

The 25% Shift

The Economic Benefits of Food Localization For The
Pioneer Valley & The Capital Required to Realize Them

By Michael H. Shuman
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Solidago Foundation
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For Further Information, Contact:
shuman@igc.org

Michael H. Shuman
Cutting Edge Capital
2203 Quinton Road
Silver Spring, MD 20910
202-669-1220

Introduction

In recent years, the Solidago Foundation and the Lydia B. Stokes Foundation have been working to help the Pioneer Valley spearhead the creation of the PVGrows Loan Fund. The Fund works to support local farmers and food businesses by providing financial assistance and business development services to qualified applicants. The Foundations are now working together to create a much larger fund to help further localize the region's food system.

Around the world, food-localization initiatives like these are gaining momentum. This movement seeks to accomplish three interrelated goals: shortening the distance that food travels between the farm and table; capturing more of the value-adding activities associated with the growing, sorting, processing, packaging, distribution, selling, and serving of food; and maximizing the local ownership of all the enterprises involved in these value chains. If achieved, these goals will produce four distinct benefits:

- **Stronger Community Economies** – Local food is a critical economic driver of local economies. Every loaf of bread unnecessarily imported leads to the leakage of "bread dollars" within the local economy and the loss of local bread business that could contribute to community prosperity. Moreover, local ownership of a bread factory matters, because locally owned businesses spend more of their money regionally than do comparable, non-local businesses. Unlike outsider-owned businesses, local businesses tend to have local CEOs advertise in local media, hire local accountants and attorneys, and reinvest profits in their community. Numerous studies have documented that a dollar spent on a local business yields two to four times the "economic multiplier" – the underlying source of income, wealth and jobs – as an equivalent non-local business.¹ Additionally, there is a growing body of evidence suggesting that local businesses are particularly good at attracting tourists and future entrepreneurs, promoting creative economies, and stimulating charitable contributions.²
- **Ecological Sustainability** – Local food promotes not only general economic development but also *sustainable* economic development. Farmers, whether rural or urban, are among the most important stewards of the land. Because agriculture accounts for approximately 30% of the earth's land surface, environmentally sensitive production of foodstuffs is critical to

¹ The best studies in this area have been done by two economists at Civic Economics based in Austin. See, for example: "Economic Impact Analysis: A Case Study," monograph (Civic Economics, Austin, Texas, December 2002); and "The Andersonville Study of Retail Economics," monograph (Civic Economics, Austin, Texas, October 2004). Both can be downloaded for free at www.civiceconomics.com.

² Michael H. Shuman, *The Small Mart Revolution: How Local Businesses Are Beating the Global Competition* (San Francisco: Berrett-Koehler, 2006), pp. 39-62.

maintaining the healthy habitats, air, water, soil, and ecosystems needed to support healthy people.³ To eat sustainably, moreover, means growing and processing foodstuffs in a sustainable manner. Any community on the planet that cannot sustainably feed itself necessarily places burdens on the ability of other communities to feed themselves. Put positively, business models that meet local food needs sustainably can, if shared and multiplied globally, teach communities in other parts of the world to feed themselves sustainably.⁴ Moreover, since local businesses, including local food businesses, tend to spend their money locally, their “inputs” travel less, use less energy, and thereby emit fewer pollutants and less climate-disrupting carbon.

- ***Better Nutrition and Health*** – Another dimension of economic development is the well being of human capital, and here local food also has much to contribute. Because many foods lose nutrients over time, local food means quicker delivery of foodstuffs generally greater in nutritional value. Moreover, knowing a farmer or rancher tends to enhance a consumer’s trust in the healthfulness of his or her products. Local foods also typically involve less processing, which means fewer chemicals and additives. Replacing processed food with fresh food, as author Michael Pollan argues, is a powerful way to improve consumer health and reduce the incidence of obesity and diabetes.⁵ Every headline about a breakdown in the mainstream food system – outbreaks of e-coli in hamburger meat and peanut butter from distant suppliers, for example – is a reminder about the health value of purchasing food from producers who are known and trusted.
- ***More Civic Engagement*** – As author Bill McKibben argues, a farmers market shopping experience is fundamentally different from that of a typical supermarket (let alone a Wal-Mart Supercenter). A supermarket is about finding and purchasing foods as quickly and efficiently as possible. A farmers market is about consumers chatting among, learning from, and developing relationships with local food producers, and about neighbors interacting with one another. An entire sociological literature underscores that

³ World Resources Institute, *World Resource 2000-2001 People and Ecosystems: The Fraying Web of Life* (Washington: Elsevier Science, 2000), p. 56.

⁴ The growing, harvesting, raising, or capturing of specific foodstuffs are all dependent on many natural endowments – water, climate, ecology, genetics – that are not universally available. But technology is steadily leveling the playing field to the point where there are compelling examples of communities feeding themselves in every extreme—cold or hot, wet or dry, high or low, urban or rural. The development and spread of better and cheaper greenhouses, hydroponics, rooftop and suburban lawn gardening, and urban farms will hasten this equalization. A further point is that even if a community is capable of producing no raw foodstuff, it still in theory can find, from other communities, excellent models for small-scale food processing, distribution, retail, and restaurants. And from a value-added standpoint, these may be by far more important than raw food production.

⁵ Michael Pollan, *In Defense of Food: An Eater’s Manifesto* (New York: Penguin, 2008).

communities characterized by local business result in greater civic welfare, less social strife, and greater equality.⁶

The only plausible argument not to promote local food is a concern that local food sometimes costs more than conventional, mass-market food. But two points are worth making here.

First, an important reason why local food prices are relatively high is that demand exceeds supply; the prices reflect, moreover, a lack of distribution and aggregation infrastructure, which reduces efficiencies and cost savings in the local food system. As local food businesses grow and spread, particularly infrastructure businesses, prices will begin to adjust downward.

Second, economic success does not just occur with provision of the lowest priced goods and services. No one, for example, would criticize Starbucks as a failed model because its lattes are the most expensive in town. Consumers of all incomes are not only looking for the lowest priced food but also the *best value* for a given price. And in many ways, consumers – even low-income consumers – are finding that local food, even if it's nominally pricier, delivers better value.⁷ A recent study by the USDA found that local food often provides the cheapest nutrients available, and local food markets like New Seasons have thrived in low-income communities because they provide better bargains than the processed foods available from corner stores and bodegas.

