Wayne County
Dairy Processing Feasibility Study

Queso Fresco: Photo from GourmetSleuth.com

Prepared for:

Wayne County Board of Commissioners
Wayne County Dairy Feasibility Group

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Wayne County Dairy Processing Feasibility Study

Table of Contents

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Wayne County Dairy Processing Study

Executive Summary

Shepstone Management Company, Inc. has been contracted to assess the feasibility of establishing additional dairy processing capacity in Wayne and, based on this study, to develop a business plan for what might be determined to be feasible. The mission is to "Lay the groundwork for developing additional dairy processing capacity that will serve to support the retention and possible expansion of the Wayne County dairy industry as a fundamental aspect of the county's economy and rural character."

The *Wayne County Agricultural Development Plan*, finalized late last year, included interviews and focus group discussions with key dairy producers and concluded the following:

> *Despite the fluid demand created by these industries and positive entrepreneurial culture, dairy farmers are concerned that the core processing industries need to be enhanced to fortify and strengthen the production cluster and improve dairy prognosis. Without active entrepreneurism in this area, there is a strong sense that a large number of producers will cease operations.*

This general level of interest is also supported by the fact two dairy producers, Calkins Creamery in Damascus Township and Creamworks Creamery in Clinton Township have effectively added their own dairy processing capacity. The establishment of these on-farm operations replicates a pattern what happened with Finger Lakes grape producers in the 1970's, for example.

Individual dairy producers are logical suppliers if a dairy processing facility is in a position to take the full volume produced. Absent that ability, it is questionable whether the producer would find an outlet for the remaining milk.

Therefore, the facility will likely need to secure its milk supply from another handler such as DFA, which is constantly seeking new markets for its milk. The challenge will be in transitioning to direct purchase from producers, so as pass along a price premium. Obtaining the necessary milk supply will require an incentive, but, as indicated above, an analysis of pricing factors suggests a $2.00 premium per hundredweight should be both feasible and adequate for that purpose. There are at least 885 dairy farms, 62,459 milk cows and an estimated 14.8 million hundredweight of milk available, much more than needed by a Wayne County dairy processing facility.

The *Pennsylvania Dairy Study* prepared in 2017-2018 identified dairy processing opportunities as follows:

> *"Substantial incentives appear to exist for additional processing capacity in Pennsylvania —especially for other" cheese (non-American types, including Italian and specialty cheese) plants—based on their potential to reduce overall supply chain costs given 2016 milk production and dairy product demands."*

Given that hauling costs are likely to be most impactful with respect to bulk quantities of raw product, a processing plant located between New York City and large milk producing areas could attract dairy producers, while positioning the processor to also get the finished product to market more economically. Wayne County is such a location.

Estimated average dairy spending per household and cheese spending by county throughout the Northeast have been developed using data from ESRI (formerly Environmental Systems

Research Institute). The data shows the primary market for products that might be produced by a Wayne County dairy processor consists of New York, Bronx, Kings, Nassau, Queens, Suffolk and Westchester Counties in New York, Fairfield County in Connecticut and Bergen County in New Jersey. A secondary market is represented by much of the remainder of Northern New Jersey plus Orange and Rockland Counties in New York. A tertiary market includes several adjoining counties in all four states.

The total market for dairy products within the 35 counties involved is over $6 billion with more than half coming from the nine counties that constitute the Primary Market Area (PMA). The combined total market is expected to grow by $915 million over the next five year, with 60% coming from the PMA and 31% or $170 million of that growth being accounted for by cheese alone. The total cheese market is $1.9 billion and cheese spending per household is more than twice the national average. Secondary Market Area (SMA) spending on cheese, in fact, is 2.26 times the national average.

Specialty cheese production offers a distinct niche for any dairy processor within close proximity to the New York metro market. New York City attracts large numbers of Hispanic immigrants and is also home to equally large numbers of higher income households apt to find ethnic and other specialty cheeses appealing. The data suggests the best speciality cheese opportunities for a dairy processor to exploit are among Italian cheeses (e.g., Parmigiano Reggiano), Feta cheeses and Hispanic cheeses. Hispanic cheeses, in fact, have been showing steady growth for some time.

Popular Hispanic cheeses include Queso Fresco (means “fresh cheese”), Queso Quesadilla, Cojita and Oaxaco. Queso Fresco is, by far, the most popular, accounting for a 62% market share in multi-outlet retail and convenience stores, according to Information Resources, Inc. (IRi), a market research firm. Queso Quesadilla represents 7% of the Hispanic cheese market. Significantly, the Hispanic percent of total buying power by state was 11% for New Jersey in 2016 and 10% in New York State.

Doble crema cheese from Chiapas, Mexico (Photo: Alejandro Linares Garcia)

None of this is to suggest there could not also be opportunities within other dairy niches (e.g. specially branded fluid milk, yogurts, butters, etc.) but specialty cheeses clearly offers the best approach for reaching into the New York City metro area.

Product pricing will depend on the specific dairy products being marketed, of course, but a reasonable proxy for purposes of assessing pricing potential is offered by the spending index data for various categories of product and it indicates that, within the Primary Market Area, cheese enjoys the highest spending index among dairy products with a 71% premium above the national average.

Getting Wayne County dairy products to the Primary Market Area, of course, involves additional transportation and related costs that offset a portion of these premiums. Also, some items such as popular fresh Hispanic cheeses are difficult to produce, although fresh cheeses such as Queso Fresco can be brought to market and produce cash much more quickly.

A Wayne County dairy processing facility would benefit competitively by its proximity to the New York City metro area which is a premier specialty cheese market. There will, nonetheless, be challenges in identifying distributors and individual outlets interested in new product. Moreover, many distributors, particularly with respect to basic Hispanic cheeses, for instance, are more focused on lower cost commodity type cheeses to complement other products geared to the Hispanic market. Therefore, developing specialty products within this specialty category will be necessary.

The first diversification opportunity may be with variations on specialty cheeses; to introduce cheeses made with goat milk, for example, or to expand into semi-soft Hispanic cheeses. There are any number of other possible Hispanic cheeses that could be added to the production line in the future, although variations on Queso Fresco and Mozzarella would be the best place to start, focusing on soft cheeses.

Statco-DSI, a designer and supplier of dairy and other food processing systems, was tasked with developing a concept for a soft-cheese manufacturing facility capable of processing the milk from a minimum of eight 75-cow dairies (roughly 40,000 pounds per day), although such a facility would undoubtedly start at a much lower volume and grow with market development. Hispanic soft cheese (especially Queso Blanco and Queso Fresco). The system would be designed to pasteurize 8-10 gallons per minute initially into six 200 gallon cheese kettles.

The Statco-DSI estimate does not include costs associated with freight, taxes (if any), bonds, an air compressor, chemical pumps, utility piping, a 25 hp boiler, building improvements (including 3,000 sf or so of cold storage) or site improvements. Land, if the site were to be located on the former county farm property, would be free. It is assumed the building would be roughly 12,000 square in size and site improvements would include grading, stormwater improvements, an on-lot sewage system and on-site water well.

Statco-DSI indicates the cost of equipment detailed is $795,000. Using *BuildingJournal.com* to estimate building and site costs for a 12,000 square foot building yields a total cost of $1,265,000. There are also some special additional costs related to cold storage, the boiler and other items particular to the processing operation. Those are broadly estimated at $400,000 to $450,000 (including $100 per square foot extra for cold storage areas), bringing the total cost for the entire facility to roughly $2.5 million, say $3,000,000 for conservative analysis purposes. Some of this cost is, though, potentially coverable through grants.

It is proposed this dairy processing business be a public/private partnership. A very suitable site exists at the former Wayne County farm. It could be subdivided for leasing purposes to create a 5-10 acre site for the facility, although alternative private sites should also be considered. The county could potentially develop a facility and equip it using assistance from USDA and/or other funding sources (e.g., the Appalachian Regional Commission) and then lease the facility to a private operator solicited by requests for proposals. A lease agreement could establish minimum requirements for investment, milk premiums and the like.

This structure would minimize risk and maximize the ability to attract a capable experienced operator as well as a milk supply due to the presumed reputation of the operator. It would also serve to avoid the necessity of forming a cooperative, although that could be an option for the ownership of the buildings and equipment, which could then be retained in the event of operator failure for re-lease to another party. The first choice, though, would be to avoid the difficulty of forming another organization that dairy farmers would have to be aggressively solicited to form. Many local dairy farmers are not keen on such organizations because of the implied risks and commitments involved.

A $21,250 grant has been secured from the PA Dairy Investment Program to develop a regional dairy branding and pairing program. This regional branding and marketing program will be designed to retain and grow Wayne County's dairy industry. Pairing dairy products with others made or grown locally is a critical element.

A 10-year profit and loss statement, combined with a cash flow analysis has been developed to evaluating financial feasibility of a Wayne County dairy processing operation such as outlined above. The analysis shows profitability in year four and positive net cash flow in year three.

The 10-year forecast shows a Wayne County cheese plant is financially feasible. While there is negative cash flow during the first two years, the proposed financing includes $200,000 of working capital to cover a cumulative negative cash flow that amounts to an estimated $125,000. It's also important to understand grants could offset some equipment and other costs. While there are certain risks, they are capable of being mitigated and a Wayne County dairy processing along the lines evaluated is feasible.

Wayne County Dairy Processing Study

1.0 Mission, Goals, Objectives and Study Parameters

Shepstone Management Company, Inc. has been contracted to assess the feasibility of establishing additional dairy processing capacity in Wayne and, based on this study, to develop a business plan for what might be determined to be feasible. Based upon discussions with the study workgroup and key industry players, the following mission statement, goals and objectives and study parameters have been established to guide the study:

1.1 Mission

Lay the groundwork for developing additional dairy processing capacity that will serve to support the retention and possible expansion of the Wayne County dairy industry as a fundamental aspect of the county's economy and rural character.

1.2 Goals and Objectives:

A. Grow milk demand within Wayne County.

1. Determine what is feasible.
2. Develop a business plan that works.
3. Solicit the producers, processors and financing to implement the plan.

B. Enhance milk pricing and farm income for Wayne County farmers.

1. Steer planning toward higher-end products.
2. Develop strategy for improving marketing capacity.

C. Support agri-tourism and retention of rural character as economic assets.

1. Identify how to link dairy processing with broader tourism marketing.
2. Demonstrate approaches to blending dairy with tourism.

1.3 Producer Interest

Assessing the current level of producer interest in using additional dairy processing capacity is difficult without first knowing the scope of what might be feasible. Producer interest, though, is a key factor in feasibility, creating a chicken and egg situation. Notwithstanding this dilemma, it is possible to generically gauge interest among dairy producers from previous and recent discussions with several dairy farmers and suppliers.

The *Wayne County Agricultural Development Plan*, finalized late last year, included interviews and focus group discussions with key dairy producers and concluded the following:

> *Despite the fluid demand created by these industries and positive entrepreneurial culture, dairy farmers are concerned that the core processing industries need to be enhanced to fortify and strengthen the production cluster and improve dairy prognosis.*

Wayne County Dairy Processing Study

> *Without active entrepreneurism in this area, there is a strong sense that a large number of producers will cease operations.*

This general level of interest is also supported by the fact two dairy producers, Calkins Creamery in Damascus Township and Creamworks Creamery in Clinton Township have effectively added their own dairy processing capacity. The establishment of these on-farm operations replicates a pattern what happened with Finger Lakes grape producers in the 1970's, for example.

Several of these growers established farm wineries out of necessity to survive during a period of low grape prices and thereby birthed a new agricultural sector. They had a strong economic incentive to change the way they marketed their product.

The similar initiatives taken by these two Wayne County dairy farms suggest there is very likely additional demand from other producers who would welcome new milk marketing opportunities to avoid going out of business.

The *Study to Support Growth and Competitiveness of the Pennsylvania Dairy Industry* also indicates there are strong economic incentives for Wayne County dairy producers to patronize new dairy processing capcity if it were to be created. The study found:

> *Substantial incentives appear to exist for additional processing capacity in Pennsylvania–especially for "other" cheese (non-American types, including Italian and specialty cheese) plants—based on their potential to reduce overall supply chain costs…*

The study proposed additional plants in Reading and State College and projected "Investment in these two plants could enhance the marginal value of milk for Pennsylvania dairy producers by about $28.8 million per year." New Wayne County dairy processing capacity would, presumably, offer similar types of producer benefits (including reduced hauler costs) that would provide the necessary incentives for dairy producers to utilize it.

The feasibility challenge is to define the scope of a project where the added value in reduced supply chain costs will exceed the risks of switching processor options. It is a simple matter of economic risk versus reward rather than persuasion.

1.4 Potential Roles of Existing Cooperatives, Distributors and Processors

A. Existing cooperatives

There are currently at least three dairy cooperatives active in Wayne County. Dairy Farmers of America (DFA) processes and markets most of the milk produced locally. Land O' Lakes also has at least one member in the county, although the milk is co-mingled with DFA milk through a contractual relationship between the two cooperatives. Finally, Organic Valley has three farm members in the county; in Starrucca, Tyler Hill and Waymart.

These cooperatives could, obviously, be suppliers of fluid milk for processing into other dairy products. They could also be outlets for excess milk that cannot be used by on-farm processors, as is already the case in at least one instance.

B. Existing processors

DFA has processing facilities in Reading and Middlebury Center, Pennsylvania, as well as Ridgfield and Perth Amboy, New Jersey, to which Wayne County milk is routinely shipped. The Middlebury Center facility produces dried milk and reflects major investments. There are also several other processors within a reasonable shipping distance of Wayne County who could be utilized to take excess fluid milk and/or produce private label dairy items to complement a new processor's line of products.

These include the following:

1. Readington Farms (which is already receiving Wayne County fluid milk going to Whitehouse Station, NJ)

2. Saputo Dairy Foods (extended shelf life dairy products - Delhi, NY)

3. Cumberland Dairy (extended shelf life and other products - Bridgeton, NJ)

4. Leprino Foods (cheese - Sayre, PA)

5. Penn Dairy (organic, Halal and Kosher cheese - Winfield, PA)

6. Tuscan/Lehigh Dairies (fluid milk - Schuylkill Haven, PA)

7. Guers Dairy (fluid milk - Tamaqua, PA)

8. Lieby's Dairy (premium ice cream - Tamaqua, PA)

Cumberland Dairy has a DFA affiliation and Tuscan/Lehigh is connected with Dean Foods (now in Chapter 11 bankruptcy).

There are also a number of smaller on-farm or speciality processors involved in selling cheeses and other dairy products and who are licensed to purchase milk from other farms, although they may not be equipped to actually receive bulk fluid milk.

These include Creamworks in Wayne County, plus Montdale Farm Dairy and Manning Farm Dairy in Lackawanna County. These smaller dairies could potentially use a new dairy processing facility to expand their own product lines by having such a facility private label products for them.

C. Other entities

The Pennsylvania Milk Marketing Board (PMMB) also licenses other milk dealers that are, in fact, simply distributors of dairy products. Best Value Kosher Foods in Newark is an example, along with Blue Ribbon Farm Dairy in West Pittston, Zimmerman Dairy in Lehighton and Pocono Mountain Dairies in Blakeslee.

There are also nearby facilities in Hurleyville, New York (Formaggio Italian Specialty Cheeses) and Bethel Creamery in the Town of Bethel, which is an organic dairy processor marketing various Kosher products. They are not licensed by the PMMB. There is also Greek Mountain Dairy in Goshen, New York, which is, reportedly, a very underutilized former Sorrento Cheese facility located along Route 17.

These operations could be buyers and/or distributors of dairy products from a Wayne County dairy processing facility. Other facilities much further removed could also play a similar role, although alliances with nearby operations would likely present more branding and marketing opportunities.

2.0 Market Opportunity Analysis

2.1 Potential Product Lines

The following analysis addresses various potential product lines that could be generated by a Wayne County dairy processing facility:

A. Product lines considered.

The *Pennsylvania Dairy Study* prepared in 2017-2018 identified opportunities as follows:

"Substantial incentives appear to exist for additional processing capacity in Pennsylvania —especially for other" cheese (non-American types, including Italian and specialty cheese) plants—based on their potential to reduce overall supply chain costs given 2016 milk production and dairy product demands."

There are two separate aspects to this statement.

There is, first, the demand for speciality products, which is nationwide to some extent. It tends, though, to depend on proximity to urban areas where those special markets are more prevalent and concentrated.

Wayne County is fortuitously located close to the New York City metro area and environs and, therefore, has the potential to produce those sorts of products and get them to market at reasonable cost.

Then, there is the fact the key to marketing non-specialty products is lowering costs so as to better compete. There are are at least two manners of lowering costs.

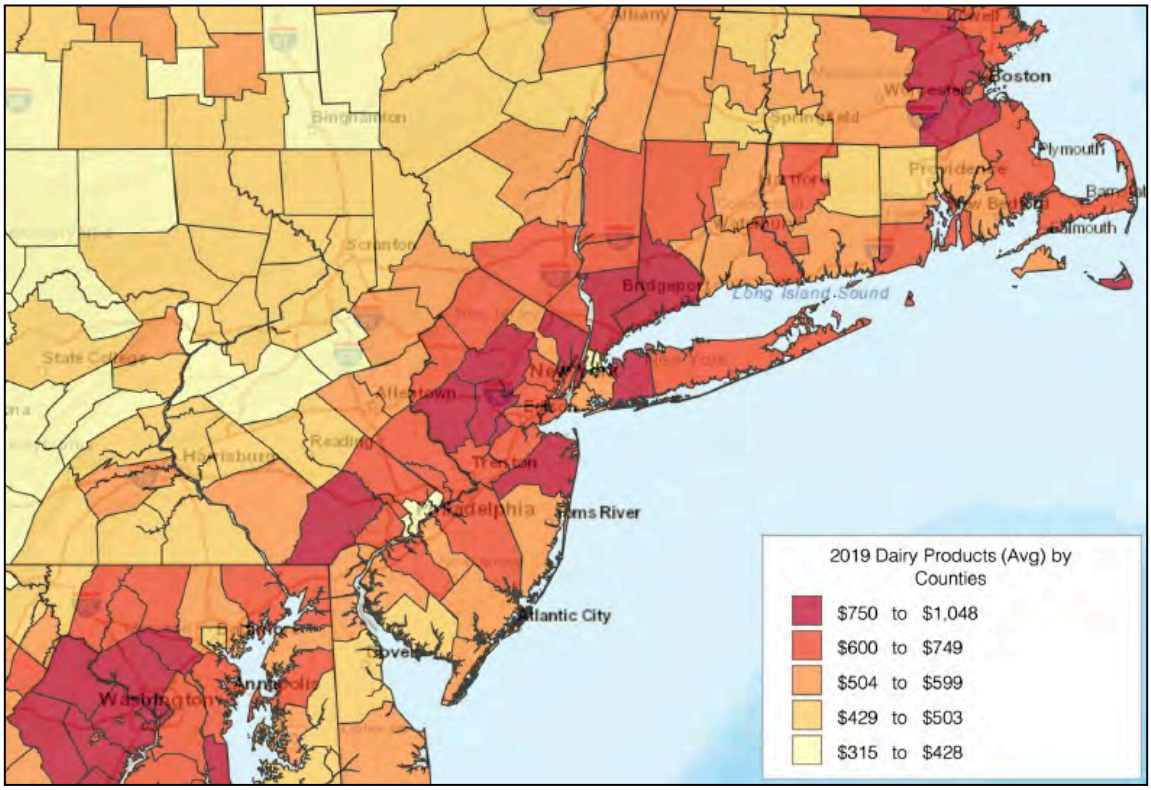
One is to increase size so as to realize greater economies of scale across the board and the other is to reduce specific costs such as those for milk hauling.

The first is not generally practicable in a small rural county such as Wayne County, where climate and land availability are limiting factors. Proximity to New York City, though, can sometimes offer a comparative advantage in lowering milk hauling and other supply chain costs, which can be a significant financial factor when it comes to marketing fluid milk and other basic products, as well as specialty items.

