Manufacturing Cost Annual

California 2010 Data

cdfa

CALIFORNIA
Manufacturing
Cost Annual

2010 Data
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Special Thanks

This publication would not be possible without the cooperation of the individuals and firms engaged in the production, manufacture, and distribution of milk and dairy products.

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Introduction

The California Food and Agricultural Code specifies that the California Department of Food and Agriculture (CDFA) must consider manufacturing costs in determining appropriate minimum prices for products categorized as Class 4a (butter and dried milk products) and Class 4b (cheese and whey products). To comply with the legislative decree, CDFA has a direct need for gathering and summarizing information provided in the cost studies to formulate reasonable manufacturing cost (make) allowances through the public hearing process.

CDFA maintains a Manufacturing Cost Unit that consists of professional auditors specializing in dairy accounting practices. The auditors work with plant management to gather data on all aspects of the operation, review plant records on-site, and allocate plant expenditures to each product manufactured by the plant. The studies are conducted and developed in conformity with generally accepted accounting principles, cost accounting techniques, and instructions contained in the Dairy Marketing Branch's Audit and Cost Procedures Manual.

Any plant that produces Class 4a and/or Class 4b products may be asked to participate in the cost studies. Information gathered in the studies provides an accurate sampling of California's annual butter, nonfat dry milk (NFDM), and Cheddar cheese production. This California Manufacturing Cost Annual includes 2010 data obtained from eight butter plants, nine NFDM plants, and six Cheddar cheese plants. Data on condensed skim and cream is collected concurrently from plants that participate. Plants that manufacture condensed skim and cream but do not manufacture butter, NFDM, or Cheddar cheese are not included in the condensed skim and cream overview. As a result, data on condensed skim and cream is based on a much lower percentage of annual production.

The data from the cost studies has a practical significance beyond the boundaries of California. They are the only studies in the U.S. which present the audited and detailed processing costs of butter, NFDM, and Cheddar cheese over several years. For the plants in the study, the results can help to isolate the actual costs of manufacturing and provide benchmark figures obtained from other California manufacturing plants. Consequently, although CDFA has the legal authority to collect cost information from the various types of milk processors, the majority of plants have found the information contained in the studies valuable and have cooperated voluntarily.

Introduction

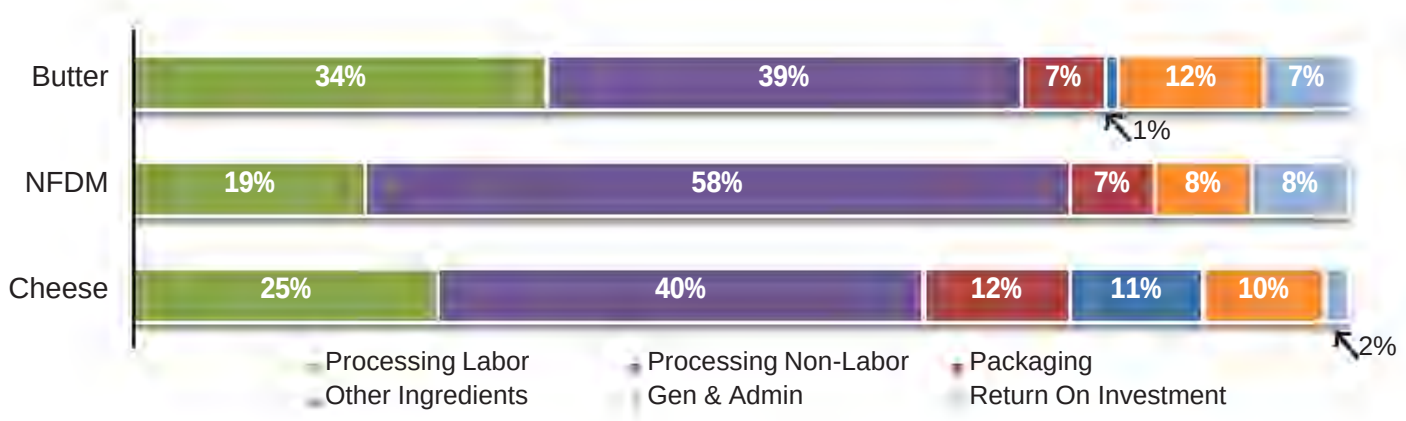
Manufacturing Cost Overview

The weighted average manufacturing cost of a product includes six categories as described. To obtain a weighted average cost, an individual plant cost is weighted by the plant's production volume relative to the total volume of all the plants included in a study.

- Processing labor costs are derived from plant wages, plant salaries, payroll taxes, and fringe benefits associated with the processing of a product.
- Processing non-labor includes costs such as, utilities, repairs, maintenance, supplies, depreciation, plant insurance, outside storage, and rental expenses.
- Packaging costs include all non-reusable items used in the packaging of a product, such as boxes, bags, tape, glue, and stretch wrap.
- Other ingredient costs may include salt, color, rennet, etc.
- General and administrative costs include expenses incurred in the management of a plant, for example, office supplies, short-term interest, dues and subscriptions, accounting fees, headquarter expenses, office clerical wages, and executive salaries.
- Return on investment (ROI) allowance is an opportunity cost that represents how much interest the plant could have earned if its capital was not tied up in land, buildings, and equipment. In other words, it is viewed as an alternative source of income had the plant invested its capital elsewhere. ROI costs are calculated by subtracting accumulated depreciation from the original cost of assets, then multiplying the remaining book value by the Moody's BAA corporate bond index.

The chart below displays the breakdown of manufacturing cost for each product by category (Figure 1).

Figure 1. Manufacturing Costs by Category



Butter Study

The butter study included eight butter plants. The eight plants processed 552.4 million pounds of butter during the period January 2010 through December 2010, representing 99.2 percent of the butter processed in California. Production included both bulk and cut butter; however, to determine packaging costs, only 25-kg bulk butter packaging materials were considered.

Total butter production for this study increased approximately 40 million pounds since 2009. Of the total butter processed, bulk butter accounted for 45 percent and cut butter made up the remainder (Figure 2). In 2010, the participating processors increased their bulk butter production to 246.8 million pounds while cut butter production decreased slightly to 305.6 million pounds. Figure 3 shows how bulk, cut, and total butter volumes have changed over the years.

To avoid revealing plant specific information, each plant was assigned to either a low or high cost group based on its total manufacturing cost.

Figure 2. Butter Packaging Size

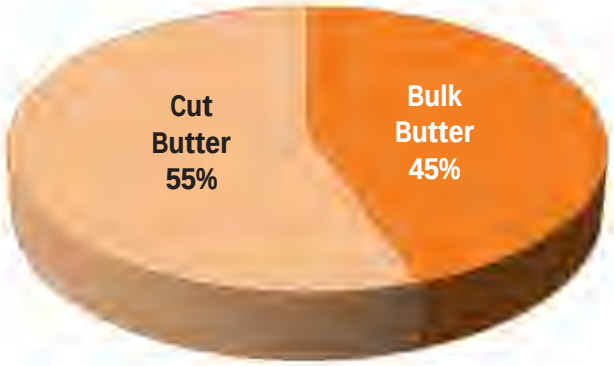
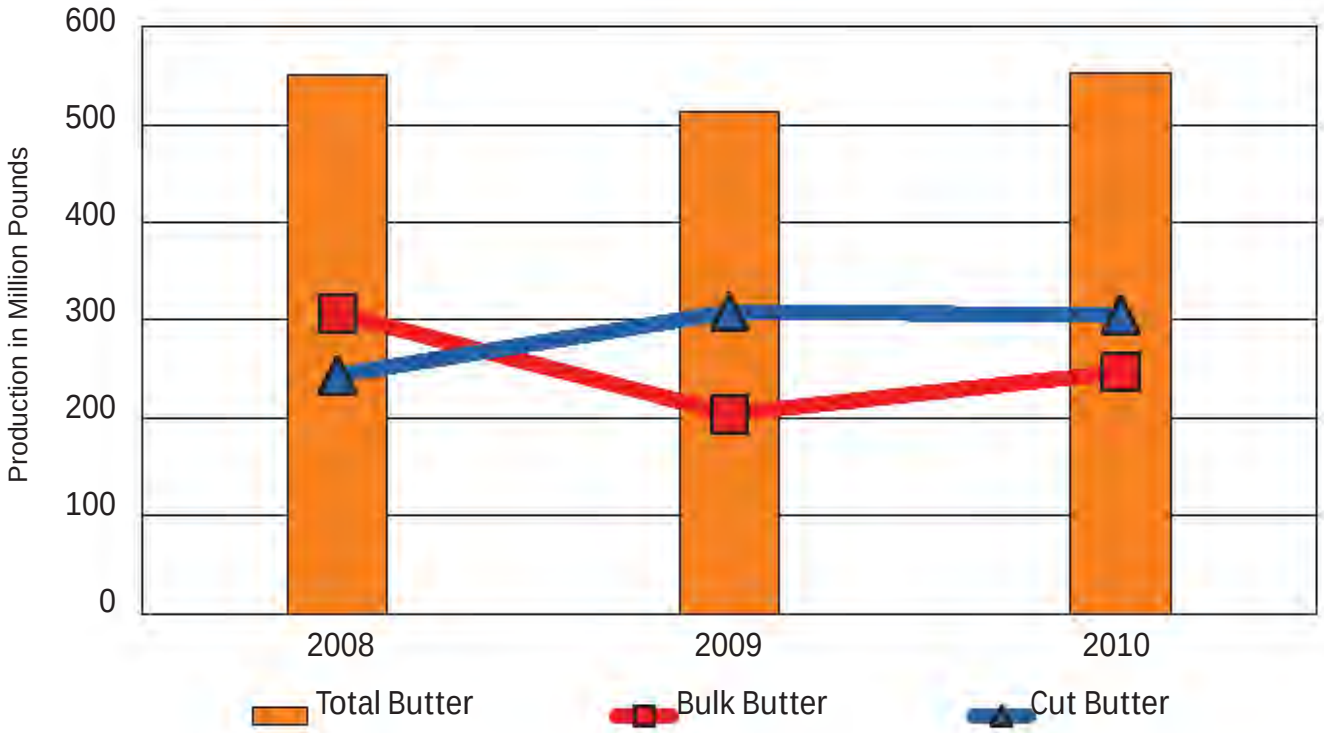


