

The Central Puget Sound Food System Initial Conditions Report

Intermediate Product of the University of Washington

Urban Planning Studio (URBDP 506/7) Winter/Spring 2011



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Prepared for the Puget Sound Regional Council, Regional Food Policy Council

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Executive Summary

Over the past three months, the University of Washington Master of Urban Planning studio class has researched the state of the food system in the central Puget Sound region – defined here as the four counties served by Puget Sound Regional Council (PSRC). The report presented here is an interim product, intended for use by PSRC’s Regional Food Policy Council (RFPC). It is the result of three months of aggregating, synthesizing, and organizing data about the central Puget Sound region’s food system.

This document is meant to serve as a tool for the RFPC as the group makes decisions about its own mission and direction. The research provided herein should present a framework and starting point for discussions of how the RFPC should move forward with their work.

The report is broken up into eight sections described below. Each section explores issues and concerns about the regional food system. The sections are: Production, Processing, Distribution & Transportation, Consumption, Waste Stream, Environment & Tribes, Green Restaurants, and Comprehensive Plans. This report can be read independently, but can also be used as an accompaniment to the presentation given by the class at the March 11, 2011 meeting of the RFPC.

Production

This section covers the three main methods of production in the region: from traditional farmland production and fisheries, to the rising trend in urban agriculture. Also discussed are aspects of organic farming, which composes a rapidly growing share of the region’s agricultural production.

Processing

This section focuses on the steps taken between production and consumption for many food products. The progression of handling and altering food products to prepare them for distribution and consumption is analyzed, as well as the various organizations and industries involved throughout the process. This section also contains an analysis of the economic importance of the region’s food system.

Distribution & Transportation

This section covers large- and small-scale distribution of food from production to market. Infrastructure, consumer access, the emergency food system, and regional resiliency are also discussed.

Consumption

This section breaks down the discussion of consumption into three pieces: consumers, access, and health. The section then discusses demographics, economics, consumption patterns, and public health.

Waste Stream

This section discusses the final physical product of the food system, how it is generated, where it goes, and the varying methods of reintegration into the system. Complications around issues of sustainability, which factor heavily into decisions and actions regarding the regional waste stream, are explored.

Environment & Tribes

This section explores the close relationship between the natural environment and the regional food system. Similar to the Production section, agriculture and fisheries are a primary focus, though the negative impacts of both activities on the environment – flooding, climate change, habitat loss, etc. – as well as mitigation measures are the primary focus of this section. Also, the role of area tribes in the food system is discussed, with a focus on fish and shellfish rights.

Green Restaurants

This section explores the role of restaurants within the food system, and opportunities for the restaurant and hospitality industry to implement more sustainable practices. This work is part of a project in conjunction with the Seattle Chefs Collaborative aimed at producing an informational resource for restaurants within the central Puget Sound region. Topics relating to food sourcing, energy consumption, water use, and waste disposal are covered, as well as the social and economic impacts of restaurants on the regional economy.

Comprehensive Plans

This section contains an analysis of the integration of policies regarding the food system in the comprehensive plans for the four counties in the region, as well as the major urban centers of Seattle, Tacoma, Bremerton, and Everett. This scan determines to what degree food is present in these comprehensive plans.

Production

INTRODUCTION

Food production in the central Puget Sound region is an incredibly diverse sector. In addition to agriculture on farmlands, food production in the region also encompasses urban agriculture and fisheries. The intensity and depth of agriculture varies greatly across the region, and remains a critical part of each county's food production. Urban agriculture, although paling in comparison to rural agriculture, is growing in popularity as many cities are encouraging the development of community gardens and farms. Organic agriculture is also gaining popularity as well, even though the amount of organic food produced is a fraction of total food production in the region. However, central Puget Sound does produce a higher percentage than the rest of Washington, and we are seeing an increase in land being converted to organic production. Additionally, local fisheries are an important part of the region's production, as they currently make up a quarter of the total market value of food in the region. In total, rural and urban agriculture and fisheries comprise most of central Puget Sound's production.

METHODOLOGY

The approaches the studio team used to analyze food production differ according to type of production.

Data was collected for each of the three sectors of production, rural and urban production and fisheries, within each of the four counties and in the greater Puget Sound region. Agricultural and fishery data was collected from county agricultural reports and from state and federal government agencies, particularly the United States Department of Agriculture (USDA). The available data from each county was aggregated to represent total regional production. When available, data was compared over time to show trends in production.

Information on urban agriculture was difficult to obtain for the four counties. Because this information varies by county and city it was deemed inappropriate to aggregate at the regional level. Urban agriculture remains heavily tied to the efforts of non-profit organizations or citizen-gardeners, hence information is still scattered across a number of different sources. The data presented in this document is fairly localized, and this portion focuses on interesting and innovative developments in the central Puget Sound region. The examples included are only a fraction of those that currently exists and were chosen to show the variety of different approaches being used.

ACTORS

Production involves more than just producers. It is dependent on a wide range of actors, including individuals, non-profits, non-government organizations and government agencies. They act as advocates, educators, regulators and policy makers. Below is a partial list of actors involved in production in the Central Puget Sound.

Table 1-1: Food Production Actors

Rural and Urban Production		Fisheries
Buy Local Food in Kitsap	Snohomish County Focus on Farming	Puget Sound Salmon Commission
Cascade Harvest Coalition	South of the Sound Community Farm Land Trust	Seattle Port Authority
King County Agriculture Info	Tilth Placement Service	Washington State Department of Fish and Wildlife
King County Agriculture Commission	Tilth Producers	United States Fish and Wildlife Service
King County Farm Preservation Program	United States Department of Agriculture	Pierce County Shellfish Partners
King-Pierce County Farm Bureau	Vashon Island Growers Assoc	King County Shellfish Monitoring Program
Kitsap Community & Agriculture Alliance	WA Dept of Agriculture	Snohomish County Surface Water Management Division
Kitsap County Food and Farm Policy Council	WA State Grange	Washington Dept. of Ecology
Municipal Research and Services Center of Washington	Washington 4-H	NOAA National Marine Fisheries
Puget Sound Farm Network	Washington Farm Bureau	Mid-Puget Sound Fisheries Enhancement Group
Regional Food Policy Council	Washington Food System Directory	Washington Dept. of Natural Resources
Seattle Tilth	Western Sustainable Agriculture Working Group	People for Puget Sound
Sno-Valley Tilth	WSU Cooperative Extension Offices	USDA Agriculture Census

RURAL PRODUCTION

Rural food production in the central Puget Sound region comes from farmland in Kitsap, Snohomish, King and Pierce Counties. The following section evaluates data from rural farms for each county and the entire region.

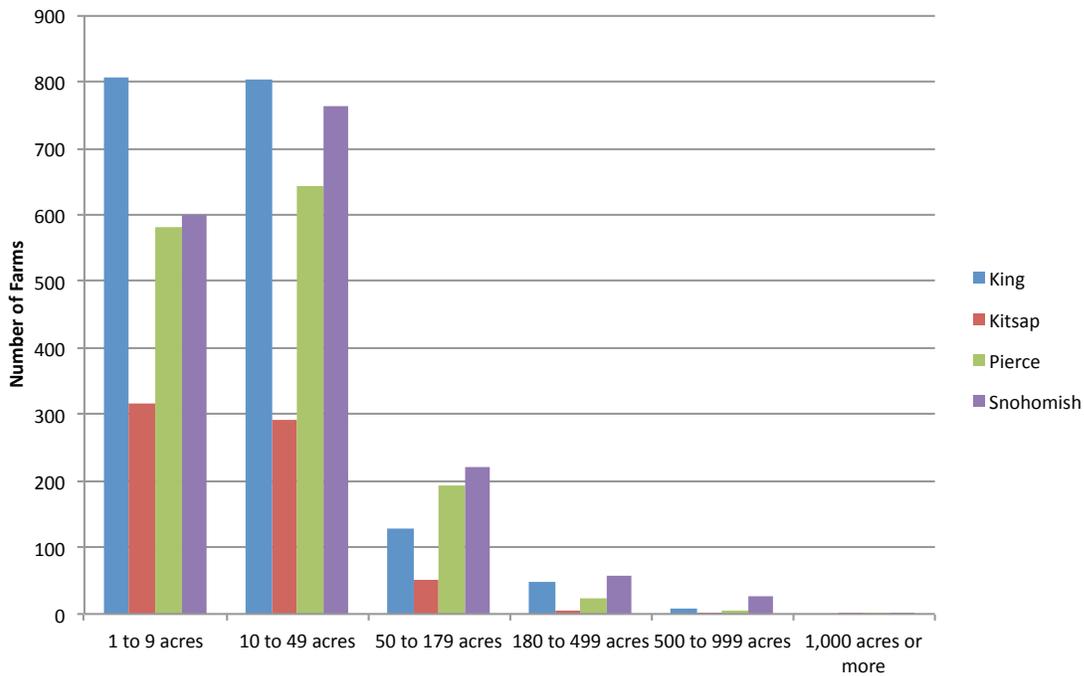
Figure 1-1 shows that most farms in the region are located in King, Snohomish and Pierce County and are about one to fifty acres in size. Total farmland and number of farms increased from 2002 to 2007, but declined overall from 1997 to 2007 as seen in Tables 1-2 and 1-3. Acres of farmland decreased significantly in both Pierce and Kitsap County from 1997 to 2007 at 29 percent and 58 percent respectively. Snohomish County is the only county where farmland increased during that time period. However, the total number of farms in the Snohomish County decreased during the period, indicating that farm size is increasing. More detailed data on farm size is available in Appendix 1-1.

Table 1-2: Number of Farms in Central Puget Sound 1997, 2002 & 2007

	Central Puget Sound					
	King	Kitsap	Pierce	Snohomish	Sound	Washington
1997	1,817	641	1,616	1,819	5,893	40,113
2002	1,548	587	1,474	1,574	5,183	35,939
2007	1,790	664	1,448	1,670	5,572	39,284
% change from 1997 to 2007	-1.51%	3.46%	-11.60%	-8.92%	-5.76%	-2.11%
% change from 2002 to 2007	13.52%	11.60%	-1.80%	5.75%	6.98%	8.51%

Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

Figure 1-1: Farms in Central Puget Sound Region by Size, 2007



Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

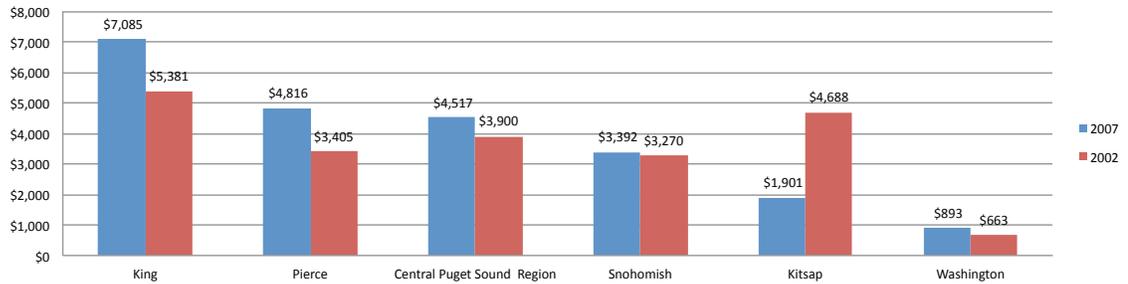
Table 1-3: Acres of Farmland in Central Puget Sound 1997,2002 & 2007

	King	Kitsap	Pierce	Snohomish	Central Puget Sound	Washington
1997	52,257	24,209	61,689	72,882	211,037	15,778,606
2002	41,769	16,094	57,224	68,612	183,699	15,318,008
2007	49,285	15,294	47,677	76,837	189,093	14,972,789
% change from 1997 to 2007	-6.03%	-58.29%	-29.39%	5.15%	-11.60%	-5.38%
% change from 2002 to 2007	15.25%	-5.23%	-20.02%	10.70%	2.85%	-2.31%

Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

Farmland in the central Puget Sound region faces greater development pressure than in the rest of Washington, as indicated by the higher market value of land in Figure 1-2. The value of farmland is highest in King County and lowest in Kitsap County. Value decreased in every county except Pierce County from 2002 to 2007. Decreases in value can be attributed to current market conditions, changes in local land use codes, and changes to property deeds such as conservation easements.

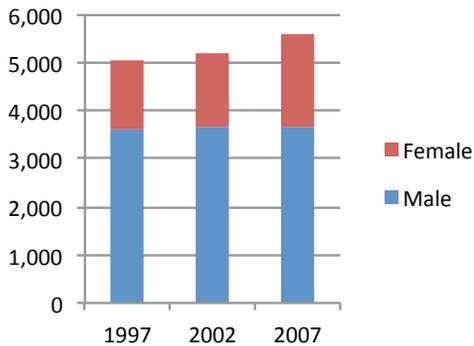
Figure 1-2: Average Market Value of Total Farmland by Acre 2002 and 2007



Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

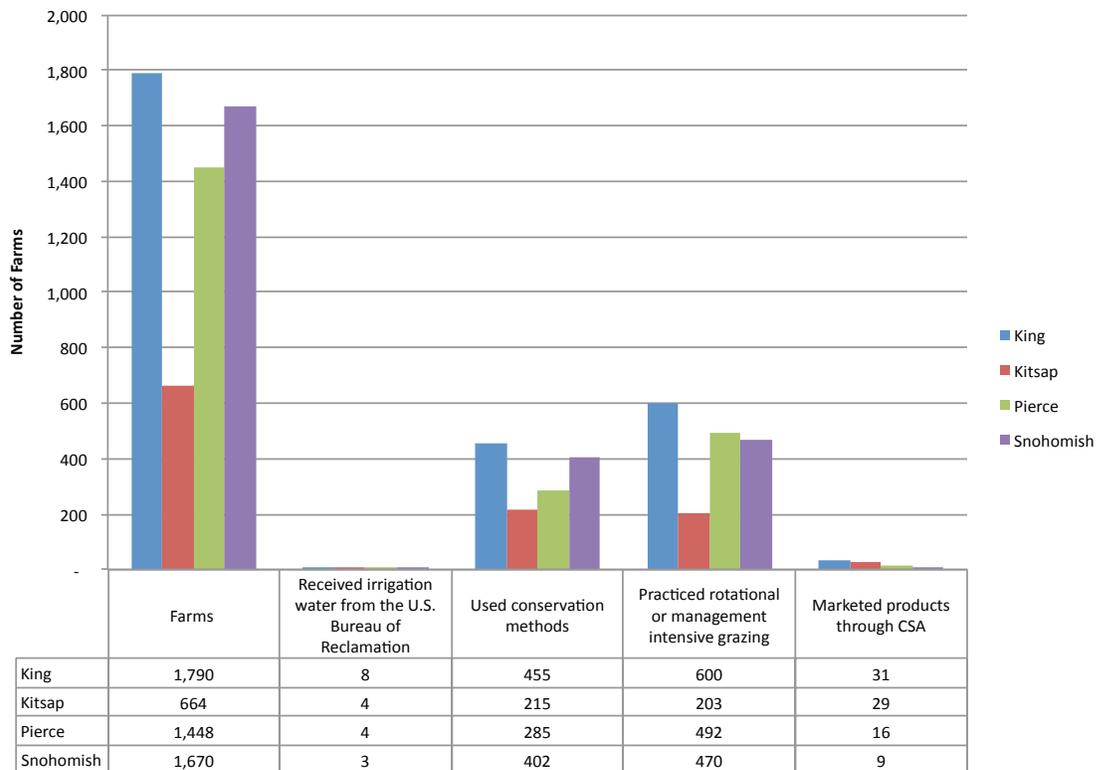
Figure 1-3 shows that the total operators of farms in the region slowly increased from 1997 to 2007. Male operators comprise a larger share of total operators, although the female share did rise during that time period. Figure 1-3 also shows that the number of farm operators in the region has increased slightly from 1997 to 2007. An increase in owners and operators indicates that the farming industry may be growing in the region.

Figure 1-3: Principal Farm Operators in Central Puget Sound 1997, 2002, and 2007



Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

Figure 1-4: Selected Practices in the Central Puget Sound Region, 2007



Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

A larger portion of farmers use conservation methods in farming practices in Kitsap, Snohomish and King County than in Pierce, as indicated in Figure 1-4. Also, more farms market their products through Community Supported Agriculture (CSA) in King and Kitsap County than in Pierce and Snohomish.

Table 1-4 lists the top crops by county. More farmland is used for the production of forage (hay and haylage, grass silage, and greenchop), than any other crop in all four counties. The primary function of forage production is food for livestock, either as pasture or feed.¹ This also shows that most farmland is not used for food production. Of farmland that is used for food production, vegetables harvested for sale are the most popular crops. Snohomish County has more farmland devoted to producing vegetables than any other county in the region.

¹ USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_evel/Washington/wav1.pdf.

Table 1-4: Top Crops by County in Central Puget Sound

Snohomish		Acres
Forage		12485
Corn for silage		5582
Vegetables harvested for sale		4140
Peas, green (excluding southern)		3302
Field and grass seed crops, all		1040
Remaining crops		26549
Kitsap		
Forage		990
Cut Christmas trees		481
Floriculture crops		160
Vegetables harvested for sale		111
Nusery stock		90
Remaining crops		1832
King		
Forage		5641
Corn for silage		1181
Vegetables harvested for sale		960
Floriculture crops		390
Cut Christmas trees		367
Remaining crops		8539
Pierce		
Forage		7493
Vegetables harvested for sale		1622
Nursery stock		879
Cut Christmas trees		741
Rhubarb		332
Remaining crops		11067

Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

Table 1-5 shows the top livestock items in the four counties in 2007. Laying hens are the most popular livestock item in every county except King, where cattle and calves top the list. Appendices 1-2, 1-3 and 1-4 show that more farms in the region produce cattle and calves than poultry and other livestock. Cattle and calf farms are used primarily for beef production rather than milk. Pierce and Snohomish County have the greatest number of cattle and calf farms in the region, while King and Snohomish County have the greatest number of poultry farms in the region. Appendix 1-2, 1-3 and 1-4 also show that there are more hog and pig farms than poultry farms and nearly all of them are located in Pierce and Snohomish Counties.

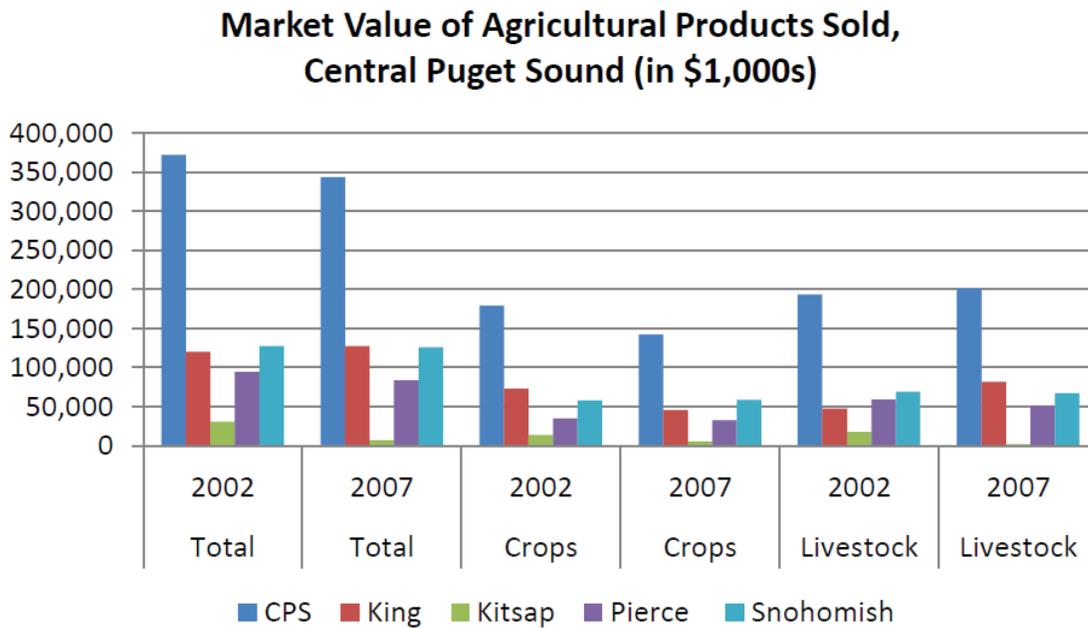
Table 1-5: Top Livestock Items in Central Puget Sound, 2007

King	Kitsap	Pierce	Snohomish
Cattle and calves	Layers	Layers	Layers
Layers	Horses and ponies	Pullets for laying flock replacement	Cattle and calves
Horses and ponies	Cattle and calves	Broilers and other meat-type chickens	Mink and their pelts
Mink and their pelts	Sheep and lambs	Cattle and calves	Horses and ponies
Alpacas	Broilers and other meat-type chickens	Horses and ponies	Rabbits and their pelts

Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

Market value for agricultural products sold in the region was nearly \$350 million in 2007, as shown in Figure 1-5. Livestock products generated more revenue than crop products in the region and in every county in both 2002 and 2007. Furthermore, Snohomish and King Counties generate the highest amount of agricultural sales in the region.

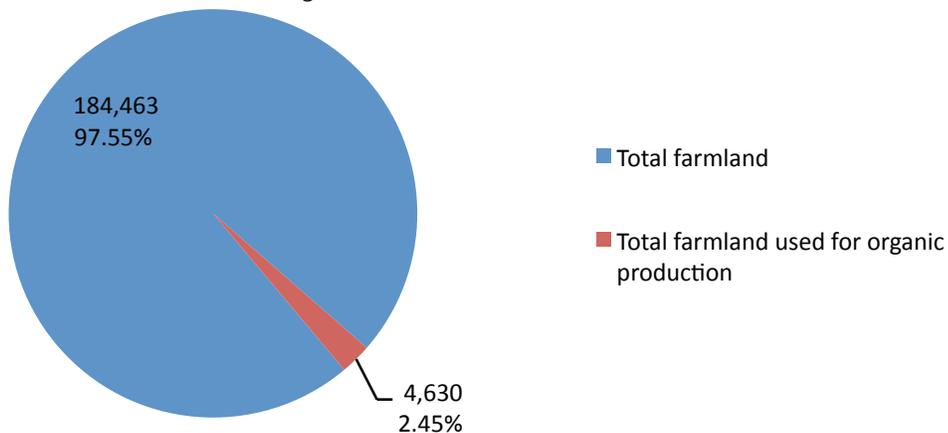
Figure 1-5: Market Value of Agricultural Products Sold in Central Puget Sound 2002 and 2007



Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

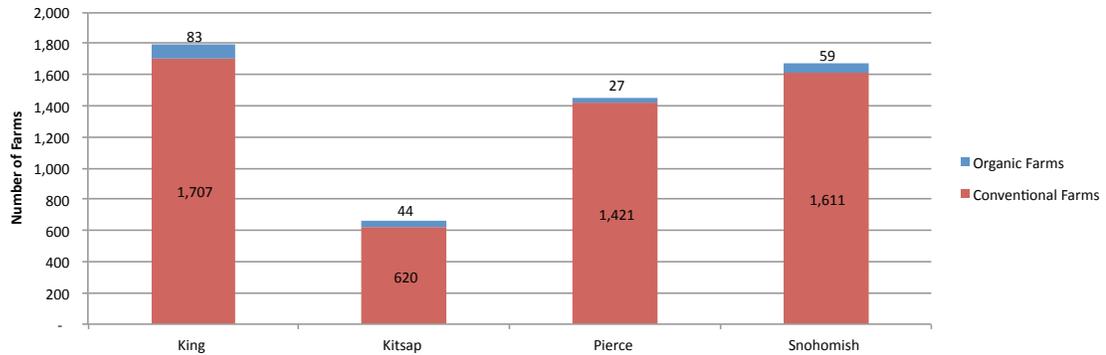
Of the total acres of farmland in the region about 2.5 percent is certified as organic production (Figure 1-6). King County has the most organic farms, and Kitsap County has the highest ratio of organic farms to conventional farms.

Figure 1-6: Organic Farmland in Central Puget Sound, 2007



Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

Figure 1-7: Organic Farms in Central Puget Sound, 2007



Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

The central Puget Sound region has seen an overall decline in farmland and number of farms since 1997, although since 2002 these figures have trended upward, as has the number of owners and operators. Most farmland in the region is used for the production of forage, not food production. Farmland that does produce food is primarily comprised of vegetable crops and livestock. Central Puget Sound has the highest value farmland in Washington State, which means that there is more pressure for farmers to sell land to developers, leading to a decline in regional farmland.

Snohomish County

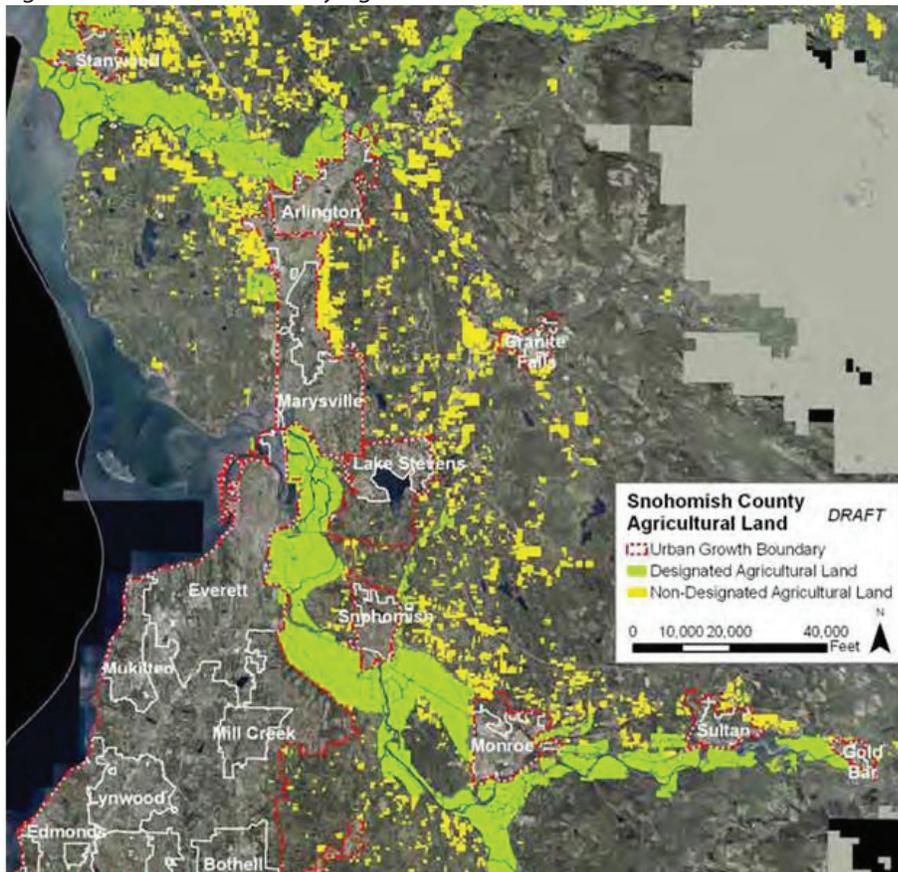
Snohomish County's rural lands are "characterized by broad floodplains and rolling pastures with a backdrop of majestic mountains," and most of the designated commercial farmland is located along the major rivers.² Partially due to the favorable landscape characteristics, Snohomish produces more than the other three counties.

The County commissioned a report, the Agriculture Sustainability Project, to document the existing farmland and agricultural economy in an effort to preserve farmland and strengthen their economy.³ The study was prepared by Nyhus Communications, LLC; Makers Architecture+Urban Design; and Community Attributes in July, 2009. They inventoried and mapped the designated and non-designated agricultural land in the county and collected information about use of the land, including what land was not being used for agricultural purposes.

²"Ag Sustainability Report: A Community Vision for Sustainable Agriculture in Snohomish County," Snohomish County Focus on Farming, (July 2009), B-13, http://www1.co.snohomish.wa.us/County_Services/Focus_on_Farming/agsustainability.htm.

³"Focus on Farming," Snohomish County, accessed 12 March 2011, http://www1.co.snohomish.wa.us/County_Services/Focus_on_Farming/.

Figure 1-8: Snohomish County Agricultural Land



Source: "Ag Sustainability Report: A Community Vision for Sustainable Agriculture in Snohomish County," Snohomish County Focus on Farming, [July 2009], B-8, http://www1.co.snohomish.wa.us/County_Services/Focus_on_Farming/agsustainability.htm.

They identified 69,160 acres of agricultural land, 14,995 acres of which they classified as non-active. Forage was the overwhelmingly dominant land use covering about 81 percent of the agricultural land.⁴ Their inventory is more detailed than the U.S. Agricultural Census data, and it includes specific types of land use such as marsh or wetland, sod farm, and waterfowl hunting. This detail is useful, because it shows how much land is being devoted to producing food, as opposed to forestland or tree farms.

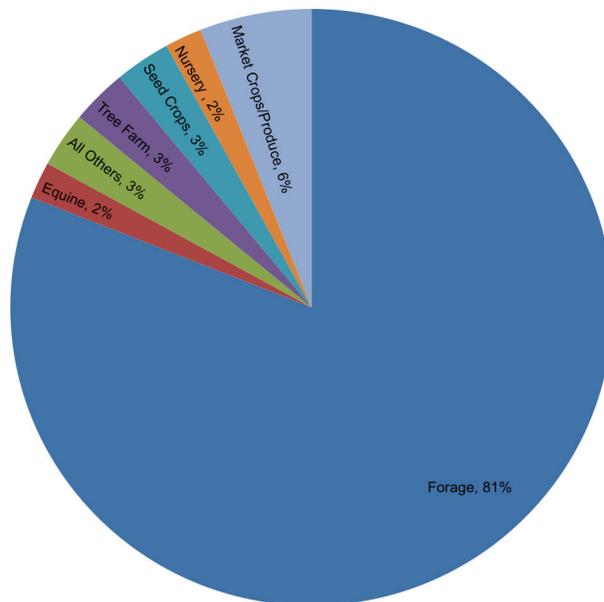
⁴"Ag Sustainability Report: A Community Vision," B-10.

Table 1-6: Snohomish County Agricultural Lands Inventory

Type of Agriculture	Designated Land (in acres)	Non-Designated Land (in acres)	Total Number of Acres
Berries	269.77	4.93	274.70
Equine	713.12	402.01	1,115.13
Fallow	1,843.29	915.68	2,758.97
Forage	25,133.25	18,578.37	43,711.62
Forested/Upland	8,062.27	NA	8,062.27
Grain	424.04	0	424.04
Market Crops/Produce	3,093.95	39.22	3,133.17
Marsh or Wetland	2,081.79	NA	2,081.79
Nursery	926.60	152.65	1,079.25
Orchard	32.76	3.53	36.29
Other	602.74	7.18	609.92
Poultry	22.91	122.59	145.50
Pumpkin Patch/ Corn Maze	220.28	0	220.28
Seed Crops	1,617.94	0	1,617.94
Sod Farm	182.12	0	182.12
Sports/Rec.	101.34	NA	101.34
Too Wet To Farm	703.40	89.05	792.45
Tree Farm	1,244.29	370.78	1,615.07
Waterfowl Hunting	1,197.36	0	1,197.36
TOTAL	48,473.24	20,685.99	69,159.23
Non-Agricultural Use	13,989.46	1,004.73	14,994.19
TOTAL IN ACTIVE PRODUCTION	34,483.79	19,681.26	54,165.05

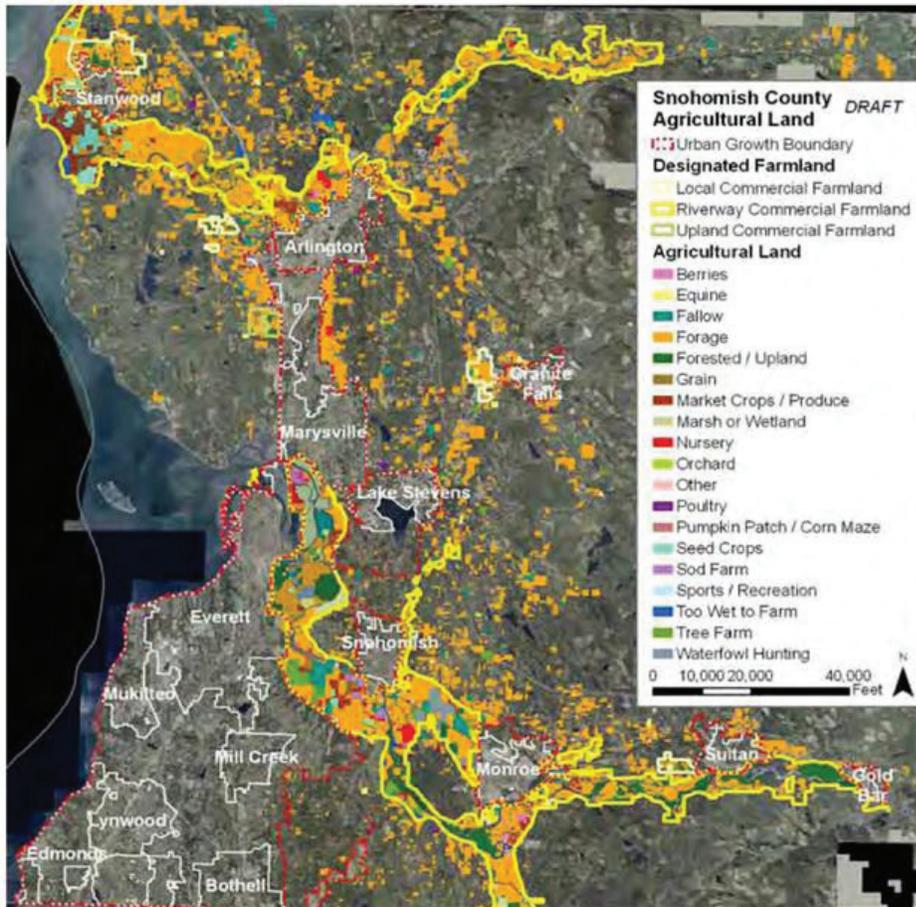
Source: "Ag Sustainability Report: A Community Vision for Sustainable Agriculture in Snohomish County," Snohomish County Focus on Farming, [July 2009], B-10, http://www1.co.snohomish.wa.us/County_Services/Focus_on_Farming/agsustainability.htm.

Figure 1-9: Snohomish County Agricultural Lands Distribution



Source: "Ag Sustainability Report: A Community Vision for Sustainable Agriculture in Snohomish County," Snohomish County Focus on Farming, [July 2009], B-11, http://www1.co.snohomish.wa.us/County_Services/Focus_on_Farming/agsustainability.htm.

Figure 1-10: Snohomish County Agricultural Land showing type and location of activity



Source: "Ag Sustainability Report: A Community Vision for Sustainable Agriculture in Snohomish County," Snohomish County Focus on Farming, [July 2009], B-12, http://www1.co.snohomish.wa.us/County_Services/Focus_on_Farming/agsustainability.htm.

Kitsap County

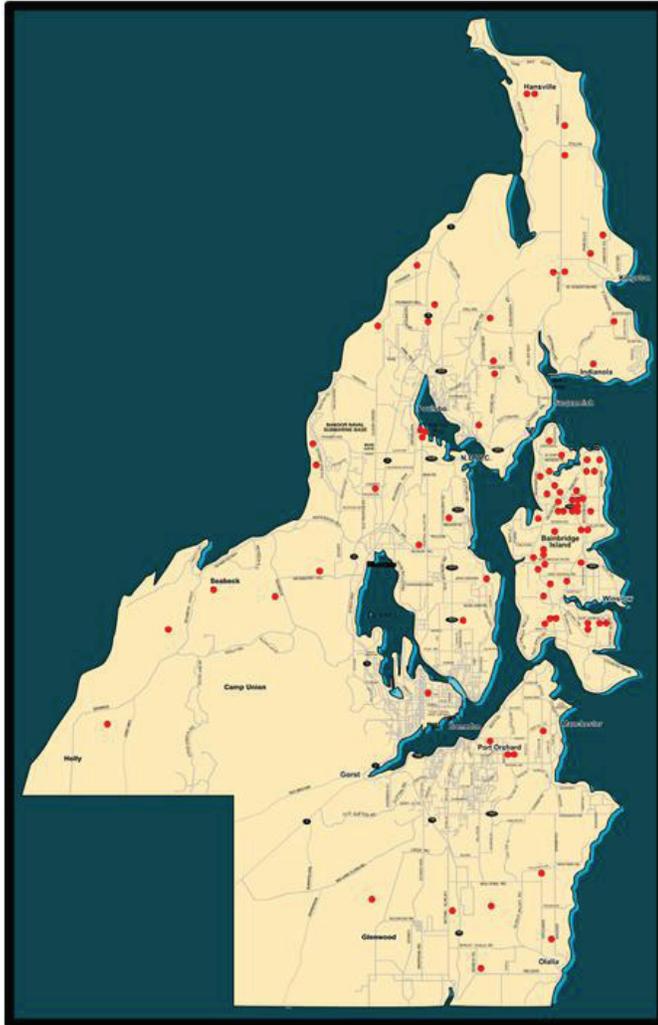
The geography of Kitsap County is not conducive to typical large-scale rural agriculture. It includes the Kitsap peninsula and two islands, Bainbridge and Blake. The majority of farms are less than 50 acres and produce mostly specialty crops and livestock, including many non-food items such as Christmas trees.

There is very little information on Kitsap County agriculture other than the U.S. Agricultural Census. The county is partnered with the Kitsap Extension of Washington State University (WSU) to provide a number of services for the small farms in the area, including classes on sustainable farming and ranching practices.⁵ They also produce a Kitsap County Farm Map, which lists the various farms that sell direct as well as a list of the products, ranging from beef to pumpkins to emus.⁶

⁵ "Small Acreage Farming," Washington State University: Kitsap County Agriculture, accessed March 12, 2011, <http://kitsap.wsu.edu/ag/index.htm>.

⁶ "Kitsap County Farm Map," Washington State University: Kitsap County Agriculture, accessed March 12, 2011, http://kitsap.wsu.edu/ag/farm_map.htm.

Figure 1-11: Kitsap County Farm Map



Source: "Kitsap County Agriculture," Washington State University, accessed March 12, 2011, http://kitsap.wsu.edu/ag/farm_map.htm.

King County

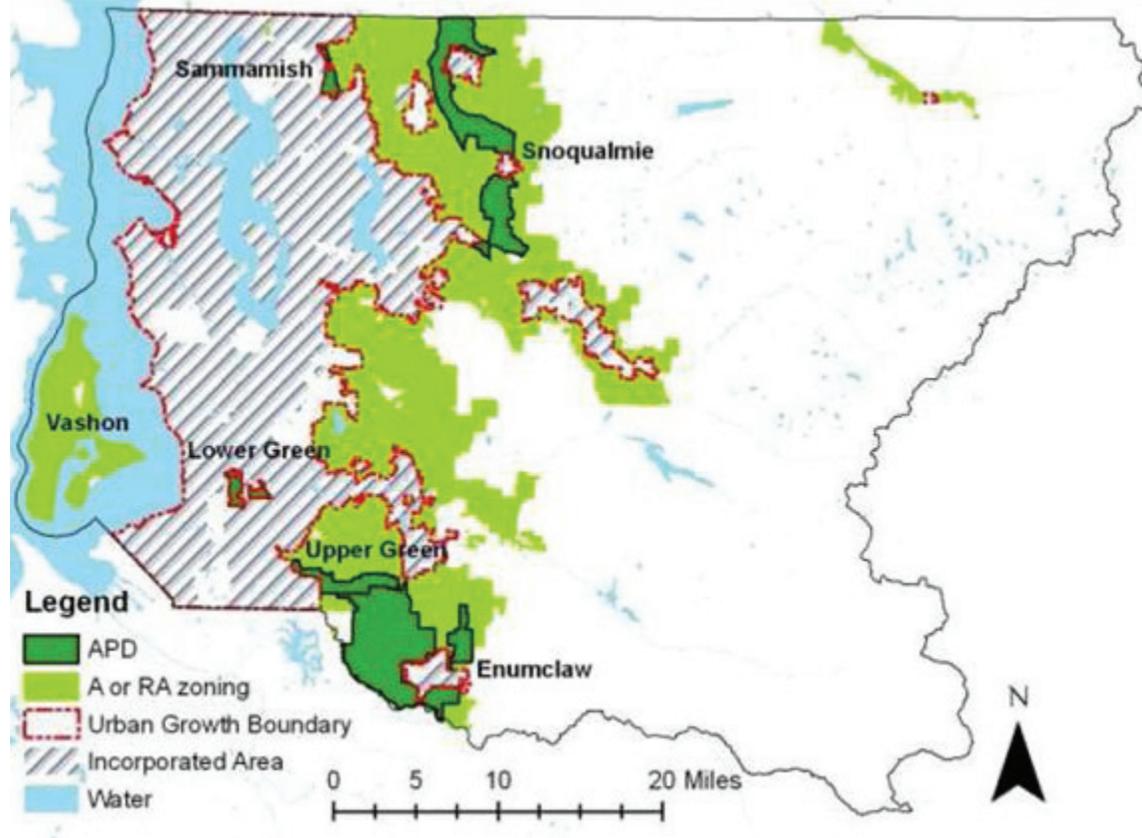
King County has some of the best farming conditions in the United States because of highly productive river bottom soils, moderate temperature and sufficient rain.⁷ In 2009, the Water and Land Resources Division with the assistance of the King County Agriculture Commission created the Farms Report on the conditions of agriculture in the county. Detailed information regarding farm production in the county can be accessed in the report.

Figure 1-12 illustrates the Agricultural Production Districts and areas zoned for agriculture in King County. Major farm production areas of the county are located around Snoqualmie and the Upper Green River Valley. In 2007 there was approximately 49,285 acres of land in farms in King

⁷ King County Water and Land Resources Division, "FARMS Report," December 2009, accessed March 12, 2011, <http://your.kingcounty.gov/dnrp/library/water-and-land/agriculture/future-of-farming/farms-report-no-apdx.pdf>.

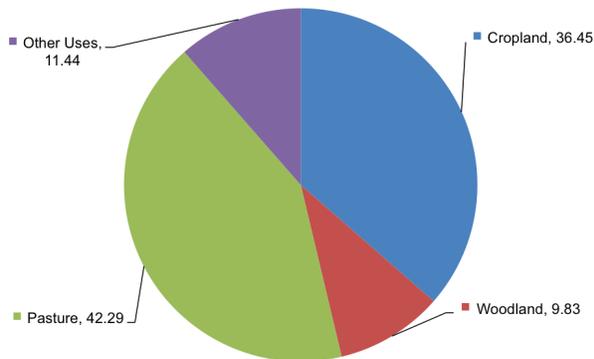
County and 1,790 farms.⁸ Figure 1-13 shows that the majority of farmland in the county is used for cropland and pasture. Figure 1-14 shows that livestock generates more revenue than other farm uses.

Figure 1-12: Location of Farmland in King County



Source: King County Water and Land Resources Division, "FARMS Report," December 2009, accessed 12 March 2011, <http://your.kingcounty.gov/dnrp/library/water-and-land/agriculture/future-of-farming/farms-report-no-apdx.pdf>.

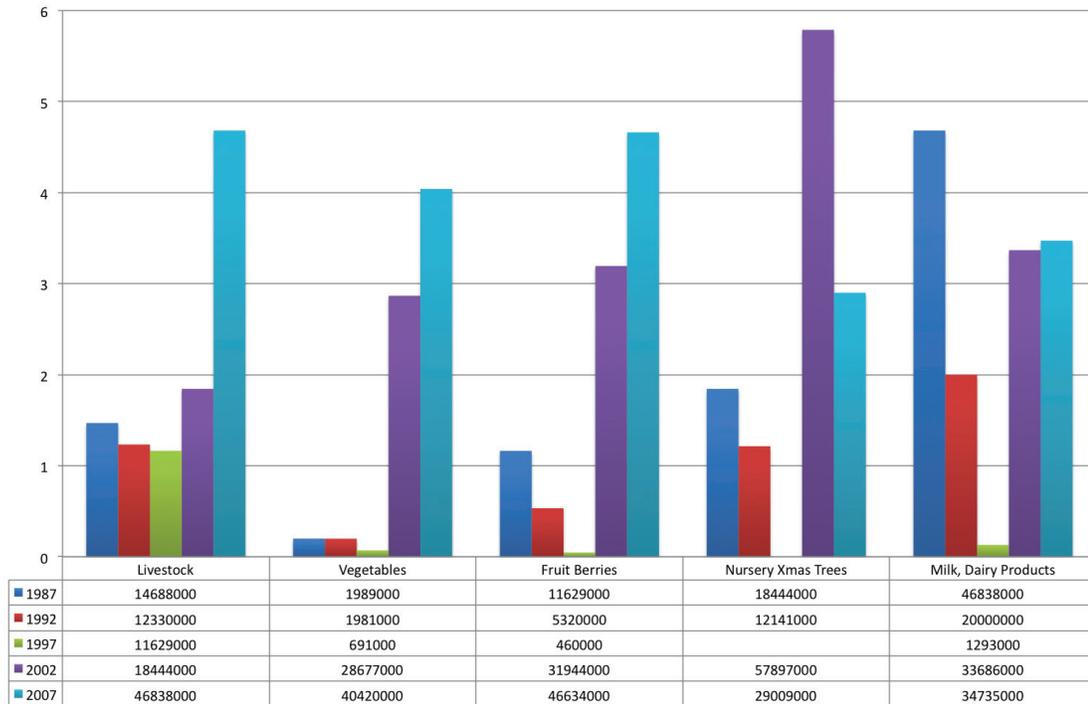
Figure 1-13: King County Land in Farms



Source: USDA 2007 Census of Agriculture State and County Profiles, "King County, WA," 2007, accessed March 12, 2011, http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/Washington/cp53033.pdf.

⁸ US Department of Agriculture, 2007 Agriculture Census, King County, accessed March 12, 2011, <http://www.agcensus.usda.gov/>.

Figure 1-14: Market Value of King County Agricultural Products, In Millions



Source: King County Water and Land Resources Division, "FARMS Report," December 2009, accessed March 12, 2011, <http://your.kingcounty.gov/dnrp/library/water-and-land/agriculture/future-of-farming/farms-report-no-apdx.pdf>.

Pierce County

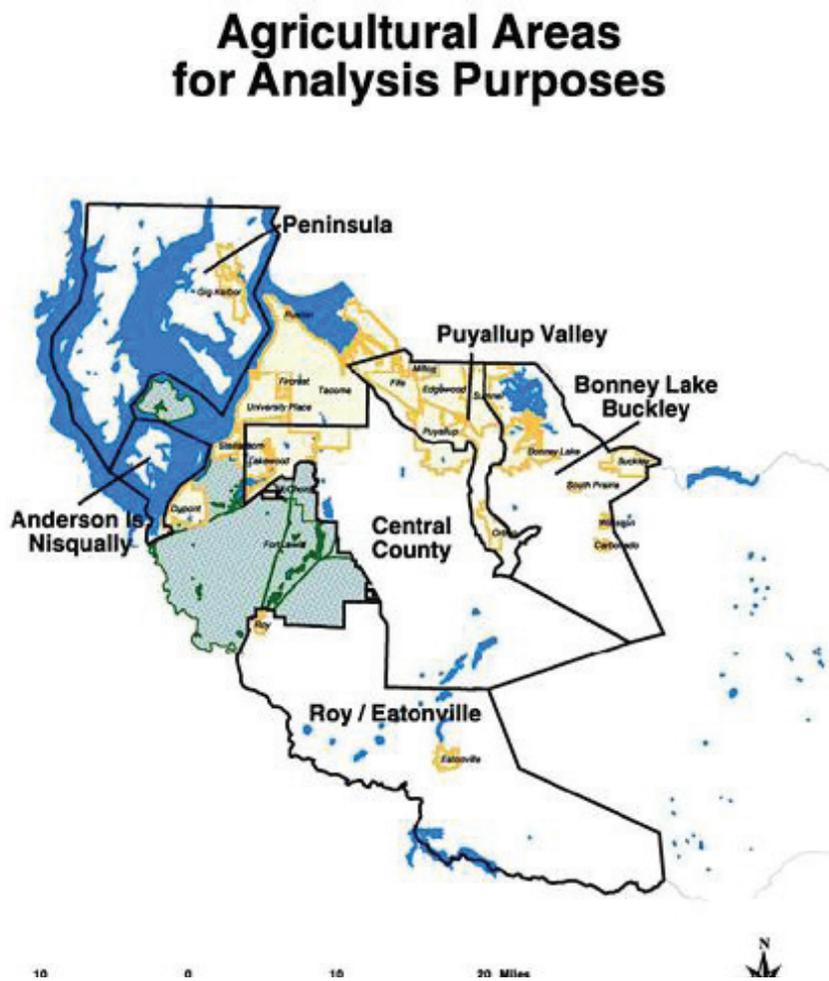
Pierce County has a long tradition of agriculture that is centered around the Puyallup Valley.⁹ In January 2006 Barney and Worth Inc. and Globalwise Inc. created the Pierce County Agriculture Strategic Plan for the Pierce County Economic Development Division. It reports on the state of agriculture in the county to identify ways to curb the reduction in local farmland. A more comprehensive analysis on agriculture in Pierce County can be found in that report.

In 2007, there were approximately 47,677 acres of farmland and 1,448 farms in Pierce County.¹⁰ Figures 1-15 identifies the agriculture areas in Pierce County and Table 1-7 shows that most of the land is located in the Roy/Eatonville area. The majority of agricultural land is dedicated to crops as evidenced in Figure 1-16.

⁹ Barney & Worth Inc. and Globalwise Inc., "Pierce County Agriculture Strategic Plan," Pierce County Economic Development Division, January 2006, accessed March 11, 2011, http://barneyandworth.com/reports/webreport_piercecountyagriculture.pdf.

¹⁰ US Department of Agriculture, 2007 Agriculture Census, King County, accessed March 12, 2011, <http://www.agcensus.usda.gov/>.

Figure 1-15: Pierce County Agricultural Areas



Source: Barney and Worth Inc. and Globalwise Inc., Pierce County Agriculture Strategic Plan, January 2006, http://www.co.pierce.wa.us/xml/abtus/ourorg/exec/ecd/documents/REPORT_Pierce%20County%20Agriculture%20Strategic%20Plan.pdf

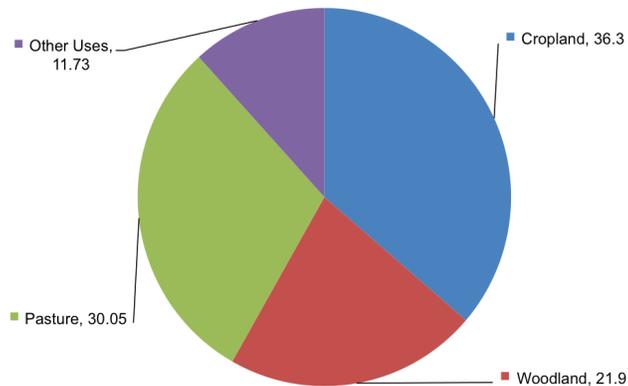
Table 1-7: Pierce County Land in Agriculture Areas

Pierce County Agricultural Land		
Agricultural Area	Ag Land (acres)	% Inc./UGA ¹
Anderson Island/Nisqually	1,787	0%
Bonney Lake/Buckley	7,290	2.5%
Central County	7,318	5.7%
Peninsula	5,155	0%
Puyallup Valley	6,606	24.7%
Roy/Eatonville	19,723	0.8%
Total	47,880	5.0%

¹ Percentage of agricultural land that is located within an incorporated area or urban growth boundary.

Source: Barney and Worth Inc. and Globalwise Inc., Pierce County Agriculture Strategic Plan, January 2006, http://barneyandworth.com/reports/webreport_piercecountyagriculture.pdf.

Figure 1-16: Pierce County Land in Farms



Source: USDA 2007 Census of Agriculture State and County Profiles, "Pierce County, WA," 2007, accessed 12 March 2011, http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/Washington/cp53053.pdf.

URBAN PRODUCTION

The USDA estimates that 15 percent of food produced in the world originates within urban areas.¹¹ In the Puget Sound region, urban agriculture has become increasingly popular as concerns over food security, health awareness and environmental impacts have come to the forefront. The Washington Department of Health lists community gardens as one strategy to increase access to healthy food.¹² Many cities in central Puget Sound have addressed urban agriculture in their policies or have local organizations devoted to promoting urban agriculture.

Participating in urban agriculture can help residents lower the cost of their food or provide a supplemental source of income. Urban agriculture can also promote healthier lifestyles through better nutrition and higher consumption of vegetables and fruit. In many cases, urban agriculture can provide social benefits, such as strengthened community relationships or wider recreational and educational opportunities for both adults and children.¹³ Some community gardens or organizations participate in donation programs in the Puget Sound region, where growers can donate extra produce to food banks or schools.

The scale of urban agriculture differs from area to area. Although similar, the distinction is made between community gardens and urban farms by ownership (public or private) and for-profit (in comparison to non-profit).¹⁴ Included in this section are community supported agriculture programs (CSA). Although produce from CSA may come from either urban or non-urban sources, this type of market is specifically geared towards connecting local agriculture to urban areas.

The extent and focus of urban agriculture varies greatly among the four-county region, no

¹¹ USDA, "Urban Agriculture," Alternative Farming Systems Information Center, January 4, 2011, http://afsic.nal.usda.gov/nal_display/index.php?info_center=2&tax_level=2&tax_subject=301&level3_id=0&level4_id=0&level5_id=0&topic_id=2719&placement_default=0.

¹² Washington Department of Health, "Nutrition and Physical Activity Plan: Policy & Environmental Approaches," July 2008, <http://www.doh.wa.gov/cfh/NutritionPA/publications/08-plan.pdf>, 20.

¹³ City of Seattle Department of Neighborhoods, "A Stroll in the Garden: An Evaluation of the P=Patch Program," August 2009, <http://www.seattle.gov/neighborhoods/ppatch/documents/PPatchEvaluation2009.pdf>; Ellen Teig et al., "Collective efficacy in Denver, Colorado: Strengthening neighborhoods and health through community gardens," *Health & Place* 15 (2009): 1115-1122.

¹⁴ WHY, "Community Gardens," Food Security Learning Center, January 2010, <http://www.whyhunger.org/programs/fslc/topics/community-gardens.html>.

statistics were found a region-wide scale. City and countywide statistics and policies have been inconsistent across the region as well. However, many efforts to promote urban agriculture are underway. Several non-profits work with local communities and governments to promote urban agriculture. Some significant organizations to note include Cascade Harvest Coalition, Washington Tilth, and WSU extension. These organizations hold important resources and knowledge to support urban agricultural efforts in central Puget Sound region, and local jurisdictions should look to these resources if and when urban agriculture becomes a priority.

