

When certain tiers (or scales) overpower others, food systems may become unbalanced. Of particular concern to Long Island is the quantity of food that is imported from the national and global scale and the susceptibility to supply chain disturbances, including fluctuating commodity prices (oil and electricity) and price surges related to climate conditions. We also harm our local air quality as a result of burning fossil fuels through the shipment of products to the region, particularly through truck transportation.

In order to achieve greater balance, we need to build up our local and regional food system tiers, focusing on producer and consumer interactions, as well as strategic partnerships among industries. This will help to increase the type of food available across tiers; improve food system resiliency by more equally distributing risk; and generate collaboration and entrepreneurship to sustain a healthy food system.

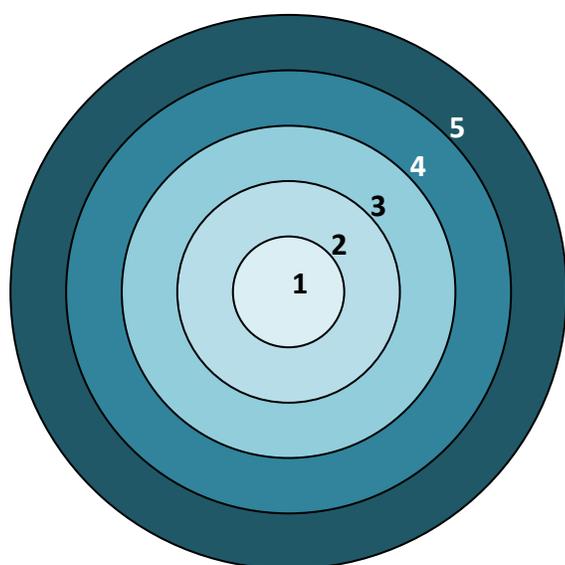


Figure 1: Food System Scales

### Impacts

Within a health context, there are impacts or outcomes resulting from current food systems. These are interconnected to the functionality, efficiency, and policies of food systems.

- Human Health includes the physiological status and the presence of diseases such as obesity, diabetes, cardiovascular disease and cancer of a population resulting from the availability, quality, quantity, and safety of the food supply.
- Economic Health includes wages, employment, household income, and business activity. It also includes the circulation of monetary wealth within communities.
- Ecological Health includes the environmental integrity of natural resources such as soil, water, biodiversity, air and fossil fuel usage and the restorative capacity to carry out nature’s services.
- Social Health or fairness is a measure of social justice and engagement and assures no person or thing is exploited; workers earn a living wage, work in safe conditions, and are offered equal opportunities to advance while low to moderate income families are able to afford fresh, nutritious meals.



Tier 5	GLOBAL, ANONYMOUS AGGREGATION AND DISTRIBUTION CHANNELS Transnational corporations, agribusinesses, etc.
Tier 4	LARGE VOLUME AGGREGATION AND DISTRIBUTION CHANNELS National grocery chains, food distributors, etc.
Tier 3	STRATEGIC PARTNERS IN SUPPLY CHAIN RELATIONSHIPS Food Co-ops, Food Centers
Tier 2	DIRECT PRODUCER TO CONSUMER Farmers’ markets, farm stands, Community Supported Agriculture (CSA), community kitchens
Tier 1	PERSONAL PRODUCTION OF FOOD Backyard gardens, community gardens, canning, hunting, gathering, fishing

Figure 2: Consumers and Producer Relationships  
Source: Center for Integrated Agricultural Systems,  
University of Wisconsin

# CHALLENGES

## TO LONG ISLAND'S FOOD SYSTEM

Long Island is a region with a rich food culture, reflected in its long history of farming and fishing, its ever-growing mix of national cultures and foodstuffs, and its burgeoning local food movement. It is also an important contributor to the state's food economy. Yet, the food system is not as robust as it could be, given the range of resources and assets available to us. Challenges to the food system exist at every level and are broad-based. Because of this complexity, we categorize these challenges according to the core principles of a sustainable food system: *environmentally healthy, economically robust, and socially equitable*. Each principle addresses challenges across food system sectors.

We present these challenges with the understanding that their size and range may appear overwhelming, but are not insurmountable. We need to create a thoughtful, proactive, and integrated approach to act in the region's best interest and demand the political imagination and willpower to move us out of today's complacency into tomorrow's more sustainable future.

### Challenges to an environmentally healthy food system

Risks to the environment exist at each stage of the food system, from production to waste management, harming air and water quality, reducing the amount of arable land, and negatively impacting environmental and personal health. In addition, the overreliance on non-renewable energy sources, dependence on nitrogen-rich fertilizers, widespread use of pesticides and herbicides, fresh water extraction, and suburban sprawl continue to negatively impact our ecosystem. Examples of our impaired ecosystem include poor surface and ground water quality; air pollution; dwindling farmland and protected open space; greater susceptibility to climate change; and threats to plant and animal life. It is essential to mitigate these negative environmental impacts to ensure the long-term success of agriculture on Long Island and protect public health.

