New York Suppliers, Routes, and Strategies for Continuity of Dairy Commerce in New England

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SUMMARY

This document was prepared for the United States Department of Agriculture, Animal and Plant Health Inspection Service (USDA-APHIS) and the New England Animal Agricultural Security Alliance (NESAASA) to advance the New England Secure Milk Supply (SMS) Project.[1]

The document is intended to help fill a gap identified in New England as a Jurisdiction for Supporting Continuity of Dairy Operations: A Reassessment (NESAASA, 2013). The gap is in preparation to sustain shipments of unpasteurized milk from New York to New England in an animal-disease emergency, such as an outbreak of Foot-and-Mouth Disease (FMD).

The following includes:

1) An overview of the importance of New York milk producers and of coordination with New England for the sustainability of regional dairies in an animal-disease emergency.
2) An analysis of the geographic distribution of New York producers who supply New England plants, emphasizing their concentration in eastern counties.
3) An analysis of the routes of milk shipments from New York to New England, emphasizing their convergence on a small number of boundary-crossing roads.
4) Strategies for maintaining those shipments in an animal-disease emergency that take advantage of the distribution and routing of normal milk shipments.
5) An appendix with detailed statistics on the origin, destination, scale, and routes of normal shipments of unpasteurized milk from New York to New England.

Key findings are:

1) **Distribution**. Farms that are widely dispersed in New York (in 45 of 62 counties) regularly ship unpasteurized milk to processing plants in New England. However, most of the milk comes from a much smaller number of counties concentrated near the boundary. Most of the milk (more than 60%) that is produced in New York and shipped to New England plants comes from just 6 counties, and 18 counties account for more than 90% of the supply.
2) **Routing**. The topography of the northeast channels east-west, farm-to-market traffic onto a small number of roads. Nearly all (99%) of the tanker traffic between New York dairy farms and New England processing plants can be expected to cross the boundary on just three roads: I-90, US-2, and I-84.

Recommended **strategies** for maintaining shipments in an animal-disease emergency include directing resources toward the specific counties and boundary-crossing roads that:

a) Are crucial to normal commerce, as exemplified in this document, and
b) Regulators and stakeholders in the seven states (six in New England plus New York) judge best to promote continuity of dairy operations in an animal-disease emergency.

This analysis supports the possibility of using standardized permitting procedures and/or cleaning en route to promote continuity of dairy operations in New York and New England.

[1] "Support for the Project to 'Revise, Expand, and Exercise Regional FAD Emergency Continuity of Operation Planning,'" Cooperative Agreement Number 13-9644-1245CA (FFY 2013) between the Division of Agriculture/Animal Health in the Rhode Island Department of Environmental Management and USDA-APHIS Veterinary Services on behalf of NESAASA (October 4, 2013 to August 31, 2014).

INTRODUCTION TO NEW YORK AS A SUPPLIER TO NEW ENGLAND DAIRIES

Dairy processing plants in New England normally acquire about a quarter of their supply of unpasteurized milk from farms in 45 of the 62 counties in the state of New York. This pattern in the supply chain suggests that emergency, continuity-of-operation planning for New England's dairy industry had better include New York and vice versa.

New York Counties (Yellow) Where Farms Supply Dairy Processors in New England, 2013[2]

Detailed county-level statistics are appended.
See also
New England as a Jurisdiction for Supporting Continuity of Dairy Operations.[3]

[2] County maps in this paper are adapted from a New York State County Map (2005) from the U.S. Department of the Interior National Atlas of the U.S., maintained on-line at New York State Search.
[3] Statistics on traffic between New York dairy farms and New England dairy processors refer to commerce regulated under the Federal Milk Order during the month of September, 2013 (the most recent, complete, and quality-assured data set available). Data were supplied by the Market Administrator of the Northeast Marketing Area (Federal Order 1) of the USDA Agricultural Marketing

Plainly, the commercial-dairy connections among all seven states (the six in New England, plus New York) are broad enough to demand attention. For example, if a highly contagious disease such as Foot-and-Mouth Disease (FMD) were to infect dairy operations in any one of them, state boundaries could not be expected to contain it, at least without biosecurity measures that are ordinarily absent. Through normal farm-to-market traffic – with tankers traveling from each farm to a plant and back (i.e., between susceptible livestock and congregate sites), at least once every 48 hours – disease could spread very far, very fast, even before it is detected or confirmed.

However, in light of that very threat, a recent paper for the New England Agricultural Security Alliance (NESAASA) concluded that there is still good reason to consider New England a proper jurisdiction to support continuity of dairy operations in an emergency.[4] Among its key points:

- From a farmer's perspective, New England constitutes a market of its own. Nearly all of the milk produced within the six states is processed there, too. In a pinch (e.g., if needed to reduce the risk of spreading disease), their farmers could get by with purely in-region milk shipments.
- With some important exceptions, normal milk traffic from New York to New England provides a small share of normal supply (about 25%) to New England, mainly for just a half-dozen FMO-regulated plants in just three of the six states in the region.
- New York is a very large dairy producer and likely to have pressing, more distinctly Mid-Atlantic than New England priorities in an emergency. That 25% of supply to New England plants that originates in New York represents no more than about 4% of New York's total dairy production. The scope and direction in New York's normal milk traffic – in-state plus out-of-state to the south and west – could make interruption in the New England outlet seem more tolerable from one side of the border than the other.
- The legacy of cooperation among regulators in the six states of New England and their recent progress in Secure Milk Supply (SMS) planning suggest that they could best advance preparations for continuity of dairy operations as a region of their own, organizationally separate, albeit in consultation with New York.

