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GREATER PHILADELPHIA

FOOD SYSTEM STUDY

Appendices





The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals, and the public with the common vision of making a great region even greater. Shaping the way we live, work, and play, DVRPC builds consensus on improving transportation, promoting smart growth, protecting the environment, and enhancing the economy. We serve a diverse region of nine counties: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey. DVRPC is the official Metropolitan Planning Organization for the Greater Philadelphia Region—leading the way to a better future.

The symbol in our logo is adapted from the official DVRPC seal and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

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Greater Philadelphia Food System Study: *Appendices*

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Introduction

These technical appendices are a compendium to the *Greater Philadelphia Food System Study* (Publication Number: 09066A), an assessment of Greater Philadelphia's "100-mile foodshed" released in January 2010. An executive summary of the *Greater Philadelphia Food System Study* (Publication Number: 09066B) was released in May 2010.

A food *system* is a set of interconnected activities or sectors that grow, manufacture, transport, sell, prepare, and dispose of food from the farm to the plate to the garbage can or compost pile. Greater Philadelphia is comprised of many community food systems, but is also served by a regional food system, and fits within a global food system.

As the metropolitan planning organization for the nine-county region, the Delaware Valley Regional Planning Commission (DVRPC) is envisioning and actively preparing for a sustainable future amidst energy and climate uncertainties. Interest in the food system began when it became apparent how much food affects and is affected by many issues central to DVRPC's work, including land use planning, transportation, economic development, and natural resources and open space preservation. The *Greater Philadelphia Food System Study* was undertaken to better understand the complicated regional food system that feeds Greater Philadelphia.

A 70-county area, within five states makes up a 100-mile "foodshed," or the theoretical geographic area that supplies a portion of food for Greater Philadelphia's population. DVRPC's planning area, consisting of nine counties – Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in southeastern Pennsylvania; and Burlington, Camden, Gloucester, and Mercer counties in southern New Jersey – constitutes the foodshed's "population base."

These appendices provide more detail of DVRPC's analysis of the region's agricultural resources, food distribution trends, regional food economy, and food system stakeholders.

- **Appendix A: Agricultural Resources Data Tables**
The US Department of Agriculture's (USDA) Census of Agriculture has information on farming and farms aggregated to the county level, including average age and other characteristics of the principal operator, land in farms, average value per acre, the market value of products sold, and top counties for selected fruit and vegetables. This appendix provides some selected Census of Agriculture data for the 70 counties in the 100-mile Foodshed, spanning the five states of Pennsylvania, New Jersey, New York, Delaware, and Maryland.
- **Appendix B: Food Freight Analysis Framework**
The Freight Analysis Framework (FAF) is the primary tool DVRPC used to explore how food moves into, out of, and throughout the region. The FAF findings were outlined extensively in the Food Distribution section of the *Greater Philadelphia Food System Study*. This appendix provides more detailed information on the methodology for gathering and analyzing data for the entire FAF, including sourced databases, geographic boundaries, and data organization.

- **Appendix C: Food Commodity Summaries**
 There are 43 commodity codes within the FAF database that correlate with the Standard Classification of Transported Goods used by Bureau of Transportation Statistics and the US Census Bureau. Of the 43 classifications, there are eight commodities that are associated with the food industry. For the purposes of this study, the eight commodities and their movements constitute the Food FAF. The categories are: (1) live animals and fish, (2) cereal grains, (3) other agricultural products, (4) animal feed, (5) meat and seafood, (6) milled grain products, (7) other foodstuffs, and (8) alcoholic beverages. This appendix contains detailed descriptions of each of these commodity classifications, including the base year and forecasted values.
- **Appendix D: Food Miles Literature Review**
 This literature review targets articles and reports in four areas: (1) discussions of methodologies generally, (2) "food miles," (3) "lifecycle assessment" (LCA) methodologies, and (4) other types of studies. The articles and reports chosen for review within the *Greater Philadelphia Food System Study* were selected from an extensive bibliography of food-related studies and supplemented by other relevant literature reviews and research summaries.
- **Appendix E: Food Economy Sector Summaries**
 Economic data, including establishments and employees, trends, and regional examples, is provided for the following six sectors of the food economy: (1) Natural Resources and Agricultural Support, (2) Wholesale Trade, (3) Food and Beverage Manufacturing, (4) Transportation and Warehousing, (5) Food and Beverage Stores, and (6) Food Services and Drinking Places. The data analysis covers the 11-county Metropolitan Statistical Area (MSA). The data was collected by the US Census Bureau in the Economic Census (released every five years) and the annual County Business Patterns data. Where relevant, these comprehensive sources of information have been supplemented by additional data sources, such as Global Insight, a provider of economic and financial analysis. The six elements of the food system and their subsectors provided in this appendix exclude the agriculture production information measured by the USDA Census of Agriculture.
- **Appendix F: Identified Food System Stakeholders for Greater Philadelphia**
 Greater Philadelphia's Food System Stakeholders were first identified through Part 4: Stakeholder Analysis conducted between June and September of 2008. Prior to this publication, DVRPC staff updated the list based on recommendations from and new membership in the Stakeholder Committee as well as additional research. This appendix provides a brief description of each stakeholder (organizations, businesses, and individuals) and their associated food system activities.
- **Appendix G: Identified Research and Service Gaps**
 In Part 4: Stakeholder Analysis, survey respondents were asked: "What would you like to know about the food system? What information about food and farming would help you do your job better?" The answers are summarized and organized by theme in this appendix.

- **Appendix H: Stakeholder Analysis Sample Survey Questions**
DVRPC conducted a Stakeholder Analysis between June 2008 and September 2008 to gain a better understanding of Greater Philadelphia’s regional food system and its major actors, and Greater Philadelphia’s role in the global food system. The stakeholder analysis is Part 4 of the four-part Greater Philadelphia Food System Study and asks the question “who is doing what where?” This appendix provides a sample of the questions that were asked in an in-person interview, during a roundtable discussion, or through an online survey.
- **Appendix I: Stakeholder Analysis Interview Dates and Details**
This appendix lists all stakeholders interviewed between June 2008 and September 2008 for the Stakeholder Analysis. Over 100 individuals were interviewed in the three month period, through in-person interviews, telephone interviews, round tables, and tours.
- **Appendix J: Best Management Practices**
The Stakeholder Analysis conducted in the summer of 2008 generated a list of 66 best management practices (BMP). Stakeholders were asked to identify impressive programs, policies, or initiatives from outside of the Greater Philadelphia region. The Stakeholder Committee members narrowed that list to seven to be researched and profiled. Information was gathered based on primary contact with identified staff or policy makers, as well as print and digital resources. The BMPs demonstrate innovation or effectiveness in the following categories: (1) land access, (2) support services, (3) financing, (4) community enterprise, (5) urban agriculture, (6) city food policy councils, and (7) farm-to-school.
- **Appendix K: Bibliography**
Beginning in May 2007, DVRPC began researching food systems and food system planning in preparation for the *Greater Philadelphia Food System Study*. This appendix catalogues some of the resources that DVRPC drew upon, but did not directly cite, in the published study. The bibliography is organized by the type of resource: Books, Brochures, Journal Articles, Magazine and Newspaper Articles, Newsletters, Presentations, Reports and Papers, and Websites.

The *Greater Philadelphia Food System Study* is the first stage in DVRPC’s efforts to envision a more sustainable and resilient food system for the Greater Philadelphia region. Findings within the study will be used to learn more about a broad range of food supply issues, such as agricultural production, natural resources, the origins and destinations of food imports and exports, and the significance of the food economy, all of which are crucial to regional development. In July 2009, DVRPC commenced a second stage, which will outline a strategy for the region. This planning stage draws from the knowledge gained from convening a large stakeholder group and the results from the food system study. It will produce recommendations and create a comprehensive plan for a more sustainable and resilient food system. The latest updates and information on these efforts are available at www.dvrpc.org/food.

Appendix A: Agricultural Resources Data Tables

Figure A.1: Principal Operators' Average Years on Present Farm

State\County	2002	2007	Absolute Change in Years on Farm	State\County	2002	2007	Absolute Change in Years on Farm
Delaware\Kent	20.8	19.5	(1.3)	New Jersey\Warren	19.3	20.4	1.1
Delaware\New Castle	22.3	20.8	(1.5)	New York\Bronx	-	15	-
Delaware\Sussex	22.2	23.7	1.5	New York\Kings	(D)	14	-
Maryland\Anne Arundel	21.0	23.5	2.5	New York\Nassau	16.8	19.9	3.1
Maryland\Baltimore	22.5	23.4	0.9	New York\New York	18	-	-
Maryland\Caroline	20.3	22.4	2.1	New York\Orange	20.4	22.3	1.9
Maryland\Carroll	21.1	22.8	1.7	New York\Queens	(D)	12.3	-
Maryland\Cecil	21.8	20.6	(1.2)	New York\Richmond	25.5	28.3	2.8
Maryland\Dorchester	20.5	20.7	0.2	New York\Rockland	25.2	23.7	(1.5)
Maryland\Harford	21.6	21.6	0.0	New York\Westchester	18.7	19.3	0.6
Maryland\Howard	20.3	22.4	2.1	Pennsylvania\Adams	18.6	20.5	1.9
Maryland\Kent	22.1	21.7	(0.4)	Pennsylvania\Berk	20	21.5	1.5
Maryland\Queen Anne's	20.6	22.0	1.4	Pennsylvania\Bucks	20.4	23.1	2.7
Maryland\Talbot	18.8	21.6	2.8	Pennsylvania\Carbon	20.4	25.5	5.1
New Jersey\Atlantic	18.8	19.8	1.0	Pennsylvania\Chester	18.2	19.8	1.6
New Jersey\Bergen	23.9	26.7	2.8	Pennsylvania\Columbia	22.2	23.9	1.7
New Jersey\Burlington	18.6	20.6	2.0	Pennsylvania\Cumberland	19.4	20.6	1.2
New Jersey\Camden	20.8	20.8	0.0	Pennsylvania\Dauphin	20.2	21.1	0.9
New Jersey\Cape May	19.1	19.7	0.6	Pennsylvania\Delaware	23.1	18.6	(4.5)
New Jersey\Cumberland	18.6	21.1	2.5	Pennsylvania\Lackawanna	24.7	24.2	(0.5)
New Jersey\Essex	17.9	20.4	2.5	Pennsylvania\Lancaster	18	18.8	0.8
New Jersey\Gloucester	19.9	21.6	1.7	Pennsylvania\Lebanon	18.8	19.9	1.1
New Jersey\Hudson	-	-	-	Pennsylvania\Lehigh	21.1	22.6	1.5
New Jersey\Hunterdon	19.4	20.3	0.9	Pennsylvania\Luzerne	24.9	23.7	(1.2)
New Jersey\Mercer	20.6	22.0	1.4	Pennsylvania\Monroe	19.9	19.9	0.0
New Jersey\Middlesex	21.1	23.8	2.7	Pennsylvania\Montgomery	22.7	22.7	0
New Jersey\Monmouth	19.0	21.0	2.0	Pennsylvania\Montour	22.8	20.7	(2.1)
New Jersey\Morris	20.6	20.4	(0.2)	Pennsylvania\Northampton	21.9	23.2	1.3
New Jersey\Ocean	19.7	19	(0.7)	Pennsylvania\Northumberland	21.1	22.4	1.3
New Jersey\Passaic	17.5	18.9	1.4	Pennsylvania\Perry	22.5	22.8	0.3
New Jersey\Salem	20	20.9	0.9	Pennsylvania\Philadelphia	16.7	10.2	(6.5)
New Jersey\Somerset	20.3	19.5	(0.8)	Pennsylvania\Pike	21.3	23.7	2.4
New Jersey\Sussex	18.7	20	1.3	Pennsylvania\Schuylkill	22.1	21.3	(0.8)
New Jersey\Union	27.4	28	0.6	Pennsylvania\Wayne	23.5	23.3	(0.2)
				Pennsylvania\York	19.4	22.1	2.7

Source: USDA 2009, DVRPC 2009

Figure A.2: Land in Farms

State\County	Total Land Area	1987	1992	1997	2002	2007	% of Land Area in Farms (2007)	Change (1987 - 2007)
Delaware\Kent	383,298	201,444	197,375	194,554	185,329	173,808	45.3%	-13.7%
Delaware\New Castle	300,277	93,994	87,134	77,302	71,248	66,981	22.3%	-28.7%
Delaware\Sussex	604,344	312,803	304,680	307,689	283,503	269,464	44.6%	-13.9%
Maryland\Anne Arundel	266,821	42,413	43,320	34,679	35,218	29,244	11.0%	-31.0%
Maryland\Baltimore	440,496	92,806	83,232	75,795	71,227	78,282	17.8%	-15.6%
Maryland\Caroline	207,663	132,804	126,981	111,316	114,843	131,277	63.2%	-1.1%
Maryland\Carroll	289,434	166,745	157,505	160,180	147,252	141,934	49.0%	-14.9%
Maryland\Cecil	230,265	86,861	80,241	85,702	77,089	85,026	36.9%	-2.1%
Maryland\Dorchester	364,197	125,019	123,762	122,928	125,385	133,188	36.6%	6.5%
Maryland\Harford	286,175	99,948	97,312	94,112	81,409	75,166	26.3%	-24.8%
Maryland\Howard	162,002	54,041	44,623	39,846	37,582	29,371	18.1%	-45.7%
Maryland\Kent	182,112	133,597	131,283	117,526	117,372	128,220	70.4%	-4.0%
Maryland\Queen Anne's	240,112	170,677	165,349	167,957	155,566	146,927	61.2%	-13.9%
Maryland\Talbot	174,960	109,032	109,108	109,572	105,729	109,002	62.3%	0.0%
New Jersey\Atlantic	351,818	29,423	29,606	31,050	30,337	30,372	8.6%	3.2%
New Jersey\Bergen	157,883	2,596	2,636	2,633	1,283	1,177	0.7%	-54.7%
New Jersey\Burlington	523,844	103,224	97,186	103,667	111,237	85,790	16.4%	-16.9%
New Jersey\Camden	145,649	10,033	7,799	9,007	10,259	8,760	6.0%	-12.7%
New Jersey\Cape May	159,172	13,553	11,644	9,669	10,037	7,976	5.0%	-41.1%
New Jersey\Cumberland	322,693	72,406	68,627	66,288	71,097	69,489	21.5%	-4.0%
New Jersey\Essex	81,932	580	613	(D)	153	184	0.2%	-68.3%
New Jersey\Gloucester	215,691	62,128	61,748	58,373	50,753	46,662	21.6%	-24.9%
New Jersey\Hudson	32,847	-	-	-	-	-	NA	NA
New Jersey\Hunterdon	280,100	123,698	106,324	105,230	109,241	100,027	35.7%	-19.1%
New Jersey\Mercer	146,523	41,303	35,786	28,391	25,070	21,730	14.8%	-47.4%
New Jersey\Middlesex	202,399	25,222	25,011	28,100	21,824	18,717	9.2%	-25.8%
New Jersey\Monmouth	305,273	65,846	58,758	59,405	47,198	44,130	14.5%	-33.0%
New Jersey\Morris	308,093	27,086	23,915	22,351	17,233	17,028	5.5%	-37.1%
New Jersey\Ocean	409,203	8,820	10,365	11,381	12,239	9,833	2.4%	11.5%
New Jersey\Passaic	126,167	1,380	1,838	2,232	1,526	1,981	1.6%	43.6%
New Jersey\Salem	222,950	95,265	98,256	92,047	96,238	96,530	43.3%	1.3%
New Jersey\Somerset	195,290	45,190	43,989	46,258	36,237	32,721	16.8%	-27.6%
New Jersey\Sussex	342,993	78,641	75,531	73,001	75,496	65,242	19.0%	-17.0%
New Jersey\Union	66,547	449	325	(D)	182	126	0.2%	-71.9%
New Jersey\Warren	232,255	87,583	87,638	82,900	78,042	74,975	32.3%	-14.4%
New York\Bronx	27,648	(D)	(D)	(D)	-	(D)	NA	NA
New York\Kings	43,918	4	4	8	(D)	(D)	NA	NA
New York\Nassau	177,520	1,471	1,890	1,390	1,118	1,288	0.7%	-12.4%
New York\New York	17,857	(D)	(D)	(D)	4	-	NA	NA
New York\Orange	536,790	114,928	102,733	94,771	107,977	80,990	15.1%	-29.5%
New York\Queens	68,909	(D)	(D)	(D)	(D)	(D)	NA	NA
New York\Richmond	37,149	16	(D)	29	44	(D)	NA	NA
New York\Rockland	127,570	1,107	8	561	(D)	(D)	NA	NA
New York\Westchester	304,150	8,519	5,709	7,528	9,917	8,521	2.8%	0.0%

State\County	Total Land Area	1987	1992	1997	2002	2007	% of Land Area in Farms (2007)	Change (1987 - 2007)
Pennsylvania\Adams	333,772	187,035	172,366	178,780	181,081	174,595	52.3%	-6.7%
Pennsylvania\Berk	553,660	243,260	221,981	221,511	215,679	222,119	40.1%	-8.7%
Pennsylvania\Bucks	398,190	85,113	76,790	83,534	76,831	75,883	19.1%	-10.8%
Pennsylvania\Carbon	247,931	21,720	19,026	19,838	19,257	20,035	8.1%	-7.8%
Pennsylvania\Chester	486,050	189,943	176,643	175,363	168,165	166,891	34.3%	-12.1%
Pennsylvania\Columbia	313,399	110,096	101,816	110,408	123,514	122,621	39.1%	11.4%
Pennsylvania\Cumberland	352,753	153,745	141,919	143,163	143,159	157,388	44.6%	2.4%
Pennsylvania\Dauphin	356,291	101,692	90,298	86,522	94,983	89,533	25.1%	-12.0%
Pennsylvania\Delaware	122,273	8,036	5,095	4,841	(D)	4,361	3.6%	-45.7%
Pennsylvania\Lackawanna	297,118	42,033	36,963	29,509	32,931	39,756	13.4%	-5.4%
Pennsylvania\Lancaster	629,953	403,964	388,368	391,836	411,848	425,336	67.5%	5.3%
Pennsylvania\Lebanon	232,375	117,405	104,519	110,638	125,066	113,486	48.8%	-3.3%
Pennsylvania\Lehigh	223,006	96,931	82,982	91,629	91,304	84,643	38.0%	-12.7%
Pennsylvania\Luzerne	580,319	58,441	49,850	57,317	73,216	66,577	11.5%	13.9%
Pennsylvania\Monroe	394,981	26,898	20,777	26,145	32,938	29,165	7.4%	8.4%
Pennsylvania\Montgomery	311,955	56,734	44,425	41,552	48,327	41,908	13.4%	-26.1%
Pennsylvania\Montour	84,625	41,870	41,347	39,957	39,964	50,252	59.4%	20.0%
Pennsylvania\Northampton	241,458	86,694	81,479	78,317	77,556	68,252	28.3%	-21.3%
Pennsylvania\Northumberland	305,616	125,673	109,438	114,936	119,129	147,660	48.3%	17.5%
Pennsylvania\Perry	355,748	112,654	104,292	114,882	129,092	144,375	40.6%	28.2%
Pennsylvania\Philadelphia	91,301	47	(D)	285	(D)	262	0.3%	457.4%
Pennsylvania\Pike	362,520	5,472	6,197	5,566	10,113	27,569	7.6%	403.8%
Pennsylvania\Schuylkill	501,261	96,961	89,045	90,331	110,946	118,501	23.6%	22.2%
Pennsylvania\Wayne	480,461	138,960	121,907	109,615	113,167	92,939	19.3%	-33.1%
Pennsylvania\York	582,695	278,239	252,052	261,164	285,336	292,507	50.2%	5.1%
100-Mile Total	19,142,699	5,632,271	5,249,419	5,223,067	5,257,096	5,198,753	27.2%	-7.7%
United States	2,264,000,000	964470625	945531506	931795255	938,279,056	922,095,840	40.7%	-4.4%

Source: USDA 2009, DVRPC 2009

Figure A.3: Average Value per Acre (2002 and 2007)

State\County	2002 Average per acre	2007 Average per acre	% Change	2002 Average per farm	2007 Average per farm	% Change
Delaware\Kent	\$3,498	\$9,926	183.8%	\$905,260	\$2,091,272	131.0%
Delaware\New Castle	\$5,681	\$11,892	109.3%	\$1,331,761	\$2,295,500	72.4%
Delaware\Sussex	\$3,951	\$10,234	159.0%	\$926,312	\$2,006,959	116.7%
Maryland\Anne Arundel	\$7,475	\$13,204	76.6%	\$566,783	\$1,024,267	80.7%
Maryland\Baltimore	\$6,824	\$9,209	35.0%	\$614,858	\$959,869	56.1%
Maryland\Caroline	\$2,951	\$5,510	86.7%	\$623,769	\$1,260,068	102.0%
Maryland\Carroll	\$5,629	\$7,881	40.0%	\$751,710	\$974,324	29.6%
Maryland\Cecil	\$5,799	\$7,690	32.6%	\$976,857	\$1,121,597	14.8%
Maryland\Dorchester	\$2,704	\$4,896	81.1%	\$1,008,456	\$1,538,075	52.5%
Maryland\Harford	\$4,903	\$9,721	98.3%	\$610,832	\$1,037,882	69.9%
Maryland\Howard	\$6,071	\$13,212	117.6%	\$717,316	\$1,158,349	61.5%
Maryland\Kent	\$3,380	\$6,105	80.6%	\$1,235,084	\$2,076,300	68.1%
Maryland\Queen Anne's	\$3,144	\$5,786	84.0%	\$1,144,839	\$1,631,776	42.5%
Maryland\Talbot	\$4,203	\$6,169	46.8%	\$1,583,295	\$2,204,538	39.2%
New Jersey\Atlantic	\$5,796	\$14,827	155.8%	\$414,096	\$902,470	117.9%
New Jersey\Bergen	\$48,159	\$69,192	43.7%	\$684,924	\$915,051	33.6%
New Jersey\Burlington	\$6,778	\$11,981	76.8%	\$867,945	\$1,114,826	28.4%
New Jersey\Camden	\$11,446	\$15,473	35.2%	\$519,176	\$602,414	16.0%
New Jersey\Cape May	\$7,049	\$16,055	127.8%	\$341,959	\$637,097	86.3%
New Jersey\Cumberland	\$4,714	\$9,346	98.3%	\$585,323	\$1,056,005	80.4%
New Jersey\Essex	\$45,867	\$92,052	100.7%	\$495,369	\$1,302,885	163.0%
New Jersey\Gloucester	\$9,485	\$15,459	63.0%	\$671,557	\$1,078,215	60.6%
New Jersey\Hudson	-	-	-	-	-	-
New Jersey\Hunterdon	\$11,994	\$20,174	68.2%	\$882,975	\$1,243,324	40.8%
New Jersey\Mercer	\$18,855	\$18,813	-0.2%	\$1,296,915	\$1,314,520	1.4%
New Jersey\Middlesex	\$14,664	\$20,289	38.4%	\$1,060,696	\$1,609,071	51.7%
New Jersey\Monmouth	\$17,187	\$23,718	38.0%	\$791,503	\$1,123,048	41.9%
New Jersey\Morris	\$26,419	\$24,606	-6.9%	\$1,025,669	\$992,865	-3.2%
New Jersey\Ocean	\$14,522	\$18,116	24.7%	\$455,399	\$698,579	53.4%
New Jersey\Passaic	\$32,161	\$40,965	27.4%	\$707,097	\$787,880	11.4%
New Jersey\Salem	\$4,572	\$10,475	129.1%	\$593,464	\$1,332,268	124.5%
New Jersey\Somerset	\$14,440	\$20,474	41.8%	\$911,321	\$1,505,463	65.2%
New Jersey\Sussex	\$7,136	\$13,625	90.9%	\$505,823	\$838,636	65.8%
New Jersey\Union	\$93,158	\$133,263	43.1%	\$962,630	\$1,119,405	16.3%
New Jersey\Warren	\$7,428	\$12,350	66.3%	\$773,777	\$992,474	28.3%
New York\Bronx	-	(D)	(D)	-	(D)	(D)
New York\Kings	(D)	(D)	(D)	(D)	(D)	(D)
New York\Nassau	\$30,396	\$98,997	225.7%	\$572,913	\$2,161,159	277.2%
New York\New York	\$7,500	-	-	\$7,500	-	-
New York\Orange	\$4,339	\$5,150	18.7%	\$664,668	\$649,645	-2.3%
New York\Queens	(D)	(D)	(D)	(D)	(D)	(D)
New York\Richmond	\$98,954	\$120,776	22.1%	\$273,578	\$379,581	38.7%
New York\Rockland	\$25,154	\$56,515	124.7%	\$1,075,563	\$651,265	-39.4%
New York\Westchester	\$15,094	\$31,812	110.8%	\$1,087,369	\$2,557,300	135.2%
Pennsylvania\Adams	\$3,781	\$6,389	69.0%	\$594,491	\$865,422	45.6%
Pennsylvania\Berks	\$5,527	\$6,882	24.5%	\$661,305	\$772,086	16.8%

State\County	2002 Average per acre	2007 Average per acre	% Change	2002 Average per farm	2007 Average per farm	% Change
Pennsylvania\Bucks	\$9,418	\$9,951	5.7%	\$768,909	\$808,476	5.1%
Pennsylvania\Carbon	\$4,436	\$5,468	23.3%	\$419,182	\$529,262	26.3%
Pennsylvania\Chester	\$10,358	\$10,740	3.7%	\$889,836	\$1,034,252	16.2%
Pennsylvania\Columbia	\$3,137	\$4,210	34.2%	\$448,782	\$536,605	19.6%
Pennsylvania\Cumberland	\$3,826	\$6,347	65.9%	\$484,967	\$644,525	32.9%
Pennsylvania\Dauphin	\$5,291	\$6,101	15.3%	\$556,467	\$653,346	17.4%
Pennsylvania\Delaware	\$22,852	\$13,020	-43.0%	\$764,965	\$718,736	-6.0%
Pennsylvania\Lackawanna	\$3,205	\$4,933	53.9%	\$333,285	\$470,318	41.1%
Pennsylvania\Lancaster	\$7,955	\$9,324	17.2%	\$610,359	\$726,059	19.0%
Pennsylvania\Lebanon	\$5,349	\$8,319	55.5%	\$592,004	\$791,376	33.7%
Pennsylvania\Lehigh	\$4,504	\$5,874	30.4%	\$610,357	\$963,477	57.9%
Pennsylvania\Luzerne	\$3,541	\$4,728	33.5%	\$551,229	\$515,986	-6.4%
Pennsylvania\Monroe	\$5,191	\$7,069	36.2%	\$567,011	\$590,756	4.2%
Pennsylvania\Montgomery	\$12,748	\$10,025	-21.4%	\$698,038	\$584,297	-16.3%
Pennsylvania\Montour	\$2,996	\$5,117	70.8%	\$385,870	\$441,064	14.3%
Pennsylvania\Northampton	\$4,862	\$6,083	25.1%	\$720,687	\$854,282	18.5%
Pennsylvania\Northumberland	\$3,099	\$4,038	30.3%	\$494,522	\$636,980	28.8%
Pennsylvania\Perry	\$3,203	\$4,419	38.0%	\$473,540	\$636,686	34.5%
Pennsylvania\Philadelphia	\$26,090	\$35,031	34.3%	\$629,052	\$539,894	-14.2%
Pennsylvania\Pike	\$2,878	\$1,664	-42.2%	\$506,258	\$849,318	67.8%
Pennsylvania\Schuylkill	\$3,383	\$5,012	48.2%	\$398,309	\$614,809	54.4%
Pennsylvania\Wayne	\$2,111	\$4,137	96.0%	\$356,704	\$637,576	78.7%
Pennsylvania\York	\$4,805	\$5,680	18.2%	\$542,750	\$701,059	29.2%
100-Mile Foodshed	\$5,660	\$8,380	48.1%	\$680,596	\$953,897	40.2%

Source: USDA 2009, DVRPC 2009

Figure A.4: Market Value of Products Sold by Counties

State\County	Number of Farms	2007 Market value of agricultural products sold	% of 100-Mile Total Market Value	Rank among 3,076 US Counties
Delaware\Kent	825	\$188,390,000	2.8%	366
Delaware\New Castle	347	\$45,703,000	0.7%	1,646
Delaware\Sussex	1,374	\$848,942,000	12.6%	28
Maryland\Anne Arundel	377	\$19,090,000	0.3%	2,288
Maryland\Baltimore	751	\$68,423,000	1.0%	1,272
Maryland\Caroline	574	\$186,039,000	2.8%	372
Maryland\Carroll	1,148	\$87,406,000	1.3%	1,010
Maryland\Cecil	583	\$95,789,000	1.4%	925
Maryland\Dorchester	424	\$166,732,000	2.5%	455
Maryland\Harford	704	\$42,865,000	0.6%	1,699
Maryland\Howard	335	\$22,685,000	0.3%	2,176
Maryland\Kent	377	\$85,711,000	1.3%	1,033
Maryland\Queen Anne's	521	\$113,328,000	1.7%	770
Maryland\Talbot	305	\$50,541,000	0.8%	1,552
New Jersey\Atlantic	499	\$128,339,000	1.9%	675
New Jersey\Bergen	89	\$8,694,000	0.1%	2,653
New Jersey\Burlington	922	\$86,302,000	1.3%	1,025
New Jersey\Camden	225	\$18,554,000	0.3%	2,310
New Jersey\Cape May	201	\$14,586,000	0.2%	2,426
New Jersey\Cumberland	615	\$156,939,000	2.3%	505
New Jersey\Essex	13	\$710,000	0.0%	3,025
New Jersey\Gloucester	669	\$93,883,000	1.4%	946
New Jersey\Hudson	--	--	--	--
New Jersey\Hunterdon	1,623	\$69,745,000	1.0%	1,250
New Jersey\Mercer	311	\$18,646,000	0.3%	2,305
New Jersey\Middlesex	236	\$41,854,000	0.6%	1,725
New Jersey\Monmouth	932	\$105,413,000	1.6%	841
New Jersey\Morris	422	\$27,312,000	0.4%	2,050
New Jersey\Ocean	255	\$11,515,000	0.2%	2,547
New Jersey\Passaic	103	\$6,318,000	0.1%	2,751
New Jersey\Salem	759	\$79,962,000	1.2%	1,104
New Jersey\Somerset	445	\$18,911,000	0.3%	2,296
New Jersey\Sussex	1,060	\$21,242,000	0.3%	2,210
New Jersey\Union	15	\$2,483,000	0.0%	2,948
New Jersey\Warren	933	\$75,477,000	1.1%	1,163
New York\Bronx	1	--	--	--
New York\Kings	1	--	--	--
New York\Nassau	59	\$15,799,000	0.2%	2,392
New York\New York	-	--	--	--
New York\Orange	642	\$73,748,000	1.1%	1,192
New York\Queens	4	\$117,000	--	--
New York\Richmond	14	\$5,174,000	0.1%	2,799
New York\Rockland	21	\$2,560,000	0.0%	2,939
New York\Westchester	106	\$10,998,000	0.2%	2,570
Pennsylvania\Adams	1,289	\$216,994,000	3.2%	281
Pennsylvania\Berk	1,980	\$367,840,000	5.5%	108