### Challenges to an economically robust food system

There are many economic challenges across the food system that impact stakeholders and the wider regional economy. Pre-existing issues such as rising food prices, stagnant or low wages, unemployment, and a rising, higher cost of living have been aggravated by the recent recession, contributing to economic stagnation. Meanwhile, the high costs of agricultural inputs, property taxes and utility fees are making it increasingly difficult for farmers to maintain operations and earn their livelihoods. The food system is also hindered by the lack of well-developed and well-funded food manufacturing and distribution infrastructure. While ambitious projects like Agriculture Enterprise Park in Calverton begin to address such gaps, more investment is needed to increase capacity and offset declines in the number of food processing and wholesale facilities. Finally, the lack of higher skilled jobs in the food industry that would pay livable wages not only impacts personal finances, but drags down the overall economy, through decreased consumer demand and spending.

### Challenges to a socially equitable food system

Lower-income and middle-class Long Islanders encounter multiple barriers to accessing nutritious and affordable food in their communities. These barriers include an insufficient number of local food retailers, an inadequate public transportation system to reach these retailers, and the high price of grocery items, particularly healthy food options. For those without access to nutritious food, diet may be compromised and the risk increases for a range of diet-related health conditions such as diabetes, hypertension, and anemia. In addition, unsafe work conditions, unfair labor practices, and lack of health benefits negatively impact many in the food manufacturing and service sectors as well as farm workers, particularly in lower-wage positions.

System transparency is also an issue: Consumers often do not have adequate information about what is in their food as well as how their food was produced, transformed, distributed, or marketed. Finally, process inequities are inherent in the food system. For example, decision-making about food system practices and regulations often take place without input from farmers, workers, and consumers who would benefit from a more participatory system of governance.

## Methods

The purpose of the LIFSRC is to identify and measure the sustainability of Long Island's food system in order to encourage dialogue, research, and policies to promote economic development, environmental health, and social equity. The study uses 11 main categories to group 31 indicators across food system sectors. Toward this end, the LIFSRC creates a baseline profile of the Long Island food system, highlighting indicator trends and needs as well as relationships among sectors of the food system. Data findings then inform recommendations for a safe, fair, and sustainable food system and serve as the platform for subsequent community discussions about policy and program development.

Throughout this report, we aim to provide all stakeholders with a timely, informative and data-driven document to help generate community dialogue about programs, policies, and research to protect and improve Long Island's food system. Ultimately, we hope that by creating and sharing this report, our region is able to mobilize for change, leading to a wide array of proactive solutions with long-term, tangible benefits to our food system.

## Indicator Identification and Selection

Based on an extensive review of the food system literature, the stakeholders identified an initial set of over 100 different indicators who helped to narrow them down to the indicators included in this report. Throughout this process, we set out to ensure that the indicators used were reflective of the concerns of a broad spectrum of Long Islanders, measurable and derived from publicly available, reliable sources. These sources include federal, state and county governments, national, regional and local non-profit organizations, and national research and academic institutions.

### The selection of all the indicators reflects consideration of the following criteria:

- Reliability: consistently measures same phenomena over repeated observations.
- Validity: measures the phenomena it states it is measuring.
- Sensitivity to changing phenomena: measurement detects small changes in occurrence.
- Timeliness: data are current and/or conform to some established time period.
- Regularity: data are collected routinely at some specified interval.
- Longitudinally: data are collected at different points in time for the same population.
- Public availability: data are easily accessible and understandable.
- Geographic specificity: data are bounded geographically.

## Data Analysis

To the extent possible, each indicator was assessed through geographic comparisons with national and state data. Analysis focused on trends over time, comparing an indicator's most recent year with a fixed first year in a longitudinal time series (a process referred to as baseline benchmarking). Whenever possible, relationships between data findings in one food system sector or domain were contrasted and/or linked with findings in another.



# MATRIX CATEGORIES

## SECTORS AND DOMAINS

Food Sectors	Domains		
	Economic	Environment	Equity
Production	Food Produced Locally	Farms and Preservation	Farm Labor and Farmer Diversity
Transformation & Processing	Food Manufacturing		
Distribution, Marketing & Retail	Wholesale Market		Consumer and Retail Market
Food Access & Consumption	Expenditures and Purchasing Power		Food Insecurity and Public Health
Waste Management	Waste Alternatives	Negative Impacts and Tracking Waste	
Cross-cutting Indicator	Food System Jobs		

### Production Sector

- Food Produced Locally – describes the economic value of Long Island’s agriculture and aquaculture, fisheries, alternative revenue sources for farms through agricultural tourism, and the impact of production expenses on locally produced food.
- Farms and Preservation – highlights trends in the acreage, number and size of farms, and tracks how successful county-led preservation efforts have been.
- Farm Labor and Farmer Diversity – describes what crops are raised and how much is dedicated for food as well as the impact of different farm labor employment methods on food production.

### Transformation & Processing Sector

- Food Manufacturing – describes how manufacturing diversity affects the local economy.

### Distribution, Marketing & Retail Sector

- Wholesale Market – describes the availability and accessibility of various food types through local retail and wholesale outlets.
- Consumer and Retail Market – highlights the number of farms and the market value of direct sales for those farms that provide direct sales of their products.