Nevertheless the NESAASA paper also argues that New York supply has been so vital to New England's largest processing plants that sustaining that supply may be essential for business continuity as a whole. What is needed is preparation with a more precise picture of the way the supply chain relates to the border between New York and New England.

DISTRIBUTION OF NEW YORK SUPPLIERS TO NEW ENGLAND DAIRY PLANTS

New York farms that supply unpasteurized milk to New England plants are concentrated near the state's eastern boundary, where there is both a lot of dairy production (albeit east of the center of the legendary "New York milkshed") and proximity to New England plants.[5]

Service in December, 2013. See also the caveat on this AMS data in Richard P. Horwitz, FMD as a Hazard for New England Dairies (NESAASA, 2011), pp. 89-90.

[4] Richard P. Horwitz, New England as a Jurisdiction for Supporting Continuity of Dairy Operations: A Reassessment (NESAASA, 2013).

[5] See appended map. The "New York milkshed" was is normally defined to cover the supply chain connecting upstate producers to consumers in the New York metropolitan area. Most published scholarship on the New York (or "New York-New Jersey" or "Mid-Atlantic") milkshed dates from the 1920s to 1960s, when the supply chain, originally rail-linked, was more clearly bounded. See, for example, G. J. Conneman, An Economic Analysis of Changes in Milk Production in the New York Milkshed Changes in Number of Producers, Size of- Herd, and Method of Delivering Milk in the New York-New Jersey Market,

It is worth emphasizing that New York counties vary greatly in their size and in the number of farms they contain. Supply totals or shares at the county level should be interpreted in that light. One county may ship less milk than another, not because the county is a less significant supplier, but simply because it is smaller (e.g., Schenectady). Nevertheless, the distribution of suppliers is obviously discrete.

Look, for example, at the counties that are the largest contributors to the New England dairy supply. (See also the appended "New York Counties Ranked by the Amount of Unpasteurized Milk They Supply to FMO-Regulated Plants in New England.") Just a half-dozen counties – albeit variable in size – each normally ship more than 5% of the state total. Together they account for more than 60% of all the milk that New York farmers ship to plants that are across the New England line (more than 77 of 128 million pounds per month). Sustaining commerce with just those six counties would go a long way toward sustaining the dairy industry as a whole.

Six Counties (Yellow) Where Farms Produce More Than 60% of the Milk Shipped from New York to Processors in New England, 2013

1960-1964, Progress Report 4 (Cornell University, 1964); or Donald Davidson, *Regionalism and Nationalism in the United States: The Attack on Leviathan* (University of North Carolina, 1938; Transaction, 1991).

Sustaining milk shipments from an additional dozen counties would preserve more than 90% of the normal New York share of the supply to New England processing plants (117 of 128 million pounds per month).

Eighteen Counties (Yellow) Where Farms Produce More Than 90% of the Milk Shipped from New York to Processors in New England, 2013

In other words, participation in cross-boundary traffic is much more concentrated, distinctly centered along the state's eastern border, than an unfiltered, statewide view might suggest. Focusing on fewer than half the counties that ship to New England (in this illustration, 18 of 45 counties) could be extremely effective for sustaining the whole dairy industry, especially since consumer demand could be expected to fall in a FMD outbreak, anyway.[6]

If processing must be reduced accordingly, it would make sense for disease-emergency-response managers to favor biosecurity measures that reduce the distance that milk travels (e.g., stop the smaller volume of ordinary milk imports to New England from more westerly counties in New York) and thereby the span of potential cross-contamination. It should be both beneficial and possible to prepare continuity-of-operation efforts in the areas where the bulk of the cross-regional traffic normally originates.

[6] Richard P. Horwitz, How to Communicate with Dairy Consumers about FMD (December 2012).

Distribution.

Farms that are widely dispersed in New York (in 45 of 62 counties) regularly ship unpasteurized milk to processing plants in New England. However, most of the milk comes from a much smaller number of counties concentrated near the boundary. Most of the milk (more than 60%) that is produced in New York and shipped to New England plants comes from just 6 counties, and 18 counties account for more than 90% of the supply.

STRATEGIC IMPLICATIONS OF THE DISTRIBUTION OF NEW YORK SUPPLIERS

New York dairy producers and New England processors share an interest in maintaining as much of their connection as possible in an emergency. Insofar as they can safely keep milk moving from farm to market, consumers, livestock, and the environment stand to gain, too. Given such great potential benefits, the ideal would be to sustain safe dairy shipments from all normal participants, from all 45 of New York's 62 counties.

However, as argued in New England as a Jurisdiction for Supporting Continuity of Dairy Operations, that ideal may be unachievable. In an outbreak, the larger the number of counties from which milk shipments continue, the greater the risk of spreading disease and the more preparedness and response resources that would be required (e.g., to establish and monitor elevated biosecurity, as required in SMS Plans).

Sustaining New York Supply to New England Processors by Standardizing Emergency Permit Procedures[7]

New England is among the most advanced of regions in developing procedures to issue emergency permits (e.g., surveying farms for Readiness, building a secure but sharable on-line database, conducting exercises, etc.) So, maybe New York could be convinced to prepare in parallel, as if it were part of NESAASA. Then, each of the six states might agree to recognize a permit issued in New York and vice versa, much as the New England states have already agreed to recognize each other's.

