



FOOD OPTIMIZATION STUDY



Prepared by
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and Community Environmental Services
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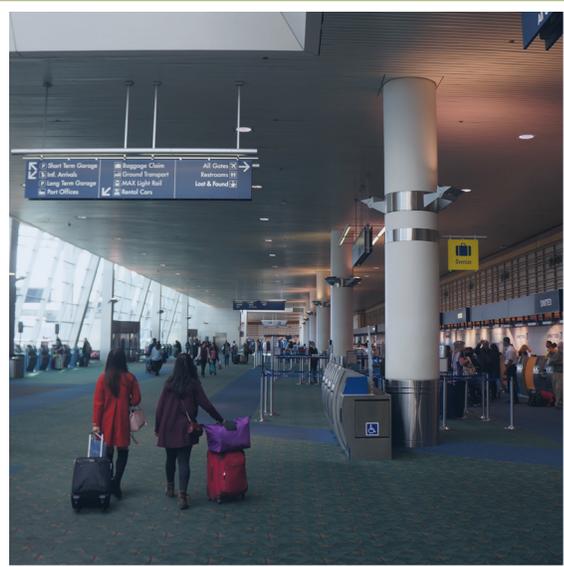
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*Top to bottom:
Food carts are a unique walk-up foodservice option at PDX; Grab-and-go displays are a viable market for PDX vendors, due to the convenience, speed and variety this option provides; PDX serves over 16 million passengers per year, and is home to over 30 food and beverage service locations.*

Executive Summary

Each month, airport restaurants within the Portland International Airport (PDX) Terminal generate 20 tons of food waste. The Port of Portland's Waste Minimization Team (WMT) tracks waste production at PDX and believes that food waste not only has undesirable environmental impacts, but has financial drawbacks to airport restaurants as well. The WMT developed and implemented a Food Optimization Study to assess the causes of food waste at restaurants within the PDX terminal. The primary goal of the study was to identify business practices and barriers that resulted in food waste. From these findings, the WMT hopes to establish ways to reduce food waste at PDX in the future. The major findings and recommendations of the study are outlined below.

Findings

1. Airport restaurants encounter a unique set of challenges that often result in added food waste, including irregular passenger flow times, long operating hours, and restricted access to deliveries. This is particularly true within the first year of operation, when inexperience leads to over-ordering or over-preparation of food.
2. The more experienced restaurant managers take advantage of Port-provided monthly sales and passenger enplanement projections to inform food ordering and preparation. Many managers- new and old- consult daily flight schedules to make real-time food management decisions.
3. Pre-packaged grab-and-go food displays are most efficient when preparation and stocking decisions are well-informed; otherwise, they lead to excess food production.
4. Many restaurants use a waste log to track food loss, but the format and level of detail vary greatly between restaurants. This study concluded that it is uncertain whether current waste log practices are an effective tool to reduce food waste at PDX.
5. Restaurants that prepare food on-site using perishable ingredients tend to generate more food waste than restaurants sourcing fresh or frozen, pre-portioned ingredients that are prepared off-site.
6. Employee error is a major contributor to food waste.
7. Many restaurants do not specifically engage employees in food waste reduction goals. Some have best practices that include employee education, training and rewards specific to food waste.

Recommendations

Provide Food Optimization Support and Training Specific to Airport Restaurants.

Restaurant managers new to PDX would benefit from receiving additional tools to be a successful business. This would help them with forecasting, balancing costs and reducing food waste. A restaurant manager's first year at PDX would be the most influential time to provide support.

Focus on Grab-and-Go Efficiency.

Pre-packaged food items were consistently identified as a source of food waste and lost profit. Opportunities to market this product category more efficiently, while maintaining customer satisfaction, should be considered and could reduce the amount of grab-and-go food waste at PDX.

Increase Employee Awareness and Involvement.

Increasing restaurant employee education around food optimization will promote a team-based approach to reducing food waste and align employees with business goals. To be successful, restaurant leadership and managers must prioritize and promote food waste reduction.

Introduction

During the 2015/2016 fiscal year, the Port of Portland's (Port) Waste Minimization Team (WMT) conducted a Food Optimization Study to understand how restaurants at Portland International Airport (PDX) manage food and food waste. The study analyzed food purchasing, inventory, and display models, and looked at how operating within an airport context influences levels of food waste. The study goals included:

- » Identify restaurant practices that contribute to food waste, and
- » Provide recommendations for reducing food waste at PDX.

This report introduces the primary impacts of restaurant food waste, provides an overview of the existing food waste diversion program at PDX, and offers an in-depth review of the Food Optimization Study that includes findings and recommendations.

Impact of Food Waste

Food waste is a major economic and environmental issue in the United States. It is estimated that in 2010, the total value of food loss at the retail and consumer levels was \$161.6 billion.¹ The resources allotted to food production also result in major inefficiencies: the National Resource Defense Council (NRDC) asserts that food production in the US utilizes 10%, 50%, and 80% of the country's energy, land, and freshwater resources, respectively². Despite this lion's share of resources, the same report also calculates that 40% of all food that is produced in the US is thrown away. While some food waste may be donated or composted, the majority ends up in landfills and accelerates the production of methane, a greenhouse gas 25 times more potent than carbon dioxide.

While food loss occurs at various points along the production and supply chain, a major source of waste occurs within restaurants. Food waste is defined as any edible portion of food that is suitable for human consumption, but rather than being consumed, gets thrown away; in the restaurant context, this can be the result of spoilage, contamination, human error, overproduction, leftover plate waste, or other factors. The amount of food waste generated by the food service industry is hard to identify, but one study suggested that between 4% and 10% of food that is stocked in restaurants is never served, and estimated that 50% of a restaurant's entire waste stream (by weight) is comprised of food waste.³ This evidence indicates that restaurants are an ideal target for food waste prevention programs, and the food service industry is following suit. The National Restaurant Association (NRA) has made food waste

prevention a consistent organizational focus, and helped establish the Food Waste Reduction Alliance in 2011. A 2014 NRA survey of 1,300 chefs found that food waste was listed as a top priority issue among food service professionals, as well.⁵

The Environmental Protection Agency (EPA) released the food recovery hierarchy as a guiding framework for consumers and suppliers to engage with food waste reduction (figure, right)⁶. Though food donation and composting is better than throwing food into the landfill, this excess is still the result of an over-production of food and a waste of resources. This study focuses on *source reduction*, or the act of reducing surplus food production, which is the highest tier of the food recovery hierarchy.

Best Practices from Existing Studies

Many best management practices (BMPs) have been identified for optimizing food management by restaurants.⁷ Below is an overview of BMPs that focus on operations within smaller kitchens or a single restaurant (rather than large industrial kitchens in schools or hotels), which are more relevant to airport businesses.

Build re-use into food management practices.

- » Incorporate trimmings, leftover product, or bruised product into soups, sauces, salads, pizzas, casseroles, or special items.
- » Create a secondary use station where leftover items and scraps can be consolidated and shelved for re-use.

1 USDA, 2014.

2 NRDC, 2012

3 End Food Waste Now, 2015

4 24-Hour Restaurant Waste Sort data collected by the Port WMT, 2016

5 NRA, 2014.

6 USEPA, 2015.

7 Leanpath, 2016

Adapt menus to optimize food.

- » Offer lunch and/or half-size portions, or consider reducing portion sizes altogether if food is often not finished by customers.
- » Use daily specials to reduce excess inventory.
- » Limit customer choices to reduce overproduction of menu items.

Prep in smaller portions.

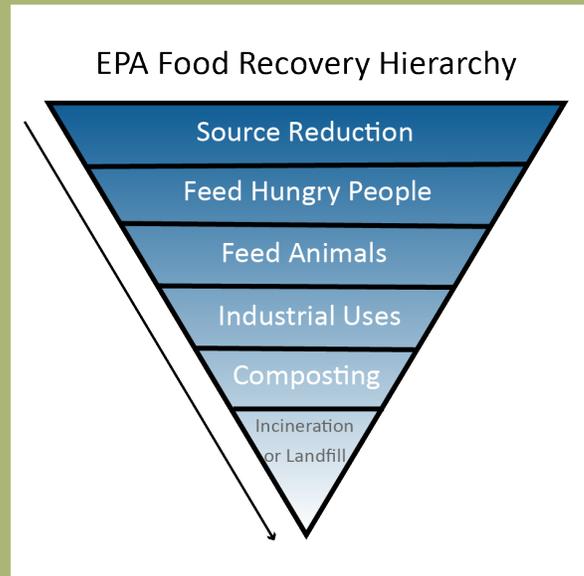
- » Use smaller pans for batch items, or smaller shelves for displays.
- » Monitor sales to pinpoint when to curtail prep throughout the day.

