
Indicator 4.1.1 Net Carbon Update

The Influence of Fire and
Debris Burning

WIWAG February 11, 2021



Burning and Indicator 4.1.1

Element: 4.1 Carbon Uptake and Storage
 Maintain the processes that take carbon from the atmosphere and store it in forest ecosystems.

Value	Objective	Indicator	Target	Variance
The uptake of carbon	The net rate of carbon uptake by the forest is positive over time	Net carbon uptake	The net annual carbon uptake on the DFA is positive	1 year negative

Year	Description	CO ₂ e (tonnes)
2019	Carbon uptake (from growing stock TFL 44)	608,773
	Carbon removed (to short-lived products ¹)	-188,917
	Fuel Consumed (harvest & transport)	-6,796
	Debris burned (debris disposal/operational fires)	-70,283
	NET Carbon Uptake	342,777

Calculating the Effect of Burning: Variables

Properties (density) of wood harvested on the DFA. Denser wood produces more CO₂.

	CO ₂ e (t/m ³)	Harvest (m ³)
Hemlock	0.821	174,737
Balsam	0.745	64,083
Redcedar	0.650	116,548
Yellow cedar	0.821	6,194
Douglas-fir	0.936	44,070
Sitka spruce	0.745	812
Red alder	0.756	1,240
Average	0.772	407,684

Calculating the Effect of Burning: Variables

Type of Burn:

- Pile burn, broadcast burn, Unnatural wildfire

	CO ₂ e/unit (t/m ³)	Units
pile disposal	60.09	Piles
broadcast silviculture burn	77.23	Hectares
unnatural wildfire	115.85	Hectares

Calculating the Effect of Burning: Variables

Wood volume consumption by unit by burn type

Burn type	Unit	Fire consumption (m ³ /unit)	Comment
Pile disposal	piles	77.8	Estimate of wood burn in average pile
Broadcast silviculture burn	Hectares	100	Estimate of wood burnt per hectare
Unnatural wildfire	Hectares	150	Estimate of wood burnt per hectare

Contribution of All Variables on Carbon Emission 2019

Burn type	Unit of measure	Number of Units	CO2e (tonne/m3)	Fire Consumption (m3/unit)	CO2e/unit (tonnes/m3)	CO2e (tonnes)
Pile disposal	Pile	1140	0.772	77.8	60.09	68,503
Broadcast silviculture burn	Hectare	0	0.772	100	77.23	-
Unnatural wildfire	Hectare	15.4	0.772	150	115.85	1,780
					Total	70,283



Carbon Emitted Through Pile Burning 2016 to 2020

Year	CO2e (tonnes)
2020	81,302 (1,353 piles)
2021	70,283 (1,140 piles)
2018	54,634 (906 piles)
2017	84,531 (1,169 piles)
2016	88,172 (1,246 piles)
Total	5814 piles

Trees Planted at Roadside: 6 trees per pile for 35,000 trees.

Concluding Remarks

Why burn? After all, it creates smoke and CO₂.

- Creates plantable spots for trees at roadside
- Reduces fire hazard
- Creates forage species for ungulates
- Alternatives can be costly and in some cases still produce CO₂ (e.g. the production of hog fuel)
- Indicator is very robust as compared to other schema.

PHOTOGRAPHS: piles, burn, forage, growth