Figure 3. Butter Production Comparison



Butter Study

Figure 4. Butter Manufacturing Costs

CURRENT Study Period: January through December 2010
With Comparison to the same time period Prior Year (2009)

- Manufacturing cost data were collected and summarized from eight California butter plants. The eight plants processed 552.4 million pounds of butter during the 12-month study period, January through December 2010, representing 99.2% of the butter processed in California.
- The volume total includes both bulk butter and cut butter, but the costs reflect only costs for bulk butter (25 kg and 68 lb. blocks).
- To obtain the weighted average, individual plant costs were weighted by their butter processing volume relative to the total volume of butter processed by all plants included in this cost study.
- For this study period, approximately 4.7% of the butter was processed at a cost less than the current manufacturing allowance for butter of $0.1635 per pound.

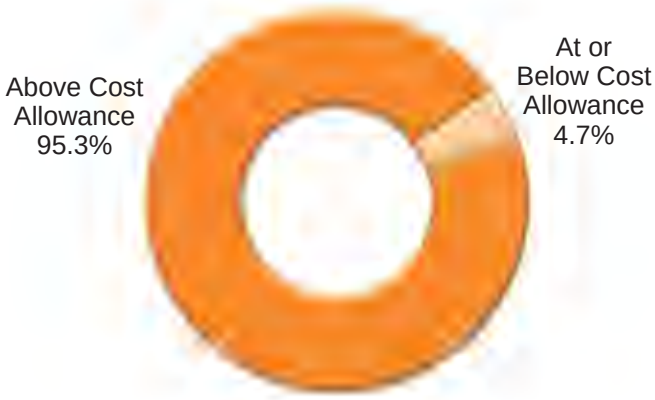
Breakdown of Butter Manufacturing Costs - January through December 2010

Categories	Low Cost Group	High Cost Group	Range of Costs		CURRENT Weighted Average Cost All Plants Jan-Dec 2010	PRIOR YEAR Weighted Average Cost All Plants Jan-Dec 2009	Actual Difference Current Less Prior Year
			Minimum	Maximum			
	Dollars Per Pound of Butter						
Number of Plants	4	4	8	8	8	8	0
Processing Labor	$0.0613	$0.0584	$0.0342	$0.2261	$0.0598	$0.0620	-$0.0022
Processing Non-Labor	$0.0694	$0.0693	$0.0505	$0.2230	$0.0694	$0.0718	-$0.0024
Packaging	$0.0111	$0.0120	$0.0100	$0.0134	$0.0116	$0.0124	-$0.0008
Other Ingredients	$0.0026	$0.0017	$0.0015	$0.0030	$0.0021	$0.0024	-$0.0003
General & Administrative	$0.0170	$0.0272	$0.0166	$0.0452	$0.0222	$0.0182	$0.0040
Return on Investment	$0.0068	$0.0189	$0.0027	$0.0340	$0.0130	$0.0143	-$0.0013
Average Total Cost	$0.1682	$0.1875	--	--	$0.1781	$0.1811	-$0.0030
Volume in Group (Lbs.)	269,294,778	283,084,117	--	--	552,378,895	512,544,105	39,834,790
% Volume by Group	48.80%	51.20%	--	--	100.0%	100.0%	--

In 2010, each cost group included four plants. Figure 4 lists the weighted average cost per pound for each category of the butter manufacturing cost.

For this study period, approximately 4.7% of the butter was processed at a cost less than the current manufacturing allowance for butter of $0.1635 per pound (Figure 5).

Figure 5. Butter Manufacturing Cost Allowance and Production



Butter Study

Butter Manufacturing Costs

Processing labor costs were $0.0598 per pound and represented 34 percent of the butter manufacturing cost. A further breakdown revealed general plant labor costs were the largest of labor costs at 30 percent. General plant includes plant supervision and various general plant labor expenses. The weighted average bulk packaging labor cost of $0.0174 per pound accounted for 29 percent of total processing labor cost (Figure 6).

Figure 6. Butter Processing Labor

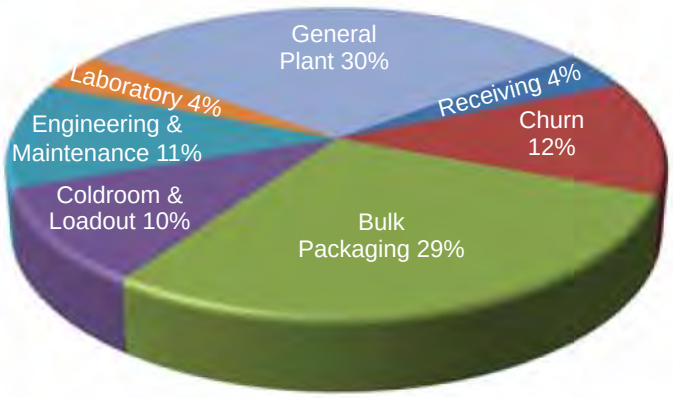
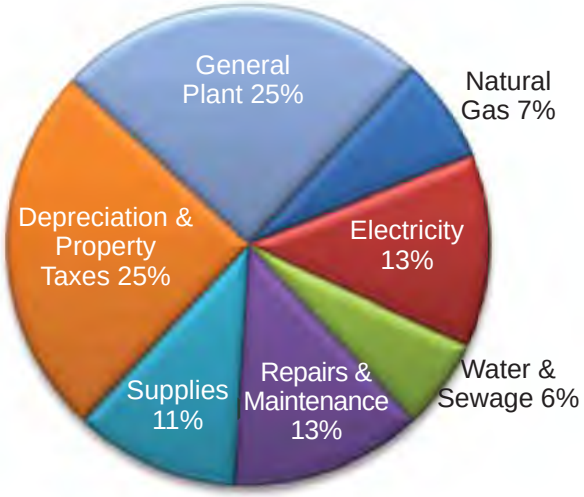
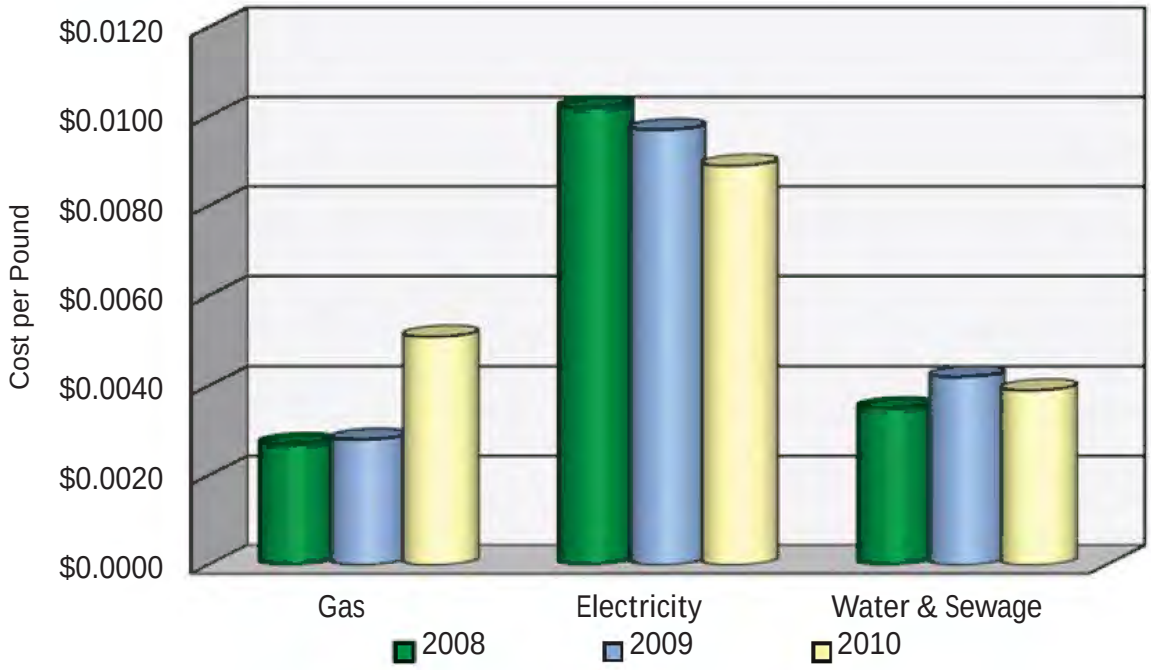


Figure 7. Butter Processing Non-Labor



Processing non-labor costs were $0.0694 per pound and accounted for 39 percent of the manufacturing cost. The combined utility costs for electricity, natural gas, and water & sewage accounted for 26 percent of processing non-labor (Figure 7). An annual comparison of utility costs is presented below (Figure 8).