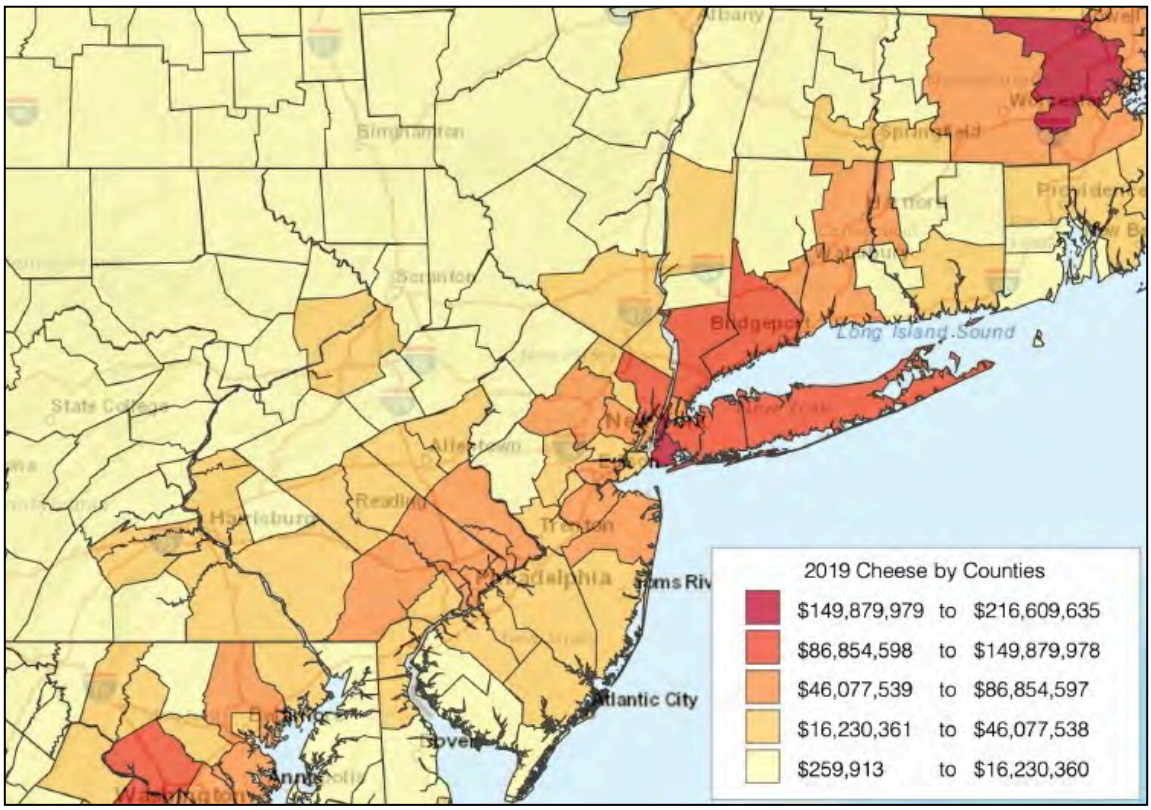
Given that hauling costs are likely to be most impactful with respect to bulk quantities of raw product, a processing plant located between New York City and large milk producing areas could attract dairy producers, while positioning the processor to also get the finished product to market more economically. Wayne County is such a location (see Section 3.0 for further discussion).

Two maps documenting estimated average dairy spending per household and cheese spending by county throughout the Northeast have been developed using data from ESRI (formerly Environmental Systems Research Institute).

The maps show where the markets for dairy products and cheese, the New York City metro area as well Boston, Philadelphia and the nation's capital being among the best.



2019 Dairy Products Consumed Per Household by County - ESRI

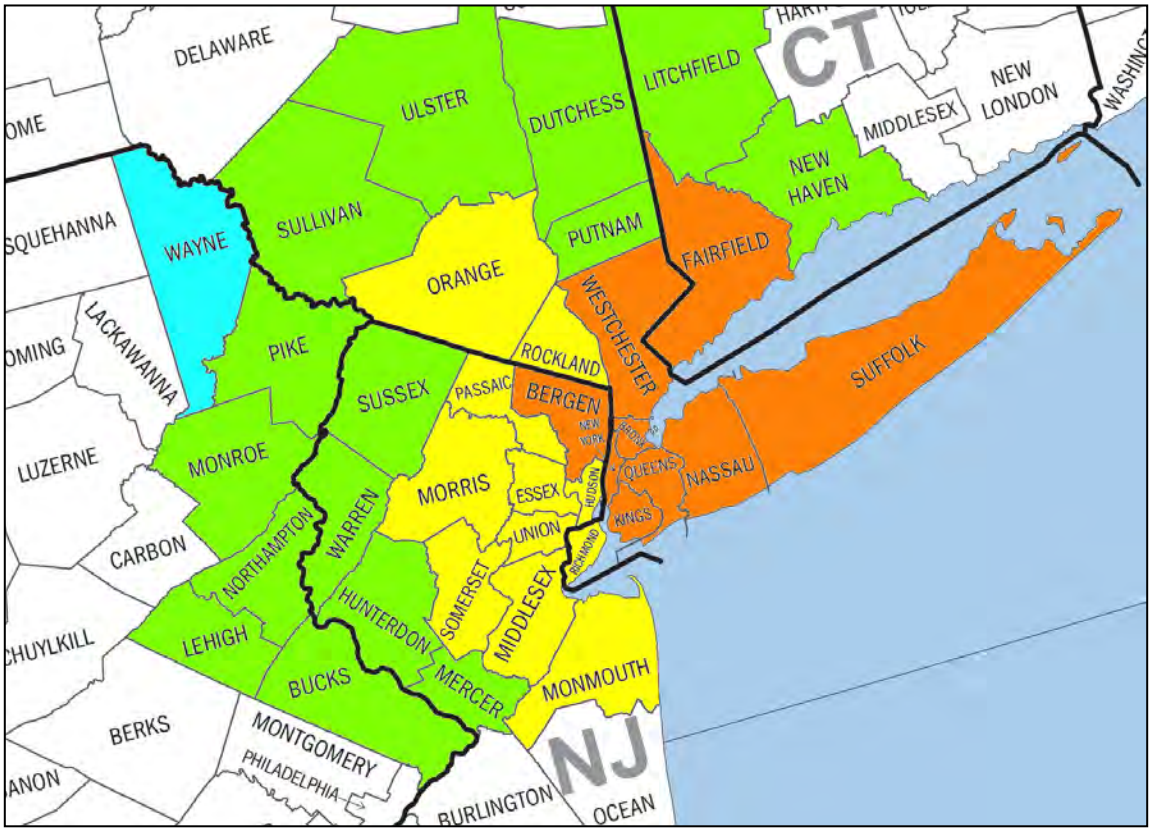


2019 Cheese Products Sold by County - ESRI

Wayne County Dairy Processing Study

The data shows the primary market for products that might be produced by a Wayne County dairy processor consists of New York, Bronx, Kings, Nassau, Queens, Suffolk and Westchester Counties in New York, Fairfield County in Connecticut and Bergen County in New Jersey. A secondary market is represented by much of the remainder of Northern New Jersey plus Orange and Rockland Counties in New York. A tertiary market includes several adjoining counties in all four states.

The following map and table depict these market areas and provide the estimated sales volumes for various dairy products in each:



ESRI Estimated 2019 Dairy Product Spending				
Category	**Primary Market**	**Secondary Market**	**Tertiary Market**	**Total Market**
Butter	$242,975,059	$105,546,303	$66,198,985	**$414,720,347**
Cheese	$1,114,035,182	$491,008,983	$303,619,970	**$1,908,664,135**
Cream	$209,653,184	$93,480,842	$59,474,263	**$362,608,289**
Fresh Milk	$983,992,021	$413,758,929	$248,161,130	**$1,645,912,080**
Ice Cream	$485,761,332	$213,428,267	$133,405,120	**$832,594,719**
Other Dairy	$519,232,882	$221,908,549	$132,944,024	**$874,085,455**
Total Dairy	**$3,555,649,660**	**$1,539,131,873**	**$943,803,492**	$6,038,585,025

B. Demand characteristics.

Clearly, cheese and fluid milk are the most important commodities when it comes to the overall market, with the former counting for almost a third of the sales in dollar volume.

The following table provides further insights:

Dairy Processing Market Characteristics, 2019-2024

Category	Primary	Secondary	Tertiary	Combined
All Dairy Products - 2019	$3,555,649,660	$1,539,491,873	$943,803,494	$6,038,945,027
All Dairy Products - 2024	$4,101,053,812	$1,781,744,374	$1,071,380,628	$6,954,178,814
All Dairy Products 2019-2024 Increase	$545,404,152	$242,252,501	$127,577,134	$915,233,787
All Dairy Products Average - 2019	$697	$708	$619	N/A
All Dairy Products Spending Index - 2019	130	132	116	N/A
Butter - 2019	$242,975,059	$105,546,303	$66,198,985	$414,720,347
Butter - 2024	$280,119,528	$122,108,245	$75,137,933	$477,365,706
Butter 2019-2024 Increase	$37,144,469	$16,561,942	$8,938,948	$62,645,359
Butter Average - 2019	$48	$49	$43	N/A
Butter Spending Index - 2019	128	130	117	N/A
Cream - 2019	$209,653,184	$93,840,842	$59,474,263	$362,968,289
Cream - 2024	$241,705,698	$108,570,031	$67,507,599	$417,783,328
Cream 2019-2024 Increase	$32,052,514	$14,729,189	$8,033,336	$54,815,039
Cream Average - 2019	$41	$43	$39	N/A
Cream Spending Index - 2019	124	130	117	N/A
Cheese - 2019	$1,114,035,182	$491,008,983	$303,619,970	$1,908,664,135
Cheese - 2024	$1,284,677,506	$568,205,957	$344,668,296	$2,197,551,759
Cheese 2019-2024 Increase	$170,642,324	$77,196,974	$41,048,326	$288,887,624
Cheese Average - 2019	$127	$131	$116	N/A
Cheese Spending Index - 2019	218	226	199	N/A
Fresh Milk (All Types) - 2019	$983,992,021	$413,758,929	$248,161,130	$1,645,912,080
Fresh Milk (All Types) - 2024	$1,135,481,948	$479,051,010	$281,727,710	$1,896,260,668
Fresh Milk 2019-2024 Increase	$151,489,927	$65,292,081	$33,566,580	$250,348,588
Fresh Milk (All Types) Average - 2019	$193	$190	$163	N/A
Fresh Milk (All Types) Spending Index - 2019	134	132	113	N/A
Ice Cream & Related Products - 2019	$485,761,332	$213,428,267	$133,405,120	$832,594,719
Ice Cream & Related Products - 2024	$560,158,190	$246,979,505	$151,431,247	$958,568,942
Ice Cream & Related Products 2019-2024 Increase	$74,396,858	$33,551,238	$18,026,127	$125,974,223
Ice Cream & Related Products Average - 2019	$95	$98	$88	N/A
Ice Cream & Related Products Spending Index - 2019	126	130	116	N/A
Other Dairy Products - 2019	$519,232,882	$221,908,549	$132,944,024	$874,085,455
Other Dairy Products - 2024	$598,910,941	$256,829,627	$150,907,843	$1,006,648,411
Other Dairy Products 2019-2024 Increase	$79,678,059	$34,921,078	$17,963,819	$132,562,956
Other Dairy Products Average - 2019	$102	$102	$87	N/A
Other Dairy Products Spending Index - 2019	140	140	120	N/A

The total market for dairy products within the 35 counties involved is over $6 billion with more than half coming from the nine counties that constitute the Primary Market Area (PMA).

The combined total market is expected to grow by $915 million over the next five year, with 60% coming from the PMA and 31% or $170 million of that growth being accounted for by cheese alone. The total cheese market is $1.9 billion and cheese spending per household is more than twice the national average. Secondary Market Area (SMA) spending on cheese, in fact, is 2.26 times the national average.

The significance of this spending index is that it is far higher than the indexes for other dairy products, those ranging from 1.24 to 1.40 times the national average. The latter merely reflect the higher cost of living in the metro area, whereas the cheese figure reveals an extraordinary level of demand.

Research from the Agricultural Marketing Resource Center indicates the following regarding cheese production nationwide:

> *Total U.S. cheese production in [2018] was [13.0] billion pounds, up [3.0] percent from [2017]…*
>
> *U.S. per person cheese consumption was [38.15] pounds in [2018], a slight increase from the previous year [a 2.4% increase year over year]. Cheddar cheese and mozzarella cheese remain the most popular varieties of cheese (USDA)…*
>
> *[A] contributing factor to cheese popularity in the United States has been mainstream acceptance of ethnic cooking, such as Italian and Mexican, which use substantially more cheese. The popularity of Latino foods and Hispanic cheeses is at an all-time high…*
>
> *Increased cheese consumption can be attributed, in part, to growth in specialty, artisanal and farmstead cheeses.*
>
> *Specialty cheese is a value-added product of high quality and limited quantity. Some of the unique qualities of this cheese include having an exotic origin, distinctive processing, extraordinary packaging or unusual use and channel of sale, with particular attention paid to natural flavor and texture profiles. Specialty cheeses may be made from all types of milk and may include flavorings, such as herbs, spices, fruits and nuts. To be regarded as a specialty cheese, annual production cannot be more than 40 million pounds.*
>
> *Reasons why the specialty cheese market is growing include: more U.S. citizens traveling abroad and trying unique varieties of cheese; U.S. restaurants offering a cheese course (a time-honored European tradition); greater access to a wide variety of cheese; an increased interest in ethnic food; the overall trend of U.S. consumers desiring more variety and robust flavor in food; and education from retailers, foodservice and cheese organizations on the use of unique cheese. Successful merchandising of specialty cheese is a key factor in the growth of the retail market for specialty cheese.*
>
> *The word "artisan" or "artisanal" implies that a cheese is produced primarily by hand, in small batches, with particular attention paid to the tradition of the cheesemaker's art, thus using as little mechanization as possible in the production of the cheese. These cheeses may be made from all types of milk and may include various flavorings.*

Farmstead cheese is another leading force behind the growth in traditional European-style cheese sales. Farmstead cheese is defined as an artisan cheese that is produced on a farm using only milk from the farm's herd or flock. The milk cannot be obtained from any outside source. Farmstead cheeses may be made from all types of milk and may include various flavorings.

Specialty cheese production offers a distinct niche for any dairy processor within close proximity to the New York metro market. New York City attracts large numbers of Hispanic immigrants and is also home to equally large numbers of higher income households apt to find ethnic and other specialty cheeses appealing.

While very little detailed data is available on specialty cheese sales within the market in this instance, there is such data for Wisconsin cheese sales, the Badger State being a prime producer of such cheeses. The following table summarizes the latest statistics for the state:

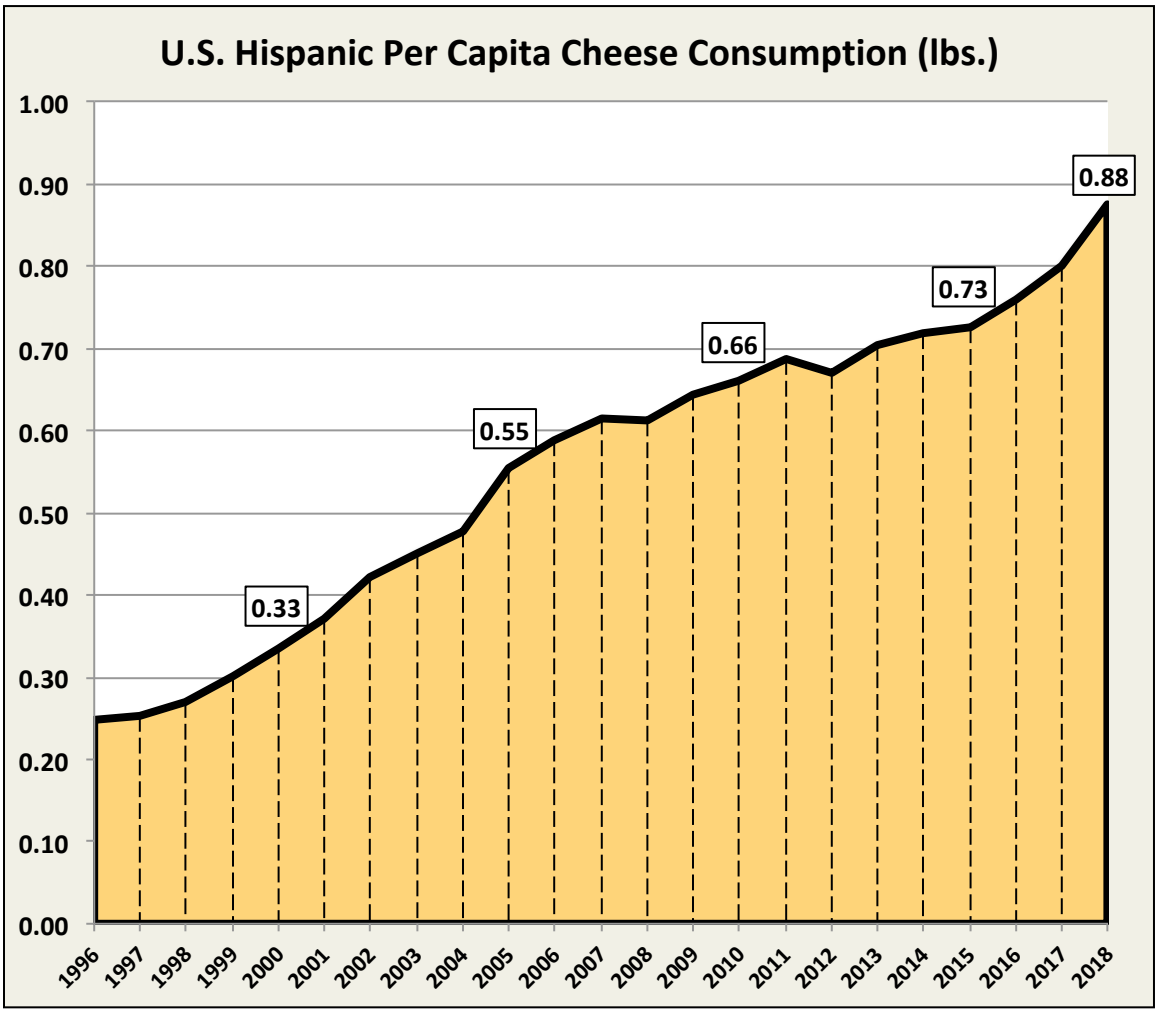
Wisconsin Specialty Cheese Production: 2017–2018

Type	2017 Producers	2017 Production (1,000 lbs.)	2018 Producers	2018 Production (1,000 lbs.)	Change, 2017-2018
Farmers	**12**	**1,342**	**13**	**1,475**	**9.9%**
Parmesan Wheel	**6**	**67,116**	**6**	**70,948**	**5.7%**
Feta	**8**	**97,990**	**9**	**102,505**	**4.6%**
Limburger	**1**	**447**	**1**	**464**	**3.8%**
Hispanic	**12**	**91,407**	**15**	**93,394**	**2.2%**
Cheddar	40	29,036	44	28,624	**-1.4%**
Gorgonzola	10	18,102	9	18,007	**-0.5%**
Havarti	12	42,685	12	40,455	**-5.2%**
Italian Fontina	12	12,198	12	11,447	**-6.2%**
Asiago	13	31,941	14	28,882	**-9.6%**
Romano Wheel	6	10,655	8	9,516	**-10.7%**
Gouda	26	18,684	29	14,188	**-24.1%**
Colby	10	7,792	(D)	(D)	**(D)**
Monterey Jack	(D)	(D)	15	9,392	**(D)**
All Other (1)	59	369,255	54	373,375	**1.1%**
Total	**99**	**798,650**	**99**	**802,672**	**0.5%**

(D) Withheld to avoid disclosing data for individual operations

(1) Includes: Alpine, American Grana, Auribella, Bel Paese, Blue, Brie and Camembart, Butterkase, Caerphilly, specialty Colby, Edam, Fior di Latte, Fontinella, Gruyere, other specialty Italian, Italico, Juustoleipa, Kefalograviera Sagana, Kasseri, Mascarpone, Middle Eastern cheeses, Morning Sun, specialty Mozzarella, other specialty Parmesan, Pepato, Peperon, specialty Provolone, Raclette, other specialty Romano, Soft-ripened, specialty Swiss, Tvarog Polish, and Yogurt cheese.

