BACKGROUNDER:

Preliminary Costs of the Federal Carbon Backstop on Saskatchewan Agriculture

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The Agricultural Producers Association of Saskatchewan (APAS) is Saskatchewan's general farm organization – formed to provide farmers and ranchers with a democratically elected, grassroots, non-partisan, producer-run organization based on rural municipal boundaries. As the united voice of thousands of agricultural producers in Saskatchewan, we strive to represent the views of a wide variety of agricultural stakeholders in order to form comprehensive policies that can benefit all sectors of society.

What does the Federal carbon backstop mean for Saskatchewan agricultural producers?

- Starting April 1, 2019, the Federal backstop carbon tax was applied in Saskatchewan.
- The tax started at $20/tonne of emissions in 2019 and will increase by $10/tonne per year until it reaches $50/tonne in 2022.
- An exemption for farm fuel is provided upfront, through the use of exemption certificates, when certain conditions are met. The certificate allows a registered distributor to deliver gasoline or light fuel oil (e.g., diesel) to a farmer at a farm or cardlock provided the fuel must be "used exclusively in the operation of eligible farming machinery and for eligible farming activities."
- Although farm fuel is exempt from the carbon tax, farmers will still face significant cost increases on other fuel sources, like heating fuel, electricity generation, natural gas and propane for grain drying. Producers will also incur indirect costs as railways and other service providers pass the carbon tax down to producers through lower prices and higher input bills.
- Based on APAS estimates, a $20/tonne federal carbon tax has costed an average Saskatchewan grain farm $1.76 per acre in 2019. These costs will increase to $2.38 for 2020 and rise to $3.80 per acre by 2022.
- Research on cost estimates for livestock production are underway.

Table 1. Fuel Charge Rates Applied to Saskatchewan – Effective April 1, 2019				
	2019	**2020**	**2021**	**2022**
Natural gas $/cubic metre	$0.0391	$0.0587	$0.0783	$0.0979
Gasoline- $/litre	$0.0442	$0.0663	$0.0884	$0.1105
Propane- $/litre	$0.0310	$0.0464	$0.0619	$0.0774
Diesel- $/litre	$0.0548	$0.0821	$0.1095	$0.1369

What potential costs could an agricultural producer in Saskatchewan face?

Fertilizer

- Major Canadian fertilizer plants are subject to the output-based pricing system (OBPS) and are assessed to be in a "high competitive risk category" that allows them to emit 90% of their sector's average emissions intensity with no additional cost. More information is forthcoming.

Grain Drying

- With propane being taxed at $0.0391/cubic metre in 2019, grain drying cost an additional $0.51/acre and go up to $1.26/acre in 2022.

Heating and Electricity

- Electricity costs increased by $0.06/acre in 2019 and will increase $0.15/acre by 2022.
- Heating costs increased $0.15/acre in 2019 and increase by $0.39/acre in 2022.

Rail Freight

- Average length of haul of 1,150 miles for grain from Saskatchewan to reach port position resulted in additional freight costs of $0.88 an acre in 2019, increasing to $1.60 by 2022, assuming 65.2 bushels/acre wheat crop.

Trucking

- Hauling spring wheat from farm to elevator, travelling on average 63km one way (one way loaded, one way empty) increased trucking costs by $0.16/acre in 2019 and reach $0.40/acre in 2022.

What costs are unknown or still to be determined?

- Indirect costs of transporting inputs
- Transportation costs for livestock and livestock feed
- Increased costs on processors and product handlers (elevators, canola crushers, mills), translating into lower commodity prices at the farmgate.
- Cost increases for manufactured products like machinery
- Increased costs for custom services

What assumptions were made when calculating these costing numbers?

