

The Cost Implications of Ontario's Environment Plan to Reduce Greenhouse Gas Emissions¹

Dave Sawyer² and Seton Stiebert³

Summary

In this report, we assess the economic costs of the greenhouse gas (GHG) mitigation measures contained in the Made-in-Ontario Environment Plan (Plan) and the alternative Federal Backstop Carbon Pricing approach to be applied in Ontario. We conclude the cost of the Made-in-Ontario Plan on businesses and households is 59% higher in 2022 and 50% higher in 2030 than the Federal approach for the same quantity of GHG reductions.

We estimate the total cost of the Ontario Plan in 2022 is \$334 million with an average cost of \$62 per tonne removed. In 2022, the Plan could reduce Ontario's GHGs by about 3.3% or 5.4 megatonnes (Mt). To achieve the 18 Mt reduction in 2030 sought by the Plan, we calculate the average cost per tonne of emissions removed is \$69 per tonne with a total cost of \$1.23 billion. The cost of the Federal approach for the same level of emission reductions is estimated to be \$214 million in 2022 with an average cost of \$40 per tonne removed. In 2030, total costs are \$811 million with an average cost of \$45 per tonne.

We estimate that household costs under the Ontario Plan total \$450 million in 2022 and \$924 million in 2030. Given there are no carbon revenues to address the household impacts of the policy, we find that on average, Ontario households are worse off under the Plan. In 2022, the Ontario Plan could cost the average Ontario household \$80 rising to \$154 in 2030. Assuming all carbon costs are passed on by industry, an assumption consistent with recent [Parliamentary Budget Office](#) analysis, household costs would rise to \$94 in 2022 and \$181 in 2030.

Under the Federal approach, households are better off in both time periods due to the federal rebates, even when accounting for abatement and carbon costs passed on by industry through higher prices. In 2022, the average Ontario household under the Federal approach is ahead \$130 while in 2030 the benefit is \$25. Assuming all carbon costs are passed on by industry, the benefit in 2022 falls to \$71 with rebates greater than carbon costs. In 2030, the benefit shifts to a net cost of \$24, where the rebates are insufficient to offset the costs.

Large final emitters under the Ontario Plan could be overcompensated in 2022 and 2030 as carbon costs are passed on while carbon payments are rebated under the Industry Performance Standard and subsidies provided under the Carbon Trust. Under the Federal approach, there are competitiveness risks for segments of the economy that can't opt-in to the Output-based Pricing System and likely will pay more than they are rebated.

¹ This Report was completed in partnership with Canadians for Clean Prosperity.

² EnviroEconomics Inc; Senior Fellow, Smart Prosperity Institute, University of Ottawa; and School Fellow, Carleton School of Public Policy.

³ Stiebert Consulting; and, EnviroEconomics Inc.

While we did not assess the feasibility of the GHG measures contained in the ON Plan, integrated economy-wide modeling accounting for the policy interactions between the Plan's measures would likely find higher costs for the same GHG reductions. Under the Federal approach, this policy interaction effect is less of a risk due to economy-wide carbon pricing, but there is some interaction risk given the presence of the Clean Fuel Standard.

Introduction

The [Made-in-Ontario Environment Plan](#) (Plan) includes a series of greenhouse gas emission (GHGs) reduction measures aimed at achieving an 18 Mt reduction in GHGs by 2030. While the emission reduction targets for each of the measures are listed in the Plan, there is no presentation of the costs of the measures or a total cost for the Plan. Absent a costing of the Plan, there is no basis to assess what the Plan will cost businesses and households or if the Plan is cost-effective relative to the federal alternative it seeks to replace. We therefore orient the analysis contained in this Report to address three important questions that help reveal the trade-offs of the alternatives:

- **What are the costs of the climate measures contained in the Ontario Plan?** We estimate the cost per tonne of the measures on both an average and total cost basis.
- **How do the costs compare to the Federal approach?** The Ontario government developed its Made-in-Ontario Plan as an alternative to the federal Carbon Pricing Backstop. To provide context on cost-effectiveness of the two alternative plans, we compare the carbon costs of the Ontario Plan against the Federal approach, which includes the Carbon Pricing Backstop and the Clean Fuel Standard.
- **Who ultimately pays for the climate measures in the Plan?** With the costs estimated, we determine how those costs work their way through the Ontario economy, identifying the incidence of costs on businesses and households.

Comparisons are made between the Ontario Plan and the Federal approach in 2022 and 2030.

The Made-in-Ontario Plan

The “no new measures” GHG forecast published in the Made-in-Ontario Plan indicates emissions without the measures contained in the Plan will remain flat at about 161 megatonnes (Mt) between now and 2030. With the Ontario Plan in place, GHG’s are targeted to be 3.3% lower in 2022 for a reduction of 5.4 Mt⁴ while total emissions would fall 18 Mt to 143 Mt in 2030 or be 11% lower (Figure 1).

