

Appendix N Evaluating Greenhouse Gas Emissions

Although the stated mission of the District does not include reducing the amount of green house gas (GHG), climate change has focused attention on the greenhouse effect. The greenhouse effect is the natural process of the sun warming the Earth's surface. Greenhouse gases in the atmosphere (primarily carbon dioxide, methane, nitrous oxide, ozone, and water vapor) trap the sun's heat and cause the global temperature to rise, otherwise known as global warming. All human activity, including the things we use and the way we dispose of those things has an effect on the amount of GHG released.

Using the U.S. Environmental Protection Agency’s Waste Reduction Model (WARM), the District estimated the GHG emissions associated with solid waste management activities. WARM was used to analyze reference year data and data from the sixth year of the planning period, 2027. The data used was only the amount of reported residential/commercial recycling and composting. Some of the material categories that the District uses to report recycling and composting required regrouping to fit into the categories available in the WARM model. Table N-1 shows the amounts of recycling/composting diversion entered for analysis for 2018 and 2027.

Table N-1 Waste Diversion Amounts Entered for WARM Analysis

Material	2,018	2,027
Mixed Electronics	24	24
Tires	635	729
Food	144	165
Glass	511	587
Mixed Metal	348	401
Corrugated Cardboard	2,375	2,728
Mixed Paper	1,875	2,154
Mixed Plastic	391	448
Branches (wood)	19	22
Mixed Recyclables	369	424
Yard Waste	3,813	4,379
Total	10,504	12,237

The top charts in Table N-2 that follows provides the results from WARM assuming that the waste recycled was instead landfilled. The second chart represents the actual amount recycled in 2018. The amount of GHG measured in metric tons of carbon dioxide equivalents (MTCO_{2E}) for the first scenario, landfilling, is **330.69** MTCO_{2E}. The alternative scenario showing the result of that same material being managed by recycling and composting is minus **18,060.81**.

Table N-2 Greenhouse Gas Emissions print out for the Reference Year, 2018

Material	Tons Recycled	Tons Landfilled	Tons Composted	Total MTCO ₂ E
Corrugated Containers	-	2,375.00	NA	607.16
Mixed Paper (general)	-	1,875.00	NA	268.14
Food Waste	NA	144.00	-	78.07
Yard Trimmings	NA	3,813.00	-	(685.77)
Branches	NA	19.00	-	(9.43)
Mixed Plastics	-	391.00	NA	7.92
Mixed Electronics	-	24.00	NA	0.49
Mixed Metals	-	348.00	NA	7.05
Glass	-	511.00	NA	10.35
Tires	-	635.00	NA	12.86
Mixed Recyclables	-	369.00	NA	33.85

GHG Emissions RECYCLING & COMPOSTING Waste Management (MTCO₂E): (18,060.81)

Material	Tons Recycled	Tons Landfilled	Tons Composted	Total MTCO ₂ E
Corrugated Containers	2,375.00	-	NA	(7,446.43)
Mixed Paper (general)	1,875.00	-	NA	(6,647.86)
Food Waste	NA	-	144.00	(25.35)
Yard Trimmings	NA	-	3,813.00	(557.89)
Branches	NA	-	19.00	(2.78)
Mixed Plastics	391.00	-	NA	(403.09)
Mixed Electronics	24.00	-	NA	(18.94)
Mixed Metals	348.00	-	NA	(1,528.12)
Glass	511.00	-	NA	(141.08)

Material	Tons Recycled	Tons Landfilled	Tons Composted	Total MTCO ₂ E
Tires	635.00	-	NA	(238.95)
Mixed Recyclables	369.00	-	NA	(1,050.33)

Combining the results from the two scenarios shows the GHG reduction for each type of waste that was recycled or composted instead of landfilling.

The WARM analysis was applied to the projected amount that the District expects to be managed by recycling and composting in the sixth year of the planning period, 2026.

2026 GHG Emissions RECYCLING & COMPOSTING Management (MTCO₂E): (20,435.66)

Material	Tons Recycled	Tons Landfilled	Tons Composted	Total MTCO ₂ E
Corrugated Containers	2,728.00	-	NA	(8,553.20)
Mixed Paper (general)	2,154.00	-	NA	(7,637.06)
Food Waste	NA	-	165.00	(29.04)
Yard Trimmings	NA	-	4,379.00	(640.70)
Branches	NA	-	22.00	(3.22)
Mixed Plastics	391.00	-	NA	(403.09)
Mixed Electronics	24.00	-	NA	(18.94)
Mixed Metals	348.00	-	NA	(1,528.12)
Glass	511.00	-	NA	(141.08)
Tires	729.00	-	NA	(274.33)
Mixed Recyclables	424.00	-	NA	(1,206.88)

The additional recycling projected for the sixth year of the planning period would result in an additional reduction of GHG of **2,374 MTCO₂E**.