Use data and tracking tools.

- » Perform waste audits and/or use waste logs.
- » Review end-of-day waste and leftovers with employees.
- » Use food waste information to identify patterns based on factors such as sales, weather, customer flow, and so on.
- » Track progress and compare to baseline audits to gauge success.

Educate and involve employees.

- » Reduce trim waste, over-portioning, and other human error through a regular training program.
- » Keep a food waste idea log for employees, and hold regular meetings to discuss ideas and observations from the team.
- » Appoint sustainability leaders and/or create a “green team” of interested employees with managerial leadership.
- » Set collective goals and track progress through visuals, updates or emails.
- » Use recognition, contests, and rewards to build enthusiasm among employees.



Top to bottom:

The EPA's Food Recovery Hierarchy identifies source reduction as the most effective approach to fight food waste; A soup selection at one restaurant illustrates an efficient outlet for surplus fresh food supply; Another restaurant advertises rotating specials prominently to passersby.

Waste Minimization at Portland International Airport

Portland International Airport (PDX) is a major regional transportation hub that serves over 16 million passengers every year. PDX currently has over 30 food and beverage locations within the terminal to serve travelers, and an estimated 10,000 airport employees. This robust marketplace produces a high amount of waste: together, airport restaurants and shops (concessions tenants) produce more waste than any of the airport's other main generators (airline waste, public area waste, and administrative waste).⁸ Furthermore, restaurant food waste makes up the largest waste stream: individual restaurant waste sorts conducted since 2013 reveal that food waste accounts for, on average, 58% by weight of the waste generated by airport restaurants.⁹

PDX is owned and operated by the Port of Portland, and the Port's *Five Years to Zero Waste* plan recognizes food diversion as an important strategy to reduce landfill-bound waste. Thus, much of the waste reduction and diversion efforts within the PDX terminal are focused on restaurant tenants, and particularly the food waste they produce. The Port Waste Minimization Team (WMT) manages these efforts, and is the organizational entity that sets goals, conducts data analysis and coordinates outreach and programming to restaurant employees.

The Port and the WMT have consistently taken steps to reduce the amount of food waste at PDX, which has established PDX as a national airport leader in food diversion practices. The Port began a food waste collection program in 2003 to divert food for composting, and nearly 3,300 tons of food waste has been diverted since then. In 2013, the WMT launched a food donation program to capture unused food products from restaurants and introduce high-quality excess food back into the community. Since then, more than 100 tons of donated food items, such as excess fruit, pastries, and packaged grab-and-go items, have made their way to local schools, shelters and food kitchens.

The WMT works closely with restaurant managers to maintain the PDX food waste and food donation programs. These efforts include monthly presentations at restaurant managers meetings to reinforce food diversion efforts, providing training for food diversion best practices, and

⁸ 24-Hour Waste Characterization data collected by the Port WMT, 2016
⁹ 24-Hour Restaurant Waste Sort data collected by the Port WMT, 2016

an annual recognition and rewards program ("Sort It and Win") for employees that demonstrate proper food diversion practices. The Port's Concessions Operations Team also supports these efforts by providing restaurant managers with personalized monthly data which includes month-by-month restaurant sales history, sales projections, and airport enplanement projections for the following month (examples of this data are included in Appendices C and D). These data are provided to help managers make staffing and food purchasing and preparation decisions. Despite these support systems, the volume of food waste produced at PDX is still considered a priority issue by the WMT. In 2015, restaurants diverted, on average, 1,400 pounds of food waste every day¹⁰ through the compost and food donation programs. The WMT recognizes that source reduction, or *reducing food waste*, at PDX will save restaurants money and address some of the negative environmental impacts of food waste, while helping the Port achieve its zero-waste goal.

The Food Optimization Study assessed food waste generation in restaurants within the PDX terminal, to understand how restaurant practices such as food purchasing, inventory, preparation, service and employee training influenced levels of food waste generation. The overall goal was to gain an understanding of the factors that create food waste at airport restaurants, and to use that knowledge to develop specific recommendations for the Port and restaurant tenants moving forward that would effectively reduce wasted food.

Study Design

The WMT began the Food Optimization study by researching universal causes of restaurant food waste, and identifying best practices that are commonly employed to decrease it. The WMT also drew upon existing data, including restaurant sales data and 24-hour individual restaurant waste sort data, to identify food management trends within the restaurants. The primary data collection tools used to understand the scope of the issue were waste sorts, a survey instrument and focus groups with Restaurant management.

Survey

During the fall of 2015, the WMT created and administered a written survey that was completed by 28 restaurant

¹⁰ Gresham Sanitary Services Data provided to Port WMT, 2015

managers and chefs representing 20 different restaurants . The 11-question survey consisted of a mixture of multiple-choice and open-ended questions focused on food management techniques, restaurant business practices, and attitudes towards food waste. The survey revealed that a majority of restaurant managers are aware that food waste is an issue. It also identified multiple causes of food waste and recognized best practices currently used to track and minimize food waste. A copy of the survey and question-by-question responses are included in Appendices A and B.

Focus Groups

In February 2016, the WMT conducted a series of focus groups with eight restaurant managers to build upon the results of the survey. While the survey was intended for all restaurants operating within the airport terminal, focus group and interview participants were selected specifically to capture a range of key voices. Selection criteria included a restaurants' food waste diversion performance during 24-hour waste sorts, responses provided on the survey, the length of time a restaurant had been operating at PDX, and whether it was a full service or quick service restaurant. The focus group questions were split into two main areas: individual business practices and airport policies. These discussions drew out more nuanced, individual observations that allowed the WMT to better understand how food optimization is viewed and practiced within the airport-specific context.

Findings

Both the survey and focus group interviews conducted for this study identified a number of findings that were common to all participants. These findings, discussed below, created the basis of the WMT's recommendations.

1. **Airport restaurants encounter a unique set of challenges that often result in added food waste, including irregular passenger flow times, long operating hours, and restricted access to deliveries. This is particularly true within the first year of operation, when inexperience leads to over-ordering or over-preparation of food.**

» "I think we all went bald from pulling our hair out the first three months. There is no Airport 101," said one focus group participant, who has owned and operated a restaurant since 2011.

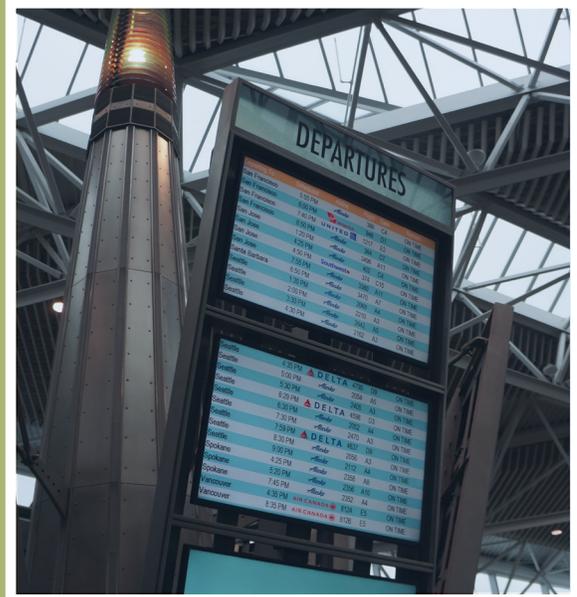


Top to bottom: The PDX food donation central refrigerator and daily donations from one participant; Poster used to promote the PDX annual rewards program for composting.



“Grab-and-go is prime real estate for us. [It’s] always fresh, fresh stuff. It is not a secondary market.”

75% of survey respondents use past sales data and passenger flow projections to make food management choices.



“If I run out of product, it’s bad business. You don’t want to run out. So we keep extra portions on hand.”