State\County	Number of Farms	2007 Market value of agricultural products sold	% of 100-Mile Total Market Value	Rank among 3,076 US Counties
Pennsylvania\Bucks	934	\$70,573,000	1.0%	1,236
Pennsylvania\Carbon	207	\$8,944,000	0.1%	2,642
Pennsylvania\Chester	1,733	\$553,290,000	8.2%	49
Pennsylvania\Columbia	962	\$45,874,000	0.7%	1,642
Pennsylvania\Cumberland	1,550	\$132,803,000	2.0%	649
Pennsylvania\Dauphin	836	\$82,887,000	1.2%	1,070
Pennsylvania\Delaware	79	\$9,455,000	0.1%	2,620
Pennsylvania\Lackawanna	417	\$16,216,000	0.2%	2,382
Pennsylvania\Lancaster	5,462	\$1,072,151,000	15.9%	18
Pennsylvania\Lebanon	1,193	\$257,097,000	3.8%	206
Pennsylvania\Lehigh	516	\$72,059,000	1.1%	1,212
Pennsylvania\Luzerne	610	\$18,151,000	0.3%	2,320
Pennsylvania\Monroe	349	\$7,819,000	0.1%	2,700
Pennsylvania\Montgomery	719	\$30,028,000	0.4%	1,986
Pennsylvania\Montour	583	\$36,193,000	0.5%	1,838
Pennsylvania\Northampton	486	\$31,762,000	0.5%	1,942
Pennsylvania\Northumberland	936	\$110,978,000	1.6%	795
Pennsylvania\Perry	1,002	\$105,052,000	1.6%	849
Pennsylvania\Philadelphia	17	\$487,000	0.0%	3,035
Pennsylvania\Pike	54	\$2,524,000	0.0%	2,942
Pennsylvania\Schuylkill	966	\$124,752,000	1.9%	702
Pennsylvania\Wayne	603	\$29,428,000	0.4%	1,998
Pennsylvania\York	2,370	\$212,634,000	3.2%	289
100-Mile Foodshed Total	45,673	\$6,732,916,000		

Source: USDA 2009, DVRPC 2009

Figure A.5: Vegetables and Fruits by Top County

Vegetables	2007 Top County by Acreage	Vegetables	2007 Top County by Acreage
Asparagus	Gloucester, NJ	Kale	Cumberland, NJ
Beets	Cumberland, NJ	Lettuce	Cumberland, NJ
Broccoli	Lancaster, PA	Mustard greens	Cumberland, NJ
Brussels Sprouts	Cumberland, NJ	Okra	Cumberland, NJ
Cabbage, head	Cumberland, NJ	Onions, Dry	Orange, NY
Cantaloupes	Lancaster, PA	Onions, Green	Cumberland, NJ
Carrots	Salem, NJ	Parsley	Cumberland, NJ
Cauliflower	Lancaster, PA	Peas, Chinese (sugar and snow)	Bucks, PA
Celery	Lancaster, PA	Peas, Green	Sussex, DE
Chinese Cabbage	Monmouth, NJ	Peas, Southern (black-eyed)	Sussex, DE
Collards	Cumberland, NJ	Peppers (other than bell)	Dorchester, MD
Cucumbers & Pickles	Sussex, DE	Peppers, Bell	Gloucester, NJ
Eggplants	Gloucester, NJ	Potatoes	Dorchester, MD
Escarole & Endives	Cumberland, NJ	Pumpkins	Lancaster, PA
Garlic	Monroe, PA	Radishes	Cumberland, NJ
Green Lima Beans	Sussex, DE	Snap Beans	Carroll, MD
Green Peas	Sussex, DE	Spinach	Salem, NJ
Herbs, Fresh cut	Atlantic, NJ	Squash, All	Gloucester, NJ
Vegetables	2007 Top County by Acreage	Fruits	2007 Top County by Acreage
Sweet Corn	Sussex, DE	Apples	Adams, PA
Sweet Potatoes	Camden, NJ	Apricots	Adams, PA
Tomatoes in the Open	Gloucester, NJ	Cherries	Adams, PA
Turnip greens	Gloucester, NJ	Grapes	Chester, PA
Turnips	Gloucester, NJ	Nectarines	Cumberland, NJ
Vegetables, Others	Monmouth, NJ	Nuts	Cumberland, NJ
Watermelons	Sussex, DE	Peaches	Gloucester, NJ
		Pears	Adams, PA
		Plums	Orange, NY

Source: USDA 2009, DVRPC 2009

Figure A.6: 2007 Principal Operators' Characteristics

State\County	Average age of Principal Operator (years)	Principal Operators by Primary Occupation		% Primary Occupation Farming	Principal Operators by sex		% Women Principal Operators
		Farming	Other		Male	Female	
Delaware\Kent	53.4	482	343	58.4%	674	151	18.3%
Delaware\New Castle	57.8	173	174	49.9%	293	54	15.6%
Delaware\Sussex	55.9	849	525	61.8%	1,170	204	14.8%
Maryland\Anne Arundel	59.4	187	190	49.6%	270	107	28.4%
Maryland\Baltimore	58.8	356	386	48.0%	570	181	24.1%
Maryland\Caroline	56.2	335	239	58.4%	498	76	13.2%
Maryland\Carroll	57.2	565	583	49.2%	947	201	17.5%
Maryland\Cecil	56.6	296	287	50.8%	438	145	24.9%
Maryland\Dorchester	57.6	249	175	58.7%	376	48	11.3%
Maryland\Harford	57.1	288	416	40.9%	570	134	19.0%
Maryland\Howard	58.3	132	203	39.4%	241	94	28.1%
Maryland\Kent	59.6	200	177	53.1%	311	66	17.5%
Maryland\Queen Anne's	57.9	270	251	51.8%	454	67	12.9%
Maryland\Talbot	58.5	144	161	47.2%	284	21	6.9%
New Jersey\Atlantic	54.8	226	273	45.3%	401	98	19.6%
New Jersey\Bergen	59.2	51	38	57.3%	77	12	13.5%
New Jersey\Burlington	57.4	443	479	48.0%	712	210	22.8%
New Jersey\Camden	57.1	91	134	40.4%	175	50	22.2%
New Jersey\Cape May	58.6	102	99	50.7%	152	49	24.4%
New Jersey\Cumberland	55.9	324	291	52.7%	498	117	19.0%
New Jersey\Essex	58.8	6	7	46.2%	10	3	23.1%
New Jersey\Gloucester	56.1	306	363	45.7%	537	132	19.7%
New Jersey\Hudson	N/A	N/A	N/A	N/A	N/A	N/A	N/A
New Jersey\Hunterdon	57.6	639	984	39.4%	1,256	367	22.6%
New Jersey\Mercer	58.3	127	184	40.8%	235	76	24.4%
New Jersey\Middlesex	57.1	106	130	44.9%	198	38	16.1%
New Jersey\Monmouth	57.8	445	487	47.7%	712	220	23.6%
New Jersey\Morris	57.7	158	264	37.4%	325	97	23.0%
New Jersey\Ocean	56.3	113	142	44.3%	178	77	30.2%
New Jersey\Passaic	56.9	43	60	41.7%	76	27	26.2%
New Jersey\Salem	56.1	396	363	52.2%	633	126	16.6%
New Jersey\Somerset	57.8	167	278	37.5%	337	108	24.3%
New Jersey\Sussex	57.3	430	630	40.6%	821	239	22.5%
New Jersey\Union	61.8	10	5	66.7%	13	2	13.3%
New Jersey\Warren	57.2	443	490	47.5%	720	213	22.8%
New York\Bronx	N/A	N/A	N/A	N/A	N/A	N/A	N/A
New York\Kings	N/A	N/A	N/A	N/A	N/A	N/A	N/A
New York\Nassau	55.1	24	35	40.7%	39	20	33.9%
New York\New York	N/A	N/A	N/A	N/A	N/A	N/A	N/A
New York\Orange	56.4	393	249	61.2%	461	181	28.2%
New York\Queens	N/A	N/A	N/A	N/A	N/A	N/A	N/A
New York\Richmond	60.5	4	10	28.6%	12	2	14.3%
New York\Rockland	61	9	12	42.9%	17	4	19.0%

	Average age of Principal Operator (years)	Principal Operators by Primary Occupation		% Primary Occupation Farming	Principal Operators by sex		% Women Principal Operators
State\County		Farming	Other		Male	Female	
New York\Westchester	56.8	46	60	43.4%	73	33	31.1%
Pennsylvania\Adams	55.2	598	691	46.4%	1,105	184	14.3%
Pennsylvania\Berks	54.4	1,080	900	54.5%	1,708	272	13.7%
Pennsylvania\Bucks	57.2	435	499	46.6%	737	197	21.1%
Pennsylvania\Carbon	55	77	130	37.2%	179	25	12.3%
Pennsylvania\Chester	53.5	932	801	53.8%	1,360	373	21.5%
Pennsylvania\Columbia	57.7	370	592	38.5%	791	171	17.8%
Pennsylvania\Cumberland	54.1	690	860	44.5%	1,336	214	13.8%
Pennsylvania\Dauphin	54.7	342	494	40.9%	719	117	14.0%
Pennsylvania\Delaware	57.6	29	50	36.7%	61	18	22.8%
Pennsylvania\Lackawanna	58	132	285	31.7%	352	65	15.6%
Pennsylvania\Lancaster	47.7	3,501	1,961	64.1%	5,065	397	7.3%
Pennsylvania\Lebanon	51.7	654	539	54.8%	1,069	124	10.4%
Pennsylvania\Lehigh	56.9	258	258	50.0%	429	87	16.9%
Pennsylvania\Luzerne	57.8	245	365	40.2%	498	112	18.4%
Pennsylvania\Monroe	55.8	146	203	41.8%	276	73	20.9%
Pennsylvania\Montgomery	58.8	305	414	42.4%	558	161	22.4%
Pennsylvania\Montour	54.6	209	374	35.8%	513	70	12.0%
Pennsylvania\Northampton	58	226	260	46.5%	423	63	13.0%
Pennsylvania\Northumberland	55	420	516	44.9%	830	106	11.3%
Pennsylvania\Perry	56.8	430	572	42.9%	841	161	16.1%
Pennsylvania\Philadelphia	50.4	11	6	64.7%	7	10	58.8%
Pennsylvania\Pike	57.9	19	35	35.2%	41	13	24.1%
Pennsylvania\Schuylkill	54.6	341	625	35.3%	860	106	11.0%
Pennsylvania\Wayne	57.7	314	289	52.1%	504	99	16.4%
Pennsylvania\York	55.8	1,071	1,299	45.2%	2,069	301	12.7%
100-Mile Total	55.2	22,463	23,195	49.2%	38,095	7,569	16.6%
United States Total	57.1	993,881	1,210,911	45.1%	1,898,583	306,209	13.9%

Source: USDA 2009, DVRPC 2009

Appendix B: Food Freight Analysis Framework – Technical Details

The Freight Analysis Framework (FAF) is one of the tools that DVRPC used to explore how food moves into, out of, and throughout the region. Its findings were outlined extensively in the Food Distribution section of the Greater Philadelphia Food System Study. The following pages provide more detailed information on the methodology for gathering and analyzing data for the entire FAF and for the food components more specifically, including sourced databases, geographic boundaries, and data organization.

FAF Databases

The FAF uses numerous data sources to create a national database for freight movements. It is primarily based on the 2002 Commodity Flow Survey (CFS) and uses 2002 as its base year. The CFS is a survey of manufacturing, mining, wholesale, and select retail establishments (namely, electronic shopping) that asks participants to identify the movement of their goods within the United States. It is undertaken by a partnership of the U.S. Census Bureau, the U.S. Department of Commerce, and the U.S. Department of Transportation's Bureau of Transportation Statistics (BTS). The survey is sent to 50,000 businesses chosen by geographic location and industry. The selected establishment is asked to report a sample of individual shipments for a one-week period in each calendar quarter. The collected data is identified by commodity type, weight, value, and destination for each reported shipment. The U.S. Census Bureau is in charge of this survey portion of the data collection; once assimilated, the data is sent to the BTS for analysis and aggregation.

Because the FAF uses the CFS as its major data source, the FAF can track the flow of products transported between manufacturers, processors,

warehouses, and retail establishments.

Therefore, the Food FAF infers the volume and type of food that enters the region, circulates within the region, and is exported out of the region.

The CFS does not cover businesses classified in services, transportation, construction, some retail industries, farms, fisheries, foreign establishments, and most government-owned establishments. To close the gaps and create a complete picture of freight movement, other data sources (detailed below) are integrated into the CFS database to arrive at the FAF database. The other major databases used in the FAF include:

- The Carload Waybill Sample is a sample of carload waybills for terminated shipments by U.S. railroad carriers. The Association of American Railroads (AAR) collects the waybill information from railroads that moved “at minimum” 4,500 carloads each year for the past three years, or moved five percent or more of any state’s total rail traffic.
- The Domestic Waterborne Commerce Inventory of the United States, provided by the U.S. Army Corps of Engineers (the Army Corps), provides data on waterborne commerce. Included in the data are all movements by inland barges and ships over the nation’s rivers, lakes, and the U.S. Intra-Coastal Waterway. Movements are tracked using the Army Corps’ Vessel Operating Reports, as well as its Lock Performance Monitoring System.
- The International Waterborne Commerce Inventory of the United States, also provided by the Army Corps, is based on information supplied to the Corps by the U.S. Census Bureau. This data covers both bulk and containerized shipments on all vessels engaged in U.S. foreign trade and transportation.

- The Transborder Surface Freight database has data from the U.S. Customs Services, via the U.S. Census Bureau. The database provides the dollar value of imports and exports at the Canadian and Mexican borders, as well as the tonnage of the imports.
- The U.S. Air Freight Movements documents the weight and origin/destination of domestic and international revenue-generating air freight entering the country. The data used in FAF reports the annual payload (weight in tons) of U.S. mail, as well as freight flown between U.S. airports over the course of the year.

Even with the incorporation of these five databases to the CFS, there are still some significant gaps in the database. As part of the FAF 2.2 effort, Oak Ridge National Laboratory, in collaboration with the BTS and MacroSys Incorporated, identified 15 additional CFS gaps and undercounts. For example, these databases do not include farm commodities from the farm to the first point of sale or fish and seafood from the fisherman's boat to the processor. Nevertheless, the FAF still provides an impressive picture of freight movements that is illuminating when applied to the regional food system.

FAF Data Organization

The FAF database is organized into millions of data cells for each permutation of commodity, origin, destination, and mode. Each cell is then assigned a weight and value for the base year 2002 and for the forecast years 2010, 2015, 2020, 2025, 2030, and 2035.

Geography: Origins and Destinations

The first two fields in the FAF database are origin and destination. These data fields track which region a particular commodity is traveling

to and from. The FAF is broken up into 114 geographical regions within the United States. The regions are based on Metropolitan Statistical Areas (MSAs) and Consolidated Statistical Areas (CSAs), as defined by the U.S. Census Bureau, or entire states and/or balances of states. For the purposes of this study, DVRPC evaluated the movements of commodities for four geographic areas: a) the Philadelphia CSA, b) the 100-Mile Foodshed, c) other domestic, and d) international.

A) The Philadelphia CSA: The Philadelphia Metropolitan area is referred to as the Philadelphia CSA and varies slightly from the DVRPC region. The Philadelphia CSA includes Salem and Cumberland counties, which are not part of the DVRPC region, and does not include Mercer County, which is part of the DVRPC region. In 2005, the U.S. Census Bureau added Berks County in Pennsylvania to the Philadelphia CSA. However, since this data is based on 2002, Berks County is not included for the purposes of this report.

Figure B.1: Philadelphia Consolidated Statistical Area (CSA)



Source: DVRPC 2009

B) The 100-Mile Foodshed: Since the FAF uses geographical regions, and not counties, it is not possible to separate out the 70 counties within the 100-Mile Foodshed study area of the Greater Philadelphia Food System Study. Given the FAF data aggregation, it was determined that for the purposes of **The Greater Philadelphia Food System Study's Part 2: Food Distribution**, the 100-Mile Foodshed is composed of any FAF region that intersects the 100-mile boundary. **Map 2.1: Food Freight Analysis Framework (FAF) 100-Mile Foodshed** in the Food System Study shows the 100-Mile Foodshed as it is defined for this analysis. The following are the included geographical regions:

- Pennsylvania Remainder: everything in Pennsylvania that is not in the Philadelphia or Pittsburgh metro areas.
- Maryland Remainder: everything in Maryland that is not in the Baltimore or Washington metro areas.
- Maryland Baltimore: the Baltimore Combined Statistical Area.
- Delaware: the entire State of Delaware.
- New Jersey Remainder: everything in New Jersey that is not in the Philadelphia or New York metro areas.
- New Jersey New York: The New Jersey portion of the New York City Combined Statistical Area.
- New York New York: The New York portion of the New York City Combined Statistical Area.

C) Other Domestics: The remaining 105 geographic regions not included within the 100-Mile Foodshed are considered “other domestic.” This origin/destination category includes major metropolitan areas like Seattle, Los Angeles/Southern California, and Dallas, as well as remainders of states, and entire states, like New Mexico, without a sizable metropolitan area of influence.

D) International: There are seven international geographical regions in the FAF: 1) Canada, 2) Mexico, 3) Latin and South America, 4) Asia, 5) Europe, 6) Rest of World (mainly Oceania and Africa), and 7) Southwest Asia (mainly the Middle East).

The forecasts are based on Global Insight's Business Demographics Model (BDM),¹ and include macroeconomic, regional, industrial, and intrastate forecast modeling capabilities.

¹ For more information on the BDM, visit http://ops.fhwa.dot.gov/freight/freight_analysis/faf/faf2_reports/reports8/s3_underlying.htm.

Appendix C: Food Commodity Summaries

(1) Live Animals and Live Fish

DEFINITION

This commodity category is relatively self-explanatory. It includes live fish, poultry, swine, and bovine animals, as well as all fur-bearing animals, honeybees, live bait, and pets and songbirds.

MOVEMENTS

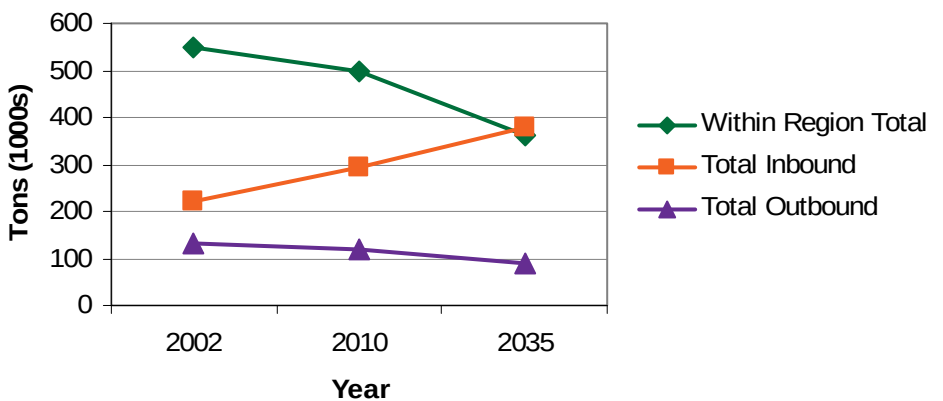
Commodity Category 1: Live Animals and Live Fish makes up 2% of all food commodities by weight moving within, into, and out of Greater Philadelphia, and about 4% by value.

In 2002, 68% (550 million tons) of all Live Animals/Fish movements destined for Greater Philadelphia originated within Greater Philadelphia. *Within* movements are predicted to decrease by 34% by 2035, declining to 363 million tons, and to 44% of the total destination share—those movements destined to stay within Greater Philadelphia. Movements originating from the 100-Mile Foodshed and destined for Greater Philadelphia made up just 18% (173 million tons) of all movements in 2002. Unlike *within* movements, these 100-Mile Foodshed *inbound* movements are forecasted to grow by 60%, increasing to 275 million tons by 2035, and increasing to 33% of the total destination share.

As evidenced in the general trends of all food commodities, *inbound* movements are forecasted to grow at a much faster rate than *within* and *outbound* movements.

Inbound movements from other domestic sources are forecasted to grow 118% between 2002 and 2035, with Ohio as the top trading partner. Live animals are not necessarily high-value commodities and will probably not be transported great distances. The trading partners that are sending animals to Greater Philadelphia are states east of the Mississippi, like Virginia and Ohio.

Figure C.1: Live Animals/Fish by Weight – Forecast



Source: FHWA 2007, DVRPC 2009

REGIONAL EXAMPLE

One example of the movement of live animals is Hatfield Quality Meats, based in Montgomery County. This company brings live pigs into the processing facility, located within Greater Philadelphia, slaughters them, and makes pork products and, most notably, hotdogs. The hotdogs are then transported to customers throughout the region and around the country. Once the live animals are processed, the movements of the product are counted as “other foodstuffs.” This illustrates that weight and value can be double counted. The weight of the live animals and the weight of the pork products are both counted in the total weight of food commodities for a given year.

Figure C.2: Live Animals/Fish by Weight and Value

Weight (thousands of tons)						Value (millions of 2002 dollars)					
Origin		2002	2010	2035	Change	Origin		2002	2010	2035	Change
Inbound	Within Gtr Phl Total	550.2	497.1	363.4	-34%	Inbound	Within Gtr Phl Total	635.3	577.9	438.9	-31%
	100 Mile	172.3	238.6	275.4	60%		100 Mile	191.7	269.8	323.1	68%
	Other	48.0	55.5	104.6	118%		Other	28.8	33.3	64.1	123%
	Top Trading Partner:						Top Trading Partner:				
	OH	38.0	44.2	84.6	123%		OH	18.4	21.6	43.6	137%
Outbound	Total Inbound	220.3	294.0	380.0	72%	Outbound	Total Inbound	220.5	303.1	387.2	76%
	100 Mile	125.2	116.2	87.9	-30%		100 Mile	143.6	135.7	105.5	-27%
	Other	4.6	3.7	2.5	-46%		Other	5.2	4.3	2.8	-46%
	Top Trading Partner:						Top Trading Partner:				
	VA	1.5	1.2	1.1	-28%		VA	1.7	1.4	1.2	-27%
Inbound	Total Outbound	129.9	120.0	90.4	-30%	Inbound	Total Outbound	148.9	139.9	108.3	-27%
	Total Domestic	900.4	911.1	833.7	-7%		Total Domestic	1,004.6	1,020.9	934.4	-7%
	Port of Entry Import	9.5	13.5	22.9	141%		Port of Entry Import	16.4	18.9	0.0	-100%
	To Gtr Phl	7.7	10.8	17.5	128%		To Gtr Phl	9.3	13.1	21.2	128%
	To 100 Mile	1.8	2.7	5.3	198%		To 100 Mile	1.9	2.9	5.8	200%
Outbound	Other Imports	21.0	32.6	40.8	94%	Outbound	Other Imports	31.9	51.1	59.5	87%
	Top Trading Partner:						Top Trading Partner:				
	Rest of World	8.9	12.2	19.1	115%		Rest of World	10.8	14.9	23.2	114%
	Total Imports	30.5	46.1	63.7	109%		Total Imports	48.3	70.0	59.5	23%
	Ports Export	1.4	2.8	4.1	187%		Ports Export	3.5	3.8	0.0	-100%
	From Gtr Phl	1.1	1.9	2.1	97%		From Gtr Phl	2.4	2.6	0.0	-100%
	From 100 Mile	0.2	0.7	1.4	457%		From 100 Mile	0.9	1.1	0.0	-100%
	Other Exports	2.8	2.9	2.2	-21%		Other Exports	2.3	3.4	5.5	136%
	Top Trading Partner:						Top Trading Partner:				
	Canada	1.6	1.3	1.0	-36%		Canada	1.9	1.5	1.2	-35%
	Total Exports	4.2	5.7	6.2	49%		Total Exports	5.8	7.2	5.5	-5%
	Total International	34.7	51.8	69.9	102%		Total International	54.1	77.1	65.0	20%

Source: FHWA 2007, DVRPC 2009

(2) Cereal Grains

DEFINITION

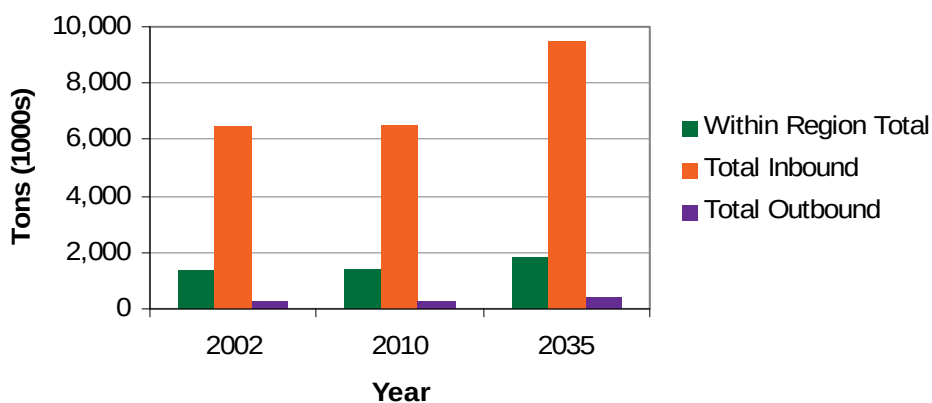
This commodity code includes grains, such as wheat, corn (except sweet corn, but including seed and corn for popping), rye, barley, oats, buckwheat, and millet.

MOVEMENTS

Commodity Category 2: Cereal Grains makes up 20% of all food commodities by weight moving within, into, and out of Greater Philadelphia, and only 2% by value. Cereal grains can be characterized as a high-weight/low-value commodity. In terms of weight, cereal grains are the third most common commodity moving through Philadelphia. However, cereal grains are by far the most common commodity moving around the United States. In 2002, cereal grains were responsible for about half (44%) of the total weight of food-related products in the nation. The disparity between the nation and the region is due to the production of these grains in states to the west of Pennsylvania. Grain production requires large acreage to create economies of scale.

Some grains are produced within the 100-Mile Foodshed, but they are generally used for animal feed. See **Part 1: Agricultural Resources of The Greater Philadelphia Food System Study** for more information on grain production within the regional food system. The 100-Mile Foodshed does not produce a large amount of grains for human consumption. Less than 300,000 tons of cereal grains left the region in 2002, and about 1.5 million tons originated and stayed within the region, as compared to over six million tons of cereal grains entering the region.

Figure C.3: Cereal Grains by Weight – Forecast



Source: FHWA 2007, DVRPC 2009

REGIONAL EXAMPLE

Greater Philadelphia has a small cluster of bakeries and food-processing plants (see **Part 3: The Food Economy of The Greater Philadelphia Food System Study**). These facilities create a relatively high demand for cereal grains for baked goods, which are then sold in the region or exported out of the region for sale and consumption.

Figure C.4: Cereal Grains by Weight and Value

Weight (thousands of tons)						Value (millions of 2002 dollars)							
Origin			2002	2010	2035	Change	Origin			2002	2010	2035	Change
Inbound	Within Gtr Phl Total		1,357.7	1,408.6	1,827.1	35%	Within Gtr Phl Total		68.2	71.5	92.8	36%	
	100 Mile		1,233.8	1,228.5	1,745.2	41%	100 Mile		66.8	67.3	95.6	43%	
	Other		5,191.2	5,280.7	7,748.0	49%	Other		369.5	380.3	560.9	52%	
	Top Trading Partner:						Top Trading Partner:						
	OH		5,059.3	5,143.6	7,536.9	49%	OH		356.6	366.7	539.9	51%	
	Total Inbound		6,425.0	6,509.1	9,493.2	48%	Total Inbound		436.3	447.5	656.5	50%	
Outbound	100 Mile		258.6	284.6	433.2	67%	100 Mile		12.9	14.4	24.2	87%	
	Other		9.8	9.8	16.1	64%	Other		0.4	0.4	0.6	41%	
	Top Trading Partner:						Top Trading Partner:						
	VA		3.0	3.2	5.3	80%	VA		0.1	0.1	0.2	70%	
	Total Outbound		268.4	294.4	449.3	67%	Total Outbound		13.4	14.8	24.8	85%	
	Total Domestic		8,051.2	8,212.1	11,769.6	46%	Total Domestic		517.8	533.8	774.1	49%	
Inbound	Port of Entry Import		10.3	14.0	21.3	106%	Port of Entry Import		1.0	1.3	2.0	106%	
	To Gtr Phl		8.6	11.5	16.7	95%	To Gtr Phl		0.8	0.8	0.8	0%	
	To 100 Mile		1.6	2.2	3.7	135%	To 100 Mile		0.2	0.2	0.4	161%	
	Other Imports		42.7	39.8	34.6	-19%	Other Imports		4.6	4.5	6.8	47%	
	Top Trading Partner:						Top Trading Partner:						
	Canada		29.3	26.7	37.7	29%	Canada		3.4	3.1	4.4	27%	
Outbound	Total Imports		53.1	53.8	55.9	5%	Total Imports		5.6	5.8	8.7	57%	
	Ports Export		0.1	0.0	0.1	-60%	Ports Export		0.0	0.0	0.0	-60%	
	From Gtr Phl		0.1	0.0	0.0	-60%	From Gtr Phl		0.0	0.0	0.0	-60%	
	From 100 Mile		0.0	0.0	0.0	-60%	From 100 Mile		0.0	0.0	0.0	-60%	
	Other Exports		16.9	10.7	4.3	-75%	Other Exports		1.6	1.2	0.7	-59%	
	Top Trading Partner:						Top Trading Partner:						
Mexico		15.1	9.8	3.6	-76%	Mexico		1.5	1.1	0.6	-59%		
Total Exports		17.1	10.8	4.3	-75%	Total Exports		1.7	1.2	0.7	-59%		
Total International		70.1	64.6	60.2	-14%	Total International		7.2	7.0	9.4	30%		

Source: FHWA 2007, DVRPC 2009

(3) Other Agricultural Products

DEFINITION

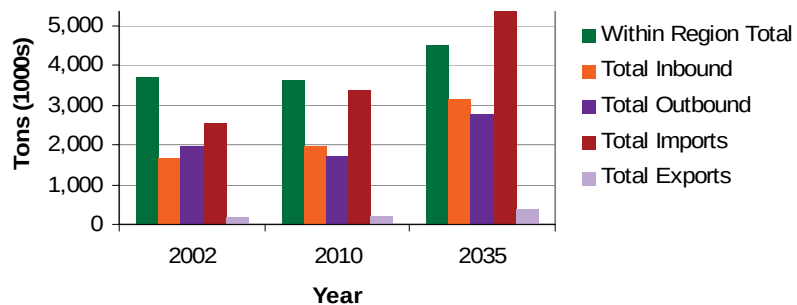
Other agricultural products consist of many things, but are primarily fresh fruits and vegetables. A few nonfood products also included in this commodity are bulbs, live plants, seeds for sowing, and cut flowers.

MOVEMENTS

Commodity Category 3: Other Agricultural Products makes up 25% of all food commodities by weight moving within, into, and out of Greater Philadelphia. Other agricultural products are the second most predominant commodity in terms of weight and the third most in terms of value for Greater Philadelphia. It is by far the most predominant food item moving over international borders. Because of the region's demand for fresh fruits and vegetables year round, large amounts of other agricultural products are shipped from domestic sources, like California, and from international sources, like South America.

Compared to the other food-related commodities, other agricultural products have by far the most diverse array of movement types. In 2002, 40% (3.7 million tons) of all other agricultural products destined for Greater Philadelphia originated within Greater Philadelphia. It is also projected that international import movements will increase to 52% of the total destination share by 2035. The main source of these imports is South America. By 2035, shipments from other domestic sources will be increased by 160%, with most originating from California.

Figure C.5: Other Agricultural Products Movements by Weight-Forecast



Source: FHWA 2007, DVRPC 2009

Like all food commodities to some degree, other agricultural products are exported out of the region. The top trading partner for *outbound* shipments is Connecticut. When New Jersey's landscape was dominated by agricultural production, the state sent its produce north to New England, serving colder states as the growing season moved up the East Coast.

