Bulk Milk at King County Schools: Gateway to Opportunity

zero waste washington

NORTHWEST FOOD ALLIANCE

ilumina consulting

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All photos in report are from Zero Waste Washington, Northwest Food Alliance, and ilumina consulting, unless otherwise noted.

January 2026

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Executive Summary

Zero Waste Washington implemented Reviving Hydration, a bulk milk project funded by King County's Re+ Circular Economy grant, in 2025. This project aimed to reduce waste from milk cartons and water bottles by installing bulk milk dispensers and water refill stations in schools in King County, Washington.

Implementation

Bulk Milk

- 18 dispensers
- 6+ schools
- 3 districts

Water Refill Stations

- 6 dispensers
- 5 schools
- 4 districts

Preliminary Impact

	Number Diverted to Date	Weight (Lbs)	Anticipated Number Diverted 2025-2026*	Weight (Lbs)
Milk Cartons	**68,299**	**1,835.6**	**202,389**	**5,442.1**
Water Bottles	**6,018**	**122.7**	**8,044**	**164.0**

**2025-2026 school year*

Key Lessons Learned

Discovery Phase

- Include Matrix of Stakeholders from the start
- Assess district and school readiness thoroughly
- Select equipment informed by labor and workflow
- Create opportunities for student engagement

Implementation Phase

- Provide comprehensive training for staff
- Identify and address staff needs
- Assess operations for workflow adaptations
- Provide onsite support during implementation

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Introduction

Background

The idea for this pilot project originated during the 2022–23 school year through Zero Waste Washington's statewide Workgroup on Sustainable School Cafeterias when members identified ½-pint milk cartons as a major component of waste in their schools. This project aimed to reduce this waste while enhancing students' environmental literacy and supporting cost-effective food service operations.

The project evolved as the team learned from school staff and infrastructure partners. For example, the statewide workgroup initially envisioned a closed-loop, dairy-to-district model in which milk would be delivered to schools in reusable, stainless steel canisters and returned to dairies for cleaning, sanitizing, and refilling. As the project launched, it became clear that implementing such a system would require a longer-term, multi-year effort, because adequately designed canisters were not available and the dairies lacked needed infrastructure for sanitizing and filling canisters. The team quickly pivoted to the use of bagged milk as a more immediately feasible solution.

The project also addressed waste from single-use plastic water bottles through the installation of water refill stations.

Finally, a Learning Cohort was convened by the team for the duration of the project. The cohort consisted of professionals committed to advancing sustainability and reducing waste in school lunchrooms. The cohort collaborated in identifying best practices emerging from the pilot and in developing strategies for broader implementation.

Although the grant was awarded in October 2024, contract delays led to a compressed timeline. The team conducted preliminary planning while the contract was pending. The contract was signed in March 2025, and the team began project activities. They approached each phase with flexibility and a solution-minded approach. This led to multiple pivots during the project, with an eye toward sustainable change.

Data Collection Methods

The team designed the evaluation from the beginning of the project, using a mixed methods approach, collecting data from multiple sources. Data collection methods included the following:

- Waste Audits
- District School-level Data
- Surveys
- Interviews
- Project Records

Data from surveys and interviews are woven throughout this report and were used to inform the key lessons summarized for each section.

Implementation Summary

By the end of the grant funding period, the team had identified seven schools in three districts for bulk milk implementation. The three districts are Federal Way Public Schools (FWPS), Tukwila School District (TSD), and Renton School District (RSD). Five of the seven schools implemented by December 31, 2025; a sixth implemented in January 2026, and a seventh school opted out at the last minute. FWPS is identifying another school to take its place.

Eighteen milk dispensers were purchased. Sixteen were installed at six schools in three districts. One will be installed at the seventh school. FWPS also has a backup dispenser at the district for the inevitable maintenance needs. Additionally, six water refill stations were installed in five schools across four districts including FWPS, TSD, Auburn School District, and Lake Washington School District. Please see Appendix 1 for list of equipment purchased, with links.

Bulk Milk Dispensers Installed

Federal Way Public Schools
- Star Lake Elementary
- Panther Lake Elementary
- Evergreen Middle School
- TAF@Saghalie
- TBD

Tukwila School District
- Showalter Middle School

Renton School District
- Hazelwood Elementary

Water Refill Stations Installed

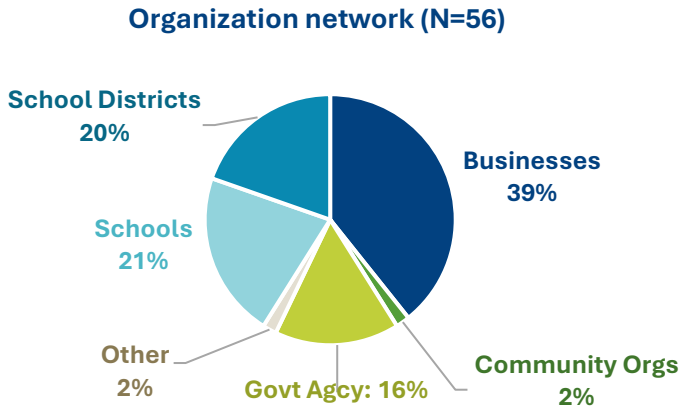
Federal Way Public Schools
- Star Lake Elementary

Auburn School District
- Lakeland Hills Elementary x2
- Mt. Baker Middle School

Lake Washington School District
- Lake Washington High School

Tukwila School District
- Showalter Middle School

During the course of the project, the team networked with 56 different organizations: businesses, schools, school districts, government agencies, and community organizations. Some agencies became collaborative partners, schools or districts implementing bulk milk, and businesses providing supplies.