### Food Access and Consumption Sector

- Expenditures and Purchasing Power – tracks how much consumers are spending on food, where food expenditures are occurring, and the value of SNAP sales at farmers’ markets.
- Food Insecurity and Public Health – describes the percentage of the population that is food insecure and/or enrolled in SNAP/Food Stamps as well as the numbers accessing emergency food services.
- Additionally, this indicator looks at the prevalence of specific diet-related health conditions.

### Waste Management Sector

- Waste Alternatives as Economic Generators – looks at the impact of composting and recycling on reducing municipal solid waste.
- Negative Impacts and Tracking Waste – examines the environmental effects of waste on our water supply as well as the effects of municipal solid waste on air and soil.

## Cross-cutting Economic Category

- Food System Jobs – looks at the number of jobs across the food system as well as employee wages, examining the impact of jobs in one sector throughout all sectors and on the long-term viability of employment around food.

## Data Challenges

Indicator projects like the LIFSRC typically use quantitative, secondary data to assess local conditions. Quantitative data are often referred to as “objective,” meaning they provide measurements that are impartial or unbiased. However, no data or research can be completely free from subjective influences. Indicators and data, even the absence of data, reflect the choices and concerns of those collecting information at a particular point in time. This does not diminish the significance of studies like the LIFSRC but offers a context to frame and inform our understanding of data findings.

The use of secondary data in the LIFSRC also presented a variety of method-related challenges. In addition to the absence of data, in some cases, there were also definitional and temporal issues, given the wide array of data sources (government databases; grassroots and not-for-profit data; national, state and local research studies) and the scope of food system issues being explored. These included:

- Different definitions of phenomena or operational definitions, e.g. food retailers.
- Different cycles of data collection (e.g. annual), and different starting points for longitudinal data.
- Data gathered for only one point in time.

In some cases, the lack of robust data, particularly at the local or regional level, posed difficulties for analysis. For example, data on the Waste Management sector was extremely limited; hindering attempts to determine long-term trends. Such limitation points to the need for enhanced efforts (by the counties or other organizations) to regularly collect detailed, systematic information on all food system sectors.

## Rating Food System Indicator Trends and Needs

Measuring trends and determining what is needed to address issues found in these trends can be a challenging and subjective process. Evaluators have to assess what the data means for an indicator and extrapolate from it to determine how the indicator trend impacts other issues not being measured.

Rather than providing a ranking system for the indicators (i.e. hierarchical), this report designates whether a trend has moved positively, negatively, or has not experienced significant change over time. These designations do not necessarily reflect directional movement in the data but show whether or not trends is positive or negative for the food system indicator being measured.

- Up arrow (↑) – trend has moved positively, having increasing or improving effects.
- Down arrow (↓) – trend has moved negatively, causing decreasing or deteriorating conditions.
- Left-to-Right arrow (↔) – trend is unchanged or steady and impacts or conditions remain the same.

Ratings for indicator needs were driven by consensus among evaluators to determine what actions or activities should be taken to maintain or improve observed trends.

**Dark Green – Maintain actions and monitor activities to maintain positive trends.**  
**Green – Long-term actions and minor activities are suggested to increase positive trends.**  
**Yellow – Some actions and activities are needed to reverse stagnant or negative trends.**  
**Orange – Short-term actions and minor-to-major activities are needed to reverse negative trends.**  
**Red – Immediate actions and major activities are needed to reverse negative trends.**

## Recommendations

Recommendations for approaches to build a more sustainable food system appear at the end of this report. The recommendations were compiled based on input from the FEAC and the Vital Signs Advisory Board. The recommendations were also informed by strategies identified in our literature review of previous academic and policy studies. Over time, we hope to build on this initial work and expand the LIFSRC to include additional data, indicators, and to further develop recommendations.

# REPORT CARD

## ASSESSING LONG ISLAND'S FOOD SYSTEM

Domains	Categories	Indicators	Trends	Needs
<b>Production Sector</b>				
Economic	Food Produced Locally	Market value and acreage of produce vs. non-produce	↑	Green
		Farm revenue by crop	↑	Green
		Farm animals produced	↔	Light Green
		Aquaculture and fishery production	↓	Yellow
		Farms offering agricultural tourism	↑	Green
		Farm production expenditures	↓	Orange
Environment	Farms and Preservation	Acreage, number and size of farms	↓	Red
		Farmland preservation	↓	Orange
Equity	Farm Labor and Farmer Diversity	Farm workers employed by farm labor contracts	↑	Yellow
		Farmer and farm operator diversity	↔	Orange
<b>Transformation &amp; Processing Sector</b>				
Economic	Food Manufacturing	Diversity of food manufacturing by county and type	↓	Yellow
		Animal slaughtering and processing	↓	Orange
		Fruit and vegetable preserving and manufacturing	↔	Yellow
<b>Distribution, Marketing &amp; Retail Sector</b>				
Economic	Wholesale Market	Food wholesalers	↓	Orange
Equity	Consumer and Retail Market	Food retailers per 100,000 people	↔	Yellow
		Percentage of farms with direct sales	↑	Yellow
		Value of agricultural products sold for human consumption	↑	Light Green
<b>Food Access &amp; Consumption Sector</b>				
Economic	Expenditures and Purchasing Power	Average annual food expenditure per consumer unit	↓	Yellow
		Food expenditures, Home vs. Away from Home	↓	Yellow
		Value of SNAP/EBT purchases and access at farmers' markets	↑	Yellow
Equity	Food Insecurity and Public Health	Population as food insecure and SNAP eligibility	↓	Orange
		Percentage of children anemic or underweight	↔	Yellow
		Percentage of population that is diabetic	↓	Yellow
		Emergency food programs and pounds of food rescued	↔	Yellow
		Adults eating 5+ servings of fruit and vegetables per day	↔	Yellow
<b>Waste Management Sector</b>				
Economic	Waste Alternatives	Composting and alternatives to incineration	NA	Yellow
		Recycling as a percentage of municipal solid waste	↓	Orange
Environment	Negative Impacts and Tracking Waste	Water quality of rivers, lakes, and estuaries	NA	Red
		Drinking water quality	NA	Orange
		Municipal solid waste transported or incinerated	NA	Orange
<b>Cross-cutting Economic Indicators</b>				
Economic	Food System Jobs	Wages throughout the food system sectors	↓	Orange
		Total number of food system jobs	↔	Yellow