REGIONAL EXAMPLE

Philadelphia's ports import a significant amount of fruit, such as bananas and pineapples, especially in the winter months. Large fruit companies Chiquita, Dole, Turbana, and Banacol use Greater Philadelphia's port facilities in Pennsylvania and New Jersey as a major port of entry for their products. Fruit may be unloaded from a ship and stored in a warehouse until it is ripened, and then shipped to retail outlets in the Northeast.

The Food FAF data reveals that the 100-Mile Foodshed ships a significant amount of fruit and vegetables for local consumption. Unfortunately, the database is aggregated for a given year, so it is not possible to see the origins and destinations of other agricultural products during the growing and harvest seasons. Local data from the Philadelphia Regional Port Authority shows a higher proportion of fruit shipments in December, January, February, and March, compared to the summer months.

Figure C.6: Other Agricultural Products Movements by Weight and Value

Weight (thousands of tons)						Value (millions of 2002 dollars)					
Origin		2002	2010	2035	Change	Origin		2002	2010	2035	Change
Inbound	Within Gtr Phl Total	3,705.3	3,633.5	4,529.2	22%	Inbound	Within Gtr Phl Total	1,115.6	933.8	968.1	-15%
	100 Mile	1,149.6	1,388.9	1,867.3	62%		100 Mile	964.3	1,208.5	1,723.3	44%
	Other	497.6	558.8	1,296.2	160%		Other	299.7	313.9	742.7	60%
	Top Trading Partner:						Top Trading Partner:				
	CA	116.5	155.2	384.5	230%		CA	127.4	142.5	425.4	234%
Outbound	Total Inbound	1,647.2	1,947.7	3,163.4	92%	Outbound	Total Inbound	1,264.0	1,522.4	2,465.9	49%
	100 Mile	1,532.9	1,336.3	2,177.8	42%		100 Mile	409.0	345.2	461.3	11%
	Other	419.7	381.5	587.9	40%		Other	226.3	194.9	232.1	3%
	Top Trading Partner:						Top Trading Partner:				
	CT	160.9	150.5	279.9	74%		CT	50.2	44.0	69.7	39%
Inbound	Total Outbound	1,952.6	1,717.8	2,765.8	42%	Inbound	Total Outbound	635.3	540.1	693.4	8%
	Total Domestic	7,305.0	7,299.0	10,458.4	43%		Total Domestic	3,014.9	2,996.3	4,127.5	27%
	Port of Entry Import	1,995.4	2,626.7	4,562.2	129%		Port of Entry Import	988.8	1,301.7	2,260.8	129%
	To Gtr Phl	1,345.9	1,772.2	2,856.8	112%		To Gtr Phl	607.7	791.4	1,257.2	107%
	To 100 Mile	503.0	646.1	1,270.2	153%		To 100 Mile	239.6	312.5	608.4	154%
Outbound	Other Imports	562.5	734.0	1,011.9	80%	Outbound	Other Imports	323.2	415.4	573.9	78%
	Top Trading Partner:						Top Trading Partner:				
	Americas	1,151.0	1,493.2	2,305.9	100%		Americas	561.9	722.0	1,091.7	94%
	Total Imports	2,557.9	3,360.8	5,574.1	118%		Total Imports	1,312.0	1,717.1	2,834.7	116%
	Ports Export	21.6	39.9	71.9	233%		Ports Export	10.5	19.4	34.9	233%
Outbound	From Gtr Phl	16.0	27.9	49.8	211%	Outbound	From Gtr Phl	5.4	8.3	14.6	169%
	From 100 Mile	4.3	9.0	14.6	242%		From 100 Mile	4.1	9.2	14.9	263%
	Other Exports	141.3	185.4	291.1	106%		Other Exports	61.2	71.4	94.0	54%
	Top Trading Partner:						Top Trading Partner:				
	Canada	78.0	82.2	116.6	50%		Canada	41.3	42.1	55.7	35%
Outbound	Total Exports	162.9	225.3	363.0	123%	Outbound	Total Exports	71.7	90.7	128.9	80%
	Total International	2,720.8	3,586.0	5,937.1	118%		Total International	1,383.7	1,807.8	2,963.6	114%

Source: FHWA 2007, DVRPC 2009

(4) Animal Feed

DEFINITION

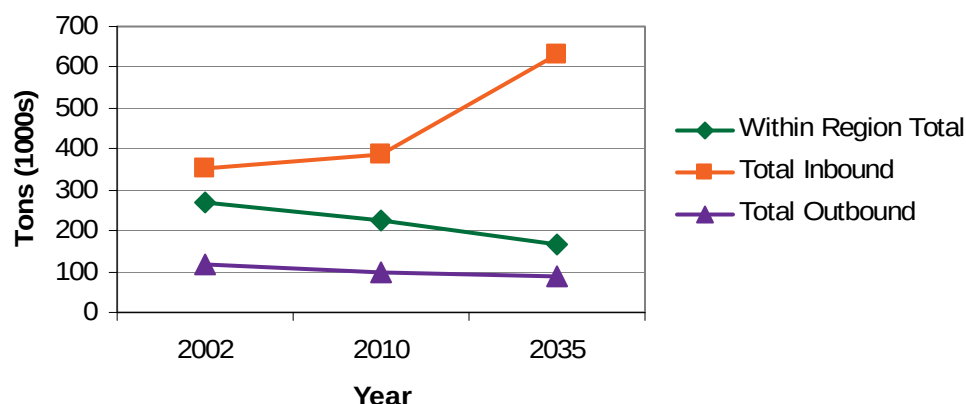
Commodity Category 4: Animal Feed, as defined by the Standard Classification of Transported Goods, consists of different things that animals may eat, including prepared animal food for retail (pet food), residuals from the food industry that are fed to animals, such as straw, and husks and forage products that are fed to animals on farms.

MOVEMENTS

Animal feed is a relatively small portion (2%) of food shipments by weight in Greater Philadelphia. *Inbound* movements of animal feed are forecasted to grow 79% by 2035. Ohio is the region's largest trading partner for both *inbound* and *outbound* movements of animal feed, indicating that Ohio is both a large producer of grains and commodity crops, as well as animal feedlots. Ohio is also the top trading partner shipping live animals to Greater Philadelphia.

It is interesting to note that in 2002, 41% (268,000 tons) of animal feed destined for Greater Philadelphia originated within Greater Philadelphia, and 37% (241,000 tons) originated in the 100-Mile Foodshed.

Figure C.7: Animal Feed by Weight- Forecasts



Source: FHWA 2007, DVRPC 2009

REGIONAL EXAMPLE

The Food FAF data corresponds with the 2007 Census of Agriculture, in which 23 of the 70 counties within the foodshed reported the top crop by acreage is forage (commonly grown on or near dairy, poultry, and hog farms as feed). See **Part 1: Agricultural Resources** of *The Greater Philadelphia Food System Study* for detailed information on crop production.

Figure C.8: Animal Feed by Weight and Value

Weight (thousands of tons)					Value (millions of 2002 dollars)						
Origin		2002	2010	2035	Change	Origin		2002	2010	2035	Change
Inbound	Within Gtr Phl Total	268.1	227.1	168.8	-37%	Inbound	Within Gtr Phl Total	61.3	49.3	34.3	-44%
	100 Mile	241.3	260.3	418.7	74%		100 Mile	134.1	134.4	194.0	45%
	Other	110.9	124.4	212.0	91%		Other	99.4	108.8	165.0	66%
	Top Trading Partner:						Top Trading Partner:				
	OH	49.9	54.8	97.2	95%		OH	21.3	21.9	36.3	71%
	Total Inbound	352.1	384.7	630.7	79%		Total Inbound	233.5	243.2	359.0	54%
Outbound	100 Mile	69.0	58.4	55.6	-19%	Outbound	100 Mile	14.3	12.3	10.1	-29%
	Other	49.1	41.0	30.7	-37%		Other	17.7	15.6	11.5	-35%
	Top Trading Partner:						Top Trading Partner:				
	OH	46.2	38.3	28.8	-38%		OH	17.1	15.0	11.1	-35%
	Total Outbound	118.1	99.3	86.3	-27%		Total Outbound	32.0	27.9	21.6	-32%
	Total Domestic	738.3	711.1	885.8	20%		Total Domestic	326.8	320.3	415.0	27%
Inbound	Port of Entry Import	5.8	5.9	6.3	9%	Inbound	Port of Entry Import	1.0	1.1	1.4	39%
	To Gtr Phl	4.2	4.3	5.3	27%		To Gtr Phl	0.7	0.7	0.8	24%
	To 100 Mile	1.0	1.0	1.2	16%		To 100 Mile	0.1	0.1	0.1	0%
	Other Imports	21.5	26.5	25.1	17%		Other Imports	10.0	12.5	11.5	15%
	Top Trading Partner:						Top Trading Partner:				
	Canada	21.1	25.8	24.5	16%		Canada	9.3	11.5	10.4	12%
	Total Imports	27.4	32.4	31.4	15%		Total Imports	11.0	13.6	12.9	18%
Outbound	Ports Export	2.4	2.4	3.3	35%	Outbound	Ports Export	0.2	0.2	0.3	102%
	From Gtr Phl	0.7	0.7	0.7	0%		From Gtr Phl	0.7	0.7	0.7	0%
	From 100 Mile	0.6	0.6	1.2	103%		From 100 Mile	0.1	0.1	0.2	236%
	Other Exports	16.0	13.1	7.2	-55%		Other Exports	3.0	2.4	1.0	-67%
	Top Trading Partner:						Top Trading Partner:				
	Canada	11.0	9.9	5.3	-51%		Canada	2.5	2.3	1.2	-51%
	Total Exports	18.4	15.6	10.4	-43%		Total Exports	3.2	2.6	1.4	-58%
	Total International	45.8	48.0	41.9	-9%		Total International	14.2	16.2	14.3	0%

Source: FHWA 2007, DVRPC 2009

(5) Meat and Seafood

DEFINITION

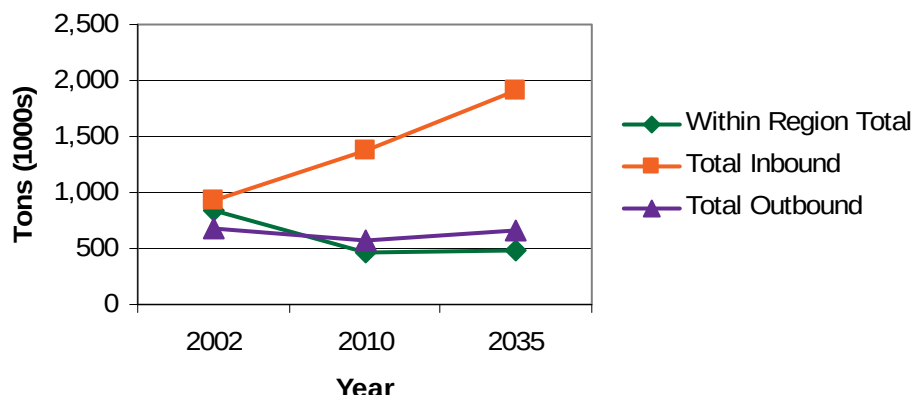
This commodity class includes all meat and seafood, excluding live animals, as well as any prepared meat and seafood extracts, such as fish oil and juices.

MOVEMENTS

Meat and seafood movements made up 6% of all food commodities by weight moving within, into, and out of Greater Philadelphia in 2002. However, meat and seafood had the second highest value, making up 18% of the total value of food commodities, signifying that this commodity category is low-weight/high-value freight. Nationally, meat and seafood shipments are also valued high, but lag behind the total value of foodstuffs, agricultural products, and cereal grains.

Like all other food commodities, meat and seafood projections suggest an increasing reliance on *inbound* movements. *Within* movements of meat and seafood are projected to decrease by almost 50% by 2035. *Inbound* movements from the 100-Mile Foodshed are projected to increase by a mere 8%. Meanwhile, *inbound* movements from other domestic sources are forecasted to grow by 187%. The southeastern states are projected to increase shipments to Greater Philadelphia, making Virginia the top trading partner in 2035.

Figure C.9: Meat and Seafood by Weight- Forecasts



Source: FHWA 2007, DVRPC 2009

REGIONAL EXAMPLE

Southern New Jersey is a hub for the fishing industry. Ships from up and down the East Coast stop in and around Cape May to drop off fish for nearby markets and processors. Much of those fish are distributed throughout Greater Philadelphia to fresh fish markets and restaurants.

Philadelphia's ports also import a large volume of frozen beef from Australia, among other countries. These movements are detailed on **Map 2.2: Australian Beef Case Study** in *The Greater Philadelphia Food System Study*.

Figure C.10: Meat and Seafood by Weight and Value

Weight (thousands of tons)						Value (millions of 2002 dollars)							
Origin			2002	2010	2035	Change	Origin			2002	2010	2035	Change
Inbound	Within Gtr Phl Total		843.0	459.5	487.3	-42%	Within Gtr Phl Total		1,205.7	667.8	951.2	-21%	
	100 Mile	424.4	269.2	456.6	8%	100 Mile	821.4	412.6	589.0	-28%			
	Other	509.1	1,104.0	1,459.8	187%	Other	1,657.9	2,759.2	3,693.6	123%			
	Top Trading Partner:					Top Trading Partner:							
	NC	95.0	44.4	83.5	-12%	NC	286.7	113.3	226.8	-21%			
Total Inbound		933.5	1,373.2	1,916.4	105%	Total Inbound		2,479.3	3,171.8	4,282.7	73%		
Outbound	100 Mile	419.9	313.8	402.4	-4%	100 Mile	843.6	818.1	1,132.5	34%			
	Other	262.8	253.0	262.5	0%	Other	920.7	878.2	869.1	-6%			
	Top Trading Partner:					Top Trading Partner:							
	MA	19.6	26.7	26.8	37%	MA	75.1	98.9	97.7	30%			
	Total Outbound		682.7	566.8	664.9	-3%	Total Outbound		1,764.3	1,696.3	2,001.6	13%	
Total Domestic		2,459.1	2,399.5	3,068.7	25%	Total Domestic		5,449.2	5,535.9	7,235.5	33%		
Total Imports		19.2	23.2	31.1	62%	Total Imports		31.3	37.2	50.5	61%		
Total Exports		3.0	4.3	4.4	50%	Total Exports		3.0	4.3	4.4	50%		
Total International		22.2	27.5	35.5	60%	Total International		34.3	41.5	54.9	60%		

Source: FHWA 2007, DVRPC 2009

(6) Milled Grain Products

DEFINITION

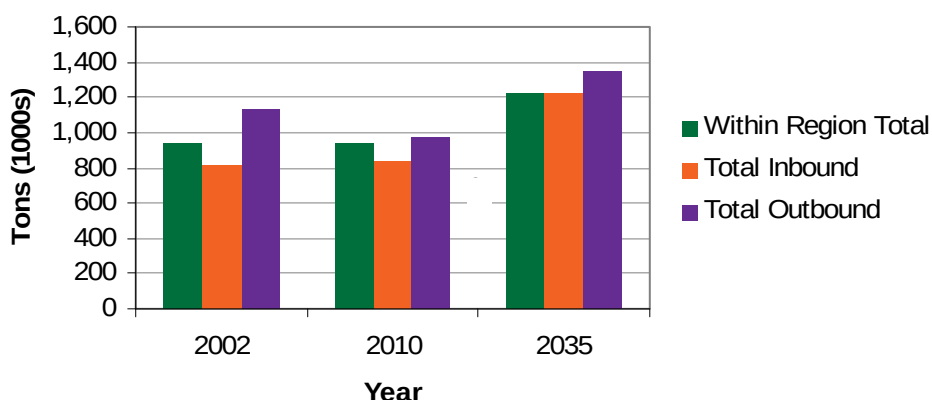
Milled grain products include rice, pasta, cereals, and flour, as well as any bakery product. The difference between this commodity category and Category 2 (cereal grains) is that cereal grains are basically grains in bulk, unrefined form, while milled grain products are refined products or products that mainly consist of grains.

MOVEMENTS

Commodity Category 6: Milled Grain Products makes up only 7% of all food commodities by weight moving within, into, and out of Greater Philadelphia, and 14% by value.

Its movements around the region are somewhat unique. *Within* movements make up 32.4% of all movements, *inbound* make up 28.1%, and *outbound* make up 39.4%. The percentages are relatively even, suggesting significant trade between this and other regions. Based on the large *inbound* movements and few *outbound* movements of cereal grain, it can be seen that the region processes grains and produces products, such as bakery goods, in substantial amounts.

Figure C.11: Milled Grain Products Movements by Weight-Forecasts



Notably, the majority (54%) of this category's total value originates within Greater

Source: FHWA 2007, DVRPC 2009

Philadelphia and is destined for locations outside of Greater Philadelphia, with most of it destined for locations outside of the 100-Mile Foodshed. While nearly all *outbound* food commodities appear to be of a higher value, milled grain products show by far that higher-value products are leaving the region. This suggests, first, that only high-value foods are shipped long distances, and second, that the Philadelphia region is a prominent location for food processing and baking.

REGIONAL EXAMPLE

Bakeries large and small in Greater Philadelphia can ship their goods throughout the country. Amoroso Bakery ships daily fresh breads and rolls up and down the East Coast, marketing the bread's "Philly roots." Additionally, milled grain products have a shorter shelf life than highly processed foods, such as cookies or cupcakes (categorized as "other foodstuffs"). Therefore, more bakery items are produced within a market area, as those items will be consumed more quickly. For more information on Greater Philadelphia's food manufacturing sector, see **Part 3: The Food Economy** of *The Greater Philadelphia Food System Study* and Appendix E: Food Sector Economies in this volume.

Figure C.12: Milled Grain Products Movements by Weight and Value

Weight (thousands of tons)						Value (millions of 2002 dollars)					
Origin		2002	2010	2035	Change	Origin		2002	2010	2035	Change
Inbound	Within Gtr Phl Total	942.3	941.1	1,225.8	30%	Inbound	Within Gtr Phl Total	572.5	570.5	775.9	36%
	100 Mile	463.1	472.9	608.2	31%		100 Mile	667.0	579.4	613.8	-8%
	Other	350.3	364.4	620.2	77%		Other	659.6	770.7	1,413.2	114%
	Top Trading Partner:						Top Trading Partner:				
	OH	87.3	99.0	174.1	99%		OH	192.9	190.7	343.9	78%
	Total Inbound	813.4	837.3	1,228.3	51%		Total Inbound	1,326.6	1,350.1	2,027.0	53%
Outbound	100 Mile	506.7	419.5	574.0	13%	Outbound	100 Mile	549.6	582.8	872.9	59%
	Other	632.7	557.5	771.8	22%		Other	1,706.8	1,380.4	1,562.6	-8%
	Top Trading Partner:						Top Trading Partner:				
	IL	103.3	74.2	101.5	-2%		IL	159.2	124.7	156.5	-2%
	Total Outbound	1,139.4	977.0	1,345.8	18%		Total Outbound	2,256.4	1,963.2	2,435.5	8%
	Total Domestic	2,895.1	2,755.4	3,800.0	31%		Total Domestic	4,155.4	3,883.8	5,238.3	26%
	Total Imports	8.3	10.5	13.2	60%		Total Imports	6.9	8.5	10.9	58%
	Total Exports	6.9	8.5	10.9	58%		Total Exports	11.0	11.1	12.6	15%
	Total International	19.3	21.6	25.9	34%		Total International	18.0	19.6	23.6	31%

Source: FHWA 2007, DVRPC 2009

(7) Other Foodstuffs

DEFINITION

Other foodstuffs can generally be referred to as processed foods. More specifically, this category includes dairy (milk, cheese, ice cream, and yogurt), canned or processed fruits and vegetables and their juices, potato chips, coffee and tea, fats, oils, vinegars, sugars, and all nonalcoholic beverages.

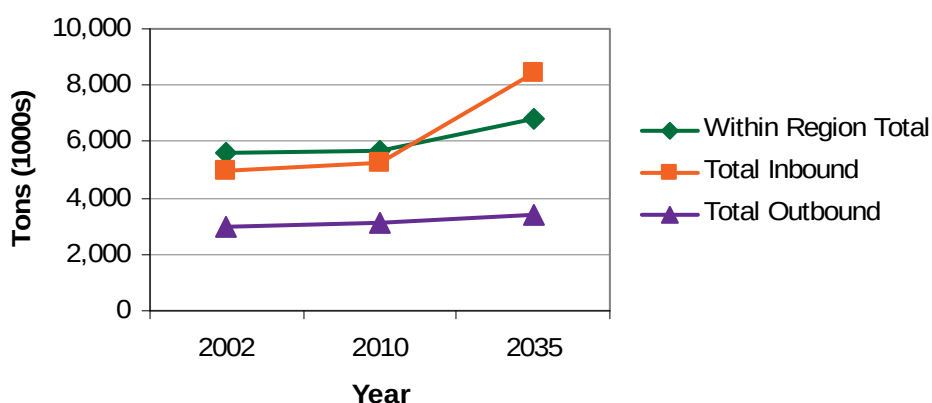
MOVEMENTS

Commodity Category 7: Other Foodstuffs is the largest food category shipped and the most valuable in Greater Philadelphia. In 2002, these shipments made up 35% of all food-related shipments by weight and 40% by value. For the nation, other foodstuffs are also the most valuable, but rank second in terms of weight, after cereal grains.

The FAF data predicts a growth of all movement types for Greater Philadelphia through

2035. However, a larger proportion of food (36% of the destination share) will be coming from other domestic sources, most notably Illinois, in the future. Illinois may be a more significant trading partner in the future because it is a major transportation hub, with active highway, rail, and water facilities.

Figure C.13: Other Foodstuffs by Weight- Forecasts



Other foodstuffs are slightly different from other food commodities in that a

large amount (almost 5 million tons) originated within the region and was destined for other locations in 2002. However, these shipments are not necessarily of a higher value than what is entering the region. See milled grain products as an illustration of higher-value products leaving the region.

Source: FHWA 2007, DVRPC 2009

REGIONAL EXAMPLE

Other foodstuffs are a prime example of how commodities are double counted in the FAF database. Other foodstuffs are usually shipped in bulk to a warehouse, split into smaller shipments, and then delivered to local retailers. One can easily recall seeing a chip and soda truck double-parked delivering processed and packaged foods. Therefore, the FAF would document an *inbound* trip to a local distribution center, as well as a *within* region trip to the point of sale. One reason why *within* region movements may be growing at a slower pace than *inbound* movements throughout all commodity categories is that the freight supply chain is constantly trying to minimize the use of warehousing and distribution centers, with a preference for direct-to-store delivery, saving on storage charges, fuel costs, and spoilage.

Figure C.14: Other Foodstuffs by Weight and Value

Weight (thousands of tons)					Value (millions of 2002 dollars)					
	Origin		Change			Origin		Change		
	2002	2010	2035			2002	2010	2035		
Inbound	Within Gtr Phl Total	5,605.7	5,652.0	6,819.9	22%	Within Gtr Phl Total	3,299.9	3,188.2	3,473.3	5%
	100 Mile	2,054.4	2,036.6	2,904.7	41%	100 Mile	2,340.4	2,241.3	2,888.1	23%
	Other	2,902.3	3,191.4	5,555.7	91%	Other	2,923.7	3,240.8	5,656.8	93%
	Top Trading Partner:					Top Trading Partner:				
	IL	346.7	403.8	712.7	106%	IL	356.3	417.2	586.5	65%
Outbound	Total Inbound	4,956.7	5,227.9	8,460.4	71%	Total Inbound	5,264.1	5,482.1	8,544.9	62%
	100 Mile	1,740.6	1,859.8	2,129.7	22%	100 Mile	1,722.6	1,787.8	1,953.0	13%
	Other	1,235.1	1,272.5	1,288.3	4%	Other	1,672.0	1,706.5	1,660.0	-1%
	Top Trading Partner:					Top Trading Partner:				
	MA	194.9	196.3	168.5	-14%	MA	81.0	79.3	67.2	-17%
	Total Outbound	2,975.7	3,132.3	3,418.0	15%	Total Outbound	3,394.6	3,494.3	3,612.9	6%
	Total Domestic	13,538.1	14,012.2	18,698.3	38%	Total Domestic	11,958.6	12,164.6	15,631.1	31%
	Total Imports	128.7	193.2	208.7	62%	Total Imports	118.6	167.7	184.6	56%
	Total Exports	55.1	61.7	57.2	4%	Total Exports	39.1	45.3	42.6	9%
	Total International	183.7	254.8	265.9	45%	Total International	157.7	213.0	227.2	44%

Source: FHWA 2007, DVRPC 2009

(8) Alcoholic Beverages

DEFINITION

Alcohol beverages are beer, wine, and ethyl products (such as ethanol).

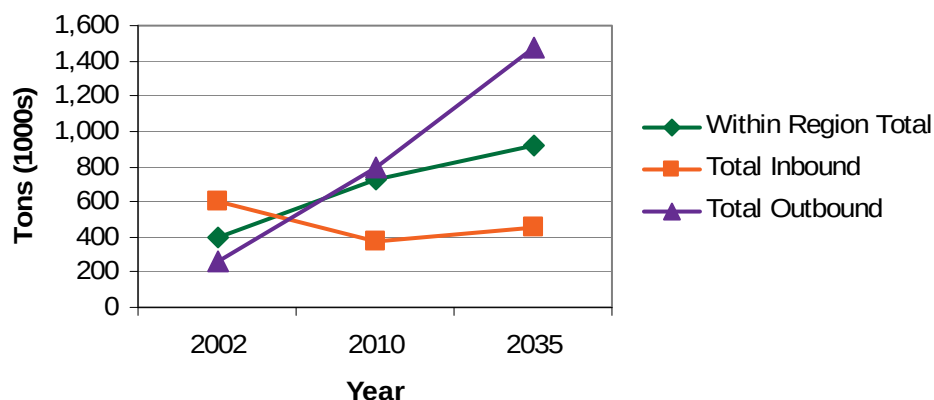
MOVEMENTS

For Greater Philadelphia, alcoholic beverages are one of the only commodities for which the growth of *outbound* shipments is forecasted to grow significantly faster than *inbound* movements. *Outbound* movements are forecasted to grow 80% through 2035. According to the FAF data, Greater Philadelphia will become a net exporter of alcoholic beverages in 2010, trading with other states.

REGIONAL EXAMPLE

The results of the data described above may be due to Pennsylvania's state-run alcohol system. The state has a major distribution hub in Philadelphia County, and it is highly likely that most of southeastern Pennsylvania's liquor is distributed from this distribution center. It is also possible that the forecasting models did not take into account Pennsylvania's state system and, therefore, the supply and demand models were thrown off by the purchasing rates shown for the area.

Figure C.15: Alcoholic Beverages by Weight- Forecasts



Source: FHWA 2007, DVRPC 2009

Figure C.16: Alcoholic Beverages by Weight and Value

Weight (thousands of tons)						Value (millions of 2002 dollars)							
Origin			2002	2010	2035	Change	Origin			2002	2010	2035	Change
Inbound	Within Gtr Phl Total		398.2	729.3	917.3	57%	Within Gtr Phl Total		390.2	728.5	983.9	60%	
	100 Mile	217.6	105.7	55.0	-296%	100 Mile	373.2	228.5	100.0	-273%			
	Other	378.6	272.7	395.7	4%	Other	313.3	239.6	387.4	19%			
	Top Trading Partner:					Top Trading Partner:							
	NC	92.2	111.6	209.5	56%	NC	39.7	50.1	102.6	61%			
Total Inbound		596.2	378.4	450.7	-32%	Total Inbound		686.5	468.1	487.4	-41%		
Outbound	100 Mile	202.3	596.4	1,193.3	83%	100 Mile	390.9	1,044.4	1,805.9	78%			
	Other	57.0	199.7	284.4	80%	Other	85.1	345.6	462.2	82%			
	Top Trading Partner:					Top Trading Partner:							
	IL	28.1	103.7	173.1	84%	IL	30.5	118.7	206.3	85%			
	Total Outbound		259.3	796.1	1,477.7	82%	Total Outbound		475.9	1,390.0	2,268.1	79%	
Total Domestic		1,253.7	1,903.7	2,845.6	56%	Total Domestic		1,552.6	2,586.6	3,739.4	58%		
Total Imports		41.5	40.6	44.9	7%	Total Imports		14.0	13.2	14.4	3%		
Total Exports		2.1	2.6	2.2	6%	Total Exports		2.1	2.6	2.2	6%		
Total International		43.6	43.2	47.1	7%	Total International		16.1	15.8	16.7	3%		

Source: FHWA 2007, DVRPC 2009

Appendix D: Food Miles Literature Review

INTRODUCTION

This literature review targets articles and reports in four areas: (1) discussions of methodologies generally, (2) "food miles," (3) "lifecycle assessment" (LCA) methodologies, and (4) other types of studies. The articles and reports chosen for review within the *Greater Philadelphia Food System Study* were selected from an extensive bibliography of food-related studies and supplemented by other relevant literature reviews and research summaries.

The results of food system studies, including "food miles" studies, LCAs, and other methodologies, depend heavily on how the initial research question is framed. Although LCAs generally give more complete pictures of the impacts of food items than "food miles" studies (primarily by extending their research purview to the system, and not limiting their topic to the transport of a single food item), the results still depend heavily on the research boundaries and units of observation chosen. Furthermore, many assumptions and generalizations have to be built into the research process; some reports do better than others at justifying or recognizing the limits of generalizations.

RELEVANCE OF FOOD MILES TODAY

Food miles are a convenient and readily understood indicator that many local food and slow food advocates have adopted to measure the environmental impact of one's diet or food choices. There is a variety of reasons that local food has become appealing to consumers, including: a sense that local food is easier to "track" to its source; it is fresher and tastier; and it is more environmentally friendly than food traveling long distances. Many cities and regions around the United States and in Europe have

adopted food miles as the primary indicator of progress toward a more sustainable food system. However, the values embedded in the local food movement go beyond mere miles traveled. The overall desire is for a food system that is environmentally, socially, and economically sustainable and humane.

Food miles alone are not a solid indicator of progress toward such a sustainable food system. Production methods, irrigation use, land use practices, labor practices, and a myriad of other factors must also be considered to judiciously evaluate our food system. Ultimately, better methods for researching and evaluating how we produce, distribute, consume, and dispose of our food will aid attempts to plan responsibly for food production, distribution, and retail.

LITERATURE SELECTION

The articles and reports reviewed herein were chosen based on the relevance to the topic of food systems and energy, scholarly content, and influence on the growing field of food ethics.

METHODOLOGIES

A set of papers was identified as an introduction to the variety of research methods concerning the relationship of food and energy. The first paper, by John Hendrickson of the University of Wisconsin, Madison, provided a synopsis and discussion of work on this topic completed in the United States up to 1996. The two remaining reports analyzed the value of food miles and LCAs as tools for evaluating the sustainability of food systems. A common theme emerged that such studies are heavily reliant on, and therefore limited by, the defined boundaries of the food system.

Hendrickson

Hendrickson (1996) finds that the most substantial research on food and energy in the United States was completed in the 1970s, during the energy crisis. The energy crisis turned attention to these issues in much the same way that current anxiety about oil prices and climate change has revived interest in the topic today. He compares a handful of these studies, which focused on four aspects of the U.S. food system: agricultural production; processing; transportation; and home consumption (shopping and cooking). He notes that none of the studies considered food waste disposal as part of the food system.