This data suggests the best speciality cheese opportunities for a dairy processor to exploit are among Italian cheeses (e.g., Parmigiano Reggiano), Feta cheeses and Hispanic cheeses. Hispanic cheeses, in fact, have been showing steady growth for some time, as the following chart, prepared from USDA data supplied by the Economic Research Service, illustrates:



The average 0.88 pounds of Hispanic cheese consumed in 2018 was based on the U.S. population as a whole. It is equivalent to 4.81 pounds per capita as applied to the U.S. Hispanic population.

Popular Hispanic cheeses include Queso Fresco (means “fresh cheese”), Queso Quesadilla, Cojita and Oaxaco. Queso Fresco is, by far, the most popular, accounting for a 62% market share in multi-outlet retail and convenience stores, according to Information Resources, Inc. (IRi), a market research firm. Queso Quesadilla represents 7% of the Hispanic cheese market. Significantly, the Hispanic percent of total buying power by state was 11% for New Jersey in 2016 and 10% in New York State.

None of this is to suggest there could not also be opportunities within other dairy niches (e.g. specially branded fluid milk, yogurts, butters, etc.) but specialty cheeses clearly offers the best approach for reaching into the New York City metro area.

C. Product pricing.

Product pricing will depend on the specific dairy products being marketed, of course, but a reasonable proxy for purposes of assessing pricing potential is offered by the spending index data for various categories of products (see table, page 2-4). These indices reflect spending compared to the national average such that an index of 130 means the spending in the case of this particular geography is 130% of that expected from the typical U.S. consumer. This data indicates marketing to the Primary Market Area has the potential to generate the following spending or pricing premiums compared to Wayne County:

Spending Premium
Primary Market Area vs. Wayne County

Category	Wayne County	Primary Market Area	Spending Premium
All Dairy Products	**84**	**130**	**46**
Fresh Milk	82	134	**52**
Cream	90	124	**34**
Butter	94	128	**34**
Cheese	147	218	**71**
Ice Cream & Related Products	86	126	**40**
Other Dairy Products	77	140	**63**

Getting Wayne County dairy products to the Primary Market Area, of course, involves additional transportation and related costs that offset a portion of these premiums. Also, some items such as popular fresh Hispanic cheeses are difficult to produce, although fresh cheeses such as Queso Fresco can be brought to market and produce cash much more quickly.

D. Competition.

There are numerous dairy processors within or capable of serving the designated market areas. There are relatively few of the size or product mix that would be likely to be feasible, given the potential demand discussed above and the available milk supply within Wayne County and adjoining counties. The following represent possibly competitive cheese producing/distributing facilities:

> **Tropical Cheese Industries** is located in Perth Amboy, New Jersey and does an estimated $150 million in sales. According to D&B Hoovers it "manufactures specialty dairy products under the Paisano, El Molino Rojo and Tropical brand names to satisfy the specialty fresh cheese needs of Caribbean and Hispanic consumers living throughout the US." The company specializes in Hispanic cheeses such as Queso Fresco and primarily distributes its products along the East Coast.

Arthur Schuman Inc. is located in Fairfield, New Jersey and operates under the name Schuman Cheese, and, according to *Buzzfile*, primarily operates in the cheese sector. It is estimated to generate $181 million in annual revenues, and employs approximately 85 people at this headquarters location and 350 total employees across all locations. This organization is engaged in manufacturing, but mostly in Wisconsin. It does largely Italian cheeses but imports and distributes South American cheeses from this facility.

Greek Mountain Dairies is located in Goshen, New York and is a producer of Feta cheeses and an importer of other cheeses from Greece. It has been operating for approximately 8 years according to *Buzzfile* and is estimated to generate only $150,000 or so in annual revenues, with but two employees at this location and a plant that appears to be very under-utilized. The facility could, though, potentially offer a co-packing opportunity in conjunction with a Wayne County dairy processing facility.

Mongiellos Italian Cheese Specialties is located in Hurleyville, New York. According to *Buzzfile* also operates under the name Formaggio Italian Cheese, and has been operating for approximately 19 years. Mongiellos Italian Cheese Specialties is estimated to generate $25.6 million in annual revenues, and employs approximately 150 people at this single location. This organization is engaged in manufacturing activities at this facility and, again, could potentially offer a co-packing opportunity.

Upstate Farms Cheese is a subsidiary of Upstate Niagara Cooperative, Inc., which is a farmer-owned cooperative representing 300± family-farms in western New York. The cheese plant, located in Campbell, New York (Route 17 slightly west of Corning) is one of several plants operated by the co-op and focuses on Mozzarella string cheese. The co-op as a whole also markets fluid milk, yogurt, Riccota cheese, cottage cheese and frozen deserts. It also promotes its co-packing services.

Catskill Creamery is a proposed dairy processing facility proposed on the grounds of Sullivan County Community College (SUNY Sullivan) in Loch Sheldrake, New York. It proposes to take advantage of niche opportunities such as products manufactured from milk from grass fed cows, products made using low temperature vat pasteurization, products locally and humanely produced, certified GMO free products and specialty kosher products. Secondly, the proposed product line includes a specialty line of premium goods for the

specialty kosher market, sometimes referred to within that market as Chalav Yisrael (Israel Milk). The facility would offer, once again, offer co-packing opportunities.

These are primary examples of facilities that could either compete with or complement a Wayne County dairy processing operation on the demand side. Facilities that would compete for milk supply is discussed in Section 3.0 of this report.

E. Product substitutes.

There are numerous non-dairy substitutes for fluid milk (e.g. almond milk, other beverages) and fluid milk is difficult to distinguish through branding, there are relatively few substitutes for products such as Hispanic, Italian or Feta cheeses. They are, rather, distinct and not easily replaceable products. The elasticity of these niche items is limited and, therefore, pricing tends to be somewhat less competitive but prices still make a difference.

Cheese can, in fact, be branded in innumerable ways via the techniques employed to produce it and the multitude of flavor and forms that are possible. Niche product lines can realistically be pursued with cheeses, yogurts, ice creams and even butters, whereas fluid milk, cream and other products are much less distinguishable and less capable of being branded and priced as premium products. Moreover, while there are a limited number of plant-based cheeses, they are still fairly low quality in nature.

The following 2015 *AgWeb* article excerpts nicely summarize the current situation;

> You may have learned in your high school or college economics class that dairy consumption is relatively "inelastic," meaning demand for food staples such as milk, butter and cheese varies little with price.
>
> But times have changed, and dairy demand is not inelastic as it once was, says Sara Dorland, managing partner with Seattle-based Ceres Dairy Risk Management. Now, higher prices have a direct effect on consumption…
>
> Additionally, when it comes to fluid milk, there are a lot of beverage alternatives with prices that are far more stable.
>
> "With all of those factors, we do see that consumers are price sensitive, especially when it comes to fluid milk," Dorland adds. "Butter and cheese are far less so. People like cheese and have been paying a good amount of money for it this year, which makes me very optimistic about domestic cheese demand this year."
>
> The Food Network and the Food and Drug Administration have done a lot to help butter demand. "In the past, butter was vilified," she says. "Now, butter is best."

With that stamp of approval and emerging health concerns about margarines and butter substitutes, consumers are making the switch back to butter. Given lower margarine output and the studies on transfats, people are unwilling to switch back.

"Again, people are buying butter, but when it gets expensive, they buy a little less," Dorland says. "We saw that this fall with lower commercial disappearance figures."

So, which food sectors help drive the fluctuation in dairy demand? Dorland points to restaurants and quick-serve restaurants in the domestic market.
"When prices begin to rise, we see a little less cheese and butter on the menu," she says. "As an example, McDonald's may replace the double cheeseburger with the cheeseburger and eventually the hamburger. Pizza outlets run fewer promotions and ads.

"What appear to be very small changes can swing the market pretty quickly to an over-supplied situation. Add to this consumers buying a little less at the store, and demand eases back. The opposite is also true," Dorland explains. "The complication today is that this happens on a global scale."

Overall, fluid milk is much more easily replaced today than cheese, although cheese is still subject to some elasticity and somewhat lower demand when prices inch too high because it is not necessarily viewed as a necessity.

F. Marketing channels.

There are four distinct approaches to marketing:

Direct Store Delivery where the operator of the dairy processing facility solicits retail accounts and delivers directly to them, using a refrigerated truck of its own or contracting with a delivery service. On-line sales could also be delivered from a facility in Wayne County in insulated packaging via UPS, as Zabar's, with a retail outlet on Broadway in New York City, does with its cheese products, for example. Calkins Creamery in Wayne County also ships products to all 50 states, proving this is a viable marketing option for other dairy processing operations, although some products are more shippable in this fashion than others. Still, one can go on Amazon.com and order cases of Upstate Farms Greek Nonfat Yogurt, as well as other dairy products (e.g., cottage cheese, sour cream), that are shipped refrigerated or packaged with dry ice.

Brand Line Distribution, working with distributors and purveyors such as Pocono ProFoods, a family-owned distributor based in Stroudsburg, which supplies food and equipment to independent and multi-location restaurants and other large-scale organizations. It offers a wide variety of products including butter, milk, cheeses and ice cream. Kreider Farms (Lancaster County) is one of its vendors for these products, for example, although that company also sells on-line. Another relatively close distributor of Hispanic cheeses such as Queso Fresco and Oaxaca is Best Mexican Foods, located in Chester, New York. This company distributes in New York City, Connecticut, New Jersey, Pennsylvania, New England, Maryland and Delaware.

Warehouse Outlets such as ALDI and Sam's Club. ALDI, as an example, fairly aggressively solicits suppliers and emphasizes basic products such as dairy. It markets the fact there are no rebates, manufacturer coupons or promotions involved, no advertising reps, marketing costs or food show fees. It buys in full pallets or truckloads whenever possible. There is also no need to provide in-store point-of-sale displays and there are no slotting fees. Products are sold in ALDI display boxes delivered straight from their warehouse to the store floor from centralized distribution facilities, eliminating the need for direct store delivery on the part of a dairy processor. ALDI limits its product lines but carries Pueblo Lindo Queso Fresco, for instance.

Dock Pickup such as offered by Pointe Dairy Services, a Michigan distributor, which distributes directly from its warehouse and distribution center, which includes a 90,000 cubic foot cooler and high-capacity dock area with 20 high-load out bays. This option could, of course, be part of any operation, but is unlikely to be very useful in penetrating New York City metro area markets as the hauls are apt to be mostly in one direction and reverse haul opportunities being limited.

Marketing costs would likely be lowest with brand line distributors. Typically, a brand-line will mark up products to achieve a 10% gross margin, leaving the retailer up to 40% and the processor roughly 50% from which the cost of goods must be deducted. These numbers can vary considerably, of course, and there are often brokers involved for whom a percentage (typically 5%) must also be carved out.

G. Logistics and distribution issues.

There are several logistics and distribution issues that will need to be addressed with any dairy processing operation, beginning with delivery costs. A truck driver delivering product to a distributor or other purchaser is typically restricted by government

regulation to a 10-hour day. Allowing time for unloading, heavy traffic conditions, inclement weather and other factors essentially means outlets that are more than three hours away in one direction will be very difficult to serve without incurring additional cost for overnight stays that increase costs unacceptably.

Conversely, a dairy processing facility in Wayne County that used milk from, say, Susquehanna County in addition to Wayne, will enjoy the ability to serve most of the New York City metro area market, which a facility in Susquehanna County or beyond would not.

Outgoing deliveries, though, will have to be refrigerated. This means the equipment will be relatively expensive to operate on a per unit basis if less than full truckloads or palletized product are involved. This introduces a frequency of delivery issue as well. The difficulty at the outset will be ramping up as quickly as possible to achieve the proper economies of scale. This may require using contracted delivery services until, at least, full truckload or palletized quantities are involved. Contracted delivery services are also a long-term option although it could cut into margin.

Another logistical issue is how to supply a range of products that a typical distributor might desire before taking on the brand involved. Most dairy processing plants today are single product in nature. Therefore, additional products might have to be produced elsewhere under private label.

This might create an opportunity to collaborate with other small processors such as Greek Mountain Dairy, for example, but then getting the products to the distributor will become an issue unless they are shipped separately. Given the location of Greek Mountain Dairy and it's underutilization, though, there may be potential to ship product first there, where it could be combined with other products and shipped to New York City. Such arrangements could also apply to the proposed Catskill Creamery, if and when it starts operation.

There will be the logistical problem of securing milk supply, much of which could have to come from outside the county. Subsidizing trucking may be necessary to attract that supply. This could be done by a direct subsidy or by doing pickups with processor owned or contracted equipment.

H. Seasonality.

Seasonality with respect to consumption of dairy products varies considerably. Ice cream sales are notoriously seasonal, although less so in warmer climates and, more recently, some of this seasonality has been reduced.

Butter is also seasonal with average daily consumption by month ranging from 77% of average in January to 145% in November. Fluid milk sales are much less so, being 94% of average in January and 109% in November. Cheese consumption is similar with it being 95% in January and 109% in October.

Cash flow becomes an issue, the more a product line is affected by seasonality. Therefore, cheese continues to offer a potential advantage if the products involved are fresh cheeses such as Queso Fresco, which do not require aging and, therefore, experience lower capital costs as well.

I. Strategic partnering.

There are several possibilities for strategic partnering, some of which have already been identified above. The following are some of the more obvious and they could be combined:

Public/Private Option which might include locating a dairy processing facility on the former Wayne County Farm property, which is now used in part for the emergency communications center, recycling center and recreation complex. There also some other facilities on what was formerly the farm but considerable land remains that could be an excellent site for a processing facility with good highway access, natural gas service potential and sewage treatment connection possibilities. The County is also committing to developing a business plan for a facility, pending the outcome of this study. The County has also already applied for grants that might be used for equipment and product branding (the latter just having been approved). Therefore, there is a distinct opportunity for packaging of leased tax-exempt County land with these incentives and putting it out for bids or proposals from potential private operators.

Co-Packing in cooperation with other processors such as Greek Mountain Dairy or the proposed Catskill Creamery. This would allow processors on both ends to add product lines without compromising the economies of scale and other efficiencies that attend to single-line production.

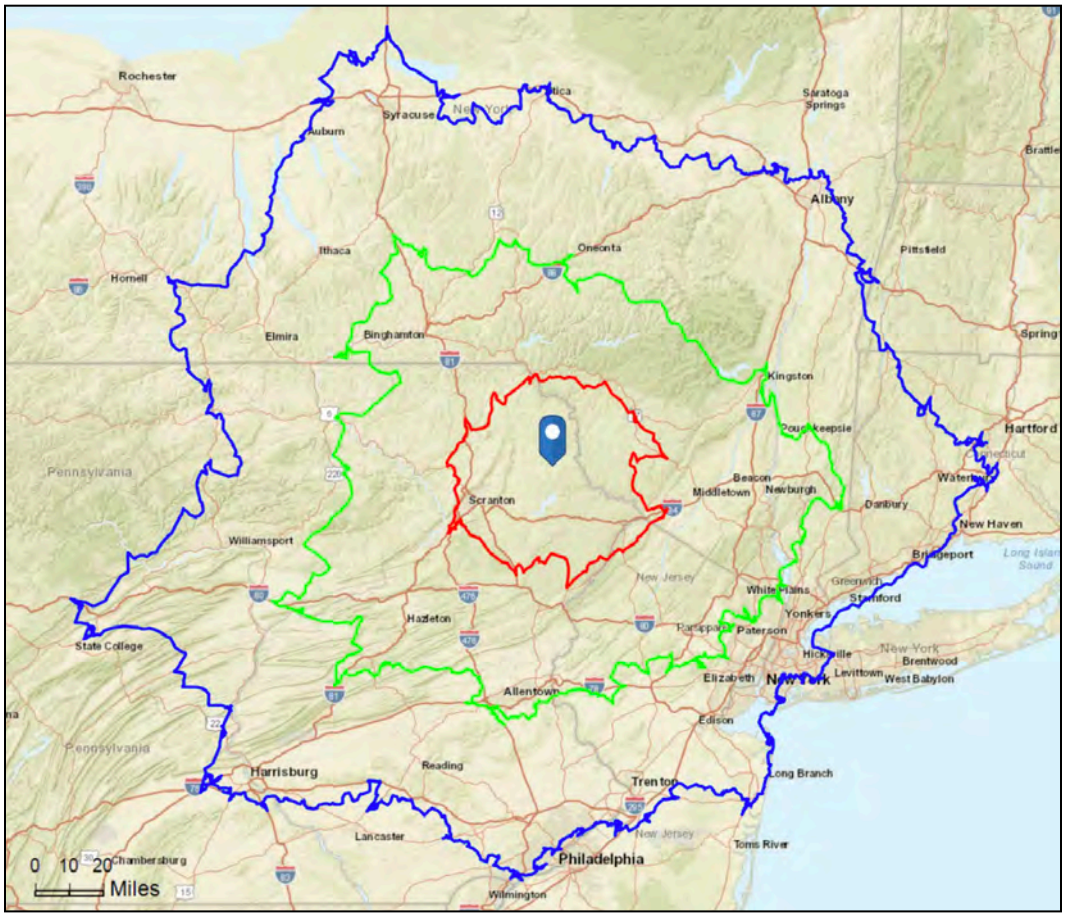
Cooperative Marketing is certainly possible given that there are already other small dairy processors operating in Wayne County. One can envision Calkins Creamery and Creamworks products being jointly promoted and delivered together with products from a new dairy processing facility, for example, and others nearby might also be included. There would also be considerable potential to develop a "cheese trail" similar to the Finger Lakes Cheese Alliance that came about partly as an outgrowth of a feasibility study Shepstone Management Company did in Schuyler County, New York several years ago (further discussed below).

J. Service areas.

As noted above, the service area for a dairy processing facility located in Wayne County will extend approximately three hours from the location if the facility is doing its own deliveries to retail outlets or other product buyers. This is attributable to regulations limiting the number of hours a driver can be on the road. If the delivery is to a brand-line

distributor within that distance, though, the potential reach of the market is significantly father. Best Mexican Foods, for example, would be a minimum of an hour closer to New York City.

The following map depicts potential service areas with 60, 120 and 180 minutes driving time of Wayne County owned property in Berlin Township:



Three hours includes areas stretching State College, Pennsylvania to Waterbury, Connecticut and Philadelphia, Pennsylvania to Utica, New York. Using a distributor in Orange County, New York would extend the service area to include most of Long Island, though.

1.2 Financial Analysis:

Given the size of the metro area market, there is more than enough demand, with proper branding and marketing to consume whatever supply can be produced. The more critical question in this instance is whether or not sufficient milk supply is potentially available to support a specialty cheese plant. This is a function of incentives that might be offered to attract producers to send their milk to a specialty cheese or other niche dairy processing operation.

An analysis of the potential incentives vis-a-vis the prospective milk check a farmer with a 75-cow herd might receive selling to a non-pool specialty cheese plant was conducted for this purpose. What could a dairy farmer receive in milk payments from a specialty cheese plant in

Wayne County Dairy Processing Study

Wayne County, PA compared to selling through a cooperative? The following pro forma producer payment table compares what a 75-cow dairy farm would receive from a non-pool cheese plant compared to a plant that is in the Federal Order 1 producer pool. The headings show the specialty cheese plant as a "non-pool plant."