Figure 8. Butter Utilities Comparison



Butter Study

The total volume of butter used to determine the weighted average cost included both bulk and cut butter. However, only packaging costs for 25-kg bulk butter were considered. The weighted average packaging cost of $0.0116 per pound accounted for 7 percent of the manufacturing cost.

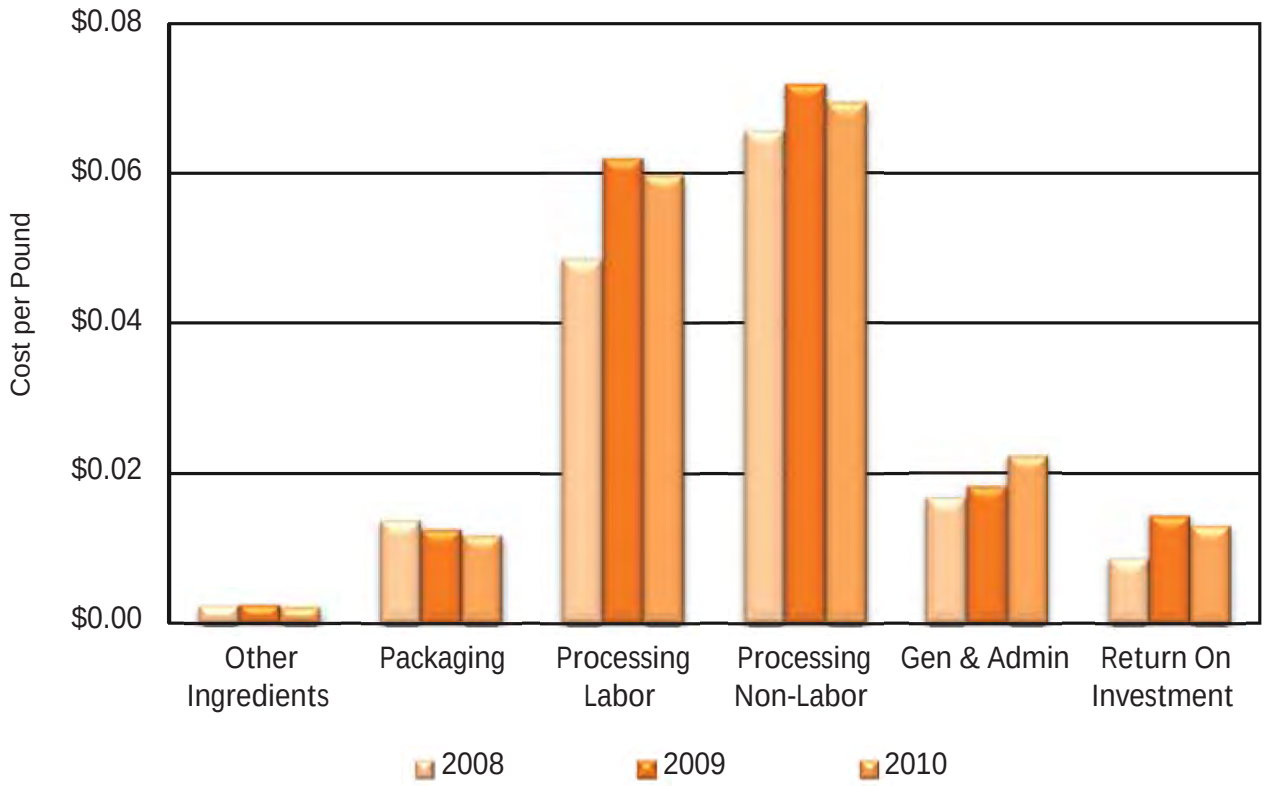
Other ingredient costs decreased slightly in 2010. The weighted average cost of $0.0021 per pound represented 1 percent of the manufacturing cost.

General and administrative costs increased to $0.0222 per pound and represented 12 percent of the manufacturing cost.

Return on investment costs decreased to $0.0130 per pound and accounted for 7 percent of the manufacturing cost.

The cost of manufacturing butter decreased to $0.1781 from $0.1811 per pound the prior year. Figure 9 displays cost comparisons for each category and the changes that have occurred over a three-year period.

Figure 9. Butter Manufacturing Costs Comparison



Nonfat Dry Milk Study

The 2010 NFDM study included nine plants whose combined production was 875.0 million pounds, representing 99.4 percent of the NFDM produced in California. Of the 875.0 million pounds produced, 99.67 percent was sold for human consumption, and 0.33 percent was sold as animal feed.

The total NFDM production for this study gained 7 percent over the prior year. 72 percent of the NFDM was packaged in 25-kg or 50-lb multi-wall bags, and 28 percent was packaged in totes weighing between 1,100 to 3,200 lbs each (Figure 10). NFDM production has increased steadily since 2008. Figure 11 displays the changes in production over the last three years.

To avoid revealing plant specific information, each plant was assigned to either a low cost group, medium cost group, or high cost group based on its total manufacturing cost.

Figure 10. NFDM Packaging Size

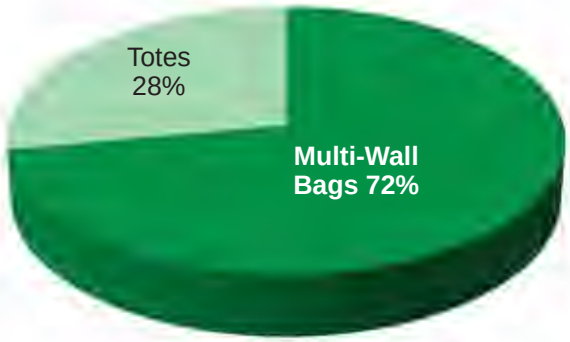
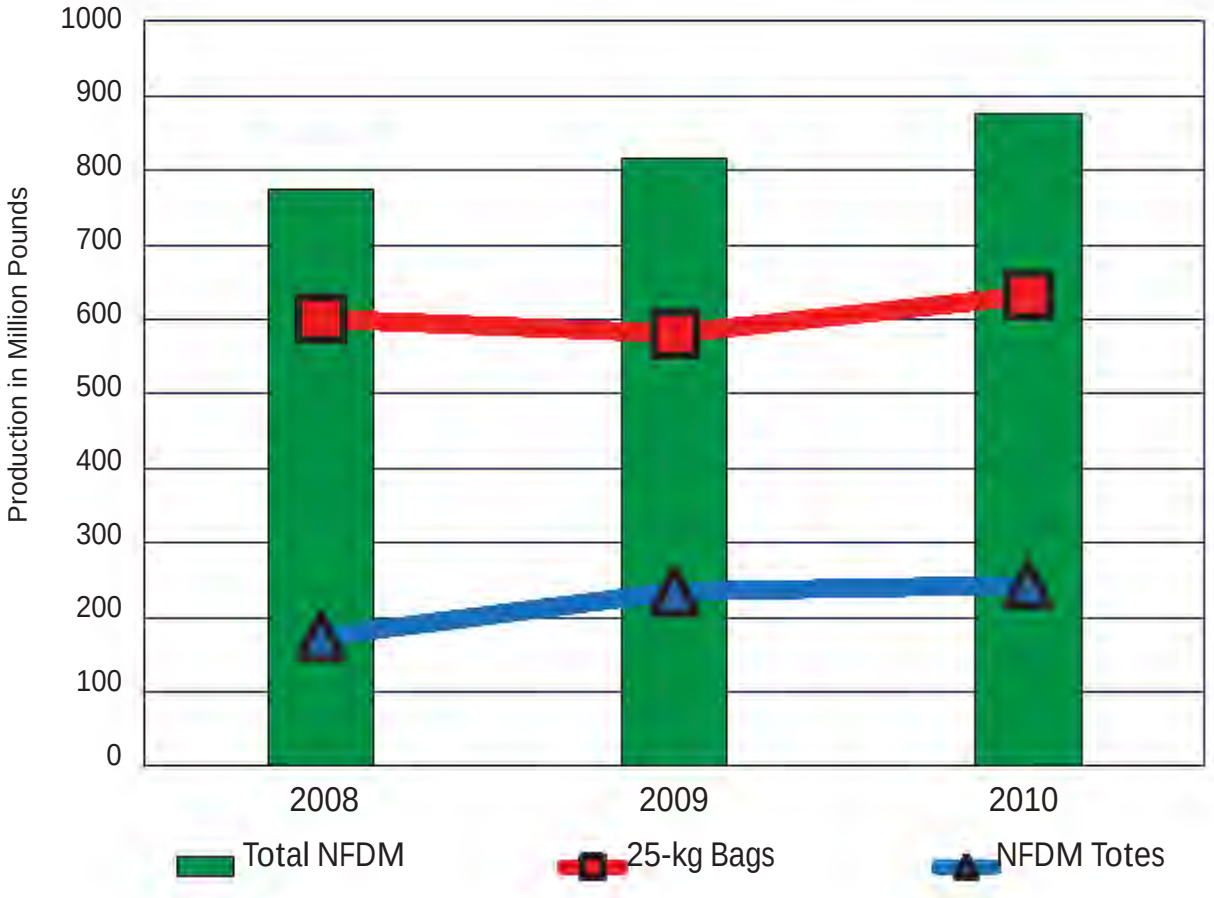