For better or worse, such uniformity and reciprocity may be worse than tough to achieve. The dairy industry in New York is much larger than in New England, and it has barely begun SMS preparations. By tethering its progress to yet another, much larger state, New England would be handicapped. Furthermore, increasing the scope of existing plans from six to seven states would sacrifice some of the advantages of treating New England as a region in the first place. For example, judging from normal milk traffic, New York encompasses several abutting milksheds. While some clusters of New York farms are tied to plants in Connecticut, Massachusetts and Vermont, others are tied to Pennsylvania, and yet others to New Jersey, and those farm-to-market routes crisscross each other. In this way, expanding the jurisdiction to deal with one set of anomalies would introduce yet more of them as well as administrative burdens and greater risks of cross-contamination during an outbreak.

[7] Richard P. Horwitz, New England as a Jurisdiction for Supporting Continuity of Dairy Operations: A Reassessment, (NESAASA, 2013), pp. 22-23.

An alternative would be to develop an understanding between New York and New England that would, in effect, extend the New England plan to cover only the specific set of New York farms or locations that regularly ship to New England plants. New England might, for example, ask New York milk inspectors to administer surveys and maintain compatible data on the specific set of farms and haulers that service the New-York-to-New-England routes.

So, support for continuity of dairy operations might best focus preparations and resources in the specific counties where farms could keep **the most milk** moving, as in the six or eighteen counties illustrated above.

However, priorities could also be based on other ways of identifying sources that are critical for continuity of dairy operations. Appended lists, for example, rank New York counties by the **number of plants** that farms in those counties supply in New England and by the **importance of the supply** (average **amount** and average **share** of the total) for each plant. None of the rankings are identical, even at the top.

Top Ten New York Counties that Supply New England Plants, Ranked by Different Criteria

Ranked by Total Amount of Milk Supplied to New England	Ranked by Number of Destination Plants in New England	Ranked by Average Share of Supply to Each Plant	Ranked by Average Amount of Supply to Each Plant
Clinton	Montgomery	Chemung	Franklin
Washington	Herkimer	Rensselaer	Washington
Franklin	Clinton	Clinton	Clinton
Rensselaer	Otsego	Dutchess	Saratoga
Montgomery	Madison	Franklin	Columbia
Saratoga	Oneida	Montgomery	Rensselaer
Jefferson	Rensselaer	Washington	Monroe
Columbia	Washington	Columbia	Jefferson
Oneida	Schoharie	Saratoga	Essex
Herkimer	Jefferson	Orange	Sullivan

Only three counties (Clinton, Washington, and Rensselaer) make the top ten on all four lists that rank counties by the criteria identified here, though the remainder tend to appear in at least a couple of others.

At issue are the sorts of benefits in milk movement that emergency responders and stakeholders most value. Ranking by each of these criteria has its distinct rationale, and the decision to favor one or some combination over another (e.g., in allocating resources for business continuity) would benefit from deliberation, consultation, and trial in advance of an actual incident.

Finer grained preparations would also help. The survival of **individual farms or plants** may depend on each other in ways that county-level measures miss.

For example, a single, small plant may get nearly all of its milk from a New York county that does not otherwise appear to be a crucial supplier. Continued interstate shipments surely could be crucial, though, for that particular plant and the dairy market.

Likewise, interruption in ordinary, interstate sales could be catastrophic for an individual farm in New York, no matter what the sales record of its surrounding county. (It is also worth remembering that, in the 2001 outbreak of FMD in the U.K., a huge share of livestock euthanized – arguably the majority – were animal-welfare rather than disease casualties, due to farmers' inability to provide care and feeding, once transportation was interrupted.)

Preparing for such "outlier" cases as well as normal patterns may be extremely important.

At issue is whether the emphasis should be on simply moving the most milk, sustaining the largest number of plants, or filling the most critical needs of particular producers and processors.

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These are priorities that regulators and stakeholders might best work together to clarify and exercise in advance of an incident. Data from this report on the distribution of dairy suppliers can be used to focus that effort.

ROUTES FOR TRAFFIC BETWEEN NEW YORK FARMS AND NEW ENGLAND DAIRY PLANTS

Another approach to sustaining the dairy connection between New York and New England in an animal-disease emergency would be to concentrate on elevating biosecurity at key crossing points on farm-to-market routes.

The topography of New York tends to channel east-west milk shipments onto a small number of roads, through passes in the Appalachian Mountains (the Adirondacks and Catskills), north of New York City, and around Lake Champlain.

New York Highways, 2013

The producer co-ops that schedule and pay for most of the tanker traffic in the northeast have just begun to establish real-time, geographic positioning capacity for the haulers that they hire. Identifying actual routes that are traveled would be easier to analyze as well as more reliable with such GPS data. Even without it, though, transit options are small enough to make some reasonable predictions from recent (September 2013) AMS data

Look, for example, at the result of running a month of shipments (from the New York counties of origin to the street addresses of the destination plants) through the directions function of Google Maps. (More detailed results are tabulated in "Predicted Routes for Milk Shipments to New England by State of Destination and New York County of Origin," and collated in "Share of New York Farm-to-Market Milk Routing by State Destination" in the Appendix.)

Of course, it is possible that tankers actually travelled different routes than here predicted. Drivers carry loads from several stops more often than from a single stop to a plant destination. They may start their route at a farm in one county and head for New England from another, and in choosing routes they may have to adjust for differing weight limits in states through which they pass. Nevertheless, the predicted patterns point to an impressively tight convergence on a small number of possibilities.