# RATING INDICATORS

## INDIVIDUAL FOOD SYSTEM SECTORS

The following section looks at the individual food system sectors and provides a detailed analysis of the categories and indicators used for assessment. Additional charts and graphics are included in the report to provide a visual representation of the sub-indicator being measured so that trends can be observed.

Production Sector				
Domains	Categories	Indicators	Trends	Needs
Economic	Food Produced Locally	Market value and acreage of produce vs. non-produce	↑	Green
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		Farmland preservation	↓	Orange
Equity	Farm Labor and Farmer Diversity	Farm workers employed by farm labor contracts	↑	Yellow
		Farmer and farm operator diversity	↔	Orange

### Food Produced Locally

#### Indicator Background

Long Island has a long and rich history of farming and agriculture, dating back more than 300 years when the area was first settled. Agricultural products grown on Long Island over the years include fresh vegetables and fruit, seafood, poultry, and a variety of horticultural products. The region is also strong in niche agricultural markets such as ducks, wine, sod, and fruit and vegetables for both local and non-local markets. Today, more than 35,690 acres are in production on Long Island, growing more than 100 different crops.<sup>2</sup>

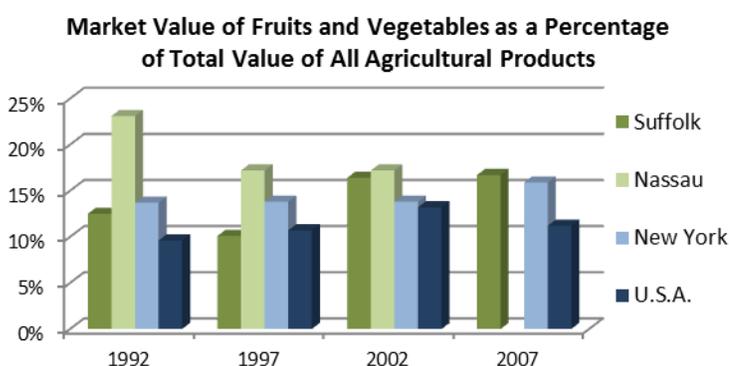
Agriculture and fishing are important components of the Long Island economy. More than 6,000 people work in agriculture and fishing related industries, which total more than \$240 million in cash receipts.<sup>3</sup> While Nassau and Suffolk both have long agricultural histories, the vast majority of farming now takes place in Suffolk County, which leads the state in agricultural revenue. Suffolk County also ranks first statewide in terms of nursery, greenhouse, floriculture, pumpkin and sod production and aquaculture.

New York State is home to world class fishing for a wide variety of cold water, warm water and saltwater fish species, with the largest fishing trades historically occurring on the East End of Long Island. While oyster, commercial fishing and the bay scallop industries were once booming business, challenges from pollution, overfishing, and competition have plagued the industry over the past decades. Harmful algal blooms known as Brown Tides as well as state and federal regulations designed to provide for improved conservation and management of fisheries have limited commercial fishing activities in recent years. Despite this, the Long Island Sound and other waters serve as breeding, nesting, and nursery areas for a variety of plant and animal life, contributing an estimated \$5.5 billion per year to the regional economy from boating, commercial and sport fishing and sight-seeing.<sup>4</sup>

This indicator examines the economic health of the food production sector, while considering how effectively the region is leveraging agritourism (and other niche/direct markets) in order to attract more business to the area. By increasing the dollars spent on local food, we can benefit from a multiplier effect that stimulates our wider economy and generates greater wealth, income and jobs. Data for this indicator come from the United States Department of Agriculture (USDA) Census of Agriculture, the National Marine Fisheries Service and the USDA Fruit Report.

### Market value and acreage of produce vs. non-produce

The percentage of agricultural revenue from fruit and vegetable production is informative for two reasons. First, changes in the percentage suggest either an increase or decrease in the scale of fruit and vegetable farming. Growing more produce locally potentially lessens our dependency on imports from other markets, especially if fruits and vegetables are sold directly to consumers or distributed at local retailers. Second, marketed effectively, Long Island fruits and vegetables are attractive export commodities or ecotourism draws, generating profit for agricultural producers and the wider economy as well as strengthening regional identity around food.