Table 2. Calculation of APAS Cost Estimates				
	2019 $20/tonne	**2020 $30/tonne**	**2022 $50/tonne**	**Assumptions**
Electricity	**$0.06/acre**	**$0.09/acre**	**$0.15/acre**	-Estimated current total cost of $2.74/acre[1,2] -At $20/tonne, carbon tax charge of 0.2994 cents /Kwh, resulting in avg. cost increase of 2.1% for 2019 and increasing at a rate consistent with the carbon tax ($0.03/acre annually) **- ($2.74 /acre) * (2.1% increase) = $0.06 /acre** -At $30/tonne, estimated cost increase of another $0.03/acre **- ($0.06/acre) + ($0.03) = $0.09 /acre** -At $50/tonne, estimated cost increase $0.03/acre per year for 2021 and 2022: **- ($0.09 /acre) + (0.06 / acre = $0.15/acre**
Heating	**$0.15/acre**	**$0.23/acre**	**$0.39/acre**	- Estimated current total cost of $0.39/acre[1,2] - Current Natural Gas Rate April 1, 2019: $0.0998 Cost/m3 - Carbon Levy ($20/tonne): $0.0391 Cost/m3 Natural Gas (40% increase) **- ($0.39 /acre) * (40% increase) = $0.15 /acre** At $30/tonne ($0.0587 Cost/m3), estimated cost increase of 59% **- ($0.39/acre) * (59% increase) = $0.23/acre** At $50/tonne ($0.0979 Cost/m3), estimated cost increase of 100% **- ($0.39/acre) * (100% increase) = $0.39/acre**
Grain Drying	**$0.51/acre**	**$0.76/acre**	**$1.26/acre**	- 65.2 bu per acre wheat yield, weighing 60 lbs./bu to be dried 5 points, removing 3.0 lbs water/bu -2000 average Btu required to remove 1 lb. Water - Propane energy conversion of 25.3 MJ/L - $0.0391/L of propane carbon tax for 2019, $0.0464/L in 2020, and $0.0774/L for 2022 **= $0.51/acre in 2019 increasing to $0.76/acre in 2020 and $1.26/acre in 2022.**
Rail Freight	**$0.88/acre**	**$1.06/acre**	**$1.60/acre**	- Average length of haul for Saskatchewan grain to export position: 1,150 miles - Railway Carbon Tax Surcharge Rates: $0.04/mile in Saskatchewan and Alberta (65% of haul) miles); $0.06/ mile in BC (35% of haul)[3] - ($54.05 per rail car) ÷ (3300 bushels/rail car) = $0.0164/bushel **- (65.2 bu/acre)*($0.0163/bushel) = $1.07/acre** - At $50/tonne, estimated cost is $80.5 per rail car ($0.0244/bushel) **- (65.2 bu/acre)*($0.0244/bushel) = $1.60/acre**

[1] 2019 Saskatchewan Crop Planning Guide estimate $4.90 per acre "Utilities"
[2] "Utilities" breakdown (56% electricity, 28% telephone, 16% heating) as per discussion with Saskatchewan Ministry of Agriculture
[3] CN and CP Carbon Tax and Environmental Surcharge Tariffs Available Online

Trucking Freight	**$0.16/acre**	**$0.24/acre**	**$0.40/acre**	**In 2019 at $20/tonne ($0.055 carbon cost/litre of diesel):** - Hauling fully loaded Super B of loaded wheat 63km (39.4 miles) to elevator[4] (39.4 miles) / 0.99 miles/litre[5] = 39.8 litres farm to elevator (39.8 litres farm to elevator) * ($0.055 carbon cost/litre of diesel) = $2.20 in carbon costs - An empty Super B uses 40% less fuel (39.4 miles) / 1.39 miles/litre[5] = 28.3 litres to farm (from elevator) (28.3 litres to farm) * ($0.055 carbon cost/litre of diesel) = $1.55 in carbon costs - Carbon costs for round trip $2.20 + $1.55 = $3.75 ($3.75 per trip) ÷ (1500 bushels/trip[6]) = $0.0025 / bushel **($0.0025 / bushel) * (65.2 bushels/acre)** **= $0.16/acre** **In 2020 at $30/tonne ($0.0821 carbon cost/litre of diesel):** **= $0.24/acre** **In 2022 at $50/tonne ($0.1369 carbon cost/litre of diesel):** **= $0.40/acre**

