



InSinkErator® | City of Tacoma
FOOD WASTE DISPOSER DEMONSTRATION
P R O J E C T

How Food Waste Disposers
Can Benefit Municipalities



Environmental Services &
Office of Environmental
Policy and Sustainability



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Commercial & Residential Solutions

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In 2013, the City of Tacoma and InSinkErator combined efforts to assess the efficacy of household in-sink food waste disposers as a tool for Tacoma households to divert food scraps from the landfill – using food waste disposers to convert the waste into a liquid slurry for transport via existing sewers to Tacoma’s wastewater treatment facility. The City selected a neighborhood in the Wapato Lake area to offer a variety of conservation-related projects and services – including participation in this project.

The demonstration project was conducted by the **City of Tacoma and InSinkErator** from April of 2013 through April of 2014.





The program was named, “Healthy Homes, Healthy Neighborhoods” in resident communications. Following several canvases, 90 households in the Wapato Lake area agreed to have a new food waste disposer installed. Disposers were installed in May/June, 2013 in 63 of those homes (the remainder were eliminated or dropped out). Over the following year, those households received various outreach efforts designed to guide their use of the disposer – including mailings, door-to-door visits and phone calls.



“Enjoy the Fruit, Grind the Rind!” Participants were reminded of the challenging food waste their advanced disposer could grind with a complementary bag of fruit.

While similar in many ways to projects in Philadelphia, Chicago, Milwaukee and Boston, Tacoma’s project offered two unique conditions: residents already could divert food scraps via Tacoma’s “brown-bin” that encouraged commingling of yard waste and food scraps; and implementing a shift to every-other-week (EOW) collection of household trash, with weekly collection of the brown-bin/organics and conventional recyclables. The EOW shift occurred during the course of the project.

KEEP YOUR KITCHEN GREEN AND WAPATO LAKE CLEAN

Fill out the reverse side to apply for a **FREE Food Waste Disposer**

Food waste disposers are small, quiet appliances installed under your kitchen sink to grind up leftover food scraps—including fruits, veggies, and pasta... even chicken bones!

Disposers are easy to use, and they help get rid of kitchen scraps and reduce the number of smelly garbage bags you have to haul to the curb. That means fresher kitchens, fewer rodents and a cleaner greener Wapato Lake.

To be eligible to participate in a special study organized by the City of Tacoma, please indicate your interest in receiving a **FREE InSinkErator® food waste disposer** installed by a licensed plumber. Simply complete the reverse side and give it to the city's representative today.

Why is the city behind this program? Food waste disposers recycle food scraps that are sent to Tacoma's wastewater treatment plants, where they are buried. This adds water, reusable energy, and PACES. Sending food scraps to Tacoma's wastewater treatment plants is a water-intensive process from the source, and helps to save all of us money.

Environmental Services Office of Sustainability

TIP #3 Maintenance tips

By now, you've probably figured out the basics of using your disposer to handle nearly all of your food scraps. Here are some simple tips to keep you grinding happily!

- Grind ice cubes to help scrub the grind chamber
- Grind citrus (lemons or limes) to help freshen your disposer
- If you forget to turn the disposer off and it automatically shuts down, push the red reset button on the bottom of the disposer
- Your disposer should not jam or clog with proper use - food food waste is created!

TIP #2 How does it work?

Disposers are simple and convenient - which is why they're so popular. The disposer's chamber acts like a cheese grater. When you turn it on, a plate with spinning, hot-ironed blades scrapes against the "grater" until the pieces are tiny and flow easily through your drain.

TIP #1 Getting started: The basics

Congratulations! You're the proud owner of one of America's most popular kitchen appliances - a new InSinkErator® food waste disposer (model) 20 years ago to make kitchen cleaner. It's simple to use - here's how to get started:

- Turn on your faucet with a moderate flow of water
- Turn on disposer (push button or switch) - remember to hold switch!
- Gradually feed food scraps into the disposer
- When the grinding begins, slowly let the water out. Let the water run for a few seconds.

Do your pipes a favor - don't pour cooking oil or grease into your sink. It's hot and can stick to the walls.

Happy Grinding! **Coming next: How does it work?**

A variety of materials and methods were used in resident outreach and education, including weekly postcards with tips and advice.



THE RESEARCH METHODOLOGY

Two types of analyses were conducted over the course of the project: waste audits intended to quantify the diversion of food scraps from other means of disposal (especially the trashcan), and surveys of project participants to assess the messages and methods of outreach, and personal satisfaction with disposers. The waste audits were conducted by Cascadia Consulting, which had worked with the City of Tacoma for waste characterization and program planning needs. The survey research was analyzed by SERA, a firm specializing in research on environmental behavior.

