

CASE STUDY:

## Mixing Equipment Introduction at Boulder Valley School District (BVSD) 2015-16



A Life Time Foundation Program in Partnership with BVSD  
Boulder, Colorado  
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## Executive Summary

BVSD's Food Services Department—"School Food Project"—scratch-cooks nutritious meals for about 13,000 students every weekday at three main production kitchens. Producing large quantities of freshly-prepared food requires a significant amount of physical labor, which can be difficult, but is necessary for BVSD to accomplish their mission:

*"We believe that all children of the Boulder Valley School District will have daily access to fresh, flavorful, and nutritious food made with wholesome and when possible, local ingredients, so that every child may thrive."*

In order to increase efficiency, to improve the quality of food produced, and to contribute to greater student participation, Life Time Foundation (LTF) granted \$100,000 to BVSD. The grant allowed BVSD to purchase "tumbler" mixing equipment, specifically three Fatosa Model KFM-440 Stainless Steel Reverse-Action Mixers with variable speed. The equipment was installed at the end of the 2015-16 school year and was implemented in Fall 2016. For this case study, Chef Ann Foundation (CAF) gathered feedback from BVSD's Food Services leadership and staff on the strategic introduction of the equipment and its early-stage impact on human resources, production, and participation.

The major findings in this report are as follows:

- The tumbler equipment saves payroll costs by reducing the preparation time for several school food recipes.
- The tumbler equipment improves the quality of several school food recipes.
- The tumbler equipment contributes to increased efficiency in production kitchens.

Given these findings, BVSD's Food Services Director, Chef Ann Cooper, would recommend that other schools invest in this type of equipment to increase efficiency in food preparation. By sharing these findings, BVSD, LTF, and CAF hope to support sound decision-making at other organizations and offer learnings that may streamline the equipment implementation process.



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## Background

### BVSD's School Food Project

BVSD's School Food Project is working to meet the growing needs that coincide with an expanding population. The Food Services Department currently feeds approximately 13,000 students daily—more than one-third of the district's student body of around 31,000 students.

In November 2014, BVSD voters approved a \$576.5-million bond program that is based upon the recommendations and findings from the Educational Facilities Master Plan. The plan recommends allocating approximately \$10 million to construct a new Central Kitchen at BVSD's Education Center that is expected to open in 2019. The Central Kitchen will help increase food preparation efficiency, improve quality, and expand capacity. It will be one of a handful of such modern kitchen facilities in school districts across the country.

In advance of the Central Kitchen's completion, BVSD Food Services has invested in larger, more efficient equipment that will eventually be moved to the Central Kitchen. Funded by a Life Time Foundation equipment grant, the three "tumbler" reverse-action mixers are part of this effort.

### BVSD Production Kitchen Process

"Imagine scaling a recipe you make at home to feed thousands of people," says Brandy Dreibelbis, Chef and District Manager of BVSD Food Services. "It's a lot of work." In addition to an expanding student body, BVSD's menu also continues to expand. "We are doing bigger, better things each year," she adds.

BVSD's Food Services staff currently prepares, cooks, and chills meals at three regional production kitchens based at Casey Middle School, Monarch High School, and Centaurus High School. Each kitchen team—usually a sous chef, two production cooks, and three food services assistants—produces as many as 3,500 meals daily, which are delivered to 14-17 school sites. A fourth production kitchen at Arapahoe Ridge High School produces [catered foods](#) and menu items for BVSD's [food truck](#).

The process begins three weeks before meals are prepared. Kitchen Satellite Leads at each school place their orders in a shared school-nutrition software program. They project upcoming needs based on the number of meals eaten the last time they served each menu item. Sous chefs in the regional production kitchens then scale recipes based on the total number of servings needed for all their satellite school sites, creating a production list for the daily menus.

The food production schedule is as follows:

Day 1: Production Kitchen staff prepares and cooks recipes listed on the production sheet. Cooked dishes are cooled, portioned, then chilled to 40 degrees or below.

Day 2: Menu items are loaded into insulated, rolling totes that are picked up twice daily by delivery drivers. Using tags and receipts, temperatures are noted and tracked when the food leaves the production kitchen and again when it is delivered to each school.

Day 3: School's kitchen staff heats, assembles, and when necessary, quick-cooks dishes, then serves them.