WSU Extension Master Gardener Program has been critical in the development of community gardens around the region. The program uses an innovative method of education, in which trained volunteers become Master Gardeners, who in turn pass their knowledge on to others. Currently there are over 4,000 Master Gardeners trained in the state of Washington.¹⁵ Each of the Master Gardener programs provides services to the community by maintaining demonstration gardens and plant clinics and by providing a resource for gardeners in the state. WSU Extension has partners with other urban agriculture organizations and municipalities to develop new gardens.

Washington Tilth plays a similar role in the central Puget Sound region. Currently there are seven branch chapters working to promote organic agriculture. The seven chapters often collaborate with other organizations in the counties. Washington Tilth provides the community with gardening education through classes and consultation. Each Tilth chapter has been involved in helping to establish gardens in local communities and partnering with other organizations such as the Master Gardener Program, Seattle P-Patches and Cascade Harvest Coalition.¹⁶

Cascade Harvest Coalition has been critical in promoting urban agriculture in the central Puget Sound Region. The organization has partnered with King County to create Puget Sound Fresh, a guide to local farms and farmers markets. The organization's annual Harvest Celebrations have also been an important event supporting local agriculture and linking Puget Sound residents with agriculture. The event celebrates locally grown food through education and connects urban residents to their food. The 2009 event boasted 29,000 in attendance, and attendance is growing each year.¹⁷ Cascade Harvest Coalition also maintains FarmLink, connecting landowners and farmers together, and is involved with farm-related studies.¹⁸ Other organizations in the region also bridge the gaps in the local food system, ensuring that food remains local. Programs such as the Puget Sound Food Network link production, processing and consumption together, allowing businesses to locate and coordinate necessary services.¹⁹

Cities in the Puget Sound region have taken a proactive stance with urban agriculture. Many cities are developing plans that involve community gardens and urban agriculture. However, with cities and counties strapped for funding, implementing urban agriculture has become difficult. A number of municipalities are relying on community-based and non-profit organizations to assist in developing and managing new sites.

¹⁵ Dave Gibby et al., "The Master Gardener Program, A WSU Extension Success Story, Early History from 1973," 2008, <http://mastergardener.wsu.edu/documents/MasterGardenerProgramHistoryrev2009.8.pdf>.

¹⁶ Seattle Tilth Association, "Seattle Tilth Gardens," 2011, <http://seattletilth.org/about/seattle-tilth-gardens/aboutgardens>.

¹⁷ Cascade Harvest Coalition, "Harvest Celebrations," accessed March 2011, <http://www.cascadeharvest.org/community/harvest-celebrations>.

¹⁸ Cascade Harvest Coalition, "Farmer's Markets," accessed March 2011, <http://www.cascadeharvest.org/programs/farmers-markets>.

¹⁹ Puget Sound Food Network, 2011, <http://www.psfm.org/our-mission/>.

King County

The King County Board of Health Guidelines for Healthy Communities identifies the health benefits of community gardens and encourages the development of more gardens within the county.²⁰ In 2010 the King County Council passed a motion requesting an implementation plan for community gardens on vacant county-owned property.²¹ The result was an inter-governmental document, Community Garden Program Implementation Plan, discussing partnerships that could be formed to push community gardens forward. The passing of this motion and the document that followed shows a gaining importance of gardens in the county. The plan notes that the county currently does not have sufficient resources to develop vacant plots, but partnerships with non-profit organizations and community members can make this a possibility. The document built upon an existing inventory of vacant and developable lands. University of Washington students developed this inventory identifying 84 properties with potential for community gardening, 33 within cities and 51 in unincorporated King County. There are currently six community gardens on King County-owned property.

Seattle

The City of Seattle has been active in encouraging community gardens. The successful P-Patch program, the Local Food Action Initiative and Resolution 30194 have encouraged urban agriculture within city limits. Much has been written about Seattle's urban agriculture, and documents such as the Sound Food Report provide insight on this effort. In that document researchers identified a number of urban agriculture issues within the City of Seattle, and recommended the following five policy goals:

1. Increase neighborhood food access;
2. Increase the sale and availability of locally/regionally grown foods;
3. Increase urban food production;
4. Recover or recycle food from the waste stream;
5. Organize and enhance internal and external City response to food issues.²²

The P-Patch program exemplifies the community garden movement in the central Puget Sound region. Seventy-three P-Patches are scattered around the city of Seattle, and the waiting list for a plot is over 2,000 people. These community gardens have become areas of community activism. In 2009, volunteers donated 18,500 hours to the P-Patch community gardens. Additionally, gardeners donated 12.4 tons of produce to food banks in 2009. The same year, the Department of Neighborhoods released a P-Patch evaluation report entitled "A Stroll in the Garden: An evaluation of the P-Patch Program."²³ The report assesses the current program's weaknesses and priorities and devotes significant space to the state of the program through identifying gardener demographics, policies and budgeting. Despite the program's popularity, a major note of concern is the need for better revenue recovery of the program. Although the program revenue is over

²⁰ King County Board of Health, "Planning for Healthy Communities," September 2010, http://www.king-county.gov/property/permits/codes/growth/GMPC/MeetingArchive/~media/property/permits/documents/GMPC/2010/20101208AttachmentE_BOHGuidelines.ashx.

²¹ King County Interdepartmental Team on Community Gardens, "Community Garden Program Implementation Plan," November 2010, <http://mkcclegisearch.kingcounty.gov/View.ashx?M=F&ID=1175296&GUID=AE0031C1-04D2-4634-B1CE-6499FC2E7C87>.

²² Report to the City of Seattle, Sound Food Report: Enhancing Seattle's Food System, June 20, 2006, http://faculty.washington.edu/bborn/Sound_Food_Report2.pdf, 5.

²³ City of Seattle Department of Neighborhoods, "A Stroll in the Garden." 2009. www.seattle.gov/neighborhoods/ppatch/.../PPatchEvaluation2009.pdf.

\$71,000, currently only 12 percent of the P-Patch program cost is recovered through plot fees.²⁴ To further increase the viability of the P-Patch program, coordinators may need to find additional sources of income beyond the general fund.

The City of Seattle has also taken measures to reduce the restrictions around urban agriculture. The Local Food Action Initiative, passed in 2008, required the City of Seattle to address food-related issues within their departments. The Initiative aimed to strengthen connections between agriculture and urban areas, increase food security, and emphasize locally grown food. In addition, the City passed Ordinance 123378 updating the city's land use codes and removing barriers to urban agriculture. With the passing of the ordinance, citizens are allowed to have "urban farms" and "community gardens" in all zones, with some limitations in industrial zones.²⁵

Kitsap County

Kitsap County currently does not include urban agriculture in their countywide comprehensive plan. The total number of gardens on a countywide level has not been counted or inventoried. The county maintains two P-Patches, Blueberry Park in Bremerton and Raab Park in Poulsbo, and WSU Kitsap County Extension maintains four community and demonstration gardens in the county.²⁶ Although there is demand for plots in the county, few resources currently exist to acquire and develop new gardens.²⁷ Urban agriculture is gaining popularity in Kitsap's cities and there are a growing number of indicators to show this. Currently there are 12 CSAs and 15 farmer's markets within the boundaries of Kitsap County.²⁸

Bremerton

Bremerton has a number of small urban agriculture projects. A recent addition, Blueberry Park, was once the site of a blueberry farm. The City of Bremerton purchased the land in 1979, and it was then used as a community garden. In 2007 the city began the process of developing the site into park space in addition to community gardens, with a focus on low-impact design. The site currently has 66 occupied plots with a waitlist.²⁹

Bainbridge Island

In the past century, the City of Bainbridge Island had lost a significant amount of their agricultural lands to development. In 2000 and 2001, the city bought two parcels of farmland in hopes of preserving agriculture on the island. In 2001, voters passed an \$8 million bond to continue the preservation effort. The city acquired six properties, totaling approximately 65 acres, with three currently being farmed collectively.³⁰ This public farmland has contributed toward Bainbridge Island's vision of preserving one percent of its land for agriculture.³¹ A report created by Cascade Harvest Coalition and American Farmland Trust examines at the efforts of the city to acquire public

²⁴ Ibid.

²⁵ "Urban Agriculture in Seattle," City of Seattle Department of Planning and Development, May 20, 2010, last accessed March 17, 2011, <http://www.seattle.gov/DPD/Planning/UrbanAgriculture/Overview/default.asp>.

²⁶ Master Gardener Foundation of Kitsap County, "Come and Garden", 2010, <http://www.kitsapgardens.org/garden.htm>.

²⁷ Lynsi Burton, "Public gardening takes root," Bremerton Patriot, February 11, 2011.

²⁸ Kitsap Community and Agricultural Alliance. "Why, Where, Who, How and When To Buy Local Food in Kitsap," <http://www.buylocalfoodinkitsap.org/>.

²⁹ Lynsi Burton, "Public gardening takes root," Bremerton Patriot, February 11, 2011, <http://www.pnwlocal-news.com/kitsap/pat/news/115971189.html>.

³⁰ American Farmland Trust and Cascade Harvest Coalition, "An Assessment and Recommendations for Preservation and Management of City-owned Agricultural Land. Prepared for the City of Bainbridge Island. January 2006. <http://www.farmland.org/programs/states/documents/BainbridgeFullReport.pdf>, 5.

³¹ Ibid.

farmland. The report describes at key public benefits of farmland, systems to secure land for the long-term future, and recommendations.³² The document explores the possibility of leveraging public support to increasing the amount of preserved farmland.

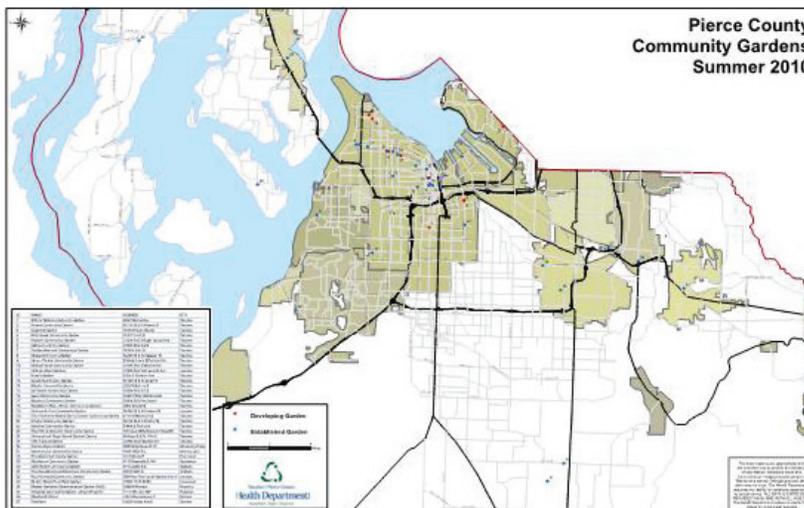
Pierce County

Pierce County has made a number of actions acknowledging and supporting urban agriculture. Most significantly, a partnership between Pierce County, ACHIEVE (Action Communities for Health, Innovation and Environmental Change) and Healthy Communities of Pierce County has created a document entitled “Community Gardens Plan for Tacoma-Pierce County”. It evaluates the state of community gardens in the county and establishes short-term goals and policies to further the urban agriculture movement in the county. The document is innovative in that it connects achievable actions to the goals the county wishes to see done by 2012, listed below:

1. Increase the number of community gardens within Tacoma and Pierce County, with a focus on underserved communities;
2. Strengthen existing gardens by offering support and resource to communities in developing volunteer networks and a system for maintaining functional gardens;
3. Build and maintain a coordinated network of individuals and organizations to assist with implementation of the Plan;
4. Increase the social capital of participating communities.³³

A recent achievement of the program was the hiring of a full-time community garden coordinator with the assistance of Cascade Land Conservancy.³⁴ As of summer 2010, the County listed 37 community gardens. The document shows the innovative collaboration of the City of Tacoma, Pierce County, YMCA, WSU Extension, Cascade Land Conservancy, and many others to further the urban agriculture movement in the county.

Figure 1-17: Community Gardens in Pierce County



Source: Healthy Communities of Pierce County, “Map of Existing Gardens in Tacoma-Pierce County”, 2010, http://www.healthypierce.org/file_viewer.php?id=135.

³² Ibid., 6-7.

³³ Healthy Communities of Pierce County, “ACHIEVE Community Gardens Committee,” 2009, <http://www.healthypierce.org/projects-programs/achieve-community-gardens-committee/Community Gardens Plan.pdf>.

³⁴ Ibid.

In March 2010, Cascade Land Conservancy worked in partnership with local government departments to hold a summit on community gardening for Tacoma and Pierce County. With an attendance of over 150 residents, the summit focused on creating new community gardens in the county and celebrating existing ones. It included panels of experts, gardening workshops and lectures. This gathering highlights efforts in the county to emphasize the importance of community gardening.

There are currently 12 CSA programs in Pierce County. Pierce County estimates that less than 100 acres of farmland are in production for CSA operation and CSAs serve an approximate customer base of 600 to 800.³⁵ The county anticipates growth of CSAs in the future.

Snohomish County

In Snohomish County, there are currently 28 community gardens.³⁶ These efforts, however, have not been on a countywide level, and there have been no programs, plans or policies that mention community gardens or urban agriculture. WSU Snohomish County Extension has been especially proactive in leading community gardening efforts. Their "Growing Groceries" program emerged from the Master Gardener Program.³⁷ The program is similar to those established by other WSU Extension programs and provides significant teaching support to the community. The Growing Groceries program goes further than others by conducting a number of courses on gardening, providing financial support to gardens and establishing new gardens. The program boasts impressive statistics, with 11 new gardens established, attendance of 800 novice gardeners for 70 classes, establishing financial assistance for needy gardeners and 12,700 pounds of organic produce donated to local food banks.³⁸

FISHERIES

Fisheries have a long history in the central Puget Sound area. Local tribes were the first to depend on the region's abundant resources. Their diets included shellfish, salmon, cod, seal and various sea plants. As settlers began to trickle into the area, they quickly realized the value of this abundance. According to Washington State Fish Commissioner Kershaw, by 1902 there were thousands of fishing boats on the Puget Sound and the annual value of the salmon catch was just over \$3.2 million.³⁹ That value would be nearly \$84 million in current US dollars.

The state of fisheries has changed greatly since 1902. New technologies allow for greater quantities of fish to be caught in a shorter amount of time, species populations are closely monitored, and pollution has negatively impacted native habitats. Also, shellfish and fish can now be mass-produced in artificial habitats using aquaculture technologies.

This section looks at the current state of fisheries in Puget Sound. Data was collected for species

³⁵ Barney and Worth Inc., and Globalwise, Inc., prepared for Pierce County, Pierce County Agriculture Strategic Plan Appendices, http://www.co.pierce.wa.us/xml/abtus/ourorg/exec/eecd/documents/APPENDICES_Pierce%20County%20Agriculture%20Strategic%20Plan.pdf, 7.

³⁶ Washington State University Snohomish County Extension, Snohomish County Food Gardens, <http://growinggroceries.wsu.edu/SnohomishCountyfoodgardens.htm>.

³⁷ Ibid.

³⁸ Washington State University Snohomish County Extension, "WSU Snohomish County Growing Groceries Program: Building the Capacity of Communities and Families to Grow Healthy Food," Extension 'Cord, March 2010.

³⁹ Prosser, William Farrand. 1903. A history of the Puget Sound country, its resources, its commerce and its people: with some reference to discoveries and explorations in North America from the time of Christopher Columbus down to that of George Vancouver in 1792. New York: Lewis Pub. Co. P.106.

that are categorized into three groups, which account for the majority of the fishery industry in the central Puget Sound region (Table 1-8).

Table 1-8: Three Measured Species Groups⁴⁰

Groundfish: Sablefish, Pacific Whiting, Sole (Dover and Petrale)

Salmon: Chum, Chinook, Sockeye

Shellfish: Dungeness Crab, Geoduck Clams, Pink Shrimo

Excluded species groups and major species include: Pacific Halibut, Coastal Pelagic (Sardines, Herring, and other), Albacore Tuna, and Other Anadramous and Eggs (Chum Eggs, Sturgeon, Shad and Smelt). They are excluded because they do not have an impact on the central Puget Sound fishing industry. For example, all Pacific Halibut are landed in Gray's Harbor, which is outside the region, and the amount of Other Anadramous and Eggs is less than \$1,000.⁴¹

The fishery industry in the Puget Sound represents over one-quarter of the fisheries in Washington State.⁴² Table 1-8 shows the total amount of species groups landed and their value in 2006. Salmon constitutes the largest catch; however, they do not have the highest value. Shellfish have a value over 200 percent higher than salmon. Groundfish have the least amount of total value in Puget Sound due to the fact that 98 percent of Groundfish are landed in coastal ports.⁴³ The total value of fish landed in the Puget Sound is \$21.5 million.

Table 1-9: Pounds Landed and Value of Commercial Fish Landings in Non-Treaty Fisheries in 2006 (in thousands of pounds and dollars)

	North Puget Sound		South Puget Sound		Puget Sound	
	Pounds Landed	Value (\$)	Pounds Landed	Value (\$)	Pounds Landed	Value (\$)
Groundfish	647	203	643	199	1,291	402
Salmon	3,256	2,909	6,469	3,777	9,725	6,687
Shellfish	3,374	6,207	2,666	8,274	6,041	14,482
Total	7,277	9,320	9,779	12,250	17,056	21,570

Source: Washington Department of Fish and Wildlife, Economic Analysis of the Non-Treaty Commercial and Recreation Fisheries in Washington State. Dec. 2008.

Figure 1-18 shows the value of fish landings in each of the four counties in the region. King County captures the highest value of all three species groups. In 2006, Kitsap County only landed shellfish. Snohomish County landed over six times the value in salmon than Pierce County. Pierce County landed over three times the value in shellfish than Snohomish County. The greatest valued species group is shellfish, followed by salmon. The total value of all three species groups in central Puget Sound is \$9.7 million, almost half that of Puget Sound region.

⁴⁰ Washington Department of Fish and Wildlife, Economic Analysis of the Non-Treaty Commercial and Recreation Fisheries in Washington State. Dec. 2008.

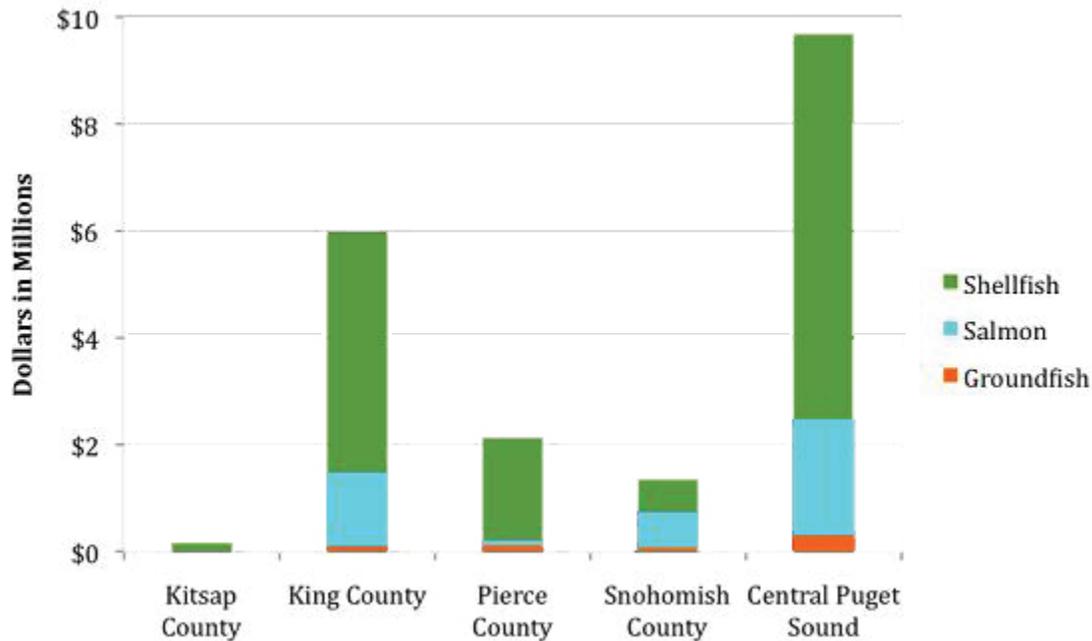
⁴¹ Washington Department of Fish and Wildlife, Economic Analysis of the Non-Treaty Commercial and Recreation Fisheries in Washington State. Dec. 2008.

⁴² Ibid.

⁴³ Ibid.

One reason King County has the greatest value in fish landings is that Seattle is the only major commercial fish landing port in central Puget Sound.⁴⁴ Other major ports are Poulsbo and Bremerton in Kitsap County, Tacoma in Pierce County, and Everett in Snohomish County.

Figure 1-18: Value (ex-vessel) of Commercial Fish Landings from Washington Fisheries in 2006



Source: Washington Department of Fish and Wildlife, Economic Analysis of the Non-Treaty Commercial and Recreation Fisheries in Washington State. Dec. 2008.

Aquaculture

The USDA defines aquaculture as, “the production of aquatic animals and plants under controlled conditions for all or part of their lifecycle.”⁴⁵ Categories include catfish, mollusks, ornamental fish, trout, crustaceans, sport or game fish, and other.

Data relevant to aquaculture at the county level is deficient. Most aquaculture corporations do not allow their data to be disclosed at that level, however they do allow their data to be aggregated at the state level. Figure 1-19 shows data collected from the 2007 USDA Agriculture Census.⁴⁶ In Washington State, total aquaculture products in 2007 were valued at approximately \$161.6 million.⁴⁷

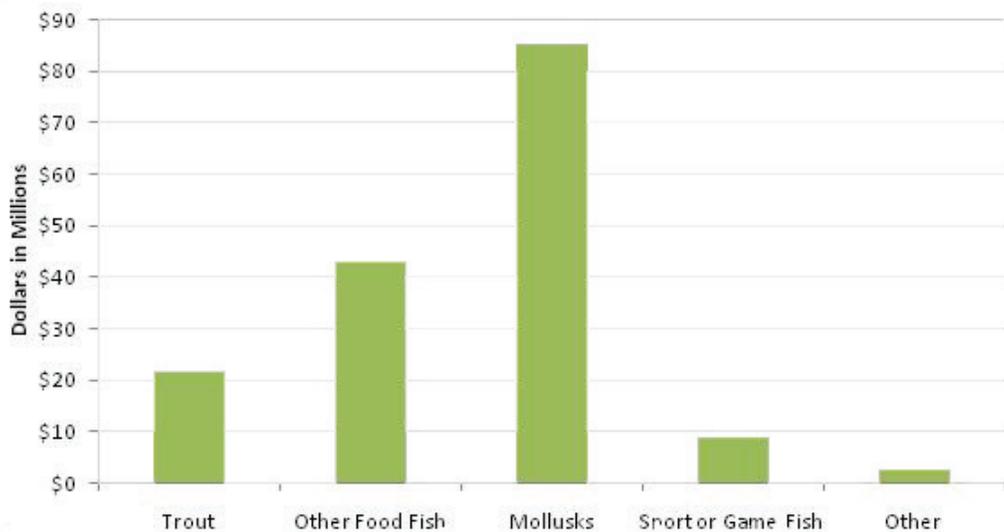
⁴⁴ Washington Department of Fish and Wildlife, Economic Analysis of the Non-Treaty Commercial and Recreation Fisheries in Washington State. Dec. 2008.

⁴⁵ USDA 2007 Census Agriculture Washington State. Accessed March 1, 2011, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/index.asp.

⁴⁶ No data were available for Crustaceans and Catfish.

⁴⁷ USDA 2007 Census Agriculture Washington State. Accessed March 1, 2011, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/index.asp.

Figure 1-19: Value of Aquaculture Industry in Washington State, 2007



Source: USDA 2007 Census Agriculture Washington State. Accessed March 1, 2011, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/index.asp

FURTHER RESEARCH

Some of the big questions remaining are: how much food that is produced in central Puget Sound stays local? What percentage of agricultural production is for human consumption?

For urban agriculture, a basic assessment of how much and what is grown in urban areas is needed.

Insufficient data is the main barrier to conducting a thorough analysis of fisheries and aquaculture. If given more time further research would include:

- Number of marinas with commercial moorage
- Number of marinas with infrastructure for commercial fishing boats
- Number of registered commercial fishing boats
- Locations of various fishing grounds
- Information on types of fish and quantity raised in hatcheries
- Narrower data on types and quantity of salmon
- Number and types of aquaculture facilities

Processing

INTRODUCTION

Food processing is a critical component of the regional food system that bridges the gap between producers and consumer markets, relying extensively on transportation networks to receive inputs and ship finished products. Food processing contributes to the economic diversity and food security of the central Puget Sound region. The processing element of this report seeks to collect and analyze available data (and identify additional missing data as needed) to describe the past, current, and future role of processing in the regional food system.

Recognizing the importance of food processing to the regional economy, the Puget Sound Regional Council's Prosperity Partnership identified Specialty Food as one of the 15 "industry clusters" most important to the region's economy in 2005.¹ That document limited specialty food to the production and processing of seafood, beverages, baked goods, and frozen and specialty food manufacturing.² The goal of the present analysis is to supplement and enhance the conversation on the economic importance of food processing within the region and to contextualize processing both within the food system and within the broader regional economy.

Varying industry and legal definitions provide a broader understanding of food processing than the one used by Prosperity Partnership. The Revised Code of Washington describes food processing as "the handling or processing of any food in any manner of preparation for sale for human consumption."³ The Washington State Department of Agriculture (WSDA) expands on this definition and details processing activities as the manufacture of "dried fruits, herbs, teas, baked goods, cider, salad mixes and many other food products which are processed for sale or distribution and food that is custom processed for another party. It also includes repacking foods that are taken from one container in an unwrapped state and transferred or packaged to another container."⁴

METHODOLOGY

Data collection and quantitative analysis of primary data sources, including U.S. Economic Census and the Bureau of Labor Statistics data sets, were used in the creation of this report. Since much of the information on processing—including the reasons firms cease operations or consolidate with other firms, as well as revenue data – is proprietary, the studio team relied on secondary sources such as reports from public agencies like WSDA and county economic development agencies as well as non-governmental organization reports to obtain a sense of trends and issues across the central Puget Sound region. Further analysis could include obtaining business license records to examine trends over time, data that was not obtainable during the time frame of this report.

The studio team also contacted a variety of people involved in food processing activities. Interviews were conducted with the owner of a small fishing company, a poultry growers' cooperative, a non-profit organization that supports producers and connects consumers to the local food system, a produce distributor, and a dairy cooperative. For sample interview questions, see Appendix 2-1.

¹ Prosperity Partnership, *Economic Analysis of the Central Puget Sound Region: Volume II of the Regional Economic Strategy*, Seattle, WA: September 27, 2005, http://www.prosperitypartnership.org/strategy/res_v2.pdf.

² *Ibid.*, 36.

³ WSDA, "Food Processing," January 2010: 1, <http://agr.wa.gov/Marketing/SmallFarm/DOCS/10-FoodProcessing.pdf>.

⁴ Claudia Coles, "Food Processors," Washington State Department of Agriculture, last updated July 9, 2009, <http://agr.wa.gov/FoodAnimal/FoodProcessors/>.

ACTORS

In addition to firms specializing in food processing, the processing industry also involves producers who provide raw inputs, distribution networks that move goods, and markets where consumers access products. The interrelation of the elements of the food system requires processors to identify stable suppliers of raw inputs and access efficient distribution networks through strategic location of facilities. These complex relationships between market forces partly determine which raw imports are produced and processed locally. This section provides an overview of private firms, government agencies, and non-governmental organizations in the processing industry in the central Puget Sound region.

Food processors in the region range from small on-farm processing facilities to large corporations like Sara Lee Fresh, National Frozen Foods Corporation, and Trident Seafoods. They rely on producers for raw food inputs and make agreements with producers to supply them with certain crops, thus determining which products are grown in the region. They also make technology available that allows new items to be processed.

A number of agencies outside of food production participate in the food processing industry. Public agencies and regulatory bodies like county health departments, WSDA food safety program, the United States Department of Agriculture (USDA), and the Food and Drug Administration (FDA) also impact the industry through their permitting and licensing requirements, inspections, regulations, and policies on where and how processing activities can occur. The ways in which the current regulatory regime creates burdens for small- and medium-scale processors are discussed in greater detail below. Besides regulating, public agencies such as the Washington State University (WSU) extension program, also provide education and training on new technologies and methods, best practices, sanitation, product development, and new business start-up assistance.⁵ In addition, agencies like the Washington State Department of Commerce's Business Services Division (BSD) and business organizations such as Chambers of Commerce promote Washington as a favorable place to do business and advocate for business-friendly policies.

Many other industry associations conduct education, research, advocacy, and marketing activities on behalf of their constituents. In this region, such associations include, but are not limited to, the following:

Northwest Food Processors Association (NWFPA)

- Represents the interests of processors in Idaho, Oregon, and Washington. Processor-members are mostly fruit and vegetable processors but also include some seafood, dairy, bakeries, specialty food and fresh-cut processors. Membership includes over "450 companies, including nearly 80 food processors with nearly 200 production facilities throughout the Northwest region."
- NWFPA sees itself as "an advocate for members' interests and a resource for enhancing their competitive capabilities."⁶

⁵ WSU Extension "Extension Food Processing," <http://foodprocessing.wsu.edu/>.

⁶ Northwest Food Processors Association, "Association Overview," <http://www.nwfpa.org/>.

Pacific Northwest Vegetable Association

- Represents both small specialty crop and large vegetable growers in Idaho, Oregon, and Washington.
- Their mission includes “education, research, production, promotion and representation relative to the Northwest vegetable industry and its markets.”⁷

Pacific Seafood Processors Association

- Invests in technology and training and conducts education, outreach, and advocacy on the role of the seafood industry and their members in the regional economy.
- The association includes corporate members Alaska General Seafoods, Alyeska Seafoods, Golden Alaska Seafoods, North Pacific Seafoods, Peter Pan Seafoods, Phoenix Processor Limited Partnership, Trident Seafoods, UniSea, and Westward Seafoods.⁸

These associations often represent and support larger processing interests and activities, while non-governmental organizations exist to support smaller processing activities. One example is the Northwest Agriculture Business Center (NABC) located in Mount Vernon, Washington. This organization “provides Northwest Washington farms with the skills and the resources required to profitably and efficiently supply their products to consumers, retailers, wholesalers, foodservice operators and food manufacturers.”⁹ Their activities include supply chain support, business training, evaluating market demand for new value-added products, and market creation, with a focus on sustainable agriculture and mid-sized family farms. NABC conducts processing-related workshops, such as cider making and artisan distilling, and works with Cascade Harvest Coalition on a “Puget Sound Regional Food System Project,” which has assessed the feasibility of creating a multi-purpose co-packing and processing facility.¹⁰

SPATIAL ANALYSIS

The location of food processing facilities provides clues of the support infrastructure and other needs these facilities require. A spatial analysis will also display a picture of the interrelation between processing and the rest of the food system. The locational decisions of processors are made by weighing access to ports and other transportation facilities, proximity to producers supplying raw inputs, as well as the regulations and policies of local governmental jurisdictions.

There are currently no publicly available data that catalogue the distribution of processing facilities in the central Puget Sound region. The self-reporting directory of processors provided by the WSDA provided a proxy measure of local processing activity. The directory includes producers, processors, distributors and retailers throughout the State of Washington. For the purposes of this report, the studio team identified processors by the WSDA definition with

facilities in the central Puget Sound region. Figure 2-1 identifies processing centers by the number of facilities by city.

⁷ Pacific Northwest Vegetable Association, “About PNVA,” <http://www.pnva.org/>.

⁸ “Pacific Seafood Processors Association, “Members,” <http://www.pspafish.net/>.

⁹ Northwest Agriculture Business Center, “What We Do,” <http://www.agbizcenter.org/>.

¹⁰ Ibid.

Other reports suggest that the number of processing companies in the region are declining. One survey was sent to 1,748 licensed processors (as well as distribution, warehousing, food co-operatives, retail, and resale facilities) across the twelve-county Puget Sound region. Approximately 13 percent were returned because the facility was no longer in business or at the location of record, which was confirmed through follow-up inquiries.¹¹

ECONOMIC ANALYSIS

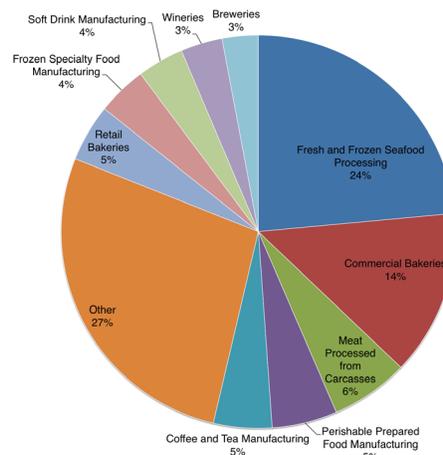
This economic analysis of the region’s food processing industry relies on the North American Industry Classification System (NAICS). NAICS divides food processing into sub-industries. The categories selected for analysis include all food (NAICS codes 311XXX) and beverage (NAICS codes 3121XX) manufacturers with the exception of animal food and ice manufacturers. The sum of the industries defined by these NAICS codes makes up “food processing industries” as used in this section. The following economic analysis consists of data on employment and revenue.

Employment figures were often available at the finest level of detail afforded by the NAICS. However, the Census Bureau suppresses many employment figures in order to prevent the identification of individual businesses. Suppression codes, representing a range of possible employment (e.g., 0-19, 20-99, etc.), present a challenge to accurately derive county and industry employment totals. In this analysis, suppression codes were replaced with a “logarithmic midpoint”¹² of the possible employment range indicated by the suppression code. A logarithmic midpoint is calculated by applying a logarithmic scale to the range of possible employment rather than a simpler linear scale. Unlike a linear midpoint, the logarithmic midpoint addresses the reality that there are more businesses with few employees than many employees. A suppression code that represents 0-19 employees, for instance, has a linear midpoint of 9.5 but a logarithmic midpoint of 6.3.

Employment in the largest industries in the central Puget Sound region can be found Figure 2-2 while a complete table of employment in all 50 industries in each of the four counties, Washington, and the U.S. can be found in Appendix 2-2 (Economic Analysis).

Figure 2-2: Employment Pie Chart

Food Processing Industries in the CPS by Proportion of Employment, 2008



Source: U.S. Census Bureau, “2008 County Business Patterns,” July 2010, http://www.census.gov/econ/cbp/download/08_data/index.htm.

¹¹ Puget Sound Food Project, “Final Report,” December 2008, <http://www.agbizcenter.org/programs/regionalFoodSystemProject>, 6.

¹² Logarithmic midpoint = minimum employees + (e^{ln(10)/2} * employees range/10)

Location quotients were calculated in order to understand the makeup of the central Puget Sound region's food processing sector in relation to Washington and the nation. The location quotient compares the size of an industry regionally to the size of the same industry in a reference area (in our case, the nation). A location quotient of "1" means the relative sizes of employment in an industry is the same regionally and nationally. A location quotient above "1" means regional employment is relatively greater than national employment in an industry. A location quotient below "1" means regional employment is relatively smaller than national employment in an industry. The food processing industries with the greatest location quotients in the central Puget Sound region are presented in Figure 2-3. Location quotients for all 50 of the processing industries can be found in Appendix 2-2.

Table 2-1: Industry Revenue By County

Food Processing Industries' Revenue by County, 2007

County	Total Revenue
Snohomish	\$374,540,000
Pierce	\$410,585,000
Kitsap	suppressed
King	\$4,461,142,000
Three county total	\$5,246,267,000

Sources: U.S. Census Bureau, "2007 Economic Census: Table 4. Selected Statistics by Economic Sector, Sub-Sector, Industry Group, NAICS Industry, and U.S. Industry: 2007." http://factfinder.census.gov/servlet/GQRTTable?_bm=y&-qr_name=ECN_2007_GQRT4&-geo_id=05000US53033&-ds_name=EC0700A1.

Revenue data by industry is subject to nearly complete suppression for the central Puget Sound counties. Because of suppression, only food processing industries' revenues for three counties are available. The figures include animal food processing and exclude the beverage processing industries, which would normally be considered part of the food processing sector (Table 2-1).

Census data also allow us to look at the change in employment by industry (Tables 2-2 and 2-3). The most dramatic changes in recent years are the decline in employment in commercial bakeries and the increase in employment in seafood processing.

Table 2-2: Job Growth

Largest Job Growth by Industry in CPS, 2004-2008

Industry	Net Job Change
Fresh and Frozen Seafood Processing	563
Chocolate and Confectionery Manufacturing from Cacao Beans	368
Breweries	283
Retail Bakeries	241
Coffee and Tea Manufacturing	202

Sources: U.S. Census Bureau, "2008 County Business Patterns," July 2010, http://www.census.gov/econ/cbp/download/08_data/index.htm and U.S. Census Bureau, n.d., "2004 County Business Patterns." http://www.census.gov/econ/cbp/download/04_data/index.htm.

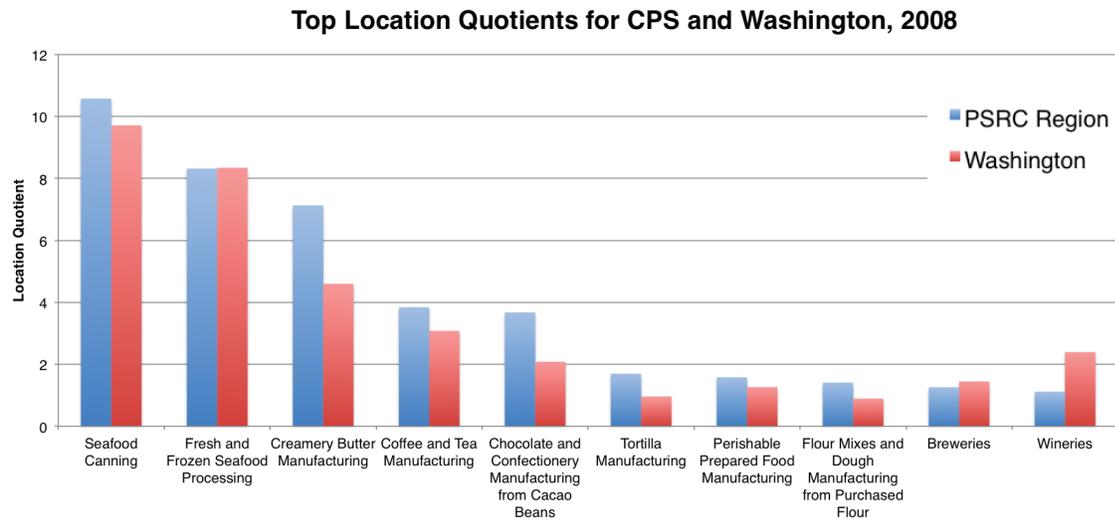
Table 2-3: Job Shrinkage

Largest Job Shrinkage by Industry in CPS, 2004-2008

Industry	Net Job Change
Commercial Bakeries	-1,295
Confectionery Manufacturing from Purchased Chocolate	-325
Meat Processed from Carcasses	-248
Perishable Prepared Food Manufacturing	-231
Seafood Canning	-223

Sources: U.S. Census Bureau, "2008 County Business Patterns," July 2010, http://www.census.gov/econ/cbp/download/08_data/index.htm and U.S. Census Bureau, n.d., "2004 County Business Patterns." http://www.census.gov/econ/cbp/download/04_data/index.htm.

Figure 2-3: Leading Industries



Source: U.S. Census Bureau, "2008 County Business Patterns," July 2010, http://www.census.gov/econ/cbp/download/08_data/index.htm.

Shift share analysis is a tool used by economists and planners to help identify a region's industries' sources of employment change over time. There are three components to a shift share analysis:

1. National share, the expected total employment of an industry based on the change in national employment.
2. Industry mix, the expected change in employment of an industry based on the region's share of that industry and the employment of that industry's growth or decline at the national level.
3. Regional shift, the change in employment in a region that remains after national share and industry mix are taken into account. The regional shift is often equated with an industry's competitive advantage in a region.

A shift share analysis of the food processing industries identified by 6-digit NAICS code for the central Puget Sound region for the period 2004-2008, the most recent four-year period available, revealed the top five industries and bottom five industries by regional shift as presented in Tables 2-4 and 2-5. Again, suppression codes were replaced by logarithmic midpoints. Seafood processing establishments showed the greatest increase in jobs by regional shift while commercial bakeries showed the greatest job loss by regional shift. Notably, retail bakeries showed the opposite trend of commercial bakeries, adding 288 jobs not due to national changes in the economy or the retail bakery industry. The analysis also reveals opposite trends between the two types of confectioneries. Manufacturers using cacao beans added 369 jobs due to regional shift while manufacturers using purchased chocolate lost 271 jobs. A complete table of the shift share analysis may be found in Appendix 2-2.

The Bureau of Labor Statistics classifies food processing occupations into eight categories. The Bureau provides job totals and wages for each category, giving us a snapshot of employment in food processing industries. The data indicates the two largest occupations are bakers and packaging and filling machine operators and tenders (Table 2-6). Both provide about \$14 an hour in wages. The highest-paying occupation belongs to butchers and meat cutters who make,

Table 2-4: Positive Regional Shift

Greatest Positive Regional Shift (competitive advantage) by Industry, 2004-2008

Industry	Regional Shift
Fresh and Frozen Seafood Processing	811
Chocolate and Confectionery Manufacturing from Cacao Beans	369
Retail Bakeries	288
Breweries	286
Tortilla Manufacturing	149

Sources: U.S. Census Bureau, "2008 County Business Patterns," July 2010, http://www.census.gov/econ/cbp/download/08_data/index.htm and U.S. Census Bureau, n.d., "2004 County Business Patterns," http://www.census.gov/econ/cbp/download/04_data/index.htm.

Table 2-5: Negative Regional Shift

Greatest Negative Regional Shift (competitive advantage) by Industry, 2004-2008

Industry	Regional Shift
Commercial Bakeries	-1,009
Meat Processed from Carcasses	-354
Perishable Prepared Food Manufacturing	-324
Confectionery Manufacturing from Purchased Chocolate	-271
Bottled Water Manufacturing	-224

Sources: U.S. Census Bureau, "2008 County Business Patterns," July 2010, http://www.census.gov/econ/cbp/download/08_data/index.htm and U.S. Census Bureau, n.d., "2004 County Business Patterns," http://www.census.gov/econ/cbp/download/04_data/index.htm.

on average, about \$20 per hour while the lowest-paying occupation belongs to meat, poultry, and fish cutters and trimmers who make about \$11 per hour.

Table 2-6: Occupations and Wages

CPS Food Processing Occupations and Wages, 2009

Occupation	Jobs	Hourly Median	Hourly Mean	Annual Mean
Bakers	1890	\$14.34	\$14.76	\$30,700
Butchers and Meat Cutters	720	\$21.34	\$20.36	\$42,345
Meat, Poultry, and Fish Cutters and Trimmers	1410	\$10.63	\$11.46	\$23,840
Slaughterers and Meat Packers	0	\$-	\$-	\$-
Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	80	\$15.20	\$16.53	\$34,390
Food Batchmakers	590	\$12.87	\$13.96	\$29,030
Food Cooking Machine Operators and Tenders	140	\$14.75	\$14.64	\$30,440
Food Processing Workers, All Others	0	\$-	\$-	\$-
Packaging and Filling Machine Operators and Tender	1810	\$13.93	\$15.09	\$31,390

Source: U.S. Bureau of Labor Statistics, "May 2009 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates," November 30, 2010, <http://www.bls.gov/oes/current/oesrcma.htm>.

TRENDS & ISSUES

The following several subsections report trends and issues identified as particularly important to the regional food system in general and the food processing industry in particular. The list is not exhaustive, but does provide an overview of items of importance to food processors. These items may serve as a launching point for further discussion.

Production/Processing Integration

Some farmers in the central Puget Sound region, looking for additional ways to “capture a greater portion of the retail dollar,” have vertically integrated their activities by setting up on-farm processing facilities. For example, “as family-owned milk processing plants have closed in recent years, some small dairies have added dairy processing and artisan cheese production.”¹

A 2002 survey of producers gives us a sense of the farmers’ attitudes and plans about food processing activities happening from the producer point of view. The survey included 167 producers in “Urban Puget Sound” (King, Kitsap, Mason, Pierce, Thurston) and 199 producers surveyed in the “Northwest Region” (Clallam, Island, Jefferson, San Juan, Skagit, Snohomish, Whatcom). Highlights related to processing include the following results:

- In 2001, none of the Urban Puget Sound producers and 13.1 percent of Northwest Region producers grew fruits or vegetables intended for major processing, compared to 10.5 percent of farmers statewide.
- However, 3.9 percent of producers in Urban Puget Sound and 7.8 percent of Northwest Region producers produced value added products (like jams), compared to 2.1 percent statewide.
- 3.1 percent of Urban Puget Sound producers and 9.4 percent of Northwest Region producers planned to add on-farm packing and processing facilities for 2002-2004.²

A survey of producers within the central Puget Sound’s four counties may reveal different results, yet this data does suggest at least two trends. First, because of the volume of produce required for major food preservation activities like drying and canning, farmers in the urban Puget Sound counties — who operate on a smaller scale than the statewide average — do not find it viable to plant produce varieties intended for processing. At the same time, more of this activity occurs in Snohomish County and its other northwest Washington neighbors. Second, the greater proportion of value added products as well as plans to add on-farm processing facilities indicates that despite this limitation, producers are engaged in processing activities as a way to add value, diversify operations, and increase revenue. As such, it is worth investigating whether markets and facilities in the region are available to support and sustain these smaller-scale processing activities.

Access to Processing Facilities & Markets

Many of the processing barriers in this region are issues that face primarily small and mid-sized producers. According to a survey by the Puget Sound Food Project (a project of NABC and Cascade Harvest Coalition that extends across the twelve Puget Sound counties), producers

¹ Doug Collins, “King County Food and Fitness Initiative Agricultural Assessment,” June 15, 2009: 13, <http://king.wsu.edu/foodandfarms/documents/KCFF-AG-final-6-15-09.pdf>.

² Raymond Jussaume, Marcy Ostrom, and Lucy Jarosz, “Agriculture in Washington State: The Experiences and Perspectives of Washington Farmers,” last updated May 11, 2004, <http://www.crs.wsu.edu/outreach/rj/agsurvey/index.html>.

feel that there is a lack of facilities available at the scale needed. The barriers and opportunities identified in their work are quoted and summarized in this section.

- 42.6 percent of respondents noted that they have additional acreage to farm if demand for their product were greater.
- 91.1 percent of respondents did not know of a processing center that is currently under-utilized or that could be expanded.
- 74.7 percent of farmers said they would be interested in a shared, multi-purpose agricultural production center near their farm.
- 31 percent of farmers felt that having a nearby processing center would encourage them to start new enterprises or grow new products.³

Barriers

Volume. The smaller producers do not have enough of any single product to make processing at larger facilities or financing their own facilities worthwhile, nor could they sell to a larger distributor or supplier.⁴ These producers need to aggregate product with other farmers and provide quality assurance and control in a cooperative or agglomerated model.

Location. Producers note that there are location and accessibility barriers to processing their product, and many send their products long distances or out of state to be processed, which adds time and expense.⁵ Most producers would prefer to be located within 30 minutes of a processing center.⁶

Seasonality. A promising market for mid-sized producers and processors is in institutional settings such as schools, hospitals, and correctional facilities. However, processors are faced with the following difficulties in working with this market:

- They cannot often receive or process whole or unwashed product, so products must be processed elsewhere (e.g. carrots being cut into carrot coins).⁷
- Schools are not in session during the time that most food in this region is harvested, which means that processing, freezing, and otherwise preserving the product becomes especially important.⁸

Resources. Producers feel a lack of resources, incubation services, or incentives available to consider expanding their production or to take on new product development.⁹

Facilities. The Puget Sound Food Project identified the following processing needs from its purchaser and producer interviews and surveys:

- Processing fresh fruits and vegetables for ready-to-eat products
- Processing fruit for puree and juices

³ Ibid., 5.

⁴ Mary Embleton (Cascade Harvest Coalition), interview with Eva Ringstrom, University of Washington, March 1, 2011.

⁵ Puget Sound Food Project, "Final Report," 1.

⁶ Ibid., 5.

⁷ Mary Embleton, interview.

⁸ Ibid.

⁹ Puget Sound Food Project, "Final Report," 3.

- Freezing fruits and vegetables
- Formulating, jarring, and pasteurizing
- USDA inspected meat and poultry slaughter and cut and wrap facilities
- Warehousing for dry, fresh, and frozen products
- Distribution methods that support smaller producers¹⁰

Opportunities

Despite the barriers, producers reported that if facilities and infrastructure like co-pack facilities and commercial kitchens were made available, they would produce more food.¹¹ These facilities could include the ability to do post-harvest handling, drying and dehydrating, freezing, central distribution and storage, co-packing, poultry and/or livestock processing.¹²

These barriers suggest a need for post-harvest handling, co-packing (where multiple producers products are combined under the same label), and processing facilities. It also suggests that there would be a demand for individually quick-frozen facilities in order to supply seasonal institutional markets like schools. Such models would need to ensure economically affordable access for producers.

Recently, two online communication tools have been established to facilitate communication between producers and buyers: the Puget Sound Food Network run by Northwest Agriculture Business Center in Mount Vernon, Washington and Food Hub, run by Ecotrust in Portland, Oregon. These tools could be used to promote food processing connections as well.

Livestock & Poultry Processing

Recent innovation addresses livestock processing barriers in this region. Two groups have established Mobile Meat Processing Units (MMPU) to respond to the inability for small-to medium-sized producers to access the three USDA processing facilities in the central Puget Sound region. These MMPUs involve a 45-foot trailer designed to meet USDA specifications (including organic certification) that travels to farms and ranches. Staffed by a trained USDA inspector and processing personnel, the unit processes the animals, then transports the animal carcasses to cut & wrap facilities for further processing. The presence of USDA certification and inspection means that the products can now be delivered and sold in retail markets rather than simply on-farm.

- The Puget Sound Meat Producers Cooperative (PSMPC) incorporated in 2008 as a non-profit cooperative of local ranchers, farmers, butchers, and restaurant owners. Beginning in July 2009, they operate a mobile, USDA-inspected meat processing unit that serves King, Kitsap, Lewis, Mason, Pierce, and Thurston counties.
- The Island Grown Farmers Cooperative has fixed facilities in Bow, Washington and provides MMPU service to Island, Skagit, Snohomish, and Whatcom counties.¹³

An agricultural assessment by Doug Collins of Washington State University notes that most of these USDA-inspected facilities are already operating at capacity.¹⁴

¹⁰ Ibid., 4.

¹¹ Ibid., 1.

¹² Ibid., 3.

¹³ "About IGCF," Island Grown Farmers Cooperative, accessed March 10, 2011, <http://www.igfcmats.com/2.html>.

¹⁴ Doug Collins, "King County Food and Fitness Initiative Agricultural Assessment," June 15, 2009, <http://>

Poultry operations in the region are divided between large-scale operations like Draper Valley Farms and small-scale producers that raise less than 1,000 birds per year and process under a WSDA license for on-farm sales only.¹⁵ Anecdotal evidence from Cascade Harvest Coalition focus groups and studio team interviews shows that there is increasing market demand for pasture-raised poultry, yet there are no producers in this region that are sufficiently sized to meet the demand.¹⁶ Recent activities to support small poultry growers including those by the following groups:

- NABC's Poultry Processing Equipment Rental Program, which makes two sets of poultry processing equipment available to Snohomish County producers. The producer must have a WSDA permit for on-farm sales or home consumption, meaning that because the facility is not USDA-inspected, the products cannot be sold in retail venues. Direct, on-farm sales can include customers pre-ordering chickens at the season's beginning and picking them up on-site.¹⁷
- Kitsap Poultry Growers Cooperative makes equipment available for rental, provides equipment orientation and humane slaughter classes, and helps producers navigate licensing and regulatory requirements.¹⁸ The facility has been operating since 2002.

While cooperatives and organizations make processing equipment available for rental, producers are not able to sell these products in the general marketplace due to regulations, and may only apply for a special WSDA permit to slaughter and sell up to 1,000 fresh birds directly to the consumer within forty-eight hours of processing and for the sole consumption of the owner. To solve this problem, one group has organized to create a mobile poultry-processing unit. This unit allows members to be licensed as poultry producers under WSDA inspection and food processor licenses. Under these licenses, producers can slaughter up to 20,000 birds per year and sell to restaurants, farmers markets, and stores—opening up new markets, increasing demand, and providing opportunities for business expansion.¹⁹ Many small producers agree that these regulations are reasonable and necessary from a food safety perspective, but they note that the main barrier is the lack of the necessary infrastructure and equipment to meet these requirements.²⁰

Producers feel that on the other side of this hurdle is an untapped demand for fresh, local food. One feasibility survey estimates that there is a market for approximately 90,000 additional fresh or frozen pasture-raised chickens from restaurants and grocery stores alone.²¹ Though there is indication of demand, our interviews suggested that the major hurdles relate to start-up funding, expertise, and energy to create these new facilities. For example, the Puget Sound Food Project, a joint effort of the Northwest Agriculture Business Center and Cascade Harvest Coalition, conducted a feasibility analysis for a new multi-purpose processing facility that includes poultry processing and determined that there was sufficient demand and identified a potential location. However, the project remains on hold due to the economic climate and lack of funds.²²

king.wsu.edu/foodandfarms/documents/KCFF-AG-final-6-15-09.pdf, 2, 18-19.

¹⁵ Bruce Dunlop, "Pasture Poultry Production & Processing Feasibility in the Puget Sound Region," prepared for Cascade Harvest Coalition, December 15, 2008, 2.

¹⁶ Dunlop, "Pasture Poultry," 1; Interview with food processor, February 28, 2011.

¹⁷ "Poultry Processing Equipment Rental Program," Northwest Agriculture Business Center, accessed March 10, 2011, <http://www.agbizcenter.org/node/38>.

¹⁸ "Equipment Rental," Kitsap Poultry Growers Cooperative, accessed March 10, 2011, <http://www.kitsappoultry.com/equipment-rental/>.

¹⁹ Interview with food processor, February 28, 2011.

²⁰ Ibid.

²¹ Dunlop, "Pasture Poultry," 3.