Figure 11. NFDM Production Comparison



Nonfat Dry Milk Study

Figure 12. Nonfat Dry Milk Manufacturing Costs

CURRENT Study Period: January through December 2010
With Comparison to the same time period Prior Year (2009)

- Manufacturing cost data were collected and summarized from nine California NFDM plants. The nine plants processed 875.0 million pounds of NFDM during the 12-month study period, January through December 2010, representing 99.4% of the NFDM processed in California.
- The volume includes NFDM, both animal and human consumption. NFDM for human consumption represented 99.67% of the 875 million pounds of NFDM processed, and NFDM for animal consumption represented 0.33%.
- The volume total includes all grades of NFDM packaged in any container size, but the costs reflect only costs for 25 kg and 50 lb. bags of NFDM.
- To obtain the weighted average, individual plant costs were weighted by their NFDM processing volume relative to the total volume of NFDM processed by all plants included in the cost study.
- For this study period, approximately 31.8% of the NFDM was processed at a cost less than the current manufacturing cost allowance for NFDM of $0.1763 per pound.

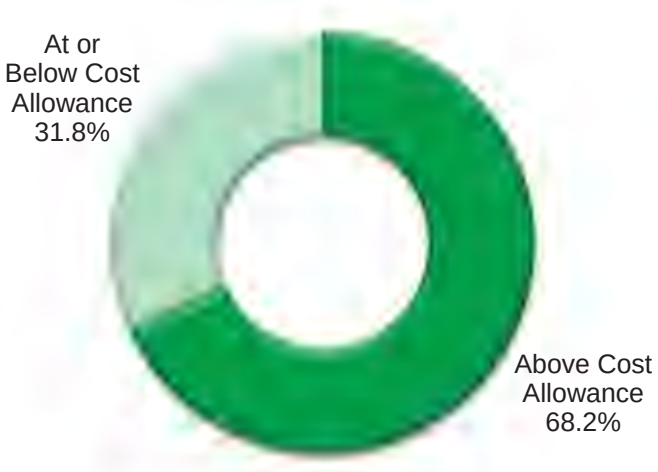
Breakdown of Nonfat Dry Milk Manufacturing Costs - January through December 2010

Categories	Low Cost Group	Medium Cost Group	High Cost Group	Range of Costs Minimum	Range of Costs Maximum	CURRENT Weighted Average Cost All Plants Jan-Dec 2010	PRIOR YEAR Weighted Average Cost All Plants Jan-Dec 2009	Actual Difference Current Less Prior Year
	Dollars Per Pound of NFDM							
Number of Plants	3	3	3	9	9	9	9	0
Processing Labor	$0.0402	$0.0456	$0.0265	$0.0221	$0.1015	$0.0388	$0.0366	$0.0022
Processing Non-Labor	$0.1018	$0.1232	$0.1379	$0.0983	$0.2791	$0.1194	$0.1156	$0.0038
Packaging	$0.0151	$0.0138	$0.0136	$0.0135	$0.0167	$0.0142	$0.0145	-$0.0003
General & Administrative	$0.0104	$0.0150	$0.0268	$0.0090	$0.0290	$0.0164	$0.0135	$0.0029
Return on Investment	$0.0062	$0.0162	$0.0378	$0.0040	$0.0398	$0.0182	$0.0182	$0.0000
Average Total Cost	$0.1737	$0.2138	$0.2426	--	--	$0.2070	$0.1984	$0.0086
Volume in Group (Lbs.)	308,708,212	341,898,356	224,433,182	--	--	875,039,750	815,148,443	59,891,307
% Volume by Group	35.28%	39.07%	25.65%	--	--	100.0%	100.0%	--

Figure 13. NFDM Manufacturing Cost Allowance and Production

In 2010, each cost group included three plants. Figure 12 lists the weighted average cost per pound for each category of the manufacturing cost.

Approximately 31.8 percent of the total NFDM production in the study was processed at or below the current manufacturing allowance of $0.1763 per pound (Figure 13).



Nonfat Dry Milk Study

Nonfat Dry Milk Manufacturing Costs

Processing labor costs were $0.0388 per pound, 6 percent higher than in 2009. The weighted average packaging labor cost for the 25-kg bag packaging was $0.0052 per pound, representing 13 percent of the total processing labor cost (Figure 14). General plant labor costs represented 21 percent of labor and included plant supervision and various general labor expenses.

Figure 14. NFDM Processing Labor

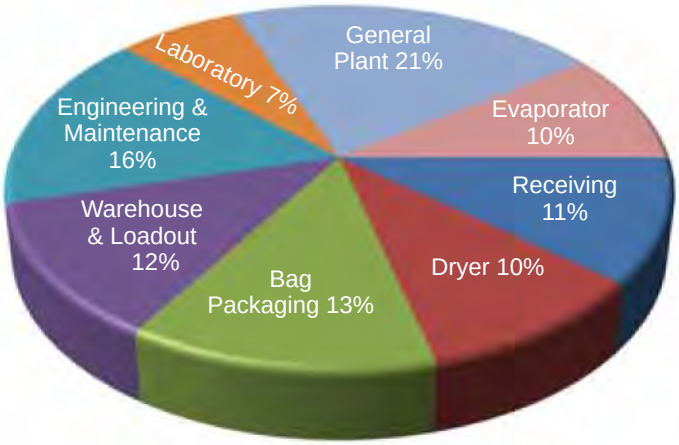
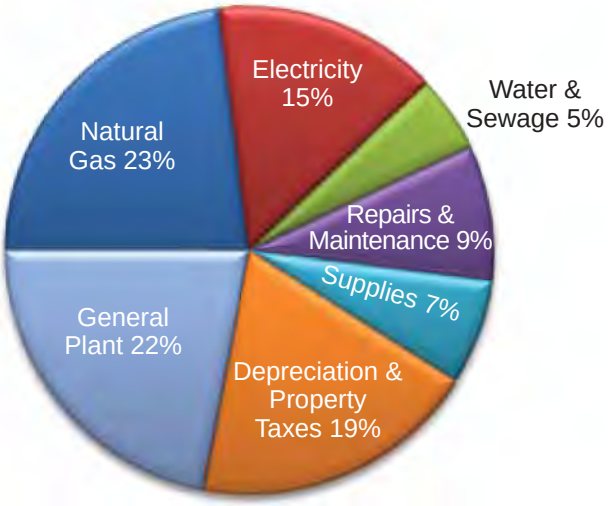
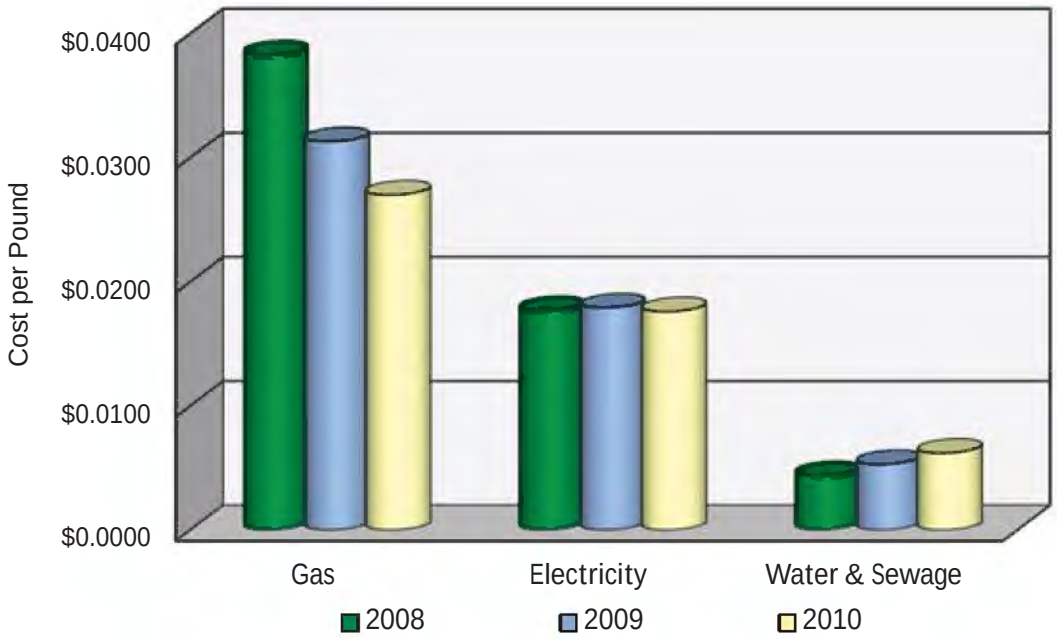


Figure 15. NFDM Processing Non-Labor



Processing non-labor costs of $0.1194 per pound accounted for 58 percent of the total manufacturing cost. Among the processing non-labor costs, natural gas expenses were 23 percent (Figure 15). An annual comparison of utility costs is presented below (Figure 16).