The Plan’s target of 143 Mt in 2030 matches the latest “additional measures” [emissions projection](#) from Environment and Climate Change Canada (ECCC). The main elements of the Federal policy package that delivers 18 Mt of GHG reductions in 2030 contained in ECCC’s scenario include: the Clean Fuel Standard; economy-wide carbon pricing climbing from \$20 in 2019 to \$50⁵ in 2022 and flat thereafter to 2030, differentiated between output-based pricing for large emitters and a carbon charge on fossil fuels in the rest of the economy; improved energy efficiency regulations for equipment and light duty vehicle regulations; and, net-zero building codes.

⁴ We apply a simple linear interpolation for each measure assuming each commences in 2020 and achieves the Plan’s 2030 reductions for each measure.

⁵ Not indexed to inflation and falling in real terms

Contained in the Made-In-Ontario Plan are seven measures and one group of measures (i.e., other policies) as well as the anticipated emission reductions for each of the measures. Figure 2 provides an overview of the expected GHG reductions in 2030 for the Ontario Plan's measures. Similar detail on the Federal approach is not available.

Figure 1: Provincial and Federal GHG Pathways to 2030

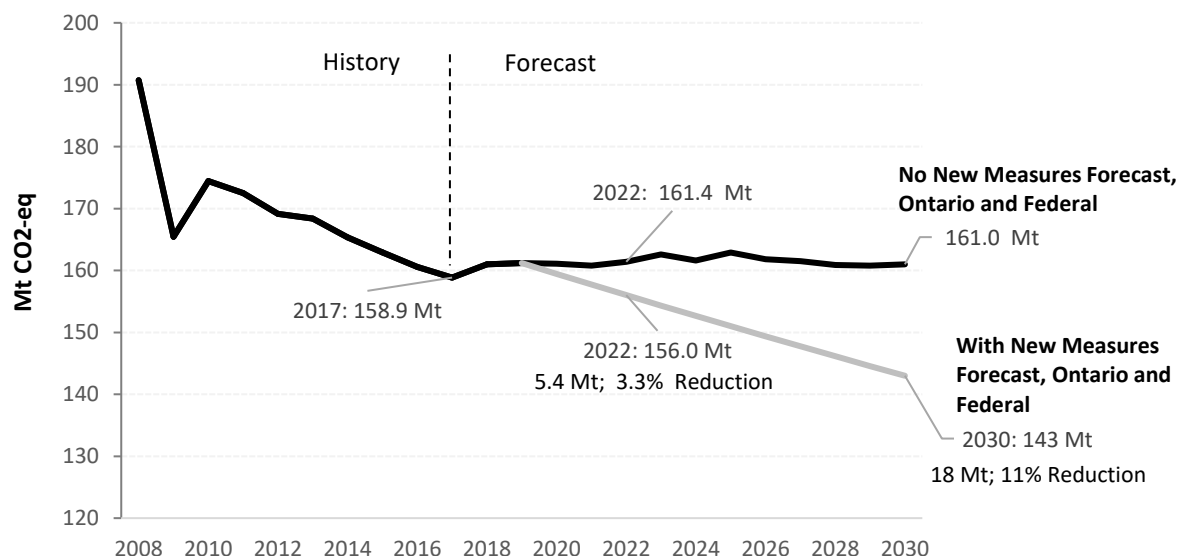
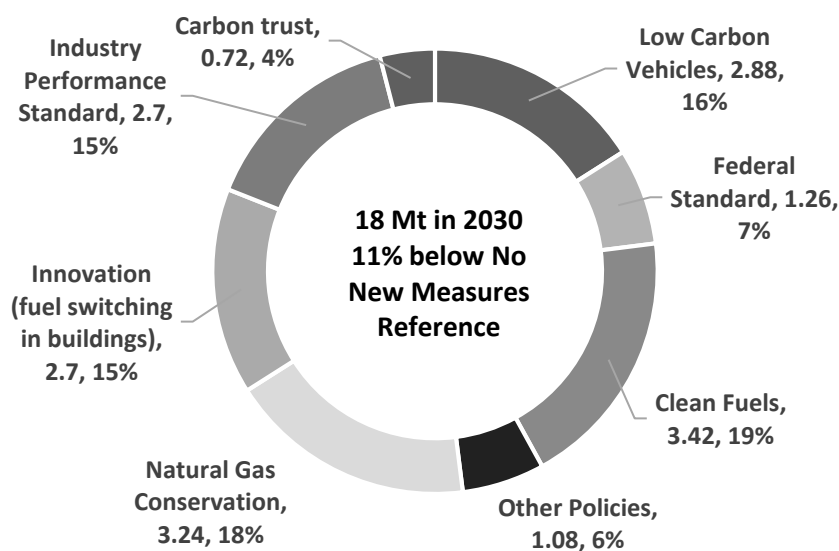