Predicted Routes from New York Dairy Farms to New England Processors by State Destination

Destination State	**Predicted Route from NY**	**Supply** (lbs in 9/2013)	**Share of State Supply from NY**	**Share of NE Supply from NY**
CT	I-84	3,865,365	20.6%	3.0%
CT	I-90 (via MA)	14,881,579	79.4%	11.7%
MA	I-84 (via CT)	625,678	0.9%	0.5%
MA	I-90	70,535,439	99.1%	55.4%
NH	US-2 via VT	255,103	100.0%	0.2%
VT	NY-22A to VT-30	943,239	2.5%	0.7%
VT	NY-7 to VT-279 or VT-9	582,758	1.6%	0.5%
VT	US-2	35,658,809	95.7%	28.0%
VT	US-4	64,465	0.2%	0.1%

In total, nearly all (99%) of the regional supply of unpasteurized milk from New York can be expected to enter New England by just three roads:

- I-90, crossing into Massachusetts
- US-2, crossing into Vermont
- I-84, crossing into Connecticut

Predicted New-York-to-New-England Crossing Routes for Dairy Tanker Traffic

Predicted Route to/from New York	**Milk Shipped to New England** (pounds in September, 2013)	**Share of Total NY-to-NE Shipments**
I-90	85,417,018	67%
US-2	35,913,912	28%
I-84	4,491,043	4%

Routing

The topography of the northeast channels east-west, farm-to-market traffic onto a small number of roads. About 99% of the tanker traffic between New York farms and New England plants can be expected to cross the boundary on just three roads: I-90, US-2, and I-84.

STRATEGIC IMPLICATIONS OF THE ROUTES FOR TRAFFIC BETWEEN NEW YORK FARMS AND NEW ENGLAND DAIRY PLANTS

Sustaining New York Supply to New England Processors by Cleaning En Route[8]

> A simpler solution might be to agree to implement special, elevated biosecurity measures as needed along the regular routes. Such a remedy might be particularly useful when shipments originate from a Free Premises in a Control Area on one side of the regional border and their destination is in a Free Area on the other side of the border or vice versa.
>
> States on either side of the border might require that shipments stop for cleaning and disinfection (C&D) near the border (e.g., hire the services of a designated, pre-certified commercial truck wash) and require the tanker to present evidence of proper C&D before being allowed to enter the premises at its destination. This procedure would help protect the disease-free status of the state that it is entering or leaving, while sustaining commerce. Such targeted risk remediation would also lighten the burden of data collection and management in advance of an outbreak and spare New York farmers from potential subjection to two sets of SMS standards (one for NESAASA and one for New York).

RECOMMENDATION

Recommended strategies for maintaining shipments in an animal-disease emergency include directing resources toward the specific counties and boundary-crossing roads

a) That are crucial to normal commerce, as exemplified in this document, and
b) That regulators and stakeholders in the seven states (six in New England plus New York) judge feasible as a focus in promoting continuity of dairy operations in an animal-disease emergency.

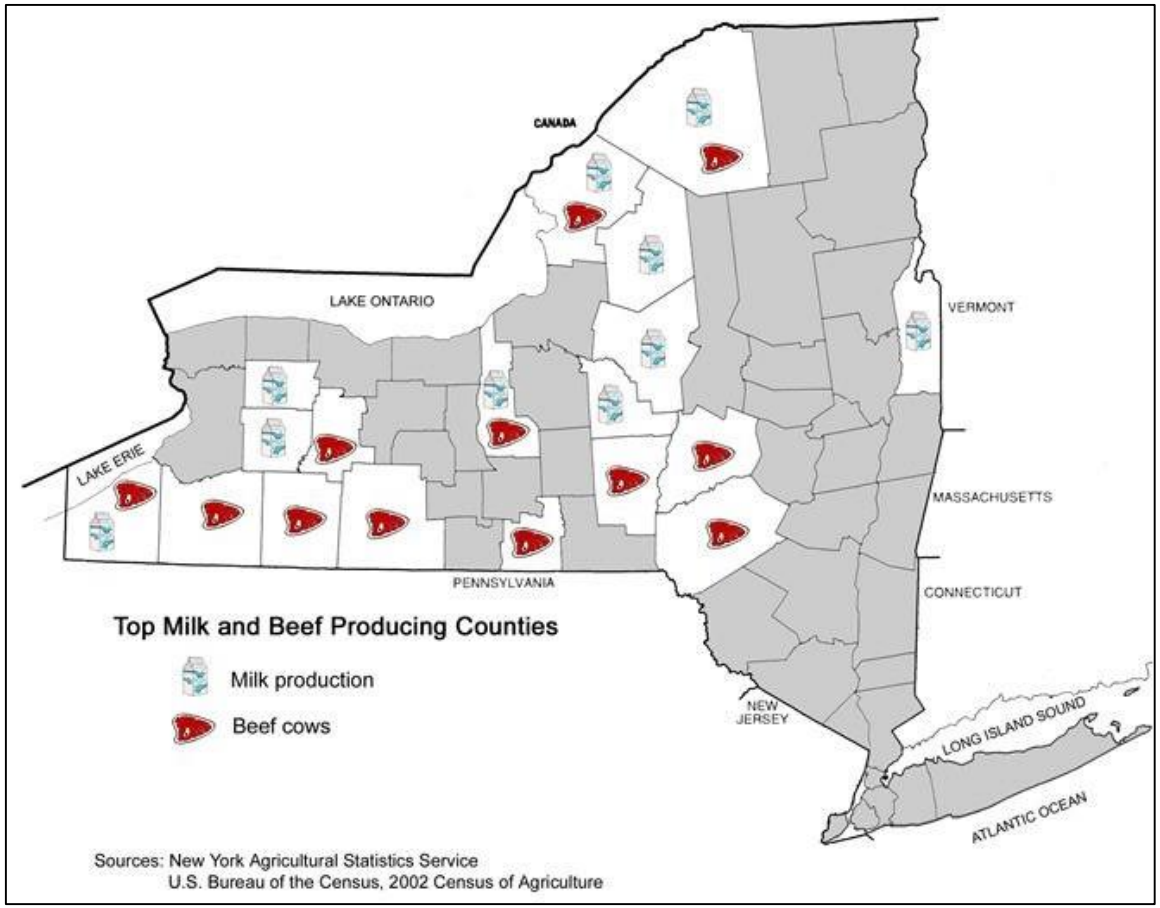
In particular, this analysis supports the possibility of using standardized permitting procedures and/or cleaning en route to promote continuity of operations.