Prospective Specialty Cheese Plant Incentive to Attract Milk Supply
Potential Producer Check for 75-Cow Herd - 2019 Calendar Year

Component	Pounds	Value	Pool Plant	Value	Non-Pool Plant	Net
Butterfat	52,298	$ 2.5088	$ 131,203.97		$ 131,203.97	
Protein	43,463	$ 2.3796	$ 103,423.37		$ 103,423.37	
Other Solids	76,523	$ 0.1862	$ 14,248.49		$ 14,248.49	
Subtotal			**$ 248,875.83**		**$ 248,875.83**	
Adjustments to Component Values						
Somatic Cell Adjustment	1,425,000	$ 0.0000109	$ -		$ 3,106.50	$ 3,106.50
Producer Price Differential (PPD) (1)	1,425,000	$ 0.0072	$ 10,212.50		$ -	$ (10,212.50)
Quality Premium	1,425,000			$ 0.0050	$ 7,125.00	$ 7,125.00
Market Premium	1,425,000			$ 0.0100	$ 14,250.00	$ 14,250.00
Total Before Deductions			**$ 259,088.33**		**$ 273,357.33**	
Deductions						
Less: National Advertising	1,425,000	$ (0.0015)	$ (2,137.50)		$ (2,137.50)	$ -
Less: Federal Order Market Service	1,425,000	$ (0.0005)	$ (712.50)		$ -	$ 712.50
Less: Hauling	1,425,000	$ (0.0075)	$ (10,687.50)	$ (0.0025)	$ (3,562.50)	$ 7,125.00
Less: Cooperative Deduction	1,425,000	$ (0.0045)	$ (6,412.50)		$ -	$ 6,412.50
Net Producer Check			**$ 239,138.33**		**$ 267,657.33**	**$ 28,519.00**
Net Per Hundreweight			**$ 16.78**		**$ 18.78**	**$ 2.00**

(1) See PPD assumptions below based on averages for 2019 adjusted to deliveries to a plant in Mt. Holly Springs, Pennsylvania

Butterfat	1,425,000	3.67%	52,298	lbs
Protein	1,425,000	3.05%	43,463	lbs
Other Solids	1,425,000	5.37%	76,523	lbs
Somatic Cells	200,000			

In this hypothetical example the specialty cheese plant could pay $2.00 per Cwt. more than a cooperative. For a 75-cow dairy this means $268,000 in annual milk revenue compared to $239,000. For many dairy farms this could mean the difference between operating at a loss or earning a profit.

A 75-cow dairy is about the average sized dairy farm found in Wayne County. An annual herd average of 19,000 pounds of production per cow was used to project total volume. This is typical of most small farms in northern Pennsylvania. We used the following component tests as representative of dairy farms in this region: Butterfat 3.67%, Protein 3.05%, Other Solids 5.37%.

The specialty cheese plant could pay a premium to the dairy farmers for achieving a low somatic cell count. Somatic cells occur in all cow's milk, but are lower at dairy farms with excellent animal care. When a cheese plant receives lower somatic cell milk, they achieve higher cheese yields. This means the plant obtains more saleable cheese from a vat when the milk has lower somatic cells. The somatic cell premium returns a portion of the value of the extra cheese to the dairy farmer as a reward for their excellent animal care.

The pro forma shows the dairy farm receiving two premiums: a quality premium of $0.50 per hundredweight (Cwt.) for low bacteria counts (also called a plate loop count) and a market

premium of $1.00 per Cwt. because Hispanic-style cheeses command a higher price in the marketplace than the commodity cheeses that set the Federal Order component values.

The pro forma also shows the cost of hauling milk being significantly less to a local processing plant located in Wayne County. The USA dairy system puts the cost of moving milk from farm to plant on the dairy farmer. The dairy farm receives a price FOB processing plant. In the hypothetical example hauling costs are $0.75 per Cwt. for a pool plant compared to $0.25 per Cwt for the proposed non-pool plant.

The non-pool cheese plant would not pay the dairy farmer the Producer Price Differential (PPD). The PPD averaged $0.72 per Cwt. in 2019. In calculating the PPD it assumed the milk was being delivered to a large cooperative processing plant in Mt. Holly Springs, Pennsylvania.

Would a dairy farmer want to ship to this plant? Receiving an extra $2.00 per Cwt. would be a good incentive for a dairy farmer to sell their milk to the non-pool specialty cheese plant. Indeed, in 2019, this would have meant an extra 12% revenue to the farmer. Therefore, there is every reason to believe the necessary milk supply for any reasonably sized specialty cheese plant, would be obtainable.

1.3 Case Studies

Case studies of dairy processing operations of various sizes and products that could be applicable to Wayne County have been identified and analyzed with respect to operating expenses and other financial characteristics. This was done by employing the annual statement studies from the Risk Management Association (RMA), which is a non-profit professional group serving the financial services industry. It collects and tabulates information from annual financial statements prepared for a multitude of industries by size.

An analysis of the most recent annual financial statements of 53 cheese manufacturers across the U.S., some 92% of which were companies with more than $10 million of annual sales indicates the following:

Gross profit as a percent of sales	21.6%
Operating expenses as a percent of sales	18.1%
Operating profit as a percent of sales	3.5%
All other expenses as a percent of sales	1.0%
Profit before taxes as a percent of sales	2.5%

No breakdown was provided for operations with less than $10 million dollars in annual sales but, significantly, those between $10 million in $25 million in sales incurred a 2.7% negative profit or loss before taxes, whereas those above $25 million in sales had 4.0% profit before taxes. This confirms commodity cheese production is only profitable at very large scale that is well beyond what Wayne County could realistically entertain.

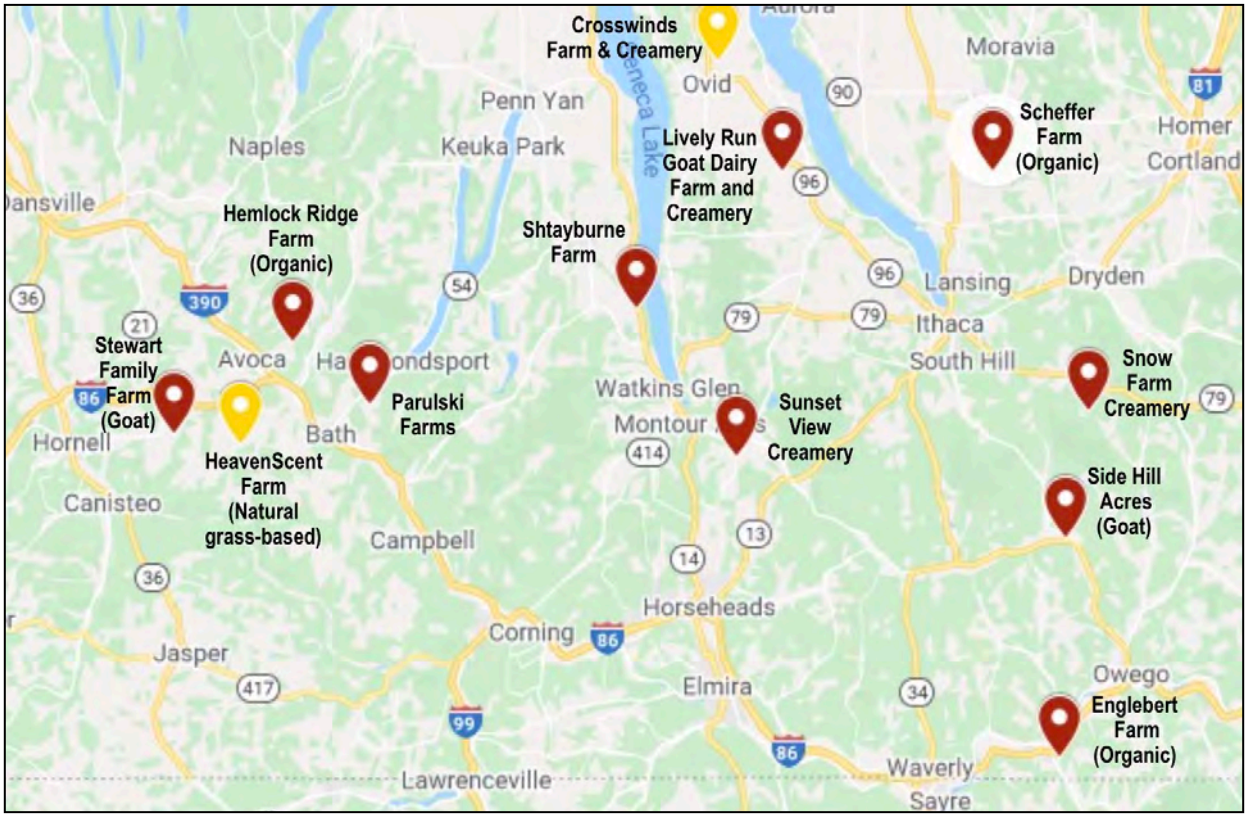
Specialty cheese is another matter. Shepstone Management Company, as noted above, conducted a feasibility study in 2002 for a small scale dairy processing in Schuyler County, New York. The result was as follows (as reported in the online NY Farms! newsletter of June 8, 2004):

> “On May 1, 2004, Carmella and Ronald Hoffman officially opened the doors to Sunset View Creamery, Schuyler County's first farm producer of specialty artisanal cheeses. The Hoffmans are producing Monterey Jack cheese in five flavors and will begin selling their

own Cheddar in July at the Creamery, using milk from their own dairy cattle herd in the Town of Catharine. As part of SCOPED's (Schuyler County Partnership for Economic Development) Rural Business Initiative, funded with grants from Appalachian Regional Commission (ARC) and NYS Department of Agriculture and Markets, a specialty cheese feasibility study was prepared in 2002 by Tom Shepstone, a specialist in agriculture analysis. "

"The study was distributed to the Schuyler County dairy community and has been used to assist in the development of business plans and financing. Cornell Cooperative Extension of Schuyler County partnered with SCOPED to support the Hoffman's in pursuing their new business venture. Sunset View Creamery was also the recipient of a Schuyler County Farm Web Site Micro-Grant, a project of SCOPED and Cornell Cooperative Extension also funded by ARC. The project allowed the Creamery to create an effective web site for on-line product marketing and agri-tourism. Schuyler County will also see a second specialty cheese producer open shortly. In addition to the Hoffman's, Nancy Taber Richards of Finger Lakes Farmstead Cheese expects to begin production of farmstead gouda in the Town of Hector later this year on the Taber Family Farm near Mecklenburg. Their speciality cheesemaker is Jan Beuzekom who has arrived from the Netherlands to develop their product."

Significantly, both operations are still active. Sunset View Creamery is now part of a Finger Lakes Cheese Alliance that includes 11 other cheese producers. Their locations are depicted on the map following:



Financials for these operations are not available but Shepstone Management Company's analysis at the time was that "a specialty cheese processing facility would generate a positive

cash flow in the seventh month of operation and breakeven in terms of profitability at just over 1,600,000 pounds of raw milk processed per year (160,000 pounds of cheese)." The propagation of a dozen speciality cheese operations in the last two decades, many of which include tourism components, indicates there are significant financial opportunities of a similar sort in Wayne County where the Pocono label provides a potential branding foundation. The prices being obtained ($21 per pound for the Sunset View Creamery Havarti cheeses pictured below) provide further evidence of this.

Between these two approaches is the possibility of developing a single mid-sized dairy processing plant focused on one line of products such as Hispanic cheeses, a plant that could also include a tourism component.

A good example of a cheese plant of a size that might be suitable for Wayne County is the one operated by Roelli Cheese Haus in Shullsburg, Wisconsin. It makes a variety of cheeses, operates a retail store where it sells other cheeses and products and includes a milk hauling business. It markets its cheese in multiple locations in Wisconsin and Chicago.

Roelli has also competed in and won cheese contests that have brought it a marketing edge and allowed it to grow. The company, between 2005 and 2017, invested approximately $650,000 to accommodate this growth. It now also wholesales four of its most popular cheeses to eleven different distributors and the like from Brooklyn, NY to California and Oregon.

Roelli's website indicates it is now producing 135,000 pounds of cheese per year or over 12,000 pounds per month and is retailing its Little Mountain and Roelli Haus Select Cheddar Cheese half-pound wedges on-line for $13.49.

This is, on a small scale, a potentially good model for Wayne County. Roelli's milk processing amounts to an annual volume of roughly 1,350,000 pounds, which represents less than 2% of the county's milk supply but could easily grow to perhaps 10% or more if the facilities were planned with expansion in mind.

A larger facility is also possible and is explored further later in this report. Still, starting small has the advantage of both minimizing risk and allowing time for development of markets. Moreover, there would be no reason there couldn't be multiple facilities each producing select products, which facilities could be developed as demand grew.

Penn State Extension has, in this regard, developed a useful financial model for small cheese plants. Although the template is clearly oriented toward smaller on-farm facilities similar to those profiled in the Finger Lakes region, it is flexible and allows calculation of the likely financial characteristics of a somewhat larger facility.

Using its slightly modified formulas for a facility processing 1,500,000 pounds of milk per year, for example, yields the following:

Cheesemaking Budget (Using Penn State Sample) [Assumes 1,500,000 lbs. of Milk Processed Annually]						
INCOME						
Cheese Sales						
Wholesale Sales (75%)	112,500	Pounds	$	8.00	$	900,000.00
Retail Sales (25%)	37,500	Pounds	$	12.00	$	450,000.00
Total Sales					**$**	**1,350,000.00**
EXPENSES						
Variable expenses						
Milk	15,000	CWT	$	22.00	$	330,000.00
Payroll expense	33,150	Hours	$	10.50	$	348,075.00
Utilities	150,000	Pounds	$	0.21	$	31,500.00
Outside smoking	3,840	Pounds	$	7.68	$	29,491.20
Sanitation supplies	150,000	Pounds	$	0.16	$	24,000.00
Employee healthcare	150,000	Pounds	$	0.09	$	13,500.00
Office supplies	150,000	Pounds	$	0.04	$	6,000.00
Bank charges	150,000	Pounds	$	0.02	$	3,000.00
Training & education	150,000	Pounds	$	0.01	$	1,500.00
Outside testing	150,000	Pounds	$	0.00	$	600.00
Operating interest expense					$	27,459.96
Marketing expense		% sales		15%	$	202,500.00
Sub-total					**$**	**1,017,626.16**
Fixed expenses						
Non-food processing equipment	1	Year	$	9,880.50	$	9,880.50
Processing equipment	1	Year	$	63,214.20	$	63,214.20
Insurance	1	Year	$	76,420.50	$	76,420.50
Legal and professional fees	1	Year	$	23,782.50	$	23,782.50
Repairs and maintenance	1	Year	$	18,395.40	$	18,395.40
Telephone	1	Year	$	15,369.00	$	15,369.00
Interest	1	Year	$	3,202.14	$	3,202.14
Sub-total					**$**	**210,264.24**
Total Expenses					**$**	**1,227,890.40**
RETURNS TO MANAGEMENT						**$122,109.60**

These are but crude numbers for purposes of feasibility analysis but they indicate a large-sized on-farm or small-scale off-farm facility would generate a positive financial return. The ability to sell product if the operation is successful in penetrating the New York City metro market with the correct products is virtually unlimited given its size. Therefore, costs of production are the important thing.

Those costs could also be lowered in this instance by using county land and grant money for equipment and initial branding. Applications have been made for both and branding money has been approved already. The potential to secure up to $250,000 in creamery equipment appears, at least, to enjoy good prospects of being awarded as well.

Therefore, it is reasonable to expect a small start-up plant will be feasible and hold the potential to earn money that would also reward an operator and potentially provide premium incentives for local dairy farmers to participate. A successful small plant that grew to utilizing 10% of Wayne County's milk would use a truckload a day.

The customers such a facility would best target include the following ESRI Tapestry Segments:

LifeMode Group: Upscale Avenues - Group 2B, "Pleasantville"

- Households within Primary Market Area: 10.9%
- Average Household Size: 1.87
- Median Age: 37.4
- Median Household Income: $112,200
- Education: 66% college educated, 37% with a bachelor's degree or higher.
- Many professionals in finance, information/tech, education or management.
- Median household income denotes affluence.
- Not cost-conscious, willing to spend more for quality and brands they like.
- Food Spending Index: 123
- Hispanic: 17.6%

LifeMode Group: Upscale Individuals - Group 3A, "Laptops and Lattes"

- Households within Primary Market Area: 8.8%
- Average Household Size: 2.88
- Median Age: 42.6
- Median Household Income: $92,900
- More than three out of four have a bachelor's degree or higher.
- Health-conscious consumers who exercise regularly.
- Pay attention to the nutritional value of the food they purchase.
- Environmentally/image conscientious: both impact purchasing.
- Food Spending Index: 196
- Hispanic: 9.3%

LifeMode Group: Affluent Estates - Group 1A, "Top Tier"

- Households within Primary Market Area: 6.5%
- Average Household Size: 2.84
- Median Age: 47.3
- Median Household Income: $173,200
- More than one in three residents has a postgraduate degree.
- Earn more than three times the US median household income.
- Nation's wealthiest consumers.
- Regularly cook at home, attentive to good nutrition and fresh organic foods.
- Food Spending Index: 260
- Hispanic: 5.9%

Altogether, these three groups ensure a large market for quality specialty and Hispanic cheeses. There are also two additional groups that are more specific to Hispanic cheeses and these are discussed in Section 5.0 of this report.

3.0 Availability of Milk Supply

This section assesses the conditions under which a milk supply of sufficient quantity and quality will be available to a dairy processing plant of the scope addressed in Section 2.0 preceding.

3.1 Nature of Supply Required

A. Price factor.

Analysis of recent pool pricing factors (see Section 2.0 hereof) as compared to the advantages of using non-pool milk sources suggests the potential to pay up to a $2.00 per hundredweight premium over pool pricing for milk utilized in a Wayne County dairy processing facility. Is this a premium sufficient to attract producers to a new outlet for their milk, given the security such producers might feel with respect to their existing buyers?

There are three reasons to believe the answer is positive. These include the fact local dairy producers have already expressed interest in alternative outlets through surveys and public participation in the preparation of the *Wayne County Agricultural Development Plan,* which, as noted in Section 1.0, included interviews and focus group discussions with key dairy producers.

More importantly, though the $2.00 per hundredweight premium would represent an approximately 10% gross increase in revenue to the dairy producer, even at today's relatively high pricing. This is hugely significant at a time when the only other method of improving margin is by lowering costs. Specialization is well known to be the sole effective way, in a commodity business, to grow on the revenue side.

Thirdly, there is no longer the same level of economic security in staying with a particular outlet. Conventional milk handlers primarily engaged in selling fluid milk are operating on extremely low margins. Indeed, as noted in Section 2.0, those with sales between $10 million and $25 million incurred a 2.7% negative profit or loss before taxes. There have been numerous bankruptcies and closures, in fact, meaning dairy producers potentially face the prospect of needing to secure other outlets if they do not specialize.

B. Delivery ability.

Assuming a dairy processing facility might be located on the County Farm property in Berlin Township, milk would have to be delivered there. This should present no particular obstacle as Wayne County is home to multiple milk haulers already. The only question is whether they can deliver milk economically (e.g., in less than full truckloads or irregularly in the event a facility cannot utilize large quantities until it has sufficiently ramped up sales). This may require purchasing the milk, at the outset, through another outlet, which would require negotiating a price that incorporates the premium.

