JOSH GREEN, M.D.
GOVERNOR

KEITH T. HAYASHI
SUPERINTENDENT

STATE OF HAWAIʻI
DEPARTMENT OF EDUCATION
KA ʻOIHANA HOʻONAʻAUAO
P.O. BOX 2360
HONOLULU, HAWAIʻI 96804

OFFICE OF THE SUPERINTENDENT

February 28, 2024

The Honorable Ronald D. Kouchi, President
and Members of the Senate
State Capitol, Room 409
Honolulu, Hawaii 96813

The Honorable Scott K. Saiki, Speaker
and Members of the House of Representatives
State Capitol, Room 431
Honolulu, Hawaii 96813

Re: Hawaii State Department of Education Annual Report on Composting Pilot Project Working Group

Dear President Kouchi, Speaker Saiki, and Members of the Legislature:

For your information and consideration, a copy of the annual Composting Pilot Project Working Group report is being transmitted, pursuant to Act 207, Session Laws of Hawaii 2018. In accordance with Section 93-16, Hawaii Revised Statutes, the report may also be viewed electronically at*: https://www.hawaiipublicschools.org/VisionForSuccess/SchoolDataAndReports/Pages/Legislative-reports.aspx*

Should you have any questions, please contact Ken Kakesako, Director of the Policy, Innovation, Planning and Evaluation Branch, Office of Strategy, Innovation and Performance, via email at *ken.kakesako@k12.hi.us* or by phone at (808) 282-3430.

Sincerely,

Keith T. Hayashi
Superintendent

KTH:lb
Attachment

c: Legislative Reference Bureau
Hawaii State Public Library System
University of Hawaii
Deputy Superintendent of Operations
Office of Facilities and Operations

State of Hawaii
Department of Education

Annual Report on Composting Pilot Project Working Group

December 2023

Act 207, Session Laws of Hawaii 2018, requires the composting pilot project working group to annually report on its findings and recommendations.

School Composting Pilot Project

Act 207, Session Laws of Hawaii 2018, established a composting grant pilot working group and provided funding for a grant program. Subsequently, since 2019, the Hawaii State Department of Education (Department) Hawaii School Composting Grant Program administered a grant pilot for composting at public schools.

Status of Composting Grant Program

The Department solicited applications for supplies, equipment, and technical guidance support. A total of 21 schools received support from the program (see Table 1 for list of programs; see Appendix for funding). The program schools received personalized recommendations from composting experts for their campus based on the schools' access to labor, land area, school population, administrative support, teacher engagement, and student interest. These schools are able to apply to the program for funds to cover supplies and equipment based on the scale and scope of their new or existing composting and organics diversion systems. Salaries were not eligible for funding due to restrictions in Department budgetary rules, so staff time to manage each campus program has to be funded directly by the school's external funding sources, or donated as volunteer labor. Following the COVID-19 pandemic, a number of school composting efforts took lower priority and were discontinued. However, in 2023, many of the program schools are restarting their cafeteria food scrap collection and composting systems.

Table 1. Completed and Pending Program Applications to Date, November 2023

School	Composting and Bioconversion Strategies in Use
Castle High School	Green Waste, Food Waste
Fort Shafter Elementary	Pending: Green Waste, Food Waste Static Pile Composting, Vermicomposting
Haiku Elementary School	Green Waste, Food Waste Static Pile Composting, Vermicomposting
Hauula Elementary School	Pending: Green Waste, Food waste Static Pile Composting
Honaunau Elementary School	Green Waste, Food Waste, Vermiculture, Bokashi/Microorganisms, Vermicast Tea
Jefferson Elementary School	Green Waste, Food Waste
Kaimuki Middle School	Green Waste, Food Waste, Vermiculture, Vermicast Tea
Kaiser High School	Green Waste, Food Waste, Vermiculture
Kamaile Academy Public Charter School	Green Waste
Ka Waihona o Ka Naauao (Public Charter School)	Pending: Green Waste, Food Waste Static Pile Composting
Mililani High School	Pending: Green Waste, Food Waste In-Vessel Composting