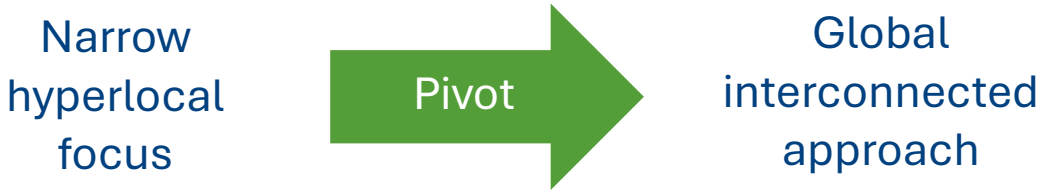


Increased Capacity

District staff at FWPS dedicated considerable time and resources to the project. The district's Nutrition Services and Maintenance staff worked closely with the project team to plan, assess, and implement the bulk milk project in four schools. Although the fifth school opted out, FWPS is well-placed to implement at one additional school after the pilot project ends given their high level of commitment and support, and increased capacity.

Discovery Phase

The team spent the first few months planning, networking with potential project partners, starting the Learning Cohort, and researching equipment options. Originally the plan was to focus on implementing with interested schools and sourcing equipment and supplies locally as much as possible. It became clear, however, that to provide the most efficient solutions, the team would need to pivot and broaden the approach to look at a variety of equipment options and to assess readiness across interconnected dimensions at interested schools before determining if they would be a good fit for implementation.



Readiness

As schools were identified as potential sites, the team focused on assessing their readiness. It was crucial to understand if the full range of key stakeholders were on board, as well as if the site made sense logistically. For example, if a school required a large, expensive plumbing retrofit to add a dishwasher to accommodate washing durable cups, they were not in a state of readiness that would work for this project's budget or timeline. In some cases, if a school was not a good fit for the project, the team was able to provide funding for a water refill station to help them reduce plastic waste. Areas of readiness examined by the team included the following:

- District buy-in
- School and staff buy-in
- Operational and logistical readiness

This process included identifying which dispenser equipment would be the best fit for the school, which cups and/or trays they preferred, and if additional tables, carts, and other supplementary equipment were needed. Working with school staff, for example, the team supported reconfiguration of the student lines from one to two lines, which in some cases, necessitated providing a second salad bar and multiple dispensers. Schools, with support from the team, also worked with their milk suppliers to ensure that bagged milk could be available for the school when needed for implementation.

Matrix of Stakeholders

Through discussions with interested schools, the team discovered quickly that for a project to move smoothly through planning, having a matrix of stakeholders on board was crucial (including attending key planning meetings). Follow-up interviews supported this finding. Several staff who were interviewed emphasized that this project cut across multiple departments at the school, and so having those teams involved in the change process increased the likelihood of success. FWPS, for example, implemented in four schools (and has the equipment to implement in a fifth). Their district maintenance department played a critical role in sourcing, modifying, and installing equipment. Because of their place at the district level, they were able to help problem-solve by swapping equipment between schools to stretch project funds further.

> "Having nutritional staff, custodial staff, and a principal who are all on board, solution-oriented, and open-minded is critical to implementing successfully."
>
> - Staff Member

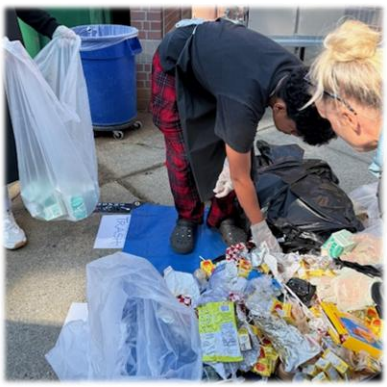
School leadership, school and district nutrition services staff, and maintenance and custodial staff should all be engaged from the beginning. Other stakeholders that should be included in planning and implementation include teachers, students, finance/purchasing, and the district's milk supplier.

Figure 1. Matrix of Stakeholders

Student Engagement

Students are not just recipients; they are also participants. Several schools included students and existing green teams in the planning and implementation of the project. We found that there are opportunities for students to be hands-on in the process, as well as opportunities for teachers to leverage this project for learning beyond milk: climate change and other science lessons, nutrition, supply chain logistics, art, marketing, and math.

Several schools encouraged students to create more student-relevant signs for waste stations. One engaged students in conducting waste audits to better understand the solid waste burden at the school. One school used the opportunity to teach students about data collection. The team conducted a data workshop with the students to prepare them for high-quality data collection and analysis.