- » New restaurants struggle to balance costs while adjusting to the unique perspective of working in the airport, including irregular passenger flow times, long operating hours, and restricted access to deliveries (which must adhere to a schedule, enter through the secured airfield area and undergo inspection). It takes several months for new restaurants to optimize ordering, stock and preparation systems. As a result, restaurants tend to over-order and under-sell which results in large amounts of food waste. In fact, low sales were cited as the most common reason for food waste (57% of survey respondents). Over-ordering was the second most common answer (29%). This suggests that tenants struggle to optimize ordering and stocking of product to align with customer demand(s).
- » “If I run out of product, it’s bad business. You don’t want to run out. So we keep extra portions on hand,” said another focus group participant. “Particularly in the beginning, we started by over-ordering, and from there you continue to fine-tune your system”.
- » Participants in the focus groups generally agreed that food optimization improved over time, with increased knowledge and practice in the airport environment. For example, one manager described how the airport restaurant branch operates differently than other, less-constrained locations: Food is processed offsite for the airport location; the airport location uses simplified cooking steps in order to make new batches of food very quickly; if the manager determines an order bound for the airport is no longer needed, the restaurant is able to re-route and absorb that shipment at its other locations.
- » More experienced restaurant managers are adept at using data provided monthly by the Port Concessions Operations team. Using these data, they are able to more accurately gauge how much food to order and prepare for any given day of the month. These data can also be used to make staffing decisions and achieve maximum operating efficiency (examples of this data are included in Appendices C and D). Veteran restaurant managers find the use of sales data and enplanement projections to be invaluable, but acknowledge that it takes time to learn how to make the most of these tools.
- » “For people that have been around for a long time and are able to look at [the data] and know exactly what to do with that—great. The people that are new around here are just trying to figure out how to operate in this environment... and just try to use it to the best of their ability,” one interview participant said.
- » Nearly all restaurants are using some form of analysis to make food management decisions, whether via the Port provided data or their own in-house systems. 75% of survey respondents indicated that they predict sales using passenger flow data and/or past sales data. Several participants explained how they use daily flight boards displaying up-to-date schedules to predict hourly foot traffic near their restaurant. The number of arriving and departing flights can influence how much food should be prepared at any given time of day, and can also provide insight into what time the kitchen should operate. While monthly averages for arrival and departure times are provided by the Port Concessions Operations Team, daily flight boards provide up-to-date, accurate information.

2. The more experienced restaurant managers take advantage of Port-provided monthly sales and passenger enplanement projections to inform food ordering and preparation. Many restaurant managers- new and old- consult daily flight schedules to make real-time food management decisions.

3. Pre-packaged grab-and-go food displays are most efficient when preparation and stocking decisions are well-informed; otherwise, they lead to excess food production.

- » Grab-and-go food displays are particularly useful in an airport setting to encourage and facilitate quick, convenient food purchases. However, the majority of tenants do not prioritize food optimization when stocking their shelves.
- » “Grab-and-go is prime real estate for us. The grab-and-go is always fresh, fresh stuff. It is not a secondary market,” said a focus group participant. “And I think it’s just a part of human psychology

Top to bottom:

Grab-and-go displays have been identified as an integral aspect of foodservice business at PDX, but excess grab-and-go items make up the vast majority of food donation items; Departure and arrival flight boards provide up-to-date information on passenger flows; Freshly prepared food items can cause more food waste than pre-packaged or frozen food.

not to take the first of something, and not to take the last. So we've always got to have it stocked, and it has to look good."

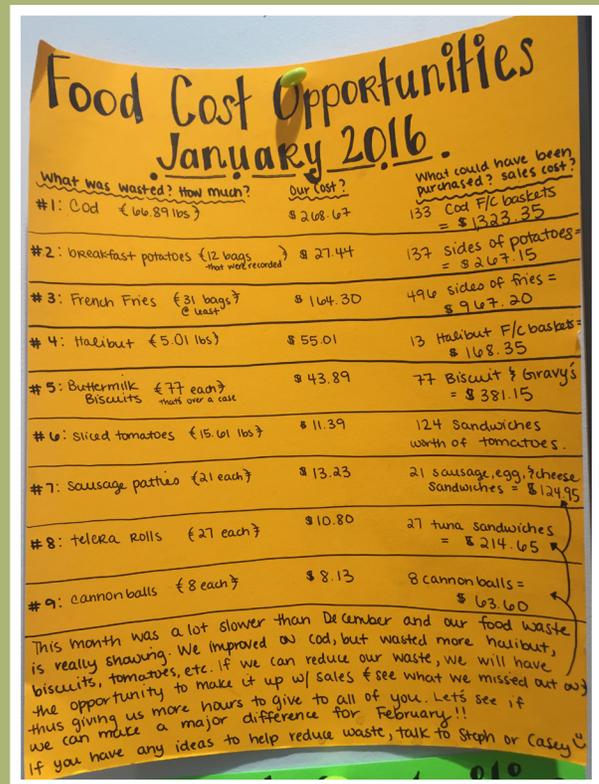
- » A few factors (including sales projections, flight schedules and other data) are used to inform grab-and-go provisioning at some restaurants . However, participants agreed that it took months after opening to notice patterns and adjust stock accordingly, during which time excess food waste was created. Many reported reducing or changing the items offered in their grab-and-go displays after assessing first month sales.
 - » It is the understanding of some restaurants that grab-and-go displays are required as a lease condition at PDX. In reality grab-and-go options are not required, but strongly encouraged by the Port.
 - » Some best management practices for grab-and-go displays were pointed out in the survey data. One manager explained that they created a "busy" count and a "slow" count that specifies how much to prep and stock in the grab-and-go depending on airport activity. Another manager, whose business is located pre-security (where they indicated grab-and-go sales are generally lower), stocks minimal food items and displays a sign reading "Will make fast & fresh if requested" together with pictures and descriptions of potential grab-and-go items.
 - » Several PDX retail shops carry a selection of grab-and-go food items. These businesses were outside the scope of this study. However, future efforts that focus on grab-and-go food waste should include these establishments due to the observed high volumes of grab-and-go waste they regularly generate and contribute to the PDX food donation program.
4. **Many restaurants use a waste log to track food loss, but the formats and level of detail vary greatly between restaurants. This study concluded that it is uncertain whether current waste log practices are an effective tool to reduce food waste at PDX.**
- » Half of the survey respondents indicated that their restaurant has some method in place to track wasted food. 32% of survey respondents use a waste log, specifically. Food waste logs are cited by many experts to be a tool for reducing food waste when they are used appropriately. But, it remains unclear whether or not all forms

of food waste are captured on logs all the time. Waste logs utilized by restaurants appeared to be used primarily for tracking employee error. They were not used to record other forms of food waste (for example, expired food or discarded prep food scraps). By not taking advantage of the log's additional resources managers may be able to identify employee error, but they may not be capturing the entire food waste picture.

5. **Restaurants that prepare food on-site using perishable ingredients tend to generate more food waste than restaurants sourcing fresh or frozen, pre-portioned ingredients that are prepared off-site.**
- » By comparing individual restaurant waste sort data, it is apparent that restaurants that prepare food on-site generate more food waste. On-site preparation creates a higher volume of prep food scraps, and opens a larger window for food loss from employee error. (It should be assumed that additional food waste is being generated outside of PDX by restaurants or businesses that prepare and prepackage food for airport restaurants). One restaurant manager acknowledged that the business' commitment to fresh, locally-sourced foods and seasonal rotating menu items might unintentionally contribute to higher volumes of food waste.
 - » "We prep all our food fresh, and losing some of that is just the cost of doing business, and staying in business," said another focus group participant.
6. **Employee error is a major contributor to food waste.**
- » 25% of survey respondents and several focus group participants indicated that employee error was a leading cause of food waste. Primary examples of employee error included over-preparation, inefficient preparation/slicing techniques, over-portioning, dropping food, burning food, or preparing the wrong item. Lack of training was the most commonly cited explanation for employee error. Several focus group participants acknowledged that training and staff communication- particularly from the first point of hire- is the key to establishing a work ethic that includes food waste reduction.

7. Many restaurants do not specifically engage employees in food waste reduction goals. Some have best practices that include employee education, training and rewards specific to food waste.

