

Greenhouse Gas Equivalencies – EPA – Energy and Environment WARM Calculator: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

Collection Method	(CO ₂) Production Equivalent	(CO ₂) Reduction Equivalent	Net CO ₂
Public Drop-Off Program (Roeland Park Actuals 2021)	1.5 Tons (CO₂)	22.59 Tons (CO₂) @ 271,088lbs diverted	21.09 Tons (CO₂) (Reduction)
Math:	22.4mi/pull x 35 pulls = 784mi 784mi/6mpg = 130.66 Input: 150g gas/131g Diesel	276,620lbs Recovered 276,620lbs x 98% = 271,088lbs 271,088/2,000/6= 22.59t (CO ₂)	1.5 – 22.59 = 21.09
Glass Separate Curbside Program (42% Participation) (Light-truck and Trailer)	1.7 Tons (CO₂)	15.48Tons (CO₂) @ 189,528lbs diverted	13.78 Tons (CO₂) (Reduction)
Math:	178mi/mo = 2,136mi 2,136/14mpg = 152.57 Input: 175g gas/153g Diesel	(13.19x2,851x12x0.42)=189,528lbs 189,528lbs x 98% = 185,737lbs 185,737/2,000/6= 15.48t(CO ₂)	1.7 – 15.48 = -13.78
Glass Separate Curbside Program (60% Participation Target) (Light-truck and Trailer)	1.7 Tons (CO₂)	22.11 Tons (CO₂) @ 265,339lbs diverted	20.41 Tons (CO₂) (Reduction)
Math:	178mi/mo = 2,136mi 2,136/14mpg = 152.57 Input: 175g gas/153g Diesel	(13.19x2,851x12x0.6)=270,754lbs 270,754lbs x 98% = 265,339lbs 265,339/2,000/6= 22.11t (CO ₂)	1.7 – 22.11 = -20.41

Curbside Estimation Equation information and Assumptions:

13.19 = average lbs per set out per collection during the Roeland Park pilot program

2,851 = number of households in Roeland Park

42% = assumed participation rate per collection (doubled the average pilot participation rate since the pilot used bi-weekly collection and the City-wide program anticipates monthly collection)

98% = modifier to estimate what percentage of glass collected is able to be recycled

60% = target participation rate per collection based on comparable program actuals

For reference, a typical passenger vehicle emits about 4.6 metric tons of carbon dioxide per year.

- This assumes the average gasoline vehicle on the road today has a fuel economy of about 22.0 miles per gallon and drives around 11,500 miles per year. Every gallon of gasoline burned creates about 8,887 grams of CO₂.
- At 42% participation the curbside program has the estimated net additional environmental benefit over the drop off program equal to the elimination of 1.9 gas burning passenger cars annually; at 60% participation the benefit increases to eliminating 4.8 gas burning passenger cars.