Based on data from the U.S. Census of Agriculture, the market value of produce as a percentage of total agricultural revenue increased in Suffolk County from 1992 to 2007. The market value of fruits and vegetables, which was 12.5% of total agricultural revenue in 1992, rose to 16.7% in 2007. Total agricultural revenue for Suffolk County was \$242,933,000 in 2007, with approximately \$40,560,000 from sales of fruits and vegetables.

Source: United States Department of Agriculture, NASS Census of Agriculture  
 Notes: Market value of fruits and vegetables for Nassau not disclosed in 2007.  
 Fruits and vegetables include vegetables, melons, potatoes, sweet potatoes, fruits, tree nuts and berries.

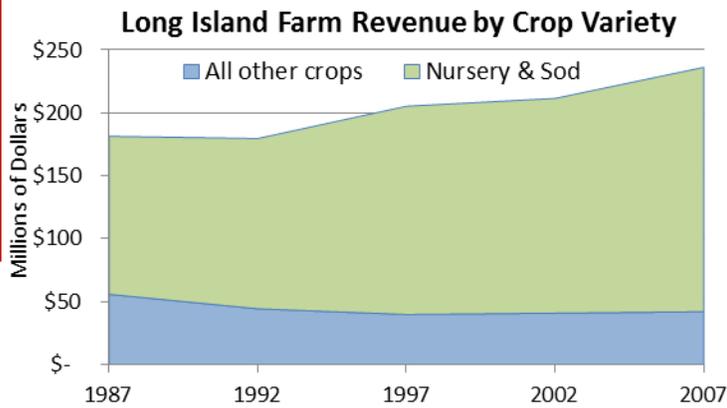
The increase in the percentage of fruit and vegetable market value corresponds with a gain in the percentage of acres used for growing produce in Suffolk County. From 1992-2007, the proportion of farmland acres used for fruit and vegetable production climbed from 22.6% to 28.6%.<sup>5</sup>

In Nassau, the market value of produce as a percentage of total agricultural revenue decreased from 1992 to 2002, falling from 23.1% to 16.7%. No data were available for Nassau County in 2007. Total agricultural revenue for Nassau was \$8,251,000 in 2002, with a market value of \$591,000 for fruits and vegetables. Total agricultural revenue was \$15,799,000 in 2007.

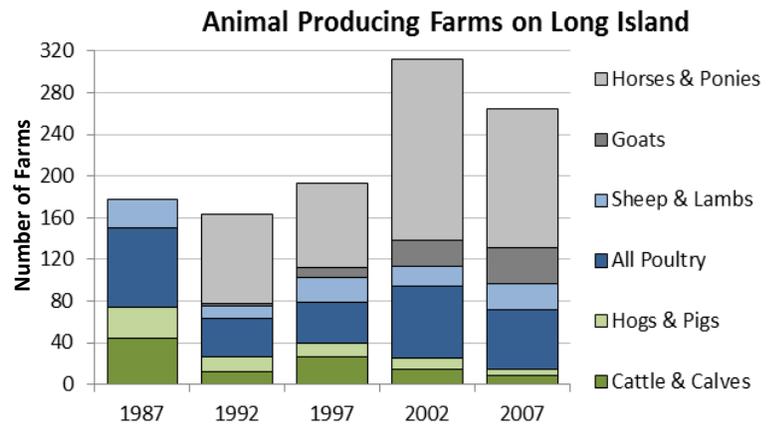
Due to lack of data on acres in orchards, it was impossible to determine longitudinal changes in the percentage of farmland acres in Nassau County growing produce.

### Farm revenue by crop

A unique combination of climate and topography allows Long Island farmers to harvest a broad array of crops, with nursery yields, such as floriculture and sod, dominating production. With the exception of pine trees, grains, and hay, all other crops produced on Long Island show a positive trend. From 1987 to 2007, the inflation-adjusted value for vegetables, melons, potatoes, and sweet potatoes increased 12%, while the value for fruit, tree nuts, and berries increased by almost 171% island-wide. Nursery crops such as floriculture and sod increased over 54% during the same time period and were valued at approximately \$194,305,000 in 2007. The value of nursery crops produced in 2007 was significant to Long Island's agricultural industry, representing more than 50% of the revenue from nursery crops value produced in the state, up from over 40% in 1987.



Source: United States Department of Agriculture, NASS Census of Agriculture. Values are adjusted for inflation to 2007 dollars.



Source: United States Department of Agriculture, NASS Census of Agriculture.