Key Lessons

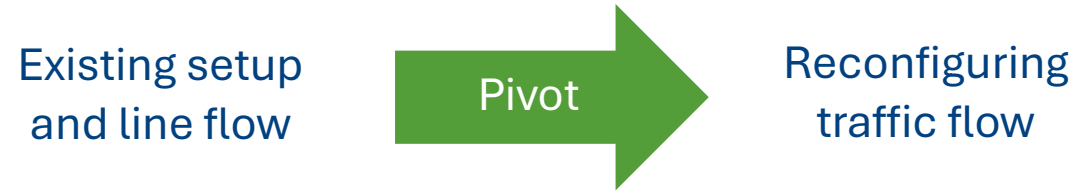
The following are key lessons learned during the Discovery Phase:

- Include Matrix of Stakeholders from the start
- Assess district and school readiness thoroughly
- Select equipment informed by labor and workflow
- Create opportunities for student engagement

> "[Students are] gaining some interest and insight and environmental stewardship and across all disciplines."
>
> - Staff Member

Implementation Phase

The implementation phase included three key components: training, workflow adaptations, and onsite support during project launch at each school. The team also made another pivot at this stage. Originally, the thought was that equipment would be able to slide into the existing setup at the schools. Concerns about bottlenecks in the student line, however, led to a focus on overall cafeteria efficiency. This resulted in reconfigured traffic flow in most schools to speed up how students moved through the lunch line, including adding second lines.



Training

After equipment was delivered and set up at the schools, the team conducted onsite training with the school staff so everyone would be familiar with the equipment and the process on launch day. All interviewed staff felt that the training was comprehensive and prepared them well for implementation.

Some staff were missing from the training session at the first school to implement, and this led to return visits and repeated training - a time-intensive task.

"But there is a little bit of logistics involved with the cups getting them out and then getting them stacked right so that they can be brought back in and put into the dishwasher. So, a little, just different logistics, I think. I don't know if it's a lot more work. I think it's more just new logistics and just trying to figure that out."

- Staff Member

Workflow Adaptations

The implementation process involved several on-the-spot adjustments and highlighted the need for adaptability. During a follow-up interview, one staff member expressed that although implementation was fairly smooth, there were small things that popped up that required procedure adjustment, new equipment, and reconfiguration. This emphasized the need for staff to approach project launch with solution-oriented attitude. Two key examples are described below.

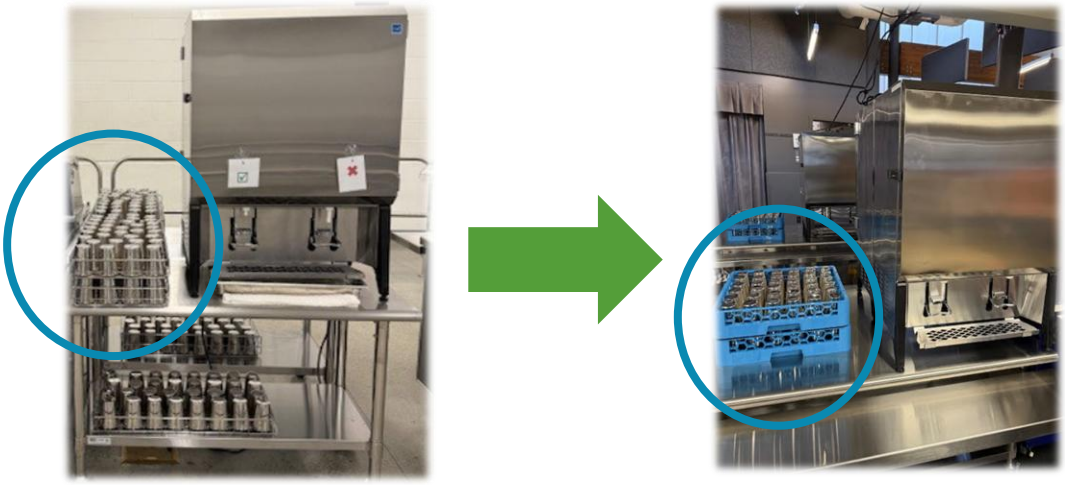
Solving the Right Problem

During the Discovery Phase, the team talked with staff at several districts throughout the state who had previously tried and abandoned bulk milk. One of the main barriers cited was the weight of 5-gallon bags, and the impact on staff when lifting and carrying the bags. As a result, the team originally planned to use 2.5-gallon bags to address the weight problem. Sourcing those bags, however, proved challenging as the dairies did not have them readily available. The team brainstormed new solutions. Rather than reducing the size of the bag from 5-gallons, a compact hydraulic lift was identified to do the lifting for the staff. As a result, staff could use the lift to move the bags out of the refrigerator, over to the dispensers, and to the right height to go into the dispensers, with ease.

Streamlining to Save Time

During follow-up interviews and surveys, some staff members note that implementing bulk milk leads to additional work in comparison to handling milk cartons. One staff person said, “I don’t know if it’s a lot more work. I think it’s more just new logistics and just trying to figure that out.” To address some of these additional tasks, the team looked for opportunities to streamline. For example, the team spent considerable time modifying waste stations to make them as efficient as possible for durable cup washing, and also to improve composting and reduce contamination.