Ideally, yet more remedies may occur to government- and private-sector stakeholders, but this analysis suggests that collaboration along these lines now could be helpful in an emergency. It is recommended for consideration by NESAASA, New York, and others with a stake in sustaining northeastern dairies.

[8] Richard P. Horwitz, New England as a Jurisdiction for Supporting Continuity of Dairy Operations: A Reassessment, (NESAASA, 2013), pp. 22-23.

APPENDIX[9]

Milk and Beef Production in New York by County, 2002[10]



[9] All numerical data originate in FMO-regulated commerce in the month of September, 2013 (the most recent, complete, and quality-assured) and were supplied by the Market Administrator of the Northeast Marketing Area (Federal Order 1) of the USDA Agricultural Marketing Service in December, 2013.

[10] Top Milk and Beef Producing Counties, compiled by The Farmers' Museum with data from the New York Agricultural Statistics Service and the U.S. Bureau of the Census, 2002 Census of Agriculture.

Unpasteurized Milk Shipped to FMO-Regulated Plants in New England by New York County of Origin, September 2013

NY County of Origin	Number of Destination Plants in New England	Total Supply (lbs/ month)	Share of New York Supply to New England	Average Supply per Plant (lbs/ month)	Share of Plant Supply	Average Share of Plant Supply
Albany	4	543,080	0.42%	135,770	0.02% - 5.25%	2.32%
Allegany	1	85,014	0.07%	85,014	0.28%	0.28%
Broome	3	901,542	0.71%	300,514	0.01% - 0.87%	0.43%
Cattaraugus	1	28,740	0.02%	28,740	0.10%	0.10%
Cayuga	3	1,263,190	0.99%	421,063	0.01% - 1.92%	0.91%
Chemung	1	11,046	0.01%	11,046	41.75%	41.75%
Chenango	4	1,405,572	1.10%	351,393	0.04% - 1.37%	0.53%
Clinton	10	21,873,052	17.11%	2,187,305	0.26% - 94.25%	14.02%
Columbia	3	4,781,940	3.74%	1,593,980	0.82% - 12.03%	5.22%
Cortland	3	169,939	0.13%	56,646	0.08% - 0.13%	0.10%
Delaware	3	606,554	0.47%	202,185	0.05% - 0.62%	0.31%
Dutchess	4	3,087,915	2.41%	771,979	0.08% - 52.04%	13.99%
Erie	1	6,269	0.00%	6,269	0.02%	0.02%
Essex	2	1,651,775	1.29%	825,888	0.11% - 3.50%	1.81%
Franklin	4	13,979,095	10.93%	3,494,774	0.18% - 15.96%	9.00%
Fulton	4	315,287	0.25%	78,822	0.01% - 2.14%	0.88%
Genesee	3	936,280	0.73%	312,093	0.07% - 2.53%	1.32%
Herkimer	10	3,970,670	3.11%	397,067	0.04% - 10.40%	1.94%
Jefferson	6	4,976,035	3.89%	829,339	0% - 7.33%	2.42%
Lewis	5	2,445,242	1.91%	489,048	0.01% - 8.24%	3.81%
Livingston	2	74,946	0.06%	37,473	0.49% - 5.75%	3.12%
Madison	8	1,297,368	1.01%	162,171	0.01% - 2.14%	0.62%
Monroe	1	869,699	0.68%	869,699	1.34%	1.34%
Montgomery	11	6,661,786	5.21%	605,617	0.09% - 42.59%	8.61%
Oneida	7	4,721,168	3.69%	674,453	0.93% - 5.52%	2.71%
Onondaga	5	3,624,158	2.83%	724,832	0.07% - 13.24%	4.20%
Ontario	2	81,769	0.06%	40,885	0.05% - 0.12%	0.09%

Orange	2	858,366	0.67%	429,183	0.96% - 7.80%	4.38%
Oswego	4	508,838	0.40%	127,210	0.01% - 1.58%	0.61%
Otsego	9	2,649,792	2.07%	294,421	0.01% - 5.63%	1.58%
Rensselaer	7	9,869,635	7.72%	1,409,948	0.01% - 37.40%	14.49%
Saratoga	4	6,651,156	5.20%	1,662,789	0.15% - 14.00%	4.46%
Schenectady	5	466,221	0.36%	93,244	0.02% - 2.34%	0.86%
Schoharie	6	3,074,248	2.40%	512,375	0.18% - 11.06%	4.32%
Schuyler	1	4,787	0.00%	4,787	0.01%	0.01%
Seneca	2	73,201	0.06%	36,601	0.07% - 1.38%	0.73%
St Lawrence	5	2,891,486	2.26%	578,297	0.04% - 3.61%	1.57%
Steuben	1	33,698	0.03%	33,698	2.36%	2.36%
Sullivan	1	787,157	0.62%	787,157	2.24%	2.24%
Tioga	3	319,016	0.25%	106,339	0.13% - 0.27%	0.18%
Tompkins	1	51,060	0.04%	51,060	0.15%	0.15%
Ulster	1	65,141	0.05%	65,141	0.10%	0.10%
Washington	7	18,298,357	14.31%	2,614,051	0.19% - 30.02%	8.56%
Wayne	2	134,162	0.10%	67,081	0.19% - 0.41%	0.30%
Wyoming	5	758,681	0.59%	151,736	0.35% - 1.23%	0.77%
Total		127,864,133				