- » Most managers participating in the survey indicated that food waste is monitored, but results are used at a managerial level only. A few participants cited a various employee-oriented best practices related to food waste reduction. These included: employee training, employee outreach (posters and visuals), reward programs (rewarding sustainability “leaders” among staff), tools (waste logs), and visual waste inspections.
- » Only one survey respondent specifically mentioned that “keeping employees in the know” was part of the restaurant’s food optimization strategy. The need to inform employees was discussed further in the focus group setting. Overall, this participant’s restaurant exhibited the most integrated set of food optimization best practices. The basis of the success for this restaurant is a set of team-building norms that encourage leadership and waste reduction. The company has “two-minute management coaching” trainings; an employee recognition and appreciation system to incentivize employees; sets monthly performance improvement goals; and maintains a mentorship program wherein every employee is either a mentor or a mentee. Specific to food waste reduction, management holds trainings concerning portion sizes, and also tracks food waste through a detailed waste log. The monthly waste log is used to create a large poster board that equates food waste with lost revenue. The management holds monthly meetings where staff is engaged in a creative discussion around potential waste reduction solutions.



“Keeping employees in the know” is an important food optimization strategy.

- survey respondent

Top: an example of a poster aimed at engaging employees around the subject of food waste, displayed in one restaurant kitchen.

Recommendations

Based on the findings from the Food Optimization Study, the WMT has developed the following recommendations that fall under three major themes:

- » Provide Food Optimization Support and Training Specific to Airport Restaurants
- » Focus on Grab-and-go Efficiency
- » Increase Employee Awareness and Involvement

Provide Food Optimization Support and Training Specific to Airport Restaurants

Restaurant managers new to PDX would benefit from receiving tools needed to be a successful business at the airport. This would help them with forecasting, balancing costs and reducing food waste. During restaurant manager's first year at PDX would be the most influential time to provide support.

- » **Strategy: Review Port-provided projections**

Some restaurant managers used Port-provided sales and enplanement projections as a primary planning tool and found these data invaluable. Others viewed the information as a source of confusion. A consistent concern among all restaurants, however, was a "fear of running out of food". This fear created a tendency to over-order food, which leads to waste. While running out of a food item is considered undesirable by many restaurants, throwing away food (equating resources and potential profits) should also be objectionable to all businesses. Making use of the projections allows management to influence decisions about staffing as well as food purchasing and food preparation. The WMT recommends gathering more information about how successful restaurants use projections provided by the Port to optimize food use and curtail waste. How to establish effective methods to consult/reach out to restaurant managers should also be determined. Increased education and technical assistance will help restaurants both identify and mitigate primary causes of food waste and save money.

- » **Strategy: Cultivate information exchange**

Restaurant managers- and employees- should be provided a forum to discuss successes and challenges related to the

use of sales and passenger projection data to reduce food waste. This roundtable could be a place where food waste lessons learned and best practices are shared.

Focus on Grab-and-go Efficiency

Grab-and-go displays used by most restaurants were consistently identified as a source of food waste and lost profit. Opportunities to market grab-and-go food more efficiently while maintaining customer satisfaction should be considered and could reduce the amount of grab-and-go food waste at PDX.

- » **Strategy: Collect additional data to better understand grab-and-go food waste**

Grab-and-go-specific waste audits and continued engagement with managers and employees will help the WMT better understand the scope and causes of grab-and-go food loss. A more detailed assessment of grab-and-go food and marketing methods is needed to develop a comprehensive plan to reduce this source of food waste. For example, it would be helpful to understand whether there are certain types of food that are routinely wasted, and what factors (time of day, nature of the business, location within the terminal or marketing techniques) affect grab-and-go waste. The WMT can use this information to develop and promote best practices among airport restaurants to reduce grab-and-go waste.

- » **Strategy: Re-evaluate Port grab-and-go expectations**

The Port should evaluate lease language and Concessions Program expectations around grab-and-go food at restaurants. Grab-and-go displays are dynamic and should be tailored to each business to promote sales and reduce waste. Restaurants should be allowed flexibility to develop successful grab-and-go displays and the possibility to phase in grab-and-go items to reduce food waste loss and develop more efficient marketing and sales systems.

Increase Employee Awareness and Involvement

Increasing restaurant employee education on food optimization will promote a team-based approach to reducing food waste and help to align employees with business goals. To be successful, restaurant leadership

and managers must prioritize and promote food waste reduction, and explicitly share goals with employees.

» **Strategy: Expand WMT technical assistance program**

The WMT can readily expand or focus its existing outreach and technical assistance program to specifically address food optimization. This can include creating materials such as a uniform waste log template, educational posters, and tips for creating and tracking food waste reduction goals.

» **Strategy: New employee trainings**

There are opportunities to re-establish recurrent new employee trainings, which can include a review of the PDX Waste Minimization Program and emphasize the Port's commitment to food waste reduction. Employees will be aware of Port-wide goals from the start, which restaurant managers can reinforce by involving employees in restaurant-level goals and expectations.

Next Steps

The Port of Portland is a committed leader in the nation-wide effort to reduce food waste. As a management entity within a multi-tenant foodservice setting, the Port and its WMT have a unique opportunity to apply and expand upon the lessons learned from this study. The Port and the WMT will continue exploring opportunities to build on this study and to increase food optimization at restaurants in the future. The findings and recommendations from this study will be shared with the Port, restaurant stakeholders and other airports and businesses that could benefit from the information. The Port will continue the conversation around food optimization and work with its stakeholders to better understand and manage food waste.



Top to bottom: Staff at PDX's Hissho Sushi prep fresh food items, and dispose of food waste in the terminal's Central Waste Area.

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APPENDIX A - PDX Restaurant Survey

PDX Food Optimization Study- Restaurant Survey

Name: _____ Restaurant: _____ Date: _____

The Waste Minimization Team is conducting a study on food management techniques to gain insight into common business practices to help cut costs and prevent food waste. Please answer the following questions; it should take no more than 10 minutes. All answers will be kept confidential. Thank you!

1. How do you view food waste? (Select one that most applies)

- A necessary part of business
- Lost revenue
- Something that could be reduced

2. Does your restaurant track the food that is donated, composted, or thrown away? (Select one)

- Yes
- No
- I don't know

If yes, (Respond to all that apply)

We track at: _____ How is it measured? _____

- Purchasing/inventory _____
- Preparation _____
- Production/Service _____
- Other (Please specify) _____

3. What is the primary cause of food costs that are out of range? (Check all that apply)

- Over ordering
- Low sales
- Inadequate pricing
- Other _____

4. Does your restaurant use any of the following information to estimate daily food production?

(Check all that apply)

- Passenger flow projections
- Past sales volumes
- Inventory Information
- Other (please specify) _____

5. Does your restaurant have a policy to overstock food inventory to ensure products are always available?

- Yes
- No
- I don't know

6. Does your restaurant offer half orders, lunch specials, or smaller meal sizes?

- Yes
- No
- I don't know

7. During food preparation, does your restaurant encourage employees to use as much of the product as possible (ex. meat, veggies, etc.)?

- Yes
- No
- I don't know

8. What does your restaurant do with bruised or excess food that you won't sell customers, but is still edible? (Select one)

- Compost
- Donate
- Incorporate into menu items
- I don't know
- Other (please specify) _____

9. Do you think there are opportunities for your restaurant to decrease the amount of food waste it produces?

- Yes
- No
- I don't know

10. Is there any additional information that you think might help reduce food waste at PDX, or anything else you would like us to know?
(additional space on back)

11. May we contact you for follow up information?

(Circle one)

Yes No

Thank you for your feedback! Please contact the Waste Minimization Team at 503-415-6245 or LessWaste@portofportland.com with any questions.