C. Seasonality of supply.

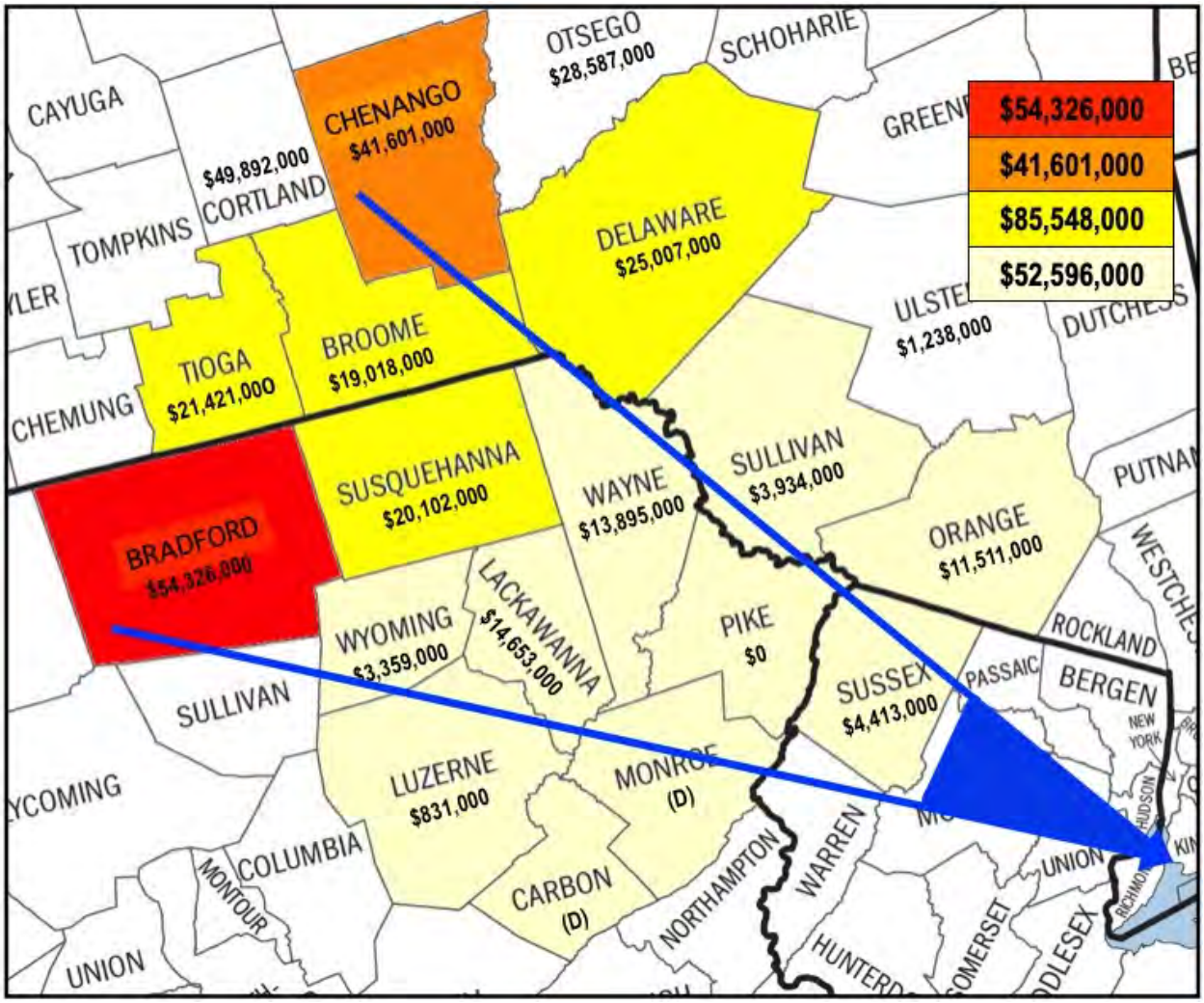
Because the best opportunity (see Section 2.0) appears to be in speciality cheese and similar products and a Wayne County dairy processing facility would be a relatively small operation, it is not anticipated seasonality will be a factor in securing the necessary milk supply.

D. Contract conditions.

There may be conditions connected with contracts dairy already have with other milk handlers that could impact the ability to provide a milk supply in the short-term. Likewise, a Wayne County dairy processor will want to assure its own supply with a contract requiring the availability of milk on a routine basis. This contract would include provisions for the price premium, but also incorporate a milk supply commitment from the producer or other outlet from which the milk is being obtained.

3.2 Milkshed Definition and Characteristics

The following map incorporates data from the 2017 Census of Agriculture, the figures presented representing the estimated market value of milk sold. The counties are Wayne County, those between it and the New York City metro area and those within roughly two hours to the north and west. Altogether, they accounted for a minimum of $234,071,000 in milk sales. Data for some counties is too small to report without revealing proprietary information but there are also at least 885 dairy farms, 62,459 milk cows and an estimated 14.8 million hundredweight of milk available, much more than needed by a Wayne County dairy processing facility.



Estimated 2017 Milk Sales (Source: U.S. Agricultural Census

3.3 Milk Availability

A. Potential suppliers.

Individual dairy producers are logical suppliers if the dairy processing facility is in a position to take the full volume produced. Absent that ability, it is questionable whether the producer would find an outlet for the remaining milk.

Therefore, the facility will likely need to secure its milk supply from another handler such as DFA, which is constantly seeking new markets for its milk. The challenge will be in transitioning to direct purchase from producers, so as pass along a price premium.

B. Cooperative formation potential.

A cooperative is clearly one potential means of delivering the price premium that will justify investment in a local dairy processing facility. It could own and operate the facility, in fact, and/or be the vehicle for ensuring a steady supply of milk through organization of dairy producers. A cooperative, though, would not be the most effective means of accomplishing a startup, as the volume of milk involved will necessarily be limited.

Likewise, a cooperative would have to hire outside expertise to operate the plant. Given the relatively small size of plant anticipated in this instance, a far better model would be to bid out a contract for lease of a plant to a prospective experienced operator.

C. Pricing and other incentives required.

Obtaining the necessary milk supply will require an incentive, but, as indicated above, an analysis of pricing factors suggests a $2.00 premium per hundredweight should be both feasible and adequate for that purpose.

4.0 Competitive Assessment

This section identifies the types of current and potential competitors who may supply the same products, or product substitutes, to the proposed plant's target markets.

4.1 Market Structure

The potential competition is a mix of family-owned (e.g., Calkins Creamery), cooperative-owned (e.g., Upstate Farms Cheese), and large corporations (e.g., Kraft, which has a yogurt plant in Walton pictured below). There is a huge range of plant sizes, from one million pounds of milk processed per year to several million pounds of milk per day. Most are not competitors.

Moreover, some potential competitors are, in reality, potential partners and cooperators. It would be counterproductive to view local on-farm processors as anything but that. Indeed, a new county dairy processing facility would undoubtedly want to specifically avoid competing with local on-farm producers. This is so as to be able to work together in promoting a regional brand image via a cheese/dairy trail or similar joint promotion mechanisms.

4.2 Pricing

Traditionally, cheese is priced and sold by weight. Cheese pricing between conventional manufacturers and wholesalers/retailers is typically based on prices for cheddar cheese traded on the Chicago Mercantile Exchange (CME). For example, a certain variety of cheese might be priced at CME plus 20 cents a pound. The CME cheddar price increases and decreases with various market factors, including both supply and demand of cheese and the underlying costs of raw milk.

A Wayne County dairy processing facility, by contrast, would largely work around this pricing

system of pricing by setting its own for what are non-conventional, non-traditional premium products of higher market values. Traditional pricing is commodity-based, but a local processing operation would necessarily depend upon its products being specialty items rather than ordinary commodities.

Cheddar cheese is an ordinary commodity that is very price sensitive, whereas a new specialty Hispanic cheese would be marketed based on its uniqueness . It would not be nearly as price-sensitive. Therefore, the extent of competition based on price will, for any new facility, be inversely proportional to the degree of specialization it offers.

4.3 Logistic/Transportation Issues

Cheese varieties can be fresh or aged. Both fresh and aged cheese must be stored in refrigerated warehouses. All cheese varieties must be delivered in a refrigerated truck. Aged cheese has a long shelf life — 6 months or more — which means it can be delivered with less frequency. Fresh cheeses have a shelf of about thirty days and must be delivered more quickly and frequently for the sake of marketing by retail customers, for example.

Wayne County enjoys some logistical/transportation advantages. These include its relative proximity to the New York City metro market. That market is well within a single day's drive and back for a delivery truck and driver. Federal regulations limit the number of hours a truck-driver is permitted to be on the road. Therefore, this would be an advantage to a Wayne County facility as opposed to one from Clinton County, for example. Wayne County is also convenient to interstate routes such I-81, I-84 and Route 17, making it very competitive with other locations.

Finally, it's important to note cheese, simply because of its generally longer shelf life compared to fluid milk, offers some additional competitive advantages as a means of marketing Wayne County milk.

4.4 Facilities and Infrastructure

Cheese manufacturing plants must be built to food-grade standards, whether it is new construction or renovation of existing structures. There is a need for significant quantities of potable water and Wayne County enjoys very plentiful supplies of it, plus there are existing water wells on the county property where such a facility might be located.

A cheese plant requires municipal sewage access or on-site wastewater treatment. The former is available less than two miles away and the site is characterized by Oquaga and Wellsboro soils that are well-drained and well-suited for on-site sewage disposal. (See possible site below.}

Electrical demand for cheese manufacturing is moderate. Culinary steam is needed for the pasteurization, cooking, and clean up. The most economical source of steam is usually natural gas-fired boilers. Natural gas is potentially available, a transmission line being very proximate and distribution lines being within two miles.

Access to the interstate highway system is needed to economically move the product to the market and is, as noted above, very accessible.

4.5 Existing Relationships

The cheese industry is characterized by many manufacturers and many buyers. There are some long-term relationships between buyers and manufacturers. For example, Leprino Foods is the long-term exclusive supplier to Domino's, Papa Johns, and Pizza Hut. Those relationships provide a distinct competitive advantage for those processors. But, there are also many buyers looking for new and unique cheese products that bring variety and innovation to the market. Indeed, as noted in Section 2.0, there large outlets that also want to offer these products along with their commodity-type products. Wegman's, for example, sells Beecher's Handmade Cheese, an example of which is this product:

A Wayne County dairy processing facility would benefit competitively by its proximity to the New York City metro area which is a premier specialty cheese market. Therefore, existing relationships are not necessarily a competitive disadvantage for a new processor trying to break into the market. There will, nonetheless, be challenges in identifying distributors and individual outlets interested in new product. Moreover, many distributors, particularly with respect to basic Hispanic cheeses, for instance, are more focused on lower cost commodity type cheeses to complement other products geared to the Hispanic market. Therefore, developing specialty products ***within this specialty category*** will be necessary.

4.6 Market Characteristics

Cheese is used in three significant markets: retail, food service, and industrial. Retail includes supermarkets, club stores, large "big box" retailers, convenience stores and bodegas. Food

service includes fine dining, casual, fast food, and institutional settings like hospitals, prisons, military, nursing homes, schools, and universities. Pizza restaurants are large users of mozzarella cheeses. Industrial uses are food processors that use cheese as an ingredient in the products they manufacture. There are many examples, including cheese flavored crackers and packaged macaroni and cheese.

A Wayne County dairy processing facility will necessarily be focused on the specialty retail segment of the market, with some potential for food service. As such, competition will be relatively limited in the majority of instances and the New York City metro market is, for all intents and purposes, an inexhaustible one.

Cheese consumption is generally nonseasonal. There are small increases in demand prior to the Holidays and prior to the NFL Super Bowl. These are also good opportunities to introduce new specialty products, which bodes well for the potential competitiveness of a Wayne County facility.

4.7 Expansion Capacity

Demand for cheese in the USA has increased every year over the last four decades. An export market for cheese manufactured in America has also begun to develop. A new cheese plant in other areas of the country would typically need to take business from existing manufacturers. The immense size of the New York City metro market, though, combined with the growth in cheese consumption, especially of Hispanic cheeses, opens up room in the market for new competitors focused on niche specialty products.

Assuming a new plant is successful, it will also have a competitive advantage with respect to expansion potential. This is due the fact the best site for such a facility is county-owned land with room to expand and a capital advantage in terms of land costs.

4.8 New Research and Technology

Cheesemaking practices are continually refined, but the basic processes have been in place for more than a hundred years. Much of the current progress in technology is developed at the Center for Dairy Research (CDR) at the University of Wisconsin. The CDR holds numerous short courses, conferences, and workshops to educate personnel in the industry. The general manager and the lead cheesemaker at any plant would benefit from the CDR programs.

Competitively speaking, the technology is not affecting much except for non-dairy substitutes, which are currently not that competitive. Even extended life products are not new. There is, though, new interest in certain long-existing products such as butters and kefir drinks.

4.9 New Product Introductions

New product introductions could include new varieties (types) of cheese or new flavors of existing cheese. For example, the original product might be Queso Fresco — a mild, fresh, Hispanic-style cheese. The product line extension might be Queso Fresco with jalapeno or habanero added. Developing such specialties within the Hispanic category or another will be key to ensuring competitiveness and securing premium status, along with higher pricing.

Plant management would need to be tasked with following customer requests and other market information on new cheese products that could be produced profitably.

4.10 Competitive Strategies Analysis

The following matrix addresses competitive strategies that competitors may employ to compete against any proposed facility. It is intended to help evaluate potential partnerships, the potential product mix for a facility, regulatory conditions and the like.

Competitive Strategies Analysis - Evaluation of Potential Competitors

Competitors / Factors	Proposed Wayne County Facility	Non-Dairy Competitors	On-Farm Competitors	Wholesale Competitors	Retail Competitors	Cooperative Competitors
Price	Would be positioned as a producer of premium specialty cheeses and related products	Mostly non-competitive and over-priced with very minimal market share currently	Competitive at the farm but less so for specialty product shipped into metro markets	Very competitive on basic products, but much less so on specialty items	Fairly competitive on basic products as well as specialty items but latter are often limited	Fairly competitive on basic products and some specialty products
Quality	Would be positioned as a producer of premium specialty cheeses and related products	Mostly non-competitive, with few imitation cheese items and questionable quality	Competitive, depending on products. Important to specialize and avoid local competition	Mostly non-competitive, as generally focused on basic products in majority of cases	Somewhat competitive where speciality product lines are involved but limited	Somewhat competitive where speciality product lines are involved but limited
Brand Image	Would be marketed as a high-quality regional brand	Mostly non-competitive	Less competitive	Not applicable	Very competitive	Very competitive
Natural vs. Conventional	Would be generically branded as natural	Competitive with select vegan buyers, etc.	Very competitive	Not applicable	Competitive on selected products	Very competitive in selective cases
Local vs. National	Would be generically branded as a local (regional) product	Not applicable	Very competitive	Not applicable	Not competitive other than in cases of very small retailers	Mostly, not competitive other than in cases of very small co-ops
Farmer/Family Ownership	Would emphasize milk supplied by local farm families	Not applicable	Very competitive	Not applicable	Generally not competitive	Competitive in case of smaller co-ops
Federal Regulation	Would be subject to allFDA/food safety regulations	Subject to all FDA/food safety regulations	Subject to all FDA/food safety regulations, which represent a relatively higher burden	Relatively unimpeded by FDA/food safety regulations already met by suppliers	Subject to all FDA/food safety regulations	Subject to all FDA/food safety regulations
State Regulation	Would be subject to all basic licensing	Subject to basic licensing	Subject to basic licensing	Subject to basic licensing	Subject to basic licensing	Subject to basic licensing
Zoning	Would be located on public land in unzoned community	Not applicable	Typically not subject to additional zoning regulation	Larger facilities can involve major zoning issues	Larger facilities can involve major zoning issues	Larger facilities can involve major zoning issues
Utilities	Would have reasonably close access to natural gas	Typically require no special utilities	Typically require no special utilities	Typically require no special utilities	Larger facilities can involve major utility requirements	Larger facilities can involve major utility requirements

This matrix summary analysis supports the conclusion that specialty cheeses are where the best opportunities are for a Wayne County dairy processing facility. This is for all the reasons set forth above and in preceding sections. They establish that the competitive advantages Wayne County enjoys include; (a) proximity to a nearly boundless New York City specialty foods market, (2) the availability of county land for a facility, (3) favorable land use regulation regarding development, (4) good highway access and (5) a large milk supply.

5.0 Preliminary Concept

This section is intended to offer a preliminary concept of the physical and operational elements of a proposed facility that would be feasible for Wayne County.

5.1 Product Mix

As the analysis conducted for previous sections illustrated, specialty cheese production exhibits the best market and profit opportunity with respect to a Wayne County dairy processing facility. The New York City metro market is huge. There is potential to pay farmers a premium to secure the milk supply. Specialty cheese production can be started at a small scale and grow. There is also niche potential within the category; namely soft Hispanic and Mozzarella type cheeses.

This is not to exclude the potential for other products in the future, but the first diversification opportunity may be with variations on specialty cheeses; to introduce cheeses made with goat milk, for example, or to expand into semi-soft Hispanic cheeses such as the Drunken Goat cheese (Queso Murcia al Vino) sold at Weis Markets in Honesdale (6 ounces for $10.95). It is a cheese made in Spain by soaking the dairy product in red wine and is also available from Murray's Cheese ($23.00/lb), the New York City retailer.

There are any number of other possible Hispanic cheeses that could be added to the production line in the future, although variations on Queso Fresco and Mozzarella would be the best place to start, focusing on soft cheeses.

5.2 Client Profile

ESRI data on the Primary Market Area (New York City, Long Island, Westchester County. Bergen County and Fairfield County) categorizes consumers in this region by Life Mode Groups representing "markets that share a common experience—born in the same generation or immigration from another country—or a significant demographic trait, such as affluence." Life Group No. 13 is labelled as "Next Wave" and is "extremely diverse with a Hispanic majority, the highest among LifeMode groups."

There are two segments of this Life Mode Group that are particularly relevant to profiling the

likely consumers of products from a Wayne County dairy processing facility. The "International Marketplace" segment is the larger, representing an estimated 304,193 households and 733,664 adults. There are another 242,726 such households and 588,870 adults in the Secondary Market Area, meaning just this portion of the market represents a population larger than Dallas, Texas and only slightly smaller than Philadelphia. The segment is described as follows (emphasis added):

> *International Marketplace neighborhoods are a rich blend of cultures, found in densely populated urban and suburban areas, almost entirely in the Middle Atlantic (especially in New York and New Jersey) or in California. Almost 40% of residents are foreign-born; nearly 1 in 4 households are linguistically isolated.* ***Young, Hispanic families renting apartments in older buildings dominate this market****; about one quarter of households have children. Over one-fifth of households have no vehicle, typically those living in the city.* ***Workers are mainly employed in white collar and service occupations*** *(especially food service and building maintenance). One-fifth of workers commute using public transportation and more walk or bike to work than expected.* ***Median household income is lower, but home values are higher, reflecting the metropolitan areas in which they live.*** *Consumers are attentive to personal style; purchases reflect their youth and their children.* ***True to their culture, residents visit Spanish language websites, watch programs on Spanish TV networks, and listen to Hispanic music****.*

The fact these consumers have slightly lower incomes means premium products will have to be priced very carefully, toward the lower end of the premium part of the scale. Products targeted at this market will also need to reach into Spanish speaking media to get attention. But, there are large numbers of white collar workers in the segment and these are households striving to succeed. These households are potentially able to spend more on food because they do not have to spend on vehicles.

There is also the Las Casas segment described as follows:

> *Cultural differences depict Las Casas, a family-oriented market distinguished by multigenerational households. Their spending reflects their children—baby food and furniture or children's apparel—and convenience—fast food and family restaurants.* ***Consumer choices also focus on personal style, as well as the latest trends and fashions****. Although young and predominantly renters, this market is stable, affected more by immigration from abroad than local moves.*

This segment includes a combined 55,300 households and 151,843 adults within the Primary and Secondary Market Areas, bringing the total market from the two major Hispanic segments to almost 1.5 million adults. Clearly, though, Hispanic cheese demand is not limited to Hispanic households. There are many other households within the market areas, including households of greater wealth, who are potential customers. These should help support lower-end premium pricing.

These potential customers are reachable by on-line marketing, direct ship to retail outlets such as bodegas and by using distributors. The distributor option may be appropriate in the short-term as a means of introducing product, testing markets and avoiding large capital and overhead expense at the front end. Long-term, though, on-line marketing and direct ship are going to be the better options. Therefore, the client may be described as either a consumer similar to those described above or a retail outlet focused on that consumer, in which case a New York City bodega may be considered as the prime example.

5.3 Processing Types

Statco-DSI, a designer and supplier of dairy and other food processing systems, was tasked with developing a concept for a soft-cheese manufacturing facility capable of processing the milk from a minimum of eight 75-cow dairies (roughly 40,000 pounds per day), although such a facility would undoubtedly start at a much lower volume and grow with market development

Statco-DSI did a preliminary study of equipment required for the manufacture of whole milk to make Hispanic soft cheese (Especially Queso Blanco and Queso Fresco). The system would be designed to pasteurize 8-10 gallons per minute initially into six 200 gallon cheese kettles.

The raw milk would be received from tankers and be pumped into two 6,000 gallon raw milk storage tanks. From the raw milk silos, the milk would be pumped to the HTST balance tank. The HTST system would be skid mounted and include a CIP pump to clean the system and its discharge lines. There would be three to six 200 gallon cheese kettles that would be piped from the HTST. A CIP return line would be piped back to the HTST system. A steam line from a customer supplied boiler would also be run to the HTST and over the three vats. These lines could be connected to steam wands.