New York Counties Ranked by the Amount of Unpasteurized Milk They Supply to FMO-Regulated Plants in New England, September 2013

NY County of Origin	**Total Supply** (lbs/month)	**Share of Total New York Supply to New England**	**Average Supply per Plant** (lbs/month)
Clinton	21,873,052	17.11%	2,187,305
Washington	18,298,357	14.31%	2,614,051
Franklin	13,979,095	10.93%	3,494,774
Rensselaer	9,869,635	7.72%	1,409,948
Montgomery	6,661,786	5.21%	605,617
Saratoga	6,651,156	5.20%	1,662,789
Jefferson	4,976,035	3.89%	829,339
Columbia	4,781,940	3.74%	1,593,980
Oneida	4,721,168	3.69%	674,453
Herkimer	3,970,670	3.11%	397,067
Onondaga	3,624,158	2.83%	724,832
Dutchess	3,087,915	2.41%	771,979
Schoharie	3,074,248	2.40%	512,375
St Lawrence	2,891,486	2.26%	578,297
Otsego	2,649,792	2.07%	294,421
Lewis	2,445,242	1.91%	489,048
Essex	1,651,775	1.29%	825,888
Chenango	1,405,572	1.10%	351,393
Madison	1,297,368	1.01%	162,171
Cayuga	1,263,190	0.99%	421,063
Genesee	936,280	0.73%	312,093
Broome	901,542	0.71%	300,514
Monroe	869,699	0.68%	869,699
Orange	858,366	0.67%	429,183
Sullivan	787,157	0.62%	787,157
Wyoming	758,681	0.59%	151,736
Delaware	606,554	0.47%	202,185
Albany	543,080	0.42%	135,770
Oswego	508,838	0.40%	127,210
Schenectady	466,221	0.36%	93,244
Tioga	319,016	0.25%	106,339
Fulton	315,287	0.25%	78,822
Cortland	169,939	0.13%	56,646
Wayne	134,162	0.10%	67,081
Allegany	85,014	0.07%	85,014
Ontario	81,769	0.06%	40,885
Livingston	74,946	0.06%	37,473
Seneca	73,201	0.06%	36,601
Ulster	65,141	0.05%	65,141
Tompkins	51,060	0.04%	51,060
Steuben	33,698	0.03%	33,698

Cattaraugus	28,740	0.02%	28,740
Chemung	11,046	0.01%	11,046
Erie	6,269	0.00%	6,269
Schuyler	4,787	0.00%	4,787
Total	127,864,133		

New York Counties Ranked by the Number of FMO-Regulated Plants They Supply in New England, September 2013

NY County of Origin	Number of Destination Plants in New England	Share of Supply per Plant
Montgomery	11	0.09% - 42.59%
Herkimer	10	0.04% - 10.40%
Clinton	10	0.26% - 94.25%
Otsego	9	0.01% - 5.63%
Madison	8	0.01% - 2.14%
Oneida	7	0.93% - 5.52%
Rensselaer	7	0.01% - 37.40%
Washington	7	0.19% - 30.02%
Schoharie	6	0.18% - 11.06%
Jefferson	6	0% - 7.33%
Schenectady	5	0.02% - 2.34%
Wyoming	5	0.35% - 1.23%
Lewis	5	0.01% - 8.24%
St Lawrence	5	0.04% - 3.61%
Onondaga	5	0.07% - 13.24%
Fulton	4	0.01% - 2.14%
Oswego	4	0.01% - 1.58%
Albany	4	0.02% - 5.25%
Chenango	4	0.04% - 1.37%
Dutchess	4	0.08% - 52.04%
Saratoga	4	0.15% - 14.00%
Franklin	4	0.18% - 15.96%
Cortland	3	0.08% - 0.13%
Tioga	3	0.13% - 0.27%
Delaware	3	0.05% - 0.62%
Broome	3	0.01% - 0.87%
Genesee	3	0.07% - 2.53%
Cayuga	3	0.01% - 1.92%
Columbia	3	0.82% - 12.03%
Seneca	2	0.07% - 1.38%
Livingston	2	0.49% - 5.75%
Ontario	2	0.05% - 0.12%
Wayne	2	0.19% - 0.41%
Orange	2	0.96% - 7.80%
Essex	2	0.11% - 3.50%

Schuyler	1	0.01%
Erie	1	0.02%
Chemung	1	41.75%
Cattaraugus	1	0.10%
Steuben	1	2.36%
Tompkins	1	0.15%
Ulster	1	0.10%
Allegany	1	0.28%
Sullivan	1	2.24%
Monroe	1	1.34%

New York Counties Ranked by Their Average Share of the Milk Supply to Each FMO-Regulated Destination in New England, September 2013

