

Waste and Recycling

Why is this important?

Less waste or higher waste diversion rates save both landfill space and “embodied” energy and resources. (Embodied energy and resources are those involved in the production of a product: extraction of materials, transportation, emissions from factories, and other infrastructure support.) Landfilling waste also contributes to global warming, by either allowing organic material to decompose anaerobically and produce methane – which has around 23 times more greenhouse gas effect than CO₂ – or by failing to re-use the “embodied” energy in cans, bottles, plastics, metals, and other items that could be recycled. In Redwood City’s 2005 Community Greenhouse Gas Emissions inventory, waste accounted for 6% of total greenhouse gas emissions. Waste reduction and recycling is also a proven tool for raising awareness about other elements of environmental sustainability.

California has been a leading recycling state for many years, and there are many recycling and waste diversion systems in place that can simply be expanded. This can make recycling easier to implement than some other environmental initiatives (such as renewable energy installation, green building, or revamped transportation systems) that require extensive improvements to infrastructure, policy, or regulation before significant progress can be made.

Defining Sustainability

A sustainable state is one where things are reused, recycled and composted, and where there is less and less waste generated in the first place.

Indicator Results

Tons of Solid Waste Disposed of in Landfills

- In 2002, 83% of total waste generated in Redwood City (before diversion to recycling composting, or elsewhere) was non-residential. This means only 17% of total waste generated was residential. This is a very high proportion of non-residential waste compared to some other typical residential Bay Area Cities. For instance, approximately 80% of all waste in the City of El Cerrito, a typical residential Bay Area city, is residential.
- In 2006, Redwood City’s 100,943 total tons of waste sent to landfill was the highest of any city in San Mateo County, followed by San Mateo at 93,046 tons, South San Francisco at 87,634 tons, Daly City at 70,786 tons, and San Carlos at 42,184 tons. Redwood City’s high amount of total waste is due primarily to the high amount of non-residential waste it generates.
- As is shown in Figure 2, Redwood City’s total tons of waste sent to landfill increased and peaked at 145,341 tons 2001, decreased dramatically to 2003, and peaked slightly in 2005. Based on the very stable 10-year decrease in residential landfill waste (documented below in “Residential Waste Make-Up and Diversion Rates”), this was due to peaks in

non-residential waste. Allied Waste has suggested these peaks could be associated with the construction in Redwood Shores (late 1990s, early 2000s) and construction of condominiums on Bair Island Road and commercial development on Seaport Boulevard (2005).⁴

- In 2006, 61% of total waste generated was diverted from landfill (based on the Waste Management Board’s 2002 baseline estimate of 258,828 tons of waste generated and 100,943 tons sent to landfill). This diversion rate is above the required state minimum of 50%.