Even on a price basis, the economics of local food is steadily improving. At least five trends are likely to help local food improve its competitiveness over the next decade:

- ***Distributional Inefficiency*** – While moving factories to low-wage regions with few regulations can bring down the production costs of food, global distribution of food is becoming increasingly inefficient. Economist Stewart Smith of the

⁶ See, e.g.: C. Wright Mills and Melville Ulmer, "Small Business and Civic Welfare," in *Report of the Smaller War Plants Corporation to the Special Committee to Study Problems of American Small Business*, Document 135. U.S. Senate, 79th Congress, 2nd session, February 13. (Washington, DC: U.S. Government Printing Office, 1946); and Thomas A. Lyson, "Big Business and Community Welfare: Revisiting A Classic Study," monograph (Cornell University Department of Rural Sociology, Ithaca, NY, 2001), p. 3.

⁷ A recent study found that 500 South Carolina consumers were willing to pay 27% more for locally grown produce and 23% more for local animal products. Carlos E. Carpio and Olga Isengildina-Massa, "Intermediate Economic Evaluation of the South Carolina Agricultural Marketing and Branding Campaign," working paper, March 2008. Another study of residents in Maine, New Hampshire, and Vermont found that 17 to 40% of consumers in each state were willing to pay two dollars more to buy a locally produced five-dollar food item. Kelly L. Giraud, Craig A. Bond, and Jennifer J. Keeling, "Consumer Preferences for Locally Made Specialty Products Across Northern New England" (Department of Resource Economics and Development, Durham, NH), p. 20. See also: "Decomposing Local: A Conjoint Analysis of Locally Produced Foods," Kim Darby, Marvin Batte, Stan Ernst and Brian Roe. *American Journal of Agricultural Economics*, 2008, vol. 90, issue 2, pp. 476-486; Gretchen Nurse, Yuko Onozaka, and Dawn Thilmany McFadden, "Understanding the Connections Between Consumer Motivations and Buying Behavior: The Case of the Local Food System Movement," Selected Paper, Southern Agricultural Economics Association 2010 Annual Meeting. <http://ageconsearch.umn.edu/handle/56494> (Access date: November 5, 2010); and J.K. Bond, D. Thilmany, et al, "Direct Marketing of Fresh Produce: Understanding Consumer Purchasing Decisions," *Choices: The Magazine of Food, Farm, and Resource Issues*, American Agricultural Economics Association, Vol. 21 (2006), pp. 229-235.

University of Maine, for example, estimates that a dollar spent on a typical foodstuff item in the year 1900 wound up giving 40 cents to the farmer, with the other 60 cents split between inputs and distribution.⁸ Today, about seven cents of every retail food dollar goes to the farmer, rancher, or grower, and 73 cents goes toward distribution. Whenever the distribution cost greatly exceeds the production cost, there are opportunities for cost-effective localization. Not just in the United States, but worldwide, local distribution offers opportunities for reducing the need for, and expense of, every component of distribution, including transportation, refrigeration, packaging, advertising, insurance, and middle people. The Oklahoma Food Coop, for example, is a no-frills, internet-based food distribution company that has reduced distribution costs to 18 cents on the dollar.

- **Rising Energy Prices** – Long-distance food distribution will become more costly still when, as most analysts expect, global oil prices rise.⁹ Adding to these market forces are political pressures to enact carbon taxes to slow global climate disruption. Because foodstuffs have a relatively low value per unit weight (except for a few products like expensive wines and spices), they are disproportionately vulnerable to rising energy prices and energy taxes (including green and carbon taxes).
- **Homeland Security** – Global concerns about terrorism have focused the attention of security officials on scenarios that national food supplies could be contaminated or destroyed.¹⁰ They are recognizing that the shorter supply lines and community self-reliance that come with local food can reduce these security risks. This is translating into a recalibration of government policies to impose higher insurance premiums on global food producers and to offer more assistance to local food businesses. Professor David Orr of Oberlin College is consulting with the Joint Chiefs of Staff at the White House on the connection between distributed and self-reliant local food on the one hand and energy systems and national security on the other.
- **Telecommunications** – The spread of the Internet, affordable computers, and mobile phones provide local food entrepreneurs with information about market opportunities that once was available only to larger companies. Even the smallest food and farm entrepreneurs are experimenting with no- or low-cost

⁸ Stewart Smith, e-mail to Michael Shuman, 2 December 2005, updating Stewart Smith, “Sustainable Agriculture and Public Policy,” *Maine Policy Review*, April 1993, pp. 68–78.

⁹ See, e.g., Christopher Steiner, *\$20 Per Gallon: How the Inevitable Rise in the Price of Gasoline Will Change Our Lives for the Better* (New York: Grand Central Publishing, 2009).

¹⁰ Brian Halweil, “Home Grown: The Case for Local Food in a Global Market” (Washington, DC: Worldwatch Institute, 2003) (Worldwatch Paper #163).

social media tools to successfully reach their customers. The millennials, as an emerging demographic cohort, are already mobilizing their purchasing power in favor of local.

- **Competitive Models** – A fifth factor increasing the competitiveness of local food is that local food businesses themselves are learning from their global brethren how to compete more effectively. In fact, in *every* food category of the North American Industrial Classification System (NAICS), there are more examples of successful small business than examples of successful large business. Even in relatively centralized sectors, like poultry production, there are compelling examples of small-scale success throughout the United States that can provide guidance to local food entrepreneurs. As pointed out in a recent study on *Community Food Enterprise* funded by the Kellogg and Gates Foundations, locally owned businesses are deploying more than a dozen strategies – such as low-cost technology, the internet, vertical integration, consumer ownership – to compete effectively against large-scale players.¹¹ Moreover, networks of local food businesses and non-food businesses are forming – creating joint procurement cooperatives, for example – that are improving their economies of scale. Many local food advocacy groups and intermediaries are deploying peer learning strategies and network “communities of practice” to more effectively diffuse innovation for model replication.

The emerging competitiveness of local food businesses, while profound, still could result in little change in the absence of enough capital to expand existing local food businesses and create new ones. Consequently, a growing focus of the local food movement, thanks to the spread of groups like Slow Money and the Business Alliance for Local Living Economies (BALLE), has been on local finance. A growing number of Americans want to invest in local business, and a growing number of local food entrepreneurs are looking for capital from local investors.