Figure 16. NFDM Utilities Comparison



Nonfat Dry Milk Study

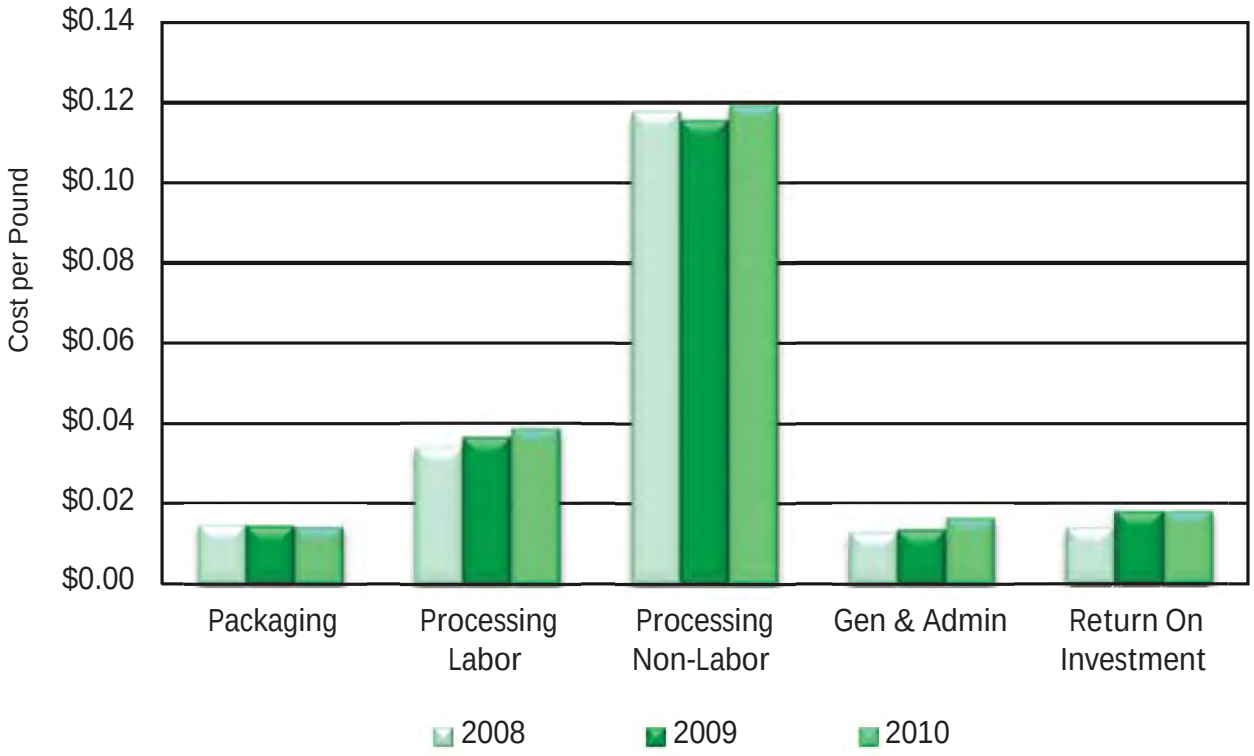
The weighted average packaging cost of $0.0142 per pound for a 25-kg bag represented 7 percent of the total manufacturing cost.

General and administrative costs were $0.0164 per pound and accounted for 8 percent of the manufacturing cost.

Return on investment costs were $0.0182 per pound.

In 2010, the NFDM manufacturing cost increased to $0.2070 from $0.1984 per pound the prior year. Figure 17 shows the changes that have occurred in each category of cost over a three-year period.

Figure 17. NFDM Manufacturing Costs Comparison

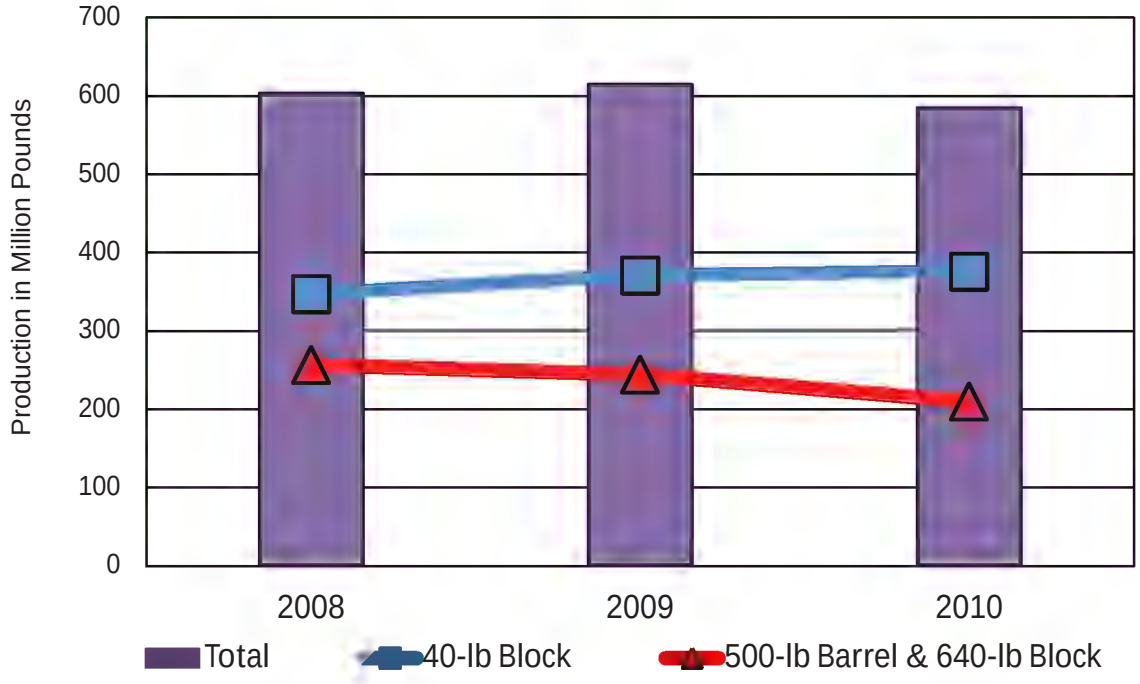


Cheese Study

In 2010, the cheese study included six plants. The six plants processed 585.1 million pounds, representing 95.9 percent of the Cheddar and Jack cheese processed in California. In addition to Cheddar and Jack cheeses, the cheese plants processed various other types of cheese and cheese by-products.

Total Cheddar and Jack cheese production for this study decreased 5 percent since 2009. Figure 18 displays production volume changes over the last three years.

Figure 18. Cheese Production Comparison



For all Cheddar cheese, the weighted average vat yield was 13.70 pounds of cheese per hundredweight (cwt) of milk, the weighted average moisture was 37.78 percent, and the weighted average vat test was 4.67 percent fat and 9.60 percent solids-not-fat (Table 1).

Table 1. All Cheddar Cheese Production Parameters Comparison

Year	Finished Moisture %	Vat Fat Test %	Vat SNF Test %	Vat Yield (Lbs.)
2010	37.78	4.67	9.60	13.70
2009	38.03	4.62	9.58	13.28

Cheese Study

Figure 19. Cheese Manufacturing Costs

CURRENT Study Period: January through December 2010
With Comparison to the same time period Prior Year (2009)

- Manufacturing cost data were collected and summarized from six California cheese plants. The six plants processed 585.1 million pounds of cheese during the 12-month study period, January through December 2010, representing 95.9% of the Cheddar and Monterey Jack cheese processed in California.
- The volume total includes both Cheddar and Monterey Jack cheeses, but the costs reflect only costs for 40-lb. blocks of Cheddar.
- Three plants processed 500-lb. barrels or 640-lb. blocks. Packaging costs and packaging labor for 40-lb. blocks were substituted for these plants.
- To obtain the weighted average, individual plant costs were weighted by their cheese processing volume relative to the total volume of cheese processed by all plants included in the cost study.
- For all cheese: the weighted average yield was 13.70 lbs. of cheese per hundredweight of milk. The weighted average moisture was 37.78% and the weighted average vat tests were 4.67% fat and 9.60% SNF.
- For the study period, approximately 88.8% of the cheese was processed at a cost less than the current manufacturing cost allowance for cheese of $0.1988 per pound.