Sunset Beach Elementary School	Pending: Green Waste, Food Waste Static Pile Composting, Vermicomposting
Waianae Intermediate School	Green Waste
Waikiki Elementary School	Green Waste, Food Waste, Vermiculture, Bokashi/Microorganisms, Vermicast Tea
Waikoloa Elementary & Middle School	Green Waste, Food Waste
Waipahu Intermediate School	Green Waste, Food Waste, Vermiculture, Bokashi/Microorganisms, Vermicast Tea, L.A.B production from recovered milk
Windward Zero Waste School Hui	
Enchanted Lake Elementary School	Green Waste, Food Waste, Vermiculture
Kaelepulu Elementary School	Green Waste, Food Waste, Vermiculture
Kailua Intermediate School	Green Waste, Food Waste, Vermiculture
Kainalu Elementary School	Green Waste, Food Waste, Vermiculture, Vermicast Tea
Kaohao School (Public Charter School)	Green Waste, Food Waste, Vermiculture, Bokashi/Microorganisms, Vermicast Tea

The program has shown incredible potential for its ability to foster campus composting, engage students in hands-on resource conservation, and demonstrate the financial and operational benefits to the Department in minimizing waste streams for disposal. Additionally, this program can serve the essential function of aggregating existing work and resources of multiple stakeholders who encourage and support school composting and waste reduction. The School Garden Hui, Farm to School Network, and School Garden Circle are such organizations that have created resources, curriculum and school guidance that aligns with the mission of the program. Creating school compost from diverted organic materials creates aligned learning opportunities for students and supports healthy soils needed by school gardens. The program also aligns with these organizations' goals of mapping existing school gardens and composting existing and future plans. Opportunities exist in these circumstances to support the development of onsite and offsite composting that the program can help achieve, in partnership with aligned organizations.

The program team will continue to support Department schools in their composting efforts, and recommends that additional funds be allocated to the program to service the highest number of schools, as well as aid the State of Hawaii in achieving its codified waste reduction and sustainability goals.

The following sections summarize efforts undertaken by the program in 2023 in support of school composting, as well as highlighting schools that are doing great work in their own

composting projects that are not supported by the grant. Additionally, the report outlines the schools receiving support and equipment, including updates since the 2022 legislative report.

Development of Standardized Campus Composting Guidelines and Agreements:
In an effort to create uniform standards and expectations for Department schools interested in food scrap recovery and campus composting, program advisors developed a proposed classification system for organic resource recovery and campus composting strategies that interested schools may consider undertaking on their campuses. Currently, these drafted guidelines and resources are in review and pending approval.

1) Drafting of school organics diversion tier system by scale and scope that could be refined and formatted into a decision tree for determining which program tier would work best for each school. These tiers can be broken down between Education/Demonstration priority and Diversion priority in which most or all of a school's compostable material is managed on-campus. These tier strategies range from training students to separate compostable materials for educational purposes only with no processing (Tier 1), organics collection for third-party pickup and offsite processing (piggeries or composting operations) (Tier 2), 1-2 on-campus composting piles, bokashi buckets, and/or vermicomposting systems (Tier 3) or small-scale in-vessel composting machines that accelerate the composting process, to the Diversion priority (Tier 4) which would be a school aiming to collect and manage all of their food scraps and other compostable materials on-campus through compost piles, in-vessel composting machines, bokashi, or vermicomposting.
2) Drafting of operational guidelines for each proposed tier, such as recommendations on cafeteria sorting station strategies, siting of campus composting systems, projected labor requirements, compost system recipes and maintenance, community outreach strategies, pathogen testing, product distribution, and agreements with the Office of Facilities and Operations.
3) Research of cost and budgeting considerations by tier and composting system/technology - and how many schools could be supported at each tier with remaining program funds.