Until recently, the barriers standing in the way of local investment were insuperable. Securities laws enacted during the Great Depression, for example, made it prohibitively expensive for the 99% of firms that are small and local to prepare all the legal documents necessary to take investment dollars from the 99% of investors who are “unaccredited” (that is, not wealthy). Consequently, nearly 100% of Americans’ \$30 trillion in long-term investments – in stocks, bonds, mutual funds, pension funds, and insurance funds – goes into publicly traded companies or government securities. If capital markets were able to work properly, roughly half of this capital, about \$15 trillion, would shift from Wall Street to Main Street, providing ample capital for food localization. Mindful of these opportunities, many local business advocates pressed Capitol Hill to pass the recent Jobs Act, which creates some new, low-cost, crowdfunding opportunities for local business.

¹¹ See Michael Shuman et al., *Community Food Enterprises* (Wallace Center, December 2009).

Excited about bringing these opportunities to the Pioneer Valley, the Solidago and Stokes Foundations charged Cutting Edge Capital to explore the contours of a new fund that could support the expansion of local food businesses in the region—a fund that would build on the modest contributions and success of the existing PVGrows Loan Fund, which the two funders helped launch. Three questions in particular were considered especially important in determining the shape of the fund:

- How large would such a fund need to be to put the Pioneer Valley on a strong path toward food localization?
- What would be the economic impacts of getting onto that path?
- What should be the critical design features of such a fund?

To answer these questions, this paper analyzes the contours, impacts, and investment requirements for a 25% “local shift” in the Pioneer Valley. What we mean by a “25% shift” is that the localization gap in each food-business sector—that is, the gap between the level of business that exists today and the level needed to achieve self-reliance in that sector—is closed a quarter of the way. We envision this shift occurring over a decade. We believe that this goal is big enough to inspire regional mobilization of the business, policymaking, and grassroots communities, but not so big as to be wildly unrealistic.

In the following sections, we analyze the contours of the food economy in three counties that make up the Pioneer Valley: Franklin, Hampden, and Hampshire. We then analyze the economic impacts of a 25% shift. We go on to analyze the financial requirements necessary to achieve this shift. Finally, we look at the key design features of a fund to help the region realize a 25% shift.

Here are the key bottom lines:

- The Pioneer Valley currently has 37,825 jobs in its food economy, more than half supporting restaurants and other eatery businesses.
- A 25% shift toward food localization would create 4,030 new jobs, enough in principle to put one out of every six unemployed workers in the region back to work.
- An estimated \$279 million in capital is needed to create or expand local business sufficiently to support this shift.
- A fund of \$56 million, paired with existing lending vehicles in the Pioneer Valley, might be sufficient to capitalize the 25% shift.

I. The Pioneer Valley Food System

As of 2010, the three counties that make up the Pioneer Valley – Franklin, Hampden, and Hampshire – had 697,458 residents living in 271,433 households. They were spread over 1,850 square miles.

A comprehensive picture of the Pioneer Valley economy is possible using IMPLAN, the Minnesota Input-Output Model deployed extensively by economic development agencies nationwide. The most recent available IMPLAN data from 2010 show that the total value added for the county – the local equivalent of the Gross Domestic Product – is about \$28 billion per year. Of that, \$15 billion goes to employees in wages, \$1.6 billion to business proprietors as income, and \$9 billion to property holders as rent, interest, or profit.¹² Another \$2.2 billion is paid by Pioneer Valley businesses in state and local taxes. On the demand side, households spend \$23 billion per year, state and local governments purchase \$5 billion worth of goods and services, and the federal government purchases another \$1 billion (largely through hiring, services, and construction).

IMPLAN is helpful in drawing an accurate, comprehensive picture of the demand and supply sides of the overall food system. IMPLAN carves up the universe of business into 432 categories, some of which combine the 1,100 categories of NAICS. We focus here only on 57 IMPLAN categories that relate to food either exclusively or *primarily*. Food, depending on how you look at it, comprises 5% to 10% of the Pioneer Valley economy.

On the demand side, IMPLAN includes not only consumer demand (as covered by the Consumer Expenditure Survey) but also demand by businesses, public agencies, and nonlocal purchasers. Chart 1 presents the food demand picture. It shows household demand for food at \$1.7 billion. State and local purchases of food is another \$632 million, which includes everything from school lunches and prison meals to vending machines and commissaries in public buildings. IMPLAN's accounting system also considers purchases outside the Pioneer Valley of local products as part of the demand picture. It shows that other parts of the United States are demanding \$938 million of the Pioneer Valley's food products and services, and the rest of the world another \$61 million.

¹² Property here includes real, tangible, and financial property.

Chart 1
Food Demand in Pioneer Valley Region – IMPLAN Estimates (2010)

	Food Demand	Total Demand
Households	\$1,657,532,409	\$15,972,367,535
Federal Government	\$4,978,767	\$722,361,439
State & Local Government	\$631,824,994	\$4,000,206,281
Capital	\$1,127,282	\$1,965,191,163
Inventory	\$3,381,993	\$32,982,175
Domestic Exports	\$937,892,845	\$13,247,877,123
Foreign Exports	\$61,087,696	\$3,028,738,692
	\$3,297,825,986	\$38,969,724,407

Chart 2 (on the next page) summarizes the top exports by Pioneer Valley food businesses. The biggest export items (by value) are manufactured foodstuffs: ice cream (\$178 million total domestic and foreign exports), milk and butter (\$106 million), animal slaughter (\$71 million), “all other food” manufacturing” (\$71 million), bakery goods (\$72 million), and breakfast cereal (\$54 million). Another high-value export item is retail food sales (\$167 million), presumably because people living in adjacent counties are doing a significant amount of their grocery shopping in the Pioneer Valley.

On the supply side, IMPLAN combines various federal databases on farmers, self-employed residents, and public employees. As shown in Chart 3, the “food economy” in the Pioneer Valley currently employs 37,825. More than 60% work in food service, primarily restaurants. About 26% work in groceries and food retail, 6% in food manufacturing, and 6% in farming and primary food production.

