



MANDATORY FOOD WASTE RECYCLING  
ORDINANCE FOR LARGE FOOD  
ESTABLISHMENTS IN HONOLULU, HAWAII

BY

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**MANDATORY FOOD WASTE RECYCLING ORDINANCE FOR LARGE FOOD  
ESTABLISHMENTS IN HONOLULU, HAWAII**

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I. Introduction

A recent study by two University of Hawaii at Mānoa researchers estimates that more than 26% of the available food supply in Hawaii is discarded each year.<sup>1</sup> Food waste occurs at all stages of the food supply chain-- after food is harvested, during packaging, shipping and storage, and finally by consumers. Since most of the food consumed in Hawaii is imported, most of the food waste in Hawaii occurs at the consumer level.

The Natural Resources Defense Council (NRDC) estimates that in the U.S. 40 percent of

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<sup>1</sup> Matthew K Loke and PingSun Leung, "Quantifying food waste in Hawaii's food supply chain," *Waste Management & Research*, 2015, Vol. 33 (12) pp. 1076-1083. Loke and Leung define food waste as "the edible portion of food, post-harvest, that is available for human consumption, but is not consumed for any reason."

all food “from farm to fork to landfill” is wasted.<sup>2</sup> The U.S. Department of Agriculture Economic Research Service’s (USDA ERS) estimate of food waste in the U.S. is slightly less at between 30 percent and 40 percent of the food supply.<sup>3</sup> According to the U.S. Environmental Protection Agency (EPA), in 2014 the U.S. produced 258.5 million tons of municipal solid waste (MSW) of which 14.9% (38.4 million tons) was “food”; by far the largest amount (29.4 million tons or over three-quarters) of the food waste went into landfills, 7.1 million were combusted with energy recovery, and nearly 2 million tons were recycled or composted. (MSW does not include industrial, construction, or hazardous waste.) Food waste made up the largest percentage (21.6% each) of MSW landfilled or combusted to produce energy.<sup>4</sup> In 2015 the first national goal for food loss and food waste aims to cut food waste by 50 percent by 2030.<sup>5</sup> EPA’s preferred food recovery hierarchy is to reduce waste generation at the source or, failing that, to rescue food for human consumption and then recycle what is left to feed animals, generate energy, and compost in descending order. The objective is to minimize the amount of food that is incinerated or sent to landfills.<sup>6</sup>

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<sup>2</sup> Dana Gunders, *Wasted: How America is Losing up to 40 Percent of its Food from Farm to Fork to Landfill*, Natural Resources Defense Council, 2012 at <https://www.nrdc.org/sites/default/files/wasted-food-IP.pdf>

<sup>3</sup> <https://www.usda.gov/oce/foodwaste/faqs.htm> Because there is not a single definition of food waste, estimates of food waste in the U.S. vary widely depending on what is considered food waste and what is not. See Marc F. Bellermaire, Metin Cakir, Hikaru Hanawa Peterson, Lindsey Novak and Jeta Rudi, “On the Measurement of Food Waste,” *American Journal of Agricultural Economics*, Vol. 99, Issue 5, 1 October 2017, pp. 1148-1158.

<sup>4</sup> [https://www.epa.gov/sites/production/files/2016-11/documents/2014\\_smmfactsheet\\_508.pdf](https://www.epa.gov/sites/production/files/2016-11/documents/2014_smmfactsheet_508.pdf)

<sup>5</sup> Harvard Food Law and Policy Clinic, *Keeping Food Out of the Landfill, Policy Ideas for States and Localities*, October 2016, p.1 at [https://www.chlpi.org/wp-content/uploads/2013/12/Food-Waste-Toolkit\\_Oct-2016\\_smaller.pdf](https://www.chlpi.org/wp-content/uploads/2013/12/Food-Waste-Toolkit_Oct-2016_smaller.pdf)

<sup>6</sup> <https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy> The State of Hawaii has adopted EPA’s priorities. Hawaii Revised Statutes HRS 342G-2—also known as the Hawaii Integrated Solid Waste Management Act--states that “In implementing this chapter, the department and each county shall consider the

In recent years, some states and cities began to impose food waste bans/mandatory recycling requirements on food establishments. *Spoiler Alert*, a Boston-based, venture-backed technology startup, provides a list of states and cities that have done so—California in 2016, Connecticut in 2014, Massachusetts in 2014, Rhode Island in 2016, Vermont in 2014, Austin, Texas in 2016, New York City in 2016, Portland, Oregon in 2014, San Francisco in 2009, and Seattle in 2015.<sup>7</sup> The Harvard Food Law and Policy Clinic did a comparison of their provisions but did not analyze how well these bans/recycling laws have actually worked.<sup>8</sup>

Curiously, both *Spoiler Alert* and the Harvard Food Law and Policy Clinic failed to mention the City and County of Honolulu, Hawaii which had enacted the first mandatory food waste recycling ordinance in the country in 1997.<sup>9</sup> Honolulu’s food waste ordinance requires large food establishments to separate and recycle their food waste. This article examines how well Honolulu’s ordinance has worked. Lessons learned from Honolulu’s lengthy experience in enforcing its mandatory food waste recycling ordinance may help other jurisdictions interested in designing similar law.

## II. Honolulu’s Food Waste Ordinance for Large Food Establishments

Honolulu’s 1997 mandatory business food waste recycling ordinance ([Chapter 9, Section 9-3.5](#)) that went into effect on January 1, 1997 was passed not without political controversy as

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following management practices and processing methods in their order of priority: (1) Source reduction; (2) Recycling and bioconversion, including composting, and (3) landfilling and incineration. At <https://law.justia.com/codes/hawaii/2011/division1/title19/chapter342g/342g-2/>

<sup>7</sup> Spoiler Alert, *A Growing List of Food Waste Bans in America*, December 9, 2016 at <http://blog.spoileralert.com/food-waste-bans>

<sup>8</sup> Harvard Food Law and Policy Clinic, October 2016, Section VII, beginning on page 60.