²² Mary Embleton (Cascade Harvest Coalition), interview with Eva Ringstrom, University of Washington,

There is also interest in replicating the existing models or having the current organizations like the PSMPC operate additional units to regionalize their model into a wider geographic area.²³ As noted by Mary Embleton of Cascade Harvest Coalition, producers themselves do not always have the available time and resources to develop this infrastructure. Ms. Embleton sees a role for community, business, and government support in forming public-private partnerships to get these new resources off the ground.²⁴

Seafood Processing

Issues in seafood processing reflect some of the larger trends in the national and global food processing arena. According to Pete Knutson of Loki Salmon, many of the dominant seafood processors in our region quick-freeze. Dominant processors do a quick freeze and then send the product overseas (often to China) to be processed, after which it returns to this area for distribution.²⁵

Other fishing vessels do processing on the boat and chill the fish within one-half hour, delivering the products to local canners, smokers, and cold storage facilities in Lyndon, Monroe, and Bellingham, Washington. The smaller fishers who use this method often experience a bottleneck in the form of ice availability. According to Pete Knutson, commercial ice corporations in their Alaskan ports are linked to the larger seafood industry and are unwilling to sell ice to smaller independent vessels. Some innovative fishers are beginning to install refrigerated seawater systems on board so that they can make their own ice to refrigerate and hold their catch on board.²⁶

Labor

To remain competitive in the global market, established and high-volume processors are continually working to improve technology and efficiency while cutting costs. This has positive implications for the research and development of new technologies, while it has negative impacts on employment numbers, as evidenced by the economics and labor statistics cited earlier. Processing companies state that labor costs are increasing, which drives them to increase product costs and seek additional efficiencies through technology and other means.²⁷

Nationally, the trend in food processing is that more companies are shutting their doors and using lean manufacturing techniques to remain cost competitive. For example, the US Economic Census shows that from 2002 to 2004, U.S. food processing employment went from 1.5 million employees to 1.44 million, while total shipments increased from \$563.7 billion to \$623.7 billion.²⁸

Due to the seasonal nature of food production, food processing jobs are not always year-round. Employment thus offers less job security and pays lower hourly wages, requiring workers to seek other forms of employment in the off-season. Figure 2-4, from Washington State's Employment Security Department, illustrates this trend, demonstrating a rising and falling pattern over the

March 1, 2011.

²³ Ibid.

²⁴ Ibid.

²⁵ Pete Knutson (Loki Fish Co.), in discussion with URBPD 506 studio class, University of Washington, March 2, 2011.

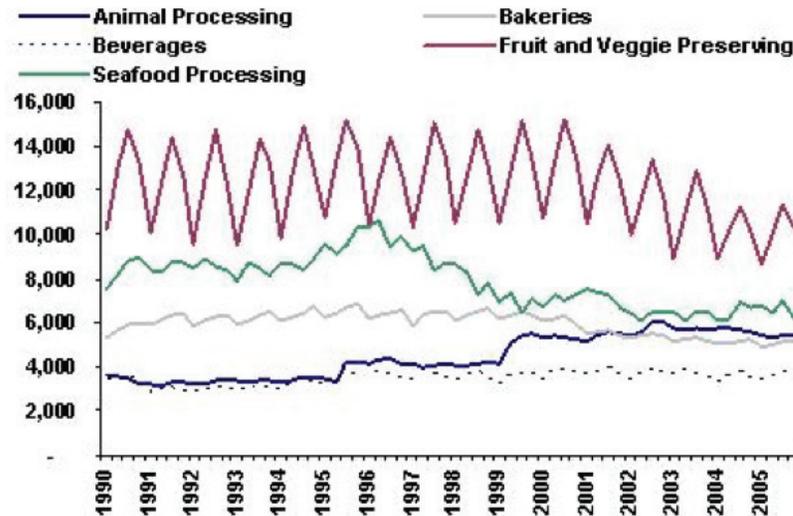
²⁶ Ibid.

²⁷ Interview with food distributor, February 25, 2011.

²⁸ Applied Development Economics, "Northwest Food Processing Cluster Assessment and Roadmap" October 2006: 3, http://www.adeusa.com/assets/docs/reports/Northwest_Food_Cluster_Roadmap.pdf.

course of each year, with higher employment and wages during the summer months. However, a WSDA report notes that statewide, seasonal food processing labor has experienced a downward trend and constituted approximately 12 percent of the state workforce as of 2008.²⁹

Figure 2-4: Food Processing Quarterly Employment Trends



Source: David Wallace, "Food Processing Update 2006," September 16, 2006, <http://www.workforceexplorer.com/article.asp?PAGEID=152&SUBID=&ARTICLEID=6874&SEGMENTID=0>.

Regulatory Burdens

As noted above, recent local policy initiatives have aimed to create opportunities for food processing through innovative techniques such as mobile meat processing facilities.³⁰ Despite these recent efforts, the relationship between food processors and governments has often been a contentious one, as evidenced by our research and interviews. Government regulation is frequently cited as among the most significant barriers to small and mid-sized food producers and processors.³¹

Many government regulations create difficulties for processors and those seeking to enter the processing industry. While further research examining specific regulations is needed, existing data from WSDA's Future of Farming report provides a good sense of the overall complexity and redundancy of the current regulatory regime. The report concludes that "the accumulation of complex local, state, and federal regulations has become a major threat...to the retention of the state's food processing industry."³²

²⁹ Future of Farming Project, "Review of the Food Processing Industry in Washington," working paper 2008: 7, www.agr.wa.gov/FoF/docs/MajorFoodProcessing.pdf.

³⁰ For another example, see "Mobile Meat Processing Unit," Pierce Conservation District, <http://www.piercecountycd.org/mobilemeat.html>.

³¹ WSDA, "Regulatory System Impacting Farmers and Ranchers," WSDA Future of Farming Working Paper, 2009, <http://agr.wa.gov/FoF/docs/RegulatoryBurden.pdf>.

³² WSDA, "Strategic Plan, 2020 and Beyond: Future of Farming," 2009: 9, <http://agr.wa.gov/fof/docs/FoFStrategicPlan.pdf>.

Currently, “there are at least 12 state and 12 federal agencies that have some jurisdiction over agricultural activities.”³³ Most of these agencies are of particular importance in the regulation of processing activities as well, as indicated in Table 2-7.

Table 2-7: State and Federal Regulatory Agencies

Regulatory Area	State	Federal
Business licensing	DOL	
Business/sales/property taxes	DOR	
Sales license(s)	AGR	
Income taxes		IRS
Unemployment taxes	ESD	
Worker Comp. taxes	L & I	
Wages	L & I	USDOL
Worker Safety	L & I, DOH, AGR	USDOL, OSHA
Insurance	OIC	
Water quality	ECY, DFW, DOH, DNR, AGR	EPA, USACE
Groundwater	ECY	
Air quality	ECY, DNR	EPA
Solid/hazardous waste	ECY, DNR	EPA
Building permits	ECY, DFW	
Land purchase/use	DNR	USDA, FSA, BLM
Food safety & animal health	AGR, DOH	USDA, FDA
Transportation		
Migrant labor		USDHS
Commerical Vehicles	WSP	USDOT

Source: WSDA, “Regulatory System,” 2009.

Acronyms Key:

AGR: Washington Dept of Agriculture

ECY: Washington Dept of Ecology

DFW: Washington Dept of Fish & Wildlife

DOH: Washington Dept of Health

DNR: Washington Dept of Natural Resources

DOL: Washington Dept of Licensing

DOR: Washington Dept of Revenue Security

ESD: Washington Dept of Employment

L & I: Washington Dept of Labor & Industries

OIC: Office of Insurance Commissioner

WSP: Washington State Patrol

FDA: US Food & Drug Administration

IRS: Internal Revenue Service

OSHA: Occupational Safety & Health Admin

USACE: US Army Corps of Engineers

USDOT: US Dept of Transportation

USDHS: US Dept of Homeland Security

USDOL: US Dept of Labor

EPA: Environmental Protection Agency

USDA: US Dept of Agriculture

FSA: Farm Service Agency

BLM: Bureau of Land Management

Table 2-8 shows specific regulatory actions conducted by these agencies, as well as some of the negative impacts of these actions on food processors. While each of the regulatory actions

³³ WSDA, “Regulatory System,” 6.

are designed to serve an important function, their overall impact adds costs sufficient to force the consolidation or elimination of small and medium-scale processors who are unable to take advantage of economies of scale.

Table 2-8: Regulatory Actions and Consequences

Regulatory Action	Intended/Perceived Benefit	Producer [And Processor] Impact
Workplace Safety Rules	* fewer on-job injuries * lower health costs * safer work environment	* more paperwork * higher administrative costs * increased operational costs * efficiency loss * lost profits
Minimum Wage Laws	* economic justice	* reduce job availability * increased operational costs * loss of competitiveness
Chemical Use Laws	* safer environment * worker safety	* loss of management tools * loss of competitive edge
Immigration Laws	* homeland security * reduce societal costs	* workforce losses * production losses
Animal ID Laws	* enable animal traceback	* cost-prohibitive for small & mid-size producers * increase administrative costs
Food Traceback Laws	* enable food traceback	* increase administrative costs * increase liability
Permitting Requirements	* control activities * fund inspection; enforcement	* slows response to natural disasters * slows response to market demands * loss of competitive edge
Permitting Costs	* fund administration	* loss of profits * loss of competitive edge * money diverted from agricultural needs to societal needs
Water Use/Availability Laws	* conserve resource	* reduce production * loss of management tool
Agricultural Supply Industry Laws/Rules	* control industry * finance administration	* loss of suppliers * higher supply cost * loss of farmers/farmland

Source: WSDA, "Regulatory System," 2009.

The Future of Farming report emphasizes the challenge processors currently face with "internally conflicting" regulatory strategies that create an inability for small processors to meet "state and federal standards without the modern infrastructure available to their larger competitors."³⁴ While regulations protect public health and wellbeing and ensure the quality of our food, they also "often create barriers to farmers who wish to process and direct market their own products."³⁵ Future research may demonstrate how regulations can be streamlined through greater interagency cooperation to improve efficiency, lessen the burden on processors, eliminate redundancies, and more effectively meet the goals for which they were designed.

Marketing

³⁴ WSDA, "Strategic Plan," 76-77.

³⁵ Dennis Canty and Helena Wiley, "A Characterization of Puget Sound Agriculture," Report to the Puget Sound Shared Strategy, March 2004: 11, <http://www.sharedsalmonstrategy.org/files/2004-04-ag.pdf>.

Marketing, packaging, and labeling of agricultural products, while not a physical transformation, is, like food processing, a part of the crucial step that connects food producers to consumers. Few comprehensive studies exist on the impact of regional marketing initiatives, and it is difficult to isolate it from other trends in purchasing and nationwide consumer awareness and desires for sustainable, organic, and locally-produced food. One potential measurement is the opinions of producers themselves regarding these programs' efficacy. The 2002 statewide farmer survey referenced above asked producers' opinions on marketing initiatives. Table 2-9 summarizes the attitudes of regional producers and compares them to the statewide average response.

Table 2-9: Producer Attitudes Toward Marketing
Attitudes Toward Marketing and Farm Policy
(percentage of Those Who Neither Agree nor Disagree are not given)

	Urban Puget Sound		State-Wide	
	Agree	Disagree	Agree	Disagree
- Labeling products as "Grown in WA" would benefit producers	74.83	6.62	77.22	5.63
- Biggest threat to my farm's viability is falling prices	47.72	21.67	73.86	12.68
- Free Trade Agreements will help my farm be profitable	9.34	38.67	21.91	45.50
- Government-supported agriculture programs should be targeted to small/medium farms	67.76	10.53	68.23	14.39
- "Buy Local" campaign could increase consumption of local products	66.67	7.34	57.22	13.82
- Maintaining family farms is important to County's future	80.39	7.19	86.60	4.82
- Need is greater than ever for Public Ag. Research and Extension	63.33	7.34	63.79	11.45
- Private Agribusiness can replace most University Research and Extension	7.90	58.55	13.03	56.38
- In-County consumers should have more local foods made available	67.79	5.36	57.08	6.32
- Direct Marketing is effective for keeping farms viable in my county	76.66	2.67	60.96	11.09
- Significant demand exists for organic ag. products in Washington	57.72	10.74	39.43	23.18
- Extension programs benefited my farm business	52.63	15.13	59.05	14.21

Source: Raymond Jussaume, Marcy Ostrom, and Lucy Jarosz, "Agriculture in Washington State: The Experiences and Perspectives of Washington Farmers," last updated May 11, 2004, <http://www.crs.wsu.edu/outreach/rj/agsurvey/index.html>.

Farmers in the regions including central Puget Sound feel that "Buy Local" campaigns are effective at and have the ability to increase local product consumption. Additionally, farmers surveyed in this region place more faith in direct marketing campaigns than farmers statewide. This is perhaps connected to the concentration of population and potential consumers in western Washington compared to other parts of the state.

WSDA works with farmers and processors to promote food produced in Washington. The department developed the Heart of Washington label to identify local food. The campaign creates public awareness to increase demand for Washington food products. The program also partners with producers and retailers to establish a brand image that is easier for consumers to identify. Industry groups, such as Washington Beef, and national campaigns like Know Your Farmer, Know Your Food work with local producers and processors to support local branding and marketing efforts. The success of these campaigns has not been thoroughly evaluated.

Some regional food marketing is done through community supported agriculture (CSA) programs and listings, farmers markets, and other direct-to-consumer methods like roadside farm stands. In addition, counties publish farm guides or maps, such as the Kitsap County Farm Map, available through the Kitsap County WSU Extension.³⁶

The major, unified regional food marketing program in the central Puget Sound region is Puget Sound Fresh, run by Cascade Harvest Coalition. The program was started by King County in 1998 and it fully transitioned to Cascade Harvest Coalition management in 2001, along with Washington FarmLink (a program for connecting aspiring farmers with landowners). Between 1999 and 2001, Pierce, Snohomish, and Kitsap Counties joined King County under Puget Sound Fresh, and the project is still supported by King County and the King Conservation District.³⁷ The program is primarily a branding and consumer education effort to increase the income and viability of local farm operations and to preserve farmland. It does outreach primarily through one-on-one education at sixty to one hundred events per year as well as through their website and publishing a farm guide.³⁸ Its labels can be found at a number of regional retailers and restaurants.

According to the project's director, Puget Sound Fresh has seen successes and challenges. In its initial conceptualization, Puget Sound Fresh was tailored to each of the twelve counties of the Puget Sound.³⁹ As a result, the labels currently include Select Kitsap, Puget Sound Fresh: Pride of Pierce County, Puget Sound Grown: Appellation, and Puget Sound Grown: Taking Root in the Northwest.⁴⁰ Often, counties start out desiring their own branding campaigns. Two factors lead them to choose the unified Puget Sound Fresh label: (1) the fact that consumers are already aware of it, and (2) diminishing budgets for county agencies and agricultural marketing programs.⁴¹

Numerous other labels, certifications, and branding campaigns exist. As WSDA notes, the Hartman Group reports that over fifty-two percent of consumers are inclined to purchase sustainably produced products, which has led to the rise of "eco labels."⁴² These labels and other stamps of approval include:

- USDA or third-party organic certification
- Fair Trade
- Salmon-Safe Farm Management Certification Program: Run in Washington State by Stewardship Partners, Salmon-Safe is a third-party certification that works with farmers to use conservation techniques for restoring water quality and salmon habitat.⁴³
- Animal welfare labels
- Food Alliance certification: This label certifies that a producer meets criteria in eight areas such as "worker conditions, humane treatment of animals, and environmental

³⁶ Washington State University–Kitsap County Extension, "Kitsap County Farm Map," http://kitsap.wsu.edu/ag/farm_map.htm.

³⁷ Puget Sound Fresh, "About Puget Sound Fresh," <http://www.pugetsoundfresh.org/about.asp>.

³⁸ Mary Embleton (Cascade Harvest Coalition), interview.

³⁹ Mary Embleton (Cascade Harvest Coalition), interview.

⁴⁰ Puget Sound Fresh, "About Puget Sound Fresh."

⁴¹ Mary Embleton (Cascade Harvest Coalition), interview.

⁴² WSDA, "Direct Marketing Strategies: Other Certifications and Eco-labels," no. 6, Small Farm & Direct Marketing Handbook, January 2010, <http://agr.wa.gov/Marketing/SmallFarm/DOCS/6-OtherCertificationsAndEco-labels.pdf>.

⁴³ Ibid.

standards.”⁴⁴

Some producers express concern that the numerous labels available can dilute the message and confuse consumers.⁴⁵ Efforts to investigate further regional branding should consider this issue before taking action.

Along with direct marketing, agri-tourism is another marketing technique primarily used by small and medium-sized farms with less than \$250,000 of total sales to promote their products, diversify their operations, increase revenue, and educate consumers.⁴⁶ Regions across the country and internationally—particularly in Europe—view agri-tourism as an economic development tool. Agri-tourism activities in this region include wine tours, farm festivals, dinners, and tours, U-pick opportunities, homestays, and more. A recent review of agri-tourism in Washington State highlights the impacts of these activities and the obstacles faced by producers wishing to conduct agri-tourism activities. The WSU researchers surveyed 119 farms that participate in agri-tourism and direct marketing activities, summarized here:

- Agri-tourism customers were identified as primarily local, with seventeen percent coming from other counties and a small portion of that coming from other countries (especially Canada, Japan, and the United Kingdom).
- Washington agri-tourism operations are primarily on small farms (45 percent on 20 acres or less; 18 percent on 31-40 acres).
- Agri-tourism creates some seasonal jobs: approximately 30 percent of farmers surveyed that conduct agri-tourism hire between four and nine additional workers.
- Farmers contact government and extension agencies for information on agri-tourism. Seventy-three percent of those surveyed noted that they would be interested in joining an organization of agricultural producers engaged in agri-tourism activities.
- Agri-tourism operators are concerned that “state regulations and rules,” and some “land use rules/zoning” are major barriers to their activities. Lack of insurance availability also poses liability concerns.

These survey results suggest that there are opportunities for a regional organization to promote agri-tourism, facilitate advertising and communication, and reduce the barriers for agri-tourism operators, thus presenting opportunities to market regional agricultural activities to a wider tourist audience and foster economic development activities for the region’s producers.

NEXT STEPS

An important question remaining unanswered is what defines a healthy food processing sector. As noted earlier a large proportion of food processing employment is seasonal, and many jobs in food processing sub-industries pay low wages. Providing additional processing infrastructure may assist producers in getting their products to market. Despite current initiatives, however, the challenge of achieving steady, living-wage employment in the industry remains.

⁴⁴ Ibid.

⁴⁵ Mary Embleton (Cascade Harvest Coalition), interview.

⁴⁶ Gregmar I. Galinato, Suzette P. Galinato, Hayley Chouinard, Mykel Taylor, and Phil Wandschneide, “Agritourism and Direct Agricultural Marketing in Washington State: An Industry Profile,” WP 2010-10, Washington State University School of Economic Sciences, July 2010: 1, http://www.ses.wsu.edu/PDFFiles/WorkingPapers/Galinato/WP2010_10.pdf.

One way to accomplish this goal is by setting food systems indicators that guide efforts and measure progress toward goals. One example comes from the Iowa Food Systems Council, which recently set indicators for its food system. Under its food processing section (called “Transformation”), it explains that stakeholders chose three measures as reliable, valid, relevant, available and understandable indicators that met its goal. They chose worker safety and small firm size as a measurable proxy for good working conditions.⁴⁷

Economic Goals

- Percent of fruit and vegetable canning, pickling and drying facilities of total food manufacturers in Iowa
- Incidence of nonfatal worker injuries/illnesses in animal slaughtering and processing in Iowa

Fair Food & Farming Goals: Number of poultry processing facilities in Iowa with less than 20 employees

In addition to investing in labor equity and infrastructure, additional steps can be taken to develop a more robust understanding of the complex interrelationships between food processors and the food system. By systematically analyzing the entrance and exit to the market of processors over time, further research could begin to help the understanding of the impact of market changes, consumer preference, and government projects and policies in encouraging local processing.

Through this preliminary research, the studio team has noted a number of other information gaps and questions for further study. This list is not exhaustive, but suggests the types of work to be done should the Regional Food Policy Council wish to take up food processing as an area to study and promote.

1. How does the broader food processing industry fit into the ongoing update of the goals and work being done by the Prosperity Partnership and outlined in PSRC’s Regional Economic Strategy?
2. What is the impact of coordinated, place-based food marketing in this region?
3. What is the impact of direct-to-consumer marketing in this region?
4. What are the reasons that food processors are leaving this region?
5. How can policy-makers facilitate communication between producers and processors about available processing infrastructure capacity or need for new products?
6. What is the Regional Food Policy Council’s role in advancing or incubating new processing models, such as co-pack facilities?
7. What agri-tourism strategies are used in other states or regions to promote the industry to a wider, non-local audience? What are the impacts of these programs?
8. Are there ways to further unify regional marketing and branding campaigns that will increase consumption of local products?

⁴⁷ Angie M. Tagtow and Susan L. Roberts, “Cultivating Resilience: A Food System Blueprint that Advances the Health of Iowans, Farms and Communities,” Iowa Food Systems Council (February 2011), www.IowaFoodSystemsCouncil.org/cultivating-resilience, 7-8.

Distribution/Transportation

INTRODUCTION

The central Puget Sound region has a transportation network that includes hundreds of miles of roadway, freight rail, three international maritime ports, the Seattle-Tacoma International Airport, and auxiliary infrastructure. Most of this has a direct relation to some aspect of the food system, either from the perspective of goods distribution or consumer access, and it is from these two overarching perspectives that the intersection of transportation and food will be addressed here.

Distribution is the movement of food from the point of production to the end consumer and the infrastructure needed to support it. It includes all modes of transportation used to move food, including all of those mentioned above, as well as the warehouses, cold storage, and other related facilities scattered throughout the region that are critical to supporting the distribution of food. While traditionally focused on commercial freight operations, interest in the local food movement has generated a variety of other means of getting food to both market and consumers, and these will also be addressed. As these two varieties of distribution are quite distinct from one another, they will be addressed separately as large- and small-scale distribution.

Consumer access, by contrast, focuses on passenger transportation systems and the opportunities (or lack thereof) that these provide people to obtain fresh, healthy foods. The focus of this analysis is therefore finer in scale, often considering the presence of food retail outlets and transit service within walking distance of residences. Equity is an underlying concern for such an analysis.

In addition to large- and small-scale distribution and consumer access, emergency food system distribution and regional resilience will also be addressed. The former addresses food banks and other charitable food services, while the latter considers the capacity of the region to overcome potential crisis situations like natural disasters and oil shocks.

METHODOLOGIES

Information on transportation and distribution systems was collected through review of relevant literature, interviews and presentations with actors in the food system, and Geographic Information System (GIS) data analysis. Most of the interviews are confidential in order to protect the interviewees' business practices.

ACTORS

The following groups and organizations influence the transportation and distribution of food in the region:

- Farmers and ranchers
- Fishers
- Processors, including meat and dairy processors
- Distribution and trucking companies
- Sea ports and shipping companies
- Airports and airlines
- Railroad companies
- Supermarkets and other food stores
- Restaurants
- Consumers
- Emergency food providers (distribution, food bank, and meal preparation organizations)

REGIONAL FOOD DISTRIBUTION

Food Miles

The impact of 'food miles' on greenhouse gas (GHG) emissions has garnered considerable popularity in food policy discussions in recent years. Food miles are "roughly a measure of how far food travels between its production and final consumer,"¹ and the prevailing mentality since the term was coined in 1995 has been that reducing food miles—i.e., consuming more locally-produced foods—results in fewer GHG emissions. A 2008 study by Weber and Matthews found, however, that food transportation often accounts for a relatively low percentage of total embodied emissions in food. The authors found that food in the United States travels an average of about 1,000 miles, with the food's transportation accounting for roughly 11 percent of the associated GHG emissions for fruits and vegetables and only one percent for red meat. By contrast, the production phase was found to account for 83 percent of embodied emissions.² The study concluded that changes in diet could have a greater impact on GHG emissions than eating more locally-produced foods. Still, reducing the distance that food must be transported does tend to reduce emissions, even if only marginally, and should be considered in a discussion about the intersection between transportation, food, and environmental policy.

¹ Christopher L. Weber and H. Scott Matthews, "Food-Miles and the Relative Climate Impacts of Food Choices in the United States," *Environmental Science & Technology* 42, no. 10 (2008), doi: 10.1021/es702969f.

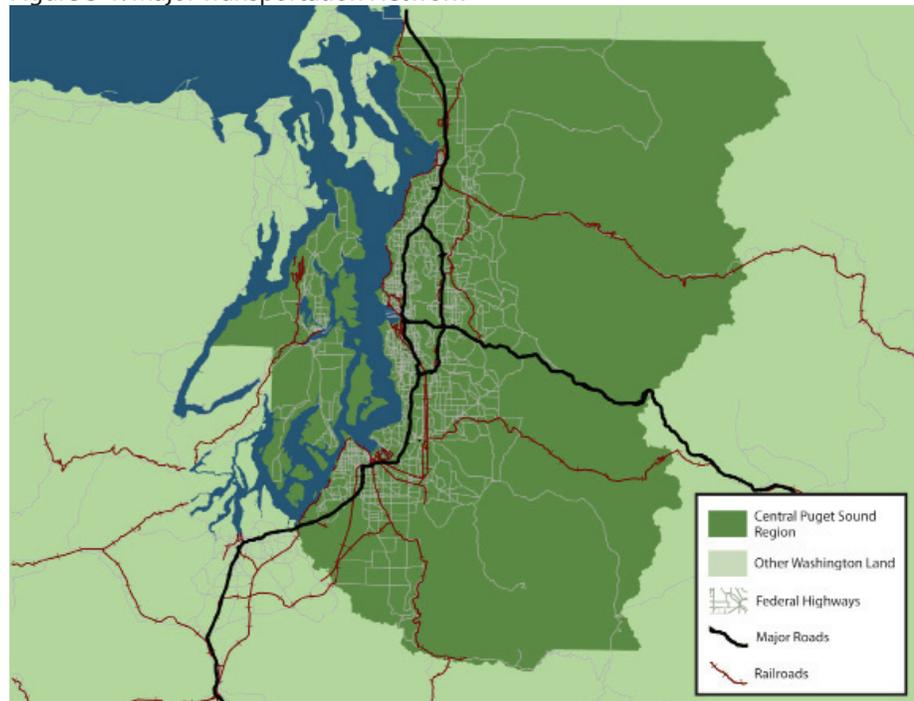
² Ibid.

Large-Scale Distribution

"Movement of freight is the circulatory system of our economy"¹ and, by extension, also of our food system. The central Puget Sound region's freight system is comprised of a network of roads and rails connecting distribution and manufacturing centers, ports, airports, agriculture, and local business. Freight movement is critical to the region because it supports the daily functions of businesses and households. Large-scale distribution is akin to the 'conventional network' as described in the Sound Food Report: major companies that distribute products between producers or processors and retail outlets or the food service industry.²

Figure 3-1 depicts major components of the transportation network in the central Puget Sound region. This expansive network of highways, streets, and railroads is vital to the movement of food, as most of these routes are necessary to get food to market and to get the region's population to this food. Ultimately, it does not matter how much food is produced if consumers and product cannot be brought together in the same place. The transportation system establishes these connections, and is thus of great importance to the food system.

Figure 3-1: Major Transportation Network



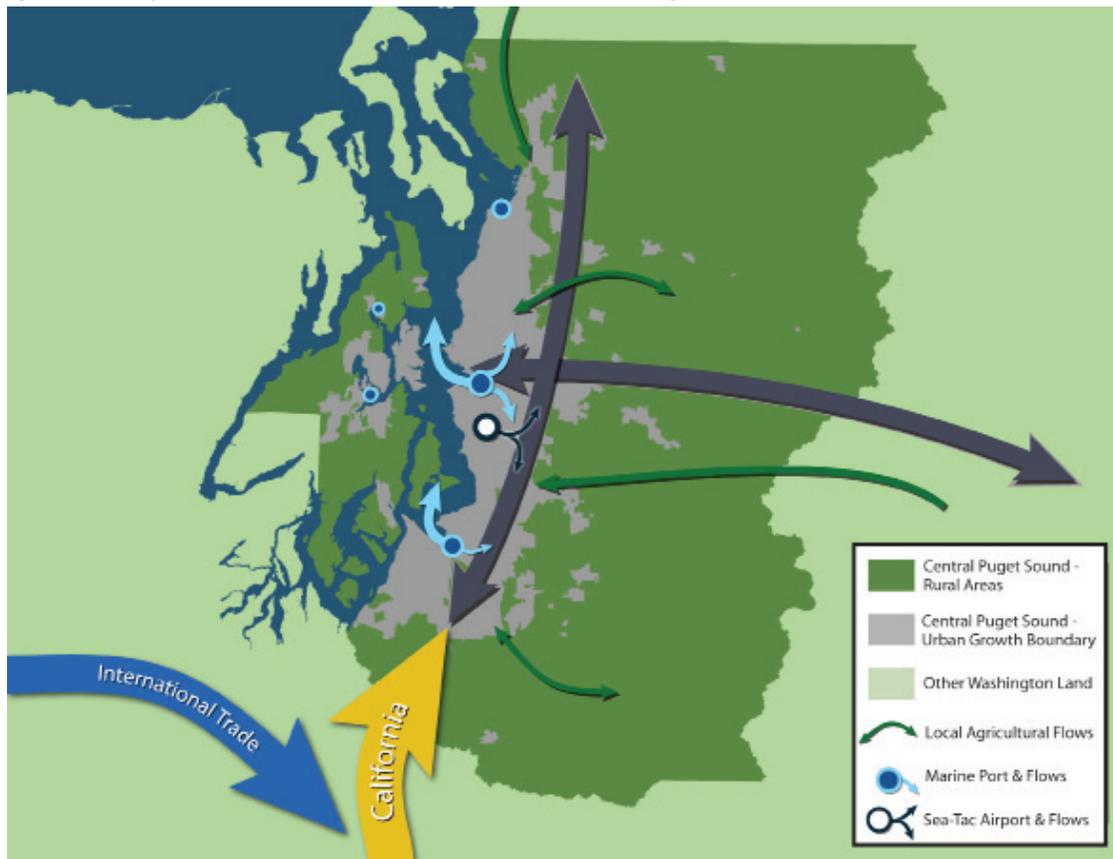
Source: GIS Datasets, Washington State Geospatial Data Archive, accessed March 10, 2011, <http://wagda.lib.washington.edu/WAGDA> (requires log-in).

¹ Puget Sound Regional Council, "Freight Mobility/FAST Corridor," <http://psrc.org/transportation/freight>.

² Steven Garrett, et al., "Sound Food Report," 2006, http://faculty.washington.edu/bborn/Sound_Food_Report2.pdf.

Figure 3-2 is a simplified diagram depicting the flows of the transportation network. International and interstate importation—the latter especially from California—represents a substantial majority of the food supply in the central Puget Sound region. While data identifying the volume or percentage is not available at this time, this dependence on externally-produced food—and the transportation of it—was corroborated anecdotally by several major distributors in the area consulted by the studio team. This can be understood by considering the multitude of foods that cannot be produced in Washington for climatic reasons that remain common sights on grocery store shelves. Further, because the ports of the central Puget Sound region do not possess the facilities required to handle most kinds of fresh food products, the region’s ports are not the point of entry for most international foods. Instead, much of it passes through the Port of Los Angeles-Long Beach and is then trucked to Washington State via Interstate 5. Shipments to and from the eastern United States predominantly use Interstate 90, but rail freight is also commonly used along this corridor for transporting bulk and nonperishable goods and commodities.

Figure 3-2: Major Flows of Food Distribution in the Central Puget Sound

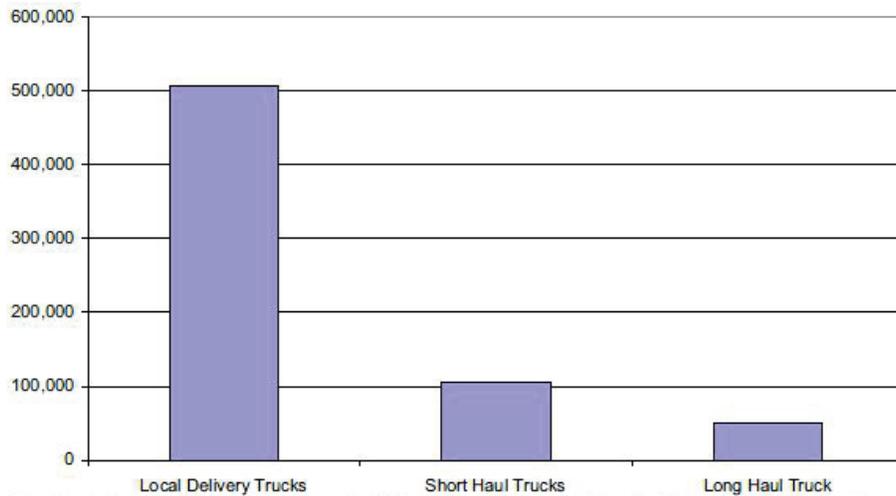


Other important things to note are the marine ports, with those in Seattle and Tacoma being of particular significance to the export of food and agricultural products. The Port of Seattle’s Fisherman’s Terminal is also important, as it provides a unique hub at which fishermen may sell their catch directly to the public. Sea-Tac Airport plays an important role in the importation of seafood and other highly perishable goods. See Appendix 3-1 for the breakdown of freight tonnage by mode in 2010.

Trucking

Trucking represents the single most significant portion of all food freight movement in the central Puget Sound region. Nearly 100 percent of all food purchased by consumers in the region was at some point delivered by truck, most often local delivery trucks, resulting in hundreds of thousands of truck trips daily on area roadways (Figure 3-3).³

Figure 3-3: Central Puget Sound Average Daily Truck Trips by Type



Source: WSDOT, "Washington Transportation Plan Update Freight Movement," 2008.

The relative amount of truck traffic on the area's major highways can be seen in the map provided in Appendix 3-2. Most of these trips are related to major distribution centers, of which there are several throughout the region. Some of the most notable, taken from the Sound Food Report, include:

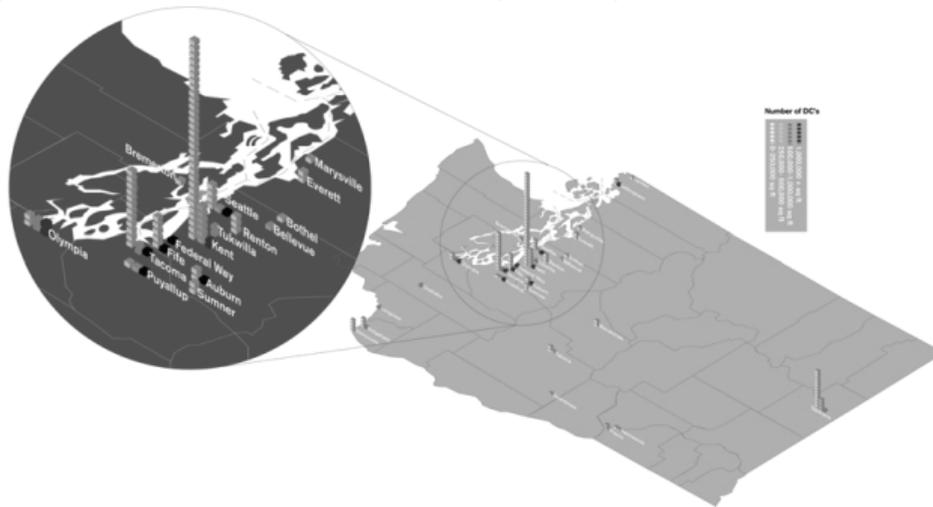
- Safeway: main warehouse and distribution facility in Auburn
- Walmart: main warehouse and distribution facility in Auburn
- QFC/Kroger/Fred Meyer: main warehouse and distribution facility in Puyallup
- Associated Grocers: warehouse in South Seattle
- Sysco: main warehouse and distribution facility in Kent
- Supervalu & Albertson's: Tacoma
- Costco: depot in Issaquah⁴

Major distribution centers are typically located along major highways to facilitate efficient movement of goods. Figure 3-4 below depicts the distribution centers in the state and region. Though these are not all specifically for food products, the map is illustrative of the major industry trends that are also relevant to the food industry.

³ WSDOT, "Washington Transportation Plan Update Freight Movement," 2008, http://www.wsdot.wa.gov/NR/rdonlyres/67530525-3531-4552-A198-BA4255AADAA7/0/WTPSeptember_2008web.pdf.

⁴ Steven Garrett, et al., "Sound Food Report," 2006.

Figure 3-4: Distribution Centers Cluster Near Major Freeways



Source: WSDOT, "Washington Transportation Plan Update Freight Movement," 2008.

Given the volume of daily truck deliveries and the just-in-time nature of distribution practices, it is little wonder that distributors identify congestion as an inhibiting factor to business. Rising congestion lowers average highway speeds and increases truck delays, resulting in a need to purchase additional trucks and hire additional drivers, which further increases traffic congestion. These increased costs to distributors are eventually passed on to consumers in the form of higher food prices. See Appendix 3-3 for PSRC's list of congested travel corridors identified as in need of congestion management.

In 2006, average daily freeway speeds were only 41 miles per hour, and arterials moved slower still at an average of only 22 miles per hour. Truck speeds are generally 10 percent slower than passenger cars on freeways, meaning that truck speeds are likely lower still. By 2040, daily trips are expected to increase 40 percent on freeways, leading to a 14 percent decline of speed on freeways and an eight percent decline of speed on arterials. Daily truck hours are expected to increase by 60 percent over 2006 and truck miles travelled are expected to increase by 44 percent.⁵ This reduced efficiency will also further contribute to negative environmental impacts associated with transportation, including increased GHG emissions, running counter to Washington State law, and a greater demand for oil.

While the focus of this section is primarily on the distribution of food into and throughout the region, it is also important to note the significant role of transportation in shipments from Washington to other states and countries. Approximately 85-90 percent of Washington fresh produce shipped outside the state does so via truck, with another 10-15 percent moved by rail. The shipment of Washington apples to eastern U.S. markets alone represents a volume equivalent to 47,000 truckloads or 20,650 rail cars, with the two modes competing to provide the means for these shipments.⁶ The same study indicates that apples, potatoes, pears, and onions together account for an estimated 149,000 truckloads or 65,000 rail cars, lending some context both to the scale of the state's exports and the resulting contribution to traffic.

⁵ Puget Sound Regional Council, "Transportation 2040 Appendix J: Regional Freight Strategy," August 2010, http://psrc.org/assets/4886/Appendix_J_-_Freight_Strategy_-_FINAL_-_August_2010.pdf.

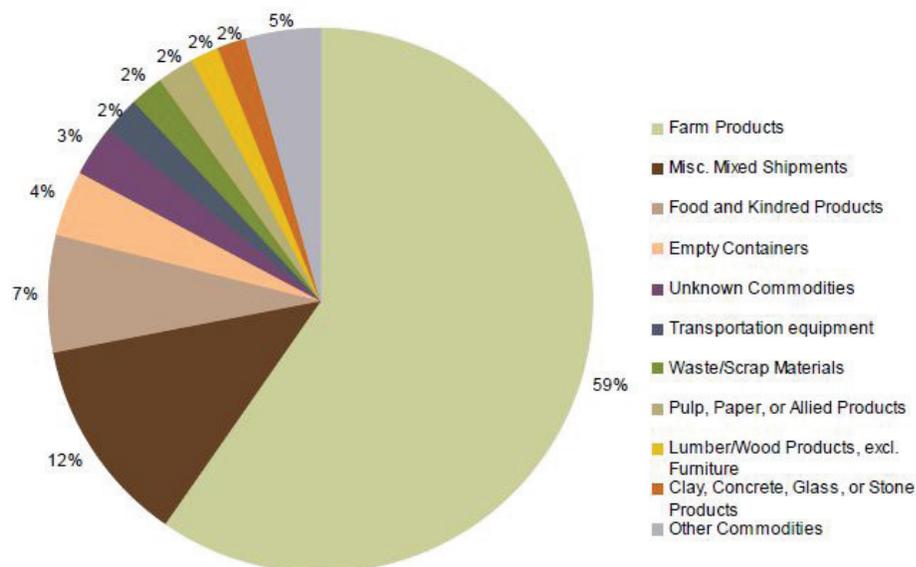
⁶ Kenneth L Casavant and Eric L Jessup, "Value of Modal Competition for Transportation of Washington Fresh Fruits and Vegetables," Strategic Freight Transportation Analysis, 2002, http://www.sfta.wsu.edu/research/reports/pdf/Rpt_3_Value_of_Modal_Comp.pdf.

Rail

Rail in the region includes the Class 1 rail facilities of the Burlington Northern/Santa Fe (BNSF) and the Union Pacific (UP) mainlines and intermodal yards, all of which provide vital rail capacity to meet the needs of international merchandise and regional businesses alike.⁷ A number of short line railroads support regional industries by providing connectivity to markets within and beyond the region.

In 2002, 76 percent of all international containers arriving at the region's seaports were transferred to rail.⁸ The top ten inbound commodities carried by rail are shown in Figure 3-5.

Figure 3-5: Top Ten Inbound Commodities Carried by Rail in 2007



Source: PSRC, Transportation 2040, Appendix J: Regional Freight Strategy.

Farm products account for approximately 60 percent of all inbound rail commodities. This reflects the Washington state agricultural products imported into the region to be exported internationally through the Port of Tacoma and the Port of Seattle, and those consumed by the population in central Puget Sound region.⁹ In addition, food and kindred products also comprise seven percent of inbound rail commodities.

To be specific, the Washington State Grain Train helps carry thousands of tons of grain to deepwater ports along Puget Sound to serve over 2,500 cooperative members and farmers in one of the most productive grain-growing regions in the world.¹⁰ The Washington State Grain Train began operations in 1994 and currently has 118 grain cars in the fleet (100 are owned by the State and 18 are owned by the Port of Walla Walla).¹¹ In the early 1990s, a national shortage of rail hopper cars made it difficult and expensive for regional farmers to get grain to market.¹²

⁷ PSRC, "Transportation 2040", Appendix J-regional freight strategy.

⁸ Ibid.

⁹ PSRC, "Transportation 2040", Appendix J-regional freight strategy.

¹⁰ Washington State Department of Transportation, "Washington Grain Train," accessed March 15, 2011, <http://www.wsdot.wa.gov/Freight/Rail/GrainTrain.htm>.

¹¹ Ibid.

¹² Ibid.

To help alleviate this shortage of grain cars, federal funds were used to purchase 29 used grain cars to carry wheat and barley from loading facilities in eastern Washington to export facilities in western Washington.¹³

Food products are also shipped by rail within the region. However, the rail system is facing congestion problems since commodity volumes will continue to grow and strain the near-capacity rail system. Rail is currently at capacity and will be near or exceeding capacity moving forward; as shown in Appendix 3-1, about 81 percent growth in freight tonnage is expected in the rail system. As a result, full capacity rail lines are expected to increase costs and delays of food products.

Marine Ports

The central Puget Sound region has three deepwater marine ports: Everett, Seattle, and Tacoma (Figure 3-6). As shown in Table 3-1, ports are dominated by food. As for the Port of Seattle, six of the top ten export items are commodities related to food. At Tacoma's port, grain and cereals, meat, and prepared vegetables ranked within the top ten export commodities.

Figure 3-6: Map of Ports in the Puget Sound



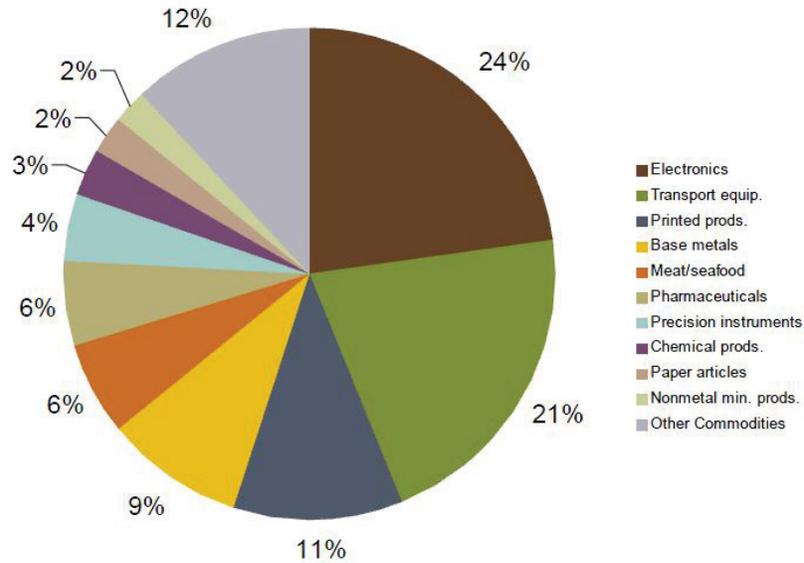
Source: WSDOT, "Washington State Ports Map," <http://www.wsdot.wa.gov/Freight/MarinePortsMap.htm>.

The region's marine ports also have grain facilities to help receive, store, and blend export grain.¹⁴ While the region's marine ports export all manner of food products, they do not have the facilities available to import and store fresh or perishable food. International imports therefore arrive predominantly through either Sea-Tac airport or from California, especially the Port of Los Angeles.

¹³ Ibid.

¹⁴ "Grain Facility – Bulk Marine Terminal," Port of Seattle, Accessed March 15, 2011, <http://www.portseattle.org/seaport/cargo/grainfacility.shtml>.

Figure 3-7: Top Ten Exports at the Port of Seattle and Port of Tacoma, 2008



Source: PSRC, Transportation 2040, Appendix J: Regional Freight Strategy.

Sea-Tac Airport

Though it accounts for the smallest percentage of all freight entering and exiting the central Puget Sound region—only about 0.1 percent, or about 400,000 tons of cargo in 2010—Sea-Tac Airport serves a unique and vital economic function in the region.¹⁵ Air cargo is typically high-value and time-sensitive. In the context of food, this tends to refer to meat, seafood, and other frozen or refrigerated perishables. As shown in Figure 3-7, meat and seafood accounted for about six percent of air cargo tonnage in 2010. PSRC states that air cargo is “totally dependent on the regional truck transportation mode,” noting that all air cargo ultimately ends up on a truck.¹⁶

Table 3-1: Puget Sound Regional Air Cargo Tonnage in 2010

Seattle			Tacoma	
Commodity	\$ (Millions)		Commodity	\$ (Millions)
1 Misc. Grain, Seed, Fruit	1,719	Grains and cereals	2,860	
2 Machinery	1,237	Meat	492	
3 Cereals	989	Iron and steel products	490	
4 Fish and Seafood	517	Industrial machinery	484	
5 Dairy, Eggs, Honey, Etc.	434	Vehicles and auto parts	409	
6 Paper, Paperboard	416	Inorganic chemicals	342	
7 Meat	368	Paper products	337	
8 Preserved Food	350	Prepared Vegetables	299	
9 Vehicles, Not Railway	282	Wood products	238	
10 Mineral Fuel, Oil, Etc.	282	Animal feed	120	

Source: PSRC, Transportation 2040, Appendix J: Regional Freight Strategy.

¹⁵ Puget Sound Regional Council, “Transportation 2040 Appendix J: Regional Freight Strategy,” 2010.

¹⁶ Ibid.

Small-Scale Distribution

Moving to the other end of the spectrum, small-scale distribution tends to involve smaller, local farms and food producers who prepare and process food themselves. Most distributors and processors want to deal with larger-scale producers who can guarantee a minimum quantity of product.¹⁷ Consequently, the smaller-scale producers tend to take their product directly to farmers markets, restaurants, and community supported agriculture (CSA) drop-off points. Other small-scale food producers sell their product to consumers coming directly to the farm, as shown in the farm store in Figure 3-8. Fisherman's Terminal, as described above, provides the public direct access to seafood coming directly from fishing boats.

Figure 3-8: Remlinger Farm Store



Source: Remlinger Farms, "Farm Market & Northwest Craft Showcase," http://www.remlingerfarms.com/remlinger_farm_market.htm.

Interest in locally produced food is increasing in the central Puget Sound region.¹⁸ A recent study found that 74 percent of consumers say that labels designating 'locally-grown' are extremely or very influential in driving their food purchasing decisions.¹⁹ The increased interest in local food has increased direct sales to customers and indirect sales to buyers such as grocers, restaurants, food banks, schools, and hospitals.

Direct sales to consumers through farmers markets and CSAs have increased over the last 10 years.²⁰ In March 2011, Puget Sound Fresh listed 66 farmers markets and 54 CSAs in its directories for King, Kitsap, Pierce, and Snohomish Counties. Figure 3-9 shows a farmers market in the central Puget Sound region. Farmers, farm employees, and other producers and processors typically deliver their products to farmers markets and CSA drop-off points in small trucks, box trucks, and vans.

¹⁷ Interview with food distributor, February 23, 2010.

¹⁸ Cascade Harvest Coalition, "Puget Sound Food Project Final Report," December 2008. http://www.agbiz-center.org/FilesUploaded/file/Final%20Carolyn%20Foundation%20Report_12_16_08.pdf.

¹⁹ Cascade Harvest Coalition, "Marketing Research and Strategy for Growing Sales Opportunities at Puget Sound Farmers Markets," <http://www.cascadeharvest.org/programs/farmers-markets>.

²⁰ WSA Small Farms Program, King County Food and Fitness Initiative Agricultural Assessment, P. 17, <http://king.wsu.edu/foodandfarms/documents/KCFF-AG-final-6-15-09.pdf>.

Figure 3-9: Puget Sound Farmers Market



Source: Puget Sound Fresh, "Puget Sound Area Farmers Markets," http://www.pugetsoundfresh.org/farmers_markets.asp.

Food purchased at local farmers markets travels shorter distances than most other food consumed in the US.²¹ A 2008 survey by Farmers Market Today magazine found that 85 percent of farmers market vendors traveled fewer than 50 miles and more than half traveled fewer than 20 miles. This is far less than the national average of 1,500 miles that food travels before reaching the consumer. Another travel advantage of smaller scale food producers concerns traffic congestion. Most small-and medium-scale food producers and distributors deliver their products at off-peak times, and do not consider traffic congestion a problem, contrary to the larger-scale distributors.^{22, 23, 24}

While farmers markets are a popular way for producers and consumers to connect directly, many farmers markets struggle to attract and keep customers and provide the right mix of products.²⁵ Some farmers markets fail for lack of publicity or poor operations. Most farmers markets are not self-supporting, and in addition to receiving private donations, must be subsidized by public agencies.²⁶

Another way that consumers connect with producers is by traveling to farms to purchase products and entertainment. Farms in the central Puget Sound region offer activities such as

²¹ Cascade Harvest Coalition, "Marketing Research and Strategy for Growing Sales Opportunities at Puget Sound Farmers Markets," <http://www.cascadeharvest.org/programs/farmers-markets>.

²² Interview with central Puget Sound region CSA, February 24, 2010.

²³ Interview with a medium-sized food distributor, February 24, 2010.

²⁴ Interview with food distributor, February 23, 2010.

²⁵ Cascade Harvest Coalition, "Marketing Research and Strategy for Growing Sales Opportunities at Puget Sound Farmers Markets," <http://www.cascadeharvest.org/programs/farmers-markets>.

²⁶ King County, "Farmers Market Report," <http://your.kingcounty.gov/dnrp/library/water-and-land/agriculture/farmers-markets/farmers-market-report-final.pdf>.

concerts, classes, farm tours, and festivals,²⁷ Fresh and processed products are usually available at farm stands that serve both the local population and tourists coming from longer distances to experience farm activities. According to the USDA, the number of farms participating in agri-tourism in the central Puget Sound region increased 120 percent from 2002 to 2007. Earnings from these activities increased 524 percent, indicating that agri-tourism and recreational services are a growing source of income for farms. Agri-tourism and recreational services include farm-related services such as hunting, fishing, farm or wine tours, hay rides, etc.

Many consumers who are interested in buying local choose to purchase products indirectly from restaurants, grocers, schools, or other establishments due to concerns about convenience, time, variety, quality, physical effort, and food safety.²⁸ Grocers, schools, and other institutions tend to buy local products from medium-scale and sometimes large-scale distributors and producers. Indirect, small-scale distribution is limited to restaurants and a small number of other buyers.

Restaurants are increasingly interested in serving local food. "Locally grown produce, locally sourced meats and seafood, sustainability, mini-desserts and locally produced wine and beer top the list of nearly 215 culinary items in the 'What's Hot in 2010' survey."²⁹ While interest in buying local food is increasing, restaurants and other commercial buyers often find it hard to get.³⁰ Producers who sell to restaurants often deliver their products directly to the restaurants.³¹ In an innovative pilot project in 2010, restaurants were able to buy local products at wholesale farmers markets in two locations in western Washington.³² Services such as Puget Sound Food Network and Puget Sound Fresh help connect restaurants and other buyers to local food producers.

Some producers are content with the small-scale distribution methods described above. However, these markets do not meet the needs of all small producers; some would like additional market options. A 2006 study found that the lack of an efficient small-scale distribution system in the Puget Sound Region limits the growth of local production for local consumption.³³ Markets for small-scale producers are limited because most of the larger grocers and distributors want larger quantities, or they have labeling, packaging, storage and other requirements that are difficult to meet.

Some of these requirements can be met with access to the appropriate infrastructure or knowledge. Cooperative efforts in the region are improving distribution and market opportunities for small-scale producers and processors through the sharing of infrastructure. The Everett Market planned through a collaboration of Snohomish County and a private developer is one promising model. In addition to a farmers market, restaurants, and processing facilities, the Everett Market will have a loading area that acts as a centralized drop-off and pick-up point with infrastructure to organize and store food products properly.³⁴ Efforts such as this could substantially benefit the region's food producers, as most farmers in the region would increase

²⁷ Puget Sound Fresh, "2010 Event Calendar." <http://www.pugetsoundfresh.org/events.asp?monthRequested=All&yearRequested=2010>.

²⁸ Cascade Harvest Coalition, "Marketing Research and Strategy for Growing Sales Opportunities at Puget Sound Farmers Markets," <http://www.cascadeharvest.org/programs/farmers-markets>.

²⁹ National Restaurant Association, "Sustainability, Local Sourcing and Nutrition Top List of Hottest Menu Trends for 2010," <http://www.restaurant.org/pressroom/pressrelease/print/index.cfm?ID=1866>.

³⁰ Comment by a member of the Chefs Collaborative in the Regional Food Policy Council Meeting, March 11, 2011.

³¹ Interview with Snohomish County Meat Processor, February 16, 2011.

³² Puget Sound Food Network, "Seattle Wholesale Market Press Release," <http://psfn.org/blog/2010/09/seattle-wholesale-market-press-release/>.