Hendrickson found that studies considered the four aspects with varying degrees of specificity and accuracy, making them difficult to compare, evaluate, and synthesize. In particular, transportation modes were difficult to compare because transportation was at times lumped with other energy sectors; at times evaluated individually; and sometimes not considered at all. Nevertheless, Hendrickson creates a portrait of the U.S. food system in which production, packaging, and cooking are the major contributors to energy consumption. He also notes that there are no clear recommendations on how to reduce the impacts of these sectors since the tradeoffs between them are so complex. Hendrickson, perhaps unintentionally, portrays transportation as contributing relatively little to the energy bill of the U.S. food system.

The studies considered in Hendrickson's summary of existing research were neither LCAs nor food miles studies, but it is notable that the issues of boundary definition were still critical. For example, the way that transportation is defined and considered determines how relevant it seems to the overall energy use in the food system.

One method that he discussed in detail was “input-output energy ratios,” in which the calories required to produce a food product were compared to the calories consumed when eating the food product. The input/output calories ratio was a popular indicator, highlighted by the media and academia, in much the same way that the concept of food miles is today. However, as Hendrickson points out, the ratio indicator glosses over complex differences in how we value and use different kinds of energy.

Smith et al.

European researchers have also evaluated “food miles” as an indicator of sustainable food systems. The AEA Technology report (Smith 2005), written for the United Kingdom Department for the Environment, Food and Rural Affairs (DEFRA), evaluates the validity of food miles as an indicator, and particularly asks if food miles can function as an indicator for the government's Sustainable Farming and Food Strategy and proposed Food Industry Sustainability Strategy. (The strategies, published in December 2002, set out how industry, government, and consumers can work together to secure a sustainable future for our farming and food industries.)

While the study for DEFRA states that there are causal relationships between food miles and the environmental, social, and economic burdens associated with *transport*, it finds food systems to be too complex to be evaluated solely on the basis of food miles. The authors find that when wider environmental, social, and economic effects that are associated with different food supply chains are considered, there is not a clear case to move toward a more localized food system, nor a more global system. However, AEA recommends that food miles be monitored and measured so that the government can properly consider their probable impacts when formulating policy.

In the instance of impacts associated with food transport, AEA suggests monitoring four indicators that have available, reliable, and frequently updated data (for the United Kingdom) and indicate varying impacts, such as carbon emissions, air pollution (i.e., pollutants associated with human health impacts), congestion, accidents, and noise. The indicators they chose were “Urban Food Km,” “Heavy Goods Vehicle Food Km,” “Air Food Km,” and “Total CO₂ Emissions from Food Transport.”

AEA also recommends that other key policy areas, such as rural development, trade, international development, and agriculture, are also monitored. Unfortunately, the authors do not specify how such policy areas should and could be monitored.

Again, the greatest limitation of food miles as an indicator is that it calculates a very small part of a larger system; the boundaries of food miles studies are, by definition, narrow. The more ambitious the boundaries of the study (i.e., the more stages in a lifecycle that are included in the study), the more is revealed about the complicated tradeoffs between efficiencies and societal costs. A Life Cycle Assessment (LCA) is more inclusive of the array of issues and sectors involved in food systems, but it is not immune from the limitations of selecting a study boundary and an observation unit.

Brodt

LCA is a method that was developed and used by private companies, specifically manufacturers, to evaluate the real cost and environmental impact of their operations. Recently, this method has been applied to the study of food production and distribution. European researchers have used and evaluated food LCAs more extensively than U.S. researchers.

Last year, the University of California, Davis, held a symposium where the issues of food LCAs were discussed by scholars and participants in the United States food supply chain. The salient points of the forum were published in the report “The Low Carbon Diet Initiative: Reducing Energy Use and Greenhouse Gas Emissions in the Food System Using Life Cycle Assessment: Summary on Critical Issues and Research Methods” (Brodt 2007). The document outlines five critical food system questions that require an LCA approach. The issues included are greenhouse gas emissions of locally sourced and conventionally grown food versus globally sourced and organically grown food; relative efficiency of processed versus fresh food; relative efficiency of plant versus animal foods; and the relative importance of preretail factors (such as production and distribution) versus post-retail factors (such as consumer transportation and cooking habits) in estimating overall efficiency.

The UC Davis report discusses some of the critical issues to consider when doing a food LCA. For example, the report explains that an LCA is well suited for identifying best practices for producing and provisioning a given set of food products. However, it is data intensive, time-consuming, and heavily reliant on how the boundaries of the study are defined. The quantitative nature of an LCA has also been criticized because many value-based issues, such as fair treatment, social equity, or lost cultural food customs, cannot always be measured in standardized units or dollar amounts.

The report gives some guiding principles for what to include and exclude in the system boundaries of a food LCA. Some of the accepted sectors are production, processing, packaging, transport, retail, post-retail, and waste. Since expansive system boundaries are not practical due to time limitations, the authors suggest that it is important to narrow in on the parts of the

system that are relevant to the study. The goal is then to obtain high-quality data on these parts and to obtain more generalized data for other parts. For example, the report suggests that it is often a good idea to focus on variable resource costs, such as process energy used, and to generalize fixed resource costs, such as buildings and capital goods. Furthermore, the “system expansion” method is discussed as a way to handle processes that create more than one product. For example, dairy operations produce milk and meat. In this method, the whole environmental impact of the dairy operation would be allocated to the product in question, and the energy saved by not producing the other product in another system could be subtracted.

Finally, some database needs are addressed. There are databases of the energy impacts of products and processes that have been developed to make LCA inventories more feasible. There is currently one database in the United States, the US Life Cycle Inventory Database (US LCI), coordinated by the National Renewable Energy Laboratory. The report questions the consistency of data in this database and notes that it is limited in the area of agricultural products. There are more extensive and reliable databases in Europe, including ecoinvent.data v.2.0 and GABI. The data in these databases focuses on Europe, although ecoinvent.data includes information from the US LCI. Some websites exist to make LCAs easier for companies to perform on their products. The importance of engaging companies in the collection of data is also discussed. Engagement is seen not only as a way of obtaining somewhat sensitive data, but also as a way to encourage companies to reduce their environmental impact.

FOOD MILES

In their most basic incarnation, “food miles” studies estimate the distance that food travels

from “farm-to-gate,” that is, from a point of aggregation or a single farm to a retail outlet. When specifically considering the greenhouse gas emissions related to food miles, most studies also consider the transportation mode and the quantities of food transported. These methods have become popular with local food advocacy groups because they can be relatively straightforward to conduct and they provide an easily understood number around which an advocacy campaign can be built.

Most food miles researchers acknowledge that this method does not give a complete picture of the environmental (or social) impact of the food item in question. However, some studies claim that the distance traveled, along with the mode of travel and the load, can be an adequate indicator for the overall trends in the sustainability of a food system. In some studies, this assertion is used too liberally to draw conclusions that may not be supported; other studies are more cautious in the conclusions that they draw. In the end, the advantage of a “food-miles” study over other methods is that it is less data intensive and therefore less time consuming. The drawback is that the conclusions are quite limited.

Three papers were reviewed as examples of food miles studies: the first is a European study written by a well-published Swedish scholar of food systems, Annika Carlsson-Kanyama; the second was published by Rich Pirog of the Leopold Center for Sustainable Agriculture; and the third study is a “Research in Action Report” from a Toronto-based local food advocate, Food Share. Each of these studies acknowledges the shortcomings of the food miles methodology, but such caveats are often lost when the results of these studies are distilled for popular media.

Carlsson-Kanyama

In the Carlsson-Kanyama article (Carlsson-Kanyama 1997), Weighted Average Source Point (WASP) and Weighted Average Source Distance (WASD) methods are applied in calculating food miles. The original data set provides information on the country of origin of individual food products. The two methods assign values to the importance of each source based on the amount of that product consumed from each source. The methods use these weighted values to produce an average value that is meant to describe the average distance that a food product traveled.

The WASD method generates a theoretical origin point to illustrate the average distance traveled by a food item. This is done by weighting the coordinate locations (latitude and longitude) of the various origins of a particular food item by the amount of food consumed from a given location. For example, food trucked to Philadelphia from California and Florida could have a WASP somewhere in Georgia if more of the food came from Florida, or somewhere in Illinois if more of the food was sourced from California. The author points out that this method is flawed because if coordinates of two food sources are equidistant and in opposite directions from the consumption point, and if the two sources provide the same amount of food, the weights of each source point cancel each other out and the distance that the food traveled would appear to be zero miles. For example, if the City of Chicago were to buy 50% of its apples from New Jersey (about 800 miles east of Chicago) and 50% from South Dakota (about 800 miles west of Chicago), a WASP calculation might show that Chicago produced all of its own apples.

WASD, on the other hand, generates an average distance without associating the distance to a particular location. This eliminates the flaw of

weighted points canceling each other out. In the previous example, a WASD calculation would show that the average distance traveled by apples consumed in Chicago is 800 miles.

Both of these methods produce highly generalized results that are of limited use in determining the actual environmental impacts of different food production and distribution models. First, only the distance is taken into account, and even the distance is generalized to major population centers within a country or state of origin. Neither calculation begins to estimate the carbon emissions or energy use associated with the distance traveled by the food, let alone the implications of different production methods. Furthermore, distances are measured as the crow flies rather than assigned to a road or transportation network.

As the author states, these methods would be most useful in determining the relative dependence on foreign sources for a given food item. For example, a WASD could be useful in understanding the difference between consumption of foreign apples versus consumption of foreign lamb. If the WASD of apples were much less than that of lamb, the implication would be that there is a greater dependence on lamb from farther away. Such generalized information is marginally useful.

Pirog et. al.

Rich Pirog (Pirog 2001) uses WASD to analyze the "food miles" embedded in produce arriving at the Chicago Terminal Market in 1981, 1989, and 1998. The analysis shows a 22% increase from 1981 to 1998 in the miles that food travels.

The researchers also attempt to calculate the greenhouse gas emissions associated with food miles in the conventional food system as compared to hypothetical regional and local food systems. Specifically, the researchers

analyze the energy use and greenhouse gas emissions that each system would require to supply Iowa with 10% of its annual consumption of 28 produce items.

In order to do this, WASDs were calculated for each food item sourced nationally, regionally, and locally. For the national system, distances were based on ground routes between the center point of a state, which might supply 10% of Iowa's share of a particular product to Des Moines. The distances of the regional system were based on the average distance of Iowa farms to two major urban centers; this average was found to be 82 miles. For the local system, the average distances from farms to distribution sites in local food projects were used.

Next, transport vehicles, load capacities, and fuel economies were associated with each system. Using this fuel efficiency and load capacity information, the energy consumption and CO₂ emissions for transporting the produce in each system were calculated. Pirog estimates that the conventional system emits between four and 17 times as much greenhouse gas as regional and local systems would.

The study does address issues related to transportation and distribution, however, the study relies on assumptions and generalizations, as the authors admit, and production methods were left out. In order to draw the conclusion that a 10% shift to local or regional markets would reduce carbon emissions, the production methods for the two systems would have to be identical, and production methods rely on climate, soil, water, and other inputs.

Bentley and Barker

The Food Share report (Bentley 2005) also uses the WASD method to calculate the distance of seven food items purchased at a farmers' market and from a nearby supermarket. Similar to

Pirog's study, greenhouse gas emissions associated with the farm-to-gate transport of each food item were also calculated. MapQuest was used to calculate land distances (which includes road network assignments), and distances "as the crow flies" were used for air and ocean transit. The modes of transportation were assumed rather than determined through case studies.

In order to determine the greenhouse gas emissions associated with transport of each food item, the following method was used. First, each food item was weighed, and the weight was converted to metric tons. The weight in tons was then multiplied by the distance traveled, giving a unit of ton-kilometers. That number was then multiplied by the emissions factor, measured in emissions per ton-kilometer, that was associated with each mode of transport (i.e., rail, boat, truck, or air). Since it was the weight of the food item that was used to determine the greenhouse gas emissions and not the size of the overall load carried by each mode of transportation, efficiencies related to the scale of each system were not considered.

The Food Share report draws broad conclusions from its calculations. For example, the authors state:

Over the course of the year, if you were to buy only locally produced food, the associated CO₂ emissions would be .006316 tonnes. If instead you were to buy only imported foods like those studied here, the associated CO₂ emissions would be .573 tonnes. This means that if you switched from eating all imported food to eating only locally produced food, you would already be half way towards achieving Canada's one ton challenge [in which each individual reduces their personal CO₂ emissions by 1 tonne]. (Bentley 2005, p.10)

This is a prime example of how a greenhouse gas emission calculation can be used to communicate simple, powerful ideas to

consumers with the hope of influencing their purchasing habits. However, the implications of changing a Canadian's purchasing habits and consumer preferences is much more challenging if we are to consider seasonality, climate, soil productivity, and household transportation options. This greenhouse gas emissions calculation does not provide a holistic analysis on which to base policy decisions.

LIFE CYCLE ASSESSMENTS

The concept of Life Cycle Assessments (LCAs) was developed in the 1960s, during the time of the burgeoning environmental movement. According to the U.S. Environmental Protection Agency (EPA), LCA is a technique to assess the environmental aspects and potential impacts associated with a product, process, or service by compiling an inventory of relevant energy and material inputs and environmental releases (i.e., water and air). LCA methodology has been standardized by the International Standards Organization due to concerns about the objectivity of these evaluations, which can influence not only internal company operations but also consumer choices and governmental purchasing policies. The method includes four stages: (1) goal and scope definition; (2) inventory analysis; (3) impact assessment; and (4) interpretation. Only recently have LCAs been applied to evaluate food items.

In contrast to "food miles" studies, LCAs track products for a greater portion of their lifecycles, going beyond "farm-to-gate." Ideally, an LCA tracks a product from "cradle to grave." Regarding food, an LCA may include agricultural production, food processing, retail sales, or even waste disposal. However, the lifecycle stages included in food LCAs are not standardized between studies, and each study draws its own scope. This is necessary, as an LCA is data intensive and some stages of the lifecycle may be irrelevant to a particular

research question. For instance, food waste disposal may be irrelevant if a study were attempting to compare locally grown apples to imported apples; it may be reasonable to assume that the impacts of post-consumer waste would be the same no matter the source of the apple. The variation among study boundaries and research questions can make studies difficult to compare.

The research question must be carefully outlined to determine what stages of a lifecycle must be included in the assessment. However, a narrow research question does not ensure the objectivity of the study. In fact, questions can be asked in such a way as to guarantee that a researcher's viewpoint is substantiated. Therefore, while LCAs can provide a more complete view of a food item's environmental impact, the comprehensiveness of each study must be examined individually.

The advantage of LCAs compared to food miles studies is their comprehensiveness, which allows for stronger conclusions. The drawback is that they are more data intensive and time consuming. They may also be less understood by the general public, so they are not as useful for public information campaigns. Additionally, despite their standardization, LCAs are not immune from bias.

Of the four articles chosen for this review, three were conducted in European countries and one was conducted in New Zealand. As mentioned earlier, Europe, and especially the United Kingdom and Sweden, have more experience applying LCAs to food items than the United States. The study from New Zealand is a response to claims made by food miles researchers, while the other studies focus on the environmental impacts of dietary choices or agricultural production. While some studies address multiple impacts, the overall focus of

these studies is on energy use and greenhouse gas emissions.

Saunders, et al.

In a report produced by Lincoln University in New Zealand, the authors take issue with food miles methodologies, calling them "simplistic" and "misleading" due to their limited scope, and aim to produce a more rigorous study (Saunders 2006). Despite the study's academic credentials, the authors appear to have a nationalistic stake in the outcome of the study, since food exports to Europe are an important part of the New Zealand economy. This report could be read as a defense of these exports.

The authors acknowledge the multiple "food miles" assessments that suggest that food imported to Europe from distant New Zealand is less sustainable than food from the United Kingdom or the European Union (EU). They point out that organizations lobbying for local food policies often use New Zealand as an example of the "insanity" or "unsustainability" of the global food system. The authors want to reassess these claims objectively, although they seem to have a strong bias toward restoring New Zealand's good name in the minds of European customers.

The report includes a history of the food miles debate, a literature review of food miles and LCA reports, a discussion of methodology, and a comparison between the energy use and greenhouse gas emissions in the lifecycles of New Zealand and EU dairy, apples, onions, and lamb. The study's scope is defined to assess the production methods and international transport of the food items listed above. Domestic transport of food is assumed to be comparable for New Zealand and the U.K. because of the comparable sizes of the countries. Therefore, domestic transport of food is not considered.

First, data for New Zealand food production systems was gathered and energy use/ CO_2 coefficients were applied to estimate environmental impacts. Next, the same process was repeated for U.K. farms. Energy inputs were separated into direct (fuel), indirect (fertilizers, among other things), and capital (farm buildings and equipment).

Data was collected through a combination of recent industry studies, academic field research, databases, and farm management knowledge. The method for considering the energy embodied in transport is similar to a conventional food mile methodology--distance is calculated, mode is considered, and energy use is estimated based on industry or government coefficients. The study found that New Zealand more efficiently produces dairy and lamb foodstuffs than the U.K., despite transporting the goods over long distances. Apples were also found to be produced more efficiently in New Zealand, though the U.K. lacked certain data concerning apple production. However, onions were found to be more efficiently grown in the U.K., except when cold storage costs were included.

While it is difficult to judge the quality of the numerous data sources, the basic structure of this study seems adequate. While the scope of the study is greater than a food miles calculation, it focuses on only one impact category--greenhouse gas emissions as related to production and transportation. The study succeeds in casting serious doubt on the validity of food miles in indicating the sustainability of a food system. However, it does not give an answer as to what a more sustainable system would be.

Carlsson-Kanyama, et al.

Annika Carlsson-Kanyama, of Environmental Strategies Research Group, Sweden, and

Marianne Popping Ekstrom and Helena Shanahan, of Goteborg University, Sweden (Carlsson-Kanyama 2003), present an inventory of lifecycle energy inputs for 150 food items widely available in Sweden and discuss how one can create energy-efficient meals and maintain an energy-efficient diet. The inventory of food items and their energy inputs was based on a data survey conducted by one of the authors for a previous study. The observation unit was one kilogram of ready-to-eat food. By specifying “ready-to-eat” food, the researchers include home cooking within their scope. A kilogram of apples could be a unit of study, as could a kilogram of cooked eggplant.

The system boundaries include farm production, processing, and transport to the retailer, as well as storage, preparation, and cooking in the household, and exclude production of capital goods (i.e., a tractor), packaging materials, waste treatment, transportation from the retailer to the consumer, and dishwashing. Energy input estimations for certain inputs were simplified; for example, the same distance was used for all food items arriving in Sweden from outside of the EU. Additionally, the method for identifying “typical” food products in the Swedish diet is outlined. It includes visiting retailers to determine availability, and contacting producers, suppliers, and importers to obtain energy data.

The authors find that the total lifecycle energy inputs for diets with similar nutritional value result in lifecycle energy inputs ranging from 6,900 to 21,000 Megajoules (MJ) per person per year. That means that the energy used to produce diets with similar nutritional value can vary between 6,900 MJ to 21,000 MJ. For reference, there are about 131 MJ in a gallon of gasoline.

Up to one-third of the total energy inputs for these diets are used in the manufacturing of snacks, sweets, and drinks--items with little nutritional value. An energy-efficient and

simultaneously nutritious diet could be constructed, but it would be very different from the current Swedish diet. Low-energy diets had fewer drinks and sweets and substituted chicken for beef.

This study serves as a model for carefully choosing appropriate study questions, lifecycle stages, and observation units, as well as linking results to an easily understood indicator. The purpose of the Carlsson-Kanyama study was not simply to evaluate the energy used to transport food between producer and retailer, but focused on the choices an individual makes when purchasing, transporting, and preparing food. As was noted earlier, when food production and home cooking are taken into account, the proportion of energy used in transporting food becomes less significant.

Cederberg and Mattson

Cederberg and Mattsson (Cederberg 2000) compare conventional and organic dairy production in Sweden. The objectives of the study are to identify energy inefficiencies in the two production methods, to test the hypothesis that high-grain input farms have greater environmental impact, and to collect data for future animal product LCAs.

Cederberg and Mattsson define the lifecycle stages included in the study as the production of farm feed inputs (fertilizers, pesticides, and seeds) on one side and retail stores on the other. The study does not address consumption, waste, or transportation. They organize impacts into three categories--resources (energy, materials, and land), human health (pesticide use), and ecological (global warming, acidification, eutrophication, photo-oxidant formation, and depletion of stratospheric ozone). The Nordic Guidelines for LCA are used to evaluate data quality.

The researchers conclude that there are "obvious environmental benefits" to a low-input agricultural system, especially where pesticides and phosphorous are used. However, for other indicators, both systems were found to need much improvement. Finally, they note that more qualitative and quantitative research is needed on how these two systems use land.

The research question is carefully framed to allow objective and informative results, and admirably addresses impact categories beyond energy use (or greenhouse gas emissions). Cederberg and Mattsson point out that methods used for calculating impacts in some areas, such as land use, are not well established compared to methods for calculating energy use and greenhouse gas emissions. This study provides a model for evaluating multiple impact categories for food production.

Mattsson, Cederburg and Blix

In the study mentioned above, Mattsson and Cederberg identified a lack of established methodology for assessing land use in LCAs. Mattsson and Cederberg join another researcher, Blix (Mattsson 2000), to explore land use as a quantifiable impact by writing three case studies of different vegetable oil crops. The authors create a set of indicators for land use assessment and test the suggested methodology with the three crops. Their aim is to generate a methodology that will be easily incorporated into other more comprehensive LCA.

The authors find that there is a need to include both aggregate quantitative data, typical for LCAs, with more qualitative judgment-based analysis. Mattsson (2000) uses the example of determining a "landscape value." There is no readily available approach to numerically calculate the social and historical values of forest land, farmland, or developed land, though the landscape value of working landscapes may

be a valid indicator when comparing competing land uses or differing farm practices.

The authors propose environmental objectives related to land use indicators. Objectives for agricultural land are to 1) "preserve and, when possible, improve the qualities of agricultural land to ensure future biological production capacity" and 2) "preserve landscape values and biological diversity" (Mattsson 2000, p.284). While measurable indicators for the second objective are hard to define, the authors establish indicators for the first objective, which includes soil erosion, hydrology, and soil's chemical and organic composition. Qualitative indicators include the avoidance of monoculture and the perpetuation of varied landscapes in a geographic area.

The quantitative and qualitative indicators are applied to the case studies of soybean production in Brazil, rapeseed production in Sweden, and oil palm production in Malaysia. The authors could not complete a full analysis because of a lack of data. Given the complexities of gathering data and performing field research overseas, the authors suggest that future LCA studies of land employ only the quantitative indicators of erosion, soil organic matter, soil structure, and certain soil chemical components, and the somewhat qualitative indicator of biodiversity. These case studies, with the focus on land use impacts, stray from the LCA methodology toward an environmental impact assessment.

OTHER STUDIES

As stated, food miles studies have been a popular method for evaluating food systems. LCAs are gaining popularity in their application to food. Other methods can be used as well. Three studies were chosen as examples of "other methods." One uses the theoretical framework of a lifecycle to analyze segments of the U.S. food system; another study uses a hypothetical

scenario to evaluate energy and land use indicators; and the third evaluates the “hidden costs” associated with both local organic and local conventional production methods and transportation systems and assigns monetary values to negative externalities. All three share similarities with LCAs. Additionally, the third study, like a food miles study, may make the detailed analysis of an LCA more meaningful to the general public by putting a monetary value on environmental costs.

Heller and Keoleian

Heller and Keoleian (Heller 2000) present a set of indicators first developed at a workshop called “A Life Cycle Approach to Sustainable Agriculture Indicators,” which brought together 60 people from various sectors of the U.S. agriculture system, including practitioners, policymakers, and academics. The report does not conduct a quantitative LCA of the U.S. food system. Rather, it tries to encourage “lifecycle thinking” about agriculture and food distribution in order to work toward a more sustainable system. To this end, the authors compile current research on the social, economic, and environmental issues facing the U.S. food system during different lifecycle phases of plant agricultural products, such as origin (seed), growing, processing, packaging, preparation/consumption, and end of life (waste and disposal). The report also looks at three indicators for the total food system—materials, energy, and management.

This report does not provide a model for a quantitative LCA. However, it provides insights into food system issues and lifecycle stages. The authors highlight important indicators of economic, social, and environmental sustainability of the U.S. food system and demonstrate the value of qualitative analysis in a food system assessment.

Cowell and Parkinson

Cowell and Parkinson (Cowell 2003) attempt to evaluate the sustainability of a relocalized food system in the United Kingdom using land area and energy use as indicators. They execute a national analysis in specific foodstuff categories tied to national data on production and consumption. Cowell and Parkinson conclude that the country can relocalize its food production and supply, although people would need to change their diets considerably (i.e., no tea, coffee, oranges, bananas, or other common food items that cannot grow in the U.K.). Additionally, more land would have to be dedicated to agricultural use. While such a land use transition and change in a nation’s diet is possible, it would be necessary to further consider any possible tradeoffs in efficiency before such a system could be recommended. The study essentially evaluates a possible, although unlikely, scenario using two indicators. This type of hypothetical study can be a model to determine the potential and tradeoffs associated with relocalized food production.

Pretty, et al.

Pretty, Ball, Lang, and Morison (Pretty 2005) estimate the hidden monetary costs of the average weekly food basket in the United Kingdom using production and transportation costs for 12 commodities and comparing domestic conventional and organic production methods, as well as local and global sourcing. Only domestic production was analyzed due to data constraints, as well as a greater interest in policy implications for domestic agriculture. Global sourcing was analyzed only for its contribution to transportation costs. The conclusion is that hidden costs, or externalities, are greatest in the areas of conventional agriculture, domestic road transportation, shopping transportation, and government agricultural subsidies. They find the contribution

of boat and air transport to be trivial because of low volumes. The external costs of various production and transportation scenarios are then compared and scenarios of different combinations of production and transport are used to project policy recommendations.

The greatest strength of this report is its synthesis of information in a powerful, understandable way. Using money as a measurement of impact is more illustrative than MJ or pounds of CO₂. However, since the monetary values used in the study are largely based on previous studies of farm and transportation impacts, the process is difficult to evaluate. The study does outline some of its assumptions and potential errors. The estimates are cost based, rather than demands based, and involve replacement costs, substitute goods, loss of earnings, and clean-up costs. They exclude what they call “side-effects” of the agricultural system, such as the energy consumed by processors, manufacturers, and wholesalers for light, heat, and refrigeration. While this study covers more of the food system than a “food miles” study, it lacks some of the rigor of the LCA framework. It is also difficult to understand what information was included or excluded and how overall cost estimates were generated.

CONCLUSIONS

Calculating “food miles” produces data points, or indicators, that are too simplistic to provide a meaningful evaluation of a food system’s energy consumption and carbon emissions. Despite the fact that the data produced is easily understood by the general public, and therefore useful in information campaigns, they do not provide a solid foundation for arguments for local food systems.

LCAs provide more comprehensive descriptions of the impacts of food and food systems, but

they must be constructed carefully to answer specific questions. The process of producing an LCA is time and data intensive and the results may not be easily understood by the general public. Therefore, if an LCA is conducted, it should be done carefully and in such a way as to inform policy decisions rather than information campaigns.

In order to construct a study that can be useful for policy decisions, the question must be framed carefully because that framing mandates what information is considered relevant and ultimately what conclusions can be drawn. Cederberg (2000) is an example of a well thought out, specific question that results in useful, balanced information. The efficiency of conventional and organic dairy production was compared in this study, with the aim of finding areas for improvement in each. In this way, the report does not read as a biased support of either system, and useful recommendations are made. On the other hand, the Saunders (2006) study from Lincoln University, New Zealand, is framed as a rebuttal of food miles studies. It makes its point that food imported in the U.K. from New Zealand is not always less energy efficient than food that does not travel as far, but it does not make recommendations for how to improve the overall efficiency of our food systems.

Although research questions must be carefully constructed in order to perform a useful LCA, the standardized process of LCA does make the studies easy to evaluate. For example, despite the fact that the Lincoln University study appears to have a bias, its process and assumptions are more transparent than those of Pretty (2005), who associated monetary values to externalized food system costs.

This literature review suggests that if DVRPC, or any organization or company, wishes to calculate energy usage and carbon emissions in

the global and local food systems, there must be a clear vision and overall standards for a sustainable region as a basis for the study. Only with such a clear vision can useful research questions be formulated.

This literature review was completed in November 2008.

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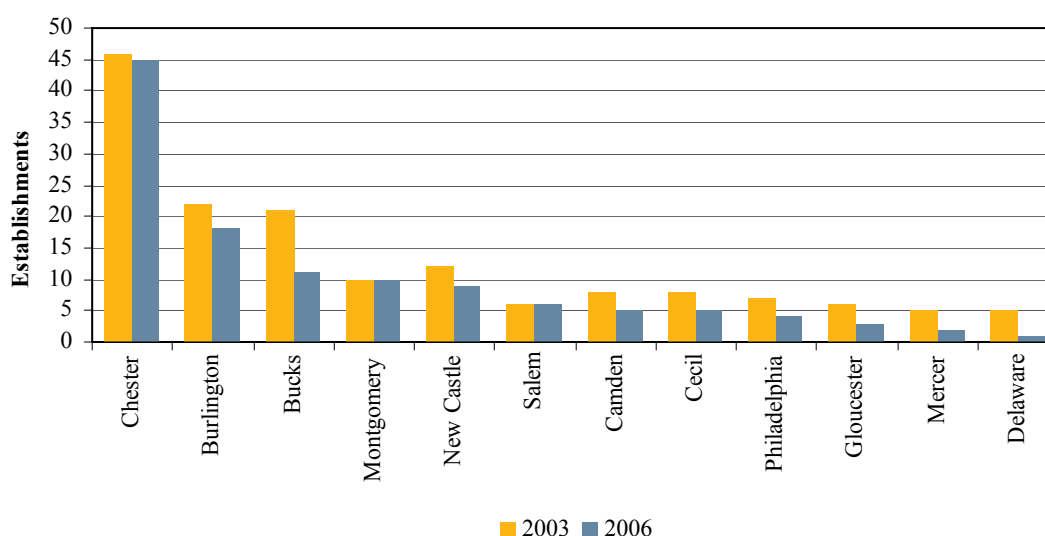
Appendix E: Food Economy Sector Summaries

(1) Natural Resources and Agricultural Support

Natural resource harvesting and agricultural support services are combined into one food sector due to their similar nature as auxiliary to agricultural production. Fishing, hunting, and trapping establishments harvest fish and other animals from natural habitats. Fishing is the predominant economic activity in this subsector and includes both finfish and shellfish fishing. Hunting and trapping establishments may be engaged in commercial operations, or may operate game or hunting preserves or retreats. Fishing, hunting, and trapping depend upon the availability of resources in the natural environment and are constrained by conservation requirements and habitat maintenance. Aquaculture, defined as rearing aquatic animals or growing aquatic plants in a controlled environment, is not within this sector; it is included in the USDA's Census of Agriculture. See **Part 1: Agricultural Resources** of *The Greater Philadelphia Food System Study*.

Support activities for crop and animal production include services that are essential to agricultural production, such as soil preparation, seed and fertilizer sellers, equipment providers, crop harvesting, post-harvest crop activities, farm labor management, animal breeding services, dairy herd improvement firms, equine boarding, and other farm-related services.

Figure E.1: Natural Resources and Agricultural Support Establishments in Greater Philadelphia (2003-2006)



Source: U.S. Census Bureau 2005 and 2008, DVRPC 2009

ESTABLISHMENTS AND EMPLOYEES:

Natural resources and agricultural support activities comprise a very small part of the food economy compared to all other sectors in terms of establishments and employees. However, these services are an essential part of a viable agricultural industry in the region.