When one school first launched with dispensers (see photo below), they used stainless steel racks to hold the cups when they set them next to the dispenser. Students then placed their dirty cups in a different container. Staff moved the cups from that container to a dishwasher rack to be washed. After they were clean, cups were moved back to the stainless-steel rack to dry. After a day or two of watching staff move cups back and forth, the team took a few minutes to talk with them about how to improve this tedious process. The team purchased additional dishwasher racks so students could place dirty cups directly in them so they wouldn't need to be moved to be washed. The extra racks also allowed the staff to keep the cups in place when they removed the racks from the dishwasher to dry. Those same racks were placed directly next to the dispensers, completely eliminating the need for staff to move cups from one rack to another.



In another example, the team purchased smaller-sized stainless student trays for one of the schools. As a result, the staff could fit many more trays into the dishracks, significantly reducing dishwashing time, and thus making up for the added time needed for the dishracks filled with cups to be washed. The school nutrition director selected the exact replacement tray she wanted, with consideration of the needs for the food that the school served.

Onsite Support

Real-time workflow adaptations are a prime example of why a key part of the project's success was having team support onsite during the launch. One staff member identified that having an external organization come in to facilitate the project was helpful, as staff don't typically have the bandwidth to launch new programs. Team members planned to be onsite for the first 2-3 days of using the dispensers to help provide support and any additional staff training.

Key Lessons

The following are key lessons learned during the Implementation Phase:

- Provide comprehensive training for staff
- Identify and address staff needs (often real-time!)
- Assess operations for workflow adaptations
- Provide onsite support during implementation

Project Impact

The team collected qualitative and quantitative data to provide estimates of the tangible impacts of the project. Initially, the team planned on using waste audits to capture precise data before and after implementation. After several waste audits, it became clear that although they were useful tools for raising awareness, engaging students, and capturing point-in-time data, they were too sensitive to mitigating factors such as field trips (depleting the number of lunch eaters) or specific food offerings (like "Cookie Day" when students particularly like to drink milk) to provide reliable big-picture data. Instead, the team pivoted to collecting school-level data from the districts for the 2024-2025 school year to calculate estimated impact. These data were combined with surveys and interviews to better understand the implementation process. At the time of this publication date (January 2026), we are still collecting data to measure project impact and will provide an update to this report at a later date.

A Note about Waste Audits

Although the team determined that waste audits would not be the most useful tool for measuring project impact, they did serve as a useful tool for raising awareness, engaging students, and assessing the waste disposal process.

The waste audit at one of the schools did highlight a critical finding for future programming: the number of juice cartons consumed at lunch was nearly double that of milk cartons. In addition, the straws and straw wrappers incessantly contaminated the compost and recycling. All three components form a trifecta of waste.

Survey Data

The team developed a survey to administer with staff 6-8 weeks after implementation. Due to the compressed timeline and supply chain issues, several schools did not implement until near the end of the project period, which did not allow time for survey administration. A total of 9 surveys from 3 schools were collected. Because this sample is not large enough for robust analysis, as such, only counts are provided in the discussion below.

Staff were asked their level of agreement with a series of statements.

Staff were split on whether project startup was smooth at first, but by 6-8 weeks after implementation, all either agreed or strongly agreed that the project was then going smoothly (Figure 2).

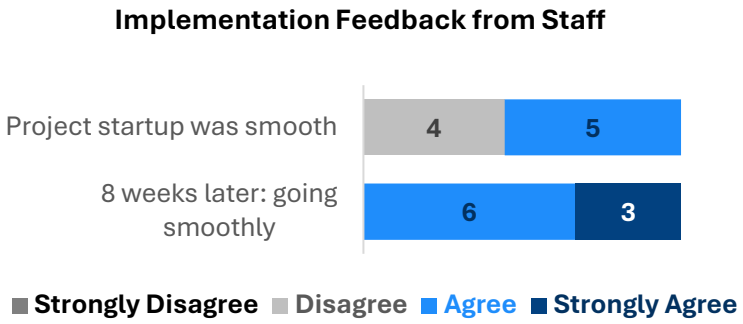


Figure 2. Implementation Feedback from Staff

About half of respondents reported that spills were a problem at first. About the same proportion said they were still a problem 6-8 weeks after implementation, although the degree of concern had softened (Figure 3).

Two respondents report that bulk milk is more work for staff and potentially would take more FTE (Figure 3).

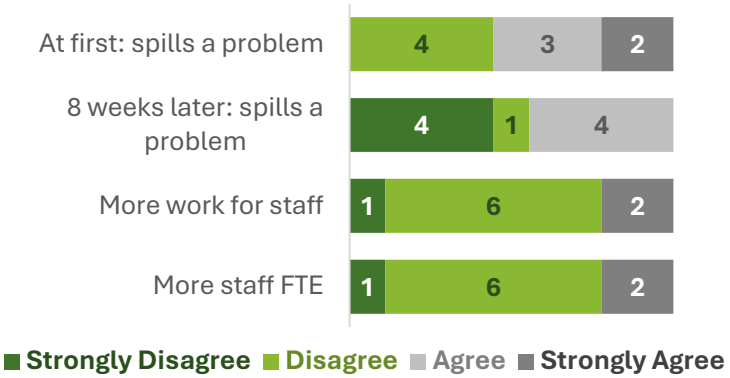


Figure 3. Implementation Feedback from Staff

Despite the mixed reports regarding spills and workload, when asked on a scale of 1-10 how likely they were to recommend bulk milk to other schools, the average response was 8.3 demonstrating good support (Figure 4).