³³ Puget Sound Food Network, "How it works," <http://www.psfm.org/how-it-works/>.

³⁴ Interview with Linda Neunzig, Snohomish County Agricultural Project Coordinator. February 16, 2011.

food production if nearby processing and distribution infrastructure was available.³⁵

Another small-scale distribution trend in the region is the increase in bicycle delivery. Food products delivered by bicycle include seafood, coffee, produce, and processed food like pizza and sandwiches. Figure 3-10 shows a bike trailer for delivering pizza. One notable example is the Sail Transport Company, which delivers produce from the Kitsap peninsula to the Ballard neighborhood of Seattle by sailboat and bicycle.³⁶

Medium-Scale Distribution

Many feel that farmers markets, CSAs, and one-to-one relationships with restaurants are not enough to create a stable and sustainable regional food system.³⁷ Medium-scale distributors can provide access to larger markets for local producers, and sometimes even small-scale producers. Several medium-scale distributors exist in the Puget Sound region. These medium-scale distributors tend to have large-scale distribution systems in place, importing food from outside of the region and country when local sources are lacking.³⁸ Many prioritize products from local producers that can meet their quality and quantity requirements. Some medium-scale distributors have agreements with farms, which guarantees a market for the farms' products and provides stability. Larger stores that are independent or part of a small or medium-sized chain can provide the same type of support for local products if buying local is part of their mission.³⁹ However, the consolidation of grocery store chains has decreased the number of medium and small-scale stores and chains.⁴⁰ Home delivery services, a still-evolving food market, operate at a variety of scales.

CONSUMER ACCESS

The level of consumer accessibility to food represents the second perspective from which the intersection of transportation and food are considered. According to a household activity survey conducted by PSRC, transportation trips for shopping and eating outside the home account for approximately 13 percent of all trips taken, about 10 percent of which are related to consumer access to food. The underlying intent of considering consumer access is to ensure that all residents are afforded proximate, equitable access to grocers, markets, or other purveyors of fresh, healthy food. Recognizing that automobile ownership and access is lesser among lower-income, elderly, youth, and disabled populations than among other groups, the concept of equitable access to food focuses on access for non-automobile modes—on foot or by bicycle, bus, or rail transit.

Areas of low or lacking access are commonly referred to as 'food deserts', but there is presently no broad consensus on the definition of food deserts or how they may best be measured. Some studies have been conducted in other parts of the country however, and some local data is available as well, but a complete consumer access analysis of appropriate scale is beyond the

³⁵ Cascade Harvest Coalition, "Puget Sound Food Project Final Report," December 2008. http://www.agbiz-center.org/FilesUploaded/file/Final%20Carolyn%20Foundation%20Report_12_16_08.pdf.

³⁶ Sail Transport Company, "Concept," <http://www.sailtransportcompany.com/Concept/>.

³⁷ Puget Sound Food Network, "How it works," <http://www.psfm.org/how-it-works/>.

³⁸ Interview with food distributor, February 23, 2011.

³⁹ Interview with local grocery business, March 8, 2011.

⁴⁰ Seattle PI, "Retail Notebook: Independents band together as Seattle's grocery war continues," http://www.seattlepi.com/business/60543_retail02.shtml.

scope of this report. The data presented below is thus provided primarily as an indication of how such a study might be conducted for the central Puget Sound region, acknowledging that the accuracy of the specific data contained herein may be disputed. Another study that may be considered for the purpose of example is “Good Food: Examining the Impacts of Food Deserts on Public Health in Chicago,” created by Mari Gallagher Research and Consulting Group in 2006.

Low access to food is typically defined in one of three ways:

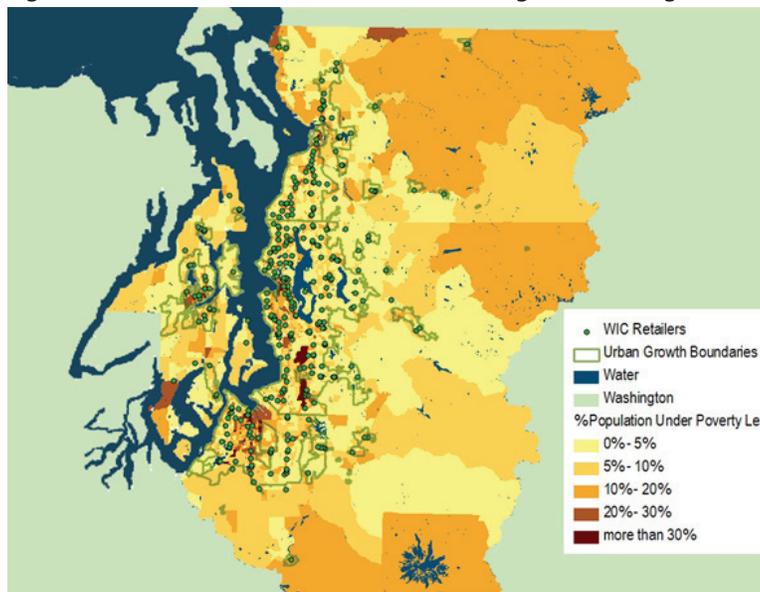
1. A lack of fresh food retail outlets within proximate distance of residences—often walking distance in urban areas, and slightly greater distance in rural areas,
2. Situations in which the vehicle expenses required to provide access to healthy food exceed residents’ ability to pay,
3. Poor connections between transit and food retail outlets.

Low food access issues vary somewhat between urban and rural areas.

Urban Food Access

The major food access concern in urban areas is the lack of food access for low-income and minority people. Residents of lower income and minority neighborhoods in most urban areas encounter two obstacles: full service supermarkets and farmers markets are insufficient in their neighborhood and they are less likely to have access to an automobile. Studies have proven that there are fewer markets in neighborhoods with low-income, minority, or immigrant residents. Within cities, wealthier neighborhoods have more than three times the number of supermarkets than in poorer areas.⁴¹ In addition, food markets located in low-income areas are often smaller, with more limited food selection.⁴² Figure 3-11 shows the distribution of people in poverty in the central Puget Sound region with low access to food.

Figure 3-10: Low food access in the Central Puget Sound Region



Source: WAGDA, WA Department of Health

⁴¹ Ming Chin Yeh & David L.Katz, 2006, “Food, nutrition, and the health of urban population.”

⁴² K Morland, S Wing, A Diez Roux, 2002, “Neighborhood characteristics associated with the location of food stores and food service places,” American Journal of Preventive Medicine, vol 22(1): 23-29.

The increase in farmers markets has been a benefit for many urban shoppers, but the distribution of farmers markets also has a tendency to be inequitable. With fewer supermarkets and farmers markets in their neighborhoods, low-income residents in urban areas depend upon corner stores and small retailers for groceries, which have limited healthy food items such as fruits or vegetables.

Residents of urban neighborhoods with few food markets have to travel farther to shop for food. However, low-income households tend to have less access to an automobile. This requires many residents to rely on walking, biking, and mass transit. However, transporting grocery bags for a long time and distance can be difficult with these modes. Additionally, they may encounter other obstacles such as lack of bicycle paths, sidewalks, crosswalks for high-traffic streets, and transit that supports grocery shopping.

Rural Food Access

Compared to urban areas, low access to food is much more rampant in rural areas. As shown in Figures 3-12 and 3-13, low food access areas are much more wide spread in rural areas than in urban areas.

Figure 3-11: Low access areas in Snohomish County, Washington



Source: TRF, "Food Access," <http://www.trfund.com/index.html>.

Figure 3-12: Low access areas in King County, Washington



Source: TRF, "Food Access," <http://www.trfund.com/index.html>.

Since population densities are low, rural areas often cannot economically support a full-service grocery store or supermarket within close proximity of residents' homes. Thus, distance to market is a common barrier for low-income, elderly, and disabled residents in rural areas. In addition, the majority of rural areas have few public transit systems, if any at all. Further research could seek to address the difficulties and barriers unique to rural residents.

Emergency Food System Distribution

Food banks, soup kitchens, shelters, and other emergency services provide food for people living in or near poverty. These services receive food from a variety of sources such as non-profit organizations, private donations, and farmers markets. For many of these services, their primary source of food comes large non-profit distributors such as Food Lifeline. Food Lifeline receives donations of food from stores, processors, restaurants, caterers, farmers, distributors, and others.⁴³ Food Lifeline also purchases food. After the donated and purchased food is sorted, orders are processed, consolidated, and delivered by semi-truck from a central distribution center in King County to nine redistribution centers located throughout western Washington. Smaller trucks then distribute orders to food banks, shelters and meal programs in the area. Beyond the issue of increasing demand for emergency food, lack of infrastructure for storing food donations is a primary distribution issue for Food Lifeline.

Farmers markets also provide access to food for low-income people. Cascade Harvest Coalition reported, "In 2008, approximately \$1.4 million in Women, Infants and Children (WIC) vouchers, Senior Farmers Market Nutrition (SFMNP) vouchers, and Supplemental Nutrition Assistance Food Program (SNAP) were redeemed at farmers markets in Washington."⁴⁴ Local food banks, soup kitchens and shelters receive thousands of pounds of fresh, unsold produce from farmers markets each year.

REGIONAL RESILIENCE

Without operating distribution facilities and infrastructure, the food system would no longer be capable of providing the public with food. There are a variety of scenarios that could potentially inhibit the system's ability to function, including natural or human-caused disasters, increasingly scarce and expensive fossil fuel energy, and the impact more stringent emissions regulations might have on food prices if enacted. "Six to twelve percent of food costs are estimated to directly be influenced by transportation costs."⁴⁵ That percentage—and food prices with it—will increase as fossil-fuel energy becomes increasingly scarce, and this could have significant impacts on the availability of food throughout the region. It is therefore important for the region to have measures in place to mitigate the impacts of such crises should they take place. Regional resilience, then, is the capacity of the region to overcome potential crisis situations like natural disasters and oil shocks and maintain a sufficient supply of food to support the population.

Each of the four counties in the region currently have a Critical Infrastructure Protection Plan in place with the Department of Homeland Security, which identify critical infrastructure and services like energy, transportation, and telecommunications—both public and private—and establish means for sharing information and protecting against system failures in the event of crises.⁴⁶

⁴³ Interview with Linda Nageotte, Food Lifeline, February 28, 2011.

⁴⁴ Cascade Harvest Coalition, "Marketing Research and Strategy for Growing Sales Opportunities at Puget Sound Farmers Markets," <http://www.cascadeharvest.org/programs/farmers-markets>.

⁴⁵ ERS/USDA, "Components of the Marketing Bill." <http://www.ers.usda.gov/Data/FarmToConsumer/marketingbill.htm>.

⁴⁶ King County, "Critical Infrastructure Protection Plan," Washington State Homeland Security Region 6, 2005, http://www.kingcounty.gov/safety/prepare/EmergencyManagementProfessionals/Plans/HomelandSecurity/~/_/media/

It is stressed, however, that these plans are not response plans; rather, they attempt to identify vital actors and useful processes that can reduce the region's long-term vulnerability if coordinated. The plans state quite plainly the potentially dire nature of the situation: "Major disruptions to transportation infrastructure can virtually paralyze the Region."⁴⁷

The PSRC also recognizes the severity of these issues. An entire portion of the VISION 2040 Regional Freight Strategy addresses the uncertainties that stem from oil depletion and climate change, and recognizes that while the exact results are difficult to predict and account for, it is valuable for regional governments to note these emerging challenges as an important part of their freight strategies.⁴⁸ "For State and regional governments and agencies, their role in this issue is likely to ensure that their long-range plans and implementation strategies are created within a framework that includes these issues."⁴⁹ Any attempt to plan for the future of the regional food system should consider the region's resilience given such potential adverse circumstances.

NEXT STEPS

Though much has been written about transportation in the central Puget Sound region, there remain a number of important considerations yet to be fully addressed. The following represents a partial list of issues that should be investigated further:

- A thorough analysis should be conducted to determine the location of the region's food deserts based on travel time and distance from all vendors selling fresh and minimally-processed produce and goods.
 - o Even though there is scattered data on the internet, methods for classifying food deserts are still very controversial. Some methodologies used are theoretically viable, however, the heavy use of GIS makes the maps inaccurate in practice.
 - o The USDA/ERS Food Environment Atlas shows data at the county level that indicates areas where access to healthy foods is limited and other demographic data, but does not provide the specific data of individual communities.⁵⁰
 - o The Reinvestment Fund policy map offers low food access areas data for the entire nation.⁵¹ This includes: 1) location at the census block group level, 2) average LAA score, and 3) number of limited service stores in the LAA. (TRF recently completed an in-depth food access analysis for 10 metro areas across the country for the Brookings Institution Metropolitan Policy Program.)
- An investigation to address how local transportation networks and services can better ensure access for all residents to grocery stores and other healthy food outlets. Such an analysis should focus especially on transit, bicycle, and pedestrian access.
- A comprehensive list of food processing and distribution centers in the region should be compiled.
- An investigation into where system efficiencies could be gained, which sector would be responsible for their development, and how much they would cost to implement.
 - o What are strategies to decrease food distribution costs?

safety/prepare/documents/Region6CIP/Region6CIP_Plan_9_2005.ashx

⁴⁷ Ibid.

⁴⁸ PSRC, "Transportation 2040 Appendix J: Regional Freight Strategy," August 2010.

⁴⁹ Ibid.

⁵⁰ NASDA, "Rural Food Deserts in Washington State," <http://www.nasda.org/File.aspx?id=26775>.

⁵¹ TRF, "Low Food Access," <http://www.trfund.com/TRF-food-access-data.html>.

- o How can congestion and other factors be improved, whether through commuter route or modal shift or other means, to better accommodate the needs of time-sensitive food distribution?
- What changes would need to be made to the regional food system's supply and distribution practices to ensure regional resilience in the event of a disaster or crisis?

Consumption

INTRODUCTION

When describing the food system as a succession of stages, the stage between food distribution and waste stream is consumption. Consumption is generally the component where most people are exposed to the food system on a daily basis. This report will analyze three aspects of consumption - consumers, access, and health.

When discussing what types of food people eat, it is first important to understand the demographics of an area. Socio-economic status, religion, personal beliefs, culture, and dietary restrictions can all influence a person's food decisions. The means by which people access food also plays a large role in what a person may eat. According to the Food and Agriculture Organization of the United Nations (FAO), food access is defined as "access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet."¹

The previous section of this report discussed access in relation to transportation infrastructure. However, food accessibility is not limited to the mode of transportation a person uses to obtain food or by which the food comes to the consumer. It also refers to the affordability of food as well as the spatial location of food (including both community food resources and food retailers). Food accessibility also influences health. While food retailers may be located close to where people live, this does not necessarily mean that healthy food is available. Diets lacking in nutrition can contribute to poor health. The ability to access healthy food is often termed "food security." According to FAO, "Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life."²

The following section explores the existing conditions of consumption within the central Puget Sound region. A number of issues related to food consumption have been examined:

1. Demographics that drive consumer demand for food;
2. The economic profile of food related establishments in the region;
3. Food consumption patterns in terms of types of food eaten and consumption of local food;
4. Factors affecting food access and ability to access food both spatially and economically; and
5. The impact of food consumption on public health.

While reports exist that describe consumption and the food system in the area,^{3,4} such reports have focused on the City of Seattle and do not provide a broader analysis of the central Puget Sound region as a whole. The research conducted for this section involved analyzing data retrieved from public agencies, including the U.S. Department of Agriculture (USDA), U.S. Economic Census, Washington State Office of Financial Management (OFM), and Washington State Department of Health (DOH). This section concludes with a description of the gaps and

¹ Food and Agricultural Organization of the United Nations (FAO), June 2006, "Policy Brief: Food Security," ftp://ftp.fao.org/es/ESA/policybriefs/pb_02.pdf.

² FAO, 2003, "Trade Reforms and Food Security: Conceptualizing the Linkages," <ftp://ftp.fao.org/docrep/fao/005/y4671e/y4671e00.pdf>.

³ Steven Garrett, et al., "Sound Food Report: Enhancing Seattle's Food System," June 2006, http://faculty.washington.edu/bborn/Sound_Food_Report2.pdf.

⁴ Viki Sonntag, 2010, "Data Compilation Background Report: Economic Opportunities Preliminary Analysis, Local Food Action Initiative, City of Seattle," <http://ecopraxis.dreamhosters.com/wp-content/uploads/2009/03/final-background-report.pdf>.

questions regarding food consumption that require further research.

DEMOGRAPHICS

The population of the central Puget Sound region has been growing rapidly at 13 percent over the last ten years, increasing to 3.7 million from 3.3 million from 2000 to 2010.⁵ This growth is accompanied by a predominantly urban population, with 93 percent of people living in urban areas, compared with just seven percent in rural areas in 2000.⁶

In 2010, there were a total of 1.6 million households, increasing from 1.3 million in 2000. At 22 percent, the growth in households has outpaced the growth in population, indicating some shift in lifestyle that is happening. This could be as a result of changes in household size due to fewer children or changing family structures. 2010 Census data on household sizes has yet to be released, making it very difficult to confirm this argument. In 2000, the average household size in the central Puget Sound region was 2.49, and median household income was \$51,168. Of the population 16 years and over 91 percent was employed, while the unemployment rate was 8.9 percent.

There were 47,754 family and 54,667 non-family households below the poverty line in 1999, for a combined total of 7.98 percent. Looking specifically at the four counties, Kitsap, Pierce and Snohomish counties all have a higher proportion of family households compared to non-family households, while King County shows the opposite. The ethnic composition as of 2000 in the central Puget Sound region was 78.59 percent white, 8.2 percent Asian, 4.77 percent African American, 4.57 percent two or more races, and 3.88 percent other races. The average age in 2000 was 34.1 years old.⁷ Table 4-1 summarizes the statistics for each of the four counties.

Table 4-1: Demographic Information for the Central Puget Sound Region

	King	Kitsap	Pierce	Snohomish	Puget Sound
Population (1990)	1,507,319	189,731	586,203	465,642	2,748,895
Population (2000)	1,737,034	231,969	700,820	606,024	3,275,847
Population (2010)	1,931,249	251,133	795,225	713,335	3,690,942
% Population Change (1990-2010)	15.2%	22.3%	19.6%	30.1%	19.2%
% Population Change (2000-2010)	11.2%	8.3%	13.5%	17.7%	12.7%
Urban/Rural (1990)	94% / 6%	65% / 35%	87% / 13%	80% / 20%	88% / 12%
Urban/Rural (2000)	96% / 4%	80% / 20%	92% / 8%	89% / 11%	93% / 7%
Average Age (2000)	35.7	35.7	34.1	34.6	34.1
Unemployment Rate (2000)	4.50%	6.0%	6.50%	5.00%	8.90%
Poverty Rate (2000)	8.40%	8.80%	10.50%	6.90%	n/a
Poverty Rate (2009)	9.70%	7.40%	12.30%	9.80%	n/a
Ethnic composition (2000)					
White	75.58%	83.95%	78.40%	85.48%	78.59%
African America	5.27%	2.70%	6.95%	1.58%	4.77%
Two or more races	4.41%	5.15%	5.57%	3.65%	4.57%
Asian	10.81%	4.51%	4.95%	5.86%	8.20%
Other Races	3.93%	3.70%	4.20%	3.42%	3.88%
Total Households (2000)	710,916	86,416	260,800	224,852	1,282,984
Total Households (2010)	851,261	107,367	325,375	286,659	1,570,662
% Change (2000-2010)	20%	24%	25%	27%	22%
Average Household Size (2000)	2.39	2.6	2.6	2.65	2.49*
Average Rents (Spring 2000)	790	610	590	730	n/a
Average Rents (Fall 2010)	1033	861	819	871	n/a
% Change Average Rent (2000-2010)	0.3076	0.4115	0.3881	0.1932	n/a
Median HH Income 2005-2009	\$67,246	\$59,358	\$56,773	\$64,780	\$63,976
HH Below Poverty Line (2000)	7.80%	8.20%	9.60%	6.50%	7.98%
Family households	22,597	3,866	13,574	7,717	47,754
Non-family households	33,142	3,228	11,445	6,852	54,667

Source: U.S. Census Bureau, "American Fact Finder", 2000, <http://factfinder2.census.gov/main.html>.

⁵ U.S. Census Bureau, 2010, "American Fact Finder," <http://factfinder2.census.gov/main.html>.

⁶ U.S. Census Bureau, 2000, "American Fact Finder," <http://factfinder2.census.gov/main.html>.

⁷ Ibid.

This demographic information provides a basic understanding of the population within each of the four counties. A number of the demographic statistics described above were found to be associated with higher rates of household food insecurity, including poverty status, race, lower education levels, lack of home ownership, housing costs, median income and average rent.⁸

ECONOMY AND FOOD RESOURCES

Economics play a large role in affecting consumption patterns within an area. From the 17 Wal-Marts and 16 Costcos in the region to the dozens of farmers markets and CSAs, the central Puget Sound region is home to a plethora of food retail and resources.^{9, 10} These can range from free resources such as foraging, consumption of homegrown food and food banks to farmers markets and big box stores. Due to the general lack of data on free resources, this section will focus primarily on typical food retail resources.

Within the central Puget Sound region the food industry is diverse, consisting of grocery wholesalers, warehouses and supercenters, food retailers (grocery and convenience stores), restaurants, and specialty food providers (e.g. mobile food trucks and caterers). According to the 2007 Economic Census, there are approximately 11,300 establishments related to the food industry located in the region. These establishments employ roughly 182,400 people. Approximately 60 percent of the total establishments and the total food service workers are located within King County. Throughout the region, restaurants have the largest number of establishments. As of 2007, there were roughly 8,400 prepared food establishments (excluding grocery stores or convenience stores) in the region. This sector represents nearly 75 percent of the total food-related establishments.¹¹ While there appears to be an overabundance of prepared food establishments in the area, supermarkets (excluding convenience stores) actually earned the highest amount of annual sales in comparison to the other sectors.

In total, grocery stores earned approximately \$7.7 billion.¹² The number of grocery stores and superstores continues to grow, with nearly 850 grocery stores and nearly 60 superstores (including club stores) in 2007. In comparison, in 2002, there were approximately 800 grocery stores and 43 superstores.¹³

While grocery stores and restaurants make up a majority of the food market, they are not the only places where food is sold. Farmers markets are another key food provider in the region. The number of farmers markets in the central Puget Sound region has increased from 54 to 76 between 2009 and 2010. On the other hand, the number of convenience stores with no

⁸ Judi Bartfeld and Rachel Dunifon, October 2005, "State-Level Predictors of Food Insecurity and Hunger Among Households With Children," Contractor and Cooperator No.13.

⁹ Walmart.com, "Walmart Store Finder," 2011, http://www.walmart.com/cservice/ca_storefinder.gsp; and Costco, "Costco Warehouse List," 2011, <http://www.costco.com/Warehouse/WarehouseList.aspx>.

¹⁰ Puget Sound Fresh, "2010 Puget Sound Farm Guide," 2010, <http://www.pugetsoundfresh.org/pdf/2010-PSF-Farm-Guide.pdf>.

¹¹ Economic Census, "Economy-wide Key Statistics," 2007, http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ECN&_tabId=ECN1&_submenuld=datasets_4&_lang=en&_ts=246366688395.

¹² Ibid.

¹³ Economic Census, 2002, "Economy-wide Key Statistics," http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ECN&_tabId=ECN2&_submenuld=datasets_4&_lang=en&_ts=246366739615.

gas station has dropped in all four counties between 2007 and 2008 (from 454 to 376)¹⁴. For additional data regarding food-related establishments within the region, please refer to Appendix 4-1 and 4-2.

CONSUMPTION PATTERNS

Consumer Expenditures

Table 4-2 shows household food expenditures across the central Puget Sound region at the county level. Average food expenditures across the region are relatively consistent, making up 13.6 percent of median household income, which is marginally higher than the national average of 12.4 percent. Household food expenditures are broken into two categories, food at home and food away from home. Residents of central Puget Sound region spend 44.7 percent of food expenditures on food away from home, compared with the national average of 41.1 percent.¹⁵ Food away from home makes up a significant portion of American food budgets, and has been found to be less nutritious than food prepared at home.¹⁶ These foods tend to be higher in total and saturated fat, and lower in fiber, calcium and iron than home prepared foods.¹⁷ Restaurants are providing healthier options, yet food away from home is still a contributing factor to poor diet quality as well as obesity.¹⁸

Table 4-2: Consumer Food Expenditure

	King	Kitsap	Pierce	Snohomish	Puget Sound	National
Median HH Income 2005-2009	\$67,246	\$59,358	\$56,773	\$64,780	\$63,976	\$51,425
Food Expenditures	\$9,225	\$8,007	\$7,886	\$8,394	\$8,693	\$6,372
<i>Food at home</i>	<i>\$5,055</i>	<i>\$4,475</i>	<i>\$4,428</i>	<i>\$4,666</i>	<i>\$4,805</i>	<i>\$3,753</i>
<i>% Food at home</i>	<i>54.8%</i>	<i>55.9%</i>	<i>56.2%</i>	<i>55.6%</i>	<i>55.3%</i>	<i>58.9%</i>
<i>Food Away from Home</i>	<i>\$4,170</i>	<i>\$3,532</i>	<i>\$3,458</i>	<i>\$3,728</i>	<i>\$3,888</i>	<i>\$2,619</i>
<i>% Food Away from Home</i>	<i>45.2%</i>	<i>44.1%</i>	<i>43.8%</i>	<i>44.4%</i>	<i>44.7%</i>	<i>41.1%</i>
% income spent on food	13.7%	13.5%	13.9%	13.0%	13.6%	12.4%

Source: Washington State Department of Commerce, "Washington Prospector - City and County Profiles," 2011, <http://www.washingtonprospector.com/ed.asp?citycounty=1>.

Readily available data does not exist on how people allocate money on different types of food resources (farmers market, grocery store, super market, CSA, etc.) at a county level. Nationally, the USDA Economic Research Service has examined total food at home expenditures, looking at food stores, restaurants, home delivery, direct marketing, home production and donations, and found that food stores make up almost two-thirds of food at home expenditures, as shown in Figure 4-1.

¹⁴ USDA Economic Research Service (USDA ERS), "Your Food Environment Atlas," 2011, <http://maps.ers.usda.gov/FoodAtlas/foodenv5.aspx>.

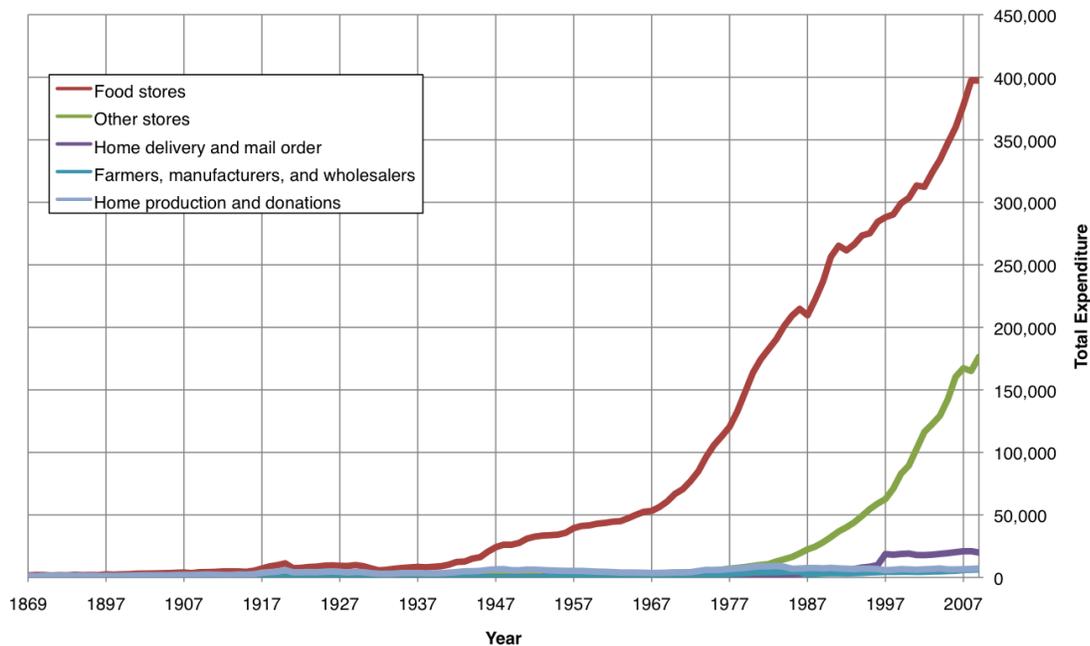
¹⁵ Ibid.

¹⁶ Jessica Todd, Lisa Mancino, and Biing-Hwan Lin, USDA ERS, "The Impact of Food Away From Home on Adult Diet Quality," ERR-90, February 2010, <http://www.ers.usda.gov/Publications/ERR90/ERR90.pdf>.

¹⁷ Joanne F. Guthrie, Biing-Hwan Lin, and Elizabeth Frazao, "Role of Food Prepared Away from Home in the American Diet, 1977-78 versus 1994-96: Changes and Consequences," *Journal of Nutrition Education and Behavior* 34(3): p.140-50, 2002.

¹⁸ Todd, et al., "Food Away From Home."

Figure 4-1: National Food at Home: Total Expenditures (in millions of dollars)



Local Food Consumption

There is considerable demand for local food. According to a report by Viki Sonntag, if King County farmers alone were to meet the current demand for vegetables, production would need to increase by eight-fold, while fruit production would need to increase 67 fold.¹⁹ While this report does not account for production outside King County, it does confirm that there is a large demand for fresh local food.²⁰

One constraint to shifting demand for local food is its seasonal availability. Appendix 4-3 lists food products and the months in which they are available. The schedule shows that there is a scarcity of local food between the months of January and April²¹ and indicates that in addition to research to determine whether enough food can be produced to feed the region, more information is needed regarding whether a healthy diet for a typical consumer can be sustained on a predominantly local diet.

Research into the quantities of homegrown food consumed at a household level was stymied by a lack of data on this topic. In a brief by the USDA Economic Research Service that tracked food consumer price index (CPI) and expenditures, the share of total food produced at home had once reached national rates of over 20 percent in 1935, before it steadily declined in importance as a food source, until it has reached where it has been for the past five years, at 0.6 percent of the total share of food consumed.²² However, regional and local data sources are not readily available, and more research in this area could be useful in better understanding homegrown food consumption at the local level. One data source comes from the Solid Ground Lettuce Link Program, which tracks homegrown produce that has been donated through Solid Ground to food

¹⁹ Sonntag, "Data Compilation Background Report."

²⁰ Puget Sound Fresh, "Puget Sound Area Farmers Markets," 2011, http://www.pugetsoundfresh.org/farmers_markets.asp.

²¹ Puget Sound Fresh, "Harvest Schedules," 2011, http://www.pugetsoundfresh.org/harvest_schedule.asp.

²² USDA Economic Research Service, "Food CPI and Expenditures," 2010, http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/Data/Expenditures_tables/table6.htm.

banks and meal programs. This program contributed almost 45,000 pounds of produce through a variety of P-patch gardens, backyards, and community gardens,²³ with much of these donations typically made up of the excess production of households.

FOOD ACCESS

While the business of food is profitable in the central Puget Sound region, there is a significant portion of the population that requires assistance in obtaining food. Although the following numbers reflect the situation across Washington State, the central Puget Sound region is not immune. In 2008, the estimated number of Washington households who were food insecure rose dramatically from 288,000 to 367,000 in 2009, a 27 percent increase. About 152,200 households met the definition for very low food security, up 40,200, or 36 percent from 2008 levels.²⁴ These populations could be described as being in a state of food insecurity, with "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways."²⁵

Several factors have been shown to be linked to food access. Individual households, socioeconomic factors, location and state-level factors all contribute to food availability. State-level factors, for instance, include such things as economics, housing and school lunch patterns. On a state level, the top five most influential factors that correlate to food access are:

1. low average wages;
2. high rental cost for housing;
3. low summertime participation in the National School Lunch Program and Summer Food Service Programs;
4. high unemployment rate; and
5. residential instability.²⁶

Food access is a major issue in Washington and increasingly in the central Puget Sound region. There are substantial efforts already underway that support this need, both from non-governmental organizations and government agencies. Typically, help is provided through lower prices, additional food funding or free food. Much work has been done to document the convenience of unhealthy food, the dependency on handouts, and other issues that relate to food access. An increasing number of sources are available to help households in need of food access. The three primary means to assist households that suffer from low food access are:

- Food Banks
- Basic Food/Supplemental Nutrition Assistance Program (SNAP)
- Women, Infants and Children (WIC)

Food Banks

In western Washington, Food Lifeline coordinates the majority of the food banks, hot meal

²³ Jennifer Langston, "Growing in Seattle: Food aid from the home front," June 2008, <http://sidewalksprouts.wordpress.com/2008/06/04/growing-in-seattle-food-aid-from-the-home-front/>.

²⁴ Children's Alliance, "Hungry in Washington," November 2010, http://www.childrensalliance.org/sites/default/files/Hungry%20in%20Washington2010%20_FINAL1_.pdf.

²⁵ S.A. Andersen, ed., "Core Indicators of Nutritional State for Difficult to Sample Populations," *The Journal of Nutrition* 120, (1990): 1557S-1600S.

²⁶ Judi Bartfeld and Rachel Dunifon, "State-Level Predictors of Food Insecurity and Hunger Among Households With Children," October 2005, Contractor and Cooperator No.13.

programs, and shelters over a 17-county area including the four counties within the central Puget Sound region. According to a 2010 report on www.foodlifeline.org, King County has 132, Kitsap County has eight, Pierce County has 24, and Snohomish County has 22 food banks with a total of 186 participating food banks coordinated by Food Lifeline in the central Puget Sound region.²⁷ In 2010, over four million meals were provided to 900,000 people. This translates to an individual obtaining only about four meals from a food bank for the entire year of 2010. This is a relatively low number, and if a food bank intends to adequately serve the 900,000 people requiring services, the food bank would have to provide over 600 million meals a year (approximately two meals per person a day). On the other hand, it is possible that only a small percentage of those 900,000 people accessing food banks during 2010 used a food bank as a regular source of nutritious food. In that case, without increasing food levels, the four million meals could provide regular nutritious meals twice a day for only about 5,500 people in the region.²⁸ Additional data is required in order to better understand food bank use.

Table 4-3: Food Access Statistics

	KING COUNTY	KITSAP COUNTY	PIERCE COUNTY	SNOHOMISH COUNTY	REGION
Food Insecure Residents & ratio	306,469 (1:6)	40,179 (1:6)	141,926 (1:6)	112,091 (1:6)	600665
People served at WSDA Food Banks	323648	44312	431367	100834	900161
Number of food bank visits	2297261	256546	1057537	554623	4165967
Percent living under poverty levels	0.1	0.09	0.12	0.08	0.1

Source: James Mabli, Rhoda Cohen, Frank Potter, and Zhanyun Zhao, Mathematica Policy Research Inc., January 2010, "Hunger in America - Local Report Prepared for Food Lifeline," <http://www.foodlifeline.org/hunger/resources/documents/HungerinAmerica2010-WesternWashingtonReportfinal.pdf>.

Basic Food/Supplemental Nutrition Assistance Program

The Basic Food program in Washington state, a federally funded food assistance program, is more commonly known as SNAP or food stamps. Through the Basic Food program, low-income citizens are provided monetary assistance for food purchases. At the federal level, the program is administered by USDA's Food and Nutrition Service. Federal regulations define eligibility requirements, benefit levels, and administrative rules. States, through local welfare offices, are responsible for day-to-day operations of the program and determine eligibility, calculate benefits, and issue benefits to participants according to federal rules.²⁹

According to the USDA, approximately 692,000 Washington residents were eligible for the Basic Food program in 2007 and 520,000, or approximately 76 percent of those eligible, were active participants. Participation in the program has resulted in \$1.08 billion in total economic activity for the state during that year.³⁰ The number of Basic Food redemption purchases at grocery stores increased by 63 percent across the four county region between 2008 and 2009.³¹ Table 4-4 contains information compiled by the New York Times, showing use of food stamps by several

²⁷ James Mabli, Rhoda Cohen, Frank Potter, and Zhanyun Zhao, Mathematica Policy Research Inc., "Hunger in America - Local Report Prepared for Food Lifeline," January 2010, <http://www.foodlifeline.org/hunger/resources/documents/HungerinAmerica2010-WesternWashingtonReportfinal.pdf>.

²⁸ Ibid.

²⁹ USDA Economic Research Service (USDA ERS), February 2009, "Supplemental Nutrition Assistance Program (SNAP): Background," <http://www.ers.usda.gov/Briefing/SNAP/Background.htm>

³⁰ USDA Food and Nutrition Service, "Annual State Level Data FY2006-2010," 2010, <http://www.fns.usda.gov/pd/snapmain.htm>.

³¹ USDA ERS, "Your Food Environment Atlas," 2011, <http://maps.ers.usda.gov/FoodAtlas/foodenv5.aspx>.

demographic groups and further exemplifying the increased use of food stamps from 2007 to 2009 across the central Puget Sound region.³²

Table 4-4: Food Stamp Usage by Demographic³³

	KING COUNTY	KITSAP COUNTY	PIERCE COUNTY	SNOHOMISH COUNTY
All People	0.09	0.1	0.13	0.1
Children	0.15	0.17	0.21	0.16
White	0.05	0.09	0.09	0.08
African-American	0.31	0.23	0.28	0.16
Change since 2007	0.56	0.67	0.63	0.73

Further research should be completed regarding other factors, in addition to the economic recession, that caused the recent surges in food stamp participation to occur.

Women, Infants and Children (WIC)

WIC provides assistance to pregnant women, infants and children under five years old. It is USDA's third largest food and nutrition assistance program that helps participants to eat well, stay healthy and learn about nutrition. With program costs of nearly \$6.5 billion in FY2009, WIC served over 9.1 million participants each month. WIC provides a number of benefits, including nutrition education, referrals to health care and social service providers, and vouchers for supplemental food that has been screened for nutritional quality.³⁴ Eligibility for the WIC program is based on gross monthly income and nutritional need, and recipients of Basic Food Program benefits, Medical Assistance, Temporary Assistance for Needy Families, or Food Distribution Program on Indian Reservations are automatically eligible for WIC. Table 4-5 shows the income eligibility standards for WIC from the Washington State Department of Health.

Table 4-5: WIC Eligibility Standards

Household or Family Size	Gross Income Per Year	Gross Income Per Month
1	20036	1670
2	26955	2247
3	33874	2823
4	40793	3400
5	47712	3976
6	54631	4553

Source: USDA Food & Nutrition Service, "WIC Income Eligibility Guidelines 2009-2010", 2010, <http://www.fns.usda.gov/wic/howtoapply/incomeguidelines.htm>.

Many local grocery stores and some pharmacies accept WIC checks. WIC checks are valued at approximately \$45 per month and can be exchanged for nutritious foods. These foods include those that are high in protein, calcium, iron, or vitamins A & C such as: milk, peanut butter, 100 percent fruit juice with vitamin C, cheeses, dried peas and beans, iron-fortified cereals, eggs, iron fortified baby formula (for babies who are not breastfed) and fresh produce.

In 2009 WIC made important revisions to better support healthy diets for lower income women, infants and children. WIC supplemental foods now match current dietary guidelines, encourage breastfeeding, allow for more culturally appropriate foods, and are lower in fat and cholesterol.

³² Matthew Bloch, Jason DeParle, Matthew Ericson and Robert Gebeloff, "Food Stamp Usage Across the Country," November 28, 2009, <http://www.nytimes.com/interactive/2009/11/28/us/20091128-foodstamps.html>.

³³ Ibid.

³⁴ DOH, "Washington State WIC Nutrition Program," 2011, <http://www.doh.wa.gov/cfh/WIC/>.

One surprising statistic found regarding WIC participation is that almost half of all infants and about a quarter of all children ages 1-4 in the U.S. participate in the program.³⁵ Table 4-6 shows the influence of WIC in the central Puget Sound region, with comparable WIC participation rates for infants at the national level, except for King County, which had a 37 percent participation rate. WIC and its farmers market nutrition program has contributed over \$60 million to the local economy.³⁶

Table 4-6: 2009 WIC Statistics

	King	Kitsap	Pierce	Snohomish
Participation Rates for Infants Born Served by WIC	0.37	0.51	0.55	0.46
Women, Infant and Children Served by WIC(Total)	67,198	10,782	43,602	25,883
Infants& children under age 5	46,267	7,595	30,580	17,947
Pregnant,Breasting, postpartum women	20,931	3,187	13,022	7,936
WIC and the Farmers Market Nutrition Programs Benefit the Local Economy (Total)	\$29,378,623	\$4,137,902	\$16,901,595	\$10,907,217
Dollars to grocery stores	\$29,200,625	\$4,123,126	\$16,816,629	\$10,863,557
Dollars to farmers	\$177,998	\$14,776	\$84,966	\$43,660

Source: DOH, "Annual Reports and County Fact Sheets", 2009, <http://www.doh.wa.gov/cfh/WIC/reports.htm>.

According to the "WIC Annual Report", over 67 percent of infants born in rural counties were served by the Washington WIC Nutrition Program; statewide 51 percent of all infants born were served. More than 313,000 women, infants and children participated in WIC in 2009. In the Puget Sound Region, the average number of people who were served by WIC is lower than statewide. However, WIC still plays the very important role of helping lower income women, infants and children.³⁷

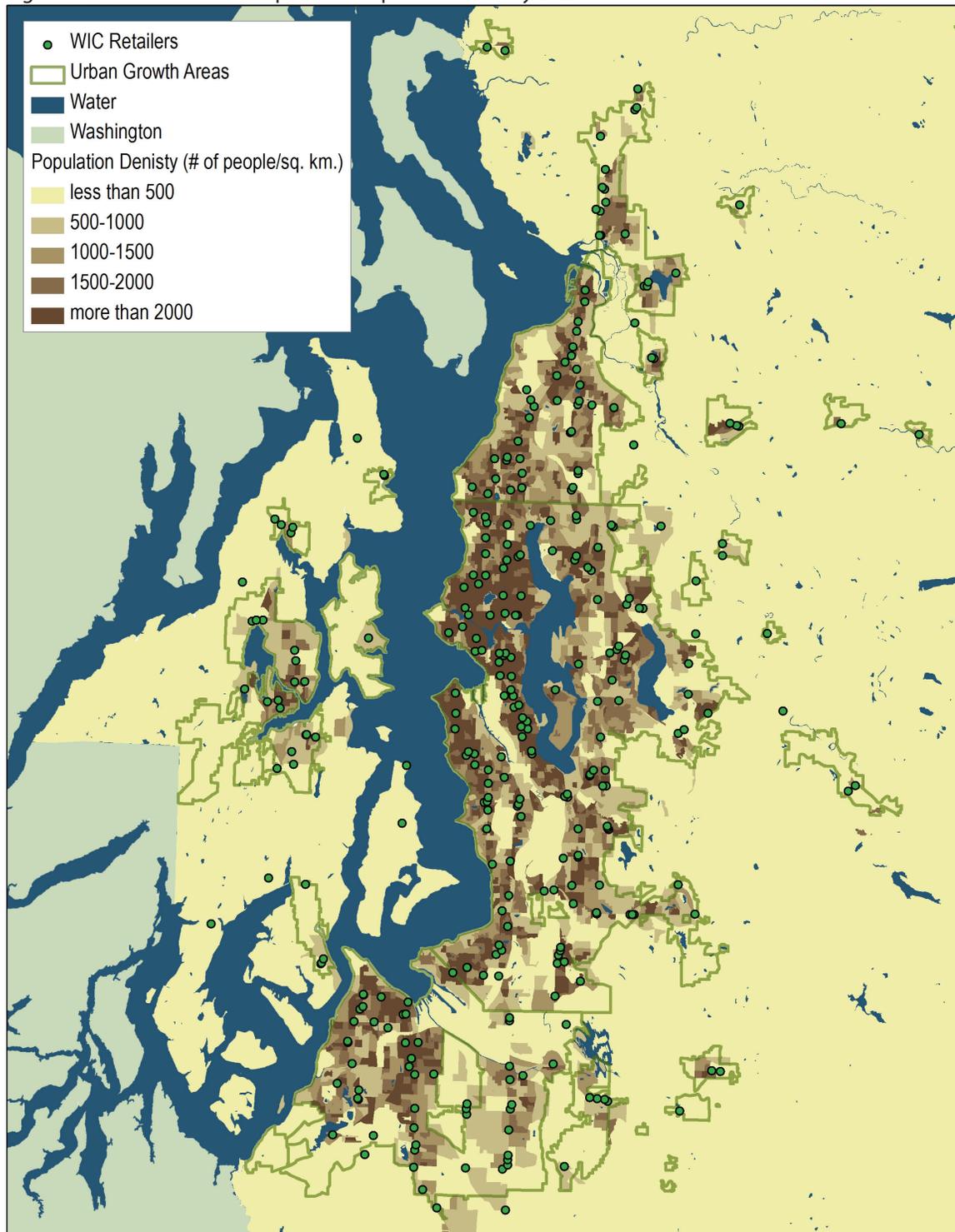
Generally speaking, a WIC retailer is the place where most people receive WIC benefits. In the central Puget Sound region, there are 319 WIC retailers in total, and the following maps (Figure 4-2 and 4-3) show how WIC retailers are distributed in relation to population density and poverty levels.

³⁵ Victor Oliveira and Elizabeth Frazão, "The WIC Program: Background, Trends, and Economic Issues, 2009 Edition," USDA Economic Research Service, Economic Research Report No. (ERR-73), <http://www.ers.usda.gov/Publications/ERR73/ERR73.pdf>.

³⁶ DOH, "Annual Reports and County Fact Sheets," 2009, <http://www.doh.wa.gov/cfh/WIC/reports.htm>.

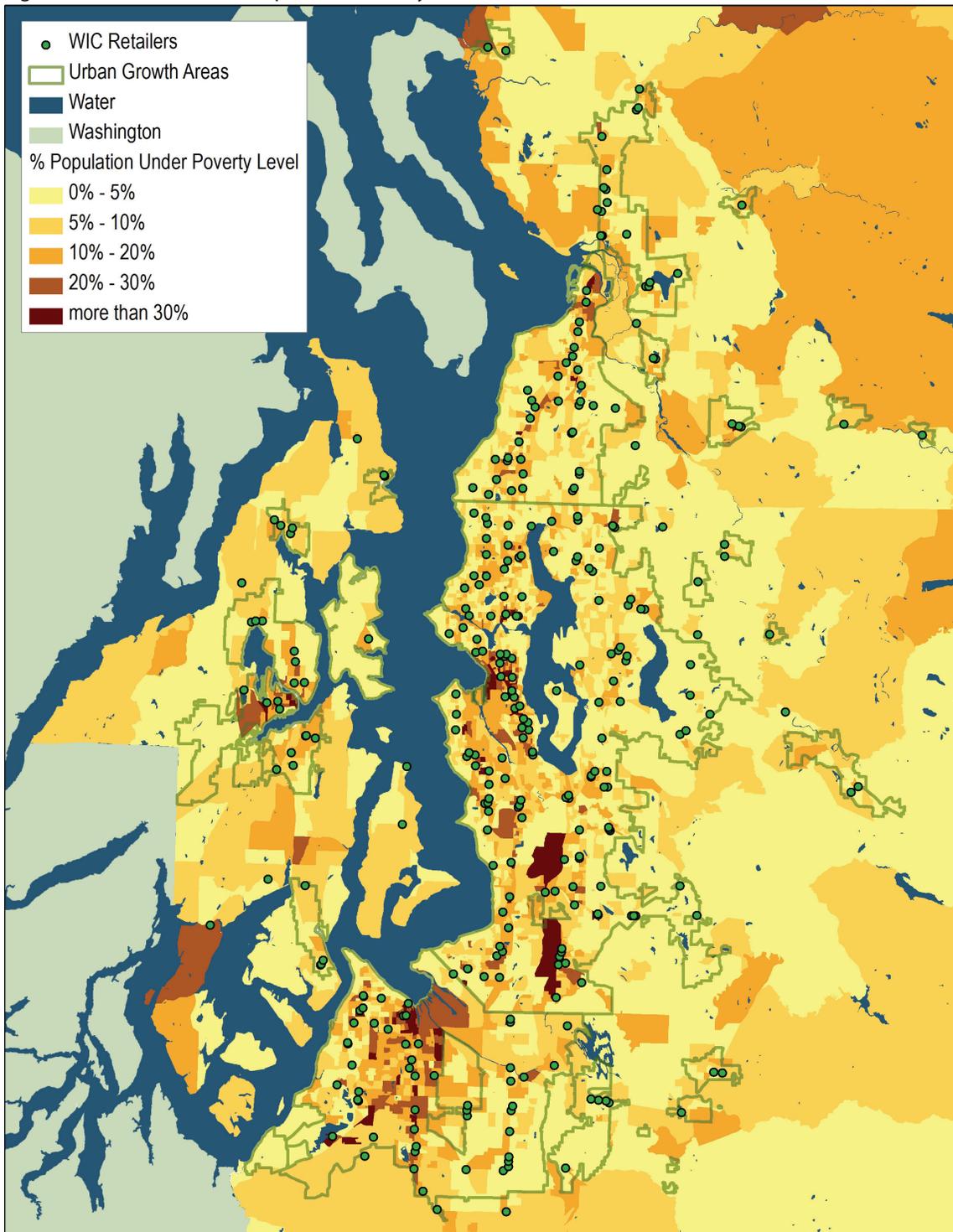
³⁷ DOH, "WIC 2009: A time of change - 2009 Annual Report," <http://www.doh.wa.gov/cfh/WIC/materials/reports/2009/annualreport09.pdf>.

Figure 4-2: WIC Retailers Compared to Population Density in 2000



Source: DOH, "WIC Retailers," March 2009, vector digital data, http://ww4.doh.wa.gov/gis/metadata/WIC_retailers.htm; and U.S. Census Bureau, "American Fact Finder," 2000.

Figure 4-3: WIC Retailers Compared to Poverty Levels in 2000



Source: DOH, "WIC Retailers."

These maps show the concentration of WIC retailers in urban areas and in areas with lower income populations. A report on WIC participation patterns showed that certain households indicate the benefits of the program are not justified by the efforts required to receive benefits, and also that scheduling and transportation issues played a role in early exit from WIC.³⁸ These suggest that beyond geographic proximity, there are additional factors that pose barriers to continued participation in WIC. Additional research needs to be done to verify the prevalence of WIC participation by children and infants, as well as where the opportunities are for improving food access to vulnerable populations.

Institutional Assistance

In addition to federal assistance programs, institutions also play a large role in ensuring their constituents have access to healthy food. This section discusses methods in which schools, correctional facilities and military bases in the central Puget Sound region provide healthy food, or access to healthy food, to their members. There are many other institutions that also provide food assistance to their members, such as universities, hospitals and correctional facilities.

Schools

As described previously, one segment of the population that is often affected by food access issues are youth from kindergarten through 12th grade. As children begin to enter school, WIC assistance is no longer available. To address this need, state and federal governments have created a number of programs, including the National School Lunch Program and the School Breakfast Program. These programs are heavily used within the central Puget Sound region and provided 45 million meals to 58 school districts in 2009.³⁹ As part of the federal programs, over \$74 million in food expenditures was reimbursed to participating schools.⁴⁰

Part of the reimbursement amounts cover free or reduced-price school meals, another form of food provision assistance for families. As of October 2010, approximately 200,000 out of 530,000 enrolled students (37.7 percent of enrolled students) had applied for a school meal program in the central Puget Sound region. Appendix 4-4 lists the percentage of applications within each county and indicates that Pierce County has the highest percentage of applications at 45 percent. Of the applications received throughout the region, over 80 percent were for free meals.⁴¹ With such high rates of participation for free or reduced meals in the region's public schools, it is important to recognize the role schools play in providing healthy nutrition. Considering the large influence school meals have on student diets, further research should be conducted regarding the nutritional value of foods being served in the region's schools.

Military

The presence of the military within the central Puget Sound region has a large impact on the surrounding area. More than 45,000 active military personnel are stationed in the area. Thousands of non-active duty personnel also benefit directly and indirectly from the presence of the military in the region, including contractors, civilians, spouses, dependents, business owners,

³⁸ Alison Jackowitz and Laura Tiehen, USDA ERS, "WIC Participation Patterns: An Investigation of Delayed Entry and Early Exit," December 2010, <http://www.ers.usda.gov/Publications/ERR109/ERR109.pdf>.

³⁹ Washington State Office of the Superintendent of Public Instruction (OSPI), "County Level Enrollment June 15 2010," <http://www.k12.wa.us/DataAdmin/GenderEthnicity.aspx>.

⁴⁰ OSPI, "Participation Report 2010," 2010, <http://www.k12.wa.us/ChildNutrition/Reports/ParticipationReport2010.aspx>.

⁴¹ OSPI, "Public Schools Free and Reduced-Price Applications," 2010, <http://www.k12.wa.us/ChildNutrition/Reports/FreeReducedMeals.aspx>.

and many others.⁴² Approximately 30 percent of economic activity in Pierce County came from Joint Base Lewis-McChord.⁴³ It is unknown how much of that activity was food related.

The military provides food for its active duty service-members in one of two ways. Depending on several factors (e.g., the person’s rank, job, food source availability, ships, and location), the military will either provide food to service-members or provide money to purchase food. Typically, military departments contract with a prime vendor who regularly delivers nutritious food to the on-base mess facilities. For the Puget Sound Navy bases and ships, the current prime vendor is SYSCO Food Service of Seattle.⁴⁴ The delivered food is then prepared, served, and consumed in a dining room facility and can also accommodate take out or delivery to those service-members on duty. Another prepared meal type is known as a “meal ready to eat,” or MRE. Since many military missions and training situations do not have the luxury of bringing along fully operational dining facilities, the military provides prepackaged meals that have an extended shelf life to service-members away from established dining facilities. MREs are available for a variety of diets including vegetarian, halal, and kosher.⁴⁵ It is currently unknown how many active duty personnel currently receive meals provided by the military as a main source of their diet or receive monetary assistance for food. While we recognize the military has a large impact on the central Puget Sound region, more research is required for a greater understanding of food provision and assistance by the military to its personnel.

PUBLIC HEALTH

The most common diseases related to diet include obesity, diabetes and high cholesterol. The following table summarizes the disease rates for each county in the central Puget Sound region.

Table 4-7: Diet Related Diseases

Diet Related Disease	King	Kitsap	Pierce	Snohomish	WA State
Obesity	0.2	0.27	0.28	0.26	0.25
Diabetes	0.06	0.06	0.08	0.07	0.07
High cholesterol	0.32	0.32	0.33	0.32	0.32

Source: Washington State DOH, 2011, “Chronic Disease Profiles by County for 2011,” <http://www.doh.wa.gov/cfh/diabetes/Section-3/section3-page2.htm>.