Figure 2: Measures in the Made-in-Ontario Plan and Associated GHG Reductions from No New Measures Forecast



Method

To **estimate the costs of the Ontario Plan and the Federal approach**, we specify [marginal abatement cost curves](#) for the individual measures, which consist of pairings of costs per tonne of GHGs reduced and tonnes reduced. [Aggregated marginal abatement cost curves](#) are also estimated for both the Plan and the Federal approach. For most of the curves we develop, we use the same set of integrated economic modelling runs to ensure we compare the policies on a consistent basis.

For each GHG measure in the Plan, we estimate the total cost calculated as the area under the marginal abatement cost curve given the emission reduction target. The average cost is simply the total cost divided by the total reduction.

Note, we do not assess the co-benefits associated with the measures which can include air quality improvements, avoided costs such as landfill savings and energy conservation benefits to household income. Quantifying these benefits may make some of the measures more attractive from a societal perspective.

The approach to cost the measures in the **Made-in-Ontario Plan** includes:

- **Low Carbon Vehicles** contained in the Plan include increased electric vehicle (EV) adoption as well as the expansion of natural gas in trucking. In our analysis, we broaden the reach of the transportation measure to include more than EVs and natural gas in trucking, assuming a series of other measures would more generally target Ontario's transportation sector. This assumption enables the use of cost curves from [previous economic and emission modelling](#) developed for Ontario's transportation sector. Broadening the transportation measure likely results in costs that are lower than if the entire transportation wedge was achieved with EV's or natural gas in trucking alone. For example, some studies have found that Canadian costs for reducing GHG emissions with electric vehicles at well [over \\$200 per tonne](#) (and [here](#)). Given ongoing Federal [energy efficiency regulations](#) and the EV mandate, the reductions in the Plan would likely be incremental to ongoing reductions attributable to the federal regulations. To account for these policies that will use up some of the stock of the future abatement potential, we set the cost curve to start at \$30 per tonne (i.e. intercept is \$30).
- The **Industry Performance Standard** identified in the Plan [targets large industrial emitters](#) in the province with a program similar to the large emitter program that existed under Ontario's now cancelled Cap and Trade program. We develop cost curves for the large industrial emitters in Ontario based on past analysis and modeling completed in Ontario. We identify the regulated entities likely to be subject to the IPS using Ontario's [greenhouse gas emissions reporting by facility](#).
- **Clean Fuels** in the Plan includes a focus on both more biofuel in gasoline and diesel as well as renewable natural gas. For this measure, we calculate that the new [Ontario regulations for 15% ethanol in gasoline by 2025](#) delivers sufficient GHG reductions to achieve the Clean Fuels target

in both 2022 and 2030 and we therefore do not include (more expensive⁶) renewable natural gas towards the GHG reductions sought by this measure:

- **New Ontario E15 Mandate.** To estimate the cost of [Ontario's new ethanol mandate](#), we calculate the incremental tax and retail margins associated with the [volume penalty](#) of adding more ethanol to the gasoline supply, that is more volume is needed for the same energy and therefore there are more gasoline taxes and retail margins payable. This approach implicitly assumes that the addition of more ethanol will [reduce the requirement to add costly octane to the fuel](#), thereby reducing the costs of the ethanol mandate. Following Ontario's regulatory announcement, we increase the ethanol mandate from the current level of 5% to 15% by 2025 to estimate the impact on GHGs. While there is evidence that ethanol levels are currently higher than the 5% mandate, this market condition could change. The implication of this assumption is that we likely overestimate the emission reductions and therefore underestimate the costs. Some studies have found that biofuel costs are [well over \\$100 per tonne of CO₂e removed in Canada](#).
- **Federal Clean Fuel Standard** identifies the GHG reductions expected in the ON Ontario associated with [low carbon fuels mandate](#) implemented by the Government of Canada. We use recent modeling and analysis by Navius Research to [develop a marginal cost](#) for the Federal Clean Fuel Standard and apply this cost to the Plan's stated target for this measure. Our cost estimate is about 60% lower than some recent estimates of the [cost of the Low Carbon Fuel Standard](#). We comment on the possible overlap and policy interactions between the biofuel mandate and Federal Clean Fuel Standard later in this document.
- **Natural Gas Conservation** in the Plan identifies the additional GHG reductions associated with demand side management (DSM) programs implemented by Ontario's natural gas utilities. These reductions would be incremental to those already anticipated under Ontario's current [Demand Side Management Framework](#) administered by the Ontario Energy Board. We use the [2016 Conservation Potential Study](#) developed by ICF Consulting to estimate DSM supply curves for 2022 and 2030. We calculate the incremental increase in conservation sought by the Plan that is above and beyond the current forecast of conservation potential to be delivered by the DSM framework.
- **Ontario Carbon Trust** would be an emission reduction [subsidy program focused on clean technologies](#) for business. A total of \$400 million has been targeted to incent GHG reduction technologies. Subsidy programs for clean technology are known to be less efficient than other policies such as the IPS, with a common view subsidies are [50 to 70 percent less efficient](#) due to [free-riders](#) and other programming inefficiencies, which then drives up the cost per tonne of the