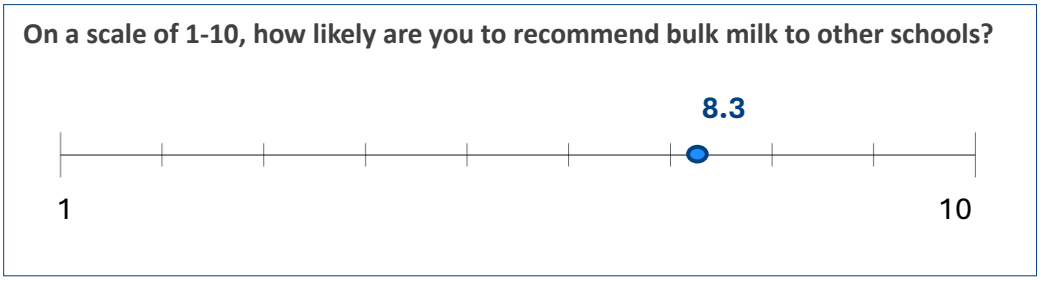


Figure 4. Likelihood to Recommend

Surveys also asked a series of open-ended questions. The themes in the responses fell into two main categories:

Bulk milk benefits students and community

- Students report that milk tastes better
- Less solid and milk waste (environment)
- Better health benefits
- Simple process and operation

Logistics are sometimes challenging

- More mess/milk spills
- More dishwashing time
- Startup woes (cost, process)

Interviews

Five interviews were conducted as part of the project's evaluation, three were conducted with school staff, and two were conducted with team members. The purpose of the interviews was to gather contextual information, including success and challenges, about the implementation of the project. Thematic analysis was conducted on the interview transcripts. Five themes emerged during analysis:

- Adaptability: Flexibility is key, and may be driven by staff, the situation, or the space
- Communication: Clear, simple communication is critical to a project's success
- Gateway project: This project naturally leads to learning opportunities & other projects
- Support is crucial: school staff are busy, and additional support enables success
- Students learn fast and are curious: students picked up the new process quickly and were interested in the new milk

"[The concerns] just kind of didn't really come to fruition, especially that one. Everyone was... worried about the spilled milk, and it just wasn't a thing."

"And any student I asked, well, this tastes way better than the other milk"

"it seemed like the kids felt more, like it was kind of a more grown-up experience to be drinking from a cup and not just a carton."

"I think awareness is a really a big, big piece is making people more aware of what actually happens to the stuff that we use."

"I see milk dispensers as one component of... a bigger picture"

"We have increased awareness at the school, like student mass awareness on sustainability and recycling."

Outcomes: District Data

The team worked with staff at each district to gather school-level data for the 2024-2025 school year. Each school implemented at different times and gathering exact before and after data was not feasible given the tight implementation timeline. Gathering the previous year's data allowed the team to estimate the impact to date, as well as the estimated impact for the 2025-2026 school year.

Bulk Milk Dispensers

To provide big picture estimates rather than point-in-time counts, school-level data for the 2024-2025 school year were collected from the districts. There are some mitigating factors which may impact the accuracy of the data estimates. For example, some schools have placed greater emphasis on composting given the state legislative mandate now in place. Additionally, FWPS chose to serve only plain milk (no chocolate) starting in the 2025-2026 school year, which may have temporarily led to a reduction in milk consumption.

To date, all participating schools offered bulk milk during lunch time but continued to use cartons at breakfast. Some schools are evaluating their breakfast processes to see if it's feasible to also use bulk milk then; the logistics of breakfast service are often quite different from lunch service. Thus, diverted waste numbers below focus only on lunchtime milk distributions. As non-dairy options are offered in cartoons, they have also been excluded from analysis. Enrollment changes also affect actual data.

Baseline data presented are for participating schools for the 2024-2025 school year: four in FWPS, one in RSD, and one in TSD. Lunch milk cartons (268,178) accounted for 44.8% to 69% of the total cartons used in 2024-2025 (before implementation). A full year of lunch bulk milk implementation could potentially avoid 7,207.3 estimated pounds of lunch milk cartons, for a population of 3,346 students (Table 2).

Table 2. Baseline Milk Carton Distribution from 2024-2025

District	2024-2025 Student Enrollment	Total Cartons Distributed*	Dairy Lunch Cartons	Lunch Percent of Total Cartons	Lbs of Dairy Lunch Cartons **
FWPS (4 schools)	2204	200,900	135,503	67.5%	3641.6
RSD (1 school)	479	49,975	34,675	69.4%	931.9
TSD (1 school)	663	219000	98,000	44.8%	2633.8
Totals	**3,346**	**469,875**	**268,178**	**57.1%**	**7207.3**

*Includes breakfast and nondairy options

**Estimated using raw carton weight (.43 oz per carton) – doesn't account for milk waste

Only some schools implemented at the beginning of the school year. To calculate the estimated actual waste diversion, a rough per-month estimate was determined by dividing the total number by 10, the number of months students are in the school. These estimates were combined with launch timing at each school and used to calculate the estimated to-date waste diversion and estimated anticipated waste diversion carton count and weight calculations for the 2025-2026 school year (Table 3).