5.4 Infrastructure Requirements

Statco-DSI has developed a detailed list of the equipment that would be required plus a layout, both of which are attached hereto as Appendix A. This equipment installation includes the following elements:

Dairy Processing Equipment Required		
Item	**Description**	**Quantity**
No. 1	Raw milk storage tanks (6,000 gallons each)	2
No. 2	High Temperature Short Time (HTST) system	1
No. 3	Cheese vats (100 gallon vertical wall cream vats)	8
No. 4	Sani-Matic CIP/COP washer	1
No. 5	Pump and valve components	1
No. 6	Installation piping, etc.	1
No. 7	Engineering, installation and project management	1

The Statco-DSI estimate does not include costs associated with freight, taxes (if any), bonds, an air compressor, chemical pumps, utility piping, a 25 hp boiler, building improvements (including 3,000 sf or so of cold storage) or site improvements. Land, if the site were to be located on the former county farm property, would be free. It is assumed the building would be roughly 12,000 square feet in size and site improvements would include grading, stormwater improvements, an on-lot sewage system and on-site water well.

5.5 Projected Costs

Statco-DSI estimates the cost of equipment detailed in Appendix A is $795,000. Using *BuildingJournal.com* to estimate building and site costs for a 12,000 square foot building yields a total cost of $1,265,000. There are also some special additional costs related to cold storage, the boiler and other items particular to the processing operation. Those are broadly estimated at $400,000 to $450,000 (including $100 per square foot extra for cold storage areas), bringing the total cost for the entire facility to roughly $2.5 million, say $3,000,000 for conservative analysis purposes. Some of this cost is, though, potentially coverable through grants.

6.0 Business Concept

This section is intended to outline the business concept for a proposed dairy processing facility that would be feasible for Wayne County.

6.1 Mission Relationship

The mission is to "Lay the groundwork for developing additional dairy processing capacity that will serve to support the retention and possible expansion of the Wayne County dairy industry as a fundamental aspect of the county's economy and rural character."

It is proposed, in that regard, to: (a) grow milk demand within Wayne County, (b) enhance milk pricing and farm income for Wayne County farmers and (3) support agri-tourism and retention of rural character as economic assets.

The business concept, therefore, is focused on specialty dairy products, namely cheeses, that can command a higher price, by taking advantage of the nearby metro marketplace. This will allow the operator of the facility to pay a premium milk price, thereby allowing dairy farmers more opportunity to prosper.

6.2 Measurable Business Objectives

The following measurable business objectives are proposed:

A. Develop a successful dairy processing operation utilizing, within 10 years, as much as 10 million pounds of Wayne County milk per year.

B. Secure a milk premium of no less than $2.00 per hundredweight payable to Wayne County dairy farmers selling to the dairy processor./

C. Market as much as 1,000,000 pounds per year of specialty cheese to a combination of retail and wholesale outlets.

D. Ensure the speciality products do not directly compete with existing on-farm processors, but, rather, complement these to establish a regional branding program with which to market all Wayne County dairy products.

6.3 Business Structure

It is proposed this dairy processing business be a public/private partnership. A very suitable site exists at the former Wayne County farm. It could be subdivided for leasing purposes to create a 5-10 acre site for the facility. Alternatively, a private site could be selected on a local but highly visible farm for marketing purposes. The county could potentially develop or help develop the facility and equip it using assistance from USDA and/or other funding sources (e.g., the Appalachian Regional Commission) and then lease the facility to a private operator solicited by requests for proposals. A lease agreement could establish minimum requirements for investment, milk premiums and the like.

This structure would minimize risk and maximize the ability to attract a capable experienced operator as well as a milk supply due to the presumed reputation of the operator. It would also serve to avoid the necessity of forming a cooperative, although that could be an option for the

ownership of the buildings and equipment, which could then be retained in the event of operator failure for re-lease to another party. The first choice, though, would be to avoid the difficulty of forming another organization that dairy farmers would have to be aggressively solicited to form. Many local dairy farmers are not keen on such organizations because of the implied risks and commitments involved.

6.4 Recommended Product Mx

While a dairy processing facility could produce multiple products, this is not especially efficient. Moreover, the best growth and premium pricing opportunities exist in speciality cheeses, which have the added advantage in many cases of longer shelf life and the ability to ship product in small quantities. Hispanic cheeses are a niche not currently being pursued in Wayne County and offer a particular opportunity. The most popular Hispanic cheeses are fresh cheeses and do not require aging. This contributes to better cash flow, although the shelf life is obviously shorter than other cheeses.

The product mix doesn't have to be limited to Hispanic cheeses and probably shouldn't be, but this is where so much of the market growth is occurring in the metro area. Therefore, it is a recommended component of the product mix.

6.5 Recommended Marketing Strategy

A $21,250 grant has been secured from the PA Dairy Investment Program to develop a regional dairy branding and pairing program. This regional branding and marketing program will be designed to retain and grow Wayne County's dairy industry. Pairing dairy products with others made or grown locally is a critical element. The project will include the following:

A. A marketing professional will be contracted to study market demand so as to identify those characteristics of demand within nearby metro areas that must be addressed for a dairy branding and pairing program to be successful in effectively reaching consumers within those markets and creating brand recognition.

B. These characteristics will be used to develop a brand concept that will then be tested with metro area consumers of dairy products.

C. Once the brand concept has been tested and refined, a logo design will be created to establish the brand identity.

D. The marketing professional will also address product pairing opportunities, key brand messaging, brand positioning, marketing of the brand and other aspects of firmly establishing the brand in the marketplace in a way that generates higher dairy product pricing that will translate into higher farm incomes.

6.6 Site Needs

The following are the site requirements:

A. A 5-10 acre cleared, relatively level and easily accessed site on the Wayne County farm property in Berlin Township or some other private location of similar quality (high visibility, etc.).

B. Suitable area on this site to accommodate an on-site sewage disposal system (subsurface or spray irrigation).

C. Preferably, access to the natural gas service.

D. A loading and unloading area for multiple milk trucks and product delivery vehicles.

E. Parking area for customers, employees and visitors (with the idea the production facility could be an educational and tourist attraction).

6.7 Engineering Requirements

The site on the Wayne County farm will need to be legally described for leasing and financing purposes. This will demand a property survey and subdivision approval under Berlin Township's Subdivision and Land Development Ordinance.

Land development (site plan) approval will also be required under Berlin Township's Subdivision and Land Development Ordinance. This will demand civil engineering expertise and various accompanying studies of topography, soils, stormwater conditions, wetlands and water supply capacity, along with grading plans, building plans, a sewage system design, an erosion and sedimentation plan and highway access permits if a new access is demanded.

Some level of mechanical engineering will also required with respect to the processing equipment and operation floor plan, although that expertise can often be provided to a large extent by the companies providing the equipment.

6.8 Financial Needs Analysis

A 10-year profit and loss statement, combined with a cash flow analysis has been developed to evaluating financial feasibility of a Wayne County dairy processing operation such as outlined above. The analysis shows profitability in year four and positive net cash flow in year three. Numerous assumptions went into this analysis, including the following:

A. An investment of $3 million in fixed assets plus $200,000 for working capital, for a total of $3,200,000 is projected. After an investment of $320,00 (10%), the remaining $2,880,000 would be financed at 4% for a term of 20 years. Annual payments of principal and interest would be $209,427.

B. The $3 million in fixed assets includes $200,000 in site improvements, $800,000 in buildings and other improvements, and $1,500,000 in equipment. Equipment would be a combination on new and used. There are frequent auctions of used dairy equipment. This equipment has many years of useful life remaining.

C. An additional investments in equipment of $50,000 is projected for year two with $100,000 per year thereafter.

D. The first-year sales are estimated at 100,000 pounds. This requires the purchase of 1,000,000 pounds of raw milk from dairy farmers. Sales increases of 50% are projected for the next two years with 25% increase each year thereafter. This sales increase requires corresponding increases in raw milk purchases.

E. Sales prices of $7.50 per pound at wholesale and $10 per pound for retail sales are projected. The first-year sales are 15% retail and 85% wholesale. The proportion of retail to wholesale changes each year so that in year 10 the sales are 5% retail and 95% wholesale.

F. The average sales price is $7.88 per pound in year one, decreasing each year to $7.62 per pound in year five as a consequence of increasing wholesale activity at lower prices (trading price for volume).

G. We have used $18 per Cwt. as the raw milk price. The average price paid for milk used in cheese-making during the most recent period was $18.86. The $21 milk price allows for a premium payment to the dairy farmers of at least $2 per Cwt.

H. Packaging costs of $0.03 per pound and miscellaneous ingredients costs of $0.03 per pound are projected. Miscellaneous ingredients include salt, cultures, color, and rennet.

I. Variable costs change directly with the number of pounds of cheese produced and sold. This five-year projection uses these variable costs per pound of cheese:

Labor & Benefits	$1.80
Repairs & Maintenance	$0.12
Supplies	$0.16
Outside Services	$0.20
Contract Hauling	$0.20
Utilities	$0.18

J. Advertising and marketing costs are calculated as a percentage of net sales. This spending is 7% of net sales in year one, declining by 1% each year to 3% in year five and thereafter.

K. Labor and benefits costs for management are estimated $45,000 in year one and projected to increase by 10% each year as the enterprise grows and at a faster rate.

L. Depreciation is calculated using a 20-year life for the building and a 10-year life for the equipment. Equipment rental and real estate taxes are fixed during all 10 years.

M. Insurance, professional services, and miscellaneous expenses increase 10% each year.

N. The net operating income is calculated as net sales less cost of goods sold less variable and fixed expenses. EBITDA is Earnings Before Interest Taxes Depreciation and Amortization. It represents the amount of cash available to pay debt service, make further investments in the business and pay returns to investors.

The 10-year forecast (next page) shows a Wayne County cheese plant is financially feasible. While there is negative cash flow during the first two years the proposed financing includes $200,000 of working capital to cover a cumulative negative cash flow that amounts to an

estimated $125,000. It's also important to understand grants could offset some equipment and other costs.

Wayne County Dairy Processing Facility
Proforma Profit and Loss Statement and Projected Cash Flow

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
SALES										
Lbs Cheese Sold	100,000	150,000	225,000	281,250	351,563	439,453	549,316	686,646	858,307	1,072,884
Average Price/Lb	$7.88	$7.83	$7.80	$7.78	$7.75	$7.73	$7.70	$7.67	$7.65	$7.62
NET SALES	**$787,500**	**$1,173,750**	**$1,755,000**	**$2,186,720**	**$2,724,609**	**$3,394,776**	**$4,229,736**	**$5,270,004**	**$6,566,047**	**$8,180,737**
COSTS OF GOODS SOLD										
Lbs Raw Milk Purchased	1,000,000	1,500,000	2,250,000	2,812,500	3,515,625	4,394,531	5,493,164	6,866,455	8,583,069	10,728,836
Average Price per Cwt.	$21.00	$21.25	$21.50	$21.75	$22.00	$22.25	$22.50	$22.75	$23.00	$23.25
Milk Cost	$210,000	$318,750	$483,750	$611,719	$773,438	$977,783	$1,235,962	$1,562,119	$1,974,106	$2,494,454
Packaging/Ingredients	$6,000	$9,000	$13,500	$16,875	$21,094	$26,367	$32,959	$41,199	$51,498	$64,373
TOTAL	**$216,000**	**$327,750**	**$497,250**	**$628,594**	**$794,531**	**$1,004,150**	**$1,268,921**	**$1,603,317**	**$2,025,604**	**$2,558,827**
PER LB	**$2.16**	**$2.19**	**$2.21**	**$2.24**	**$2.26**	**$2.29**	**$2.31**	**$2.34**	**$2.36**	**$2.39**
GROSS MARGIN	**$571,500**	**$855,000**	**$1,271,250**	**$1,575,001**	**$1,951,171**	**$2,416,993**	**$2,993,774**	**$3,707,885**	**$4,591,941**	**$5,686,283**
GROSS MARGIN %	**72.6%**	**72.8%**	**72.4%**	**72.0%**	**71.6%**	**71.2%**	**70.8%**	**70.4%**	**69.9%**	**69.5%**
OPERATING EXPENSES										
VARIABLE COSTS										
Labor & Benefits	$180,000	$270,000	$405,000	$506,250	$632,813	$791,016	$988,770	$1,235,962	$1,544,952	$1,931,190
Repairs & Maintenance	$12,000	$18,000	$27,000	$33,750	$42,188	$52,734	$65,918	$82,397	$102,997	$128,746
Supplies/Sanitation	$16,000	$24,000	$36,000	$45,000	$56,250	$70,313	$87,891	$109,863	$137,329	$171,661
Outside Services	$20,000	$30,000	$45,000	$56,250	$70,313	$87,891	$109,863	$137,329	$171,661	$214,577
Contract Hauling	$20,000	$30,000	$45,000	$56,250	$70,313	$87,891	$109,863	$137,329	$171,661	$214,577
Advertising & Marketing	$55,125	$70,425	$87,750	$87,469	$81,738	$101,843	$126,892	$158,100	$196,981	$245,422
Utilities	$18,000	$27,000	$40,500	$50,625	$63,281	$79,102	$98,877	$123,596	$154,495	$193,119
Misc./Contingency	$32,113	$46,943	$68,625	$83,559	$101,689	$127,079	$158,807	$198,458	$248,008	$309,929
SUB-TOTAL	**$353,238**	**$516,368**	**$754,875**	**$919,153**	**$1,118,584**	**$1,397,867**	**$1,746,881**	**$2,183,035**	**$2,728,085**	**$3,409,222**
FIXED COSTS										
Labor & Benefits	$45,000	$49,500	$54,450	$59,895	$65,885	$72,473	$79,720	$87,692	$96,461	$106,108
Depreciation	$270,000	$275,000	$285,000	$295,000	$305,000	$315,000	$325,000	$335,000	$345,000	$355,000
Equipment Rent	$3,000	$3,750	$4,688	$5,859	$7,324	$9,155	$11,444	$14,305	$17,881	$22,352
Real Estate Taxes	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000
Insurance	$12,000	$13,200	$14,520	$15,972	$17,569	$19,326	$21,259	$23,385	$25,723	$28,295
Professional/Testing	$16,000	$20,000	$25,000	$31,250	$39,063	$48,828	$61,035	$76,294	$95,367	$119,209
Interest Expense	$113,453	$109,543	$105,474	$101,238	$96,831	$92,243	$87,469	$82,500	$77,329	$71,947
Miscellaneous	$20,000	$22,612.50	$25,664.38	$29,244.09	$33,460.10	$38,445.62	$44,364.56	$51,418.98	$59,858.35	$69,991.01
SUB-TOTAL	**$483,453**	**$497,606**	**$518,796**	**$542,459**	**$569,131**	**$599,471**	**$634,292**	**$674,595**	**$721,621**	**$776,902**
TOTAL COSTS	**$836,691**	**$1,013,973**	**$1,273,671**	**$1,461,612**	**$1,687,715**	**$1,997,339**	**$2,381,173**	**$2,857,630**	**$3,449,706**	**$4,186,124**
PRODUCTION COSTS/LB	**$8.37**	**$6.76**	**$5.66**	**$5.20**	**$4.80**	**$4.55**	**$4.33**	**$4.16**	**$4.02**	**$3.90**
TOTAL COSTS/LB	**$10.53**	**$8.94**	**$7.87**	**$7.43**	**$7.06**	**$6.83**	**$6.64**	**$6.50**	**$6.38**	**$6.29**
NET OPERATING INCOME	**-$265,191**	**-$158,973**	**-$2,421**	**$113,389**	**$263,456**	**$419,654**	**$612,601**	**$850,255**	**$1,142,234**	**$1,500,159**
NON-CASH EXPENSES ADDED BACK TO YIELD EBITDA										
Depreciation	$270,000	$275,000	$285,000	$295,000	$305,000	$315,000	$325,000	$335,000	$345,000	$355,000
Interest Expense	$113,453	$109,543	$105,474	$101,238	$96,831	$92,243	$87,469	$82,500	$77,329	$71,947
EBITDA	**$118,263**	**$225,570**	**$388,053**	**$509,628**	**$665,287**	**$826,897**	**$1,025,070**	**$1,267,755**	**$1,564,564**	**$1,927,106**
ADDITIONAL CASH EXPENSES										
Debt Service	$209,427	$209,427	$209,427	$209,427	$209,427	$209,427	$209,427	$209,427	$209,427	$209,427
Capital Expenditures	$0	$50,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
CASH FLOW	**-$91,164**	**-$33,857**	**$78,626**	**$200,201**	**$355,860**	**$517,470**	**$715,643**	**$958,329**	**$1,255,137**	**$1,617,679**

6.9 Risk Assessment

There are several risks attendant the success of the project. These include the following:

A. The inability to secure the necessary funding/financing. There is a reasonable likelihood of obtaining an Appalachian Regional Commission grant to pay for a portion of the equipment required and, thereby, in combination with the land, to meet most of the 10% down likely to be needed to finance the project as a whole. Failure to secure such a grant could create a significant obstacle in bringing the project to fruition. Such a grant does appear likely, though, so this risk is limited.

B. The inability to open up specific markets for the product. Research herein indicates a very good overall market exists for speciality cheeses and Hispanic cheeses, but the success of the project will depend on developing individual relationships with customers, retailers and wholesalers. This risk can be mitigated by securing a competent operator with experience and contacts in the industry.

C. The inability to realize the prices projected. This risk can be mitigated by specialization of the product lines and good marketing of the product through branding. An already received grant for this purpose should significantly reduce this risk.

D. Unexpected costs. Every effort has been made to be very conservative in projecting costs. Basic costs have been determined from the existing financial statements of other dairy processors of similar character to one proposed. Therefore, this risk is thought to be low.

E. The inability to secure the milk supply. Dairy farmers are risk adverse insofar as changing milk outlets. Notwithstanding this, though, milk can undoubtedly purchased from their outlets until the operation is established and farmers warm to the idea of selling direct and securing a premium.

F. There is also the risk that a Request for Proposals from private operators might not yield a satisfactory response. This risk can be mitigated by establishing the private/public partnership ***prior*** to making property improvements or securing equipment, based on a business plan.

Summarizing, these various risks can mostly be mitigated and should not materially affect feasibility.

Wayne County
Dairy Processing Feasibility Study

APPENDIX

Engineering Solutions that Make Sense

March 26, 2020
Project 06411

Wayne County Dairy

Cheese Processing Facility

Statco-DSI Process Systems
117 South West End Avenue
Lancaster, PA 17603
Office: 717-209-7125

March 26, 2020
Project 06411

CHEESE PROCESSING SYSTEM

This report is for a preliminary study for equipment required for the manufacture of whole milk to make Hispanic soft cheese (Especially Queso Blanco and Queso Fresco). The system would be designed to pasteurize 8-10 GPM initially into (6) 200 gallon cheese kettles. The raw milk would be received from Tankers and be pumped into (2) 6000 gallon Raw Milk Storage Tanks. From the Raw Milk Silos, the milk would be pumped to the HTST balance tank. The HTST system would be skid mounted and include a CIP pump to clean the system and its discharge lines. There would be (3-6) 200 gallon cheese kettles that would be piped from the HTST. A CIP return line would be piped back to the HTST system.

A Steam line from a customer supplied boiler would also be run to the HTST and over the (3) vats. These lines could be connected to steam wands.