<sup>9</sup> Teresa Dawson, “Food Waste Recycling on Oahu: A Good Thing Gone Wrong, Again,” *Environment Hawaii* posted in March 2002 at <http://www.environment-hawaii.org/?p=3114>

many residents living near the Unisyn food waste processing facility complained about the odor emitted from the facility and feared the enactment of the ordinance would only make the problem worse. Unisyn was then the island’s largest food waste recycler and had lobbied vigorously in favor of the ordinance. County Council members had little choice but to pass it as the County’s Waimanalo Gulch Sanitary Landfill (WGSL) was near capacity and scheduled to be shut down without a replacement. (The County maintains a separate landfill for construction and demolition debris.) H-POWER, the waste-to-energy facility completed in 1990 to burn refuse to generate electricity, was not able to accept all the municipal solid waste (MSW) generated in the county.<sup>10</sup> In a land-scarce and densely developed island community, the obstacle to building a new or expanding an existing landfill is often not financial, it is political. “No community wants a landfill in its backyard,” said (then) Honolulu County mayor following the Hawaii Supreme Court’s 2012 decision overturning a previous Land Use Commission ruling which required Honolulu’s Waimanalo Gulch Sanitary Landfill to stop accepting municipal waste later in the year.<sup>11</sup>

Honolulu City lawmakers did not only target food waste for recycling. In 1996 City lawmakers enacted City Ordinance 9-3.1 that required liquor-serving establishments to recycle glass containers and office buildings with 20,000 square feet or more of space to recycle office paper, newspaper and corrugated cardboard.<sup>12</sup> The Department of Environmental Services (DES)

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<sup>10</sup> Expansion of H-POWER began in 2009 and was completed in 2012. For the history of H-POWER, see

[https://swana.org/Portals/0/awards/2016/winners/CityandCountyofHonolulu\\_WastetoEnergy.pdf](https://swana.org/Portals/0/awards/2016/winners/CityandCountyofHonolulu_WastetoEnergy.pdf)

<sup>11</sup> <http://www.hawaiinewsnow.com/story/18152300/state-supreme-court-overturns-waimanalo-gulch-landfill-ruling>

<sup>12</sup> There are also volume limits on some targeted materials. See Department of Environmental Services, *Report on the Enforcement of Mandatory Business Recycling Ordinances, Fiscal Year 2018* at

has the responsibility to enforce both ordinances.

[Chapter 9, Section 9-3.5](#) of the Revised Ordinances of Honolulu states: “The owners of... food establishments [that include hotels, restaurants, grocery stores, hospitals, food courts and food manufacturers and processors that meet certain size criteria] located within the City and County of Honolulu shall: (i) arrange for the separate collection of food waste and for its recycling by a recycling facility in the city, or (ii) separate food waste from all other solid waste generated by the food establishment and deliver the food waste to a recycling facility.<sup>13</sup> A recycling facility includes “a composting facility, waste bioconversion facility, rendering facility, pig farm or other agricultural facility that uses food waste as animal feed or for other agricultural purposes, or any other facility that recycles food waste and is approved by the director for that purpose.”<sup>14</sup> Items that can be recycled include vegetable and fruit waste, eggs, meat and fish waste, dairy waste, bakery waste, noodles, rice and cooking oil.

The law allows several exemptions/waivers. First, the ordinance does not apply to any church or non-profit organization, except hospitals. Second, establishments that serve food and drink at self-serve counters are also exempt, except markets and food courts. Third, the establishment is exempt if it can show that recycling facility/capacity is unavailable. Fourth,

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[http://www.opala.org/solid\\_waste/pdfs/2018%20Report%20on%20Mandatory%20Business%20Recycling%20FINAL.pdf](http://www.opala.org/solid_waste/pdfs/2018%20Report%20on%20Mandatory%20Business%20Recycling%20FINAL.pdf)

<sup>13</sup> [http://www.honolulu.gov/rep/site/ocs/roh/ROH\\_Chapter\\_9\\_.pdf](http://www.honolulu.gov/rep/site/ocs/roh/ROH_Chapter_9_.pdf) For example, a market that occupies 18,000 square feet or more of floor area, a restaurant with 5,000 square feet or more of floor area and serves 400 or more prepared meals per day, a hospital that that serves 400 or more prepared patient meals a day are required to comply.

<sup>14</sup> Currently, local options to recycle most of the food waste include hog farmers (for produce and food scraps); Pacific Pure Technologies, Island Commodities, and Pacific Biodiesel (for meat, seafood and cooking oil) and Hawaii Earth Products (the state’s largest composting company). Hawaii Food Bank and Aloha Food Harvest handle discarded food suitable for human consumption.

“the law allows for the requirements to be suspended for any business if the cost to collect and recycle is more than the cost to collect and dispose of the targeted materials.” In other words, recycling should be accomplished without additional cost to food waste generators. DES also does not enforce the ordinance on federal government properties (e.g. military bases) or the State’s public school cafeterias and prison in Honolulu.<sup>15</sup>

Each year DES sends compliance forms and tip sheet (see Appendix below) to remind food establishments of their responsibility to recycle. The compliance form asks food establishments to confirm that they are in compliance with the recycling ordinance, name the collector of their food waste, and how much was recycled. Affected businesses must return the compliance form within a few weeks (either on line since 2016 or by mail).

DES follows up with site inspections of establishments that either failed to return compliance forms, reported non-compliance, or requested help with developing recycling programs, as well as those that are randomly selected. Before 2018, inspectors announced ahead of time when they would arrive to make an inspection; beginning in 2018 no prior announcements are given.