⁶ We calculate that the biofuel costs are about 40 to 50 percent lower than RNG cost per tonnes of CO₂e removed. On an energy basis, we calculate the [incremental cost of renewable natural gas](#) developed by Navius Research (\$15 per GJ) relative to a forecast of [end-use natural gas prices](#) in Ontario in 2022 and 2030.

emission reduction. We develop a marginal cost curve from modelling runs that reflect a free-rider rate of 50% for subsidy programs. Note, the \$400 million program cost is not included in this estimate since it is a tax transfer. We do, however, add an annualized estimate of the tax revenue cost in the distributional implications under the “who pays” assessment below.

- **Other policies** in the Plan include emission reductions from investments in public transit and reducing organic waste from households and businesses. Absent direction in the Plan on the contribution of each sub-measure to the overall of reductions for this measure, we split the reduction equally between transit and organics programs:
 - **Public transit** costs are estimated from economy-wide modeling that we have completed in the past (as mentioned above). Abatement opportunities included in the modeling primarily include intercity and intracity modal shifts to public transit.
 - **Organic waste** costs were developed for Ontario’s updated [Food and Organic Waste Policy](#). Based on a reading of various Ontario policy documents, [diversion targets for organic waste](#) (and [here](#)) seek to climb from about [28% currently](#) to 40% by 2025 and climbing to about 60% by 2035. Based on the estimated tonnes of organic waste to be diverted from business and households, we were able to calculate the GHG tonnes removed.⁷ Diversion [costs per tonne of organic waste](#) were then applied to the fraction of diverted waste anticipated from the industrial, commercial and institutional sector (IC&I) as well as the residential sector.
- **Innovation** is focused on additional measures requiring fuel switching in buildings as well as other options such as energy storage. Absent additional detail on the Innovation measure, we developed a cost curve for a series of building measures applicable to Ontario that include fuel switching, improved heating and cooling efficiency, improvements to building shells, and other efficiency measures. We then applied the cost curve to the expected emission reductions for the Innovation measure.

The approach to cost the currently announced measures in the **Federal approach** include,

- Adopt the GHG reduction targets for the **Federal Clean Fuel Standard** from the ON Plan;
- For large emitters, adopt **Ontario IPS GHG target** for the Federal Output-based Pricing System (OBPS), assume identical coverage of large emitters.
- **Economy-wide carbon price** for the remaining GHGs to achieve the ON Plan GHG targets in 2022 and 2030. Develop a marginal abatement cost curve for the economic sectors not covered by the OBPS, including households.

⁷ Following the method to estimate the organic waste emission factor published by Environment Canada and Climate Change (2018) in the [National Inventory Report, Part II](#). The emission factor is in the range of 0.742 tonnes of CO₂e per tonne of organic waste which aligns with a simple back calculated emission factor imputed from [Government of Ontario data](#).

- Adopt rebating of carbon revenue as currently announced: Households get 90% of the non-large emitter revenue while businesses get the remaining 10%. All revenue from the large emitter program is returned to the large emitters.
- The integrated modelling runs used to develop the marginal abatement cost curves include the continuation of a few federal measures contained in ECCC “additional measures” scenario such as energy and vehicle efficiency regulations. We therefore do not include these as discrete measures in the Federal approach scenario in our analysis. Since we use the same modelling runs to develop many of the ON Plan abatement curves discussed above, there is consistent treatment of these ongoing federal measures between the scenarios.

To assess the **cost-effectiveness of the Made-in-Ontario Plan and the Federal approach**, we compare the average and total costs for the same emission reductions in 2022 and 2030 consistent with the lower GHG pathway presented in Figure 1. Distributional impacts of both options are then compared, including the implications of the Federal rebate system for carbon payments.

Results

We estimate the **cost of the Ontario Plan** in 2022 to be \$334 million for 5.4 Mt of reductions with an average cost of \$62 per tonne of CO₂e removed (Figure 3). The average cost of each measure ranges between a low of \$32 for the Low Carbon Vehicles measures and a high of \$140 a tonne for the Clean Fuel Standard.