Chart 3
Employment in Pioneer Valley Food Businesses (2010)

	Jobs	% Breakdown
Primary Production	2,447	6%
Manufacturing	2,310	6%
Retail	9,760	26%
Eating Out	23,308	62%
	37,825	100%

Chart 2
Food Exports from The Pioneer Valley – IMPLAN Estimates (2010)

Description	Domestic Exports	Foreign Exports	Total Exports
Ice cream and frozen dessert manufacturing	\$176,106,206	\$2,263,383	\$178,369,589
Retail Stores - Food and beverage	\$166,629,790	\$0	\$166,629,790
Fluid milk and butter manufacturing	\$106,424,431	\$2,964,436	\$109,388,867
Animal (except poultry) slaughtering, rendering	\$81,135,140	\$12,275,106	\$93,410,246
All other food manufacturing	\$70,795,083	\$11,826,698	\$82,621,781
Bread and bakery product manufacturing	\$71,615,266	\$1,909,277	\$73,524,543
Breakfast cereal manufacturing	\$53,664,751	\$2,548,180	\$56,212,931
Dry, condensed, and evaporated dairy product	\$28,369,907	\$8,950,901	\$37,320,808
Breweries	\$29,807,130	\$1,874,561	\$31,681,691
Greenhouse, nursery, and floriculture productio	\$24,434,235	\$599,175	\$25,033,410
Food Service & Drinking	\$18,803,343	\$3,154,338	\$21,957,681
Snack food manufacturing	\$20,590,254	\$408,598	\$20,998,852
Cookie, cracker, and pasta manufacturing	\$17,489,714	\$427,242	\$17,916,957
Fruit and vegetable canning, pickling, and dryir	\$15,244,632	\$745,587	\$15,990,219
Coffee and tea manufacturing	\$9,430,180	\$932,945	\$10,363,125
Frozen food manufacturing	\$9,097,706	\$486,660	\$9,584,365
Confectionery manufacturing from purchased c	\$8,755,281	\$163,745	\$8,919,026
Vegetable and melon farming	\$4,900,512	\$3,914,944	\$8,815,456
Seasoning and dressing manufacturing	\$8,307,401	\$322,767	\$8,630,168
All other crop farming	\$5,024,419	\$1,110,408	\$6,134,827
Tobacco farming	\$3,732,384	\$839,976	\$4,572,360
Commercial logging	\$646,403	\$1,575,798	\$2,222,201
Dairy cattle and milk production	\$2,025,880	\$98	\$2,025,978
Animal production, except cattle and poultry at	\$1,769,391	\$191,608	\$1,961,000
Poultry and egg production	\$1,889,805	\$0	\$1,889,805
Fruit farming	\$41,266	\$1,383,630	\$1,424,896
Support activities for agriculture and forestry	\$482,776	\$6,771	\$489,547
Soft drink and ice manufacturing	\$300,806	\$83,090	\$383,896
Seafood product preparation and packaging	\$246,027	\$98,295	\$344,322
Commercial hunting and trapping	\$70,426	\$0	\$70,426
Cattle ranching and farming	\$48,352	\$19	\$48,371
Tree nut farming	\$128	\$28,980	\$29,108
Forestry, forest products, and timber tract prod	\$13,818	\$480	\$14,297
	\$937,892,845	\$61,087,696	\$998,980,541

Chart 4 (on the next page) provides a more specific breakdown of employment and wages in each food sector.

Chart 5 breaks down the \$799 million paid out in wages for food businesses. Food service, responsible for 62% of the jobs, pays only 49% of the wages, reflecting the relatively low pay in the sector. Manufacturing, responsible for 6% of the jobs, pays 15% of the wages, reflecting the higher pay in that sector.

Chart 5
Wages in the Pioneer Valley Food Businesses (2009)

	Wages	% Breakdown
Primary Production	\$31,093,134	4%
Manufacturing	\$118,884,634	15%
Retail	\$259,231,262	32%
Eating Out	\$389,334,625	49%
	\$798,543,656	100%

Chart 6 breaks out the \$1.4 billion in value-added by Pioneer Valley food businesses. Maximizing value-added is important, because it allows higher wages to be paid and more wealth to be injected locally. Relatively high “value” comes from manufacturing, and relatively low value comes from retail. Food service generates about half of the value-added, because it is such a big part of the food economy.

Chart 6
Value Added in Pioneer Valley Food Businesses (2010)

	Value Added	% Breakdown
Primary Production	\$67,478,823	5%
Manufacturing	\$237,131,417	17%
Retail	\$387,528,415	28%
Eating Out	\$682,539,612	50%
	\$1,374,678,266	100%

Chart 7 illuminates what we know about local demand versus local production in the Pioneer Valley, according to IMPLAN. The second column, labeled "Leakage," shows what percentage of local demand is lost to imports of outside goods and services. Almost every category is at or near 100%, suggesting the huge degree of “leakage.” The biggest exceptions are food retail (groceries) and food services (restaurants), which typically are built up to be at or near local demand (though they are spread unevenly, sometimes leaving “food deserts”). Several large manufacturers, which top the export list, also are producing enough in theory to meet a big proportion of local demand. The first column, labeled “Self-Reliance,” is the inverse of the second column.

Chart 4
Food Business Employment in the Pioneer Valley (2010)