Although compliance forms state that failure to comply could result in fines, actually fines are rarely imposed. A fine is levied only after a business failed to make changes

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<sup>15</sup> Email from Evan Bisho (DES Recycling Specialist) to James Mak on August 31, 2018. Hawaii is the only state in the U.S. where public K-12 education is provided by the state government and not by local governments. The Department of Education’s (DOE) 197 cafeterias serves 100,000 meals per day statewide, making it the largest restaurant in the state. DOE explains that by U.S. Department of Agriculture rules, what is not eaten in school cafeterias has to be thrown into the trash. At a few schools, some students go through the trash and separate the food waste for composting. To reduce food waste the DOE field tests new foods before they are added to menus. At <http://www.hawaiinewsnow.com/story/34359334/hawaii-public-schools-look-to-lessen-food-waste>

subsequent to a follow-up inspection.<sup>16</sup> In FY2018, DES issued \$250 fines (each) to two establishments, both apparently due to changes in management at the firms and the new management personnel were unaware of the earlier notification of non-compliance. DES states that “The goal of the City’s enforcement efforts is to ‘catch them recycling,’ not to penalize businesses for non-compliance.”

Not all food establishments are inspected every year for compliance. DES sets a yearly percentage goal of food establishments to physically inspect, and tries to inspect new food establishments each year. For example, in FY 2018, out of 1148 “affected businesses”, DES inspected 70 of them and issued 12 citations for violations.<sup>17</sup>

It is noteworthy that few food establishments that met the size criteria applied for waivers. In FY2010 and FY2011, DES reported only a “few” businesses located in the outlying areas requested waivers because they did not have collection options. In FY2012-FY 2016 there were no petitions for waivers. In FY 2017 one petitioner was granted a waiver; none in FY2018.<sup>18</sup> The fact that few establishments that met the size criteria applied for waivers indicates that for most food establishments recycling food waste is “good for business” and/or because they support the environmental goals of the law.

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<sup>16</sup> Email from Evan Bisho (DES Recycling Specialist) to James Mak on August 30, 2018. The amount is not stated on the compliance form but the ordinance established the fine at an amount up to \$250 per violation.

<sup>17</sup> Department of Environmental Services, *Report on the Enforcement of Mandatory Business Recycling Ordinances, Fiscal Year 2018* at [http://www.opala.org/solid\\_waste/pdfs/2018%20Report%20on%20Mandatory%20Business%20Recycling%20FINAL.pdf](http://www.opala.org/solid_waste/pdfs/2018%20Report%20on%20Mandatory%20Business%20Recycling%20FINAL.pdf)

<sup>18</sup> Department of Environmental Services, *Report on the Enforcement of Mandatory Business Recycling Ordinances, Fiscal Years 2010 to FY 2018*.

### III. Impact of the 1997 Food Waste Recycling Ordinance

Each (fiscal) year DES is required to submit a report to the City Council on the progress of the business recycling program.<sup>19</sup> Unfortunately, DES only reports the number of surveys (compliance forms) sent to food establishments each year and the number of forms returned (i.e. the response rate). The annual reports provide no information on the number of establishments actually in compliance, the number that are not required to file (i.e. exempt), and the number of firms that are not in compliance. We were able to obtain that information from the internal files of the DES for selected years, and they are displayed in Table 1.

Table 1  
Food Establishment Responses to Request on Compliance with Food Waste Ordinance

<u>Fiscal Year</u>	<u># of Forms Sent</u>	<u># of Responses</u>	<u># of Firms in Compliance</u>	<u># Not Required to File</u>	<u># Not in Compliance</u>
2018	1148	751	308	440	3
2017	1162	777	330	429	0
2016	1006	765	322	427	5
2015	385	343	189	80	NA
2014	385	350	273	76	NA

Source: Department of Environmental Services, Recycling Branch, internal files kindly supplied by Evan Bisho (Recycling Specialist). Note: The numbers do not always add up.

Beginning in FY 2016 the number of food establishments (businesses) that were sent the compliance form more than doubled (Table 1) because DES used a different establishment list. According to Evan Bisho, Recycling Specialist at the DES, “I believe we acquired a new list of registered businesses and decided to mail everyone whether or not we knew they would be exempt. I think we previously had tried to narrow down and mail to mostly affected

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<sup>19</sup> For example, Fiscal Year 2018 runs from July 1, 2017 to June 30, 2018.

businesses.”<sup>20</sup> Now all food establishments on the list are considered “affected businesses.” Not surprisingly, response rates have declined in recent years. In Table 1, the number of establishments reported to be in compliance for FY2015 is probably incorrect.

Table 1 shows that the number of establishments in compliance greatly exceeded the number not in compliance. For FY 2018, only three respondents said that they were not in compliance; two of them explained that their business had closed, and a third said that it needed to set up a program and could do so quickly. In the previous year, no food establishment failed to comply.

Large number of establishments that claimed to be exempt nevertheless filed the compliance form. DES acknowledges that it is difficult to ascertain if all of them met the criteria for exemption since DES does not have independent access to information to verify that a restaurant, for example, occupies 5000 square feet of space and serves at least 400 meals per day. If an inspection is held, the management is asked, but the response is not independently verified by DES. Thus, compliance with the ordinance is based on the honor system.<sup>21</sup>

In its annual reports, DES concludes: “...businesses appear to be generally supportive of recycling...The majority of the inspected businesses have established recycling programs and are

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<sup>20</sup> Email from Evan Bisho to James Mak on August 3, 2018.