For the 18 Mt reduction target in 2030, the estimated cost is \$1.23 billion. The average cost rises to \$69 per tonne reduced. The average cost of the Industry Performance Standard shows the lowest average cost at \$38 per tonne while the cost of Clean Fuel Standard climbs to \$145 per tonne by 2030.

In assessing the **costs of the Plan against the Federal approach**, we find that the cost of the ON Plan is higher. The total and average costs of the Plan in 2022 is 1.56 more expensive than the Federal approach, which we estimate at \$214 million in 2022 for the same level of GHG reductions. In 2030, the total and average costs of the ON Plan is also about 1.5 time more expensive than the Federal approach.

When comparing against a scenario of economy-wide carbon pricing alone (i.e. Output-based Pricing System and economy-wide carbon price) – since those are the measures the Ontario Plan hopes to replace – the Ontario Plan is 1.94 times as expensive in 2022 and 1.8x the cost in 2030 (Figure 3/4).

The high cost of the Ontario Plan stems not from the GHG reductions sought by the Plan, but rather the choice in the Plan to cherry-pick mitigation measures while stranding low cost abatement opportunities elsewhere in the economy. Figure 5 highlights the costs and emission reductions of the measures contained in Plan (solid black boxes) relative to the more efficient policy such as an economy wide-carbon price that broadly incents low-cost abatement opportunities (grey triangle).

Figure 3: Estimated Tonnes Reduced, Average and Total Costs (\$2018)

	2022			2030		
	Mt Reduced	Average Cost per Tonne	Total Cost (\$M)	Mt Reduced	Average Cost per Tonne	Total Cost (\$M)
Made-in-Ontario Plan						
Low Carbon Vehicles	0.86	\$32	\$27.41	2.88	\$44	\$128.08
Industry Performance Standard (IPS)	0.81	\$32	\$26.06	2.70	\$38	\$101.60
Clean Fuels						
Ontario E15	1.02	\$70	\$71.99	3.42	\$72	\$246.19
Clean Fuel Standard	0.38	\$140	\$52.27	1.26	\$145	\$182.80
Natural Gas Conservation	0.97	\$67	\$64.56	3.24	\$57	\$183.96
Ontario Carbon Trust	0.22	\$61	\$13.09	0.72	\$89	\$63.80
Other Policies						
Transit	0.16	\$35	\$5.64	0.54	\$58	\$31.38
Organic Waste	0.16	\$122	\$19.75	0.54	\$128	\$68.99
Innovation (buildings)	0.81	\$65	\$52.75	2.70	\$84	\$226.65
Total Ontario Plan	5.4	\$62	\$334	18.0	\$69	\$1,233
Federal Approach						
Federal Clean Fuel Standard	0.38	\$140	\$52.27	1.26	\$145	\$182.80
Output-based Pricing System	0.81	\$32	\$26.06	2.70	\$38	\$101.60
Economy-wide Carbon Tax	4.20	\$32	\$135.32	14.04	\$37	\$526.17
Total Federal Approach	5.4	\$40	\$214	18.0	\$45	\$811
Ratio ON Plan/Federal		1.59	1.59		1.5	1.5

Figure 4: Estimated Average Abatement Costs
Made-in-Ontario Plan, Federal Approach and Carbon Price Alone