NY County of Origin	Average Share of Supply to Each Plant	Range of Share of Supply to Each Plant
Chemung	41.75%	41.75%
Rensselaer	14.49%	0.01% - 37.40%
Clinton	14.02%	0.26% - 94.25%
Dutchess	13.99%	0.08% - 52.04%
Franklin	9.00%	0.18% - 15.96%
Montgomery	8.61%	0.09% - 42.59%
Washington	8.56%	0.19% - 30.02%
Columbia	5.22%	0.82% - 12.03%
Saratoga	4.46%	0.15% - 14.00%
Orange	4.38%	0.96% - 7.80%
Schoharie	4.32%	0.18% - 11.06%
Onondaga	4.20%	0.07% - 13.24%
Lewis	3.81%	0.01% - 8.24%
Livingston	3.12%	0.49% - 5.75%
Oneida	2.71%	0.93% - 5.52%
Jefferson	2.42%	0% - 7.33%
Steuben	2.36%	2.36%
Albany	2.32%	0.02% - 5.25%
Sullivan	2.24%	2.24%
Herkimer	1.94%	0.04% - 10.40%
Essex	1.81%	0.11% - 3.50%
Otsego	1.58%	0.01% - 5.63%
St Lawrence	1.57%	0.04% - 3.61%
Monroe	1.34%	1.34%
Genesee	1.32%	0.07% - 2.53%
Cayuga	0.91%	0.01% - 1.92%
Fulton	0.88%	0.01% - 2.14%
Schenectady	0.86%	0.02% - 2.34%
Wyoming	0.77%	0.35% - 1.23%
Seneca	0.73%	0.07% - 1.38%

Madison	0.62%	0.01% - 2.14%
Oswego	0.61%	0.01% - 1.58%
Chenango	0.53%	0.04% - 1.37%
Broome	0.43%	0.01% - 0.87%
Delaware	0.31%	0.05% - 0.62%
Wayne	0.30%	0.19% - 0.41%
Allegany	0.28%	0.28%
Tioga	0.18%	0.13% - 0.27%
Tompkins	0.15%	0.15%
Cortland	0.10%	0.08% - 0.13%
Cattaraugus	0.10%	0.10%
Ulster	0.10%	0.10%
Ontario	0.09%	0.05% - 0.12%
Erie	0.02%	0.02%
Schuyler	0.01%	0.01%

New York Counties Ranked by the Average Amount of Milk They Supply to Each FMO-Regulated Destination in New England, September 2013

NY County of Origin	Average Amount of Supply To Each Plant (lbs/month)	Average Share of Plant Supply
Franklin	3,494,774	9.00%
Washington	2,614,051	8.56%
Clinton	2,187,305	14.02%
Saratoga	1,662,789	4.46%
Columbia	1,593,980	5.22%
Rensselaer	1,409,948	14.49%
Monroe	869,699	1.34%
Jefferson	829,339	2.42%
Essex	825,888	1.81%
Sullivan	787,157	2.24%
Dutchess	771,979	13.99%
Onondaga	724,832	4.20%
Oneida	674,453	2.71%
Montgomery	605,617	8.61%
St Lawrence	578,297	1.57%
Schoharie	512,375	4.32%
Lewis	489,048	3.81%
Orange	429,183	4.38%
Cayuga	421,063	0.91%
Herkimer	397,067	1.94%
Chenango	351,393	0.53%
Genesee	312,093	1.32%
Broome	300,514	0.43%
Otsego	294,421	1.58%

Delaware	202,185	0.31%
Madison	162,171	0.62%
Wyoming	151,736	0.77%
Albany	135,770	2.32%
Oswego	127,210	0.61%
Tioga	106,339	0.18%
Schenectady	93,244	0.86%
Allegany	85,014	0.28%
Fulton	78,822	0.88%
Wayne	67,081	0.30%
Ulster	65,141	0.10%
Cortland	56,646	0.10%
Tompkins	51,060	0.15%
Ontario	40,885	0.09%
Livingston	37,473	3.12%
Seneca	36,601	0.73%
Steuben	33,698	2.36%
Cattaraugus	28,740	0.10%
Chemung	11,046	41.75%
Erie	6,269	0.02%
Schuyler	4,787	0.01%

Concentration of Market Share among Dairy Farms in New England, 2007[11]

	Fewest number of farms accounting for . . .				
	Total	**10 percent of sales**	**25 percent of sales**	**50 percent of sales**	**75 percent of sales**
Number of farms	2,518	0	16	170	750
Share of farms	100%	0	0.64%	6.75%	29.79%
Value ($1,000)	806,872	0	93,979	368,603	653,469
Share of sales	100%	0	11.65%	45.68%	80.99%

[11] U.S. Department of Agriculture, National Agricultural Statistics Service (USDA/NASS), 2007 Census of Agriculture, Volume 1, Chapter 1: State Level Data, "Table 40. Farms by Concentration of Market Value of Agricultural Products Sold" (2007) and Robert Hood of Data Lab Section of USDA/NASS, special tabulation of "Farms by Concentration of Market Value" in "Table 40. Farms by Concentration of Market Value of Agricultural Products Sold: 2007" combined for the six New England States (March 17, 2011). Farms are sorted by their market value of agricultural products sold, from largest to smallest. Break points are then established where the smallest number accounts for 10%, 25%, 50% and 75% of the total value of agricultural products sold. "(D)" indicates a count "withheld to avoid disclosing data for individual farms."