Grant Program Research and Resource Development:
1) Drafting of Memorandum of Understanding between Office of Facilities and Operations and the school wishing to pursue diversion-scale programs.
2) Research on containerized (in-vessel) technologies and their applicability on school campuses of various sizes, and potential for on-island design and construction by school stakeholders including students. In particular, the Green Mountain Technologies (GMT) Intermodal Earth Flow for Diversion-scale strategies, GMT Earth Cubes for small-scale in-vessel composting programs, and open-source plans for automated rotary drum in-vessel composting machines.
3) Research on existing guides and curriculum available for school composting program development and student education - including conversation with School Garden Hui and School Garden Circle teams on opportunities to utilize their existing curriculum/resources and strategies for tying in school composting goals to school garden initiatives.
4) Drafting a new outreach onboarding plan for distribution statewide to ensure schools are aware of the availability of funds, resources, and guidance from the program.

5) Development of cafeteria waste audit and reporting protocols for new program schools.
6) Planning for statewide school composting program mapping initiative in collaboration with the School Garden Hui, Farm to School Hui, and School Garden Circle, including initial research on contact lists for individual school cafeteria managers and garden coordinators.

School Reports: Examples of Programs Supported by Grants

Several of the following updates have been provided by the school directly. Others have been summarized based on communications with the school leads and in-person visits to the school campus.

Castle High School
Castle High School maintains a modest composting pile system that receives some food scraps generated on campus, combined with mulch and other campus green wastes. Cured and harvested composting product is used on campus as a soil amendment in the Food Systems and natural resources program.

Fort Shafter Elementary School
Fort Shafter Elementary School became a program school in the first quarter of 2023, with the aim of determining the most appropriate composting strategy for their campus, which has limited space. The program worked with the school to conduct a cafeteria waste audit as a first step in gauging capacity, and presented results to program leads and administration. Recommendations were for beginning a demonstration-scale compost pile system; the school is considering next steps.

Haiku Elementary School
Haiku Elementary School joined the program in Summer 2023, with the goal of refreshing and rebuilding the school's vermicomposting and compost pile systems with new bay building materials and expanded capacity, as well as a high-quality lateral flow vermicomposting system with unique features that will better suit the students' access and harvesting activities. Haiku Elementary School is estimating a 30-50 pounds a week diversion of food scraps and offsite and onsite green wastes.

Honaunau Elementary School
Honaunau Elementary School has continued its garden renovation and building out the garden infrastructure, including developing curriculum around soil building and resource conservation. It has restarted its modest composting program with garden vegetative scraps and some school food scraps combined with campus green wastes.

Jefferson Elementary School
Jefferson Elementary School is diverting school lunch food scraps and campus green waste to campus compost piles as a S.T.E.M. project-based learning initiative. This operation is run by six students, two community gardeners, and one school teacher, and has diverted over 1,000 pounds of food scraps from disposal in Spring 2023. This is an average of thirteen pounds a day with collection occurring on 57% of school days, and 33% of the school's classes participating. The

compost program estimates that they have produced enough compost to save gardeners over $500 worth of soil amendment purchased at a store.

Kaiser High School
Teachers are once-again reviving the campus composting program to run in conjunction with the school's agricultural activities and gardens. They have championed the campus composting program encouraging their students to assist with reestablishing six static thermal piles to process the food scraps collected from classroom activities and cafeteria lunch prep scraps. Students and teachers have utilized agriculture and botany class time to maintain the static piles with aeration, watering, and temperature monitoring to ensure proper composting and pathogen reduction.