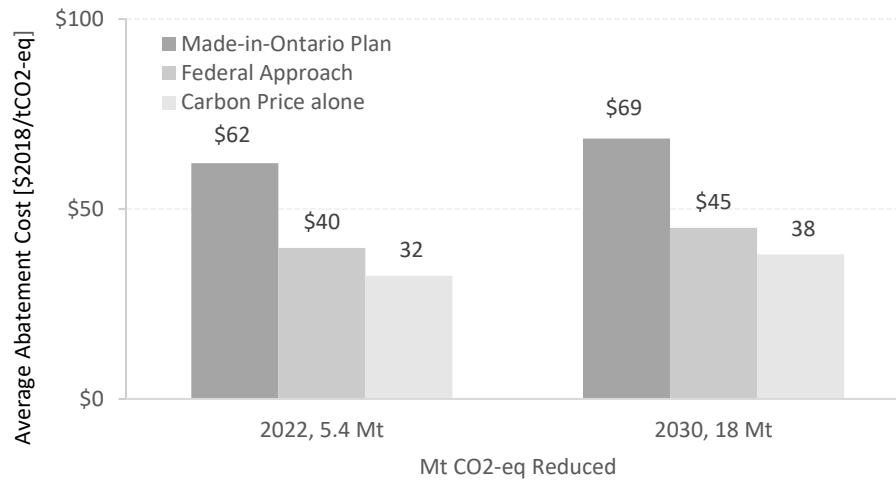
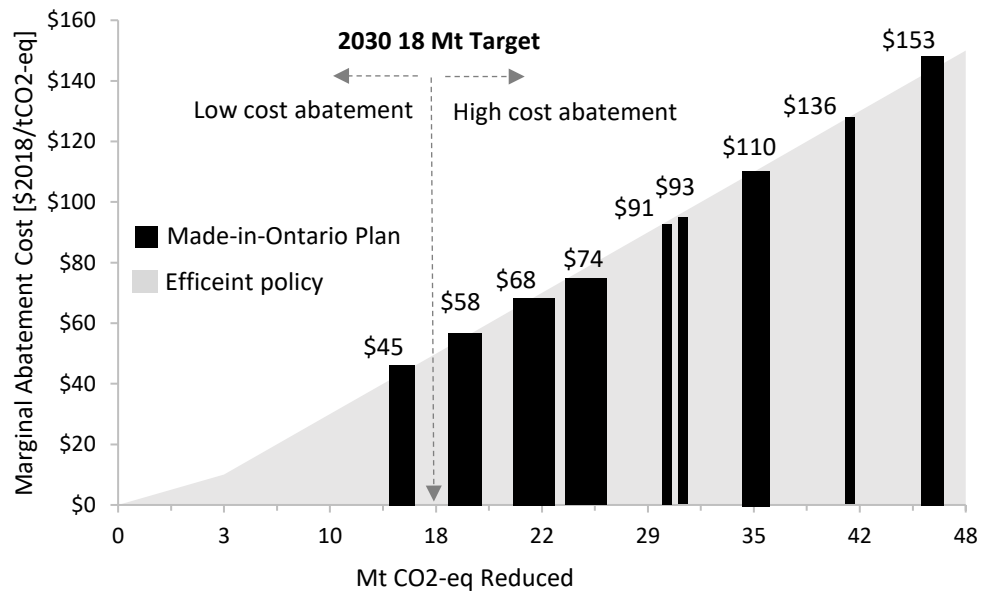


Figure 5: Cherry Picking High Cost Abatement
Made-in-Ontario Plan vs Efficient Policy for 18 Mt Reduction in 2030
Marginal Costs



To evaluate **who ultimately pays the carbon cost contained in the Plan and the Federal approach**, we compare the carbon costs using a model of Ontario's economic structure of supply and use⁸ to determine the share of the carbon costs borne directly by the emitters, and those that are passed on as price increases through supply chains to businesses and households.

We allocate the carbon costs for each of the measures to the appropriate production sector and by extension commodity. For example, the cost of a demand side management program would get allocated to utilities in our model and then passed on as an increase in the price of delivered natural gas. Regulated utilities delivering natural gas can pass on all carbon cost, but this may not be the case for all energy users. Depending on a GHG emitter's ability to pass on carbon costs down the supply chain, some share of costs will end up raising the price of goods and services for downstream households and businesses while some share will stay with the emitter.

Based on past analysis and modeling, we calculate average cost pass through rates for Ontario to be in the order of 60%, with sectors like trade exposed industry passing on a small share of the cost while utilities could pass on 100% of the carbon cost. An assumption of 100% cost pass through would significantly increase the household costs we estimate below while lowering industry costs.⁹ We explore the implications of alternative cost pass through assumptions on household costs below.

A notable difference with the Federal approach relative to the Ontario Plan is the generation of carbon revenue and the subsequent rebating of that revenue to households and businesses. We recycle the revenue following the current Federal approach, where 90% of the non-OBPS revenue is rebated to households and 10% to other business while none is recycled to the government sector. All OBPS revenue is recycled back to the large emitters. Under the ON Plan, we also assume all IPS revenue from the large emitters is recycled back to the sector.

We estimate 103 Mt of priced GHGs in 2022 under the Federal approach, which is about 72% of the remaining 2022 GHGs after accounting for the 5.4 Mt of abatement. Priced OBPS GHGs are 8.4% of the total or 9.4 Mt in 2022 and 8.6 Mt in 2030. We assume the coverage under the ON Plan for the IPS large emitter program is identical.

⁸ Statistics Canada [supply and use tables](#) combined with [direct and indirect emission intensities](#) published by Statistics Canada enable a method to identify direct and indirect emissions associated with output (supply) and then subsequently to various uses including household expenditures, capital formation (e.g. buildings), government and exports. We balance the emission intensities to match the National Inventory and supply and use tables for Ontario. We then track the embodied carbon in goods and services as they pass from production to consumption. This is a similar method followed by the [Parliamentary Budget Office](#) to estimate embodied carbon in household consumption.

⁹ The 100% cost pass through is an assumption made by the [Parliamentary Budget Office](#). However, our work with industry and based on the [literature](#) examining real world outcomes of GHG policy finds that the 100% cost pass through is an extreme assumption.