### Farm animals produced

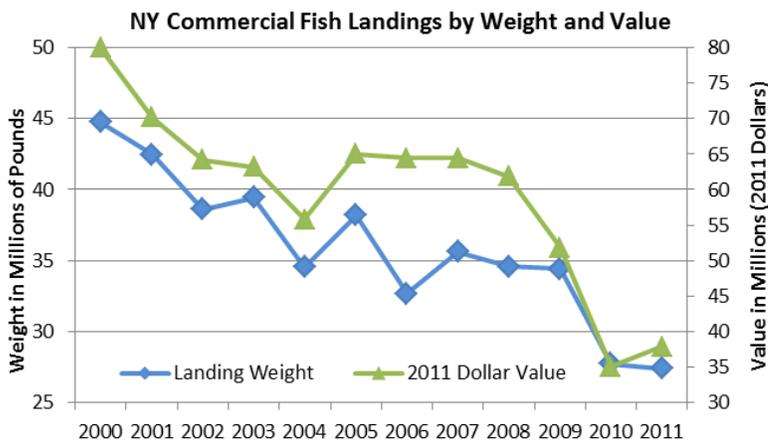
Animal production has been an important component of farming on Long Island, including duck and poultry farming. Dating back to the 1850s, Suffolk County was a leading producer of ducks. Throughout the 20<sup>th</sup> Century, duck farming on Long Island abounded, peaking in the 1940s-1960s when the region produced approximately two-thirds of the duck consumed in the nation, and making the industry as vital to the state economy as commercial fishing.<sup>6</sup> However, the growth in duck farms eventually resulted in coastal water pollution and an increase in regulations which, along with rising property values and suburbanization, shut down much of the industry. In 2010, only two duck farms remained on Long Island, yet Suffolk County still leads the state in duck production, producing roughly 10% of the nation's duck meat.<sup>7</sup> In 2007, Suffolk County ranked fifth in New York State in poultry.

Other farm animal production on Long Island is mixed, with some animal production appearing to be phased out in preference of others. From 1987 to 2007, the number of farms producing cattle and calves decreased by nearly 91%, with only one farm in Nassau and seven farms in Suffolk remaining in 2007. During the same timeframe, the number of farms producing hogs and pigs dropped by nearly 78%, with one farm in Nassau and six farms in Suffolk remaining. Poultry farms shrank by over 52%, leaving six farms in Nassau and 51 farms in Suffolk. The number of farms producing sheep and lambs remained relatively flat during the same time period, with one farm in Nassau and 24 farms in Suffolk. In the same timeframe, the number of farms raising horses and ponies increased by nearly 156%, rising to 26 farms in Nassau and 108 farms in Suffolk, while the number of farms producing goats skyrocketed in 2007 to more than 11 times the number in 1992, with five farms in Nassau and 29 farms in Suffolk.

### Aquaculture and fishery production

In addition to standard agricultural products, Long Island also benefits from a sizeable aquaculture industry. The market value of Long Island's aquaculture (fish farms, crustaceans, mollusks, and aquatic plants, in general) appears to have remained steady for the most part, showing only a 1.4% decline between 2002 and 2007 sales. However, after adjusting for inflation, the market value of Long Island's aquaculture actually declined by 14.5%. The 2007 market value reported by the US Census of Agriculture was for Suffolk County only, and was recorded at over \$7.6 million.

Commercial fishing remains an important driver of our local economy. In 2010, New York State ocean fisheries landed almost 28 million pounds of fin fish, shellfish and crustaceans with a value of \$35 million. Approximately 99% of New York State landings took place in Nassau and Suffolk Counties, with the greatest weight and dollar value landed in Montauk. Even as Long Island contributes significantly to New York's fishing/seafood industries, the last ten years show an overall negative trend in landings, with dollar values falling 44.3% and weight falling 38% from 2000 to 2011.

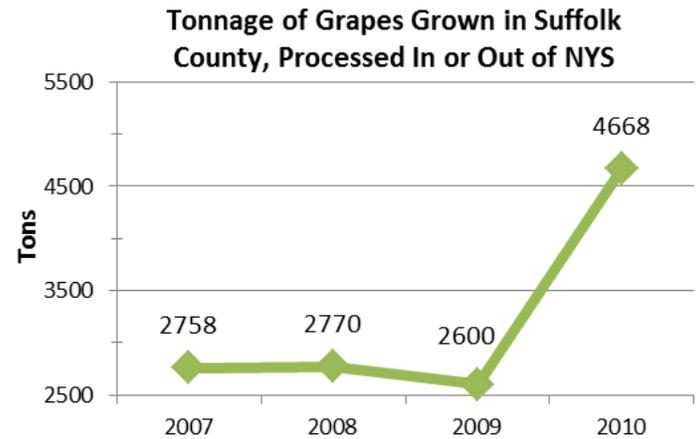


Source: National Marine Fisheries Service, NOAA

It should be noted that an initiative headed by Cornell Cooperative Extension to expand bay scallop restoration efforts, included in the Long Island Regional Economic Development Council's (LIREDC) plan for the region, received funding through Empire State Development and Governor Cuomo in 2012.

### Farms offering agricultural tourism

Agricultural tourism or agritourism includes a range of farm-based activities, like tours, roadside stands, wineries, u-pick activities, and pumpkin patches, conducted for the enjoyment and education of visitors. Agricultural tourism provides farm operators with opportunities for diversification and profit, promotes economic development and helps educate the public about the important contributions of agriculture to the region's economy and quality of life. In addition, agritourism may enhance the appeal of and demand for local products, foster regional marketing efforts and create value-added and direct-marketing opportunities to stimulate economic activity and spread the benefits to various communities in the region.