Among these, obesity is of primary concern given its prevalence throughout demographic groups and because overweight or obese individuals are at an increased risk of developing diabetes, hypertension (high blood pressure), high cholesterol, heart disease, and certain types of cancer.⁴⁶ After smoking, obesity is the second leading cause of preventable death.⁴⁷ “For each individual, body weight is a function of the cumulative influence of genetic, metabolic, behavioral, and

⁴² Prosperity Partnership, “Military Cluster,” February 2010, <http://www.prosperitypartnership.org/clusters/military/> (accessed March 12, 2011).

⁴³ Washington State Office of Financial Management, “Economic Impacts of the Military Bases in Washington,” July 2004, <http://www.ofm.wa.gov/economy/military/military.pdf>.

⁴⁴ U.S. Naval Supply Systems Command (NAVSUP), “NAVSUP Notice 7330: Quarterly Guidelines and Procedures for Food Service Financial Accountability,” June 2010, Mechanicsburg: Department of the Navy.

⁴⁵ Ibid.

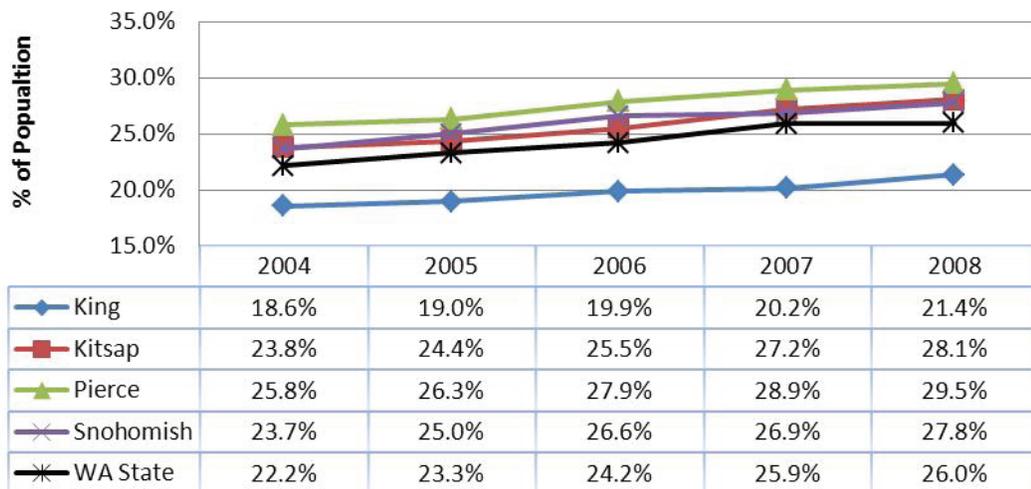
⁴⁶ Stanford Hospital and Clinics, “Health Effects of Obesity,” <http://stanfordhospital.org/clinicsmedServices/COE/surgicalServices/generalSurgery/bariatricsurgery/obesity/effects.html>.

⁴⁷ Ali H. Mokdad, James S. Marks, Donna F. Stroup, and Julie L. Gerberding, “Actual Causes of Death in the United States, 2000,” Special Communication. *Journal of the American Medical Association*. 291(10): 1238-1245.

environmental factors”.⁴⁸ This is not to minimize the importance of healthy food in the prevention of obesity, however, for along with lack of physical activity, overweight and obesity is caused by excessive calorie consumption.⁴⁹

There has been an upward trend in obesity rates in each of the four counties in the region, and the percentage of residents who are overweight or obese has risen rapidly over the last 15 years. Since 1994, the prevalence of obesity has doubled in Snohomish County.⁵⁰ Figure 4-4 shows the obesity trends from 2004 to 2008 for the central Puget Sound counties.⁵¹ Reversing these trends may require coordinated efforts to promote healthy eating and ensure individuals have access to healthy foods.

Figure 4-4: Obesity Trends 2004-2008



Source: Centers for Disease Control and Prevention, “National Diabetes Surveillance System,” <http://apps.nccd.cdc.gov/DDTSTRS/default.aspx>.

NEXT STEPS

Public health, food access and food consumption patterns are areas requiring more substantial research and corrective action. The most significant issue in terms of consumption is related to food access, specifically food security.

One way to improve the understanding of the increasing amount of data available is by showing it spatially on a map through GIS. Mapping allows for quick assimilation of information and the ability to draw spatial relationships that would otherwise be difficult to discern. Many of the issues dealt with in this section could likely benefit from the use of GIS.

⁴⁸ Office of the Surgeon General, 2007, “Overweight and Obesity: At a Glance,” 2007, http://www.surgeongeneral.gov/topics/obesity/calltoaction/fact_glance.htm.

⁴⁹ Ibid.

⁵⁰ Center for Disease Control and Prevention, “BRFSS Annual Survey Data”, Database, http://www.cdc.gov/brfss/technical_infodata/surveydata.htm.

⁵¹ Centers for Disease Control and Prevention, “SMART: BRFSS City and County Data,” <http://apps.nccd.cdc.gov/BRFSS-SMART/SelQuickViewChart.asp>.

There are many innovative ideas addressing food access that have been developed, and these require examination for applicability to the region. One such idea is the Retail Food Environment Index that was developed by the California Center for Public Health Advocacy. This index describes a food environment by determining the ratio of healthy and unhealthy food outlets.⁵²

Further Research

Listed below are areas where further research on food consumption is warranted:

- Food consumption patterns within institutions (schools, military, prisons, hospitals, etc.)
- Impact of rural and urban food environments on access to food resources
- Accessibility issues related to transportation and spatial distribution of food resources, particularly on Indian Reservations
- Food consumption choices at the county level - what people choose to eat and where they acquire their food
- Prevalence or absence of food deserts within the region
- Spatial distribution of food providers
- Health patterns (i.e., areas with concentrations of specific health concerns)
- Consumption of homegrown food at a the local level

The central Puget Sound region is a large and diverse region, with areas that interact differently with the food system at any given time. The combination of increased population growth, increased food prices, and changing food consumption habits makes the issue of equitable access to healthy food complex. More research is required to better understand the role of consumption within the food system. Increasing awareness of nutrition and improving food access, especially for the region's food insecure populations, are among the major issues that remain to be addressed.

⁵² California Center for Public Health Advocacy, Searching for Healthy Food: The Food Landscape in California Cities and Counties, January 2007, http://www.publichealthadvocacy.org/RFEI/policybrief_final.pdf.

Waste Stream

INTRODUCTION

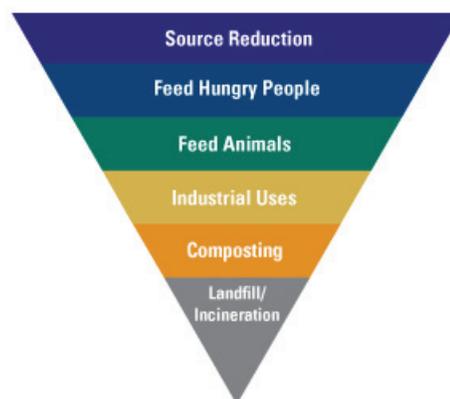
As various actors in the central Puget Sound region work to sustain and strengthen the area's food-related waste is often viewed as an end-product in the waste stream, or the final resting place of a food system item. In general, most food is processed, packaged, shipped to retail food outlets, purchased and eaten. Whatever is left—packaging and/or the actual food item—is considered waste. Given the rise of the sustainability movement, the waste process should not be considered so straightforward. Though much food waste ends up in a landfill, other disposal and reuse methods can and should be considered to help divert food waste from the landfill.

Discussion of the food system and its waste generation is a new research focus and therefore has not been clearly defined. However, the Environmental Protection Agency (EPA) does define food waste as waste that “is generated from many sources: food manufacturing and processing facilities; supermarkets; institutions such as schools, prisons, and hospitals; restaurants and food courts; and households. Food waste is categorized as either pre-consumer (e.g., food prep waste) or post-consumer waste (e.g., leftover food or plate scraps).”¹ The EPA also defines waste stream as “the total flow of solid waste from homes, businesses, institutions, and manufacturing plants that is recycled, burned, or disposed of in landfills, or segments thereof such as the ‘residential waste stream’ or the ‘recyclable waste stream.’”² These definitions provide the basis for an adequate definition of the food-related waste stream:

Pre-consumer and post-consumer food-related waste that is recycled, composted, reused, burned, or deposited in landfills.

Also helpful in understanding the food-related waste stream is the EPA's food recovery pyramid (Figure 5-1). The inverse pyramid delineates a hierarchy that helps to answer what society should do with food waste. Source reduction (minimizing the amount of unneeded food) is the preferred alternative, followed by feeding hungry people, feeding animals, industrial uses, composting, and finally food waste discarded in landfills or incinerated.³

Figure 5-1: EPA's Food Waste Hierarchy



Source: United States Environmental Protection Agency, December 16, 2010, “Generators of Food Waste,” <http://www.epa.gov/osw/consERVE/materials/organics/food/fd-gener.htm>.

¹ United States Environmental Protection Agency (US EPA), December 16, 2010, “Generators of Food Waste,” <http://www.epa.gov/osw/consERVE/materials/organics/food/fd-gener.htm>.

² US EPA, October 2, 2006, “Terms of Environment,” <http://www.epa.gov/glossary/wterms.html>.

³ US EPA, “Generators of Food Waste”

In addition to the food hierarchy, an understanding of other food waste-related terms will help clarify the meaning of many issues described in this paper. These definitions are from the EPA⁴ and are integrated with county planning documents.

Diversion: 1. Use of part of a stream flow as water supply. 2. A channel with a supporting ridge on the lower side constructed across a slope to divert water at a non-erosive velocity to sites where it can be used and disposed of.

Garbage: Waste that's final destination is a landfill.

Municipal Solid Waste (MSW): Common garbage or trash generated by industries, businesses, institutions, and homes.

Recovery Rate: Percentage of usable recycled materials that have been removed from the total amount of municipal solid waste generated in a specific area or by a specific business.

Source Reduction: Reducing the amount of materials entering the waste stream from a specific source by redesigning products or patterns of production or consumption (e.g., using returnable beverage containers). Synonymous with waste reduction.

Waste: 1. Unwanted materials left over from a manufacturing process. 2. Refuse from places of human or animal habitation.

These definitions and the EPA's food waste hierarchy frame how food-related waste was examined in the context of this report. Specifically, this section of the report will examine the waste stream of the central Puget Sound region—mainly garbage, recycling, and composting. Such methods are not the only options to reduce food waste in landfills; other methods of food reuse and reduction will be discussed.

It should be noted that data on food and food-related products ending up in landfills or diverted from them is often conflicting across counties and difficult to draw comparisons. However, given that an estimated one-third of waste in landfills is food waste, it is important to attempt to understand the main factors that influence and drive the waste stream in the central Puget Sound region.⁵

EXPLANATION / METHODOLOGIES

We collected primary and secondary data through site visits to compost facilities, interactions with leaders in the community—including members of the RFPC, invited guests to our University of Washington studio, and lectures—and through the examination of the aforementioned counties' waste plans, comprehensive plans, and other government documents. Though emphasis is placed on the county's role in the food-related waste stream, private companies to a lesser degree were also examined.

⁴ US EPA, "Terms of Environment"

⁵ Kameshwari Pothkuchi and Jerome L. Kaufman, "The Food System: a Stranger to the Planning Field," *Journal of the American Planning Association* 66, 2 (2000): 113-124.

ACTORS

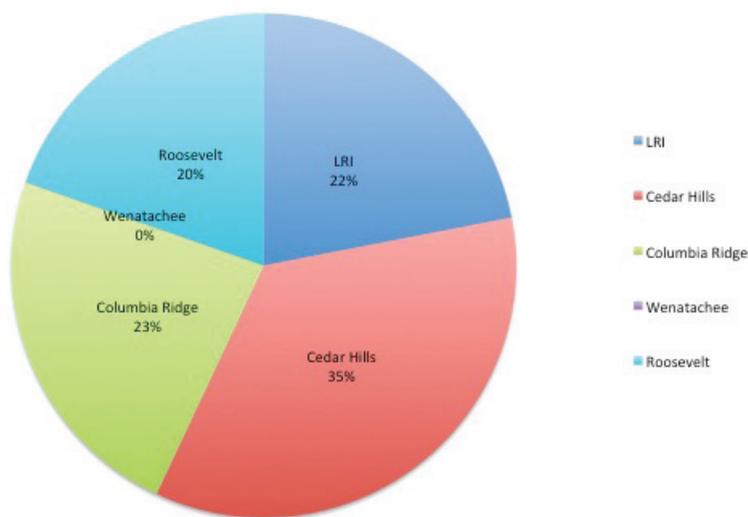
Implicit in the definition of the food-related waste stream is the notion that waste is generated during the pre-consumer and post-consumer stages. Below are some of the myriad actors that partake in the food-related waste stream:

- Pre-Consumers (e.g. agricultural, processing, manufacturing)
- Distributors (e.g. to grocery stores, big box stores)
- Consumers (e.g. residential, commercial, institutional)
- Private Companies (e.g. landfill, recycling, composting)
- Private Haulers (e.g. garbage, recycling, food/yard waste)
- City/Town Agencies (e.g. Public Works, Solid Waste Division)
- County Agencies (e.g. Public Works, Solid Waste Division, Wastewater Division)
- State Agencies (e.g. Department of Ecology, Department of Health)
- National Agencies (e.g. Environmental Protection Agency)
- Non-profits and charitable organization (e.g. food banks, missions)

PUGET SOUND REGIONAL WASTE ASSESSMENT

In 2009, 2,633,315 tons of municipal solid waste from the region was deposited into landfills located throughout the Northwest.⁶ The majority of the central Puget Sound region's garbage is disposed of in landfills located within Washington State (Figure 5-2). Only 23 percent of the region's garbage is exported to Oregon; in this case, the garbage is exported to the Columbia Ridge Landfill in Arlington, Oregon and is mostly garbage from the City of Seattle and Kitsap County. The Cedar Hills Landfill and LRI Landfill, both located within the region, collect a total 57 percent of central Puget Sound's garbage.⁷

Figure 5-2: Puget Sound Regional Landfill Export



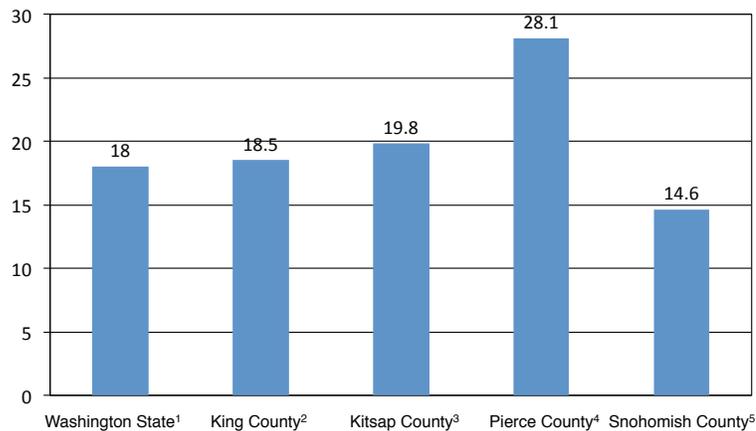
Source: Washington State Department of Ecology, 2009, "Consolidated Waste Report," <http://www.ecy.wa.gov/programs/swfa/solidwastedata/>.

⁶ Washington State Department of Ecology (WA DOE), 2009, "Consolidated Waste Report," Accessed January 30, 2011, <http://www.ecy.wa.gov/programs/swfa/solidwastedata/>.

⁷ Ibid.

No specific study has been done regarding the central Puget Sound region's food-waste characterization in landfills. Though waste characterization studies have been done in each county, it is important to note that each study was conducted in a different manner and therefore may be difficult to use as a comparison between counties (Figure 5-3). One might suggest that food waste in garbage would follow state-wide trends because much of the MSW collected state-wide is generated within the central Puget Sound Region.⁸

Figure 5-3: Food Waste in Garbage
Percentage of Food 'Waste' in Garbage



Sources: 1) Washington State Department of Ecology, 2009, "Washington Statewide Waste Characterization Study"; 2) King County Solid Waste Division, 2008, "2007 Waste Characterization Study"; 3) Kitsap County Public Works Department Solid Waste Division, 2006, "2006 Kitsap County Organic Waste Management Study"; 4) Pierce County Solid Waste and Recycling Public Works and Utilities, 2010, "Multi-Seasonal Waste Characterization Analysis"; 5) Snohomish County Public Works, 2009, "Waste Composition Study"

Based on national estimates and county waste characterization studies, food waste and other organic waste is the single largest component of the MSW of the region. Through assessment of King, Pierce, Snohomish and Kitsap counties food waste ranges from 15 to 28 percent of the counties' waste stream.^{9,10} This percentage equates an estimated 33,000 to 188,000 tons of food waste per year.¹¹ Most food waste could potentially be diverted from landfills through source reduction techniques, composting, or alternative disposal/reuse techniques. Food waste diverted from landfills could decrease the budgetary constraints on municipalities and solid waste services while supporting environmental efforts.

Recycling of pre-consumer and post-consumer food-related waste ranges throughout the central Puget Sound region from a rate of 31 percent to 48 percent.¹² Each county has outlined future goals for their recycling rates, which range from 50 to 70 percent within the next ten years.^{13, 14}

⁸ Ibid.

⁹ Pierce County, 2010, "Multi-Seasonal Waste Characterization Analysis."

¹⁰ Kitsap County Department of Public Works (Kitsap DPW), "Waste Wise Communities: The Future of Solid and Hazardous Waste Management in Kitsap County," (2010) http://www.kitsapgov.com/sw/pdf/cswmp_final_draft.pdf.

¹¹ King County, 2001, "King County Comprehensive Solid Waste Management plan," http://your.kingcounty.gov/solidwaste/about/planning/documents/Comp_Plan.pdf (accessed February, 27 2011)/.

¹² Ibid., 3-1.

¹³ Snohomish County Solid Waste Division (Snohomish Solid Waste), 2004, "Solid Waste Management Plan," http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SolidWaste/Information/complansection2-104.pdf.

¹⁴ King County Department of Natural Resources and Parks 2009, October 2009. "Draft 2009 Comprehensive Solid

A more detailed account of food related waste as it currently resides in the garbage, recycling and composting sectors of waste stream within the central Puget Sound region is stated below.

GARBAGE

State Level

Of the roughly 4,978,496 tons of garbage created by Washington residents each year, about 18 percent is food waste.¹⁵ This information is particularly relevant because the central Puget Sound region is responsible for creating over half of the state's waste (in this case, Thurston County is included in this figure; it can be assumed that Thurston County's impact to waste tonnage is negligible given that only 6.5 percent of the population of the five counties live there).¹⁶ Instead of going to landfills, the nearly 1,000,000 tons of statewide food waste could be composted, reused, or reduced. Washington State plans on decreasing the amount of food waste in landfills by promoting national campaigns about food waste management set forth by the EPA food hierarchy chart (Figure 5-1).

King County

In 2009, King County produced 1,215,193 tons of MSW.¹⁷ In 2009, 71 percent of the total garbage produced in King County was exported to the Cedar Hills Regional Landfill.¹⁸ The Cedar Hills Regional Landfill is located 20 miles south of Seattle, in King County. This is the only remaining active landfill in the county, operated by the King County Solid Waste Division. The rest of the county's garbage is taken to the Columbia Ridge Landfill in Oregon. The City of Seattle exports almost all of its garbage to the Columbia Ridge Landfill. In the "2007 Waste Characterization Study" of King County's garbage, it was reported that 18.5 percent of the King County garbage was made up of food waste.¹⁹

King County contracts out the collection of garbage to private haulers, except in the cities of Enumclaw and Skykomish; in these cities, the municipality is responsible for the collection. Private haulers Waste Management Northwest and Allied Waste Services provide the majority of the collection in King County, though smaller haulers Cleanscapes and Waste Connection do operate in some cities. It is important to note that the City of Seattle is not included in the King County service area; the City of Seattle Public Utilities is responsible for collection services in Seattle.

Kitsap County

It is estimated that 19.8 percent of Kitsap County's garbage is food waste.²⁰ Kitsap County residents produce, on average, 9.8 pounds of waste per person, per day. This figure is considerably less than the state average of 12.37 pounds per person, per day.²¹ In total, the

Waste Management Plan," <http://your.kingcounty.gov/solidwaste/about/Planning/documents/DRAFT-2009-comp-plan.pdf>, 3-4.

¹⁵ WA DOE, 2009, "Washington Statewide Waste Characterization Study," <http://www.ecy.wa.gov/biblio/1007023.html>, 8.

¹⁶ Ibid.

¹⁷ WA DOE, 2009, "Consolidated Waste Report," <http://www.ecy.wa.gov/programs/swfa/solidwastedata/>.

¹⁸ Ibid.

¹⁹ King County Solid Waste Division (King Co. Solid Waste), 2008, "2007 Waste Characterization Study," <http://your.kingcounty.gov/solidwaste/about/documents/waste-characterization-study-2007.pdf>.

²⁰ Kitsap County Public Works Department- Solid Waste Division, 2006, "2006 Kitsap County Organic Waste Management Study."

²¹ WA DOE, 2009, "Generation, Recycling and Per Capita Summary," <http://www.ecy.wa.gov/programs/swfa/>

county generated 291,084 tons of MSW in 2008. Kitsap County disposed of approximately 68 percent of MSW in landfills, with the remaining 32 percent of MSW being recycled.²² Future increases in waste generation are to be expected as population forecasts show increases in residents in the county.

Kitsap County recently implemented curbside garbage pickup for the entire county including unincorporated Kitsap County.²³ Prior to 100 percent coverage of curbside pickup, 12 percent of households took waste directly to transfer stations.²⁴

Most of the garbage in Kitsap County is sorted at the Olympic View Transfer Station outside of Bremerton, compressed and packed onto railroad cars, and shipped 300 miles to the Columbia Ridge Landfill in north-central Oregon.²⁵ Regardless of where the garbage is sorted, all of the county's MSW is exported to the Columbia Landfill in Oregon.

Pierce County

Pierce County's 2010 "Multi-Seasonal Waste Characterization Analysis" states food waste comprises 28.1 percent of Pierce County's landfill-bound waste.²⁶ Food waste represents "the most prominent type of material in the County's waste stream."²⁷ In the Pierce County residential waste stream, food waste comprises 33.6 percent of all garbage in the single-family sector and 25.6 percent in the multi-family sector.²⁸ The trend of food waste as a percentage of garbage is also increasing. In 1995, food waste was only 15.3 percent of waste, by 2010, the number had almost doubled.²⁹

Pierce County estimates that in the next eight years, the county will produce 800,000 tons of waste per year, this assumes the county will continue to recycle nearly half of its MSW. Because food-related waste is a large component of the waste stream in Pierce County, the county recognizes the need "to conduct an audit of waste being landfilled to determine the potential amounts that could be recovered... and to evaluate how much and what type of organic waste might be collected through new collection programs or added to yard waste collection systems for composting."³⁰ This recognition prompted Pierce County's Solid Waste and Recycling Division to retain R.W. Beck, Inc. to perform a waste characterization analysis of Pierce County's waste stream.

The majority (92 percent) of Pierce County's garbage is deposited in the LRI Landfill located in Graham, Washington. LRI is slated to accept Pierce County's garbage until at least 2035, but the county is considering transferring 25 percent of Pierce County's garbage outside of the County to extend the capacity of the LRI landfill until 2042.³¹ The other 8 percent of the county's garbage is taken to the Roosevelt Landfill in southern Washington, outside of the central Puget Sound region.³²

Snohomish County

solidwastedata/recyclin.asp.

²² Ibid.

²³ Kitsap DPW, "Curbside Recycling Available Everywhere," (2010) http://www.kitsapgov.com/sw/pdf/3380_curbside.pdf.

²⁴ Kitsap DPW, 2010, "Waste Wise Communities: The Future of Solid and Hazardous Waste Management in Kitsap County," http://www.kitsapgov.com/sw/pdf/cswmp_final_draft.pdf.

²⁵ Kitsap DPW, "Where Does My Garbage Go?" (2007) http://www.kitsapgov.com/sw/pdf/3372_where_garbage_goes.pdf.

²⁶ Pierce County, 2010, "Multi-Seasonal Waste Characterization Analysis."

²⁷ Ibid.

²⁸ Pierce County, 2008, "Public Works, Public Benefit and Utilities 101," <http://www.co.pierce.wa.us/xml/abtus/ourorg/pwu/about/Final101.pdf>.

²⁹ Ibid.

³⁰ Ibid.

³¹ Pierce County, 2010, "Landfill Capacity Analysis".

³² WA DOE, "Consolidated Waste Report"

In Snohomish County, about 15 percent of the county's landfill-bound garbage is food waste.³³ The percent of food waste in landfills from Snohomish County continues to rise. In their 2009 Waste Composition Study, Snohomish County states "diversion of food waste should be considered. Food waste is the largest single item remaining in the waste stream."³⁴

In Snohomish County, the job of collecting waste is contracted out to private haulers. The main private haulers include Waste Management Northwest, Allied Waste Services, Rubatino Refuse Removal and Sound Disposal. After Snohomish County's Cathcart landfill closed, the county decided to export their waste.³⁵ Since 1992, Snohomish County has exported most of their garbage to the Roosevelt Landfill in Klickitat County, with whom the county signed a 21-year contract.

Private haulers pick up residential, commercial, institutional, and industrial garbage and take the garbage to one of three Snohomish County transfer stations in Everett, Arlington, and Mountlake. In addition to curbside pick-up there are also rural drop box locations where waste can be deposited. In the case of drop boxes the county is responsible for collecting garbage and taking it to a transfer station.

Proceeding reaching the transfer station privately contracted companies take the compacted garbage to a landfill. In 2009, 96 percent of the Snohomish County's municipal/commercial solid waste went to the Roosevelt Landfill. The other 4 percent of Snohomish County garbage went to the Columbia Ridge Landfill in Oregon.³⁶ The Roosevelt Landfill is expected reach capacity in 45 years. This could prove problematic as about 300 containers of waste from Snohomish County are transported each week to the Roosevelt Landfill rail facility.³⁷

RECYCLING

State Level

In 2009, the Washington State Department of Ecology reported that the recycling rate of the Washington state resident for 2009 was 44.57 percent. This number represents an increase in recycling participation has risen over the past 10 years. This trend is evident throughout the central Puget Sound region where rates have reached rates as high as 48 percent.

King County

The King County recycling rate, as of 2007, was 47 percent with a goal of increasing the rate to 70 percent by 2020.³⁸ Rates of curbside recycling in the county are in excess of 99 percent.³⁹ While much of the residential recycling occurs as a curbside service, there are numerous transfer stations where residents and businesses can take products that are too large for curbside pickup. To that end, there are many for-profit and non-profit businesses

³³ Snohomish County Public Works, 2009, "Waste Composition Study," http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SolidWaste/Information/Brochures/WasteComp2009Final.pdf.

³⁴ Ibid.

³⁵ Snohomish Solid Waste, "Where Does My Garbage Go?" http://www1.co.snohomish.wa.us/Departments/Public_Works/Divisions/SolidWaste/Garbage/wheregarbagegoes.htm (accessed February 10, 2011)

³⁶ WA DOE, "Consolidated Waste Report"

³⁷ Snohomish Solid Waste, "Where Does My Garbage Go?"

³⁸ King County Department of Natural Resources and Parks, October 2009, "Draft 2009 Comprehensive Solid Waste Management Plan." <http://your.kingcounty.gov/solidwaste/about/Planning/documents/DRAFT-2009-comp-plan.pdf>, 3-4.

³⁹ Ibid., 3-9.

that recycle or reclaim food products that are not eligible for pick-up by current municipal haulers.⁴⁰ Examples include farms and biodiesel organizations that rely on used oil and grease for heating/transportation needs or to sustain their business model. This is especially applicable for restaurants in the county who use larger volumes of oil than residential customers.

The City of Seattle, home to about one-third of King County population, runs recycling programs through Seattle Public Utilities. Their goal, in 2005, was to achieve a 60 percent recycling rate by 2007.⁴¹ Materials that are mostly associated with food products—as defined in the Cascadia Consulting Group report (2007) include polycoat containers, aseptic containers, aluminum cans, tin food cans, small PET bottles, large PET bottles, HDPE bottles, HDPE jars, tubs, and other containers, other plastic bottles (#3-7, excluding #6), others jars, tubs, and containers (#3-7, excluding #6), clear bottles, green bottles, brown bottles, clear container glass (A-1). Glass bottles comprised 13.5 percent of recyclable materials by weight. Nearly 3.3 percent of materials are from plastic and metal products. While this figure is low, these materials are much lighter than glass bottles and paper. In fact, paper accounts for 75 percent of the recycled products.⁴²

King County is dedicated to reducing the amount of garbage generated in the county and encouraging waste reduction and recycling. Education efforts such as the 1996 King County Master Recycler Composter (MRC) program, which provides free community education about waste reduction and recycling. Residents in King County outside of Seattle are eligible for this program. Participants receive free training about waste reduction, recycling, home composting, alternatives to household hazardous waste, and solid waste impacts on climate change. For this training participants are then asked to disseminate their knowledge throughout the community through volunteer opportunities.⁴³

Kitsap County

Recycling was first introduced to Kitsap County in 1990 and is now included in the price of garbage service. However, it should be noted that many areas in the county do not require garbage service and thus do not require recycling service. The larger cities—Bremerton, Port Orchard, and Poulsbo—have mandatory garbage service with included recycling service.⁴⁴ From the inception of the recycling program in the county, recycling rates have steadily increased to current rates of 31 percent or about 100,000 tons annually.⁴⁵ The majority of products suitable for recycling are shipped to facilities in Pierce County.⁴⁶

Most recycling occurs at the commercial and self-haul sector (note: these figures were calculated prior to the 100 percent curbside recycling service began so current self-haul figures might be lower) accounting for 34 percent and 35 percent, respectively, of recycled tonnage. Single-family residential and multi-family residential account for 24 percent and seven percent, respectively.⁴⁷

Pierce County

⁴⁰ King County Solid Waste, February 2, 2011, "What do I do with...?" <http://your.kingcounty.gov/solidwaste/wdidw/index.asp>

⁴¹ Cascadia Consulting Group. 2006. "2005 Residential Recycling Composition Study," http://www.seattle.gov/util/groups/public/@spu/@usm/documents/webcontent/spu01_002134.pdf, 1.

⁴² *Ibid.*, 5.

⁴³ King County, 2010, "Commercial Food Scrap Collection," <http://your.kingcounty.gov/solidwaste/garbage-recycling/commercial-collection.asp>

⁴⁴ Kitsap DPW, 2010b, "Waste Wise Communities: The Future of Solid and Hazardous Waste Management in Kitsap County," http://www.kitsapgov.com/sw/pdf/cswmp_final_draft.pdf, 3-11.

⁴⁵ *Ibid.*, 3-1.

⁴⁶ *Ibid.*, 3-8.

⁴⁷ *Ibid.*, 3-12.

In 1990 Pierce County was Washington's first county to introduce a county-wide residential curbside recycling collection program. Since then, residents and businesses have recycled about 7 million tons of materials. In 2005, nearly one-fifth of all the yard waste reported as recycled in the state came from Pierce County and its cities. Solid waste educators reach 28,000 people annually through classroom education and workshops.⁴⁸

Pierce County recycles an average of 3.94 pounds or 47.5 percent of their daily waste generated. Since curbside collection began seventeen years ago an estimated seven million tons of material has been diverted from landfills. The high degree of recycling in Pierce County can be accounted in large part by their single-cart comingling program. This allows for consumers to place all recyclable items into a single cart. This change in recycling collection increased recycling amounts by over 70 percent between 2005 and 2008.⁴⁹

One remaining concern regarding Pierce County recycling is, that while curbside service is available to single-family households, multi-family collection is consistently unreliable. Unincorporated Pierce County does not have requirements for mandatory recycling. Recycling guidelines are regulated by the Washington Utilities and Transportation Commission (WUTC) in these areas, which does not have recycling requirements. Therefore, the county does not have authority to require that these areas provide recycling service.⁵⁰

Snohomish County

Recycling opportunities for residents of Snohomish County are many. Residents can have their recycling picked up curbside (by a private hauler as discussed in the garbage section), they can drop their household recycling off at a local transfer station or drop box, and/or they can bring recycling items to a private recycling facility. Snohomish County has "delegated most operational elements of recycling to the private sector."⁵¹

Because it is the intent of the county to ensure that all residents have equal access to a variety of disposal options—garbage, recycling, composting—it provides information and programs to encourage Snohomish residents to properly dispose of their unwanted items.⁵² The county's Solid Waste Division facilitates recycling events for community clean-up, provides opportunities for Snohomish residents to exchange unwanted household items, and a program promoting the reuse/recycling of items otherwise landfill-bound.

Currently, the county is aiming at reaching a 50 percent recycling goal. This is a goal higher than the existing statewide recycling rate. It was reported in the Snohomish County Solid Waste Management Plan that in 2004, single-family residences were at a 38 percent recycling rate, while the multi-family residences were only at an 18 percent recycling rate.⁵³ The current recycling rate for Snohomish County is not readily available.

⁴⁸ Pierce County, 2008, "Stepping Up To The Challenges," <http://www.co.pierce.wa.us/xml/services/home/environ/waste/draft%20supplement%20july%202007.pdf>

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ Snohomish Solid Waste, 2004, "Solid Waste Management Plan," http://www.co.snohomish.wa.us/documents/Departments/Public_Works/SolidWaste/Information/complansection2-104.pdf.

⁵² Snohomish Solid Waste, "Solid Waste Division," http://www1.co.snohomish.wa.us/Departments/Public_Works/Divisions/SolidWaste/.

⁵³ Snohomish Solid Waste, "Solid Waste Management Plan"

COMPOST

State Level

Composting is the only “closed loop” method of recycling food residuals that can transform all of what goes into the systems as a beneficial product upon completion.⁵⁴ In April 2007, the Washington Department of Ecology published “Washington State’s Beyond Waste Project, Increasing Recycling for Organic Materials.”⁵⁵ This document serves as a guideline for why the increased usage of composting across the state has value both to consumers and the waste stream as a whole. Studies show that composting along with recycling creates more jobs than landfill disposal or incineration. Often these green jobs are higher paid, more family-wage jobs. Additionally, business experts claim that green jobs are an important area for states to be focusing on for future economic growth. Furthermore, organic composting is one important way to reduce energy use and greenhouse gasses which are produced by the transportation of garbage and the decomposition of garbage in landfills. Through disposal and tipping fees consumers help to pay for landfills to operate. By diverting up to 30 percent of what is currently deposited of in landfills consumers can spend less money on garbage bills. Increased composting can also allow local governments to spend their limited resources cost-effectively instead of burying them in a landfill.⁵⁶ Composting also creates a marketable product, which can then be sold and used by local residents, businesses and municipalities to improve soil quality, protect against erosion and better-contaminated soil.

In 2002, Washington recovered about 380,000 tons of composted material, which also includes yard waste. We have been unable to collect data on how many tons of food waste alone has been diverted from the solid waste stream throughout the state. It is estimated that Washington State annually produces 1,616,245 tons of organic and compostable paper products alone, which makes up 41.2 percent of the statewide waste stream.⁵⁷

Image 5-4: Food Compost



Source: Seven Days, 2011, “Waste Not?” <http://www.7dvt.com/2007/waste-not>.

⁵⁴ WA DOE, “Consolidated Waste Report”

⁵⁵ WA DOE, 2007, “Washington State’s Beyond Waste Project, Background Paper for Beyond Waste Summary Document,” <http://www.ecy.wa.gov/pubs/0407027.pdf>

⁵⁶ WA DOE, 2009, “Beyond Waste Plan 2009 Update,” <http://www.ecy.wa.gov/pubs/0907026.pdf>

⁵⁷ Cascade Consulting Group, 2009, “Washington Statewide Waste Characterization Study Statewide Characterization Results,” <http://www.ecy.wa.gov/pubs/1007023.pdf> (accessed February 27, 2011).

King County

In King County, 188,000 tons of food waste and compostable paper are disposed of per year. Food waste represents a growing percentage of the waste stream in King County, increasing from around 12 percent in 1994 to 15 percent in 2000.⁵⁸

King County Public Works and King County Public Utilities, in conjunction with numerous private composting services, came together to provide curbside food waste disposal to almost all single-family residences in King County. Multi-family units also have access to food waste curbside pick-up, however food waste collection at these residences must be requested and set up by the property management for the entire property.⁵⁹

In 2001, King County Public Works began working with the county cities and collection companies to phase in curbside collection of food scraps and food-soiled paper in the yard waste containers. Currently, 98 percent of single-family curbside collection customers have access to food scrap collection and participation continues to increase.

King County contracts with private companies to treat the collected organic materials. Cedar Grove Composting is one of the private companies serving portions of King County and charges \$40-\$45 a ton to compost material. They also bag and sell their post-composted soil blends to the general public and contractors around the state and as far as Idaho and Oregon. This resale activity is vital to the firm's viability and profitability.⁶⁰ Recent years have proved that they are producing more soil than they can sell.⁶¹

Susan Thomson, director of corporate business and development at Cedar Grove has noted that "it's cheaper to compost than to landfill" using their system. Cedar Grove has two operating facilities: one in Maple Valley (King County) and the other in Everett (Snohomish County). The 28-acre facility in Maple Valley has a contract to pick up material throughout King County. Currently Cedar Grove's Maple Valley location collects 195,000 tons of waste annually. Of that total, 15 to 20 percent is food waste.⁶²

In the commercial sector, King County's composting efforts have led nearly 200 grocery stores, restaurants, and home and garden centers to reduce their disposed waste by composting their leftover organics.⁶³ There remains a great need to engage more commercial partners in the composting sector.

⁵⁸ King County, 2001, "King County Comprehensive Solid Waste Management plan," http://your.kingcounty.gov/solidwaste/about/planning/documents/Comp_Plan.pdf (accessed February, 27 2011).

⁵⁹ King County, 2008, "Recycle Food It's Easy To Do," http://your.kingcounty.gov/solidwaste/garbage-recycling/documents/Food_scrap_recycling-FAQs.pdf (accessed February 27,2011).

⁶⁰ Cedar Grove Composting, 2011, Jerry Bartlett Interview.

⁶¹ Ibid.

⁶² Heller. P.J., 2010, "Food Waste Tops Menu For Composting Facilities." <http://soilandmulchproducernews.com/archives/72-septemberoctober-2010/173-food-waste-tops-menu-for-compost-facilities>

⁶³ King County, 2010, "Commercial Food Scrap Collection," <http://your.kingcounty.gov/solidwaste/garbage-recycling/commercial-collection.asp>.

Table 5-1: King County Composting Facilities and food-related compost⁶⁴:

Seattle University Onsite Composting	Food Waste (Pre- consumer), Wood Waste	6.5 Tons
Cedar Grove	All compostable Materials	180,365 Tons
Steerco/ Sawdust Supply	Manure, sawdust	4,700 Tons
Woodland Park Zoo	Manure, food waste (pre-consumer), sawdust, yard waste	406 Tons

Kitsap County

While exact figures are difficult to ascertain, an estimated 200,000 to 470,000 tons of organic materials are generated each year in Kitsap County.⁶⁵ Food accounts for 32,780 tons of that estimate. This product comes from grocery stores, schools, restaurants, wholesale-nondurable, correctional facilities, assisted living, military-common dining, military (residential), military (non-residential), hospitals, self-hauled residential waste, self-hauled commercial waste, and commercially hauled residential waste. It should be noted that 9,479 tons comes from restaurants and 11,592 comes from commercially hauled residential waste. Only 1 percent of food waste is recycled in the county. Food material is expected to increase to 46,766 tons by 2030.⁶⁶

Consistent with other central Puget Sound counties private haulers are contracted to handle the pickup of organic material. Two such companies are Waste Management Northwest and Bainbridge Disposal.⁶⁷

Pierce County

Pierce County currently has curbside yard waste pick-up but does not collect food waste. The county speculates that the amount of food waste generated “may comprise more than 30 percent of what we dispose of in Pierce County.”⁶⁸ Though compost facilities could reduce the amount of food waste that Pierce County injects into landfills, restrictive permitting requirements makes establishing new composting facilities difficult.

Pierce County’s composting facility in Purdy handles only yard waste. However, a private company, LRI Compost Factory in Puyallup, accepts commercially composted food waste. Little information is available on the amount of food waste received at the LRI site though the facility is capable of handling 91,000 tons of compost a year. LRI charges \$35 a ton for composting material.

Though the county does not have curbside composting, they do sponsor worm composting workshops which are two hour segments on worm bin set-up, maintenance and compost usage. There is tuition for the workshop that includes materials needed to start at home composting. Currently there is a waiting list for these workshops.⁶⁹

⁶⁴ WA DOE, 2009, “Solid Waste and Recycling Data,” <http://www.ecy.wa.gov/programs/swfa/solidwastedata/>.

⁶⁵ Kitsap DPW, “Waste Wise Communities: The Future of Solid and Hazardous Waste Management in Kitsap County,” (2010) http://www.kitsapgov.com/sw/pdf/cswmp_final_draft.pdf.

⁶⁶ Ibid.

⁶⁷ Kitsap DPW, 2010, “Food & Yard Waste – Curbside Collection,” <http://www.kitsapgov.com/sw/recycle.asp?ItemID=31>.

⁶⁸ Ibid.

⁶⁹ Pierce County, 2011, “Environmental Education,” <http://www.co.pierce.wa.us/pc/services/home/enviro/edmenu.htm>.

As of 2008 Pierce County did not have in-county capacity to compost more organic materials. Public and private facility capacity was over-extended and new capacity was needed just to meet existing demand. Pierce County recognizes the need for further study in this area and wished to know more about how local food processing businesses are managing their food waste and what steps the agricultural community is taking, or may take in the future, to handle agricultural waste. There is desire by the county to look more closely at possible partnerships in the area of food waste management.⁷⁰

Snohomish County

In 2009, Snohomish County reported composting around 22,000 tons of food-related waste.⁷¹ This number was calculated by looking at manure composting, food waste, and food processing waste. All of this waste originated in Snohomish County. The majority of food related composting was food waste and manure, rather than food processing waste, which was only a small portion of the reported compost amounts.

There are several composting locations in Snohomish County that take compostable materials from King County in addition to Snohomish County. Snohomish County is home to four private composting facilities: Cedar Grove Composting, Lenz Enterprises Inc., Bailand Farms Yardwaste & Compost and Misich Farms/Riverside Topsoils. Lenz Enterprises is the only facility in the county to compost food waste generated at food processing centers. Both Cedar Grove and Lenz Enterprises compost food waste.

Table 5-2: Snohomish Composting Facilities and food-related compost⁷²:

Bailand Farms Yardwaste/Compost	Manure	2,000 Tons
Cedar Grove	Food Waste	112,78 Tons
Lenz Enterprises	Food Processing Waste	78 Tons
Lenz Enterprises	Manure	6,222 Tons
Lenz Enterprises	Food Waste	2,687 Tons

Cedar Grove Composting is the leading composting facility in the Northwest. Its newest facility, on 26 acres in Everett, was constructed in 2004. That site handles 228,000 tons of yard and food waste each year. In addition to composting, they are planning to integrate an anaerobic digestion system with their composting process.

In most areas of Snohomish County, depending on the private hauler contracted to their area, residents can deposit food scraps in yard waste bins. This is a big step for Snohomish County which had not facilitated the disposal of food waste in yard waste bins years prior to the current policy.

⁷⁰ Pierce County, 2008, "Stepping Up To The Challenges," http://www.co.pierce.wa.us/xml/services/home/environ/waste/draft_percent20supplement_percent20july_percent202007.pdf.

⁷¹ Solid Waste Clearinghouse, 2009, "Snohomish County Feedstocks and Amounts Composted by Permitted Sites," Accessed February 19, 2011. <https://fortress.wa.gov/ecy/swicpublic/UIProfiles/Profile.aspx?profileID=31>.

⁷² WA DOE, 2009, "Solid Waste and Recycling Data," <http://www.ecy.wa.gov/programs/swfa/solidwastedata>.

ALTERNATIVE MEANS OF FOOD WASTE DISPOSAL IN THE PUGET SOUND REGION

Anaerobic Digestion

Anaerobic digestion is a way to more efficiently process organic waste. This system allows organic materials to decompose without oxygen while producing biogas (which can be sold) and a nutrient-rich organic solid (which can be used for topsoils). Currently Cedar Grove's Everett location plans to implement one of the largest anaerobic digesters in the nation aimed at handling large quantities of food waste⁷³.

In 2008 the Qualco Energy Corporation started operating their anaerobic digester in Snohomish County.⁷⁴ This was a project to dispose of manure from local dairy farms and other waste products such as expired beer/soda. Though the project was originally intended as an environmental mitigation effort to prevent runoff and contamination of local streams, it has morphed into a producer of energy. The digester captures the methane released by compostable materials which is converted into energy and sold back to the Puget Sound Energy Corporation. Any solids that are left over after the process can be composted.

Though anaerobic digesters are very expensive, there are federal grants available to offset the high capital costs. In Qualco Energy Corporation's case, the company was awarded two grants from the federal government to pay for the initial cost of the anaerobic digester.

King County has completed a feasibility study for anaerobic digesters to be used for county dairies, used much like Qualco Energy Corporation's digester.⁷⁵ There has been some discussion in Kitsap County about purchasing a digester to produce fertilizer (the leftover solids) and dispose of waste efficiently.⁷⁶

Garbage Disposal

The use of garbage disposals over discarding food items into the garbage is preferable. However, the benefits of composting outweigh those of garbage disposal use. This is because certain types of food waste cannot be handled by the sewer system.⁷⁷ Additionally, unlike composting, there is no marketable product produced. Further study is necessary to evaluate the volume of food waste being disposed of by this means and associated implications for the region's infrastructure.

Landfill 'Gas for Cash'

While it is important to divert food waste, there are means of capturing the energy of discarded food waste in landfills. This is a relatively new way to harness energy from landfills while earning money and contributing to "greener" energy as "the county estimates the landfill gas-to-energy

⁷³ Jerry Bartlett, February 9, 2011, Speaker to University of Washington URB DP 506.

⁷⁴ Bryan Sims, 2011, "Anaerobic Digestion Project in Washington's Tualco Valley is Paying Off," Accessed March 3, 2011. <http://biomassmagazine.com/articles/5309/biogas-benefits/>.

⁷⁵ King County Department of Natural Resources and Parks: Water and Land Resources Division, 2003, "Anaerobic Digesters for King County Dairies."

⁷⁶ Christopher Dunagan, 2010, "Kitsap County Planning Big, But Costly, Improvements to Sewer Systems" Accessed March 5, 2011, <http://m.kitsapsun.com/news/2010/nov/13/county-planning-big-but-costly-improvements-to/>.

⁷⁷ King Co. Solid Waste. "Residential Food Scrap Recycling in King County, WA," <http://your.kingcounty.gov/solidwaste/garbage-recycling/backyard-composting.asp>.

project results in a reduction of emissions equivalent to removing 22,000 average passenger cars from the road each year.⁷⁸ King County recently announced that “the methane gas created by decomposing garbage at the Cedar Hills Regional Landfill could net King County about \$1 million per year.”⁷⁹ This is the first project of its kind in the region with no other counties following suit.

Donation of Excess Food

Seattle is home to the Food Recovery Initiative. Mark Musick from Seattle Public Utilities notes that “40-50 percent of food is never eaten.”⁸⁰ He also notes that 25 percent of Seattle’s solid waste is food waste; this is enough food to fill over 4,400 rail cars.⁸¹

There are numerous organizations in the central Puget Sound region who work to eliminate hunger. For example, Food Lifeline works with food banks, shelters, and meal programs in the central Puget Sound region and other western Washington counties to provide access to food for those in need. While data for the central Puget Sound are not readily available, the organization provided 24 million meals to over 686,000 people each year.⁸² Food Lifeline acts as an intermediary in procuring food that might be slated for the landfill. For example, the organization works with area grocery stores to recover unsellable and out-of-date food. They distributed 31 million pounds last year, which was distributed to food banks, shelters, and meal programs throughout the region and state. Food Lifeline works with 132 King County, 8 Kitsap County, 24 Pierce County, and 22 Snohomish County agencies that provide food.⁸³ While this list is not exhaustive in terms of total numbers of food banks in the central Puget Sound region, it hints at the commitment in the region of fighting hunger and diverting food that might be destined for the landfill, thus meeting EPA’s primary goal in their food hierarchy.

Source Reduction

As the EPA food hierarchy pyramid shows, reducing excess food—source reduction—is the preferred method to dealing with waste. Waste is largely the result of cheap and abundant.⁸⁴ However, simply reducing the amount of food produced is a multifaceted issue requiring coordination at the national level. However, restaurants and institutions can reduce the amount of wasted food by examining handling practices, reviewing prep waste—a large source of waste, implementing trayless dining, and modifying menus based on consumer preferences.⁸⁵ Also, consumers have the ability to control the amount of food waste by reducing portion sizes, buying in realistic quantities, eating leftovers, and composting.⁸⁶

⁷⁸ Ibid.

⁷⁹ Warren Kagarise, 2011, “County Announces Deal to Turn Trash Gas into Cash,” Accessed March 1, 2011, <http://www.issaquahpress.com/2011/02/08/county-announces-deal-to-turn-trash-gas-into-cash/>.

⁸⁰ Mark Musick, 2011, “Seattle Food Recovery Initiative.” <http://www.resourceventure.org/green-your-business/waste-prevention-recycling/food/food-too-good-to-waste>.

⁸¹ Ibid.

⁸² Food Lifeline, 2011, “Hunger of Hope?”

⁸³ Food Lifeline, 2009, “Ending Hunger.” <http://www.foodlifeline.org/hunger/distribute/index.html#snohomish>.

⁸⁴ Jonathan Bloom, University of Washington Lecture, March 8, 2011, “Wasting Food: Why so much food ends up in the trash and what we can do about it.”

⁸⁵ US EPA, December 16, 2010, “Food Waste Reduction.” <http://www.epa.gov/osw/conserves/materials/organics/food/fd-reduce.htm>.

⁸⁶ US EPA, December 16, 2010, “Household Food Waste,” <http://www.epa.gov/osw/conserves/materials/organics/food/fd-house.htm>.

NEXT STEPS

There are many opportunities to further explore the food-related waste stream in the central Puget Sound. Some gaps and questions include:

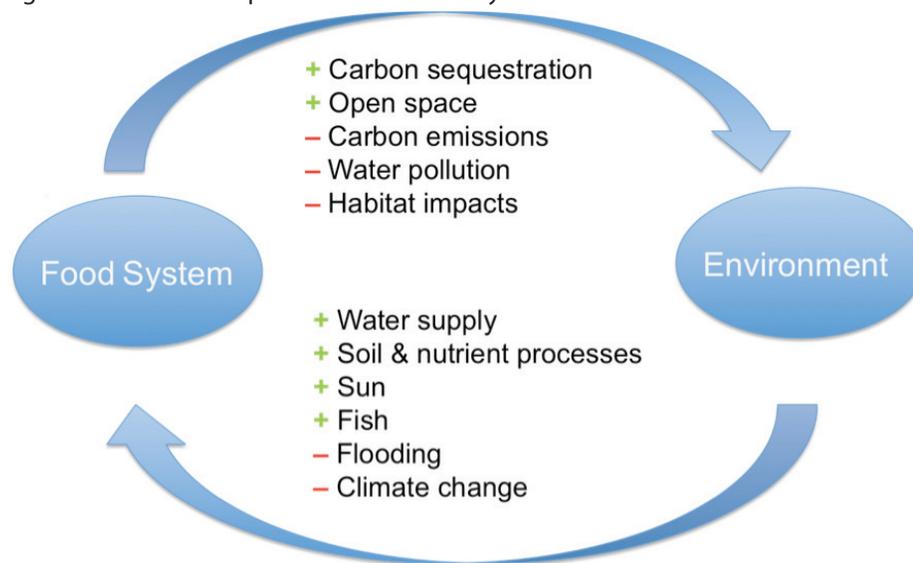
- What measures can be taken to ensure that less food waste is disposed in landfills?
- Data on food waste is hard to come by and certainly not consistent across counties. It is therefore very difficult to get a regional sense of how much food-related waste comprises the food stream and how much is being diverted from landfills.
- There is much variation in what municipalities require in terms of recycling/trash/composting. A county may express a wish to compost but the infrastructure needs may not exist or is fiscally impossible. Some of this stems from the public/private partnerships that are inherent in the waste stream (e.g. municipal government contracting out waste pick-up to private entities).
- It is worth further investigating how food waste diverted from landfills could decrease the budgetary constraints on municipalities and solid waste services while supporting environmental efforts.

Environment and Tribes

INTRODUCTION

The food system is intimately connected to the natural environment. There are many ways in which the two systems influence each other. Agricultural production requires natural goods like water for irrigation. Fishery production requires natural habitats for salmon and other species. At the same time, the way that we produce, distribute, consume, and dispose of food has a variety of environmental impacts such as pollution and greenhouse gas emissions. These complex relationships affect the quality of life for citizens throughout the four-county Puget Sound Regional Council (PSRC) planning region. The health of aquatic species is particularly important to the region's tribes, for whom salmon and other aquatic species are an essential component of life. Figure 6-1 shows some of the relationships between the food system and the environment.

Figure 6-1: Relationship Between the Food System and the Environment



This section focuses largely on water and habitat issues that appear the most problematic in our research. Water issues include the availability of water for irrigation, flooding, and climate change impacts. Habitat issues include current policies, governance, critical areas, voluntary programs, and negotiation practices. However, there is also increasing interest in some of the positive relationships – such as sustainable agriculture and ecosystem services research.

METHODOLOGY

Information in this section has been gathered through extensive research of reports, legal documents, and websites of various government agencies, non-profits, and tribal resources.