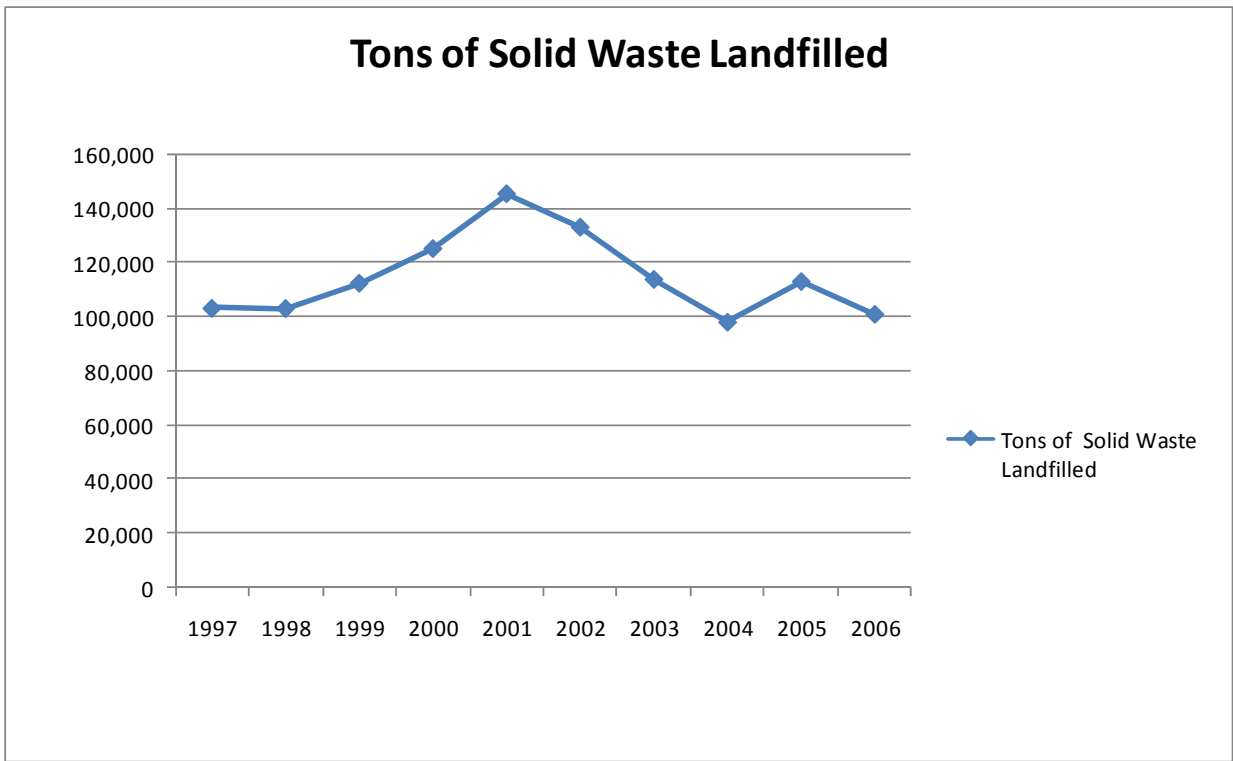


Figure 2: Annual Tons of Redwood City Solid Waste Landfilled

Source: California Integrated Waste Management Board, 2008

Top Non-Residential Waste Producers

Non-residential waste makes up 83% of total waste generated in Redwood City. This suggests an overall strategy of targeting waste-reduction efforts at the City’s largest non-residential producers. Table 1 shows the top 20 non-residential waste producers in Redwood City, and changes in their waste production rates can be tracked over time. Highlights are as follows:

- Two of the top three non-residential waste producers are hospitals.
- Other notable non-residential waste producers include grocery stores, theatres, city and county facilities, Costco, and Oracle Corporation.

⁴ Cited from 8/25/08 email correspondence from Jackie Hawley, Regulatory Rate Analyst, Allied Waste.

Table 1: Top Non-residential Solid Waste Producers in Redwood City

Solid Waste Producer	Address	Monthly Cubic Yards
SEQUOIA HOSPITAL	ALAMEDA & WHIPPLE	609
COSTCO	2300 MIDDLEFIELD RD	600
KAISER HOSPITAL	1150 VETERANS BLVD	480
ELECTRONIC ARTS/ONLINE	209 REDWOOD SHORES PKWY	450
CENTURY THEATRE OF RWC	825 MIDDLEFIELD RD	375
COUNTY OF SAN MATEO	445 WARREN ST	360
TARGET 321	2485 EL CAMINO REAL	240
NOB HILL FOOD-CITY COLLECTION	270 REDWOOD SHORES PKWY	240
SEQUOIA STATION	1035 EL CAMINO REAL	225
COUNTY OF SAN MATEO COUNTY	591 WINSLOW ST	198
REDWOOD CITY, LLC	2107 BROADWAY ST	180
CENTURY PARK THEATER	557 E BAYSHORE RD	180
SAN MATEO COUNTY JAIL	400 COUNTY CTR	144
HOTEL SOFITEL	223 TWIN DOLPHIN DR	144
SAFEWAY	850 WOODSIDE RD	135
SAFEWAY	1071 EL CAMINO REAL	120
ORACLE USA, INC.	500 ORACLE PKWY	93
ORACLE CORP	300 ORACLE PKWY	93
ANDERSONS TV & STEREO	2700 MIDDLEFIELD RD	90
ORACLE	10 TWIN DOLPHIN DR	84

Source: Allied Waste, August 2008

Residential Waste Generation and Diversion Rates

Table 2 shows the make-up and diversion rate in tons of residential waste in Redwood City. Significant results include the following:

- From 1998 to 2007, despite an increase in population, the total waste stream produced (before disposal or diversion) remained relatively stable, with 27,052 tons in 1998 and 26,968 tons in 2007. Stabilizing or decreasing the total waste stream in this manner is a key element in decreasing waste sent to landfill.
- From 1998 to 2007, Redwood City's total residential *disposed* waste *decreased* (by an average of 456 tons per year). Meanwhile, its total residential *diverted* waste *increased* (by an average of 447 tons per year, with the largest increase coming between 1998 and 1999), mostly due to increased curbside plant material collection. The City's waste contractor, Allied Waste, has asserted that curbside recycling rates have not increased due to a higher container redemption value set by the state, which has led to more scavenging and direct redemption at buyback centers.⁵
- Per capita between 2000 and 2006, the first and last years that U.S. Census Bureau data is available during this period in Redwood City, residential *disposed* waste per capita decreased from 0.25 tons per capita to 0.18 tons per capita. Residential *diverted* waste per capita remained stable at 0.16 tons per capita in both 2000 and 2006.
- From 1998 to 2007, Redwood City's total residential waste diversion rate steadily increased from 32.8% to 47.8%.