Source: United States Department of Agriculture, NASS Fruit Report

Data on agritourism were first collected in 2002. At that time, Nassau County had only one farm that promoted agricultural tourism, while Suffolk County had ten. The value of agritourism was not reported for Nassau County in 2002, but for Suffolk agritourism produced approximately \$18,000 in economic benefit. By 2007 no farms in Nassau County engaged in agritourism, but the number of farms in Suffolk County offering agritourism had more than tripled to 32 farms, generating over \$798,000 for the region.

Wineries are among the most prominent agritourism ventures on Long Island, attracting 1.2 million visitors annually. Suffolk County ranks third in the state in grape production and has seen significant growth in recent years, producing 4,668 tons of grapes in 2010.

### Farm production expenditures

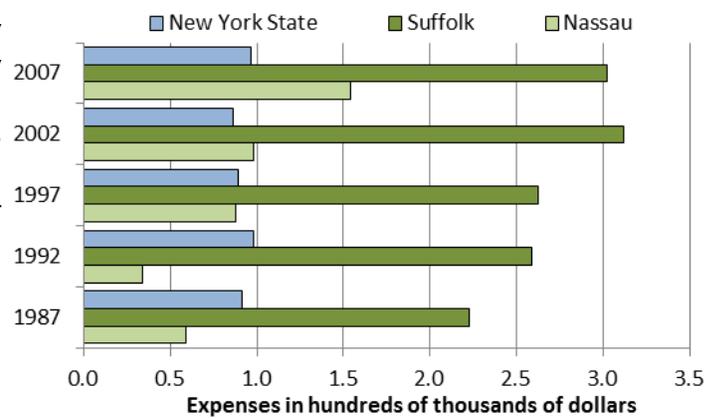
There are a wide variety of expenditures involved in farm production. For the purposes of this indicator, the expenses that are being examined fall into one of three categories: those with a potential environmental impact, utilities and property taxes, and the cost for new or replacement seeds, plants, trees, and vines. Other significant expenses that factor into farm business and profitability include capital expenses such as equipment, and wages.

Expenditures with potential environmental impacts include fertilizers used for replenishing nutrients in soils, chemicals used as pesticides, herbicides and fungicides to control pests and weeds, and petroleum products such as gasoline, fuels or oils to power farm equipment. The cost of fertilizers for Long Island farms, when adjusted for inflation in 2007 dollars, decreased by 11.7% between 1987 and 2007. The cost for chemicals, in 2007 dollars, also fell by 11.1% in the same timeframe.

Two expenses that have risen dramatically and impacted farms in Nassau County are property taxes and utility costs. After adjusting for inflation, utility costs rose 548% between 1987 and 2007. Property taxes on farms reached their highest point in 1997, when they increased 538% from 1987 rates. Since then, taxes have declined somewhat, but are still more than double the 1987 rate. From 1987-2007, prices for fuels and gasoline increased 97% for Nassau farms, while the cost of new seeds, plants, trees, and vines rose by over 363%.

In Suffolk County, property taxes increased by 118.7% between 1987 and 2007, while utility costs rose by over 225% in the same time period. Gasoline and fuel expenditures rose by over 208% from 1987 to 2007, but by far the largest expenditure increase was for seeds, plants, trees, and vines, which soared over 312% in the same period. Fertilizer and chemical expenditures grew at nearly the same rate, 63.2% and 62.8% respectively, between 1987 and 2007.

Average Farm Production Expenses, 2007 Dollars



Source: United States Department of Agriculture, NASS Census of Agriculture

## Farms and Preservation

### Indicator Background

From 1982 to 2007, the United States converted more than 14 million acres of prime farmland to development. While the rate of conversion has slowed in recent years, 4 million acres were lost between 2002 and 2007. On Long Island, the increased value of land for development has also resulted in a decline in farmland. In response, local counties, towns, and not-for-profits have spearheaded a range of conservation initiatives to preserve undeveloped land both for farming and open space. Retaining active farmland is a vital part of keeping agriculture economically viable on Long Island.

The Nassau County Environmental Bond Acts of 2004 and 2006 calls for the preservation of 400 acres of open space, some of which is farmland. To date, the \$150 million program has preserved more than 230 acres of open space both inside and outside of the County's Special Groundwater Protection Area (SGPA), including several farms, a few of which are being cultivated.<sup>8</sup> Organizations like the Nassau Land Trust and The Nature Conservancy partner with Nassau County to preserve farmland, such as the Crossroads Farm at Grossman's. A 10-year action plan developed by Long Island's "Last Stand," a coalition of environmental, civic and business associations, calls for renewed commitment to save the most significant remaining open spaces and farmland and to restore and protect harbors, bays and public parklands.<sup>9</sup>

This indicator looks at the current number of farms and acreage of active farmland. It also tracks the extent of farmland preservation efforts. Data for this indicator comes from the US Census of Agriculture.