ITEM 1- RAW MILK STORAGE TANKS (2) Required

Vertical Insulated 'EP' Cream Storage Tanks - Tag #: TBD — Model: EP-6000-102-HZ

Working Volume:	6,000 Gallon	Tank Design Pressure:	Atmospheric
Volume to Top Tangent:	6,451 Gallon	Tank Design Temp:	-20°F to 300°F
Flooded Volume:	6,876 Gallon	Tank Corrosion Allowance:	.0000 in.
Empty Weight:	7,705 lbs.	Jacket Design Pressure:	100 psig / FV
Flooded Weight (1.03 SG):	66,775 lbs.	Jacket Design Temp:	-20°F to 300°F
Product:	Cream	Jacket Media:	Water
Inner Diameter:	102 in.	Top Head Type:	Standard F&D
Straight Side:	180 in.	Bottom Head Type:	Flat - pitched 3/4" per ft.
Freeboard:	13 in.	Top Head Thickness:	7 Ga. (0.1874 in.)
Outlet Height:	18 in.	Bottom Head Thickness:	7 Ga. (0.1874 in.)
Overall Height:	221 in. (221 in. w/ agitator)	Shell Thickness:	10 Ga. (0.1350 in.)
Outer Diameter:	108.5 in.	External Stiffening Rings:	0
Process Contact Material:	304	Internal Surface Finish:	#4
Jacket Material:	304	Internal Weld Finish:	32 Ra
Insulation Sheathing Material:	304	Internal Electropolish:	No
Support Material:	304	External Surface Finish:	#4
Elastomers:	Standard	External Weld Finish:	35 Ra
		Support Weld Finish:	Cleaned Only
Shell Heat Transfer Jacket:	14 Ga. Dimple (320 sq.ft.)		
Bottom Heat Transfer Jacket:	14 Ga. Dimple (42 sq.ft.)	Support Type:	(6) Sch 40 Pipe Legs
Heat Transfer Jacket Zones:	4	Feet Type:	Ball
		Adjustable Feet:	Yes
Top Insulation:	N/A	Casters:	No
Shell Insulation:	3 in. Fiberglass (12 Ga. Sheathing)	Removable Legs:	No
Bottom Insulation:	3 in. Fiberglass (10 Ga. Sheathing)	Load Cell Adapters:	No

Nozzle Schedule

Qty	Type	Location	Notes
1	16" x 20" Inswing Manway	Sidewall	w/ Sample Valve
1	2 in. Ferrule	Sidewall	Side Inlet
1	2.5 in. Ferrule	Bottom	Outlet
1	Anderson Level Shell	Sidewall	Less device
1	0.5 in. Thermowell	Sidewall	w/ 5" Dial Thermometer
1	1.25 in. Thermowell	Sidewall	Less RTD
1	4 in. Vent	Top	
2	3 in. Ferrule	Top	w/ 1.5 in. Standard Static Sprayball
8	2 in. NPT	Jacket	
1		Sidewall	w/ Louvered CIP Door

- [√] ASME Jacket
- [√] 3-A Stamp
- [ ] Other Stamp [NR13]
- [ ] PE Stamp
- [ ] Passivation
- [ ] Saline Test
- [ ] Factory Acceptance Test
- [ ] Caps / Blinds
- [ ] Spray Coverage Test
- [ ] Spare Gaskets
- [ ] Documentation Package
- [ ] Shrink Wrap
- [ ] Jacket Nitrogen Charge
- [ ] 3D Drawings

Miscellaneous

(2) - Lifting Lug

Feldmeier Horizontal Agitator

2 hp, 63 rpm, inverter duty, 230/460/60/3 (less switch)
Inverter Duty TEFC Motor w/ Food Grade Lube
22" diameter (3) blade Horizontal CIP-able Agitator.
Heavy Duty round mount with shaft guard.
Product not exceeding 200 Cps or 1.1 SG
Unit to include sanitary seal, 1/2" clamp connection & hose for CIP.

Accessories

ITEM 2- HTST

One plate and frame heat exchanger designed to pasteurize raw milk at 8 GPM from 40°F to 162°F using regeneration and reheating and exiting the unit at approximately 97°F. The unit will include:

- 20 Gallon Legal PMO Balance Tank
- Timing Pump
- Booster/CIP Pump
- 18 second holding tube
- Flow Diversion Valve
- Controls for Processing and CIP
- Legal instruments, including STLR Recorder, DART Digital Thermometer, Differential pressure Controller, and FDV Controller
- Hot Water Set
- AGC Plate and Frame Heat Exchanger, Expandable

Regenerator:
500 GPH raw milk 40°-112°, pressure drop = 9 PSI
500 GPH past. milk 162°-90°*, pressure drop = 5 PSI
* - Note: Bypass approx. 60 GPH pasteurized milk to achieve 90°F outlet
Heater:
200 GPH milk 112°-162°, pressure drop = 12 PSI
12 GPM hot water 165°-151°, pressure drop = 5 PSI

Recommended CIP:
5 GPM; Pressure drops = 14 PSI Regenerator (ea. side), 20 PSI Heater

Required:
(1) AGC Model 080-S solid stainless steel frame (Polished, 3A), with low profile legs, adjustable ball feet, 1.5" sanitary tri-clamp fittings, and (6) stainless steel tie-bolts. Size 2 (>100% expansion room).
(1) Stainless steel terminal with 1.5" sanitary tri-clamp fittings.
(32) 080Plus T-316 S/S 0.6mm plates with NBR gaskets.

ITEM 3- CHEESE VATS

VERTICAL, INSULATED, STAINLESS STEEL, PROCESS TANKS

QUANTITY: (8) Eight 100 Gallon Vertical Double Wall Cream Tanks in accordance with the following specifications:

INNER SHELL:	12 Gauge, T-304 SS
RIM SUPPORT:	Flat Bar at the open rim, rolled and fully welded to the upper shell, T-304 SS
TOP COVER:	Approximately 40% of the top head will be fixed and welded 12 Gauge, T-304 SS. With 12 Gauge, T-304 SS hinge cover with 3A Formed Hinge, and provided with (1) Metal U-Shape handle.
BOTTOM HEAD:	10 Gauge, Flat Flanged with 0.75" inside knuckle radius, T-304 SS. Pitched to side drain.
OUTER SHELL:	12 Gauge, T-304 SS
DIMENSIONS:	36.00" ID x 38.50" OD x 30.00" straight sidewall height x approximately 3'–11" overall height.
INSULATION:	Tank shell will be insulated with 1" chloride free blanket insulation.
SUPPORTS:	(4) 2" Sch 40/Std Pipe Legs with 1" Sch 10 horizontal pipe bracing and caster mounting plates, T-304 SS provided with (2) 4" rigid casters and (2) 4" swivel casters, with wheel brake. Casters have SS frames and polyolefin wheels. Bolts & Nuts mounting hardware included.
BOTTOM OUTLET:	1 1/2" Tri-Clamp Ferrule x 12" clearance to floor. Outlet provided with sump/pod for complete drainage.
CIP:	(1) Fixed Mounted 1" Tri-Clamp Ferrule with fixed G & H CIP sprayball. Spray device requires 40 GPM @ 25 PSIG.
TANK RATING:	Tanks are designed and fabricated for atmospheric pressure at 150^0 F, and 1.00 specific gravity.
MATERIAL FINISH:	All interior and exterior surfaces will have a 150 grit finish. All interior welds will be ground smooth and ribbon polished to a 150 grit finish. All exterior welds will be bright abrasive wheel buffed with weld ripple and some heat tint discoloration remaining.

ITEM 4: COP/CIP TANK:

Described is a Sani-Matic CIP/COP Washer designed and manufactured to the following specifications.

Application:	CIP: Satisfactory for washing 200' - 2.5" lines and tanks equipped with two spray balls (40 gpm at 25 psi). COP: Washing disassembled machine parts and piping in standard wire baskets. List any unique important item.
Rate:	COP/CIP automation rates will be determined and programmed by others.
Product Residue:	COP: For optimum cleaning, large amounts of residual soil should be pre-flushed prior to loading into the COP tank.

- NOTE: Components to be washed should not be sensitive to submersion, heat shock, or chemical exposure.
- Control of the cleaning process is provided by the following primary functions:

Cleaning Variable	Sani-Matic CIP/COP Washer
Time:	COP: Typical manual cleaning of parts is rushed and inconsistent. Operator loads components into baskets and submerges them into the COP tank, then proceeds to other cleaning tasks. This ensures adequate residence time and continuous cleaning.
Temperature:	COP: Because part is submerged it also rises & remains at the hot water temperature. This assists the breakdown of residual solids. Higher temperatures can be maintained safely because of minimal operator exposure. Temperature controlled by self regulating steam valve with integral thermobulb. Other heating methods are available as an option upon request. Temperature set-point should be adjusted so it is satisfactory for both CIP and COP functions.

Chemical Concentration:	Manual addition of chemical according to SSOP. Higher concentrations can be safely used due to minimal operator exposure. Note: Non-foaming, non-chlorinated cleaners are required.
Physical Action:	COP: Sanitary side jets provide a turbulent rolling wash action for components in baskets. CIP: Solution is recirculated so that tubing velocity of 5'/sec. is maintained to clean piping. Delivery to tanks should be maintained at the required pressure and volume. Typically 60 gpm at 25 psi.

1. System Description

1.1 Baskets & COP tank Configuration

- Processing equipment is disassembled and component parts are placed directly into the COP tank or a Sani-Matic wire basket. If excessive soil remains it is quickly pre-flushed off the parts manually with a hose. The basket is loaded into the COP tank by hanging it into a predetermined position. It is recommended that individual machine components remain in their own designated basket until pre-op inspection & reassembly. This will reduce damage or loss of machine parts.
- RW-8 (200) tank – ID 24"W x 22"D x 99"L Working volume: 185 gallons
  Detergent Reservoir (150) – ID 24"W x 22"D x 75"L Working volume: 140 gallons
  Rinse Reservoir (50) – ID 24"W x 22"D x 24"L Working volume: 45 gallons
- Working volume assumes 4 inches of freeboard for water displacement during loading.
- Pitched bottom designed for complete drainage. Includes removable perforated sump strainer.
- Tubular support legs with a set of (4) Heavy Duty 5" Diameter Non-Marking wheels with Stainless Steel hardware and foot brake installed on each leg for portability. If a large area or multiple rooms, the COP can be moved to several areas through a plant sanitation sequence, attached to utility sources, and be used to clean multiple processing lines.

1.2 Sanitary Jet Flow Design

- **Detergent Reservoir Only** – Dual side jet manifolds are located on front & back to provide effective turbulent, rolling cleaning action throughout the tank.

Alternate manufacturing methods using exterior butt-welded pipe and drilled rod creates many niche areas for bacteria harborage, and inadequate flow pattern.

Sani-Matic exclusive sanitary jet design is fully welded & precisely machined to eliminate niches, and create consistent high velocity jet flow.

- Sanitary manifold from the supply pump discharge to the jet manifold is removable for inspection and drainable. The manifold is constructed of sanitary design including tri-clamp connections.

1.3 Solution Compartment

- **Detergent & Rinse Section Water Fill** – Each tank section will a have customer supplied manual water fill valve located on the potable water line.
- Chemical is added manually. A chemical injection system is can be added as an option.
- **Rinse Reservoir Section:** The purpose of this section is to manually rinse all the components off which have been washed in the detergent section. Also, it will be used as a final rinse cycle for CIP application. A 2.5" manual-actuated butterfly valve will provided at the bottom of tank to be connected to the pump suction manifold with the detergent section of the tank.

  Tank size: 24"W x 22"D x 24"L
- The set-point temperature is maintained through direct inline steam injection with mixer/sparger and steam self regulating valve with integral thermobulb installed in the supply pump's suction manifold. The themobulb will be installed in the discharge manifold to control the water temperature by regulating the steam flow from the control valve. ***Note: 15 psi steam pressure (maximum) is required for heating the COP solution from 55-140ºF.***
- Detergent is continuously heated and recirculated, saving chemicals (conductivity sensor & controller is optional) and ensuring a consistent repeatable process. Higher temperatures and concentrations may be used safely as the process is contained within the COP tank, therefore worker safety is improved versus manual methods.

1.4 CIP/COP Valves

- **Solution Valves** – All cleaning fluid valves will be supplied as VNE sanitary polished butterfly style, manually operated, 304 stainless steel valves with EPDM seals.
- (2) 2.5" outlet valves provided to each compartment connected to the pump suction manifold.
- (2) 2" valves provided for discharge either to the CIP circuit or COP manifold.
- (1) 2.5" drain valve provided at the pump suction manifold.
- (1) 2.5" valve provided at pump suction for return of solution to the pump suction for CIP recirculation.
- **Discharge Manifold:**
- (1) Angle Line Strainer – Installed in supply pump discharge manifold to prevent fouling of spray devices. 316L SS construction, 20.75" long, 2"-TC ferrules, 0.015 wedge-wire inner frame filter.
- **Note**: Confirm CIP application for supply pump performance.

2. Sanitary Design & Construction Specification

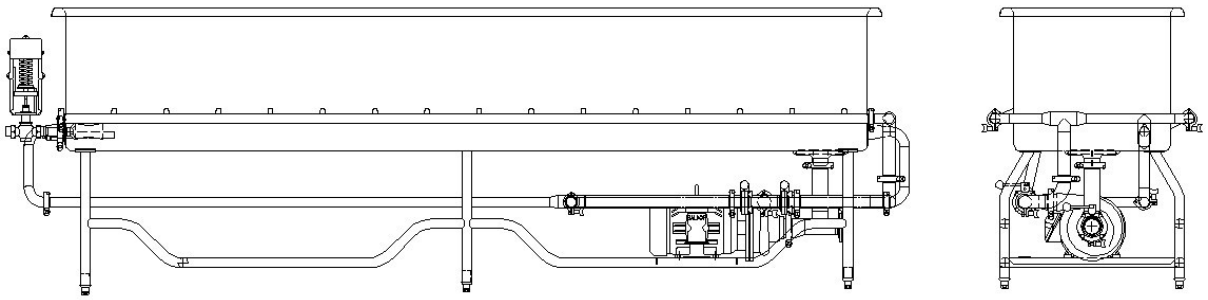
- **Wash tank** – Type 304 stainless steel, #4 finish. Internal welds are ground and polished and external welds are color cleaned and/or bead blast finished.
- **Material Thickness** – 14 GA 304 stainless steel.
- **Tubing Finish** – All tubing welds are gas backed ID/ buffed OD according to 3A standards. Tubing connections use Sanitary Tri-Clamp connections. Gaskets are EPDM, a heat & chemical resistant polymer.
- **Supply Pump (Detergent Section)** – Ampco AC-216 series sanitary centrifugal supply pump with Tri-Clamp connections sized to deliver 116 gpm @ 27 psi to jet manifold. Motor: 5 HP, TEFC, premium efficient wash down duty, 3500 RPM.
- ***Please note that the CIP requirements are to be confirmed prior to order placement to insure prior sizing of the pump.***

3. Motor Starter / Disconnect Assembly

- All skid-mounted motors will be provided wired to the control enclosure with 460 volt, 60HZ, 3 Phase and include 30 amp power disconnect switch, motor starters with overloads, fuses and control transformer and switches.
- Enclosure is 304SS, NEMA 4X, 12”H x 10”W x 6”D.
- (2) On/Off pushbuttons mounted in the door panel to control the supply pump.
- **Conduit Assembly** – Schedule 40 non-Metallic – Connection to low voltage electrical devices will be installed with flexible cord and/or cable. Flexible connections to electrical devices operating at 120 VAC and higher will be installed with seal-tite flexible conduit.
- Includes a 20’ of SO cord for electrical connection-plug not included.

4. Approximate Overall Dimensions

- 32”W x 43”H x 116”L (H = Height from floor to top edge of tank)
- Add 30” to the height when the optional cover is in the open position.
- Note: Drawing is for reference only.



5. Utility Requirements

The following utilities are Sani-Matic's basis for the design of the CIP/COP system:

(RW-50/150)	Pump Electric:	7.5 FLA @ 460 VAC, 3 Phase, 60 Hz
Detergent Section (150 Gallon)	Water: Steam:	140 gallons @ 55° F 417 Lbs / Hr @ 15 psi – Customer to provide and install manual shutoff valves and Y-Strainer. See Note below for heating.
Rinse Section (50 Gallon)	Water:	45 gallons @ 55° F

Note: Steam requirements based on heating the tank capacity of the wash section from 55°F to 140°F in approximately 15 minutes.

ITEM 5: COMPONENTS

a. Receiving Pump 10 HP
b. HTST Transfer pump 2 HP
c. One (1) Lot of sanitary Valves
d. One (1) Lot of steam valves and hoses

ITEM 6: INSTALLATION

e. Raw Milk receiving
f. Storage Tank piping
g. Fabrication of HTST system per P&ID using 304SS SS tubing and fittings.
h. Process Line to Cheese Vats and CIP return
i. Low Pressure Culinary Steam Line to Cheese Vats
j. CIP piping and returns

ITEM 7: ENGINEERING, INSTALLATION, AND PROJECT MANAGEMENT

- Process Design
- Detailed drafting of installation drawings
- Design services that will provide the order detail for purchased items
- Design services for coordination of process, building design, electrical and mechanical services
- Submittal of design documents to Public Health Regulators

- Installation
  - Qualified Stainless steel welders fabricating per 3 A standards
  - Price includes all tools, travel, consumables, rentals

- Site Services
  - Field Construction Technician on site as required during construction and startup.
  - Design Engineer and Project Manager periodic visits during construction and startup as required. Anticipate minimum 1 visit/ week during construction
  - Sanitary and utility installation fitters and welders, meeting PMO specifications for sanitary welds.
  - System start up team that will handle all aspects of mechanical startup.
  - Rigging for new equipment
  - Electrical connection including wiring and conduit for new equipment and instruments