Mililani High School
Mililani High School has begun preparations and research into a composting program capable of processing all food scraps and green waste generated on-campus utilizing an in-vessel composting machine like the EarthFlow. The machine is designed to process up to 1,200 pounds a day of food scraps and other compostable materials (mulch, landscaping greens, plastic-free fiber products). This would be the first campus composting program utilizing this strategy, and could potentially serve as a model for other schools interested in a diversion-scale program on their campuses. The program has assisted in preliminary conversations on site layouts, compliance, and program development. Mililani High School has not completed an application to the program at this time, but will be eligible to receive funds for relevant supplies upon program acceptance.

Sunset Beach Elementary School
Sunset Beach Elementary School has expressed interest in joining the program, specifically to revitalize the compost bays and vermicomposting systems, Additionally, Sunset Beach Elementary School has expressed interest in investigating the feasibility of designing and constructing Coconut Rhinoceros Beetle (CRB) proof mulch and compost containers approved by the CRB prevention agencies to create an alternative to campuses being forced to remove all mulch materials onsite if infested. This is a project that could be highly relevant to school garden and campus composting programs in Hawaii, and the program looks forward to their application.

Waianae High School
Waianae High School maintains green waste only compost piles on their campus. The program will begin assisting their program in locating a more consistent source of mulch to continue operations. No campus food waste is added to the compost at this time.

Waikiki Elementary School
Waikiki Elementary School has been building back its food scrap and green waste composting pile program in 2023, and will continue the revitalization in 2024 with new oversight and planned diversion of compostable materials generated on campus.

Waikoloa Elementary & Intermediate School
The school is using three kinds of composting on a small-scale: food, mulch, and worms. Their students are engaged and enjoying the program. The school collects a minimal amount (0.25 to 1 pound) of lunch scraps on Wednesdays for their worms in their 25-gallon size food compost bin.

The school food waste goes to a local piggery. In addition, Waikoloa is also offering a composting 201 session.

Waipahu Intermediate School
In 2023, Waipahu Intermediate's Future Farmers of America (FFA) program teams continued to investigate diverse opportunities to compost campus organics, and experimented with turning wasted milk into Lactic Acid Bacteria (LAB) to be used as a soil health builder. LAB regulates soil organic matter and the biochemical cycle, detoxifies hazardous chemicals, and enhances plant health. The school also successfully installed two Earth Cubes from GMT (small-scale, in-vessel system) to study the processes of accelerated composting princesses and the "recipes" of various compostable materials to create the best process and product. While the program did scale-back mid-year initially to devote more energy to developing the agribusiness land lab and the community garden space on-campus, composting operations are beginning to ramp up again.

Waipahu Intermediate School started two different composting systems in October to host the entire 2nd grade class of 155 students from August Ahrens Elementary School in November. The FFA team will be doing rotation stations to teach 2nd graders about different types of composting, environmental impact, and understanding how waste streams work on Oahu. Ultimately, with many projects ongoing in support of soil health, Waipahu Intermediate continues to work toward its goal of eventually becoming a zero-waste school.

Windward Zero Waste School Hui (WZWSH)
The WZWSH schools are all located on the windward side of Oahu and include: Enchanted Lake Elementary School, Kaelepulu Elementary School, Kailua Intermediate School, Kainalu Elementary School, Kaohao School. These schools were host to an exceptional diversion and composting program that trained students to separate their cafeteria milk waste and food scraps, that were then managed on-site by a professional team of Resource Recovery Specialists via compost piles, and vermicomposting. All grade levels participated and contributed to the program by preparing compostable paper/fiber materials, maintaining piles and worm pipelines (with supervision), and harvesting and sifting finished compost. WZWSH facilitated diversion-scale composting programs at each of the schools from 2018 to 2023. While these programs did operate through the summer of 2023, they are now suspended and working through next steps for the Hui and for the schools themselves who wish to continue diverting waste to composting. Collectively, these schools were able to divert and compost over 65,000 pounds (32+ tons) of resources over this reporting period, and over 550,000 pounds (275+ tons) between 2018 and 2023.