Breakdown of Cheese Manufacturing Costs - January through December 2010

Categories	Total Cost One Group	Range of Costs Minimum	Range of Costs Maximum	CURRENT Weighted Average Cost All Plants Jan-Dec 2010	PRIOR YEAR Weighted Average Cost All Plants Jan-Dec 2009	Actual Difference Current Less Prior Year
	Dollars Per Pound of Cheese					
Number of Plants	6	6	6	6	6	0
Processing Labor	$0.0481	$0.0403	$0.1102	$0.0481	$0.0491	-$0.0010
Processing Non-Labor	$0.0766	$0.0606	$0.1340	$0.0766	$0.0729	$0.0037
Packaging	$0.0228	$0.0126	$0.0262	$0.0228	$0.0260	-$0.0032
Other Ingredients	$0.0211	$0.0103	$0.0324	$0.0211	$0.0248	-$0.0037
General & Administrative	$0.0189	$0.0155	$0.0432	$0.0189	$0.0183	$0.0006
Return on Investment	$0.0046	$0.0033	$0.0154	$0.0046	$0.0055	-$0.0009
Average Total Cost	$0.1921	--	--	$0.1921	$0.1966	-$0.0045
Volume in Group (Lbs.)	585,108,135	--	--	585,108,135	614,680,488	-29,572,353
% Volume by Group	100.0%	--	--	100.0%	100.0%	--

In 2010, to avoid revealing plant specific information, all six plants were grouped together. Figure 19 lists the weighted average cost for each category of the manufacturing cost.

For this study period, 88.8 percent of the cheese was processed at a cost less than the current manufacturing allowance of $0.1988 per pound (Figure 20).

Figure 20. Cheese Manufacturing Cost Allowance and Production

Cheese Study

Cheddar Cheese Manufacturing Costs

Processing labor costs were $0.0481 per pound, a slight decrease from 2009. For the plants that processed 500-lb barrels or 640-lb blocks, the weighted average packaging labor cost for 40-lb block Cheddar cheese was substituted. General plant labor represented 20 percent of the processing labor cost (Figure 21) and included plant supervision and various general plant expenses.

Figure 21. Cheese Processing Labor

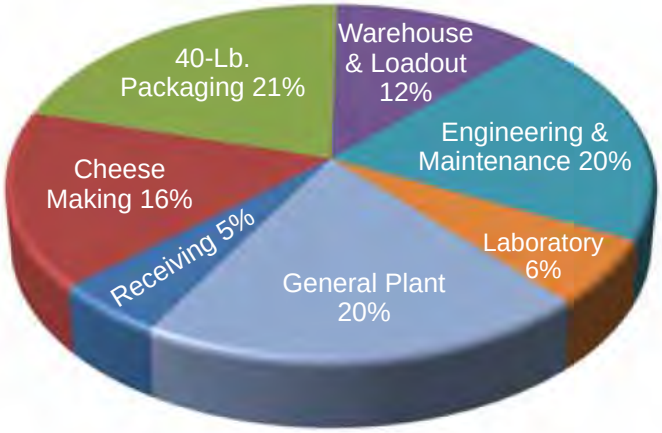
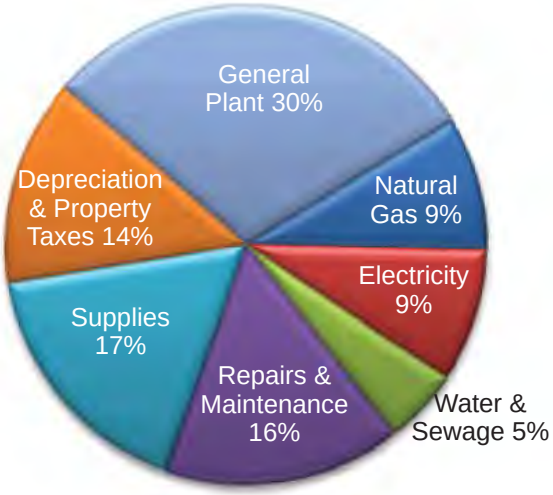
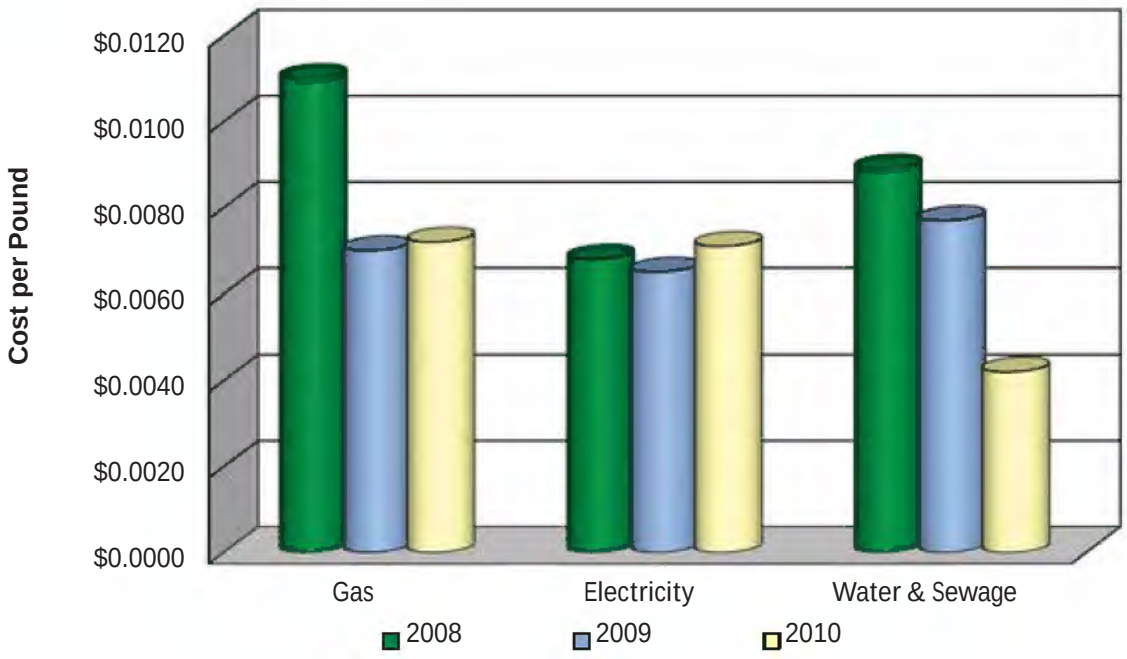


Figure 22. Cheese Processing Non-Labor



Processing non-labor costs were $0.0766 per pound and accounted for 40 percent of the total manufacturing cost. The combined utility costs accounted for 23 percent of processing non-labor (Figure 22). Annual comparison of utility costs is presented below (Figure 23).

Figure 23. Cheese Utilities Comparison



Cheese Study

Packaging costs included all non-reusable items, such as boxes, liners, tape, glue, and stretch-wrap. The weighted average packaging cost for 40-lb block Cheddar cheese was substituted for those plants producing 500-lb barrel or 640-lb block cheese. Packaging costs were $0.0228 per pound.