<sup>21</sup> A large number of food establishments do not return the compliance form. Bisho opines that “Just because they do not send back the forms does not necessarily mean that they are not in compliance. In fact, many would probably be exempt. We have made an effort to perform inspections on businesses who have not sent back the compliance forms, but in trying to be efficient, we tend to stay in areas where we can complete a lot of inspections in a short amount of time. We haven’t really looked at the demographics of those who have not sent back the forms...My guess would be plenty of store closures, change of ownership, non-English speakers and people who know we can’t do anything unless we inspect them since they see this form every year and nothing happens.” Email from Evan Bisho to James Mak on August 29, 2018.

in compliance with the recycling ordinance.” The mandatory food waste recycling program appears to be a success story. According to the President of the Hawaii Food Manufacturers Association (HFMA), “I think the intent is good and since oil pick up is free, financially beneficial. However, from my perspective it is also disruptive because we have at least three different companies we have to coordinate things with to get rid of waste and not all are reliable.”<sup>22</sup>

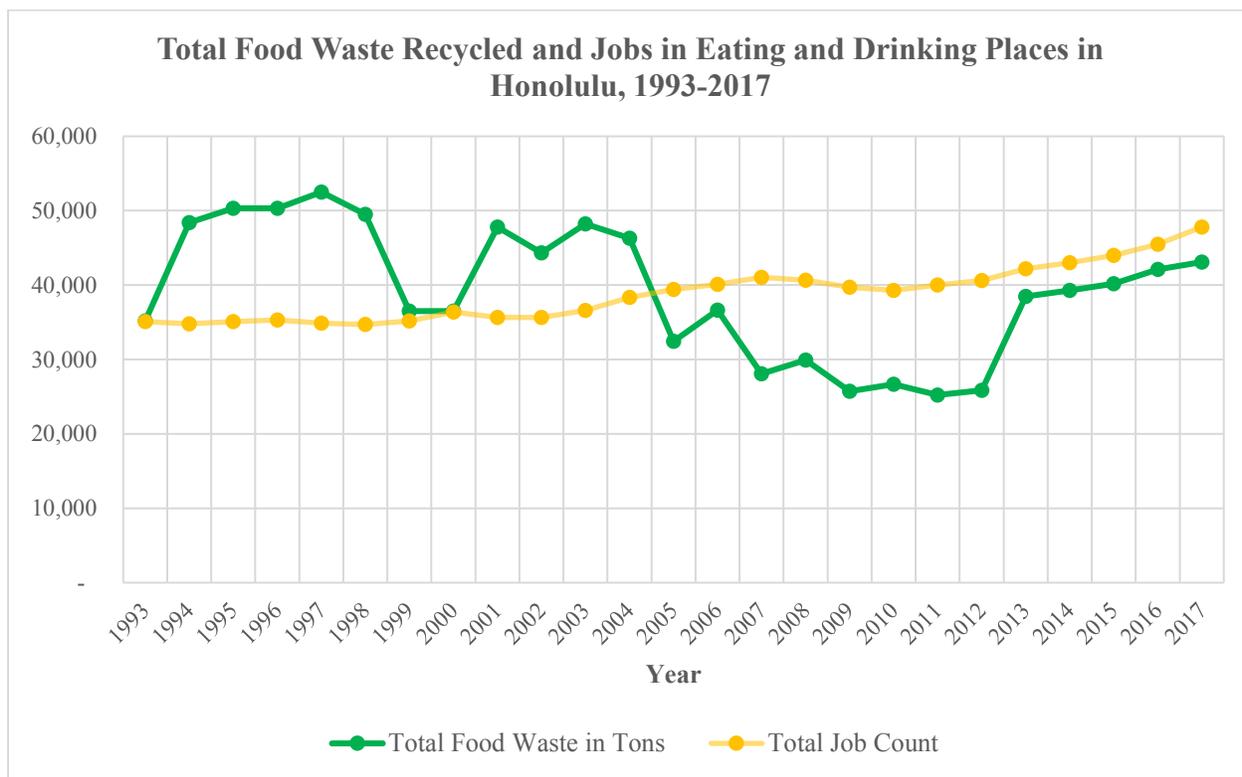
However, the volume of food waste recycled in Honolulu did not rise as one might expect after the ordinance was enacted (Figure 1). DES has been collecting recycling data since 1988 (except for 1989 and 1990)<sup>23</sup> and has been publishing food waste recycling data beginning in 1993. Figure 1 displays the volume of food waste recycled between calendar years (CY) 1993 and 2017. The peak year of food waste recycling was 1997 when the ordinance went into effect. Since then, the volume of annual food waste recycled in the City and County of Honolulu has trended downward till 2012 and has been rising since. Despite recent increases, in CY 2017 only 43,105 tons of food waste were reported to have been recycled in the City and County of Honolulu compared to 50,300 tons in 1996.

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<sup>22</sup> Email from James K. Chan, General Manager of the Hawaiian Chip Company to Matthew K. Loke dated September 1, 2018.

<sup>23</sup> City and County of Honolulu, Department of Environmental Services, *Fifth Annual Report, Status of Actions Taken to Comply with the State Land Use Commission’s Order Dated October 2, 2009 and Status of Operations Waimanalo Gulch Sanitary Land Fill*, June 1, 2015, p. 16

Figure 1



Source: Food waste data from Appendix, Table A-1 (below);  
 Job count data from Hawaii Workforce Infonet, *Job Count by Industry* at  
<https://www.hiwi.org/gsipub/index.asp?docid=421>

The decline in food waste recycling displayed in Figure 1 is puzzling. The intent of the ordinance was to encourage food establishments to recycle more food waste, not less. It is noteworthy that the volume of glass, office paper and corrugated cardboard recycled all increased; only food waste and newspaper recycling volumes decreased between CY1993 and CY2017.<sup>24</sup> The volume of food waste recycled is negatively correlated with glass recycling (-.757), corrugated cardboard (-.453), office paper (-.367) and newspapers (-.005). Since food