As of October 2023, these participating schools will receive Pour Away systems to manage milk waste. Additionally, these schools will be receiving one to two GMT Earth Cubes in 2024 to allow for a smaller scale of composting to continue through an in-vessel machine instead of static aerobic piles. These pieces of equipment will be purchased through the use of program funding.

School Reports: Examples of Other Programs (Not Grant-Funded)
There are many Department schools across the state who are not formally part of the program, but are doing excellent work on their campuses and in their communities through resource

recovery, composting, and Bokashi. Highlights below for the Scrappahz Union 96792 and West Maui Green Cycle.

Nanakuli High and Intermediate School and the Scrappahz Union 96792
Outside of some early guidance and collaborative conversations with the grant program advisors, Nanakuli High and Intermediate school's campus and community program is independently funded and run by students and teacher advisors.

The program is getting increased attention. For example, an article in the Ko Olina Press (koolina.com/press/eh-like-scrap/) describes the program as follows:

> On Oahu's West Side, a group of eco-minded high school students are bucking the long-running local stereotype that teenagers from this part of the island just want to "scrap," or start fights. Guided by Michelle Pieper, Nanakuli High School's Hawaiian language teacher, Scrappahz Union 96792 is not only diverting cardboard from landfills and leading the first community compost effort on the West Side, but also teaching waste diversion techniques to others. "Yeah, we do wanna scrap," Pieper says. "We want your food scraps, your cardboard scraps, whatever you got."
>
> Today, all Nanakuli High School students who enroll in the Hawaiian language elective - around 120 students currently - make bokashi compost, repurpose cardboard, and study zero-waste practices. The kids take turns collecting food scraps from the cafeteria during their lunch breaks and add the scraps to bokashi buckets back in the classroom. They sprinkle the bokashi mixture - water, molasses, wheat bran, and microorganisms - between two-inch layers of food, which incites fermentation. Then, the buckets full of nutrient-dense compost are transferred to the outdoor compost bin or given away to students of Hoopulapula Academy, an Aina based (land-based) education program on the shared campus of Nanakuli High and Intermediate School. When there's cardboard on hand, students strip any tape and staples, feed the scraps into the shredder, and fashion biodegradable planters and packing materials from the resulting corrugated sheets."
>
> One weekend each month, Scrappahz Union 96792 hosts Sustainable Saturdays, a cardboard-shredding day held on Nanakuli High School's campus, where the public can exchange cardboard scraps for CSA (Community Supported Agriculture) boxes. Farmers donate fresh produce and other food items for the boxes and, in turn, receive cardboard sheeting - useful for trapping moisture under plants and fruit trees and lining rabbit and chicken beds. In December 2022 and 2023, Scrappahz Union 96792 won $25,000 in the American Savings Bank KeikiCo business plan contest, enabling the crew to expand their outreach efforts - and help other schools, including Nanakuli Elementary, Kapolei High School's Hoola Leadership Academy, and Hawaii School for the Deaf and the Blind, start their own zero-waste programs.

In addition to the impressive diversion efforts of the Scrappahz Union 96792, Nanakuli High School and Intermediate's new cafeteria manager has demonstrated the positive impacts of source reduction via a revamped school cafeteria menu plan that has doubled student meal participation and reduced food scrap generation by 80 pounds per month. Nanakuli High School

and Intermediate School is a model for upstream and downstream conservation and management practices for organic materials that could be replicated throughout the Department of Education.

West Maui Green Cycle School Composting
West Maui Green Cycle has spent several years supporting the regions' schools by building up campus composting programs using aerobic compost piles fed by cafeteria food scraps and milk. The goal is to rescue invaluable organic resources from the maxed-out Maui landfills and generate compost products that can rebuild soil health. The program operated on four West Maui school campuses, with Lahaina Intermediate as the flagship operation. Any compostable collected on campuses like fiber trays and other compostable products that could not be managed on-campus would be transported to West Maui Green Cycle to process in their in-vessel systems. In 2023, this program successfully diverted over 60,000 pounds of food from the landfill, bringing the Program total to over 80,000 pounds of food waste diverted and composted. With the devastation caused by the August 8th wildfires, this Program is paused while West Maui heals, recovers, and looks to rebuild.