With a carbon price in 2022 of \$46.40¹⁰ under the Federal approach, the total value on remaining GHGs is \$5.19 billion. With 143 Mt of GHGs in 2030, the price GHGs are 94 Mt, with a total value of \$4.1 billion assuming the 2022 carbon price remains flat and therefore falling in real terms to 2030.

For the Ontario Carbon Trust in the ON Plan, we assume the \$400 million is dispersed annually on the same GHG pathway as the IPS program which equals \$23.7 million in 2022 and \$116 million in 2030. We do not allocate the tax revenue needed to fund the subsidy although it would be funded from general revenue. We rebate the subsidy to the large emitters and business in the rest of the economy based on their relative shares of abatement cost.

Figure 6 and Figure 7 provide the results of who pays in 2022 and 2030. Details are presented for households, large emitters, government and the rest of the economy.

For **Households**,

- **ON Plan.** In 2022, total household costs of the Ontario Plan are \$450 million or \$80 per household. In 2030, household costs climb to \$924 million or \$154 per household. Embodied carbon costs in goods and services passed on from the large emitter Industrial Performance Standard contribute to household costs of \$255 million in 2022 and \$201 million in 2030. Given there are no carbon payment rebates, all households are made worse off under the ON Plan in both 2022 and 2030.
- **Federal approach.** In 2022, the Federal approach costs households \$141 million for abatement efforts, while the household carbon payments under the Federal approach are estimated to be \$3.4 billion with carbon rebates of \$4.3 billion (this includes direct costs for combusting fossil fuels but also embodied carbon costs in goods and services purchased). Under the Federal approach, households are better off by \$728 million, or a rebate of \$130 per household. In 2030, abatement costs are forecast to be \$533 million, carbon payments are \$2.7 billion, and rebates are \$3.4 billion with households again better off on a net basis by \$152 million or a rebate of \$25 per household. Household carbon costs and rebates are both down in 2030 relative to 2022 given the reduction in GHGs.
- **Assuming a 100% cost pass through.** With 100% cost pass through of carbon costs from industry, household costs in 2022 under the ON Plan increase to \$530 million or \$94 per household while the Federal approach leaves the average household better off by \$71 with rebates greater than costs. In 2030, the ON Plan costs households \$1.09 billion equalling \$181 per Ontario household. The Federal approach in 2030 has costs exceeding rebates, which would cost the average household \$24.

For **large emitters**,

- For the **ON Plan**, large emitter cost increases stem from the Industry Performance Standard but also other programs such as the Natural Gas Conservation, Innovation and E15

¹⁰ The federal \$50 carbon price in 2022 is not indexed to inflation (i.e. nominal). The \$50 in 2022 dollars must therefore be adjusted to real \$2018.

measures. Large emitter abatement costs are \$61 million in 2022 while 2030 costs are \$225 million. Due to the ability to pass on costs in the domestic market, IPS costs for the large emitters are a fraction of total IPS payments, estimated at \$79 million of the \$434 million in IPS payments in 2022 and \$62 million of \$342 million IPS payments in 2030.¹¹ Rebates under the IPS and the Carbon Trust are forecast to be \$458 million in both 2022 (\$434 million in IPS rebates and \$24 million in subsidy) and 2030 (\$342 million in IPS rebates and \$23 million in subsidy). Large emitters look to be overcompensated, on average, by \$298 million in 2022 and \$78 million in 2030 as they pass on costs but receive all their carbon payments back plus the Carbon Trust subsidies.

- Under the **Federal approach**, abatement and carbon costs including the carbon tax in supply chains are \$542 million, with rebates equal to \$434 million. The net cost to industry in 2022 is \$108 million. In 2030, the net cost is \$149 million, with abatement costs and carbon payments of \$491 million offset by rebates totalling \$342 million.

For **government operations**,

- Under the **ON Plan**, costs total \$43 million in 2022 and \$155 million in 2030. The costs of the Ontario Carbon Trust program are included in these estimates. We assume the Carbon Trust would be financed out of general revenue given there are no carbon revenue streams from which to finance the subsidy program.
- Under the **Federal approach** in 2022, government operations account for \$251 million of the total cost falling slightly to \$227 million in 2030.

For the **rest of the economy**,

- Under the **ON Plan**, costs total \$138 million in 2022 and \$232 million in 2030. IPS costs experienced through price increases in supply chains linked to large emitters subject to the IPS are \$89 million in 2022 and \$70 million in 2030.
- With the **Federal approach**, the rest of the economy has carbon costs and payments of \$1.06 billion while carbon tax rebates are 10% of the non-large emitter total equalling \$477 million. Total net costs for the rest of the economy in 2022 are \$583 million. Net costs in 2030 are \$586 million with abatement costs and payments totalling \$961 million with rebates of \$376 million.