Greater Philadelphia had the fourth highest MSA population, although it was eighth in the country in terms of the number of establishments in the natural resources and agricultural support sector. In 2006, there were seven fishing, hunting, and trapping establishments, 26 establishments providing crop production support, and 86 establishments providing animal production support. These 119 establishments employ between 528 and 1,045 people in Greater Philadelphia.

As seen in Figure E.1, Chester County has by far the most establishments in this sector, and declined only slightly between 2003¹ and 2006. Bucks County, however, lost nearly half of its establishments during this period.

TRENDS:

In recent years, Greater Philadelphia has lost both establishments and employment in this sector faster than the national average. This hints at both the increasing urban development and the shrinking of agricultural support infrastructure in the region. This trend is especially true in Bucks County, which dropped from 21 establishments employing between 51 and 89 persons in 2003 to just 12 establishments and between 15 and 53 employees in 2006.

Between 2003 and 2006, the number of establishments in this sector declined 9% nationally and 24% in Greater Philadelphia.² Employment in this food economy sector declined 4% nationwide (from about 90,000 to 86,000 employees). Employment in Greater Philadelphia decreased from a range of 600 to 1,266 to 528 to 1,045; using the midpoint of each range would mean a 16% decrease in employment.

REGIONAL EXAMPLES:

About three-quarters of the establishments in this sector in Greater Philadelphia provide support activities for animal production, not all of which are food related. Many of these businesses may be engaged in equine activities, such as breeding, boarding, and horseshoe services. Also included in this sector is sheep shearing, which is often conducted by individuals who may travel throughout the region to provide their service.

Another type of establishment providing support for animal production is livestock artificial insemination businesses. Nearly all the major beef and dairy artificial insemination companies are headquartered in Wisconsin, but they serve farmers around the world. One such company, Select Sires, is headquartered in Ohio and provides genetic services globally through a network of marketing contacts. Select Sires is one of the largest artificial insemination companies in North America and is composed of 10 farmer-owned cooperatives. One of these cooperatives, Select Sire Power, is headquartered in Virginia and has a service location in Elmer, Salem County, New Jersey. Select Sire Power provides bovine breeding services for both dairy and beef breeds, in addition to other herd management services, such as nutritional supplements and udder care products.

(2) Wholesale Trade

Most food and beverages purchased by consumers at retail establishments were in turn purchased from wholesalers. Food and beverage wholesalers act as intermediaries, buying from farms and manufacturers and selling to retail stores, bars and restaurants, manufacturers, and other businesses. Certain retail

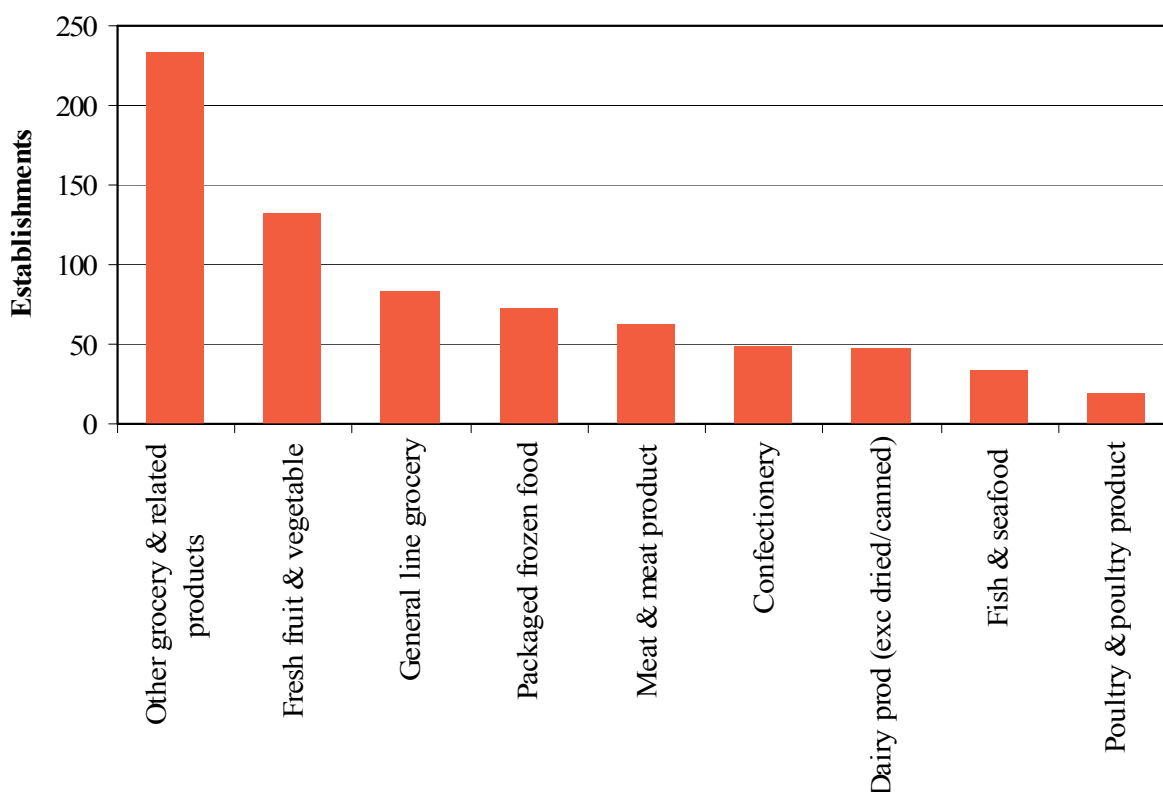
¹ Data for this sector was unavailable in the Economic Census, unlike all other sectors.

² The number of establishments declined from 12,185 to 11,146 in the United States, and from 156 to 119 in Greater Philadelphia.

operations, distribution companies, agents, brokers, auction companies, and manufacturing companies participate in wholesale trade.

This sector includes establishments engaged in the wholesale trade of grocery and related products, as well as beer, wine, and alcoholic beverages. In addition, the wholesale trade of farm product raw materials and farm supplies is also included. Nonmerchant wholesalers, such as agents and brokers, are grouped in an overall category, “wholesale electronic markets and agents and brokers” (NAICS 425), which combines durable and nondurable goods, and so are not included in this analysis.

Figure E.2: Types of Grocery Wholesale Trade Establishments in Greater Philadelphia (2006)



Source: U.S. Census Bureau 2008, DVRPC 2009

ESTABLISHMENTS AND EMPLOYEES:

The Greater Philadelphia MSA was the sixth largest in the country in the number of food-related merchant wholesale establishments in 2006, with a total of 932 establishments. The vast majority of these, 732 establishments, deal in grocery and related products, followed by beer, wine, and alcoholic beverages (97), farm supplies (75), and farm product raw materials (29). These four types of wholesale trade establishments employ between 21,349 and 22,832 people.

Grocery and related products wholesalers are divided into nine overall categories of goods, shown in **Figure E.2: Types of Grocery and Related Product Wholesale Trade Establishments in Greater Philadelphia (2006)**. The category with the greatest number of establishments is “other grocery and related products.” These 234 establishments specialize in the wholesale trade of goods, including coffee, tea, and spice; bread and baked goods; soft drinks; canned goods; food and beverage basic materials; and all grocery items excluded from other categories, including bottled water. Considering the area’s concentration of bakeries, a large number of these grocery wholesalers in the “other” category are likely to be trading bread and baked goods, although more detailed data is unavailable at the MSA or county level. The second most common type of grocery wholesaler distributes fresh fruits and vegetables. There are 132 produce wholesalers in Greater Philadelphia, many of which purchase goods either directly from farmers or at one of the many produce auctions in the region. The third most common type of grocery wholesaler is general line, which supplies a wide range of groceries to retailers.

Within Greater Philadelphia, food-related wholesalers are concentrated in Philadelphia County, where there are 247 establishments that employ about 5,500 people. Other counties with large numbers of wholesale establishments include Montgomery County (120), Bucks County (101), Chester County (95), and Camden County (75).

TRENDS:

Over the past decade, the number of food-related wholesale trade establishments fell in Greater Philadelphia at a higher rate than the national average. However, the number of employees increased slightly in Greater Philadelphia, while employment fell nationally.

Between 1997 and 2006, the number of establishments in the United States of these four types of food-related wholesalers declined 19%, from about 64,000 to 52,000 establishments. In Greater Philadelphia, the number of these establishments declined 22%, from about 1,200 to 900 establishments.

Nationwide, the number of employees in food-related wholesale trade declined 8%, from 1.18 million to 1.09 million. During that same time period, employment in Greater Philadelphia stayed relatively the same, at approximately 21,000 to 22,000 employees.³ Consolidation is the likely reason for the decline in number of establishments while the number of employees in food-related wholesaling was relatively unchanged between 1997 and 2006.

Global Insight data reveals a similar trend of decreasing establishments but modestly increasing employment. In 2008, Global Insight reported that there were 936 establishments and 19,020 employees in Greater Philadelphia. The number of establishments has declined 15%, and the number of employees has increased 9% over the past decade. Global Insight estimates that the total output of the four types of food-related wholesale trade was \$13.9 billion in 2008.

There has been a great deal of consolidation in the wholesale trade business, as distribution companies have merged with retail operations or other distributors. Consolidation in both the restaurant and the grocery retail industry has encouraged consolidation in wholesalers in order to meet the wider geographical and population base of those large retailers. One result of this wholesale consolidation has been a limitation in consumer choices, since wholesale companies rarely represent competing brands; fewer distributors has led to fewer brands being distributed. Small-scale farms and producers are at a

³ In 1997, the region employed between 21,052 and 22,195 employees, and in 2006, it employed between 21,349 and 22,832 employees.

competitive disadvantage with large distributors and tend to either rely on the remaining independent wholesalers to distribute their products, or they may deal directly with retailers.⁴

Consolidation is evident in the increasing concentration of sales by fewer firms. Nationwide, the four largest grocery wholesale firms made up just 14% of all sales, and the top 50 firms made up 47% of sales in 2002. This, however, represents a significant increase in consolidation from 1997, when the top four firms made up 9% and the top 50 made up 39% of all grocery wholesale sales. Concentration of sales has been much greater within certain subsectors of the grocery wholesale industry. For example, within confectionary wholesalers, the four largest firms made up 55% of all sales in 2002, up from 47% in 1997. Within the largest category of grocery wholesale trade nationwide, general line, the four largest firms made up 41% of sales in 2002, up significantly from 28% in 1997.

REGIONAL EXAMPLES:

The Philadelphia Regional Produce Market has been operating in Philadelphia as a terminal (or wholesale) market since 1959. Also known as the “Food Distribution Center,” the market continues a tradition of produce trading that existed in Philadelphia since the 1600s. Its current location on four acres in south Philadelphia contains over 40 wholesale businesses that employ 1,100 people and produce \$1 billion in sales of produce. It is also estimated that over one million pounds of produce are donated annually to food assistance programs such as

Philabundance. Seeking more space and upgraded refrigeration and other facilities, the Produce Market will relocate to a remediated brownfield site in southwest Philadelphia through a public/private partnership. The new site of the Produce Market is set to open in 2010.

The Common Market, an alternative to the Philadelphia Regional Produce Market, is a nonprofit wholesale distribution center dedicated to distributing local farm products produced in Pennsylvania, New Jersey, Maryland, and Delaware. Opened in 2008, the Common Market buys from local growers and sells case-load quantities to institutions such as Jefferson University Hospitals and Cooper University Hospital. The Common Market was developed with the help of Farm to Institution, a program of the Fair Food project of White Dog Community Enterprises. The mission of Farm to Institution is to build relationships between local farmers and institutions and to develop solutions to the many barriers to institutional purchasing of high-quality, local food. Some of these barriers include binding policies of food service contractors that prohibit buying outside of the contracts, high insurance premiums, and competitive open bidding, all of which put small-scale operations at a disadvantage. Organizations like the Common Market and Farm to Institution seek to overcome these hurdles and revitalize the local food system by

New Jersey’s Wholesale Fruit and Vegetable Marketing System

Rutgers University’s Agricultural Experiment Station (NJAES) completed a comprehensive study in 2002 analyzing New Jersey’s wholesale fruit and vegetable marketing system. While examining problems faced by producers and brokers in Cumberland County, the project team considered the effect of the global market on New Jersey’s agricultural success and failure. The study found that the produce industry, like many other food economy sectors, experienced consolidation with improved technology. This helped meet growing consumer demand. From these analyses, NJAES developed strategies and made recommendations that it felt would help the local industry achieve objectives, like reducing market risks and improving grower returns, customer service, and efficiency.

Source: Brennan, Margaret, 2002. “New Jersey’s Vegetable Industry.” Rutgers Food Policy Institute.

⁴ Murphy, Kate. “Food Brokers Are Bigger, So Shelves Look Smaller.” *New York Times* 2 September 2001: Business 4.

developing a network of local farms, distributors, and institutional food services that will be able to continue and succeed in the long term.

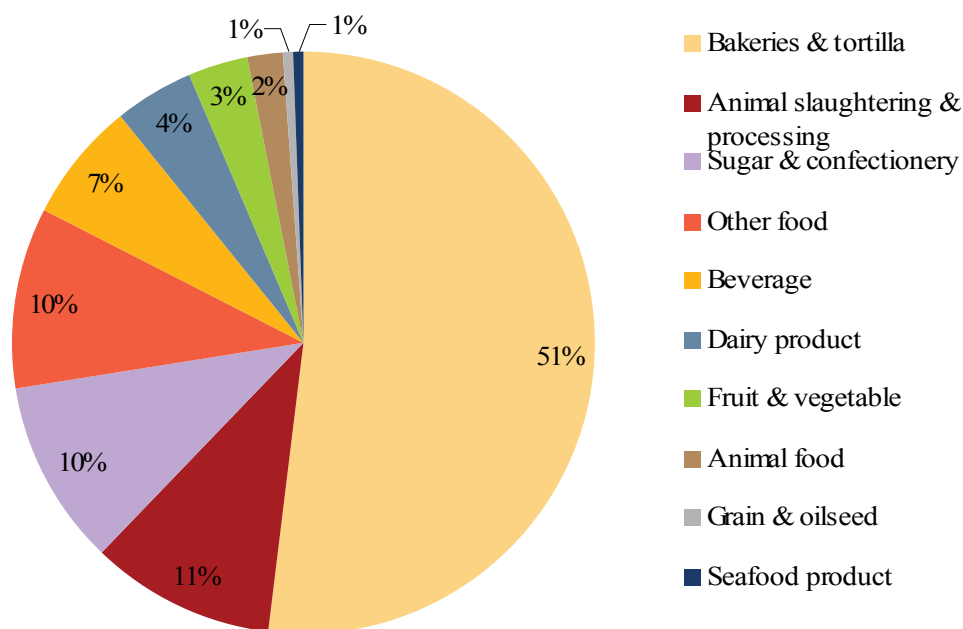
(3) Food and Beverage Manufacturing

Many of the foods and beverages consumed by Americans have been processed in some way. Food and beverage manufacturers process livestock and agricultural products for immediate or final consumption. Typically, the products are then sold to wholesalers or retailers for final sale, although many bakery and confectionary establishments make and sell products on the premises and also are included in this category.

There are nine different types of food manufacturing establishments: (1) animal food; (2) grain and oilseed milling; (3) sugar and confectionary products; (4) fruit and vegetable preserving and specialty foods; (5) dairy products; (6) animal slaughtering and processing; (7) seafood products; (8) bakeries and tortilla manufacturing; (9) and other food manufacturing.

There are four types of beverage manufacturing establishments: (1) soft drinks, ice, and bottled water; (2) breweries; (3) wineries; and (4) distilleries.

Figure E.3: Food and Beverage Manufacturing Establishments in Greater Philadelphia (2006)



Source: U.S. Census Bureau 2008, DVRPC 2009

ESTABLISHMENTS AND EMPLOYEES:

The Philadelphia MSA is fifth in the country in the number of food and beverage manufacturers, with 458 food- and 34 beverage-manufacturing establishments. Mercer County adds another 30 food and one beverage manufacturer, for a total of 523 food and beverage manufacturers in Greater Philadelphia. About half (271) of these establishments are bakeries; 249 bakeries manufacture bread and bakery products and

22 produce cookies, crackers, and pasta. Of the bread and bakery product manufacturers, 171 are retail bakeries selling their products on site, 71 are commercial bakeries, and seven produce frozen cakes, pies, and other pastries.

In terms of number of establishments, Greater Philadelphia ranks within the top 10 metropolitan areas for eight of the 13 types of food and beverage manufacturing:

- Fourth for sugar and confectionary product manufacturing;
- Fourth for animal slaughtering and processing;
- Fourth for soft drink, ice, and bottled water manufacturing;
- Tied for fifth for distilleries;
- Sixth for dairy product manufacturing,
- Sixth for bakeries and tortilla manufacturing
- Sixth for breweries; and
- Eighth for other food manufacturing.

Food and beverage manufacturing employed approximately 24,000 people in 2006. Bakeries employed approximately 7,700 people, followed by animal slaughtering and processing, which employed approximately 6,000 people.

Pennsylvania is fourth in the country in the number of food manufacturing establishments, although it is third in “value added” of production, which is equal to the value of shipments minus the cost of production.⁵ This suggests that food manufacturing in Pennsylvania creates a great deal of value above the cost of raw materials. In 2006, food manufacturing generated \$13.8 billion in value added in Pennsylvania. Comparatively, California generated \$24.9 billion and Texas generated \$14 billion in value added. The amount of value added in food manufacturing in New Jersey and Delaware in 2006 was \$4.8 billion and \$900 million, respectively. The amount of value added increased 14% in the United States and nearly 19% in Pennsylvania and 50% in Delaware (not adjusted for inflation) between 2002 and 2006. However, the amount of value added in food manufacturing fell 10% in New Jersey during this time.

Nationally, the greatest amount of value added of food and beverage manufacturing derives from animal slaughtering and processing, followed by beverage manufacturing. In the three states of Pennsylvania, New Jersey, and Delaware, however, “other food manufacturing” generates the most added value, followed by bakeries, sugar and confectionary manufacturing, beverage manufacturing, and then animal slaughtering and processing.

TRENDS:

Within the past 10 years, food manufacturing in Greater Philadelphia has declined at a rate higher than the national average. Beverage manufacturing has increased in Greater Philadelphia, but slower than the rate for the nation as a whole.

Nationally, the number of food manufacturing establishments declined 4% between 1997 and 2006, from about 26,400 to 25,400. The number of beverage manufacturing establishments, however, increased 36% during this period, from about 2,600 to 3,600. In Greater Philadelphia, the number of food manufacturing establishments declined 21% during the same time period, from about 600 to 500 establishments, while the number of beverage manufacturing establishments increased 17%, from 30 to 35.

⁵ Value added is not available on the MSA or county level. The amount of value added for beverage manufacturing was not disclosed for many states.

Over the past decade, employment in food and beverage manufacturing decreased about 2% nationwide, from approximately 1.6 million to 1.5 million employees. In Greater Philadelphia, employment decreased about 7%, from approximately 26,000 to 24,000. Like the number of establishments, employment in food manufacturing decreased, while that of beverage manufacturing increased in both Greater Philadelphia and the nation.

Global Insight estimates a somewhat higher number (595) of food/beverage manufacturing establishments employing about the same number of people—24,417 employees—in Greater Philadelphia in 2008. Within the past decade, the number of establishments has fallen 7% and the number of employees has fallen 24%.

Consolidation has been occurring in the food manufacturing industry since at least the 1970s, driven mostly by technological change.⁶ Because of new technologies in the production system, the number of both processing plants and employees has fallen sharply, while the size of plants and the output per employee has risen greatly. The increased consolidation of larger plants and firms has led to increased concentration of sales. Nationwide, in 2002, the four largest firms controlled 15% of the value added of food manufacturing, up from 11% in 1997. Concentration of sales is much greater in some subsectors of food manufacturing, such as grain and oilseed milling, and sugar and confectionary manufacturing, where the top four firms controlled 51% and 43%, respectively, of the total sales in 2002.

Beverage manufacturing, however, has decreased in concentration in recent years. Nationwide, in 2002, the top four firms controlled 36% of the value added, down from 42% in 1997. This change is mainly due to diversification in soft drink and ice manufacturing. Concentration was greatest in breweries, where the top four firms controlled 91% of total sales in 2002, unchanged from 1997.

REGIONAL EXAMPLES:

The Tasty Baking Company began in 1914 in Philadelphia through a partnership between a Pittsburgh baker and a Boston egg salesman. The line of prewrapped snack cakes delivered to stores was appealing, and the company's iconic Tastykake products earned \$300,000 in sales in the first year. Today, the company has gross annual sales of \$250 million and bakes over 4.8 million cakes, donuts, pies, and cookies each day at manufacturing facilities in north Philadelphia and Oxford, Pennsylvania. In the spring of 2009, the company announced plans to relocate to a new facility in Philadelphia's Navy Yard, which will attempt to achieve green building certification through the use of recycled materials, conservation, and other environmentally friendly practices. Although once available only in the Philadelphia area, the company has gradually expanded, and Tastykakes are now available in a number of states on the East Coast.

The Campbell Soup Company, headquartered in Camden, New Jersey, was founded in 1869 and is now one of the largest food manufacturers in the world. Campbell's soups and other food products are sold in 120 countries around the world. In addition to the Campbell's brand, the company also owns Pace salsa, Pepperidge Farm cookies and crackers, Swanson broth, and V8 beverages, as well as a number of other brands sold only in Europe. Campbell Soup has a commitment to purchasing many of its ingredients from local farmers located within 100 miles of its facilities. By sourcing locally many fresh, high-quality ingredients, including Jersey tomatoes, Campbell Soup helps contribute to the viability of local farming communities.

⁶ "Structural Change in the Meat, Poultry, Dairy, and Grain Processing Industries." USDA ERS Economic Research Report No. (ERR3), April 2005.

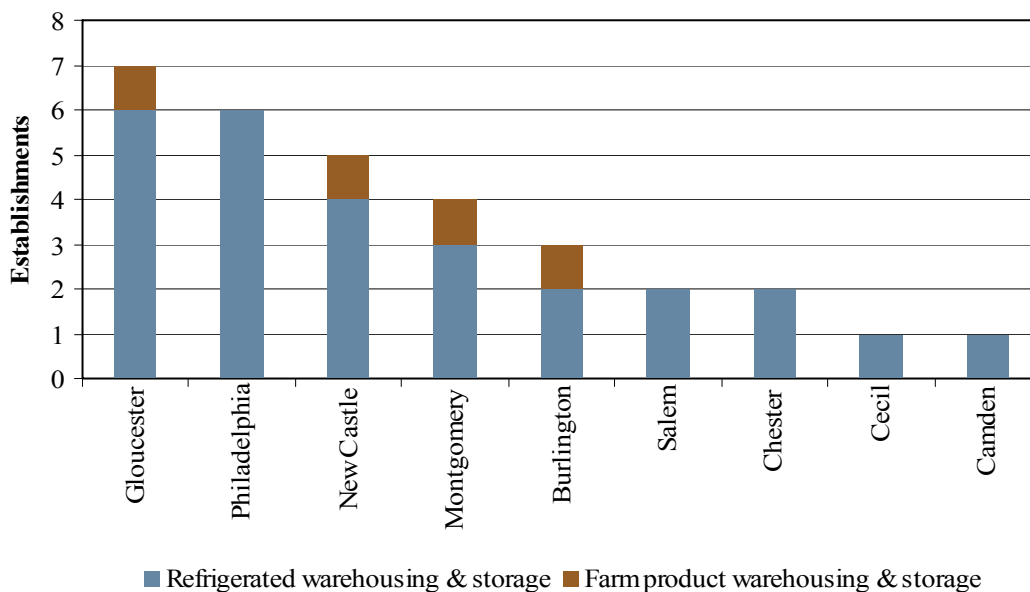
(4) Transportation and Warehousing

The flow of goods drives the transportation and warehousing industries. Most farmers and manufacturers are usually unable to sell their products as quickly as they are produced, and so rely on warehousing facilities for temporary storage. These goods may then be purchased by wholesalers and sent to other warehousing facilities until the products are ordered by retailers. Cold storage facilities are those refrigerated warehouses that store goods for 30 days or more. On average, 12.6 billion pounds of commodities are kept in cold storage each month in the United States.⁷

Food is typically stored in refrigerated warehousing or cold storage facilities that are protected from fire and theft, are climate controlled to be under 50°F, and often utilize technology for tracking and handling inventory. Warehousing and storage facilities serve as a link between producers and retailers, offering an efficient and inexpensive way to store goods. While refrigerated warehouses are mainly used for storing food and beverages, they also serve the pharmaceutical, chemical, medical, and scientific industries. Many cold storage facilities are located at ports, where large volumes of perishable goods are imported and exported. Companies with national distribution often have their own private facilities, as do many large-scale farmers. Public warehousing facilities often serve regional or local producers who do not have the volume to justify their own facilities.

Warehousing facilities are categorized as either general, refrigerated, farm product, or other. This analysis looks only at refrigerated and farm-product warehousing facilities, since they primarily deal with food products. While “general” and “other” warehouses probably store food-related items as well, DVRPC had no equivalent proxy for estimations.

Figure E.4: Refrigerated and Farm Product Storage Establishments in Greater Philadelphia (2006)



Source: U.S. Census Bureau 2008, DVRPC 2009

⁷ USDA NASS. “Cold Storage 2008 Summary.” February 20, 2009.

The U.S. Census Bureau data series does not distinguish between food and nonfood transportation, and so a proxy was used. According to the Food Freight Analysis Framework (FAF) detailed in **Part 2: Food Distribution** of *The Greater Philadelphia Food System Study*, 99% of food travels by truck, and food comprises 14% (by weight) of all freight carried by truck. Therefore, DVRPC estimates that 14% of the trucking business is engaged in transporting food. Many trucking lines carry a wide range of cargo that includes food, while other trucking lines specialize in food transport.

ESTABLISHMENTS AND EMPLOYEES:

Pennsylvania, with its network of interstate highways, is ninth in the country in the number of refrigerated warehouses, and eight in its usable refrigerated space capacity. California, Wisconsin, and New York are the states with the greatest number of refrigerated warehousing facilities; California, Florida, and Texas have the greatest capacity of usable refrigerated space.⁸

The Philadelphia MSA is fourth in the country in the number of refrigerated and farm-product warehousing establishments, with a total of 31 establishments.⁹ Warehouse facilities require large areas of low-cost land, and so many facilities are located immediately outside of dense metropolitan areas adjacent to interstate highway interchanges. Eight refrigerated and two farm-product warehouses are located in Middlesex County adjacent to the New Jersey Turnpike. A significant number of warehouses specializing in perishable and processed foods is located in Lancaster and Lehigh counties at Pennsylvania Turnpike interchanges. Cumberland County, New Jersey, also has a significant concentration of food-related warehouses and contains another eight of these establishments, which employ between 100 and 268 people.

The Philadelphia MSA is the seventh highest ranking metropolitan area in the number of truck transportation establishments, with about 1,500 such establishments employing between 10,000 and 24,999 employees. The addition of Mercer County adds 63 establishments and about 800 employees. The 14% proxy yields 214 establishments and between 1,500 and 3,600 employees in Greater Philadelphia responsible for transporting food by truck.

TRENDS:

Trends in food-related warehousing in Greater Philadelphia differ from many other areas of the food economy in that the number of establishments has increased, while the number of employees has decreased, over the past decade. However, both the number of establishments and employees in truck transportation increased in Greater Philadelphia. Market concentration is low in the transportation sector, although it is greater in the warehousing sector. In 2002, the top four firms controlled just 8% of total truck transportation sales, 36% of refrigerated warehousing sales, and 17% of farm-product warehousing sales.

Nationally, the number of establishments of refrigerated and farm-product warehousing and storage increased 39% between 1997 and 2006, from about 1,400 to 1,900. The number of these establishments increased 72% in the Philadelphia MSA, growing from 18 to 31 during the same time period.

Employment in food-related warehousing and storage increased in the nation but remained relatively the same in Greater Philadelphia over the past decade. Nationally, the number of employees doubled, from

⁸ USDA National Agricultural Statistics Board (NASS). "Capacity of Refrigerated Warehouses 2007 Summary." January 2008.

⁹ There were no refrigerated or farm product warehouses reported in Mercer County in 2006.

about 27,000 to 55,000. In the Philadelphia MSA, the number of employees changed from about 900 to between 500 and 1,100.

Global Insight estimates that there were 25 refrigerated and farm-product warehouse establishments in 2008 in 11 counties of Greater Philadelphia. Over the past decade, the number of establishments has increased 32%. The number of employees has fluctuated over the past 10 years, from a low of 495 in 1998 to a high of 826 in 2004 to 605 employees in 2008.

The number of total truck transportation establishments in Greater Philadelphia increased 13% between 1997 and 2006, from about 1,400 to 1,500. The number of employees changed from about 18,000 in 1997 to between 10,800 and 25,800 in 2006.

REGIONAL EXAMPLES:

The Mullica Hill Group, headquartered in Gloucester County, New Jersey, is an integrated warehousing and transportation company that operates three cold storage facilities, as well as two transportation fleets. Mullica Hill Cold Storage, Garden State Freezers, and South Jersey Cold Storage have a combined capacity of over 26 million cubic feet of cold storage capacity.¹⁰ Aldan Transportation and Garden State Trucking each have fleets of 30 refrigerated trucks to serve the warehousing facilities. A second warehouse and office facility for South Jersey Cold Storage was completed in 2005 and has on-site USDA inspection services. This facility is also one of the largest facilities for the inspection of imported beef from Australia, New Zealand, and South and Central America. In addition to its consolidation of transportation and warehousing activities, the Mullica Hill Group exemplifies market consolidation in the refrigerated warehousing industry.

(5) Food and Beverage Stores

Over half of food expenditures in Greater Philadelphia are spent on food at home (groceries), the vast majority of which is purchased at food and beverage stores.

Food and beverage stores are defined by the U.S. Census Bureau as places that usually retail food and beverages from fixed point-of-sale locations. These places include grocery stores, specialty food stores, and beer, wine, and liquor stores. Grocery stores are categorized as either convenience stores or “supermarkets and other grocery stores.” Convenience stores sell a limited line of goods, such as milk, bread, soda, and snacks, and do not include food marts at gas stations. Supermarkets and other grocery stores sell a general line of food that generally includes canned, fresh, and frozen foods, produce, and meats; this category includes small delicatessen-type establishments that primarily sell a general line of food. The third type of food store is specialty food stores, which includes four different categories: (1) meat markets, (2) fish and seafood markets, (3) fruit and vegetable markets, and (4) other specialty food stores. Other specialty food stores is the largest of these four categories and includes stores specializing in baked goods, confectionaries and nuts, and other goods, including ethnic or international products. Lastly, beer, wine, and liquor stores are combined into a single category.