*The tumbler's 400-pound capacity mixing tank empties through a pneumatic "trap door" in the bottom.*

## Assessment of Equipment Introduction

### Goals

The main goals of introducing the "tumbler" reverse-action mixers were to:

- Reduce payroll costs by boosting efficiency in food production
- Consistently produce higher quality food
- Increase student participation over time

The tumbler equipment was operational at the start of the 2016-17 school year in late August, and was fully integrated into the BVSD food preparation process by late September. This case study presents initial findings that were reported at school site visits and during interviews conducted in May, November, and December 2016.

## Successes

After four months of using the tumblers, BVSD Food Services Director Ann Cooper calls the investment a success. “We were hoping for a more efficient system and we got it,” she says. “We bought the tumblers because we thought they would save time and produce a better quality product while maintaining the highest possible level of efficiency. We now have better food with less payroll.”

BVSD’s production kitchen staff is also finding that the tumblers improve the quality of some recipes in unanticipated ways. “Even for recipes we didn’t think we’d use the tumbler for, it works well,” says Dreibelbis.

Efficiency: Tumblers help save time, labor, and payroll expense.

“With the tumblers, we are able to mix the food in large batches,” Cooper says. “Before we got this equipment, we had to mix several smaller batches—up to ten or more—by hand.”



*Making mashed potatoes the "old way," making several batches in 75-pound capacity Hobart mixers.*

With 400-pound capacity mixing tanks, the tumblers allow production staff to make most recipes in just one or two batches. The process is less labor-intensive and takes less time. Staff spends less time transferring food between containers and ingredients spend less time sitting out on counters before being used.



*Making mashed potatoes the new way in the Tumbler.*

For instance, [mashed potatoes](#) required making nine or ten separate batches using the kitchen's 75-pound capacity Hobart mixers. The tumbler does the job in just two batches, cutting prep time in half.

Similarly, to make [burrito](#), [enchilada](#) and [quesadilla](#) fillings, the kitchen staff made several small batches using large stainless-steel bowls on wheeled legs, large stainless-steel mixing paddles, and a lot of muscle power to sequentially mix ingredients together, often multiple times. Now, it's just one or two batches in the tumbler.



*Scratch-cooking at BVSD includes hand-rolling 1,200 burritos at one production kitchen.*

Quality: Consistent, gentle tumbling makes dishes look and taste better

“Already popular recipes are getting even better reviews now that they’re mixed in the tumbler,” says Dreibelbis. The tumbler’s reverse-action mixer arm has variable speeds, so it’s possible to mix delicate ingredients gently, improving the appearance of the finished dish.

For example, French Toast Casserole looks much better when made in the tumbler. “It saves time and labor because it gently breaks the bread into pieces,” says Dreibelbis. At each kitchen, we used to have to cut more than 200 loaves of bread.”

Another success is [Thai Fried Rice](#)—a relatively complex recipe with many components. “It is still a time-consuming recipe, but now everything can be mixed much more quickly, in one large batch,” Dreibelbis says. “The tumbler tosses the ingredients so evenly and gently that the final appearance is much better. I think the improved appearance is making the dish taste better and sell better.”

Human Resources: Fewer strenuous hand-mixing tasks improves morale

During the eight years Ann Cooper has been the Director of BVSD Food Services, the program has made an impressive transition to serving scratch-cooked meals made with carefully and locally sourced ingredients. The kitchen staff produces these recipes in relatively small work areas that were not purpose-built for large-scale, home-style food production. “The kitchen staff are doing up to 3,500 meals out of each production kitchen every day,” Cooper says. “It’s a lot of hard work.”

“It was really nice to be able to invest in equipment that will move us forward and help us to become more efficient,” Dreibelbis says. “We have been working around our equipment and other obstacles in our kitchens, which weren’t designed for large-scale food production.”



*Variable-speed mixing arms gently toss fresh vegetables and other ingredients to make a more consistent, better-quality Thai Fried Rice.*



	<b>French Toast Casserole</b>	<b>Mashed Potatoes</b>	<b>Thai Fried Rice</b>
<b>Staff Before Tumbler</b>	5 people	2 people	3 people
<b>Hours Before Tumbler</b>	6 hours	6 hours	5 hours
<b>Batches Before Tumbler</b>	3 batches	9-10 batches	6-8 batches
<b>Staff After Tumbler</b>	3 people	2 people	1 person
<b>Hours After Tumbler</b>	4 hours	3 hours	4 hours
<b>Batches After Tumbler</b>	3 batches	2 batches	1 batch
<b>Total Hours Saved</b>	18 hours	6 hours	9 hours
<b>Total Payroll Savings (across all 3 production kitchens)</b>	\$972	\$324	\$486

Figure 1: BVSD's Top 3 Successful Tumbler Recipes

## Challenges

The challenges of introducing the tumbler equipment to BVSD's school food program were much less notable than the successes. The shipment from Italy was delayed, which meant the equipment arrived near the end of the 2015-16 school year, and there was limited time to pilot their use in the kitchen. Some of the other challenges that arose when BVSD installed the tumblers into the existing kitchen spaces included the following:

### Electrical Capacity

BVSD's existing production kitchens did not have 220-volt outlets located where the tumblers were placed. The district needed to install 220-volt outlets and increase overall electrical capacity, which also delayed full integration of the equipment.