Table 3. Estimated Milk Cartons Diverted

District	Estimated Cartons Diverted to date (1/30/ 2026)	Lbs of Diverted Carton Waste to date* (1/30/2026)	Estimated Anticipated Cartons Diverted (2025-2026)	Lbs of Anticipated Diverted Carton Waste (2025-2026)*
FWPS (4)	48,699	1308.8	116,451	3129.6
RSD (1)**	0	0	17,338	465.9
TSD (1)	19,600	526.8	68,600	1846.6
Totals	**68,299**	**1835.6**	**202,389**	**5442.1**

*Estimated using raw carton weight (.43 oz per carton) – doesn't account for milk waste
**RSD implementing as of 2/2/2026

Numbers shown in the tables are estimates, used in lieu of actual data due to the lack of feasibility of collecting post-data so soon after implementation. Districts have been encouraged to examine actual data at the end of the school year, to better understand how many servings of bulk milk were distributed to get a more accurate estimate of number of cartons diverted.

Two schools in FWPS implemented at the beginning of the school year. District Nutrition Services staff did a direct month-to-month comparison of waste disposal tons and waste disposal costs (the two schools are on the same campus and share dumpsters, which are weighed with each pickup). The staff calculated the actual differences between the 2024-2025 and 2025-2026 school year for Sept, Oct, and Nov (Figures 5 and 6). Although it is likely that other mitigating factors (composting, removal of chocolate milk) also played a role in waste reduction, the tangible reductions in waste are notable. Garbage decreased by 2.39 tons in September, 2.0 in October, and 1.9 in November, year over year. Waste disposal costs decreased between 200-350 dollars per month.

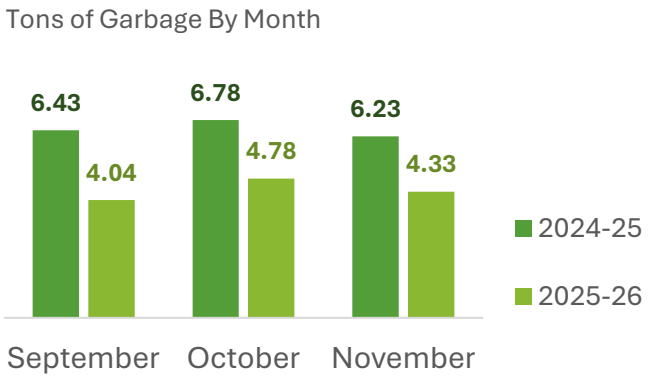


Figure 5. Comparison of Garbage Weight

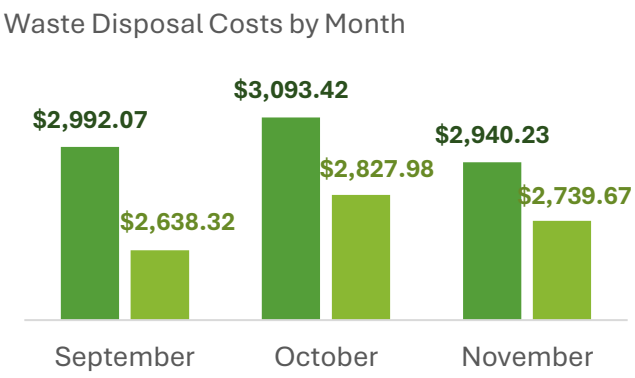


Figure 6. Comparison of Garbage Cost

FWSD staff also calculated the cost savings associated with bulk milk implementation and found that the bulk milk in 5-gallon bags cost 1 cent less per serving than carton milk, during the same time period.

Water Refill Stations

Six water refill stations were installed at five schools in four districts. In addition to diverting plastic waste, in several cases, these installations have increased access to water for students. At one school, students only had access via a water jug and cups in the lunchroom. Now they have access at all times of the day, in a central location in the school. At Lake Washington High School (LWHS), the water refill station was installed near the athletic fields, so during PE and athletic practices and games students would have access.

The refill stations were installed over the project timeline, from December 2024 to December 2025, thus the use count reflects a wide range of number of months of usage.

To estimate the impact, actual use count data was recorded from five of the six stations. The sixth is located outdoors at LWHS and does not have a counter built into the unit. Estimates calculated for the LWHS station used the monthly per student use from Mt. Baker Middle School, as there were no other participating high schools. The team estimated waste prevention to date, as well as total estimated impact for the 2025-2026 school year.

As of January 30, 2026, the six water refill stations have been used just over 6000 times. An average weight of 9.25 grams per empty water bottle was used to calculate the weight of diverted waste. When calculating estimates, the summer months were excluded from analysis. It is likely that annual estimates are slightly lower than what will be realized because the students need some time to get used to having access to water refill capacity. To date, this strategy has diverted 122.7 lbs. of plastic bottles. The estimated impact for the entire 2025-2026 school year 164 lbs. of plastic bottles diverted.