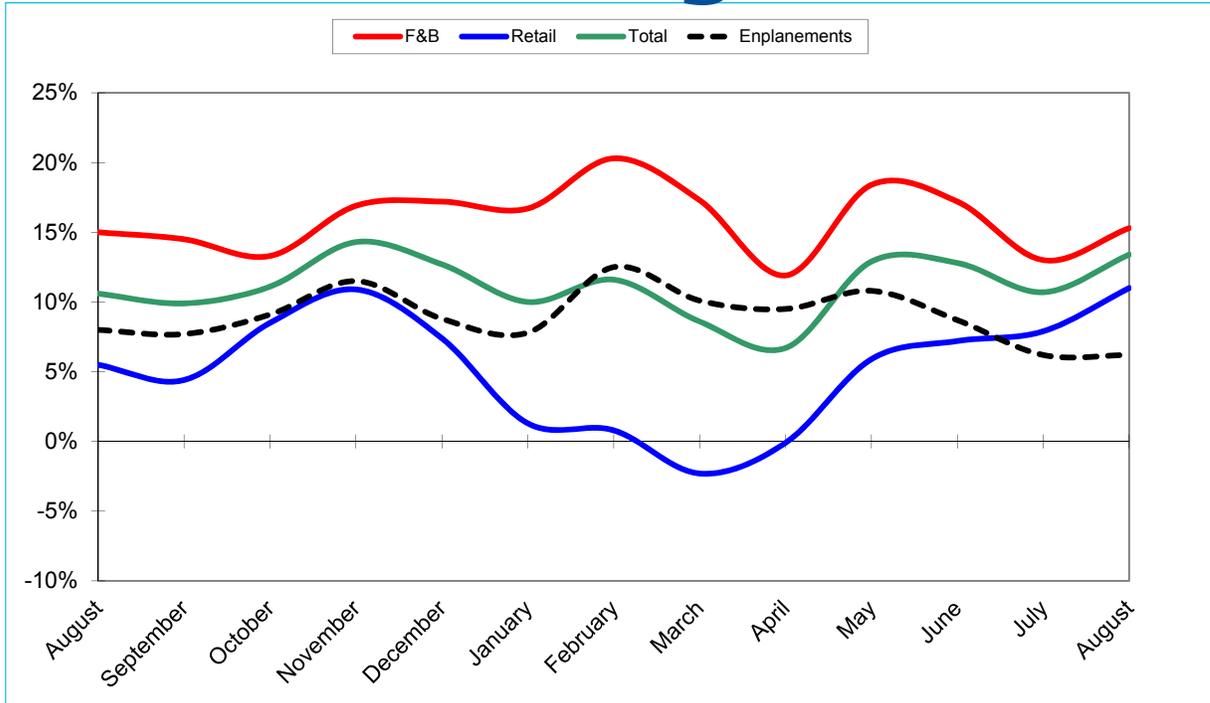


<p>1. How do you view food waste? (Select one that most applies)</p> <ul style="list-style-type: none"> <input type="radio"/> A necessary part of business 18% (5 out of 28 respondents) <input type="radio"/> Lost revenue 29% <input type="radio"/> Something that could be reduced 54% 	
<p>2. Does your restaurant track the food that is donated, composted, or thrown away? (Select one)</p> <ul style="list-style-type: none"> <input type="radio"/> Yes 50% <input type="radio"/> No 50% <input type="radio"/> I don't know N/A 	
<p>If yes, (Respond to all that apply) We track at:</p> <ul style="list-style-type: none"> <input type="radio"/> Purchasing/inventory 79% <input type="radio"/> Preparation 71% <input type="radio"/> Production/Service 50% <input type="radio"/> Other (Please specify) 50% 	<p><u>How is it measured?</u></p> <p>Keeping waste logs, monitoring sales, looking at end-of-day food waste buckets, monthly inventories.</p>
<p>3. What is the primary cause of food costs that are out of range? (Check all that apply)</p> <ul style="list-style-type: none"> <input type="radio"/> Over ordering 29% <input type="radio"/> Low sales 57% <input type="radio"/> Inadequate pricing 11% <input type="radio"/> Other 36% 	<p><u>Other:</u></p> <p>Lack of training, large portion sizes, employee mistakes, over-prepping.</p>
<p>4. Does your restaurant use any of the following information to estimate daily food production? (Check all that apply)</p> <ul style="list-style-type: none"> <input type="radio"/> Passenger flow projections 75% <input type="radio"/> Past sales volumes 75% <input type="radio"/> Inventory Information 46% <input type="radio"/> Other 11% 	<p><u>Other:</u></p> <p>Software programs, monitoring by-the-hour sales against sales projections, flight boards, current airport promotions.</p>
<p>5. Does your restaurant have a policy to overstock food inventory to ensure products are always available?</p> <ul style="list-style-type: none"> <input type="radio"/> Yes 32% <input type="radio"/> No 78% <input type="radio"/> I don't know N/A 	

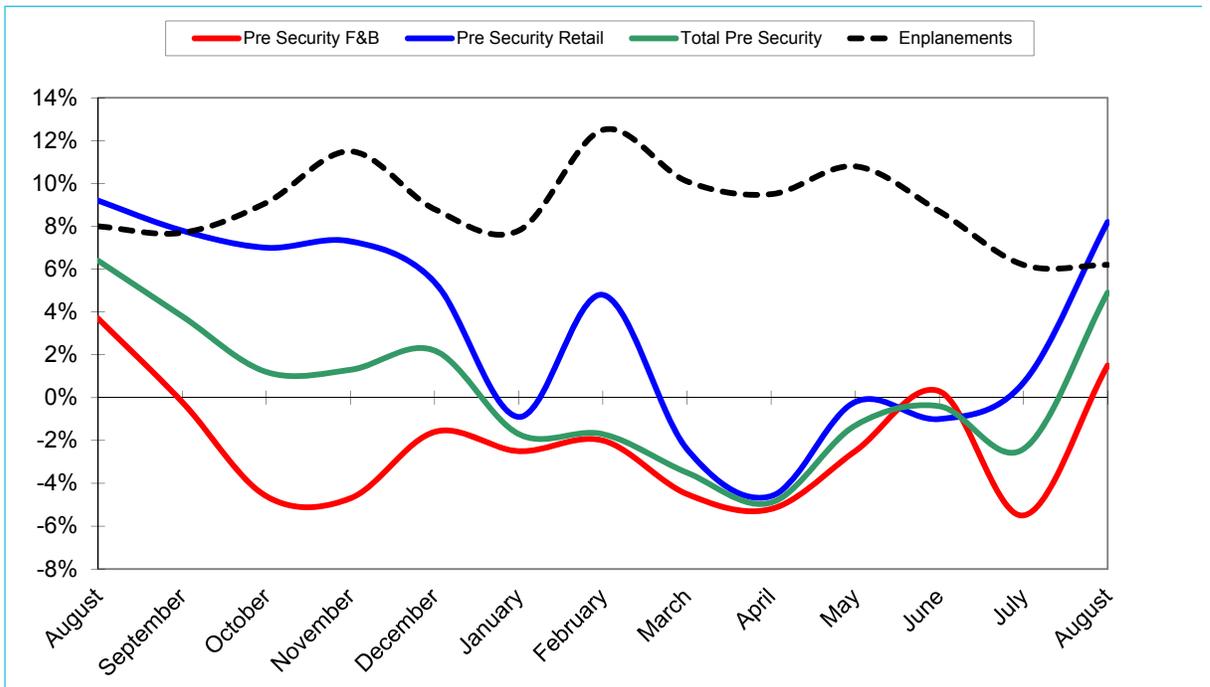
APPENDIX B - Question-by-Question Survey Responses

<p>6. Does your restaurant offer half orders, lunch specials, or smaller meal sizes?</p> <ul style="list-style-type: none"><input type="radio"/> Yes 50%<input type="radio"/> No 50%<input type="radio"/> I don't know N/A	
<p>7. During food preparation, does your restaurant encourage employees to use as much of the product as possible (ex. meat, veggies, etc.)?</p> <ul style="list-style-type: none"><input type="radio"/> Yes 65%<input type="radio"/> No 35%<input type="radio"/> I don't know N/A	
<p>8. What does your restaurant do with bruised or excess food that you won't sell customers, but is still edible? (Select one)</p> <ul style="list-style-type: none"><input type="radio"/> Compost 43%<input type="radio"/> Donate 14%<input type="radio"/> Incorporate into menu items 18%<input type="radio"/> I don't know 7%<input type="radio"/> Other 18%	<p><u>Other:</u></p> <p>Send back for credit from company, use good portion and discard unusable portion, depends a lot on the item.</p>
<p>9. Do you think there are opportunities for your restaurant to decrease the amount of food waste it produces?</p> <ul style="list-style-type: none"><input type="radio"/> Yes 86%<input type="radio"/> No 14%<input type="radio"/> I don't know	
<p>10. Is there any additional information that you think might help reduce food waste at PDX, or anything else you would like us to know?</p> <p>Better training for employees, shorter operating hours, a "smaller portion culture", increase enplanements, know every possible way to use a product, keep your employees "in the know" about food waste, comparing waste from month to month.</p>	
<p>11. May we contact you for follow up information?</p> <ul style="list-style-type: none"><input type="radio"/> Yes 93%<input type="radio"/> No 7%	