CLIMATE CHANGE

The food system contributes to climate change and is also affected by it. Climate change could have dramatic effects on current food system production, from harmful trends such as more frequent floods and droughts to beneficial effects such as longer growing seasons and the ability to grow warmer-weather crops. Equally important is the contribution of our current food system to greenhouse gas emissions. From methane released on farms to carbon released by driving

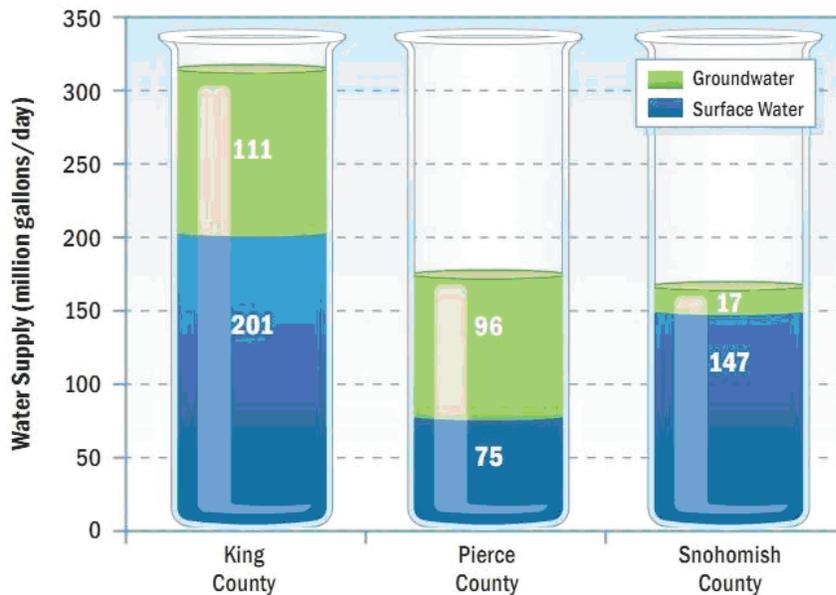
to the grocery store, the current food system has many climate impacts. There has been little comprehensive research on the climate impacts from the central Puget Sound food system. However, further research in this area could provide a basis for a carbon reduction strategy.

WATER AND THE FOOD SYSTEM

Numerous aspects of the food system involve water consumption, disposal, and reuse, particularly in the production, processing, and consumption stages. While little research measures water use within the food system itself, we know that agriculture irrigation, which relates to the food system, by far composes the largest proportion of water used in Washington State.¹

In the central Puget Sound region, a variety of public and private sources supply the region's water. Public water sources include municipalities and more than one hundred water utilities, which supply water to more than 94 percent of the region's population. The water utilities serving the largest number of customers are Seattle Public Utilities, Tacoma Public Utilities, Alderwood Water District, Bellevue, Lakehaven Utility District, and Everett. These six utilities provide water to more than 45 percent of the region's population and serve another 29 percent indirectly through wholesale supplies.

Figure 6-2: Municipal Water Consumption Use Rates in Region



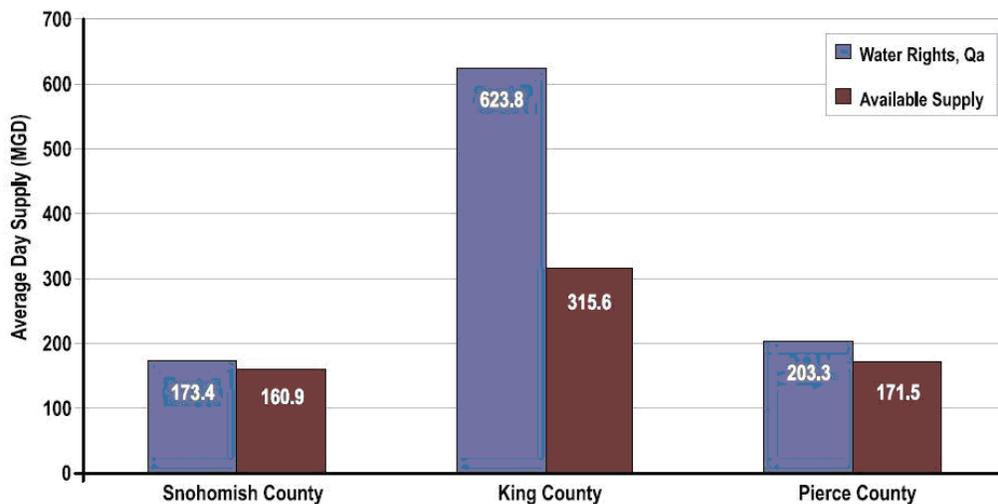
Source: Water Supply Forum, "2009 Regional Municipal Water Supply Outlook, 2009, ES-7," <http://www.watersupplyforum.org/assets/outlook/reports/2009/ExecutiveSummary09.pdf>.

Approximately 66 percent of the region's water supply comes from the region's rivers: Sultan River for Everett, the Tolt and Cedar rivers for Seattle, and the Green River for Tacoma. The remaining 34 percent of the region's water supply comes from groundwater, which is produced by wells located primarily in King and Pierce Counties.

¹US Geological Survey, "Water Use in the United States," accessed March. 13, 2011, <http://water.usgs.gov/watuse/>.

Almost 60 percent of the municipal water used in the region is for residential purposes. Non-residential uses, including food processing, account for about 32 percent of the water usage.² Figure 6-2 displays the breakdown of municipal water supply in Pierce, Snohomish, and King Counties.

Figure 6-3: Water Rights versus Supply by County



Source: Water Supply Forum, "Water Information Resource Center," Accessed February 13, 2011, <http://www.watersupplyforum.org/resource/>.

Figure 6-3 compares water rights (on a total annual volume) and existing developed water supply at the county level. Water rights are the authorized supply amounts that the water utility is allowed to withdraw from waters of the State.

The comparison shows Snohomish and Pierce County utilities total developed water supply comes within 95 and 84 percent, respectively, of the total water rights retained by utilities for each county. In contrast, water rights in King County are nearly double that of developed supply. This is largely due to the status of water rights and claims held by SPU.³

Unlike the other three counties, the water supply in Kitsap relies heavily on groundwater and a few surface streams.⁴ The following two figures (Figure 6-4 & Figure 6-5) show water rights issued for ground water and surface water respectively in Kitsap County.

After reviewing the related water supply documents and analyzing the existing data, a few problems of water supply are identified.

First, we do not know how much water we will have in the future because climate change may change the supply. Many scientific communities agree that climate change is occurring, but the specific degree of temperature increase cannot be accurately predicted. Predictions of changes in precipitation are even more speculative, with some scenarios showing precipitation increasing in the future and others showing the opposite.

² Water Supply Forum, "2009 Regional Municipal Water Supply Outlook, 2009," accessed March 13, 2011. <http://www.watersupplyforum.org/resource/>.

³ Water Supply Forum, "Water Information Resource Center," accessed March 10, 2011. <http://www.watersupplyforum.org/resource/>.

⁴ Kitsap County, "Kitsap County Coordinated Water System Plan," accessed March 10, 2011, http://www.kitsapgov.com/dcd/community_plan/kccwsp/adopted_cwsp_20050509.pdf.

Figure 6-4: Summary of Ground Water Rights Annual Quantities

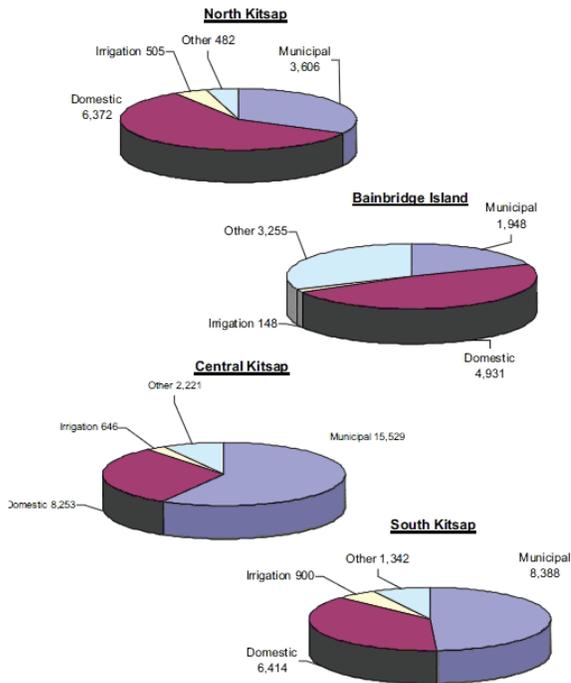
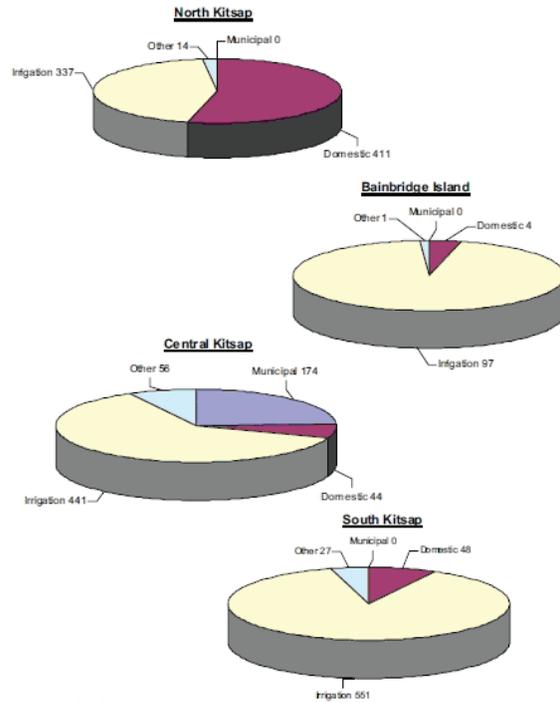


Figure 6-5: Summary of Surface Water Rights Annual Quantities



Source: "Kitsap Coodinated Water System Plan," Kitsap County, 2005, http://www.kitsapgov.com/dcd/community_plan/kccwsp/adopted_cwsp_20050509.pdf.

Second, we do not know how much water is consumed for agriculture use in the four counties. Different crops require different amount of irrigation. Additionally, reclaimed water presents an irrigation opportunity.

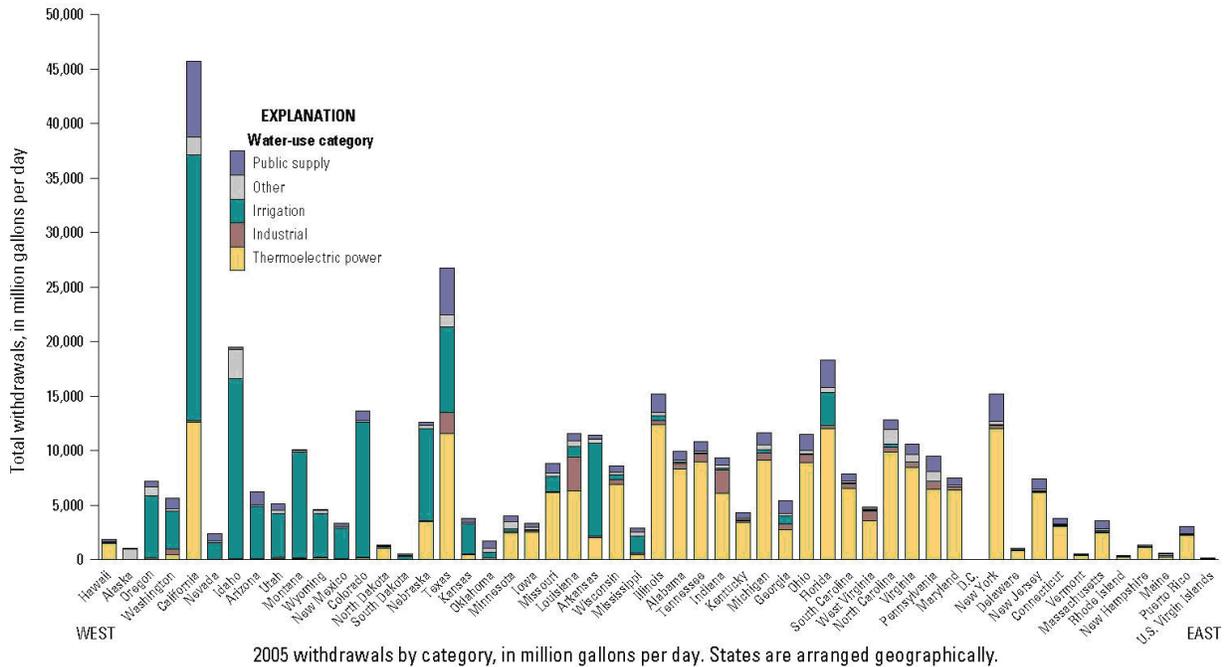
Third, water distribution can be uneven across the region. For instance, it could be more expensive for farmers in Kitsap County to buy water because of its special geographical limitations that there are only a few natural surface water resources.

Further work can develop our understanding of the food system's imprint on water supply and demand. Additional consultation should involve water utilities, conservation districts, and agricultural production districts, and county extension offices to inventory the following baseline conditions:

- Irrigation requirements by crop type;
- Primary irrigation techniques for regional farms;
- Runoff produced by various irrigation types;
- Current conservation and runoff reduction practices used by area farmers;
- The practical and financial feasibility of using reclaimed residential, commercial, and industrial water, rather than fresh water, for agricultural irrigation purposes.

Numerous aspects of the food system involve water consumption, disposal and reuse, particularly in the production, processing, and consumption stages. While little research measures water use within the food system itself, figure 6-6 provides a general breakdown of water use in the United States. The fourth bar from the left indicates that agriculture irrigation, which relates to the food system, by far composes the largest proportion of water used in Washington State.

Figure 6-6: 2005 Daily Water Use by State



Source: "Water Use in the United States," US Geological Survey, accessed February 13, 2011, <http://water.usgs.gov/watuse/>.

Flooding

Floods produce benefits and issues for agricultural interests in the Puget Sound region. A large number of farms within the area are found in floodplains. Since floodplains present a hazard to development, they are less likely to be developed. Therefore, the risk of developing farmland located in floodplains is much less than farms located outside of floodplains. Additionally, farmers benefit from flooding because floods replenish the rich agricultural soils.

The negative impacts of flooding can outweigh the benefits. Floods can destroy crops, wash away soils, and alter a farm's landscape. As a result, floods can cause thousands of dollars in damage and losses.

Repairing the damage caused by floods has become an environmental issue. In September of 2008, the National Marine Fisheries Service (NMFS) issued a Biological Opinion that determined that implementing the National Flood Insurance Program (NFIP) causes jeopardy to several species of Puget Sound Salmon and Orca Whales as well as adverse modification to their habitat.⁵

⁵ FEMA, "NFIP and the Endangered Species Act," accessed March 15, 2011, <http://www.fema.gov/about/regions/regionx/nfipesa.shtml>.

HABITAT AND THE FOOD SYSTEM

Seafood has been a critical component of the Puget Sound economy and culture for thousands of years. Salmon were originally a source of food and an inseparable piece of tribal identity, spirituality, and survival. In later years, fishing communities drew new development and town-creation. Regional seafood products include groundfish such as sole and Pacific Halibut, shellfish such as Dungeness crab, pink shrimp, Geoduck clams, and most famously – salmon. Salmonoid species include Chum, Sockeye, Chinook, Coho, and Pink salmon and Cutthroat trout, Bull trout, and Steelhead. Salmon are renowned as one of the most iconic and historically important species of the Pacific Northwest, but also center amid numerous controversies.

Today, populations are extremely depressed compared to historical levels. For example, in the Snohomish basin between 1999 and 2003, the populations of Chinook salmon were 3.3 percent of historic levels in the Skykomish River and 3.8 percent in the Snoqualmie River.⁶ A number of factors in recent decades have contributed to dramatic declines in salmon populations, such as overfishing, loss of estuarine habitat, pollution, and development. Puget Sound Chinook salmon and Bull trout were listed as threatened in 1999, and Puget Sound Steelhead were designated as threatened in 2007.⁷ These listings mandate that local jurisdictions take action to restore populations and can face federal action if they fail to do so.

Salmon have a complex lifecycle that requires precise ecological conditions for survival. It is this complexity that makes the species particularly vulnerable to impacts from human activity and changes in the environment. Most salmonids species are anadromous – they spend time in both freshwater and saltwater. It is during freshwater stages that salmon are most affected by agricultural production and other human activities. Salmon live their early lives in freshwater streams, estuaries, and rivers, before entering freshwater/saltwater transition zones and later the Pacific Ocean. Critical habitat features during freshwater life stages include the right water temperature-which may be provided by streamside vegetation, water flow, water quality gravelly river bottoms, woody debris, and low silt levels, and other environmental features.^{8,9} Additionally, salmon need to be able to pass through everywhere from small streams to large rivers without encountering physical barriers such as dams or culverts.

There is a great deal of research within central Puget Sound watersheds on the many factors negatively impacting salmon habitat. Because of the complex lifecycle described above and other environmental factors, the analysis is generally quite scientifically complex. This section attempts to briefly summarize a few of the primary impacts from agricultural production, highlighting the need to balance aquatic life and agricultural food production. Secondary impacts may also occur from activities designed to benefit agricultural lands and development – such as construction of levees for flood management, though not included in detail here.¹⁰

⁶ Snohomish County Public Works Department. 2005. "Snohomish River Basin Salmon Conservation Plan". Snohomish County Public Works Department, Surface Water Management Division. Retrieved January 2010 from http://www.co.snohomish.wa.us/documents/Departments/Public_Works/surfacewatermanagement/snohomishsalmonplanfinal/Final_Compiled_Plan.pdf.

⁷ National Oceanic and Atmospheric Association, "Puget Sound Steelhead get protection under endangered species act", <http://www.noaa.gov/stories/2007/s2854.htm>.

⁸ Oregon Wild, accessed February 13, 2010, http://www.oregonwild.org/fish_wildlife/wildlife-pages/bull-trout.

⁹ John Kerwin, "Salmon Habitat Limiting Factors Report for the Puyallup River Basin (WRIA 10)," Washington Conservation Commission, July 1999, <http://your.kingcounty.gov/dnrp/library/archive-documents/wlr/wrias/10/salmon-habitat-limiting-factors/pdf/wria-10-salmon-habitat-limiting-factors.pdf>.

¹⁰ John Kerwin, "Salmon Habitat Limiting Factors Report for the Puyallup River Basin (WRIA 10)," Washington Conservation Commission, July 1999, <http://your.kingcounty.gov/dnrp/library/archive-documents/wlr/wrias/10/salmon-habitat-limiting-factors/pdf/wria-10-salmon-habitat-limiting-factors.pdf>.

Agricultural activity can affect the availability of these conditions in a number of ways. For example, dredging and filling of mudflats and emergent marshlands to create or support agricultural lands and constructing dikes and tidal gates to control tidal water flows have had significant impacts to salmon.¹¹ These types of activities reduce estuarine and rearing habitat for salmonids, and also limit habitat for salmonid prey species. Changes to stream flows such as water withdrawals for irrigation can reduce stream flows to below necessary levels for salmon, while straightening of stream channels and bank armoring reduce habitat quality. Water quality can also degrade due to nutrients from animal waste such as fecal coliform and runoff from fertilizers and pesticides.

These issues have caused considerable conflict between agricultural, environmental, tribal, and other groups within the central Puget Sound. The discord is summarized by the Ruckelshaus Center in the 2008 report "An Overview of Salmon Recovery Plans and Agriculture in Washington State":

"Although advocates for the environment and agriculture have many common interests, they have been in conflict with one another as they struggle to retain farms, restore fisheries, and ensure an environmental and agricultural heritage for future generations. A front line for these conflicts has historically been at the county level, where disputes have occurred over the statutory requirements for the protection and restoration of critical areas on agricultural lands."¹²

The next several sections will discuss how counties in the central Puget Sound are currently addressing these issues.

HABITAT RESTORATION AND MANAGEMENT

Programs, Regulations, and Voluntary Measures

Much work has been done in the central Puget Sound region regarding the food system and the environment. A leader in these efforts has been the Ruckelshaus Center, which assembled a framework for establishing stewardship goals of an agricultural economy and the environment. The Agriculture and Critical Areas Committee of the Ruckelshaus Center was asked by the legislature in 2006 to analyze how agriculture stakeholders and policy-makers could address environmental degradation. Environmental research that emerged from this work included summaries or programs and policies that protect critical areas while promoting the compliance in the agricultural sector.

Critical Areas

In 1995, the Growth Management Act (GMA) as amended to require counties and cities to include the best available science in developing policies and development regulations to protect the functions and values of critical areas (RCW 36.70A.172).¹³ Establishing critical areas has been a regulatory measure towards ecological integrity. While these protected areas create space for habitat, much habitat acreage has been identified on private property, especially farmland. As a result, jurisdictions must manage resentment between environmental stakeholders and farm operators.

¹¹ Ibid.

¹² Anne E Seiter, "Overview of Salmon Recovery Plans and Agriculture in Washington State," Ruckelshaus Center, (2008). http://ruckelshauscenter.wsu.edu/documents/FF_V_Overview_Salmon_Recovery_Plans_Ag_AS_06.30.10_WDRC_Cover.pdf.

¹³ MSRC, Critical Areas," accessed February 27, 2011, <http://www.mrsc.org/subjects/environment/criticalpg.aspx>.

Typically, the establishment of critical areas on farmland manifests through the creation of wetland setbacks and fish and wildlife habitat setbacks. Setting aside acreage can be critical in the preservation of habitat for protected species, especially salmon. Streamside habitat protection can reduce erosion and moderate stream temperatures, two components of salmon habitat that can be damaged by agricultural runoff and development.

Critical Area Ordinances and County Agriculture

PSRC member-counties have adopted critical areas ordinances, and each addresses the how farmland will or can comply with these ordinances. The following outline is a summary of county ordinance language.

Pierce: Existing agricultural activities established prior to February 2, 1992 are exempt from enforcing critical area ordinances. After that date exempt with conditions.

King and Kitsap: "Existing and on-going agricultural activities when undertaken pursuant to best management practices to minimize impacts to critical areas" are exempt. "Best management practices (BMPs) are approved by the county: 'The Department shall maintain a selection of best management practices which have been approved by the Board for those uses which are subject to best management practices.'

Snohomish: Existing and on-going agriculture are not exempt. As of Oct. 1, 2007 Snohomish County has two CAOs – one for agriculture subject to the "timeout" in SSB 5248 (old CAO – SCC 30.62) (this includes land located within agriculture or rural designations) and another for agriculture not subject to the "timeout" as well as all other development activities (this includes land located outside of agriculture or rural designations) (SCC 30.62A, B and C).¹⁴

Incentivizing Conservation

24 Washington counties do not enforce critical area ordinances on agricultural land. The deficit of regulation on farmland has been balanced by a greater emphasis on voluntary programs. Two examples analyzed by the Ruckleshaus Center were the Conservation Reserve Enhancement Program and the Conservation Reserve Program.

Conservation Reserve Enhancement Program (CREP)¹⁵

- Program overview:
 - o CREP is a cost-share program for restoring salmon spawning riparian habitat on streams adjacent to agricultural lands. CREP provides a \$100 per acre incentive bonus for landowners. \$1,568,000 awarded in Washington in 2008. 704 total recipients over 10 years. 30 recipients for FY 2008. The federal government pays 80 percent of CREP; state funds are used to leverage more funding. All eligible applicants receive CREP funding. NRCS, Farm Service Agency, and the Conservation Commission are lead agencies for this program.
- Limitations/Barriers:
 - o There must be presence of salmon or steelhead; CREP does not include forestland, urban, or public lands. Only a certain amount of salmon bearing stream miles are allowed into the program.
 - o CREP is a voluntary program, and does not generate enough demand. Whatcom could be a model for the state; it's underutilized in the rest of the state.
 - o There are currently 15 year no touch periods for CREP and CRP, but there

¹⁴ MSRC, "Critical Areas," accessed February 27, 2011, <http://www.msrc.org/subjects/environment/criticalpg.aspx>.

¹⁵ Ibid.

should be an option for landowners to set the area aside in perpetuity; it would benefit the state and the landowner could extract some value from it.

- CREP program statistics by county:¹⁶
 - o Acres in Pierce County: 3
 - o Acres in Snohomish County: 202.9
 - o Acres in Kitsap County: 18.5
 - o Acres in King County: 22.5

Conservation Reserve Program (CRP)¹⁷

Program overview:

- CRP provides cost-share and/or rental payments to protect environmentally sensitive farmland from erosion. More than 90 percent of applicants receive CRP funding. \$78 million awarded in Washington in 2004 to 6,455 recipients. Farm Service Agency is the lead agency for this program.
- Limitations/Barriers:
 - o CRP has a 25 percent acreage cap on counties (including CREP)- no more than 25% of the cropland of a given county can be enrolled in CRP. In the past a few counties received waivers to exceed the 25% cap, but now counties are being held to that cap. Now producers in some counties (e.g. Douglas County) cannot reenroll in CRP.
 - o Rental rates are based on dry land, so there is little economic incentive to take land out of production.
 - o Some people have the perception that CRP pays farmers not to farm, which has caused pushback from farm equipment and seed dealers because taking land out of production hurts local businesses.
 - o Since land values are very high in Western Washington, it is often not economically feasible for farmers to take land out of production.
- CRP program statistics by county:¹⁸
 - o Acres in Pierce County: N/A
 - o Acres in Snohomish County: 273
 - o Acres in Kitsap County: 19
 - o Acres in King County: N/A

REGULATORY AND VOLUNTARY PROGRAMS

Critical areas are one method in which counties regulate agricultural land and environmental preservation. Beyond regulatory measures, counties and other agencies create non-regulatory approaches to environmental protection and farmland preservation. These voluntary approaches differ according to the stakeholders of the jurisdiction. These programs are examples of county-based efforts that demonstrate environmental protection and regulation. It is not an extensive list but attempts to provide examples of county efforts.

¹⁶ Born, Branden and Alon Bassok, "Acreage Enrolled in CREP (Conservation Reserve Enhancement Program) and Other Conservation Program Descriptions," William D. Ruckelshaus Center, September 19, 2008, 7.

¹⁷ Kilbane, "Summary of Expert Interviews on conservation Districts and Incentive Programs," William D. Ruckelshaus Center, June 1, 2009.

¹⁸ Born, Branden, "CREP"

Water Resource Inventory Areas (WRIAs)

Because of the many factors discussed in the previous section, restoration of salmon populations is both critical and challenging. The Water Resources Act of 1971, Chapter 90.54 of the Revised Code of Washington established Water Resource Inventory Areas (WRIAs) to develop natural resource and salmon recovery planning at the appropriate watershed scale. County governments are also involved in salmon restoration, and in many cases, one county acts as the lead entity for WRIA planning. The following table lists the WRIAs that are at least partly within each county. However, WRIAs are largely planning organizations for salmon restoration, not managers of programs or policy to meet the needs of agricultural interests.

Table 6-1: WRIAs by County

County	WRIAs
King	7, 8, 9, 10, 15, 38, 39, 45
Kitsap	6, 8, 15, 16, 17
Snohomish	3, 4, 5, 6, 7, 8, 15, 45, 47
Pierce	10, 11, 12, 15, 26, 38

Source: "Water Resource Inventory Areas by County", MSRC, accessed February 10, 2011, <http://www.mrsc.org/Subjects/Environment/esa/esa-what2.aspx>.

Snohomish County

The Sustainable Lands Strategy (SLS) is a recent (2010) public participation effort begun in Snohomish County working for resolution of environmental and agricultural issues. Agricultural interests are concerned that environmental restoration projects will result in the uncompensated loss of agricultural productivity, while restoration interests are stymied in their efforts to restore critical ecological processes and fish and wildlife populations.¹⁹ SLS brings together agricultural stakeholders, members of the tribal community, and government staff to develop standardized processes in assessing the placement of environmental mitigation projects.

As of September 2010, SLS has determined a new permitting policy amended in the Snohomish County Comprehensive Plan. This proposal would require that proponents of habitat projects on GMA designated farmland zoned Agriculture-10 or Rural 5 obtain a Planning and Development Services (PDS) Habitat Restoration Permit using one of three review tiers, depending of the size and significance of impact. Each category would have defined requirements and thresholds. A Tier 3 project would have the biggest impact to agriculture and thus the most requirements and review. A Tier 1 project would be one that had no or little impact to agriculture, and PDS permit review would be limited to ensuring the project adhered to the requirements in the newly developed code.²⁰

The Snohomish County Conservation District offers voluntary programs for farmers to engage mitigation efforts. Several initiatives of the program include Low-Impact Development (LID) education and stormwater management. Low-impact development slows water runoff, which gives soils and plants time to treat and filter water before it reaches streams.²¹ In particular, the District offers compiles information on services that help land owners develop rain gardens, permeable surfaces, rain water collection, and many other LID projects.²²

¹⁹ Snohomish County, July 19, 2010, "Sustainable Lands Strategy – Draft Problem and Opportunity Statement," http://www.co.snohomish.wa.us/documents/County_Services/FocusOnFarming/SustainLands/opportunity0710.pdf.

²⁰ Snohomish County, September 19, 2010, "Habitat Restoration Permit on GMA designated farmland that is zoned Agriculture-10 or Rural-5," http://www.co.snohomish.wa.us/documents/County_Services/FocusOnFarming/SustainLands/habitat0910.pdf.

²¹ Snohomish County Conservation District, "Low-Impact Development," accessed March 1, 2011, <http://snohomishcd.org/managing-stormwater/low-impact-development/>.

²² "Snohomish County Conservation District, "Low Impact Development Contacts – Local Contacts," accessed March 1, 2011, <http://snohomishcd.org/managing-stormwater/SCD%20LID%20Resources%20List%20-%20REVISED%20>

Pierce County

The Pierce County Conservation District assists with farmers in implementing best management practices. Through conservation planning, the landowner receives guidance on pasture rotation, fencing design, gutters & downspouts, planting of native trees, and waste storage designs.²³

In an on-going project, Pierce County planners work with Washington Department of Fish and Wildlife (WDFW) and University of Washington to implement bio-diversity planning. The goal of this work is to preserve those areas that host a range of species through open space corridors. In Pierce County, the Pierce County Biodiversity Alliance (PCBA) has identified areas of particular concern, the Lower White River and the Crescent Valley. The PCBA has been integral to assessing the biodiversity of these regions as well as identifying opportunities for land land-owner education and land acquisition.²⁴ This program has helped land owners and farming interests work towards the preservation of bio-diverse regions and improve ecological integrity.

King County

Like Snohomish County, King County has identified permitting processes and environmental regulations that frequently cause problems for farmland operators. The Department of Natural Resources and Parks presented high priority changes to King County regulations in the 2009 FARMS Report. Several of these priorities are included below:

- Farmworker housing;
- Farm pads large enough to accommodate future expansion of the agricultural operation;
- Redefine wastewater/sewage from on-farm processing so that it can be used for irrigation and not be considered "industrial wastewater";
- Milking parlors and other farm infrastructure on farm pads;
- Beavers and removal of beaver dams that are causing drainage problems.²⁵

In addition to regulatory changes, King County has offered funding for farmers. The Conservation District in King County offers the Land-Owner Incentive Program (LIP) which provides farm operators that wish to implement best-management practices that improve soil and water quality.²⁶

Kitsap County

Like other Conservation Districts, the Kitsap Conservation District and the County Surface and Stormwater program offer grants to landowners that own land adjacent to streams or shoreline.²⁷

Kitsap County made steps towards improving Best Available Science (BAS) for critical areas in its habitat by creating the East Kitsap nearshore Habitat Assessment and Restoration Prioritization Framework. These effort developed science-based protocol for determining priorities and strategies that improve ecosystem functions.²⁸ Investing in BAS improves the quality of environmental protection, and tailoring BAS land use decisions in habitat specific regions can ensure a greater degree of success in mitigating environmental impact.

SEPT%202010.pdf.

²³ Pierce County Conservation District, "Services," accessed March 1, 2011, <http://www.piercecountycd.org/services.html>.

²⁴ Pierce County, "Pierce County Biodiversity Planning," accessed March 1, 2011, <http://www.co.pierce.wa.us/pc/services/home/property/pals/other/biodiversity.htm>.

²⁵ Dyckman, Claire, "2009 FARMS Report Appendix N - Regulations," King County Department of Natural Resources and Parks," (2009), <http://your.kingcounty.gov/dnrp/library/water-and-land/agriculture/future-of-farming/appendices/n-agriculture-friendly-regulations.pdf>.

²⁶ King Conservation District, "Farm Management Services," accessed March 1, 2011, http://www.kingcd.org/pro_far.htm.

²⁷ Kitsap Conservation District, "Stream and County Restoration Grants for 2011," <http://kitsapcd.org/programs/stream-and-shoreline-restoration-grants-for-2011> (accessed March 1, 2011).

²⁸ Kitsap County Community Development, "East Kitsap County Nearshore Habitat Assessment and Restoration Prioritization Framework," accessed March 8, 2011, <http://www.kitsapgov.com/dcd/nr/nearshore/default.htm>

TRIBES OF THE CENTRAL PUGET SOUND

Federally-Recognized Tribes

The following section introduces the contributions of federally-recognized tribes within the PSRC region to the area food system habitat. Area tribes play an integral role in the cultivation and habitat development of the fish and shellfish.

In *United States vs. Washington*, thirteen Western Washington tribes pursued the courts for recognition of their rights to salmon. Federal Judge Boldt ruled in 1974 that fourteen treaty tribes in Western Washington have rights to salmon and fishing grounds. Effective from the Boldt Decision, recognized tribes can take up to half of the annual catch.

The majority of the tribes featured in the following section operate environmental and economic programs. Environmental programs improve fish habitat and water quality. Economic programs moderate fish catches and promote tribe-based seafood production/marketing. Many of these tribes run these programs through a department of natural resources (DNR) that is individual to the tribe and advances its conservation efforts.

Suquamish- Kitsap County

Department of Natural Resources:

- Water Resources: Water Resources addresses water rights issues on the Reservation, measures rainfall, and participates in stream surveying. They also provide insight into hydrogeology of proposed building sites;
- Forestry: The Forestry Program offers advice on dangerous trees, issues wood-cutting permits, and directs timber sales from small to large projects;
- Realty: DNR's Realty Program handles fee to trust conversions, partitions, gift deeds, and easements. They also track allotments, legal descriptions, and other related information;
- Utility Program: The Utility Program is responsible for water sampling, performs daily chlorination testing of well sites in Tribal housing areas, and offers advice and training to private well owners to take their own samples.²⁹

Fisheries Programs:³⁰

- Fin Fish;
- Shell Fish;
- Salmon Enhancement;
- Salmon Recovery;
- Environmental Program (habitat protection);
- Tribal Enrollment;
- Archaeology and Historic Preservation Program.

²⁹ Suquamish Tribe, "DNR Programs," accessed March 8, 2011, <http://www.suquamish.org/Departments/DNR.aspx>.

³⁰ Suquamish Tribe, "Suquamish Fisheries Department," accessed March 8, 2011, <http://www.suquamish.org/Departments/Fisheries.aspx>.

Suquamish Sea Foods Enterprise

- This program works with divers and fishermen of the Suquamish Tribe in addressing issues of safety, regulation and business development.

Port Gamble S'Klallam- Kitsap County

Department of Natural Resources

- **Forest Practices:** Under the Timber, Fish, and Wildlife/Forest and Fish agreements, the Tribes play an active role in reviewing and “watchdogging” forest practices that have the potential to impact downstream fish and wildlife habitat. The Port Gamble S'Klallam Tribe works cooperatively with state agencies and timberland managers to ensure Tribal Treaty resources are not compromised by commercial logging and road-building activities. This work involves reviewing individual forest practice applications, conducting on-site review, and participating in inter-disciplinary stakeholder meetings.³¹
- **Development review:** The Tribe’s management area lies in the fast-growing region of west Puget Sound. Because past residential and commercial development have compromised the health and integrity of the Tribe’s Treaty-protected fish, wildlife, and shellfish resources, we are active in reviewing new development proposals to ensure no further habitat loss or degradation. The Tribe’s Natural Resources Department scrutinizes and comments on those development proposals that threaten Treaty resources.³²
- **On-reservation land use planning and review:** Natural Resources staff also assist with the design and review of on-reservation development. At present, we are actively participating in an effort to update the Tribe’s original 25-year old land use plan and continue to provide the Planning Department with technical review of development proposals to protect water quality and safeguard fish and wildlife habitat.³³
- **Forest and Fish Adaptive Management:** Under Washington State’s Forest and Fish agreement, the Tribes are active participants in an adaptive management process to validate and refine forest practice standards to ensure that fish and wildlife resources are adequately protected. The Port Gamble S'Klallam Tribe works actively with other Tribes, as well as the Northwest Indian Fisheries Commission (as link), in this effort. Our current activities include: water type verification surveys (link to WT Ludlow water typing webpage), an Olympic Peninsula-wide study evaluating new Forest and Fish riparian management prescriptions, and stream temperature and monitoring.³⁴
- **Watershed Assessments:** Natural Resources staff members also lead independent watershed assessments and participate in multi-stakeholder efforts, such as the Washington Conservation Commission’s salmonid limiting factors analyses (or LFAs). Currently, the Tribe is engaged in a project to map and assess salmon habitat in the Dosewallips River combining remote sensing technologies (high-resolution LIDAR

³¹ Port Gamble S'Kallam Tribe, “Environmental Review,” accessed March 11, 2011, <http://www.pgst.nsn.us/natural-resources/habitat/environmental-review>.

³² Ibid.

³³ Ibid.

³⁴ Port Gamble S'Kallam Tribe, “Assessment and Monitoring,” accessed March 11, 2011, <http://www.pgst.nsn.us/natural-resources/habitat/assessment-and-monitoring>.

and digital imaging) with conventional ground surveys. Another staff focus area is the recovery and use of archival land survey and navigation charts to reconstruct historical habitat conditions in Hood Canal. Tribal Natural Resources staff members are active participants in a Hood Canal Coordinating Council-led 'monitoring collective' to update and refine our habitat knowledge base for planning and implementing salmon recovery.³⁵

- **Watershed Planning:** Natural Resources staff participate in WRIA 15 Kitsap Peninsula and WRIA 17 Quilcene-Salmon (east Jefferson County) watershed planning units. These multi-stakeholder planning processes are focused on providing for future water use and conservation while safeguarding aquatic ecosystems and water quality.³⁶
- **Salmon Recovery Planning:** The Tribe is an active participant in Hood Canal Coordinating Council (HCCC),³⁷ an organization composed of three counties (Kitsap, Jefferson, and Mason), two tribes (Skokomish and Port Gamble S'Klallam), as well as other state/federal agencies and citizens groups. The HCCC prioritizes and disperses over \$2 million dollars annually for salmon restoration across their planning area. Natural Resources staff members provide technical input and support to Tribal Councilwoman, Marie Hebert, currently the HCCC board chair. In addition, the Tribe serves as a restoration partner working on a variety of projects around Hood Canal. This includes: the multi-stakeholder Hood Canal Salmon Sanctuary working to secure conservation easements for sensitive riparian environments, as well as various riverine and estuarine restoration efforts in the Dosewallips and Big/Little Quilcene watersheds.³⁸

Stillaguamish- Pierce County

Department of Natural Resources

- **Habitat Recovery:** The Natural Resource Department engages in a variety of restoration activities to aid in salmon recovery. These include revegetating riparian buffers, wetland restoration, depositing large woody debris (LWD) in streams and rivers, redirecting or reopening stream channels, installing bridges or fences, and amending culverts inaccessible to migrating or juvenile fish.³⁹
- **Water Quality Data Collection:** Currently, water quality samples are collected on a quarterly basis. Water quality data such as temperature, conductivity, dissolved oxygen, turbidity, total suspended solids, alkalinity, hardness, and fecal coliform are among the parameters the Stillaguamish Natural Resources Department collects and shares with other agencies.⁴⁰
- **Outreach and Education:** Outreach also involves meeting and consulting with landowners about land-use and water quality concerns. They arrange riparian plantings

³⁵ S'Kallam Tribe, "Assessment and Monitoring," accessed March 8, 2011, <http://www.pgst.nsn.us/natural-resources/habitat/assessment-and-monitoring>.

³⁶ S'Kallam Tribe, "Watershed Planning," accessed March 8, 2011, <http://www.pgst.nsn.us/natural-resources/habitat/watershed-planning>.

³⁷ "Hood Canal Coordination Council," accessed March 19, 2011, <http://hccc.wa.gov/>.

³⁸ Ibid.

³⁹ Stillaguamish Tribe, "Department of Natural Resources," accessed March 8, 2011, <http://www.stillaguamish.nsn.us/restoration.htm>.

⁴⁰ Stillaguamish Tribe, "Water Quality Program," accessed March 8, 2011, <http://www.stillaguamish.nsn.us/waterquality.htm>.

and help landowners apply for various government programs to assist landowners conservation, such as CREP (Conservation Reserve Enhancement Program).⁴¹

- Hatchery Programs: The Stillaguamish Tribe has voluntarily chosen to not fish for Chinook salmon since 1980. In 1978 Stillaguamish Tribal Hatchery opened operations as a restoration facility for the Chinook and Coho salmon to rebuild diminished runs. The tribe is responsible for releasing 200,000 wild origin Chinook back into the river system every year. The National Marine Fisheries Service (NMFS) has recently recognized the Tribe's Chinook Natural Stock Recovery Program as essential for the recovery of Endangered Species Act listed Puget Sound Chinook. The tribal Chinook program is one of only six out of 100 hatchery programs that NMFS has acknowledged as critical for recovery.⁴²

Puyallup- Pierce County

Environmental Contributions

- The Puyallup Tribe works with Water Resources Inventory Areas (WRIAs) 10 and 12 in a shared salmon strategy. The groups work towards habitat management and fish monitoring have been launched in rivers, tributaries, floodplains, and other riparian habitats.⁴³

Snohomish- King County

Environmental Contributions

- Water Quality Programming: The program protects public health and welfare, enhances the quality of water resources on Tribal lands, provides protection for fish, shellfish and wildlife.⁴⁴

Muckleshoot- King County

Environmental Contribution

The Muckleshoot Tribe operates the Keta Creek Fish Hatchery on the White River, and it participates in a variety of habitat preservation efforts.

⁴¹ Stillaguamish Tribe, accessed, March, 8, 2011, <http://www.stillaguamish.nsn.us/education-outreach.htm>.

⁴² Stillaguamish Tribe, "Outreach and Education Activities, Stillaguamish Tribal Hatchery," accessed March 8, 2011, <http://www.stillaguamish.nsn.us/hatchery.htm>.

⁴³ Shared Salmon Strategy for Puget Sound, "Puyallup/White and Clover/Chambers (WRIAs 10 and 12) Shared Strategy Feedback for Decision Makers," October, 11, 2004, <http://www.sharedsalmonstrategy.org/watersheds/feedback-letters/Puyallup.pdf>.

⁴⁴ An Act Relating to Surface Waters Management, Tribal Council Act 6-1, Section 2.0, (2008), <http://www.snoqualmiation.com/Tribal%20Code/Surface%20Water%20Code.6.1.Codified.pdf>

Tulalip- Snohomish

Environmental Contributions

- Hatchery Services: The Bernie Kai-Kai Gobin Hatchery is operated by the Tulalip Tribes and located on the Tulalip reservation near Marysville, Washington.⁴⁵
- Shellfish Monitoring: The Tulalip Tribes work cooperatively with the State of Washington to co-manage the shellfish resource. Management agreements and harvest plans are developed to preserve, protect and perpetuate shellfish resources while providing equal sharing of allowable harvest. The Tulalip Tribes conduct several types of biological assessments and monitoring. Clam population surveys are conducted on Tulalip Tribal property, private tidelands and cooperatively with the State of Washington. This information is used in the conservation management of the resources. In September 1999, tribal divers were trained to do geoduck surveys and have completed surveys in the North Sound region. Crab and shrimp tests are also conducted to better manage the fishery.⁴⁶
- Land Use Regulation Enforcement: The Timber, Fish and Wildlife Program (TFW) works to enforce regulations on land use that protect habitat.

Non-Recognized Tribes⁴⁷

These tribes are those who have appealed for federal recognition but have not yet received it. Information regarding these tribes is available online. These tribes represent a significant cultural aspect of the PSRC member-counties, but they do not operate environmental or fishery programs.

Tribes	County
Duwamish Tribe	King
Kikiallus Indian Nation	King
Snohomish Tribe	Snohomish
Steilacoom Tribe	Pierce

NEXT STEPS

The relationships between the environment and the food system are complex. The preceding section introduces persistent problems for environmental systems and agricultural stakeholders. Additionally, it provides examples of regulations and voluntary programs.

As the RFPC moves forward, further research may be done to address the following issues:

- Environmental relationships do not follow county or regional boundaries. Since environmental issues occur between jurisdictions, greater research will have to be done to determine the most effective means of coordination across boundaries.
- Counties and agricultural interests create strategies for negotiating regulations. What approaches are most effective for balancing environmental and other goals?

⁴⁵ Tulalip Tribe, "Shellfish," accessed March 8, 2011, <http://www.tulalip.nsn.us/htmldocs/shellfish.htm>.

⁴⁶ Ibid.

⁴⁷ Washington State School Directors Association, "Tribal History and Culture Project," accessed March 8, 2011, wssda.org/wssda/WebForms/En-Us/.../04thc_toolkit_list_of_tribes.doc.

Guidance for Greener Restaurants

INTRODUCTION

As various actors in the central Puget Sound region work to sustain and strengthen the area's food system, the restaurant and hospitality industry will play a major role in achieving this blend of environmental, economic, and social goals. Restaurants influence regional food distribution and production demands, use disproportionate amounts of energy compared to other building types, and contribute large amounts of waste. As such, they are important commercial actors in creating a healthy regional food system.

Regional restaurant operators, led by the Seattle Chef's Collaborative, have expressed the desire for voluntary guidelines and resources that help the restaurant and hospitality industry to adopt more sustainable practices. Although some organizations in the United States and abroad have developed restaurant-specific "green" standards or certification systems, Chef's Collaborative seeks a product tailored to the particular needs of the central Puget Sound market.

National data indicates that sustainable practices matter to consumers. According to a 2009 National Restaurant Association survey, 44 percent of consumers are likely to make a restaurant choice based on a restaurant's efforts to conserve energy and water, and 60 percent say they are more likely to visit a restaurant offering food that is environmentally responsible.¹

In association with Chef's Collaborative, the University of Washington Masters of Urban Planning studio plans to develop an information product containing voluntary, practical recommendations for the industry, as opposed to a formalized incentive or rating system. These guidelines may also help to inform the ongoing work of the Puget Sound Regional Council's Regional Food Policy Council.

This initial conditions report serves to set the stage for the final set of guidelines, projected for release by June 2011. Here, we offer data on current conditions and practices in the restaurant industry, with an emphasis on the central Puget Sound region and attempts to link the data to concrete actions by the restaurant industry wherever possible. We also identify opportunities for further research.

What is Sustainability?

The broadest, most commonly used definition of sustainability comes from a seminal 1987 report by the United Nations-convened Brundtland Commission. This report defines sustainable development as meeting "the needs of the present without compromising the ability of future generations to meet their own needs."² The definition of sustainability has been expanded over time and is now generally agreed to include environmental, economic, and social elements.³

The terms "sustainable" and "green" have taken on broad, abstract meanings that can muddle the goals and consequences of practices that receive these labels. This vagueness of terminology risks diluting the meaning of these terms and complicates how businesses, governments, and individuals implement sustainable principles.

¹ Green Seal, Be Green. Be Certified. Ten Questions you should ask about Green Certification (2009), <http://www.greenseal.org/Portals/0/Documents/Standards/GS-46/10questionsaboutgreenrestaurantcertification.pdf>.

² "Report of the World Commission on Environment and Development: Our Common Future," UN Documents: Gathering a body of global agreements, accessed March 10, 2011, <http://www.un-documents.net/wced-ocf.htm>.

³ City of Seattle, Seattle's Comprehensive Plan: Toward a Sustainable Seattle (2005), vi, http://www.seattle.gov/DPD/cms/groups/pan/@pan/@plan/@proj/documents/web_informational/cos_004485.pdf.

Further complicating this picture are allegations in recent years against companies advertising products as environmentally-friendly when in reality they fall short of accepted standards.⁴ This practice, sometimes called “greenwashing” or “green sheen,” has attracted the attention of the Federal Trade Commission, which maintains rules designed to discourage false marketing related to environmental claims.⁵ Programs like the Green Washing Index help consumers evaluate whether environmental marketing claims are accurate and hold businesses accountable to their green advertising.⁶

Existing Green Initiatives for Restaurants and Hospitality

A number of relatively new programs designed to quantify, rate, and encourage sustainable practices in the restaurant and hospitality industry currently exist in the United States and abroad. However, none of these initiatives appears to have taken a dominant foothold or achieved the industry-wide name recognition that, for example, the U.S. Green Building Council’s LEED certification has done in the building industry. Still, these existing incentive and rating programs may offer some lessons in future work on guidelines focused towards the central Puget Sound region. Programs or organizations that have achieved some measure of membership base include:

Green Restaurant Association

Founded in 1990 in San Diego, the Green Restaurant Association (GRA) offers certification standards for restaurants and related businesses in the United States and Canada with a mission of creating “an environmentally sustainable restaurant industry.”⁷ This non-profit organization serves four major client groups: restaurants, consumers, manufacturers, and distributors.⁸ The GRA lists the national Chefs Collaborative and a number of environmental organizations, including the Natural Resources Defense Council and the Environmental Defense Fund, among its endorsers.⁹

Through GRA, restaurants may achieve three levels of ratings — two-star, three-star, and four-star. These ratings rest on points scored in seven categories: water efficiency, waste reduction and recycling, sustainable furnishings and building materials, sustainable food, energy, disposables, and chemical and pollution reduction.¹⁰ Restaurants pay fees, which start at \$300 per year, to undertake the certification process, and fees increase with additional consulting or marketing services.

The influence and recognition of the GRA standard remains unclear at this point. As of March 2011, Washington State counts only two member restaurants: Microsoft’s corporate cafes in Redmond and the National Park Inn Dining Room at Mount Rainier. Some metropolitan areas, such as Boston, New York, and Chicago, have a dozen or more members.

⁴ Meidyatama Suryodiningrat, “Commentary: When CSR is neither Profit nor Public Good,” The Jakarta Post, August 8, 2008, <http://www.thejakartapost.com/news/2008/08/28/commentary-when-csr-neither-profit-nor-public-good.html>.

⁵ Part 260, “Guides for the Use of Environmental Marketing Claims,” accessed March 10, 2011, <http://www.ftc.gov/bcp/grnrule/guides980427.htm>.

⁶ “Greenwashing Index,” EnviroMedia Social Marketing and University of Oregon, accessed March 10, 2011, <http://www.greenwashingindex.com/>.

⁷ “About The GRA,” Green Restaurant Association, accessed March 10, 2011, <http://dinegreen.com/about-us.asp>.

⁸ “GRA’s Four Constituents,” Green Restaurant Association, accessed March 10, 2011, <http://dinegreen.com/constituents.asp>.

⁹ “Organizations the Endorse the Green Restaurant Association,” Green Restaurant Association, accessed March 10, 2011, <http://dinegreen.com/endorsements.asp>.

¹⁰ “Green Restaurant Certification 4.0 Standards,” Green Restaurant Association, accessed March 10, 2011, <http://dinegreen.com/restaurants/standards.asp>.

Sustainable Restaurant Association

A more comprehensive rating system comes from the new Sustainable Restaurant Association (SRA), a non-profit membership organization that offers certifications to restaurants in the United Kingdom. The SRA, launched in 2010, defines sustainability as containing fourteen factors nested in three major components: sourcing, environment, and society.¹¹

Society comprises treating people fairly, community engagement, healthy eating, and responsible marketing. Environment covers attributes related to water saving, workplace resources, supply chain, waste management, and energy efficiency. Sourcing encompasses environmentally positive farming, local and seasonal products, sustainable fish, ethical meat and dairy, and fair trade.

As of February 2011, the SRA had about 250 member restaurants, rated as one-star, two-star, or three-star based on the SRA's audit. To obtain an audit, restaurants pay a one-time joining fee and then sliding fees per quarter, depending on their gross annual business sales.¹²

EPA: Energy Star Program for Restaurants

Through their joint ENERGY STAR incentive program, the US Department of Energy (DOE) and the US Environmental Protection Agency (EPA) offer a special subset of guidelines geared especially to restaurants. This program aims to promote environmentally-friendly practices through emphasizing the cost savings associated with energy-efficient practices. In a guide called Putting Energy Into Profits, ENERGY STAR offers detailed recommendations for restaurants to conserve energy through use of common appliances and practices.¹³

Non-membership-based rating systems and guides

A number of less formal restaurant sustainability rating systems have also sprung up, primarily through the internet, in recent years.

Greenopia

Greenopia, an online service founded by a former advertising executive in southern California, produces a "local guide to green living," with sections devoted to restaurants, cafes, and markets. This online guide says, "companies cannot pay to be included and all listees are included because they met our strict standards of eco-friendliness."¹⁴ As of February 2011, this service recommends 44 Seattle-area restaurants and rates businesses in more than two dozen metropolitan areas across the United States.

Greenopia's restaurant criteria focus primarily on food quality issues, such as the percentage of certified organic and/or locally grown produce, the percentage of certified organic and free-range/cage-free poultry and eggs, and the percentage of meat or meat substitutes that are certified organic and/or grass fed and raised without hormones or antibiotics. Greenopia also considers secondarily the business's composting, recycling, and energy efficiency programs.

¹¹ "What is Sustainability?," Sustainable Restaurant Association, accessed March 10, 2011, http://thesra.org/index.php?option=com_content&view=article&id=52&Itemid=58.

¹² "Restaurant Membership Fees," Sustainable Restaurant Association, accessed March 10, 2011, http://thesra.org/index.php?option=com_content&view=article&id=191&Itemid=137.

¹³ US Environmental Protection Agency, ENERGY STAR Guide for Restaurants: Putting Energy into Profits (2010), http://www.energystar.gov/ia/partners/publications/pubdocs/restaurants_guide.pdf.

¹⁴ "About Us," Greenopia: Experts on Green Living, accessed March 10, 2011, http://www.greenopia.com/SE/greenopia_area.aspx?section=about_us.

Eat Well Guide

Another online service, the Eat Well Guide, provides a directory of “fresh, locally grown and sustainably produced food” in the United States and Canada.¹⁵ This guide does not rate restaurants in any quantifiable way but allows inclusion of businesses that it considers to be “sustainable, organic, locally-sourced or distributed, and ethically-produced.” The site’s authors note that they may also choose to include listings that “have a positive impact on our food system and/or provide healthier choices in under-served communities.”