We did not assess the ability of the policy measures contained in the Plan to achieve the overall GHG reduction target. Yet, our experience using integrated models to assess GHG mitigation packages tells us that policy interactions will lower overall effectiveness. Such [policy interactions](#) are obvious in the Plan, notably the Clean Fuel Standard and the biofuel mandate both target transportation fuels. Absent a more integrated assessment of the Plan, one must question the ability of a mashup of policies to

¹¹ This is a maximum value of the total IPS payments from large emitters. To the extent compliance mechanisms like offsets are used instead of payments for compliance, the total payments and available rebates would both be reduced by the same amount.

achieve the stated emission reductions, even at the costs we have estimated in this paper. With less GHG reductions due to policy interactions, the average cost of the Plan would rise.

Figure 6: Who Ultimately Pays? Incidence of Costs in 2022

Made-in-Ontario Plan				
	Abatement Cost and Carbon Trust	Incidence IPS Carbon Payments	IPS Rebates and Trust Subsidy	Who Pays?
Households	\$196	\$255	\$0	\$450
Government	\$32	\$11	\$0	\$43
Large Emitters	\$61	\$79	-\$438	-\$298
Other Industry	\$69	\$89	-\$20	\$138
Total	\$358	\$434	-\$458	\$334

Federal Approach				
	Abatement Cost	Incidence Federal Carbon Payments	Federal Carbon Rebates	Who Pays?
Households	\$141	\$3,420	-\$4,289	-\$728
Government	\$10	\$241	\$0	\$251
Large Emitters	\$21	\$520	-\$434	\$108
Other Industry	\$42	\$1,018	-\$477	\$583
Total	\$214	\$5,199	-\$5,199	\$214

Figure 7: Who Ultimately Pays? Incidence of Costs in 2030

Made-in-Ontario Plan				
	Abatement Cost and Carbon Trust	Incidence IPS Carbon Payments	IPS Rebates and Trust Subsidy	Who Pays?
Households	\$723	\$201	\$0	\$924
Government	\$147	\$9	\$0	\$155
Large Emitters	\$225	\$62	-\$366	-\$78
Other Industry	\$254	\$70	-\$92	\$232
Total	\$1,349	\$342	-\$458	\$1,233

Federal Approach				
	Abatement Cost	Incidence Federal Carbon Payments	Federal Carbon Rebates	Who Pays?
Households	\$533	\$2,697	-\$3,381	-\$152
Government	\$38	\$190	\$0	\$227
Large Emitters	\$81	\$410	-\$342	\$149
Other Industry	\$159	\$803	-\$376	\$586
Total	\$811	\$4,099	-\$4,099	\$811

Discussion

Expensive climate policy is easy to design. All too often Canadian politicians have committed to deep GHG targets while rejecting economy-wide mitigation policy like carbon pricing. With economy-wide carbon policy out of the toolbox, the policy package, as with the Made-in-Ontario Plan, inevitably adopts disjointed measures of high-cost GHG mitigation siloes. These silos then strand low cost abatement outside the policy signal, increasing the overall cost of the policy. This dual threat of deep targets and constrained mitigation choices then reinforces a feedback loop of inaction predicated on unacceptable pocketbook and balance sheet costs.

While cherry picking high cost policies is also a risk with the Federal approach, especially with the Clean Fuel Standard, the risk is lessened given the broadly transmitted carbon price signal. Add in the rebating scheme to address the income impacts of the policy, and the Federal approach is clearly superior - it would deliver reductions at lower costs with the least amount of economic dislocation.

Still, for Conservative politicians opposed to carbon pricing, an alternative would be to expand economy-wide the industrial performance standards for large emitters already contained in most climate plans. We estimate that such an economy-wide performance standard applied in Ontario would more than halve the Ontario Plan costs. These tradeable performance standards were pioneered by [conservative governments in Alberta](#), were updated by Premier Notley's [Carbon Competitiveness Incentive Regulation](#) and are to be updated again under Premier Kenney's [Technology Innovation and Emissions Reduction \(TIER\)](#) regime. The Federal [Output-Based Pricing System](#), Saskatchewan's proposed [Output—based performance standards](#), and Ontario's Industry Performance Standard are all variants on the same theme. Looking beyond the title of Nova Scotia's cap and trade program, there is blueprint for [a regulatory framework](#) that puts compliance flexibility and low cost mitigation back in the conservative carbon policy toolbox.

By adopting an economy-wide performance standard, Conservatives wouldn't have to call an economy-wide carbon policy a carbon tax. For the rest of us, we wouldn't be stuck with a patchwork of high-cost policy emblematic of the fragmented climate measures contained in the Made-in-Ontario Plan.

With well over a decade of implementing carbon policy packages in Canada, we can certainly do better.