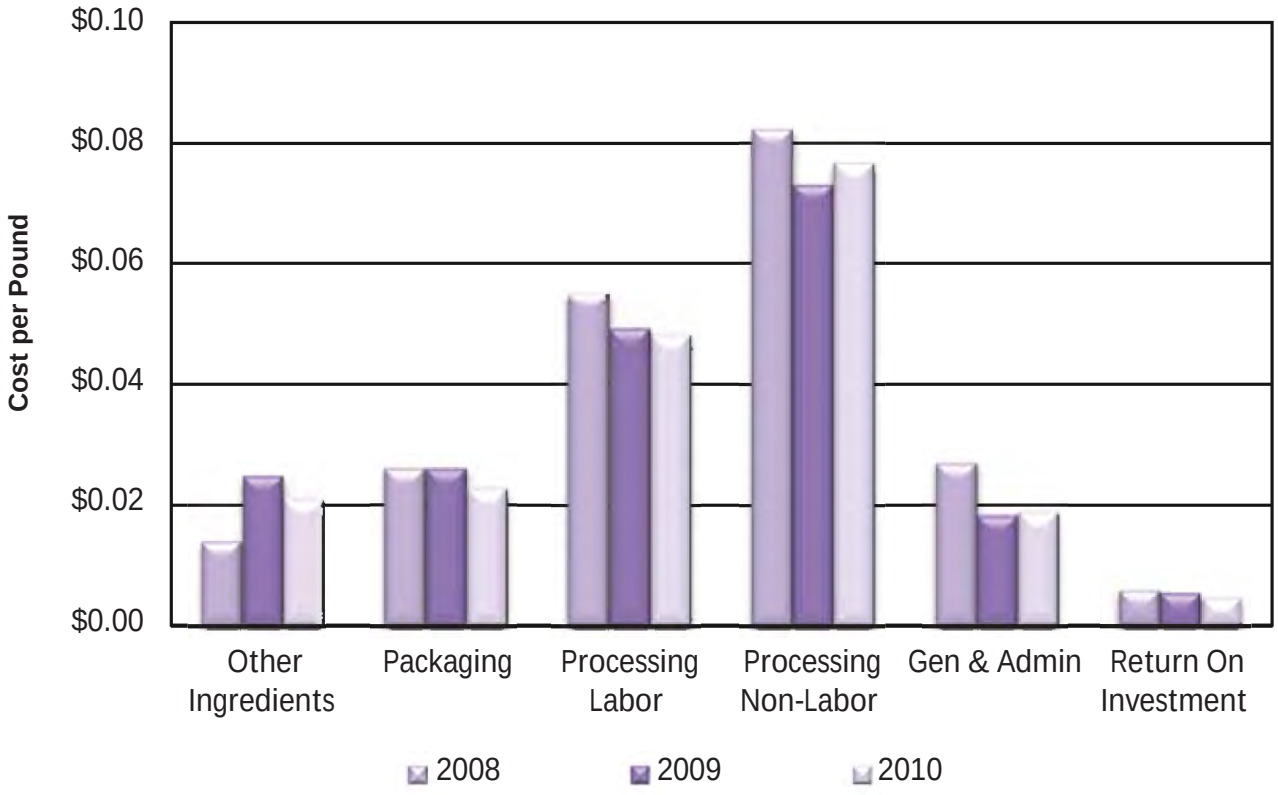
Other ingredient costs for Cheddar cheese included salt, color, rennet, fortification costs, etc. The weighted average cost decreased to $0.0211 per pound, a difference of 15 percent from 2009.

General and administrative costs were $0.0189 per pound, a slight increase from 2009, and accounted for 10 percent of the manufacturing cost.

Return on investment costs were $0.0046 per pound, a 16 percent decrease from the prior year, representing 2 percent of the manufacturing cost.

The cost of manufacturing cheese dropped to $0.1921 per pound from the prior year; Figure 24 illustrates the changes occurring in each category of cost over a three-year period.

Figure 24. Cheese Manufacting Costs Comparison



Condensed Skim & Cream

The manufacturing cost of bulk dairy products, such as condensed skim and cream, are not as precise as packaged products like butter, NFDM, and cheese. There are very few direct costs associated with bulk dairy products. Most, if not all, bulk dairy product costs are derived from the general plant costs allocated to them based on component hundredweight (cwt).

Condensed Skim Overview

In 2010, the condensed skim study was completed on nine plants. Condensed skim sales were 492.5 million pounds, down slightly from the 2009 study (Figure 25). The weighted average manufacturing cost of condensed skim was $4.25 per cwt in 2010. Labor costs decreased slightly, while general and administration costs increased 15 percent compared to the prior year (Figure 26).

Figure 25. Condensed Skim Sales Comparison

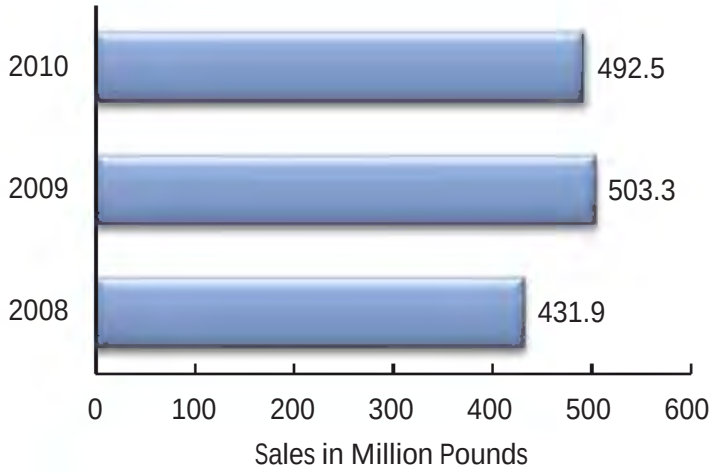
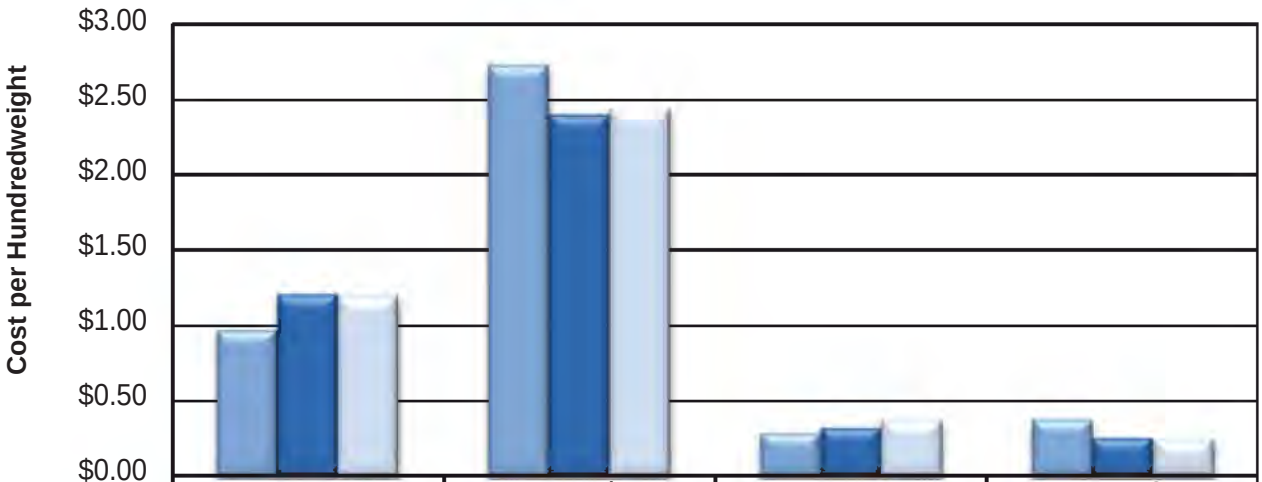


Figure 26. Condensed Skim Manufacturing Costs Comparison



	Processing Labor	Processing Non-Labor	Gen & Admin	Return On Investment
2008	$0.9663	$2.7264	$0.2834	$0.3761
2009	$1.2061	$2.4008	$0.3228	$0.2512
2010	$1.1967	$2.4380	$0.3706	$0.2416

Condensed Skim & Cream

Cream Overview

The cream study included nine plants in 2010. Cream sales were 278.6 million pounds, down 14 percent from the 2009 study (Figure 27). The weighted average manufacturing cost of cream increased to $4.50 per cwt, a slight increase over the prior year cost (Figure 28).

Figure 27. Cream Sales Comparison

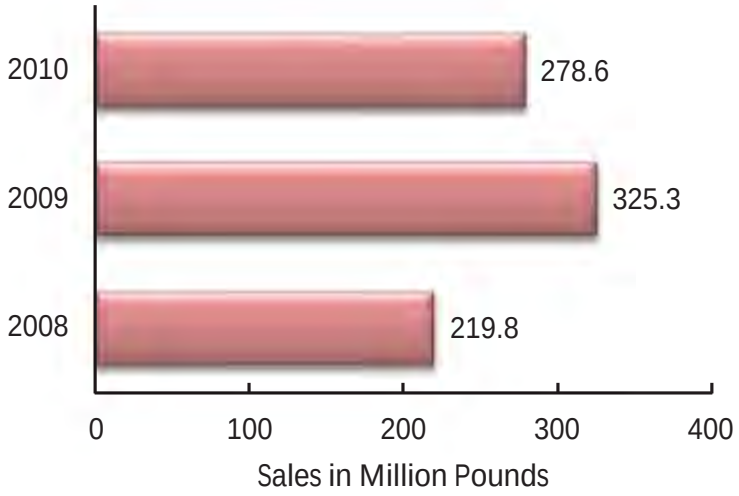
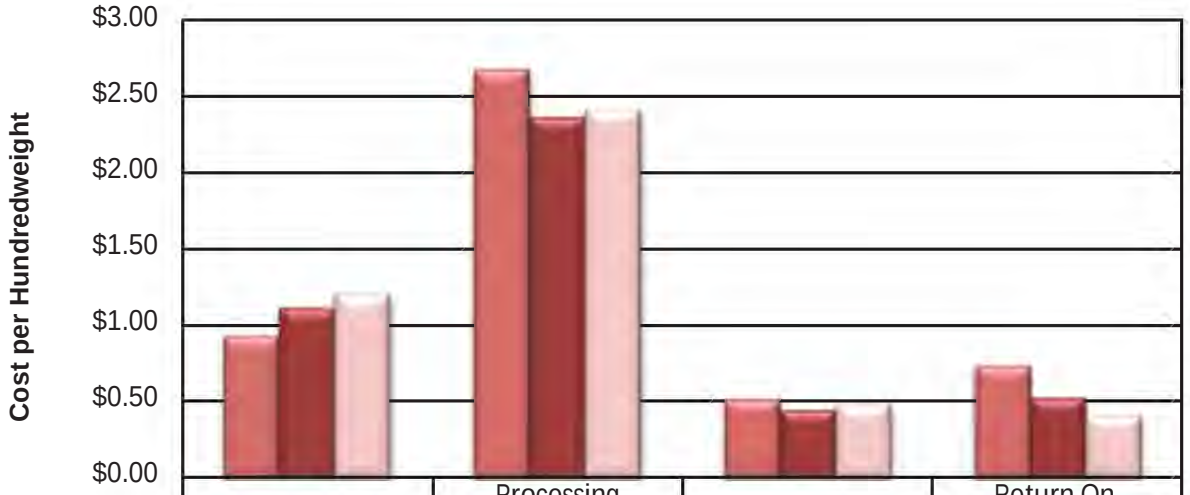