Eat Well currently lists about 100 restaurants within 20 miles of downtown Seattle, although it does not generally explain specific reasons for their inclusion. The site’s producers find listings through user suggestions, staff research, and partnerships with about 50 food- and farming-related non-profit associations.¹⁶

Some private citizens and bloggers have taken to developing their own rating systems. At a site called Sustainable Sustenance, two Phoenix-area architects are compiling a list of sustainable restaurants in their area. Their metrics include those common to many systems, such as food sourcing, energy consumption, building materials, and water management. However, they also branch out to other factors, such as proximity to public transit and support for non-motorized transportation, density of the area where the restaurant is located, affordability, and “community impact,” which they define as community art, community service and outreach.¹⁷

Other systems are more specialized. A website called Fish2Fork uses guidelines published by the Monterey Bay Aquarium’s Seafood Watch to rate the sustainability of a restaurant’s seafood offerings.¹⁸ Part rating system, part anti-overfishing campaign, the service markets itself as the first “to rate restaurants that serve fish not only for the quality of their food but also for the effect they are having on the seas and on marine life.”¹⁹ The site invites both restaurant operators and consumers to fill out questionnaires about seafood-serving restaurants and does not appear to charge a fee for its rating services.

ENVIRONMENTAL STANDARDS FOR FOOD SERVICE

Development of environmental standards geared specifically to restaurants is also a relatively new endeavor. The past two years have brought at least two major initiatives that specifically address environmental standards for the restaurant and foodservice industry.

Green Seal

Green Seal, founded in 1989, was among the first US non-profit organizations formed to offer environmental certifications for a broad spectrum of products, including household cleaning products, paints, and hand soaps.

Their newest endeavor, released in 2009, is the Restaurant and Food Services Standard, called GS-46.²⁰ Restaurants that achieve this standard “serve responsibly farmed and raised food and

¹⁵ “Find Good Food,” Eat Well Guide, accessed March 10, 2011, <http://www.eatwellguide.org/i.php?id>About>.

¹⁶ “Partners,” Eat Well Guide, accessed March 10, 2011, <http://www.eatwellguide.org/i.php?pd=Partners>.

¹⁷ “Rating System,” Sustainable Sustenance, accessed March 10, 2011, <http://www.sustainablesustenance.com/rating-system.php>.

¹⁸ “Our Rating System and What it Means,” Fish2Fork, accessed March 10, 2011, <http://www.fish2fork.com/ratings-system.aspx>.

¹⁹ “What is fish2fork?,” Fish2Fork, accessed March 10, 2011, <http://www.fish2fork.com/about-fish2fork.aspx>.

²⁰ “About Green Seal,” Green Seal, accessed March 10, 2011, <http://www.greenseal.org/AboutGreenSeal>.

have minimized their waste; implemented energy efficiency and conservation measures; reduced their water use and restricted what goes down the drain in wastewater; minimized use of hazardous substances; and established a policy to purchase green products.”²¹

To develop the standards, Green Seal conducted, by their estimation, the first life-cycle study of restaurants and food services. A detailed document instructs restaurants on their potential cost savings through adopting the minimum practices recommended by Green Seal.²² In order to apply for a Green Seal certification, restaurants must file a request with Green Seal and pay a sliding scale of fees based on their annual revenues.²³

Green Seal employs environmental scientists to develop its certification programs and uses procedures reviewed by a number of independent, third-party standards bodies.²⁴ As a result, Green Seal says its standards are on par with other widely recognized standards, such as the US Department of Agriculture’s Organics Standards Board and the US Green Building Council’s LEED certification system.²⁵ Green Seal also provides standards for food service packaging and for paper products used in food manufacturing.²⁶

National Restaurant Association Conserve Initiative

In 2010, the National Restaurant Association, the major trade association and lobbying group representing nearly one million restaurants and food service outlets nationwide, launched a program called Conserve which was designed to encourage environmentally friendly practices. The initiative and its accompanying Greener Restaurants program do not offer any sort of ratings or certifications but seek to educate restaurateurs on “positive changes” that apply to their individual situations.²⁷

The Conserve Initiative takes a more narrow view of sustainability, offering tips only on the environmental side of the equation.²⁸ It suggests basic, easier-to-implement tasks such as changing lightbulbs from incandescent to more energy-efficient compact fluorescent ones, seeking recycling programs for bar glass, turning off cooking hoods and lights when not in use, fixing water leaks, and training employees on such practices.

aspx.

²¹ “Green Seal Standards: Restaurants and Food Services,” Green Seal, accessed March 10, 2011, <http://www.greenseal.org/GreenBusiness/Standards.aspx?vid=StandardCategory&cid=10>.

²² Green Seal, Green Seal-Certified Restaurants: Environmental Impact Sources, Solutions and Savings, (2009), <http://www.greenseal.org/Portals/0/Documents/GS-46%20Impact%20Sources%20Savings%20and%20Solutions.pdf>.

²³ Green Seal, Environmental Standard for Restaurants and Food Services (GS-46) Certification Fee Schedule, last modified August 19, 2009, http://www.greenseal.org/Portals/0/Documents/Certification/gs46_certification_fees.pdf.

²⁴ “Qualification and Accreditation,” Green Seal, accessed March 10, 2011, <http://www.greenseal.org/About-GreenSeal/QualificationsAccreditation.aspx>.

²⁵ Green Seal, Certifying a Restaurant (2009), <http://www.greenseal.org/Portals/0/Documents/Standards/GS-46/GS-46StepstoCertification.pdf>.

²⁶ “Finding Green Products and Services: Food Packaging (GS-18, GS-35),” Green Seal, accessed March 10, 2011, <http://www.greenseal.org/FindGreenSealProductsandServices.aspx?vid=ViewProductDetail&cid=13>.

²⁷ “Clarifying Derogatory Blog Posts About Us,” National Restaurant Association: Conserve: Solutions for Sustainability, An Environmental Initiative, May 18, 2010, http://conserve.restaurant.org/news/news_20100518_recent_blog_posts.cfm.

²⁸ “Top 10 Tips,” National Restaurant Association: Conserve: Solutions for Sustainability, An Environmental Initiative, accessed March 10, 2011, <http://conserve.restaurant.org/conservenow/tentips.cfm>.

LEED

Leadership in Energy and Environmental Design (LEED) is a green building certification system developed by the US Green Building Council (USGBC). LEED has nine different rating systems divided by building typology: New Construction, Existing Buildings, Commercial Interiors, Core and Shell, Schools, Retail, Healthcare, Homes, and Neighborhood Development. The rating systems are designed to improve building and operation performance by promoting healthy, durable, affordable, and environmentally sound practices, and taking into account the life cycle of the resources used in construction.²⁹ For a standalone restaurant, LEED may help achieve sustainability through building design by regulating building materials and improving indoor air quality.

Although LEED covers many different buildings systems, it does not begin to start tackling the unique issues that restaurants encounter. For example, 35 to 50 percent of restaurants lease their buildings, according to the National Restaurant Association.³⁰ These leases may impose limits on the extent to which restaurant operators can control their building design and appliance choices.

At present, very few restaurant buildings have obtained LEED certification. Currently, of the approximately 300 LEED-certified buildings in the state of Washington, only about five appear to be food-service buildings.³¹ A pizza restaurant in the Capitol Hill neighborhood of Seattle claimed to be the state's first LEED-certified restaurant when it opened in 2008.³²

WHAT MAKES A GREEN RESTAURANT?

Based on a study of these existing rating systems, a central Puget Sound green restaurant initiative may include guidance on a number of fronts, including food production and sourcing approaches, environmental practices, and social and economic factors. We expect that stakeholders from Chef's Collaborative will provide further direction on the factors to prioritize for the final guideline documents.

The following sections give a brief overview of existing guidance and data in the following areas:

- Food Sourcing and Production
- Energy
- Water
- Waste
- Economic and Social Factors

²⁹ "LEED Rating Systems," US Green Building Council, accessed March 7, 2011, <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222>.

³⁰ National Restaurant Association and Deloitte & Touche LLP, Restaurant Industry Operations Report (2010), <http://www.restaurant.org/esdpdf/OpsReport2010.pdf>.

³¹ "Certified Project Directory," US Green Building Council, accessed March 13, 2011, <http://www.usgbc.org/LEED/Project/CertifiedProjectList.aspx>.

³² "Pizza Fusion to Open Washington's First LEED Certified Restaurant in Seattle," April 28, 2008, <http://www.franchisewire.com/article.php?id=2532>.

FOOD SOURCING AND PRODUCTION

The restaurant industry has clearly exhibited an interest in sustainable food sourcing practices in recent years. According to a survey of more than 1,500 chefs conducted by the National Restaurant Association, the nation's largest restaurant and foodservice lobbying group, "locally sourced meats and seafood," "locally grown produce," and "sustainability" led the list of top 20 restaurant trends for 2011. Items such as "sustainable seafood," "locally produced wine and beer" and "organic produce" are also on the list.³³ We may help to propel these efforts by better defining terms like "local" and "sustainable" in the context of restaurants in our region.

Local Food

There are approximately 185,000 acres of designated farmland within the four-county region; however, not all of it is used for food production. Of that total, approximately 75,000 acres are active cropland, but much of it is dedicated for production of forage crops for livestock. Vegetables harvested for sale make up between 3 and 11 percent of farm production within each of the four counties of the central Puget Sound. In addition to vegetable crops, meat and dairy products constitute a large portion of the local agricultural market. There has been a trend towards greater numbers of and smaller farms in the region, many of which focus on specialty products that may be of more interest to restaurant buyers.

In addition to farmed products, fisheries are a significant local food source in the central Puget Sound and represent around one-quarter of all state fisheries in the state. Shellfish and salmon make up the majority of locally-landed food products. See the Production section of this report for further details and resources about the regional food production economy.

These regional characteristics provide important opportunities for restaurants to access locally-produced food. Smaller-scale farms are more likely to value direct and local sales to businesses, and forging relationships between those farmers and restaurants could have economic benefits for each industry. Similar relationships are possible between smaller-scale fishers and restaurants. Our local fishery economy provides the opportunity not only for locally-sourced food, but also extremely fresh seafood offerings within restaurants.

Many restaurants are already utilizing these local food sources. One of the aims of this project is to facilitate the development of more farm-to-restaurant connections by distributing information to restaurant operators about local food offerings. Fortunately, several sources of this information already exist.

The Cascade Harvest Coalition is a non-profit organization that works to provide a direct connection between consumers and producers in Washington. They provide directories of farms and markets where consumers can pick up their local food. The Puget Sound Fresh program is one of their most successful ventures. That program's goal is to provide consumer education and product identification through labeling products that are produced or grown within the twelve counties that touch the Puget Sound.³⁴ Through their website, users can search for farms and farmers markets based on location, product selection, and farming practices, and they provide a harvest schedule for all crops and animal products. Community supported agriculture (CSA) is another opportunity for restaurants to receive produce from local farmers. Puget Sound Fresh

³³ National Restaurant Association, 2010, "Chef's Survey: What's Hot in 2011", http://www.restaurant.org/pdfs/research/whats_hot_2011.pdf.

³⁴ "Puget Sound Fresh," Cascade Harvest Coalition, accessed March 12, 2011, <http://www.cascadeharvest.org/programs/puget-sound-fresh>.

also provides information on CSAs throughout the region.

With Washington's plentiful rivers and close connection to the Pacific Ocean, salmon and crab have become two of the most prized foods for area consumers. Seattle Chef's Collaborative hosts an annual event called Farmer Fisher Chef Connection, which fosters direct connections between local food producers and consumers. This conference also provides a panel of experts to teach participants how to best utilize opportunities within the Puget Sound region and throughout Washington.³⁵

One issue with getting local food to restaurants is efficient distribution. A few exciting possibilities for improving distribution are placing orders for pick up at farmers markets and development of centralized markets, such as the food hub project proposed in Everett.

Another exciting possibility for local food sourcing is the on-site production of certain items within restaurants themselves. Some local restaurants are already experimenting with this practice, for example, Bastille in the Ballard neighborhood of Seattle. It is not clear if the practice is becoming widespread in the region or what federal and local regulations (e.g., USDA, county health departments) may govern such practices. While unlikely to become a major component for restaurant food sourcing, on-site production may be feasible for some businesses and complements similar interests in urban agriculture that have grown throughout the region (see the Production section of this report for further information).

Sustainable Food: Organics and Production Practices

Food sustainability has been widely associated with a growing interest in organic agriculture, both within the region and nationally. Consumer access to organic food has increased in recent years, and restaurants are realizing the potential commercial benefits for providing organic foods within their menu. The Organics Food Production Act of 1990 created the fifteen-member National Organics Standards Board, composed of farmers/growers, handlers/processors, retailers, scientists, consumer/public interest advocates, environmentalists, and one USDA accredited certifying agent. Their goal is to "make recommendations about whether a substance should be allowed or prohibited in organic production or handling, to assist in the development of standards for substances to be used in organic production, and to advise the Secretary" of Agriculture on implementation.³⁶

The organic revolution in agriculture has spawned many other groups. One example is the National Sustainable Agriculture Coalition, which consists of grassroots organizations advocating "for federal policy reform to advance the sustainability of agriculture, food systems, natural resources, and rural communities." Within their website, one can find a wealth of resources for farmers and restaurateurs including multiple guides to sustainable agricultural practices, how to prepare farmers for future impacts due to climate change, and list of farms and groups that practice sustainable farming techniques.³⁷

Washington State University Agriculture Extension is a local example of farmers and educators working together to bring research-based information to "improve the productivity, efficiency, and

³⁵ "Farmer Fisher Chef Connection," Seattle Chefs Collaborative, accessed March 10, 2011, <http://seattlechefs.org/f2c2.php>.

³⁶ United States Department of Agriculture, National Organic Program, <http://www.ams.usda.gov/AMSV1.0/NOSB> (accessed March 14, 2011).

³⁷ "About Us," National Sustainable Agriculture Coalition, accessed March 10, 2011, <http://sustainableagriculture.net/about-us/>.

safety of products” from the state. They are continually researching new sustainable farming practices and have a dedicated program trying to improve organic production, specifically gardening.³⁸ Restaurants have the potential to do on-site food production, either by growing vegetables on a roof garden or mushrooms in cabinet drawers. WSU extension has a Master Gardener Program staffed by volunteers who help individuals to start their own gardens and guide restaurateurs on the gardening potential of their businesses.³⁹

Despite the growing interest, only 2.5 percent (4600 acres) of the central Puget Sound’s crop production is in organic production, with another 1,700 acres of cropland currently seeking certification. Of the 4,600 acres, only around 2,200 acres are used for crop production, with the remaining used as organic pastureland. Although there is relatively little organic crop production within the region (and within the state), local food distributors offer many organic options. Presumably, much of this food comes from California or from global markets, but more research is necessary on this issue.

Similarly to organics, interest in humanely-treated animal products has also grown recently. The Puget Sound Meat Producers Cooperative is a group of small- and mid-sized farmers and ranchers that aims to “meet the increasing demand for local, safe & humanely-produced meat products.”⁴⁰ They provide a potential connection for restaurants to local producers in the region and also focus on processing and distribution services for farmers and ranchers.

Another resource for sourcing meat products is the Global Animal Partnership (GAP), an organization of farmers, retailers, scientists, and more that share the goal of improving the welfare of animals within the agricultural industry. GAP created “5-Step Animal Welfare Rating Standards” designed to ensure that animals are treated humanely. The standards cover beef cattle, broiler chickens, and pigs, with more to come soon. The unique thing about GAP’s program is that they show the specific value to consumers of humane treatment for animals.⁴¹

These programs along with seafood sustainability measures like the Fish2Fork program (cited earlier in this report) are useful resources for restaurant operators seeking more sustainable food sources.

Future Research

- Compile a list of professional associations/resources/websites that may help chefs looking to buy local produce, meat, etc., e.g., Cascade Harvest, Puget Sound Food Network.
- Examine the current distribution system from local food producers to restaurants.
- Understand where organic food products are currently coming from and what opportunities exist to increase the amount of organic foods produced in the region.
- Examine the feasibility of on-site gardens or food production for restaurants, providing case studies and best practices (possible case study: Bastille in Ballard).

³⁸ Washington State University Extension, “Agriculture,” <http://extension.wsu.edu/agriculture/Pages/default.aspx>. (accessed March 10, 2011).

³⁹ David Gibby, et al., “The Master Gardener Program: A WSU Success Story Early History from 1973,” Washington State University Extension, updated 2008, accessed March 12, 2011, mastergardener.wsu.edu/documents/MasterGardenerProgramHistoryrev2009.8.pdf.

⁴⁰ Puget Sound Meat Producers Cooperative, FAQ, <http://www.pugetsoundmeat.com/FAQ.html> (accessed March 12, 2011).

⁴¹ Global Animal Partnership, <http://www.globalanimalpartnership.org>, (accessed March 12, 2011).

ENERGY

Restaurants are the most energy-intensive commercial users in the United States, according to a report by the Energy Information Administration of the Department of Energy (DOE).⁴² Although food service buildings account for only around 6 percent of the energy usage by commercial buildings, expenditures for energy in food service buildings average \$3.56 per square foot, nearly three times that of other commercial industries. Reducing energy usage in restaurants is not only an important component of environmental sustainability within the industry but also can achieve major cost savings for restaurant operators.

Although the exact breakdown of energy usage in restaurants will vary from case to case, the major items can be described in five broad categories: (1) cooking, (2) refrigeration, (3) Heating, Ventilating, and Air Conditioning (HVAC), (4) lighting, and (5) water heating and sanitation. The DOE reports cooking (32 percent of total energy use), space heating and cooling (20 percent), and refrigeration (13 percent) as the top three energy expenders.⁴³ A more recent study by the San Diego Gas and Electric Company lists cooling systems (40 percent), cooking and refrigeration (31 percent), and lighting (13 percent) as the top energy usage activities.⁴⁴

Through the ENERGY STAR® program, the DOE and US Environmental Protection Agency (EPA) publish a guide geared specifically for restaurants.⁴⁵ The guide discusses potential energy-cost savings from utilizing ENERGY STAR®-certified appliances and provides a practical breakdown appliance-by-appliance. It also emphasizes energy savings based on restaurant operations, such as turning down stoves and ovens during off-peak times and proper equipment maintenance.

Each of these information resources may be used individually or in summarized forms in the compilation of a guide for central Puget Sound restaurant operators. The EPA also provides several tools and calculators to help individual businesses determine their energy usage and prioritize areas for reduction.

One important thing to note is that the initial investment in energy-efficient equipment is often significantly higher than for less efficient equipment. This issue is addressed within these energy guides, as well as by equipment manufacturers themselves, by noting long-term (annual) cost savings from which a “break-even” point can be calculated for businesses considering such an investment. Local governments and utilities sometimes provide incentives for businesses to buy “sustainable” equipment, and the EPA provides a “Rebate Locator” to assist businesses in finding those opportunities.⁴⁶

Puget Sound Energy, the energy utility for much of the four-county region, provides grants and rebates for the purchase of wide array of energy-efficient commercial kitchen equipment and lists participating appliance distributors in all four counties. Although this program provides important incentives for restaurants in the region, it should be noted that Puget Sound Energy does not

⁴² “A Look At Food Service Buildings – How Do They Use Energy and The Cost?,” US Department of Energy, last modified January 3, 2001, http://www.eia.doe.gov/emeu/consumptionbriefs/cbecs/pbaweb/site/foodserv/foodserv_howuseenergy.htm

⁴³ Ibid.

⁴⁴ San Diego Gas & Electric, 2007, “Energy Saving Solutions for Restaurants”, <http://www.sdge.com/documents/forms/RestaurantGuide.pdf>.

⁴⁵ US Environmental Protection Agency, 2010, “ENERGY STAR® Guide for Restaurants”, <http://www.energystar.gov/>.

⁴⁶ US Environmental Protection Agency, “Commercial Food Service Equipment Incentive Finder”, http://www.energystar.gov/index.cfm?fuseaction=CFSrebate.CFSrebate_locator (accessed 2/24/11).

serve northern and eastern Snohomish County. Snohomish County Public Utility District also serves Snohomish County, and while they have incentive programs for individual homeowners, it is not clear that they have similar programs for commercial clients.

Another important component of energy sustainability in restaurants is the potential ability to produce or redistribute energy on site. Installation of energy-producing equipment, such as solar panels, is one obvious example that can be applicable to any sort of business or residential development, including a restaurant. Opportunities more specific to the food industry include production of biofuels from spent cooking oil, use of cooling and ventilation systems that transfer heat from cooking areas to serving and residential areas (in the case of multi-use buildings), the use of direct-solar cooking equipment, and biogas production from food waste sources.

Further research

- In what ways are restaurants in the region currently implementing energy conservation practices?
- What incentive programs for energy-efficiency exist within the four-county region?
- What are some practical opportunities for on-site energy production within our regional context (resources and regulations)?

WATER

Through water conservation, restaurants can trim operating costs while helping to keep water sources safe for future use.

No data on restaurant water use in the Puget Sound region was readily available. However, a study conducted in Tampa, Florida found that restaurants use an average 5,800 gallons of water per day. Water use within restaurants was estimated as 50 percent for kitchen operations, 35 percent for restrooms, 2 percent for irrigation, 1 percent cleaning, and 12 percent for other uses. Restaurants can reduce their water consumption by as much as 12 percent by modifying kitchen and restroom operations.⁴⁷

The Saving Water Partnership, which represents local water utilities in Seattle and King County, offers water conservation guidance geared toward restaurants, including a water cost calculator tool that estimates water cost savings from switching to more efficient technology and procedures.⁴⁸ Through this program and an EPA program called WaterSense, restaurants can obtain rebates on various water-efficient kitchen products.

Opportunities to increase water efficiency include: (1) reducing dripping or leaky faucets and sprayers, (2) insulating hot water pipes, (3) installation of water-saving devices, (4) changing water-use behavior, and (5) reclamation and reuse of water.

The most effective way to conserve water is to accurately monitor and predict its use, i.e., by watching the water meter. This can help restaurant operators learn when and sometimes where water is being wasted. Another important step towards water savings is to retrofit older, inefficient

⁴⁷ "Water Efficiency Checklist for Restaurants," City of Tampa Florida, accessed March 12, 2011, http://www.tampagov.net/dept_water/information_resources/Efficiency_checklists/restaurant_water_efficiency_checklist.asp.

⁴⁸ "Conserve at Work," Saving Water Partnership, accessed March 12, 2011, http://savingwater.org/business_restaurants.htm.

appliances or and install newer equipment. For example, low-flow toilets can save 2 to 5 gallons of water per flush.⁴⁹ In some cases kitchen water may be able to be re-used for toilets and on-site gardening.

The North Carolina Center for Sustainable Tourism has developed a fact sheet that provides restaurants ideas for water conservation techniques. The figure below lists a few potential ways to reduce water consumption within kitchen operations.

Figure 7-1: Water Conservation Techniques for Kitchen Areas

- Kitchen Areas**
- Turn off the continuous flow used to clean coffee/milk/soda beverage island drain trays; clean the trays only as needed.
 - Wash full loads only and turn dishwasher off when not in use.
 - Replace spray heads in dishwasher to reduce water flow.
 - Use water from steam tables to wash down cooking areas.
 - Plan ahead and thaw foods in the cooler instead of using running water.
 - Do not use running water to melt ice.
 - Recycle water where feasible, consistent with state and county requirements.
 - Recycle rinse water from the dishwasher or recirculate it to the garbage disposal.
 - Rinse utensils and dishes in a basin rather than with running water.

Source: North Carolina Center for Sustainable Tourism. Water Conservation Ideas for Restaurants: Water Conservation is Great for the Environment and your Business's Bottom Line!. Accessed March 12, 2011. www.nccommerce.com/NR/rdonlyres/86CF7FD6-84FF-432A-B98B-8404E8177AD0/0/WaterConservationIdeasforrestaurants.pdf.

There are many national programs that are trying to help conserve water sources while maintaining water quality. For instance Food and Water Watch, a non-profit organization, "advocates for common sense policies that will result in healthy, safe food and access to safe and affordable drinking water." Food and Water Watch provides research on the importance of local food systems and resources to help consumers ensure their tap water is safe.⁵⁰

Future Research

- How many restaurants in the region currently use water-conservation techniques, and how much impact do they have on total water savings?

WASTE

Restaurants have the opportunity to reduce both their operating costs and their environmental impacts through reducing the weight of their traditional garbage. One major way to accomplish this goal is by separating recyclable and compostable items.

Existing data suggests that restaurants contribute large amounts of waste to the areas they serve. A study from the New York City Department of Sanitation, for instance, found that restau-

⁴⁹ San Francisco Department of Public Health Green Restaurant Guide, Green Restaurant Guide: Water Conservation, accessed March 12, 2011, <http://www.sfdph.org/dph/files/EHSdocs/Green/Water.pdf>.

⁵⁰ "About Food and Water Watch," Food and Water Watch, accessed March 12, 2011, <http://www.foodandwaterwatch.org/about/>.

rants account for 30 percent of the city's waste stream, mostly through paper and food waste.⁵¹

Specific data on waste management by restaurants in the central Puget Sound region is more difficult to find. In addition, the methods for collecting this data are inconsistent. For instance, Snohomish County reports that food waste composes 13.3 percent of its total waste stream.⁵² Other counties, however, do not distinguish food waste from general "organic" waste, which may also include items like yard debris. Kitsap County, which used Thurston County data as a proxy for its own, found that restaurants contribute about 23 percent of the county's organic waste stream, with the vast majority of that being food waste.⁵³

Pierce County indicates that all organic materials occupy about 27 percent of the total commercial waste stream. At the same time, the county estimates that organic materials occupy nearly 40 percent of the waste stream for waste collection routes with the largest share of food service establishments. In addition, potentially recyclable or compostable materials — paper, glass, plastic, and metal—total nearly half of that waste stream.⁵⁴

One area of growing focus for restaurant waste management is composting. The US Environmental Protection Agency notes the following benefits of composting:⁵⁵

- Decreasing direct trash disposal costs, as composting fees can be lower than landfill or trash burning fees in many areas;
- Decreasing sewer treatment and electricity costs as a result of not disposing food down the drain;
- Conserving space in landfills, reducing harmful greenhouse gases, such as methane, that landfills emit, and allowing potential landfill sites to be replaced with "higher and better" land uses;
- Helping to prevent odors, pests, and fires in large outdoor trash receptacles; and
- Contributing to the creation of nutrient-rich soil for subsequent food production.

Guidance from the EPA suggests that restaurants can save money or break even by composting food scraps rather than disposing of them with traditional trash. Full-service restaurants tend to generate more compostable food waste than do quick-service restaurants because they tend to engage in more food preparation, which generates scraps, and are more likely to have discarded food from meals returned to the kitchen.⁵⁶

Overall, food and yard residue compose 23 percent of the nation's waste stream, according to US Environmental Protection Agency estimates. Washington State estimated its share of organic

⁵¹ "Waste Prevention in the Restaurant Sector," New York City Government, accessed March 12, 2011, http://home2.nyc.gov/html/nycwasteless/html/in_business/tips_business_restaurant.shtml.

⁵² Snohomish County Public Works Solid Waste Management, Comprehensive Solid Waste Management Plan, 44-45, rev. Jan 2004, http://www.co.snohomish.wa.us/documents/Departments/Public_Works/Solid-Waste/Information/complansection2-104.pdf.

⁵³ Kitsap County Department of Public Works and Waste Management Division, Waste Wise Communities: The Future of Solid and Hazardous Waste Management in Kitsap County (2010): 4-5, http://www.kitsapgov.com/sw/pdf/cswmp_final_draft.pdf.

⁵⁴ R. W. Beck, Multi-Seasonal Waste Characterization Analysis, prepared for Pierce County Public Works and Utilities (2010): E-3, <http://www.co.pierce.wa.us/xml/services/home/environ/waste/Waste%20Audit%20Final%20Report.pdf>.

⁵⁵ US EPA, Food Waste Management Calculator 2009, last modified December 16, 2010, <http://www.epa.gov/osw/conserves/materials/organics/food/tools/foodcost.pdf>.

⁵⁶ US EPA, Composting for Restaurants. Composting for Institutions (2008), <http://www.epa.gov/wastes/conserves/materials/organics/pubs/compost.pdf>.

materials at about 25 percent of the waste stream in 2003.⁵⁷

Because of the “cost-prohibitive” nature of separating and collecting food waste, less than 3 percent of this waste stream was being composted as of 2000.⁵⁸ However, this trend appears to be changing, particularly in the central Puget Sound region. For instance, as of mid-2010, about half of Seattle restaurants--or about 1,500 total--had signed up for food-waste collection.⁵⁹ At least some of this activity was spurred by a 2010 Seattle ordinance requiring that food-service establishments use only recyclable or compostable serviceware and packaging. Several regional restaurants and hospitality industry establishments have earned recognition from King County for their commitment to composting and recycling and may serve as examples for others in the industry.⁶⁰

Each county differs somewhat in its composting and recycling offerings for commercial enterprises, which poses potential barriers to uptake of these practices. Businesses in King County and Snohomish County may secure composting collection services through a company called Cedar Grove Composting. However, such services do not appear to be readily available in Kitsap County, which lists “providing food waste collection service to groceries, restaurants, institutional kitchens, and other large scale generators of relatively uncontaminated food waste” among options for consideration in its 2010 draft solid waste management plan.⁶¹

Restaurants may consider a number of options to gain greater understanding and management of their waste streams, including:

- Waste audit: A first step that restaurants may consider is use of a waste audit, in which they categorize and measure the volume of waste being produced. The goal behind this technique is to help businesses become aware of, and reduce, their garbage weight, in favor of diverting more of their waste stream to recycling or composting. The EPA offers guidance and simple worksheets to get started.⁶² The agency also offers specific guidance on diverting food waste, with detailed spreadsheets allowing restaurants to plug in their own waste volume numbers to estimate their average disposal costs.⁶³
- On-site composting: Composting food scraps on site, rather than paying to have them hauled away, may be an option for some restaurants. Several companies manufacture closed vessels designed specifically for food waste composting with protection from animals and vermin. However, a King County study found that because of the staffing needs and infrastructure investments required, this approach is likely only cost-effective for businesses that do not have ready access to food waste collection programs either

⁵⁷ Kitsap County Department of Public Works and Waste Management Division, *Waste Wise Communities: The Future of Solid and Hazardous Waste Management in Kitsap County* (2010): 2-4, http://www.kitsapgov.com/sw/pdf/cswmp_final_draft.pdf.

⁵⁸ “Basic Information on Composting,” US Environmental Protection Agency, last modified March 11, 2010, <http://www.epa.gov/osw/conserves/rrr/composting/basic.htm>.

⁵⁹ Susan Gilmore, “New Seattle Law will Cook Restaurant Waste into Compost,” *The Seattle Times*, June 30, 2010, http://seattletimes.nwsourc.com/html/localnews/2012249781_cedar01m.html.

⁶⁰ “Best Workplaces for Recycling and Waste Reduction in King County,” King County Solid Waste Division, last modified March 3, 2011, <http://your.kingcounty.gov/solidwaste/garbage-recycling/best-workplaces.asp>.

⁶¹ Kitsap County Department of Public Works and Waste Management Division, *Waste Wise Communities*, 4-10.

⁶² “Food Waste Reduction,” US EPA, last modified December 16, 2010, <http://www.epa.gov/osw/conserves/materials/organics/food/fd-reduce.htm>.

⁶³ US EPA, *Food Waste Management Calculator 2009*, last modified December 16, 2010, <http://www.epa.gov/osw/conserves/materials/organics/food/tools/foodcost.pdf>.

now or three to four years in the future.⁶⁴

- Edible food donations: Restaurants that find they have a surplus of edible food may wish to donate it to charitable organizations. State Good Samaritan laws exist to protect such activities made in good faith. The Washington Department of Health's provides further guidance for interested donors.⁶⁵

Future Research

- How many restaurants in our region currently use composting and/or recycling?
- Explore practical options for composting and/or recycling for restaurants or hospitality industry enterprises located in areas not served by compost pickup services. Is on-site composting feasible or desirable? Anecdotal evidence or case studies may assist with this topic.
- Provide more detail on restaurants' options for donating to the emergency food system.
- Attempt to quantify how increased uptake of waste reduction, composting, and recycling by restaurants and hospitality may reduce overall garbage hauling costs in the central Puget Sound region. What are limitations to increased uptake of these practices by restaurants (space for composting facilities, employee training barriers, etc.)?

ECONOMIC AND SOCIAL FACTORS

Almost one in ten Washington State residents works in the restaurant and foodservice industry, according to the National Restaurant Association (NRA). Washington restaurants were expected to generate \$9.5 billion in sales in 2010.⁶⁶

Sales estimates were not available at county and regional levels, but because the central Puget Sound region accounts for more than half of the employees and establishments in the industry, one might expect that this region would generate at least that proportion of the sales, if not more, when cost of living differences statewide are considered.

In 2008, Washington counted about 209,000 employees and more than 14,000 establishments in "food services and drinking places," according to the US Census Bureau.⁶⁷ The census includes full-service restaurants, limited-service restaurants, caterers, cafeterias and buffets, snack and nonalcoholic beverage bars, food service contractors, caterers, mobile food services, and drinking places for alcoholic beverages in this category.

The Puget Sound region accounts for more than half of the jobs and establishments in the "food services and drinking places" category, with more than 129,000 jobs and nearly 9,000 establishments. King County houses the vast majority of the jobs and establishments in the region, followed distantly by Pierce and Snohomish counties, as detailed in Table 7-1.

⁶⁴ King County Solid Waste Division, "Using In-Vessel Systems to Compost Food Residuals," accessed March 9, 2011, http://your.kingcounty.gov/solidwaste/garbage-recycling/documents/Onsite_food_pilot_final-report.pdf.

⁶⁵ Washington State Department of Health, Charity Food Donation Guidelines: Guidance for food donors who prepare and provide food for distributing organization (2009), <http://www.doh.wa.gov/ehp/food/guide-charitydonations.pdf>.

⁶⁶ National Restaurant Association, Washington Restaurant Industry at a Glance, accessed March 9, 2011, 1, <http://www.restaurant.org/pdfs/research/state/washington.pdf>.

⁶⁷ "County Business Patterns," US Census Bureau, accessed March 9, 2011, <http://censtats.census.gov/cbpnaic/cbpnaic.shtml>.

Table 7-1: Market for Food Services and Drinking Places, 2008

	Number of Jobs	Number of Establishments
King County	80,793	5,238
Kitsap County	6,890	472
Pierce County	22,317	1,481
Snohomish County	19,622	1,481
Total	129,622	8,672
Washington State	209,294	14,437

Source: "County Business Patterns," US Census Bureau, accessed March 9, 2011, <http://censtats.census.gov/cbpnaic/cbpnaic.shtml>.

The restaurant industry influences other parts of the economy as well, ranging from food producers, processors, and distributors to furniture and building supply manufacturers, tourism-related businesses, and beyond. The NRA estimates that every dollar spent in the state's restaurants generates an additional \$1.16 for other aspects of the state's economy--known as a "multiplier effect" in economics terms.

Further analysis would be needed to determine the precise multiplier effect within the central Puget Sound region or any of the individual counties and also to determine whether the NRA's figure is credible, as it is unclear which industries the organization included to derive this number.⁶⁸

Further Research

- Address food cost and access challenges for restaurants, especially with regard to purchase and distribution of sustainable or locally produced products. Can greater transportation and distribution efficiencies lead to reduced costs on both ends?
- Conduct further analysis to determine multiplier effect of regional restaurant economy (e.g., employment of farmers, other food producers, distributors, etc. resulting from the growth of the restaurant industry) based on US census figures for the central Puget Sound region. This information may help to determine and/or make a case for the importance of building stronger relationships between local restaurateurs and local food producers.

Training Programs for Sustainable Restaurant Practices

Culinary education programs have an opportunity to help with achieving greater uptake of sustainable practices when their graduates move into positions in the restaurant and hospitality industry. A number of culinary education programs in the Puget Sound region have recently begun to offer courses that focus on sustainable practices.

Seattle Culinary Academy (SCA) at Seattle Central Community College recently changed its focus and began to market itself as "ethical, cultural, progressive, green." The school in 2005 revised its mission statement to add "fostering stewardship of the environment" as one of its goals. During the same year, it began offering a course called Sustainable Food Systems Practices, designed to educate its students on issues related to "agriculture, fisheries, the dairy industry, meat and poultry production, water and waste, as well as trade, health, and social justice."⁶⁹ The

⁶⁸ National Restaurant Association, Washington Restaurant Industry at a Glance, accessed March 9, 2011, 1, <http://www.restaurant.org/pdfs/research/state/washington.pdf>.

⁶⁹ "Seattle Culinary Academy," Seattle Central Community College, accessed March 10, 2011, <http://seat>

program offers scholarships to send students to farms for on-the-ground learning experiences and planned in 2010 to open a “culinary greenhouse” to grow produce for use in cooking classes.

SCA also keeps an internal audit, which it calls a “green list,” to track its record in seasonal and local food purchasing, waste management, and use of environmentally-friendly practices. Its two student-run restaurants include organic, sustainable and locally grown menu items when possible.

Edmonds Community College’s culinary arts program offers a course called Sustainable Food-service described as an introduction to “general concepts” of sustainability in the food industry, including “food production, agriculture, animal husbandry, commercial fishing, procurement, and waste.”⁷⁰

FareStart in downtown Seattle offers a unique culinary training program geared toward men and women who have experienced homelessness or other disadvantage in their lives. Founded in 1992 as nonprofit organization, it also operates a restaurant featuring regular appearances from area guest chefs and holds contracts to prepare daily meals for childcare centers in the area.

In addition to 16 weeks of culinary training, the FareStart program provides help with finding housing and resources for other basic needs such as transportation, meals, and health and hygiene. Students also learn “life skills training,” such as timeliness and anger management, and receive job placement services upon completion of the program. The program trains about 300 individuals per year, and more than 80 percent of its graduates find employment within 90 days of completing the program.⁷¹

FareStart in 2003 launched a youth-oriented program that trains students ages 16 to 23 as baristas. The eight-week program offers similar support services to the culinary training program for adults. The organization also recently founded a national network called Catalyst Kitchens, which plans to launch 50 similar foodservice-training programs in the next five years.⁷²

Further Research

- Determine opportunities for additional education and job training related to sustainable practices in the restaurant industry, and provide guidance for restaurants on this matter.
- Explore how sustainable restaurants can fit into increasing food access or economic development in low-income communities.

CASE STUDIES

In our final recommendations, we plan to use a number of case studies to describe the current market for sustainable restaurants and how restaurants in the region already implement sustainable practices. This information may help to act as inspiration for other restaurants.

tlecentral.edu/seattleculinary/learningground.php.

⁷⁰“Culinary Arts Course List,” Edmonds Community College, accessed March 10, 2011, <http://catalog.edcc.edu/content.php?navoid=197&catoid=1>.

⁷¹“Hire an Adult Graduate,” FareStart, accessed March 10, 2011, <http://www.farestart.org/training/hire-adult/index.html>.

⁷²“A Brief History: From Kitchens with Mission to Catalyst Kitchens,” Catalyst Kitchens, accessed March 10, 2011, <http://www.catalystkitchens.org/why-catalyst-kitchens/a-brief-history>.

We also plan to include, to the extent feasible, a breakdown of the number and types of restaurants within the central Puget Sound region. Through this data, we hope to show the applicability of our research and give additional context to the case studies.

We plan to gather information and conduct interviews related to the following restaurants or enterprises and include interesting examples in our final report. This list may include:

- Cedarbrook Lodge
- Additional restaurant(s) outside of Seattle, to be identified
- Plum Vegan Bistro
- Cafe Flora
- Madison Market
- Emmer & Rye in Queen Anne
- Homegrown sustainable sandwich shop
- Bon Appetit management
- One of the Green Restaurant Association-certified restaurants, such as Fonte Cafe and Wine Bar at the Four Seasons Hotel in Seattle, Microsoft's corporate cafes, to learn about their participation in that process
- Others from the Seattle Chef's Collaborative membership list, such as Mashiko or Agua Verde <http://seattlechefs.org/membership.php>
- A food truck or mobile kitchen (TBD)
- FareStart
- Seattle Culinary Academy at Seattle Central Community College
- A LEED-certified restaurant (Urbane in downtown Seattle?)

NEXT STEPS

This report represents a starting point that leaves numerous opportunities for research and exploration, culminating in development of voluntary sustainability guidelines for the central Puget Sound restaurant and hospitality industry.

Broadly, the preceding report deals primarily with assumptions related to full-service restaurants in this region. Therefore, more research may be required to address unique issues within the hospitality industry (catering, hotels) and quick-service restaurants. In addition, a large body of this report focuses on environmental sustainability, for which more data is readily available. However, developing the final guidelines may also require further analysis and data-gathering related to the economic and social aspects of sustainability.

The coming weeks will involve close coordination between the UW studio members and stakeholders in Seattle Chef's Collaborative in order to delineate future activities, set benchmarks for progress, and reach a final product that serves the needs of the central Puget Sound restaurant and hospitality industry.

Further points of discussion and refinement include:

- More closely defining "green" and "sustainable" as they pertain to restaurants and hospitality enterprises in this region, in order to set the stage for guidelines and give a formal name to the project;

- Selecting the scope of subject areas that the forthcoming voluntary recommendations will address;
- Identifying points for further research (many of which are listed above) that should be prioritized and pursued;
- Defining and deciding how best to address the audience(s) of restaurant operators that will benefit from the final product (full-service vs. quick-service restaurants, upscale vs. lower-priced menus, urban vs. suburban/rural location, etc.), and
- Deciding and collaborating on a design, format, and tone for the final product.

Regional Plans and Policies

INTRODUCTION

It is necessary to review comprehensive plans and other policy documents in order to locate policies that address the food system because these policies impact agriculture, the quantity and quality of food products, the infrastructure that supports the food system, and the social networks that depend on food. One of the purposes of the Regional Food Policy Council (RFPC) is to develop “just and integrated policy and action recommendations that promote health, sustain and strengthen the local and regional food system, and engage and partner with agriculture, business, communities and governments in the four-county region”.¹ The focus is on all the components that constitute local and regional food systems.

For RFPC to be an effective advisory body on food system policy and action, the first step is to determine to what degree food is present in the comprehensive plans and other policy documents of the region. It is the purpose of this section to shed light on where and how food and food systems are discussed in the plans. This includes food production, processing, transportation, commercial retail and wholesale, gardens, and all the people who partake in such activities. This section only examines comprehensive plans. Future research will integrate an examination of other policies, such as city zoning and other county ordinances, in order to gain a more complete picture of the presence and absence of policies addressing the regional food system.

Jurisdictions and Plans

In this section, the group will search for references to and policies on the food system in VISION 2040, the comprehensive plans of King, Kitsap, Pierce, and Snohomish Counties, and the comprehensive plans of the cities of Seattle, Tacoma, Everett, and Bremerton.

METHODOLOGY

Due to the extensive length of a typical comprehensive plan, the group developed a streamlined approach to analyzing the above documents for food policy and food system related issues. The keyword search was the primary method to locate any discussion or policy that refers to a component of the food system. Once the group found such references, the group determined the context of the plan that surrounds each reference or policy using the following categories:

1. Local Food Production
2. Local Processing
3. Local Distribution
4. Local Food Procurement
5. Urban Agriculture
6. Emergency Preparedness/Food Security
7. Environmental Impacts
8. Social Equity and Food Access
9. Public Health
10. Coordinated Food Planning and Policy

The keyword search method allows us to determine where food system references and policies are in each plan and what component of the food system each reference addresses. The group

¹ PSRC, Regional Food Policy Council, <http://psrc.org/about/advisory/regional-food-policy-council>.

will also demonstrate the absences of food policies and references. The lack of references can be of equal importance and interest in determining the next step for PSRC and regional food policy. (For a quick comparative summary of findings, see the matrices in Appendix 8-1.)

PLAN REVIEWS

VISION 2040

There are currently 36 explicit references to the food system in VISION 2040 (including agriculture, farming, fisheries, the food industry, and food access). There are some descriptions about the importance of regional agriculture, preserving farmland, fish and fish habitat, and the benefits of local food. Of all the components of the food system, the report mostly focuses on agriculture and food production, though there are references to other components, such as community gardens, fisheries, and the relationship between food and health.

The Multi-County Planning Policies (MPPs) are policies that PSRC can implement to influence planning practices in the central Puget Sound region. Only three MPPs directly address issues of the food system, most of which are related to agriculture or food production: MPP-DP-28, MPP-DP-47, MPP-PS-17.²

Local Production

MPP-DP-28 refers to agriculture. It states, "Support long-term solutions for the environmental and economic sustainability of agriculture and forestry within rural areas".³ The subsequent page (p. 56) provides basic information on agriculture production and farmland preservation in each of the four counties. Plus, there is a reference to creating markets throughout the region for the sale of local produce. MPP-DP-47 specifically refers to the food system. It states, "Support agricultural, farmland, and aquatic uses that enhance the food system in the central Puget Sound region and its capacity to produce fresh and minimally processed foods".⁴ On the same page (p. 59), there is a side bar that discusses the complexity of food production networks and the need to sustain the local food economy. On page 60, there is a reference to how local governments can use purchase of development rights (PDRs) or transfer of development rights (TDRs) to dedicate land in conservation easements as open space or agricultural areas. There is one reference to food in the environment section where it mentions the impact of agricultural chemicals on water quality. In other sections, agriculture is discussed as a component of other, broader concerns, such as resource lands or rural areas. The references to food system components are concentrated in the sections Environment and Development Patterns.

Environmental Impacts

In the Public Services section, the link between water infrastructure and fisheries is demonstrated. MPP-PS-17 states, "Identify and develop additional water supply sources to meet the region's long-term water needs, recognizing the potential impacts on water supply from climate change and fisheries protection".⁵ In the Economy section, there is a discussion of the full-time wage level needed to independently support and meet the basic needs of a family (p. 74). It then recognizes that food is one of those needs as a factor of cost of living, though it does not further elaborate, and there are no policies directly linking food and living wage.

² Puget Sound Regional Council Growth Management Policy Board, "Puget Sound Regional Council," Vision 2040, April 24, 2008, <http://psrc.org/growth/vision2040/> (accessed March 15, 2011).

³ Ibid.

⁴ Ibid.

⁵ Ibid.

There are few if any references to other critical food system components, e.g. processing, distribution, retail access, food and packaging waste disposal and utilization, etc. Apart from those related to goals of agricultural resource land protection, there is a lack of specific policies and actions that directly address the food system in VISION 2040.

King County

The King County Comprehensive Plan has very little content relating to the food system and food policy. The plan is centered on numerous objectives that promote “preserving the quality of life”, prudent spending, economic prosperity, housing and transportation choices, a balance of urbanity and the environment, and preserving resources and rural lands.⁶ While these relate to issues of the food system, there are few places where the links are explicit.

Local Food Production

Chapter 3, Rural Lands, describes the rural area to be preserved between the Urban Growth Boundary and the resource lands. Specifically mentioned is the role of the rural area, among other things, to provide a local and reliable food source for the region as it sustains farming and livestock possibilities. As described in the comprehensive plan, “[f]arming continues in the prime soils found in the river valleys and on the Enumclaw Plateau. Although historic activities such as hop farming have disappeared, and the number of dairy farms has declined, today’s farmers are exploring new crops as well as opportunities to create value-added products. County residents raise livestock such as poultry, cattle, sheep, llamas, alpacas, and buffalo” (p. 3-3). Furthermore, the plan supports collaboration with farm owners to help preserve the quality of rural farm lands.⁷

As of 2006, only 10 percent of the county’s population and 3 percent of the county’s jobs were located in the rural and resource areas. Agriculture has been boosted lately by a higher demand of urban residents for locally grown foods. As the plan notes, “[f]arms are becoming smaller with increased crop diversity. In 2002 there were 1,550 farms in the county, with an average farm size of 27 acres. Farm product sales totaled over \$120 million in 2002”.

Chapter 2 also mentions the King County Four-to-One Program the aim of which is to “create a contiguous band of open space, running north and south along the main Urban Growth Area Boundary” (p. 3-31). Policy U-186 describes that this open space can be farms (p. 3-32).⁸

Environmental Impacts

Food waste issues are addressed in Chapter 4, The Environment, of the King County Comprehensive Plan. The plan reinforces the issue of recycling food and yard waste, noting the fact that despite effort on the part of the county to promote composting and recycling, large quantities of recyclable waste are still being sent to landfills. Specifically the plan calls out policies to promote the idea of organic waste as a resource, the processing of organic waste, and the use of recycled waste on farms and elsewhere throughout the county.

Social Equity and Food Access

In Chapter 2, Urban Communities, the only reference to the food system involves the mention of food stands and groceries. Specifically, in Policy U-149, a mix of uses is also prescribed for unincorporated activity centers that may include uses such as a farmer’s market. Additionally, in

⁶ King County Codes, Policies, and Growth Management, “King County Comprehensive Plan,” King County, October 27, 2010, <http://www.kingcounty.gov/property/permits/codes/growth/CompPlan.aspx> (accessed March 15, 2011).

⁷ Ibid.

⁸ Ibid.

Policy U-158, the King County Comprehensive Plan describes that a community business center should contain a mix of uses including "...fruit and produce stands or small outlets offering locally produced value-added food product, such as cheese, meats, preserves". It is also noted in Policy U-163 that the retail establishments in a neighborhood business zone, possibly including a farmer's market, should be convenient for residents' shopping needs. In the Facilities section of the King County Comprehensive Plan the need to assist low income people in accessing basic needs, including food, is noted although no details for how to achieve this are outlined.⁹

Issues not addressed in the King County Comprehensive plan include Local Processing, Local Distribution, Local Food Procurement, Urban Agriculture, Emergency Preparedness/Food Security, or Public Health.

Kitsap County

The Comprehensive Plan of Kitsap County has very few references to the food system. In Chapter 2 on Land Use, the only mention of any component of the food system is Goal 37, the final goal of the chapter. It states, "Reduce harmful discharges from agricultural practices".¹⁰ Agriculture is not a dominant component of land use in Kitsap County, but it is present on a mostly small scale. The USDA Census of Agriculture shows that in 2007, there were 664 farms in the county, with an average size of 23 acres. Though agriculture is not a dominant land use for the county, its presence is still notable. The comprehensive plan does not reflect this.

Local Food Production

Chapter 3 in the comprehensive plan is entitled Rural and Resource Lands. Section 3.2.6 deals with agricultural lands. This short section has one goal: Goal 13 – Recognize agricultural activities without designating land specifically for such uses. The comprehensive plan states that in 2002 only 4,102 acres of property were used as farmland.¹¹ The group can interpret their definition of agriculture, following the definition from GMA, as land devoted primarily to production with long term commercial significance.

Environmental Impacts

In the following chapter, Natural Systems, there are two policies that mention agriculture. Policy NS-74 states, "Work with Kitsap Conservation District to encourage implementation of farm management plans that limit livestock access to streams and wetlands." Policy NS-75 encourages the county Solid Waste Division, in part, "to address agricultural and forestry technical assistance".¹²

Local Processing

Chapter 5, Economic Development, has one reference to food. Within the section Opportunities for Future Growth and Prosperity: Existing and Emerging Industry Clusters, the Plan acknowledges that specialty food is an industry cluster in the county. However, it is not considered as one of the clusters that holds the most promise for sustainable economic development. There are no other references to food in this chapter.

⁹ Ibid.

¹⁰ Kitsap County Department of Community Development, "Kitsap County Comprehensive Plan," Kitsap County, December 11, 2006, http://www.kitsapgov.com/dcd/10year/10_yr_final_volume1.htm (accessed March 15, 2011).

¹¹ Ibid.

¹² Ibid.

Finally, in Chapter 18, Implementation, there is one reference to the food system. In the list of goals, Goal 37 states, "Adopt agricultural best management practices (BMPs) for discharges".¹³ This is a goal that is to be coordinated by the Kitsap Conservation District. There are no goals or policies that address issues of public health, social equity and food access, emergency preparedness, or local distribution.

Pierce County

The Pierce County Comprehensive Plan has a limited number of references and policies on food. However, because much of the county, between the urban core of Tacoma and Mount Rainier National Park, is minimally developed and still quite rural, there are a number of references to agricultural production and farmland preservation.

The Plan makes one reference to food consumption, found in the Urban Villages section of the plan's Land Use element. Part of the county's goal to develop Urban Villages as hubs for shopping, services, residences, and more includes a stipulation that "Fast-food establishment should be discouraged". (§19A.30.025.D3).¹⁴ No further elaboration is made.

Local Production

The Plan's Land Use element includes an extensive section on what it terms: "Agricultural Resource Lands" (§19A.30.070).¹⁵ While not an express requirement of the Washington State Growth Management Act, this countywide planning policy was added for other purposes. This section outlines methods and policies for the protection of lands that are outside of the Urban Growth Boundary and that fit the special designation of having "...long-term agricultural significance" (§19A.30.070).¹⁶ This status is derived from a definition found in Washington State Law (RCW 36.70A.030(2)) and requires the consideration for the land's capacity to grow, parcel size, soil composition, proximity to urban areas and the resultant pressures from that, and more.

The Resource Lands-Agriculture section includes a list of purposes for conserving and enhancing the county's Agricultural Resource Lands, and sub-goals, as appropriate. Under the first Land Use Objective in this section (LU-Ag Objective 15) are sub-goals including the preservation of quality soils, supporting agriculture as an economic base, retention of natural systems, and more. The fourth item on that list of goals reads: "Facilitating the availability of locally grown, healthy food options for residents;" (§19A.30.070 A.1.d).¹⁷ This makes clear the county's goal to make food produced within the county available to its residents when possible.

Also worth noting is the third goal in the Resource Lands Agriculture section (LU-Ag), Objective 15: "Agricultural activities are also allowed in the urban area" (§19A.30.070 A.3).¹⁸ This may be an allusion to the county promoting urban farming, though no further elaboration is made.

Environmental Impacts

The Utilities Element of the Plan makes one very general reference to the disposal of compostable waste, which would inevitably include food in its definition. Section 19A.90.060 E

¹³ Ibid.

¹⁴ Pierce County Planning and Land Services, "Land Use Plans and Policies," Pierce County, August 19, 2010, <http://www.co.pierce.wa.us/pc/services/home/property/pals/landuse/landuse.htm> (accessed March 15, 2011).

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

states the county's goal to "Provide for adequate diversion, recycling, and disposal of specialized waste streams including, but not limited to: compostable organic wastes..." (§19A.90.060 E). The list goes on to include other non-food related waste products that also require specialized disposal.

Snohomish County

Snohomish County's Comprehensive Plan has numerous policies dedicated to agriculture, too many to list exhaustively here. There are a few references to other components of the food system, mostly policies that help protect fisheries and fish habitat. Nearly all other policies explicitly discuss agriculture, its commercial viability, and designated farmlands. These policies are found in multiple Elements of the plan, including Land Use, Transportation, Capital Facilities, Economic Development, and Natural Environment.

