economic efficiency of the policy.
- The same principle of carbon price vintaging can be applied to offsets and allocations created under the OBA system (see Annex 1) without sacrificing the flexibility that banking provides. In this way the incentive for early action and additional emissions reductions is preserved by including the rate of return in the carbon price vintaging approach.
- In an established OBA system with a full carbon price, the appreciation of allocations is in line with the rate of return. The carbon price vintaging approach will not change the system design.

Annex 1

Carbon price vintaging

The carbon value of an offset or EPC can be vintaged to the price at which it was created plus a reasonable rate of return per year. The goal of carbon price vintaging is to retain the full value of the offset/EPC without providing windfall profits.

This is accomplished by scaling the carbon value to reflect the change in carbon price:

$$Carbon\ value = \frac{\$Price\ in\ year\ created}{\$\ Price\ in\ year\ used} \times (1 + Rate\ of\ return)^{(year\ used - year\ created)}$$

The rate of return could most simply be tied to existing annual rate of return regulations in Alberta.

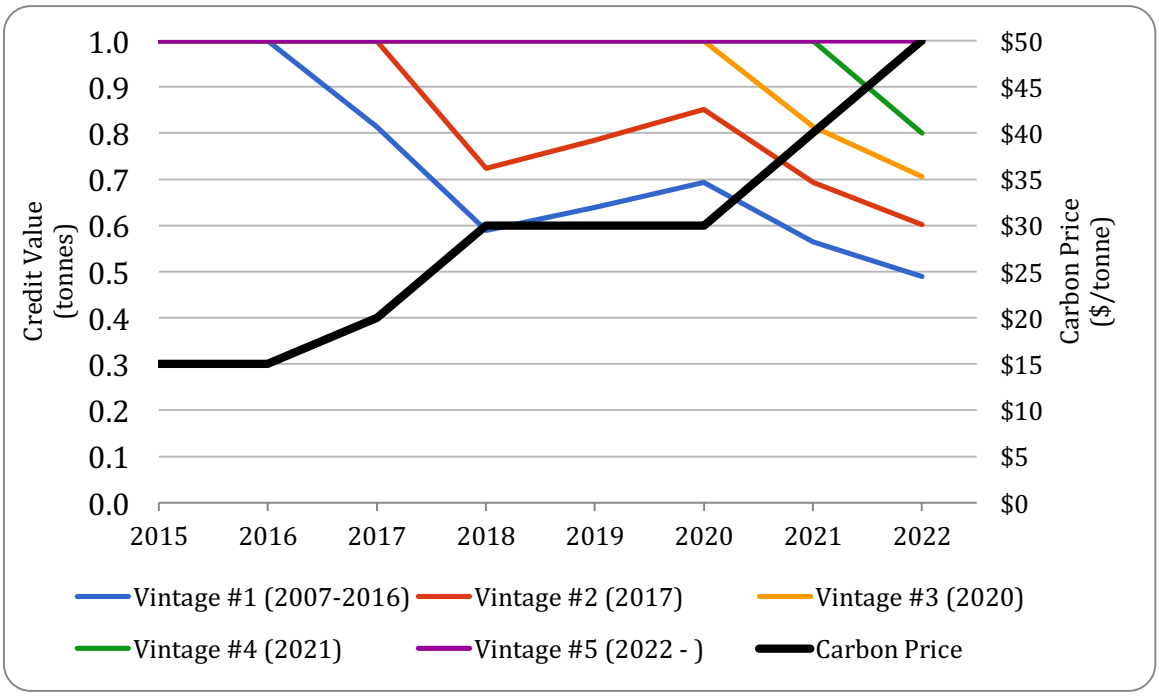
> Example: A 1-tonne offset/EPC is created in year 1 under a carbon price of $20. Assuming a 8.5% rate of return as defined by the Alberta Utilities Commission[1], in year 2 under a carbon price of $30 the offsets are worth:
>
> $$\frac{\$20}{\$30} \times (1 + 0.085)^{2-1} = 0.72 \text{ tonnes}$$
>
> Under a carbon price of $30 this translates to $22 in value, or simply the value in year 1 plus the rate of return.

The same approach can be applied to the offsets banked under SGER before the rate increase was proposed in 2016, with values tied to the 2016 year. The graph below shows value of credits for compliance.

Note that if the carbon price increases at the same rate as the rate of return, vintaging the offsets allows them to retain their full carbon value.

[1] http://www.auc.ab.ca/regulatory_documents/ProceedingDocuments/2016/20622-D01-2016.pdf

Figure 1. Value of credits for compliance under Output-Based Allocation Policy



Annex 2

Secondary market and marginal price

All large emitters have an option to comply by making payments at the government set price. It is thus reasonable to expect that offsets and allocations in the marketplace will trade at or slightly below this price. However, if a large number of credits are available on the market such that the supply exceeds the demand for credits, the price for credits — the effective marginal price — will fall below the government set price of carbon.

Several factors contribute to the number of EPCs, allocations and offsets in the secondary market. The first is the number of such credits held by market participants; with more credits held there are more potential credits that can be offered in the market. The second is the schedule of future price increases; if the schedule becomes uncertain or prices seem unlikely to increase, market participants would likely choose to sell their credits to lock in returns.