[4] Average distance from farm to elevator in Saskatchewan as per 2002 Quorum report Commercial Trucking Rates in the Movement of Western Canadian Grain

[5] 4.5 mpg or 0.99 mpl consumption by fully loaded Super B and 1.39 mpl for an empty Super B as per discussion with industry

[6] 1500 bushel capacity for an average Super B as per discussion with industry

BACKGROUNDER:

Estimated Impact of the Federal Carbon Backstop on Farm Net Income

The example below shows the potential financial impact of the carbon tax on a 5000 acre grain farm from the Black Soil Zone of Saskatchewan. The carbon tax costs are calculated using the methodology outlined in the per acre carbon costs for wheat. Costs are calculated for each crop type, with adjustments for yield and specific drying requirements. Production, revenue and business expenses are based on the projections found in the 2020 Saskatchewan Crop Planning Guide.[1] The cost impacts are shown at the 2020 carbon tax rate of $30/tonne of CO2 and the 2022 carbon tax rate of $50/tonne CO2.

In 2020, the 5000 acre farm will pay $10,432 in direct and indirect carbon taxes, representing 8% of their total net income. At the 2022 carbon tax rate, the farm would pay $16,681 in direct and indirect carbon taxes, representing 12.5% of their net income.

Table 1: Production and Revenue by crop

Crop	Yield (bu/ac)	Price	Gross Revenue	Variable Costs	Other Costs	Net Revenue per acre	Acres	Total Revenue
Canola	53.8	$10.70	$575.66	$351.80	$152.11	$71.75	1600	$114,400
Wheat	64.7	$6.42	$415.37	$238.93	$152.11	$24.33	1600	$38,928
Barley	74.6	$4.70	$350.62	$255.32	$152.11	$-56.81	700	-$39,767
peas	58.4	$6.85	$400.04	$250.83	$152.11	$-2.90	700	-$2,030
oats	139.4	$3.02	$420.99	$207.16	$152.11	$61.72	350	$21,602
Total							**5000**	**$133,133**

Table 2: 2020 Carbon Tax Expenses

Crop	Carbon tax before grain drying	Carbon Tax on grain drying	Drying Requirements: (M = Moisture %)	Total CO2 tax
Canola	$1.44 x 1600 = $2,304	$0.24 x 960 acres = $230	60% of acres, removing 3.4% M	$2,534
Wheat	$1.61 x 1600 = $2,583	$0.65 x 1280 acres = $832	80% of acres, removing 6.4% M	$3,415
Barley	$1.78 x 700 = $1,246	$0.47 x 560 acres = $263	80% of acres, removing 3.4% M	$1,509
peas	$1.51 x 700 = $1,507	$0.17 x 420 acres = $71	60% of acre, removing 1.9% M	$1,578
oats	$2.83 x 350 = $990	$1.45 x 280 acres = $406	80% of acres, removing 8.4% M	$1,396
Total	**$8,630**	**$1,802**		**$10,432**

[1] Available at: https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/farm-business-management/crop-planning-guide-and-crop-planner

Table 3: 2022 Carbon Tax Expenses

Crop	Carbon tax before grain drying	Carbon Tax on grain drying	Drying Requirements:	Total CO2 tax
Canola	$2.25 x 1600 = $3,600	$0.60 x 960 acres = $576	60% of acres, removing 3.4% M	$2,099
Wheat	$2.52 x 1600 = $4,032	$1.63 x 1280 = $2,084	80% of acres, removing 6.4% M	$2,978
Barley	$2.76 x 700 = $1,932	$0.79 x 560 = $442	80% of acres, removing 3.4% M	$5,773
peas	$2.36 x 700 = $1,652	$0.43 x 420 = $180	60% of acres, removing 1.9% M	$1,892
oats	$4.32 x 350 = $1,519	$2.37 x 280 = $664	80% of acres, removing 8.4% M	$2,183
Total	**$12,735**	**$3,942**		**$16,681**