Table 1. Impact of Water Refill Stations

Location	Students Impacted	Number of Months in Use	Uses to Date (1/30/2026) 1 use = 1 bottle	Lbs Diverted to Date	Estimated Uses 2025-2026** 1 use = 1 bottle	Estimated Lbs Diverted 2025-2026**
Showalter	638	1	170	3.5	1020	20.8
Star Lake	464	5	754	15.4	1508	30.8
Lakeland Hills (2)	494	11	2642	53.9	2402	49.0
Mt. Baker MS	886	10	905	18.5	905	18.5
LWHS*	2163	7	1547	31.5	2209	45.1
Totals	**4645**		**6018**	**122.7**	**8044**	**164.0**

*Estimated using the monthly per student use number from Mt. Baker MS

**Estimated using the monthly per student use numbers from each school, projected through 6/2026

Greenhouse Gas Emission Reductions

The team used the federal Environmental Protection Agency's WARM tool[1] to estimate greenhouse gas emission reductions for bulk milk and water refill station implementation at the schools using the estimate data from the districts. As there is no specific category in WARM for milk cartons, the team used the mixed plastics category for milk carton calculations. For water bottle calculations, the team used the PET plastic category.

In 2024-2025, the participating schools distributed 469,875 total milk cartons, sending 12,627 lbs. of carton waste to the landfill, generating 11.93 Metric Tons of Carbon Dioxide Equivalent ($MTCO_2E$). The team estimates that for the 2025-2026 school year, 202,389 milk cartons (5,442 lbs.) will have been diverted from the landfill, representing a reduction of 5.15 MTCO2E. This is an estimated reduction of 43.2% of greenhouse gas emissions due to avoided milk carton use for the 2025-2026 school year. For the water refill stations, the team estimates that for the 2025-2026 school year, another 0.16 $MTCO_2E$ will have been avoided through the use of refill stations instead of single-use water bottles.

[1] https://www.epa.gov/waste-reduction-model/versions-waste-reduction-model

Data Summary

The quantitative and qualitative data indicate that although there were some logistical challenges to implementing this pilot project, most staff from the schools and districts would recommend doing so at other schools.

Key findings include:

- Staff had mixed opinions on spills and additional work
- The majority of staff recommend implementation at other schools
- Milk carton waste reduction has the potential to reduce carton solid waste by two-thirds
- Cost reduction is possible related to less expensive bulk milk and lower waste disposal expenses
- Bulk milk implementation also has additional food waste reduction potential (milk, composting)

A critical finding from the project is the potential for future high-impact opportunities. Implementing bulk milk provides opportunities for increased student awareness and learning tied to STEM outcomes. In addition, the team found that bulk milk implementation was a "gateway project" that ended up helping school staff improve their composting and other waste reduction ideas. Finally, a potentially impactful future project would address juice boxes with bulk juice.

Sustaining Change

From the learnings of the pilot project, the team projects that the bulk milk project will be best sustained through integrating the logistical considerations across all relevant departments and shifting the culture in schools to look for opportunities to expand complementary work.

The team worked with the Learning Cohort to identify the key practices that seemed to be most relevant for future implementation.

Core Components

Based on the lessons learned, the team developed the following draft list of core components of a successful bulk milk implementation model. Schools interested in implementing bulk milk should consider each of these components carefully during planning.

Pre-Qualifying Factors

- Engaged Matrix of Stakeholders
- Adaptable Systems

Preparation and Implementation

- Assess infrastructure
- Identify needs and order equipment
- Require on-site training
- Determine milk ordering protocols
- Assess workflow and adaptation
- Provide on-site support during implementation (x2-3 days)

Available on-going **support to:**

- Troubleshoot
- Identify potential workflow modifications
- Provide supplemental training
- Offer encouragement

Leaning into Learning

The learning opportunities inherent in the project can be mined for future projects. In the interviews, these opportunities were praised by all who were interviewed. One person noted that full success depends on student involvement:

"I do think for it to be fully successful, like for it to be a full win, I think… any other schools taking it on… I do think it's really important to include the students in the process and that awareness piece, like collecting the data, doing the audit."

Potential learning opportunities extend beyond just the project itself. One school has collaborated with Northwest Food Alliance to develop multiple education modules and projects centered on the concepts introduced by the bulk milk project. They've already introduced nutrition and food-based projects to the students, including meal planning and cooking to help promote health and disease prevention.

Key Lessons for Sustaining Change

The following are key lessons learned throughout the course of this project

- Use bulk milk as a gateway to learning
- Address the details within a big picture perspective
- Implement transparent, relevant, and timely communication
- Be solution-minded

"It's a really cool opportunity to do some instruction in general, not just because we're doing this reduction of waste program, but because, you know, kids need to know that they are the stewards of the planet."

- Staff Member

Appendix 1: Equipment for Implementing Bulk Milk and Water Refill Stations

This guide outlines the items procured by Zero Waste Washington to support the implementation of bulk milk through a grant funded by the King County Re+ Circular Economy program.

