

# Executive Summary of Carbon Accounting for Food Scrap Composting in King County, WA

Diverting food scraps has benefits beyond the diversion of waste. When transformed into compost, additional benefits include higher rates of stored carbon in the soil and a reduction in fertilizer use, which require large amounts of energy to produce. To fully understand the benefits of food waste diversion, King County’s Solid Waste Division commissioned Dr. Sally Brown, Research Professor for the University of Washington’s School of Forest Resources, to develop carbon balance estimates for different food and yard waste compost applications.

Dr. Brown used local available data and research to estimate the methane avoidance associated with diverting food scraps from the landfill, using both the U.S. EPA Waste Reduction Model (WARM) and Biosolids Emissions Assessment Model (BEAM). She also estimated carbon totals for the production, transportation and application of food and yard waste compost.

The total carbon balance for the default values for WARM and BEAM are shown in the figure below, along with the total carbon balance for seven distinct end uses for compost: land restoration projects; landscaping on a new or recently constructed site; landscaping on a mature site, such as an established garden; applications on right of ways or along roadsides; agricultural use; stormwater infrastructure projects; and as alternative daily cover at a landfill.

For each local end use, the WARM methane avoidance credit was used, as well as the EPA value for compost related emissions. Results for all end uses are generally similar. The least carbon is stored in mature landscapes where personal vehicles are used to pick up compost. The highest rates of storage are associated with use in new landscapes, highways, agriculture, and stormwater systems.

While there are ranges for carbon balances of food waste based on several factors, including the end uses of the compost, the study illustrates the overall carbon benefits of diverting food waste from the landfill and offers insights on which end uses to prioritize for highest carbon impacts.

**End Summary for Carbon Balance of Different End Uses for Composted Food Scraps**