⁵ Cited from 8/25/08 email correspondence from Jackie Hawley, Regulatory Rate Analyst, Allied Waste.

- Since 2001, diverted residential plant material has surpassed residential recycling to make up the majority of diverted waste. If not diverted, most of this plant material would have decomposed in a landfill into methane, a greenhouse gas around 23 times more potent than CO₂.

Table 2: Residential Waste Make-up and Diversion Rate in Tons

Year	Total Waste Produced	Total Disposed Waste (Sent to Landfill)	Disposed Waste Make-up		Total Diverted Waste	Diverted Waste Make-up		Waste Diversion Rate
			Residential Waste	Residential Clean-up		Residential Curbside Recycling	Residential Curbside Plant Materials	
1998	27,052	18,185	16,993	1,192	8,867	5,992	2,875	32.8%
1999	29,086	17,773	14,779	3,003	11,313	6,334	4,979	38.9%
2000	30,443	18,644	15,509	3,135	11,799	6,118	5,681	38.8%
2001	28,137	16,362	15,622	740	11,775	5,533	6,243	41.8%
2002	27,681	15,723	15,016	708	11,958	5,091	6,868	43.2%
2003	27,876	15,615	14,810	806	12,261	5,452	6,808	44.0%
2004	29,131	16,212	15,534	678	12,919	5,966	6,953	44.3%
2005	28,573	15,514	14,937	577	13,059	5,711	7,348	45.7%
2006	27,173	14,385	13,917	468	12,788	5,517	7,271	47.1%
2007	26,968	14,079	13,605	474	12,889	5,640	7,249	47.8%
2008 1 st Quarter		3,439	3,349	90	3,336	1,511	1,825	49.2%

Source: Allied Waste, 2008

Backyard Composting Bins Distributed

Backyard composting or indoor composting is an alternative to city-sponsored large-scale composting, and functioning backyard composting bins can typically eliminate the majority of a household's food waste and backyard waste. It is therefore recognized by waste specialists as a promising strategy for reducing the overall waste stream.⁶ Green waste emits methane when landfilled, and is the source of 6% of Redwood City's greenhouse gas emissions (see Table 13). Rates of backyard composting are difficult to track, but San Mateo County has been subsidizing the distribution of both backyard bins and indoor worm composting bins since 1994, giving an indicator of backyard composting rates in the City. Future indicator reports could track distribution of composting bins from other sources.

- San Mateo County has distributed 2,456 backyard composting bins and 324 indoor worm bins to Redwood City residents since 1994. Assuming bins are distributed at one per household and only to households, this accounts for 10.1% of all households in Redwood City.
- The number of backyard or indoor composting bins that remain in commission in Redwood City is unknown, but if only half of those bins distributed are still in use, this would account for 5% of all Redwood City households where green waste is mostly eliminated from the waste stream.
- 83% of total backyard bins were distributed from 1994-1999.

⁶ These estimates and assessment are informed by conversations with Garth Schultz, City of El Cerrito Recycling Coordinator, July 2008.

Table 3: Backyard Composting and Indoor Worm Composting Bins Distributed by San Mateo County since 1994

Year	Backyard Bins	Indoor Worm Bins
1994	829	N/A
1995	356	N/A
1996	279	N/A
1997	253	N/A
1998	215	19
1999	109	73
2000	39	29
2001	48	27
2002	60	27
2003	43	20
2004	48	22
2005	50	27
2006	52	30
2007	75	50
TOTAL	2456	324

Source: San Mateo County, 2008

Summary of Results

Non-residential waste represents the vast majority of landfilled waste from the City, even though the majority of Redwood City's non-residential waste stream is currently diverted from landfill. This means that future reductions in non-residential waste, particularly by the city's largest non-residential waste producers, could have a large overall effect. The amount of residential waste landfilled has decreased in most years since 1998, due mostly to increased curbside composting and recycling and perhaps to backyard composting.

Potential Policy Responses

- For both residential and non-residential waste streams, seek increasing rates of waste diversion, decreasing tons of waste generation, and decreasing tons of waste sent to landfill.
- Concentrate on major waste diversion opportunities in the non-residential sector, identifying and working with the city's largest non-residential waste generators to reduce their waste generation and rates of waste disposal.
- Continue the 10-year trend of increasing residential waste diversion rates (recycling and composting) and decreasing tons of landfilled residential waste.
- Seek to neutralize and decrease rates of overall waste generation.
- Increase the number of homes, restaurants, or other community members with backyard or indoor composting. Consider coordinating with the county bin distribution program and/or developing capacity to accept kitchen waste in green bins.
- Confirm that the City's contract with its waste services provider incentivizes higher composting and recycling rates and decreased tons of waste sent to landfill.
- Ensure that all new businesses upon issuance of any city permit or payment of fees are aware of mandate to recycle.