Durable cups and trays

- **Ahimsa stainless steel foodware:**
  - Ahimsa Schools: All Products – Ahimsa® Schools
  - Link to request a quote: Quote Info – Ahimsa® Schools
  - Contact: Manasa Mantravardi, mantra@ahimsahome.com
  - 10-oz cups: dishwasher fits 36 cups in one dishwasher rack
  - 3- and 5-compartment trays: dishwashers fit 18 three-compartment trays (trays may have changed recently, so check with Ahimsa for details)

Equipment to support durables and composting in lunchrooms

- **Anti-fatigue dish room mat:** Amazon.com: Rubber Mats

- **Dishwasher racks for cups**:
  - Amazon: Carlisle RB14 OptiClean Bowl Open
  - KaTom #: 028-RB14: Carlisle Full-Size Dishwasher Open Rack - Polypropylene, Blue (RB14) - *NOTE: KaTom appears far less expensive, but they ship using UPS and FedEx, so you can end up paying far more for shipping. Be sure to check total price before ordering.*

- **Hotel pan for students to pour the milk they don't consume (4" deep, 1/6th long):** 60700HL6 - DuraPan™ Light Gauge Stainless Steel Steam Table Long Hotel Pan Long 1/2 Size, 6" Deep | Carlisle FoodService Products

- **Signage:**

  - **Signs for waste collection - Liquids, Cups, Trays, Compost, Trash** (made by Jessica Hilderbrand at Star Lake Elementary (FWPS): https://drive.google.com/file/d/1-ylH7xHnxiAKJWeLLb2ez6s0nWquL2P3/view?usp=drive_link

  - **Rotating clamps to attach signs to waste bins:** Amazon.com Mlici Sign Clips for Display, 26 Pack Plastic Sign Holder Clips

  - **Signs for milk dispensers** (to let students know which side to use (print and laminate back-to-back, poke a hole at the top for hanging on suction cup hooks on dispensers):
    - https://drive.google.com/file/d/1l-sYcJQmG0Are8D1-DNMF2pEzsNZknK9/view?usp=drive_link
    - https://drive.google.com/file/d/1-ESw6ohZBqXLbpJPI60oXVQO69F6nDCV/view?usp=drive_link

  - **Suction cup hooks** (for hanging signs on dispensers indicating which side to use: Amazon.com: KORCCI Suction Cup Hooks 12Pack - Max Load 10LB

- **Slim Jim waste receptable for collecting compost** (23 gallon): Rubbermaid® Slim Jim® Trash Cans in Stock - ULINE – May line with a compostable liner or not line the cans at all (custodians would rinse them)

- **Utility cart** for collecting cups/trays/milk (this link is for the green cart – choose your color): Uline Utility Cart - Standard, 45 x 25 x 33", Green H-2504G - Uline

Milk dispensers

- **Udderly Milk Dispenser:** HOME | Milk Dispensers | Udderly Cold Milk SolutionsTM | United States
- **Hubert Refrigerated Milk Dispenser** (double-valve):
    - HUBERT® Refrigerated Milk Dispenser, Double Valve - 27"L x 17 1/8"D x 39 1/2"H

Auxiliary equipment for dispensers

All of the following are recommended when using the Hubert milk dispenser:

- **Table for milk dispenser** (note: if you want students to be able to place lunch trays on tables while getting their milk, these tables will need to be retrofitted with tray slides):
  - Adjustable Height Stainless Steel Worktable with Bottom Shelf - 48 x 24" H-9648 - ULINE
  - Casters for Stainless Steel Worktable - Set of 4 H-5746 - ULINE
- **Hydraulic lift for 5-gallon bags of milk:**
  - Global Industrial™ Battery Powered Office Work Positioner Lift Truck, 220 Lb. Capacity
- **Shallow hotel pan to be place under milk dispenser drip tray:**
  - 60700HL2 - DuraPan™ Light Gauge Stainless Steel Steam Table Long Hotel Pan Long 1/2 Size, 2.5" Deep | Carlisle FoodService Products
- **Small bottle brush for cleaning inside of dispenser:**
  - Amazon.com: 2 Pack Straw Cleaner Brush, Reusable Metal Handles Straw Cleaner Brush
- **Small screwdriver** for removing parts inside dispenser to clean it (any small flathead screwdriver will work):
  - Klein Tools A131-2 1/8-Inch Flat Head Screwdriver with Keystone Tip, Pocket Clip, 2-Inch Round Shank and Comfordome Handle 1/8-Inch Inch Tip 2-Inch - Klein Tools - Amazon.com
- **Tube clamps for milk hoses:**
  - Kyuionty 1/4" - 1/2" Plastic Tubing Clamps Adjustable Tube Clamp, Laboratory Pinch Valve Flow Control Hose Clamp - Pack of 5 White

Additional equipment

- **Salad Bar** (if an additional one is needed to keep the lunch line moving quickly)
  - Cambro VBR6110 6' Versa Food Bar with Standard Casters Black Case of 1
- **Water Refill Station** (Item #B384183N):
  - Elkay LZS8WSSK ezH2O Bottle Filling Station, Refrigerated, Filtered, Stainless Steel