<sup>24</sup> Measured from end point to end point. The correlation coefficient uses all the data between the end years. City and County of Honolulu, Department of Environmental Services, *Recycling and Landfill Diversion* at [http://www.opala.org/solid\\_waste/archive/facts2.html](http://www.opala.org/solid_waste/archive/facts2.html) Newspaper recycling reached its peak in 2004 and began a decline.

sales (i.e. food output) is likely to be highly correlated with employment in food sales—i.e. to produce and sell more food requires more labor--we use the number of jobs in food service and drinking places in Honolulu as a crude proxy to capture the trend in the volume of food sales over time. Data (Figure 1) show that total jobs in food service and drinking places in Honolulu grew from 35,300 in 1996 to 47,800 in 2017.<sup>25</sup> Thus, food sales appear to have increased while the volume of food waste recycled appears to have decreased.

The declining trend in food waste recycling may be due to the way DES collects its data. DES's food waste recycling data are not compiled from the annual compliance forms returned by food establishments but obtained from recycling facilities that must obtain a Solid Waste Permit from the State Department of Health to handle food/wet waste.<sup>26</sup> Evan Bisho, Recycling Specialist at DES, explains as follows:<sup>27</sup>

There's no way for us to confirm the numbers reported by the business[es]. And we can't really expect them to track or give us an accurate amount in weight or gallon because that's not really their field of expertise and it probably fluctuates. Meanwhile, if businesses are recycling food waste like [they] should be, it ends up with one of the certified food waste recyclers. This involves [the] State Department of Health permitting and tonnage reporting, which is tracked.

In 2018, seven recycling companies reported collecting food/wet waste.<sup>28</sup> The recycling

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<sup>25</sup> Hawaii Workforce Infonet, *Job Count by Industry* at <https://www.hiwi.org/gsipub/index.asp?docid=421>

<sup>26</sup> The question on food waste volumes remains on the compliance form even though the collected data have never been processed or used.

<sup>27</sup> Email from Evan Bisho to James Mak, dated August 3, 2018.

<sup>28</sup> They were Aloha Harvest, Hawaii Food Bank, Hawaiian Earth Products, Island Commodities, Island Topsoil, Oahu Piggeries and Pacific Biodiesel. Email from Evan Bisho (DES Recycling Specialist) to James Mak on August 13, 2018.

facilities remain just about the same year after year. By using recycling data from the recycling facilities, any food waste not received by the recycling facilities would not be counted. If a food establishment recycles food waste on its own premise, the amount is not included in Figure 1 because it was never received at a recycling facility. Additionally, if the ordinance encouraged food establishments to generate less waste at the source (and less waste is sent to recycling facilities), the recycling data in Figure 1 also understate the effects of the ordinance.

There is plenty of anecdotal evidence on in-house food waste reducing efforts. For example, the culinary director of the Sheraton Waikiki Hotel notes that for most plated dishes, very little is thrown away. Buffets are a different story: “If you feed 1,000 people, you could literally feed another 100 people with what’s left.”<sup>29</sup> Once the food is served in a buffet line, it cannot be served again. To reduce the amount of food that is discarded, Sheraton Waikiki sends the left-over food from the buffet line to the employee cafeteria which serves 700 to 800 hotel workers a day. “If we know we have a buffet, we actually cut down on the quantities we order for the cafeteria.”<sup>30</sup> The hotel saves money and reduces the amount of food discarded.

Since the economic downturn in 2008, more restaurants in Honolulu have switched to cook-to-order menus which result in less unused food than prepared dishes (e.g. soup and lasagna). Food waste is prevented.<sup>31</sup> The executive director of Aloha Harvest, the non-profit that receives donated rescued food and distributes it to around 180 social service agencies that feed the hungry and homeless, noted that restaurants “...would call and say, ‘I’m sorry, we don’t have

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<sup>29</sup> Ilima Loomis, “Wasted,” *Hawaii Business Magazine*, February 9, 2016, at <https://www.hawaiibusiness.com/wasted/>

<sup>30</sup> Loomis, 2016.

<sup>31</sup> Loomis, 2016.

as much to donate because we've gone to this type of menu'—which, of course, is fine with us. It forced a lot of the restaurants to really evaluate how they're ordering their food."<sup>32</sup>

The following are additional observations of food waste prevention noted during DES inspections and described (verbatim) in the various DES annual reports on the enforcement of the food waste ordinance.<sup>33</sup>

- Produce Company's poi producing facility composts the taro peelings on their North Shore farm.
- Some restaurants use leftover prep vegetable and meat scraps to cook a basic broth that they use as a base in their sauces and gravies.
- One business has a proprietary process when removing potatoes and carrots peelings that almost evaporates the peelings through a cooking process, reducing waste to a minimum.
- Large catering companies, restaurants and bakeries give quality edibles to Aloha Harvest, Hawaii Food Bank and churches. These nonprofits redistribute the edibles to homeless shelters and other food distribution organizations. The food distribution chain is efficiently managed, resulting in minimal amounts of actual food disposal at our waste facilities.
- Waianae Store installed an onsite Ecovim machine that dehydrates food waste to produce a highly concentrated organic soil amendment.
- Duke's Restaurant in Waikiki is currently composting 60% to 70% of their food waste on property. They purchased two EcoVim food composting machines that can each process 250 pounds of food waste per day into a soil conditioner. They are working toward processing 100% of their food waste in the future by upgrading the machines they currently have.

Thus, by simple deduction, we are left with the conclusion that Honolulu's food waste ordinance probably did encourage food establishments to become more careful about the way

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<sup>32</sup> Loomis, 2016.