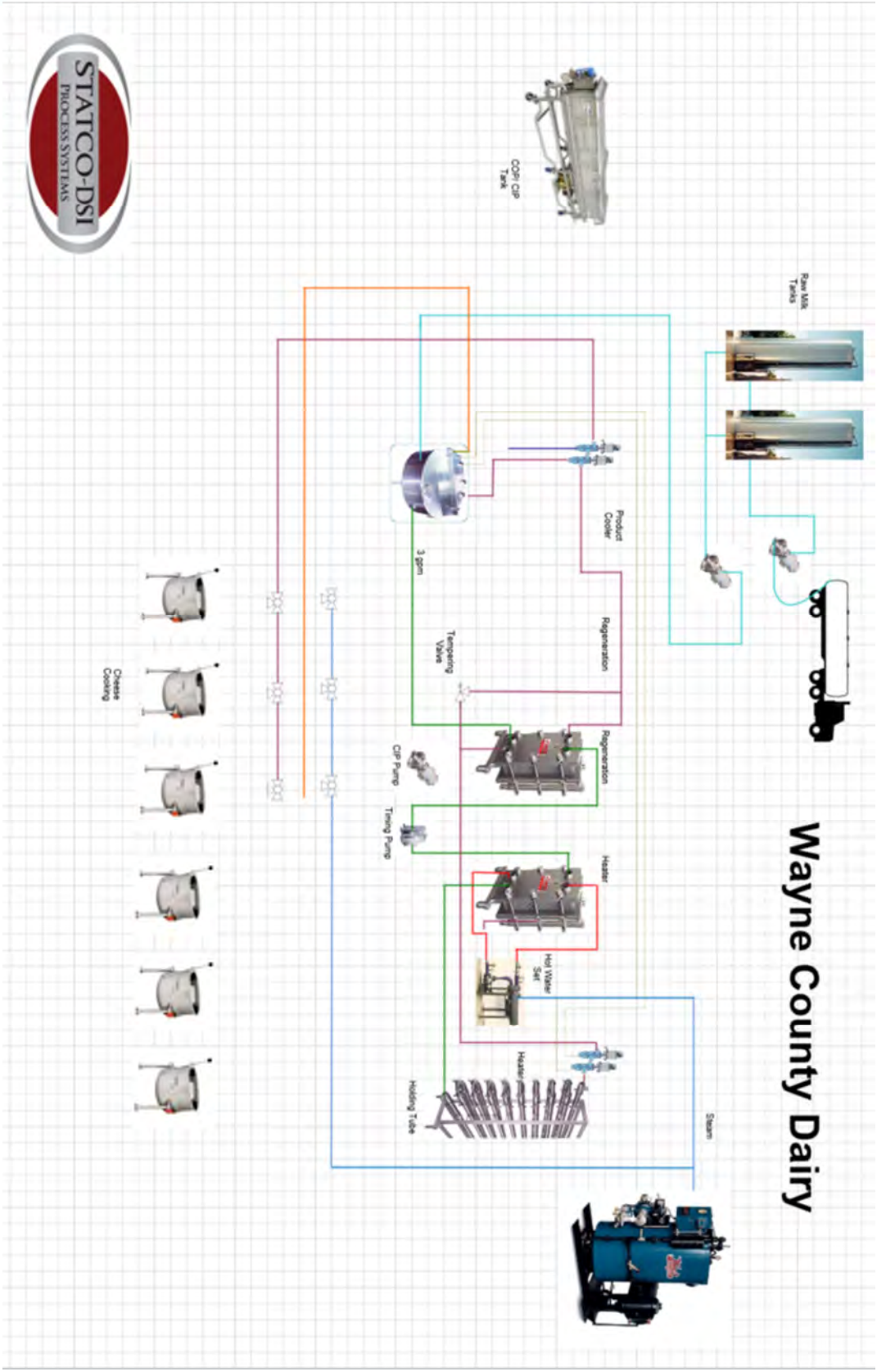
BUDGET ESTIMATE

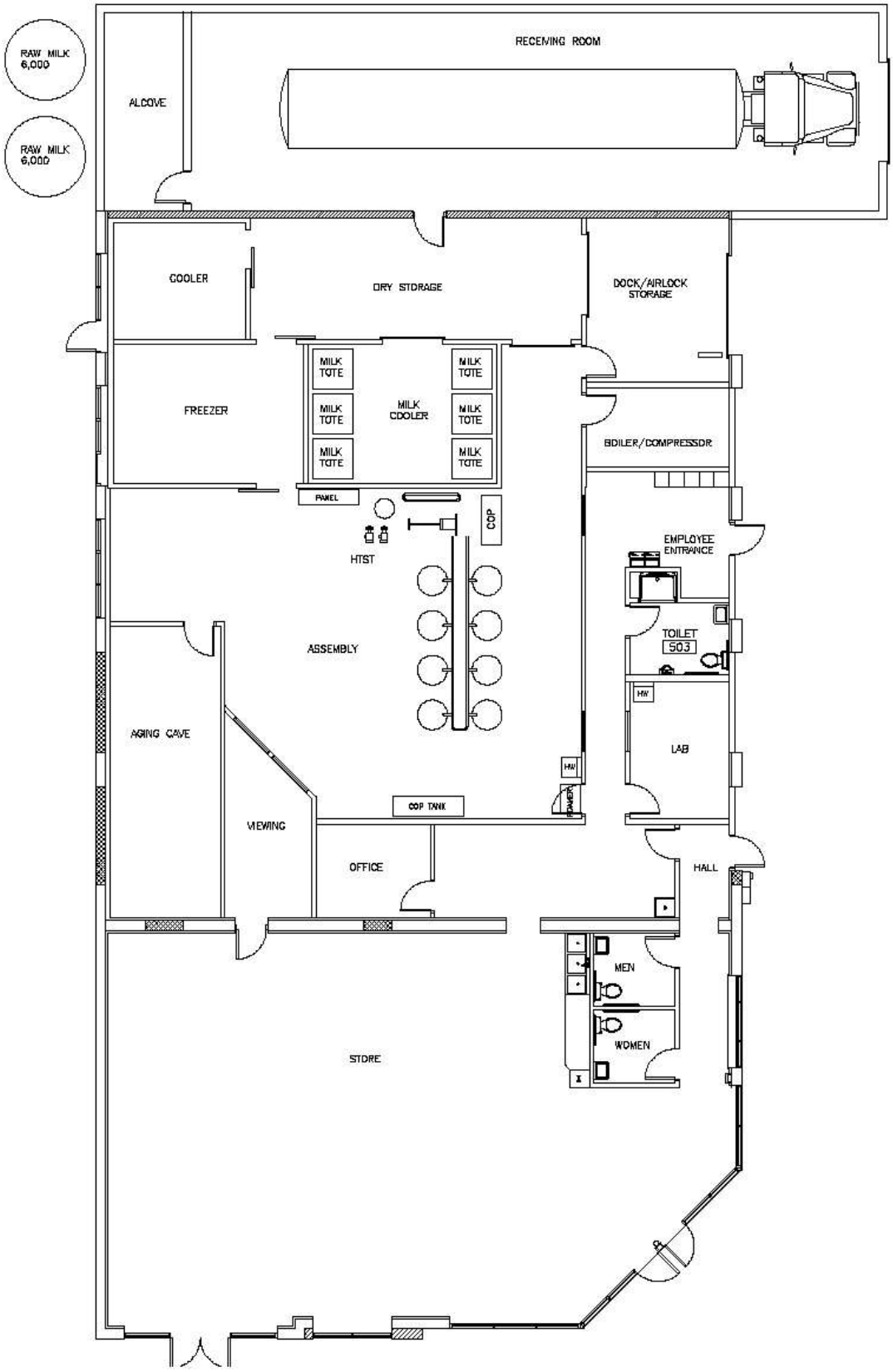
The budget estimate for the process equipment and installation in this report is **$ 795,000** based on today's pricing. Actual building conditions, timing, etc. can affect this estimate.

ITEMS NOT INCLUDED IN OUR NORMAL SCOPE:

- Building or Building Modifications except where specified.
- Boiler (Approximately 25 HP required)
- Utility Piping and Connections (Steam, Water, Air)
- Chemical Pumps
- Air Compressor
- Freight
- Taxes
- Bonds

PREPARED BY: *David Boyd*
David Boyd
Regional Engineering Manager
Statco-DSI


Wayne County Dairy
Raw Milk Tanks
CIP Tank
Product Cooler
Regeneration
Tempering Valve
3 gpm
Cheese Cooking
CIP Pump
Timing Pump
Heater
Hot Water Set
Holding Tube
Steam


RAW MILK 6,000
RAW MILK 6,000
ALCOVE
RECEIVING ROOM
COOLER
DRY STORAGE
DOCK/AIRLOCK STORAGE
FREEZER
MILK TOTE
MILK TOTE
MILK TOTE
MILK COOLER
MILK TOTE
MILK TOTE
MILK TOTE
BOILER/COMPRESSOR
PANEL
COP
HTST
EMPLOYEE ENTRANCE
ASSEMBLY
TOILET 503
HW
AGING CAVE
LAB
HW
POWER
COP TANK
VIEWING
OFFICE
HALL
MEN
WOMEN
STORE

Typical Terms and Conditions

PURCHASER'S RESPONSIBILITIES

Purchaser shall fully comply with its obligations as specified in the Proposal and these Terms and Conditions and the Plant Completion Procedure, if applicable, in accordance with the agreed upon time schedule. If there is no time schedule, Purchaser shall comply with its obligations as required for the timely implementation of the project. Purchaser shall obtain all necessary licenses, permits and approvals for the delivery and installation of the Equipment and the execution and completion of the Services. In such cases where Seller shall be performing Services, Purchaser shall supply free of charge all items not specified as the responsibility of Seller that are necessary for the Seller to comply with its obligations. Without restricting the generality of the foregoing, Purchaser shall give Seller unhindered access to the Site and provide all tools, services, raw materials not specified in the Proposal, facilities, utilities and connection required for the proper installation, start-up and tests of the Equipment at the Site. Purchaser shall furthermore provide adequate telephone and fax services and office space free of charge, if requested by Seller. Seller shall keep such requests for services and space to a reasonable level and amount. Purchaser shall insure that the project site is safe, secure and clean prior to the commencement of Seller's Work and, unless otherwise agreed in the quotation, shall remove all equipment intended to be discarded or replaced. Provided Seller gives Purchaser prompt written notice of any claim and cooperates with Purchaser with respect to such claims, Purchaser agrees to indemnify, defend, and hold Seller and its successors and assigns, and each of its officers, directors, shareholders, employees, agents and representatives, free and harmless from all claims, demands, losses, costs, expenses, obligations, lawsuits, judgments, liabilities, damages, recoveries, and deficiencies, including interest, penalties, attorney's fees, and costs, to the extent directly or indirectly incurred, whether during or after completion of the project, in connection with, or caused by or arising out of, or relating to, or resulting from (i) a breach by Purchaser of any representation, warranty or covenant contained in this agreement or other document, or (ii) errors, acts or omissions of Purchaser or its agents, employees, or representatives, other contractors or subcontractors and other persons or companies performing any part of project, or (iii) any use, operation, misuse, abuse, maintenance or repairs of equipment by Purchaser before or after take-over by Purchaser.

PAYMENTS & TAXES

The term "Price" as used herein refers to the price of the Equipment and Services, if any, provided. Purchaser shall pay Seller in accordance with the payment terms and schedule set out in Proposal. The Price is exclusive of all taxes, duties and other charges or fees, which shall be paid by Purchaser. If there is no payment schedule in the Proposal, Purchaser shall pay Seller the Price as invoiced by Seller in accordance with normal and customary practices of the trade, but in no event later than 30 days after invoice.

Unless otherwise specified in the Proposal, in case of delayed payment, Purchaser shall pay Seller interest on the amount delayed at the rate of five (5) percent per annum over the average Wall Street Journal Prime Rate during the period of default or at the highest rate allowed by applicable law, whichever rate is lower. In the event Purchaser does not strictly comply with the terms of payment set out in the Proposal or herein, Seller may without penalty, in addition to any other remedies available to Seller, suspend all performance until Purchaser has so complied.

DELIVERY

Unless otherwise specified, the delivery terms shall be f.o.b. Seller's factory. Unless the Purchaser and Seller agree otherwise, Seller may make arrangements to ship the equipment on behalf of the Purchaser and charge for the cost of shipment and insurance. The time for delivery of the Equipment and/or for the execution and completion of the Services shall start to run upon the resolution of all technical and commercial terms or receipt by Seller of any agreed advance payment, whichever is later.

In no event shall Seller be liable or responsible to Purchaser for any lost profits, lost revenues, or liquidated, indirect, punitive, incidental or consequential damages ("Excluded Damages") that may be caused by delays or failure to complete the project in accordance with the schedule, or other negligent or willful acts or omissions of Seller, regardless of fault or the cause or reason thereof. The Seller shall not be liable for delays or non-performance caused, directly or indirectly, by invasion, insurrection, and riot, and war, military or usurped power or by order of any civil or military authority, or by fire, flood, strike or labor difficulty, or by any other cause beyond its control, whether of the same or different nature. If Purchaser is unable or unwilling to accept physical delivery of the Equipment at the time specified in the time schedule or herein, Seller may store the Equipment at Purchaser's cost. In such an event, the Equipment shall be deemed delivered as of the date of storage for purposes of payment, commencement of warranties, and timeliness of Seller's delivery.

WARRANTIES

Mechanical Warranties on Equipment

1. Seller warrants Purchaser that each item of Equipment is as specified in the Proposal. Seller further warrants that each item of Equipment quoted is free from defects in the design (if designed by Seller), materials and workmanship. This warranty also extends to any repairs or replacement performed by Seller of defective Equipment during the warranty period.
2. The warranty period on each item of Equipment is one (1) year after its delivery or Take-Over if Seller is installing the Equipment. To the extent that Manufacturer's Warranties are assignable, Seller Process Systems hereby assigns such warranties, but in no event will Seller be held responsible for fulfilling any Manufacturer's Warranties.
3. Seller shall repair, replace or, at its option, refund the Price of any item of Equipment found to be defective during the warranty period. This is Purchaser's sole and exclusive remedy for Equipment that does not meet the above-specified mechanical warranty or any other mechanical warranty specified in the Proposal. Seller shall not be liable for any Excluded Damages resulting from delay, loss of use or otherwise whether caused by defective material, workmanship. Purchaser must notify Seller in writing of the claimed defect promptly after the appearance thereof and in no event later than thirty (30) days after the expiration of the warranty period.
4. Seller shall have no responsibility for damages caused by or to the Equipment as a result of:
    a) Ordinary wear and tear;
    b) Unintended use, misuse, abuse, negligence, or improper storage, installation, maintenance, operation or repairs by Purchaser or by persons not under Seller's control.
5. Unless otherwise specified, Purchaser shall bear the cost and risk of loss of or damage to Equipment in return shipment to Seller. Seller shall bear cost and risk of loss of or damage to repaired or replaced items of Equipment in return shipment to Purchaser. Any defective items of Equipment that are replaced by Seller shall thereupon become Seller's property.
6. SELLER MAKE'S NO OTHER WARRANTIES DIFFERING FROM OR IN ADDITION TO THOSE CONTAINED HEREIN AND HEREBY DISCLAIMS ANY IMPLIED WARRANTIES, WHETHER OF MERCHANTABILITY, SUITABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

Warranties on Service (Only applies if Seller performs service)

1. Seller warrants that the Services will be executed using the degree of skill and care required by customarily accepted good professional and technical practices. Seller shall exercise due care, sound judgment and good engineering in carrying out its Services.
2. Seller shall re-perform any Services which are not in conformity with the required degree of skill and care as stated above, provided that Purchaser notifies Seller of any alleged deficiency promptly (and not later than three (3) months) after Discovery, and in no event later than (3) months after project completion. Such re-performance of Services is Purchasers sole and exclusive remedy for Services that fail to meet the foregoing standards.
3. Seller shall not be responsible for any deficiencies in the Services caused by:
    a) Design parameters stipulated by persons other than Seller;
    b) Information supplied by Purchaser or by persons under Purchaser's control or contracts;
    c) Work performed by workmen or other persons not under Seller's direct control.

VARIATIONS

Variation Orders. Purchaser may order variations in the general scope of Seller's obligations. Seller shall have no obligation to accept such variation until both Seller and Purchaser have executed a variation order form which adjusts the purchase price and warranties as may be appropriate, and by which Purchaser completely indemnifies Seller for all cost incurred as a result of the change. Failure of Seller and Purchaser to execute a written variation order shall not be deemed a waiver by Seller to claim damages or request modifications to price or schedule at a later date.

Changes by Purchaser. Purchaser shall not make any changes to the drawings supplied by the Seller, the Equipment, and/or the Plant without Seller's prior written consent. Seller shall not unreasonably withhold consent, but may in any event withhold consent if in the determination of the Seller such change would adversely impact the Equipment, Services or Plant's ability to meet the Performance Criteria or if such change would result in uncompensated additional costs or damages to Seller. If such change is made by Purchaser, without the consent of the Seller, the Equipment and Services shall be deemed accepted by Purchaser regardless of the result of any performance tests. In addition, unauthorized changes by Purchaser without Seller's consent shall void all warranties and terminate all Seller indemnification obligations.

Substitution of Equipment. Seller may substitute any item of Equipment or parts thereof for another item of equal or better performance. Purchaser, however, shall not be responsible for any additional price for the substituted item without its consent.

INSPECTION OF EQUIPMENT

Unless otherwise specifically stated as part of the Services of Seller, Purchaser shall promptly unpack and inspect the Equipment at the place of delivery. Seller may be present at such inspection, at Seller's option. Purchaser must notify Seller in writing within three (3) days after the inspection of any missing, damaged or defective items of Equipment. Failure to so notify Seller shall be deemed final acceptance and Purchaser shall be deemed to have waived any claim of any defect of or damage to the Equipment or missing parts. Purchaser's notification of missing, damaged or defective equipment shall not constitute conclusive evidence of the Equipment's condition at the time of delivery.

DRAWINGS AND TECHNICAL DATA

Any descriptive data found in any advertisement, catalogue, brochure, circular or the like are approximate only. They shall not be considered as any warranty or legal obligation of Seller unless specifically contained in any Take-Over and Performance Criteria. Unless otherwise specifically stated, all confidential, proprietary information of Seller shall remain the sole and exclusive property of Seller. Seller grants Purchaser a perpetual nonexclusive nontransferable license to use such confidential, proprietary information at the Plant for the purpose specified in the Proposal. All drawings and technical data supplied by Seller shall be considered as confidential except those drawings and data already in the public domain or known to Purchaser prior to disclosure by Seller. Purchaser shall not transmit or communicate any confidential drawings or data to third parties or utilize same other than for the purposes of use at the Plant, without Seller's prior consent. Purchaser shall not make any changes in any drawings of Seller without Seller's prior written consent. Unauthorized changes by Purchaser in any drawings without Seller's consent shall void all warranties and terminate all Seller indemnification obligations.

LIABILITY

Purchaser's sole remedies for delays in delivery of Equipment, completion of Services, defective Equipment and Services and failure to meet any Take-Over or Performance Criteria and all other breaches of Seller's obligations are as stated herein. Seller shall be liable for direct physical damage to the Equipment caused by Seller's negligence in performing the Services. If the Services include supervision of the installation of the Equipment, Seller shall also be liable for direct physical damage to the Equipment caused by Seller's incorrect instructions to installers. Seller shall not be liable for the quality of installation performed if not done by Seller or by Seller's subcontractors. Other than as specified herein, Seller shall not be liable for any direct damages or any Excluded Damages, whether claimed in contract, warranty, tort (including negligence) or otherwise. The total aggregate liability of Seller for any loss, damage, or compensation whatsoever, including payment of direct damage to the Plant as specified above, shall never exceed an amount equal to fifteen (15) percent of the Price of the Equipment and Services provided.

TAKE-OVER AND PERFORMANCE CRITERIA

The fulfillment of the Take-Over and Performance Criteria, if any, will be proven during testing of the Equipment during Plant Completion Procedure. The fulfillment is expressly contingent on the following conditions as well as any other conditions specified in the Take-Over and Performance Criteria or in the Plant Completion Procedures:

a) Correct Installation of the Equipment if not installed by or under the supervision of Seller, all to the satisfaction of Seller;
b) Correct quantity and quality of raw materials, utilities and consumables, all to the satisfaction of Seller;
c) Compatibility and correct installation of equipment not supplied by Seller, all to the satisfaction of Seller;
d) Competent and adequate personnel available during the Plant Completion Procedure, all to the satisfaction of Seller;
e) The warranty period of the Equipment has not elapsed. If Purchaser is unable to comply with the above- specified conditions, Seller shall not be obliged to begin or continue with any tests until such conditions have been met. The Take-over and Performance Criteria as well as the test procedure shall be as agreed by Seller and Purchaser but failing such agreement, as Seller shall deem reasonably appropriate and which is in accordance with custom and usage of the appropriate trade or industry. In some cases, there may be no test.

If the Equipment or any portion of the Equipment fails to meet the Take-Over and/or Performance Criteria, Seller shall at its own cost make any alterations and adjustments to the Equipment as Seller deems appropriate. Seller may then repeat the tests. If after making adjustments and alterations, Seller is unable to meet the Take-Over Criteria, Purchaser's remedy is to return that portion of the equipment that has so failed for a refund of its Contract price.

If after making adjustments and alterations, Seller is unable to meet the Performance Criteria, Purchaser's remedy is to accept that portion of the Equipment that has so failed at an adjusted price. The price adjustment shall be based on the ratio between the actual level of performance and the guaranteed level. The maximum price adjustment shall be ten (10) percent. If the actual performance is less then ninety (90) percent of the guaranteed level, Purchaser may, at its option and instead of the said price adjustment, return that portion of the Equipment for a refund of its price.

The foregoing is Purchaser's sole and exclusive remedy for failure to meet the Take-Over and/or Performance Criteria.

GENERAL

The action or failure to act by Seller or Purchaser to enforce any one or all of the rights granted either party shall not act as a waiver of that right or serve as agreement to a breach of any of the provisions for the applicable document.

No change or alterations of any term herein or in any other document of Seller may be made without the written agreement of both parties. The written agreement shall set forth the change and shall be signed by any authorized individual of each party.

These terms and conditions and all other documents, certificates and instruments related to the purchase, sale, supply, delivery or installation of the Equipment or Services shall be construed under and governed by the laws of the State of California, without giving effect to any conflict of laws principles.

THE PROVISIONS HEREOF AND THE OTHER DOCUMENTS ISSUED HEREWITH CONTAIN THE ENTIRE AGREEMENT OF THE PARTIES AND SUPERSEDE ALL PRIOR OR SIMULTANEOUS OR SUBSEQUENT PROPOSALS, STATEMENTS, PURCHASE ORDERS, PROMISES, NEGOTIATION OR THE LIKE, WHETHER WRITTEN, ORAL OR IMPLIED. THE EQUIPMENT AND THE SERVICES ARE SOLD AND OFFERED FOR SALE PURSUANT TO THESE TERMS ONLY. SELLER HEREBY OBJECTS TO AND REJECTS ANY DIFFERING OR SUPPLEMENTAL TERMS, WHICH MAY BE FOUND IN ANY OF PURCHASER'S DOCUMENTS.