### Acreage, number, and size of farms over time

Long Island's farmlands have changed dramatically over time as the area has transformed from a largely rural to a primarily suburban setting. In 1920, Long Island had a total of 3,441 farms, with 71% located in Suffolk County. By 1950, at the start of the post-war suburban development boom, the number of farms stood at 2,805, with 88% located in Suffolk County. By 2007, 644 farms were left in the region (with 91% in Suffolk), a decline of 81% since 1920. In terms of farmland, the acreage distribution by county is similarly stark. In 2007, just 3.6% of Long Island's 35,692 acres of farmland were located in Nassau County.

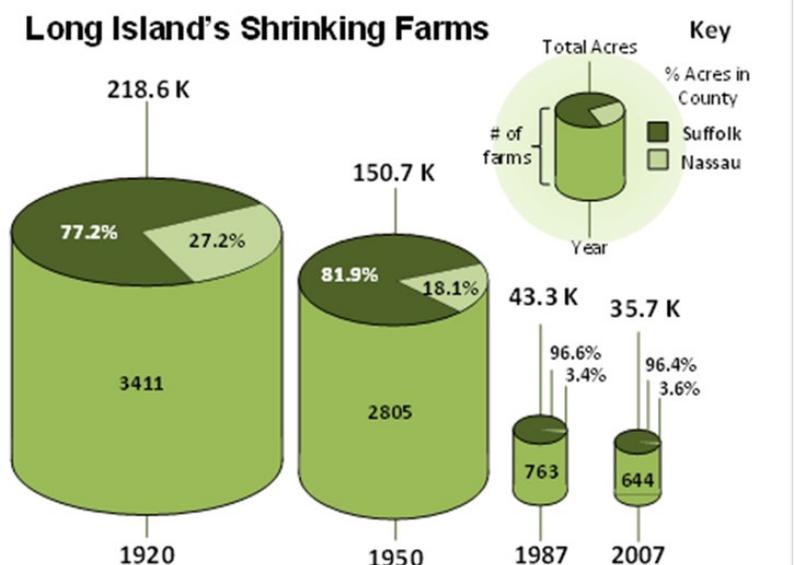
As the number of farms has decreased, so too has their size. Farms smaller than 50 acres in size represent over 75% of all farms left on Long Island with more than 55% of farms smaller than 10 acres. In 2007, the median size for farms in Suffolk County was 14 acres, while the median size in Nassau County was only 6 acres; farmland acreage in both counties was significantly less than the New York State median farm size of 95 acres.

## Farmland preservation

Preserving Long Island's farmland has been an uphill battle for conservationists. Issues such as changing zoning regulations, current land use policies, financing, and conflicts with new residential developments have resulted in less farmland being preserved over the last decade than originally anticipated. Suffolk County engages in numerous programs to acquire and preserve land and open space, including a farmland preservation program. Suffolk County was the first county in the nation to implement a purchase of development rights (PDR) program to preserve farmland (1974).<sup>10</sup> In the Suffolk County Farmland PDR program, a landowner transfers or sells the development rights of his/her land for any use, other than agriculture, to the County while maintaining private ownership of the land. This transaction guarantees that the property will be used for only agricultural practices or open space in perpetuity. Other eastern Towns, including Brookhaven, Riverhead, Southampton, and nonprofit organizations are also actively involved in farmland and other types of preservation. Preserving farmland is important as it reduces susceptibility to development pressures and enables farmers and farm owners to continue to operate their farms without worrying about selling the land.

Suffolk County also maintains an agricultural district program - a tax abatement program to relieve active farm areas of property tax burdens for short 8-year cycles, which also affords farms protection under New York State "right-to-farm" laws.<sup>11</sup> Sprawling development continues to put pressure on farmland, particularly as Suffolk County's population grows.

As stipulated by the Suffolk County Agricultural Protection Plan of 1996, the County sought to protect a minimum of 20,000 acres by 2012. As the plan noted, fiscal and temporal challenges to meeting the stated goals were great, but the plan did recommend at the time that at least another 10,000 acres should be preserved. As of 2012, approximately 10,400 acres or 52% of the target goal had been successfully protected, with the vast majority of land preserved located on the East End. The Town of Riverhead has seen the largest share of the County's preservation efforts, accounting for over 56% of all farmland preserved. As farmland diminishes, it becomes harder to protect and preserve; thus as time goes on it becomes more difficult, and more expensive, to achieve the stated goals. In August 2012, Suffolk County was awarded a grant by the New York State Department of Agriculture and Markets to update the County's Agriculture Protection Plan.



Source: United States Department of Agriculture, NASS Census of Agriculture

Nassau County began its farmland preservation efforts in 2004 with a targeted goal of preserving 400 acres by 2016. As of 2010, the County had been able to preserve approximately 300 acres, representing almost 75% of its goal. Over 75% of the farmland preserved was in the Town of Oyster Bay, which is the least urbanized of the three towns and two cities that comprise the County.

## Farm Labor and Farmer Diversity

### Indicator Background

The composition of farm laborers and operators can provide insight into fairness and diversity in farming as well as the long-term viability of agriculture. Many Long Island farmers, like their national counterparts, rely on migrant workers as a source of labor. However, concerns exist about workplace safety, language barriers, and job insecurity for migrant workers.