Description	Employment	EmployeeCompensatio
Oilseed farming	0.00	\$0
Grain farming	0.00	\$0
Vegetable and melon farming	391.27	\$7,037,028
Fruit farming	156.41	\$1,547,499
Tree nut farming	1.44	\$22,812
Greenhouse, nursery, and floriculture producti	491.34	\$11,095,720
Tobacco farming	167.55	\$301,365
Cotton farming	0.00	\$0
Sugarcane and sugar beet farming	0.00	\$0
All other crop farming	207.69	\$2,668,218
Cattle ranching and farming	31.61	\$191,642
Dairy cattle and milk production	241.83	\$1,278,584
Poultry and egg production	7.72	\$190,276
Animal production, except cattle and poultry a	393.00	\$1,312,777
Forestry, forest products, and timber tract proc	1.21	\$15,322
Commercial logging	114.63	\$3,032,377
Commercial Fishing	0.00	\$0
Commercial hunting and trapping	4.99	\$0
Support activities for agriculture and forestry	235.88	\$2,399,513
Dog and cat food manufacturing	0.00	\$0
Other animal food manufacturing	0.00	\$0
Flour milling and malt manufacturing	0.00	\$0
Wet corn milling	0.00	\$0
Soybean and other oilseed processing	0.00	\$0
Fats and oils refining and blending	0.00	\$0
Breakfast cereal manufacturing	75.01	\$2,525,474
Sugar cane mills and refining	0.00	\$0
Beet sugar manufacturing	0.00	\$0
Chocolate and confectionery manufacturing fro	0.00	\$0
Confectionery manufacturing from purchased c	30.36	\$387,045
Nonchocolate confectionery manufacturing	0.00	\$0
Frozen food manufacturing	43.69	\$1,431,300
Fruit and vegetable canning, pickling, and dryin	33.53	\$377,707
Fluid milk and butter manufacturing	306.13	\$23,013,424
Cheese manufacturing	0.00	\$0
Dry, condensed, and evaporated dairy product	71.22	\$4,201,130
Ice cream and frozen dessert manufacturing	451.84	\$32,800,312
Animal (except poultry) slaughtering, rendering	315.59	\$18,942,421
Poultry processing	0.00	\$0
Seafood product preparation and packaging	13.91	\$323,268
Bread and bakery product manufacturing	533.31	\$16,196,047
Cookie, cracker, and pasta manufacturing	46.60	\$1,216,886
Tortilla manufacturing	0.00	\$0
Snack food manufacturing	30.90	\$1,771,453
Coffee and tea manufacturing	17.61	\$292,097
Flavoring syrup and concentrate manufacturing	0.00	\$0
Seasoning and dressing manufacturing	17.02	\$909,759
All other food manufacturing	274.81	\$11,433,649
Soft drink and ice manufacturing	21.89	\$718,216
Breweries	26.23	\$2,344,446
Wineries	0.00	\$0
Distilleries	0.00	\$0
Retail Stores - Food and beverage	9,760.21	\$259,231,262
Food services and drinking places	23,308.45	\$389,334,625
TOTAL	37,824.89	\$798,543,656

Chart 7
Food Business Leakages (2010)

Description	% Self-Reliant	% Leakage
Oilseed farming	0%	100%
Grain farming	0%	100%
Vegetable and melon farming	61%	39%
Fruit farming	17%	83%
Tree nut farming	0%	100%
Greenhouse, nursery, and floriculture production	6%	94%
Tobacco farming	40%	60%
Cotton farming	0%	100%
Sugarcane and sugar beet farming	0%	100%
All other crop farming	87%	13%
Cattle ranching and farming	5%	95%
Dairy cattle and milk production	15%	85%
Poultry and egg production	1%	99%
Animal production, except cattle and poultry and eggs	18%	82%
Forestry, forest products, and timber tract production	28%	72%
Commercial logging	63%	37%
Commercial Fishing	0%	100%
Commercial hunting and trapping	30%	70%
Support activities for agriculture and forestry	68%	32%
Dog and cat food manufacturing	0%	100%
Other animal food manufacturing	0%	100%
Flour milling and malt manufacturing	0%	100%
Wet corn milling	2%	98%
Soybean and other oilseed processing	0%	100%
Fats and oils refining and blending	0%	100%
Breakfast cereal manufacturing	14%	86%
Sugar cane mills and refining	0%	100%
Beet sugar manufacturing	0%	100%
Chocolate and confectionery manufacturing from cacao	0%	100%
Confectionery manufacturing from purchased chocolate	1%	99%
Nonchocolate confectionery manufacturing	0%	100%
Frozen food manufacturing	8%	92%
Fruit and vegetable canning, pickling, and drying	3%	97%
Fluid milk and butter manufacturing	78%	22%
Cheese manufacturing	1%	99%
Dry, condensed, and evaporated dairy product manufacturing	86%	14%
Ice cream and frozen dessert manufacturing	72%	28%
Animal (except poultry) slaughtering, rendering, and processing	23%	77%
Poultry processing	1%	99%
Seafood product preparation and packaging	12%	88%
Bread and bakery product manufacturing	14%	86%
Cookie, cracker, and pasta manufacturing	6%	94%
Tortilla manufacturing	0%	100%
Snack food manufacturing	3%	97%
Coffee and tea manufacturing	3%	97%
Flavoring syrup and concentrate manufacturing	3%	97%
Seasoning and dressing manufacturing	2%	98%
All other food manufacturing	10%	90%
Soft drink and ice manufacturing	13%	87%
Breweries	5%	95%
Wineries	0%	100%
Distilleries	1%	99%
Retail Stores - Food and beverage	100%	0%
Food services and drinking places	99%	1%

II. Economic Benefits from a 25% Shift

In the following pages, we sketch what the 25% localization scenario in the Pioneer Valley would look like *in theory* and what the consequent economic benefits would be. We assume that food exports remain constant. Instead, the only changes we envision are in the behavior of local purchasers—that is, the buying of local residents, businesses, and government institutions. Increasing local demand then expands the size and number of local food businesses in the region.

The principal tool we use to measure the impacts of this shift is the IMPLAN input-output model, which draws from state and national economic patterns to model where every dollar of spending goes, and how every dollar is in turn re-spent. IMPLAN can model how a change in demand can lead not only to direct new jobs in expanded business activity, but also how the new spending by this business creates new jobs (*indirect* effects from businesses' supply chains) and how the new spending by new employees in all these businesses (both expanding food businesses and supply-chain businesses) create even more new jobs (*induced* effects).

A hypothetical example illustrates what a 25% shift looks like.¹³ (The following numbers are made up.) Suppose breweries in the Pioneer Valley were producing \$100 million worth of beer, \$10 million of which was sold locally. Further suppose total demand in the region for beer was \$200 million, which means that the region was importing \$190 million worth of beer. If all local production went to local demand, total self-reliance would mean that local breweries could expand by \$100 million in annual output. But since we assume that exports are constant – in this case \$90 million – potential output expansion is actually \$190 million. Getting a quarter of the way to this would imply \$47.5 million of new output.