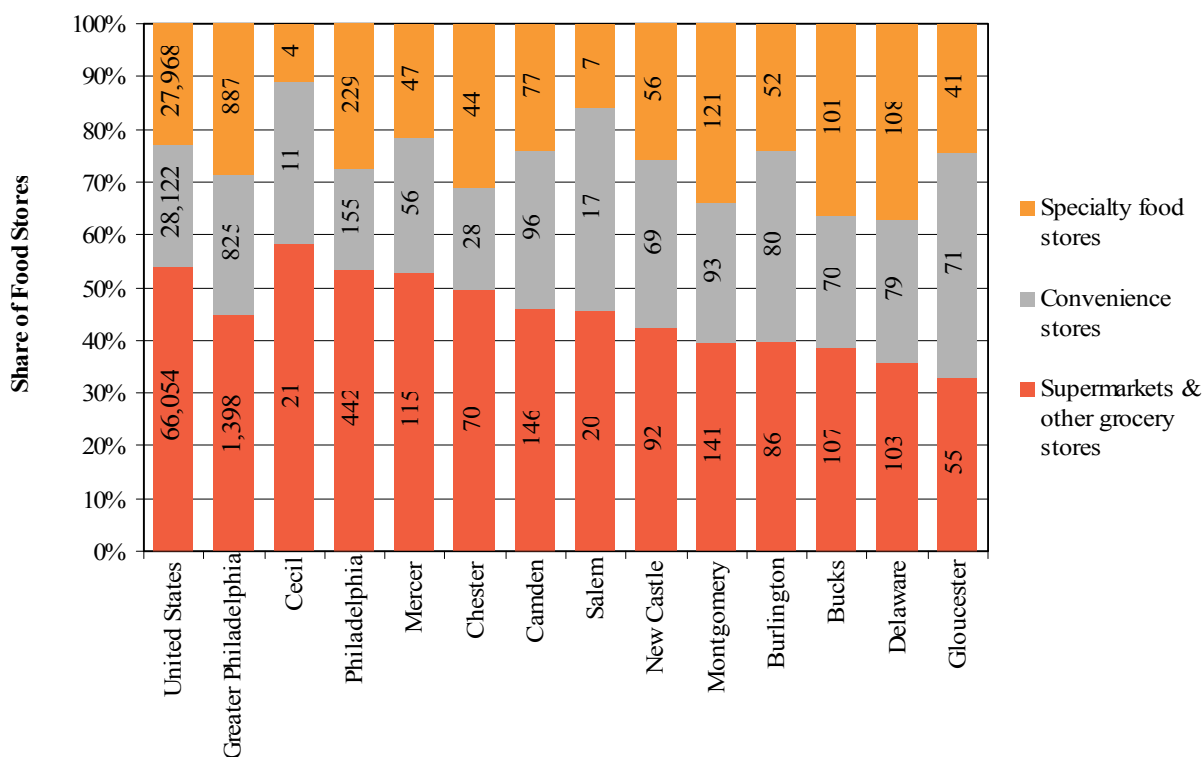
ESTABLISHMENTS AND EMPLOYEES:

Greater Philadelphia, the fourth most populated MSA, also ranks fourth in the number of food and beverage stores, with 4,016 food and beverage stores employing 73,910 people. One-quarter of these

¹⁰ International Association of Refrigerated Warehouses member directory. <http://www.wflo.org/directory/default.asp>. Accessed July 2009. and Mullica Hill Group. <http://www.mullicahg.com>. Accessed July 2009.

stores were beverage stores and the remaining three-fourths were food stores, as shown in **Figure E.5: Food Stores in the Nation, Greater Philadelphia, and Counties of Greater Philadelphia (2006)**. The dense New York MSA, with its extraordinarily high number of small urban grocery and convenience stores, has over four times the number of total establishments (17,606 stores).

Figure E.5: Food Stores in the Nation, Greater Philadelphia, and Counties (2006)



Source: U.S. Census Bureau 2008, DVRPC 2009

Among the food and beverage establishments in Greater Philadelphia, 35% (1,398) are supermarkets or grocery stores and 21% (825) are convenience stores. Another 22% (887) are specialty food stores, of which 169 are meat markets, 77 are fish and seafood markets, 140 are fruit and vegetable markets, and 501 are other specialty food stores. Beer, wine, and liquor stores make up 23% (906) of food and beverage establishments.

There is a great deal of variation in the grocery store landscape (supermarkets, convenience stores, and specialty food stores) within the counties of Greater Philadelphia. Low-density Cecil County, Maryland, has the highest percentage of supermarkets, although there are just 36 food stores in the whole county. About half of the food stores in Philadelphia, Mercer, and Chester counties are supermarkets. Gloucester County is the only county in Greater Philadelphia with more convenience stores than supermarkets, which may suggest that residents have greater access to lower-quality food. In fact, Gloucester County has the highest percentage of overweight individuals and the second highest diabetes rate in Greater Philadelphia.

TRENDS:

Nationwide and within Greater Philadelphia, there was not a significant change in either the number of establishments or employees in food and beverage stores within the past decade. The number of food and

beverage stores increased 3% nationwide between 1997 and 2006, increasing from about 149,000 to 152,000. The number of these stores increased 2% in Greater Philadelphia, growing from 3,900 to 4,000. The greatest growth was in specialty food stores, which increased 23% in the number of establishments (from 724 to 887 stores), slightly less than the national growth rate of 25%.

Between 1997 and 2006, the number of employees working in food and beverage stores increased 1% nationally, from slightly below to slightly above 2.9 million employees. While the number of stores in Greater Philadelphia increased 2%, the number of employees decreased 3%, declining from about 76,000 to 74,000. This may be due to growth in smaller stores, like specialty stores, that have fewer employees than large supermarkets.

Global Insight estimates that there were 3,374 establishments and 66,624 employees in food and beverage stores in 2008. The number of establishments has grown 13%, while employment has declined 11% over the past decade. This change suggests that there has been a growth in the number of food and beverage stores, especially those specializing in different types of food, although they are employing fewer people. It also suggests that food and beverage stores are not consolidating, but may be increasingly competitive in Greater Philadelphia. Global Insight estimates that the total output from food and beverage stores was \$16.3 billion in 2008.

Nationally, market concentration is highest in supermarkets, where the top four firms account for 33% of all sales, and less in convenience stores (16%), specialty food stores, and beer, wine, and liquor stores (both 7%).

Unlike convenience stores, supermarkets and other grocery stores offer an abundant variety of healthy foods like fresh produce. However, many low-income and minority neighborhoods in both rural and urban areas are underserved by grocery stores. For residents of these “food deserts,” convenience stores, gas station food marts, and even dollar stores may be the only sources of food in their neighborhoods. In Greater Philadelphia, The Food Trust and other organizations are working to expand access to fresh, nutritious food in food deserts by encouraging healthy choices in corner markets and supporting the development of supermarkets in underserved areas.

REGIONAL EXAMPLES:

There is an overwhelming variety of food and beverage stores in the Philadelphia region, from large corporate supermarkets to niche specialty stores.

ACME is the leading grocery retailer in the Greater Philadelphia region, with 126 supermarkets in Pennsylvania, New Jersey, Delaware, and Maryland. The company, which began in a single storefront in Philadelphia in 1891, now offers online shopping. ACME is no longer locally owned and is now a subsidiary of Albertson’s, which in 2006 merged into Supervalu, headquartered in Minnesota. This is an example of consolidation in the food retail, distribution, and wholesale industries.

Di Bruno Brothers is a gourmet specialty food store in Philadelphia that was started by Italian immigrants in 1939. Di Bruno Brothers was the first establishment to introduce an extensive selection of gourmet imported and domestic cheeses to Philadelphia. In addition to the original store in the Italian Market, Di Bruno Brothers operates three additional stores and a café in the city.

Started in 1972 as a small buying club in Mount Airy, Weavers Way Co-op is now a full-service member-owned food vendor and community organization, with 3,500 member households and stores in Mount Airy, West Oak Lane, and opening soon in Chestnut Hill. Weavers Way strives to meet its members’ demand for locally grown, fairly traded, and environmentally sensitive products at competitive prices. In

2007, Weavers Way Community Programs (WWCP) was formed to oversee and expand the Co-op's community enrichment work, including the Weavers Way Farm Education programs. Operated by a small staff of professional urban farmers and interns, the Weavers Way's Farm program is centered at Awbury Arboretum.

OTHER GROCERY RETAILERS:

Although most purchases of groceries are made at food and beverage stores, the share of food expenditures made at alternative food retailers has been increasing in recent years.

The most significant of these alternative food establishments are "other general merchandise stores" (NAICS code 4529), which include "supercenters," warehouse club stores, and discount "dollar stores." Supercenters such as Target Greatland and Super Walmart have been replacing the traditional supermarket in many parts of the country, although this has occurred to a somewhat lesser extent in the Philadelphia area. Nationally, the share of grocery sales purchased at other general merchandise stores increased from 10 to 17% between 1997 and 2002. Compared to the nation as a whole, the Philadelphia MSA¹¹ does much less grocery shopping at these stores, although this share has increased from approximately 4 to 6% of all grocery sales between 1997 and 2002. This reflects the growing consumer demand for "one-stop shopping" places where food and many other consumer goods can be purchased.

Other establishments that account for minor amounts (2% or less) of grocery sales include eating and drinking places, furniture and home furnishing stores, building and garden equipment and supplies stores, health and personal care stores, gasoline stations, miscellaneous store retailers, nonstore retailers (such as vending machines), and sporting goods, hobby, book, and music stores.

(6) Food Services and Drinking Places

Food expenditures away from home have been increasing steadily over time and make up about 46% of all food expenditures in the Philadelphia MSA. Most food away from home is purchased at food services and drinking places.

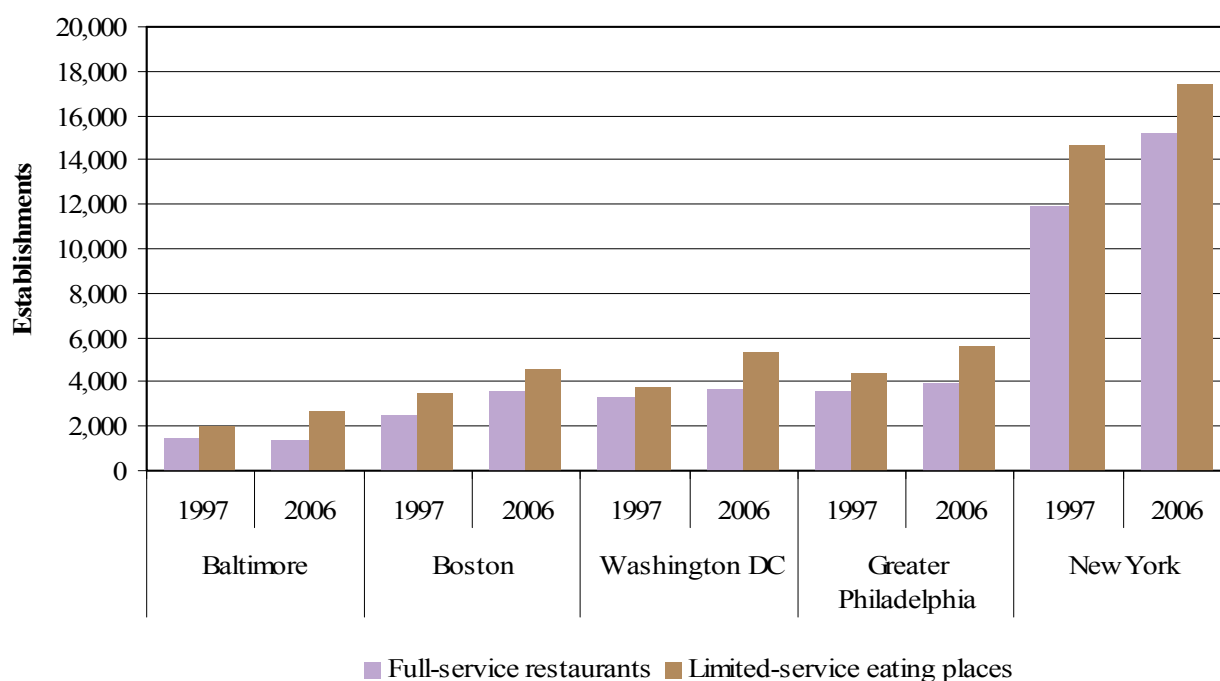
Businesses in the food services and drinking places sector prepare meals, snacks, and beverages for immediate consumption either on or off the premises. This sector is divided into four different types of places: full-service restaurants, limited-service eating places, special food services, and drinking places.

- Full-service restaurants are places where diners typically are served by a waiter or waitress while seated, and pay after eating.
- Limited-service eating places are places where patrons typically pay before eating and include fast food, cafeterias, pizza shops, coffee shops, ice cream shops, and other similar places.
- Special food services include food service contractors, caterers, and mobile food services (such as food trucks or carts).
- Drinking places are establishments that are primarily engaged in providing alcoholic drinks to customers.

¹¹ Grocery product line data at other general merchandise stores in the Trenton-Ewing MSA (Mercer County) was unavailable.

Food services and drink sales at hotels and motels; amusement parks, theaters, casinos, country clubs, and similar recreational facilities; civic and social organizations; schools and educational facilities; and health care facilities are included in this subsector only if those services are provided by a separate establishment, such as a food contractor or restaurant. Dinner cruises are also excluded.

Figure E.6: Full-service and Limited-service Eating Places in Northeastern MSAs, (1997-2006)¹²



Source: U.S. Census Bureau 2008, DVRPC 2009

ESTABLISHMENTS AND EMPLOYEES:

Greater Philadelphia was the fourth MSA in the country in the number of establishments of food services and drinking places, with a total of 12,142 establishments in 2006. Among the different types of places, 33% (3,958) were full-service restaurants; 46% (5,605) were limited-service restaurants; 12% (1,399) were special food services; and 10% (1,180) were drinking places. Food services and drinking places employ a total of 175,692 people in Greater Philadelphia.

Greater Philadelphia has a large concentration of hospitals and universities, many of which utilize food service contractors. Because of this, food service contractors make up a larger percentage of food services and drinking places in Greater Philadelphia (9%) than in other northeastern MSAs like New York (5%), Boston (8%), Washington, D.C. (6%), and Baltimore (5%).

With the exception of Pennsylvania, the cost of eating out in the states of Greater Philadelphia is generally more expensive than the national average. The average cost per meal at full- and limited-service restaurants was under \$10 in about three-fourths (74%) of the restaurants in the United States in 2002,

¹² MSA geographies have been adjusted for geographic consistency between 1997 and 2006.

compared to 57% in Delaware, 64% in Maryland, 69% in New Jersey, and 79% in Pennsylvania. Restaurants tend to be more expensive in Delaware, where the average cost per meal was over \$15 at about one-quarter of the restaurants, compared to just 8% in Pennsylvania.

Nationally, 29% of full- and limited-service restaurants are franchises, the majority of which are operated by a franchisee. There are proportionately more franchises in Maryland (32%), and fewer in Delaware (22%), Pennsylvania (17%), and New Jersey (14%).

TRENDS:

Nationally, the number of food services and drinking places increased 14% between 1997 and 2006, from about 487,000 to 553,300 establishments. The number of employees in food services and drinking places increased 15%, from 7.8 million to 9.6 million employees.

Over the past decade, the number of establishments and employees of food services and drinking places grew faster in Greater Philadelphia than in the nation as a whole. The number of total eating and drinking establishments increased 15%, from 10,500 to 12,100. The number of employees in Greater Philadelphia increased at a much higher rate (21%) than the national average, from 145,700 to 175,700 between 1997 and 2006. The number of limited-service restaurants grew at a much higher rate (26%) than full-service restaurants (12%). Limited-service restaurants increased in Greater Philadelphia faster than the national rate (19%), although full-service restaurants increased at the same rate as in the United States as a whole (12%). In addition, special food services increased by 36% in Greater Philadelphia, compared to 19% nationally. The number of drinking places declined in Greater Philadelphia (-22%) more than in the United States as a whole (-13%).

Greater Philadelphia's growth rates in full-service and limited-service restaurants were greater than some northeastern MSAs and slower than others, as shown in **Figure E.6: Full-service and Limited-service Eating Places in Northeastern MSAs, 1997-2006**. While the number of full-service restaurants increased 12% in Greater Philadelphia, they increased more in New York (27%) and Boston (46%). The number of full-service establishments in Baltimore, on the other hand, fell by 5%. The growth of limited-service restaurants in Greater Philadelphia (26%) was greater than in New York (19%), although faster growth rates were seen in Baltimore (32%), Boston (33%), and Washington, D.C. (42%).

Global Insight estimates that there were 11,485 establishments and 175,351 employees in Greater Philadelphia in 2008. The number of establishments is estimated to have increased 34%, and the number of employees 22%, over the past decade.¹³ The total output from food services and drinking places was estimated to be \$9.2 billion in 2008.

Food services and drinking places is a highly diversified industry in which the top four firms control just 6% of all sales overall, and the top 50 firms control 20%. However, market concentration is greatest in food service contractors, where the top four firms control 65% of all sales nationwide.

REGIONAL EXAMPLES:

The South Jersey Independent Restaurant Association, commonly known as SJ Hot Chefs, is an organization of locally owned and independent restaurants that are chef driven and dedicated to providing great food and service, while supporting their communities. The members of this association are committed to promoting unique and authentic independent restaurants that offer an alternative to

¹³ The number of establishments and employees estimated by Global Insight was much lower in 1998 than the Census Bureau's 1997 estimates.

corporate chains. SJ Hot Chefs participates in a number of events throughout the year, including South Jersey Restaurant Week, a “Chef Wars” cooking competition, and the “Farm to Fork” series that promotes locally grown food.

OTHER RETAILERS OF FOOD AWAY FROM HOME

The vast majority of food and beverage purchases eaten away from home are made at food services and drinking places, but there are other places where meals are purchased for consumption outside of the home. Another alternative element of the food system is the accommodation sector (NAICS code 721), which includes traveler and recreational accommodation, as well as rooming or boarding houses. The accommodation sector comprised 10% of sales of meals and 18% of alcoholic drinks in 1997, which decreased to 4% and 6%, respectively, in 2002.

Another sector left out of this discussion is “in-house” institutional purchasing of food and beverages by places such as hospitals and schools. Where food services in institutions are provided by contractors or caterers, these establishments and employees are counted in “special food services.” Most institutions do, in fact, use food contractors like Sodexo, ARAMARK, or Bon Appétit, although some institutions may have self-operated food services. Unfortunately, the establishments, employees, and value of sales of these self-operated institutional food services could not be included in this food economy analysis, as they are combined with the overall institutional data.

Appendix F: Identified Food System Stakeholders for Greater Philadelphia

Stakeholders were identified first by DVRPC's Stakeholder Committee, then by other survey participants in **Part 4: Stakeholder Analysis** of the Food System Study. The surveying effort was conducted between June 2008 and September 2008. Prior to publication in July 2010, DVRPC updated the list based on new membership in the Stakeholder Committee as well as additional research.

A.T. Buzby Farm **Woodstown, NJ**

www.buzbyfarm.adamsarts.com

Family farm in Salem County; fresh produce to consumer by direct marketing and wholesale.



Ag Choice Farm Credit **Mechanicsburg, PA**

www.agchoice.com

Federally chartered, but locally operated, cooperative that is owned by its borrowers; provides a broad range of financial services to farm and forest products business owners.



Agatston Urban Nutrition Initiative **Philadelphia, PA**

University-community partnership; teaches school-aged children about nutrition, food production, and healthy lifestyles.



Almanac Market **Philadelphia, PA**

www.almanacmarket.com

Neighborhood food retailer providing local dairy, meat, and cheese, along with other high-quality food and grocery.



American Farmland Trust **Washington, D.C.**

www.farmland.org

Legislative advocate; assists with local food system assessments, community planning, research, and land conservation. National.



American Mushroom Institute **Washington, D.C. and Avondale, PA**

www.americanmushroom.org

Membership organization; represents mushroom growers, processors, and marketers to government; shares best practices and technical assistance.



American Trucking Association **Washington, DC**

www.truckline.com

Membership organization; educates and advocates the trucking industry; hosts the annual Agricultural and Food Transporters Conference.



Amos Stoltzfus Farm **Lancaster, PA**

Amish dairy farm; participates in Lancaster County agritourism by hosting lunches and gatherings for community groups.



LEGEND



Advocacy & Legal Assistance



Distribution



Education & Outreach



Environmental Conservation



Financing & Funding



Marketing, Retailing & Purchasing

Planning & Land Use

Processing & Manufacturing

Production

Technical Assistance & Research

Regulation & Certification



Amsterdam Produce Enterprises, Inc.**Central PA and Philadelphia**

Private consultant; provides sales and distribution assistance to PA vegetable growers.

**Association of New Jersey Environmental Commissions****Mendham, NJ**

www.anjec.org

Nonprofit organization; helps New Jersey environmental commissions, individuals, and local and state agencies preserve natural resources and promote sustainable communities.

**Atlantic Capes Fisheries, Inc****Cape May, NJ**

www.atlanticcap.com

Harvester and marketer of scallops, clams, and other seafood to national and global markets.

**Beanie's of Lancaster****Lancaster, PA**

www.beaniesoflancaster.com

Processes, packages, and distributes product for its own label and other private labels across the country.

**Beechwood Orchards****Biglerville, PA**

www.beechwoodorchards.com

Fruit Orchard in Adams County Fruit Belt; distributes fresh produce to consumer by direct marketing and wholesale.

**Berks County Office of Agricultural Coordinator****Berks County, PA**

www.co.berks.pa.us/ag/

County office that plans, directs, and coordinates agricultural business development and marketing in the County of Berks; similar to a traditional economic development organization seeking to attract new businesses and retain existing businesses; position was created in 2008 in response to an American Farmland Trust report.

**Big Picture Small World****Media, PA**

www.bigpicturesmallworld.com

Private consultant; provides educational, training, and consulting programs for high schools, colleges, and other organizations.

**Brandywine Conservancy****Chadds Ford, PA**

www.brandywineconservancy.org

Protects open space, dependable water supplies, historical sites, and important works of American art through preservation and wise use of natural and cultural resources.

**Bucks County Foodshed Alliance****Newtown, PA**

www.buckscountyfoodshedalliance.org

Membership organization; creates opportunities for people to communicate about and foster a comprehensive, local, and sustainable food supply in Bucks County; operates several farmers' markets throughout the county.

**LEGEND**

Advocacy & Legal Assistance



Distribution



Education & Outreach



Environmental Conservation



Financing & Funding



Marketing, Retailing & Purchasing

Planning & Land Use



Processing & Manufacturing



Production



Technical Assistance & Research



Regulation & Certification



**Bucks County Planning Commission
Doylestown, PA**

www.buckscounty.org/government/departments/CommunityServices/PlanningCommission/
Advisory board to the county commissioners; provides guidance and advice on planning and land use issues, and is also responsible for open space and agricultural preservation programs, recycling programs, and census information.



**Burlington County Community Agricultural Center
Moorestown, NJ**

www.co.burlington.nj.us/departments/resource_conservation/parks/sites/agricultural/index.htm
Special project of the Burlington County Department of Resource Conservation and Land Use; created through farmland preservation program; hosts large community garden, working farm, a CSA, and permanent farmers' market.



**Burlington County Office of Resource Conservation
Mt. Laurel, NJ**

www.co.burlington.nj.us/Pages/ViewDepartment.aspx?did=57

County office that runs programs to promote cultural affairs and tourism, preservation and restoration of the park system, farmland preservation, and watershed management in Burlington County.



Business Alliance for Local Living Economies

www.livingeconomies.org

Network of socially responsible businesses; brings together independent business leaders, economic development professionals, government officials, social innovators, and community leaders to build local living economies.



**Camden County Improvement Authority
Camden, NJ**

www.ci.camden.nj.us/economic/why_improvement.html

Created by the Camden County Board of Chosen Freeholders to provide tax-exempt financing for public facilities, redevelopment projects, and nonprofit organizations.



**Center for a Livable Future
Baltimore, MD**

www.jhsph.edu/clf

Housed within Johns Hopkins Bloomberg School of Public Health; funds research, communicates findings, and builds partnerships driven by the concept that diet, health, food production, the environment, population, and equity are all elements of a single complex system.



**Cedar Meadow Farm
Holtzwood, PA**

www.cedarmeadowfarm.com

200-acre farm in Lancaster County that sells to larger wholesale markets in the region and speaks at local conferences and seminars.



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**Center for Rural Pennsylvania
Harrisburg, PA**

www.ruralpa.org

Legislative agency; responds to Pennsylvania General Assembly's requests for research on issues affecting rural communities across the state.



**Chesapeake Bay Foundation
Annapolis, MD**

www.cbf.org

Advocates for restoration of the Chesapeake Bay through advocacy and legal action; works with farmers to implement more environmentally sensitive farming practices.



**Chester County Economic Development Council-
Agricultural Economic Development
Exton, PA**

www.cceconomicdevelopment.com

Nonprofit; supports agricultural businesses in the area through facilitation of low-interest loans; consults with other counties in partnership with PA Department of Agriculture; promotes agriculture as a driver of economic development.



**Chester County Department of Open Space
Preservation
West Chester, PA**

www.dsf.chesco.org/openspace/site/default.asp

Preserves productive non irrigated agricultural soils and significant natural areas, provides adequate local and county park and recreation opportunities, and encourages revitalization of developed areas.



**Chicago Metropolitan Agency for Planning
Chicago, IL**

www.cmap.illinois.gov/default.aspx

Regional planning organization; responsible for developing and advising the implementation of Chicago's regional plans related to transportation, housing, economic development, open space, the environment, and other quality-of-life issues.



**City of Philadelphia, Mayor's Office of
Sustainability
Philadelphia, PA**

www.phila.gov/green/mos.html

Helps the city leverage its existing assets and mitigate its exposure to the effects of global warming and provides citizens with the tools they need to lower their own carbon emissions and reduce their vulnerability to the ever-increasing cost of energy.



**City Parks Association
Philadelphia, PA**

www.cityparksphila.org

Encourages the establishment and maintenance of public parks and open space in the City of Philadelphia through symposia, public meetings, and published reports.



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Claneil Foundation**Plymouth Meeting, PA**

www.claneilfoundation.org

Private foundation; works to create healthy communities by supporting nonprofit activities relating to hunger and nutrition, the food system, health and human services, education, and the environment in Chester, Delaware, Montgomery, and Philadelphia counties.

**Collingswood Farmers' Market****Collingswood, NJ**

www.collingswoodmarket.com

A community farmers' market started by the Borough of Collingswood as an economic development strategy.

**Common Market****Philadelphia, PA**

www.commonmarket.org

Wholesale consolidator, marketer, and distributor of locally produced products; serves primarily institutional buyers.

**Community Action Development Commission of Montgomery County- Food Resources Center Norristown, PA**

www.cadcom.org/foodsrv.php?lang=en

Food assistance organization; operates federal and state food assistance programs; manages the Norristown Farmers' Market; partners with various programs and agencies on nutrition education, food access, and community building.

**Dan Stoltzfus Farm****New Holland, PA**

Amish produce farmer in Lancaster County raising transitional organic crops for Lancaster Farm Fresh Cooperative and other buyers.

**Defense Supply Center of Philadelphia****Philadelphia, PA**

www.dscp.dla.mil

Government entity; contracting arm for all military base operations at home and abroad; Philadelphia office coordinates large-scale food purchases; chooses regional school food vendors through a bid process.

**Delaware Avenue Distribution Center, Inc****Philadelphia, PA**

www.dadc.net

Provides refrigerated storage and intermodal distribution services for national and international companies utilizing the Philadelphia region's port facilities.

**Delaware County Planning Department Media, PA**

www.co.delaware.pa.us/planning

Promotes the development and redevelopment of the county through planning and smart growth, while preserving cultural, economic, and environmental resources.



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Delaware Valley College**Doylestown, PA**www.delval.edu

Higher educational institution providing degrees in technical and managerial components of the agricultural and food industry.

**Delaware Valley Grantmakers****Philadelphia, PA**www.dvg.org

Association of grantmakers; works actively to help philanthropy strengthen and improve the health and vitality of communities in Greater Philadelphia and surrounding areas.

**Delaware Valley Regional Planning Commission****Philadelphia, PA**www.dvrpc.org

Metropolitan Planning Organization; builds consensus on improving transportation, promoting smart growth, protecting the environment, and enhancing the economy in Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer counties in New Jersey.

**Dresdner Robin****Jersey City, NJ**www.dresdnerrobin.com

Serves the needs of real estate development, finance, manufacturing, transportation, and government clientele through engineering, environmental planning, landscape architecture, and surveying.

**Duffields Farm****Sewell, NJ**www.duffieldsfarm.com

Working farm complemented by on-site market, deli, bakery, and pick-your-own operation.

**Dusty Lane Farm****Elmer, NJ**

Eighth-generation family operation owned by the Brooks; grows vegetables for processing.

**E3Bank****Malvern, PA**www.e3bank.com

Commercial and retail bank; Certified B Corporation building a sustainable enterprise by protecting the environment and investing in social equity.

**East Coast Transportation & Logistics****Paulsboro, NJ**www.eastcoastlogistics.com

Provides strategic and tactical consulting support for moving freight more efficiently.

**ES3****York County, PA**www.es3.com

Provides storage space and logistics support for food manufacturers and retailers, offering consolidated multimanager delivery to warehouses or direct to store.

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Elk Township Agriculture Committee
Monroeville, NJ

www.elktownshipnj.gov/muni/elktownship/bc/agriculture

Advises and provides guidance to the Township committee on all agricultural and agriculture-related matters including the Elk Township Farmland Preservation Plan.



Fair Food
Philadelphia, PA

www.fairfoodphilly.org

Formerly a program of White Dog Community Enterprises, this nonprofit focuses on wholesale and retail opportunities for local farmers through purchasing, workshops, consultations, working groups, and consumer/buyer guides; operates the Fair Food Farm Stand and the Farm to Institution Working Group. In September 2009, Fair Food became an independent nonprofit.



Fairmount Park Environment, Stewardship, & Education Division
Philadelphia County

www.fairmountpark.org/EnvironmentMain.asp

Manages environmental resources, provides educational programs, undertakes a broad range of environmental restoration activities throughout the park system, and works with over 98,000 volunteers each year to care for the cultural, historical, recreational, and environmental assets.



Farm Credit Council
Nationwide

www.fccouncil.com

Network of banks and associations; customer-owned source of credit and related services serving agriculture and rural America.



Farm Service Agency
State Offices Nationwide

www.fsa.usda.gov

Government entity; implements Farm Bill commodity buying programs, USDA lending programs, and crop insurance programs to serve as safety net in times of low prices or natural disaster.



Farm to City
Philadelphia, PA

www.farmtocity.org

For-profit enterprise that increases and expands markets for regional farmers through farmers' markets, a winter buying club, online sales for local CSA programs, and web services for other CSA farms and buying clubs.



FarmArt
Philadelphia, PA

Distributor of local and national products to Philadelphia-region retailers.



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Farmland Preservation Report Online

www.farmlandpreservationreport.com

Independent professional news publication; covers policies and practices that protect farmland and urban edge agriculture.



Fernbrook Farms Education Center Bordentown, NJ

www.fernbrookeducation.org

Nonprofit; provides educational opportunities for children through camps, field trips, seminars, curriculum support for teachers and product provision for local schools and other field trip, outreach, and seminar opportunities; hosts CSA farm and wholesale nursery operation on-site.



First Pioneer Farm Credit Bridgeton, NJ

www.farmcrediteast.com

Financial services cooperative; offers the northeast agricultural industry credit services, including tax preparation, tax planning, financial record-keeping, appraisals, business consulting, equipment leasing, insurance, and more.



The Food System Consortium New Brunswick, NJ

www.foodsystemconsortium.org

Partnership of educational institutions, business, community, and government organizations in Delaware, Maryland, New Jersey, New York, and Pennsylvania, focused on maintaining and improving the food system to address the collective needs of the Mid-Atlantic and northeastern U.S. region.



FoodRoutes Network Arnot, PA

www.foodroutes.org

Nonprofit; aims to rebuild and promote a sustainable national food infrastructure through communication tools, networking, technical support, and coordinating of Buy Fresh/Buy Local outreach campaigns.



Foodshed Alliance Blairstown, NJ

www.foodshedalliance.org

Nonprofit; promotes locally grown food and farming by working with farmers, community members, and agricultural leaders on projects such as farm to school, farm to chef, market development, and Buy Local campaigns.