Figure 28. Cream Manufacturing Costs Comparison



	Processing Labor	Processing Non-Labor	Gen & Admin	Return On Investment
2008	$0.9310	$2.6766	$0.5159	$0.7346
2009	$1.1169	$2.3627	$0.4457	$0.5238
2010	$1.1998	$2.4113	$0.4804	$0.4125

Figure 29. Simplified Flowchart of a Butter and Nonfat Dry Milk Plant

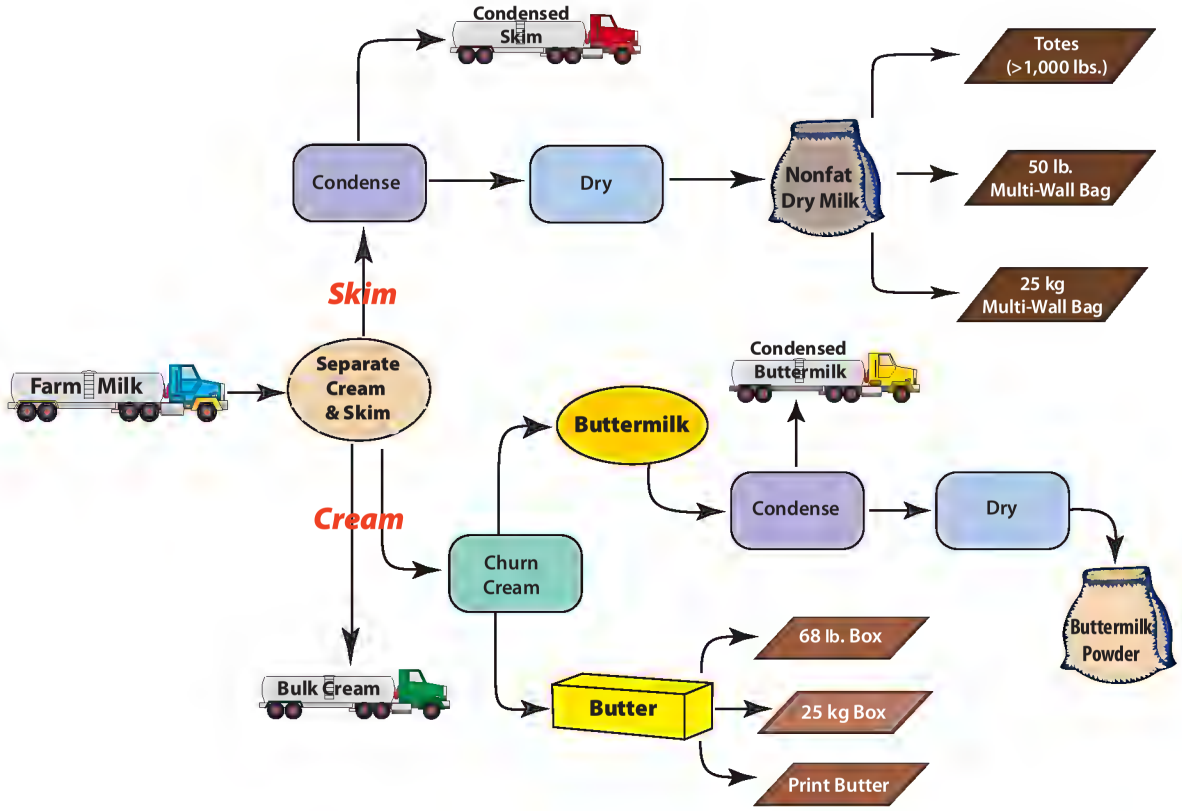
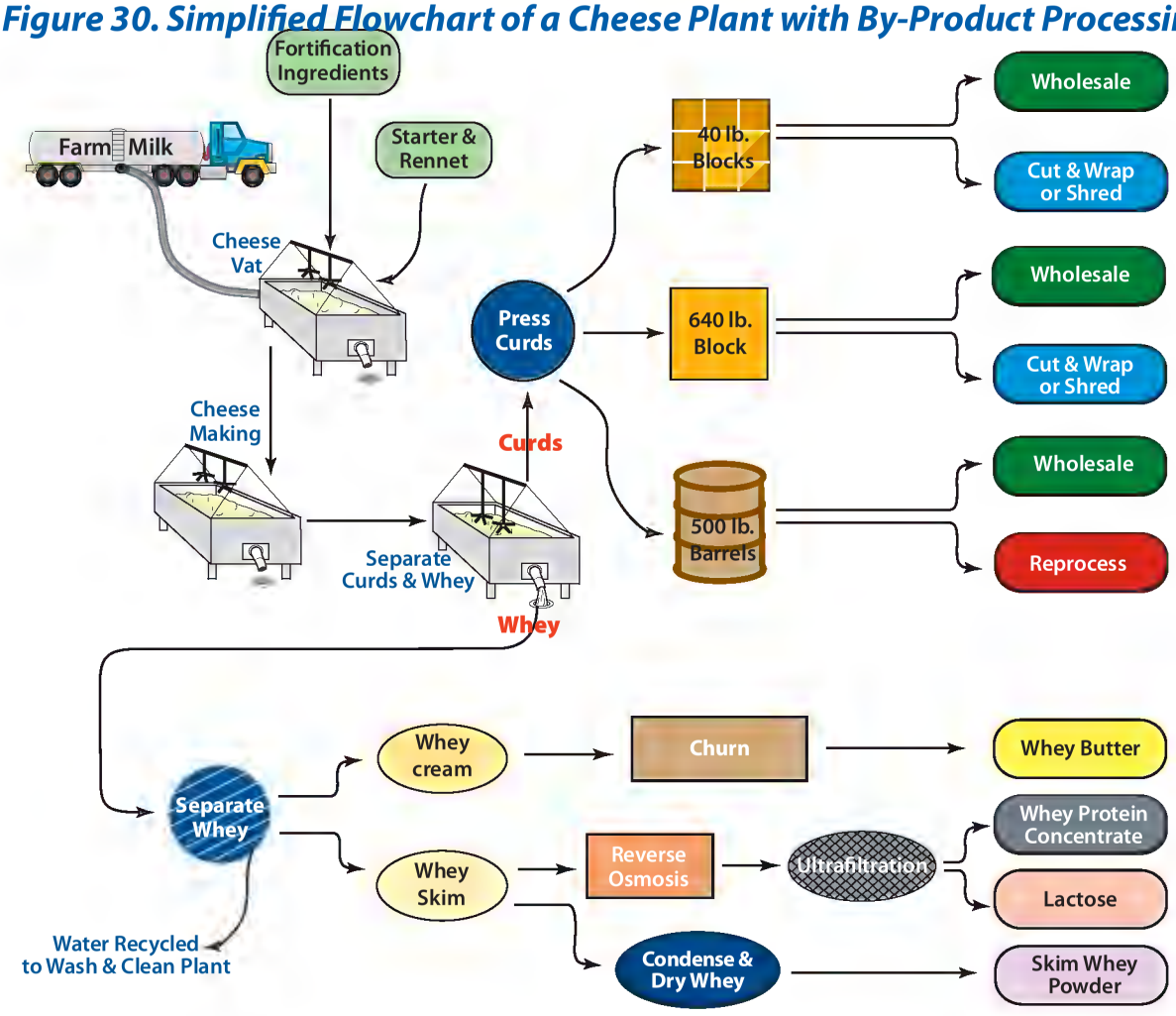


Figure 30. Simplified Flowchart of a Cheese Plant with By-Product Processing



Manufacturing Cost Unit Staff *(pictured from left to right):*
Bottom Row: Jackie Juarez; Venetta Reed, Supervisor; Leticia Regalado. Second row: Raymond Greth, Stephanie Qian, Joseph Reno

We welcome your comments on this Manufacturing Cost Annual. Please send your comments and suggestions to:

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