Chart 8 below summarizes the results of the IMPLAN model after ramping up the demand in each of the 57 (CK) food-related sectors in the Pioneer Valley. A total of 4,030 jobs would be created – 2,243 directly in new food businesses, 1,080 through new supply-chain spending (indirect effects), and 708 through new spending by employees in these direct and supply-chain jobs (induced effects). To put this in perspective, these jobs would be able to put one-in-six unemployed residents of the county back to work.¹⁴ Additionally, the 25% shift would generate \$128 million in new annual wages and \$259 million in additional value-added. *It is hard to find any economic-development proposal*

¹³ Formally, the Regional Purchasing Coefficient (RPC) within IMPLAN estimates how much of Total Gross Demand is currently met by local industry. The demand figure includes both local and nonlocal consumption. Multiplying Total Gross Demand by 1-RPC shows how much additional industry is possible to meet local demand (without reducing production for export).

¹⁴ As of March 2012, the state reported unemployment in the Pioneer Valley as 24,607, broken down as follows: 2,376 in Franklin County; 17,972 in Hamden County; and 4,259 in Hampshire County.

for the Pioneer Valley, past or present, which would have as significant a job impact as the 25% shift.

**Chart 8
Impacts of a 25% Shift for the Pioneer Valley (2010)**

ImpactType	Employment	Wages	Value Added	Output	Businesses Taxes
Direct Effect	2,242.5	54,701,614.9	119,975,556.6	454,426,345.4	\$11,862,003
Indirect Effect	1,079.9	45,267,949.0	84,758,844.0	159,415,306.5	\$8,099,990
Induced Effect	708.0	28,212,587.5	54,734,991.2	87,361,119.1	\$5,742,471
Total Effect	4,030.4	128,182,151.4	259,469,391.8	701,202,771.0	\$25,704,464

Chart 8 also shows that the 25% shift would generate an additional \$26 million in annual state and local tax collection. That means that an annual government investment at somewhat below that level, if it achieves the 25% shift, would be fiscally prudent.

Chart 9 presents a detailed roster of the job impacts in all the food sectors, compared to the existing number of jobs. Various degrees of local impact are also shown, in case the reader prefers a more or less ambitious goal than 25%.

Chart 10 summarizes the jobs impacts by broad sectors: farming and animal growing, manufacturing; food service; indirect; and induced. Relatively few new jobs come from food service, because the area already has a full array of local grocery stores and restaurants. A relatively large number of new jobs come from expanded primary production of fruits, vegetables, grains, and domestic animals. Significantly, about two thirds of all new jobs are in high-wage manufacturing or spread across the entire economy in indirect and induced jobs. The common assumption that most of the jobs resulting from food localization pay below-average wages is therefore not correct.

**Chart 17
Summary Job Impacts of a 25% Shift for the Pioneer Valley (2010)**

	Jobs	Percentage
Farming & Animal Raising - Direct	1,123	28%
Food Manufacturing - Direct	861	21%
Food Service - Direct	280	7%
Indirect	1,080	27%
Induced	708	17%
	4,052	100%

Among the top indirect jobs are support activities for farming, wholesale trade, management, trucking, and real estate. Among the top induced jobs are restaurants, health services, and retail.

Chart 9
Job Impacts of Various Shifts in the Pioneer Valley Food Sectors (2010)

Category	Current Jobs	New Jobs with 100% Shift*	New Jobs 25% Shift*	New Jobs with 10% Shift*	New Jobs with 5% Shift*
Oilseed farming	0	3	1	0	0
Grain farming	0	179	45	18	9
Vegetable and melon farming	391	267	67	27	13
Fruit farming	156	714	179	71	36
Tree nut farming	1	302	75	30	15
Greenhouse, nursery, and floriculture products	491	636	159	64	32
Tobacco farming	168	12	3	1	1
Cotton farming	0	0	0	0	0
Sugarcane and sugar beet farming	0	8	2	1	0
All other crop farming	208	302	75	30	15
Cattle ranching and farming	32	714	179	71	36
Dairy cattle and milk production	242	1,270	317	127	63
Poultry and egg production	8	91	23	9	5
Animal production, except cattle and poultry	393	1,663	416	166	83
Forestry, forest products, and timber tract products	1	3	1	0	0
Commercial logging	115	59	15	6	3
Commercial Fishing	0	291	73	29	15
Commercial hunting and trapping	5	11	3	1	1
Support activities for agriculture and forestry	236	491	123	49	25
Dog and cat food manufacturing	0	46	12	5	2
Other animal food manufacturing	0	23	6	2	1
Flour milling and malt manufacturing	0	24	6	2	1
Wet corn milling	0	10	2	1	0
Soybean and other oilseed processing	0	6	2	1	0
Fats and oils refining and blending	0	9	2	1	0
Breakfast cereal manufacturing	75	57	14	6	3
Sugar cane mills and refining	0	12	3	1	1
Beet sugar manufacturing	0	15	4	2	1
Chocolate and confectionery manufacturing from purchased ingredients	0	10	2	1	0
Confectionery manufacturing from purchased ingredients	30	129	32	13	6
Nonchocolate confectionery manufacturing	0	13	3	1	1
Frozen food manufacturing	44	163	41	16	8
Fruit and vegetable canning, pickling, and drying	34	126	32	13	6
Fluid milk and butter manufacturing	306	157	39	16	8
Cheese manufacturing	0	10	3	1	1
Dry, condensed, and evaporated dairy products	71	27	7	3	1
Ice cream and frozen dessert manufacturing	452	86	22	9	4
Animal (except poultry) slaughtering, rendering, and meat processing	316	589	147	59	29
Poultry processing	0	64	16	6	3
Seafood product preparation and packaging	14	94	24	9	5
Bread and bakery product manufacturing	533	471	118	47	24
Cookie, cracker, and pasta manufacturing	47	110	27	11	5
Tortilla manufacturing	0	35	9	4	2
Snack food manufacturing	31	92	23	9	5
Coffee and tea manufacturing	18	41	10	4	2
Flavoring syrup and concentrate manufacturing	0	6	1	1	0
Seasoning and dressing manufacturing	17	69	17	7	3
All other food manufacturing	275	198	49	20	10
Soft drink and ice manufacturing	22	144	36	14	7
Breweries	26	50	13	5	3
Wineries	0	123	31	12	6
Distilleries	0	17	4	2	1
Retail Stores - Food and beverage	9,760	117	29	12	6
Food services and drinking places	23,308	752	188	75	38
Non-Food Indirect		2,820	705	282	141
Non-Food Induced		2,375	594	238	119
	37,825	16,106	4,026	238	119