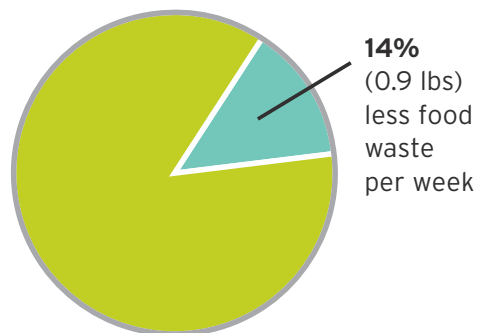
Two waste audits were conducted: a baseline audit conducted over a four-week period before the new disposers were installed and another audit approximately a year later. In both audits, food waste samples were collected from the pilot area for four weeks in a row.

RESULTS OF THE WASTE AUDITS

Key findings of both periods are presented below. The characterization results were organized by the garbage stream, the yard waste stream, and the combined streams. Within each stream, pre- and post-test results were reported. All material compositions were presented by weight. All of the waste composition results are statistically significant.

Results – Change to food waste in the garbage

- Pounds of *food* disposed in the garbage per household decreased from 25.9 pounds to 22.4 pounds – a reduction of 14% or 0.9 pounds per household per week.





Results – Change to food waste in the yard waste bin

- The proportion of *food* in the brown bin decreased from 3.5% to 0.4% [the remainder was yard waste].
- Pounds of *food* disposed in the brown bin per household decreased from 4.6 pounds to 0.5 pounds – a reduction of approximately 89%.
- Contamination by non-organic materials essentially disappeared.

Combined Streams Results for Food Waste

- Pounds of *food* disposed in the garbage and brown bin decreased from 30.5 to 22.9 pounds per household between the pre- and post-test study periods – a decrease of about 25%.
- The proportion of *food* in the combined garbage and yard waste streams decreased by 4.1%.

RESIDENT BEHAVIOR AND SATISFACTION

Residents were sent surveys at the beginning of the project after they agreed to participate, and again at the end just prior to the final waste audit. Questions included those regarding satisfaction in disposer use and other behavioral changes.

The evaluation of the survey responses found:

- **Participants are overwhelmingly happy with the new disposer:**

90% were very satisfied and report the disposer reduced the trash they disposed, made cleaning up the kitchen easier, reduced odors and smells in the house and neighborhood, and limited vectors and pests associated with trash collection.

- **Most participants report using their disposer aggressively:**

74% now put *all or nearly all* of the food scraps that were previously disposed of in the trash down the disposer instead.

- **Disposer usage is high:**

The majority of respondents (almost **60%**) reported that they *almost always* use the disposer when preparing meals and cleaning up after meals. Conversely, only 6% of respondents reported using the disposer *less than half the time* and 5% said they *never or rarely* used the disposer.

- **Most food scraps are now going down the disposer:**

Nearly **three-quarters** of respondents reported they *put all food scraps down the disposer*. Only 5% of respondents claimed to put only a little food scraps down the disposer.

- **The disposer decreased the amount of trash thrown away at the curb:**

The majority of respondents (86%) reported that since the disposer's installation, the amount of trash they throw away has decreased. When the self-reported number of trash bags disposed (pre- and post-program) were compared, trash volume *decreased* an average of **43%** per household. Overall, the average number of bags of trash decreased from **3.5** to **2.0** per household per week. Overflowing trash cans decreased to 0% (from 15%) and the completely full trash cans dropped from 56% to a quarter of respondents.

- **Participants were overwhelmingly satisfied with disposer use:**

Overall, **80%** of the respondents reported that they *did not have any problems* with the disposer. Among the 15% who reported an issue, clogs and jams were the cause in a small number of cases and were promptly remedied by InSinkErator®.

- **The disposer provides many benefits beyond reduced trash:**

Reducing trash was the most-commonly perceived benefit among participants; almost as highly valued were a clean kitchen and fewer smells in the kitchen. This program also led to a self-reported increase in recycling by **35%** of the respondents.

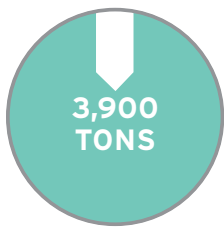
Tacoma's wastewater treatment plants turn food waste into renewable energy and beneficial fertilizer.





CITYWIDE PROJECTION OF RESULTS

Using data modeling tools developed by InSinkEerator, analysts were able to project results more broadly. If residents throughout the City of Tacoma utilized food waste disposers in homes and apartments in ways similar to the project participants, potential benefits to the City include several environmental and economic dimensions.



- Total annual residential food waste diversion from landfills of 3,900 tons



- Annual offset of GHG emissions equivalent to 2.5 million+ auto miles



- Additional methane production from anaerobic digestion of 428 ML



CONCLUSION & NEXT STEPS

As a result of the project's success, the City and InSinkEerator are engaged in ongoing discussions and exploration of the means and methods in which expanded installation and use of disposers by residents can be encouraged to increase:

- Diversion of food scraps from households
- Recycling of food scraps into renewable energy at the wastewater treatment plant
- Realization of savings resulting from reduced transport, tipping fee and electricity costs
- Reduction in GHG emissions

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