### Compressed Air

Compressed air is used to open a pneumatic "trap door" in the bottom of the mixing tank and dump mixed ingredients into a container. The district had to install compressed air after the tumblers arrived.

## Space Constraints

The tumblers BVSD purchased are intended to be used with a lifter that brings ingredients up above the mixing tank and dumps them in. Unfortunately, BVSD's kitchen ceilings were not tall enough to fit the lifter. To overcome this temporary setback, the kitchen staff uses a stepladder to manually load ingredients (pictured at right). It is expected that the new Central Kitchen design will incorporate higher ceilings that can accommodate the lifter's height.

## Recommendations and Conclusions

Purchasing and implementing tumblers into BVSD's school food program has been highly successful. In particular, it has had positive effects on:



*Chef and District Manager, Brandy Dreibelbis poses proudly with one of the new tumblers.*

- Increasing efficiency of Food Services operations
- Saving staff time and payroll expense
- Improving food quality and appearance
- Relieving staff from strenuous physical tasks

The majority of challenges BVSD experienced could have been avoided or minimized by having more detailed knowledge about the equipment specifications before implementing it. BVSD hopes that this case study, which shares its learnings in detail, will help smooth the path for school districts choosing to make a similar equipment investment.

Along with the details outlined in the preceding "Challenges" section, BVSD recommends using the following list of questions to help determine whether purchasing this type of equipment will benefit your school district.

## 8 Questions to Ask Before Purchasing a Tumbler

### 1. Is training included in the purchase price?

Training was not included with the tumblers. BVSD initially learned about the equipment during a visit from a contact that had experience with tumblers. Much of the subsequent knowledge was gained through hands-on experimentation by the food services staff.

### 2. What kind of manual is available?

The manual provided with the tumblers was not a comprehensive resource for BVSD staff.

### 3. Does it need special hookups, like compressed air?

BVSD's tumbler equipment uses compressed air to open a panel in the mixing tank for unloading food. Making necessary modifications to the kitchens delayed equipment use.



### 4. What are the power requirements?

BVSD installed 220-volt outlets in kitchens to provide adequate electrical capacity.

### 5. How much space will the equipment take up when assembled?

The tumbler's lift equipment was too tall for BVSD kitchen ceilings. In the new Central Kitchen, the district will design the space to accommodate that height.

### 6. Is there water and a drain near where you intend to put the equipment?

"If there's no floor drain, it's a bit tough to clean," Cooper says. "Then you need to collect water in a bucket or bin, take it to a drain and dump it." Additionally,

BVSD staff discovered that pressure washers work best to clean the tumbler's mixing tank. In the new Central Kitchen, tumblers will be installed over a drain near access to pressured water.



### 7. How will you load and unload ingredients?

BVSD’s kitchen staff currently loads most ingredients manually using a stepladder. “We will probably buy the lift for the new Central Kitchen,” Cooper says. Unloading mixed foods presents a similar challenge. The tumbler is sold with a 400-pound-capacity, stainless-steel, wheeled cart. Unfortunately, the cart cannot be raised to worktable height. For better ergonomics, food is unloaded into a Lexan bin on a hydraulic cart that can be raised when performing tasks like hand-rolling up to 1,200 burritos a day (pictured at right).

### 8. Are you able to visit another school with a tumbler to see it in action?

“Seeing firsthand how staff uses and cleans the equipment is invaluable,” says Cooper.

## Summary

Chef Ann Cooper, BVSD’s Director of Food Services, strongly recommends that other school districts consider adding tumblers to their main production kitchens. Investing in this type of equipment can have a range of benefits. Most importantly, tumblers can make it easier, quicker, and more cost-effective to produce the fresh, delicious, and nutritious foods that every child needs to thrive.



*The BVSD production kitchen teams enjoy working together—especially when they're supported by key equipment that makes the food preparation more efficient.*