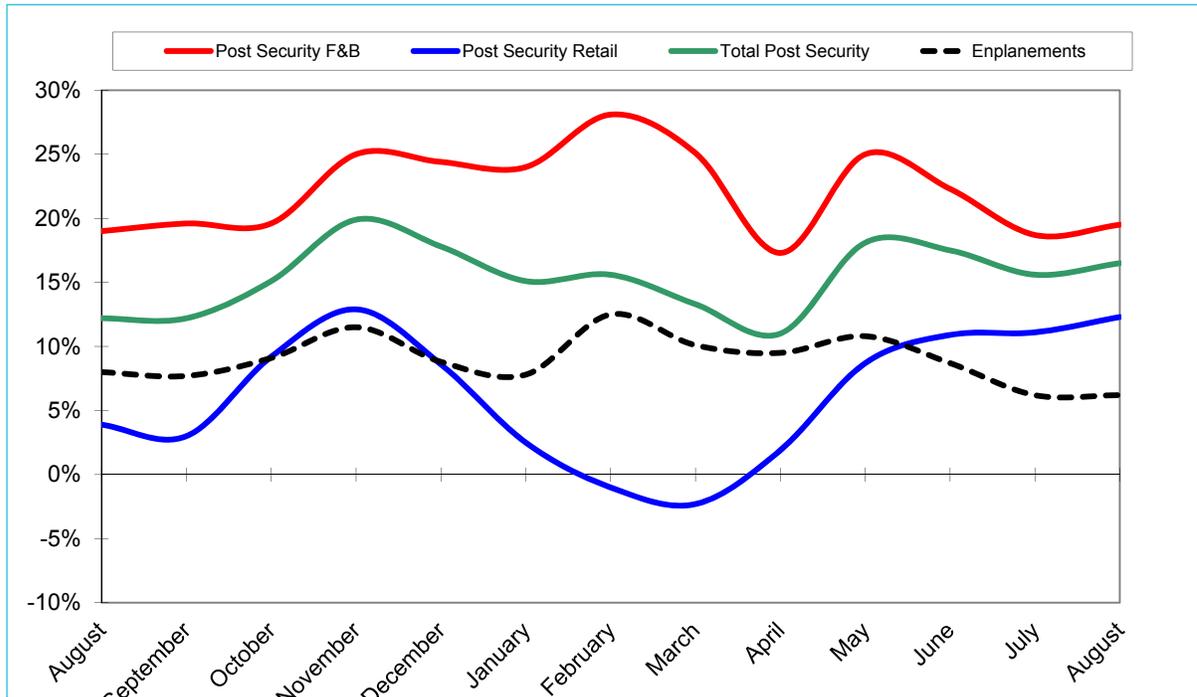
Total Program



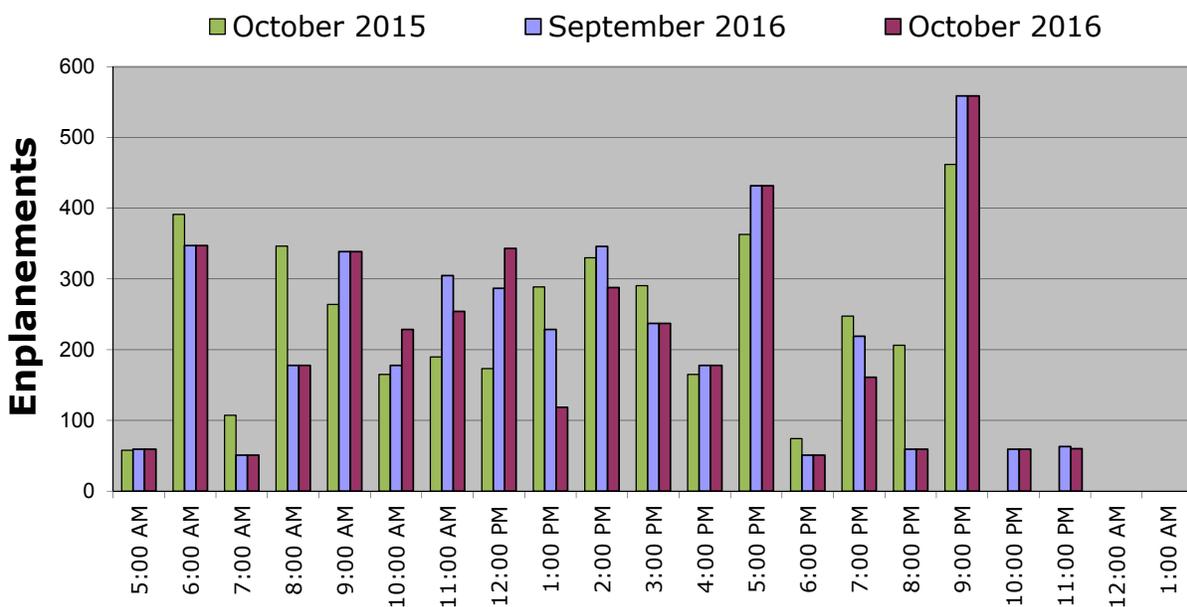
Pre-Security By Program & Total



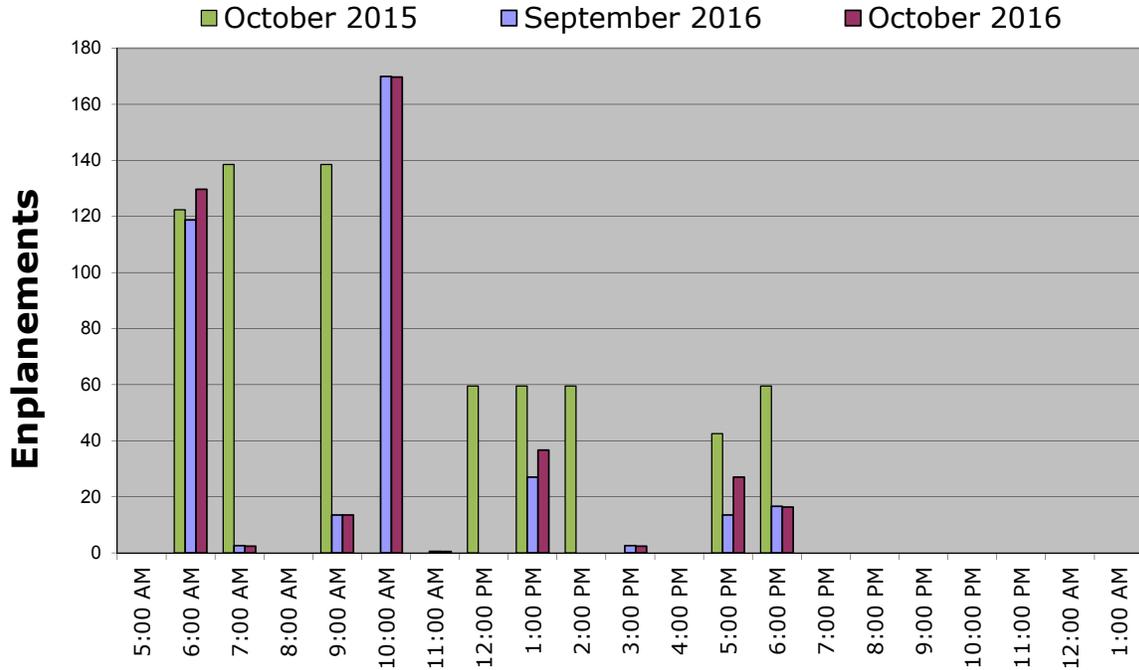
Post-Security By Program & Total



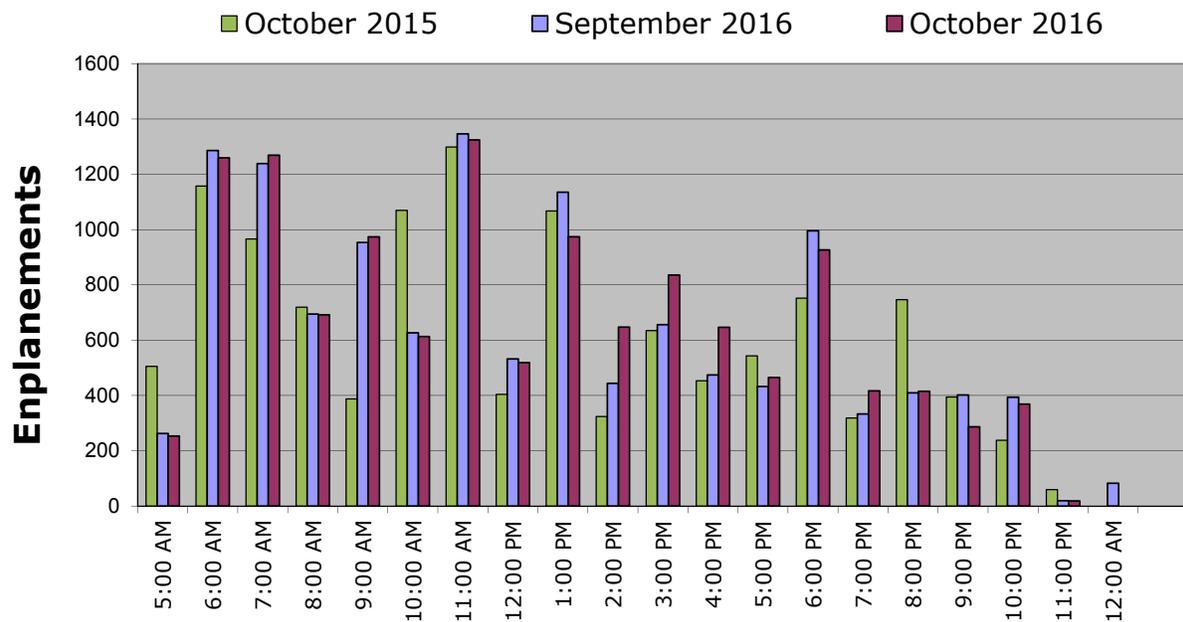