<sup>33</sup> Additional examples can be seen on the website of the Hawaii Green Business Program (HGBP), a state program that assists and recognizes green behavior in Hawaii. See <http://greenbusiness.hawaii.gov>

they managed food production which, in turn, resulted in the reduction in the amount of food waste delivered to recycling facilities. Whether that is sufficient to explain the decline in DES's food waste data in Figure 1 is unknown as it is inherently difficult to measure the amount of food waste that is prevented by the ordinance.

#### IV Conclusion

Honolulu's mandatory food waste recycling ordinance is based on the honor system. It relies on encouragement, education and county assistance to food establishments to elicit voluntary compliance rather than on coercion with harsh penalties for noncompliance. Moreover, the requirement to comply is waived if a food establishment can show that recycling is costlier than disposal. Despite this "soft" approach to regulation, there is high rate of compliance among large food establishments in Honolulu. The ordinance appears to be a success.

Some might disagree. They would argue that since so few food establishments applied for waivers, those that declared themselves to be in compliance would have recycled their food waste anyway because it cost no more for them to recycle than to dispose of their food waste; otherwise they could have applied for a waiver. For example, the FY2016 DES annual report (p.8) noted that "The vast majority of those businesses impacted by the City's food waste recycling ordinance are continuing to use local piggeries to recycle their food waste." Businesses are doing what they were doing before the ordinance was enacted. Thus, Honolulu's mandatory food waste recycling ordinance is all "smoke-and-mirrors"—i.e. the ordinance pretends that something is being done, when it is not. The problem with this argument is that while it may be able to explain why food waste recycling did not increase, it cannot explain why it decreased right after the ordinance came into effect in 1997. The ordinance, though lacking "teeth",

probably did motivate food establishments to reduce and recycle food waste. Determining how much the ordinance encouraged food establishment to prevent waste is inherently difficult, because food waste not produced cannot be counted.

Honolulu's food waste ordinance created a government recycling program. It is not a source (food waste) reduction program. The city does not have a formal source reduction program other than a website with tips on how to reduce (food and non-food) waste.<sup>34</sup> The City Auditor recommends the city do more to encourage residents "through community education and support of legislative change" to reduce waste at the source.<sup>35</sup> The proposed solution "to support legislation" is rather vague. One option available to lawmakers is to employ an economics (i.e. "market") approach whereby lawmakers adjust the cost of waste disposal by their authority to set the tipping fees at H-POWER. Raising tipping fees (consider it as an environmental surcharge) encourages food establishments to produce less waste at the source and recycle more. Getting away from a regulatory approach also gives food establishments the flexibility to choose how best to manage their food waste. For example, the Kroger grocery chain recently announced its own Zero Hunger, Zero Waste plan to eliminate hunger in its communities and zero waste within its company by 2025.<sup>36</sup>

Some recommend using a "carrot" (rather than a "stick") approach by granting tax incentives (either a tax deduction or a tax credit) to encourage businesses to make food donations

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<sup>34</sup> [http://www.opala.org/solid\\_waste/Waste\\_Prevention.html](http://www.opala.org/solid_waste/Waste_Prevention.html)

<sup>35</sup> Office of the City Auditor, City and County of Honolulu, *Audit of the City's Recycling Program*, Report No. 17-06, October 2017 at [https://www.honolulu.gov/rep/site/oca/oca\\_docs/City\\_Recycling\\_Program\\_Final\\_Report\\_rev.1\\_02717.pdf](https://www.honolulu.gov/rep/site/oca/oca_docs/City_Recycling_Program_Final_Report_rev.1_02717.pdf) p. 25.

<sup>36</sup> See <https://www.thekrogerco.com>

to charities thereby reducing waste.<sup>37</sup> Giving tax incentives for food donations amounts to giving food to the needy and getting taxpayers to pay for it. The IRS and Hawaii State Government currently allow businesses to claim tax deductions to “qualified organizations” for food donations. Raising the current incentives to encourage more food donations simply means that charities and hungry residents will receive more food (which is a good thing), but it also weakens the food establishments’ incentive to produce less food waste at the source knowing that taxpayers will pay for whatever is unsold. Hawaii State law assigns higher priority to source reduction. Perhaps the optimum solution is not a “carrot” or a “stick” solution but that both should be considered depending on the community’s objective.

Finally, the benefit of recycling has to be weighed against its cost. For Honolulu, the net benefit from food waste recycling changed dramatically when H-POWER expansion was completed in 2012 because H-POWER can now process all of Honolulu’s municipal solid waste. Indeed, the City is paying a substantial penalty to H-POWER’s contractor for failure to deliver the agreed upon minimum volume of waste to the waste-to-energy facility. The 2017 audit of the City’s recycling program concluded that, partly because of the guarantee and partly because of declining prices for recyclables, “Solid waste disposal costs can be reduced by diverting recyclable waste that is burnable to the H-POWER waste to energy facility.”<sup>38</sup> That includes

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<sup>37</sup> See, for example, Harvard Food Law and Policy Clinic, October 2016, Section II beginning on page 15.