Four Seasons Produce, Inc. Ephrata, PA

www.fsproduce.com

Wholesale produce distributor; serves foodservice, retail, and multiple chain customers in the Northeast and Mid-Atlantic regions; recognized for increased energy and distribution efficiency through technology and strategic planning.



Franklin & Marshall College- Local Economy Center

Lancaster, PA

www.fandm.edu/lec

Academic research unit; provides learning opportunities for students interested in studying local economies; supports local, sustainable economic development through conferences and publications.



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**Fresh Food Financing Initiative
Pennsylvania**

www.trfund.com/financing/realestate/supermarkets

State legislation; offers financial incentives for the development or renovation of supermarkets across Pennsylvania, particularly in communities underserved by fresh food retailers; created and administered by The Food Trust, the Reinvestment Fund, and the Commonwealth of Pennsylvania.



**Friends of Farmworkers, Inc.
Philadelphia, PA**

www.friendsfw.org

Nonprofit; provides legal representation and education on farm worker rights including housing, immigration policy, and employment.



**Fruitwood Farm
Monroeville, NJ**

www.fruitwoodorchardshoney.com

U-pick-your-own fruit farm and honey bee operation complemented by wholesale and online distribution.



**Geraldine R. Dodge Foundation
Morristown, NJ**

www.grdodge.org

Private foundation; works to encourage capacity building and institutional development, provides technical assistance workshops, and supports initiatives in the areas of art, education, and environment.



**Gloucester County Improvement Authority
Woodbury, NJ**

www.gcianj.com

Works in tandem with the Gloucester County Board of Chosen Freeholders to provide economic development, educational, and recreational opportunities to the region.



**Gloucester County Planning Department
Gloucester County, NJ**

www.co.gloucester.nj.us/government/Departments/Planning/planmain.cfm

Responsible for preparing, maintaining, and updating the county Master Plan and its various elements; serves as a coordinator and advisor for municipal transportation and environmental planning, and functions as a resource center for other agencies, municipalities, and the public in the areas of data management and mapping.



**Greater Philadelphia Coalition Against Hunger
Philadelphia, PA**

www.hungercoalition.org

Nonprofit coalition; serves as a clearinghouse for best practices; connects people in need with resources; advocates for better policies and educates the general public through events and outreach.



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Greater Philadelphia Tourism Marketing Corporation
Philadelphia, PA

www.visitphilly.com

Private, nonprofit organization; promotes the diverse historical, cultural, and entertainment/leisure aspects of the five-county Greater Philadelphia Region (Bucks, Chester, Delaware, Montgomery, and Philadelphia counties) through an integrated marketing and public relations program.



Green Meadow Farm
Gap, PA

www.glennbrendle.com

Produces specialty herbs, fruits, and vegetables for restaurants in the region; provides small-scale distribution services for neighboring farms.



Greener Partners
Malvern, PA

www.greenerpartners.org

Works to reestablish sustainable, organic farming operations within the Greater Philadelphia region by transforming public spaces and underutilized land into community teaching gardens and farms.



Greensgrow Farms
Philadelphia, PA

www.greengrow.org

Nonprofit urban farm selling its own products and those sourced from a network of regional growers through its on-site farm stand, nursery, farmers' market, and CSA program.



GreenSpace Alliance
Philadelphia, PA

www.greenspacealliance.org/

Works collaboratively with members, local governments, and nonprofit organizations to raise awareness of the importance of open space.



Haddonfield Farmers' Market
Haddonfield, NJ

www.haddonfieldfarmersmarket.org

A community farmers' market in the Borough of Haddonfield, NJ.



Harrisburg Dairies
Harrisburg, PA

www.harrisburgdairies.com

Family-owned company purchasing natural milk from independent, local operators and distributing to the Mid-Atlantic and Northeast regions.



Haverford Oakmont Farmers' Market Association
Haverford, PA

www.oakmontfarmersmarket.org

Grower-only market; aims to increase awareness of and access to locally produced goods.



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**Health Promotion Council
Philadelphia, PA**

www.hpcpa.org/site/index.php

Nonprofit corporation, an affiliate of the Public Health Management Corporation; provides community-based outreach, advocacy, and education to promote health and prevent and manage chronic disease, especially among vulnerable populations.



**Hendrick's Farm and Dairy
Telford, PA**

www.hendricksfarmsanddairy.com

Provides grass-fed dairy and meat along with produce to individual purchasers, restaurants, and institutions in southeastern PA; operates small on-site farm store.



**Heritage Conservancy
Doylestown, PA**

www.heritageconservancy.org

Not-for-profit conservation organization; specializes in open space preservation, planning for sustainable communities, natural resource protection, property stewardship, historic preservation, adaptive reuse of existing structures, wildlife habitat restoration, and biodiversity.



**Honey Brook CSA
Pennington, NJ**

www.honeybrookorganicfarm.com

One of the largest CSAs in the country, providing organic produce to over 2,900 members; operates farm on the Stony Brook-Millstone Watershed Reserve.



**Institute for Innovations in Local Farming
Philadelphia, PA**

www.somertontanksfarm.org

Enterprise; operated Somerton Tank Farms through a partnership with the Philadelphia Water Department; carries out research and education on subacre plot intensive agricultural enterprises; promotes urban agriculture.



**Isles, Inc.
Trenton, NJ**

www.isles.org

Provides community-based development services, public education, and advocacy throughout New Jersey and beyond, including the operation of community and school gardens, brownfield remediation, and nutrition education programming.



**Jade International, Inc.
Folcroft, PA**

www.jadeintl.com

Freight management company contracted by importers and exporters to facilitate logistics, including pricing/costing, paperwork and documentation, tracking technology, communication, and inland connections.



**Jewish Federation of Greater Philadelphia
Philadelphia, PA**

www.jewishphilly.org/index.aspx

Mobilizes financial and volunteer resources to address the community's most critical priorities in Philadelphia, Israel, and overseas.



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**Joe Coffee Bar
Philadelphia, PA**

www.joecoffeebar.com

Retailer of local, homemade, and fair trade products and partners with other groups for retailing, catering, or processing. As of summer 2009, shifted from a retail location to *Joe Coffee*-- a distribution partnership with stores and farmers' markets.



**Joshua Farm
Harrisburg, PA**

www.joshuagroup.org/joshua_farm.html

Nonprofit urban farm; operates a CSA and farm stand.



JustEat by BrownGold

www.justeatbybrowngold.com

Consultant and public speaker about expertise acquired as an executive chef and restaurateur.



**Kegel's Produce
Lancaster, PA**

www.kegels.com

Distributor; provides foodservice, retail, and other clients with quality local and imported produce; offers fresh cut and minimal processing services.



**Keystone Development Center
York, PA**

www.kdc.coop

Nonprofit; supports the formation of cooperative businesses and helps existing co-ops through technical assistance.



**Lancaster County Center of Excellence for
Production Agriculture
Lancaster, PA**

www.keeplancastercountyfarming.com

Partnership among local public and private entities to research, advance, and promote local agricultural production, including workforce development, innovations, efficiency, and marketing.



**Lancaster County Planning Commission
Lancaster, PA**

www.co.lancaster.pa.us/planning/site/default.asp

County agency providing planning and policy support related to housing, economic development, transportation, and heritage issues.



**Lancaster Farm Fresh Cooperative
Quarryville, PA**

www.lancasterfarmfresh.com

Growers' cooperative of over 60 Lancaster County farmers; serves customers in Eastern PA, NYC, and tri-state area with organic products through wholesale and CSA delivery.



**Lancaster Farmland Trust
Strasburg, PA**

www.lancasterfarmlandtrust.org

Nonprofit land trust; works with Amish farmers and other farmers in Lancaster County to preserve working farms.



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Linvilla Orchards**Media, PA**www.linvilla.com

200-acre farm; hosts hayrides, U-pick, and other agritourism opportunities; on-site farm stand.

**Livengood Farms****Lancaster, PA**

Certified organic farm selling produce and grass-fed beef to retail and wholesale customers.

**Mariposa Food Co-op****Philadelphia, PA**www.mariposa.coop

Member-owned cooperative association selling local and natural grocery items in West Philadelphia.

**Martin Luther King Farm/Seeds for Learning****Philadelphia, PA**

Collaboration started by Weaver's Way Co-op; urban farm providing job training to youth; sells direct at farmers' markets, on-site farm stand, and at the co-op.

**Mercer County Planning Division****Trenton, NJ**www.nj.gov/counties/mercerc/departments/planning

Participates in county-wide projects, implements applicable legislation, and conducts various studies to manage development and land use in the county.

**Metropolitan Bakery****Philadelphia, PA**www.metropolitanbakery.com

Retailers of hand-baked bread and other products; sells to wholesale, restaurants, and consumers; hosts pick-up site for CSAs and Farm to City's winter buying club.

**Mid-Atlantic Farm Credit****Lancaster Office**www.mafc.com

Member-owned cooperative lender providing financing to farmers and agribusiness for business planning, working capital, and real estate needs.

**Mill Creek Urban Farm****Philadelphia, PA**www.millcreekurbanfarm.org

Nonprofit urban farm; aims to increase access to healthy, affordable foods in West Philadelphia through a farm stand and participating in several area farmers' markets; emphasizes food access and sustainability/energy efficiency.

**Monmouth County Farmland Preservation**www.visitmonmouth.com/page.aspx?Id=2982

Purchases agricultural easements from landowners, helps to resolve right-to-farm conflicts, monitors its preserved farms, and assists landowners and farmers with stewardship and post-closing issues.

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Montgomery County Planning Commission
Norristown, PA

www.planning.montcopa.org/planning

Works to plan well-designed communities with revitalized downtowns, housing choices, efficient transportation systems, scenic open spaces, trails, vibrant employment centers, preserved farmland, and community facilities.



Natural by Nature

West Grove, PA

www.natural-by-nature.com

Processes, distributes, and sells grass-fed dairy products sourced from a farmers' co-op to consumers along the East Coast.



New Jersey Audubon Society
Centers and Offices throughout New Jersey

www.njaudubon.org

Independent Audubon society; fosters environmental awareness and conservation; protects New Jersey's birds, mammals, other animals, and plants, especially endangered and threatened species; and promotes preservation of New Jersey's natural habitats.



New Jersey Conservation Districts
County Offices State-wide

www.nj.gov/agriculture/divisions/anr/nrc/conservdistricts.html

Quasi state government division; semiautonomous bodies organized along county lines; develops conservation plans for farms; provides general assistance to farmers; implements the state's erosion control laws on construction and development sites, as well as farms.



New Jersey Conservation Foundation
Far Hills, NJ

www.njconservation.org

Private nonprofit; preserves strategic lands, promotes strong land use policies, and forges partnerships to achieve conservation goals through acquisition and stewardship.



New Jersey Department of Agriculture
Trenton, NJ

www.nj.gov/agriculture

State government department; major priority to promote, protect, and serve the state's agricultural industry; manages programs that feed schoolchildren, distribute emergency food assistance, conserve natural resources, preserve farmland, and explore new export markets.



New Jersey Department of Agriculture- Division of Agriculture and Natural Resources

www.state.nj.us/agriculture/divisions/anr

State government division; addresses land use issues, agriculture education, aquaculture, and regulation issues, with increasing coordination with DEP on natural resources and health regulations.



New Jersey Department of Agriculture- Aquaculture Development

Subdivision of state government division; assists aquaculturalists with technical, regulation, and marketing needs; administers a licensing program and a tidal lands leasing program.



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New Jersey Department of Agriculture- Economic Development

State government division; performs research on farmland assessment regulations and impacts, sales tax implications, and crop insurance implementation; contributed to the creation of the state's farmland preservation regulations.



New Jersey Department of Agriculture- Jersey Fresh Program

www.state.nj.us/jerseyfresh

State government initiative; one of the oldest state-branding programs aimed at increasing consumer awareness and preference; recently expanded to include seafood, horticulture, milk, and value-added goods.



New Jersey Department of Agriculture- State Agriculture Development Committee

www.state.nj.us/agriculture/sadc

State government initiative; administers state and county farmland preservation funding; emphasizes coordination across state departments and complementary economic development and business support.



New Jersey Department of Environmental Protection

Trenton, NJ

www.state.nj.us/dep

State government department; responsible for water permitting and allocation, conservation planning and monitoring, and other processes related to water, air, soil, and wildlife habitat.



New Jersey Department of Health, Office of Nutrition & Fitness

Trenton, NJ

www.state.nj.us/health/fhs/shapingnj

Targets environmental and policy changes within healthcare, worksites, schools, and the community to help control obesity and prevent chronic illnesses through nutrition and physical activity.



New Jersey Farm Bureau

Trenton, NJ

www.njfb.org

Represents the agricultural producers and enterprises of New Jersey at all levels of government - local, county, state, federal, and international.



New Kensington Community Development Corporation

Philadelphia, PA

www.nkcdc.org

Nonprofit; focuses on five major areas: local business development, real estate development (affordable housing), community organizing, land use management (stabilizing vacant land), and housing counseling; owns land leased by Greensgrow Farms.



Northeast Organic Farming Association of New Jersey

Pennington, NJ

www.nofanj.org

Membership organization; seeks to create a sustainable organic agricultural system; educates diverse audiences about the significance and meaning of organic practices for food and the environment; helps farmers transition to organic practices.



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**Catholic Archdiocese of Philadelphia - Nutritional Development Services
Philadelphia, PA**

www.ndsarch.org

Provides meals, food assistance, and other services to organizations serving children or the poor, including schools, after-school programs, and shelters.



**OMG Center for Collaborative Learning
Philadelphia, PA**

www.omgcenter.org

Provides consultation, strategy research and development, evaluation, and capacity building services for philanthropic, nonprofit, and government sector clients.



**Otolith Seafood Market and Kitchen
Philadelphia, PA**

www.otolithonline.com

Retail outlet, "casual kitchen," and emerging brand/label for sustainably harvested and processed seafood; seafood primarily originating from the Pacific Northwest. In August 2009, transitioned to a new location and shifted services to a Community Supported Seafood (CSS) program, online store, and wholesale marketer.



**Paradise Hill Farm
Vincentown, NJ**

Independent, fifth-generation cranberry farm harvesting heirloom cranberries, blueberries, peppers, and tomatoes for fresh market.



**Paradise Organics
Lancaster, PA**

Farmer-distributor from Lancaster County serving Philadelphia-area retail and wholesale outlets.



**Partners of the Americas
Washington, D.C.**

www.partners.net/partners/Default_EN.asp

International grassroots network; provides technical assistance in a variety of areas, including agriculture and natural resources.



**PennAg Industries Association
Harrisburg, PA**

www.pennag.com

Membership organization; supports agribusiness by providing testimony at legislative hearings; actively participates in relevant panels and on boards.



**PennEnvironment
Philadelphia, PA**

www.pennenvironment.org

Citizen-based environmental advocacy organization; combines research, ideas, and advocacy on issues related to environmental protection.



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Pennsylvania Association for Sustainable Agriculture
Millheim, PA

www.pasafarming.org

Membership organization; focuses on peer training, community outreach, and networking to build statewide channels that link farmers with farmers, farmers with consumers, and consumers with markets.



Pennsylvania Association of Regional Food Banks
Canonsburg, PA

www.pafoodbanks.org

Nonprofit; assists members (food banks and community action agencies) with acquisition of food; advocates for policy changes; educates the public on hunger and food access issues.



Pennsylvania Conservation Districts
County Offices State-wide

www.pacd.org

Quasi-state government division; each county's organization has differing programs and initiatives; generally provides assistance to individuals and public/private organizations in the use of land, water, and other natural resources; some county offices administer the local farmland preservation program.



Pennsylvania Department of Agriculture
Harrisburg PA

www.agriculture.state.pa.us

State government department; mission is to educate, protect, and promote agriculture and related industries; manages programs that feed schoolchildren, preserve farmland, explore export markets, regulate food production, retail and distribution, perform health department functions, and provide unique financing options for farmers.



Pennsylvania Department of Agriculture- Bureau of Food Safety and Laboratory Services

State government division; inspects restaurants, food plants, fairs, and farm labor camps; performs chemical analysis; administers dairy and raw milk programs; educates local health departments or other entities to do inspecting.



Pennsylvania Department of Agriculture- Bureau of Market Development

State government division; employs economic development strategies to livestock marketing and grading, PA Grows, Center for Farm Transition, organic cost-share programs, crop insurance, and risk management; functions as an agricultural business incubator; operates PAPreferred marketing program.



Pennsylvania Department of Agriculture- PA Grows/Center for Farm Transitions

www.pagrows.com

State government initiative; newly created program that assists farmers to access state and federal funding programs, perform succession planning, and business planning.



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**Pennsylvania Department of Transportation-
Bureau of Rail, Freight, Ports and Waterways
Harrisburg, PA**

www.dot.state.pa.us/Internet/Bureaus/pdBRF.nsf/RailFreightHomepage?OpenFrameset

State government division; provides economic development grants related to rail and freight movement; plans for the long-term goods movement needs.



**Pennsylvania Department of Transportation-
Center for Program Development
Harrisburg, PA**

www.dot.state.pa.us/Internet/Bureaus/CPDM.nsf/CPMDHomepage?openframeset

State government initiative; conducts research as appropriate for the state or other constituent entities and convenes a long-range planning advisory group.



**Pennsylvania Farm Bureau
Camp Hill, PA**

www.pfb.com

Membership organization; provides legislative support and representation for farm interests; offers group insurance and other financial services; provides educational opportunities and technical assistance.



**Pennsylvania Horticultural Society
Philadelphia, PA**

www.pennsylvaniahorticulturalsociety.org

Nonprofit; has many horticultural and community revitalization interests; founded the Neighborhood Gardens Association; operates City Harvest and Philadelphia Green.



**Pennsylvania Hunger Action Center
Harrisburg, PA**

www.pahunger.org

Nonprofit; advocates for state and federal food assistance programs; informs regulatory and legislative processes on barriers to access; raises the general public's awareness of hunger.



**Pennsylvania Motor Trucking Association
Harrisburg, PA**

www.pmta.org

Membership organization; provides support in legislative matters, education/training, public relations, and safety regulations and procedures.



**Pennsylvania Senator Mike Brubaker
Lancaster County, PA**

www.senatorbrubaker.com

Political representative; chair of the Senate Agriculture Committee; key supporter of Act 38: ACRE Law and farm to school programs.



**Pennsylvania State Representative Dwight Evans
Philadelphia County, PA**

www.pahouse.com/Evans

Political representative; key supporter of food access initiatives for Philadelphia and Pennsylvania, including the Fresh Food Financing Initiative.



**Pennsylvania State Representative Mike Hanna
Clinton and Centre Counties, PA**

www.pahouse.com/hanna

Political representative; chair of the House Agriculture Committee.



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Education & Outreach



Environmental Conservation



Financing & Funding



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Planning & Land Use



Processing & Manufacturing



Production



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Regulation & Certification



**Pennsylvania State University- Cooperative
Extension & Outreach
State College, PA**

County Offices State-wide

www.extension.psu.edu

Educational network that serves all 67 Pennsylvania counties and their residents; of note is the technical assistance that the extension provides to farmers and agribusiness; extension looking to develop new markets and identify production trends to help the state's producers.



**Pennsylvania State University-Department of
Agriculture Economics and Rural Sociology
State College, PA**

www.aers.psu.edu

Academic department; serves as the academic home for cooperative extension; produces research and educational initiatives in food systems, agriculture, community development, and the environment.



**Pennsylvania State University-Department of
Entomology
State College, PA**

www.ento.psu.edu

Academic department; some faculty have interdisciplinary projects with Agriculture Economics and Rural Sociology faculty members.



**Pennsylvania State University-Pennsylvania
Women's Agricultural Network
State College, PA**

www.wagn.cas.psu.edu

Membership organization; created by PSU Cooperative Extension, PASA, Rodale, and others; provides workshops and trainings for women in agriculture on topics ranging from production to business planning; offers networking opportunities.



**Pennsylvania State University-Sustainable Ag
Working Group
State College, PA**

www.agsci.psu.edu/susag

Multidisciplinary initiative; promotes unbiased scientific inquiry, collaborative discussion, cooperative program development, and informed public engagement to support diverse pathways toward more sustainable agricultural and food systems.



**Pennypack Farm
Ambler, PA**

www.pennypackfarm.org

Nonprofit suburban farm; committed to sustainable farming practices; hosts youth educational programs, lectures, and workshops; offers CSA program.



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**Philabundance
Philadelphia, PA**

www.philabundance.org

Nonprofit hunger relief organization; provides food storage, distribution, and occasional preparation to a network of local hunger/food assistance agencies in the region; utilizes second market purchasing and donations by businesses and individuals; provides disaster relief locally and nationally.



**Philadelphia City Planning Commission
Philadelphia, PA**

www.philaplanning.org

Guides the orderly growth and development of the City of Philadelphia through land use controls, facilities planning, and physical planning, as well as, economic development, human services delivery, and housing policy.



**Philadelphia Regional Port Authority
Philadelphia, PA**

www.philaport.com

Quasi state agency managing and marketing ports in Philadelphia, Bucks, and Chester counties, with a focus on agricultural products and future growth in the global marketplace.



**Philadelphia Regional Produce Market
Philadelphia, PA**

www.prpm.org

Consolidation point and wholesale market for sellers and brokers/buyers of produce from local, regional, and global producers.



**Philadelphia Urban Food and Fitness Alliance (PUFFA)
Philadelphia, PA**

www.puffa.org

Collaborative of government agencies, nonprofits, and citizens working to create policy and system change to create a healthier Philadelphia—for everyone.



**Philadelphia Water Department
Philadelphia, PA**

www.phila.gov/water

Plans, operates, and maintains the infrastructure and the organization necessary to provide a reliable water supply for all household, commercial, and community needs, and to sustain the region's watersheds by managing wastewater and stormwater effectively.



**Phoenixville Farmers' Market
Phoenixville, PA**

www.phoenixvillefarmersmarket.org

Grower-only market; features local produce, art and music, health screenings, and other types of outreach.



**Reading Terminal Market
Philadelphia, PA**

www.readingterminalmarket.org

Historic farmers' market; offers a selection of baked goods, meats, poultry, seafood, produce, flowers, ethnic foods, cookware, handmade crafts, jewelry, clothing, and eclectic restaurants.



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**Red Tomato
Canton, MA**

www.redtomato.org

Nonprofit broker, brander, and marketer of East Coast produce from smaller family farms.



**Rodale Institute
Kutztown, PA**

www.rodaleinstitute.org

Nonprofit; operates a 330-acre research farm; demonstrates advance organic farming techniques; operates a comprehensive website, CSA, research fields, publishing press, and bookstore.



**Rutgers Food Innovation Center
Bridgeton, NJ**

www.foodinnovation.rutgers.edu

Provides assistance in business development, market research, product and process development, workforce development and training, regulations and compliance support, and quality assurance and food safety systems.



**Rutgers Food Policy Institute
New Brunswick, NJ**

www.foodpolicyinstitute.org

Academic research unit; focuses on issues and challenges facing the food system by providing research for government, industry, and consumers.



**Rutgers New Jersey Agricultural Experiment
Station & Cooperative Extension
New Brunswick, NJ**

County Offices State-wide

www.njaes.rutgers.edu

Educational network; serves residents through science-based educational programs; has several focus areas, including economic growth and agricultural sustainability, healthy lifestyles, human and community development, environment and natural resources, food safety, and nutrition; operates the Rutgers Food Innovation Center.



**St. Joseph's University - Department of Food
Marketing
Philadelphia, PA**

www.sju.edu/academics/hsb/foodmarketing/index.html

Academic department; provides industry research support and professional education and training through a Food Marketing Academy, center, and executive training program.



**Seabrook Farms
Pittsgrove, NJ**

www.seabrookfarms.com

Producers, processors, and distributors of fresh and frozen produce from South Jersey to national and international markets.



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Select Greater Philadelphia

www.selectgreaterphiladelphia.com

Economic development marketing organization; offers a one-stop connection to numerous resources that help companies make informed decisions about locating to Greater Philadelphia. Through global marketing efforts, Select works to promote the region's key assets to help build the area's economy.



SHARE (Self-Help Resource and Exchange) Food Program

Philadelphia, PA

www.sharefoodprogram.org

Nonprofit; in exchange for two hours of doing "good in the community," SHARE provides monthly deliveries of affordable food packages to area host sites; serves as Philadelphia's conduit for federal supplemental feeding assistance programs (TEFAP and SFPP).



Simone Collins

Berwyn, PA

www.simonecollins.com

Planning and design firm; committed to creating biologically and culturally diverse communities, respecting ecological limits of sites, and conserving materials and energy through historic preservation and sustainable recreation, transportation, residential, and institutional planning and design.



Smucker's Meats

Mt. Joy, PA

www.smuckersmeats.com

Family-owned USDA-inspected meat facility; processes meat and cuts to farmers' specification; increasingly handles grass-fed beef.



Southeastern Pennsylvania Transportation Authority (SEPTA)

www.septa.com

Public transportation system serving Philadelphia, Bucks, Chester, Delaware, and Montgomery counties. The transportation network is made up of buses, subways, trolleys, high speed rail, and commuter trains.



Terhune Orchards

Princeton, NJ

Family-owned and run 200-acre fruit and vegetable farm, including a cider making operation, bakery, greenhouse, farm animals, and pick-your-own apples and pumpkins.



Temple University-Center for Sustainable Communities

Ambler, PA

www.csc.temple.edu

Academic center; provides objective information and services to improve decision-making relative to land use and water resources planning and development; conducts interdisciplinary research and offers educational and community outreach programs.



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The College of New Jersey-Municipal Land Use Center

Ewing, NJ

www.tcnj.edu/~mluc

Supports municipal governments in meeting the region's land use challenges by identifying opportunities for improved development and redevelopment, open space acquisition, and farmland preservation through the provision of education and training, essential tools, technical assistance, and referrals.



The Enterprise Center Philadelphia, PA

www.theenterprisecenter.com

Provides access to capital, building capacity, business education, and economic development opportunities to high-potential, minority entrepreneurs.



The Food Trust Philadelphia, PA

www.thefoodtrust.org

Nonprofit; aims to provide access to affordable, healthy food, particularly to low-income communities; operates nutrition education programs and farmers' markets; created a supermarket/food retail development initiative - Fresh Food Financing Initiative - in partnership with the Reinvestment Fund, the Greater Philadelphia Urban Affairs Coalition, and the Commonwealth of Pennsylvania.



The Merchants Fund Philadelphia, PA

www.merchantsfund.org

Private foundation; provides financial assistance to current and past merchants in Philadelphia.



The Philadelphia Foundation Philadelphia, PA

<https://www.philafound.org>

Public charity community foundation; works to build community through building, managing, and distributing, philanthropic resources effectively, focusing on vulnerable populations and non-profit organizations.



The Reinvestment Fund Philadelphia, PA

www.trfund.com

Nonprofit financial lending institution; finances community revitalization through investment in homes, schools, businesses, and clean energy and other projects that create wealth and opportunity for low-income communities. TRF is a major partner in the Pennsylvania Fresh Food Financing Initiative and is working with PolicyLink on a national initiative.



The Schuylkill Center for Environmental Education

Philadelphia, PA

www.schuylkillcenter.org

Promotes the preservation and improvement of the natural environment by fostering appreciation, understanding, and responsible use of the ecosystem; by disseminating information on current environmental issues; by encouraging appropriate public response to environmental problems and also to maintain the facilities of The Schuylkill Center and conserve its land for the purpose of environmental education.



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**Thomas Jefferson University Hospital
Philadelphia, PA**

www.jeffersonhospital.org

Teaching hospital; recently started local purchasing program; aims to integrate fresh, healthy, and often local produce into the institution's dining services; hosts an on-site farmers' market; member of Fair Food's Farm to Institution Working Group.



**Tioga Group, Inc.
Philadelphia, PA**

www.tiogagroup.com

Provides freight transportation consulting services for developing new transportation operations and logistics infrastructure, analyzing the impact of changing world trade flows, and identifying and capitalizing on new market opportunities.



**U.S. Customs and Border Patrol and United States Department of Agriculture- Agriculture and Plant Health Border Inspections
Philadelphia, PA**

www.aphis.usda.gov and www.cbp.gov

Government entity partnership; inspects all agricultural products entering the country at ports of entry; deters the introduction of environmentally and biologically harmful pests and substances; increasingly concerned with food safety.



**U.S. Department of Agriculture - National Agriculture Statistics Service
State Offices Nationwide**

www.nass.usda.gov

Government entity; provides timely, useful, and accurate data in the service of the agricultural industry; administers the Census of Agriculture; produces annual reports on specific topics and issues.



**U.S. Foodservice
Bridgeport, NJ**

www.usfoodservice.com

International distributor to food service entities, including restaurants, food stores, and institutions.



**University of Pennsylvania – PennDesign,
Department of City & Regional Planning
Philadelphia, PA**

www.design.upenn.edu/city-regional-planning

Promotes design across a range of programs—Architecture, City Planning, Landscape Architecture, Fine Arts, Historic Preservation, Digital Media Design, and Visual Studies



**University of Pennsylvania - Fox Leadership School
Philadelphia, PA**

www.sas.upenn.edu/foxleadership

Undergraduate program; offers students service-learning opportunities in food access/SNAP outreach, and broader research on access and production, among other service-learning areas of interest.



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**Vegetable Growers Association of New Jersey
Marlton, NJ**

www.njveggies.org

Professional organization; works with other agencies, professional organizations, and growers to explore and promote vegetable production.



**Vegetable Growers Association of Pennsylvania
Richfield, PA**

www.pvga.org

Professional organization; dedicated to providing educational opportunities and resources, funding research, promoting growers and their products, and representing the Pennsylvania vegetable, potato, and berry industries.



**Vineland Produce Auction
Vineland, NJ**

www.vinelandproduce.com

Cooperative auction; one of the first electronic produce auctions; members benefit from discounted packing material, consolidating space, and an annual dividend based on the auction's performance.



**Violet Packing
Williamstown, NJ**

www.donpepino.com

One of the last tomato packing facilities in New Jersey; sourcing much of the product from in-state producers for private label lines.



**Weaver's Way Cooperative Association
Philadelphia, PA**

www.weaversway.coop

Natural food co-op based in Mt. Airy; sources local produce, meat, and dairy when possible; operates a farm; operates an educational nonprofit farm at nearby high school; new store location in Ogontz.



**Whole Foods - Mid-Atlantic Region
Landover, MD**

www.wholefoodsmarket.com

National natural foods chain with increasing emphasis on local food delivered to a regional warehouse and direct-to-store.



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Appendix G: Identified Research and Service Gaps

In **Part 4: Stakeholder Analysis**, survey respondents were asked: “What would you like to know about the food system? What information about food and farming would help you do your job better?” Respondents had a multitude of answers, summarized and organized by theme here:

Scaling up local

- What will it take for regional institutions to absorb locally produced and processed food? And what are the current procurement standards?
- What is the current condition of and barriers to expanding local and regional food in rural and suburban places?
- What is needed or missing to meet local food demand?
- If local is scaled up, what would it look like? (i.e., type of farmers served, production practices, price structure, involved parties.)
- What do supermarkets sell that could be grown here?

Distribution

- Not enough information about distribution and procurement standards
 - Where and how do businesses receive products?
 - What are innovative approaches of larger entities to procure food?
- What are the hubs in the distribution system?
- How much Lancaster-grown foods leave the county and where do they go?
- How can we account for milk sent to Virginia to be processed and returned to Pennsylvania as butter?
- How can we work with farmers who prefer to stay on the farm rather than market, sell, or participate in farmers' markets?