Local Production

On page LU-51, there is a statement that sheds light on the importance of agriculture for the County. "Snohomish County agriculture gives life and diversity to our local, regional and international economies, and provides open space as well as fish and wildlife habitat. It also contributes to a level of food security for the region and provides access to affordable and nutritious food and fiber for animal and human use."¹⁹ Though the majority of the policies focus primarily on agriculture, the subtext is that food is recognized for its importance to the County's inhabitants, economy, and sense of character.

The vast majority of food policies on agriculture and farmland are located in the Land Use Element of the plan. This section will provide a brief overview of the types of policies that exist. Section one of the Land Use Element focuses on development in the Urban Growth Area. Most of these policies discuss management of urban and rural areas and the transition between them. For example, Policy LU 1.B.2 states "Rural urban transition area boundaries shall not include designated farm or forest lands."²⁰ Farmlands are recognized as rural and resource lands to be protected from development, and farmland does not constitute urban and suburban areas of development. There is one policy in this section that is distinct. Objective LU 5.B states, "Recognize unique land use issues within specific Urban Growth Areas as identified in previously adopted subarea plans and/or studies"²¹ This statement is followed by policies that address these unique land issues, one of which states, "assess the need for a year-round farmers market..."²² Though brief, the plan demonstrates the County's awareness of the need for year-round access to locally produced food.

Section 6, Rural Lands, provides several policies on agricultural lands that discuss the preservation of farmland and agricultural activities. Section 7, Agricultural Lands, is of course dominated by policies on agriculture and farmland. Goal LU 7, the guiding goal of the section, states, "Conserve agriculture and agricultural land through a variety of planning techniques, regulations, incentive and acquisition methods"²³ All subsequent objectives and policies adhere to that goal. There are five objectives within this section, with a total of 37 policies, which

¹⁹ Snohomish County Planning and Development Services, "Snohomish County Planning and Development Services Comprehensive Plan," Snohomish County, December 30, 2005, http://www1.co.snohomish.wa.us/Departments/PDS/Divisions/PlanningandTechnology/LR_Planning/Projects_Programs/Comprehensive_Plan/ (accessed March 15, 2011).

²⁰ Ibid.

²¹ Ibid.

²² Ibid.

²³ Ibid.

address agricultural lands, farmland preservation, and commercial viability of agriculture in the County.

Section 14 is entitled Transfer and Purchase of Development Rights. Its goal, Goal LU 14, states, “Conserve important natural resource lands through the use of complementary Transfer of Development Rights (TDR) and Purchase of Development Rights (PDR) programs.”²⁴ Agricultural lands is included as a component of natural resource lands, and there are three policies that elaborate on the role of TDRs and PDRs in managing and preserving agricultural lands.

Finally in the Land Use element, there is a list of land designations, which are not policies per se, but guide the definitions of types of land use possibilities. There are three types of agricultural designations:

Local Commercial Farmland, Upland Commercial Farmland, and Riverway Commercial Farmland (p. LU-95). There is also the designation of Urban Horticulture (UH), which is intended for low-density, low-impact, non-residential land uses adjacent to agricultural areas (p. LU-93). Examples include small-scale agricultural operations, sales of farm products, and sales of landscape materials. Implementing zoning for areas designated UH is Agriculture-10 acre. This land designation does not emphasize urban farming explicitly, but the language seems to allow for the possibility of creating urban farms.²⁵

The Transportation, Capital Facilities, and Natural Environment elements have several policies that related to agriculture and farmlands, which will not be listed here. The Economic Development element mentions the commercial sustainability of farms in the County. Policy, ED 6.A.2 states, “The county shall conserve and enhance existing agriculture efforts and support innovative farming approaches as an essential part of local and regional economy and food and farm product supply.”²⁶ This policy conveys the economic importance of farming in Snohomish County. The overall abundance of policies discussing agriculture demonstrates the socioeconomic importance of agriculture for the County.

There are also policies that link agriculture and environmental impact, waste management, and local food procurement. There are no policies that discuss social equity and food access.

CITY PLANS

Seattle

A review of Seattle’s Comprehensive Plan reveals that there are 12 goals and policies in the Plan that explicitly discusses the food system.²⁷ Five of these policies focus on urban agriculture and ways to support community gardens throughout the city, though several mention restaurants and other commercial aspects as well as social equity and hunger.

²⁴ Ibid.

²⁵ Ibid.

²⁶ Ibid.

²⁷ City of Seattle Department of Planning and Development (Seattle DPD), “Seattle’s Comprehensive Plan,” City of Seattle Department of Planning and Development, November 30, 2010, http://www.seattle.gov/DPD/Planning/Seattle_s_Comprehensive_Plan/ComprehensivePlan/default.asp (accessed March 15, 2011).

Local Production/Local Processing

One policy addresses the importance of fishing for the local economy. Policy LU257, found in the section of economic development policies of the Land Use element, emphasizes the needs to maintain support services for the fishing industry and to recognize the importance of local fishing in supplying commercial establishments (it also recognizes the economic contribution of distant fisheries to Seattle's maritime economy).²⁸ The production and processing of fish is an important economic activity in the local area.

Urban Agriculture

There are five goals and policies in the comprehensive plan that focus on urban agriculture, primarily on forms of community gardens. Two of these are in the Urban Village element while the Open Space, Cultural Resources, Pike/Pine Neighborhood elements each has one. Four out of the five discuss the social importance that community gardens play in the city in creating open spaces and building community. One policy, however, is distinct. Policy UV57, in the Urban Village element states, "Promote inter-agency and intergovernmental cooperation to expand community gardening opportunities."²⁹ This policy demonstrates the will to coordinate a variety of agencies within city government to promote the establishment and preservation of gardens. Through an examination of the comprehensive plan alone, the group can note that urban agriculture is a priority for the city.

Social Equity and Food Access

Two noteworthy policies address social equity, food access, and hunger. Policy HD11 states, "Encourage coordinated service delivery for food, housing, health care, and other basic necessities of life to promote long-term self-reliance for vulnerable populations."³⁰ The policy does not expand on what coordinated service delivery would entail, but it represents the city's intention to support and supplement the needs of under-privileged populations. Policy HD13 states, "Encourage public and private efforts that support food banks and nutrition programs, especially to meet the nutritional needs of infants, children and the elderly, and other vulnerable populations."³¹ The word "vulnerable" is not explained, but these policies show that the city recognizes the societal benefits of helping people find access to food and other necessary resources.

There are three policies in the Neighborhoods Element – Central District (CA-P24), MLK@Holly (MLK-P16), and Morgan Junction (MJ-G4) – that explicitly address the presence of restaurants in the neighborhoods. The policies emphasize creating a viable business base and promote commerce and high levels of street activity.

Public Health

Finally, one policy approaches the topic of public health and food safety. Policy HD23, in the Human Development element, mentions the need to make use of the City's food licensing and permit process for fire and life safety protection.³² This statement, however, does not address a component of the food system, per se, but rather merely mentions food licensing in relation to building code essentially.

Seattle's Comprehensive Plan makes many broad references to food and the food system, and includes twelve goals and policies that address planning processes with regard to the food system.

²⁸ Ibid.

²⁹ Ibid.

³⁰ Ibid.

³¹ Ibid.

³² Ibid.

Tacoma

A review of the City of Tacoma's comprehensive plan from 2010 reveals a mixed bag with regard to policies on the food system in the city. The plan mentions several components of the food system, addressing them in varying degrees of thoroughness.

Local Production

In the Land Use Element, the use of TDRs is emphasized in order to help preserve agricultural lands. This demonstrates the city's recognition of local food production. There are two policies that discuss the presence of food retail in the city, emphasizing commercial vitality and a vibrant street life. With regard to local food procurement, Policy 2.3E.4, in the Downtown Element, states, "Foster local / organic produce delivery service or 'veggie box' business".³³ It is unique for a city comprehensive plan to emphasize such a niche kind of food market. This policy demonstrates prescience of the growing importance of food access and quality in urban environments.

Urban Agriculture

Most noteworthy is the extent of policies that address urban agriculture. There are 10 policies in the Urban Forestry Element alone that encourage urban gardens and urban food production. They relate to a variety of urban issues, such as education, land, support systems, zoning, housing, green roofs, and more. For example, the Urban Forestry Element mentions that the city intends to implement zoning that establishes community gardens as a use in certain suitable locations (Policy UF-UA-7). Community gardens a designated land use in the Comprehensive Plan is an important step for policies on the local food system.

Additionally, there are policies that promote urban gardens in the Open Space Habitat and Recreation Element, the Neighborhood Element, and the Downtown Element. These policies discuss availability of open space, incentives and funds for gardens, etc. The language of the Comprehensive Plan clearly encourages the presence of gardens within the city.

Social Equity and Food Access

There is one policy in particular in the Downtown Element that emphasizes the need for equity and food access. Policy 2.3E.B states, "The City should consider access to food in the context of downtown land use decisions and support the creation of a permanent farmer's market as a catalyst project (2.1C.1)".³⁴ The catalyst projects are economic development strategies and public realm enhancements that help incubate business and retail uses that serve as models for public/private developments. This primary market, and its associated smaller, neighborhood scale markets are intended to both serve as an access point for residents to purchase local fresh goods from area farmers, as well as be a catalyst for neighborhood development.

Everett

A review of City of Everett's Comprehensive Plan from 2010 reveals that the Plan is lacking in food related policies. Food policy is more prominent in other documents such as municipal and zoning ordinances, but the Plan itself provides few food policies.

³³ City of Tacoma Department of Community and Economic Development, "City of Tacoma Comprehensive Plan," City of Tacoma, June 15, 2010, <http://www.cityoftacoma.org/Page.aspx?hid=2241> (accessed March 15, 2011).

³⁴ Ibid.

Local Production

The Plan has only three food-related policies. One policy in the Land Use Element emphasizes the preservation of agricultural land. The sole policy on agriculture is Policy 2.9.1: "Agricultural land uses in Everett are located within the floodplain and flood fringe of the Snohomish River. These areas shall continue to be permitted to be used for commercial agricultural purposes and other compatible land uses as specified in the Everett zoning code".³⁵ This land use policy aims to protect the current land used for agriculture, ensuring that it will not be used for urban development.

Environmental Impact

In the Parks and Recreation Element, Policy 9.3.2 states, "To promote environmentally sound work practices in parks including recycling and composting".³⁶ This policy is indirectly linked to the food system through the mention of composting, but shows the city's commitment to managing organic residue material.

Local Procurement

In the Land Use Element, Policy 2.4.13 emphasizes restaurants as a component of the downtown area. The policy states, "Establish an arts district in the downtown area, where a variety of activities stimulate redevelopment of housing, stores, restaurants, theaters and galleries."³⁷ This policy demonstrates the city's awareness of food retail in increasing the vitality of the downtown area.

The Everett Comprehensive Plan is lacking in food policy. There are, however, zoning codes and other city ordinances that address the food system, but it is beyond the scope of this report to detail such policies. As the recognition of the need for food policy increases, the Comprehensive Plan will require amendments that reflect this recognition.

Bremerton

There are six policies and some other general goals that explicitly address components of the food system.

Urban Agriculture

Two of these policies are focused on the creation and preservation of community gardens in the city. Policy E5A states the need to support and sponsor media and education campaigns relating to environmental issues, one of which is organic gardening. The city recognizes the importance of not using fertilizers and other chemicals in urban gardens in order to help protect the local natural environment. Policy E7D states, "Integrate community and demonstration gardens within Bremerton's open space system".³⁸ This policy explicitly states the need for gardens as open space. Gardens used as open space in the city serve the social purpose of encouraging human activity which promotes overall community vitality.

Environmental Impacts

Another environment related policy addresses fish habitat. Policy E6A states, "Manage aquatic and riparian habitats to preserve and enhance their natural functions of providing fish and

³⁵ City of Everett Department of Planning and Community Development, "Comprehensive Plan," City of Everett, June 2010, <http://www.ci.everett.wa.us/default.aspx?ID=1201> (accessed March 15, 2011).

³⁶ Ibid.

³⁷ Ibid.

³⁸ City of Bremerton Department of Community Development, "Community Development," City of Bremerton, April 1, 2010, <http://www.ci.bremerton.wa.us/display.php?id=843> (accessed March 15, 2011).

wildlife habitat and protecting water quality”.³⁹ Though it does not explicitly discuss fish as a food resource, fisheries is a significant source of food in the region. The plan also mentions the need for effective management in order to protect recreational and industrial shellfish harvesting, though there are no associated policies.

In a similar vein, Policy LU18F, in the Land Use element, states, “Adopt measures to protect anadromous fisheries per RCW 36.70A.172(1)”.⁴⁰ Though again it does not refer to fish as a food resource, the link between healthy fish habitat and fish as food is clear.

Local Production

Also in the land use section, Policy LU18C states, “Recognize that there are no lands appropriate for designation as forest or agricultural lands within the City or its Urban Growth Area”.⁴¹ This is important because it is a policy that seems to act as a barrier to commercial agriculture in the city. Because the plan does not define agriculture in this sense, the group cannot be sure what the limitations are exactly. This policy also merits review when placed in parallel to the various policies that support community gardens. They seem to contradict each other. Further investigation is required to clarify this matter.

Finally, Policy CC4F, in the Community Character element is unique from other policies in all the plans that the group have discussed. It states, “Discourage strongly thematic architectural styles associated with some chain restaurants, gas stations, big box, and service stores, and, if utilized, purposely modify such to be compatible with regional architectural styles”.⁴² This policy begins to open the discussion about food establishments, architectural design, and the physical urban characteristics of the city. It does not prescribe a certain style, but it does in fact discourage styles that detract from architectural character.

OBSERVATION SUMMARY AND CONCLUSIONS

The comprehensive plans that the group have reviewed vary widely in their references to and policies on the food system. However, no clear set of policies exists concerning all aspects of the food system. Though all the plans address some aspects of the food system, their scope falls short of being able to address the whole system through policies that are encompassing and detailed enough to be effective. It is our conclusion that a regional approach will be the most effective way to analyze the kinds of policies that currently exist and determine future steps for implementation. A regional approach will encourage the jurisdictions to coordinate efforts for consistent food policy.

Our report is only an analysis of comprehensive plans. Comprehensive plans are but one source of city and county policies that may address food and the food system. The next steps will require focusing on a variety of other policy documents, including but not limited to zoning and city ordinances, agricultural commission goals, and GMA policies. Within all the plans that the group examined, aside from agriculture, there are no visible attempts to coordinate food planning and policies in ways that attempt to integrate the complexity of the many components of the food system. However, further research is necessary in order to determine recommendations for how government entities may be able to develop such coordinated food system planning.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² Ibid.

Appendices

Production

- 1-1: Acres of Harvested Cropland by Size
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- 4-3: Local Harvest Schedule
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Appendix 1-1: Acres of Harvested Cropland by Size

Size of Farm (acres)	Washington		Puget Sound		King		Kitsap		Pierce		Snohomish	
	2007	2002	2007	2002	2007	2002	2007	2002	2007	2002	2007	2002
1 to 9	10,748	10,431	1,421	1,299	730	599	295	309	(D)	391	396	(D)
10 to 49	95,942	103,468	8,645	9,702	2,352	2,535	831	807	2,562	2,873	2,900	3,487
50 to 59	37,423	48,050	2,944	3,164	460	967	293	282	623	739	1,568	1,176
70 to 99	59,099	65,516	2,666	3,504	655	391	(D)	89	894	1,531	1,117	1,493
100 to 139	62,865	76,017	4,419	5,403	677	1,040	297	298	2,071	1,903	1,374	2,162
140 to 179	62,860	79,887	2,192	1,075	215	370	211	(D)	823	(D)	943	705
180 to 219	52,697	68,890	2,587	2,951	613	749	(D)	-	554	275	1,420	1,927
220 to 259	50,017	62,239	2,647	2,926	932	552	-	(D)	804	485	911	1,889
260 to 499	251,995	330,386	6,970	8,303	1,455	1,462	(D)	-	1,813	2,531	3,702	4,310
500 to 999	478,158	559,972	12,356	11,079	1,370	1,500	-	-	1,364	2,118	9,622	7,461
1,000 to 1,999	768,276	926,455	2,012	-	-	-	-	-	(D)	(D)	2,012	(D)
2,000 or more	2,457,089	2,563,323	-	-	-	-	(D)	-	-	-	-	-

Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/VOLUME_1,_Chapter_2_County_Level/Washington/wav1.pdf.

Appendix 1-2: Cattle and Calves in Central Puget Sound

Cattle and Calves	Beef Cows						Milk Cows						
	Farms		Total Acres		Farms		Total Acres		Farms		Total Acres		
	2007	2002	2007	2002	2007	2002	2007	2002	2007	2002	2007	2002	
Totals													
Washington	12,731	12,215	1,088,846	1,100,181	10,065	9,128	274,001	248,664	817	1,208	243,132	246,753	
Puget Sound	1,891	1,776	72,952	70,084	1,514	1,296	14,910	10,679	148	217	22,560	31,301	
King	549	418	24,524	22,529	430	292	3,009	2,376	60	68	10,025	11,423	
Kitsap	153	168	1,517	1,300	114	106	(D)	(D)	7	30	20	(D)	
Pierce	609	629	10,022	14,090	512	478	4,061	4,493	29	35	1,884	4,274	
Snohomish	580	561	36,889	32,165	458	420	7,840	3,810	52	84	10,631	15,604	

Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/VOLUME_1,_Chapter_2_County_Level/Washington/wav1.pdf.

Appendix 1-5: Trend in Number of Farm Owners in Central Puget Sound

Trend in Number of Farm Owners					
	King	Pierce	Snohomish	Kitsap	Central Puget Sound
1997	1,430	1,281	1,469	531	4,711
2002	1,291	1,213	1,301	503	4,308
2007	1,494	1,474	1,574	570	5,112

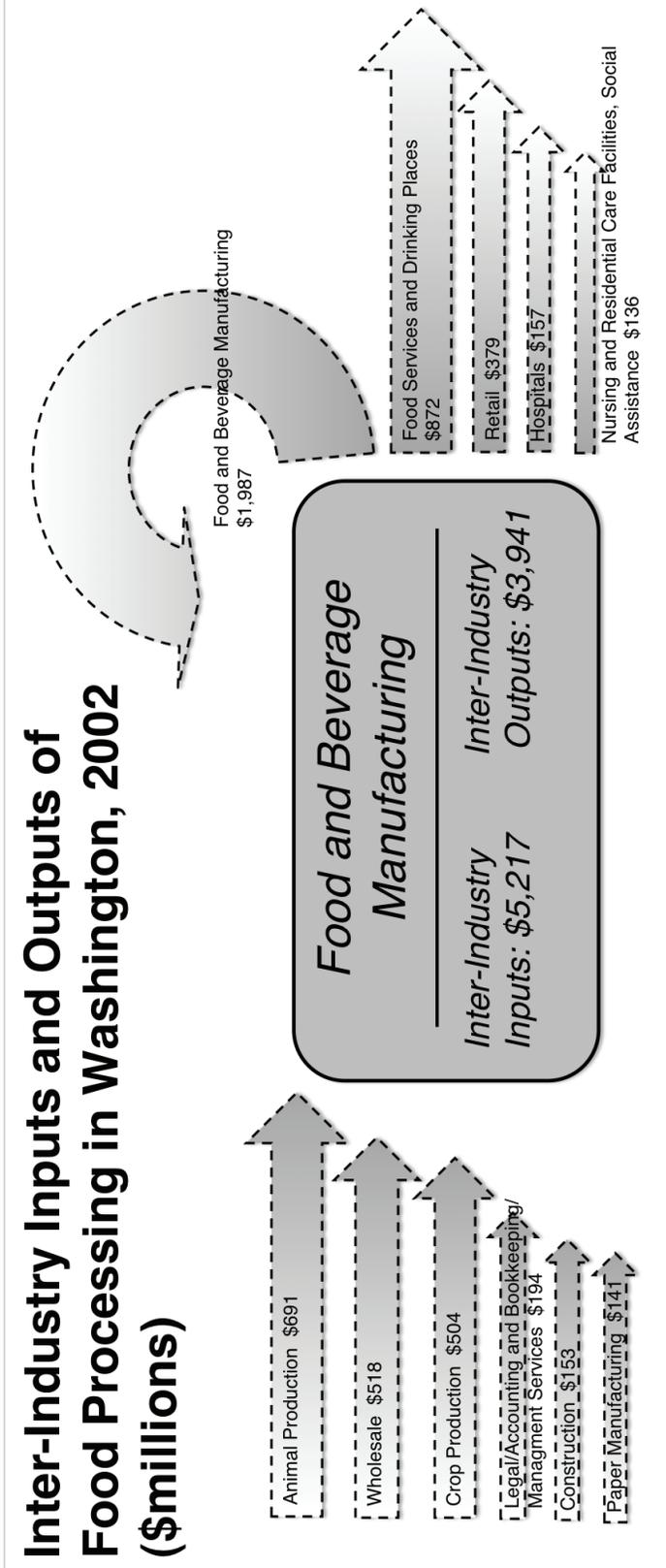
Source: USDA 2007 Census of Agriculture, "Washington State and County Data," 2007, http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Washington/wav1.pdf.

Appendix 2-1: Food Processing Interview Question Template

1. Describe your processing facilities and activities, and what you're processing (and what volumes).
2. What is the main market for your product? (Local, regional, state, national, international)
 - a. Is any percentage of your business' sales (and/or volume) directly to restaurants and/or hospitality industry food service?
3. Tell me about processing trends that you've seen in your field or business.
 - a. How has processing changed from the past? (Methods, where it is processed, how many processors there are)
 - b. Changes in your client base?
 - c. Where do you see processing headed in the future? (New trends, activities, industry shifts, way of doing business)
4. Tell me about barriers you experience in your processing industry. Are there certain policies or regulations that prevent you from doing what you'd like? Which policies/regulations have helped?
5. In your opinion, what makes the processing in this region different from other regions?
6. I have three questions related to marketing and branding.
 - a. How do you brand and market your product?
 - b. What are the main communication channels for these efforts (print ads, social media, festivals, etc.)?
 - c. Who do you work with on these promotions? (Other organizations, industry groups, governmental groups)
 - d. What kind of local product information and labeling could expand the food economy?
7. Is there anything else that I should know about processing in this region?
8. A couple of questions about transportation and distribution:
 - a. What are your distribution/transportation needs (mode, route, etc.)? Any issues? Is traffic congestion a problem for your organization? Any ideas to increase efficiency?
 - b. What transportation infrastructure would you like added or improved (either on processor, production, or distribution side)?
9. Are there other people that you'd suggest I contact?

Appendix 2-2: Input/Output Diagram

Inter-Industry Inputs and Outputs of Food Processing in Washington, 2002 (\$millions)



Source: Office of Financial Management Forecasting Division, "The 2002 Washington Input-Output Model," May 2008, <http://www.ofm.wa.gov/economy/io/2002/default.asp>.

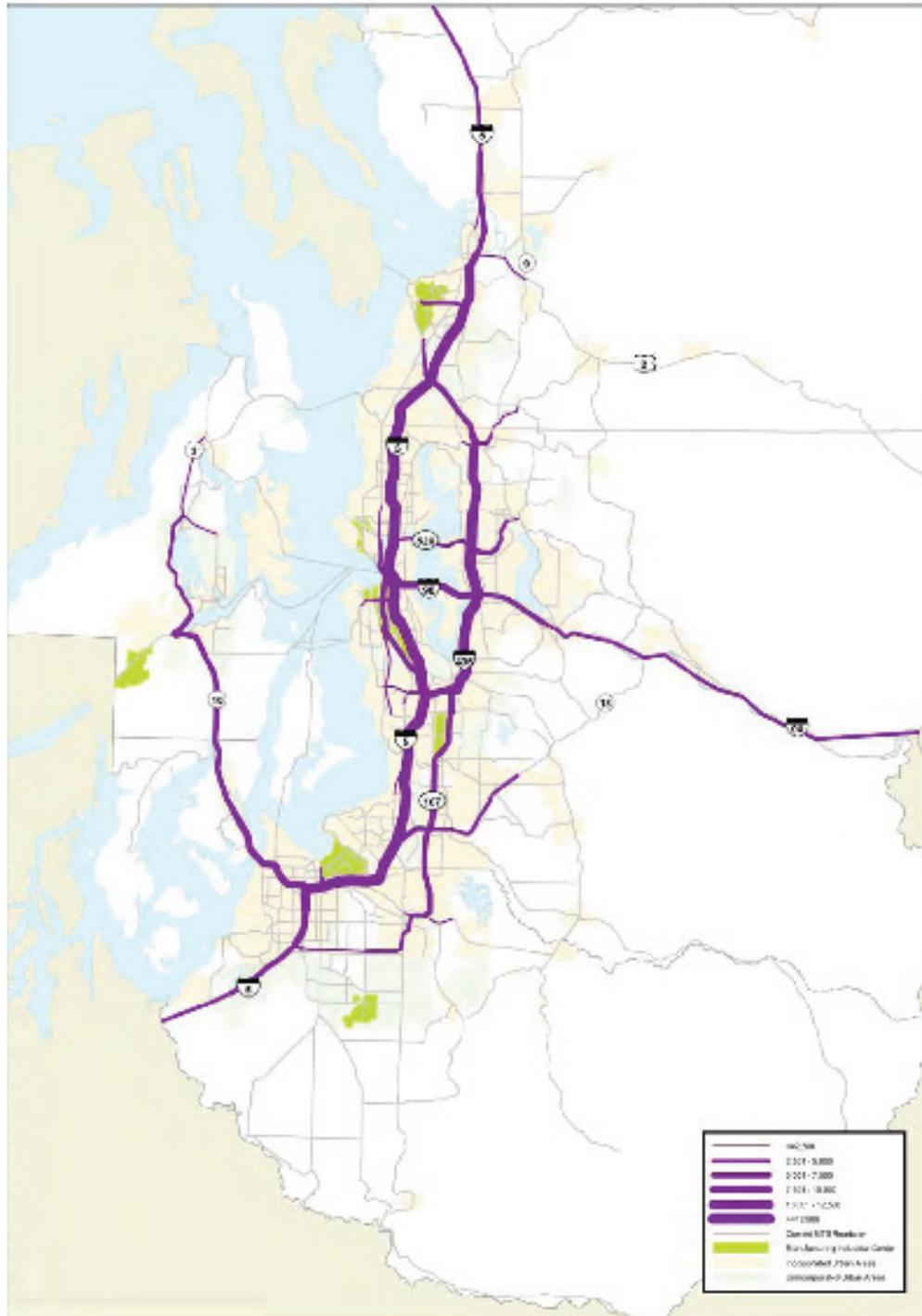
Explanation: Washington State's Office of Financial Management surveys businesses in the state about every decade to develop an input/output table. An input/output table relates the inputs (purchases) and outputs (sales) of an industry or business to every other industry or business in an economy. Bakeries, for instance, will buy berries (an input) from berry farmers to produce berry pies (an output) that they sell to grocery stores and restaurants. A very detailed input/output model would describe, in dollar terms, the economic relationship between berry farmer, bakery, and grocery store. The Office of Financial Management's latest input/output table does not offer this kind of detail but it does tell us about the relationships of food processing industries, as a whole, to 49 other sectors, including a number in the food system. The diagram above shows a summary of the top trading industries of food processing industries (including animal food processing) for the state of Washington in 2002.

Appendix 3-1: Regional Freight Tonnage by Mode

	Tonnage (Millions)				
	2010		2035		% Change
Truck	213	49.1%	366	47.9%	72%
Rail (2007 and 2040)	129	29.7%	233	30.5%	81%
<i>Carload</i>	106	24.4%	145	19.0%	37%
<i>Intermodal</i>	23	5.3%	88	11.5%	283%
Marine					
<i>TEU (2008 and 2030)</i>	3.6	0.8%	9.7	1.3%	169%
<i>Tonnage (2007 and 2040)</i>	88	20.3%	155	20.3%	76%
Air	0.4	0.1%	0.7	0.1%	52%
Total	434		764.4		

Source: PSRC, Transportation 2040, Appendix J: Regional Freight Strategy

Appendix 3-2: Average Weekday Highway Truck Volumes



Source: PSRC, Transportation 2040, Appendix J: Regional Freight Strateg

Appendix 3-3: Regional Freight Tonnage by Mode

Corridor	Major Roadways
Cross-Lake Washington	SR 520, I-90
Kitsap County	SR 3, SR 303
North Seattle	I-5, SR 99, Greenwood/15 th Avenue NW, Roosevelt Way, Lake City Way
South King County	I-5, SR 99/Pacific Highway South, SR 509, SR 518, SR 167, West Valley Highway, Auburn Way
East King County	I-405, SR 522, Coal Creek Parkway, SR 900, NE 148 th Ave, Lake Washington Boulevard
Pierce County West	SR 512, I-5 south, SR 7, SR 167, Meridian Street (SR 161), S. Tacoma Way
Pierce County East	SR 162
Southeast King County	SR 169, SR 164, SR 18
West Snohomish County	I-5, SR 99
East Snohomish County	SR 9, SR 2
Cross Puget Sound	Ferries, Tacoma Narrows Bridge
Outer Northeast King County	SR 202, I-90

Source: PSRC, Transportation 2040, Appendix J: Regional Freight Strategy

Appendix 4-1: 2007 Economic Census Data for Puget Sound (Part 1 of 3)

2007 Economic Census - King County

2007 NAICS Code	Meaning of NAICS Code	Meaning of Type of operation or tax status code	Number of employer establishments	Employer sales, shipments, receipts, revenue, or business done (\$1,000)	Annual payroll (\$1,000)	Number of paid employees for pay period including March 12
424410	General line grocery merchant wholesalers	Merchant wholesalers, except manufacturers' sales branches and offices	38	1695304	117883	2237
424420	Packaged frozen food merchant wholesalers	Merchant wholesalers, except manufacturers' sales branches and offices	112	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	1750*
424430	Dairy product (except dried or canned) merchant wholesalers	Merchant wholesalers, except manufacturers' sales branches and offices	19	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	750*
424440	Poultry and poultry product merchant wholesalers	Merchant wholesalers, except manufacturers' sales branches and offices	6	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	175*
424460	Fish and seafood merchant wholesalers	Merchant wholesalers, except manufacturers' sales branches and offices	55	448953	22107	467
424470	Meat and meat product merchant wholesalers	Merchant wholesalers, except manufacturers' sales branches and offices	24	270926	16360	340
424480	Fresh fruit and vegetable merchant wholesalers	Merchant wholesalers, except manufacturers' sales branches and offices	47	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	1750*
424490	Other grocery and related products merchant wholesalers	Merchant wholesalers, except manufacturers' sales branches and offices	131	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	1750*
445110	Supermarkets and other grocery (except convenience) stores	Total	521	4733219	541322	19697
445120	Convenience stores	Total	208	165118	13080	787
446191	Food (health) supplement stores	Total	80	58250	8536	421
446199	All other health and personal care stores	Total	64	67351	16081	405
447110	Gasoline stations with convenience stores	Total	460	1789300	60565	3280
454210	Vending machine operators	Total	28	21727	3537	122
624210	Community food services	Establishments exempt from federal income tax	40	108052	8206	282
624210	Community food services	All establishments	6	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
722110	Full-service restaurants	Total	2163	2039089	724031	40540
722211	Limited-service restaurants	Total	1672	1008950	262024	19866
722211	Limited-service restaurants	Total	157	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	1750*
722212	Cafeterias, grill buffets, and buffets	Total	31	32340	9258	630
722212	Cafeterias, grill buffets, and buffets	Total	5	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
722213	Snack and nonalcoholic beverage bars	Total	806	410997	112117	8222
722213	Snack and nonalcoholic beverage bars	Total	101	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	750*
722310	Food service contractors	Total	223	357578	100313	4501
722320	Caterers	Total	102	77268	26131	1361
722330	Mobile food services	Total	17	2712	692	29
King County Totals:			7116			111982**

Appendix 4-1: 2007 Economic Census Data for Puget Sound (Part 2 of 3)

2007 Economic Census - Kitsap County

2007 NAICS Code	Meaning of NAICS Code	Meaning of Type of operation or tax status code	Number of employer establishments	Employer sales, shipments, receipts, revenue, or business done (\$1,000)	Annual payroll (\$1,000)	Number of paid employees for pay period including March 12
445110	Supermarkets and other grocery (except convenience) stores	Total	46	454255	49775	1774
445120	Convenience stores	Total	29	25479	1463	100
446191	Food (health) supplement stores	Total	9	3744	608	42
452910	Warehouse clubs and supercenters	Total	4	410571	31339	1257
624210	Community food services	All establishments	6	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
722110	Full-service restaurants	Total	173	122824	42719	2954
722211	Limited-service restaurants	Total	157	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	1750*
722212	Cafeterias, grill buffets, and buffets	Total	5	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
722213	Snack and nonalcoholic beverage bars	Total	101	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	750*
Kitsap County Totals:			530			8747**

2007 Economic Census - Pierce County

2007 NAICS Code	Meaning of NAICS Code	Meaning of Type of operation or tax status code	Number of employer establishments	Employer sales, shipments, receipts, revenue, or business done (\$1,000)	Annual payroll (\$1,000)	Number of paid employees for pay period including March 12
424460	Fish and seafood merchant wholesalers	Merchant wholesalers, except manufacturers' sales branches and offices	9	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
424490	Other grocery and related products merchant wholesalers	Merchant wholesalers, except manufacturers' sales branches and offices	19	222583	24580	432
445110	Supermarkets and other grocery (except convenience) stores	Total	149	1199955	132064	4742
445120	Convenience stores	Total	85	63800	5208	344
446191	Food (health) supplement stores	Total	25	12534	1712	84
447110	Gasoline stations with convenience stores	Total	158	609483	19381	1248
452910	Warehouse clubs and supercenters	Total	18	1334347	118109	4714
454210	Vending machine operators	Total	4	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
624210	Community food services	All establishments	13	20427	1901	81
722110	Full-service restaurants	Total	500	410124	143264	9353
722211	Limited-service restaurants	Total	547	350541	91495	8152
722212	Cafeterias, grill buffets, and buffets	Total	10	9514	2435	171
722213	Snack and nonalcoholic beverage bars	Total	252	94585	24587	2163
722310	Food service contractors	Total	37	46162	14161	772
722320	Caterers	Total	23	14056	4167	226
722330	Mobile food services	Total	10	2042	342	15
Pierce County Totals:			1859			32617**

Appendix 4-1: 2007 Economic Census Data for Puget Sound (Part 3 of 3)

2007 Economic Census - Snohomish County

2007 NAICS Code	Meaning of NAICS Code	Meaning of Type of operation or tax status code	Number of employer establishments	Employer sales, shipments, receipts, revenue, or business done (\$1,000)	Annual payroll (\$1,000)	Number of paid employees for pay period including March 12
424490	Other grocery and related products merchant wholesalers	Merchant wholesalers, except manufacturers' sales branches and offices				375*
445110	Supermarkets and other grocery (except convenience) stores	Total	129	1337104	150721	5128
445120	Convenience stores	Total	75	56971	4197	292
446191	Food (health) supplement stores	Total	26	13785	1720	107
447110	Gasoline stations with convenience stores	Total	177	578685	20208	1392
452910	Warehouse clubs and supercenters	Total	11	1173060	89935	3504
454210	Vending machine operators	Total	11	Withheld to avoid disclosing data for individual companies	Withheld to avoid disclosing data for individual companies	60*
722110	Full-service restaurants	Total	473	376419	135552	8442
722211	Limited-service restaurants	Total	522	334253	86588	6918
722212	Caterias, grill buffets, and buffets	Total	5	8000	2233	147
722213	Snack and nonalcoholic beverage bars	Total	283	91169	24310	2040
722310	Food service contractors	Total	33	50174	10947	492
722320	Caterers	Total	22	9265	2821	174
			Snohomish County Totals:			29071**

CENTRAL PUGET SOUND REGION TOTALS: 11272

182417**

* Only approximate employee ranges were provided. Averages for the range of employees are listed here.
 ** Not an exact figure. Includes estimated figures for companies that did not want to disclose specific totals.

Source: Economic Census, 2007, Economy-wide Key Statistics, http://factfinder.census.gov/servlet/DatasetMainPagesServlet?_program=ECN&_tabid=ECN1&_submenuid=datasets_4&_lang=en&_ts=246366688395.

Appendix 4-2: 2002 Economic Census Data for Puget Sound (Part 1 of 3)

2002 Economic Census - King County

2002 NAICS Code	Meaning of NAICS Code	Meaning of Type of operation or tax status code	Number of employer establishments	Employer sales, shipments, receipts, revenue, or business done (\$1,000)	Annual payroll (\$1,000)	Number of paid employees for pay period including March
424410	General line grocery merchant wholesalers	Wholesale Trade	37	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	3750*
424420	Packaged frozen food merchant wholesalers	Wholesale Trade	117	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	1750*
424430	Dairy prod (exc dried/canned) merchant wholesalers	Wholesale Trade	23	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	750*
424440	Poultry & poultry prod merchant wholesalers	Wholesale Trade	4	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
424450	Confectionery merchant wholesalers	Wholesale Trade	21	222285	4743	169
424460	Fish & seafood merchant wholesalers	Wholesale Trade	64	823092	23255	505
			45	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	1750*
424480	Fresh fruit & vegetable merchant wholesalers	Wholesale Trade	132	2149506	130618	3357
424490	Other grocery & related products merchant wholesalers	Wholesale Trade	488	3360734	396858	17222
445110	Supermarkets & other grocery (except convenience) stores	Total	180	127454	11077	755
445120	Convenience stores	Total	69	40192	7916	409
446191	Food (health) supplement stores	Total	408	908673	48980	2894
447110	Gasoline stations with convenience stores	Total	24	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	7500*
452910	Warehouse clubs & supercenters	Total	32	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	175*
454210	Vending machine operators	Total	30	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	175*
624210	Community food services	All establishments	30	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	175*
624210	Community food services	Establishments exempt from federal income tax		Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	
722110	Full-service restaurants	Total	1711	1369787	481732	32168
722211	Limited-service restaurants	Total	1361	735594	201926	17680
722212	Cafeterias, buffets, & grill buffets	Total	29	24191	7642	549
722213	Snack & nonalcoholic beverage bars	Total	565	241756	62132	5869
		King County Totals:	5350			97662**

Appendix 4-2: 2002 Economic Census Data for Puget Sound (Part 2 of 3)

2002 Economic Census - Kitsap County

2002 NAICS Code	Meaning of NAICS Code	Meaning of Type of operation or tax status code	Number of employer establishments	Employer sales, shipments, receipts, revenue, or business done (\$1,000)	Annual payroll (\$1,000)	Number of paid employees for pay period including March
445110	Supermarkets & other grocery (except convenience) stores	Total	54	358644	42697	12
445120	Convenience stores	Total	24	22527	1391	1884
			9			128
446191	Food (health) supplement stores	Total	56	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
447110	Gasoline stations with convenience stores	Total	3	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	375*
452910	Warehouse clubs & supercenters	Total	6	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	750*
624210	Community food services	All establishments	160	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
722110	Full-service restaurants	Total	144	100255	35046	2842
722211	Limited-service restaurants	Total	55	84828	22675	2257
722213	Snack & nonalcoholic beverage bars	Total	55	12156	3365	361
			511			8717**

Kitsap County Totals:

2002 Economic Census - Pierce County

2002 NAICS Code	Meaning of NAICS Code	Meaning of Type of operation or tax status code	Number of employer establishments	Employer sales, shipments, receipts, revenue, or business done (\$1,000)	Annual payroll (\$1,000)	Number of paid employees for pay period including March
424420	Packaged frozen food merchant wholesalers	Wholesale Trade	9	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	12
424460	Fish & seafood merchant wholesalers	Wholesale Trade	10	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	375*
424490	Other grocery & related products merchant wholesalers	Wholesale Trade	26	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
445110	Supermarkets & other grocery (except convenience) stores	Total	155	949265	111311	4914
445120	Convenience stores	Total	72	54597	4345	317
446191	Food (health) supplement stores	Total	24	7852	1282	96
447110	Gasoline stations with convenience stores	Total	163	371886	18463	1366
			9	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	1750*
452910	Warehouse clubs & supercenters	Total	8	11287	2471	78
454210	Vending machine operators	All establishments	9	15868	2119	136
624210	Community food services	Establishments exempt from federal income tax	9	15868	2119	136
624210	Community food services	Total	408	299375	103902	7938
722110	Full-service restaurants	Total	407	270809	72627	7406
722211	Limited-service restaurants	Total	10	8620	2427	211
722212	Cafeterias, buffets, & grill buffets	Total	164	43872	10194	1073
722213	Snack & nonalcoholic beverage bars	Total	1483			26606**

Pierce County Totals:

Appendix 4-2: 2002 Economic Census Data for Puget Sound (Part 3 of 3)

2002 Economic Census - Snohomish County

2002 NAICS Code	Meaning of NAICS Code	Meaning of Type of operation or tax status code	Number of employer establishments	Employer sales, shipments, receipts, revenue, or business done (\$1,000)	Annual payroll (\$1,000)	Number of paid employees for pay period including March
424440	Poultry & poultry prod merchant wholesalers	Wholesale Trade	3	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	12 175*
424460	Fish & seafood merchant wholesalers	Wholesale Trade	11	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	175*
424490	Other grocery & related products merchant wholesalers	Wholesale Trade	25	135240	16434	387
445110	Supermarkets & other grocery (except convenience) stores	Total	124	1051062	121540	5330
445120	Convenience stores	Total	64	47814	3582	273
446191	Food (health) supplement stores	Total	27	10710	2135	123
447110	Gasoline stations with convenience stores	Total	163	369370	20225	1298
452910	Warehouse clubs & supercenters	Total	7	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	1750*
454210	Vending machine operators	Total	7	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
624210	Community food services	All establishments	3	Withheld to avoid disclosing data for indiv companies	Withheld to avoid disclosing data for indiv companies	60*
722110	Full-service restaurants	Total	388	267359	93320	7076
722211	Limited-service restaurants	Total	416	237229	62954	6106
722212	Cafeterias, buffets, & grill buffets	Total	7	8539	2587	237
722213	Snack & nonalcoholic beverage bars	Total	180	48147	12155	1348
Snohomish County Totals:			1425			24398**

CENTRAL PUGET SOUND REGION TOTALS:

8769

* Only approximate employee ranges were provided. Averages for the range of employees are listed here.
 ** Not an exact figure. Includes estimated figures for companies that did not want to disclose specific totals.

Source: Economic Census, 2002, Economy-wide Key Statistics, http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ECN&_tblid=ECN2&_submenuid=datasets_4&_lang=en&_ts=246366739615.

Appendix 4-3: Local Food Availability (Puget Sound Region - Western Washington)

Harvest Schedule	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Fruit Nut and Berry</i>												
Apples								Aug	Sep	Oct	Nov	
Blackberries								Aug	Sep			
Blueberries							Jul	Aug	Sep			
Boysenberries							Jul	Aug				
Cherries, Pie							Jul	Aug				
Cherries, Sweet						Jun	Jul					
Currants, Black						Jun	Jul	Aug				
Currants, Red						Jun	Jul	Aug				
Figs							Jul	Aug				
Gooseberries							Jul	Aug				
Grapes								Aug	Sep	Oct		
Kiwi									Sep	Oct	Nov	
Loganberries							Jul	Aug				
Marionberries							Jul	Aug				
Melons								Aug	Sep	Oct		
Nuts									Sep	Oct		
Pears								Aug	Sep	Oct	Nov	
Pears, Asian								Aug	Sep	Oct	Nov	
Plums								Aug	Sep			
Prunes								Aug	Sep			
Quince										Oct		
Raspberries						Jun	Jul	Aug				
Raspberries, Fall								Aug	Sep	Oct		
Rhubarb				Apr	May	Jun						
Strawberries						Jun	Jul					
Strawberries, Everbearing						Jun	Jul	Aug	Sep			
Tayberries							Jul	Aug				
<i>Herb</i>												
Basil							Jul	Aug	Sep	Oct		
Chives					May	Jun	Jul	Aug	Sep			
Cilantro						Jun	Jul	Aug	Sep	Oct		
Dill						Jun	Jul	Aug	Sep			
Lavender							Jul	Aug	Sep			
Parsley						Jun	Jul	Aug	Sep	Oct	Nov	
Rosemary						Jun	Jul	Aug	Sep	Oct	Nov	
Sage						Jun	Jul	Aug	Sep	Oct	Nov	
Tarragon						Jun	Jul	Aug	Sep			
Thyme						Jun	Jul	Aug	Sep	Oct		
<i>Meat and Egg</i>												
Eggs	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pork	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beef	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lamb	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Chicken						Jun	Jul	Aug	Sep	Oct		
Turkey											Nov	

Source: http://www.pugetsoundfresh.org/harvest_schedule.asp.

Appendix 4-4: Local Food Availability (Puget Sound Region - Western Washington)

Vegetable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Artichokes									Sep	Oct		
Asparagus				Apr	May	Jun						
Bamboo Shoots					May	Jun						
Beans, Green							Jul	Aug	Sep			
Beans, Shell									Sep	Oct		
Beans, Wax							Jul	Aug	Sep			
Beets	Jan					Jun	Jul	Aug	Sep	Oct	Nov	Dec
Broccoli						Jun	Jul	Aug	Sep			
Brussel Sprouts	Jan								Sep	Oct	Nov	Dec
Cabbage	Jan	Feb				Jun	Jul	Aug	Sep	Oct	Nov	Dec
Carrots	Jan					Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cauliflower							Jul	Aug	Sep			
Celery								Aug	Sep	Oct	Nov	
Chinese Vegetables					May	Jun	Jul	Aug	Sep	Oct		
Corn, Sweet								Aug	Sep	Oct		
Cucumbers, Pickling							Jul	Aug	Sep	Oct		
Cucumbers, Slicing							Jul	Aug	Sep	Oct		
Daikon						Jun	Jul	Aug	Sep	Oct	Nov	
Eggplant								Aug	Sep	Oct		
Garlic								Aug	Sep	Oct	Nov	Dec
Garlic, Elephant								Aug	Sep	Oct	Nov	Dec
Greens	Jan	Feb			May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Jerusalem Artichokes							Jul	Aug	Sep	Oct		
Kohlrabi								Aug	Sep	Oct	Nov	
Leeks	Jan	Feb	Mar						Sep	Oct	Nov	Dec
Lettuce					May	Jun	Jul	Aug	Sep	Oct	Nov	
Onions						Jun	Jul	Aug	Sep	Oct		
Parsnips	Jan	Feb							Sep	Oct	Nov	Dec
Peas, Chinese						Jun	Jul					
Peas, Shell						Jun	Jul					
Peas, Sugar Snap						Jun	Jul					
Peppers, Hot								Aug	Sep	Oct		
Peppers, Sweet								Aug	Sep	Oct		
Potatoes	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pumpkins										Oct	Nov	
Radishes					May	Jun	Jul	Aug	Sep	Oct	Nov	
Shallots									Sep	Oct	Nov	Dec
Spinach					May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Squash, Summer						Jun	Jul	Aug	Sep	Oct		
Squash, Winter	Jan	Feb							Sep	Oct	Nov	Dec
Tea Leaves					May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Tomatoes							Jul	Aug	Sep	Oct		
Turnips	Jan					Jun	Jul	Aug	Sep	Oct	Nov	Dec
Zucchini						Jun	Jul	Aug	Sep	Oct		

Source: http://www.pugetsoundfresh.org/harvest_schedule.asp.

Appendix 4-4: Free and Reduced Meal Eligibility as of October 2010 (Part 1 of 2)

**Office of Superintendent of Public Instruction
Public Schools Free and Reduced - Price Applications
2010, for Public School**

Co / Dist No.	Public School Districts	Applications				Total Applications	% Appl/Enroll
		Oct-10 Enrollment	Oct-10 Free	Oct-10 Reduced	Oct-10 Total		
17-001	Seattle School District	47,053	15,984	3,772	19,756	0.4199	
17-210	Federal Way School District	21,266	9,337	2,151	11,488	0.5402	
17-216	Enumclaw School District	4,543	1,035	314	1,349	0.2969	
17-400	Mercer Island School District	2,820	68	33	101	0.0358	
17-401	Highline School District	18,555	10,348	1,928	12,276	0.6616	
17-402	Vashon Island School District	1,528	235	68	303	0.1983	
17-403	Renton School District	14,106	5,905	1,400	7,305	0.5179	
17-404	Skykomish School District	46	30	7	37	0.8043	
17-405	Bellevue School District	18,284	3,095	882	3,977	0.2175	
17-406	Tukwila School District	3,039	1,933	278	2,211	0.7275	
17-407	Riverview School District	3,309	446	117	563	0.1701	
17-408	Auburn School District	14,602	5,852	1,151	7,003	0.4796	
17-409	Tahoma School District	7,377	745	250	995	0.1349	
17-410	Snoqualmie Valley School District	6,383	675	240	915	0.1433	
17-411	Issaquah School District	17,122	1,221	363	1,584	0.0925	
17-412	Shoreline School District	8,708	1,767	497	2,264	0.2600	
17-414	Lake Washington School District	22,758	2,670	784	3,454	0.1518	
17-415	Kent School District	27,255	10,511	2,465	12,976	0.4761	
17-417	Northshore School District	19,320	2,384	707	3,091	0.1600	
	King Co.	258,074	74,241	17,407	91,648	0.3551	
18-100	Bremerton School District	4,885	2,541	413	2,954	0.6047	
18-303	Bainbridge Island School District	3,904	244	39	283	0.0725	
18-400	North Kitsap School District	6,620	1,519	541	2,060	0.3112	
18-401	Central Kitsap School District	11,622	2,797	1,109	3,906	0.3361	
18-402	South Kitsap School District	9,983	2,888	829	3,717	0.3723	
	Kitsap Co.	37,014	9,989	2,931	12,920	0.3491	

Appendix 4-4: Free and Reduced Meal Eligibility as of October 2010 (Part 1 of 2)

27-001	Stellacom Historical School District	2,940	394	134	528	0.1796
27-003	Puyallup School District	21,190	5,062	1,309	6,371	0.3007
27-010	Tacoma School District	29,563	15,737	2,339	18,076	0.6114
27-019	Carbonado School District	187	38	4	42	0.2246
27-083	University Place School District	5,521	1,421	409	1,830	0.3315
27-320	Summer School District	8,066	2,086	564	2,650	0.3285
27-343	Dieringer School District	1,413	123	40	163	0.1154
27-344	Orting School District	2,342	573	184	757	0.3232
27-400	Clover Park School District	12,311	6,490	2,111	8,601	0.6986
27-401	Peninsula School District	8,560	1,650	491	2,141	0.2501
27-402	Franklin Pierce School District	7,791	4,209	811	5,020	0.6443
27-403	Bethel School District	17,519	6,175	1,412	7,587	0.4331
27-404	Eatonville School District	1,984	549	133	682	0.3438
27-416	White River School District	4,337	1,088	277	1,365	0.3147
27-417	Fife School District	3,551	1,131	348	1,479	0.4165
	Pierce Co.	127,275	46,726	10,566	57,292	0.4501
31-002	Everett School District	18,974	6,036	1,297	7,333	0.3865
31-004	Lake Stevens School District	8,088	1,922	672	2,594	0.3207
31-006	Mukilteo School District	14,508	5,902	1,030	6,932	0.4778
31-015	Edmonds School District	20,168	5,428	1,344	6,772	0.3358
31-016	Arlington Public Schools	5,607	1,040	395	1,435	0.2559
31-025	Marysville School District	11,797	4,058	891	4,949	0.4195
31-063	Index School District	39	21	1	22	0.5641
31-103	Monroe Public Schools	7,204	1,543	386	1,929	0.2678
31-201	Snohomish School District	10,081	1,635	415	2,050	0.2034
31-306	Lakewood School District	2,554	651	229	880	0.3446
31-311	Sultan School District	1,953	647	155	802	0.4107
31-330	Darrington School District	525	227	67	294	0.5600
31-332	Granite Falls School District	2,456	809	212	1,021	0.4157
31-401	Stanwood School District	4,926	1,003	275	1,278	0.2594
	Snohomish Co.	108,880	30,922	7,369	38,291	0.3517
	Central Puget Sound Total:	531,243	161,878	38,273	200,151	0.3765*

Source: OSPI, 2010c; "Public Schools Free and Reduced-Price Applications;" <http://www.k12.wa.us/ChildNutrition/Reports/FreeReducedMeals.aspx>

Appendix 4-5: School Lunch Table

	King	Kitsap	Pierce	Snohomish	Central Puget Sound*
Lunches Served/Year	20,184,306	3,206,016	12,592,526	9,018,849	45,001,697
Reimbursement Value of Lunches Sold (\$)	\$32,597,740	\$4,828,177	\$22,908,871	\$13,829,670	\$74,164,459
Free and Reduced Applications of Total Student Enrollment 2010	35.50%	34.90%	45.00%	35.20%	37.70%

Source: "Washington School Districts Listed by County." Municipal Research Services Center. Last modified June 2009. <http://www.mrsc.org/subjects/governance/spd/spd-schlst.aspx>; "County Level Enrollment June 15 2010." State of Washington Office of the Superintendent of Public Instruction. Spreadsheet. Accessed February 13, 2011. <http://www.k12.wa.us/DataAdmin/GenderEthnicity.aspx>; "Participation Report 2010." State of Washington Office of the Superintendent of Public Instruction. accessed February 13, 2011. <http://www.k12.wa.us/ChildNutrition/Reports/ParticipationReport2010.aspx>.

Appendix 8-1: County Comprehensive Plans

COUNTY COMPREHENSIVE PLANS					
	VISION 2040	Kitsap	King	Pierce	Snohomish
1 Local Food Production	+	+	+	+	++
2 Local Processing	x	x	x	x	x
3 Local Distribution	x	x	+	+	+
4 Local Food Procurement	+	+	x	+	+
5 Urban Agriculture	+	x	x	+	x
6 Emergency Preparedness/Food Security	x	x	x	x	x
7 Environmental Impacts	++	+	+	+	+
8 Social Equity and Food Access	+	x	+	x	+
9 Public Health	+	x	+	x	x
10 Coordinated Food Planning and Policy	x	x	x	x	x

Appendix 8-2: City Comprehensive Plans

CITY COMPREHENSIVE PLANS					
	Seattle	Tacoma	Everett	Bremerton	
1 Local Food Production	+	+	+	-	
2 Local Processing	x	x	x	x	
3 Local Distribution	+	+	x	x	
4 Local Food Procurement	x	+	x	x	
5 Urban Agriculture	++	++	x	+	
6 Emergency Preparedness/Food Security	x	x	x	x	
7 Environmental Impacts	+	x	+	+	
8 Social Equity and Food Access	+	+	x	x	
9 Public Health	+	x	x	x	
10 Coordinated Food Planning and Policy	x	x	x	x	