<sup>38</sup> Office of the City Auditor, City and County of Honolulu, *Audit of the City’s Recycling Program*, Report No. 17-06, October 2017 at [https://www.honolulu.gov/rep/site/oca/oca\\_docs/City\\_Recycling\\_Program\\_Final\\_Report\\_rev.1\\_02717.pdf](https://www.honolulu.gov/rep/site/oca/oca_docs/City_Recycling_Program_Final_Report_rev.1_02717.pdf) In FY2016, the city sold 379,592 megawatt hours of electricity and generated \$66.7 million in revenues. If burnable solid waste including green waste were incinerated rather than recycled, the city could have reduced penalty payments to the H-POWER contractor by \$7 million and generated an additional \$29.5 million in revenue between CY2013 and CY2016.

food waste generated in Honolulu by households and food establishments. There are others in Hawaii who share the same view.<sup>39</sup>

The State of Hawaii (Hawaii Revised Statutes, Chapter 342G) and EPA consider H-POWER as disposal and not recycling.<sup>40</sup> The City maintains that discarded food incinerated to produce energy is not the same as landfilling; it is a form of recycling.<sup>41</sup> The 2006 Waste Characterization Study for the City and County of Honolulu found that of the total volume of food waste received at the Waimanalo Gulch Sanitary Landfill and H-POWER, the landfill received only 1.7% of the total volume and H-POWER received the remaining 98.3%.<sup>42</sup> With the completion of H-POWER expansion in 2012, in theory, no food waste is currently dumped in Honolulu's municipal landfill. Bellemare, et al. argue that "...as long as food does not end up in a landfill, it is not wasted."<sup>43</sup> If keeping food waste out of the landfill is the ultimate goal of waste management, then Honolulu has succeeded although critics of waste-to-energy facilities prefer food waste be composted. All of this may be moot if City lawmakers agree with the

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<sup>39</sup> Lavonne Leong, "Should Honolulu's Recycling Program Go Up in Flames?" *Honolulu*, July 22 2015 at <http://www.honolulumagazine.com/Honolulu-Magazine/July-2015/Should-Honolulus-Recycling-Program-Go-Up-in-Flames/>; also Scott Cooney, "The Economics of Recycling," *Hawaii Business Magazine*, August 6, 2012 at <https://www.hawaiibusiness.com/the-economics-of-recycling-in-hawaii/> For a contrasting view see Ana Baptista, "Garbage in, garbage out: Incinerating trash is not an effective way to protect the climate or reduce waste," *The Conversation*, February 27, 2018 at <https://theconversation.com/garbage-in-garbage-out-incinerating-trash-is-not-an-effective-way-to-protect-the-climate-or-reduce-waste-84182>

<sup>40</sup> State of Hawaii, Department of Health Office of Solid Waste Management, *Report to the Twenty-Eighth Legislature State of Hawaii, 2016*, Honolulu: December 2015, p.17 at [https://health.hawaii.gov/shwb/files/2013/06/2016\\_OSWM\\_Annual\\_Report.pdf](https://health.hawaii.gov/shwb/files/2013/06/2016_OSWM_Annual_Report.pdf)

<sup>41</sup> For the purpose of complying with the food waste ordinance, food establishments cannot send their waste to H-POWER and claim that they are recycling. H-POWER is not a designated recycling facility.

<sup>42</sup> RW Beck, *2006 Waste Characterization Study, City and County of Honolulu*, April 2007 at [http://www.opala.org/pdfs/solid\\_waste/2006%20Final%20Waste%20Characterization%20Report.pdf](http://www.opala.org/pdfs/solid_waste/2006%20Final%20Waste%20Characterization%20Report.pdf) The total volume of food waste received at both sites was around 120,000 tons equal to 12.8% of the 940,187 tons of MSW received.

<sup>43</sup> Bellemare, et al., October 2017, p. 1152.

Auditor that the best way to handle municipal solid waste is not to recycle but to incinerate food waste at H-POWER to produce electricity; then the City's food waste recycling law is unnecessary.

Our assessment of Honolulu's mandatory food waste recycling ordinance did not produce the direct (quantitative) evidence of its effects on food waste recycling. It is encouraging to observe that most food establishments in Honolulu that are required to comply with the ordinance are behaving responsibly, but how much of the touted success is the direct result of the ordinance remains unanswered. Enforcing regulations requires resources, so we cannot claim that the program's benefits, however large, are worth the cost to taxpayers. Nonetheless, other jurisdictions interested in crafting similar law can still gain useful lessons from Honolulu's experience.

First, jurisdictions need to choose between a soft approach to regulation based on encouragement and education, as in Honolulu, versus a tough approach with harsh penalties for noncompliance. A third-approach that some economists may favor does not require regulation; instead it advocates adjusting tipping fees to encourage businesses to reduce, re-use, and recycle unused food. Profit maximizing firms would choose recycling and/or waste prevention instead of disposal given the right economic (dis)incentive. In this approach food establishments have the flexibility to choose their preferred method of handling their food waste rather than be compelled to abide by fixed rules. If regulation is selected, it is mindful that a soft approach reduces the incentive to recycle; however, stringent regulations are likely to be costlier to enforce.

Second, in mandating food waste bans/recycling, jurisdictions need to examine the rationale for granting exemptions/waivers to charitable organizations. Why should places of

worship (churches), the Salvation Army or Meals on Wheels be exempt from recycling when hospitals are not? Hawaii's K-12 public schools (and prisons) are not covered by the Honolulu's food waste ordinance leaving a huge gap in the reduce, reuse and recycle effort statewide. State and federal properties should be encouraged to support local efforts in food waste recovery.

Third, the law should require regular performance evaluation. It should also specify the metrics to be used for program evaluation and require and fund data collection necessary for that evaluation. In Honolulu, the annual report issued by the Department of Environmental Services reports only the response rate to its annual food establishment survey as a measure of success; that measure alone is insufficient.

Fourth, annual reports on enforcement and occasional audits help to inform the public and lawmakers on program achievement, but ultimately it is most important to conduct careful benefit-cost analysis to ascertain whether or not the benefits of the law outweigh its costs.

Harvard's Food Law and Policy Clinic also offers recommendations on regulation design.<sup>44</sup> The Clinic leans against granting waivers which reduce the effectiveness of waste ban/recycling laws. The Clinic also advocates expanding waste bans from large food establishments eventually to all households. It also wants jurisdictions to include the EPA's food recovery hierarchy into waste ban/recycling laws. However, it does not take into consideration what it would cost to implement its suggestions. Our view is that cost must be considered.