Land availability and capacity

- Can the farmland around Philadelphia feed the City of Philadelphia? Within what distance and to what extent?
- Can a profit be made farming vacant lots in the city?
- What land is available for community agriculture? Can we support urban farming on parkland?
- What available land is not being farmed and what is the cost of turning unused land into agricultural space?

Production and consumption

- What amount of food consumed in the region is also produced in the region?
- How much local food, and at what value, is coming into Philadelphia?
- How many fresh vegetables do Philadelphians consume per year and where do they buy them?
- What are the barriers to local food production? What would be incentives for increased production (i.e., wheat and grains for human consumption)?
- Creation of a summary document that charts or maps the origin of food products consumed in Philadelphia, listing primary sources (or geographic origin) and including public institutions, supermarkets, and restaurants/food vendors.

Food prices

- What is the trend in prices paid for food relative to income and inflation?
- Is it more expensive to farm organically?
- Is local food less or more expensive? If there is a price gap, how can we close it to make local food more affordable or globally competitive?

Low incomes and food access

- Is anyone taking a broader look at healthy food access for people with low incomes?
- If it is more affordable, should we be getting produce from California, Florida, and global sources?
- Closer examination of the economic development potential of food assistance programs.
- Map of Farmers' Market Nutrition Program redemption and authorization statistics.
- How can we aid people with SNAP in obtaining good, nutritious food at reasonable prices?

Farm Preservation

- Are we preserving the best farmland? Is preservation the best mechanism to help farming?
- Can farmland preservation be better partnered with educational and economic opportunities?
- What are alternative funding options for preservation?
- What are the successes, challenges, and opportunities of farmland preservation?
- What is the impact of land preservation on housing costs and affordability?

Definitions and criteria

- What is the most important attribute in local food? It is geography or is it other values involving things like trust, health, treatment of workers, and energy consumption?
- Criteria for measuring sustainable seafood and aquaculture production.
- What is the role of land grant universities in the food system?

Clearinghouse/collation

- List of areas where expertise (related to food and farming) and public access to research journals and publications exists.
- Synthesis of health codes related to food and agriculture direct marketing, food handling, and butchering for different counties and legal assistance with translation to make it accessible to a layperson.
- Listing of local agricultural service suppliers.
- Inventory of available farmer training and what farms are in jeopardy.

Other

- Is there any nutritional difference between local (or heirloom) and nonlocal varieties of produce?
- What is the best way to create and run a food policy council inclusively and effectively?

Appendix H: Stakeholder Analysis Sample Survey Questions

DVRPC conducted a Stakeholder Analysis between June 2008 and September 2008 to gain a better understanding of Greater Philadelphia's regional food system and its major actors, and Greater Philadelphia's role in the global food system. The stakeholder analysis is **Part 4** of the four-part *Greater Philadelphia Food System Study*.

The following is a sample of the questions that were asked in an in-person interview, during a roundtable discussion, or through an online survey:

Background Questions

1. What is your position?
2. Number of years in current position?
3. What is the purpose of your work? (What is your organization's mission?)
4. Is your work geographically focused? If YES, where?
5. What would you say are your biggest programmatic or legislative accomplishments?
6. What other projects/programs have you been involved with in the past 5 years?

Data and Information Gathering

7. Do you collect data or conduct primary research on food or farming?
8. What would you like to know about the food system? What information about food and farming would help you do your job better?
9. Are there any studies or reports by your organization or other organizations/agencies that DVRPC should look at in regard to the Greater Philadelphia Food System Study?

Bigger Picture Questions

10. What are the biggest opportunities/advantages of this area for the food system/agricultural industry?
11. What are the biggest challenges that this area faces in terms of the food system/agricultural industry?
12. What are the biggest changes to the food and agricultural industry that you have witnessed in the past 5-10 years?
13. What needs to change to make farming or the food system more successful in this area?

14. What other agriculture or food-related programs, policies, or initiatives outside of the region or state are you impressed by (other state agencies, organizations, etc.)?
15. Who else should we be talking to about these issues? (Please be as specific as possible.)

Appendix I: Stakeholder Analysis Interview Dates and Details

Stakeholders were identified first by the Stakeholder Committee, then by other survey participants. The surveying effort was conducted between June 2008 and September 2008. DVRPC also organized tours to learn more about the different aspects of the food system, from production to processing, and from distribution to retail.

DVRPC sincerely thanks all the survey respondents and tour participants who generously gave of their time and knowledge.

In-Person and Phone Interviews

A.T. Buzby Farm

Dawn Buzby, Farmer

In-person interview, 7/14/2008

Agricultural and Food Transporters

Conference-American Trucking Association

Russ Laird, Executive Director

Phone interview, 8/5/2008

Almanac Market

John, Co-owner

In-person interview, 6/23/2008

Atlantic Capes Fisheries, Inc

Peter Hughes, Sales Manager

Phone interview, 7/29/2008

Beechwood Orchards

Sean Garretson, Farmer

In-person interview, 7/9/2008

Brown's Super Stores

Paul Brauer, Director of Human Resource and Community Affairs

Phone interview, 8/21/2008

Cedar Meadows Farm

Steve Groff, Farmer and Farmer-Distributor

Phone interview, 7/23/2008

Center for Rural Pennsylvania

Barry Denk, Director

In-person interview, 6/20/2008

Chester County Economic Development Council

Sue Milshaw, Agricultural Loan Coordinator

Phone Interview, 8/6/2008

Common Market

James Demarsh, General Manager

In-person interview, 7/17/2008

Community Action Development Commission of Montgomery County

Patrick Druhan, Director, Food Resources Center

Phone interview, 6/24/2008

Davidson Exotic Mushrooms

Chad Langriehr, Farmer

In-person interview, 7/9/2008

Defense Supply Center of Philadelphia

Pat Scott, Subsistence Directorate

Phone interview, 7/11/2008

Drywoods Produce

Jacob Beilour, Farmer

In-person interview, 7/9/2008

Farm to City

Bob Pierson, Program Director

In-person interview, 7/28/2008

Fern Brook Farms Education Center

Larry Kuser, Executive Director

Eric Tadlock, Education Coordinator

In-person interview, 7/15/2008

Food Trust

Mae Brown, Market Manager

In-person interview, 7/9/2008

Tegan Hagy, Coordinator- Farm to School Mid-Atlantic Region

In-person interview, 6/16/2008

Nicky Uy, Market Manager

In-person interview, 7/3/2008

Friends of Farmworkers, Inc.

Karen Detamore, Executive Director
In-person interview, 6/30/2008

Greater Philadelphia Coalition Against Hunger

Carey Morgan, Director
In-person interview, 6/27/2008

Green Haven Farm

Brian Moyer, Farmer and PASA Board member
Phone interview, 8/5/2008

Greensgrow Farms

Mary Seton Corboy, Farmer
In-person interview, 7/7/2008

Harrisburg Dairies

Chrissy Dewey, Owner
Phone interview, 7/11/2008

Haverford Township Farmers' Market Association

Janet Chrzan, Founder
In-person interview, 6/16/2008

Hilltop Produce

Annie, Farmer
In-person interview, 7/9/2008

Hoagland Farms

Lyn Hoagland, Farmer
In-person interview, 7/3/2008

Honey Brook CSA

Sherry and Jim Dudas, Farmers
In-person interview, 8/5/2008

Jade International, Inc.

Donald Papouschek, Co-Owner
In-person interview, 8/6/2008

Joe Coffee Shop

Joe Cesa, Owner
In-person interview, 6/24/2008

Joshua Farm

Kirsten Reinford, Farmer
In-person interview, 6/19/2008

Penn State Cooperative Extension

Peggy Fogarty-Harnesh, Extension Agent,
Lancaster County
Phone interview, 7/2/2008

Tim Kelsey, State Program Leader, Economic and
Community Development
Phone interview, 8/21/2008

Livengood Farms

Dwain Livengood, Farmer
In-person interview, 7/3/2008

Mariposa Food Coop

Bull Gervasi, Store Manager
In-person interview, 7/3/2008

Martin Luther King Farm/Seeds for Learning

Brian Ferguson, Farmer
In-person interview, 7/9/2008

Metropolitan Bakery

Wendy Smith-Born, Owner
Sasha Swayze Dews, Director of Retail
In-person interview, 6/23/2008

Mid-Atlantic Farm Credit

Jay Shannon, Lancaster Loan Officer
Phone Interview, 8/18/2008

Mike Brooks Farm

Mike Brooks, Farmer
Phone interview, 8/6/2008

Mill Creek Urban Farm

Johanna Rosen
Jade Walker
Farmers
In-person interview, 6/27/2008

National Center for Appropriate Technology (NCAT)

Andy Pressman, Agriculture Specialist,
Pennsylvania Office
Email interview, 8/1/2008

New Jersey Department of Agriculture

Robert Bruch, Economic Development
Coordinator

Charles Kuperas, Secretary of Agriculture

Joseph Myers, Aquaculture Development
Specialist

Alfred Murray, Director, Division of Marketing
and Development

Monique Purcell, Director, Division of Agriculture
and Natural Resources

In-person interviews, 8/19/2008

**New Jersey State Agriculture Development
Committee**

Timothy Brill, Agricultural Retention
Program/Planning Manager

In-person interview, 8/19/2008

Otolith Seafood Market and Kitchen

Amanda Bossard, Owner

In-person interview, 6/7/2008

PA Farm Bureau

Gary Swan, Governmental Affairs and
Communication Division

Phone interview, 8/7/2008

Paradise Hill Farm

Mary Ann Thompson, Farmer

In-person interview, 7/15/2008

**Pennsylvania Association for Sustainable
Agriculture (PASA)**

Chris Fullerton, Director of Consumer Outreach

Phone interview, 7/28/2008

Marilyn Anthony, Southeast Regional Director

In-person interview, 8/18/2008

PennAg Industries

Christian Herr, Executive Vice President

Phone interview, 7/11/2008

**Pennsylvania House Representative Mike
Hanna**

Diane Hain, Executive Director: Agriculture and
Rural Affairs Committee

In-person interview, 6/19/2008

**Pennsylvania House Representative Shirley
Kitchen**

Kalisha Devan, Executive Director

In-person interview, 6/19/2008

Pennsylvania Hunger Action Center

Joe Quattrocchi, Executive Director

In-person interview, 6/20/2008

Pennsylvania Motor Truck Association

Jim Runk, President and CEO

Phone interview, 7/9/2008

Pennsylvania Senator Mike Brubaker

Kristin Ebersole-Crawford, Executive Director:
Agriculture and Rural Affairs Committee

In-person interview, 6/19/2008

Pennsylvania Women's Agricultural Network

Linda Moist, Senior Extension Agent

In-person interview, 8/12/2008

Pennypack Farm

Andy Andrews, Farmer

Susan Curry, Development Director

In-person interview, 7/17/2008

Rutgers Cooperative Extension

Rick Van Wranken, Extension Agent, Atlantic
County

Phone interview, 8/4/2008

SHARE

Steveanna Wynn, Executive Director

In-person interview, 6/27/2008

Smucker Meats

Jay Smucker, Owner

Phone interview, 7/8/2008

State Agriculture Development Committee

Timothy Brill, Agricultural Retention
Program/Planning Manager

In-person interview, 8/19/2008

Temple University

Laurie Pickard, Master's Graduate

In-person interview, 7/7/2008

Thomas Jefferson University Hospital

Shelley Chamberlain, Assistant Director of Dining Services

Mary Grant, Assistant Director of Production Services

Director of Purchasing

In-person interview, 7/8/2008

U.S. Department of Agriculture, NASS

Marc Tosiano, Director, Pennsylvania Office

In-person interview, 6/18/2008

University of Pennsylvania

Mary Summers, Senior Fellow, Fox Leadership Program

In-person interview, 6/12/2008

Vegetable Growers Association of New Jersey

John Bansch, Board Member and Vegetable Farmer

Phone interview, 7/23/2008

Vegetable Growers Association of Pennsylvania

Rob Amsterdam, Produce Consultant

Phone interview, 7/7/2008

Vineland Produce Auction

Peter Bylone, Manager

Phone interview, 7/14/2008

Weaver's Way Coop

Glenn Bergman, General Manager

David Zelov, Farmer

In-person interview, 7/8/2008

White Dog Community Enterprises

Lindsay Gilmour, Former Program Manager, Farm to Institution Program

In-person interview, 7/2/2008

Whole Foods

Matt Ray, Mid-Atlantic Regional Buyer

Phone interview, 8/7/2008

Roundtables**Food Trust**

Dave Adler, Communications Director

Brandon, Communications Associate

Yael Lehman, Executive Director

John Weidman, Deputy Executive Director

8/20/2008

Pennsylvania Department of Agriculture

Bill Chirdon, Director, Bureau of Food Safety and Laboratory Services

Cheryl Cook, Deputy Secretary for Marketing and Economic Development

Joanna Gresham, Bureau of Market Development

Dennis Hall, Division Chief for Economic Development

Frank Jurbala, PA Preferred Program, Specialist, Bureau of Market Development

6/19/2008

Pennsylvania Department of Transportation

Gary DeBerry, Transportation Planning Specialist

Thomas Stettler, Transportation Planning Specialist

Brian Wall, Statewide Planning

6/19/2008

Pennsylvania Farm Service Agency State Committee

Richard Pallman, Executive Director

6/19/2008

Philabundance

Bill Clark, Executive Director

Mary Gainer, Director of Agency and Community Relations

George Matysik, Manager of External Affairs

8/14/2008

Philadelphia Regional Port Authority

Frank Camp, Marketing Representative

Nick Walsh, Director of Strategic Planning

8/21/2008

Penn State University

Charlie Abdalla, Professor of Agricultural and Environmental Economics

Mary Barberchek, Professor of Entomology

Dara Bloom, Graduate Student

Kathy Brasier, Assistant Professor of Rural
Sociology
Ted Jaenicke, Associate Professor of Agricultural
Economics
Bill Kleiner, Director, Southeast Region of
Cooperative Extension
Walt Whitmer, Extension Agent
Jessica, Ph.D Student
8/12/2008

Tours

**Burlington County Community Agriculture
Center, Moorestown, NJ**
8/15/2008

**Delaware Avenue Distribution Center,
Philadelphia, PA**
6/17/2008

**Distribution in South Central Pennsylvania,
Lancaster and York Counties, PA**
ES3, (Efficient Storage, Shipping and Selection);
Four Seasons Produce, Inc.; and Kegel's Produce
7/31/2008

Joshua Farm, Harrisburg, PA
6/19/2008

**Lancaster County Farm and Distribution
Outlets, Lancaster County, PA**
Amos Stolfus Farm; Beanie's of Lancaster; Dan
Stolfus Farm; Leola Product Auction; Lapp
Valley Farm
8/1/2008

Mill Creek Urban Farm, Philadelphia, PA
6/27/2008

Seabrook Farms, Seabrook, NJ
10/28/2008

Viking Village Dock Tour, Barnegat Light, NJ
8/8/2008

**U.S. Customs and Inspection - Agriculture,
Philadelphia, PA**
8/22/2008

Contacted but not interviewed

Agatston Urban Nutrition Initiative
ARAMARK
Capogiro Gelato
Cassaday Farms
CATA (The Farm Workers Support Committee)
CATA Pennsylvania
Center for Dairy Excellence
City of Philadelphia
City of Philadelphia Office of Transportation
Clemens Family Corporation- Hatfield Meats (*interviewed November 2008*)
Consule General of Chile
Delaware Valley College
Dependable Distribution Services, Inc
Donio Trucking
Duffields Farm
Elizabethtown College Family Business Center
Essene Market and Café
Farm Fresh Express
Fruitwood Farms (*interviewed June 2009*)
Garden State Seafood Association
Green Meadow Farm
Haverford College
Hershey Dairy Farm
John and Kira's Chocolates
Keystone Development Center
Lancaster Farm Fresh Cooperative
Lund's Seafood
Mullica Hill Group
New Jersey Agricultural Society
New Jersey Department of Transportation
New Jersey Farm Bureau
New Jersey Farm Service Agency
New Jersey State Assembly
PennFuture
Pennsylvania Association of Regional Food Banks
Pennsylvania Department of Environmental Protection
Philadelphia Produce Terminal
Pietro Industries (*interviewed in June 2009*)
Quaker Produce
St. Joseph's Center for Food Marketing
Sysco Food Services of Central PA
Sysco of Philadelphia
U.S. Food Service
Wawa

Appendix J: Best Management Practices

The Stakeholder Analysis generated a list of 66 best management practices (BMP). Stakeholders were asked to identify impressive programs, policies, or initiatives, and the Study Advisory Committee narrowed that list to the following seven to be researched and profiled. Information was gathered based on contact with the program manager, policy maker, or initiative coordinator, where appropriate, as well as print and digital resources.

The BMPs demonstrate innovation or effectiveness in the following categories, respectively: 1) land access, 2) support services, 3) financing, 4) community enterprise, 5) urban agriculture, 6) city food policy councils, and 7) farm-to-school.

EQUITY TRUST, INC.

Turners Falls, Massachusetts

Equity Trust's mission is to "promote equity in the world by changing the way people think about and hold property." For farming in particular they are trying to address the challenge of protecting the whole farm and farmer amidst a world demanding cheap food and only recognizing land as an investment tool. More specifically, Equity Trust (ETI) provides technical assistance, tools, financing, and outreach/public education on innovative ownership models for farmland, community food systems, and affordable housing.

Best Management Practice in Land Access

Because Equity Trust is too small to conserve and finance projects itself, it has created two model documents on land tenure that can be adapted by communities across the country. The ground lease and specialized conservation easement both model "shared ownership" between a farmer and another entity- usually a land trust or stewardship organization., with flexibility regarding the level of restrictions on

agriculture and nonagricultural practices on the property. The main difference between them is that in the easement, the farmers own the fee and transfers restriction rights to the other entity. In the ground lease, the other entity owns the fee interest but transfers ownership of buildings and land improvements and the right to farm to the farmer. For both cases, the common type of farm operation has been a CSA, though there is flexibility for adaptation.

Equity Trust's easement preserves land "to be actively farmed and, when it is sold, remains affordable for future farmers." Farmers only pay for the "farm value" of the property, or the value of what can be produced, as opposed to the price that would be paid by a developer or nonfarmer seeking an estate, but they have to be the owner and actively farm it. The holder of the easement buys a purchase option along with the easement, allowing the resale price of the land to be limited to its farm value and remain affordable in the future.

The ground lease is a long-term (frequently 99-year) agreement in which the nonprofit entity owns the property and the farmer-lessee owns houses, barns, and improvements on the land. There is a limit to the price for which the improvements can be sold and there is the same requirement that the lessee actively farm the land for a living. The long-term nature of the lease allows for the farmer to plan accordingly, even multi-generationally, and be able to improve upon the land.

Equity Trust finances its loans and easement purchases through a variety of sources. The Equity Trust Fund is a revolving fund that makes low-interest loans to traditionally high-risk "low-income, grassroots groups in need of capital to get their projects off the ground." Funds are generated through investors who

provide loans, land gifts, capital contributions and equity pledges, or a donation of a percentage of a property sale. The fund has been used to help family farmers preserve and/or purchase farmland and increase growing capacity through new equipment or other purchases. Nonprofits can also receive funding to increase capacity, purchase, construct, or improve real estate, and purchase easements.

Equity Trust combines all funding or financing with technical assistance, if needed, to ensure that the funds are used effectively. Though borrowers are traditionally deemed “high risk,” default has been less than one-third of one percent and investors have never been asked to take a loss! This success is partly due to the application and approval process involving an advisory committee.

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MOBILE MEAT PROCESSING UNITS

Though there has been a rise in the number of small farmers raising animals for local or niche markets, the number of slaughterhouses has dwindled due to consolidation. This means that farmers have to go further distances and pay higher prices to process meat at USDA-inspected facilities for sale in the market unless they find the rare customers willing to buy a whole, half, or quarter cut. Also, heritage breeds, or grass-cut meat, requires special training and services that slaughterhouses are only willing and able to provide at a higher price to the farmer. Overall, the lack of small and accessible slaughterhouses is a nationwide problem for small producers, with mobile meat processing units an emerging solution explored by farmers from the Northwest to Nebraska to

Martha’s Vineyard. Mobile processing units bring the slaughterhouse to the farmer, allowing smaller operators to be more efficient and access new markets.

Best Management Practice in Support Services

Still relatively new, the first USDA-approved mobile processing unit is on the San Juan Islands off the coast of Washington State. The Lopez Community Land Trust owns the unit (a 26-foot trailer) and leases it for a nominal fee to a farmers’ cooperative. The initial cost of the unit was \$100,000 in 2002, less than the \$450,000 that a bricks-and-mortar facility would cost. A steering committee of the land trust, the farmers’ cooperative and the local extension office conducted a feasibility study to gauge customer interest and, finding sufficient demand, applied for a grant of inspection with the USDA. Though the regulatory arm was wary at first because it has never been done before, it granted inspection and committed a full-time inspector to accompany the unit and ensure that it is meeting regulations and standards. The slaughterhouse truck is equipped for slaughtering cows, sheep, hogs, and goats, and includes refrigeration and storage, with a 300-gallon water tank and cooling area with carcass hooks. As of a 2003 article, the unit processes 40 head of beef a month and is at capacity.

Once the meat is slaughtered onsite, it does need to be transported to a cut and wrap facility that, in the case of LCLT, is not mobile. Together, the truck and cut-and-wrap facility employ six people and is fully financed by membership and user fees.

On Martha’s Vineyard, the Island Grown Initiative (IGI) started a mobile poultry processing initiative in 2007 after talking with local growers and potential customers. A “processing kit” travels behind a pickup truck on a flatbed trailer and includes a trained team of four processors. IGI is currently working with

the Massachusetts Department of Agricultural Resources to develop protocols and formalized permitting. Though the unit is currently only for poultry, it hopes to expand to other animals and do value-added processing.

Proponents of mobile processing argue that it not only expands the markets that small farmers can access with their product and save on their transportation costs, it also is better for the animals. They argue that on-site slaughtering is more humane because it removes the “stressful transportation trips to slaughter houses.” It also is fresher and thus healthier for the end consumer.

One of the largest issues with mobile meat processing is the volume. According to one of the farmers at LCLT, 60 million animals are slaughtered each year in the country, and the mobile processing unit only handles about 1,000 head. However, there is the hope by some that as more consumers demand specialty meat from smaller producers, small slaughterhouses will spring up and be in profitable competition with their larger counterparts.

Contact Information

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Lopez Community Land Trust
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Ali Berlow
Island Grown Initiative- Mobile Poultry
Processing Trailer
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FOOD PROCESSING CENTER at the University of Nebraska-Lincoln

The Food Processing Center (FPC) was formed in 1983 through a legislative mandate. Legislators wanted to find ways to support, preserve, and expand the agricultural sector at a

time of economic hardship, and established the center within the Department of Food, Science, and Technology at the State University. FPC combines technical and business development services and serves clients ranging from “Mom and Pop” farms and food businesses to large corporations with workshops, case studies, technical notes, specialized service packages, and grant/loan assistance.

The state university system provides 35% of funding and the government and service fees/revenue contribute the remaining 65%. Clients come from within the university, the state, and outside of the region, and approximately 40% of clients in the last year were companies with under 100 employees. To date, over 1,000 entrepreneurs have attended the FPC workshops, as it provides “continuous, steady support of the agriculture sector in NE.”

Best Management Practice in Financing

The close connection between the FPC and the resources of the University of Nebraska is what makes the project both successful and unique. The university provides access to technology, pilot plants, faculty, and students that all contribute to the one-stop package that the FPC can offer clients and allows them to match the services to their needs.

The grant-related program is an innovative component of FPC. Clients can use FPC to identify grant opportunities, receive assistance in compiling and writing applications, and have the FPC serve as an independent, third-party consultant to review businesses and business planning. Some of the grants that the FPC provides assistance with are the Value-Added Producer Federal Grant and the State of Nebraska Agricultural Opportunities and Value-Added Partnership Act.

Reports and case studies round out the FPC’s services to clients by providing more in-depth

market research or step-by-step assistance on topics such as supplying food service and brewery establishments with local products, creating a winery, developing specialty cheeses, and attending or creating farmers' markets.

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NUESTRAS RAICES

Holyoke, Massachusetts

A self-described “grassroots organization that promotes economic, human, and community development through urban agriculture,” Nuestras Raices (Our Roots) approaches food system issues comprehensively and effectively. Projects include a network of community gardens, a community agriculture center with commercial kitchen space and food-related enterprises, the development of a farm incubator along the Connecticut River, a downtown farmers' market run by youth, and environmental justice and women's leadership activities. All projects focus on building on and connecting community members with each other and their Puerto Rican agricultural heritage.

Best Management Practices in Community Enterprise

The Centro Agrícola transformed an abandoned building and vacant lot into a community center, cultivating small businesses and community education. The outdoor plaza was designed by youth and features demonstration gardens, hosts outdoor events, and provides café-styling seating for the restaurant in the Centro. There is also a

share-use community kitchen for small catering, processing, and other food production business, including a bakery. The facilities are complimented with training and technical assistance and much of the food made is sold to area restaurants and grocery stores. There is also a library, greenhouse, and inside meeting space to flesh out the applications for the Centro Agrícola.

Another new and exciting project by Nuestras Raices is the Tierra de Oportunidades (TOP) Farm. Located on 30 acres adjacent to the Connecticut River, the TOP farm combines farmer training, business incubation, environmental conservation, and youth development. There are 15 new beginning farms on the property, in addition to nature trails, a farm stand, and an outdoor venue.

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RESOURCE CENTRES ON URBAN AGRICULTURE

Cities Farming for the Future

The Resource Centres on Urban Agriculture (RUAF) Foundation is an international network of seven organizations working on urban development and poverty reduction through urban agriculture and food security. The aim of RUAF is for individuals, communities, and governments to integrate urban agriculture in urban development and value it “as a social, economic and environmental benefit rather than a liability.”

Started in 1999 and formalized as a foundation in 2005, RUAF is moving from its first phase of awareness raising and documentation to policy advice, action planning, training, and

information exchange through the Cities Farming for the Future Programme (CFF). The main regions of focus are Latin America and the Caribbean, English-speaking West Africa, French-speaking West Africa, East and South Africa, South and Southeast Asia, China, and North Africa, and the Middle East, with worldwide coordination by ETC Urban Agriculture, a partnership group.

Best Management Practices in Urban Agriculture

Internationally funded and locally implemented, CFF builds capacity, involves a multitude of stakeholders, and looks across systems to incorporate economic development, land use planning, poverty alleviation, and gender sensitivity to urban agriculture initiatives. From 2005 to 2010, CFF has or will work on 47 initiatives in 20 different cities in its regions of focus: Latin America and the Caribbean, English-speaking West Africa, French-speaking West Africa, East and Southern Africa, China, South and Southeast Asia, North Africa, and the Middle East.

One of the most innovative components of RUAF's work through CFF is the "Multi-stakeholder Policy Formulation and Action Planning" process (also called MPAP). Since urban agriculture involves a large range of systems, actors, and urban management areas, it is important to have an open and transparent process that equally and significantly engages a wide variety of actors and incorporates their contributions into the policy and action-plan decisions. While it requires more human and financial resources and takes more time than other approaches, MPAP helps bridge distrust between citizen groups and governments, generates a better understanding of priorities and issues, and improves the likelihood of implementation and sustainability.

Bogota is one of the cities that RUAF is working in, and the MPAP process there has had many interesting outcomes. One of the most populous cities in the country with the highest unemployment rates, urban agriculture in Bogota has already begun on rooftop terraces, cement patios, and receptacles. A survey was conducted to determine the limitations and opportunities of urban agriculture for men and women, and the results were incorporated into suggested development activities. One of these is the formation of a District Urban Agriculture Roundtable to promote urban agriculture around the city.

VANCOUVER FOOD POLICY COUNCIL

Vancouver, British Columbia

The Vancouver Food Policy Council emerged out a series of actions by community groups and government officials. After approximately 10 years of informal coalition building and collaboration, the Vancouver City Council passed a resolution in 2003 calling for the development of a "just and sustainable food system" for the City of Vancouver. One component of this was the creation of a temporary Food Policy Task Force, with the eventual establishment of a permanent Food Policy Council in 2004. The council is still in existence, housed in the Social Planning Department with permanent dedicated staff, and it serves as an advisory body to city council. According to the Food Policy Council's webpage, "the primary goal of the Food Policy Council is to examine the operation of a local food system and provide ideas and policy recommendations for how it can be improved."

Best Management Practice in City Food Policy Councils

The Vancouver Food Policy Council is successfully incorporating food system policies and programs into both the government and the

larger community. A Food Charter was adopted by council in 2007 presenting a vision and cementing the city's commitment to a coordinated municipal food policy that espouses economic development, ecological health, social justice, collaboration, and celebration. At the same time, community-based initiatives are progressing, such as a goal for 2,010 garden plots by 2010, urban beekeeping support, and connections between local gardeners and food banks. Finally, the council is also working on municipal code reform and facilitating increased institutional purchasing of local, healthy foods and enhanced grocery access for all Vancouver residents.

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VERMONT FOOD EDUCATION EVERY DAY

The farm-to-school program of Vermont is a partnership by three organizations to bring “a community-based approach to school food system change in Vermont.” Specifically, Food Works at Two Rivers Center, the Northeast Organic Farming Association of Vermont, and Shelburne Farms joined together eight years ago to create a program that uses a five-person staff to provide technical assistance, conduct courses and workshops, and create tools to connect schools with farms.

Best Management Practices in Farm-to-School

VT FEED uses a “3 C’s” approach that links Cafeteria, Classroom, and Community. They also provide individualized tools for each stakeholder in farm-to-school, including teachers, food service personnel, farmers, school administration and staff, school partners, and

volunteers. VT FEED’s collaborations with public and private organizations has also furthered its success, including the passage of two Vermont Farm to School acts to fund schools’ connections with farmers and local, healthy food.

VT FEED also works with schools individually to help them create a unique school food system “vision and action plan.” This approach allows for flexibility to the local context and empowers the schools to become engaged, involved, and invested.

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NOFA– VT
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Richmond, VT 05477
(802) 434-4122
www.nofavt.org

Foodworks
64 Main St
Montpelier, VT 05602
(802) 223-1515
www.tworiverscenter.org

Appendix K: Bibliography

Beginning in May 2007, DVRPC began researching food systems and food system planning in preparation for this project. This appendix catalogues some of the resources that DVRPC drew upon, but did not directly cite, in the *Greater Philadelphia Food System Study*. The bibliography is organized by the type of resource: Books, Brochures, Journal Articles, Magazine and Newspaper Articles, Newsletters, Presentations, Reports and Papers, and Websites.

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Abstract Page

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Geographic Area Covered: 100-mile radius around the City of Philadelphia; parts of five states: Delaware, Maryland, New Jersey, New York, and Pennsylvania; and the nine-county DVRPC region: Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania, and Burlington, Camden, Gloucester, and Mercer counties in New Jersey.

Key Words

100-Mile Foodshed, Agriculture, Census of Agriculture, Economic Census, environment, farms, farming, farmland, farmland preservation, food, food access, food desert, food distribution, food economy, food miles, food policy, food system, foodshed, fossil fuels, freight analysis framework (FAF), Greater Philadelphia, land use, local food, organic, natural resources, peak oil, sustainable, stakeholder analysis, transportation, working landscapes.

Abstract

This publication is a compendium to the *Greater Philadelphia Food System Study* and contains detailed analysis and data tables for the foodshed's agricultural resources, Greater Philadelphia's food freight, Greater Philadelphia's food economic sectors, and aggregated qualitative data for the Stakeholder Survey undertaken in the summer of 2008.

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