Enplanement Projections/Comparisons Concourse A



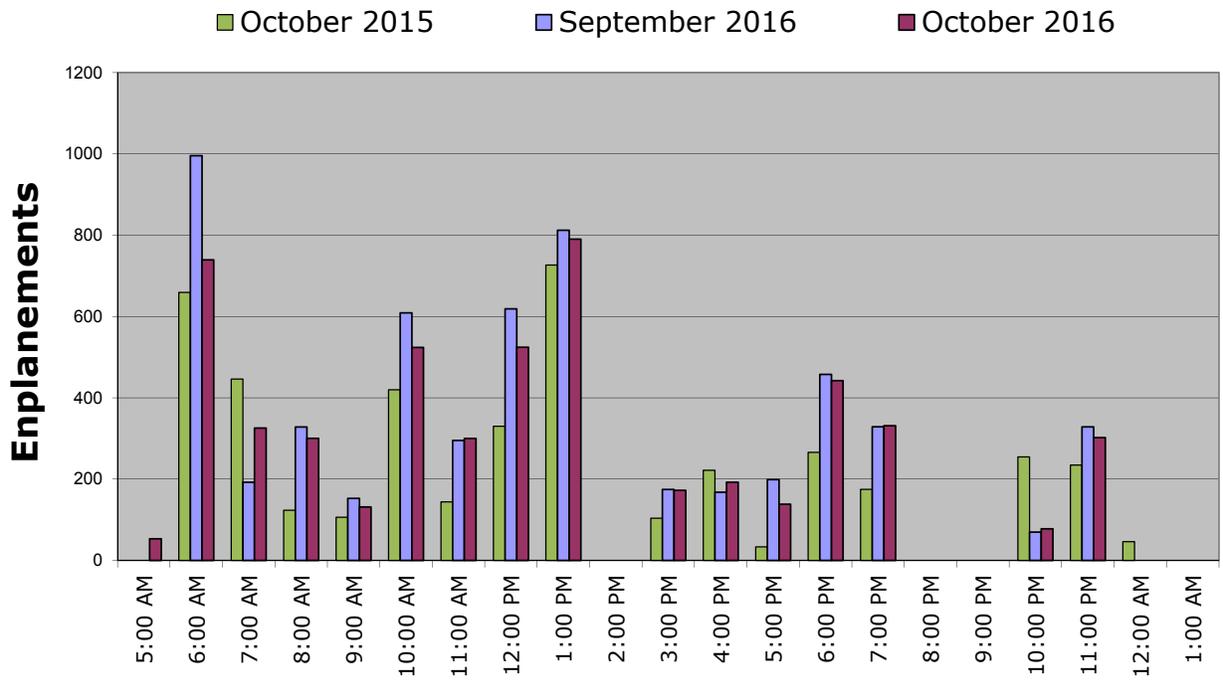
Enplanement Projections/Comparisons Concourse B



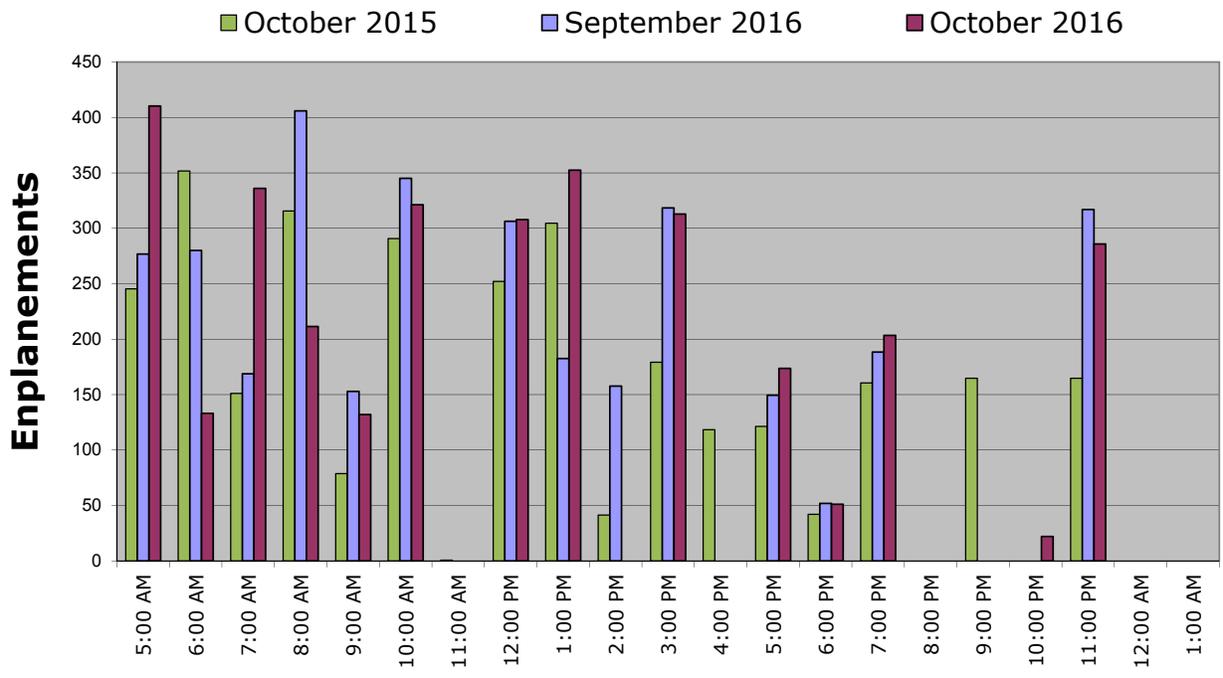
Enplanement Projections/Comparisons Concourse C