Status of School Composting Pilot Project Work Group
The School Composting Pilot Project Work Group was initially convened on November 13, 2019, at a planning charrette. The current makeup of the working group is provided in Table 2.

Table 2. School Composting Pilot Project Work Group, November 2023

Name	Organization	Office	Title
Alan Gottlieb			Community Volunteer
Allyn Tam	Hawaii State Department of Education	Office of Facilities and Operations/Auxiliary Services Branch	Energy Conservation Coordinator
Bob Leinau			Community Volunteer
Brian Miyamoto	Hawaii Farm Bureau Federation		Executive Director
Jay Bost	University of Hawaii	GoFarms Hawaii, Windward Oahu Program	Farm Coach and Site Manager
Jennifer Milholen	Efficiency First, LLC		School Composting Consultant
Jeremy Koki	Hawaii State Department of Education	Office of Facilities and Operations/Auxiliary Services Branch	Executive Assistant (TA)
Jessie Hay	Hawaii Department of Health	Solid Hazardous Waste	Environmental Engineer
Kalani Matsumura	University of Hawaii at Manoa	College of Tropical Agriculture and Human Resources	Extension Agent

Lauren Kaupp	Hawaii State Department of Education	Office of Curriculum and Instructional Design	Education Specialist, Science
Lene Ichinotsubo	Hawaii Department of Health	Solid Hazardous Waste	Environmental Engineer
Miles Yoshioka			Community Volunteer
Natalie McKinney	Kokua Hawaii Foundation		Chief Program Officer
Randall Tanaka	Hawaii State Department of Education	Office of Facilities and Operations	Assistant Superintendent
Theodore J.K. Radovich, Ph.D.	University of Hawaii at Manoa	Department of Tropical Plant and Soil Sciences	Extension Specialist, Researcher and Professor
Todd Low	Hawaii Department of Agriculture	Aquaculture Development	Special Projects

Appendix. Funds spent on Program School Equipment and Supplies, as of November 2023

School	Composting Supplies & Equipment Delivered	Total
Castle High School	Supplies delivered	$747.00
Fort Shafter Elementary	N/A, food waste audit only	$0.00
Haiku Elementary	Supplies & equipment delivered	$450.00
Hauula Elementary	N/A	$0.00
Honaunau Elementary School	Supplies delivered	$4,866.00
Jefferson Elementary School	Supplies delivered	$1,715.00
Kaimuki Middle School	Supplies delivered	$3,430.00
Kaiser High School	Supplies delivered	$1,643.00
Kamaile Academy PCS	Supplies delivered	$1,494.00
Ka Waihona o Ka Naauao	N/A	$0.00
Mililani High School	N/A	$0.00
Sunset Beach Elementary School	N/A	$0.00
Waianae Intermediate School	No supplies ordered at this time	$0.00
Waikiki Elementary School	Supplies delivered	$3,011.00
Waikoloa Elementary & Middle School	Supplies delivered	$2,676.00
Waipahu Intermediate School	Supplies delivered	$1,181.00
Windward Zero Waste School Hui Members		
Enchanted Lake Elementary School	Share chipper/Shredder, Pour away mild collection systems	$2,513.00
Kaelepulu Elementary School	Share chipper/Shredder, Pour away mild collection systems	$2,513.00
Kailua Intermediate School	Share chipper/Shredder, Pour away mild collection systems	$2,513.00
Kainalu Elementary School	Share chipper/Shredder, Pour	$3,067.00
Kaohao School	Share chipper/Shredder, Pour away milk collection systems	$2,513.00
GRAND TOTAL		**$34,332.00**