Predicted Routes for Milk Shipments to New England by State of Destination and New York County of Origin, September 2013

Destination State	**NY County of Origin**	**Supply** (lbs/month)	**Predicted Route from NY to NE**
To **Connecticut** (with 5 plants receiving a total of 18,746,944 lbs/month from NY)			
CT	Albany	111,525	I-90 via MA
CT	Broome	4,572	I-84
CT	Cayuga	16,022	I-90 via MA
CT	Cayuga	1,914	I-84
CT	Chenango	12,931	I-84
CT	Columbia	4,233,827	I-90 via MA
CT	Cortland	26,663	I-84
CT	Delaware	18,012	I-84
CT	Dutchess	1,552,226	I-84
CT	Dutchess	1,128,929	I-84 or NY343 to CT-4
CT	Essex	39,402	I-90 via MA
CT	Fulton	249,703	I-90 via MA
CT	Herkimer	402,859	I-90 via MA
CT	Jefferson	33,883	I-90 via MA
CT	Lewis	165,026	I-90 via MA
CT	Madison	17,049	I-90 via MA
CT	Montgomery	3,100,344	I-90 via MA
CT	Oneida	110,608	I-90 via MA
CT	Onondaga	290,969	I-90 via MA
CT	Ontario	1,000	I-90 via MA
CT	Orange	232,688	I-84 or I-95
CT	Oswego	31,663	I-90 via MA
CT	Otsego	1,183,110	I-90 via MA
CT	Rensselaer	4,374,725	I-90 via MA
CT	Saratoga	18,074	I-90 via MA
CT	Schenectady	49,694	I-90 via MA
CT	Schoharie	85,462	I-90 via MA
CT	Schuyler	4,787	I-84
CT	Seneca	27,571	I-90 via MA
CT	Sullivan	787,157	I-84
CT	Tioga	44,426	I-84
CT	Tompkins	51,060	I-84
CT	Washington	318,725	I-90 via MA
CT	Wayne	8,204	I-90 via MA
CT	Wyoming	12,134	I-90 via MA

To **Massachusetts** (with 6 plants receiving a total of 71,161,117 lbs/month from NY)			
MA	Albany	431,555	I-90
MA	Allegany	85,014	I-90
MA	Broome	896,970	I-90
MA	Cattaraugus	28,740	I-90
MA	Cayuga	1,245,254	I-90
MA	Chenango	1,380,285	I-90
MA	Clinton	1,973,502	I-90 or NY-7 to VT-279 or VT-9
MA	Columbia	548,113	I-90
MA	Cortland	143,276	I-90
MA	Delaware	588,542	I-90
MA	Dutchess	2,752	I-90 or NY-343 to CT-4
MA	Dutchess	404,008	I-90
MA	Erie	6,269	I-90
MA	Franklin	115,032	I-90
MA	Fulton	65,584	I-90
MA	Genesee	900,091	I-90
MA	Herkimer	3,464,852	I-90
MA	Herkimer	10,951	I-90 or NY-2 to MA2
MA	Jefferson	4,867,143	I-90
MA	Lewis	2,184,180	I-90
MA	Madison	1,022,976	I-90
MA	Monroe	869,699	I-90
MA	Montgomery	3,485,321	I-90
MA	Oneida	4,392,719	I-90
MA	Onondaga	3,297,155	I-90
MA	Ontario	80,769	I-90
MA	Orange	625,678	I-84 via CT
MA	Oswego	475,474	I-90
MA	Otsego	1,382,405	I-90
MA	Rensselaer	5,494,910	I-90
MA	Saratoga	6,633,082	I-90
MA	Schenectady	416,527	I-90
MA	Schoharie	2,988,786	I-90
MA	Seneca	45,630	I-90
MA	St Lawrence	2,375,533	I-90
MA	Tioga	274,590	I-90 or I-84 via CT
MA	Ulster	65,141	I-90
MA	Washington	17,036,393	I-90
MA	Wayne	125,958	I-90
MA	Wyoming	730,258	I-90

To **New Hampshire** (with 1 plant receiving 255,103 lbs/month from NY)			
NH	Clinton	255,103	US-2 via VT
To **Vermont** (with 4 plants receiving a total of 37,249,271 lbs/month from NY)			
VT	Chenango	12,356	NY-7 to VT-279 or VT-9
VT	Clinton	19,618,271	US-2
VT	Essex	1,612,373	US-2
VT	Franklin	13,864,063	US-2
VT	Herkimer	51,059	NY-7 to VT-279 or VT-9
VT	Herkimer	25,620	US-2 or US-4
VT	Jefferson	717	US-2
VT	Livingston	67,980	US-2
VT	Madison	248,190	NY-7 to VT-279 or VT-9
VT	Montgomery	64,465	US-4
VT	Montgomery	10,936	NY-7 to VT-279 or VT-9
VT	Oneida	214,944	NY-7 to VT-279 or VT-9
VT	Otsego	45,273	NY-7 to VT-279 or VT-9
VT	St Lawrence	469,785	US-2
VT	Washington	943,239	NY-22A to VT-30

Share of New York Farm-to-Market Milk Routing by State Destination, September 2013

Destination State	**Predicted Route from NY**	**Supply** (lbs/month)	**Share of State Total**	**Share of Regional Total**
CT	I-84	2,503,748	13.36%	1.97%
CT	I-84 or I-95	232,688	1.24%	0.18%
CT	I-84 or NY343 to CT-4	1,128,929	6.02%	0.89%
CT	I-90 via MA	14,881,579	79.38%	11.68%
MA	I-84 via CT	625,678	0.88%	0.49%
MA	I-90	68,273,644	95.94%	53.58%
MA	I-90 or I-84 via CT	274,590	0.39%	0.22%
MA	I-90 or NY-2 to MA2	10,951	0.02%	0.01%
MA	I-90 or NY-343 to CT-4	2,752	0.00%	0.00%
MA	I-90 or NY-7 to VT-279 or VT-9	1,973,502	2.77%	1.55%
NH	US-2 via VT	255,103	100.00%	0.20%
VT	NY-22A to VT-30	943,239	2.53%	0.74%
VT	NY-7 to VT-279 or VT-9	582,758	1.56%	0.46%
VT	US-2	35,633,189	95.66%	27.97%
VT	US-2 or US-4	25,620	0.07%	0.02%
VT	US-4	64,465	0.17%	0.05%