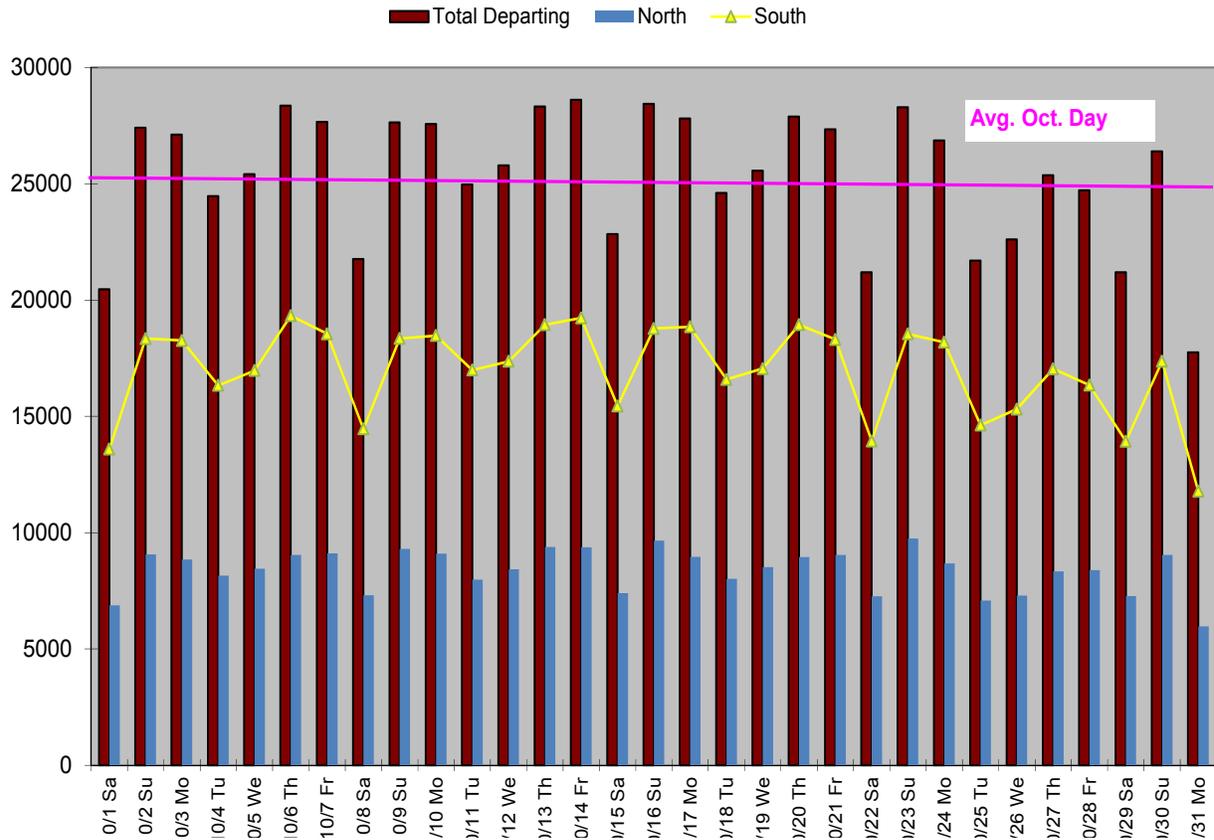
Enplanement Projections/Comparisons Concourse D



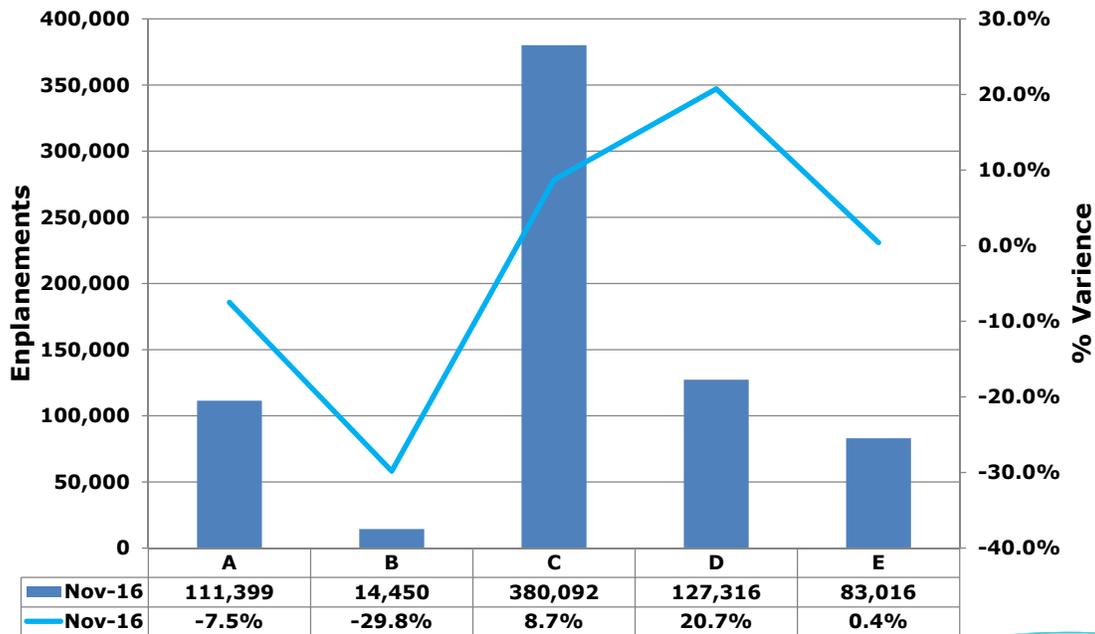
Enplanement Projections/Comparisons Concourse E



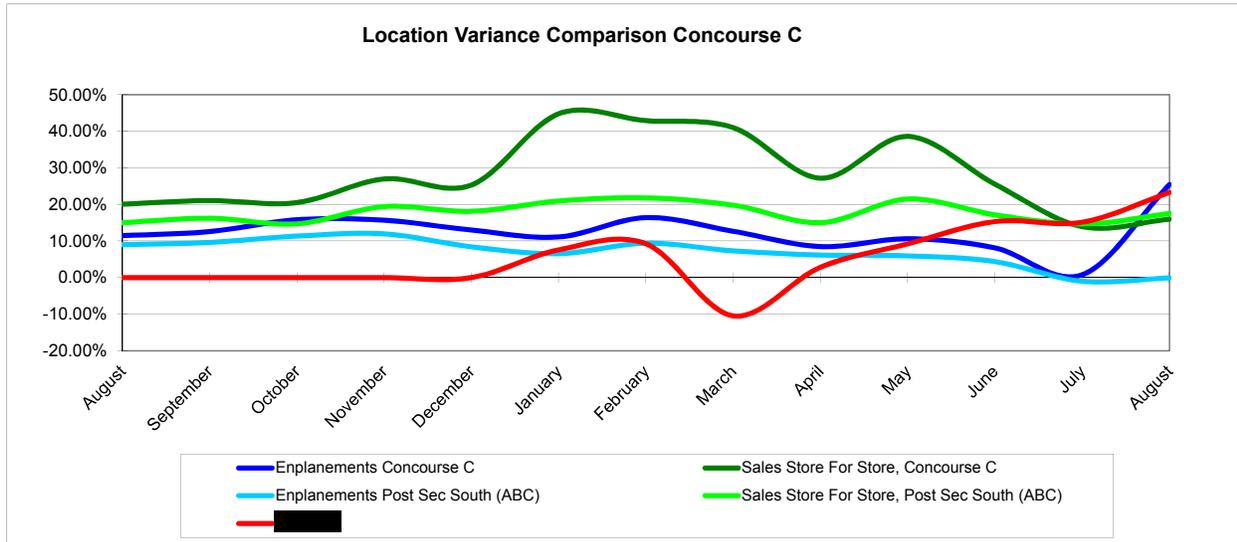
Forecast PDX Daily Departing Passengers: October 2016



Enplanement Forecast by Concourse November 2016

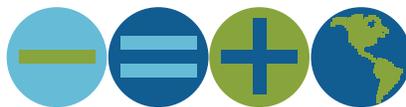


APPENDIX D - Scrubbed Tenant-Specific Port-Provided Data



	August	September	October	November	December	January	
Enplanements Concourse C	11.45%	12.59%	15.82%	15.69%	13.01%	11.11%	
Sales Store For Store, Concourse C	20.07%	21.06%	20.50%	26.98%	25.29%	44.80%	
Enplanements Post Sec South (ABC)	9.02%	9.62%	11.35%	11.96%	8.42%	6.55%	
Sales Store For Store, Post Sec South (ABC)	15.01%	16.24%	14.70%	19.42%	18.11%	20.94%	
[Redacted]	0.00%	0.00%	0.00%	0.00%	0.00%	7.59%	
	February	March	April	May	June	July	August
Enplanements Concourse C	16.39%	12.67%	8.47%	10.61%	8.13%	0.77%	25.43%
Sales Store For Store, Concourse C	42.91%	41.00%	27.17%	38.60%	25.55%	13.92%	15.96%
Enplanements Post Sec South (ABC)	9.39%	7.32%	6.16%	5.94%	4.37%	-1.01%	-0.09%
Sales Store For Store, Post Sec South (ABC)	21.81%	19.80%	15.02%	21.49%	17.17%	14.63%	17.51%
[Redacted]	9.24%	-10.46%	2.82%	9.23%	15.32%	15.14%	23.27%

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LESS WASTE MORE WORLD

 PORT OF PORTLAND