Charts 10 and 11 (on the following pages) look at the “Top 40” direct job opportunities, ranked by jobs and wages, respectively. These rankings are important, because they indicate what the priorities for localization initiatives should be. Based on these rankings, the top five food localization priorities we discern are:

- *Meat and Poultry* – If land and training are available, there is the potential for new jobs from: raising animals like pigs, sheep, and goats (327 jobs); raising cattle (162 jobs), and slaughtering these animals locally (139 jobs). There are additional jobs possible from raising poultry and eggs (23 jobs), and slaughtering them locally (16 jobs).
- *Farming* – There is the potential for new jobs from growing fruit (160 jobs), nursery trees and plants (157 jobs), tree nuts (75 jobs), vegetables (47 jobs), grains (45 jobs), and other crops (18 jobs). Another 26 jobs could come from agricultural support activities.
- *Value-Adding Manufacturing* – The directly grown items above could be fed into various well-paying manufacturing enterprises, including: local bakeries (117 jobs); frozen food (40 jobs); soft drinks and ice (36 jobs); confectionary products (32 jobs); canned fruits and vegetables (31 jobs); wineries (31 jobs); cookies, crackers, and pasta (27 jobs); snack foods (23 jobs); seasonings and dressings (17 jobs); and breweries (13 jobs).
- *Dairy* – There are large job opportunities for raising more dairy cattle (291 jobs), along with value-adding manufacturing of milk and butter (34 jobs), and ice cream and frozen desserts (20 jobs).
- *Food Service* – Even though the Pioneer Valley is rich in food service, the local demand is so large that another 76 jobs are possible.

Chart 10
Top 40 Opportunities from a 25% Shift for the Pioneer Valley – By Jobs (2010)

Total	2,238
Animal production, except cattle and poultry &	327
Dairy cattle and milk production	291
Cattle ranching and farming	162
Fruit farming	160
Greenhouse, nursery, and floriculture producti	157
Animal (except poultry) slaughtering, renderin	139
Bread and bakery product manufacturing	117
Food services and drinking places	76
Tree nut farming	75
Commercial Fishing	73
All other food manufacturing	49
Vegetable and melon farming	47
Grain farming	45
Frozen food manufacturing	40
Soft drink and ice manufacturing	36
Fluid milk and butter manufacturing	34
Confectionery manufacturing from purchased	32
Fruit and vegetable canning, pickling, and dry	31
Wineries	31
Cookie, cracker, and pasta manufacturing	27
Support activities for agriculture and forestry	26
Seafood product preparation and packaging	23
Snack food manufacturing	23
Poultry and egg production	23
Ice cream and frozen dessert manufacturing	20
All other crop farming	18
Seasoning and dressing manufacturing	17
Poultry processing	16
Breakfast cereal manufacturing	14
Commercial logging	14
Breweries	13
Dog and cat food manufacturing	12
Coffee and tea manufacturing	10
Tortilla manufacturing	9
Flour milling and malt manufacturing	6
Other animal food manufacturing	6
Dry, condensed, and evaporated dairy produc	5
Distilleries	4
Beet sugar manufacturing	4
Nonchocolate confectionery manufacturing	3

Chart 11
Top 40 Opportunities from a 25% Shift for the Pioneer Valley – By Wages (2010)

Total	\$93,019,752
Animal (except poultry) slaughtering, rendering, and meat processing	\$8,710,013
Greenhouse, nursery, and floriculture production	\$4,301,736
Bread and bakery product manufacturing	\$3,763,456
Fluid milk and butter manufacturing	\$2,655,292
Fruit farming	\$2,225,238
All other food manufacturing	\$2,181,931
Commercial Fishing	\$2,039,577
Wineries	\$1,959,108
Dairy cattle and milk production	\$1,625,338
Ice cream and frozen dessert manufacturing	\$1,543,475
Food services and drinking places	\$1,395,678
Frozen food manufacturing	\$1,376,680
Snack food manufacturing	\$1,374,645
Tree nut farming	\$1,311,992
Soft drink and ice manufacturing	\$1,258,553
Breweries	\$1,175,981
Animal production, except cattle and poultry	\$1,168,869
Vegetable and melon farming	\$1,102,605
Cattle ranching and farming	\$1,029,035
Seasoning and dressing manufacturing	\$987,836
Dog and cat food manufacturing	\$901,032
Commercial logging	\$782,865
Cookie, cracker, and pasta manufacturing	\$774,635
Grain farming	\$696,803
Poultry and egg production	\$625,591
Breakfast cereal manufacturing	\$590,725
Poultry processing	\$590,151
Seafood product preparation and packaging	\$562,377
Fruit and vegetable canning, pickling, and preserving	\$552,486
Distilleries	\$464,470
Confectionery manufacturing from purchased ingredients	\$448,363
Support activities for agriculture and forestry	\$440,541
Flour milling and malt manufacturing	\$413,371
Tortilla manufacturing	\$357,585
Other animal food manufacturing	\$343,883
Dry, condensed, and evaporated dairy products	\$316,425
All other crop farming	\$296,135
Sugar cane mills and refining	\$285,465
Wet corn milling	\$245,398
Flavoring syrup and concentrate manufacturing	\$244,336

These are the jobs that are *possible* with 25% localization. But not all these jobs are *plausible*. Among the challenging constraints are entrepreneurship training and land, both of which might limit the ability of the Pioneer Valley to seize the opportunities above for more farming, dairy, and meat slaughter. A more comprehensive analysis is needed to quantify these potential constraints and identify tools to overcome them.

That said, the worst case of these constraints – based on similar studies done in regions around the country including greater Cleveland, Denver, Detroit, and Boulder County – is that a somewhat larger area might be needed. In other words, expanding the boundaries of “local” – from three counties to ten, or to all of Massachusetts, or if necessary to New England – inevitably resolves these constraints. The immediate jobs impacts are then lower for the target community, and higher for the region.