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<sup>44</sup> Harvard Food Law and Policy Clinic, October 2016 beginning at page 65.

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## **Appendix**

DON'T DUMP ON HAWAII. SORT IT OUT.



## FOOD WASTE RECYCLING - Tips and Guidelines

### You Can Recycle

Vegetable and Fruit Waste  
Eggs  
Meat and Fish Waste  
Dairy Waste  
Bakery Waste  
Noodles  
Rice  
Cooking Oil (collected & recycled separately)

### You Can't Recycle With Your Food Waste

Plastic  
Plastic bags  
Metal  
Wood  
Glass  
Cardboard  
Large amounts of paper  
Landscape clippings

*Check with your collector to verify acceptable materials.*

- It's The Law
- Going Green Is Good For Business
- Collection Options

### It's The Law

City & County of Honolulu Ordinance, Chapter 9, Article 3.5 requires the owners of food establishments located within the City and County of Honolulu to: 1) arrange and provide for the separate collection of food waste and for its recycling by a recycling facility in the city or 2) separate food waste from all other solid waste generated by the food establishment and deliver the food waste to a recycling facility .

To be in compliance with City law , restaurants, food courts, hotels, grocery stores, food manufacturers/processors and hospitals meeting the following criteria are required to recycle food waste.

- Restaurant that occupies 5,000 square feet or more of floor area and serves 400 or more prepared meals per day
- Food court in a building or shopping center where five or more food establishments are situated and serviced by a common dining area
- Hotel with one or more kitchens, and function rooms
- Grocery store that occupies 18,000 square feet or more of floor area
- Food manufacturer or processor that occupies 5,000 square feet or more of floor area
- Catering establishment that serves or sells 400 or more prepared meals per day
- Hospital that serves 400 or more prepared patient meals per day

*NOTE: Meals per day are based on an annualized average*

### Going Green Is Good For Business

Recycling is not only the law, it is also the smart thing to do. It's good for business and good for the environment. Keeping food waste out of the dumpster lowers disposal costs, and recycling food waste and other materials helps to extend the life of our landfill. We all need to work together to reduce waste and promote sustainable waste management.

768-3200 opala.org

DEPARTMENT OF ENVIRONMENTAL SERVICES  
CITY AND COUNTY OF HONOLULU

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MAYOR

REFUSE DIVISION  
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LORI M.K. KAHIKINA, P.E.  
DIRECTOR  
MANUEL S. LANUEVO, P.E., LEED AP  
CHIEF

**FOOD WASTE RECYCLING COMPLIANCE FORM 2018**

January 29, 2018

**Business Name**  
**Business Address**  
**City, State Zip Code**

Revised Ordinance of City & County of Honolulu, Sec. 9-3.5 requires large restaurants, grocery stores, hotels, hospitals, food courts and food manufacturers and processors to recycle food waste. In so doing, these establishments shall not place food waste in the same containers as those holding refuse. City representatives conduct random inspections of businesses affected by this law.

To verify your compliance with this law, we must obtain information about your current food waste recycling program. Please complete this form, including signature, and **return by March 16, 2018**.

**NEW:** Complete this Form Online at [www.honolulu.gov/opala/compliance](http://www.honolulu.gov/opala/compliance).

You may also mail form by folding in thirds, fax to 768-3434, or scan-email to [miya.devoogd@honolulu.gov](mailto:miya.devoogd@honolulu.gov).

**Company and Address** (if different than above): \_\_\_\_\_

**Contact person:** \_\_\_\_\_ **Title:** \_\_\_\_\_

**Phone number:** \_\_\_\_\_ **Email:** \_\_\_\_\_

Check appropriate box:

Business is in **compliance** – food waste is not disposed with refuse.  
Approximate quantity of food waste recycled **per month**: tons \_\_\_\_\_ **or** gallons \_\_\_\_\_  
Recycling Company: \_\_\_\_\_

Business is **not** in compliance and needs assistance.  
Explain: \_\_\_\_\_

Business is not subject to this ordinance. Reason:  
 Restaurant that serves less than 400 meals per day  
 Restaurant occupies less than 5,000 square feet  
 Market that has less than 18,000 square feet  
 Food manufacturer or processor that occupies less than 5000 square feet  
 Other – reason: \_\_\_\_\_

If you have questions or need assistance, contact Miya DeVoogd at [miya.devoogd@honolulu.gov](mailto:miya.devoogd@honolulu.gov) or 768-3448. Recycling information is also available online at [opala.org](http://opala.org).

**If this form is not completed online or returned, an inspector will be dispatched to your establishment to verify compliance. Businesses not in compliance are in violation of City ordinance and may be subject to penalties.**

I certify that the foregoing statements are correct to the best of my knowledge.

\_\_\_\_\_  
Name (print)

\_\_\_\_\_  
Signature

Check one:  
 Owner  General Manager

\_\_\_\_\_  
Date

Table A-1  
Food Waste Recycling in Honolulu: CY1993-CY2017

Year	Food Waste (Tons)
1993	35,200
1994	48,400
1995	50,300
1996	50,300
1997	52,500
1998	49,500
1999	36,500
2000	36,500
2001	47,810
2002	44,350
2003	48,222
2004	46,303
2005	32,447
2006	36,647
2007	28,087
2008	29,933
2009	25,736
2010	26,677
2011	25,228
2012	25,845
2013	38,466
2014	39,287
2015	40,188
2016	42,109
2017	43,105

Source: Food waste data from City and County of Honolulu, Department of Environmental Services, *Recycling and Landfill Diversion* at [http://www.opala.org/solid\\_waste/archive/facts2.html](http://www.opala.org/solid_waste/archive/facts2.html)