There are other economic benefits of this 25% shift that are harder to quantify, but nevertheless are worth mentioning:

- **Branding** – As the epicenter of a local food renaissance, the Pioneer Valley area would be creating a powerful new magnet for tourism.
- **Attraction & Retention** – Becoming a fabulous dynamic region that naturally attracts and retains non-local businesses because of local economic richness and vitality – Richard Florida’s notion of a creative economy – is economically valuable.
- **Entrepreneurship** – Nearly all of the food businesses in the region right now are small. Indeed, except for a few food-processing businesses, the vast majority of food enterprises, such as farms and food service operations, can be started by a good entrepreneur with modest levels of capital. The 25% shift would lead to a region-wide entrepreneurship revolution, with positive spillovers throughout the economy.
- **Public Assistance** – Increased employment and entrepreneurship would lead to reductions in public assistance outlays in unemployment, food stamps, housing vouchers, health subsidies, and other government supports.
- **Fiscal Health** – Reduced government outlays and increased tax revenues would improve the fiscal health of various county and local governments in the region. This would improve their credit worthiness, lower the cost of capital, and reduce payments on existing and future bonds and other debts.
- **Capital Improvements** – The 25% shift would also allow more investments in public schools (human capital) and infrastructure (built capital), both of

which can add to economic vitality, foster entrepreneurship, and increase the attractiveness of the region to outside business and investors.

- ***Rural Economies*** – The 25% shift provides a stimulus in and around the Pioneer Valley to expand existing farms, diversify farm economies, and revive farms that have gone bankrupt or otherwise been abandoned. By connecting urban demand with nearby rural supply, food localization could lead to a renaissance of rural economic life.
- ***Economic Security*** – Diversification of the local food system could help inoculate the region against sudden cutoffs in food that could occur because of contamination, war, terrorism, or global shortages.

III. The Capital Requirements for a 25% Shift

Farmers and small businesses always have some difficulty getting credit, but the challenges have become especially acute during the recent financial crisis. Even companies with terrific track records for borrowing and repaying are currently having difficulty obtaining credit from mainstream banks, thrifts, or credit unions. This underscores the need for a new mechanism for capitalizing on local food businesses.

The Pioneer Valley has a number of sources of capital that can help, including, of course the PVGrows Loan Fund. Small loans to farmers and local food businesses are available from Common Capital and the Franklin County CDC Fund. The Cooperative Fund of New England can provide loans to food businesses structured as coops. RSF Social Finance and the Equity Trust (which are based in the Pioneer Valley), are national funds willing to invest in local food businesses. The Calvert Foundation could pump capital into Community Development Financial Institutions, a designation from the U.S. Department of the Treasury indicating a focus on low-income areas that many of the funds listed here have.

The challenge, though, is that many of these funds are already fully extended. They can expand, of course, but each fund also has a slightly different range of priorities whose scope reaches beyond that of food localization. The local funds must attend to businesses of various types. National funds must attend to a wide diversity of communities. A much larger source of capital is needed in the Pioneer Valley that focuses exclusively on local food.

How much additional capital might be needed for the 25% shift? The 2012 Statistical Abstract estimates the “Net Stock of Private Fixed Assets” in the country in different industries.¹⁵ Chart 11 shows these values nationally for food businesses, and then scales

Chart 11
Capital Requirements for 25% Shift (2010)

¹⁵ Table 781, for the year 2009. Food-related wholesale is assumed to be 10% of the total.

Private Assets for Food Businesses (\$millions)		
	United States	Pioneer Valley
Agriculture	\$493,000	\$1,120
Food Manufacturing	\$238,000	\$541
Food Retail & Wholesale	\$154,000	\$350
Food Services	\$269,000	\$611
Total	\$1,154,000	\$2,622
Population	307,000,000	697,458
Population %		0.00227185
Existing Food Jobs		37,825
Additional Jobs with 25% Shift		4,026
Percent Expansion		10.64%
Additional Capital Requirements		\$279

them by population for the Pioneer Valley. Assuming that the food system has a constant relationship between jobs and capital, the additional capital required for the 25% shift is \$279 million for the Pioneer Valley. This number could be higher if new businesses turn out to be more capital intensive.

There's no question that this capital, in theory, is available in the region, as shown in Chart 12. In the Pioneer Valley, for example, residents have approximately \$18 billion of savings in short-term accounts and \$62 billion in long-term accounts. Reallocating less than two percent of the former or less than half of one percent of the latter could fully finance the businesses needed for the 25% shift.

Chart 12
Estimated Household & Nonprofit Capital (2010)

\$ million	
Short Term Savings	Pioneer Valley
Checking	\$6,749
Savings	\$14,085
Money Markets	\$3,024
	\$23,858
Long-Term Savings	Pioneer Valley
Corporate Stock	\$1,719
Corporate Bonds	\$5,063
Mutual Funds	\$9,563
Pension Funds	\$27,522
Insurance Funds	\$2,860
	\$46,727

Of course, for the region to amass \$279 million for local food businesses, it might only need to come up with a small percentage – perhaps 20% – in equity. A fund of \$56 million might be able to leverage the remainder in loans from existing financial institutions in the region.

This points to another shortcoming with the existing funds in the Pioneer Valley. All of them focus on loans that are typically quite small. As the head of the Franklin County CDC Fund admitted, his fund has had difficulty making loans during the financial crisis because so many local businesses and entrepreneurs are already overextended with debt. In fact, the entire country is overextended with second mortgages that are underwater, credit cards that are maxed out, and ramped-up repayment demands by financial institutions that have caused a record number of bankruptcies.

A growing number of entrepreneurs are looking for equity or near-equity kinds of finance, which will not put them in further debt. Many of the businesses needed for the 25% shift – meat processing; food manufacturing, packaging, and distribution; food service – cannot be done through small loans. The capital requirements for these enterprises are larger, and the scale requires more experienced entrepreneurs who tend to be more interested in equity or near-equity.

The exact kind of finance needed by these businesses varies enormously. Some will prefer convertible debt, while others will prefer more active shareholders. Another option, being developed by the Vermont Sustainable Jobs Fund, is royalty financing, where repayment and royalties are tied to monthly revenues or profits. This is especially attractive to local food businesses, where the flow of business is often seasonal.

As a next step toward assembling a fund of \$56 million, the region might encourage residents to shift part of their long-term savings into self-directed IRAs. There are many scenarios in which this could happen. If two percent of residents in the Pioneer Valley – one in twenty households – shifted 5% of their long-term savings accordingly, this fund could be put together. This kind of campaign seems like a natural outgrowth of more than a decade of cutting-edge consciousness raising and business building in the region around local food.